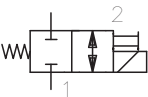
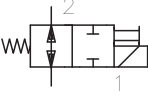
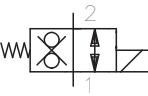
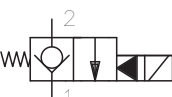

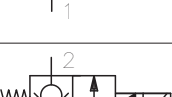

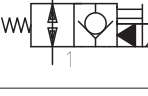
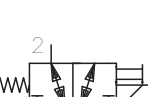

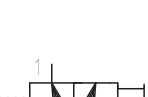
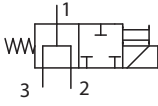
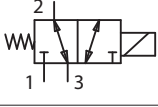
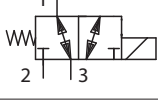
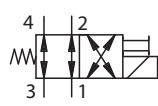

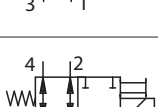


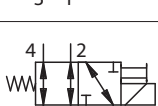
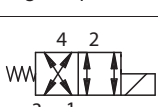
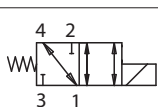
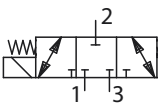



Solenoid Valves

	MODEL	DESCRIPTION	FLOW	CAVITY
	EMDV-08-C6	DIRECT ACTING SPOOL TYPE 2-WAY N.C.	5 GPM	C0820
	EMDV-10-C1		8 GPM	C1020
	EMDV-12-C1		18 GPM	C1220
	EMDV-08-O6	DIRECT ACTING SPOOL TYPE 2-WAY N.O.	5 GPM	C0820
	EMDV-10-O1		8 GPM	C1020
	EMDV-12-O1		18 GPM	C1220
	EMDV-08-C3	DIRECT ACTING POPPET TYPE 2-WAY N.C.	5 GPM	C0820
	EMDV-10-C3		6 GPM	C1020
	EMDV-08-C7	PILOT OPER. POPPET TYPE 2-WAY N.C.	10 GPM	C0820
	EMDV-10-C2		18 GPM	C1020
	EMDV-12-C2		36 GPM	C1220
	EMDV-16-C2		50 GPM	C1620
	EMDV-08-O7	PILOT OPER. POPPET TYPE 2-WAY N.O.	10 GPM	C0820
	EMDV-10-O2		18 GPM	C1020
	EMDV-12-O2		36 GPM	C1220
	EMDV-16-O2		50 GPM	C1620
	EMDV-08-C8	P.O. POPPET 2-WAY N.C. FREE REVERSE	10 GPM	C0820
	EMDV-10-C4 (on request)		20 GPM	C1020
	EMDV-12-C4		36 GPM	C1220
	EMDV-16-C4		50 GPM	C1620
	EMDV-08-O8	P.O. POPPET 2-WAY N.O. FREE REVERSE	10 GPM	C0820
	EMDV-10-O4		20 GPM	C1020
	EMDV-12-O4		36 GPM	C1220
	EMDV-16-O4		50 GPM	C1620
	EMDV-08-3L	SPOOL TYPE 3-WAY CLOSED CROSSOVER	5 GPM	C0830
	EMDV-10-3A		8 GPM	C1030
	EMDV-12-3A replaced by: ESDV-12-3A		12 GPM	C1230
			16 GPM	C1230
	EMDV-10-3C	SPOOL TYPE 3-WAY OPEN CROSSOVER	8 GPM	C1030
	EMDV-12-3C replaced by: ESDV-12-3C		12 GPM	C1230
			16 GPM	C1230
	EMDV-08-3J	SPOOL TYPE 3-WAY CLOSED CROSSOVER	5 GPM	C0830
	EMDV-10-3B		8 GPM	C1030
	EMDV-12-3B replaced by: ESDV-12-3B		12 GPM	C1230
			16 GPM	C1230
	EMDV-08-3K	SPOOL TYPE 3-WAY OPEN CROSSOVER	5 GPM	C0830
	EMDV-08-3M (on request)		5 GPM	C0830
	EMDV-10-3D		8 GPM	C1030
	EMDV-12-3D replaced by: ESDV-12-3D		12 GPM	C1230
			16 GPM	C1230

Solenoid Valves

	MODEL	DESCRIPTION	FLOW	CAVITY
	EMDV-10-3E	SPOOL TYPE 3-WAY NORMALLY OPEN	8 GPM	C1030
	EMDV-08-3N	SPOOL TYPE 3-WAY CLOSED CROSSOVER	5 GPM	C0830
	EMDV-08-3P	SPOOL TYPE 3-WAY OPEN CROSSOVER	5 GPM	C0830
	EMDV-08-3R	SPOOL TYPE 3-WAY OPEN CROSSOVER	5 GPM	C0830
	EMDV-10-4A	SPOOL TYPE 4-WAY CLOSED CROSSOVER	8 GPM	C1040
	EMDV-12-4A replaced by: ESDV-12-4A	SPOOL TYPE 4-WAY CLOSED CROSSOVER	16 GPM	C1240
	EMDV-12-4F replaced by: ESDV-12-4F	SPOOL TYPE 4-WAY OPEN CROSSOVER	20 GPM	C1240
	EMDV-08-4K	SPOOL TYPE 2 POSITION 4-WAY N.C.	5 GPM	C0840
	EMDV-10-4B		8 GPM	C1040
	EMDV-12-4B		16 GPM	C1240
	ESDV-12-4B		16 GPM	C1240
	EMDV-08-4L	SPOOL TYPE 2 POSITION 4-WAY N.O.	5 GPM	C0840
	EMDV-10-4C		8 GPM	C1040
	EMDV-12-4C		16 GPM	C1240
	ESDV-12-4C		16 GPM	C1240
	EMDV-10-4D	SPOOL TYPE 2 POSITION 4-WAY	8 GPM	C1040
	EMDV-12-4D		16 GPM	C1240
	ESDV-12-4D		16 GPM	C1240
	EMDV-08-4N	SPOOL TYPE 2 POSITION 4-WAY	5 GPM	C0840
	EMDV-10-4E	SPOOL TYPE 2 POSITION 4-WAY	8 GPM	C1040
	EMDV-12-4E		16 GPM	C1240
	EMDV-08-4J	SPOOL TYPE 2 POSITION 4-WAY	5 GPM	C0840
	EMDV-08-4P	SPOOL TYPE 2 POSITION 4-WAY	5 GPM	C0840
	EMBV-08-3J	SPOOL TYPE 3 POSITION 3-WAY CLOSED	5 GPM	C0830

Solenoid Valves

	MODEL	DESCRIPTION	FLOW	CAVITY
	EMBV-08-4J EMBV-10-4J	SPOOL TYPE 3 POSITION 4-WAY TANDEM	5 GPM 9 GPM	C0840 C1040
	EMBV-08-4K EMBV-10-4K	SPOOL TYPE 3 POSITION 4-WAY OPEN	5 GPM 7 GPM	C0840 C1040
	EMBV-08-4L EMBV-10-4L	SPOOL TYPE 3 POSITION 4-WAY CLOSED	5 GPM 6 GPM	C0840 C1040
	EMBV-08-4M (on request) EMBV-10-4M	SPOOL TYPE 3 POSITION 4-WAY MOTOR	5 GPM 6 GPM	C0840 C1040
	WKP32G / OLA1... WKP32G / ONA3... WK32G / O...	3/2 CARTRIDGE SPOOL VALVE	1 GPM 3 GPM 8 GPM	AM AM AM
	WKP42ALA1... WKP42ANA3... WK42A...	4/2 CARTRIDGE SPOOL VALVE	1 GPM 3 GPM 8 GPM	AN AN AN
	WK43D...	4/3 SOLENOID DIRCTIONAL CARTRIDGE VALVE	8 GPM	AN
	WK43G...	4/3 SOLENOID DIRCTIONAL CARTRIDGE VALVE	8 GPM	AM
	WS32GNA5...	3/2 SOLENOID CARTRIDGE VALVE	6 GPM	AM
	WS42GNA5...	4/2 SOLENOID CARTRIDGE VALVE	8 GPM	AT / C1040

COIL INFORMATION

SQUARE COIL TYPE "L" AND "S"
ROUND COIL TYPE D 2.2" / .875"

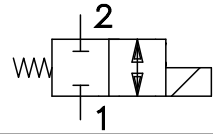
EMSV-.. (on request)

SOLENOID VERSION FOR SOFT SHIFT VALVE

Manual Over-Ride button

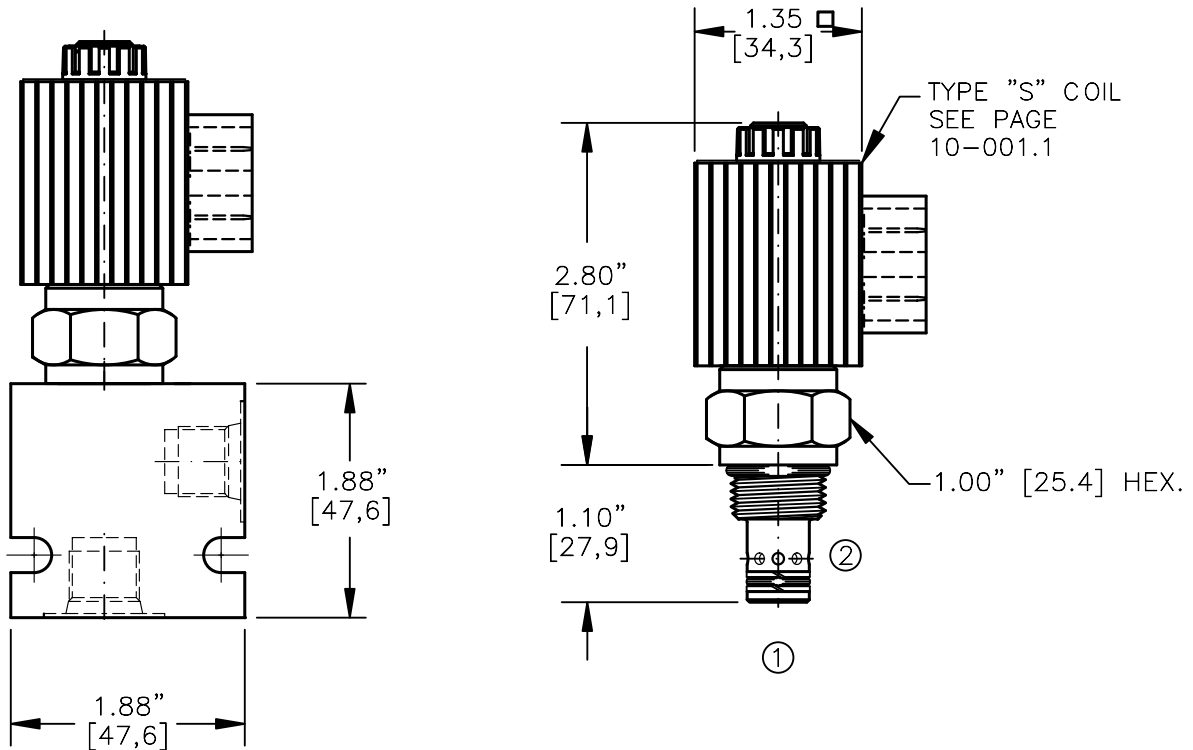
FOR SIZE 10-12-16 PUSH-TYPE SOLENOID VALVE

SOLENOID VALVE, NORMALLY CLOSED.
DIRECT ACTING, SPOOL TYPE (2/2)



TORQUE:

Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-011.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. FOR "AC" COILS USE RECTIFIED DIN CONNECTOR 20828.

EMDV-08-X-C6-X-XXX X

BASIC

SIZE
08 = 3/4"-16UNF

SEALS

N = BUNA "N"
V = VITON

TYPE

C6=NORMALLY CLOSED SPOOL
2-WAY, 2-POSITION

PORTS

0 = CARTRIDGE ONLY
02BX = G 1/4" BSPP
06TX = SAE - #6

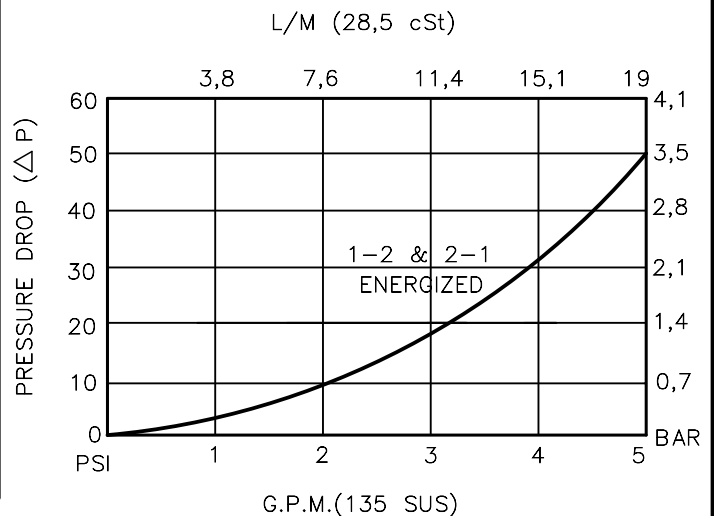
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS

L=18GA. 24" LEADS
T=SPADE TERM.
B=BOLT TERM.
G=DIN43650
W=WEATHER-PACK
D=DEUTSCH-DT04-2P
M=METRI-PACK CONN.

VOLTAGE AMPS

12D = 12 VDC 1.7
24D = 24 VDC .9
36D = 36 VDC .6
48D = 48 VDC .5
115D = 115 VDC .2



**SOLENOID VALVE, NORMALLY CLOSED,
DIRECT ACTING, SPOOL TYPE (2/2)****DESCRIPTION**

This unit is a NORMALLY CLOSED, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows no flow from ports 1 to 2 or 2 to 1.

When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 2 and 2 and 1.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

Industry common cavity.

**SOLENOID VALVE, NORMALLY CLOSED,
DIRECT ACTING, SPOOL TYPE (2/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 5.0 GPM [19 l/m] See performance chart.

INTERNAL LEAKAGE: 5 cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
5000 PSI [350 Bar] = Steel – Unplated.

OPERATING MEDIA: All general purpose hydraulic fluids such as
MIL-H-5606, SAE-#10, SAE-#20, etc.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms. * Drop-Out: 50 ms.

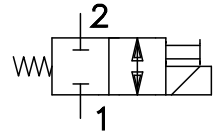
SEAL KIT: SKN-0822 Buna "N"
SKV-0822 Viton

INSTALLATION: No restrictions.

WEIGHT: .80 lb [0,36 kg] cartridge with coil only.

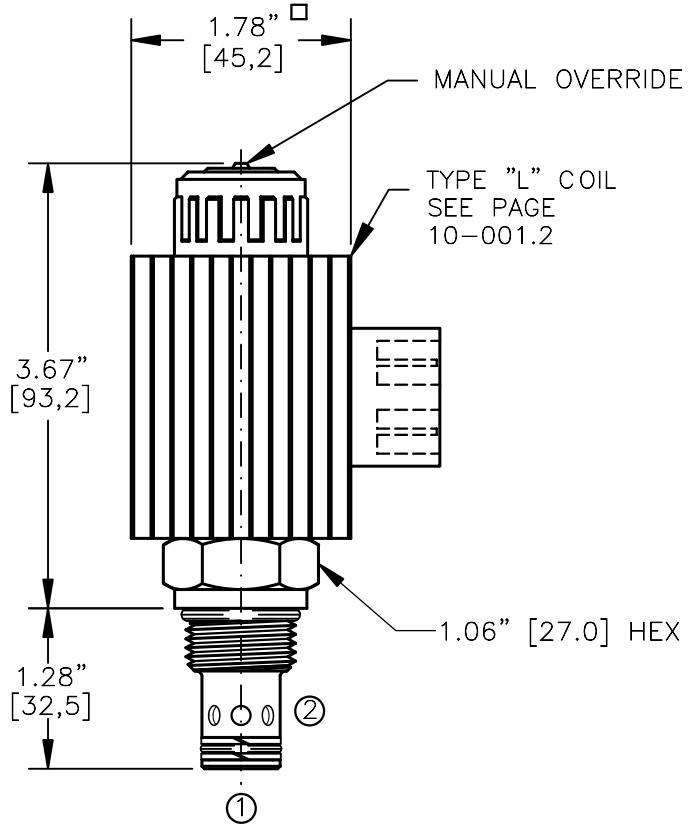
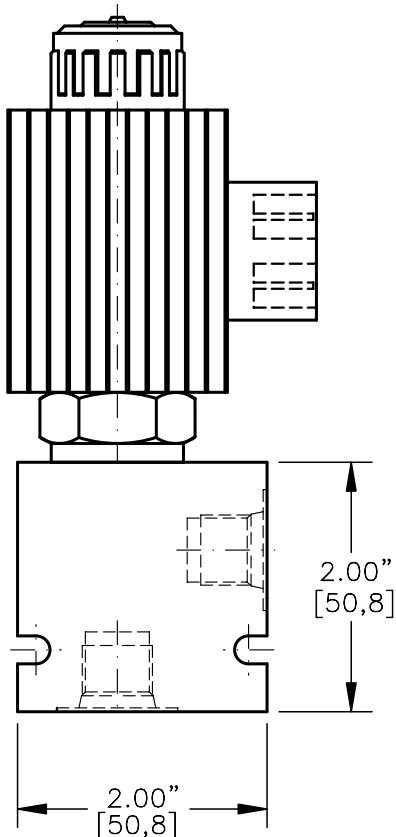
VALVE CAVITY: #C0820, See Page 0-011.0.

SOLENOID VALVE, NORMALLY CLOSED.
DIRECT ACTING, SPOOL TYPE (2/2)



TORQUE:

Steel = 55/60 Ft-Lb. [74/81 Nm]
Aluminum = 35/40 Ft-Lb. [47/54 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-012.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.
4. FOR SOFT SHIFT SOLENOID VALVE SEE PAGE 10-002.0

EMDV-10-X-C1-X-XXX X

BASIC

SIZE
10 = 7/8"-14UNF

SEALS
N = BUNA "N"
V = VITON

TYPE
C1=NORMALLY CLOSED SPOOL
2-WAY, 2-POSITION

PORTS
0 = CARTRIDGE ONLY
02BX = G 1/4" BSPP
03BX = G 3/8" BSPP
06TX = SAE - #6
08TX = SAE - #8

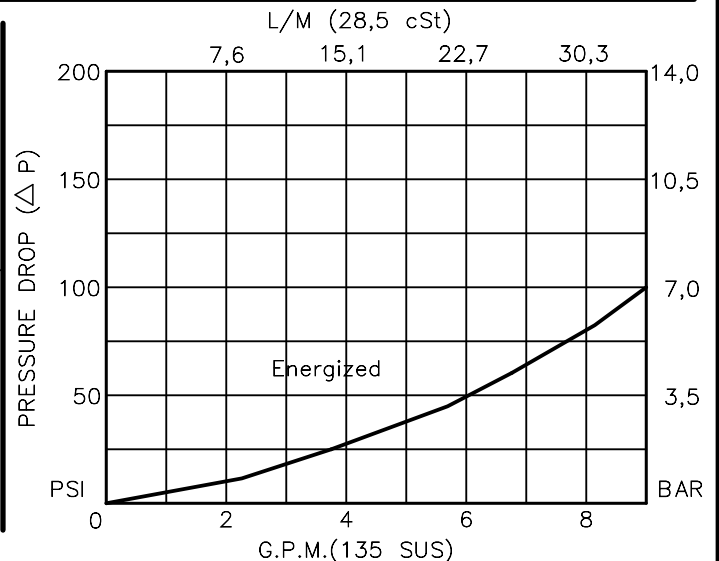
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS

L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = M ETRI-PACK CONN

VOLTAGE AMPS

12D = 12 VDC	3.00
24D = 24 VDC	1.50
36D = 36 VDC	1.00
48D = 48 VDC	0.75
110D = 110 VDC	0.33
115A = 115 VAC	0.32
230A = 230 VAC	0.16



**SOLENOID VALVE, NORMALLY CLOSED,
DIRECT ACTING, SPOOL TYPE (2/2)****DESCRIPTION**

This unit is a NORMALLY CLOSED, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows no flow from ports 1 to 2 or 2 to 1.

When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 to 2 and 2 to 1.

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

Industry common cavity.

**SOLENOID VALVE, NORMALLY CLOSED,
DIRECT ACTING, SPOOL TYPE (2/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 8.0 GPM [30 l/m] See performance chart.

INTERNAL LEAKAGE: 5 cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSING: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OPERATING TEMPERATURE: -40° to +250° F. [-40° to +120° C.]

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms. * Drop-Out: 50 ms.

SEAL KIT: SKN-1022 Buna "N"

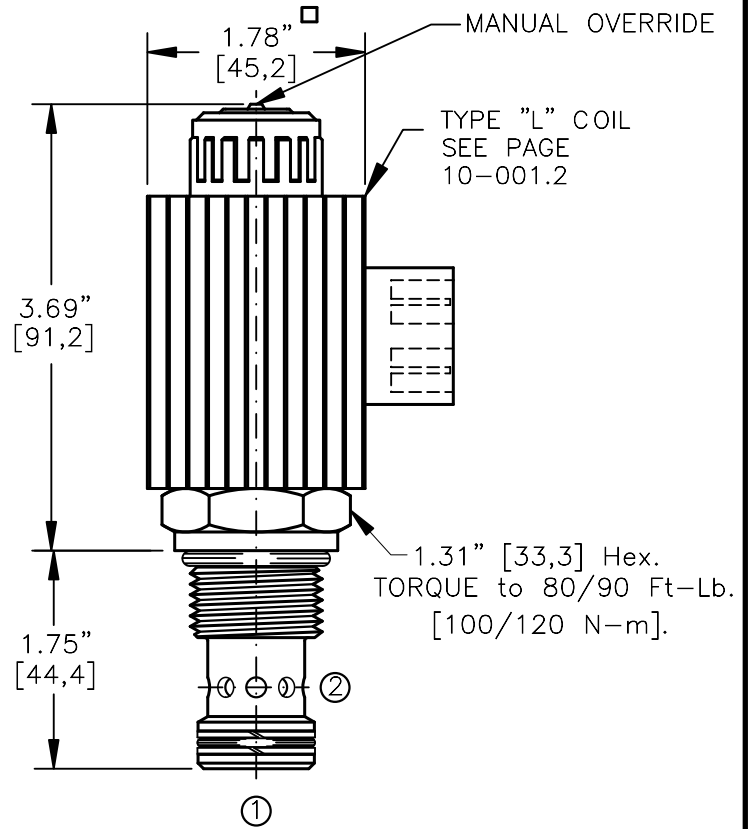
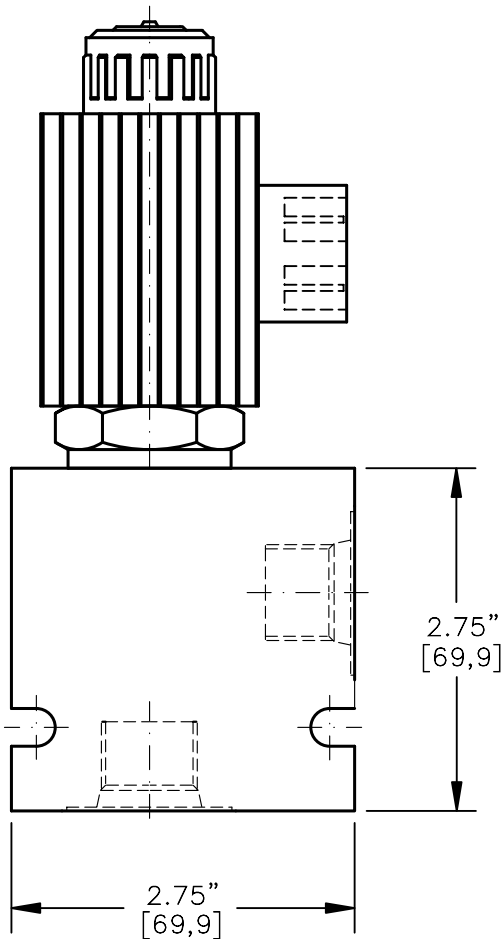
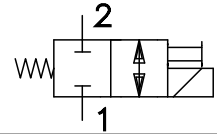
SKV-1022 Viton

INSTALLATION: No restrictions.

WEIGHT: 1.91 lb [0,86 kg] cartridge with coil only.

VALVE CAVITY: #C1020, See Page 0-012.0.

SOLENOID VALVE, NORMALLY CLOSED.
DIRECT ACTING, SPOOL TYPE (2/2)



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-013.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.
4. FOR SOFT SHIFT SOLENOID VALVE SEE PAGE 10-002.0

EMDV-12-X-C1-X-XXX X

BASIC

SIZE

12 = 1.062"-12UNF

SEALS

N = BUNA "N"
V = VITON

TYPE

C1=NORMALLY CLOSED SPOOL
2-WAY, 2-POSITION

PORTS

0 = CARTRIDGE ONLY
04BX = G 1/2" BSPP
06BX = G 3/4" BSPP
10TX = SAE - #10
12TX = SAE - #12

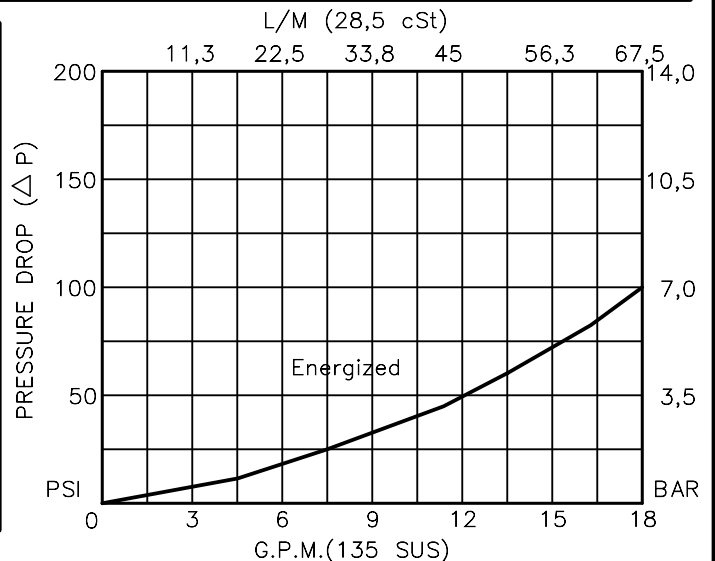
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS

L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS

12D = 12 VDC 3.00
24D = 24 VDC 1.50
36D = 36 VDC 1.00
48D = 48 VDC 0.75
110D = 110 VDC 0.33
115A = 115 VAC 0.32
230A = 230 VAC 0.16



**SOLENOID VALVE, NORMALLY CLOSED,
DIRECT ACTING, SPOOL TYPE (2/2)****DESCRIPTION**

This unit is a NORMALLY CLOSED, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows no flow from ports 1 to 2 or 2 to 1.

When solenoid coil is energized, the spool in this valve is shifted and allows flow from ports 1 to 2 and 2 to 1.

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

SOLENOID VALVE, NORMALLY CLOSED,
DIRECT ACTING, SPOOL TYPE (2/2)

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 18.0 GPM [68 l/m] See performance chart.

INTERNAL LEAKAGE: 5 cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as
MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-1222 Buna "N"

SKV-1222 Viton

INSTALLATION: No restrictions.

WEIGHT: 1.98 lb [.90 kg] cartridge with coil only.

VALVE CAVITY: #C1220, See Page 0-013.0.

info.el@bucherhydraulics.com

www.bucherhydraulics.com/commoncavity

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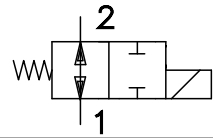
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The technical information in this catalog, may contain calculated figures (for reference only) and not actual performance data for this product.

Data is provided for the purpose of product description only, and must not be construed as warranted characteristics in the legal sense.

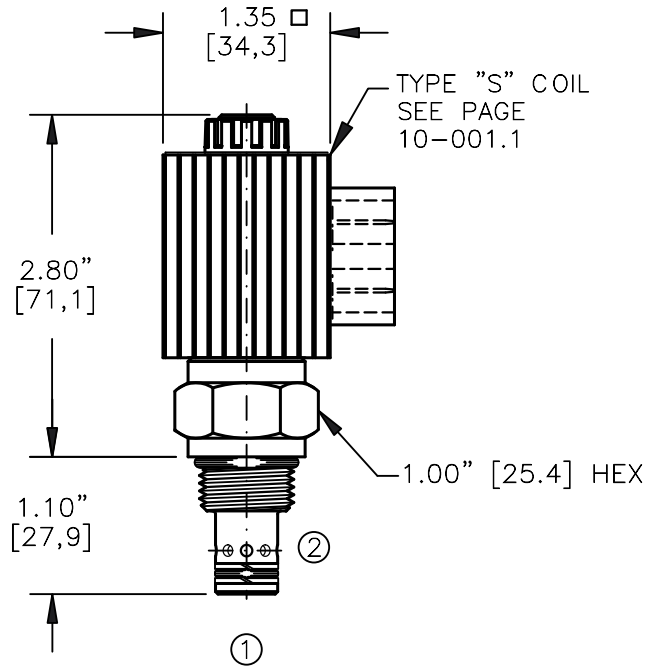
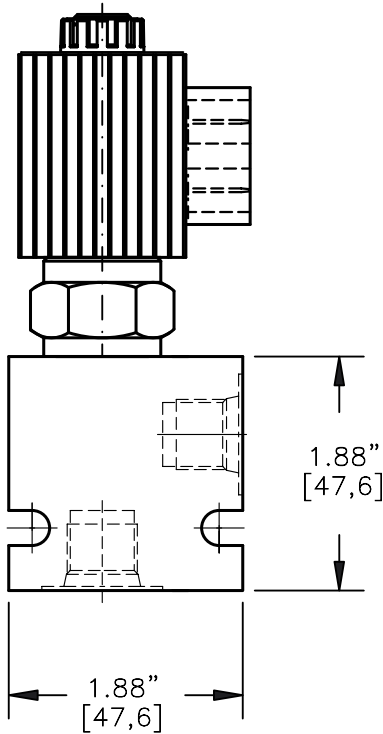
The information does not relieve users from the duty of conducting their own evaluations and tests. Because the products are subject to continual improvement, we reserve the right to amend the product specifications contained in this catalogue.

SOLENOID VALVE, NORMALLY OPEN.
DIRECT ACTING, SPOOL TYPE (2/2)



TORQUE:

Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-011.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. FOR "AC" COILS USE RECTIFIED DIN CONNECTOR 20828.

EMDV-08-X-06-X-XXX X

BASIC

SIZE
08 = 3/4"-16UNF

SEALS

N = BUNA "N"
V = VITON

TYPE

06=NORMALLY OPEN SPOOL
2-WAY, 2-POSITION

PORTS

0 = CARTRIDGE ONLY
02BX = G 1/4" BSSP
06TX = SAE - #6
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

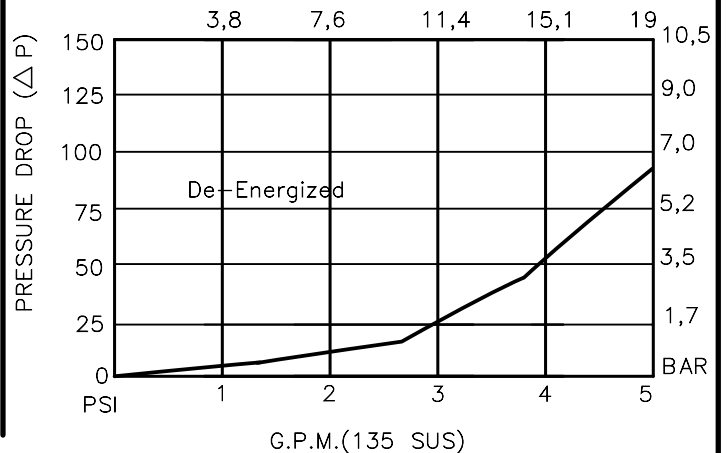
TERMINALS

L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS

12D = 12 VDC 1.7
24D = 24 VDC .9
36D = 36 VDC .6
48D = 48 VDC .5
115D = 115 VDC .2

L/M (28,5 cSt)



**SOLENOID VALVE, NORMALLY OPEN,
DIRECT ACTING, SPOOL TYPE (2/2)****DESCRIPTION**

This unit is a NORMALLY OPEN, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 2.

When solenoid coil is energized, the spool in this valve is shifted and allows no flow between ports 1 and 2.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

Industry common cavity.

SOLENOID VALVE, NORMALLY OPEN,
DIRECT ACTING, SPOOL TYPE (2/2)

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 5.0 GPM [19 l/m] See performance chart.

INTERNAL LEAKAGE: 5 cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100% voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-0822 Buna "N"

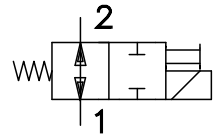
SKV-0822 Viton

INSTALLATION: No restrictions.

WEIGHT: .80 lb [0,36 kg] cartridge with coil only.

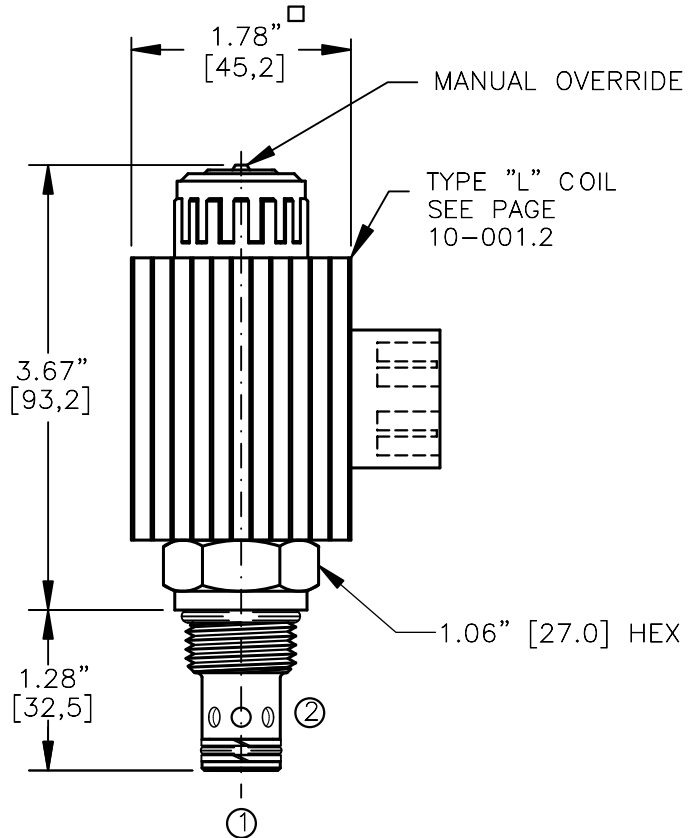
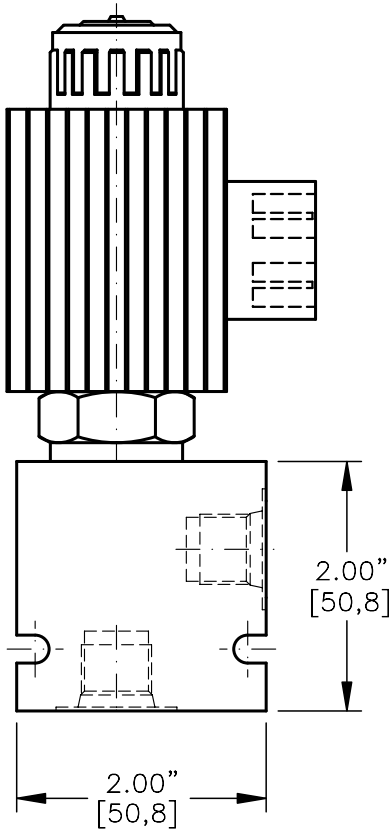
VALVE CAVITY: #C0820, See Page 0-011.0.

SOLENOID VALVE, NORMALLY OPEN
DIRECT ACTING, SPOOL TYPE (2/2)



TORQUE:

Steel = 55/60 Ft-Lb. [74/81 Nm]
Aluminum = 35/40 Ft-Lb. [47/54 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-012.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.
4. FOR SOFT SHIFT SOLENOID VALVE SEE PAGE 10-002.0

EMDV-10-X-01-X-XXX X

BASIC

SIZE
10 = 7/8"-14UNF

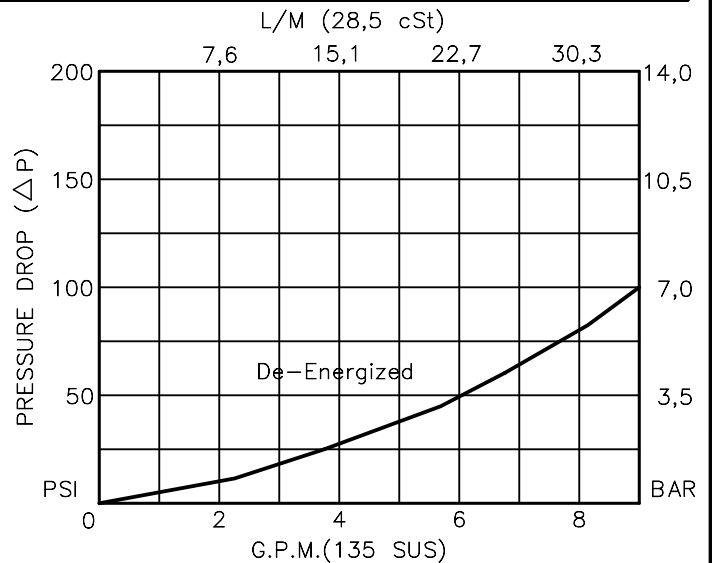
SEALS
N = BUNA "N"
V = VITON

TYPE
01=NORMALLY OPEN SPOOL
2-WAY, 2-POSITION

PORTS
0 = CARTRIDGE ONLY
02BX = G 1/4" BSPP
03BX = G 3/8" BSPP
06TX = SAE - #6
08TX = SAE - #8
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS
L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS	
12D = 12 VDC	3.00
24D = 24 VDC	1.50
36D = 36 VDC	1.00
48D = 48 VDC	0.75
110D = 110 VDC	0.33
115A = 115 VAC	0.32
230A = 230 VAC	0.16



**SOLENOID VALVE, NORMALLY OPEN,
DIRECT ACTING, SPOOL TYPE (2/2)****DESCRIPTION**

This unit is a NORMALLY OPEN, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 2.

When solenoid coil is energized, the spool in this valve is shifted and allows no flow between ports 1 and 2.

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

Industry common cavity.

**SOLENOID VALVE, NORMALLY OPEN,
DIRECT ACTING, SPOOL TYPE (2/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]
 PROOF PRESSURE: 10,000 PSI [700 Bar]
 FLOW: 8.0 GPM [30 l/m] See performance chart.
 INTERNAL LEAKAGE: 5 cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]
 VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
 5000 PSI [350 Bar] = Steel – Unplated.
 OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]
 AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]
 Please consult factory for continuously energized or
 high ambient temperature application (>122° F [50°C])
 OPERATING MEDIA: All general purpose hydraulic fluids such as
 MIL-H-5606, SAE-#10, SAE-#20, etc.
 RESPONSE TIME: First indication of change in pressure with 100%
 voltage supplied @ 80% of nominal flow rating.
 * Pull-in: 50 ms
 * Drop-Out: 50 ms
 SEAL KIT: SKN-1022 Buna "N"
 SKV-1022 Viton
 INSTALLATION: No restrictions.
 WEIGHT: 1.90 lb [.88 kg] cartridge with coil only.
 VALVE CAVITY: #C1020, See Page 0-012.0.

info.el@bucherhydraulics.com

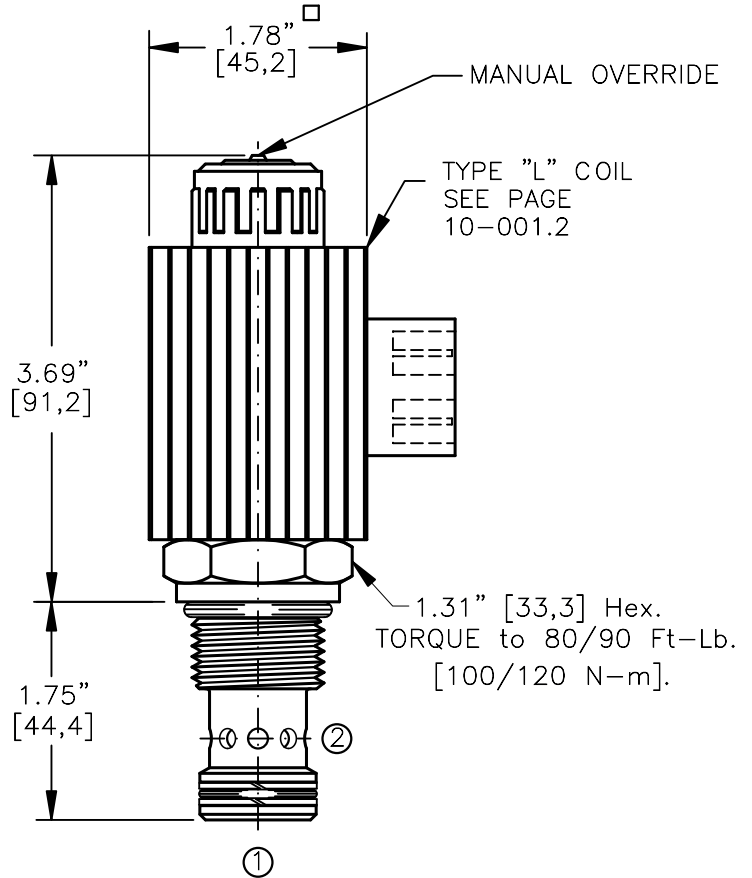
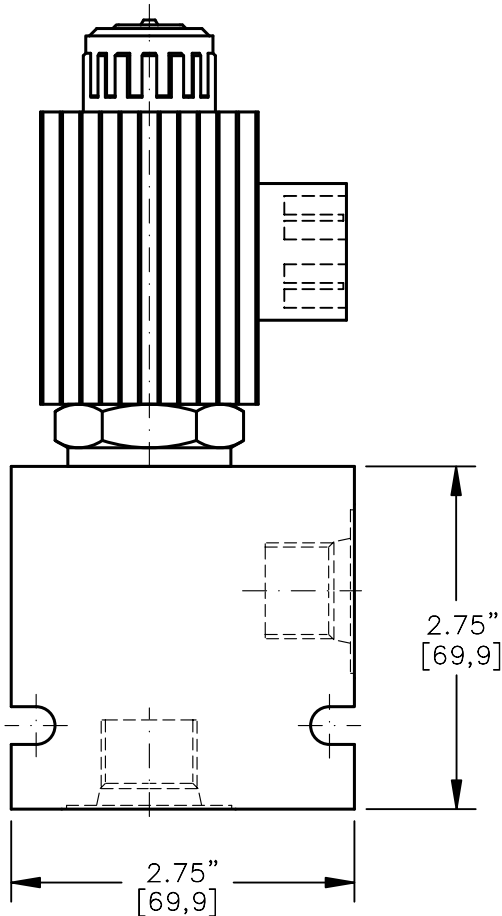
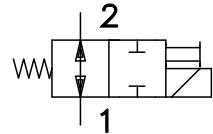
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SOLENOID VALVE, NORMALLY OPEN.
DIRECT ACTING, SPOOL TYPE (2/2)



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-013.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.
4. FOR SOFT SHIFT SOLENOID VALVE SEE PAGE 10-002.0

EMDV-12-X-01-X-XXX X

BASIC

SIZE

12 = 1.062"-12UNF

SEALS

N = BUNA "N"

V = VITON

TYPE

01=NORMALLY OPEN SPOOL
2-WAY, 2-POSITION

PORTS

0 = CARTRIDGE ONLY

04BX = G 1/2" BSPP

06BX = G 3/4" BSPP

10TX = SAE - #10

12TX = SAE - #12

"A" = ALUM. HOUSING

"S" = STEEL HOUSING

TERMINALS

L = 18GA. 24" LEADS

T = SPADE TERM.

B = BOLT TERM.

G = DIN43650

W = WEATHER-PACK

D = DEUTSCH-DT04-2P

M = METRI-PACK CONN.

VOLTAGE AMPS

12D = 12 VDC 3.00

24D = 24 VDC 1.50

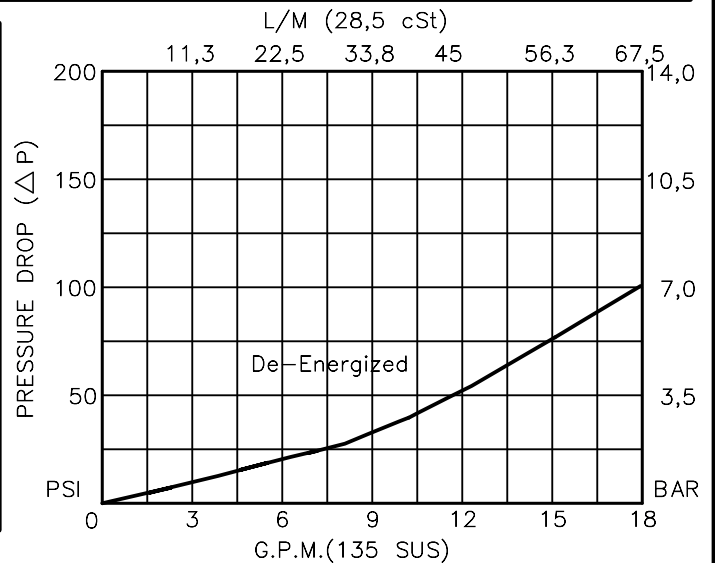
36D = 36 VDC 1.00

48D = 48 VDC 0.75

110D = 110 VDC 0.33

115A = 115 VAC 0.32

230A = 230 VAC 0.16



**SOLENOID VALVE, NORMALLY OPEN,
DIRECT ACTING, SPOOL TYPE (2/2)****DESCRIPTION**

This unit is a NORMALLY OPEN, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 2.

When solenoid coil is energized, the spool in this valve is shifted and allows no flow between ports 1 and 2.

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

**SOLENOID VALVE, NORMALLY OPEN,
DIRECT ACTING, SPOOL TYPE (2/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 18.0 GPM [68 l/m] See performance chart.

INTERNAL LEAKAGE: 5 cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-1222 Buna "N"

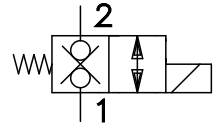
SKV-1222 Viton

INSTALLATION: No restrictions.

WEIGHT: 1.98 lb [.90 kg] cartridge with coil only.

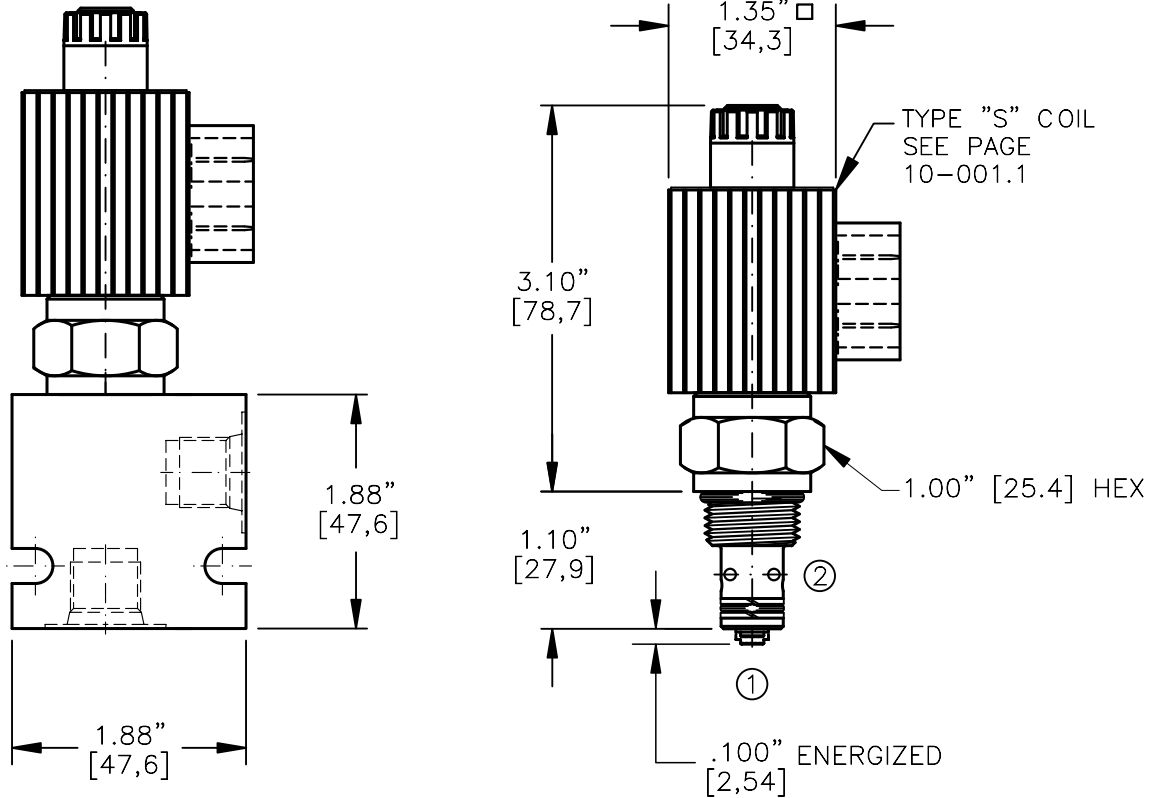
VALVE CAVITY: #C1220, See Page 0-013.0.

SOLENOID VALVE, NORMALLY CLOSED.
DIRECT ACTING, BALANCED POPPET (2/2)



TORQUE:

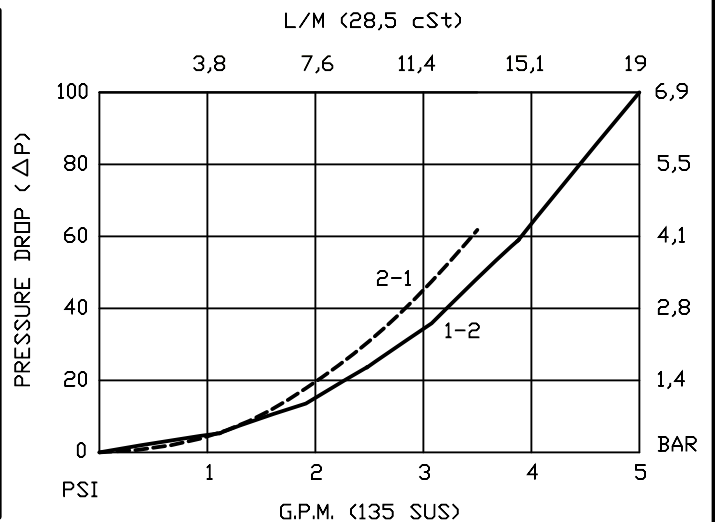
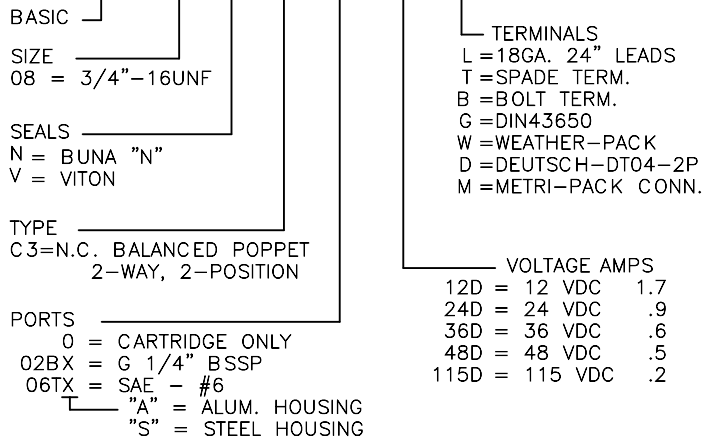
Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-011.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. FOR "AC" COILS USE RECTIFIED DIN CONNECTOR 20828.

EMDV-08-X-C3-X-XXX X



**SOLENOID VALVE, NORMALLY CLOSED,
DIRECT ACTING, BALANCED POPPET (2/2)****DESCRIPTION**

This unit is a NORMALLY CLOSED, TWO POSITION, cartridge type, balanced poppet, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows no flow from ports 1 to 2 and 2 to 1.

When solenoid coil is energized, the spool in this valve is shifted and allows flow from ports 1 to 2 and 2 to 1.

Preferred porting for this valve is Inlet at Port 1.

Port 1 to Port 2 operating limits: 5.0 GPM at 5000 PSI

Port 2 to Port 1 operating limits: 3.5 GPM at 5000 PSI
5.0 GPM at 3600 PSI

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted poppet & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

Industry common cavity.

**SOLENOID VALVE, NORMALLY CLOSED,
DIRECT ACTING, BALANCED POPPET (2/2)**

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 5.0 GPM [22 l/m] See performance chart.

INTERNAL LEAKAGE: 5 drops/min [0.25 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as
MIL-H-5606, SAE-#10, SAE-#20, etc.

PRESSURE DROP (1-2) 100 PSI @ 5 GPM

PRESSURE DROP (2-1) 100 PSI @ 4.5 GPM

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-In: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-0821 Buna "N"

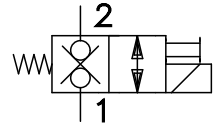
SKV-0821 Viton

INSTALLATION: No restrictions.

WEIGHT: .90 lb [0,41 kg] cartridge with coil only.

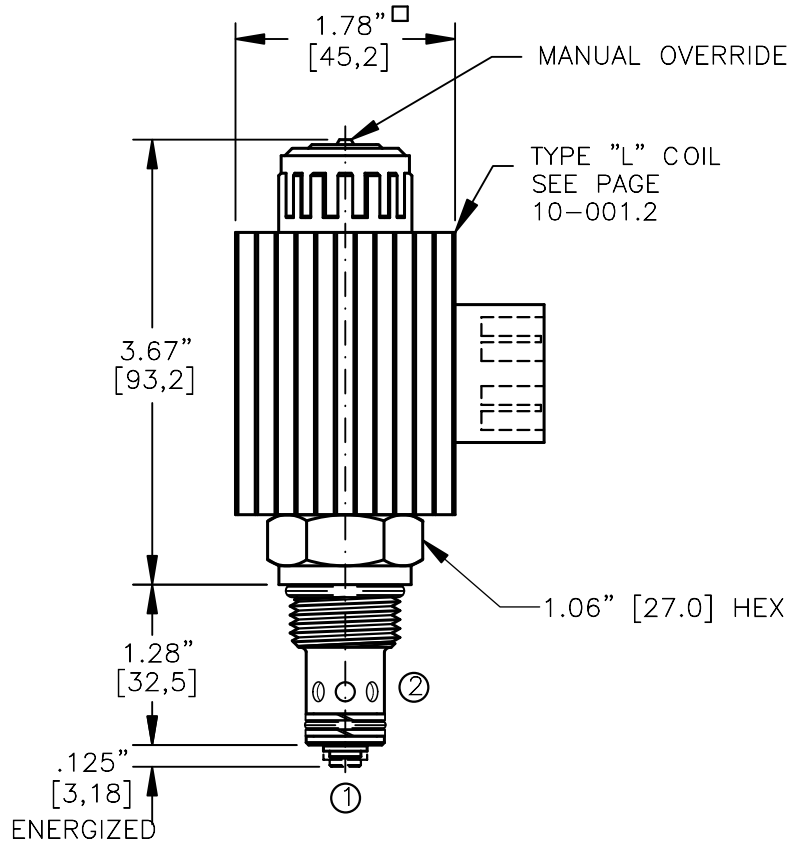
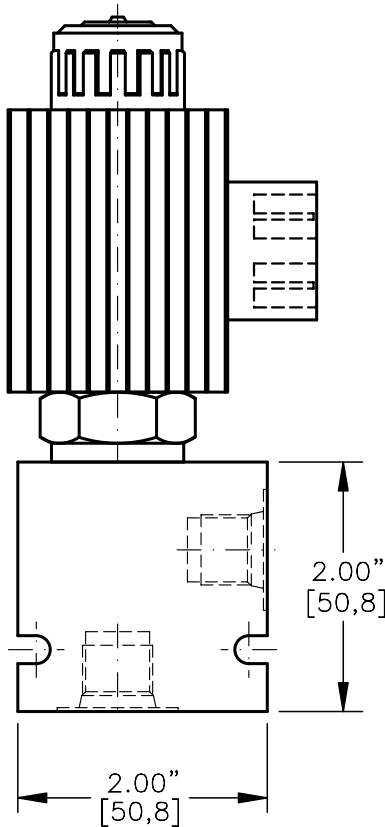
VALVE CAVITY: #C0820, See Page 0-011.0.

SOLENOID VALVE, NORMALLY CLOSED.
DIRECT ACTING, BALANCED POPPET (2/2)



TORQUE:

Steel = 55/60 Ft-Lb. [74/81 Nm]
Aluminum = 35/40 Ft-Lb. [47/54 Nm]



NOTES:

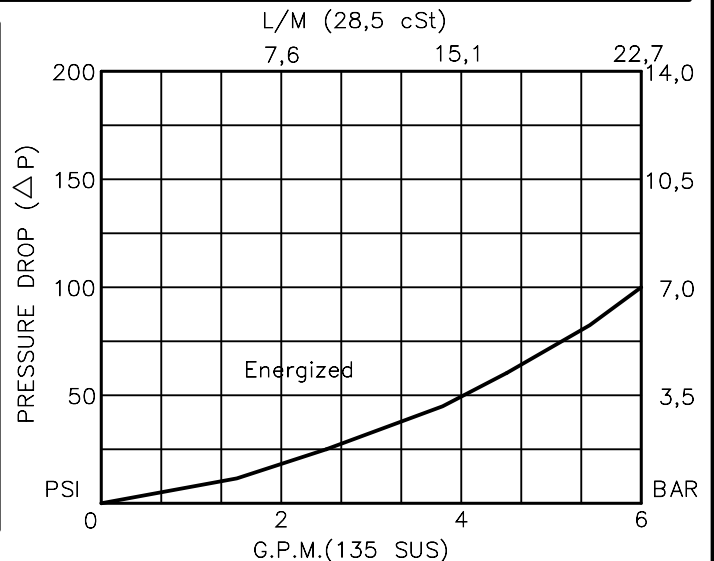
1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-012.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.
4. FOR SOFT SHIFT SOLENOID VALVE SEE PAGE 10-002.0

EMDV-10-X-C3-X-XXX X

BASIC _____
 SIZE _____
 10 = 7/8"-14UNF
 SEALS _____
 N = BUNA "N"
 V = VITON
 TYPE _____
 C3=N.C. BALANCED POPPET
 2-WAY, 2-POSITION
 PORTS _____
 0 = CARTRIDGE ONLY
 02BX = G 1/4" BSPP
 03BX = G 3/8" BSPP
 06TX = SAE - #6
 08TX = SAE - #8
 "A" = ALUM. HOUSING
 "S" = STEEL HOUSING

TERMINALS
 L = 18GA. 24" LEADS
 T = SPADE TERM.
 B = BOLT TERM.
 G = DIN43650
 W = WEATHER-PACK
 D = DEUTSCH-DT04-2P
 M = METRI-PACK CONN.

VOLTAGE	AMPS
12D = 12 VDC	3.00
24D = 24 VDC	1.50
36D = 36 VDC	1.00
48D = 48 VDC	0.75
110D = 110 VDC	0.33
115A = 115 VAC	0.32
230A = 230 VAC	0.16



**SOLENOID VALVE, NORMALLY CLOSED,
DIRECT ACTING, BALANCED POPPET (2/2)****DESCRIPTION**

This unit is a NORMALLY CLOSED, TWO POSITION, cartridge type, balanced poppet, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows no flow from ports 1 to 2 and 2 to 1.

When solenoid coil is energized, the spool in this valve is shifted and allows flow from ports 1 to 2 and 2 to 1.

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted poppet & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

Industry common cavity.

**SOLENOID VALVE, NORMALLY CLOSED,
DIRECT ACTING, BALANCED POPPET (2/2)**

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 6.0 GPM [22 l/m] See performance chart.

INTERNAL LEAKAGE: 5 drops/min [0.25 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-1022 Buna "N"

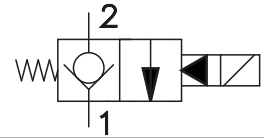
SKV-1022 Viton

INSTALLATION: No restrictions.

WEIGHT: 1.90 lb [0,86 kg] cartridge with coil only.

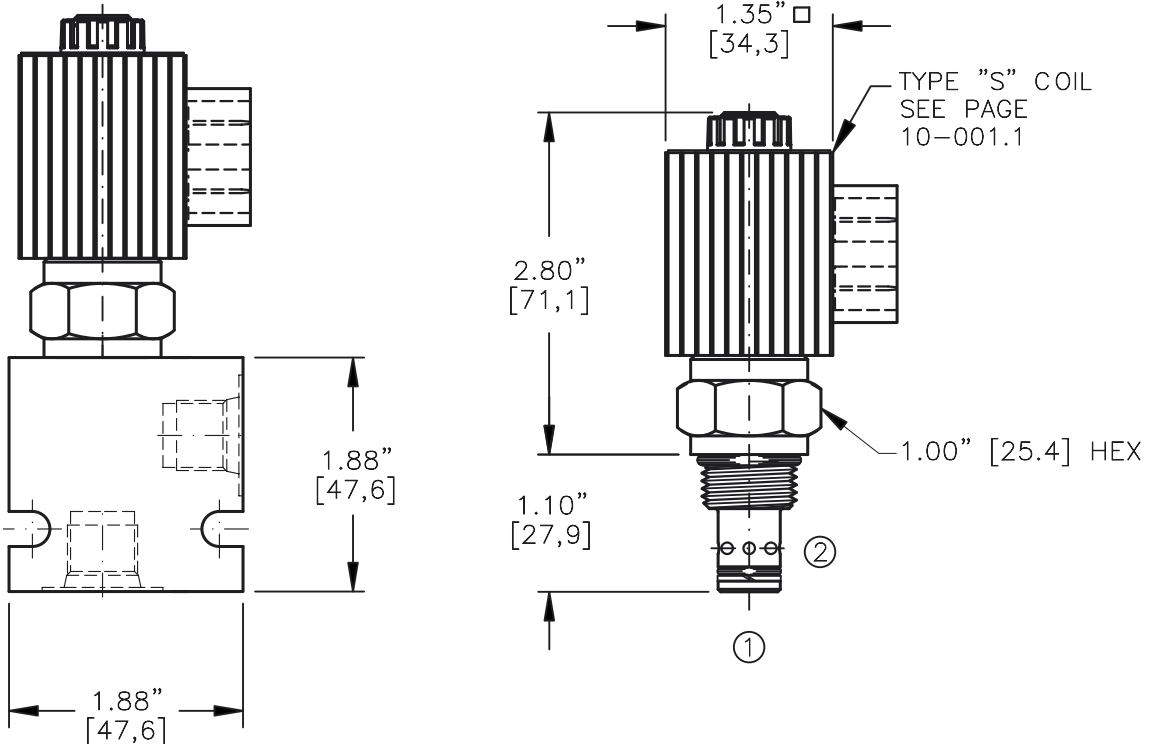
VALVE CAVITY: #C1020, See Page 0-012.0.

SOLENOID VALVE, NORMALLY CLOSED.
PILOT OPERATED, POPPET TYPE (2/2)



TORQUE:

Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]



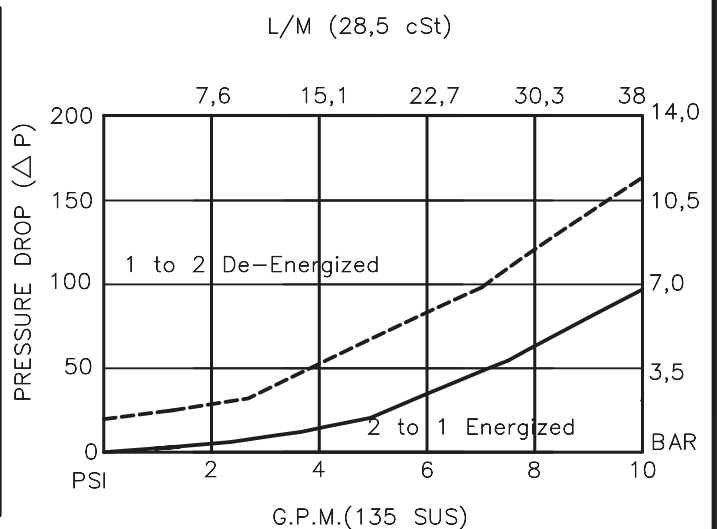
NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-011.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. FOR "AC" COILS USE RECTIFIED DIN CONNECTOR 20828.

EMDV-08-X-C7-X-XXX X

BASIC _____
 SIZE _____
 08 = 3/4"-16UNF
 SEALS _____
 N = BUNA "N"
 V = VITON
 TYPE _____
 C7=NORMALLY CLOSED POPPET
 2-WAY, 2-POSITION
 PORTS _____
 0 = CARTRIDGE ONLY
 02BX = G 1/4" BSPP
 06TX = SAE - #6
 "A" = ALUM. HOUSING
 "S" = STEEL HOUSING

TERMINALS
 L = 18GA. 24" LEADS
 T = SPADE TERM.
 B = BOLT TERM.
 G = DIN43650
 W = WEATHER-PACK
 D = DEUTSCH-DT04-2P
 M = METRI-PACK CONN.
 VOLTAGE AMPS
 12D = 12 VDC 1.7
 24D = 24 VDC .9
 36D = 36 VDC .6
 48D = 48 VDC .5
 115D = 115 VDC .2



**SOLENOID VALVE, NORMALLY CLOSED,
PILOT OPERATED, POPPET TYPE (2/2)****DESCRIPTION**

This unit is a NORMALLY CLOSED, TWO POSITION, cartridge type, poppet type, pilot operated, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows no flow from ports 2 to 1 and free flow from ports 1 to 2. When solenoid coil is energized, the poppet in this valve is shifted and allows flow from ports 2 to 1 and restricted flow from ports 1 to 2.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted poppet & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.

**SOLENOID VALVE, NORMALLY CLOSED,
PILOT OPERATED, POPPET TYPE (2/2)**

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
 PROOF PRESSURE: 10,000 PSI [700 Bar]
 FLOW: 10.0 GPM [38 l/m] See performance chart.
 INTERNAL LEAKAGE: 5 drops/min [0.25 cc/m] @ 5,000 PSI (350 Bar)
 VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
 5000 PSI [350 Bar] = Steel – Unplated.
 OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]
 AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]
 Please consult factory for continuously energized or
 high ambient temperature application (>122° F [50°C])
 OPERATING MEDIA: All general purpose hydraulic fluids such as
 MIL-H-5606, SAE-#10, SAE-#20, etc.
 RESPONSE TIME: First indication of change in pressure with 100%
 voltage supplied @ 80% of nominal flow rating.
 * Pull-in: 50 ms
 * Drop-Out: 50 ms
 SEAL KIT: SKN-0821 Buna "N"
 SKV-0821 Viton
 INSTALLATION: No restrictions.
 WEIGHT: .80 lb [0,36 kg] cartridge with coil only.
 VALVE CAVITY: #C0820, See Page 0-011.0.

info.el@bucherhydraulics.com

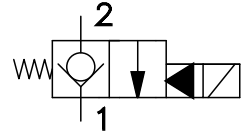
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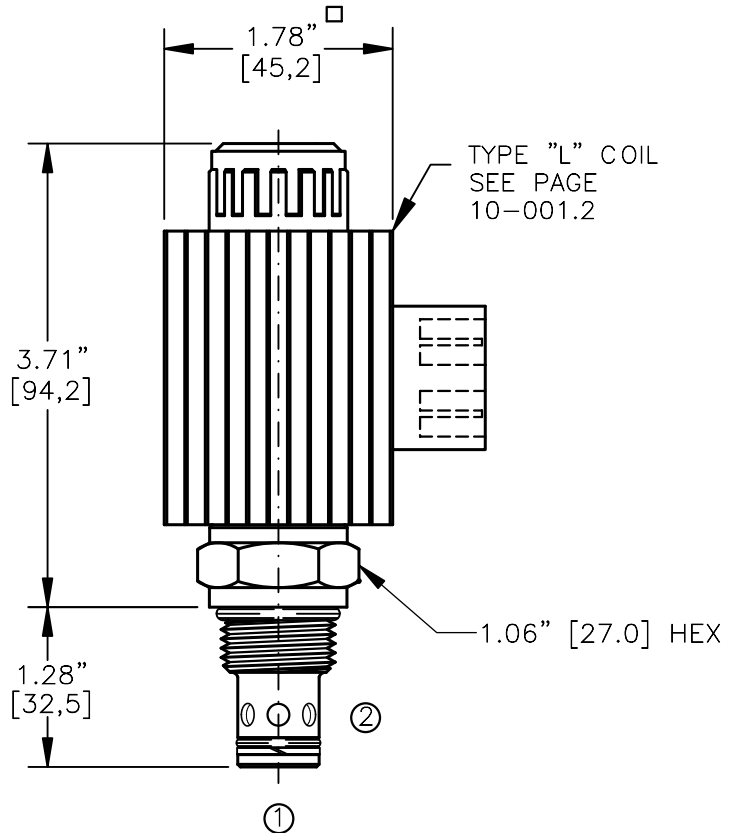
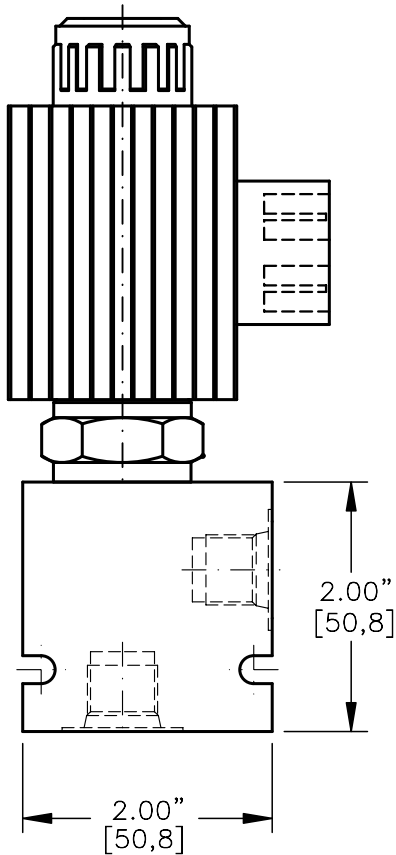
The technical information in this catalog, may contain calculated figures (for reference only) and not actual performance data for this product. Data is provided for the purpose of product description only, and must not be construed as warranted characteristics in the legal sense. The information does not relieve users from the duty of conducting their own evaluations and tests. Because the products are subject to continual improvement, we reserve the right to amend the product specifications contained in this catalogue.

SOLENOID VALVE, NORMALLY CLOSED.
PILOT OPERATED, POPPET TYPE (2/2)



TORQUE:

Steel = 55/60 Ft-Lb. [74/81 Nm]
Aluminum = 35/40 Ft-Lb. [47/54 Nm]



NOTES:

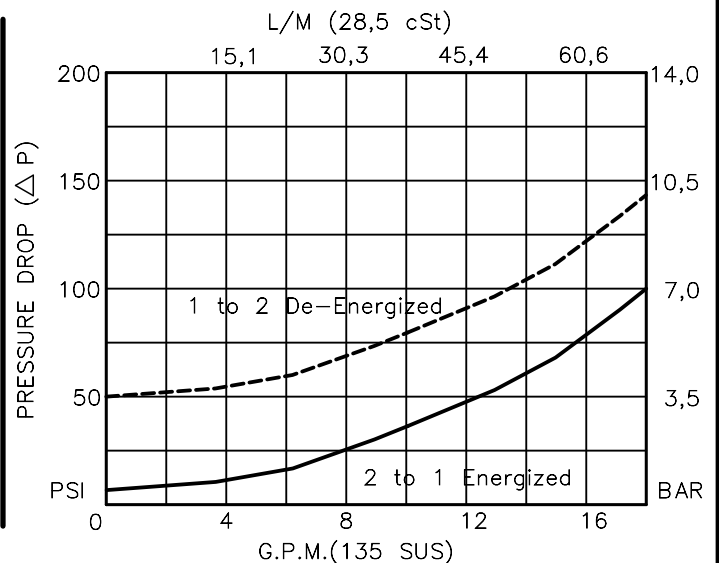
1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-012.0
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.

EMDV-10-X-C2-X-XXX X

BASIC _____
 SIZE _____
 10 = 7/8"-14UNF
 SEALS _____
 N = BUNA "N"
 V = VITON
 TYPE _____
 C2=NORMALLY CLOSED POPPET
 2-WAY, 2-POSITION
 PORTS _____
 0 = CARTRIDGE ONLY
 02BX = G 1/4" BSPP
 03BX = G 3/8" BSPP
 06TX = SAE - #6
 08TX = SAE - #8
 "A" = ALUM. HOUSING
 "S" = STEEL HOUSING

TERMINALS
 L = 18GA. 24" LEADS
 T = SPADE TERM.
 B = BOLT TERM.
 G = DIN43650
 W = WEATHER-PACK
 D = DEUTSCH-DT04-2P
 M = METRI-PACK CONN.

VOLTAGE	AMPS
12D = 12 VDC	3.00
24D = 24 VDC	1.50
36D = 36 VDC	1.00
48D = 48 VDC	0.75
110D = 110 VDC	0.33
115A = 115 VAC	0.32
230A = 230 VAC	0.16



**SOLENOID VALVE, NORMALLY CLOSED,
PILOT OPERATED, POPPET TYPE (2/2)****DESCRIPTION**

This unit is a NORMALLY CLOSED, TWO POSITION, cartridge type, poppet type, pilot operated, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows no flow from ports 2 to 1 and free flow from ports 1 to 2. When solenoid coil is energized, the poppet in this valve is shifted and allows flow from ports 2 to 1 and restricted flow from ports 1 to 2.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted poppet & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

**SOLENOID VALVE, NORMALLY CLOSED,
PILOT OPERATED, POPPET TYPE (2/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 16.0 GPM [60 l/m] See performance chart.

INTERNAL LEAKAGE: 5 drops/min [0.25 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100% voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-1021 Buna "N"

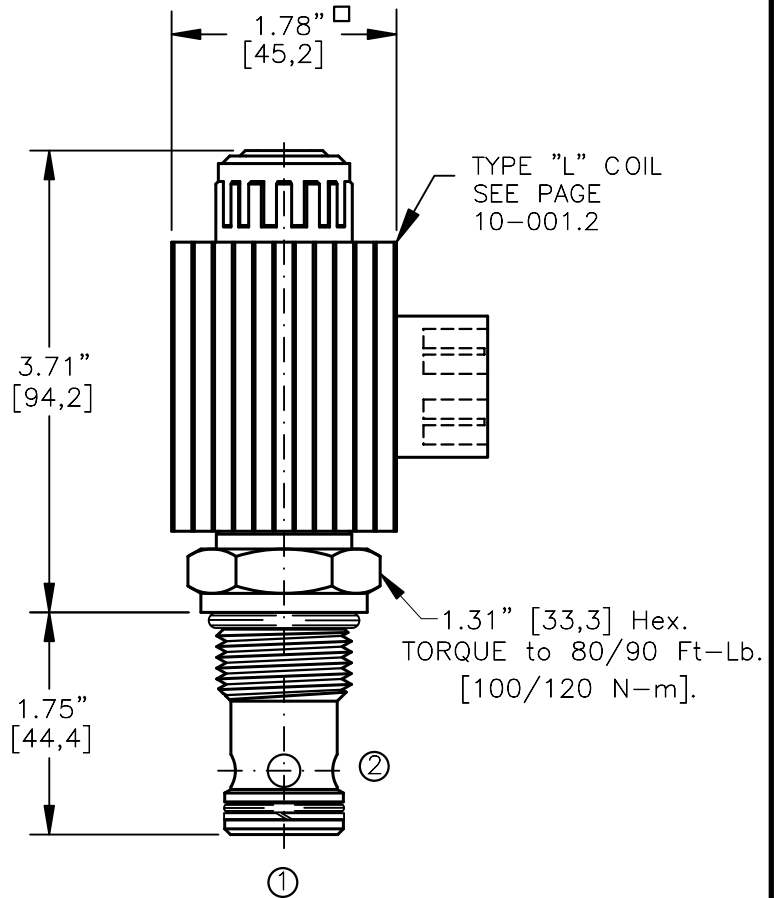
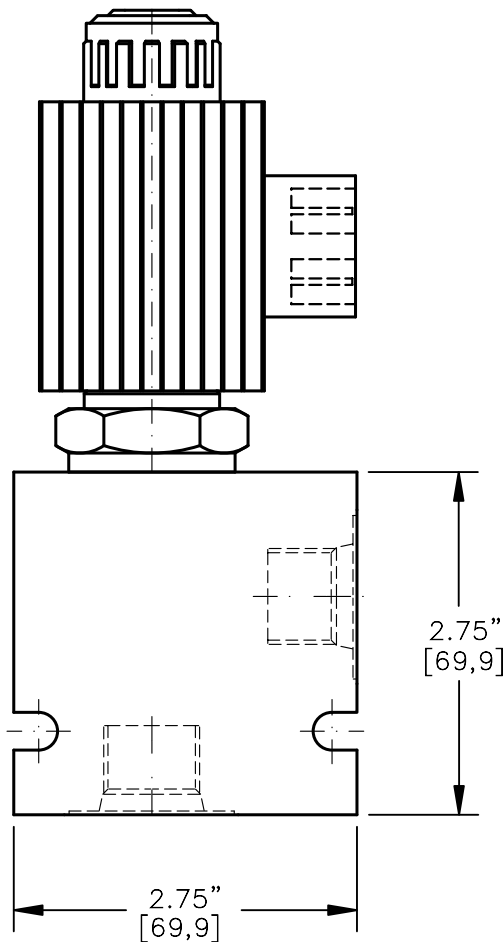
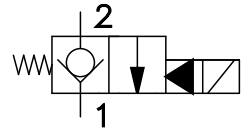
SKV-1021 Viton

INSTALLATION: No restrictions.

WEIGHT: 1.90 lb [0,86 kg] cartridge with coil only.

VALVE CAVITY: #C1020, See Page 0-012.0.

SOLENOID VALVE, NORMALLY CLOSED.
PILOT OPERATED, POPPET TYPE (2/2)

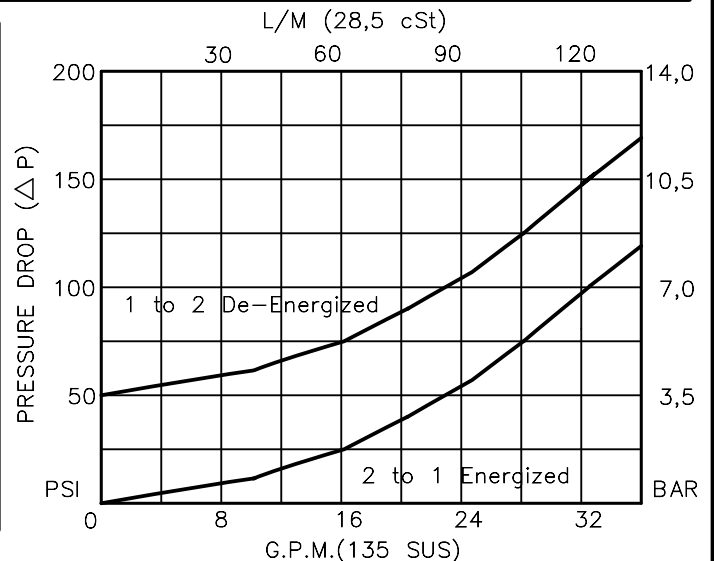


NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-013.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.

EMDV-12-X-C2-X-XXX X

BASIC	TERMINALS
SIZE	L = 18GA. 24" LEADS
12 = 1.062"-12UNF	T = SPADE TERM.
SEALS	B = BOLT TERM.
N = BUNA "N"	G = DIN43650
V = VITON	W = WEATHER-PACK
TYPE	D = DEUTSCH-DT04-2P
C2=NORMALLY CLOSED POPPET	M = METRI-PACK CONN.
2-WAY, 2-POSITION	
PORTS	VOLTAGE AMPS
0 = CARTRIDGE ONLY	12D = 12 VDC 3.00
04BX = G 1/2" BSPP	24D = 24 VDC 1.50
06BX = G 3/4" BSPP	36D = 36 VDC 1.00
10TX = SAE - #10	48D = 48 VDC 0.75
12TX = SAE - #12	110D = 110 VDC 0.33
"A" = ALUM. HOUSING	115A = 115 VAC 0.32
"S" = STEEL HOUSING	230A = 230 VAC 0.16



**SOLENOID VALVE, NORMALLY CLOSED,
PILOT OPERATED, POPPET TYPE (2/2)****DESCRIPTION**

This unit is a NORMALLY CLOSED, TWO POSITION, cartridge type, poppet type, pilot operated, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows no flow from ports 2 to 1 and free flow from ports 1 to 2. When solenoid coil is energized, the poppet in this valve is shifted and allows flow from ports 2 to 1 and restricted flow from ports 1 to 2.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted poppet & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.

SOLENOID VALVE, NORMALLY CLOSED,
PILOT OPERATED, POPPET TYPE (2/2)

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
 PROOF PRESSURE: 10,000 PSI [700 Bar]
 FLOW: 36.0 GPM [136 l/m] See performance chart.
 INTERNAL LEAKAGE: 5 drops/min [0.25 cc/m] @ 5,000 PSI (350 Bar)
 VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
 5000 PSI [350 Bar] = Steel – Unplated.
 OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]
 AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]
 Please consult factory for continuously energized or
 high ambient temperature application (>122° F [50°C])
 OPERATING MEDIA: All general purpose hydraulic fluids such as
 MIL-H-5606, SAE-#10, SAE-#20, etc.
 RESPONSE TIME: First indication of change in pressure with 100%
 voltage supplied @ 80% of nominal flow rating.
 * Pull-in: 50 ms
 * Drop-Out: 50 ms
 SEAL KIT: SKN-1221 Buna "N"
 SKV-1221 Viton
 INSTALLATION: No restrictions.
 WEIGHT: 1.98 lb [0,90 kg] cartridge with coil only.
 VALVE CAVITY: #C1220, See Page 0-013.0.

info.el@bucherhydraulics.com

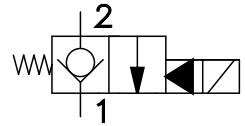
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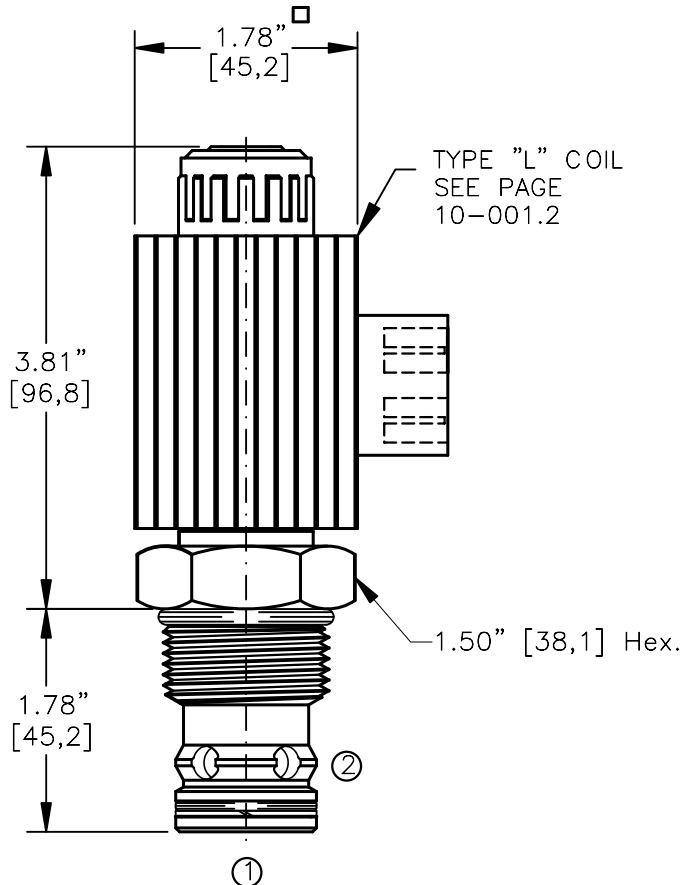
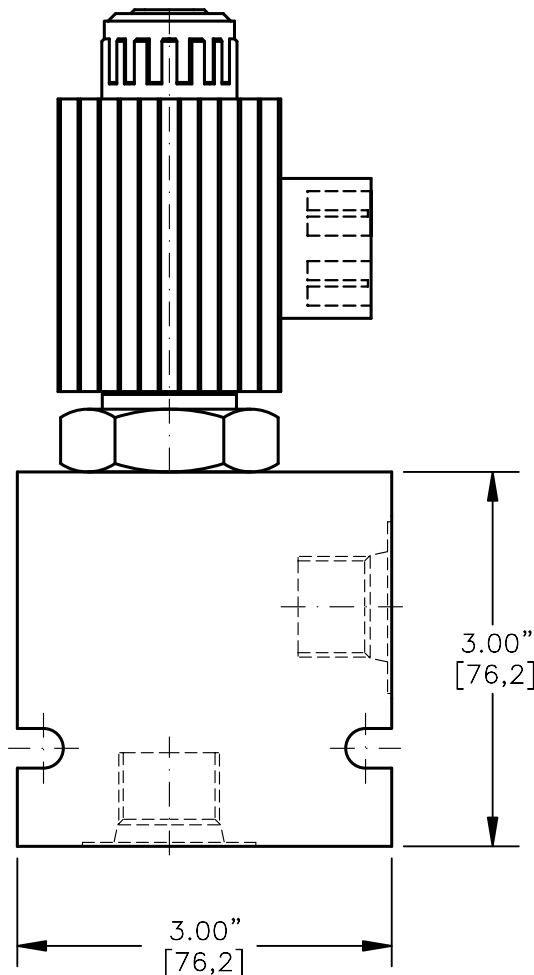
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SOLENOID VALVE, NORMALLY CLOSED.
PILOT OPERATED, POPPET TYPE (2/2)



TORQUE:

Steel = 95/100 Ft-Lb. [129/136 Nm]
Aluminum = 70/75 Ft-Lb. [95/102 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-014.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.

EMDV-16-X-C2-X-XXX X

BASIC

SIZE
16 = 1.312"-12UNF

SEALS

N = BUNA "N"
V = VITON

TYPE

C2=NORMALLY CLOSED POPPET
2-WAY, 2-POSITION

PORTS

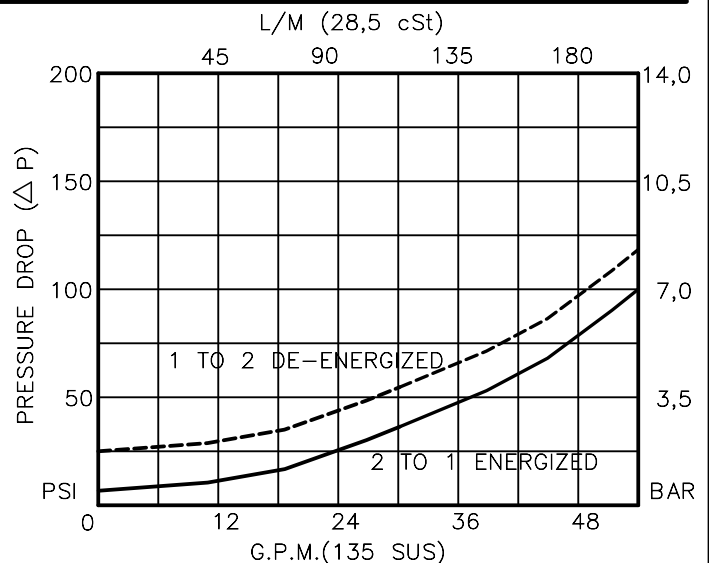
0 = CARTRIDGE ONLY
06BX = G 3/4" BSPP
08BX = G 1" BSPP
12TX = SAE - #12
16TX = SAE - #16
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS

L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS

12D = 12 VDC 3.00
24D = 24 VDC 1.50
36D = 36 VDC 1.00
48D = 48 VDC 0.75
110D = 110 VDC 0.33
115A = 115 VAC 0.32
230A = 230 VAC 0.16



**SOLENOID VALVE, NORMALLY CLOSED,
PILOT OPERATED, POPPET TYPE (2/2)****DESCRIPTION**

This unit is a NORMALLY CLOSED, TWO POSITION, cartridge type, poppet type, pilot operated, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows no flow from ports 2 to 1 and free flow from ports 1 to 2. When solenoid coil is energized, the poppet in this valve is shifted and allows flow from ports 2 to 1 and restricted flow from ports 1 to 2.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted poppet & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

**SOLENOID VALVE, NORMALLY CLOSED,
PILOT OPERATED, POPPET TYPE (2/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 50.0 GPM [190 l/m] See performance chart.

INTERNAL LEAKAGE: 5 drops/min [0.25 cc/m] @ 5,000 PSI (350 Bar)

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100% voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-1621 Buna "N"

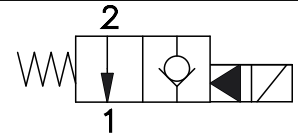
SKV-1621 Viton

INSTALLATION: No restrictions.

WEIGHT: 2.25 lb [1,20 kg] cartridge with coil only.

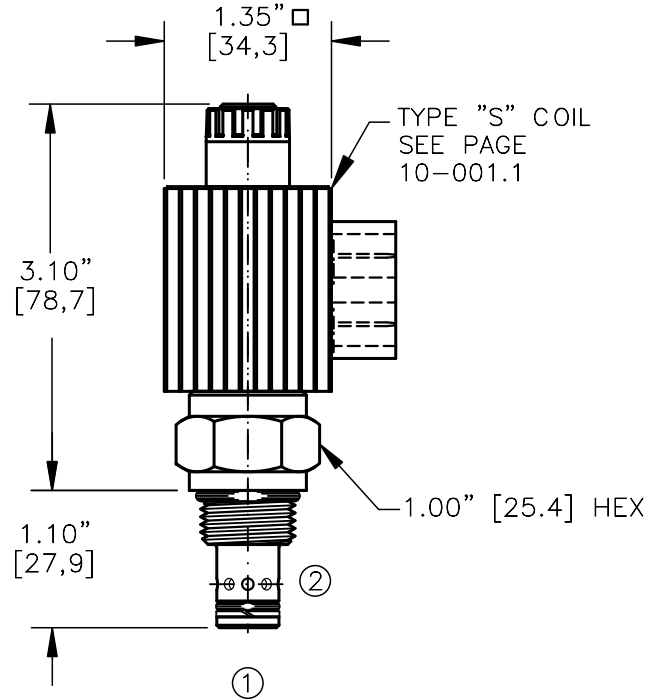
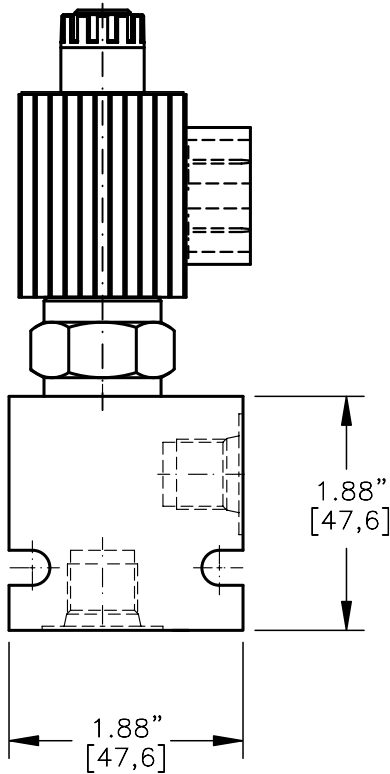
VALVE CAVITY: #C1620, See Page 0-014.0.

SOLENOID VALVE, NORMALLY OPEN.
PILOT OPERATED, POPPET TYPE (2/2)



TORQUE:

Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-011.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. FOR "AC" COILS USE RECTIFIED DIN CONNECTOR 20828.

EMDV-08-X-07-X-XXX X

BASIC

SIZE
08 = 3/4"-16UNF

SEALS

N = BUNA "N"
V = VITON

TYPE

07=NORMALLY OPEN POPPET
2-WAY, 2-POSITION

PORTS

0 = CARTRIDGE ONLY
02BX = G 1/4" BSSP
06TX = SAE - #6

"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS

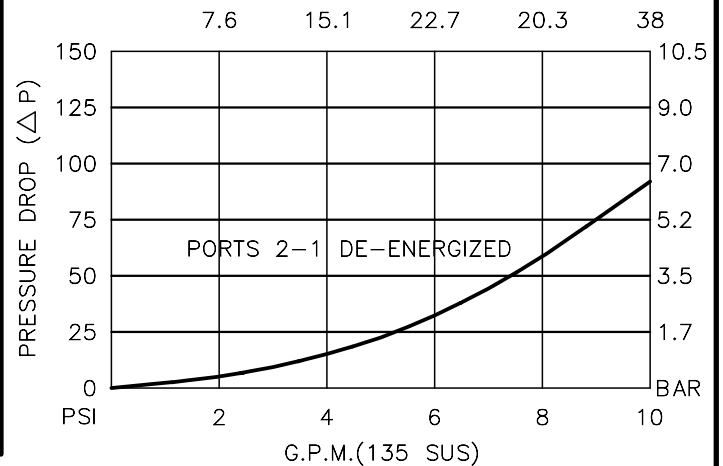
L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS

12D = 12 VDC 1.7
24D = 24 VDC .9
36D = 36 VDC .6
48D = 48 VDC .5
115D = 115 VDC .2

CARTRIDGE ONLY

L/M (28,5 cSt)



SOLENOID VALVE NORMALLY OPEN, PILOT OPERATED, POPPET TYPE (2/2)

DESCRIPTION

This unit is a NORMALLY OPEN, TWO POSITION, cartridge type, poppet type, pilot operated, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow from ports 2 to 1 and restricts flow from ports 1 and 2. When solenoid coil is energized, the poppet in this valve is shifted to block flow from ports 2 to 1 and allow reverse flow between ports 1 and 2 at a high pressure drop.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted spool & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

SOLENOID VALVE NORMALLY OPEN, PILOT OPERATED, POPPET TYPE (2/2)

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 10.0 GPM [38,5 l/m] See performance chart.

INTERNAL LEAKAGE: 5 drops/min [.25 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or

high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-0821 Buna "N"

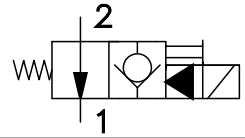
SKV-0821 Viton

INSTALLATION: No restrictions.

WEIGHT: .90 lb [0,41 kg] cartridge with coil only.

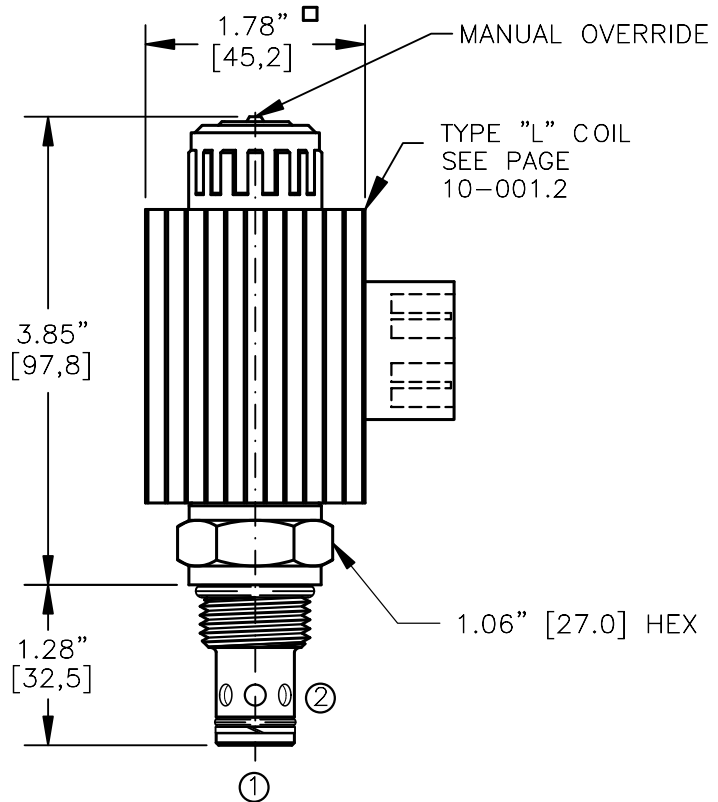
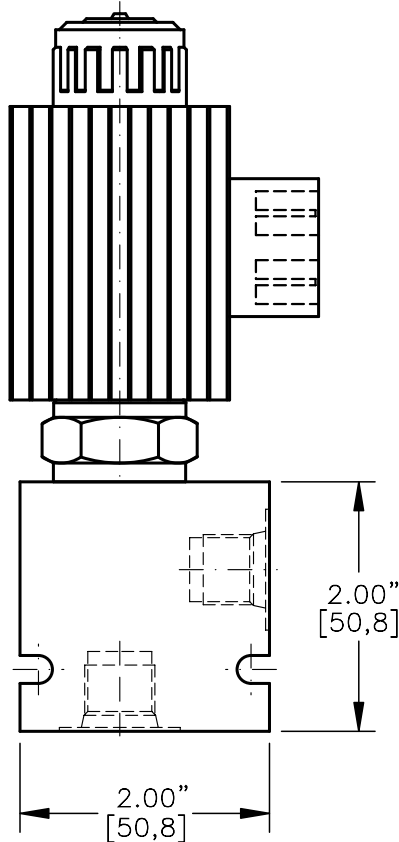
VALVE CAVITY: #C0820, See Page 0-011.0.

SOLENOID VALVE, NORMALLY OPEN.
PILOT OPERATED, POPPET TYPE (2/2)



TORQUE:

Steel = 55/60 Ft-Lb. [74/81 Nm]
Aluminum = 35/40 Ft-Lb. [47/54 Nm]



NOTES:

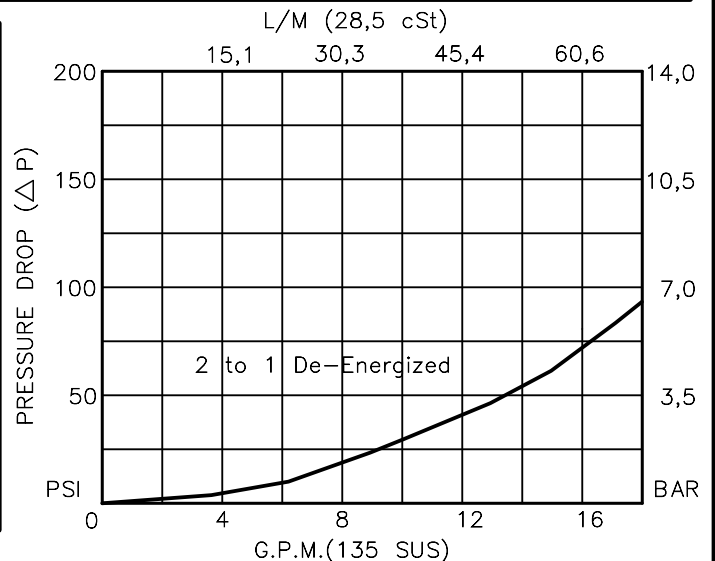
1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-012.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.
4. FOR SOFT SHIFT SOLENOID VALVE SEE PAGE 10-002.0

EMDV-10-X-O2-X-XXX X

BASIC _____
 SIZE _____
 10 = 7/8"-14UNF
 SEALS _____
 N = BUNA "N"
 V = VITON
 TYPE _____
 O2=NORMALLY OPEN POPPET
 2-WAY, 2-POSITION
 PORTS _____
 0 = CARTRIDGE ONLY
 02BX = G 1/4" BSP
 03BX = G 3/8" BSP
 06TX = SAE - #6
 08TX = SAE - #8
 "A" = ALUM. HOUSING
 "S" = STEEL HOUSING

TERMINALS
 L = 18GA. 24" LEADS
 T = SPADE TERM.
 B = BOLT TERM.
 G = DIN43650
 W = WEATHER-PACK
 D = DEUTSCH-DT04-2P
 M = METRI-PACK CONN.

VOLTAGE	AMPS
12D = 12 VDC	3.00
24D = 24 VDC	1.50
36D = 36 VDC	1.00
48D = 48 VDC	0.75
110D = 110 VDC	0.33
115A = 115 VAC	0.32
230A = 230 VAC	0.16



**SOLENOID VALVE, NORMALLY OPEN,
PILOT OPERATED, POPPET TYPE (2/2)****DESCRIPTION**

This unit is a NORMALLY OPEN, TWO POSITION, cartridge type, poppet type, pilot operated, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow from ports 2 to 1 and restricted flow from ports 1 to 2. When solenoid coil is energized, the poppet in this valve is shifted and allows no flow from ports 2 to 1 and reverse flow between ports 1 and 2 is at high pressure drop. Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil. Interchangeable solenoid coils & terminations options available. Hardened precision fitted poppet & sleeve provides reliable, long life. Very efficient, wet-armature solenoid core tube construction. All external carbon steel parts are plated for longer life against the elements. All cartridge valves are 100% functionally tested. Industry common cavity.

**SOLENOID VALVE, NORMALLY OPEN,
PILOT OPERATED, POPPET TYPE (2/2)**

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 16.0 GPM [60 l/m] See performance chart.

INTERNAL LEAKAGE: 5 drops/min [,25 cc/m] energized @5000 PSI[350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as
MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-1021 Buna "N"

SKV-1021 Viton

INSTALLATION: No restrictions.

WEIGHT: 1.90 lb [0,86 kg] cartridge with coil only.

VALVE CAVITY: #C1020, See Page 0-012.0.

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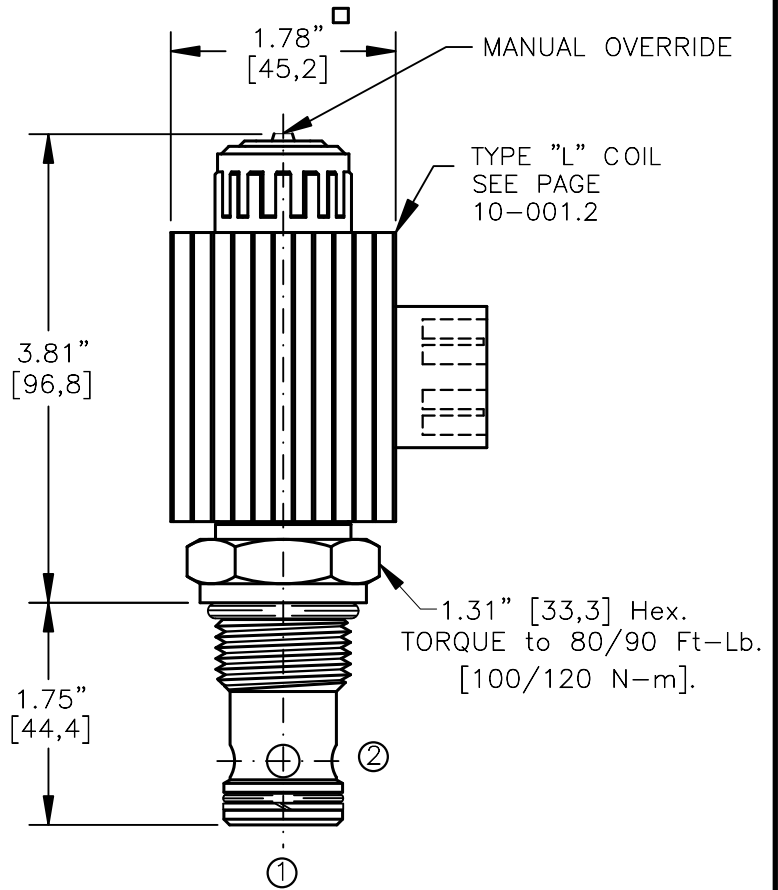
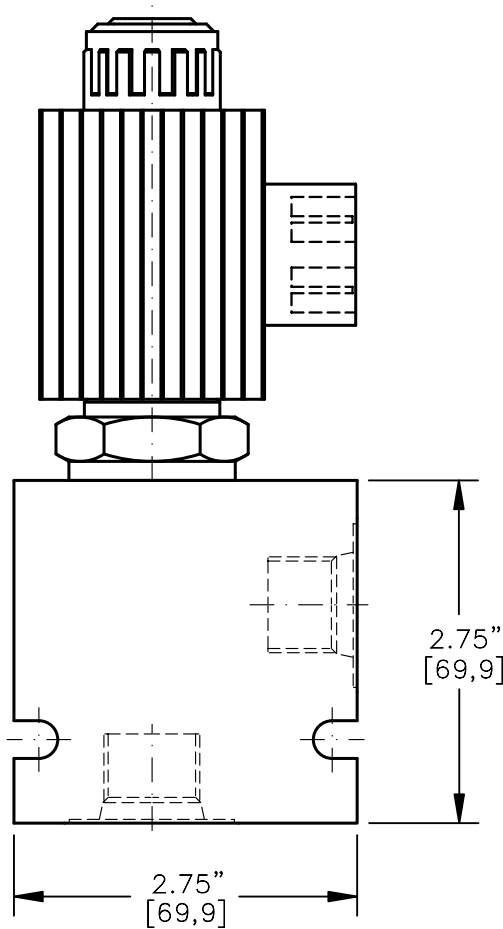
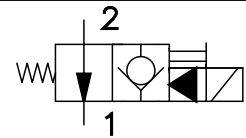
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The technical information in this catalog, may contain calculated figures (for reference only) and not actual performance data for this product.

Data is provided for the purpose of product description only, and must not be construed as warranted characteristics in the legal sense.

The information does not relieve users from the duty of conducting their own evaluations and tests. Because the products are subject to continual improvement, we reserve the right to amend the product specifications contained in this catalogue.

SOLENOID VALVE, NORMALLY OPEN.
PILOT OPERATED, POPPET TYPE (2/2)



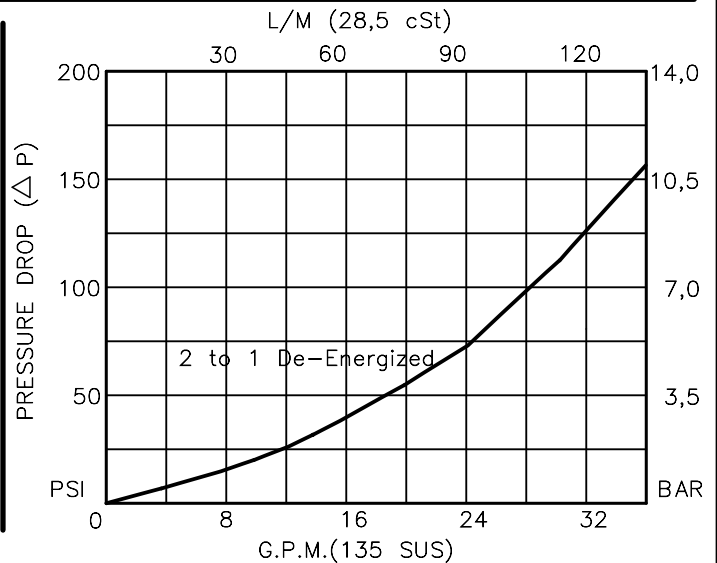
NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-013.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.
4. FOR SOFT SHIFT SOLENOID VALVE SEE PAGE 10-002.0

EMDV-12-X-O2-X-XXX X

BASIC _____
 SIZE _____
 12 = 1.062"-12UNF
 SEALS _____
 N = BUNA "N"
 V = VITON
 TYPE _____
 O2=NORMALLY OPEN POPPET
 2-WAY, 2-POSITION
 PORTS _____
 0 = CARTRIDGE ONLY
 04BX= G 1/2" BSPP
 06BX= G 3/4" BSPP
 10TX = SAE - #10
 12TX = SAE - #12
 "A" = ALUM. HOUSING
 "S" = STEEL HOUSING

TERMINALS
 L=18GA. 24" LEADS
 T=SPADE TERM.
 B=BOLT TERM.
 G=DIN43650
 W=WEATHER-PACK
 D=DEUTSCH-DT04-2P
 M=METRI-PACK CONN.
 VOLTAGE AMPS
 12D = 12 VDC 3.00
 24D = 24 VDC 1.50
 36D = 36 VDC 1.00
 48D = 48 VDC 0.75
 110D = 110 VDC 0.33
 115A = 115 VAC 0.32
 230A = 230 VAC 0.16



**SOLENOID VALVE, NORMALLY OPEN,
PILOT OPERATED, POPPET TYPE (2/2)****DESCRIPTION**

This unit is a NORMALLY OPEN, TWO POSITION, cartridge type, poppet type, pilot operated, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow from ports 2 to 1 and restricted flow from ports 1 to 2.

When solenoid coil is energized, the poppet in this valve is shifted and allows no flow from ports 2 to 1 and reverse flow from ports 1 to 2 at high pressure drop.

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted poppet & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

**SOLENOID VALVE, NORMALLY OPEN,
PILOT OPERATED, POPPET TYPE (2/2)**

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 36.0 GPM [136 l/m] See performance chart.

INTERNAL LEAKAGE: 5 cu. in./min [68 cc/m] energized @5000 PSI[350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-1221 Buna "N"

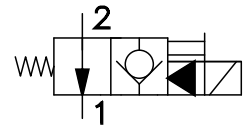
SKV-1221 Viton

INSTALLATION: No restrictions.

WEIGHT: 1.98 lb [0,90 kg] cartridge with coil only.

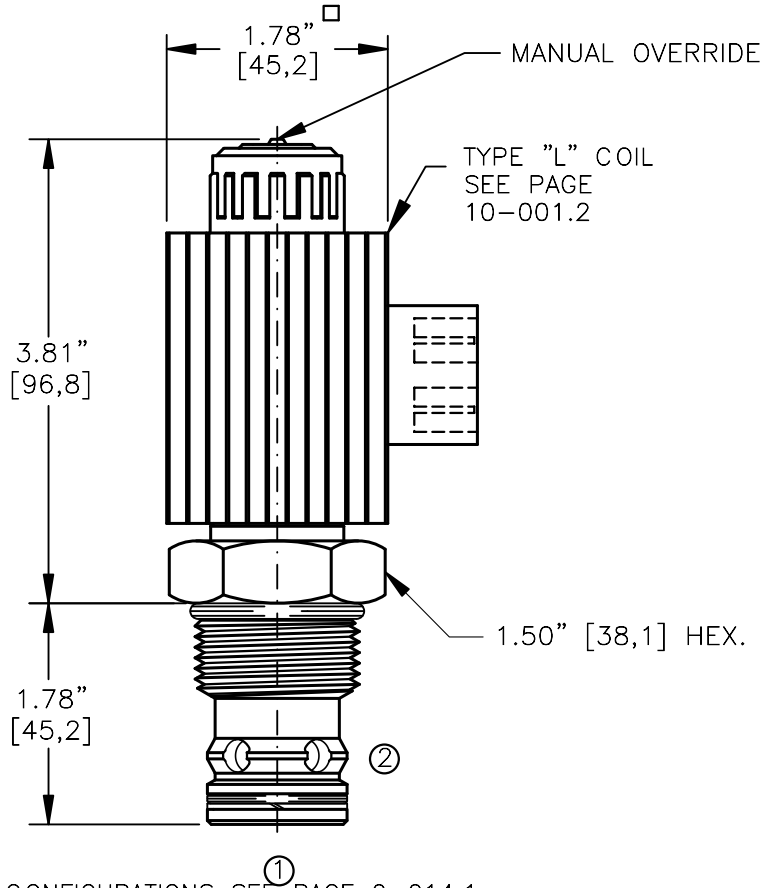
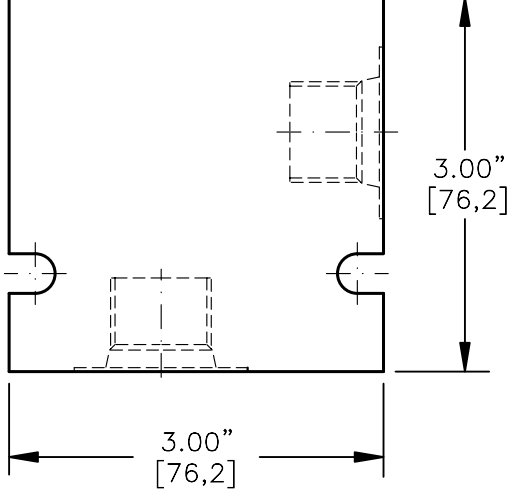
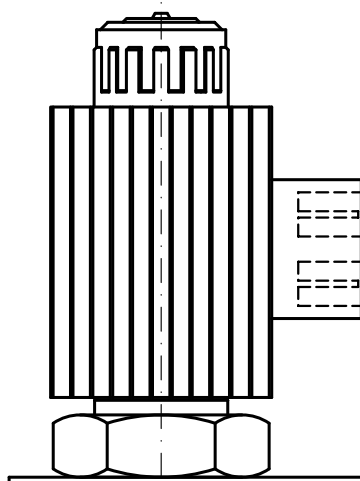
VALVE CAVITY: #C1220, See Page 0-013.0.

SOLENOID VALVE, NORMALLY OPEN.
PILOT OPERATED, POPPET TYPE (2/2)



TORQUE:

Steel = 95/100 Ft-Lb. [129/136 Nm]
Aluminum = 70/75 Ft-Lb. [95/102 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-014.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.
4. FOR SOFT SHIFT SOLENOID VALVE SEE PAGE 10-002.0

EMDV-16-X-O2-X-XXX X

BASIC

SIZE
16 = 1.312"-12UNF

SEALS

N = BUNA "N"
V = VITON

TYPE

O2=NORMALLY OPEN SPOOL
2-WAY, 2-POSITION

PORTS

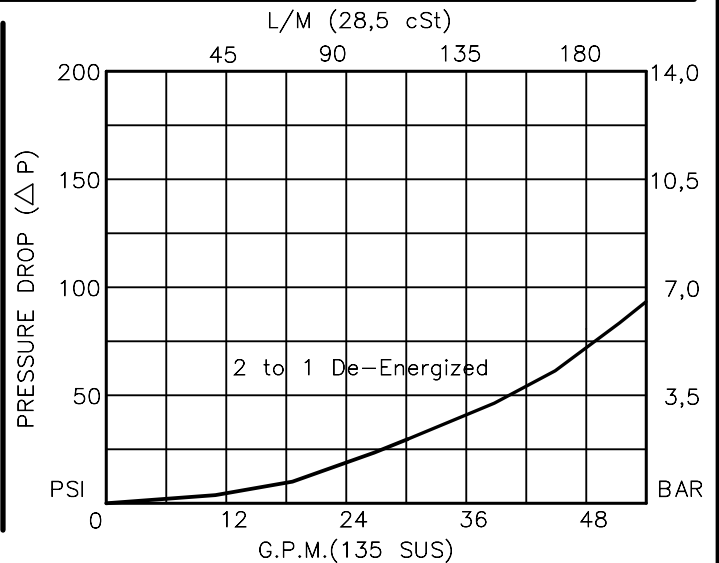
0 = CARTRIDGE ONLY
06BX = G 3/4" BSPP
08BX = G 1" BSPP
12TX = SAE - #12
16TX = SAE - #16
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS

L=18GA. 24" LEADS
T=SPADE TERM.
B=BOLT TERM.
G=DIN43650
W=WEATHER-PACK
D=DEUTSCH-DT04-2P
M=METRI-PACK CONN.

VOLTAGE AMPS

12D = 12 VDC 3.00
24D = 24 VDC 1.50
36D = 36 VDC 1.00
48D = 48 VDC 0.75
110D = 110 VDC 0.33
115A = 115 VAC 0.32
230A = 230 VAC 0.16



**SOLENOID VALVE, NORMALLY OPEN,
PILOT OPERATED, POPPET TYPE (2/2)****DESCRIPTION**

This unit is a NORMALLY OPEN, TWO POSITION, cartridge type, poppet type, pilot operated, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 2 and 1 and restricted flow between ports 1 and 2. When solenoid coil is energized, the poppet in this valve is shifted and allows no flow between ports 2 and 1 and reverse flow between ports 1 and 2 at high pressure drop.
Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted poppet & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

**SOLENOID VALVE, NORMALLY OPEN,
PILOT OPERATED, POPPET TYPE (2/2)**

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 50.0 GPM [190 l/m] See performance chart.

INTERNAL LEAKAGE: 5 drops/min [,25 cc/m] energized @5000 PSI[350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-1621 Buna "N"

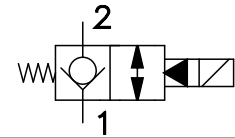
SKV-1621 Viton

INSTALLATION: No restrictions.

WEIGHT: 2.25 lb [1,20 kg] cartridge with coil only.

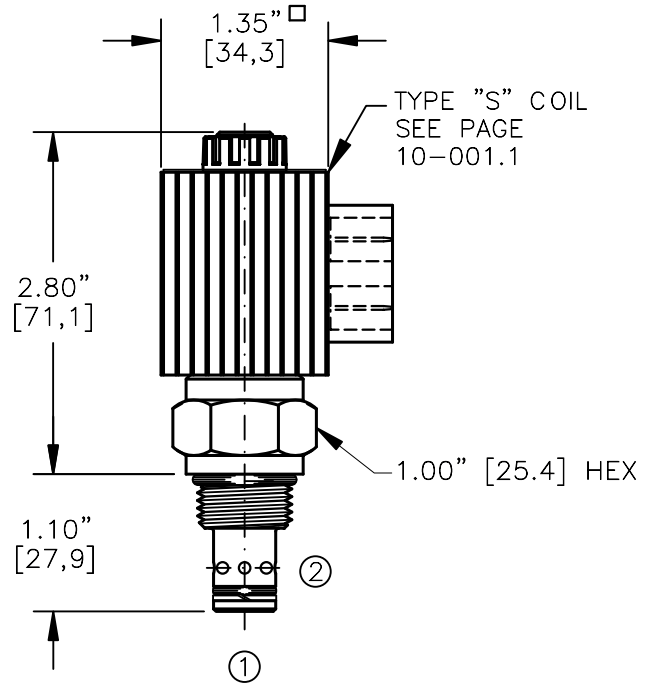
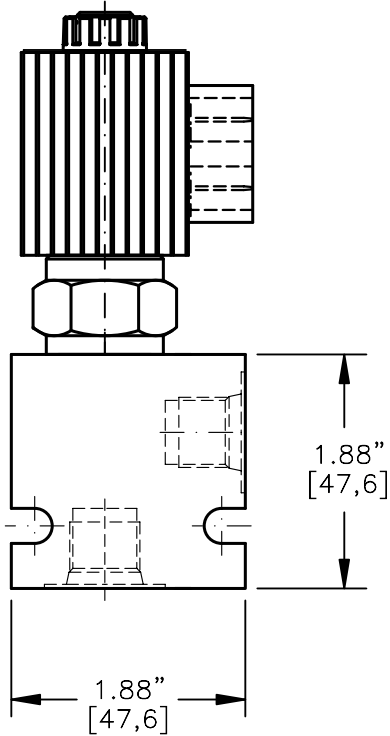
VALVE CAVITY: #C1620, See Page 0-014.0.

SOLENOID VALVE, NORMALLY CLOSED.
PILOT OPERATED, POPPET TYPE (2/2)



TORQUE:

Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]



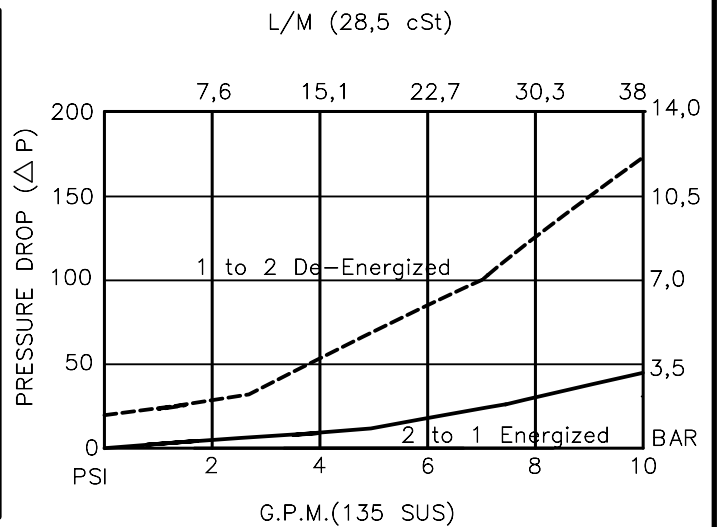
NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-011.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. FOR "AC" COILS USE RECTIFIED DIN CONNECTOR 20828.

EMDV-08-X-C8-X-XXX X

BASIC _____
 SIZE _____
 08 = 3/4"-16UNF
 SEALS _____
 N = BUNA "N"
 V = VITON
 TYPE _____
 C8=NORMALLY CLOSED POPPET
 2-WAY, 2-POSITION
 PORTS _____
 0 = CARTRIDGE ONLY
 02BX = G 1/4" BSSP
 06TX = SAE - #6
 "A" = ALUM. HOUSING
 "S" = STEEL HOUSING

TERMINALS
 L = 18GA. 24" LEADS
 T = SPADE TERM.
 B = BOLT TERM.
 G = DIN43650
 W = WEATHER-PACK
 D = DEUTSCH-DT04-2P
 M = METRI-PACK CONN.
 VOLTAGE AMPS
 12D = 12 VDC 1.7
 24D = 24 VDC .9
 36D = 36 VDC .6
 48D = 48 VDC .5
 115D = 115 VDC .2



**SOLENOID VALVE, NORMALLY CLOSED,
PILOT OPERATED, POPPET TYPE (2/2)****DESCRIPTION**

This unit is a NORMALLY CLOSED, TWO POSITION, cartridge type, poppet type, pilot operated, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows no flow from ports 2 to 1 and free flow from ports 1 to 2. When solenoid coil is energized, the poppet in this valve is shifted and allows flow from port 2 to 1 and free flow from ports 1 and 2.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted poppet & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

**SOLENOID VALVE, NORMALLY CLOSED,
PILOT OPERATED, POPPET TYPE (2/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 10.0 GPM [38 l/m] See performance chart.

INTERNAL LEAKAGE: 5 drops/min [0.25 cc/m] @ 5,000 PSI (350 Bar)

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-0821 Buna "N"

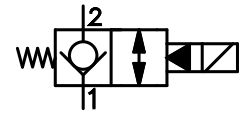
SKV-0821 Viton

INSTALLATION: No restrictions.

WEIGHT: .80 lb [0,36 kg] cartridge with coil only.

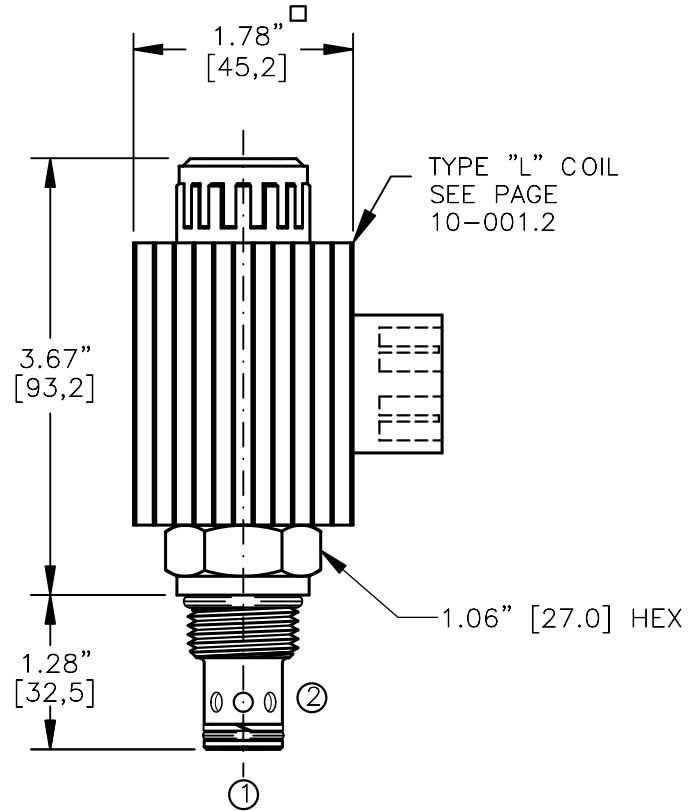
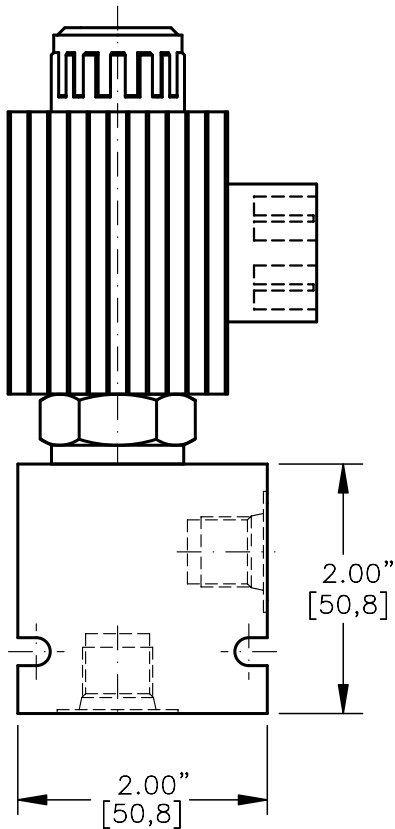
VALVE CAVITY: #C0820, See Page 0-011.0.

SOLENOID VALVE, NORMALLY CLOSED.
PILOT OPERATED, POPPET TYPE (2/2)



TORQUE:

Steel = 55/60 Ft-Lb. [74/81 Nm]
Aluminum = 35/40 Ft-Lb. [47/54 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-012.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.
4. FOR SOFT SHIFT SOLENOID VALVE SEE PAGE 10-002.0

EMDV-10-X-C4-X-XXX X

BASIC

SIZE
10 = 7/8" - 14UNF

SEALS
N = BUNA "N"
V = VITON

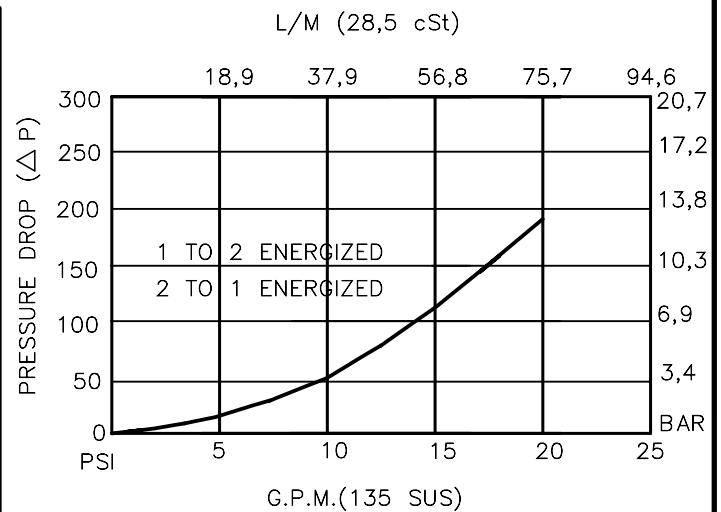
TYPE
*) C4 = NORMALLY CLOSED
2-WAY, 2-POSITION

PORTS
0 = CARTRIDGE ONLY
06TX = SAE - #6
08TX = SAE - #8
02BX = 1/4" BSPP
03BX = 3/8" BSPP

"A" - ALUM. HOUSING
"S" - STEEL HOUSING

TERMINALS
L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE	AMPS
12D = 12 VDC	3.00
24D = 24 VDC	1.50
36D = 36 VDC	1.00
48D = 48 VDC	0.75
110D = 110 VDC	0.33
115A = 115 VAC	0.32
230A = 230 VAC	0.16



*) on request

**SOLENOID VALVE, NORMALLY CLOSED,
PILOT OPERATED, POPPET TYPE (2/2)****DESCRIPTION**

This unit is a NORMALLY CLOSED, TWO POSITION, screw-in cartridge type, poppet type, pilot operated, solenoid operated, bidirectional, control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows no flow from ports 2 to 1 and free flow from ports 1 to 2. When solenoid coil is energized, the poppet in this valve is shifted and allows flow from ports 1 to 2 and 2 to 1.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted poppet & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

**SOLENOID VALVE, NORMALLY CLOSED,
PILOT OPERATED, POPPET TYPE (2/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
FLOW: 20.0 GPM [75,7 l/m] See performance chart.
INTERNAL LEAKAGE: 5 drops/min [0.25 cc/m] @ 5,000 PSI [350 Bar]
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
5000 PSI [350 Bar] = Steel – Unplated.
OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]
AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]
Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])
OPERATING MEDIA: All general purpose hydraulic fluids such as
MIL-H-5606, SAE-#10, SAE-#20, etc.
RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.
* Pull-in: 50 ms
* Drop-Out: 50 ms
SEAL KIT: SKN-1022 Buna "N"
SKV-1022 Viton
INSTALLATION: No restrictions.
WEIGHT: 1.80 lb [0,82 kg] cartridge with coil only.
VALVE CAVITY: #C1020, See Page 0-012.0.

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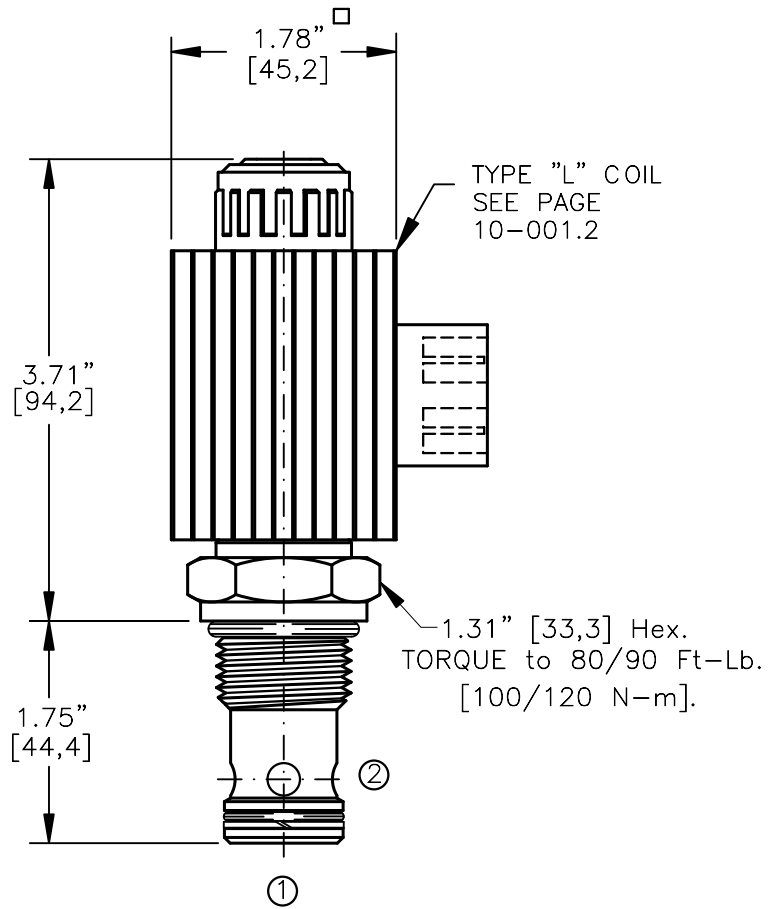
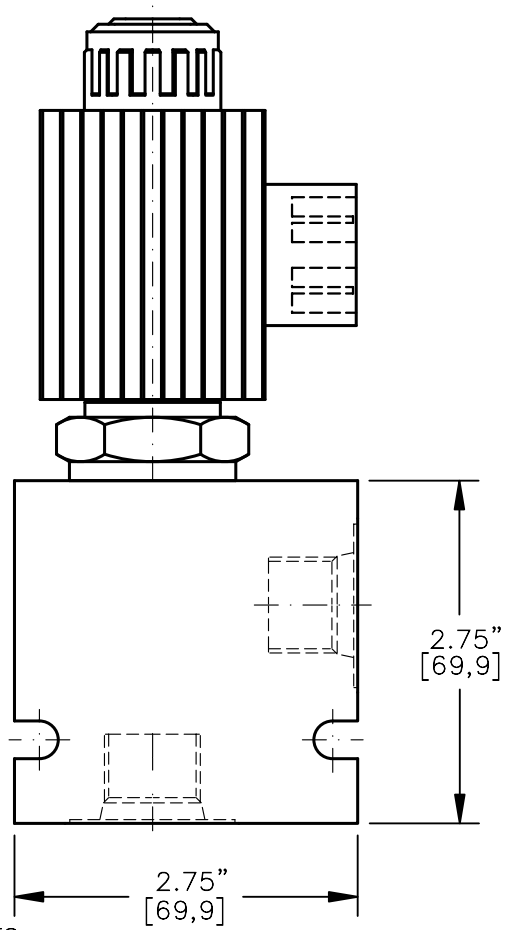
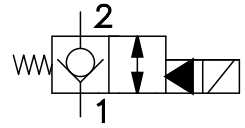
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SOLENOID VALVE, NORMALLY CLOSED.
PILOT OPERATED, POPPET TYPE (2/2)



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-013.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.

EMDV-12-X-C4-X-XXX X

BASIC

SIZE
12 = 1.062" - 12UNF

SEALS

N = BUNA "N"
V = VITON

TYPE

C4 = NORMALLY CLOSED POPPET
2-WAY, 2-POSITION

PORTS

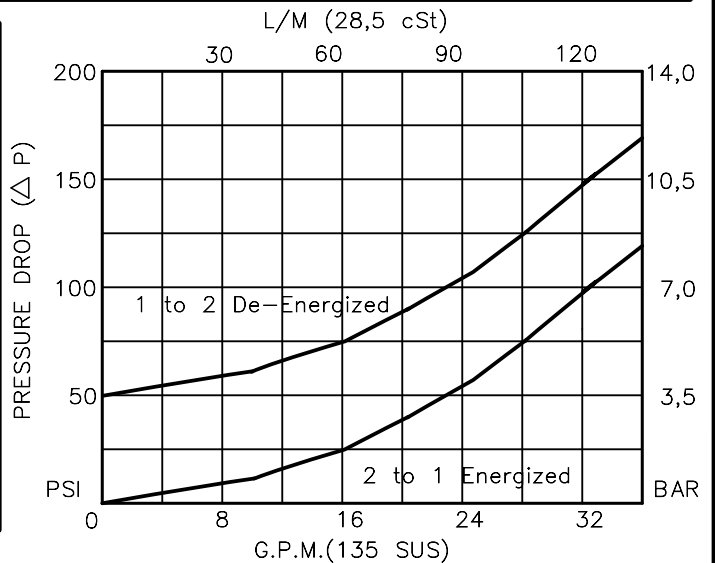
0 = CARTRIDGE ONLY
04BX = G 1/2" BSPP
06BX = G 3/4" BSPP
10TX = SAE - #10
12TX = SAE - #12
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS

L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS

12D = 12 VDC 3.00
24D = 24 VDC 1.50
36D = 36 VDC 1.00
48D = 48 VDC 0.75
110D = 110 VDC 0.33
115A = 115 VAC 0.32
230A = 230 VAC 0.16



**SOLENOID VALVE, NORMALLY CLOSED,
PILOT OPERATED, POPPET TYPE (2/2)****DESCRIPTION**

This unit is a NORMALLY CLOSED, TWO POSITION, cartridge type, poppet type, pilot operated, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows no flow from ports 2 to 1 and free flow from ports 1 to 2. When solenoid coil is energized, the poppet in this valve is shifted and allows flow from ports 2 to 1 and free flow between ports 1 and 2.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted poppet & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

**SOLENOID VALVE, NORMALLY CLOSED,
PILOT OPERATED, POPPET TYPE (2/2)**

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
 PROOF PRESSURE: 10,000 PSI [700 Bar]
 FLOW: 36.0 GPM [136 l/m] See performance chart.
 INTERNAL LEAKAGE: 5 drops/min [0.25 cc/m] @ 5,000 PSI (350 Bar)
 VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
 5000 PSI [350 Bar] = Steel – Unplated.
 OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]
 AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]
 Please consult factory for continuously energized or
 high ambient temperature application (>122° F [50°C])
 OPERATING MEDIA: All general purpose hydraulic fluids such as
 MIL-H-5606, SAE-#10, SAE-#20, etc.
 RESPONSE TIME: First indication of change in pressure with 100%
 voltage supplied @ 80% of nominal flow rating.
 * Pull-in: 50 ms
 * Drop-Out: 50 ms
 SEAL KIT: SKN-1221 Buna "N"
 SKV-1221 Viton
 INSTALLATION: No restrictions.
 WEIGHT: 1.98 lb [0,90 kg] cartridge with coil only.
 VALVE CAVITY: #C1220, See Page 0-013.0.

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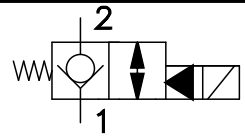
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Data is provided for the purpose of product description only, and must not be construed as warranted characteristics in the legal sense.

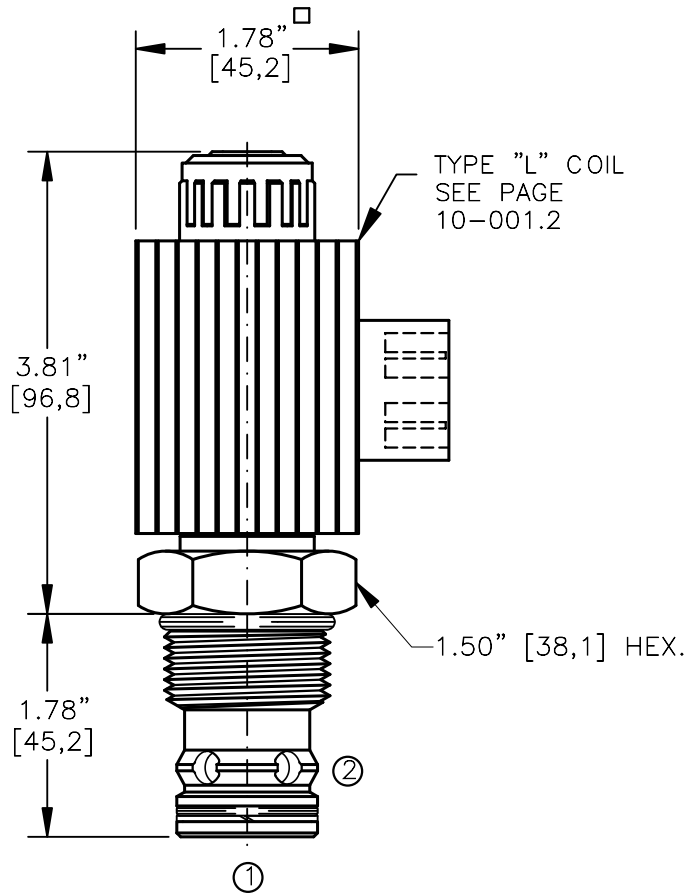
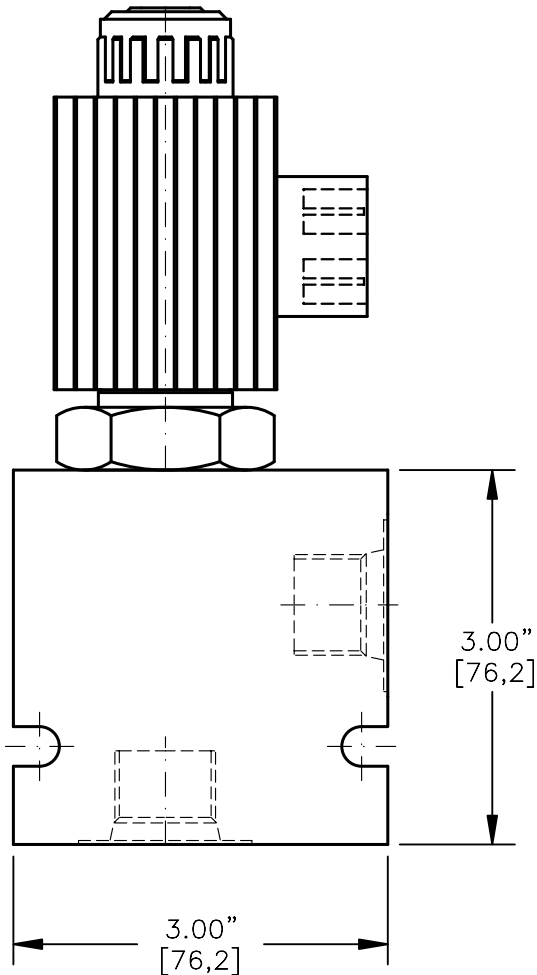
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SOLENOID VALVE, NORMALLY CLOSED.
PILOT OPERATED, POPPET TYPE (2/2)



TORQUE:

Steel = 95/100 Ft-Lb. [129/136 Nm]
Aluminum = 70/75 Ft-Lb. [95/102 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-014.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED..

EMDV-16-X-C4-X-XXX X

BASIC

SIZE
16 = 1.312"-12UNF

SEALS

N = BUNA "N"
V = VITON

TYPE

C4=NORMALLY CLOSED POPPET
2-WAY, 2-POSITION

PORTS

0 = CARTRIDGE ONLY
06BX = G 3/4" BSPP
08BX = G 1" BSPP
12TX = SAE - #12
16TX = SAE - #16

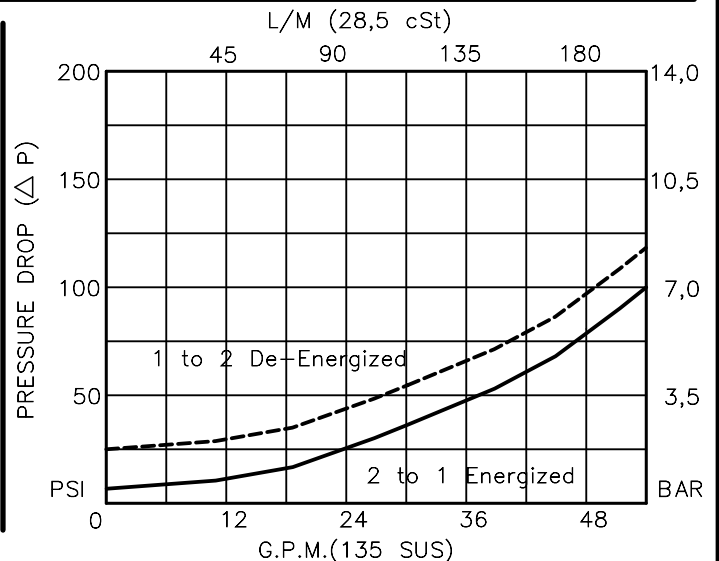
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS

L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS

12D = 12 VDC 3.00
24D = 24 VDC 1.50
36D = 36 VDC 1.00
48D = 48 VDC 0.75
110D = 110 VDC 0.33
115A = 115 VAC 0.32
230A = 230 VAC 0.16



**SOLENOID VALVE, NORMALLY CLOSED,
PILOT OPERATED, POPPET TYPE (2/2)****DESCRIPTION**

This unit is a NORMALLY CLOSED, TWO POSITION, cartridge type, poppet type, pilot operated, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows no flow from ports 2 to 1 and free flow from ports 1 to 2. When solenoid coil is energized, the poppet in this valve is shifted and allows flow between ports 2 and 1 and free flow between ports 1 and 2.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted poppet & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

**SOLENOID VALVE, NORMALLY CLOSED,
PILOT OPERATED, POPPET TYPE (2/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]
 PROOF PRESSURE: 10,000 PSI [700 Bar]
 FLOW: 50.0 GPM [190 l/m] See performance chart.
 INTERNAL LEAKAGE: 5 drops/min [0.25 cc/m] @ 5,000 PSI (350 Bar)
 VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
 5000 PSI [350 Bar] = Steel – Unplated.
 OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]
 AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]
 Please consult factory for continuously energized or
 high ambient temperature application (>122° F [50°C])
 OPERATING MEDIA: All general purpose hydraulic fluids such as
 MIL-H-5606, SAE-#10, SAE-#20, etc.
 RESPONSE TIME: First indication of change in pressure with 100%
 voltage supplied @ 80% of nominal flow rating.
 * Pull-in: 50 ms
 * Drop-Out: 50 ms
 SEAL KIT: SKN-1621 Buna "N"
 SKV-1621 Viton
 INSTALLATION: No restrictions.
 WEIGHT: 2.25 lb [1,20 kg] cartridge with coil only.
 VALVE CAVITY: #C1620, See Page 0-014.0.

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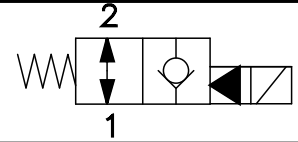
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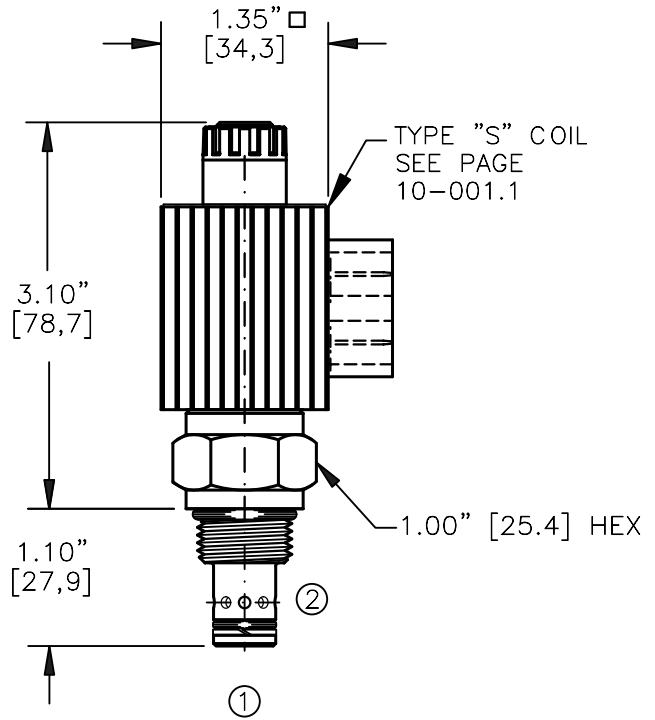
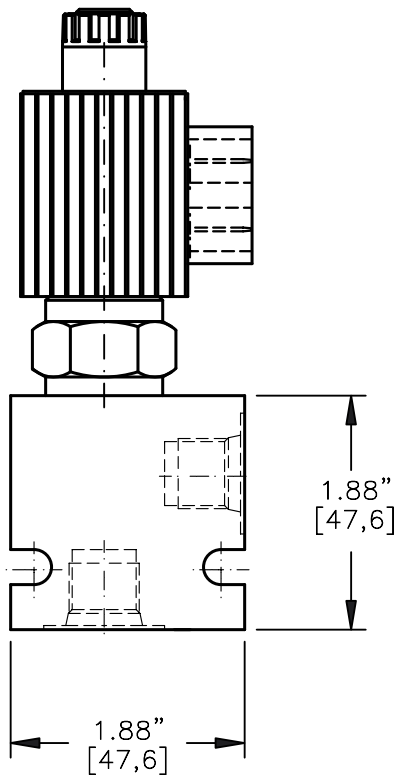
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SOLENOID VALVE, NORMALLY OPEN.
PILOT OPERATED, POPPET TYPE (2/2)



TORQUE:

Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-011.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. FOR "AC" COILS USE RECTIFIED DIN CONNECTOR 20828.

EMDV-08-X-08-X-XXX X

BASIC

SIZE
08 = 3/4"-16UNF

SEALS

N = BUNA "N"
V = VITON

TYPE

08=NORMALLY OPEN POPPET
2-WAY, 2-POSITION

PORTS

0 = CARTRIDGE ONLY
02BX = G 1/4" BSSP
06TX = SAE - #6

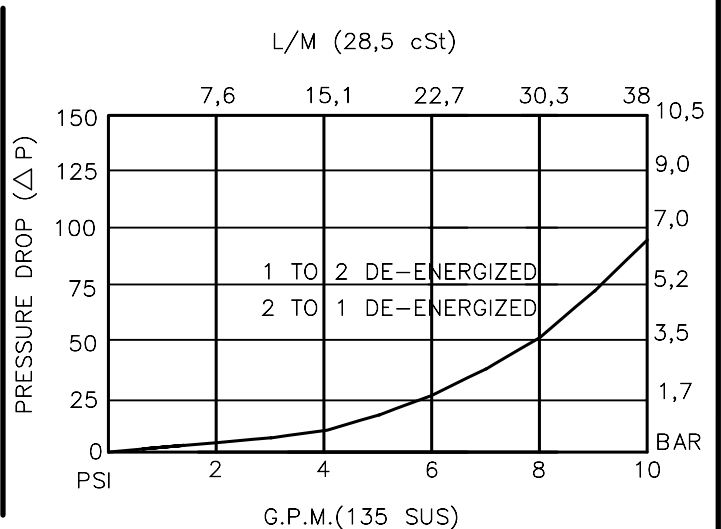
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS

L=18GA. 24" LEADS
T=SPADE TERM.
B=BOLT TERM.
G=DIN43650
W=WEATHER-PACK
D=DEUTSCH-DT04-2P
M=METRI-PACK CONN.

VOLTAGE AMPS

12D = 12 VDC 1.7
24D = 24 VDC .9
36D = 36 VDC .6
48D = 48 VDC .5
115D = 115 VDC .2



SOLENOID VALVE NORMALLY OPEN, PILOT OPERATED, POPPET TYPE (2/2)

DESCRIPTION

This unit is a NORMALLY OPEN, TWO POSITION, cartridge type, poppet type, pilot operated, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 2 and 1 and free reverse flow between ports 1 and 2. When solenoid coil is energized, the poppet in this valve is shifted to block flow between ports 2 and 1 and reverse flow between ports 1 and 2 at a high pressure drop.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted spool & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

**SOLENOID VALVE NORMALLY OPEN,
PILOT OPERATED, POPPET TYPE (2/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
FLOW: 10.0 GPM [38,5 l/m] See performance chart.
INTERNAL LEAKAGE: 5 drops/min [.25 cc/m] @ 5,000 PSI [350 Bar]
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum - Anodized.
5000 PSI [350 Bar] = Steel - Unplated.
OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]
AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]
Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])
OPERATING MEDIA: All general purpose hydraulic fluids such as
MIL-H-5606, SAE-#10, SAE-#20, etc.
RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.
* Pull-in: 50 ms
* Drop-Out: 50 ms
SEAL KIT: SKN-0821 Buna "N"
SKV-0821 Viton
INSTALLATION: No restrictions.
WEIGHT: .90 lb [0.41 kg] cartridge with coil only.
VALVE CAVITY: #C0820, See Page 0-011.0.

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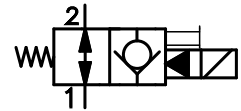
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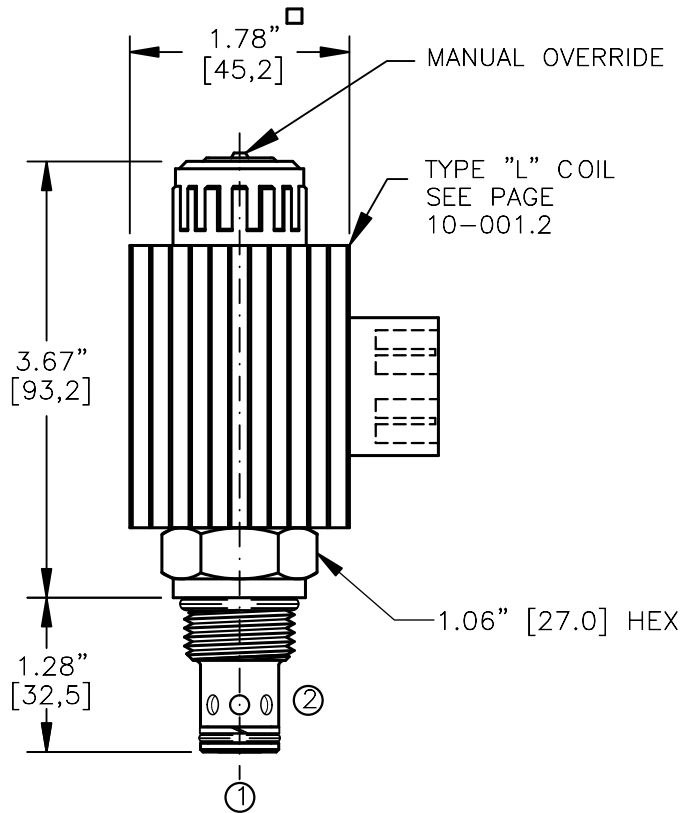
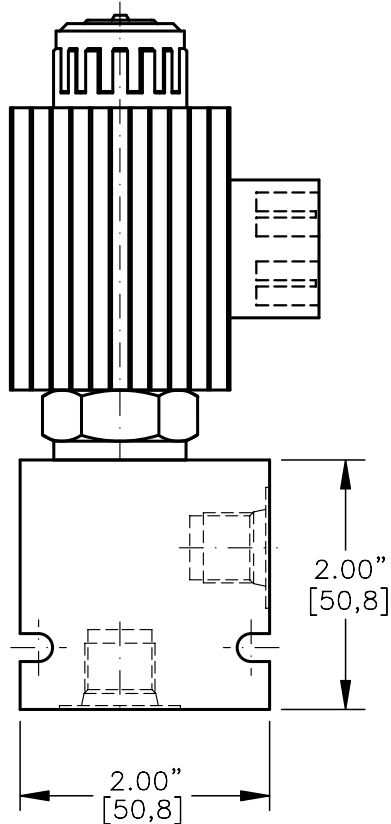
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SOLENOID VALVE, NORMALLY OPEN.
PILOT OPERATED, POPPET TYPE (2/2)



TORQUE:

Steel = 55/60 Ft-Lb. [74/81 Nm]
Aluminum = 35/40 Ft-Lb. [47/54 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-012.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.
4. FOR SOFT SHIFT SOLENOID VALVE SEE PAGE 10-002.0

EMDV-10-X-O4-X-XXX X

BASIC

SIZE
10 = 7/8"-14UNF

SEALS
N = BUNA "N"
V = VITON

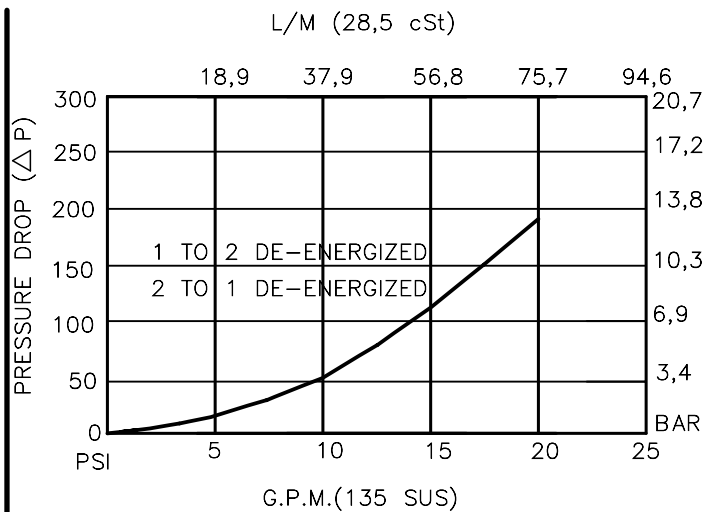
TYPE
O4=NORMALLY OPEN
2-WAY, 2-POSITION

PORTS
0 = CARTRIDGE ONLY
06TX = SAE - #6
08TX = SAE - #8
02BX = 1/4" BSPP
03BX = 3/8" BSPP

TERMINALS
L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE	AMPS
12D = 12 VDC	3.00
24D = 24 VDC	1.50
36D = 36 VDC	1.00
48D = 48 VDC	0.75
110D = 110 VDC	0.33
115A = 115 VAC	0.32
230A = 230 VAC	0.16

"A" - ALUM. HOUSING
"S" - STEEL HOUSING



SOLENOID VALVE NORMALLY OPEN, PILOT OPERATED, POPPET TYPE (2/2)

DESCRIPTION

This unit is a NORMALLY OPEN, TWO POSITION, screw-in cartridge type, pilot operated, poppet type, solenoid operated, bidirectional, control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 2 and 1 and free reverse flow between ports 1 and 2. When solenoid coil is energized, the poppet in this valve is shifted to block flow between ports 2 and 1 and reverse flow between ports 1 and 2 at a high pressure drop.

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted spool & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

**SOLENOID VALVE NORMALLY OPEN,
PILOT OPERATED, POPPET TYPE (2/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
FLOW: 20.0 GPM [75,7 l/m] See performance chart.
INTERNAL LEAKAGE: 5 drops/min [0.25 cc/m] @ 5,000 PSI [350 Bar]
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
5000 PSI [350 Bar] = Steel – Unplated.
OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]
AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]
Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])
OPERATING MEDIA: All general purpose hydraulic fluids such as
MIL-H-5606, SAE-#10, SAE-#20, etc.
RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.
* Pull-in: 50 ms
* Drop-Out: 50 ms
SEAL KIT: SKN-1022 Buna "N"
SKV-1022 Viton
INSTALLATION: No restrictions.
WEIGHT: 1.80 lb [0,82 kg] cartridge with coil only.
VALVE CAVITY: #C1020, See Page 0-012.0.

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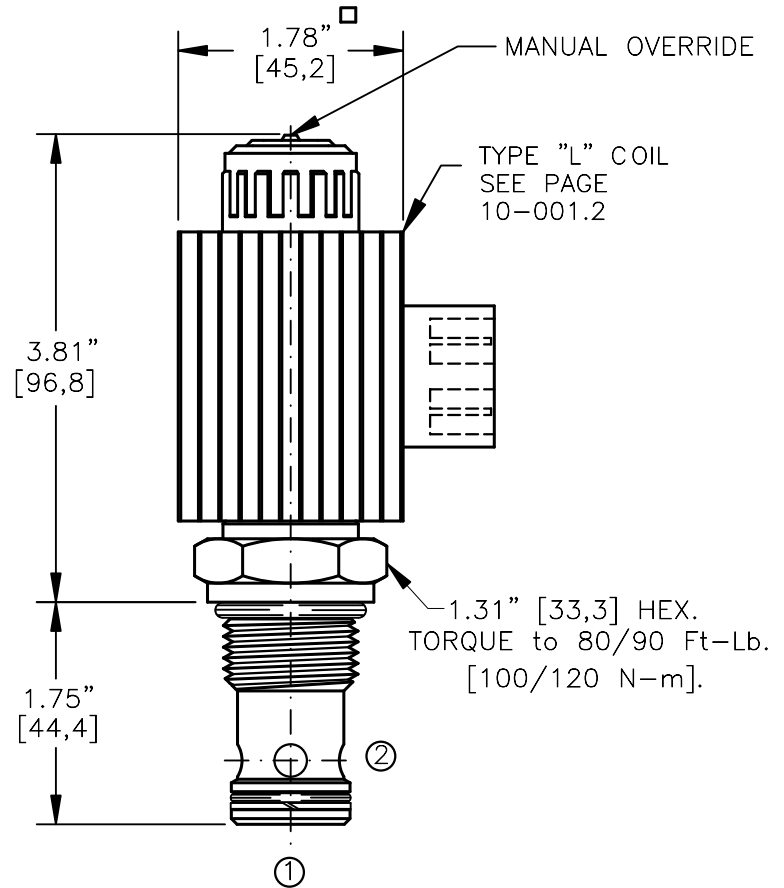
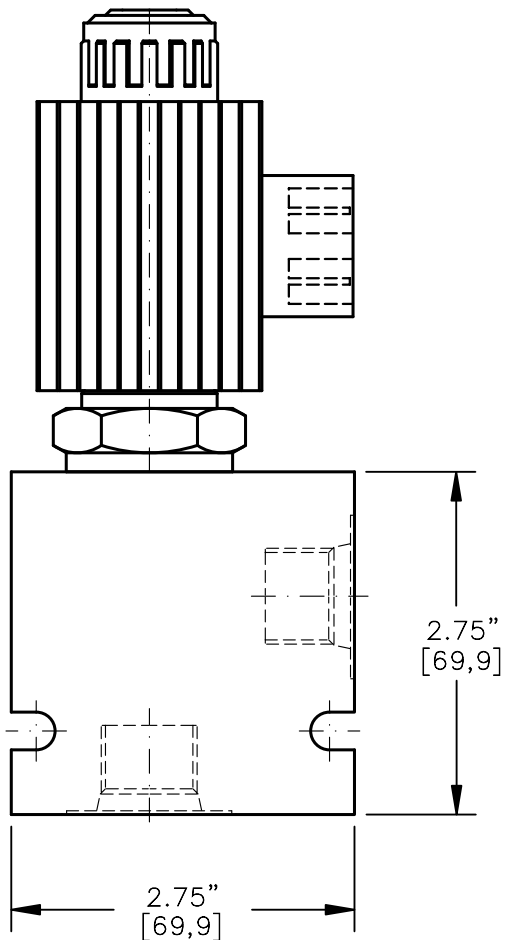
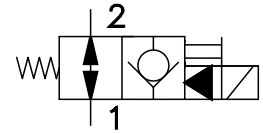
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SOLENOID VALVE, NORMALLY OPEN.
PILOT OPERATED, POPPET TYPE (2/2)



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-013.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.
4. FOR SOFT SHIFT SOLENOID VALVE SEE PAGE 10-002.0

EMDV-12-X-O4-X-XXX X

BASIC

SIZE
12 = 1.062"-12UNF

SEALS

N = BUNA "N"
V = VITON

TYPE

O4=NORMALLY OPEN POPPET
2-WAY, 2-POSITION

PORTS

0 = CARTRIDGE ONLY
04BX = G 1/2" BSPP
06BX = G 3/4" BSPP
10TX = SAE - #10
12TX = SAE - #12

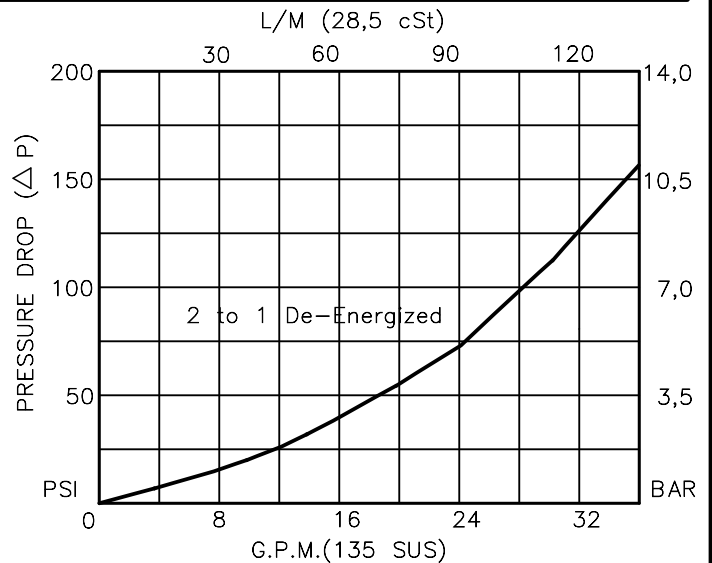
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS

L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS

12D = 12 VDC	3.00
24D = 24 VDC	1.50
36D = 36 VDC	1.00
48D = 48 VDC	0.75
110D = 110 VDC	0.33
115A = 115 VAC	0.32
230A = 230 VAC	0.16



**SOLENOID VALVE, NORMALLY OPEN,
PILOT OPERATED, POPPET TYPE (2/2)****DESCRIPTION**

This unit is a NORMALLY OPEN, TWO POSITION, cartridge type, poppet type, pilot operated, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows free flow from ports 2 to 1 and free flow from ports 1 to 2.

When solenoid coil is energized, the poppet in this valve is shifted and allows no flow from ports 2 to 1 and reverse flow from ports 1 and 2 at high pressure drop.

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted poppet & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

**SOLENOID VALVE, NORMALLY OPEN,
PILOT OPERATED, POPPET TYPE (2/2)**

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 36.0 GPM [136 l/m] See performance chart.

INTERNAL LEAKAGE: 5 drops/min [25 cc/m] energized @5000 PSI[350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-1221 Buna "N"

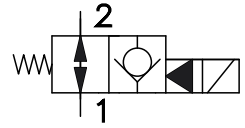
SKV-1221 Viton

INSTALLATION: No restrictions.

WEIGHT: 1.98 lb [0,90 kg] cartridge with coil only.

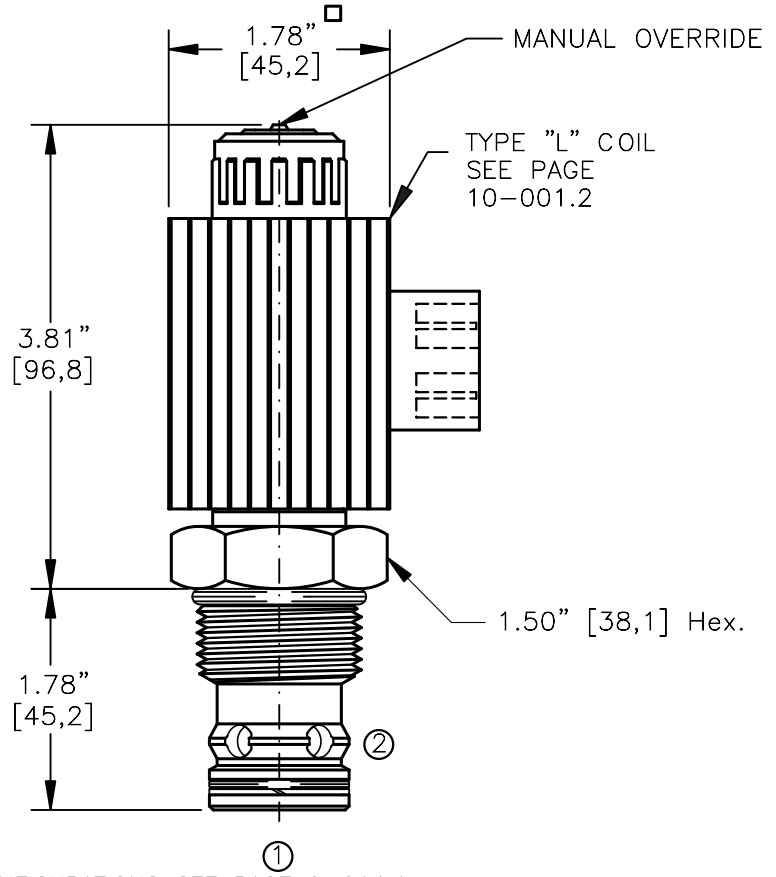
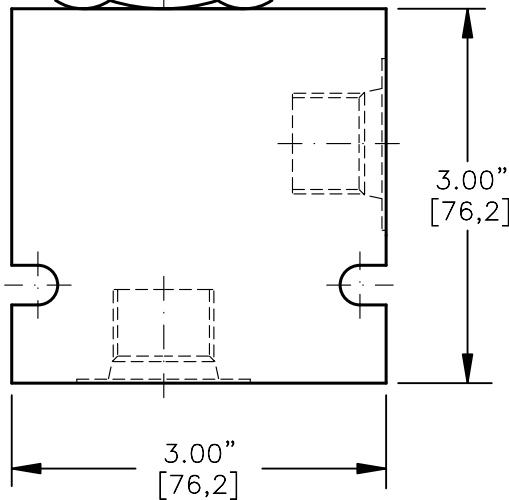
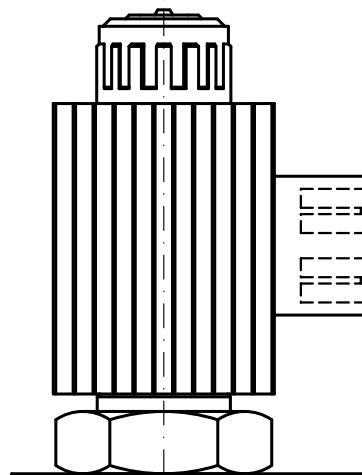
VALVE CAVITY: #C1220, See Page 0-013.0.

SOLENOID VALVE, NORMALLY OPEN.
PILOT OPERATED, POPPET TYPE (2/2)



TORQUE:

Steel = 95/100 Ft-Lb. [129/136 Nm]
Aluminum = 70/75 Ft-Lb. [95/102 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-014.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.
4. FOR SOFT SHIFT SOLENOID VALVE SEE PAGE 10-002.0

EMDV-16-X-O4-X-XXX X

BASIC

SIZE
16 = 1.312"-12UNF

SEALS

N = BUNA "N"
V = VITON

TYPE

O4=NORMALLY OPEN POPPET
2-WAY, 2-POSITION

PORTS

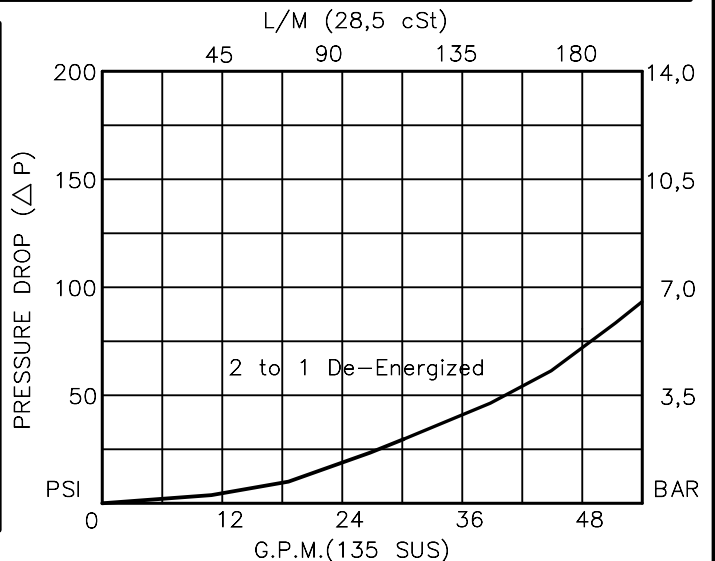
0 = CARTRIDGE ONLY
06BX = G 3/4" BSPP
08BX = G 1" BSPP
12TX = SAE - #12
16TX = SAE - #16
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS

L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS

12D = 12 VDC 3.00
24D = 24 VDC 1.50
36D = 36 VDC 1.00
48D = 48 VDC 0.75
110D = 110 VDC 0.33
115A = 115 VAC 0.32
230A = 230 VAC 0.16



**SOLENOID VALVE, NORMALLY OPEN,
PILOT OPERATED, POPPET TYPE (2/2)****DESCRIPTION**

This unit is a NORMALLY OPEN, TWO POSITION, cartridge type, poppet type, pilot operated, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows free flow between ports 2 and 1 and free flow between ports 1 and 2.

When solenoid coil is energized, the poppet in this valve is shifted and allows no flow between ports 2 and 1 and reverse flow between ports 1 and 2 at high pressure drop.

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted poppet & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

Industry common cavity.

**SOLENOID VALVE, NORMALLY OPEN,
PILOT OPERATED, POPPET TYPE (2/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 50.0 GPM [190 l/m] See performance chart.

INTERNAL LEAKAGE: 5 drops/min [,25 cc/m] energized @5000 PSI[350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-1621 Buna "N"

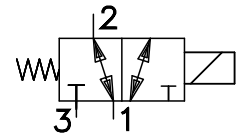
SKV-1621 Viton

INSTALLATION: No restrictions.

WEIGHT: 2.25 lb [1,20 kg] cartridge with coil only.

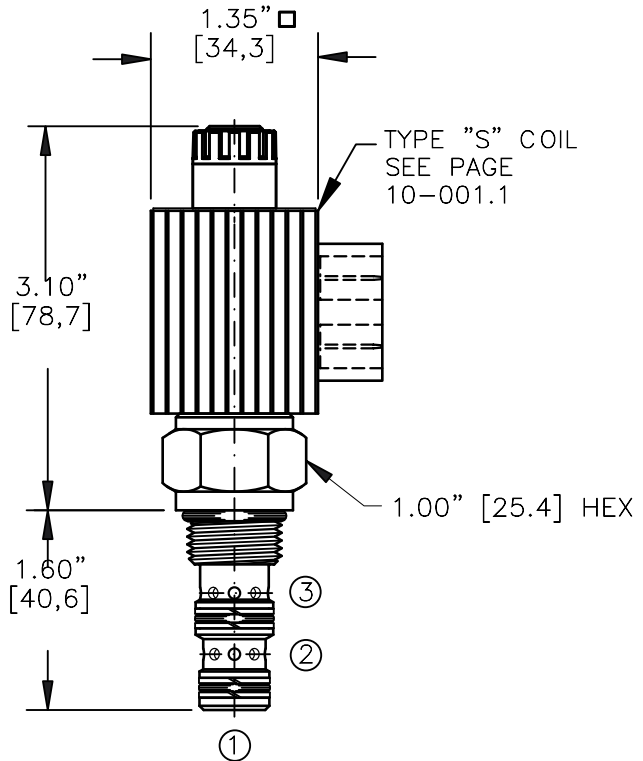
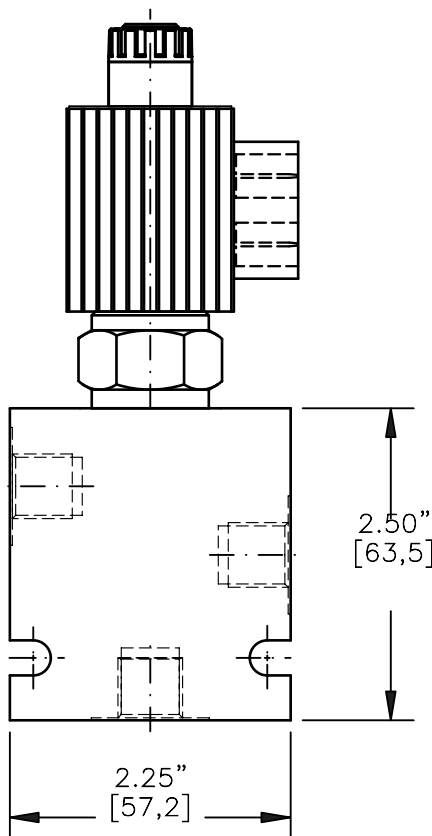
VALVE CAVITY: #C1620, See Page 0-014.0

SOLENOID VALVE, 3-WAY, 2-POSITION
CLOSED CENTER, SPOOL TYPE (3/2)



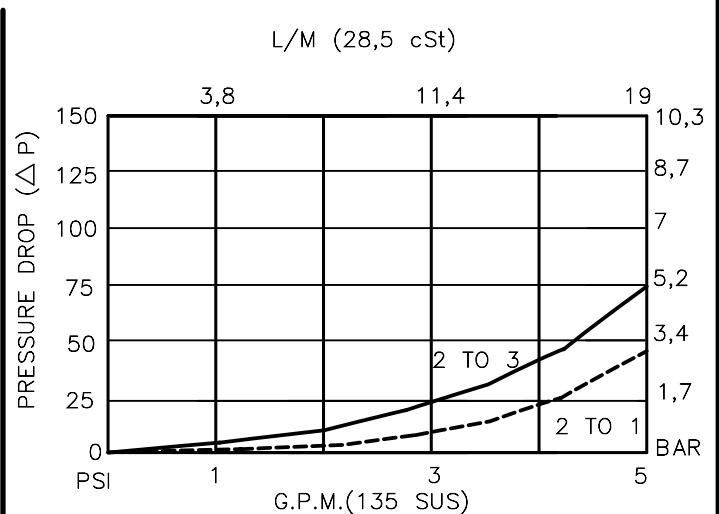
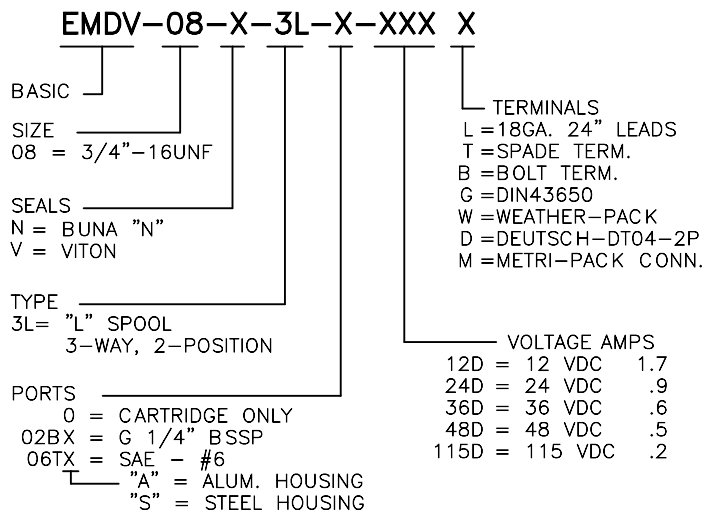
TORQUE:

Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-031.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. FOR "AC" COILS USE RECTIFIED DIN CONNECTOR 20828.



**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****DESCRIPTION**

This unit is a THREE-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 2, port 3 is blocked.

When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 2 and 3 and port 1 is blocked. This valve shifts in a closed position.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

Industry common cavity.

SOLENOID VALVE 3-WAY, 2-POSITION, DIRECT ACTING, SPOOL TYPE (3/2)

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 5.0 GPM [19 l/m] See performance chart.

INTERNAL LEAKAGE: 5 cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as
MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-0832 Buna "N"

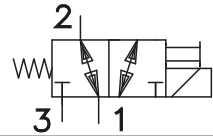
SKV-0832 Viton

INSTALLATION: No restrictions.

WEIGHT: .95 lb [0.43 kg] cartridge with coil only.

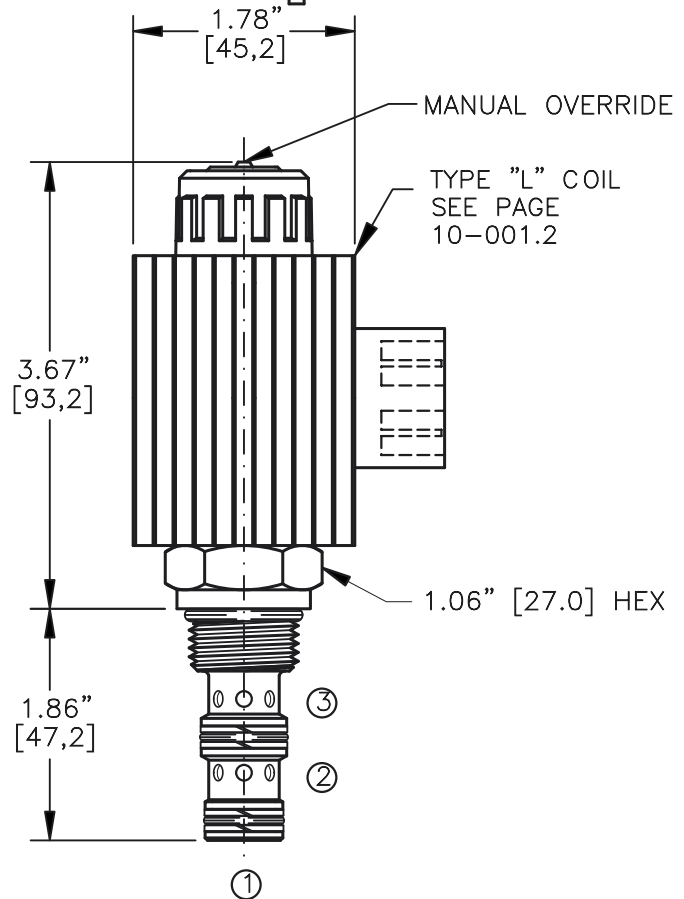
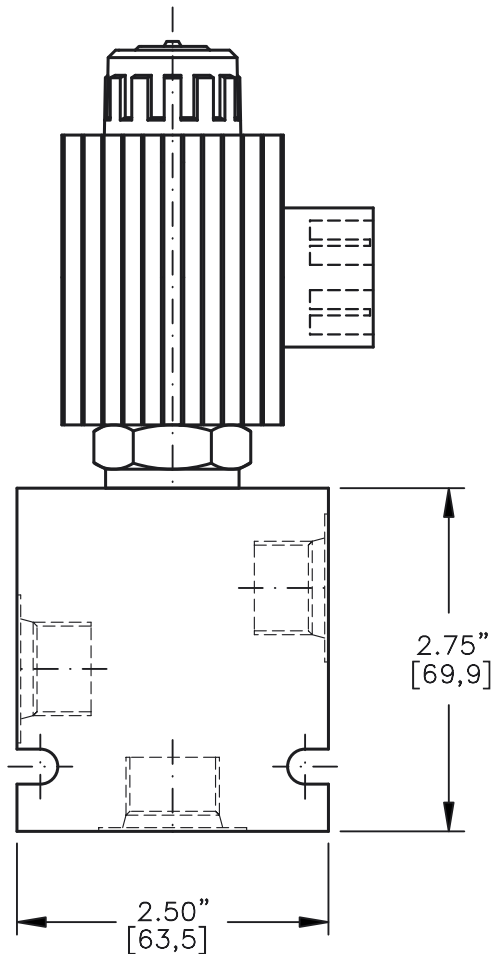
VALVE CAVITY: #C0830, See Page 0-031.0.

SOLENOID VALVE 3-WAY, 2-POSITION.
DIRECT ACTING, SPOOL TYPE (3/2)



TORQUE:

Steel = 55/60 Ft-Lb. [74/81 Nm]
Aluminum = 35/40 Ft-Lb. [47/54 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-032.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.
4. FOR SOFT SHIFT SOLENOID VALVE SEE PAGE 10-002.0

EMDV-10-X-3A-X-XXX X

BASIC

SIZE
10 = 7/8"-14UNF

SEALS

N = BUNA "N"
V = VITON

TYPE

3A = "A" SPOOL
3-WAY, 2-POSITION

PORTS

0 = CARTRIDGE ONLY
02BX = G 1/4" BSPP
03BX = G 3/8" BSPP
06TX = SAE - #6
08TX = SAE - #8

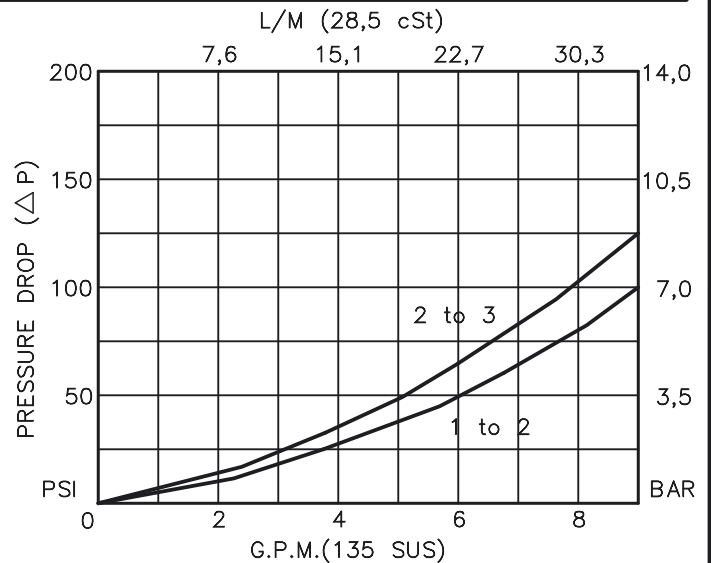
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS

L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS

12D = 12 VDC 3.00
24D = 24 VDC 1.50
36D = 36 VDC 1.00
48D = 48 VDC 0.75
110D = 110 VDC 0.33
115A = 115 VAC 0.32
230A = 230 VAC 0.16



**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****DESCRIPTION**

This unit is a THREE-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 2 and port 3 is blocked. When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 2 and 3 and port 1 is blocked. This valve shifts in a closed position. Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil. Interchangeable solenoid coils & terminations options available. Hardened precision fitted spool & sleeve provides reliable, long life. Very efficient, wet-armature solenoid core tube construction. All external carbon steel parts are plated for longer life against the elements. All cartridge valves are 100% functionally tested. Industry common cavity.

**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 8.0 GPM [30 l/m] See performance chart.

INTERNAL LEAKAGE: 5 cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-1032 Buna "N"

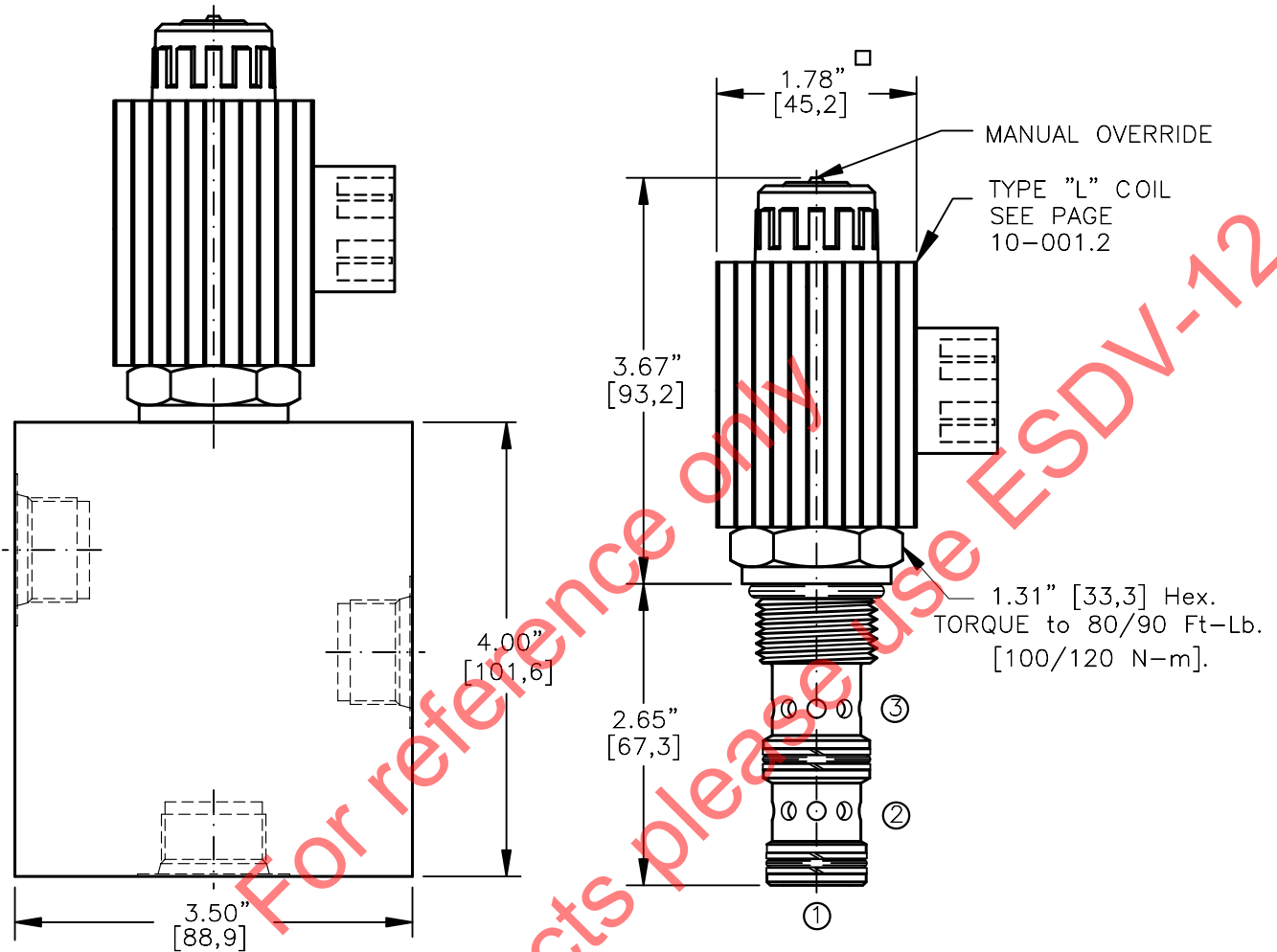
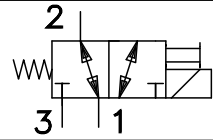
SKV-1032 Viton

INSTALLATION: No restrictions.

WEIGHT: 1.95 lb [.88 kg] cartridge with coil only.

VALVE CAVITY: #C1030, See Page 0-032.0.

SOLENOID VALVE, 3-WAY, 2-POSITION.
DIRECT ACTING, SPOOL TYPE (3/2)



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-033.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.
4. FOR SOFT SHIFT SOLENOID VALVE SEE PAGE 10-002.0

EMDV-12-X-3A-X-XXX X

BASIC

SIZE

12 = 1.062"-12UNF

SEALS

N = BUNA "N"
V = VITON

TYPE

3A = "A" SPOOL
3-WAY, 2-POSITION

PORTS

0 = CARTRIDGE ONLY
04BX = G 1/2" BSPP
06BX = G 3/4" BSPP
10TX = SAE - #10
12TX = SAE - #12

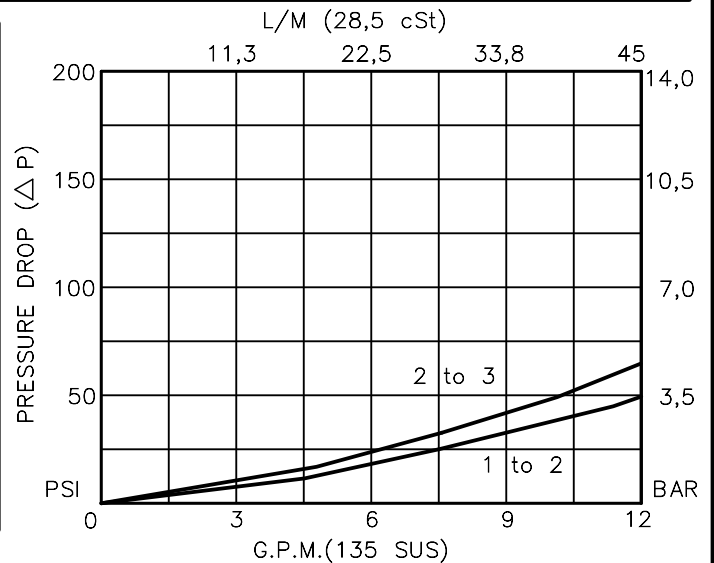
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS

L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS

12D = 12 VDC 3.00
24D = 24 VDC 1.50
36D = 36 VDC 1.00
48D = 48 VDC 0.75
110D = 110 VDC 0.33
115A = 115 VAC 0.32
230A = 230 VAC 0.16



**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****DESCRIPTION**

This unit is a THREE-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 2 and port 3 is blocked.

When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 2 and 3 and port 1 is blocked. The valve shifts in closed position.

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

For reference only
For new projects please use ESDV-12

**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 12.0 GPM [46 l/m] See performance chart.

INTERNAL LEAKAGE: 5 cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-1232 Buna "N"

SKV-1232 Viton

INSTALLATION: No restrictions.

WEIGHT: 2.06 lb [.94 kg] cartridge with coil only.

VALVE CAVITY: #C1230, See Page 0-033.0.

info.el@bucherhydraulics.com

www.bucherhydraulics.com/commoncavity

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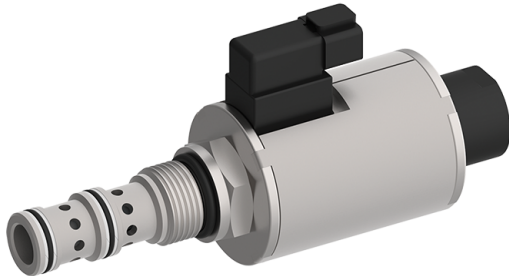
The technical information in this catalog, may contain calculated figures (for reference only) and not actual performance data for this product.

Data is provided for the purpose of product description only, and must not be construed as warranted characteristics in the legal sense.

The information does not relieve users from the duty of conducting their own evaluations and tests. Because the products are subject to continual improvement, we reserve the right to amend the product specifications contained in this catalogue.

3 Ways/2 Pos. Cartridge Spool Valve, SAE 12 / NG 10

$Q_{max} = 16.0 \text{ gpm [60 l/min]}$, $p_{max} = 5000 \text{ psi [350 bar]}$
direct acting, with solenoid operation
Series ESDV-12-3...



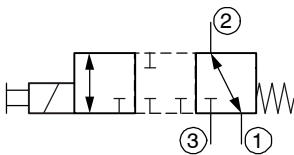
- Compact construction for cavity type C1230
- A low power consumption
- Continuous-duty cycle
- Low heat rise
- Hardened precision fitted spool & sleeve provides consistent high performance and long life
- High performance solenoid valve
- All exposed parts with zinc plating
- High pressure wet-armature solenoids
- Interchangeable IP rated solenoid coils & terminations options available
- The slip-on coil can be rotated, and it can be replaced without opening the hydraulic envelope
- Various plug-connector systems and voltages are available
- Can be fitted in a line-mounting body
- Replaces EMDV-12-3...

1 Description

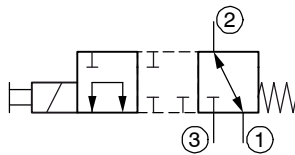
These direct acting 3 way / 2 pos solenoid operated spool valves, series ESDV-12-3... are size SAE 12 / NG 10, pressure balanced screw-in cartridges with a 1-1/16-12 UN mounting thread. When the solenoid coil is de-energized, this valve allows flow between port 2 and 1 with port 3 blocked. When solenoid coil is energized, the spool is shifted and blocks port 1 (spool A and C) respectively 2 (spool B and D) and permits flow between the other 2 ports. Valves with spool type A or B are shifting in closed transition. Valves with spool C or D are shifting in open transition. Maximum inlet capacity of flow and pressure are allowed at port 3 or port 2. Port 1 is designed to be connected to tank and there-

fore maximum inlet pressure is limited to 3200 psi at port 1. Manual override operation: Press and hold on the small plunger which is located on top of the valve with a similar object smaller than 0.180" diameter. All external parts of this cartridge valve are zinc plated and are thus suitable for use in harsh operating environments. The slip-on coils can be replaced without opening the hydraulic envelope and can be positioned at any angle through 360°. If you intend to manufacture your own cavities or are designing a line-mounting installation, please refer to the section "Related data sheets".

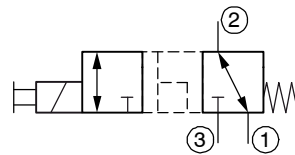
2 Symbol (ISO 1219)



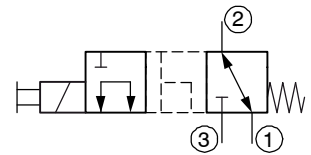
ESDV-12-3A...



ESDV-12-3B...



ESDV-12-3C...



ESDV-12-3D...

3 Technical data

General characteristics	Description, value, unit
Designation	3 ways / 2 positions cartridge spool valve
Design	direct acting, with solenoid operation
Mounting method	screw-in cartridge 1-1/16-12 UN-2A

Reference: 520-P-106030-EN-02

General characteristics	Description, value, unit
Size	SAE 12 / NG 10 for cavity type C1230
Weight	3.5 lbs [1.6 kg]
Mounting attitude	unrestricted (preferably vertical, coil down)

Hydraulic characteristics	Description, value, unit
Maximum operating pressure - ports 3, 2 - port 1	5000 psi [350 bar] 3200 psi [220 bar]
Maximum flow rate - ports 3, 2 - port 1	16 gpm [60 l/min] 11 gpm [41 l/min]
Internal leakage	25 cu.in/min by 3200 psi [410 ml/min by 220 bar] 35 cu.in/min by 5000 psi [574 ml/min by 350 bar]
Hydraulic fluid	HL and HLP mineral oil to DIN 51 524; for other fluids, please contact BUCHER
Hydraulic fluid temperature range NBR: Viton:	-13 °F ... +180 °F [-25 °C ... +80 °C] + 5 °F ... +250 °F [-15 °C ... +120 °C]
Viscosity range	10...500 mm ² /s (cSt), recommended 15...250 mm ² /s (cSt)
Minimum fluid cleanliness Cleanliness class to ISO 4406 : 1999	class 20/18/15

Electrical characteristics	Description, value, unit
Supply voltage	12 V DC, 24 V DC, 103 V DC, 206 V DC note: • for AC applications an external rectifier circuit is required • the effective voltage in AC (with external rectifier circuit) is 11% higher than the rated DC voltage: 103 VDC → 115 V AC (respectively 206 V DC → 230 V AC) • above 48 V a ground connection to the metal housing of the coil is required
Supply voltage tolerance	± 10 %
Ambient temperature range	-22 °F ... +140 °F [-3 °C ... +60 °C]
Power consumption at max. control current 12 V DC, 24 V DC 103 V DC ²⁾ , 206 V DC ²⁾	Nominal power consumption: 27 W 31 VA ³⁾
Switching time	45 ... 100 ms (solenoid ON) 20 ... 100 ms (solenoid OFF) These times are strongly influenced by fluid pressure, flow rate and viscosity, as well as by the dwell time under pressure.
Relative duty cycle	100 %
Protection class to ISO 20 653 / EN 60 529	IP 65 / IP 67 / IP 69K, see "Ordering code" (with appropriate mating connector and proper fitting and sealing)
Electrical connection	2-pin square plug to ISO 4400 / DIN 43 650 (standard) ³⁾ for other connectors, see "Ordering code"

Note:

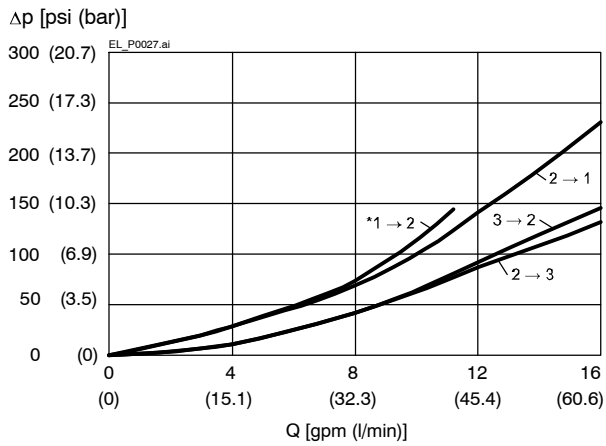
²⁾ for AC applications an external rectifier circuit is required. ATTENTION: The effective voltage in AC (with external rectifier circuit) is 11% higher than the rated DC voltage.

³⁾ above 48 V a ground connection to the metal housing of the coil is required

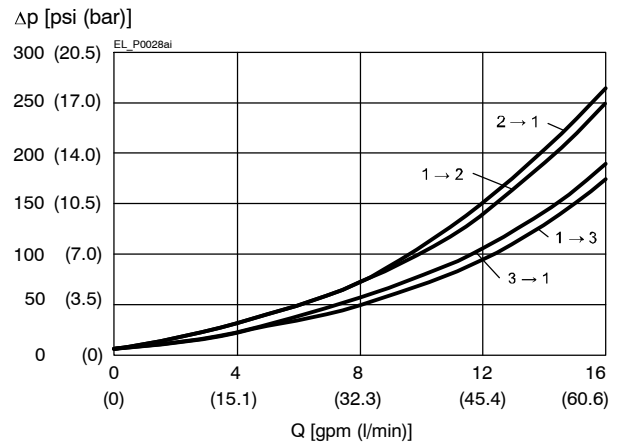
4 Performance graphs

measured with oil viscosity 33 mm²/s (cSt)

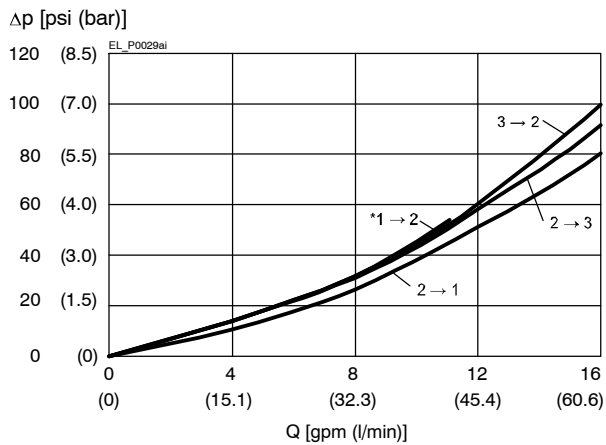
$\rho = f(l)$ Pressure adjustment characteristic – ESDV-12-3A



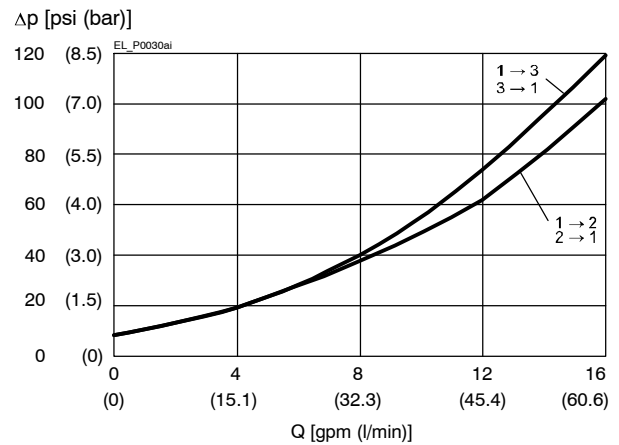
$\rho = f(l)$ Pressure adjustment characteristic – ESDV-12-3B



$\rho = f(l)$ Pressure adjustment characteristic – ESDV-12-3C



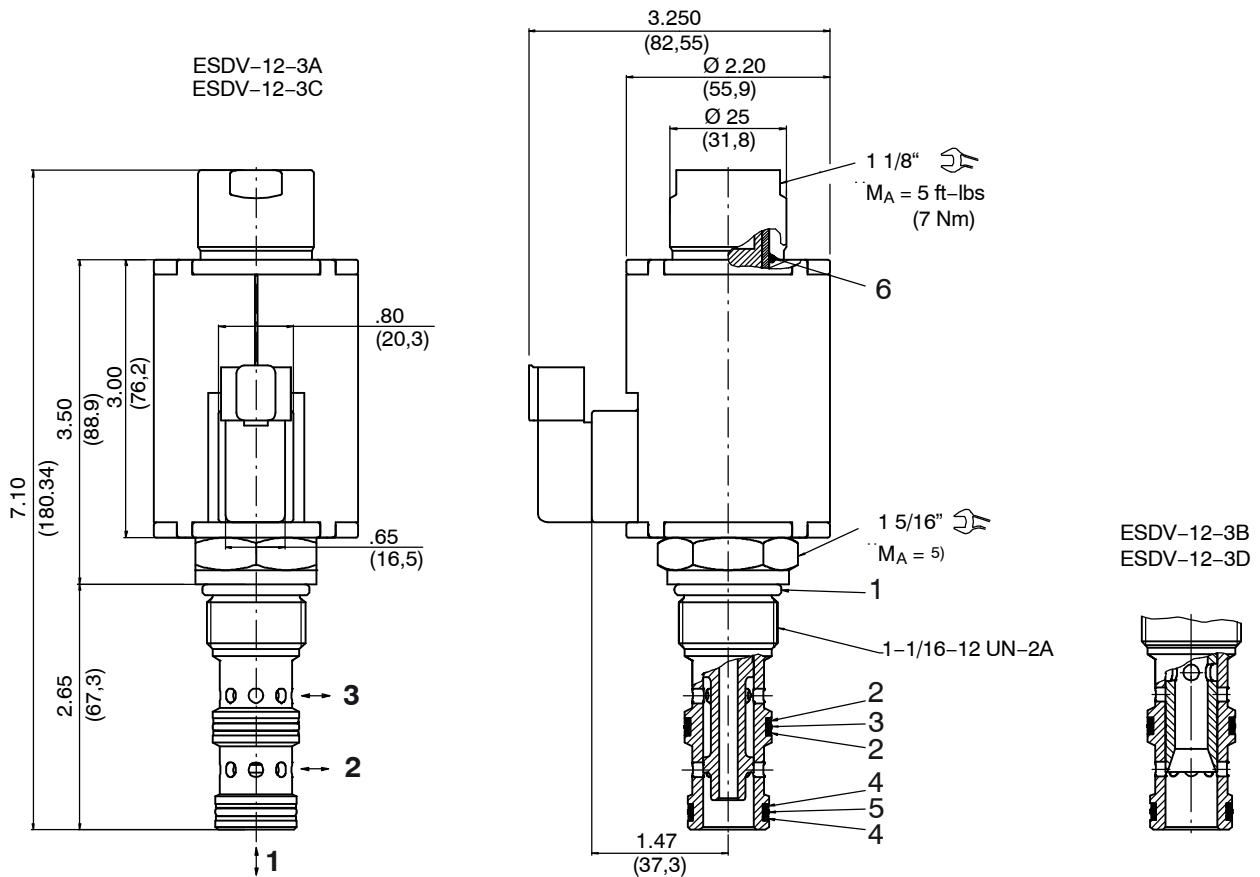
$\rho = f(l)$ Pressure adjustment characteristic – ESDV-12-3D



IMPORTANT!

* port 1 inlet flow limited to 11 gpm (41.6 l/min)

5 Dimensions & sectional view



Tightening torque M_A ⁵⁾

Cavity type	C1230
When fitted in aluminium	55...60 ft-lbs (74 - 81 [Nm])
When fitted in steel	70...75 ft-lbs (95 - 101 [Nm])

6 Installation information



IMPORTANT!

When fitting the cartridges, use the specified tightening torque. No adjustments are necessary, since the cartridges are set in the factory.



ATTENTION!

Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be undertaken is to check, and possibly replace, the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

Seal kit NBR no. SKN-1232-S1 ⁴⁾

Item	Qty.	Description	
1	1	O-ring no. 912 Ø 0.924 x 0.116 B-90	Inch
2	2	Backup ring 0.830 x 0.053 x 0.048 FI0751	Inch
3	1	O-ring no. 019 Ø 0.801 x 0.070 B-70	Inch
4	2	Backup ring 0.768 x 0.053 x 0.048 FI0751	Inch
5	1	O-ring no. 018 Ø 0.739 x 0.070 B-70	Inch
6	1	O-ring no. 020 Ø 0.864 x 0.070 V70	Inch



IMPORTANT!

⁴⁾ Seal kit with FKM (Viton) seals, no. SKV-1232-S1

7 Ordering code

Ex. ESDV - 12 - X - 3A - X - 24 D -

ESDV	=	directional valve, spool-type, direct acting
12	=	size SAE 12 / NG 10
N	=	NBR (Nitrile) seals (standard)
V	=	FKM (Viton) seals (special seals - please contact BUCHER)
3A	=	A Spool 3-way/2-position (closed transition)
3B	=	B Spool 3-way/2-position (closed transition)
3C	=	C Spool 3-way/2-position (open transition)
3D	=	D Spool 3-way/2-position (open transition)
0	=	cartridge only
04BA	=	line-mounting body G 1/2" -14 BSPP aluminum
04BS	=	line-mounting body G 1/2" -14 BSPP steel
06BA	=	line-mounting body G 3/4" -14 BSPP aluminum
06BS	=	line-mounting body G 3/4" -14 BSPP steel
10TA	=	line-mounting body SAE-10 aluminum
10TS	=	line-mounting body SAE-10 steel
12TA	=	line-mounting body SAE-12 aluminum
12TS	=	line-mounting body SAE-12 steel
...	=	voltage e.g. 24 (24 V)
D	=	current DC
		mating plug not supplied:
T	=	Deutsch axial plug connection DT04-2P (IP 67/69K) ¹⁾
TR	=	Deutsch axial plug connection DT04-2P (with protection diode, IP 67/69K) on request ¹⁾
S	=	1/4" Spade Terminals connection
F	=	flying leads (18 inch, [450 mm])
H	=	ISO 4400 / DIN 43 650 connection (IP 65)

Note:

¹⁾ only up to 48 V

8 Related data sheets

Reference	(Old no.)	Description
520-P-000050		Form tools
520-P-000330	(0-033.0)	Cavity type C1230
520-P-001020		Coils D 2.2/.875 for screw-in cartridge valves
520-P-000331	(0-033.1)	Line-mounting body, 12 series – 3 way

info.el@bucherhydraulics.com

www.bucherhydraulics.com/commoncavity

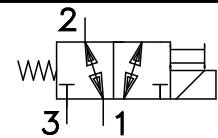
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Data is provided for the purpose of product description only, and must not be construed as warranted characteristics in the legal sense. The information does not relieve users from the duty of conducting their own evaluations and tests. Because the products are subject to continual improvement, we reserve the right to amend the product specifications contained in this catalogue.

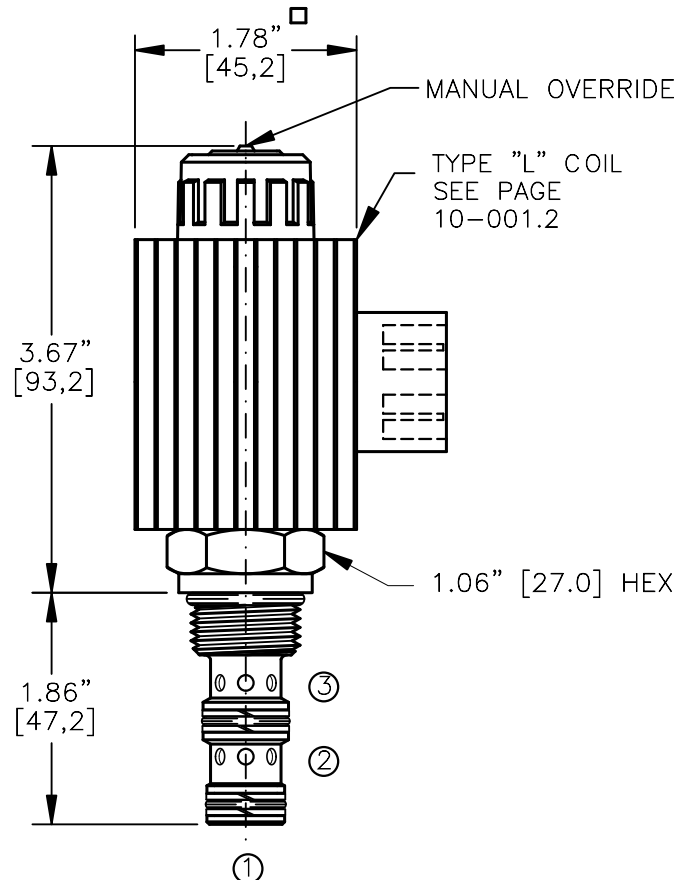
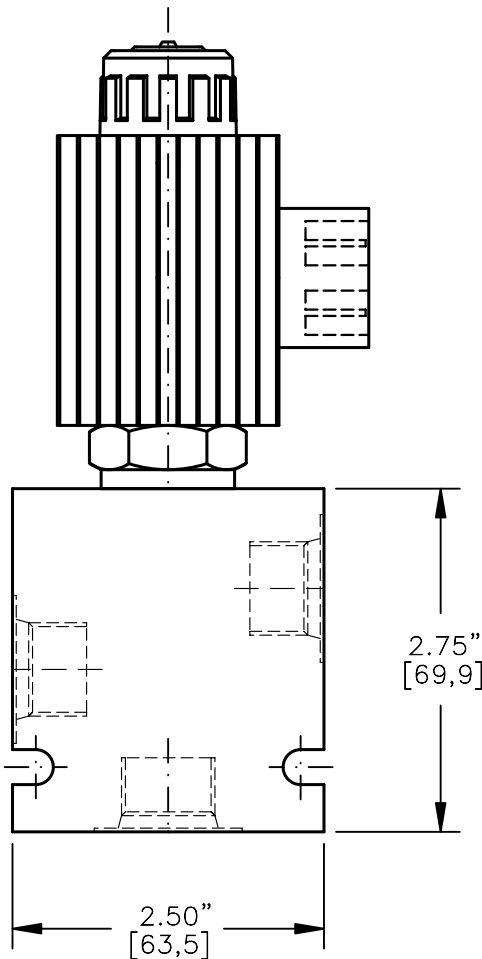
Classification: 430.300.330.305.315.380

SOLENOID VALVE, 3-WAY, 2-POSITION.
DIRECT ACTING, SPOOL TYPE (3/2)



TORQUE:

Steel = 55/60 Ft-Lb. [74/81 Nm]
Aluminum = 35/40 Ft-Lb. [47/54 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-032.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.
4. FOR SOFT SHIFT SOLENOID VALVE SEE PAGE 10-002.0

EMDV-10-X-3C-X-XXX X

BASIC

SIZE
10 = 7/8"-14UNF

SEALS
N = BUNA "N" = VITON
V

TYPE
3C = "C" SPOOL
3-WAY, 2-POSITION

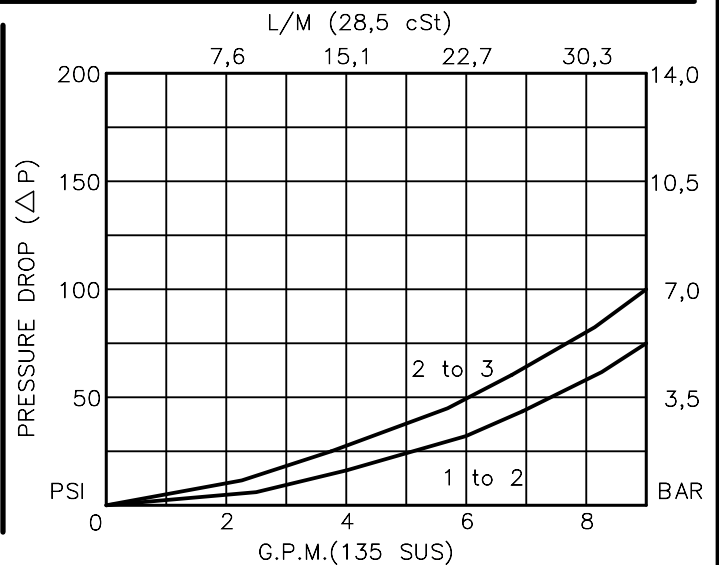
PORTS
0 = CARTRIDGE ONLY
02BX = G 1/4" BSPP
03BX = G 3/8" BSPP
06TX = SAE - #6
08TX = SAE - #8

"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS

L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS
12D = 12 VDC 3.00
24D = 24 VDC 1.50
36D = 36 VDC 1.00
48D = 48 VDC 0.75
110D = 110 VDC 0.33
115A = 115 VAC 0.32
230A = 230 VAC 0.16



**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****DESCRIPTION**

This unit is a THREE-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 2 and port 3 is blocked.

When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 2 and 3 and port 1 is blocked. This valve shifts in an open position.

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

Industry common cavity.

**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI (350 Bar)

PROOF PRESSURE: 10,000 PSI (700 Bar)

FLOW: 8.0 GPM [30 l/m] See performance chart.

INTERNAL LEAKAGE: 5 cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum - Anodized.

5000 PSI [350 Bar] = Steel - Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-1032 Buna "N"

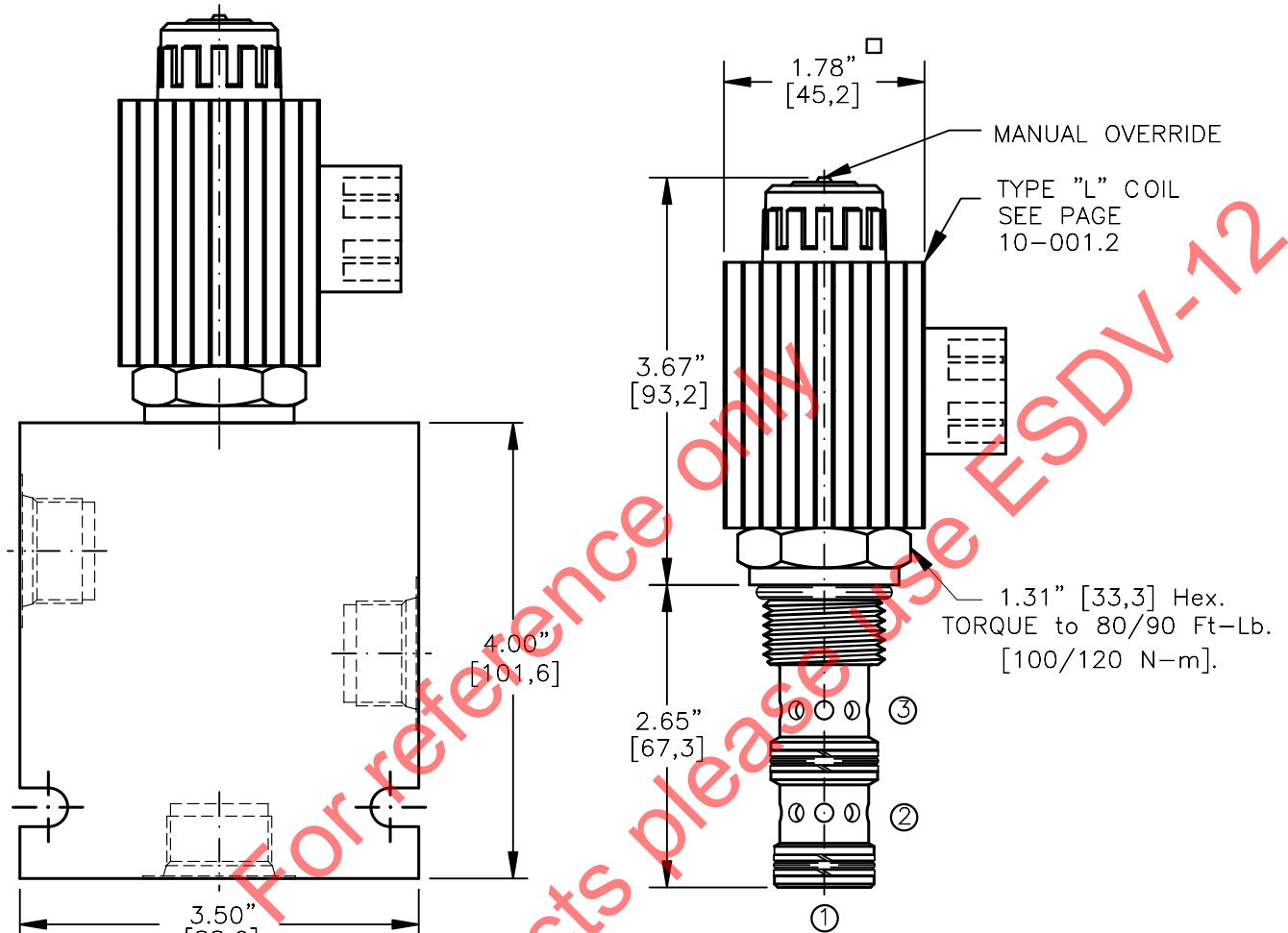
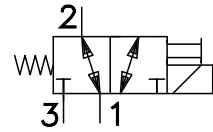
SKV-1032 Viton

INSTALLATION: No restrictions.

WEIGHT: 1.95 lb [.88 kg] cartridge with coil only.

VALVE CAVITY: #C1030, See Page 0-032.0.

SOLENOID VALVE, 3-WAY, 2-POSITION
DIRECT ACTING, SPOOL TYPE (3/2)



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-033.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.
4. FOR SOFT SHIFT SOLENOID VALVE SEE PAGE 10-002.0

EMDV-12-X-3C-X-XXX X

BASIC

SIZE

12 = 1.062"-12UNF

SEALS

N = BUNA "N"

V = VITON

TYPE

3C = "C" SPOOL
3-WAY, 2-POSITION

PORTS

0 = CARTRIDGE ONLY
04BX = G 1/2" BSPP
06BX = G 3/4" BSPP
10TX = SAE - #10
12TX = SAE - #12

"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS

L = 18GA. 24" LEADS

T = SPADE TERM.

B = BOLT TERM.

G = DIN43650

W = WEATHER-PACK

D = DEUTSCH-DT04-2P

M = METRI-PACK CONN.

VOLTAGE AMPS

12D = 12 VDC 3.00

24D = 24 VDC 1.50

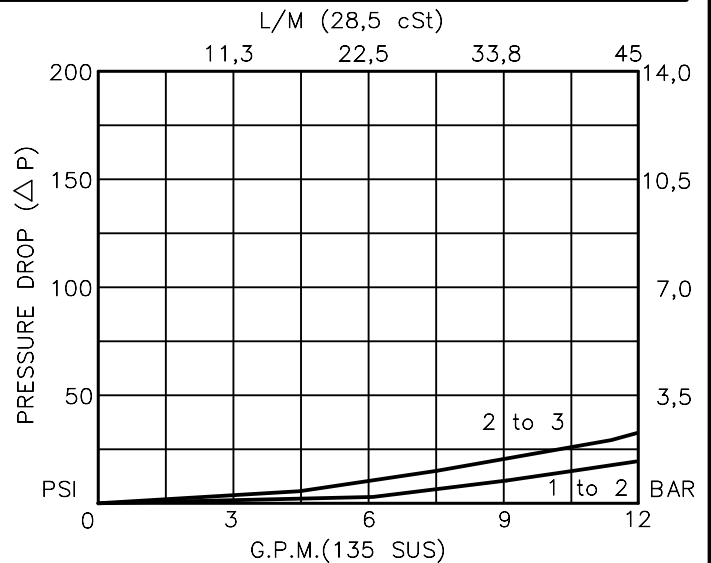
36D = 36 VDC 1.00

48D = 48 VDC 0.75

110D = 110 VDC 0.33

115A = 115 VAC 0.32

230A = 230 VAC 0.16



**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****DESCRIPTION**

This unit is a THREE-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 2 and port 3 is blocked.

When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 2 and 3 and port 1 is blocked. The valve shifts in an open position.

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

For reference only
For new projects please use ESDV-12

**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 12.0 GPM [46 l/m] See performance chart.

INTERNAL LEAKAGE: 5 cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-1232 Buna "N"

SKV-1232 Viton

INSTALLATION: No restrictions.

WEIGHT: 2.06 lb [.94 kg] cartridge with coil only.

VALVE CAVITY: #C1230, See Page 0-033.0

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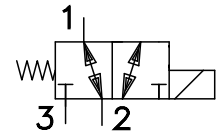
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The technical information in this catalog, may contain calculated figures (for reference only) and not actual performance data for this product.

Data is provided for the purpose of product description only, and must not be construed as warranted characteristics in the legal sense.

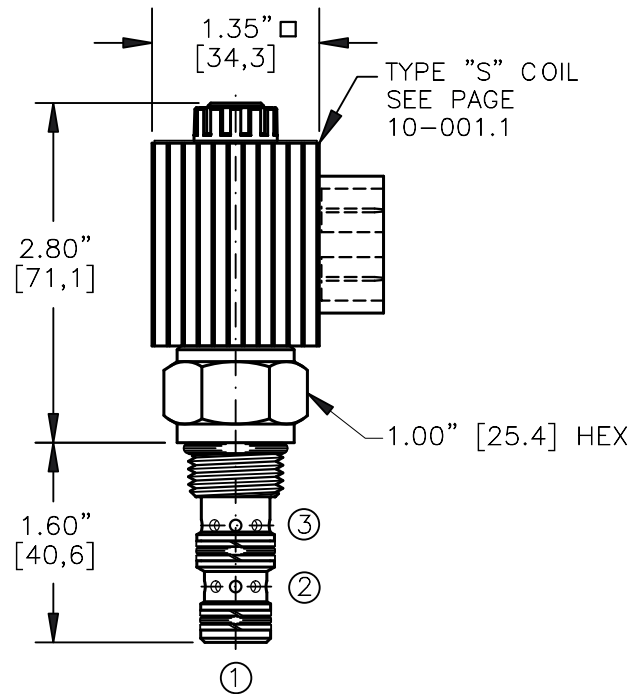
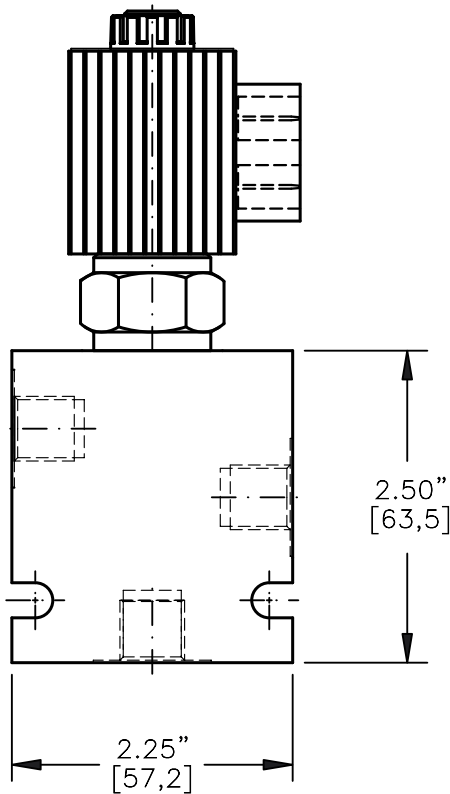
The information does not relieve users from the duty of conducting their own evaluations and tests. Because the products are subject to continual improvement, we reserve the right to amend the product specifications contained in this catalogue.

SOLENOID VALVE, 3-WAY, 2-POSITION
DIRECT ACTING, SPOOL TYPE (3/2)



TORQUE:

Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-031.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. FOR "AC" COILS USE RECTIFIED DIN CONNECTOR 20828.

EMDV-08-X-3J-X-XXX X

BASIC

SIZE
08 = 3/4"-16UNF

SEALS

N = BUNA "N"
V = VITON

TYPE

3J = "J" SPOOL
3-WAY, 2-POSITION

PORTS

0 = CARTRIDGE ONLY
02BX = G 1/4" BSSP
06TX = SAE - #6

"A" = ALUM. HOUSING
"S" = STEEL HOUSING

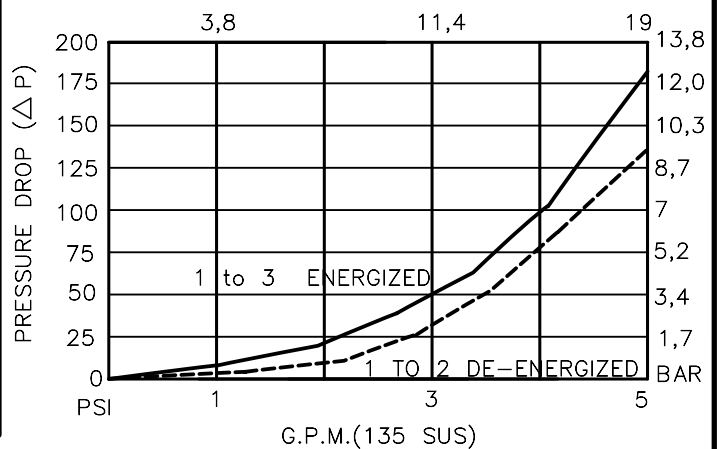
TERMINALS

L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS

12D = 12 VDC 1.7
24D = 24 VDC .9
36D = 36 VDC .6
48D = 48 VDC .5
115D = 115 VDC .2

L/M (28,5 cSt)



**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****DESCRIPTION**

This unit is a THREE-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 2 and port 3 is blocked. When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 3 and port 2 is blocked. This valve shifts in a closed position.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted spool & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 5.0 GPM [19 l/m] See performance chart.

INTERNAL LEAKAGE: 5 cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum - Anodized.

5000 PSI [350 Bar] = Steel - Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-0832 Buna "N"

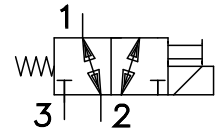
SKV-0832 Viton

INSTALLATION: No restrictions.

WEIGHT: .95 lb [0.43 kg] cartridge with coil only.

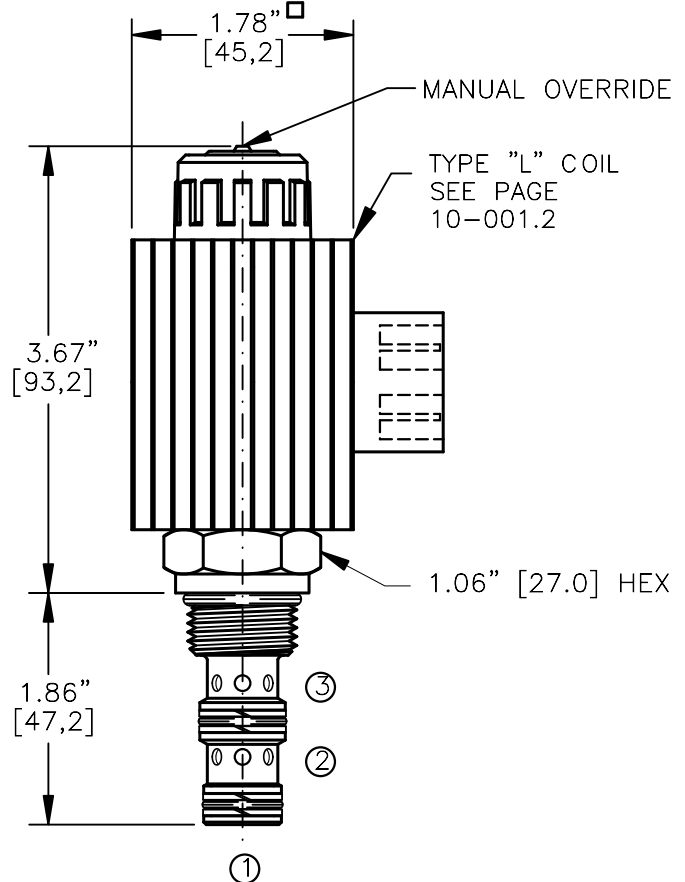
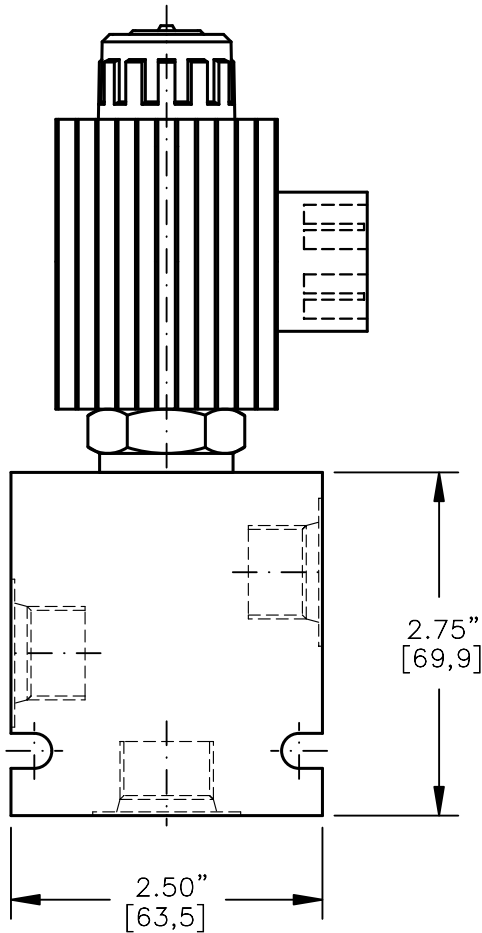
VALVE CAVITY: #C0830, See Page 0-031.0.

SOLENOID VALVE, 3-WAY, 2-POSITION
DIRECT ACTING, SPOOL TYPE (3/2)



TORQUE:

Steel = 55/60 Ft-Lb. [74/81 Nm]
Aluminum = 35/40 Ft-Lb. [47/54 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-032.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.
4. FOR SOFT SHIFT SOLENOID VALVE SEE PAGE 10-002.0

EMDV-10-X-3B-X-XXX X

BASIC

SIZE
10 = 7/8"-14UNF

SEALS

N = BUNA "N"
V = VITON

TYPE

3B = "B" SPOOL
3-WAY, 2-POSITION

PORTS

0 = CARTRIDGE ONLY
02BX = G 1/4" BSPP
03BX = G 3/8" BSPP
06TX = SAE - #6
08TX = SAE - #8

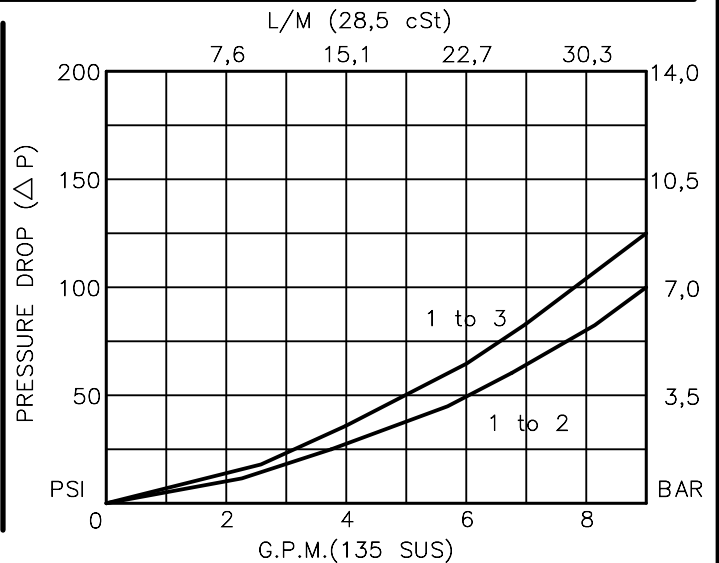
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS

L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS

12D = 12 VDC 3.00
24D = 24 VDC 1.50
36D = 36 VDC 1.00
48D = 48 VDC 0.75
110D = 110 VDC 0.33
115A = 115 VAC 0.32
230A = 230 VAC 0.16



**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****DESCRIPTION**

This unit is a THREE-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 2, port 3 is blocked.

When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 3 and port 2 is blocked. This valve shifts in a closed position.

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

Industry common cavity.

**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
FLOW: 8.0 GPM [30 l/m] See performance chart.
INTERNAL LEAKAGE: 5 cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum - Anodized.
5000 PSI [350 Bar] = Steel - Unplated.
OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]
AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]
Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])
OPERATING MEDIA: All general purpose hydraulic fluids such as
MIL-H-5606, SAE-#10, SAE-#20, etc.
RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.
* Pull-in: 50 ms
* Drop-Out: 50 ms
SEAL KIT: SKN-1032 Buna "N"
SKV-1032 Viton
INSTALLATION: No restrictions.
WEIGHT: 1.95 lb [.88 kg] cartridge with coil only.
VALVE CAVITY: #C1030, See Page 0-032.0.

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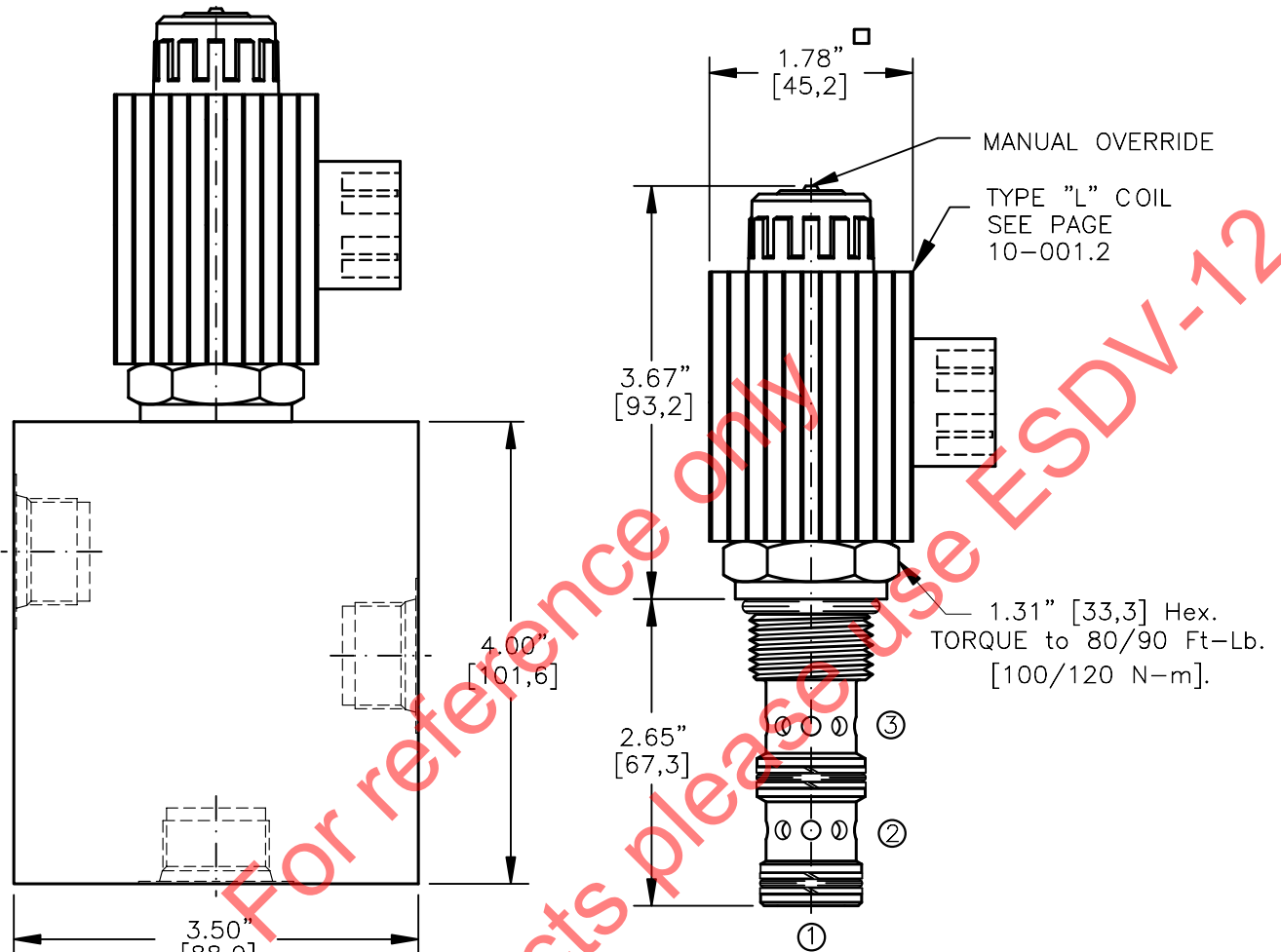
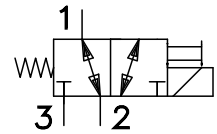
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SOLENOID VALVE, 3-WAY, 2-POSITION.
DIRECT ACTING, SPOOL TYPE (3/2)



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-033.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.
4. FOR SOFT SHIFT SOLENOID VALVE SEE PAGE 10-002.0

EMDV-12-X-3B-X-XXX X

BASIC

SIZE

12 = 1.062"-12UNF

SEALS

N = BUNA "N"
V = VITON

TYPE

3B = "B" SPOOL
3-WAY, 2-POSITION

PORTS

0 = CARTRIDGE ONLY
04BX = G 1/2" BSPP
06BX = G 3/4" BSPP
10TX = SAE - #10
12TX = SAE - #12

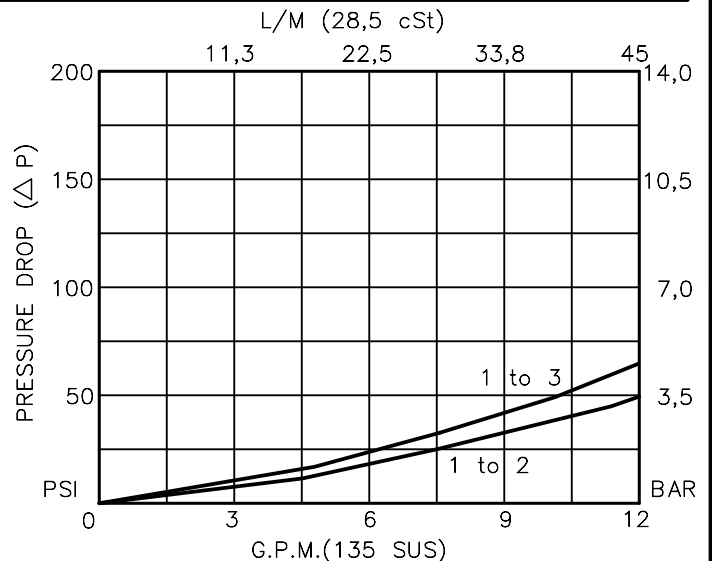
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS

L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS

12D = 12 VDC 3.00
24D = 24 VDC 1.50
36D = 36 VDC 1.00
48D = 48 VDC 0.75
110D = 110 VDC 0.33
115A = 115 VAC 0.32
230A = 230 VAC 0.16



**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****DESCRIPTION**

This unit is a THREE-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 2, port 3 is blocked.

When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 3 and port 2 is blocked. The valve shifts in closed position.

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

For reference only please use ESDV-12
For new projects please use ESDV-12

**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 12.0 GPM [46 l/m] See performance chart.

INTERNAL LEAKAGE: 5 cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])OPERATING MEDIA: All general purpose hydraulic fluids such as
MIL-H-5606, SAE-#10, SAE-#20, etc.RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-1232 Buna "N"

SKV-1232 Viton

INSTALLATION: No restrictions.

WEIGHT: 2.06 lb [.94 kg] cartridge with coil only.

VALVE CAVITY: #C1230, See Page 0-033.0.

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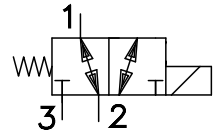
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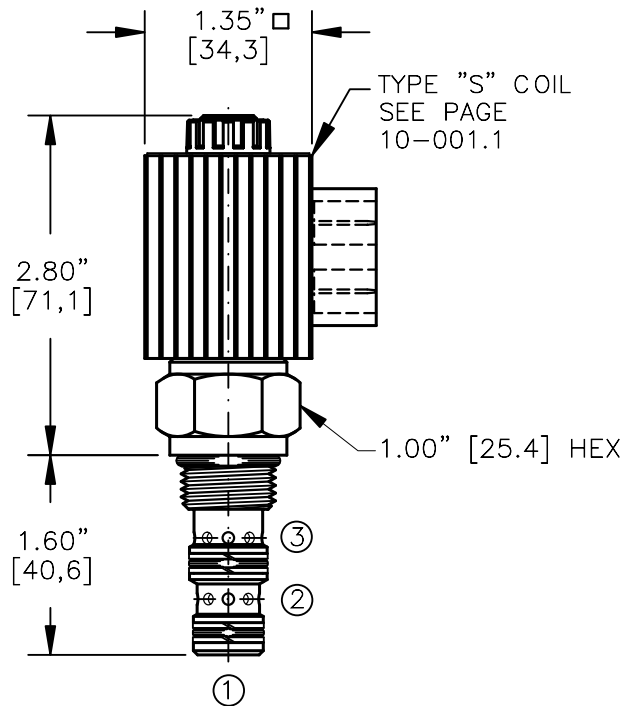
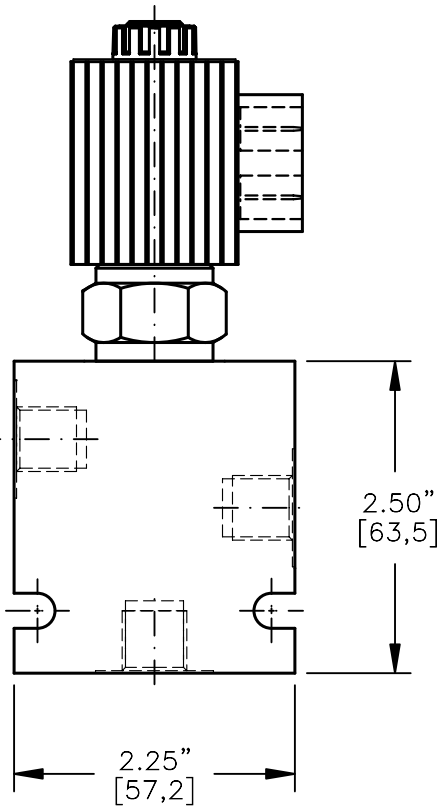
The information does not relieve users from the duty of conducting their own evaluations and tests. Because the products are subject to continual improvement, we reserve the right to amend the product specifications contained in this catalogue.

SOLENOID VALVE, 3-WAY, 2-POSITION.
DIRECT ACTING, SPOOL TYPE (3/2)



TORQUE:

Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-031.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. FOR "AC" COILS USE RECTIFIED DIN CONNECTOR 20828.

EMDV-08-X-3K-X-XXX X

BASIC

SIZE
08 = 3/4"-16UNF

SEALS

N = BUNA "N"
V = VITON

TYPE

3K = "K" SPOOL
3-WAY, 2-POSITION

PORTS

0 = CARTRIDGE ONLY
02BX = G 1/4" BSSP
06TX = SAE - #6

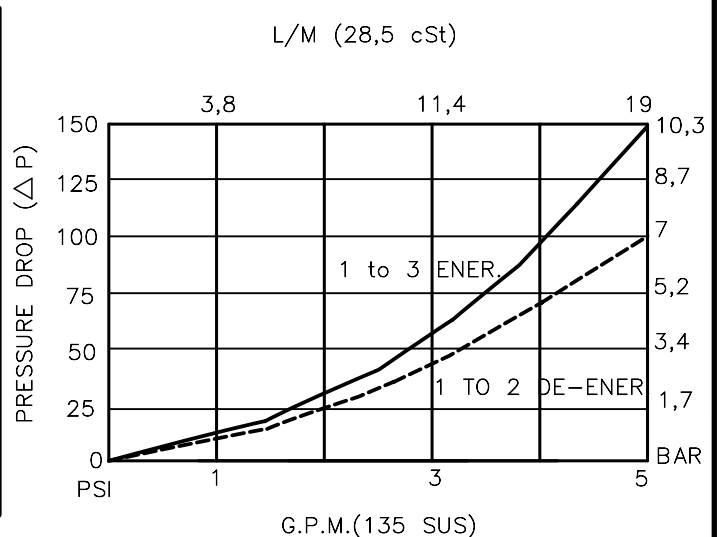
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS

L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS

12D = 12 VDC 1.7
24D = 24 VDC .9
36D = 36 VDC .6
48D = 48 VDC .5
115D = 115 VDC .2



**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****DESCRIPTION**

This unit is a THREE-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 2 and port 3 is blocked. When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 3 and port 2 is blocked. This valve shifts in an open position.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted spool & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 5.0 GPM [19 l/m] See performance chart.

INTERNAL LEAKAGE: 5 cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum - Anodized.

5000 PSI [350 Bar] = Steel - Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as
MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-0832 Buna "N"

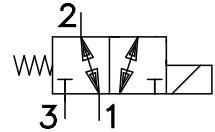
SKV-0832 Viton

INSTALLATION: No restrictions.

WEIGHT: .95 lb [0.43 kg] cartridge with coil only.

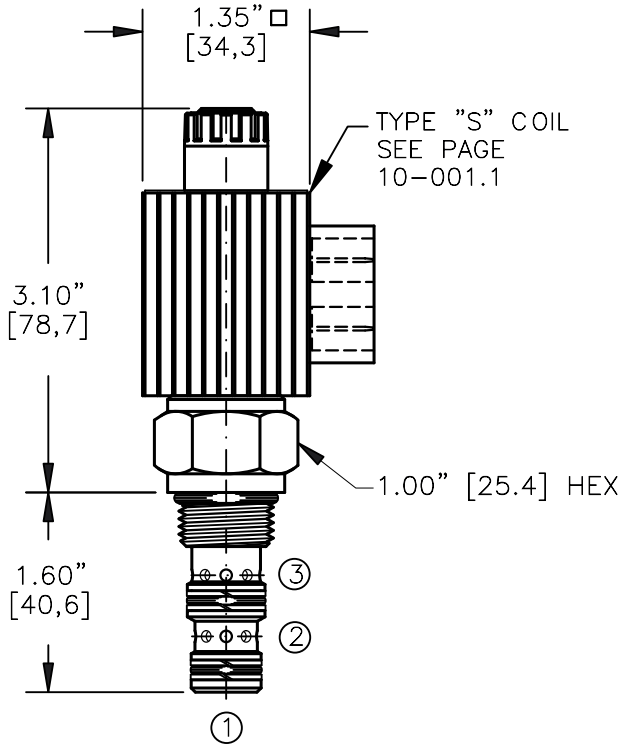
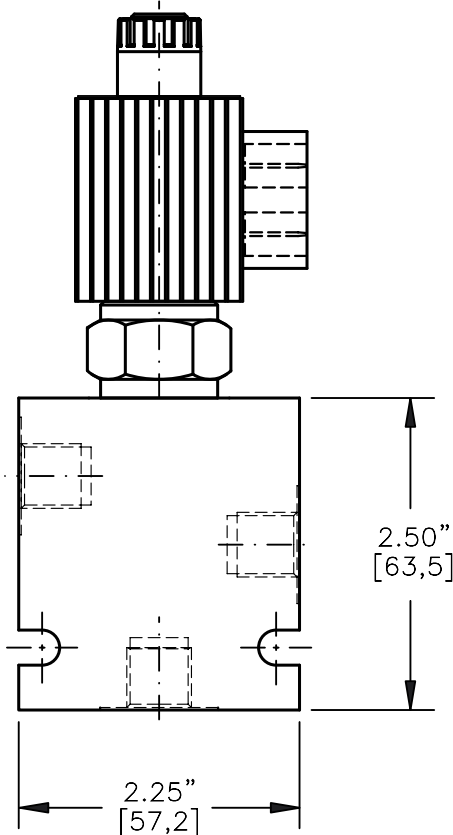
VALVE CAVITY: #C0830, See Page 0-031.0.

SOLENOID VALVE, 3-WAY, 2-POSITION
OPEN CENTER, SPOOL TYPE (3/2)



TORQUE:

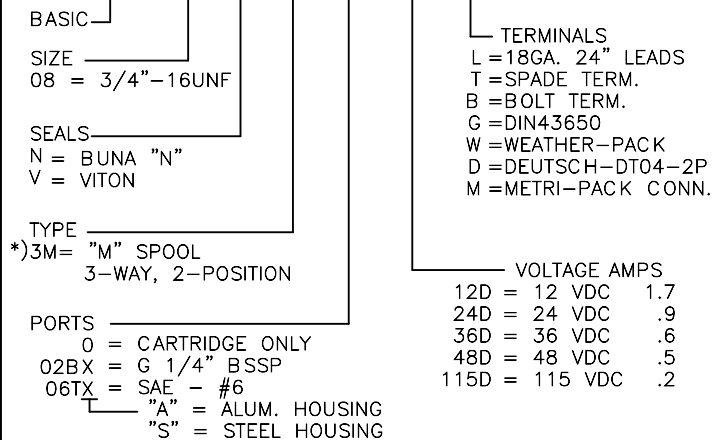
Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]



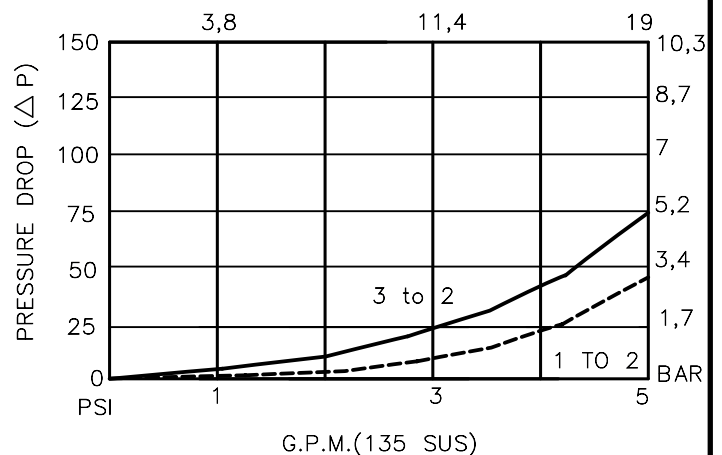
NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-031.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. FOR "AC" COILS USE RECTIFIED DIN CONNECTOR 20828.

EMDV-08-X-3M-X-XXX X



L/M (28,5 cSt)



*) on request

**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****DESCRIPTION**

This unit is a THREE-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 2 and port 3 is blocked. When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 2 and 3 and port 1 is blocked. This valve shifts in a open position.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted spool & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 5.0 GPM [19 l/m] See performance chart.

INTERNAL LEAKAGE: 5 cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as
MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-0832 Buna "N"

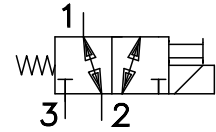
SKV-0832 Viton

INSTALLATION: No restrictions.

WEIGHT: .95 lb [0.43 kg] cartridge with coil only.

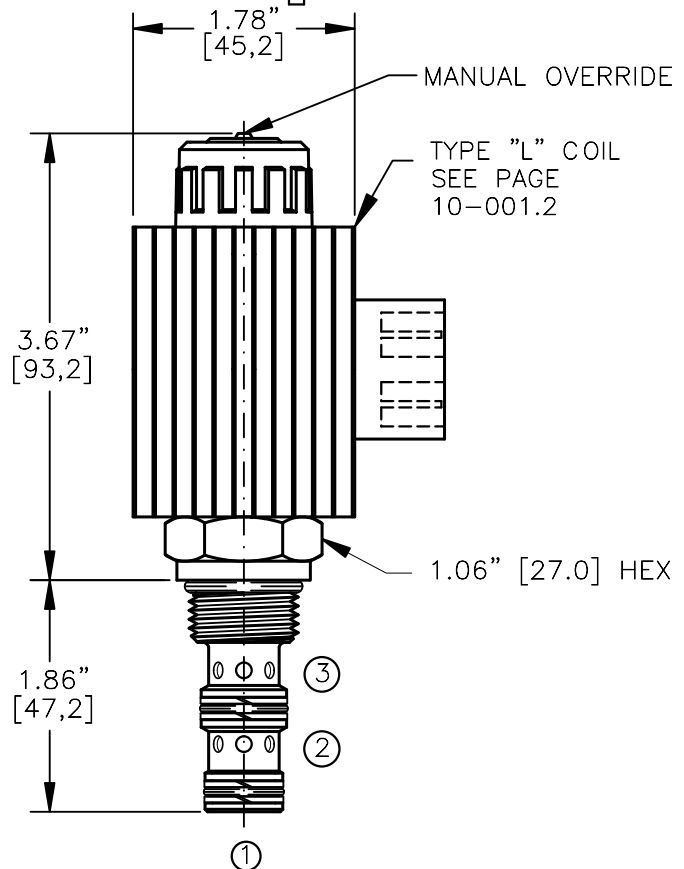
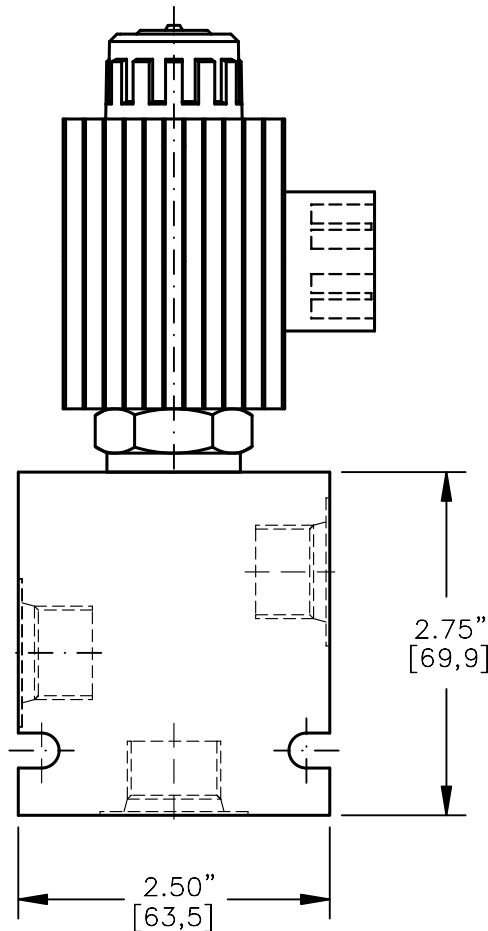
VALVE CAVITY: #C0830, See Page 0-031.0.

SOLENOID VALVE, 3-WAY, 2-POSITION.
DIRECT ACTING, SPOOL TYPE (3/2)



TORQUE:

Steel = 55/60 Ft-Lb. [74/81 Nm]
Aluminum = 35/40 Ft-Lb. [47/54 Nm]



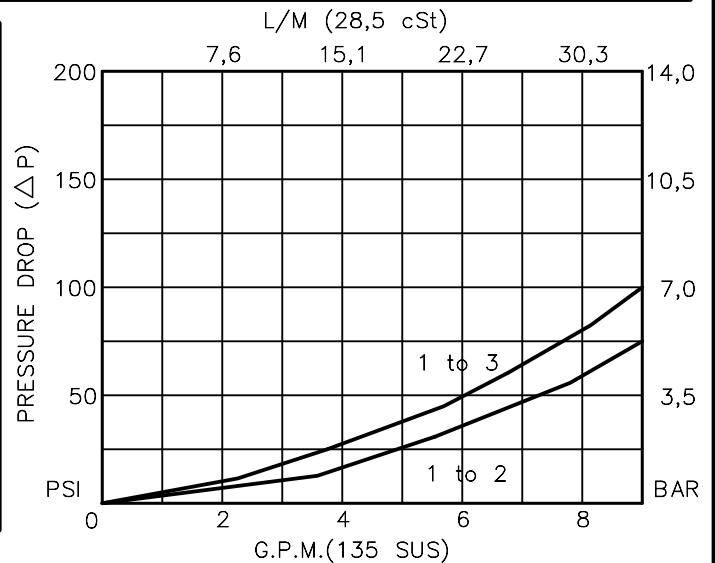
NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-032.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.
4. FOR SOFT SHIFT SOLENOID VALVE SEE PAGE 10-002.0

EMDV-10-X-3D-X-XXX X

BASIC _____
 SIZE _____
 10 = 7/8"-14UNF
 SEALS _____
 N = BUNA "N" = VITON
 V _____
 TYPE _____
 3D = "D" SPOOL
 3-WAY, 2-POSITION
 PORTS _____
 0 = CARTRIDGE ONLY
 02BX = G 1/4" BSPP
 03BX = G 3/8" BSPP
 06TX = SAE - #6
 08TX = SAE - #8
 "A" = ALUM. HOUSING
 "S" = STEEL HOUSING

TERMINALS
 L = 18GA. 24" LEADS
 T = SPADE TERM.
 B = BOLT TERM.
 G = DIN43650
 W = WEATHER-PACK
 D = DEUTSCH-DT04-2P
 M = METRI-PACK CONN.
 VOLTAGE AMPS
 12D = 12 VDC 3.00
 24D = 24 VDC 1.50
 36D = 36 VDC 1.00
 48D = 48 VDC 0.75
 110D = 110 VDC 0.33
 115A = 115 VAC 0.32
 230A = 230 VAC 0.16



**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****DESCRIPTION**

This unit is a THREE-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 2 and port 3 is blocked. When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 3 and port 2 is blocked. This valve shifts in an open position. Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil. Interchangeable solenoid coils & terminations options available. Hardened precision fitted spool & sleeve provides reliable, long life. Very efficient, wet-armature solenoid core tube construction. All external carbon steel parts are plated for longer life against the elements. All cartridge valves are 100% functionally tested. Industry common cavity.

**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 8.0 GPM [30 l/m] See performance chart.

INTERNAL LEAKAGE: 5 cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])OPERATING MEDIA: All general purpose hydraulic fluids such as
MIL-H-5606, SAE-#10, SAE-#20, etc.RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-1032 Buna "N"

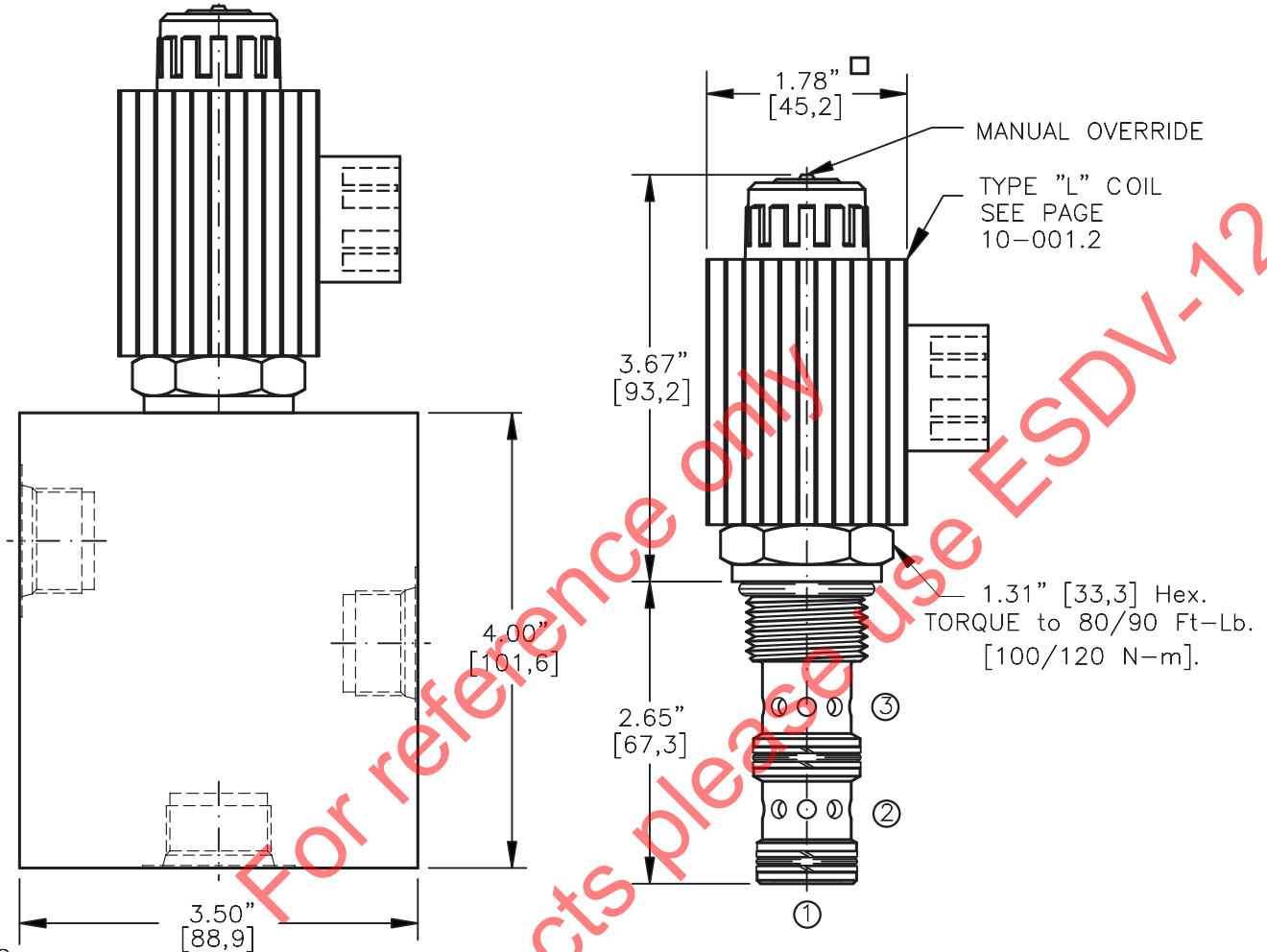
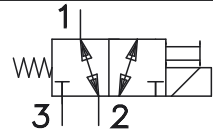
SKV-1032 Viton

INSTALLATION: No restrictions.

WEIGHT: 1.95 lb [.88 kg] cartridge with coil only.

VALVE CAVITY: #C1030, See Page 0-032.0.

SOLENOID VALVE, 3-WAY, 2-POSITION.
DIRECT ACTING, SPOOL TYPE (3/2)



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-033.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.
4. FOR SOFT SHIFT SOLENOID VALVE SEE PAGE 10-002.0

EMDV-12-X-3D-X-XXX X

BASIC

SIZE

12 = 1.062"-12UNF

SEALS

N = BUNA "N"

V = VITON

TYPE

3D = "D" SPOOL

3-WAY, 2-POSITION

PORTS

0 = CARTRIDGE ONLY

04BX = G 1/2" BSPP

06BX = G 3/4" BSPP

10TX = SAE - #10

12TX = SAE - #12

"A" = ALUM. HOUSING

"S" = STEEL HOUSING

TERMINALS

L = 18GA. 24" LEADS

T = SPADE TERM.

B = BOLT TERM.

G = DIN43650

W = WEATHER-PACK

D = DEUTSCH-DT04-2P

M = METRI-PACK CONN.

VOLTAGE AMPS

12D = 12 VDC 3.00

24D = 24 VDC 1.50

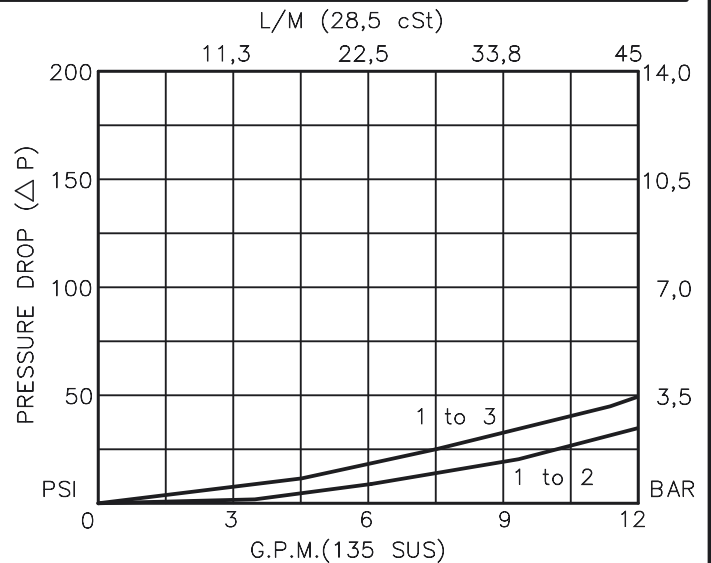
36D = 36 VDC 1.00

48D = 48 VDC 0.75

110D = 110 VDC 0.33

115A = 115 VAC 0.32

230A = 230 VAC 0.16



**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****DESCRIPTION**

This unit is a THREE-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 2 and port 3 is blocked.

When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 3 and port 2 is blocked. The valve shifts in an open position.

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

For reference only please use ESDV-12
For new projects

**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 12.0 GPM [46 l/m] See performance chart.

INTERNAL LEAKAGE: 5 cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])OPERATING MEDIA: All general purpose hydraulic fluids such as
MIL-H-5606, SAE-#10, SAE-#20, etc.RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-1232 Buna "N"

SKV-1232 Viton

INSTALLATION: No restrictions.

WEIGHT: 2.06 lb [.94 kg] cartridge with coil only.

VALVE CAVITY: #C1230, See Page 0-033.0.

info.el@bucherhydraulics.comwww.bucherhydraulics.com/commoncavity

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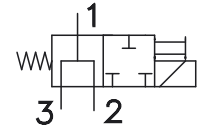
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The technical information in this catalog, may contain calculated figures (for reference only) and not actual performance data for this product.

Data is provided for the purpose of product description only, and must not be construed as warranted characteristics in the legal sense.

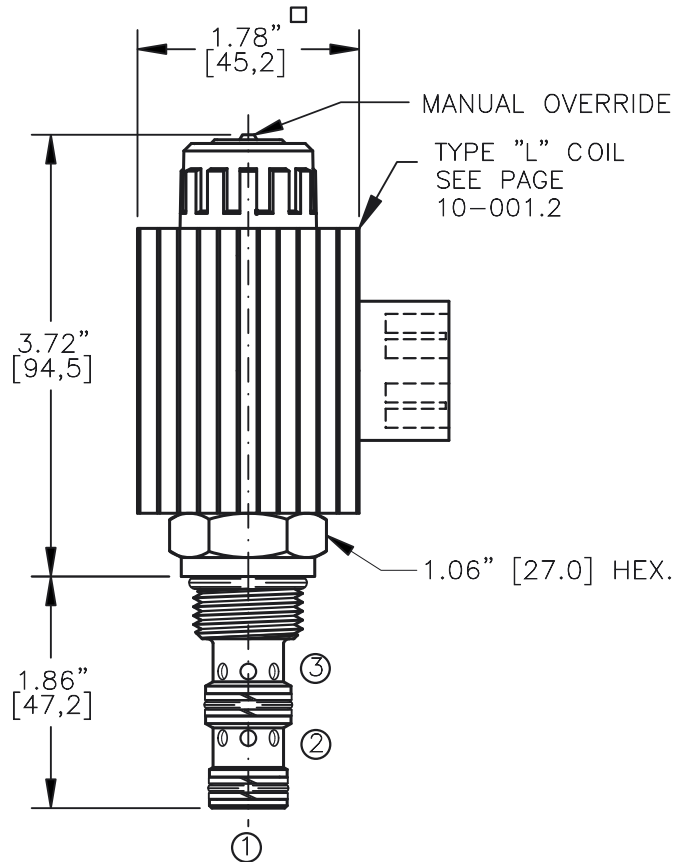
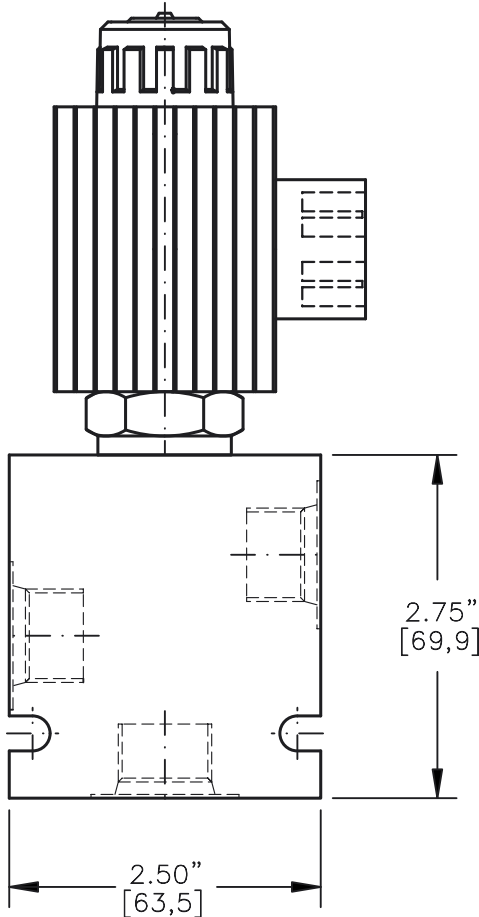
The information does not relieve users from the duty of conducting their own evaluations and tests. Because the products are subject to continual improvement, we reserve the right to amend the product specifications contained in this catalogue.

SOLENOID VALVE, 3-WAY,
OPEN CENTER SHIFT, SPOOL TYPE



TORQUE:

Steel = 55/60 Ft-Lb. [74/81 Nm]
Aluminum = 35/40 Ft-Lb. [47/54 Nm]



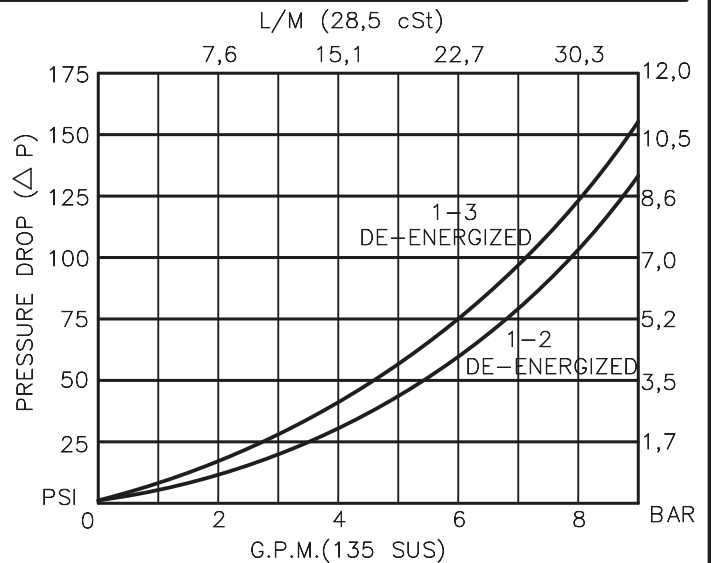
NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-032.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED..

EMDV-10-X-3E-X-XXX X

BASIC _____
 SIZE _____
 10 = 7/8"-14UNF
 SEALS _____
 N = BUNA "N" = VITON
 V _____
 TYPE _____
 3E = "E" SPOOL
 3-WAY, 2-POSITION
 PORTS _____
 0 = CARTRIDGE ONLY
 02BX = G 1/4" BSPP
 03BX = G 3/8" BSPP
 06TX = SAE - #6
 08TX = SAE - #8
 "A" = ALUM. HOUSING
 "S" = STEEL HOUSING

TERMINALS
 L = 18GA. 24" LEADS
 T = SPADE TERM.
 B = BOLT TERM.
 G = DIN43650
 W = WEATHER-PACK
 D = DEUTSCH-DT04-2P
 M = METRI-PACK CONN.
 VOLTAGE AMPS
 12D = 12 VDC 3.00
 24D = 24 VDC 1.50
 36D = 36 VDC 1.00
 48D = 48 VDC 0.75
 110D = 110 VDC 0.33
 115A = 115 VAC 0.32
 230A = 230 VAC 0.16



SOLENOID VALVE 3-WAY, OPEN CENTER SHIFT, SPOOL TYPE

DESCRIPTION

This unit is a THREE-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, all ports are open.

When solenoid coil is energized, all ports are closed.

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

Industry common cavity.

**SOLENOID VALVE 3-WAY,
OPEN CENTER SHIFT, SPOOL TYPE****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 8.0 GPM [30 l/m] See performance chart.

INTERNAL LEAKAGE: 5 cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as
MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-1032 Buna "N"

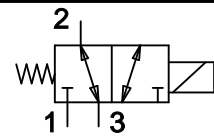
SKV-1032 Viton

INSTALLATION: No restrictions.

WEIGHT: 1.95 lb [.88 kg] cartridge with coil only.

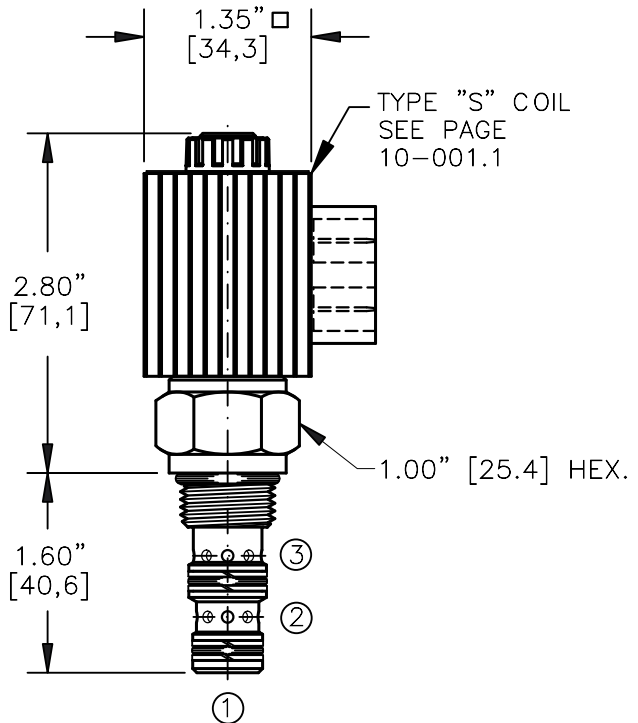
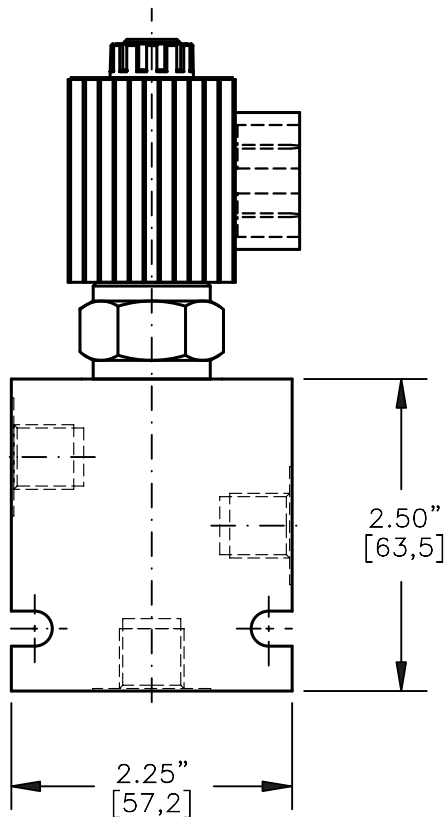
VALVE CAVITY: #C1030, See Page 0-032.0.

SOLENOID VALVE, 3-WAY, 2-POSITION
CLOSED CENTER, SPOOL TYPE (3/2)



TORQUE:

Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-031.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. FOR "AC" COILS USE RECTIFIED DIN CONNECTOR 20828.

EMDV-08-X-3N-X-XXX X

BASIC

SIZE
08 = 3/4"-16UNF

SEALS
N = BUNA "N" = VITON
V

TYPE
3N = "N" SPOOL
3-WAY, 2-POSITION

PORTS
0 = CARTRIDGE ONLY
02BX = G 1/4" BSSP
06TX = SAE - #6

"A" = ALUM. HOUSING
"S" = STEEL HOUSING

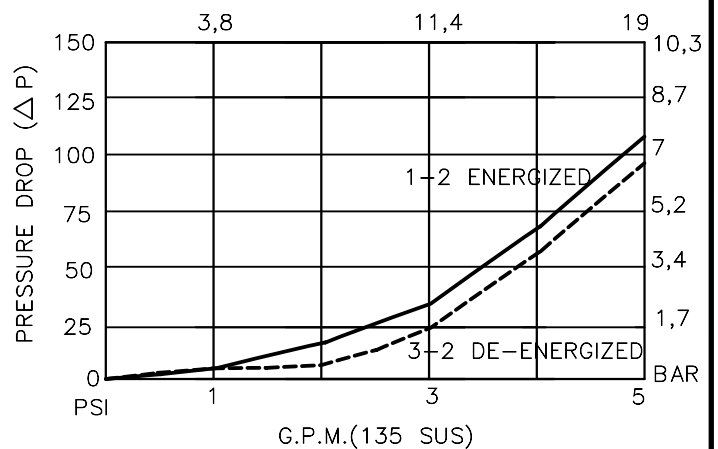
TERMINALS

L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS

12D = 12 VDC 1.7
24D = 24 VDC .9
36D = 36 VDC .6
48D = 48 VDC .5
115D = 115 VDC .2

L/M (28,5 cSt)



**SOLENOID VALVE 3-WAY, 2-POSITION,
CLOSED CENTER, SPOOL TYPE (3/2)****DESCRIPTION**

This unit is a THREE-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 2 and 3 and port 1 is blocked.

When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 2 and port 3 is blocked. This valve shifts in a closed position.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

Industry common cavity.

**SOLENOID VALVE 3-WAY, 2-POSITION,
CLOSED CENTER, SPOOL TYPE (3/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 5.0 GPM [19 l/m] See performance chart.

INTERNAL LEAKAGE: 5 cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum - Anodized.

5000 PSI [350 Bar] = Steel - Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as
MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-0832 Buna "N"

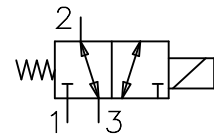
SKV-0832 Viton

INSTALLATION: No restrictions.

WEIGHT: .95 lb [0.43 kg] cartridge with coil only.

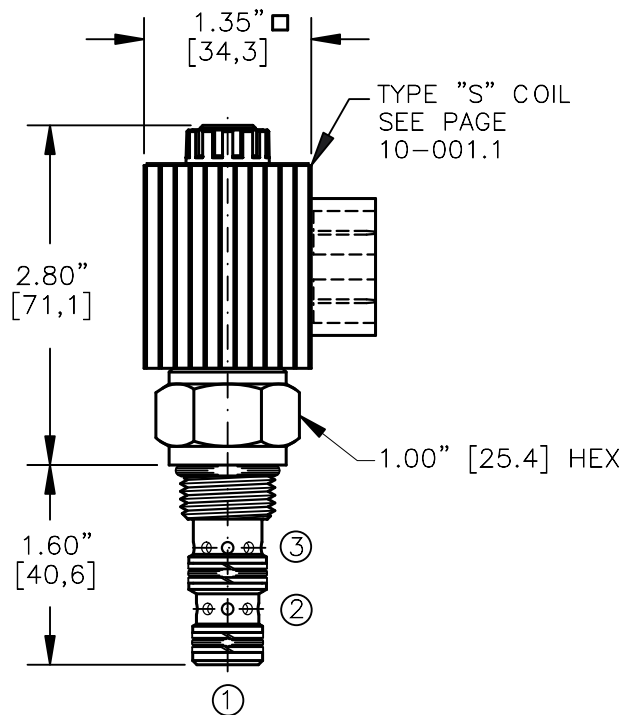
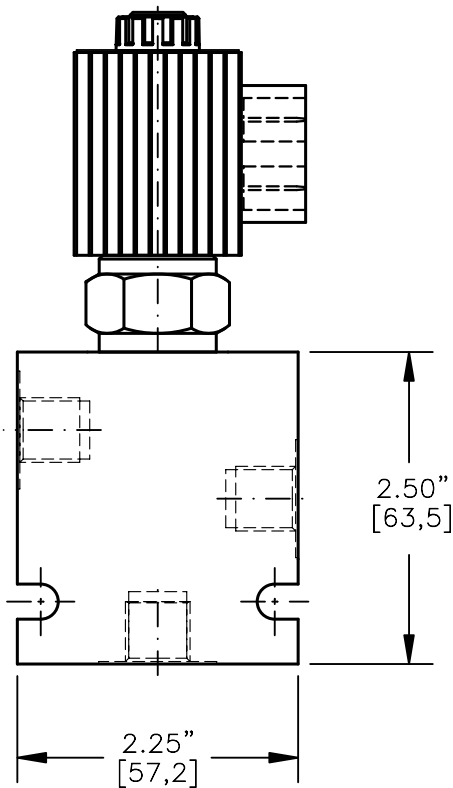
VALVE CAVITY: #C0830, See Page 0-031.0.

SOLENOID VALVE, 3-WAY, 2-POSITION
OPEN CENTER, SPOOL TYPE (3/2)



TORQUE:

Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-031.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. FOR "AC" COILS USE RECTIFIED DIN CONNECTOR 20828.

EMDV-08-X-3P-X-XXX X

BASIC

SIZE
08 = 3/4"-16UNF

SEALS
N = BUNA "N" = VITON
V

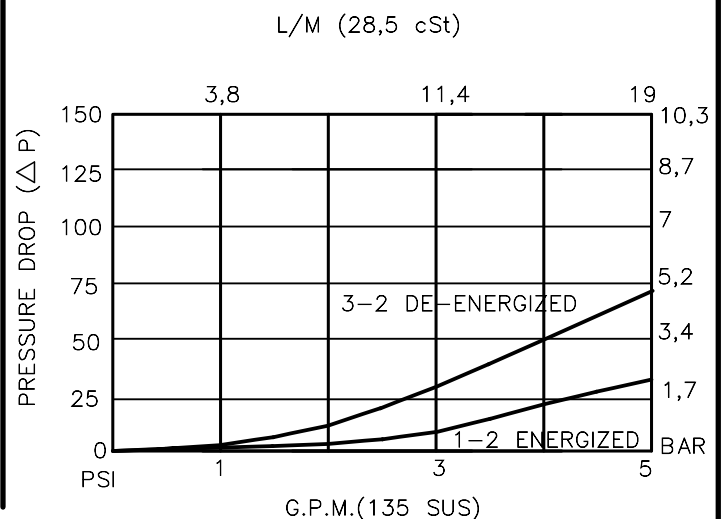
TYPE
3P = "P" SPOOL
3-WAY, 2-POSITION

PORTS
0 = CARTRIDGE ONLY
02BX = G 1/4" BSSP
06TX = SAE - #6

"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS
L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS
12D = 12 VDC 1.7
24D = 24 VDC .9
36D = 36 VDC .6
48D = 48 VDC .5
115D = 115 VDC .2



SOLENOID VALVE 3-WAY, 2-POSITION, OPEN CENTER, SPOOL TYPE (3/2)

DESCRIPTION

This unit is a THREE-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 2 and 3 and port 1 is blocked. When solenoid coil is energized, the spool in this valve is shifted and allows flow between port 1 and 2 and port 3 is blocked. This valve shifts in a open position.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted spool & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

**SOLENOID VALVE 3-WAY, 2-POSITION,
OPEN CENTER, SPOOL TYPE (3/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 5.0 GPM [19 l/m] See performance chart.

INTERNAL LEAKAGE: 5 cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum - Anodized.

5000 PSI [350 Bar] = Steel - Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as
MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-0832 Buna "N"

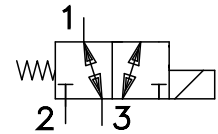
SKV-0832 Viton

INSTALLATION: No restrictions.

WEIGHT: .95 lb [0.43 kg] cartridge with coil only.

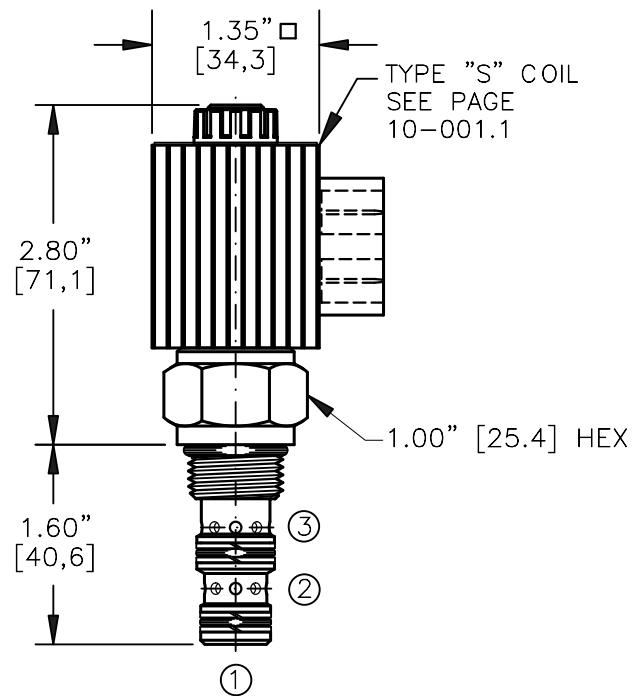
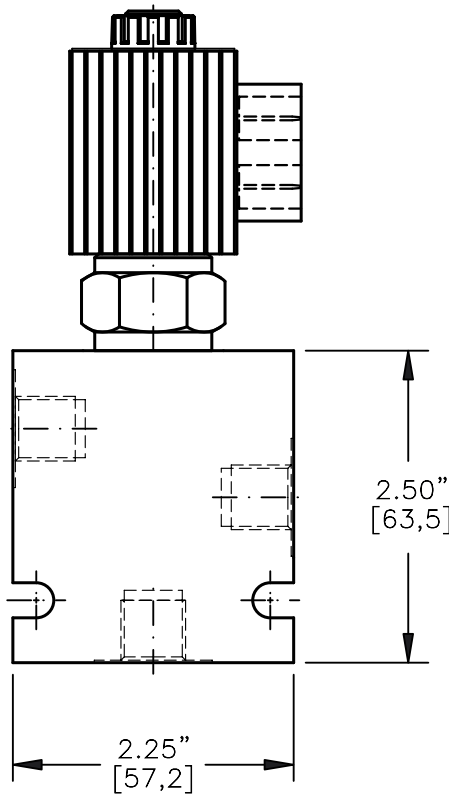
VALVE CAVITY: #C0830, See Page 0-031.0.

SOLENOID VALVE, 3-WAY, 2-POSITION
DIRECT ACTING, SPOOL TYPE (3/2)



TORQUE:

Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-031.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. FOR "AC" COILS USE RECTIFIED DIN CONNECTOR 20828.

EMDV-08-X-3R-X-XXX X

BASIC

SIZE
08 = 3/4"-16UNF

SEALS
N = BUNA "N" = VITON
V

TYPE
3R = "R" SPOOL
3-WAY, 2-POSITION

PORTS
0 = CARTRIDGE ONLY
02BX = G 1/4" BSSP
06TX = SAE - #6

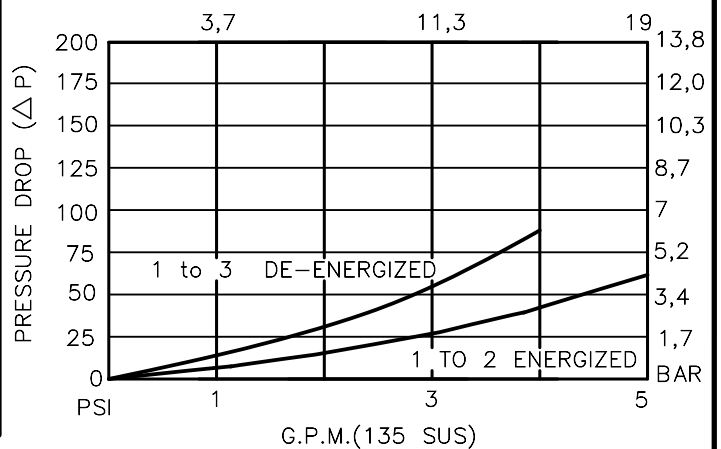
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS

L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS
12D = 12 VDC 1.7
24D = 24 VDC .9
36D = 36 VDC .6
48D = 48 VDC .5
115D = 115 VDC .2

L/M (28,5 cSt)



**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****DESCRIPTION**

This unit is a THREE-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 3 and port 2 is blocked. When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 2 and port 3 is blocked. This valve shifts in a open position.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted spool & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

**SOLENOID VALVE 3-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (3/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 5.0 GPM [19 l/m] See performance chart.

INTERNAL LEAKAGE: 5 cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum - Anodized.

5000 PSI [350 Bar] = Steel - Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100% voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-0832 Buna "N"

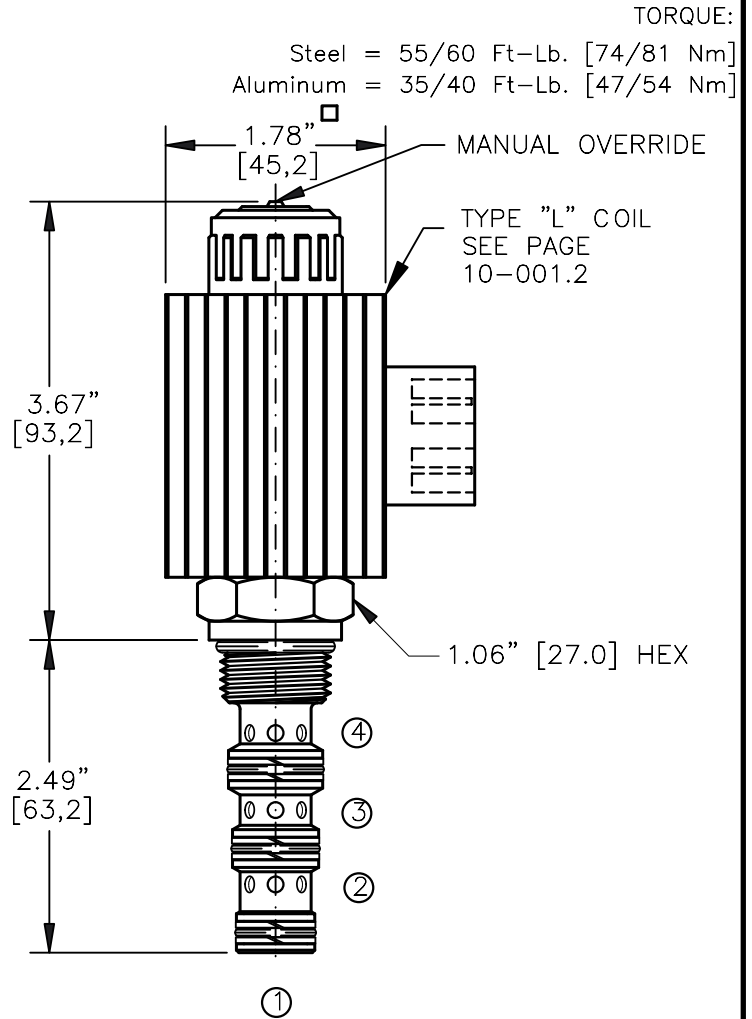
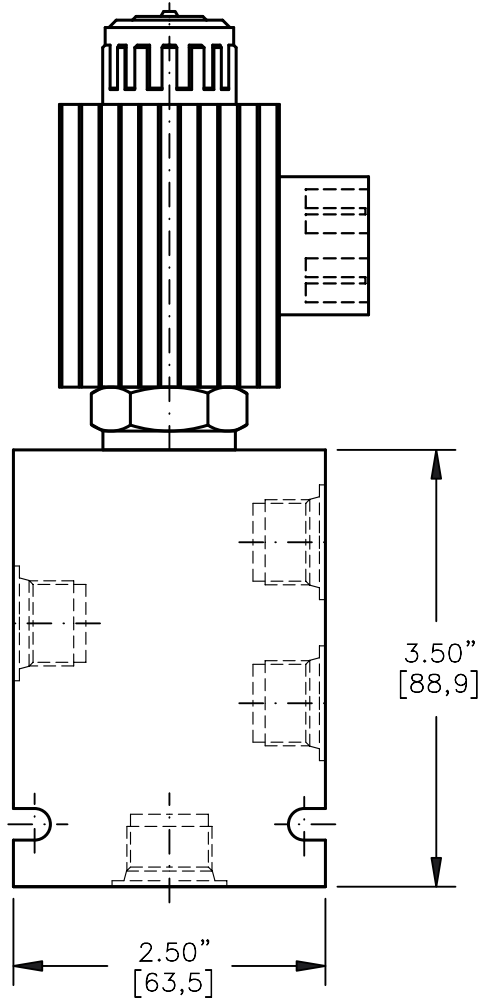
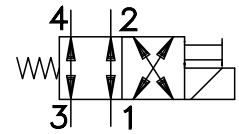
SKV-0832 Viton

INSTALLATION: No restrictions.

WEIGHT: .95 lb [0.43 kg] cartridge with coil only.

VALVE CAVITY: #C0830, See Page 0-031.0.

SOLENOID VALVE, 4-WAY, 2-POSITION.
DIRECT ACTING, SPOOL TYPE (4/2)



TORQUE:

Steel = 55/60 Ft-Lb. [74/81 Nm]
Aluminum = 35/40 Ft-Lb. [47/54 Nm]

NOTES:

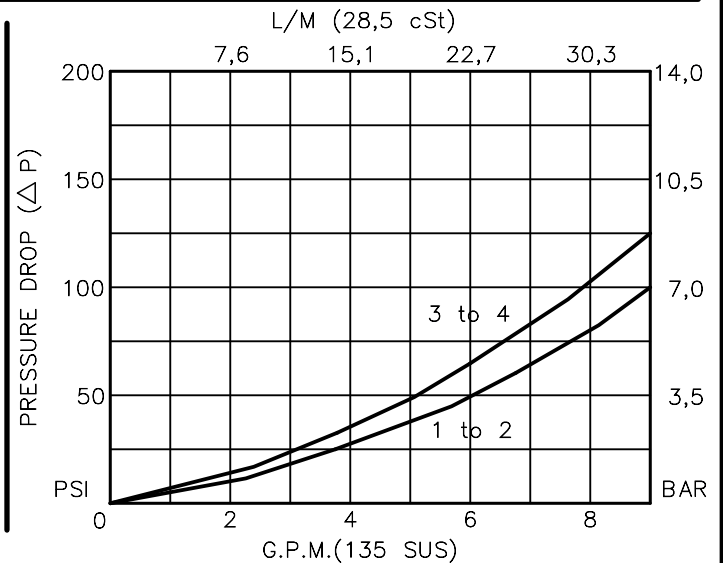
1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-042.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.
4. FOR SOFT SHIFT SOLENOID VALVE SEE PAGE 10-002.0

EMDV-10-X-4A-X-XXX X

BASIC _____
SIZE _____
 10 = 7/8"-14UNF
SEALS _____
 N = BUNA "N" = VITON
 V _____
TYPE _____
 4A = "A" SPOOL
 4-WAY, 2-POSITION
PORTS _____
 0 = CARTRIDGE ONLY
 02BX = G 1/4" BSPP
 03BX = G 3/8" BSPP
 06TX = SAE - #6
 08TX = SAE - #8
 "A" = ALUM. HOUSING
 "S" = STEEL HOUSING

TERMINALS
 L = 18GA. 24" LEADS
 T = SPADE TERM.
 B = BOLT TERM.
 G = DIN43650
 W = WEATHER-PACK
 D = DEUTSCH-DT04-2P
 M = METRI-PACK CONN.

VOLTAGE	AMPS
12D = 12 VDC	3.00
24D = 24 VDC	1.50
36D = 36 VDC	1.00
48D = 48 VDC	0.75
110D = 110 VDC	0.33
115A = 115 VAC	0.32
230A = 230 VAC	0.16



**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****DESCRIPTION**

This unit is a FOUR-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 2, ports 3 and 4.

When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 4, ports 2 and 3. "This valve shifts in a close center position".
Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted spool & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 8.0 GPM [30 l/m] See performance chart.

INTERNAL LEAKAGE: 5cu.in/min [82 cc/m] @ 5,000 PSI (350 Bar)

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

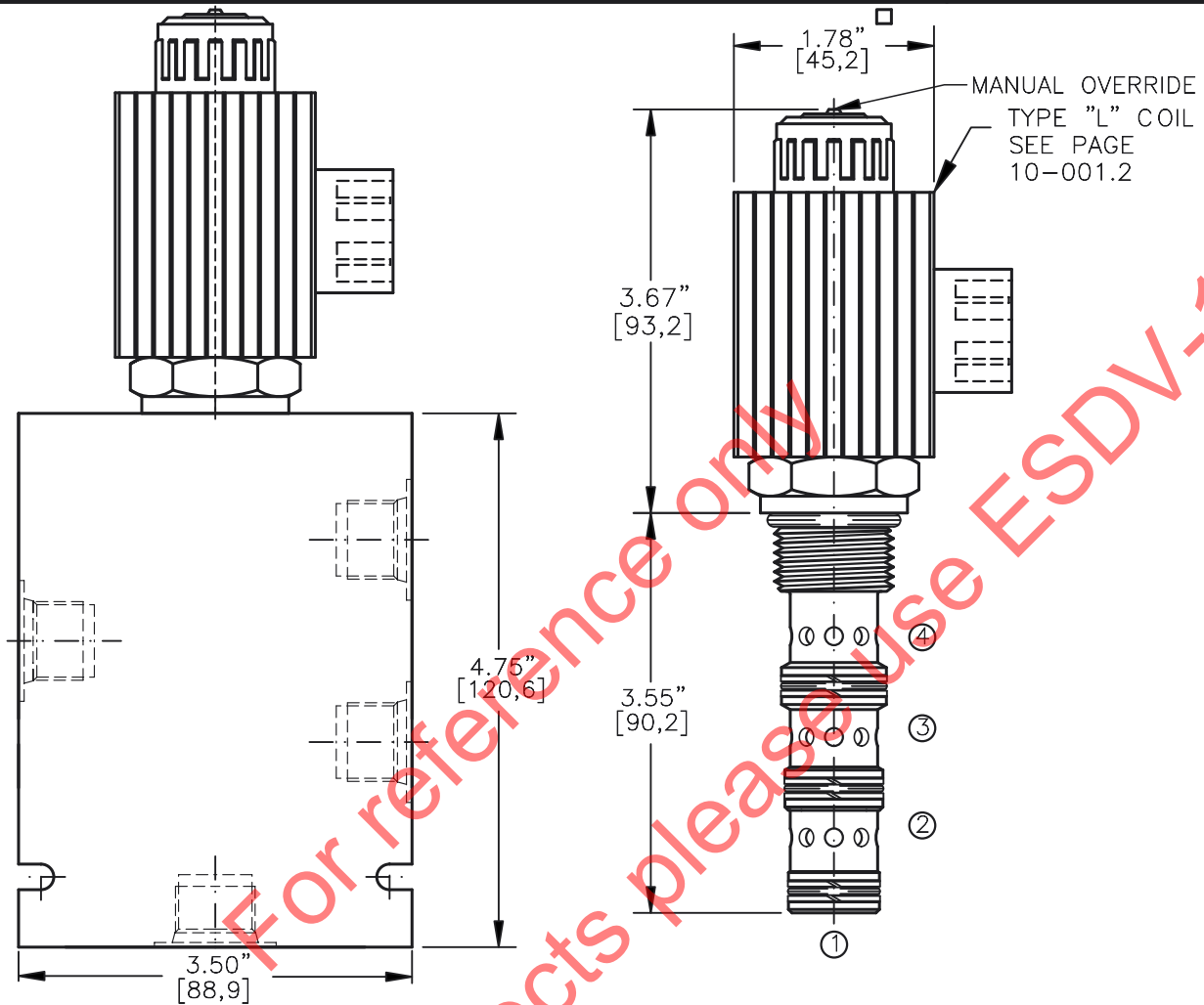
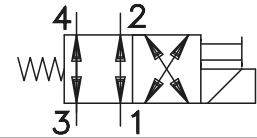
SEAL KIT: SKN-1042 BUNA "N"

SKV-1042 Viton

WEIGHT: 2.01 lb [.91 kg] cartridge with coil only.

VALVE CAVITY: #C1040, See Page 0-042.0.

SOLENOID VALVE, 4-WAY, 2-POSITION.
DIRECT ACTING, SPOOL TYPE (4/2)



TORQUE:
Steel = 70/75 Ft-Lb. [95/102 Nm]
Aluminum = 55/60 Ft-Lb. [74/81 Nm]

EMDV-12-X-4A-X-XXX X

BASIC _____

SIZE
12 = 1.062"-12UNF

SEALS
N = BUNA "N" = VITON
V

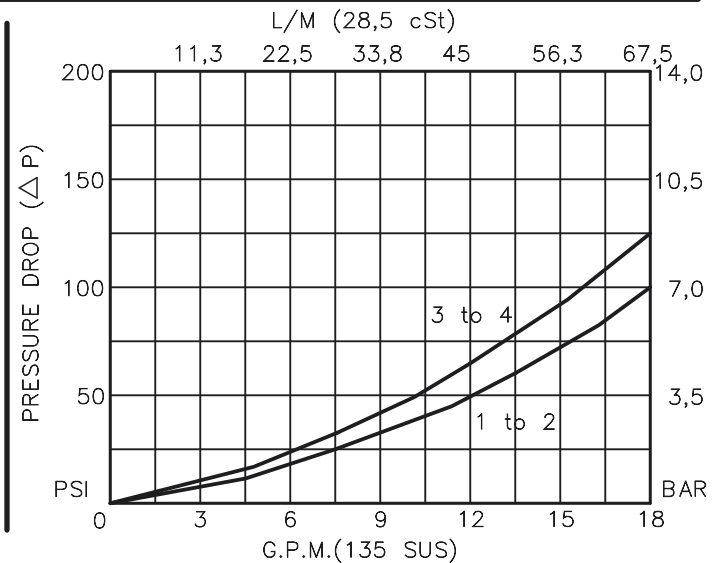
TYPE
4A = "A" SPOOL
4-WAY, 2-POSITION

PORTS
0 = CARTRIDGE ONLY
04BX = G 1/2" BSPP
06BX = G 3/4" BSPP
10TX = SAE - #10
12TX = SAE - #12
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS
L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS

12D	= 12 VDC	3.00
24D	= 24 VDC	1.50
36D	= 36 VDC	1.00
48D	= 48 VDC	0.75
110D	= 110 VDC	0.33
115A	= 115 VAC	0.32
230A	= 230 VAC	0.16



**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****DESCRIPTION**

This unit is a FOUR-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 2, ports 3 and 4.

When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 4, ports 2 and 3. "This valve shifts in a close center position".

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

For reference only
For new projects please use ESDV-12

**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 16.0 GPM [60 l/m] See performance chart.

INTERNAL LEAKAGE: 5cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum - Anodized.

5000 PSI [350 Bar] = Steel - Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-1242 Buna "N"

SKV-1242 Viton

INSTALLATION: No restrictions.

WEIGHT: 2.13 lb [.97 kg] cartridge with coil only.

VALVE CAVITY: #C1240, See Page 0-043.0.

info.el@bucherhydraulics.comwww.bucherhydraulics.com/commoncavity

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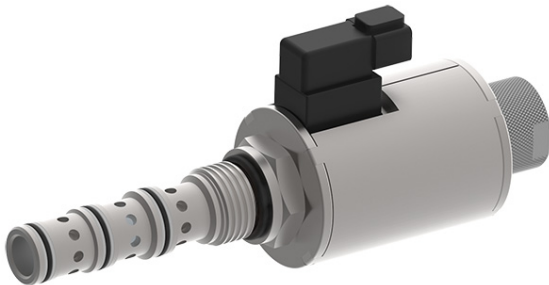
The technical information in this catalog, may contain calculated figures (for reference only) and not actual performance data for this product.

Data is provided for the purpose of product description only, and must not be construed as warranted characteristics in the legal sense.

The information does not relieve users from the duty of conducting their own evaluations and tests. Because the products are subject to continual improvement, we reserve the right to amend the product specifications contained in this catalogue.

4 Ways / 2 Pos. Cartridge Spool Valve, SAE 12 / NG 10

$Q_{max} = 20.0 \text{ gpm [75 l/min]}$, $p_{max} = 5000 \text{ psi [350 bar]}$
direct acting, with solenoid operation
Series ESDV-12-4A | F...



- A low power consumption
- Continuous-duty cycle
- Low heat rise of the solenoid coil
- Hardened precision fitted spool & sleeve provides consistent high performance and long life
- High performance solenoid valve
- All exposed parts with zinc plating
- High pressure wet-armature solenoids
- Interchangeable IP rated solenoid coils & terminations options available
- The slip-on coil can be rotated, and it can be replaced without opening the hydraulic envelope
- Various plug-connector systems and voltages are available
- Can be fitted in a line-mounting body
- Replaces EMDV-12-4...

1 Description

These direct acting 4 way / 2 pos solenoid operated spool valves, series ESDV-12-4... are size SAE 12 / NG 10, pressure balanced screw-in cartridges with a 1-1/16-12 UN mounting thread.

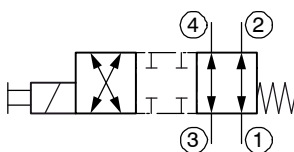
When the solenoid coil is de-energized, the main spool is held in neutral position by the return spring. Actuation of the spool happens by a wet-armature solenoid system. Port 3 is designed to be the pressure inlet port and connects to consumer port 4 (in neutral position) and port 2 (in actuated position). Pressure inlet port 3 as well as the consumer ports 2 and 4 are 5000 psi (350 bar) endurance proof and flow can be directed in both directions (see symbols).

Port 1 is designed to be connected to tank and the maximum pressure is limited to 3200 psi at port 1. Spool type ESDV-12-4A shifts in closed transition. While the spool is moving from neutral position to actuated position there is no

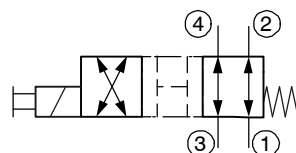
connection between ports 1, 2, 3 and 4 and therefore only minimal spool leakage appears. Spool type ESDV-12-4F shifts in open transition. While the spool is moving from neutral position to actuated position ports 1, 2, 3 and 4 are connected and therefore the valve shifts "softer" and creates less pressure peaks.

Manual override operation: Press and hold on the small plunger which is located on top of the valve with a similar object smaller than 0.180" diameter. All external parts of this cartridge valve are zinc plated and are thus suitable for use in harsh operating environments. The slip-on coils can be replaced without opening the hydraulic envelope and can be positioned at any angle through 360°. If you intend to manufacture your own cavities or are designing a line-mounting installation, please refer to the section "Related data sheets".

2 Symbol (ISO 1219)



ESDV-12-4A...



ESDV-12-4F...

3 Technical data

General characteristics	Description, value, unit
Designation	4 ways / 2 positions cartridge spool valve
Design	direct acting, with solenoid operation

General characteristics		Description, value, unit	
Mounting method		screw-in cartridge 1-1/16-12 UN-2B	
Size		SAE 12 / NG 10 for cavity type C1240	
Weight		3.54 lbs	[1.6 kg]
Mounting attitude		unrestricted (preferably vertical, coil down)	
Hydraulic characteristics		Description, value, unit	
Maximum operating pressure	- ports 4, 3, 2	5000 psi	[350 bar]
	- port 1	3200 psi	[220 bar]
Maximum flow rate	- A spool	16 gpm	[60 l/min]
	- F spool	20 gpm	[75 l/min]
Internal leakage		25 cu.in/min by 3200 psi 35 cu.in/min by 5000 psi	[410 ml/min by 220 bar] [574 ml/min by 350 bar]
Hydraulic fluid		HL and HLP mineral oil to DIN 51 524; for other fluids, please contact BUCHER	
Hydraulic fluid temperature range	NBR:	-13 °F ... +180 °F	[-25 °C ... +80 °C]
	Viton:	+ 5 °F ... +250 °F	[-15 °C ... +120 °C]
Viscosity range		10...500 mm ² /s (cSt), recommended 15...250 mm ² /s (cSt)	
Minimum fluid cleanliness Cleanliness class to ISO 4406 : 1999		class 20/18/15	
Electrical characteristics		Description, value, unit	
Supply voltage		12 V DC, 24 V DC, 103 V DC, 206 V DC note: • for AC applications an external rectifier circuit is required • the effective voltage in AC (with external rectifier circuit) is 11% higher than the rated DC voltage: 103 VDC → 115 V AC (respectively 206 V DC → 230 V AC) • above 48 V a ground connection to the metal housing of the coil is required	
Supply voltage tolerance		± 10 %	
Ambient temperature range		-22 °F ... +140 °F	[-3 °C ... +60 °C]
Power consumption at max. control current 12 V DC, 24 V DC 103 V DC ²⁾ , 206 V DC ²⁾		Nominal power consumption: 27 W 31 VA ³⁾	
Switching time		45 ... 100 ms (solenoid ON) 20 ... 100 ms (solenoid OFF) These times are strongly influenced by fluid pressure, flow rate and viscosity, as well as by the dwell time under pressure.	
Relative duty cycle		100 %	
Protection class to ISO 20 653 / EN 60 529		IP 65 / IP 67 / IP 69K, see "Ordering code" (with appropriate mating connector and proper fitting and sealing)	
Electrical connection		2-pin square plug to ISO 4400 / DIN 43 650 (standard) ³⁾ for other connectors, see "Ordering code"	

Note:

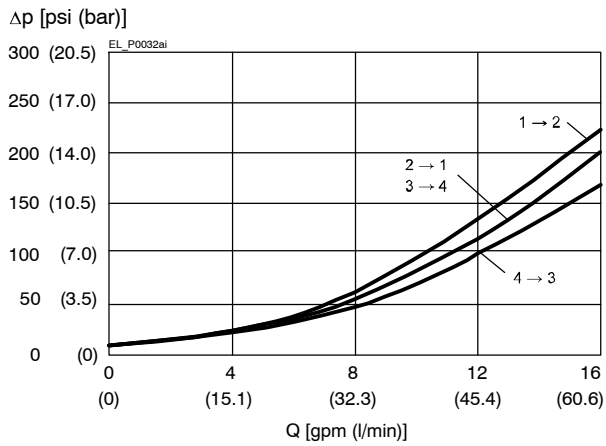
²⁾ for AC applications an external rectifier circuit is required. ATTENTION: The effective voltage in AC (with external rectifier circuit) is 11% higher than the rated DC voltage.

³⁾ above 48 V a ground connection to the metal housing of the coil is required

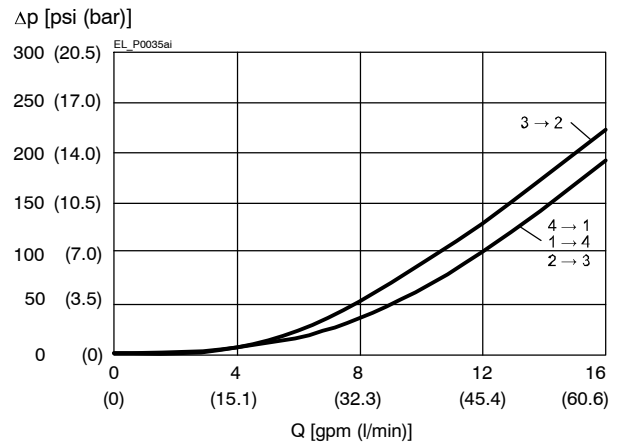
4 Performance graphs

measured with oil viscosity 33 mm²/s (cSt)

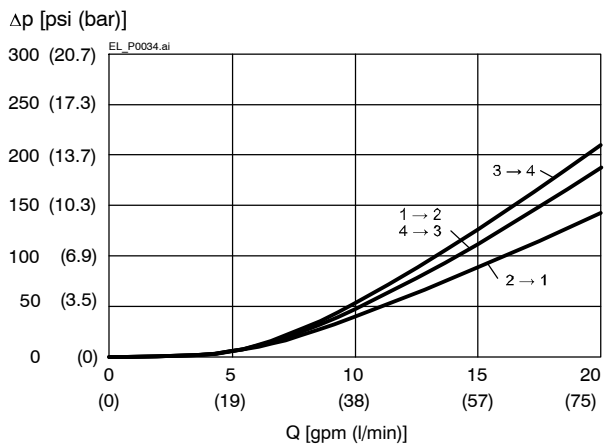
$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic
ESDV-12-4A (deenergising)



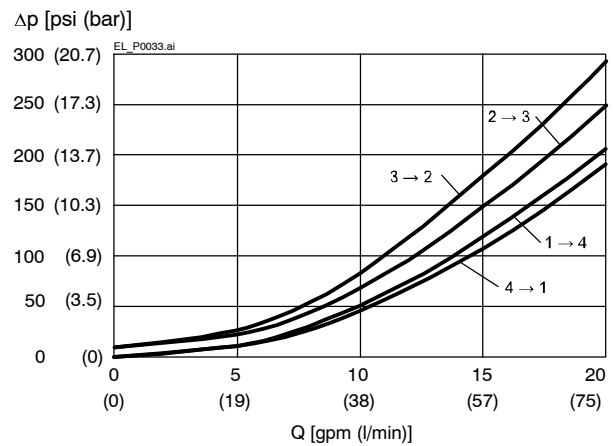
$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic
ESDV-12-4A (energising)



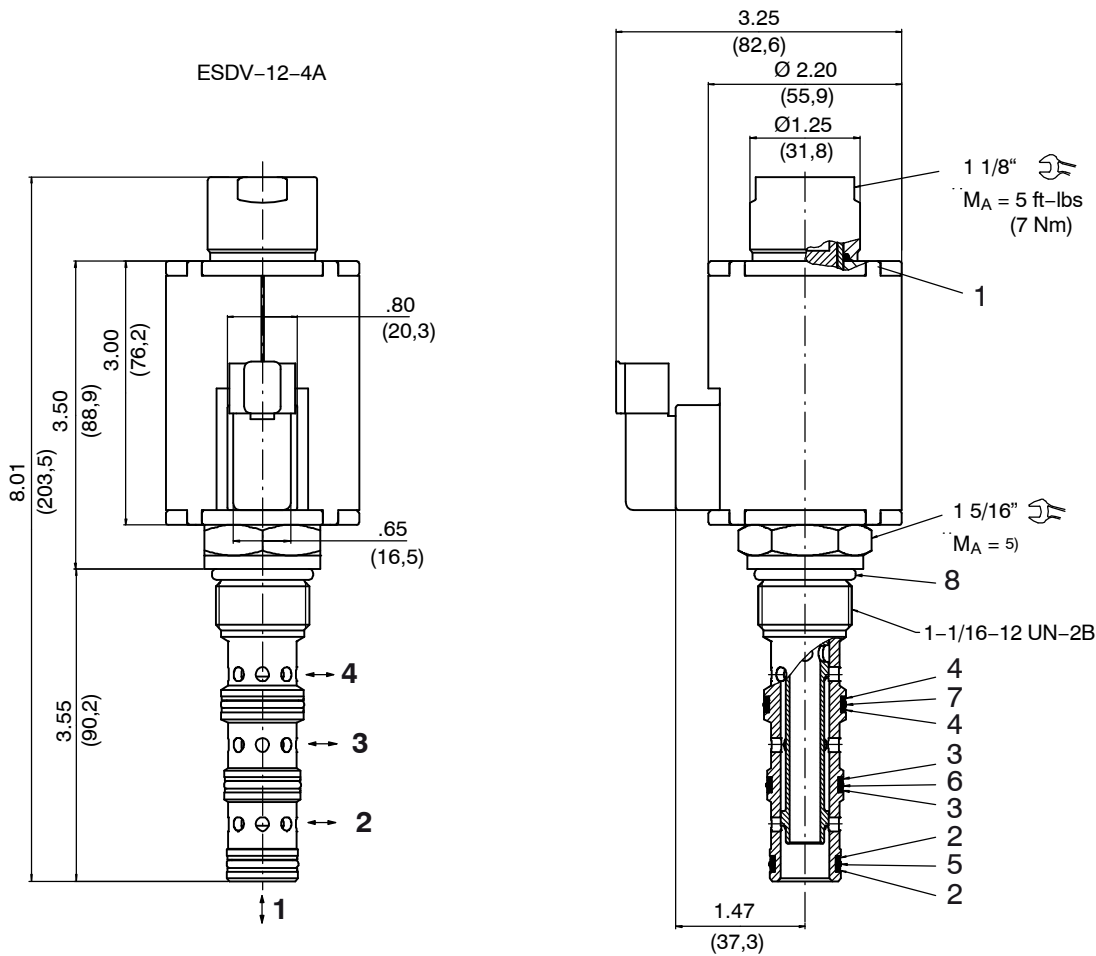
$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic
ESDV-12-4F (deenergising)



$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic
ESDV-12-4F (energising)



5 Dimensions & sectional view



Tightening torque M_A ⁵⁾

Cavity type	C1240
When fitted in aluminium	55...60 ft-lbs (74 - 81 [Nm])
When fitted in steel	70...75 ft-lbs (95 - 101 [Nm])

6 Installation information



IMPORTANT!

When fitting the cartridges, use the specified tightening torque. No adjustments are necessary, since the cartridges are set in the factory.



ATTENTION!

Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be undertaken is to check, and possibly replace, the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

Seal kit NBR no. SKN-1242-S1 ⁴⁾

Item	Qty.	Description	
1	1	O-ring no. 020 \varnothing 0,864 x 0,070 V70	Inch
2	2	Backup ring 0.697x0.052 x 0.048 FI0751	Inch
3	2	Backup ring 0.768 x 0.053 x 0.048 FI0751	Inch
4	2	Backup ring 0.830 x 0.053 x 0.048 FI0751	Inch
5	1	O-ring no. 017 \varnothing 0.676 x 0.070 B-70	Inch
6	1	O-ring no. 018 \varnothing 0.739 x 0.070 B-70	Inch
7	1	O-ring no. 019 \varnothing 0.801 x 0.070 B-70	Inch
8	1	O-ring no. 912 \varnothing 0.924 x 0.116 B-90	Inch



IMPORTANT!

⁴⁾ Seal kit with FKM (Viton) seals, no. SKV-1242-S1

7 Ordering code

Ex. ESDV - 12 - N - 4A - 0 - 24 D -

ESDV	=	directional valve, spool-type, direct acting	
12	=	size SAE 12 / NG 10	
N	=	NBR (Nitrile) seals (standard)	
V	=	FKM (Viton) seals (special seals - please contact BUCHER)	
4A	=	A Spool 4-way/2-position (closed transition)	
4F	=	F Spool 4-way/2-position (open transition)	
0	=	cartridge only	
04BA	=	line-mounting body G 1/2" -14 BSPP	aluminum
04BS	=	line-mounting body G 1/2" -14 BSPP	steel
06BA	=	line-mounting body G 3/4" -14 BSPP	aluminum
06BS	=	line-mounting body G 3/4" -14 BSPP	steel
10TA	=	line-mounting body SAE-10	aluminum
10TS	=	line-mounting body SAE-10	steel
12TA	=	line-mounting body SAE-12	aluminum
12TS	=	line-mounting body SAE-12	steel
...	=	voltage e.g. 24 (24 V)	
D	=	current DC	
mating plug not supplied:			
T	=	Deutsch axial plug connection DT04-2P (IP 67/69K) ¹⁾	
TR	=	Deutsch axial plug connection DT04-2P (with protection diode, IP 67/69K) on request ¹⁾	
S	=	1/4" Spade Terminals connection	
F	=	flying leads (18 inch, [450 mm])	
H	=	ISO 4400 / DIN 43 650 connection (IP 65)	

Note:

¹⁾ only up to 48 V

8 Related data sheets

Reference	(Old no.)	Description
520-P-000050		Form tools
520-P-000430	(0-043.0)	Cavity type C1240
520-P-001020		Coils D 2.2/.875 for screw-in cartridge valves
520-P-000431	(0-043.1)	Line-mounting body, 12 series – 4 way

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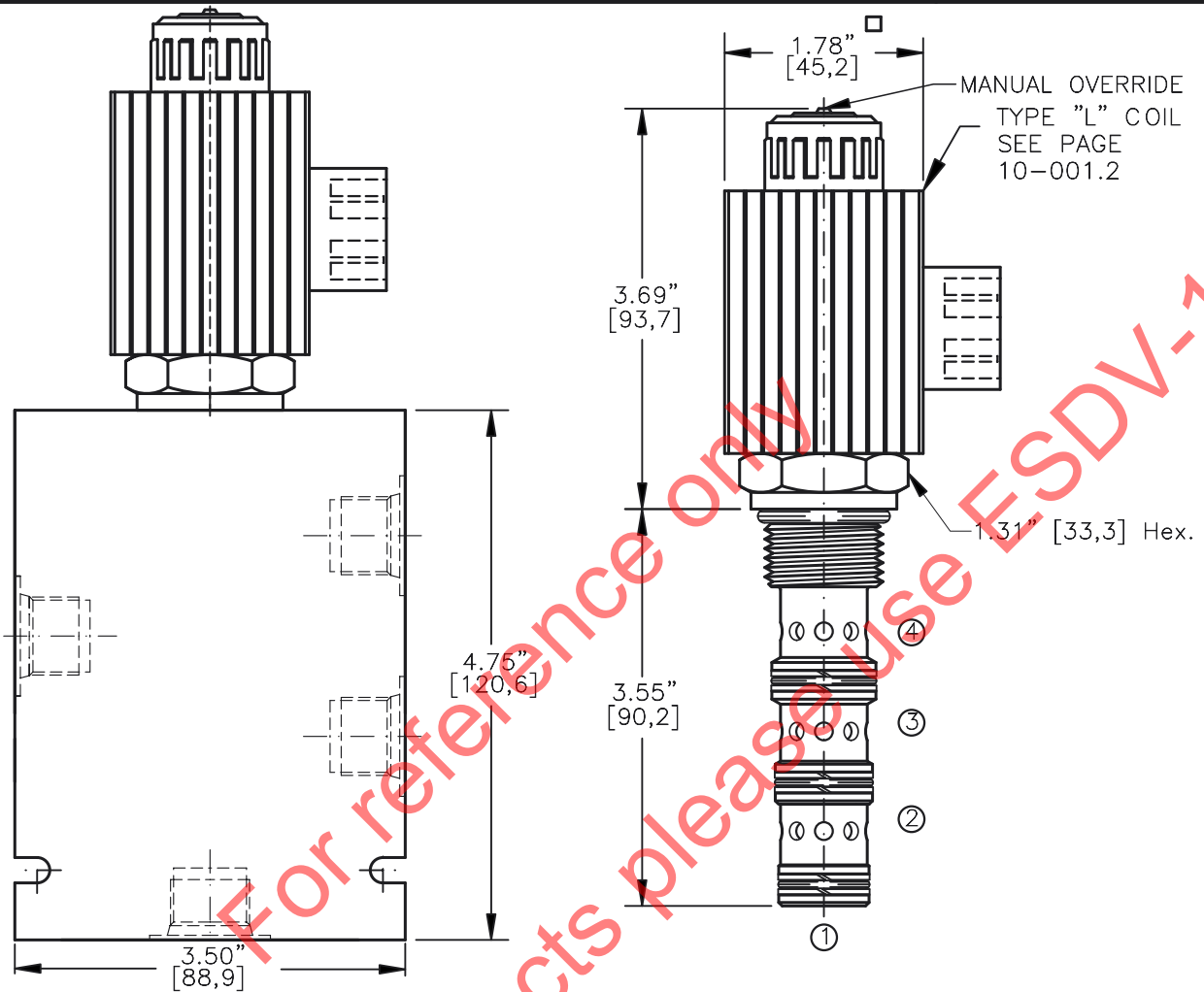
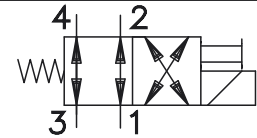
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Classification: 430.300.330.305.315.380

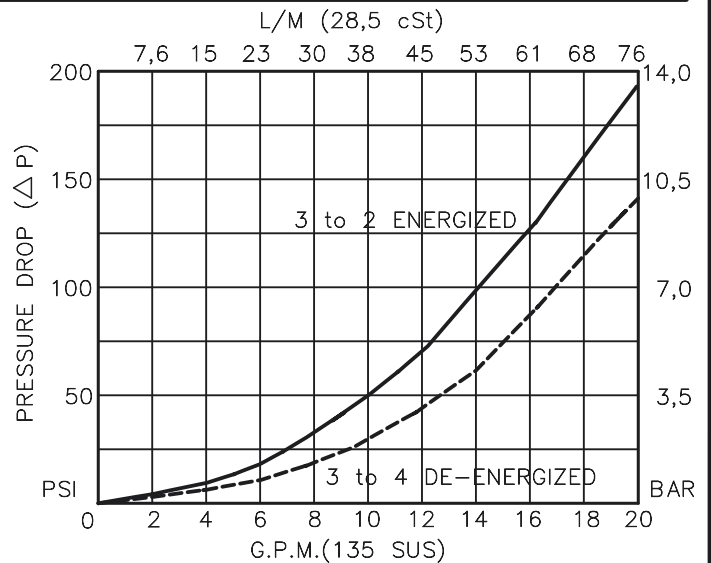
SOLENOID VALVE, 4-WAY, 2-POSITION.
DIRECT ACTING, SPOOL TYPE (4/2)



TORQUE:
Steel = 70/75 Ft-Lb. [95/102 Nm]
Aluminum = 55/60 Ft-Lb. [74/81 Nm]

EMDV-12-X-4F-X-XXX X

BASIC		TERMINALS	
SIZE	12 = 1.062"-12UNF	L = 18GA. 24" LEADS	
SEALS	N = BUNA "N" V = VITON	T = SPADE TERM.	
TYPE	4F = "F" SPOOL 4-WAY, 2-POSITION	B = BOLT TERM.	
PORTS	0 = CARTRIDGE ONLY 04BX = G 1/2" BSPP 06BX = G 3/4" BSPP 10TX = SAE - #10 12TX = SAE - #12	G = DIN43650	
	"A" = ALUM. HOUSING "S" = STEEL HOUSING	D = DEUTSCH-DT04-2P M = METRI-PACK CONN.	
		VOLTAGE	AMPS
		12D = 12 VDC	3.00
		24D = 24 VDC	1.50
		36D = 36 VDC	1.00
		48D = 48 VDC	0.75
		110D = 110 VDC	0.33
		115A = 115 VAC	0.32
		230A = 230 VAC	0.16



**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****DESCRIPTION**

This unit is a FOUR-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 2, ports 3 and 4.

When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 4,

ports 2 and 3. "This valve shifts in an open center position."

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

For reference only please use ESDV-12
For new projects please use ESDV-12

**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)**

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 20.0 GPM MAX. [76 l/m] See performance chart.

INTERNAL LEAKAGE: 5cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum - Anodized.

5000 PSI [350 Bar] = Steel - Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])OPERATING MEDIA: All general purpose hydraulic fluids such as
MIL-H-5606, SAE-#10, SAE-#20, etc.RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-1242 Buna "N"

SKV-1242 Viton

INSTALLATION: No restrictions.

WEIGHT: 2.13 lb [.97 kg] cartridge with coil only.

VALVE CAVITY: #C1240, See Page 0-043.0.

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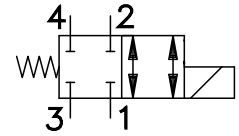
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The technical information in this catalog, may contain calculated figures (for reference only) and not actual performance data for this product.

Data is provided for the purpose of product description only, and must not be construed as warranted characteristics in the legal sense.

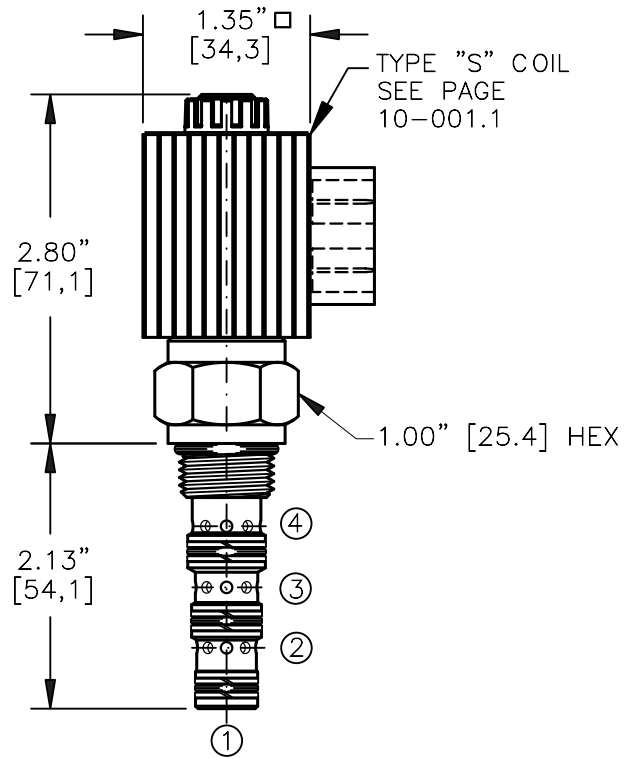
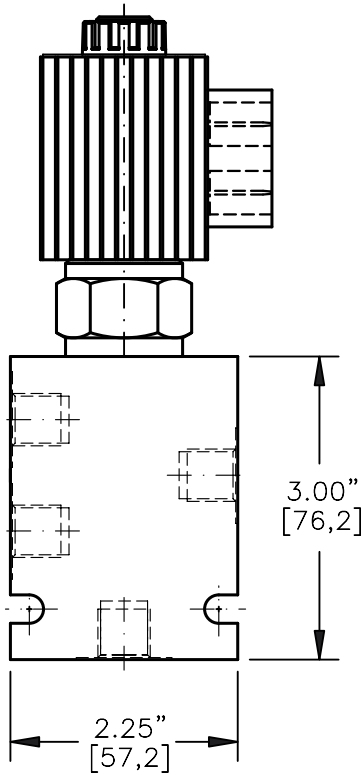
The information does not relieve users from the duty of conducting their own evaluations and tests. Because the products are subject to continual improvement, we reserve the right to amend the product specifications contained in this catalogue.

SOLENOID VALVE, 4-WAY, 2-POSITION.
DIRECT ACTING, SPOOL TYPE (4/2)



TORQUE:

Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-041.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. FOR "AC" COILS USE RECTIFIED DIN CONNECTOR 20828.

EMDV-08-X-4K-X-XXX X

BASIC

SIZE
08 = 3/4"-16UNF

SEALS
N = BUNA "N"
V = VITON

TYPE
4K = "K" SPOOL
4-WAY, N.C. SELECTOR

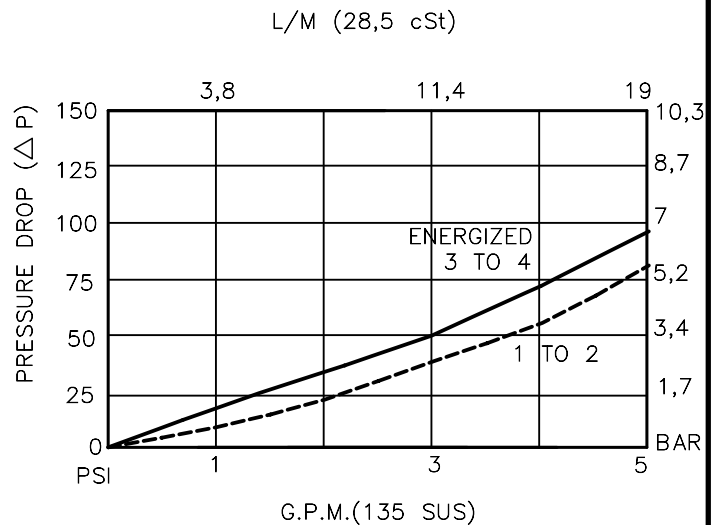
PORTS
0 = CARTRIDGE ONLY
02BX = G 1/4" BSSP
06TX = SAE - #6

"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS

L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS
12D = 12 VDC 1.7
24D = 24 VDC .9
36D = 36 VDC .6
48D = 48 VDC .5
115D = 115 VDC .2



**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****DESCRIPTION**

This unit is a FOUR-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, normally closed selector valve.

OPERATIONS

When solenoid coil is de-energized, this valve is closed at all ports. When solenoid coil is energized, the spool in this valve is shifted and allows flow from ports 1 to 2, and from port 3 to 4 or vice versa.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted spool & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)**

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 5.0 GPM [19 l/m] See performance chart.

INTERNAL LEAKAGE: 5cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum - Anodized.

5000 PSI [350 Bar] = Steel - Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

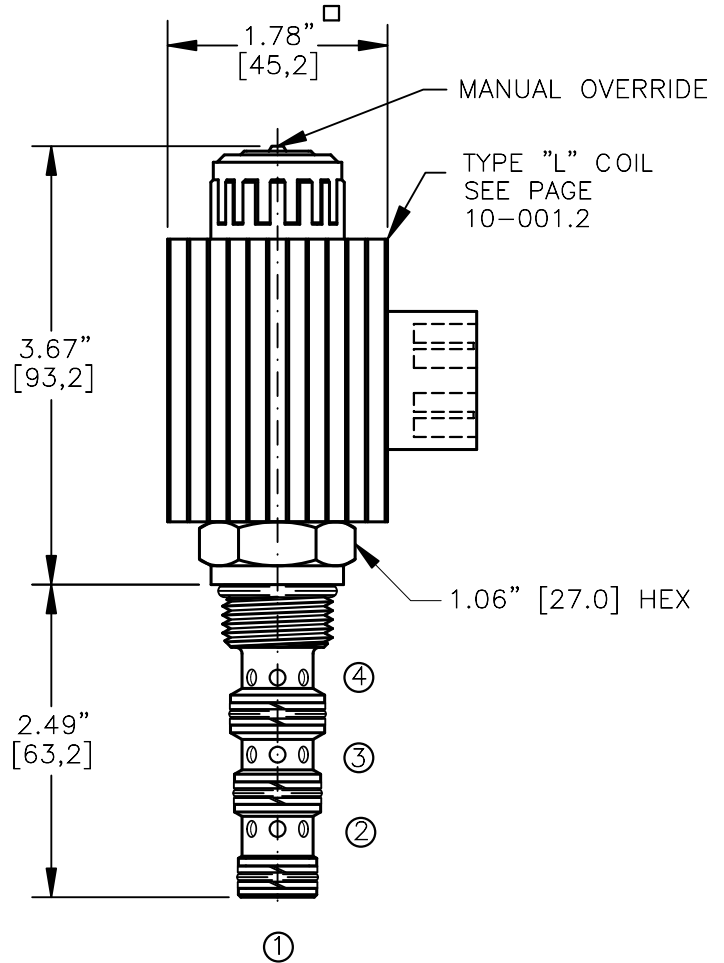
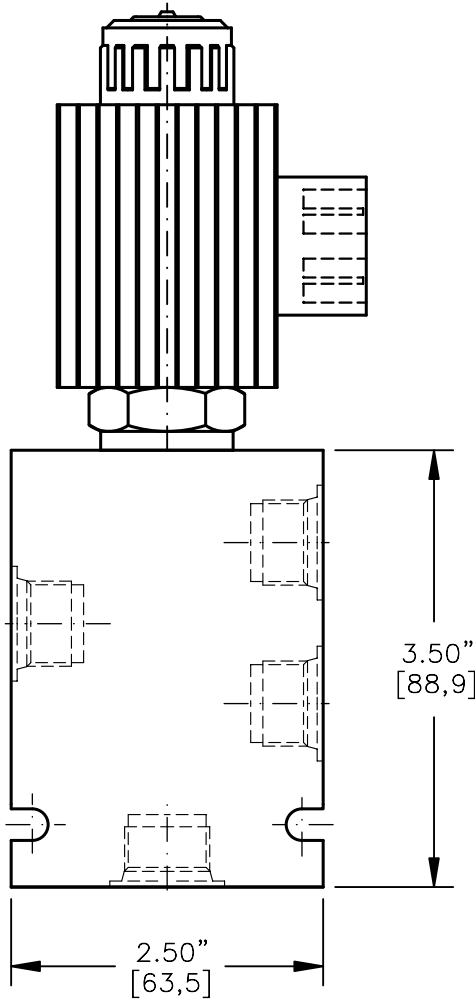
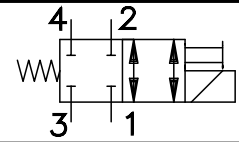
SEAL KIT: SKN-0842 Buna "N"

SKV-0842 Viton

WEIGHT: .98 lb [.44 kg] cartridge with coil only.

VALVE CAVITY: #C0840, See Page 0-041.0.

SOLENOID VALVE, 4-WAY, 2-POSITION.
DIRECT ACTING, SPOOL TYPE (4/2)

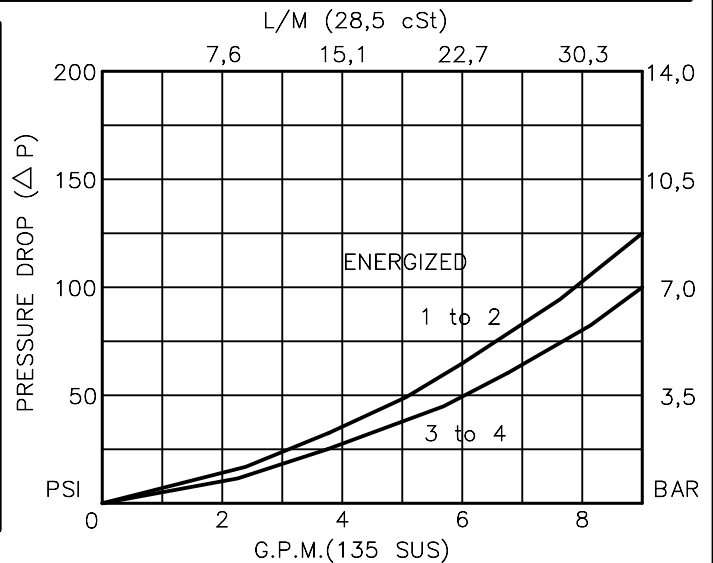


TORQUE:
Steel = 55/60 Ft-Lb. [74/81 Nm]
Aluminum = 35/40 Ft-Lb. [47/54 Nm]

EMDV-10-X-4B-X-XXX X

- BASIC
- SIZE
10 = 7/8"-14UNF
- SEALS
N = BUNA "N"
V = VITON
- TYPE
4B = "B" SPOOL
4-WAY, N.C. SELECTOR
- PORTS
0 = CARTRIDGE ONLY
02BX = G 1/4" BSPP
03BX = G 3/8" BSPP
06TX = SAE - #6
08TX = SAE - #8
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

- TERMINALS
L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.
- VOLTAGE AMPS
12D = 12 VDC 3.00
24D = 24 VDC 1.50
36D = 36 VDC 1.00
48D = 48 VDC 0.75
110D = 110 VDC 0.33
115A = 115 VAC 0.32
230A = 230 VAC 0.16



**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****DESCRIPTION**

This unit is a FOUR-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, normally closed selector valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows no flow between ports 1 and 2, ports 3 and 4.

When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 2, ports 3 and 4.

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

Industry common cavity.

**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 8.0 GPM [30 l/m] See performance chart.

INTERNAL LEAKAGE: 5cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100% voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

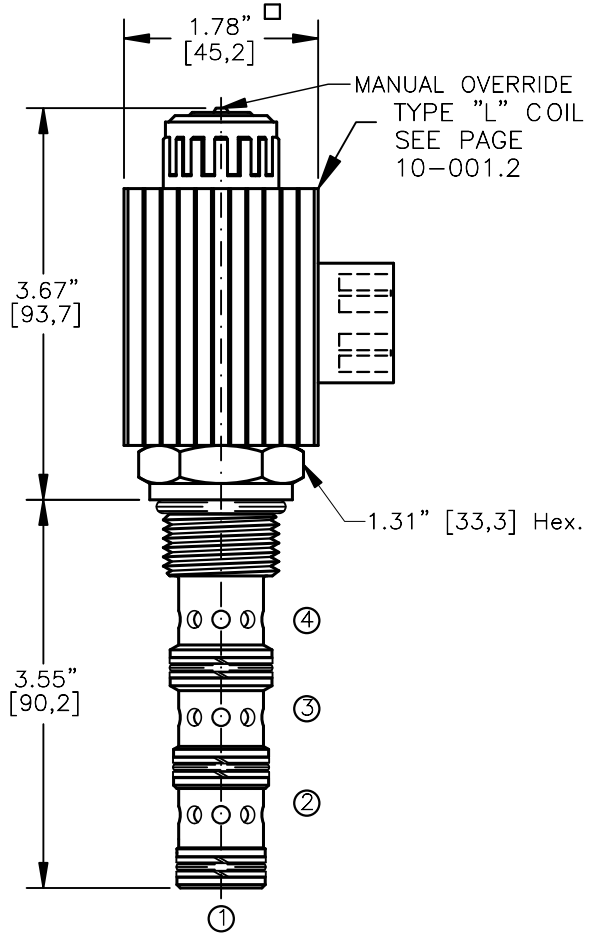
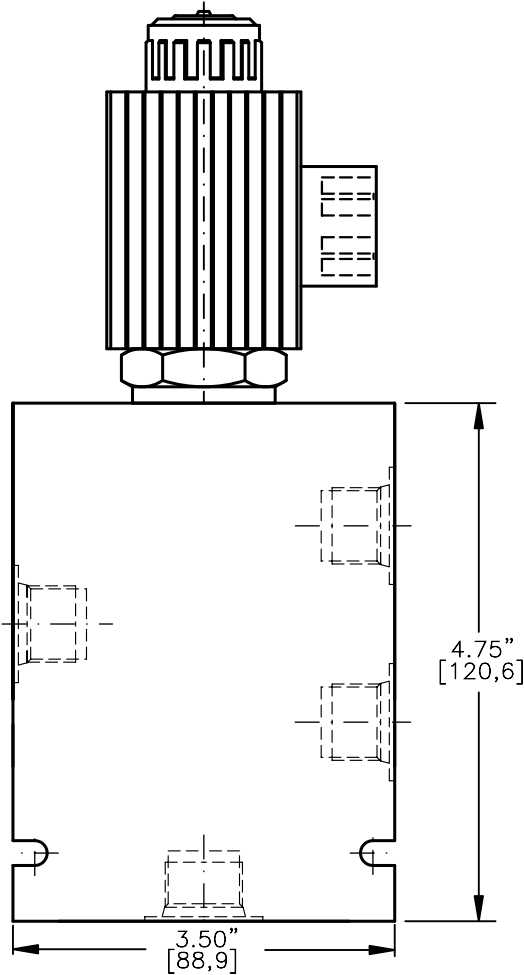
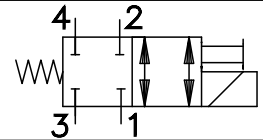
SEAL KIT: SKN-1042 Buna "N"

SKV-1042 Viton

WEIGHT: 2.01 lb [.91 kg] cartridge with coil only.

VALVE CAVITY: #C1040, See Page 0-042.0.

SOLENOID VALVE, 4-WAY, 2-POSITION.
DIRECT ACTING, SPOOL TYPE (4/2)

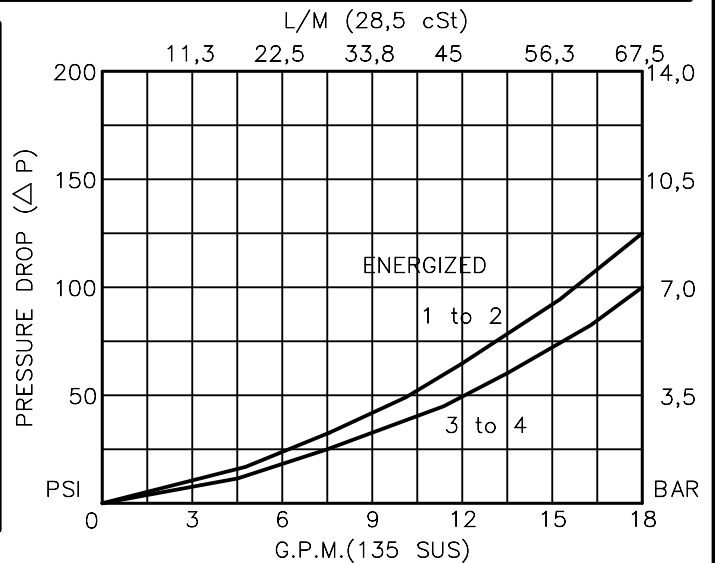


TORQUE:
Steel = 70/75 Ft-Lb. [95/102 Nm]
Aluminum = 55/60 Ft-Lb. [74/81 Nm]

EMDV-12-X-4B-X-XXX X

- BASIC
- SIZE
12 = 1.062"-12UNF
- SEALS
N = BUNA "N"
V = VITON
- TYPE
4B = "B" SPOOL
4-WAY, N.C. SELECTOR
- PORTS
0 = CARTRIDGE ONLY
04BX = G 1/2" BSPP
06BX = G 3/4" BSPP
10TX = SAE - #10
12TX = SAE - #12
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

- TERMINALS
L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.
- VOLTAGE AMPS
12D = 12 VDC 3.00
24D = 24 VDC 1.50
36D = 36 VDC 1.00
48D = 48 VDC 0.75
110D = 110 VDC 0.33
115A = 115 VAC 0.32
230A = 230 VAC 0.16



**SOLENOIL VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****DESCRIPTION**

This unit is a FOUR-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, N.C. selector valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows no flow between ports 1 and 2, ports 3 and 4.

When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 2, ports 3 and 4.

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient wet - armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

**SOLENOIL VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 16.0 GPM [60 l/m] See performance chart.

INTERNAL LEAKAGE: 5cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum - Anodized.

5000 PSI [350 Bar] = Steel - Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or

high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT:

SKN-1242 Buna "N"

SKV-1242 Viton

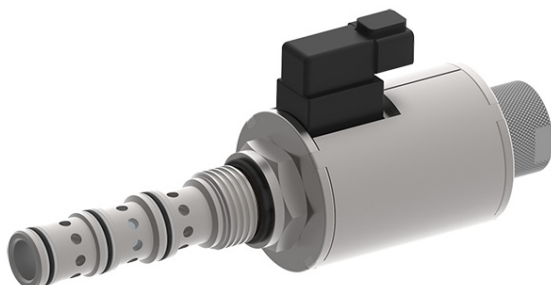
INSTALLATION: No restrictions.

WEIGHT: 2.13 lb [.97 kg] cartridge with coil only.

VALVE CAVITY: #C1240, See Page 0-043.0.

4-Ways / 2-Pos. Cartridge Spool Valve, SAE 12 / NG 10

$Q_{max} = 16.0 \text{ gpm [60 l/min]}$, $p_{max} = 5000 \text{ psi [350 bar]}$
direct acting, with solenoid operation
Series ESDV-12-4B | C | D...



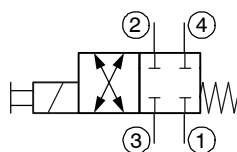
- Compact design for cavity type C1240
- A low power consumption
- Continuous duty cycle
- Low heat rise of the solenoid coil
- Hardened precision fitted spool & sleeve provides consistent high performance and long life
- High performance solenoid valve
- All exposed parts with zinc plating
- High pressure wet-armature solenoids
- Interchangeable IP rated solenoid coils available
- The slip-on coil can be rotated, and it can be replaced without opening the hydraulic envelope
- Various plug-connector systems and voltages are available
- Can be fitted in a line-mounting body
- Replaces EMDV-12-4...

1 Description

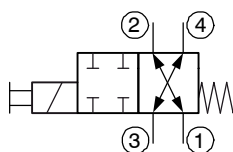
These direct acting 4-Ways / 2-Pos. solenoid operated spool valves, series ESDV-12-4... are size SAE 12 / NG 10, pressure balanced screw-in cartridges with a 1-1/16-12 UN mounting thread. When the solenoid coil is de-energized, the main spool is held in neutral position by the return spring. Actuation of the spool happens by a wet-armature solenoid system. Port 3 is designed to be the pressure inlet port. Pressure inlet port 3 as well as the consumer ports 2 and 4 are 5000 psi (350 bar) endurance proof and flow can be directed in both directions (see symbols). Port 1 is designed to be connected to the tank and the maximum pressure is limited to 3200 psi (220 bar). Spool type ESDV-12-4B is normally closed, i.e. there is no connection between ports 1, 2, 3 and 4. Once the solenoid coil is activated, port 3 is connected to 4 and port 2 to 1. Spool type ESDV-12-4C is normally open, i.e. there is a connection between port 2 to 1 as well as 3 to 4. Once the solenoid coil is activated, the

C-spool closes all connections and therefore only minimal spool leakage appears. Spool type ESDV-12-4D in neutral bypasses from 3 to 1. Once the solenoid coil is activated, ports 3 and 4 and ports 2 and 1 are connected. While the spool is moving there is a connection between ports 1, 2, 3 and 4 (D-spool shifts in open transition) and therefore the valve shifts "softer" and creates less pressure peaks.. Manual override operation: Press and hold on the small plunger which is located on top of the valve with a similar object smaller than 0.180" diameter. All external parts of this cartridge valve are zinc plated and are thus suitable for use in harsh operating environments. The slip-on coils can be replaced without opening the hydraulic envelope and can be positioned at any angle through 360°. If you intend to manufacture your own cavities or are designing a line-mounting installation, please refer to the section "Related data sheets".

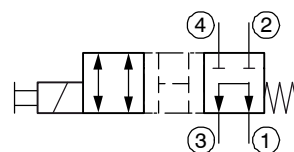
2 Symbol (ISO 1219)



ESDV-12-4B...



ESDV-12-4C...



ESDV-12-4D...

3 Technical data

General characteristics		Description, value, unit	
Designation		4-Ways / 2-Positions cartridge spool valve	
Design		direct acting, with solenoid operation	
Mounting method		screw-in cartridge 1-1/16-12 UN	
Size		SAE 12 / NG 10 for cavity type C1240	
Weight		1.25 lbs	[0,567 kg]
Mounting attitude		unrestricted (preferably vertical, coil down)	
Hydraulic characteristics		Description, value, unit	
Maximum operating pressure	- ports 4, 3, 2 - port 1	5000 psi 3200 psi	[350 bar] [220 bar]
Maximum flow rate	- B, C, D spool	16 gpm	[60 l/min]
Internal leakage		25 cu.in/min by 3200 psi 35 cu.in/min by 5000 psi	[410 ml/min by 220 bar] [574 ml/min by 350 bar]
Hydraulic fluid		HL and HLP mineral oil to DIN 51 524; for other fluids, please contact BUCHER	
Hydraulic fluid temperature range	NBR: Viton:	-13 °F ... +180 °F + 5 °F ... +250 °F	[-25 °C ... +80 °C] [-15 °C ... +120 °C]
Viscosity range		10...500 mm ² /s (cSt), recommended 15...250 mm ² /s (cSt)	
Minimum fluid cleanliness Cleanliness class to ISO 4406 : 1999		class 20/18/15	
Electrical characteristics		Description, value, unit	
Supply voltage		12 V DC, 24 V DC, 103 V DC, 206 V DC note: • for AC applications an external rectifier circuit is required • the effective voltage in AC (with external rectifier circuit) is 11% higher than the rated DC voltage: 103 VDC → 115 V AC (respectively 206 V DC → 230 V AC) • above 48 V a ground connection to the metal housing of the coil is required	
Supply voltage tolerance		± 10 %	
Ambient temperature range		-22 °F ... +140 °F	[-30 °C ... +60 °C]
Power consumption at max. control current	12 V DC, 24 V DC 103 V DC ²⁾ , 206 V DC ²⁾	Nominal power consumption: 27 W 31 VA ³⁾	
Switching time		45 ... 100 ms (solenoid ON) 20 ... 100 ms (solenoid OFF) These times are strongly influenced by fluid pressure, flow rate and viscosity, as well as by the dwell time under pressure.	
Relative duty cycle		100 %	
Protection class to ISO 20 653 / EN 60 529		IP 65 / IP 67 / IP 69K, see "Ordering code" (with appropriate mating connector and proper fitting and sealing)	
Electrical connection		2-pin square plug to ISO 4400 / DIN 43 650 (standard) ³⁾ for other connectors, see "Ordering code"	

Note:

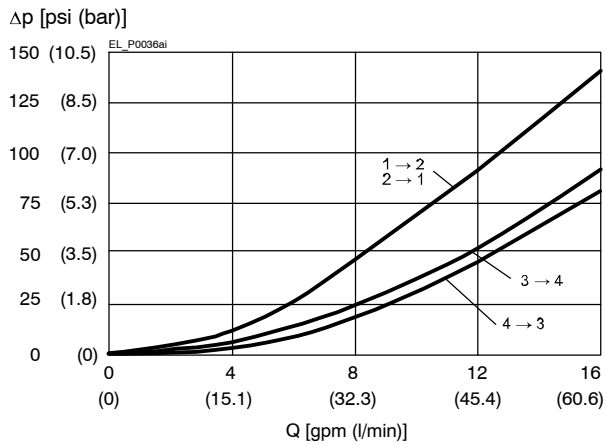
2) for AC applications an external rectifier circuit is required. ATTENTION: The effective voltage in AC (with external rectifier circuit) is 11% higher than the rated DC voltage.

3) above 48 V a ground connection to the metal housing of the coil is required.

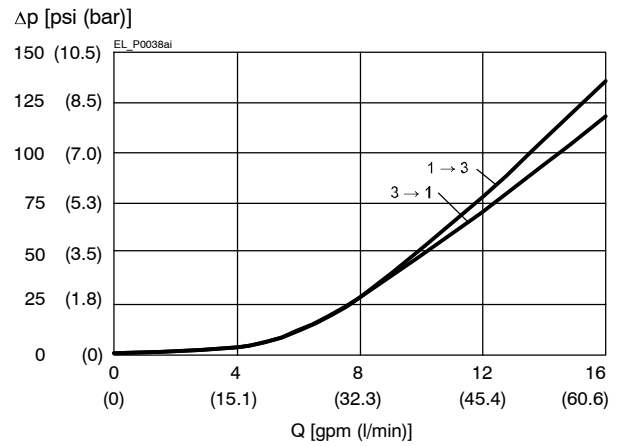
4 Performance graphs

measured with oil viscosity 33 mm²/s (cSt)

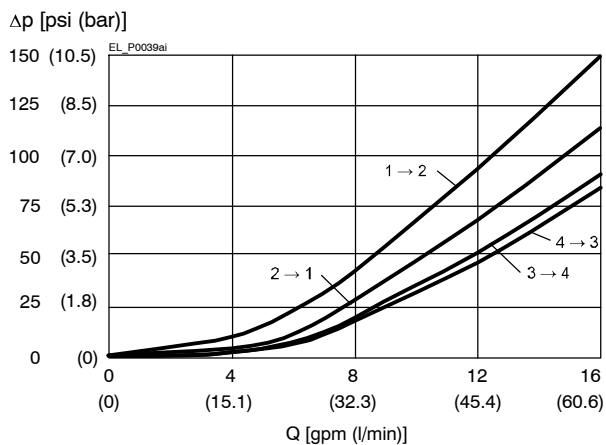
$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic
ESDV-12-4B (energising)



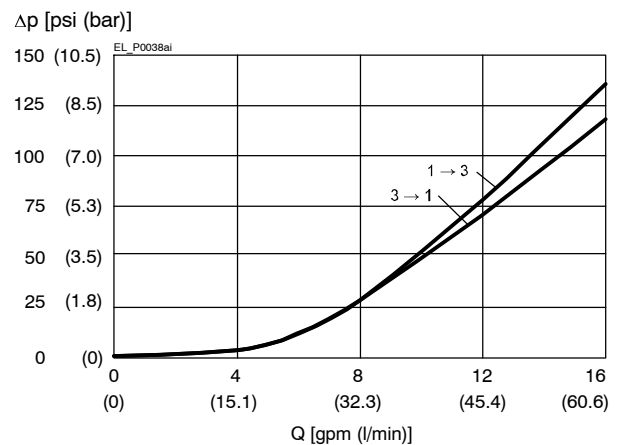
$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic
ESDV-12-4C (de-energising)



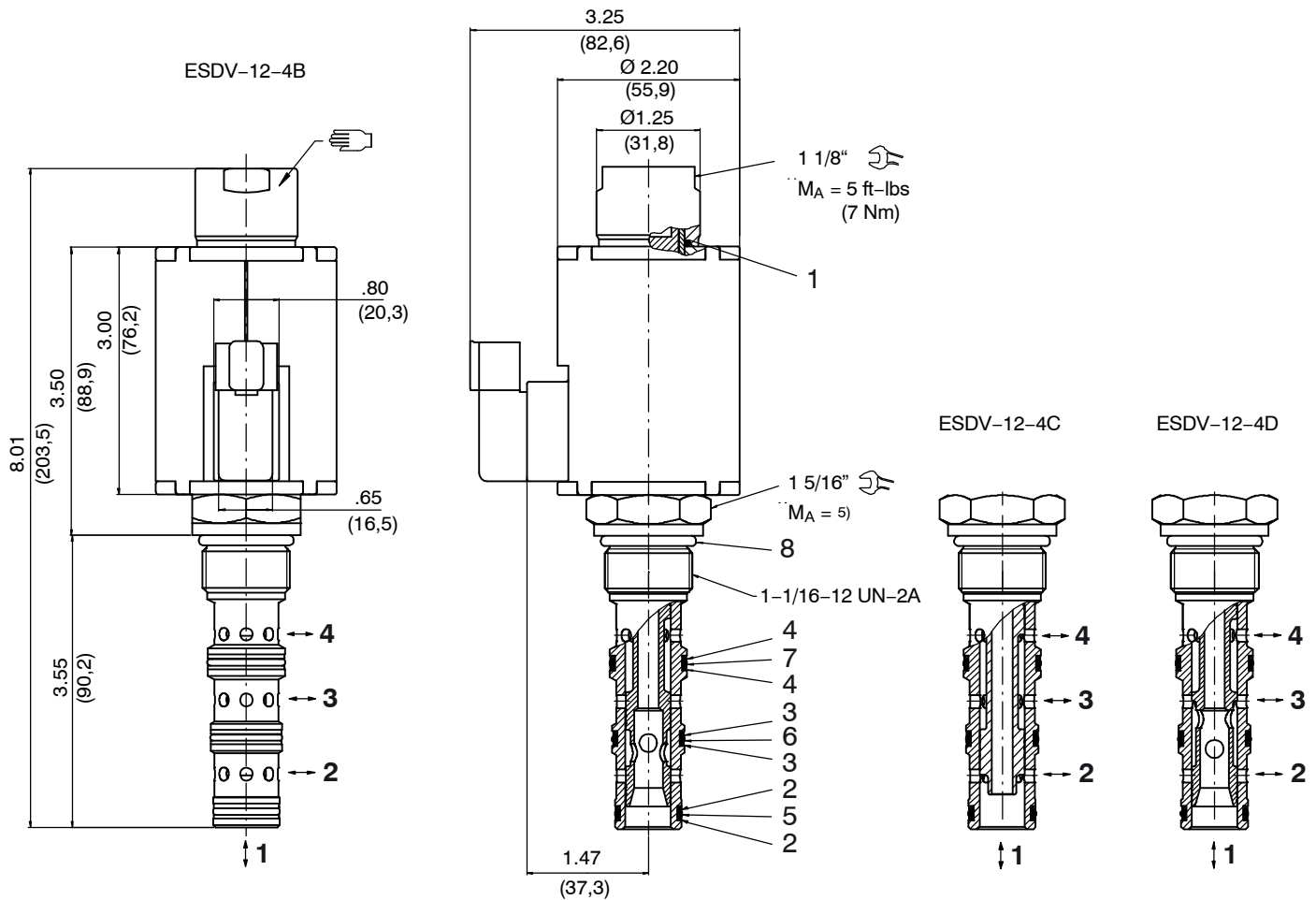
$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic
ESDV-12-4D (energising)



$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic
ESDV-12-4D (de-energising)



5 Dimensions & sectional view



Tightening torque M_A ⁵⁾

Cavity type	C1240
When fitted in aluminium	55...60 ft-lbs (74 - 81 [Nm])
When fitted in steel	70...75 ft-lbs (95 - 101 [Nm])

6 Installation information



IMPORTANT!

When fitting the cartridges, use the specified tightening torque. No adjustments are necessary, since the cartridges are set in the factory.



ATTENTION!

Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be undertaken is to check, and possibly replace, the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

Seal kit NBR no. SKN-1242-S1 ⁴⁾

Item	Qty.	Description	
1	1	O-ring no. 020 \varnothing 0,864 x 0,070 FKM	Inch
2	2	Backup ring 0.697x0.052 x 0.048 FI0751	Inch
3	2	Backup ring 0.768 x 0.053 x 0.048 FI0751	Inch
4	2	Backup ring 0.830 x 0.053 x 0.048 FI0751	Inch
5	1	O-ring no. 017 \varnothing 0.676 x 0.070 B-70	Inch
6	1	O-ring no. 018 \varnothing 0.739 x 0.070 B-70	Inch
7	1	O-ring no. 019 \varnothing 0.801 x 0.070 B-70	Inch
8	1	O-ring no. 912 \varnothing 0.924 x 0.116 B-90	Inch



IMPORTANT!

⁴⁾ Seal kit with FKM (Viton) seals, no. SKV-1242-S1

7 Ordering code

Ex. **ESDV** - **12** - **N** - **4A** - **0** - **24** **D** **_**

ESDV	=	directional valve, spool-type, direct acting		
12	=	size SAE 12 / NG 10		
N	=	NBR (Nitrile) seals (standard)		
V	=	FKM (Viton) seals (special seals - please contact BUCHER)		
4B	=	B Spool 4-ways/2-position		
4C	=	C Spool 4-ways/2-position		
4D	=	D Spool 4-ways/2-position (open transition)		
0	=	cartridge only		
04BA	=	line-mounting body G 1/2" -14 BSPP	aluminum	} on request
04BS	=	line-mounting body G 1/2" -14 BSPP	steel	
06BA	=	line-mounting body G 3/4" -14 BSPP	aluminum	
06BS	=	line-mounting body G 3/4" -14 BSPP	steel	
10TA	=	line-mounting body SAE-10	aluminum	
10TS	=	line-mounting body SAE-10	steel	
12TA	=	line-mounting body SAE-12	aluminum	
12TS	=	line-mounting body SAE-12	steel	
...	=	voltage e.g. 24 (24 V)		
D	=	current DC		
mating plug not supplied:				
T	=	Deutsch axial plug connection DT04-2P (IP 67/69K) ¹⁾		
TR	=	Deutsch axial plug connection DT04-2P (with protection diode, IP 67/69K) on request ¹⁾		
S	=	1/4" Spade Terminals connection ¹⁾		
F	=	flying leads (18 inch, [450 mm]) ¹⁾		
H	=	ISO 4400 / DIN 43 650 connection (IP 65)		

Note:

¹⁾ only up to 48 V

8 Related data sheets

Reference	(Old no.)	Description
520-P-000050		Form tools
520-P-000430	(0-043.0)	Cavity type C1240
520-P-001020		Coils D 2.2/.875 for screw-in cartridge valves
520-P-000431	(0-043.1)	Line-mounting body, 12 series – 4 way

info.el@bucherhydraulics.com

www.bucherhydraulics.com/commoncavity

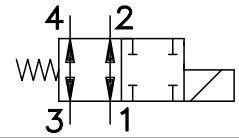
© 2020 by Bucher Hydraulics, Inc., 2545 Northwest Parkway, Elgin, Illinois 60124, USA

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Data is provided for the purpose of product description only, and must not be construed as warranted characteristics in the legal sense. The information does not relieve users from the duty of conducting their own evaluations and tests. Because the products are subject to continual improvement, we reserve the right to amend the product specifications contained in this catalogue.

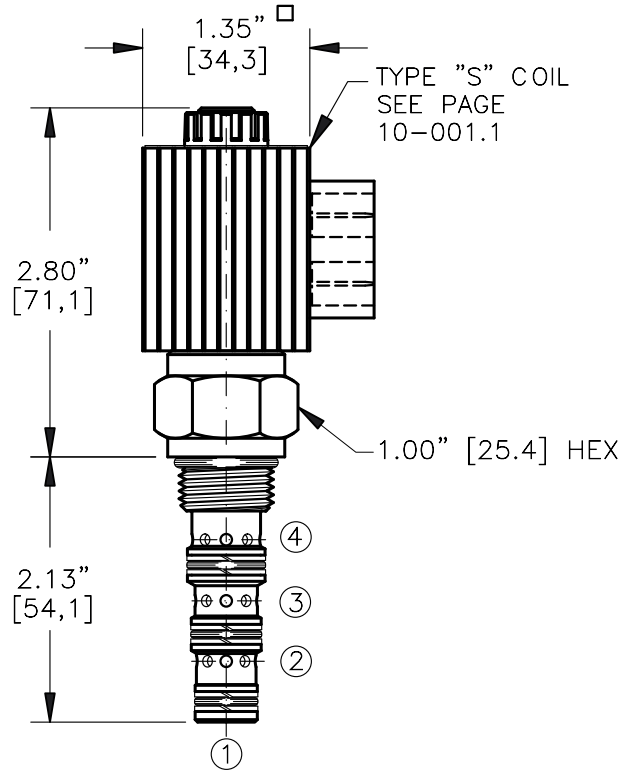
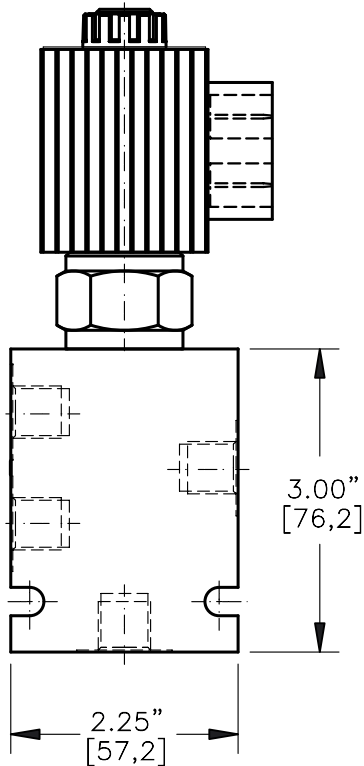
Classification: 430.300.330.305.315.380

SOLENOID VALVE, 4-WAY, 2-POSITION.
DIRECT ACTING, SPOOL TYPE (4/2)



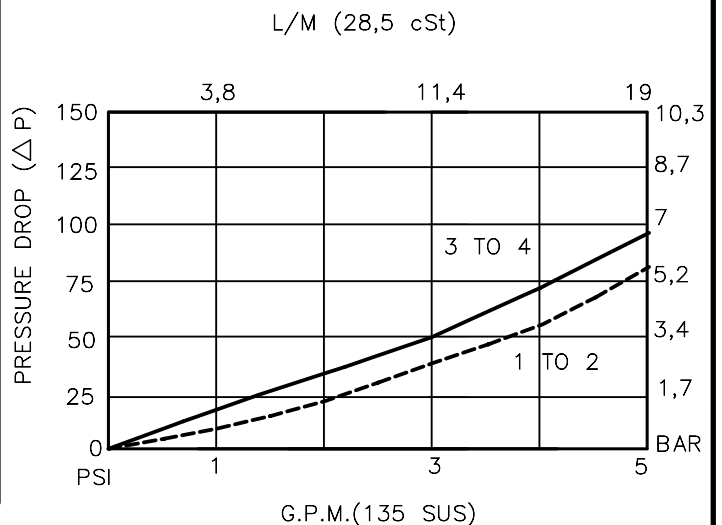
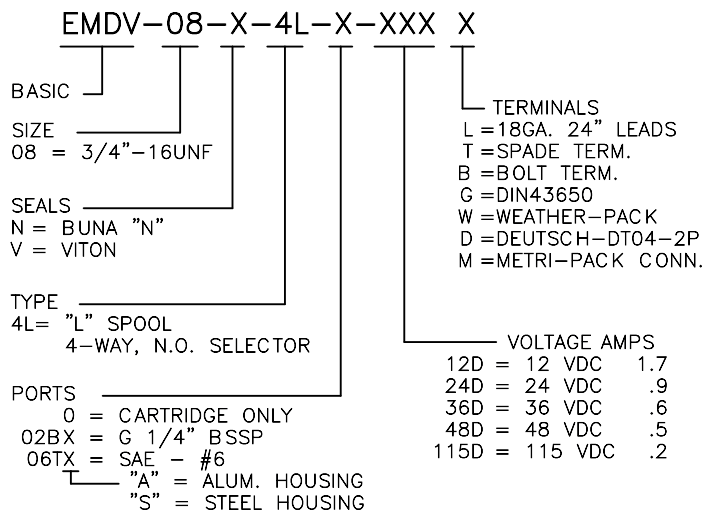
TORQUE:

Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-041.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. FOR "AC" COILS USE RECTIFIED DIN CONNECTOR 20828.



**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****DESCRIPTION**

This unit is a FOUR-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, normally open selector valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow from port 1 to 2, and port 3 to 4 and vice versa. When solenoid coil is energized, the spool in this valve is shifted and is closed at all ports.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted spool & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 5.0 GPM [19 l/m] See performance chart.

INTERNAL LEAKAGE: 5cu.in/min [82 cc/m] @ 5,000 PSI (350 Bar)

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as
MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

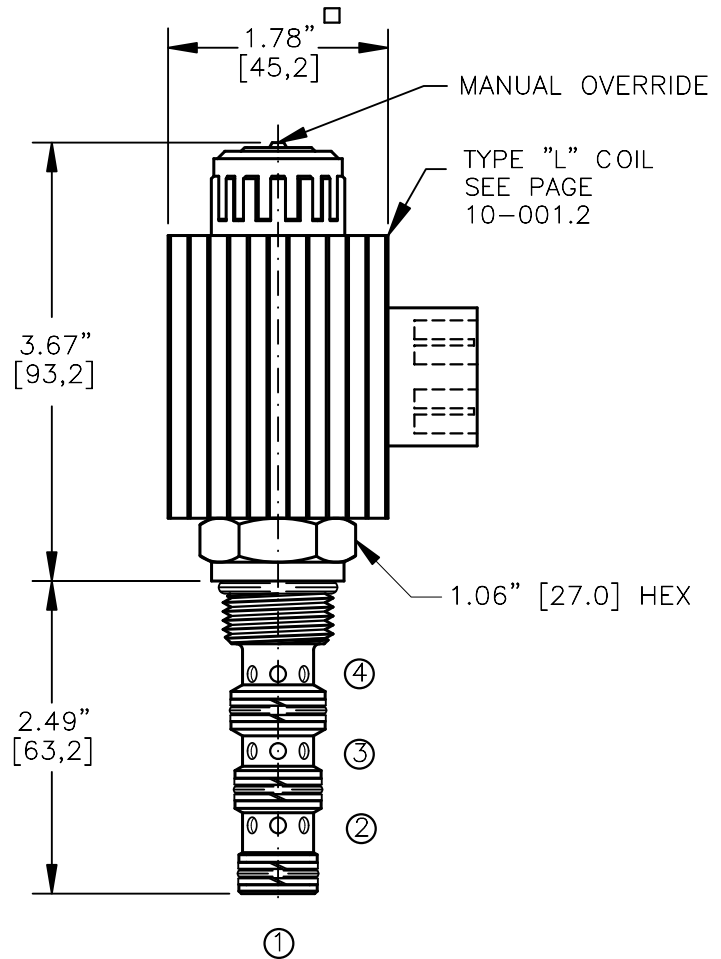
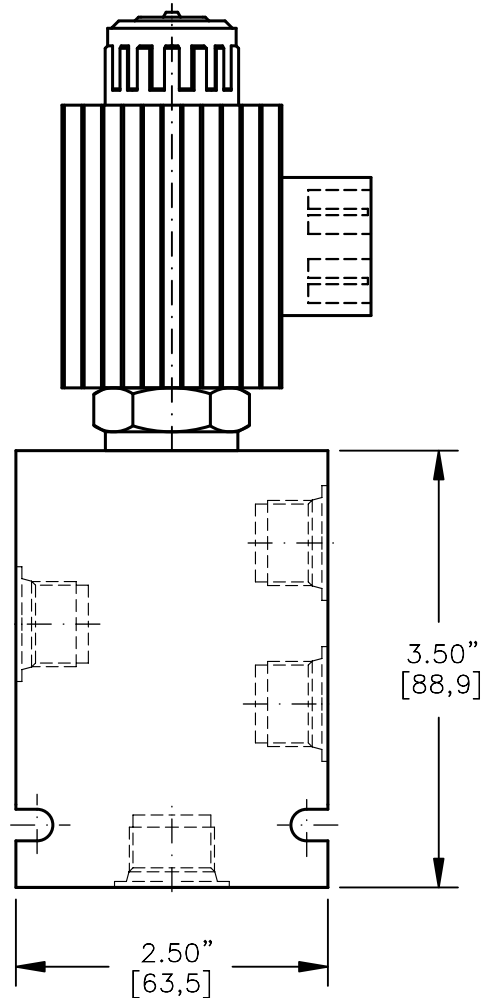
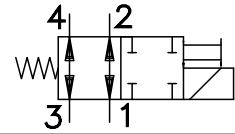
SEAL KIT: SKN-0842 Buna "N"

SKV-0842 Viton

WEIGHT: .98 lb [.44 kg] cartridge with coil only.

VALVE CAVITY: #C0840, See Page 0-041.0.

SOLENOID VALVE, 4-WAY, 2-POSITION.
DIRECT ACTING, SPOOL TYPE (4/2)



TORQUE:
Steel = 55/60 Ft-Lb. [74/81 Nm]
Aluminum = 35/40 Ft-Lb. [47/54 Nm]

EMDV-10-X-4C-X-XXX X

BASIC
SIZE
10 = 7/8"-14UNF

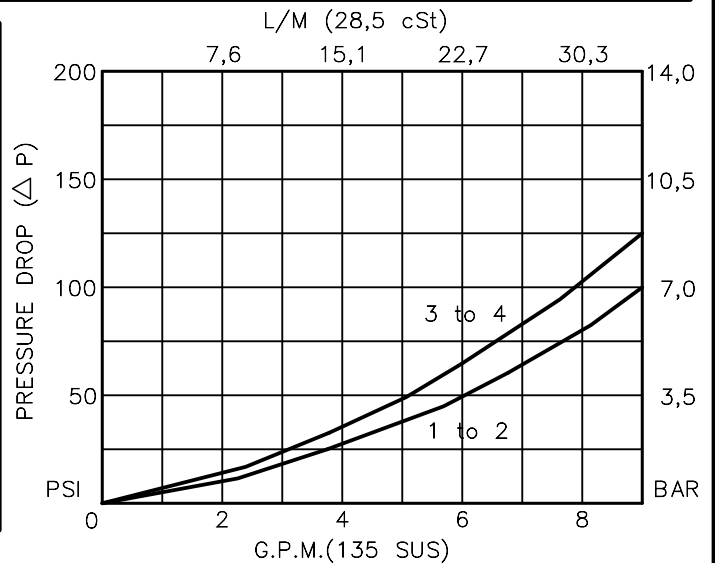
SEALS
N = BUNA "N"
V = VITON

TYPE
4C = "C" SPOOL
4-WAY, N.O. SELECTOR

PORTS
0 = CARTRIDGE ONLY
02BX = G 1/4" BSPP
03BX = G 3/8" BSPP
06TX = SAE - #6
08TX = SAE - #8
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS
L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS
12D = 12 VDC 3.00
24D = 24 VDC 1.50
36D = 36 VDC 1.00
48D = 48 VDC 0.75
110D = 110 VDC 0.33
115A = 115 VAC 0.32
230A = 230 VAC 0.16



**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****DESCRIPTION**

This unit is a FOUR-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, normally open selector valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 2, ports 3 and 4.

When solenoid coil is energized, the spool in this valve is shifted and allows no flow between ports 1 and 2, ports 3 and 4.

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

Industry common cavity.

**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 8.0 GPM [30 l/m] See performance chart.

INTERNAL LEAKAGE: 5cu.in/min [82 cc/m] @ 5,000 PSI (350 Bar)

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum - Anodized.

5000 PSI [350 Bar] = Steel - Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as
MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

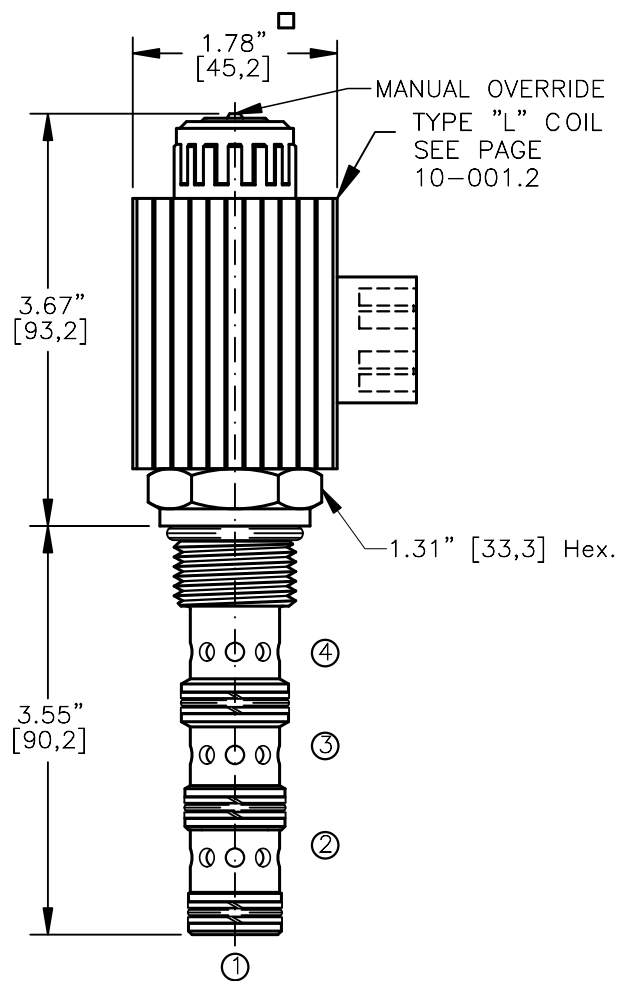
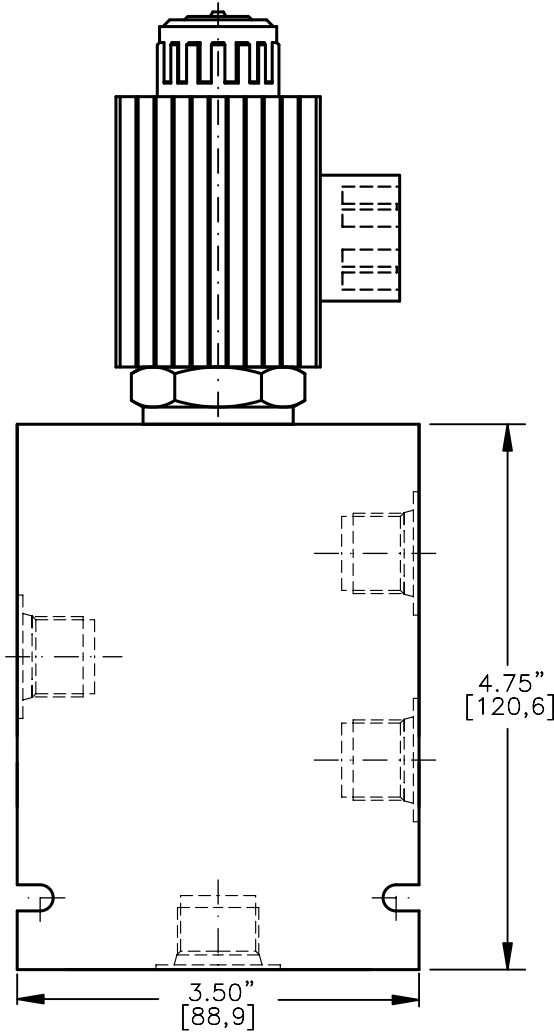
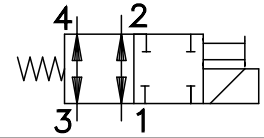
SEAL KIT: SKN-1042 Buna "N"

SKV-1042 Viton

WEIGHT: 2.01 lb [.91 kg] cartridge with coil only.

VALVE CAVITY: #C1040, See Page 0-042.0.

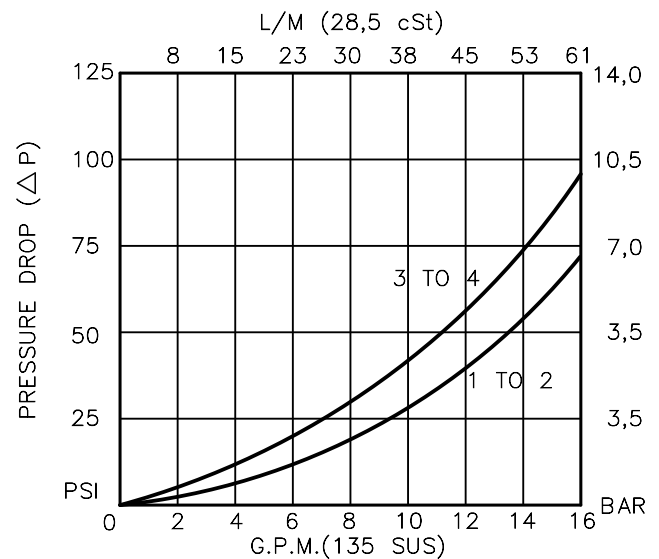
SOLENOID VALVE, 4-WAY, 2-POSITION.
DIRECT ACTING, SPOOL TYPE (4/2)



TORQUE:
Steel = 70/75 Ft-Lb. [95/102 Nm]
Aluminum = 55/60 Ft-Lb. [74/81 Nm]

EMDV-12-X-4C-X-XXX X

- BASIC
- SIZE
12 = 1.062"-12UNF
- SEALS
N = BUNA "N"
V = VITON
- TYPE
4C = "C" SPOOL
4-WAY, N.O. SELECTOR
- PORTS
0 = CARTRIDGE ONLY
04BX = G 1/2" BSPP
06BX = G 3/4" BSPP
10TX = SAE - #10
12TX = SAE - #12
"A" = ALUM. HOUSING
"S" = STEEL HOUSING
- TERMINALS
L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.
- VOLTAGE AMPS
12D = 12 VDC 3.00
24D = 24 VDC 1.50
36D = 36 VDC 1.00
48D = 48 VDC 0.75
110D = 110 VDC 0.33
115A = 115 VAC 0.32
230A = 230 VAC 0.16



**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****DESCRIPTION**

This unit is a FOUR-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, N.O. selector valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 2, ports 3 and 4.

When solenoid coil is energized, the spool in this valve is shifted and does not allow flow between ports 1 and 2 and ports 3 and 4.

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 16.0 GPM [60 l/m] See performance chart.

INTERNAL LEAKAGE: 5cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum - Anodized.

5000 PSI [350 Bar] = Steel - Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or

high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-1242 Buna "N"

SKV-1242 Viton

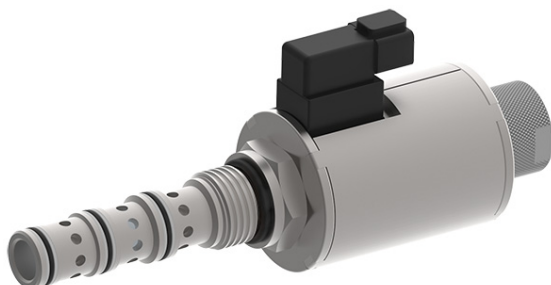
INSTALLATION: No restrictions.

WEIGHT: 2.13 lb [.97 kg] cartridge with coil only.

VALVE CAVITY: #C1240, See Page 0-043.0.

4-Ways / 2-Pos. Cartridge Spool Valve, SAE 12 / NG 10

$Q_{max} = 16.0 \text{ gpm [60 l/min]}$, $p_{max} = 5000 \text{ psi [350 bar]}$
direct acting, with solenoid operation
Series ESDV-12-4B | C | D...



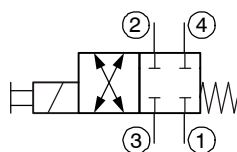
- Compact design for cavity type C1240
- A low power consumption
- Continuous duty cycle
- Low heat rise of the solenoid coil
- Hardened precision fitted spool & sleeve provides consistent high performance and long life
- High performance solenoid valve
- All exposed parts with zinc plating
- High pressure wet-armature solenoids
- Interchangeable IP rated solenoid coils available
- The slip-on coil can be rotated, and it can be replaced without opening the hydraulic envelope
- Various plug-connector systems and voltages are available
- Can be fitted in a line-mounting body
- Replaces EMDV-12-4...

1 Description

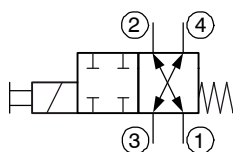
These direct acting 4-Ways / 2-Pos. solenoid operated spool valves, series ESDV-12-4... are size SAE 12 / NG 10, pressure balanced screw-in cartridges with a 1-1/16-12 UN mounting thread. When the solenoid coil is de-energized, the main spool is held in neutral position by the return spring. Actuation of the spool happens by a wet-armature solenoid system. Port 3 is designed to be the pressure inlet port. Pressure inlet port 3 as well as the consumer ports 2 and 4 are 5000 psi (350 bar) endurance proof and flow can be directed in both directions (see symbols). Port 1 is designed to be connected to the tank and the maximum pressure is limited to 3200 psi (220 bar). Spool type ESDV-12-4B is normally closed, i.e. there is no connection between ports 1, 2, 3 and 4. Once the solenoid coil is activated, port 3 is connected to 4 and port 2 to 1. Spool type ESDV-12-4C is normally open, i.e. there is a connection between port 2 to 1 as well as 3 to 4. Once the solenoid coil is activated, the

C-spool closes all connections and therefore only minimal spool leakage appears. Spool type ESDV-12-4D in neutral bypasses from 3 to 1. Once the solenoid coil is activated, ports 3 and 4 and ports 2 and 1 are connected. While the spool is moving there is a connection between ports 1, 2, 3 and 4 (D-spool shifts in open transition) and therefore the valve shifts "softer" and creates less pressure peaks.. Manual override operation: Press and hold on the small plunger which is located on top of the valve with a similar object smaller than 0.180" diameter. All external parts of this cartridge valve are zinc plated and are thus suitable for use in harsh operating environments. The slip-on coils can be replaced without opening the hydraulic envelope and can be positioned at any angle through 360°. If you intend to manufacture your own cavities or are designing a line-mounting installation, please refer to the section "Related data sheets".

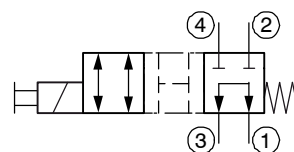
2 Symbol (ISO 1219)



ESDV-12-4B...



ESDV-12-4C...



ESDV-12-4D...

3 Technical data

General characteristics		Description, value, unit	
Designation		4-Ways / 2-Positions cartridge spool valve	
Design		direct acting, with solenoid operation	
Mounting method		screw-in cartridge 1-1/16-12 UN	
Size		SAE 12 / NG 10 for cavity type C1240	
Weight		1.25 lbs	[0,567 kg]
Mounting attitude		unrestricted (preferably vertical, coil down)	
Hydraulic characteristics		Description, value, unit	
Maximum operating pressure	- ports 4, 3, 2 - port 1	5000 psi 3200 psi	[350 bar] [220 bar]
Maximum flow rate	- B, C, D spool	16 gpm	[60 l/min]
Internal leakage		25 cu.in/min by 3200 psi 35 cu.in/min by 5000 psi	[410 ml/min by 220 bar] [574 ml/min by 350 bar]
Hydraulic fluid		HL and HLP mineral oil to DIN 51 524; for other fluids, please contact BUCHER	
Hydraulic fluid temperature range	NBR: Viton:	-13 °F ... +180 °F + 5 °F ... +250 °F	[-25 °C ... +80 °C] [-15 °C ... +120 °C]
Viscosity range		10...500 mm ² /s (cSt), recommended 15...250 mm ² /s (cSt)	
Minimum fluid cleanliness Cleanliness class to ISO 4406 : 1999		class 20/18/15	
Electrical characteristics		Description, value, unit	
Supply voltage		12 V DC, 24 V DC, 103 V DC, 206 V DC note: • for AC applications an external rectifier circuit is required • the effective voltage in AC (with external rectifier circuit) is 11% higher than the rated DC voltage: 103 VDC → 115 V AC (respectively 206 V DC → 230 V AC) • above 48 V a ground connection to the metal housing of the coil is required	
Supply voltage tolerance		± 10 %	
Ambient temperature range		-22 °F ... +140 °F	[-30 °C ... +60 °C]
Power consumption at max. control current	12 V DC, 24 V DC 103 V DC ²⁾ , 206 V DC ²⁾	Nominal power consumption: 27 W 31 VA ³⁾	
Switching time		45 ... 100 ms (solenoid ON) 20 ... 100 ms (solenoid OFF) These times are strongly influenced by fluid pressure, flow rate and viscosity, as well as by the dwell time under pressure.	
Relative duty cycle		100 %	
Protection class to ISO 20 653 / EN 60 529		IP 65 / IP 67 / IP 69K, see "Ordering code" (with appropriate mating connector and proper fitting and sealing)	
Electrical connection		2-pin square plug to ISO 4400 / DIN 43 650 (standard) ³⁾ for other connectors, see "Ordering code"	

Note:

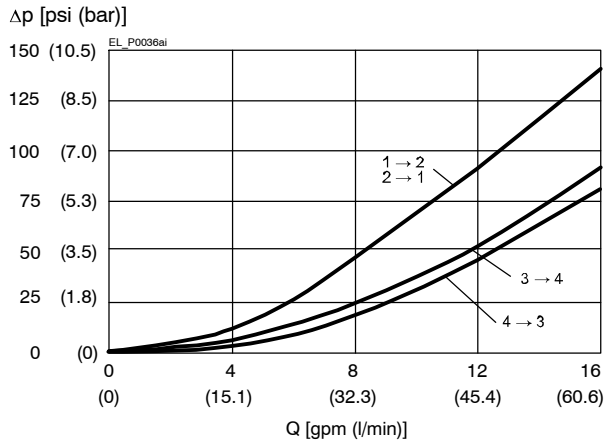
2) for AC applications an external rectifier circuit is required. ATTENTION: The effective voltage in AC (with external rectifier circuit) is 11% higher than the rated DC voltage.

3) above 48 V a ground connection to the metal housing of the coil is required.

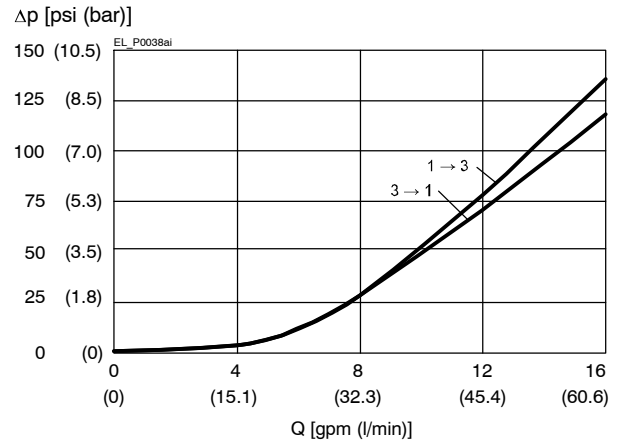
4 Performance graphs

measured with oil viscosity 33 mm²/s (cSt)

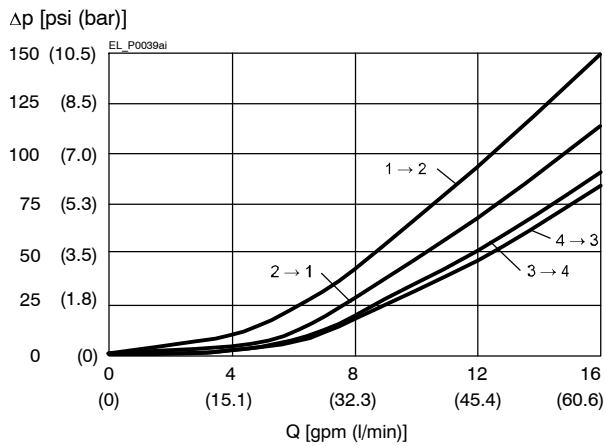
$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic
ESDV-12-4B (energising)



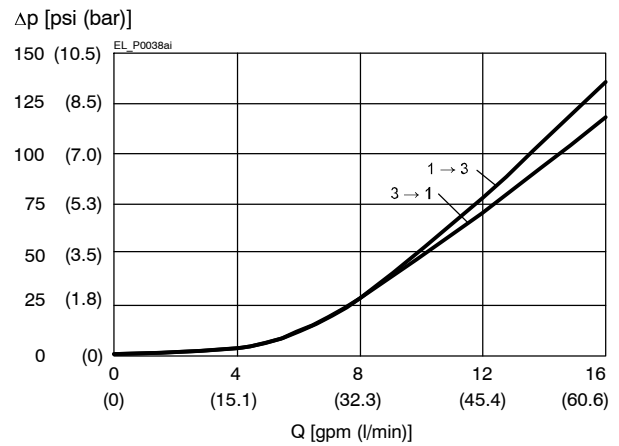
$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic
ESDV-12-4C (de-energising)



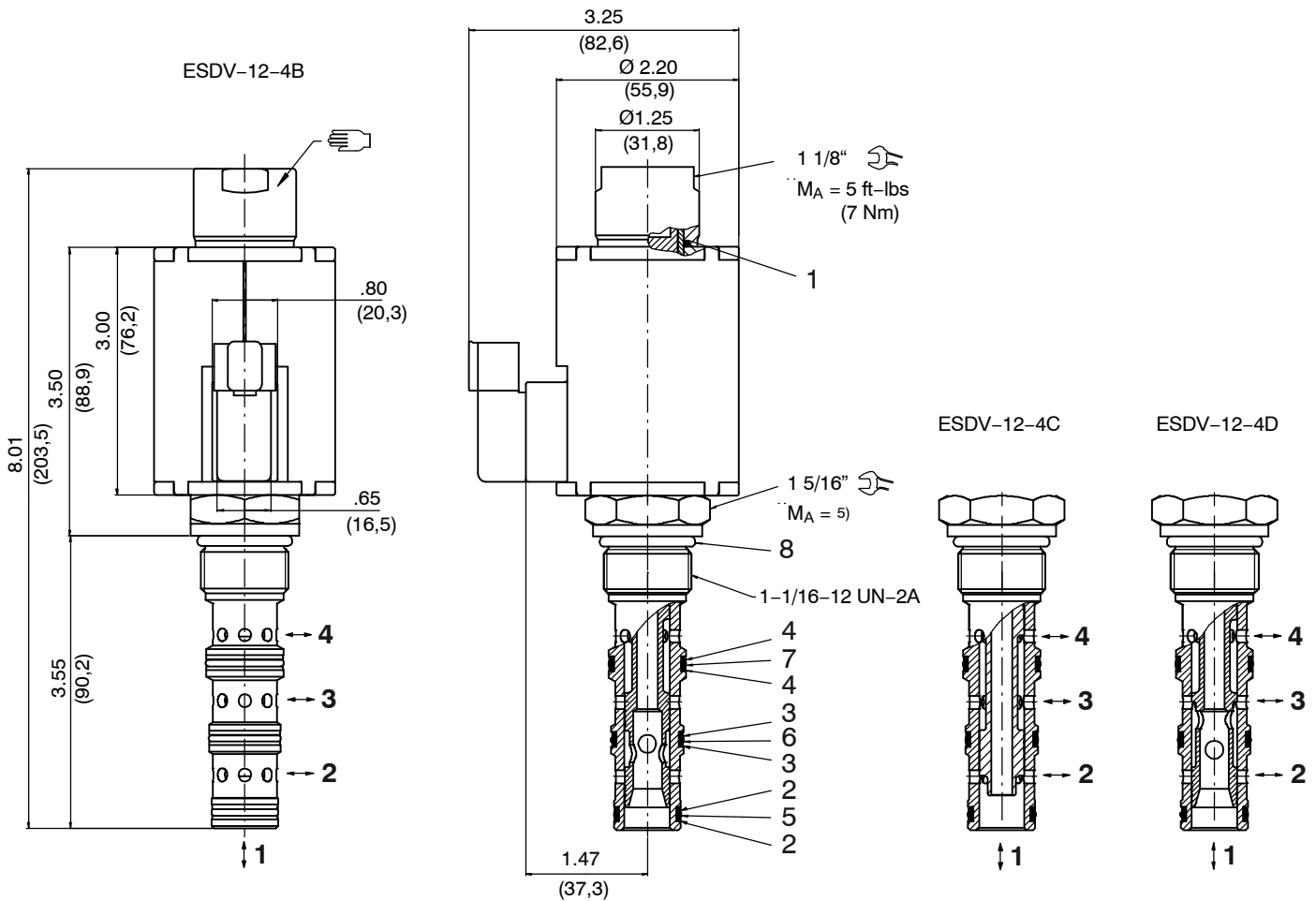
$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic
ESDV-12-4D (energising)



$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic
ESDV-12-4D (de-energising)



5 Dimensions & sectional view



Tightening torque M_A ⁵⁾

Cavity type	C1240
When fitted in aluminium	55...60 ft-lbs (74 - 81 [Nm])
When fitted in steel	70...75 ft-lbs (95 - 101 [Nm])

6 Installation information



IMPORTANT!

When fitting the cartridges, use the specified tightening torque. No adjustments are necessary, since the cartridges are set in the factory.



ATTENTION!

Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be undertaken is to check, and possibly replace, the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

Seal kit NBR no. SKN-1242-S1 ⁴⁾

Item	Qty.	Description	
1	1	O-ring no. 020 \varnothing 0,864 x 0,070 FKM	Inch
2	2	Backup ring 0.697x0.052 x 0.048 FI0751	Inch
3	2	Backup ring 0.768 x 0.053 x 0.048 FI0751	Inch
4	2	Backup ring 0.830 x 0.053 x 0.048 FI0751	Inch
5	1	O-ring no. 017 \varnothing 0.676 x 0.070 B-70	Inch
6	1	O-ring no. 018 \varnothing 0.739 x 0.070 B-70	Inch
7	1	O-ring no. 019 \varnothing 0.801 x 0.070 B-70	Inch
8	1	O-ring no. 912 \varnothing 0.924 x 0.116 B-90	Inch



IMPORTANT!

⁴⁾ Seal kit with FKM (Viton) seals, no. SKV-1242-S1

7 Ordering code

Ex. **ESDV** - **12** - **N** - **4A** - **0** - **24** **D** -

ESDV	=	directional valve, spool-type, direct acting		
12	=	size SAE 12 / NG 10		
N	=	NBR (Nitrile) seals (standard)		
V	=	FKM (Viton) seals (special seals - please contact BUCHER)		
4B	=	B Spool 4-ways/2-position		
4C	=	C Spool 4-ways/2-position		
4D	=	D Spool 4-ways/2-position (open transition)		
0	=	cartridge only		
04BA	=	line-mounting body G 1/2" -14 BSPP	aluminum	} on request
04BS	=	line-mounting body G 1/2" -14 BSPP	steel	
06BA	=	line-mounting body G 3/4" -14 BSPP	aluminum	
06BS	=	line-mounting body G 3/4" -14 BSPP	steel	
10TA	=	line-mounting body SAE-10	aluminum	
10TS	=	line-mounting body SAE-10	steel	
12TA	=	line-mounting body SAE-12	aluminum	
12TS	=	line-mounting body SAE-12	steel	
...	=	voltage e.g. 24 (24 V)		
D	=	current DC		
mating plug not supplied:				
T	=	Deutsch axial plug connection DT04-2P (IP 67/69K) ¹⁾		
TR	=	Deutsch axial plug connection DT04-2P (with protection diode, IP 67/69K) on request ¹⁾		
S	=	1/4" Spade Terminals connection ¹⁾		
F	=	flying leads (18 inch, [450 mm]) ¹⁾		
H	=	ISO 4400 / DIN 43 650 connection (IP 65)		

Note:

¹⁾ only up to 48 V

8 Related data sheets

Reference	(Old no.)	Description
520-P-000050		Form tools
520-P-000430	(0-043.0)	Cavity type C1240
520-P-001020		Coils D 2.2/.875 for screw-in cartridge valves
520-P-000431	(0-043.1)	Line-mounting body, 12 series – 4 way

info.el@bucherhydraulics.com

www.bucherhydraulics.com/commoncavity

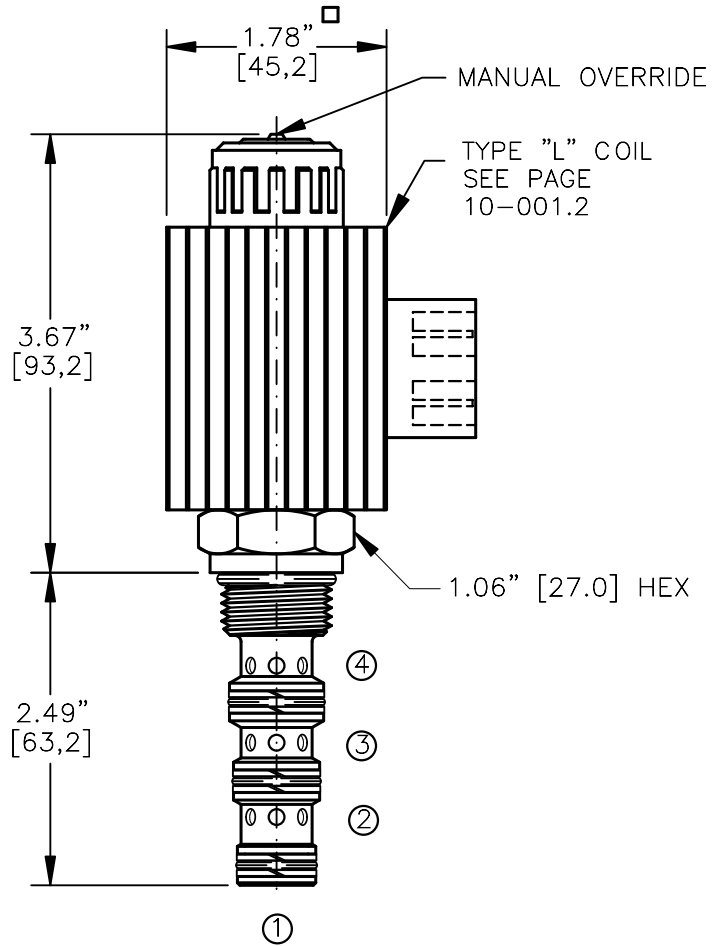
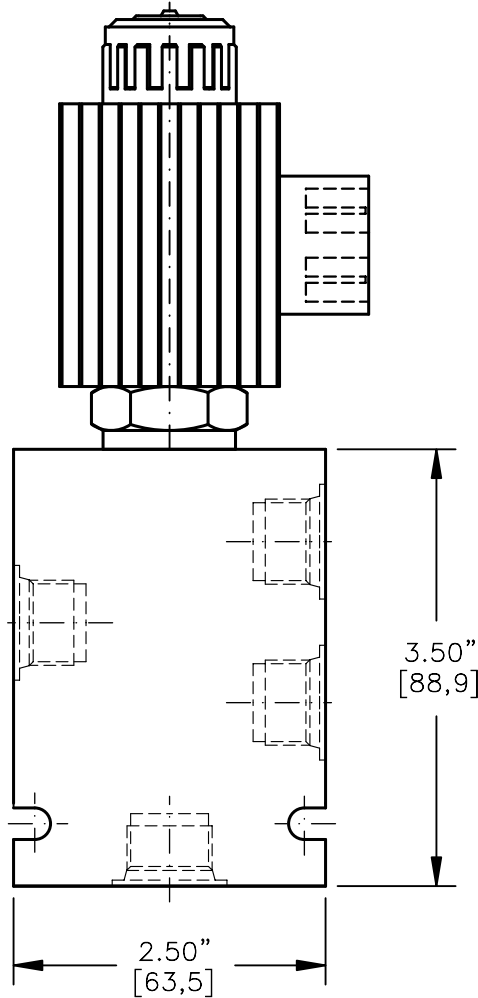
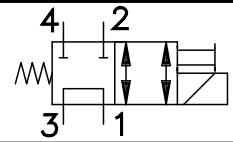
© 2020 by Bucher Hydraulics, Inc., 2545 Northwest Parkway, Elgin, Illinois 60124, USA

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Data is provided for the purpose of product description only, and must not be construed as warranted characteristics in the legal sense. The information does not relieve users from the duty of conducting their own evaluations and tests. Because the products are subject to continual improvement, we reserve the right to amend the product specifications contained in this catalogue.

Classification: 430.300.330.305.315.380

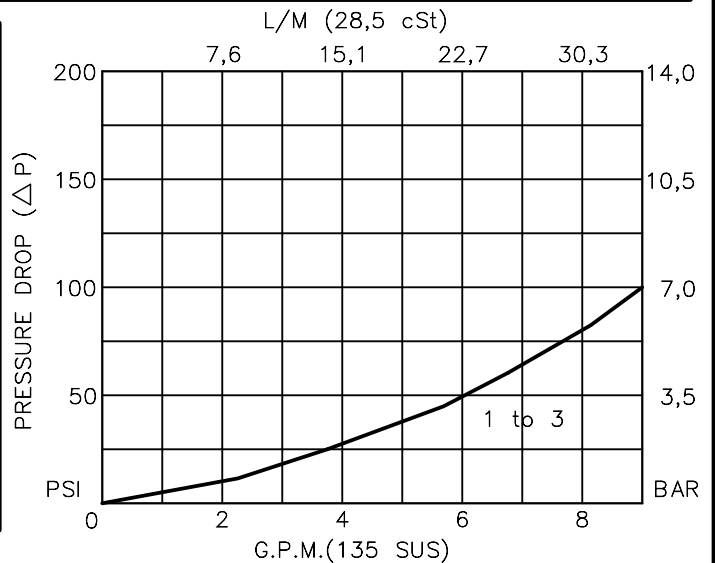
SOLENOID VALVE, 4-WAY, 2-POSITION.
DIRECT ACTING, SPOOL TYPE (4/2)



TORQUE:
Steel = 55/60 Ft-Lb. [74/81 Nm]
Aluminum = 35/40 Ft-Lb. [47/54 Nm]

EMDV-10-X-4D-X-XXX X

- | | |
|--|---|
| BASIC | TERMINALS |
| SIZE
10 = 7/8"-14UNF | L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN. |
| SEALS
N = BUNA "N"
V = VITON | VOLTAGE AMPS |
| TYPE
4D = "D" SPOOL
4-WAY, 2-POSITION | 12D = 12 VDC 3.00
24D = 24 VDC 1.50
36D = 36 VDC 1.00
48D = 48 VDC 0.75
110D = 110 VDC 0.33
115A = 115 VAC 0.32
230A = 230 VAC 0.16 |
| PORTS
0 = CARTRIDGE ONLY
02BX = G 1/4" BSPP
03BX = G 3/8" BSPP
06TX = SAE - #6
08TX = SAE - #8
"A" = ALUM. HOUSING
"S" = STEEL HOUSING | |



**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****DESCRIPTION**

This unit is a FOUR-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 3, no flow to ports 2 and 4. When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 2, ports 3 and 4.

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted spool & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 8.0 GPM [30 l/m] See performance chart.

INTERNAL LEAKAGE: 5cu.in./min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum - Anodized.

5000 PSI [350 Bar] = Steel - Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

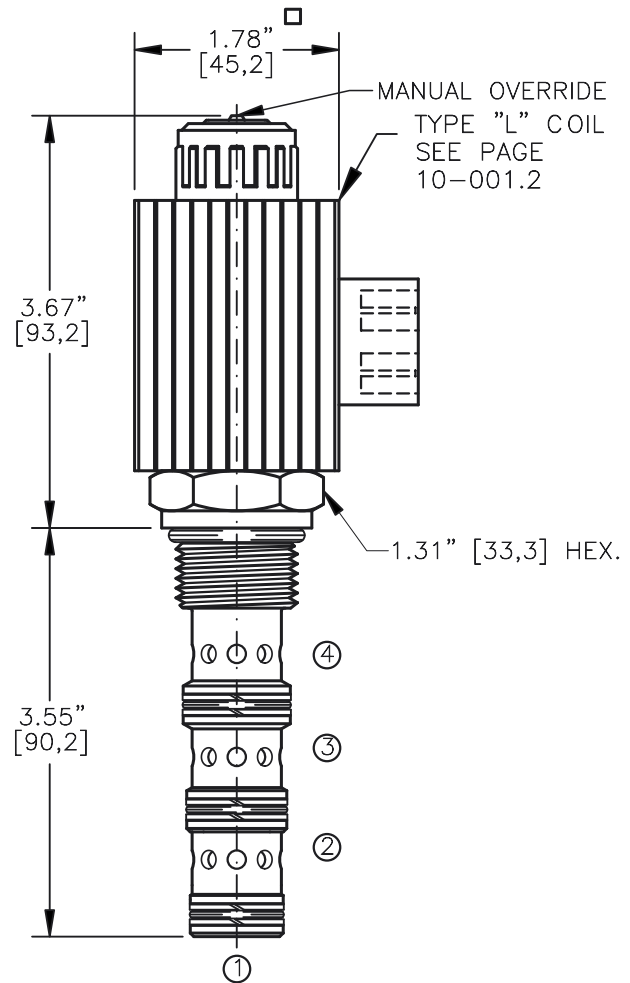
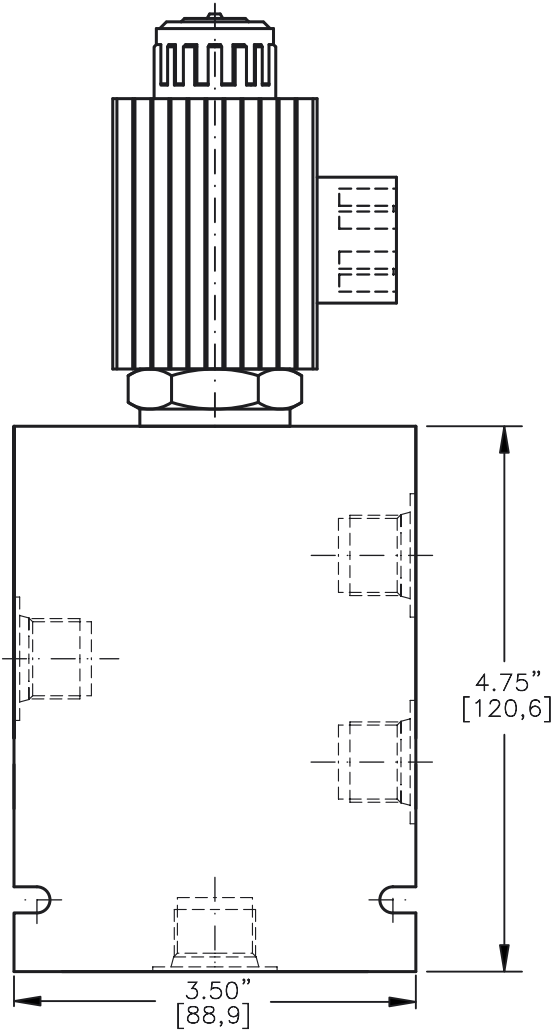
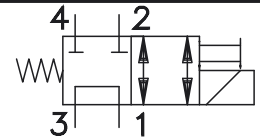
SEAL KIT: SKN-1042 Buna "N"

SKV-1042 Viton

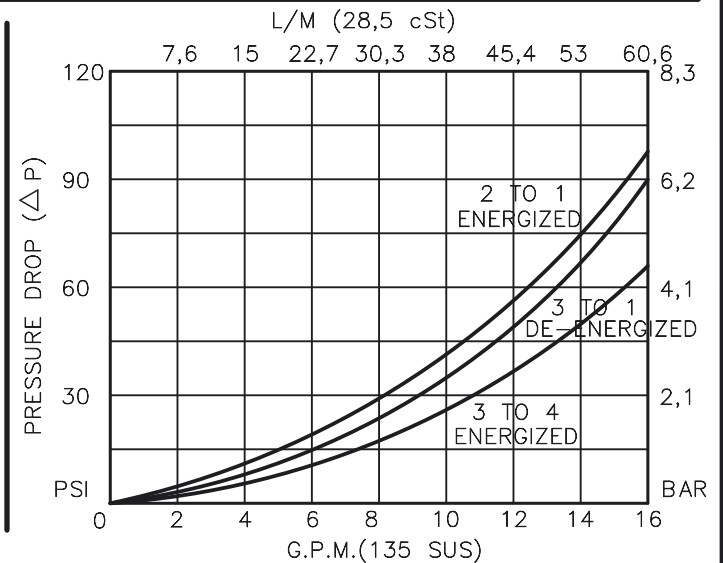
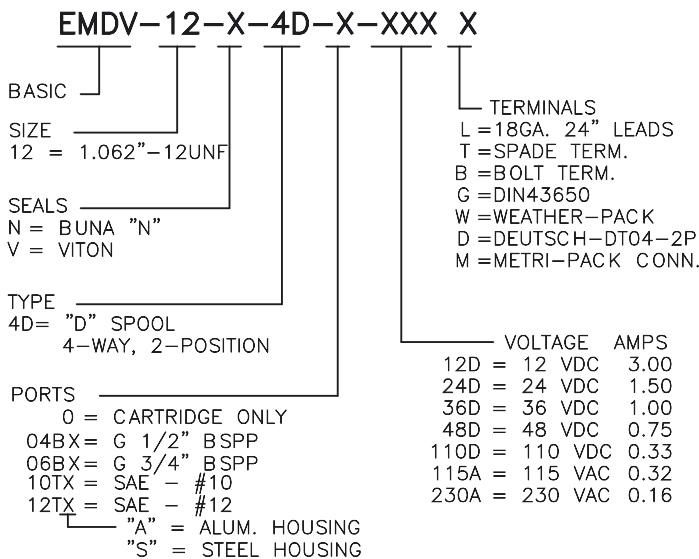
WEIGHT: 2.01 lb [.91 kg] cartridge with coil only.

VALVE CAVITY: #C1040, See Page 0-042.0.

SOLENOID VALVE, 4-WAY, 2-POSITION.
DIRECT ACTING, SPOOL TYPE (4/2)



TORQUE:
Steel = 70/75 Ft-Lb. [95/102 Nm]
Aluminum = 55/60 Ft-Lb. [74/81 Nm]



**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****DESCRIPTION**

This unit is a FOUR-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 3, no flow to ports 2 and 4.

When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 2, ports 3 and 4.

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 16.0 GPM [60 l/m] See performance chart.

INTERNAL LEAKAGE: 5cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as
MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-1242 Buna "N"

SKV-1242 Viton

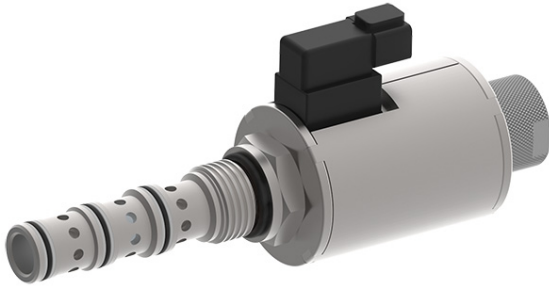
INSTALLATION: No restrictions.

WEIGHT: 2.13 lb [.97 kg] cartridge with coil only.

VALVE CAVITY: #C1240, See Page 0-043.0.

4-Ways / 2-Pos. Cartridge Spool Valve, SAE 12 / NG 10

$Q_{max} = 16.0 \text{ gpm [60 l/min]}$, $p_{max} = 5000 \text{ psi [350 bar]}$
direct acting, with solenoid operation
Series ESDV-12-4B | C | D...



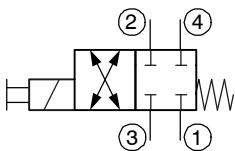
- Compact design for cavity type C1240
- A low power consumption
- Continuous duty cycle
- Low heat rise of the solenoid coil
- Hardened precision fitted spool & sleeve provides consistent high performance and long life
- High performance solenoid valve
- All exposed parts with zinc plating
- High pressure wet-armature solenoids
- Interchangeable IP rated solenoid coils available
- The slip-on coil can be rotated, and it can be replaced without opening the hydraulic envelope
- Various plug-connector systems and voltages are available
- Can be fitted in a line-mounting body
- Replaces EMDV-12-4...

1 Description

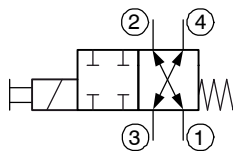
These direct acting 4-Ways / 2-Pos. solenoid operated spool valves, series ESDV-12-4... are size SAE 12 / NG 10, pressure balanced screw-in cartridges with a 1-1/16-12 UN mounting thread. When the solenoid coil is de-energized, the main spool is held in neutral position by the return spring. Actuation of the spool happens by a wet-armature solenoid system. Port 3 is designed to be the pressure inlet port. Pressure inlet port 3 as well as the consumer ports 2 and 4 are 5000 psi (350 bar) endurance proof and flow can be directed in both directions (see symbols). Port 1 is designed to be connected to the tank and the maximum pressure is limited to 3200 psi (220 bar). Spool type ESDV-12-4B is normally closed, i.e. there is no connection between ports 1, 2, 3 and 4. Once the solenoid coil is activated, port 3 is connected to 4 and port 2 to 1. Spool type ESDV-12-4C is normally open, i.e. there is a connection between port 2 to 1 as well as 3 to 4. Once the solenoid coil is activated, the

C-spool closes all connections and therefore only minimal spool leakage appears. Spool type ESDV-12-4D in neutral bypasses from 3 to 1. Once the solenoid coil is activated, ports 3 and 4 and ports 2 and 1 are connected. While the spool is moving there is a connection between ports 1, 2, 3 and 4 (D-spool shifts in open transition) and therefore the valve shifts "softer" and creates less pressure peaks.. Manual override operation: Press and hold on the small plunger which is located on top of the valve with a similar object smaller than 0.180" diameter. All external parts of this cartridge valve are zinc plated and are thus suitable for use in harsh operating environments. The slip-on coils can be replaced without opening the hydraulic envelope and can be positioned at any angle through 360°. If you intend to manufacture your own cavities or are designing a line-mounting installation, please refer to the section "Related data sheets".

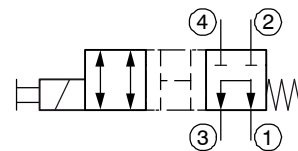
2 Symbol (ISO 1219)



ESDV-12-4B...



ESDV-12-4C...



ESDV-12-4D...

3 Technical data

General characteristics		Description, value, unit	
Designation		4-Ways / 2-Positions cartridge spool valve	
Design		direct acting, with solenoid operation	
Mounting method		screw-in cartridge 1-1/16-12 UN	
Size		SAE 12 / NG 10 for cavity type C1240	
Weight		1.25 lbs	[0,567 kg]
Mounting attitude		unrestricted (preferably vertical, coil down)	
Hydraulic characteristics		Description, value, unit	
Maximum operating pressure	- ports 4, 3, 2 - port 1	5000 psi 3200 psi	[350 bar] [220 bar]
Maximum flow rate	- B, C, D spool	16 gpm	[60 l/min]
Internal leakage		25 cu.in/min by 3200 psi 35 cu.in/min by 5000 psi	[410 ml/min by 220 bar] [574 ml/min by 350 bar]
Hydraulic fluid		HL and HLP mineral oil to DIN 51 524; for other fluids, please contact BUCHER	
Hydraulic fluid temperature range	NBR: Viton:	-13 °F ... +180 °F + 5 °F ... +250 °F	[-25 °C ... +80 °C] [-15 °C ... +120 °C]
Viscosity range		10...500 mm ² /s (cSt), recommended 15...250 mm ² /s (cSt)	
Minimum fluid cleanliness Cleanliness class to ISO 4406 : 1999		class 20/18/15	
Electrical characteristics		Description, value, unit	
Supply voltage		12 V DC, 24 V DC, 103 V DC, 206 V DC note: • for AC applications an external rectifier circuit is required • the effective voltage in AC (with external rectifier circuit) is 11% higher than the rated DC voltage: 103 VDC → 115 V AC (respectively 206 V DC → 230 V AC) • above 48 V a ground connection to the metal housing of the coil is required	
Supply voltage tolerance		± 10 %	
Ambient temperature range		-22 °F ... +140 °F	[-30 °C ... +60 °C]
Power consumption at max. control current	12 V DC, 24 V DC 103 V DC ²⁾ , 206 V DC ²⁾	Nominal power consumption: 27 W 31 VA ³⁾	
Switching time		45 ... 100 ms (solenoid ON) 20 ... 100 ms (solenoid OFF) These times are strongly influenced by fluid pressure, flow rate and viscosity, as well as by the dwell time under pressure.	
Relative duty cycle		100 %	
Protection class to ISO 20 653 / EN 60 529		IP 65 / IP 67 / IP 69K, see "Ordering code" (with appropriate mating connector and proper fitting and sealing)	
Electrical connection		2-pin square plug to ISO 4400 / DIN 43 650 (standard) ³⁾ for other connectors, see "Ordering code"	

Note:

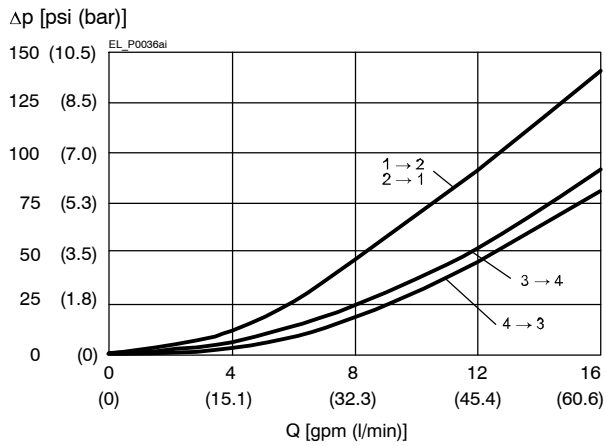
2) for AC applications an external rectifier circuit is required. ATTENTION: The effective voltage in AC (with external rectifier circuit) is 11% higher than the rated DC voltage.

3) above 48 V a ground connection to the metal housing of the coil is required.

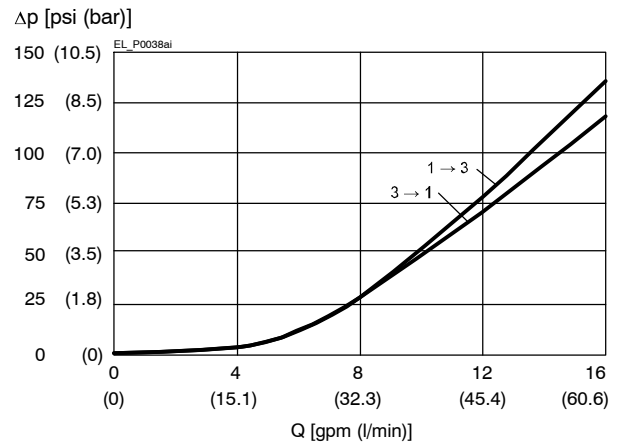
4 Performance graphs

measured with oil viscosity 33 mm²/s (cSt)

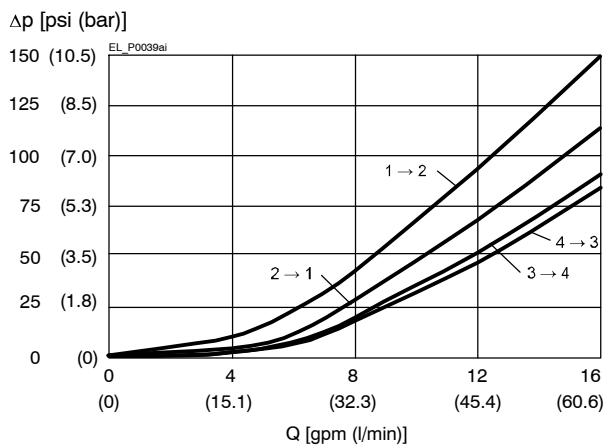
$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic
ESDV-12-4B (energising)



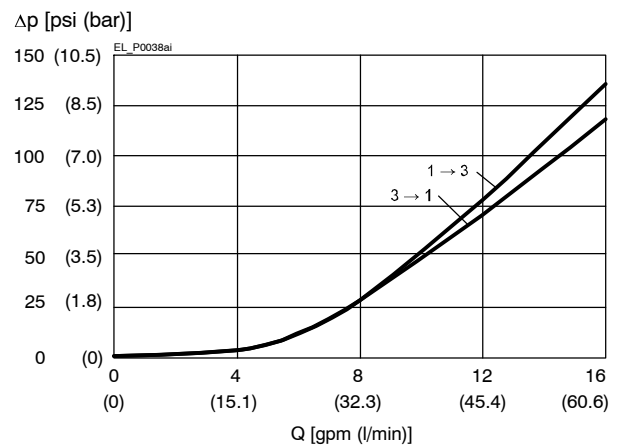
$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic
ESDV-12-4C (de-energising)



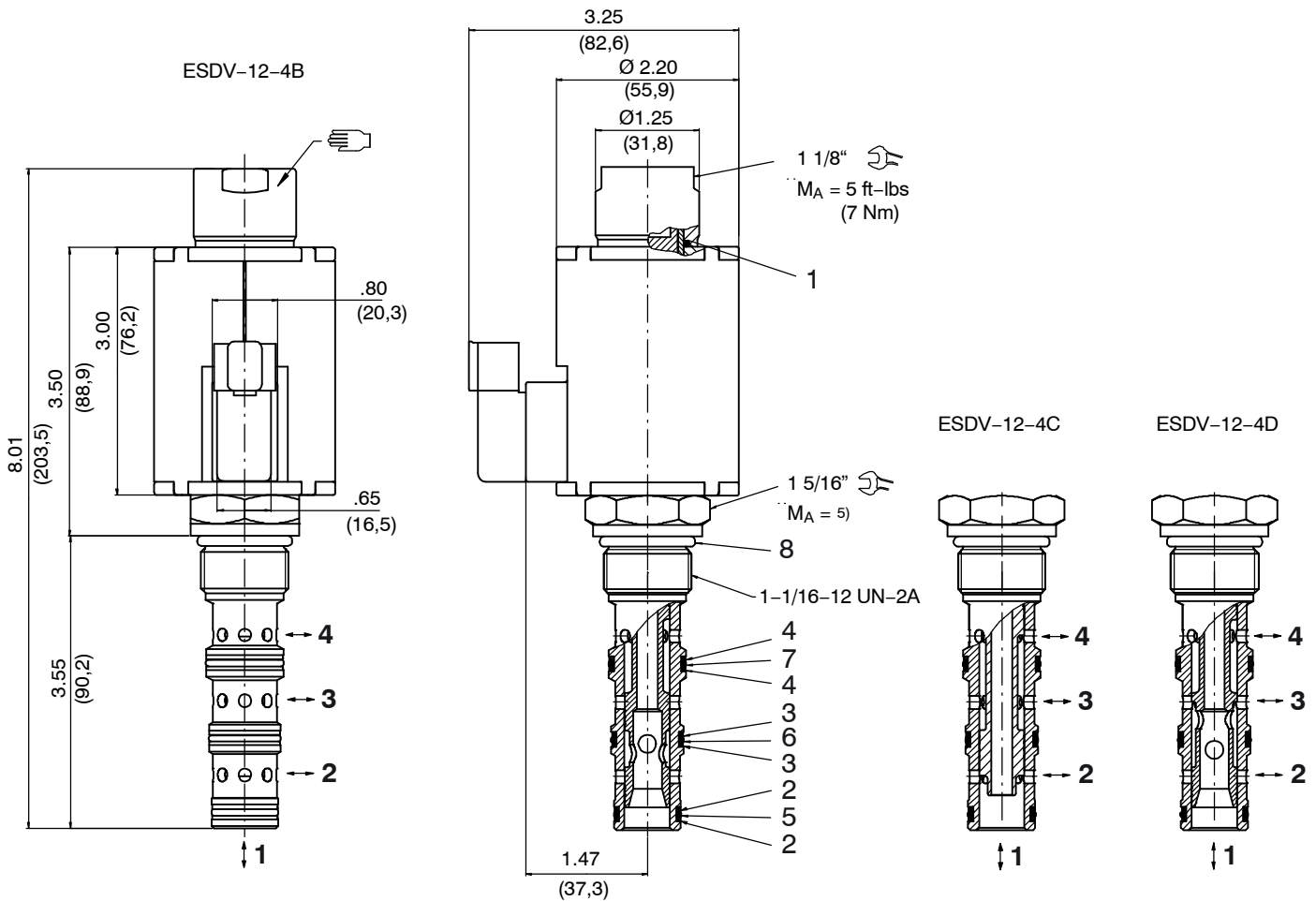
$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic
ESDV-12-4D (energising)



$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic
ESDV-12-4D (de-energising)



5 Dimensions & sectional view



Tightening torque M_A ⁵⁾

Cavity type	C1240
When fitted in aluminium	55...60 ft-lbs (74 - 81 [Nm])
When fitted in steel	70...75 ft-lbs (95 - 101 [Nm])

6 Installation information



IMPORTANT!

When fitting the cartridges, use the specified tightening torque. No adjustments are necessary, since the cartridges are set in the factory.



ATTENTION!

Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be undertaken is to check, and possibly replace, the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

Seal kit NBR no. SKN-1242-S1 ⁴⁾

Item	Qty.	Description	
1	1	O-ring no. 020 \varnothing 0,864 x 0,070 FKM	Inch
2	2	Backup ring 0.697x0.052 x 0.048 FI0751	Inch
3	2	Backup ring 0.768 x 0.053 x 0.048 FI0751	Inch
4	2	Backup ring 0.830 x 0.053 x 0.048 FI0751	Inch
5	1	O-ring no. 017 \varnothing 0.676 x 0.070 B-70	Inch
6	1	O-ring no. 018 \varnothing 0.739 x 0.070 B-70	Inch
7	1	O-ring no. 019 \varnothing 0.801 x 0.070 B-70	Inch
8	1	O-ring no. 912 \varnothing 0.924 x 0.116 B-90	Inch



IMPORTANT!

⁴⁾ Seal kit with FKM (Viton) seals, no. SKV-1242-S1

7 Ordering code

Ex. **ESDV** - **12** - **N** - **4A** - **0** - **24** **D** -

ESDV	=	directional valve, spool-type, direct acting		
12	=	size SAE 12 / NG 10		
N	=	NBR (Nitrile) seals (standard)		
V	=	FKM (Viton) seals (special seals - please contact BUCHER)		
4B	=	B Spool 4-ways/2-position		
4C	=	C Spool 4-ways/2-position		
4D	=	D Spool 4-ways/2-position (open transition)		
0	=	cartridge only		
04BA	=	line-mounting body G 1/2" -14 BSPP	aluminum	} on request
04BS	=	line-mounting body G 1/2" -14 BSPP	steel	
06BA	=	line-mounting body G 3/4" -14 BSPP	aluminum	
06BS	=	line-mounting body G 3/4" -14 BSPP	steel	
10TA	=	line-mounting body SAE-10	aluminum	
10TS	=	line-mounting body SAE-10	steel	
12TA	=	line-mounting body SAE-12	aluminum	
12TS	=	line-mounting body SAE-12	steel	
...	=	voltage e.g. 24 (24 V)		
D	=	current DC		
mating plug not supplied:				
T	=	Deutsch axial plug connection DT04-2P (IP 67/69K) ¹⁾		
TR	=	Deutsch axial plug connection DT04-2P (with protection diode, IP 67/69K) on request ¹⁾		
S	=	1/4" Spade Terminals connection ¹⁾		
F	=	flying leads (18 inch, [450 mm]) ¹⁾		
H	=	ISO 4400 / DIN 43 650 connection (IP 65)		

Note:

¹⁾ only up to 48 V

8 Related data sheets

Reference	(Old no.)	Description
520-P-000050		Form tools
520-P-000430	(0-043.0)	Cavity type C1240
520-P-001020		Coils D 2.2/.875 for screw-in cartridge valves
520-P-000431	(0-043.1)	Line-mounting body, 12 series – 4 way

info.el@bucherhydraulics.com

www.bucherhydraulics.com/commoncavity

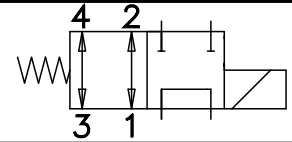
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Data is provided for the purpose of product description only, and must not be construed as warranted characteristics in the legal sense. The information does not relieve users from the duty of conducting their own evaluations and tests. Because the products are subject to continual improvement, we reserve the right to amend the product specifications contained in this catalogue.

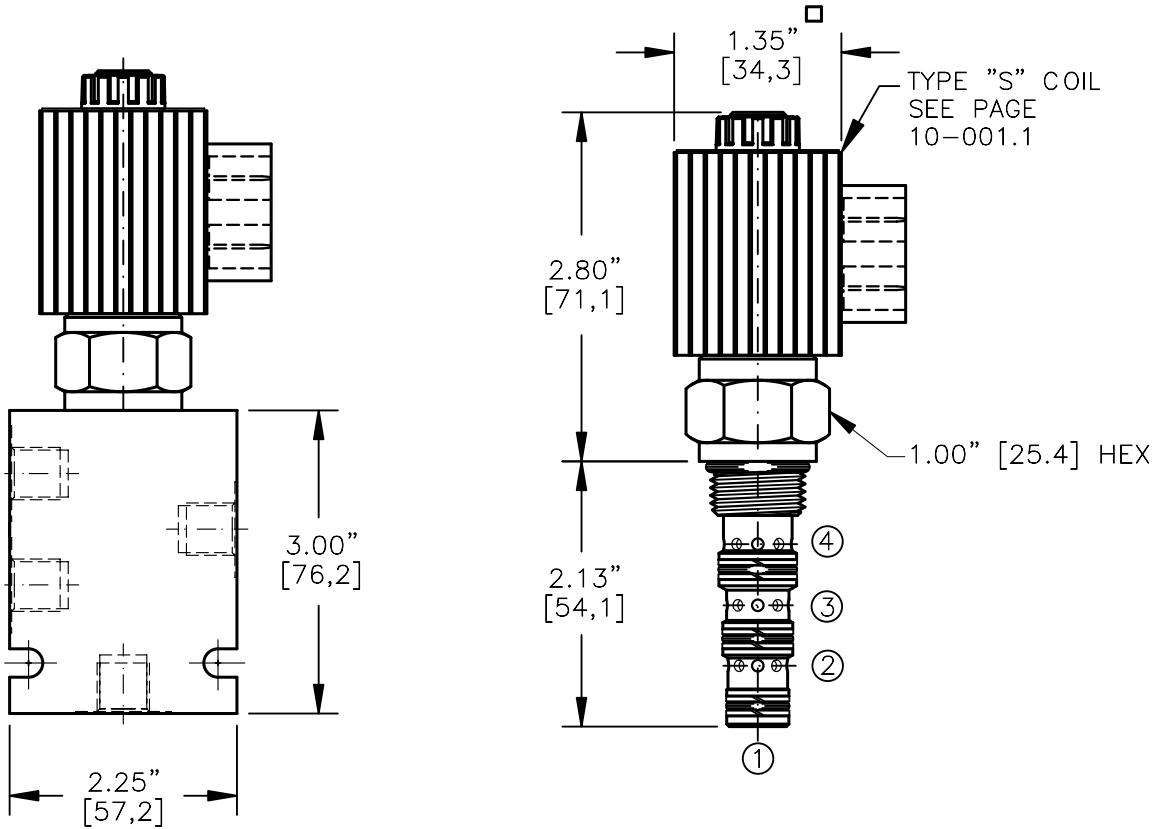
Classification: 430.300.330.305.315.380

SOLENOID VALVE, 4-WAY, 2-POSITION.
DIRECT ACTING, SPOOL TYPE (4/2)



TORQUE:

Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-041.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. FOR "AC" COILS USE RECTIFIED DIN CONNECTOR 20828.

EMDV-08-X-4N-X-XXX X

BASIC

SIZE
08 = 3/4"-16UNF

SEALS
N = BUNA "N"
V = VITON

TYPE
4N = "N" SPOOL
4-WAY, N.O. SELECTOR

PORTS
0 = CARTRIDGE ONLY
02BX = G 1/4" BSSP
06TX = SAE - #6

"A" = ALUM. HOUSING
"S" = STEEL HOUSING

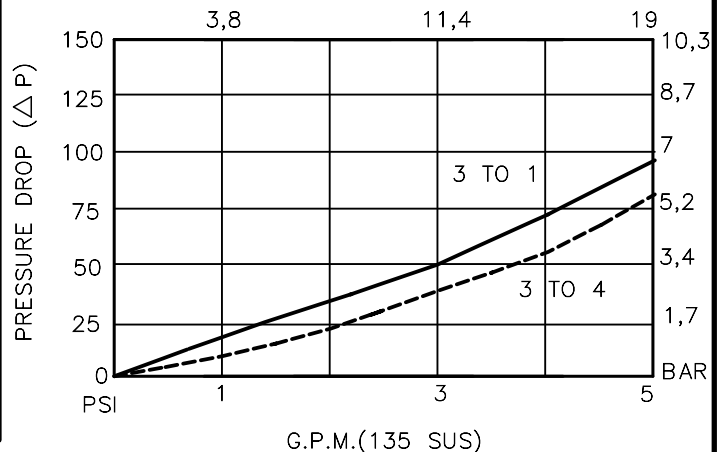
TERMINALS

L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS

12D = 12 VDC 1.7
24D = 24 VDC .9
36D = 36 VDC .6
48D = 48 VDC .5
115D = 115 VDC .2

L/M (28,5 cSt)



**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****DESCRIPTION**

This unit is a FOUR-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, normally open selector valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 3 and 4, and flow between ports 2 and 1. When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 3 and 1, and no flow to ports 4 and 2.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted spool & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 5.0 GPM [19 l/m] See performance chart.

INTERNAL LEAKAGE: 5cu.in/min [82 cc/m] @ 5,000 PSI (350 Bar)

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum - Anodized.

5000 PSI [350 Bar] = Steel - Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

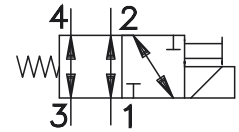
SEAL KIT: SKN-0842 Buna "N"

SKV-0842 Viton

WEIGHT: .98 lb [.44 kg] cartridge with coil only.

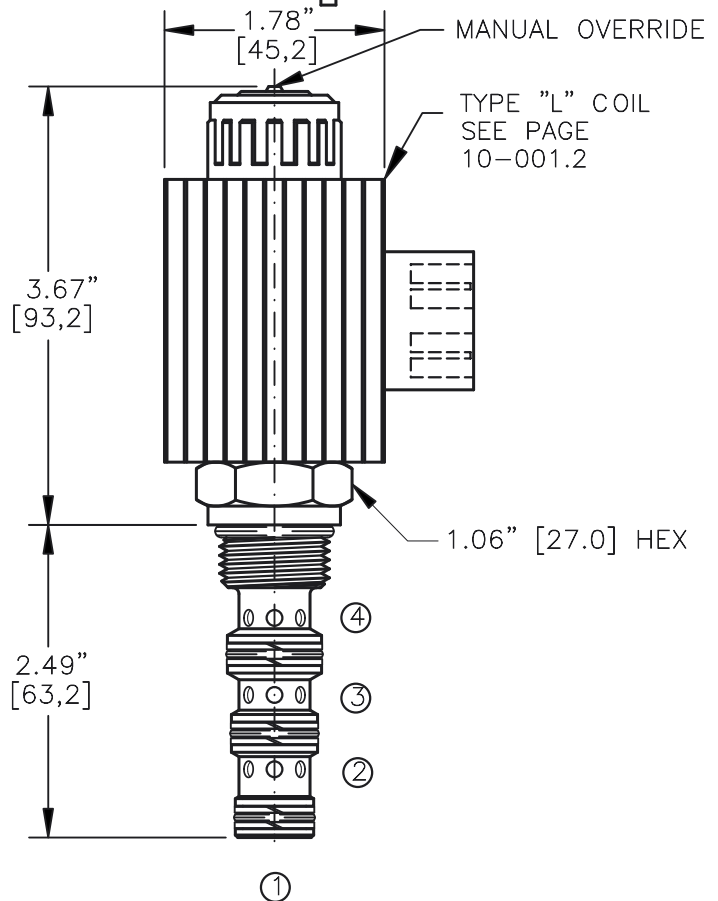
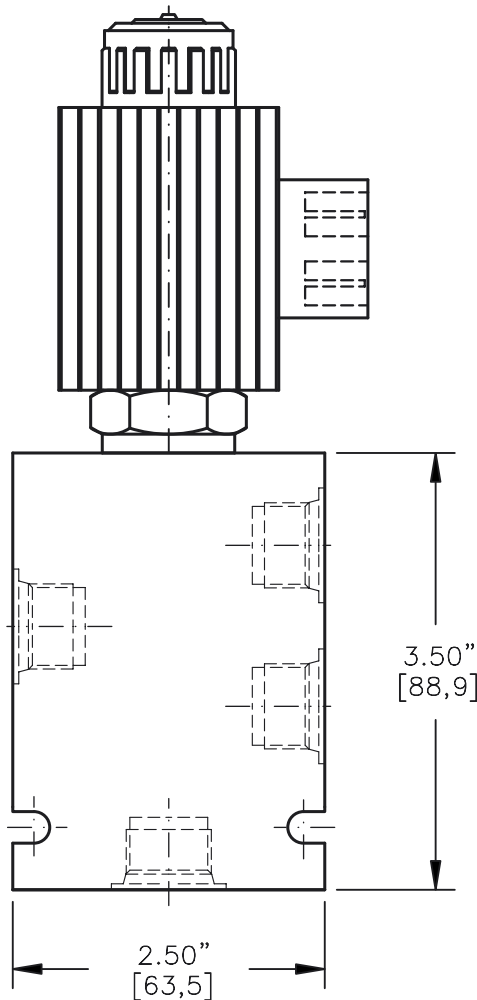
VALVE CAVITY: #C0840, See Page 0-041.0.

SOLENOID VALVE, 4-WAY, 2-POSITION.
DIRECT ACTING, SPOOL TYPE (4/2)



TORQUE:

Steel = 55/60 Ft-Lb. [74/81 Nm]
Aluminum = 35/40 Ft-Lb. [47/54 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-042.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. ALL A.C. COILS ARE INTERNALLY A.C. TO D.C. RECTIFIED.
4. FOR SOFT SHIFT SOLENOID VALVE SEE PAGE 10-002.0

EMDV-10-X-4E-X-XXX X

BASIC

SIZE
10 = 7/8"-14UNF

SEALS
N = BUNA "N"
V = VITON

TYPE
4E = "E" SPOOL
4-WAY, 2-POSITION

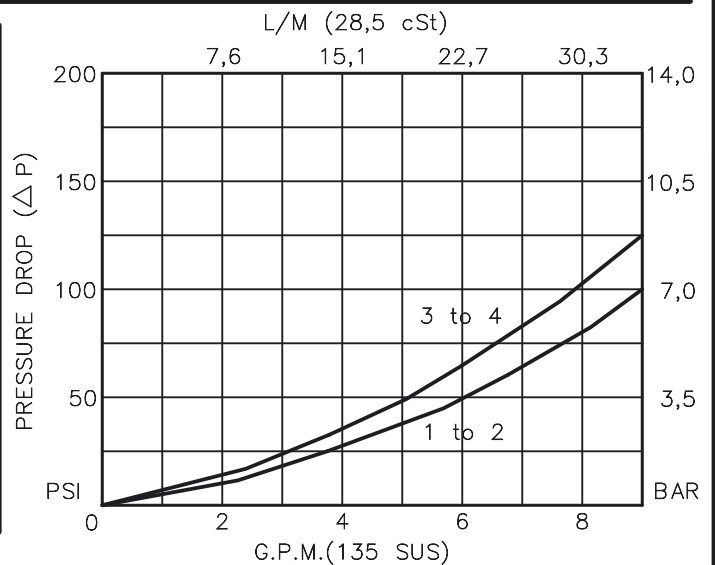
PORTS
0 = CARTRIDGE ONLY
02BX = G 1/4" BSPP
03BX = G 3/8" BSPP
06TX = SAE - #6
08TX = SAE - #8

"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS

L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE	AMPS
12D = 12 VDC	3.00
24D = 24 VDC	1.50
36D = 36 VDC	1.00
48D = 48 VDC	0.75
110D = 110 VDC	0.33
115A = 115 VAC	0.32
230A = 230 VAC	0.16



**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****DESCRIPTION**

This unit is a FOUR-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 2 and ports 3 and 4.

When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 4 and no flow between ports 2 and 3.

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

Industry common cavity.

**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)**

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 8.0 GPM [30 l/m] See performance chart.

INTERNAL LEAKAGE: 5cu.in/min [82 cc/m] @ 5,000 PSI (350 Bar)

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

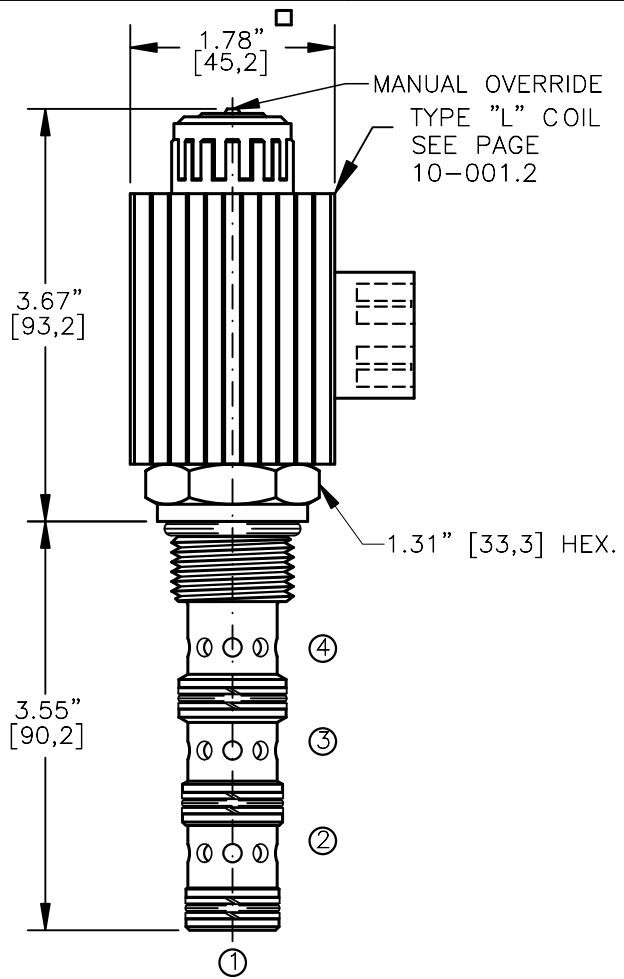
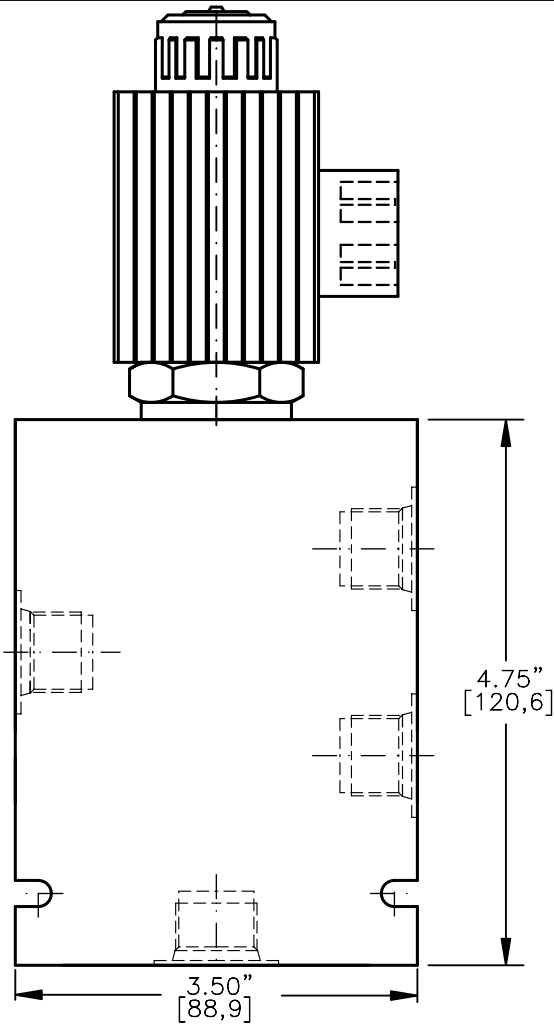
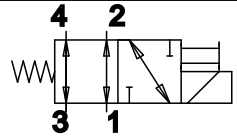
SEAL KIT: SKN-1042 Buna "N"

SKV-1042 Viton

WEIGHT: 2.01 lb [.91 kg] cartridge with coil only.

VALVE CAVITY: #C1040, See Page 0-042.0.

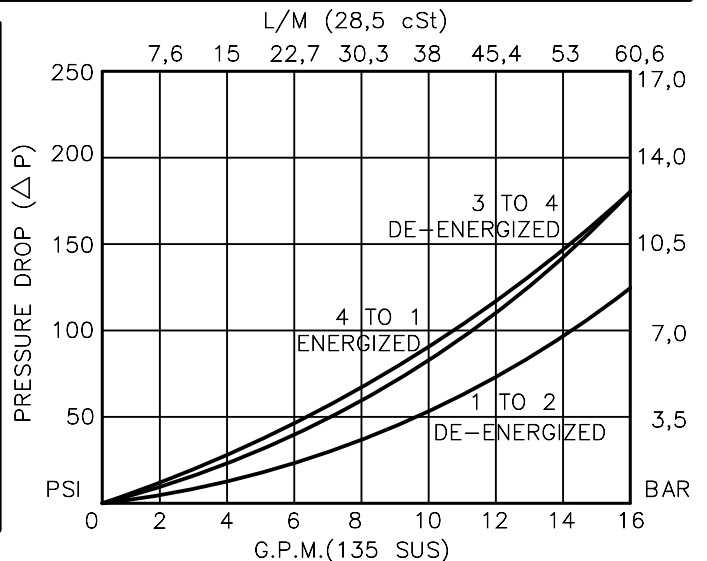
SOLENOID VALVE, 4-WAY, 2-POSITION.
DIRECT ACTING, SPOOL TYPE (4/2)



TORQUE:
Steel = 70/75 Ft-Lb. [95/102 Nm]
Aluminum = 55/60 Ft-Lb. [74/81 Nm]

EMDV-12-X-4E-X-XXX X

BASIC	TERMINALS
SIZE	L = 18GA. 24" LEADS
12 = 1.062"-12UNF	T = SPADE TERM.
	B = BOLT TERM.
SEALS	G = DIN43650
N = BUNA "N"	W = WEATHER-PACK
V = VITON	D = DEUTSCH-DT04-2P
	M = METRI-PACK CONN.
TYPE	VOLTAGE
4E = "E" SPOOL	AMPS
4-WAY, 2-POSITION	12D = 12 VDC 3.00
	24D = 24 VDC 1.50
PORTS	36D = 36 VDC 1.00
0 = CARTRIDGE ONLY	48D = 48 VDC 0.75
04BX = G 1/2" BSPP	110D = 110 VDC 0.33
06BX = G 3/4" BSPP	115A = 115 VAC 0.32
10TX = SAE - #10	230A = 230 VAC 0.16
12TX = SAE - #12	
"A" = ALUM. HOUSING	
"S" = STEEL HOUSING	



**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****DESCRIPTION**

This unit is a FOUR-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow between ports 1 and 2 and ports 3 and 4.

When solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 4 and no flow between ports 2 and 3.

Manual Operator Standard: Push in and hold a small plunger on top of the valve with a screw driver or a similar plunger smaller than .188" dia.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)**

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 16.0 GPM [60 l/m] See performance chart.

INTERNAL LEAKAGE: 5cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-1242 Buna "N"

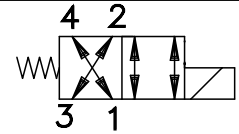
SKV-1242 Viton

INSTALLATION: No restrictions.

WEIGHT: 2.13 lb [.97 kg] cartridge with coil only.

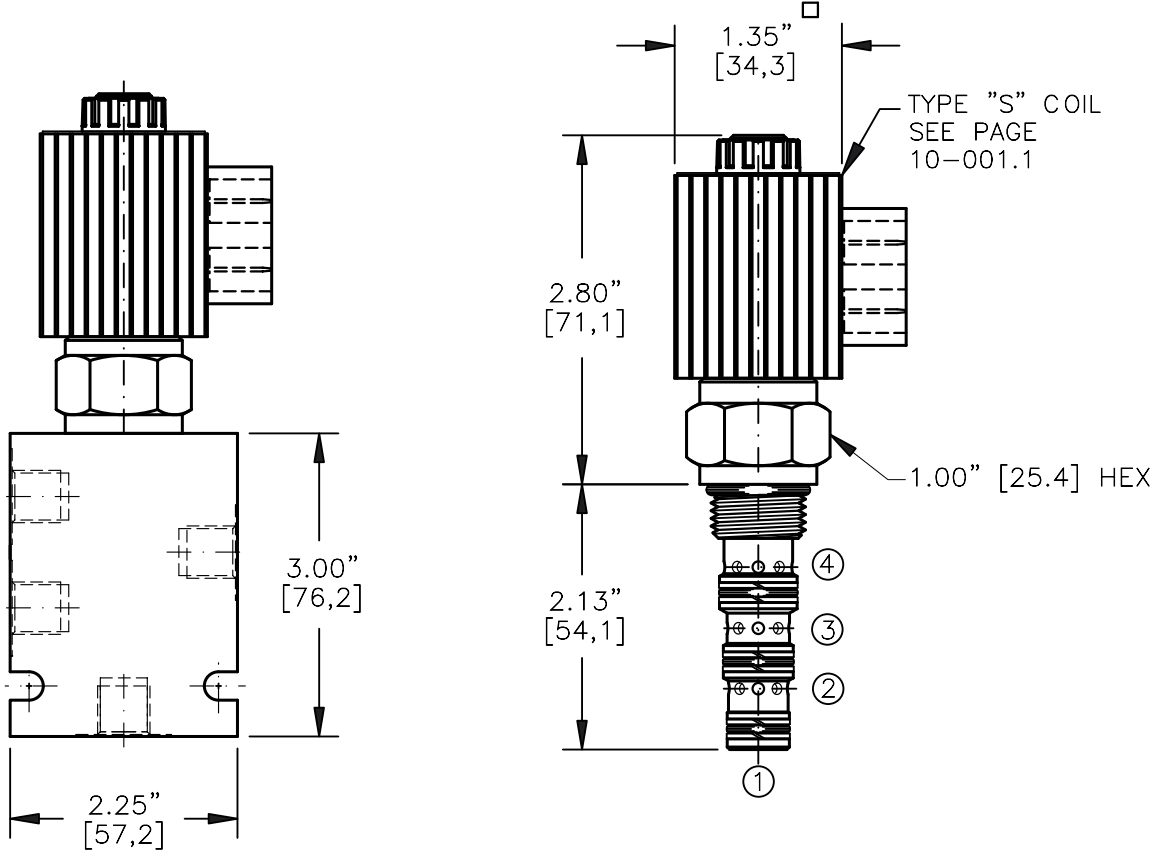
VALVE CAVITY: #C1240, See Page 0-043.0.

SOLENOID VALVE, 4-WAY, 2-POSITION.
DIRECT ACTING, SPOOL TYPE (4/2)



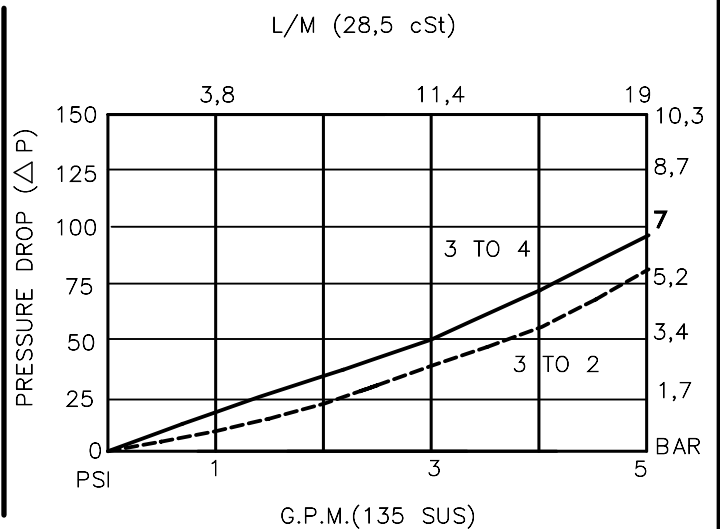
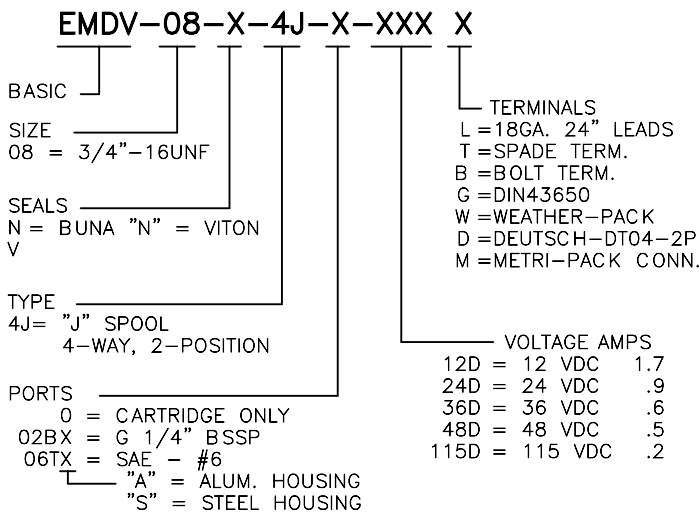
TORQUE:

Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-041.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. FOR "AC" COILS USE RECTIFIED DIN CONNECTOR 20828.



**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****DESCRIPTION**

This unit is a FOUR-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, directional control valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows flow from port 3 to 2 and port 4 to 1 or vice versa. When solenoid coil is energized, the spool in this valve is shifted and allows flow from port 3 to 4 and port 2 to 1 or vice versa.

"This valve shifts in a close center position".

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted spool & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 5.0 GPM [19 l/m] See performance chart.

INTERNAL LEAKAGE: 5cu.in/min [82 cc/m] @ 5,000 PSI (350 Bar)

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as
MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

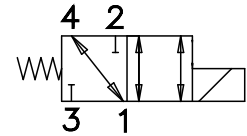
SEAL KIT: SKN-0842 BUNA "N"

SKV-0842 Viton

WEIGHT: .98 lb [.44 kg] cartridge with coil only.

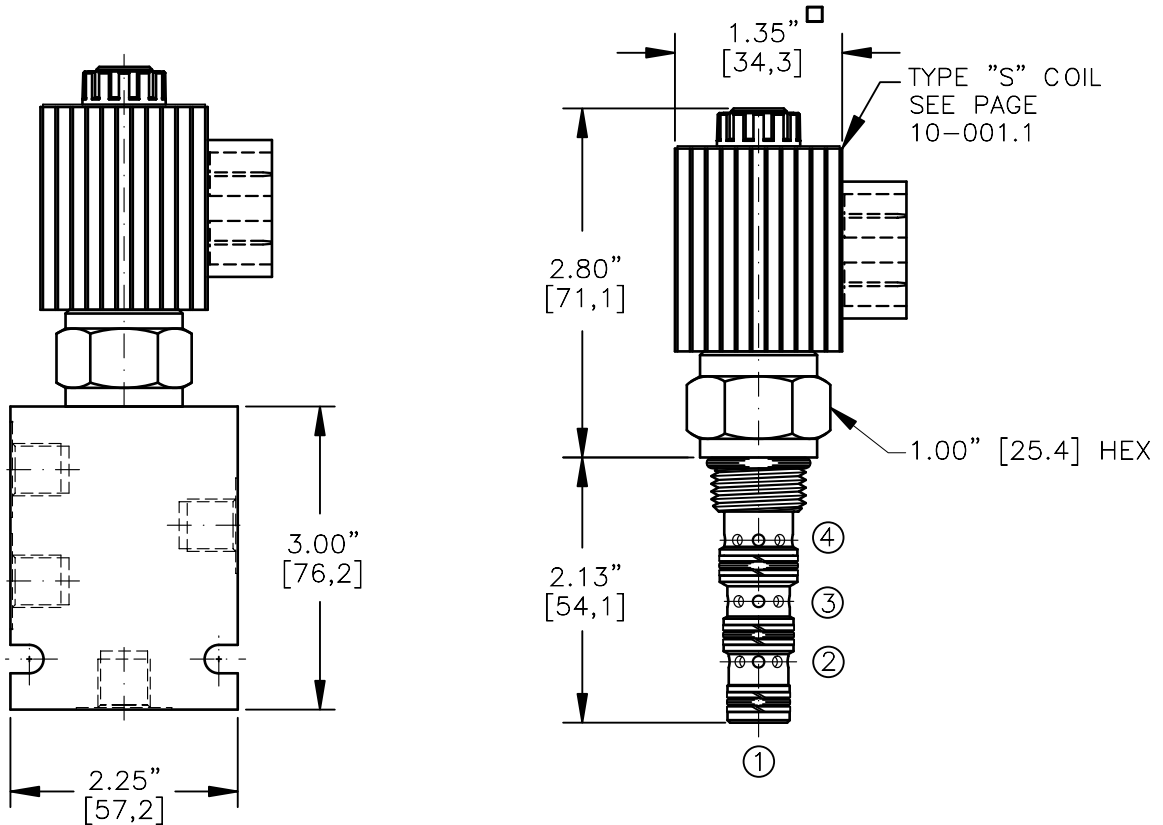
VALVE CAVITY: #C0840, See Page 0-041.0.

SOLENOID VALVE, 4-WAY, 2-POSITION.
DIRECT ACTING, SPOOL TYPE (4/2)



TORQUE:

Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-041.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. FOR "AC" COILS USE RECTIFIED DIN CONNECTOR 20828.

EMDV-08-X-4P-X-XXX X

BASIC

SIZE
08 = 3/4"-16UNF

SEALS
N = BUNA "N"
V = VITON

TYPE
4P = "P" SPOOL
4-WAY, N.O. SELECTOR

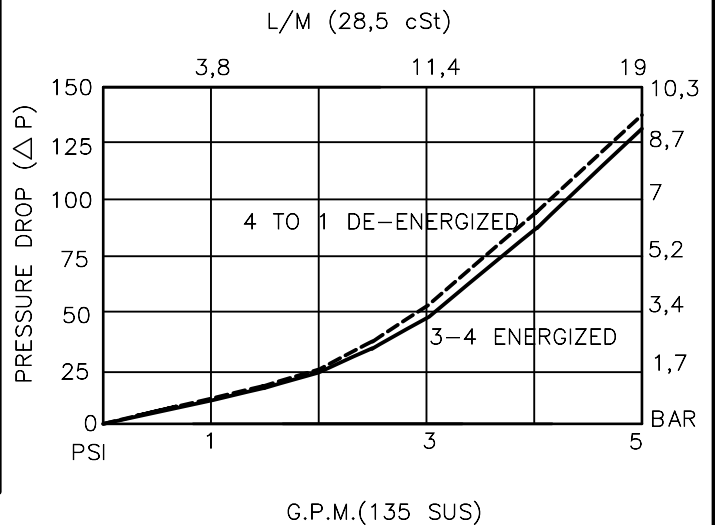
PORTS
0 = CARTRIDGE ONLY
02BX = G 1/4" BSSP
06TX = SAE - #6
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS

L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS

12D = 12 VDC 1.7
24D = 24 VDC .9
36D = 36 VDC .6
48D = 48 VDC .5
115D = 115 VDC .2



**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****DESCRIPTION**

This unit is a FOUR-WAY, TWO POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, normally open selector valve.

OPERATIONS

When solenoid coil is de-energized, this valve allows free flow from port 1 to port 4 and blocks 3 & 2. When solenoid coil is energized, the spool in this valve is shifted and allows flow from port 1 to 2, and port 3 to 4 and vice versa.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil. Interchangeable solenoid coils & terminations options available. Hardened precision fitted spool & sleeve provides reliable, long life. Very efficient, wet-armature solenoid core tube construction. All external carbon steel parts are plated for longer life against the elements. All cartridge valves are 100% functionally tested. Industry common cavity.

**SOLENOID VALVE 4-WAY, 2-POSITION,
DIRECT ACTING, SPOOL TYPE (4/2)****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 5.0 GPM [19 l/m] See performance chart.

INTERNAL LEAKAGE: 5cu.in/min [82 cc/m] @ 5,000 PSI (350 Bar)

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum - Anodized.

5000 PSI [350 Bar] = Steel - Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

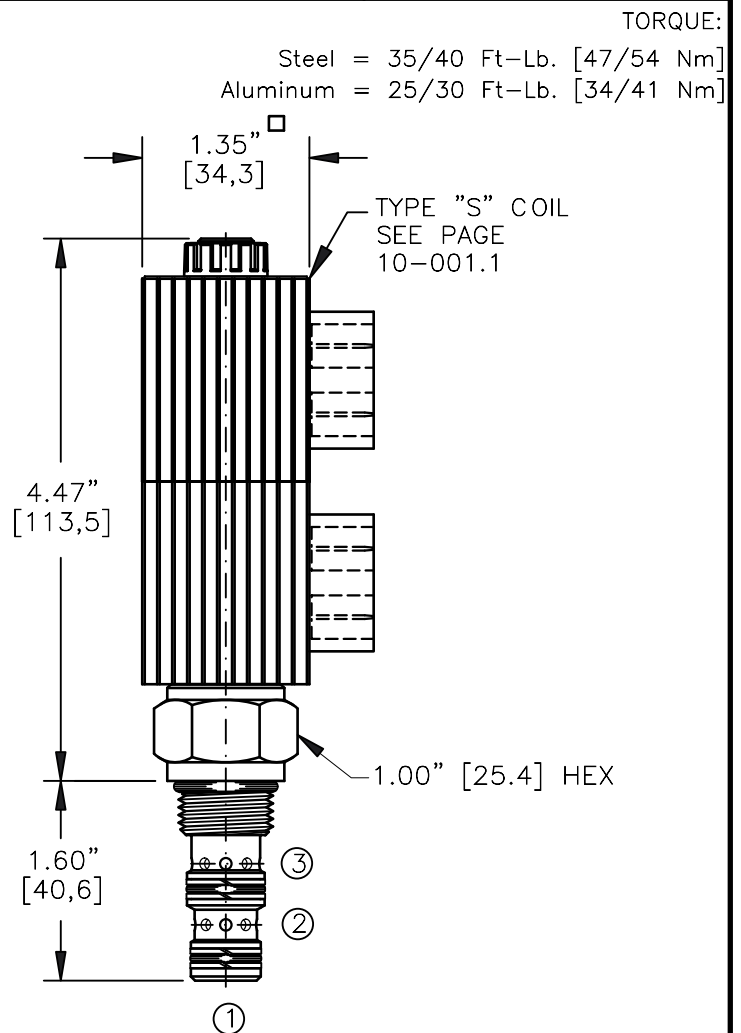
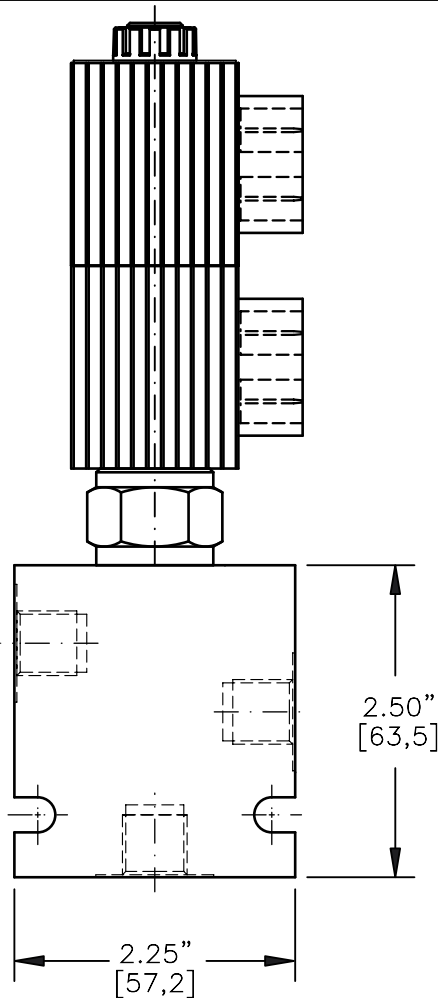
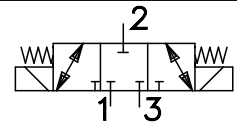
SEAL KIT: SKN-0842 Buna "N"

SKV-0842 Viton

WEIGHT: .98 lb [.44 kg] cartridge with coil only.

VALVE CAVITY: #C0840, See Page 0-041.0.

BIDIRECTIONAL CONTROL VALVE,
3-WAY 3-POSITION, SLIDING SPOOL TYPE



TORQUE:

Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]

NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-031.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.
3. FOR "AC" COILS USE RECTIFIED DIN CONNECTOR 20828.

EMBV-08-X-3J-X-XXX X

BASIC

SIZE
08 = 3/4"-16UNF

SEALS
N = BUNA "N"
V = VITON

TYPE
3J = "J" SPOOL
3-WAY, 3-POSITION

PORTS
0 = CARTRIDGE ONLY
02BX = G 1/4" BSSP
06TX = SAE - #6

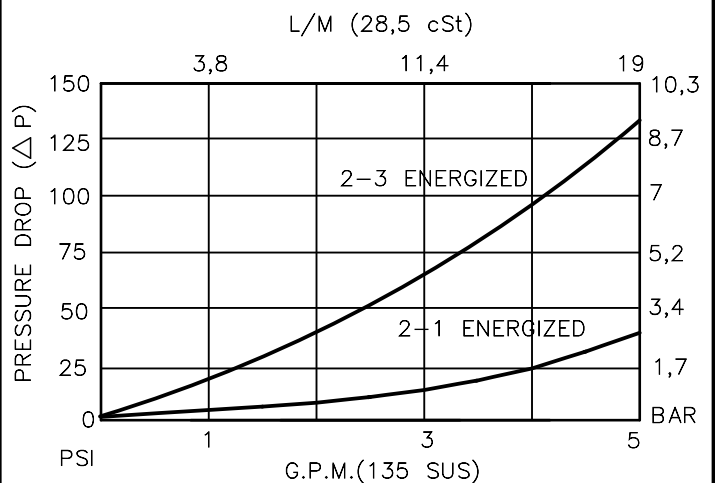
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS

L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS

12D = 12 VDC 1.8
24D = 24 VDC .9
36D = 36 VDC .6
48D = 48 VDC .5
115D = 115 VDC .2



**BIDIRECTIONAL CONTROL VALVE,
3-WAY 3-POSITION, SLIDING SPOOL TYPE****DESCRIPTION**

This unit is a THREE-WAY, THREE POSITION, cartridge type, spool type, solenoid operated, directional control valve.

OPERATIONS

In the center condition, this valve allows no flow between ports 1, 2 and 3.

When upper coil is energized, the rod pulls the spool and allows flow between ports 2 and 1; blocking port 3.

When lower coil is energized, the rod pushes the spool and allows flow between ports 2 and 3; blocking port 1.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

Industry common cavity.

**BIDIRECTIONAL CONTROL VALVE,
3-WAY 3-POSITION, SLIDING SPOOL TYPE****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 5.0 GPM [19 l/m] See performance chart.

INTERNAL LEAKAGE: 10 cu.in/min [164 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as
MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-0832 Buna "N"

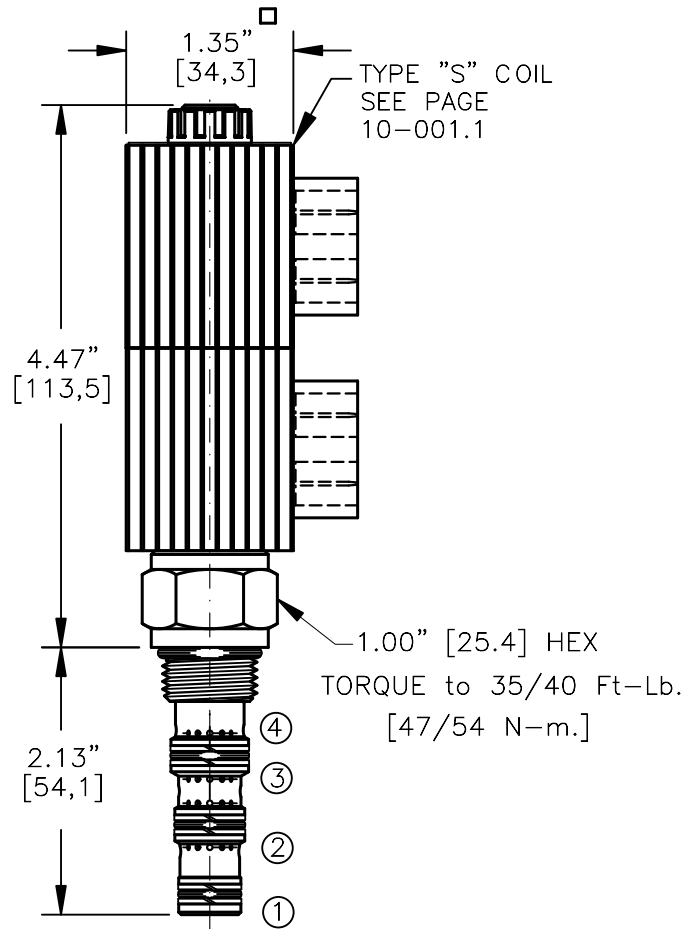
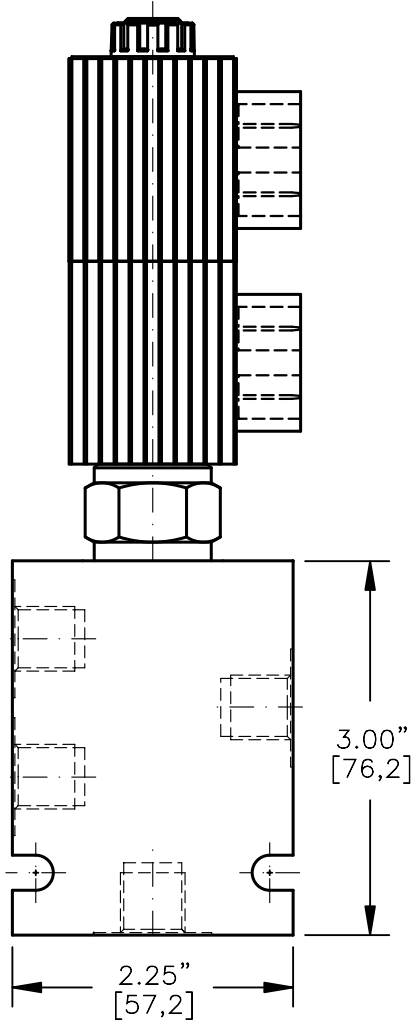
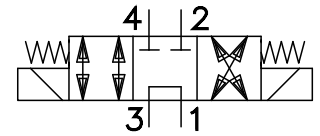
SKV-0832 Viton

INSTALLATION: No restrictions.

WEIGHT: 1.95 lb [.88 kg] cartridge with coil only.

VALVE CAVITY: #C0830, See Page 0-031.0.

SOLENOID VALVE, 4-WAY, 3-POSITION.
DIRECT ACTING SPOOL

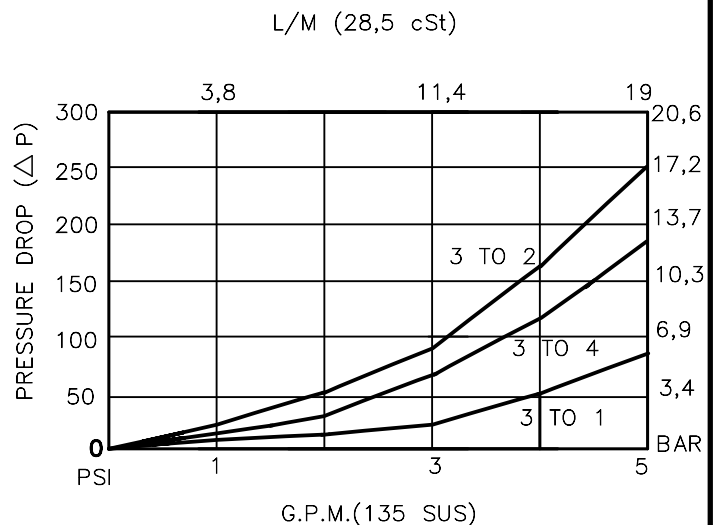


TORQUE:
Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]

EMBV-08-X-4J-X-XXX X

BASIC _____
SIZE _____
08 = 3/4"-16UNF
SEALS _____
N = BUNA "N"
V = VITON
TYPE _____
4J = "J" SPOOL
4-WAY, 3-POSITION
PORTS _____
0 = CARTRIDGE ONLY
02BX = G 1/4" BSSP
06TX = SAE - #6
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS
L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN 43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.
VOLTAGE AMPS
12D = 12 VDC 1.7
24D = 24 VDC .9
36D = 36 VDC .6
48D = 48 VDC .5
115D = 115 VDC .2



SOLENOID VALVE 4-WAY, 3-POSITION, SPOOL TYPE

DESCRIPTION

This unit is a FOUR-WAY, THREE POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, double coil, bidirectional tandem center selector valve.

OPERATIONS

At the initial position, this valve allows flow between ports 3 & 1 and blocks ports 2 & 4.

When the upper solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 2 and 3 and ports 1 and 4.

When the lower solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 3 and 4 and ports 2 and 1.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

Industry common cavity.

SOLENOID VALVE 4-WAY, 3-POSITION, SPOOL TYPE**SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 4.0 GPM [15 l/m] max. See performance chart.

INTERNAL LEAKAGE: 20cu.in/min [328 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum - Anodized.

5000 PSI [350 Bar] = Steel - Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100% voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

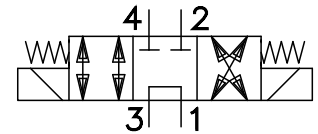
SEAL KIT: SKN-0842 Buna "N"

SKV-0842 Viton

WEIGHT: 1.52 lb [.69 kg] cartridge with coil only.

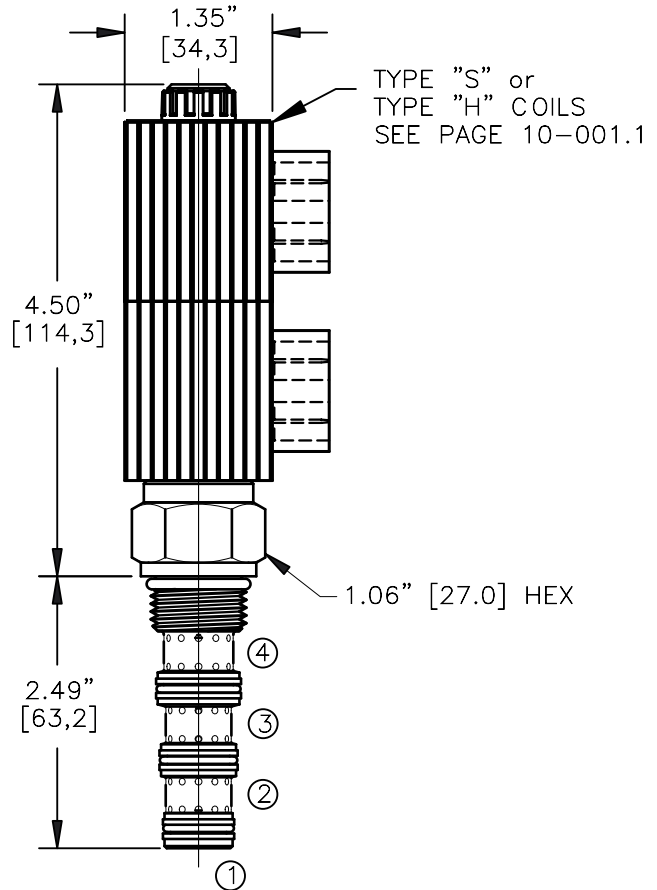
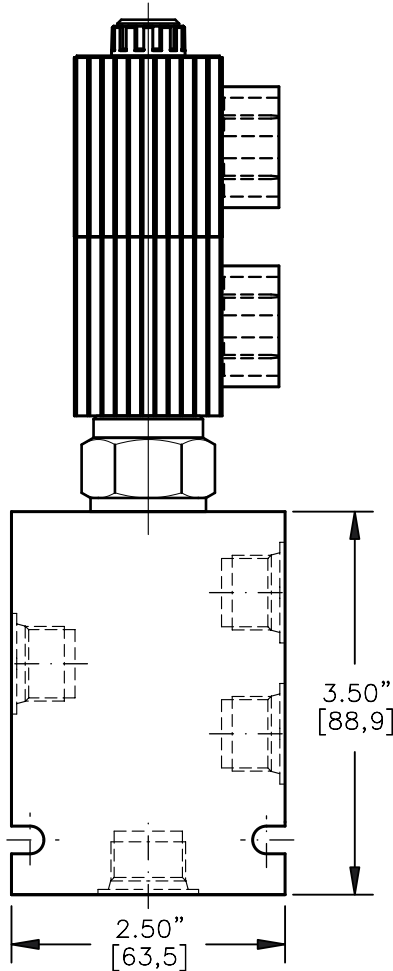
VALVE CAVITY: #C0840, See Page 0-041.0.

SOLENOID VALVE, 4-WAY, 3-POSITION.
DIRECT ACTING SPOOL



TORQUE:

Steel = 55/60 Ft-Lb. [74/81 Nm]
Aluminum = 35/40 Ft-Lb. [47/54 Nm]



NOTES:

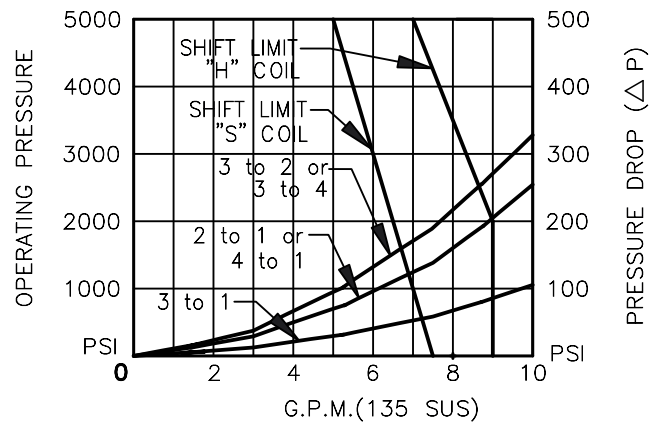
- FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-042.1
- SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.

EMBV-10-X-4J-X-XXX X X

BASIC _____
SIZE _____
10 = 7/8"-14 UNF
SEALS _____
N = BUNA "N"
V = VITON
TYPE _____
4J = "J" SPOOL
4-WAY, 3-POSITION
PORTS _____
0 = CARTRIDGE ONLY
02BX = G 1/4" BSPP
03BX = G 3/8" BSPP
06TX = SAE - #6
08TX = SAE - #8
"A" - ALUM. HOUSING
"S" - STEEL HOUSING

H = ADD FOR
TYPE "H" COIL
TERMINALS
L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN 43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.
VOLTAGE AMPS
 S H
12D = 12 VDC 1.85 2.33
24D = 24 VDC .92 1.17
36D = 36 VDC .62
48D = 48 VDC .46

CARTRIDGE ONLY



SOLENOID VALVE 4-WAY, 3-POSITION, SPOOL TYPE**DESCRIPTION**

This unit is a FOUR-WAY, THREE POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, double coil, bidirectional tandem center selector valve.

OPERATIONS

At the initial position, this valve allows flow between ports 3 & 1 and blocks ports 2 & 4.

When the upper solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 2 and 3 and ports 1 and 4.

When the lower solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 3 and 4 and ports 2 and 1.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coils.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

Industry common cavity.

SOLENOID VALVE 4-WAY, 3-POSITION, SPOOL TYPE

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
FLOW: 6.0 GPM [34,1 l/m] max. (SEE PERFORMANCE CHART)
INTERNAL LEAKAGE: 20cu.in/min [328 cc/m] @ 5,000 PSI [350 Bar]
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum - Anodized.
5000 PSI [350 Bar] = Steel - Unplated.
OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]
AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]
Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])
OPERATING MEDIA: All general purpose hydraulic fluids such as
MIL-H-5606, SAE-#10, SAE-#20, etc.
RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.
* Pull-in: 50 ms
* Drop-Out: 50 ms
SEAL KIT: SKN-1042 Buna "N"
SKV-1042 Viton
WEIGHT: 2.1 lb [.95 kg] cartridge with coils only.
VALVE CAVITY: #C1040, See Page 0-042.0.

info.el@bucherhydraulics.com

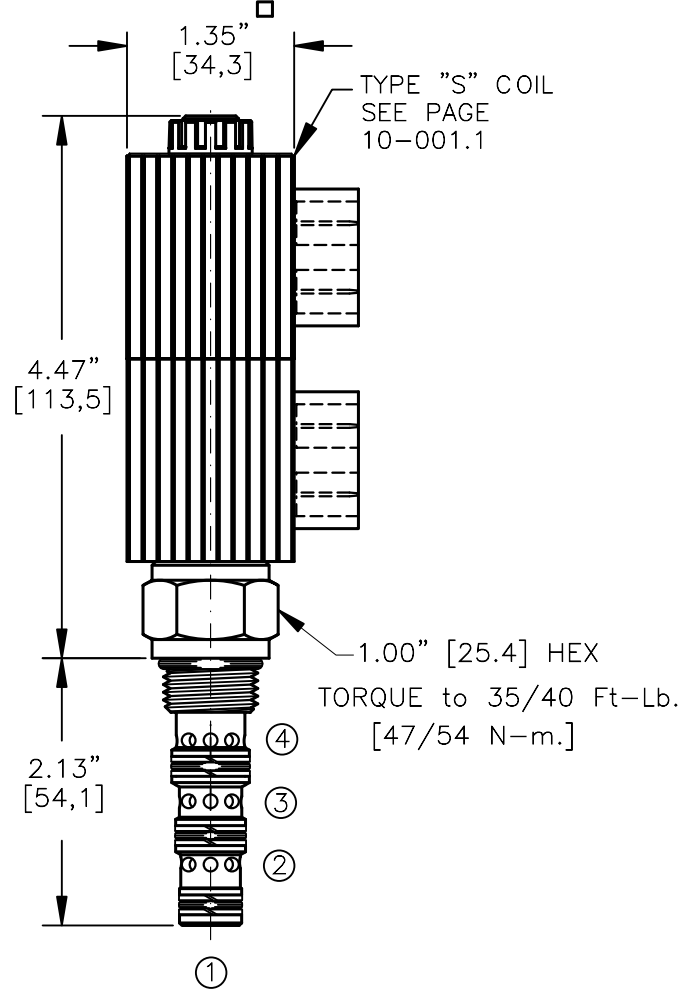
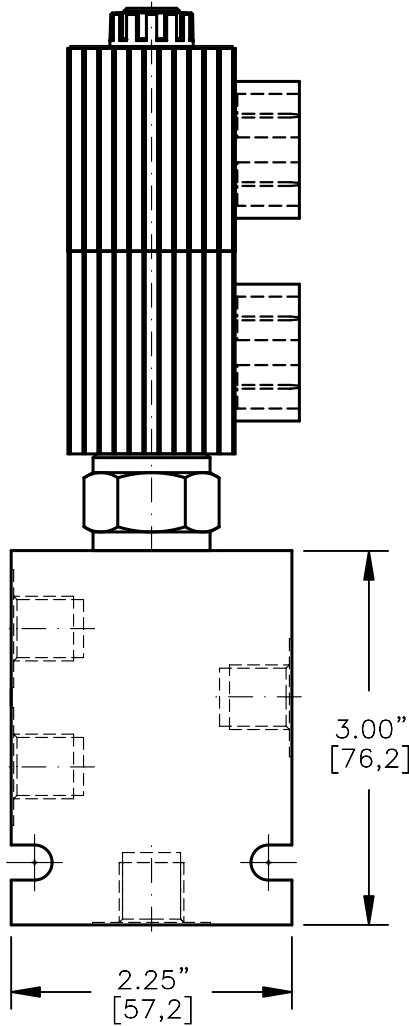
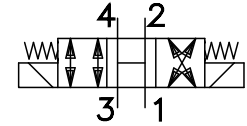
www.bucherhydraulics.com/commoncavity

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The technical information in this catalog, may contain calculated figures (for reference only) and not actual performance data for this product. Data is provided for the purpose of product description only, and must not be construed as warranted characteristics in the legal sense. The information does not relieve users from the duty of conducting their own evaluations and tests. Because the products are subject to continual improvement, we reserve the right to amend the product specifications contained in this catalogue.

SOLENOID VALVE, 4-WAY, 3-POSITION.
DIRECT ACTING SPOOL



TORQUE:
Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]

EMBV-08-X-4K-X-XXX X

BASIC _____

SIZE _____
08 = 3/4"-16UNF

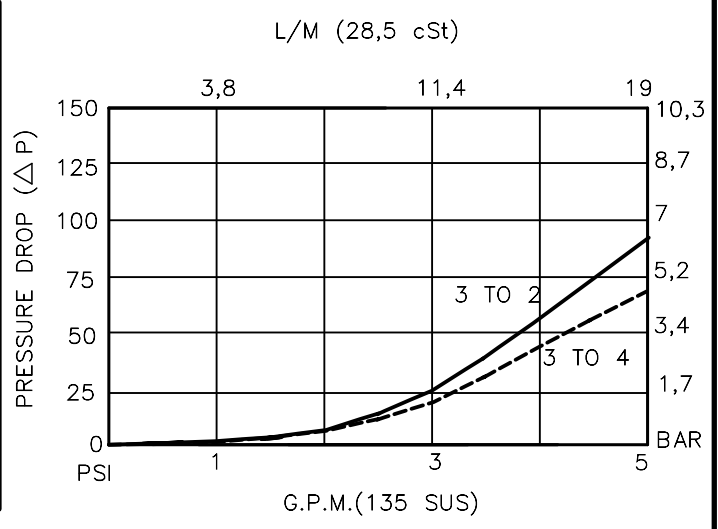
SEALS _____
N = BUNA "N"
V = VITON

TYPE _____
4K = "K" SPOOL
4-WAY, 3-POSITION

PORTS _____
0 = CARTRIDGE ONLY
02BX = G 1/4" BSSP
06TX = SAE - #6
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS _____
L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS _____
12D = 12 VDC 1.7
24D = 24 VDC .9
36D = 36 VDC .6
48D = 48 VDC .5
115D = 115 VDC .2



SOLENOID VALVE 4-WAY, 3-POSITION, SPOOL TYPE.**DESCRIPTION**

This unit is a FOUR-WAY, THREE POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, double coil, bidirectional open center selector valve.

OPERATIONS

At the initial position, this valve allows flow between thru all ports. When the upper solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 2 and ports 3 and 4. When the lower solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 4 and ports 2 and 3.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted spool & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

SOLENOID VALVE 4-WAY, 3-POSITION, SPOOL TYPE.**SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 5.0 GPM [19 l/m] max. See performance chart.

INTERNAL LEAKAGE: 10cu.in/min [164 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

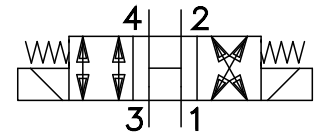
SEAL KIT: SKN-0842 Buna "N"

SKV-0842 Viton

WEIGHT: 1.52 lb [.69 kg] cartridge with coil only.

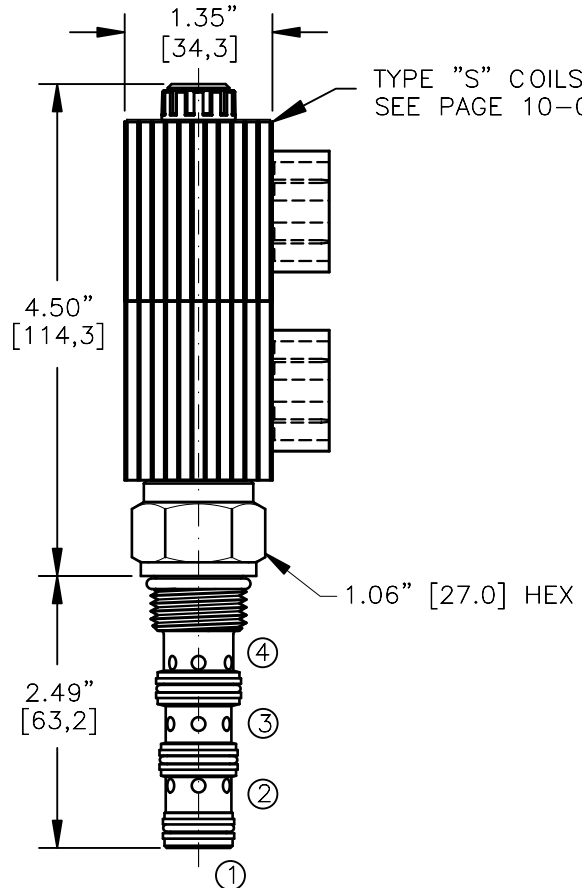
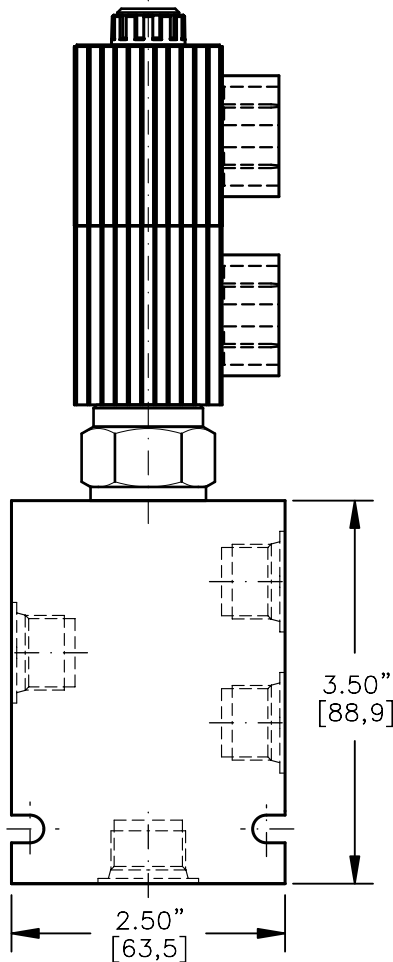
VALVE CAVITY: #C0840, See Page 0-041.0.

SOLENOID VALVE, 4-WAY, 3-POSITION, DIRECT ACTING SPOOL



TORQUE:

Steel = 55/60 Ft-Lb. [74/81 Nm]
Aluminum = 35/40 Ft-Lb. [47/54 Nm]



NOTES:

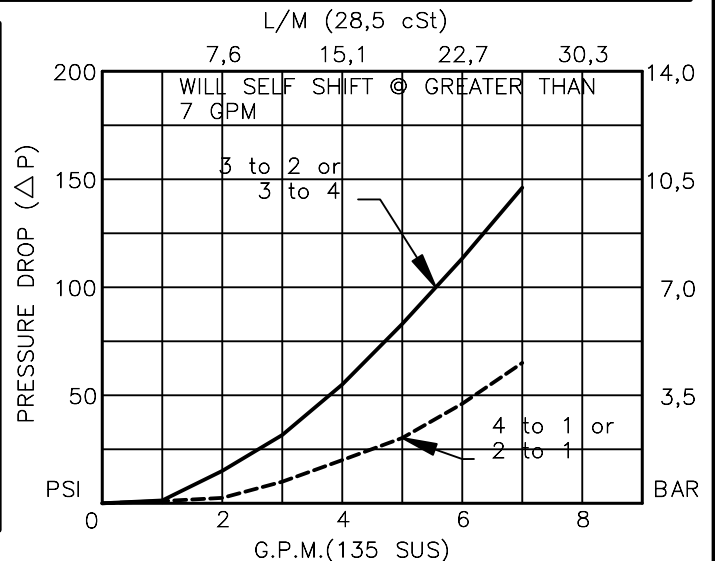
1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-042.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.

EMBV-10-X-4K-X-XXX X

BASIC _____
SIZE _____
 10 = 7/8"-14 UNF
SEALS _____
 N = BUNA "N"
 V = VITON
TYPE _____
 4K = "K" SPOOL
 4-WAY, 3-POSITION
PORTS _____
 0 = CARTRIDGE ONLY
 02BX = G 1/4" BSPP
 03BX = G 3/8" BSPP
 06TX = SAE - #6
 08TX = SAE - #8
 "A" - ALUM. HOUSING
 "S" - STEEL HOUSING

TERMINALS
 L = 18GA. 24" LEADS
 T = SPADE TERM.
 B = BOLT TERM.
 G = DIN 43650
 W = WEATHER-PACK
 D = DEUTSCH-DT04-2P
 M = METRI-PACK CONN.

VOLTAGE	AMPS
12D = 12 VDC	1.85
24D = 24 VDC	.92
36D = 36 VDC	.62
48D = 48 VDC	.46



SOLENOID VALVE, 4-WAY, 3-POSITION, DIRECT ACTING SPOOL

DESCRIPTION

This unit is a FOUR-WAY, THREE POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, double coil, bidirectional open center selector valve.

OPERATIONS

At the initial position, this valve allows flow between thru all ports. When the upper solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 2 and ports 3 and 4. When the lower solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 4 and ports 2 and 3.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coils.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted spool & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

**SOLENOID VALVE, 4-WAY, 3-POSITION,
DIRECT ACTING SPOOL****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 6.0 GPM [22,7 l/m] max. (SEE PERFORMANCE CHART)

INTERNAL LEAKAGE: 10 cu.in/min [164 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum - Anodized.

5000 PSI [350 Bar] = Steel - Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

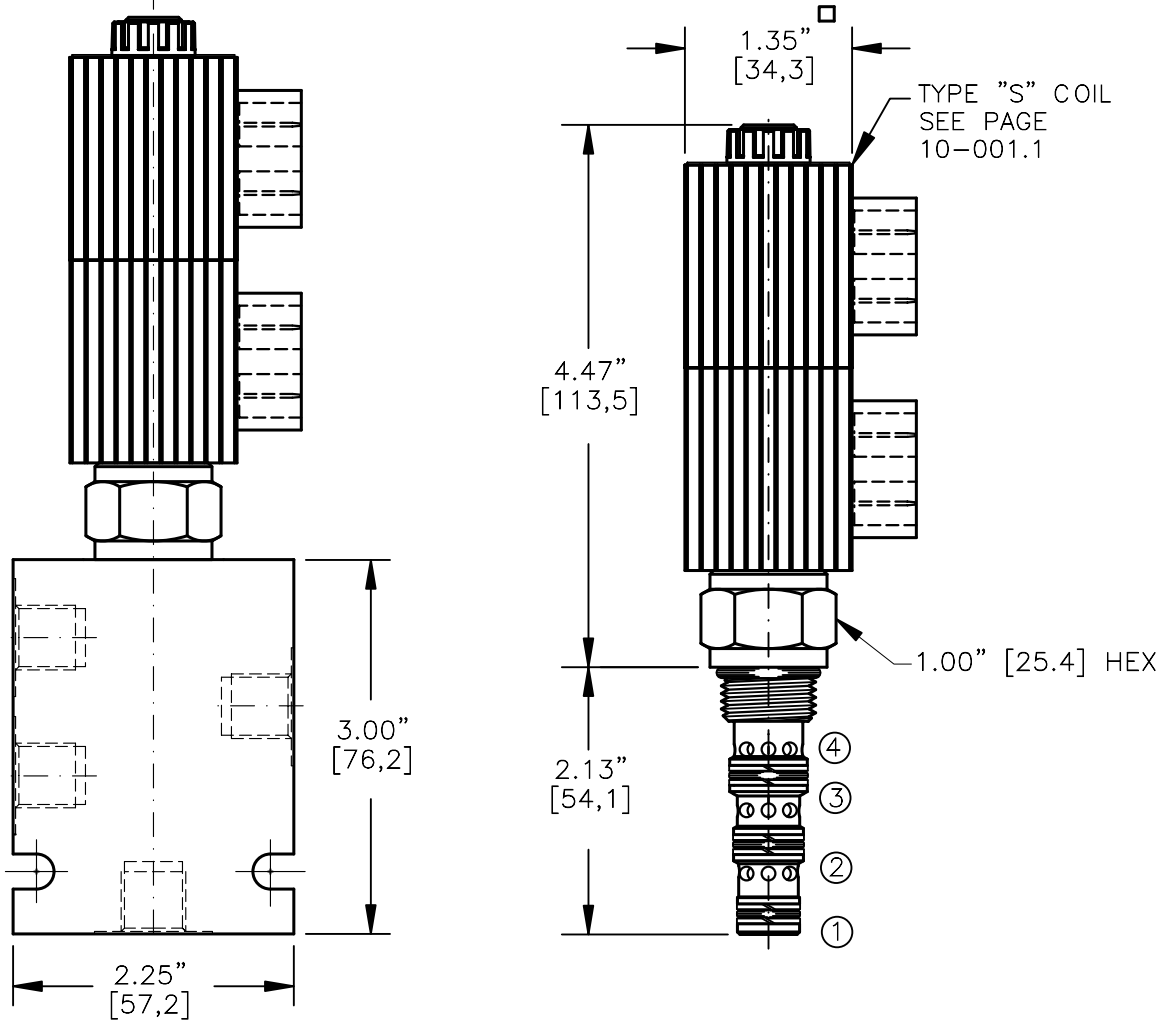
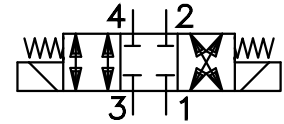
SEAL KIT: SKN-1042 Buna "N"

SKV-1042 Viton

WEIGHT: 2.1 lb [.95 kg] cartridge with coils only.

VALVE CAVITY: #C1040, See Page 0-042.0.

SOLENOID VALVE, 4-WAY, 3-POSITION.
DIRECT ACTING SPOOL



TORQUE:
Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]

EMBV-08-X-4L-X-XXX X

BASIC

SIZE 08 = 3/4"-16UNF

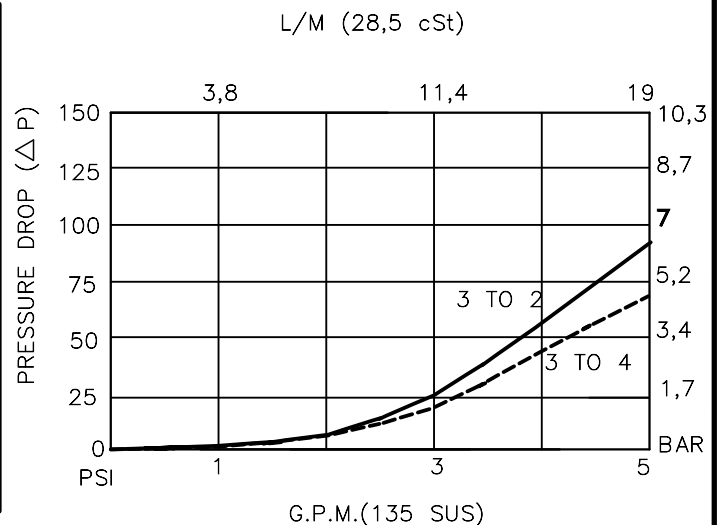
SEALS
N = BUNA "N"
V = VITON

TYPE
4L = "L" SPOOL
4-WAY, 3-POSITION

PORTS
0 = CARTRIDGE ONLY
02BX = G 1/4" BSSP
06TX = SAE - #6
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

TERMINALS
L = 18GA. 24" LEADS
T = SPADE TERM.
B = BOLT TERM.
G = DIN43650
W = WEATHER-PACK
D = DEUTSCH-DT04-2P
M = METRI-PACK CONN.

VOLTAGE AMPS
12D = 12 VDC 1.7
24D = 24 VDC .9
36D = 36 VDC .6
48D = 48 VDC .5
115D = 115 VDC .2



SOLENOID VALVE 4-WAY, 3-POSITION, SPOOL TYPE**DESCRIPTION**

This unit is a FOUR-WAY, THREE POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, double coil, bidirectional closed center selector valve.

OPERATIONS

At the initial position, flow is totally restricted in all ports.

When the upper solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 2 and 1 and ports 3 and 4.

When the lower solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 3 and 2 and ports 4 and 1.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

Industry common cavity.

SOLENOID VALVE 4-WAY, 3-POSITION, SPOOL TYPE**SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 5.0 GPM [19 l/m] max. See performance chart.

INTERNAL LEAKAGE: 5cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100% voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

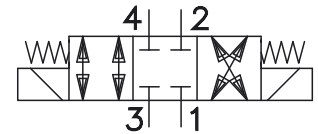
SEAL KIT: SKN-0842 Buna "N"

SKV-0842 Viton

WEIGHT: 1.52 lb [.69 kg] cartridge with coil only.

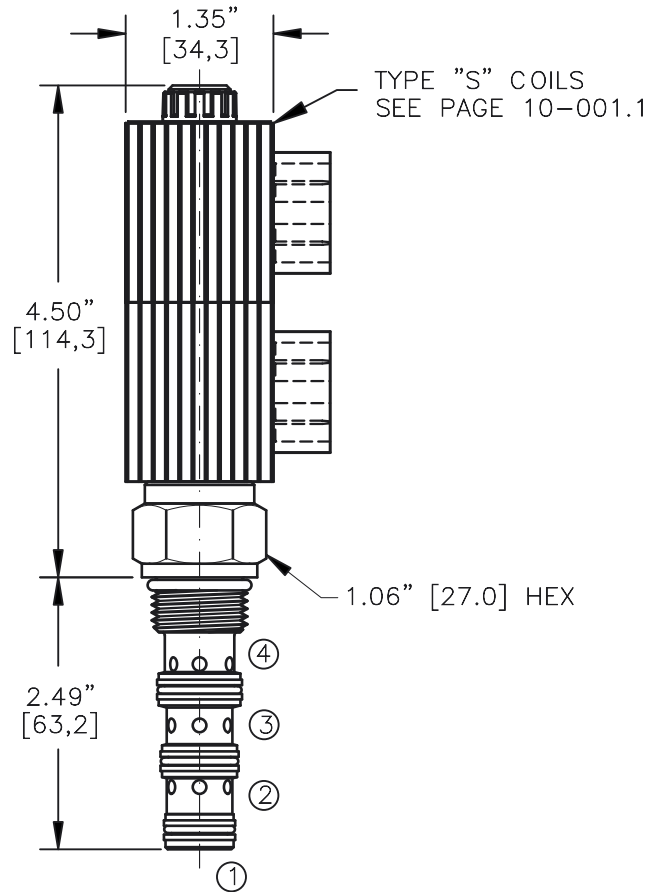
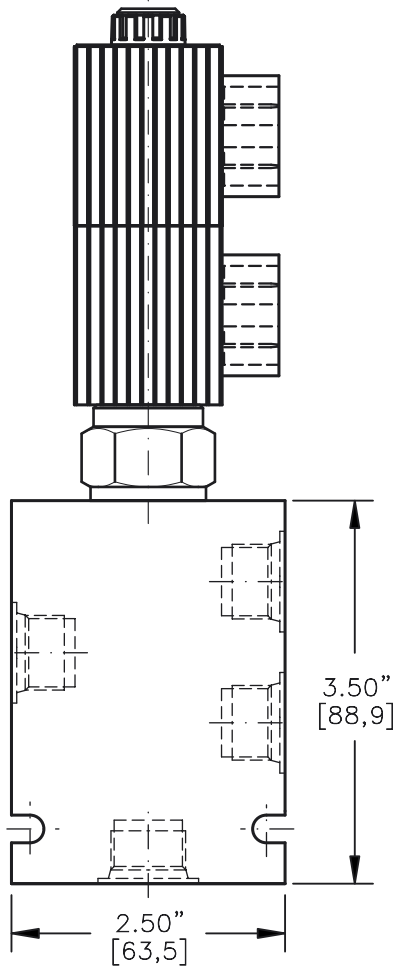
VALVE CAVITY: #C0840, See Page 0-041.0.

SOLENOID VALVE, 4-WAY, 3-POSITION, DIRECT ACTING SPOOL



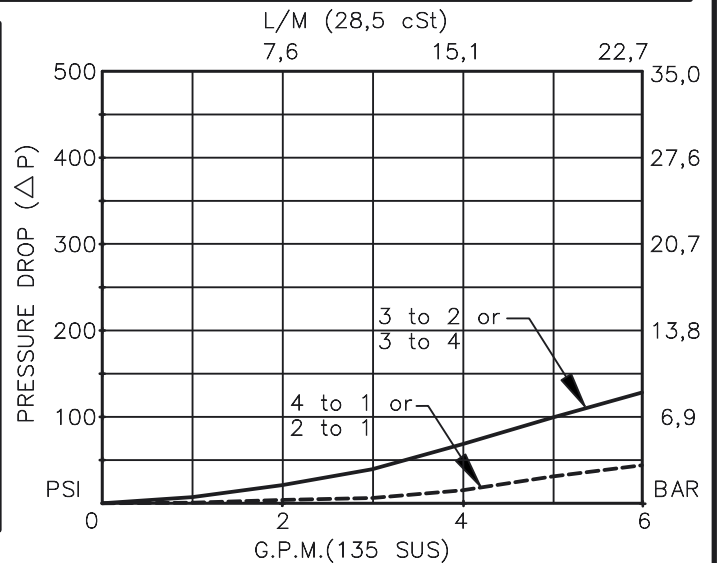
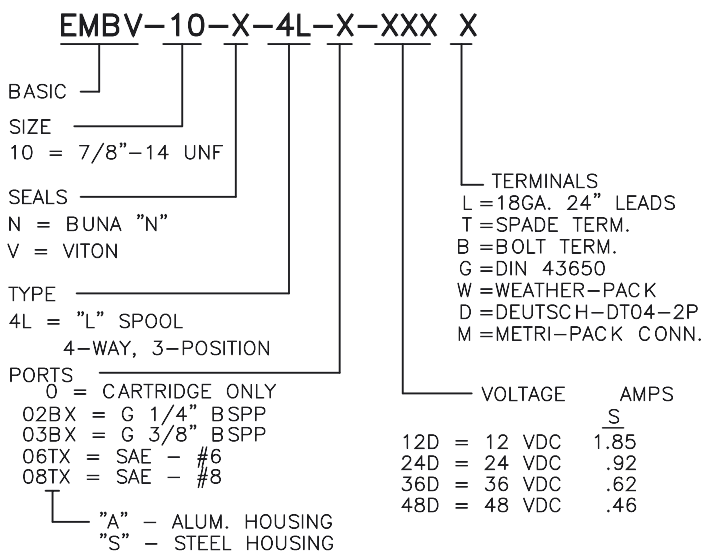
TORQUE:

Steel = 55/60 Ft-Lb. [74/81 Nm]
 Aluminum = 35/40 Ft-Lb. [47/54 Nm]



NOTES:

1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-042.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.



SOLENOID VALVE, 4-WAY, 3-POSITION, DIRECT ACTING SPOOL

DESCRIPTION

This unit is a FOUR-WAY, THREE POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, double coil, bidirectional closed center selector valve.

OPERATIONS

At the initial position, flow is totally restricted in all ports.

When the upper solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 2 and 1 and ports 3 and 4.

When the lower solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 3 and 2 and ports 4 and 1.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coils.

Interchangeable solenoid coils & terminations options available.

Hardened precision fitted spool & sleeve provides reliable, long life.

Very efficient, wet-armature solenoid core tube construction.

All external carbon steel parts are plated for longer life against the elements.

All cartridge valves are 100% functionally tested.

Industry common cavity.

**SOLENOID VALVE, 4-WAY, 3-POSITION,
DIRECT ACTING SPOOL****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 6.0 GPM [22,7 l/m] max. (SEE PERFORMANCE CHART)

INTERNAL LEAKAGE: 20 cu.in/min [328 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

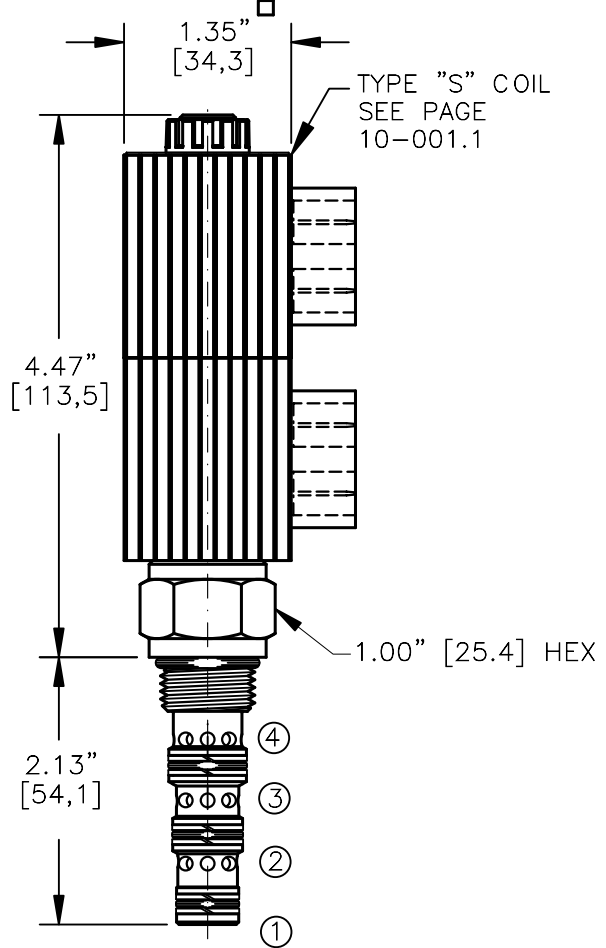
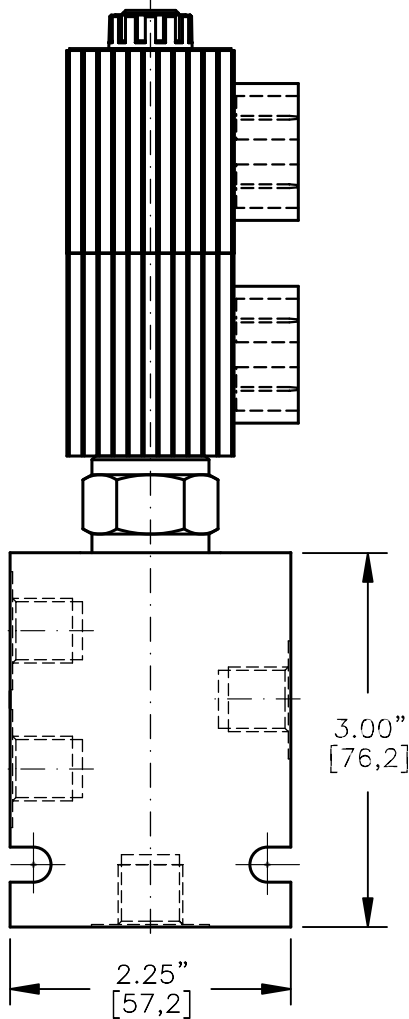
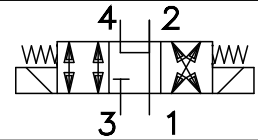
SEAL KIT: SKN-1042 Buna "N"

SKV-1042 Viton

WEIGHT: 2.1 lb [.95 kg] cartridge with coils only.

VALVE CAVITY: #C1040, See Page 0-042.0.

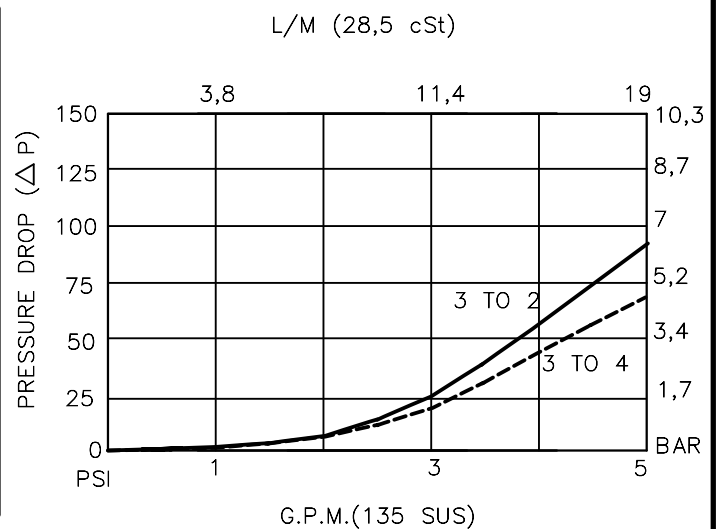
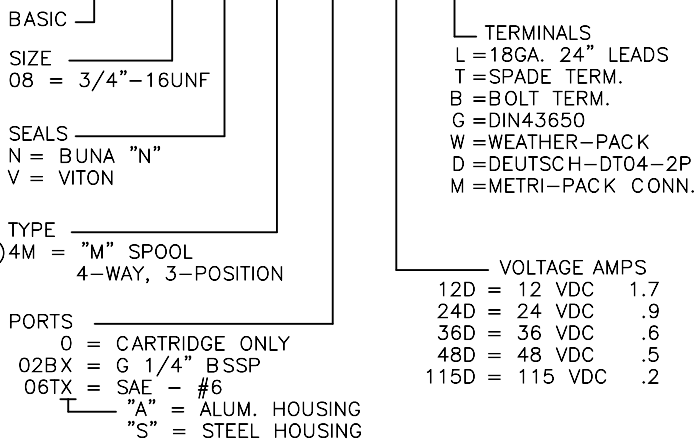
SOLENOID VALVE, 4-WAY, 3-POSITION.
DIRECT ACTING SPOOL



TORQUE:

Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]

EMBV-08-X-4M-X-XXX X



*) on request

SOLENOID VALVE 4-WAY, 3-POSITION, SPOOL TYPE.**DESCRIPTION**

This unit is a FOUR-WAY, THREE POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, double coil, bidirectional motor spool selector valve.

OPERATIONS

At the initial position, this valve allows flow between ports 4, 2 & 1. When the upper solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 2 and ports 3 and 4. When the lower solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 4 and ports 2 and 3.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted spool & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

SOLENOID VALVE 4-WAY, 3-POSITION, SPOOL TYPE.**SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 5.0 GPM [19 l/m] max. See performance chart.

INTERNAL LEAKAGE: 5cu.in/min [82 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum - Anodized.

5000 PSI [350 Bar] = Steel - Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100% voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

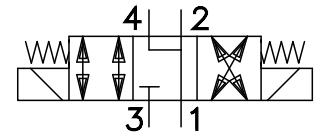
SEAL KIT: SKN-0842 Buna "N"

SKV-0842 Viton

WEIGHT: 1.52 lb [.69 kg] cartridge with coil only.

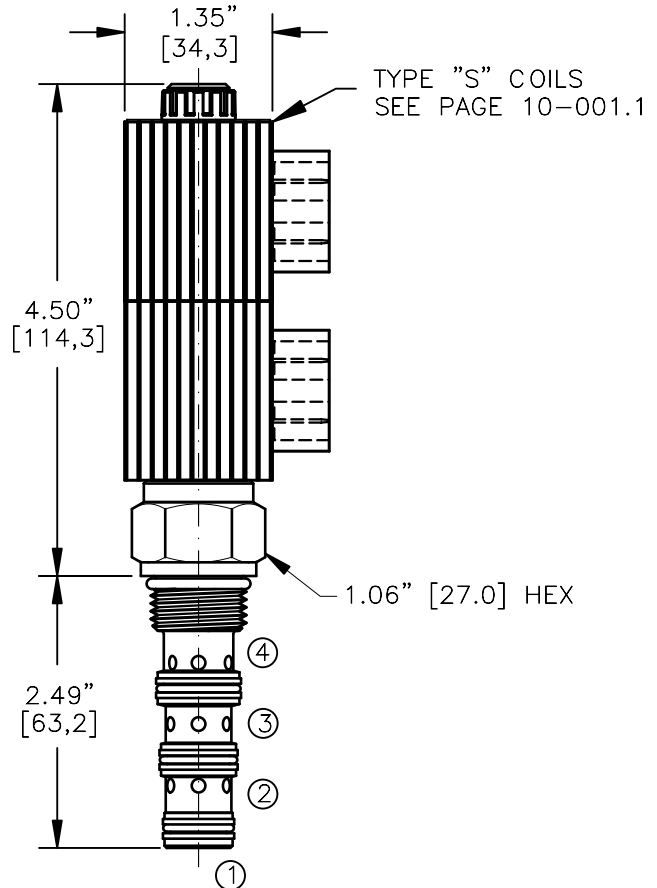
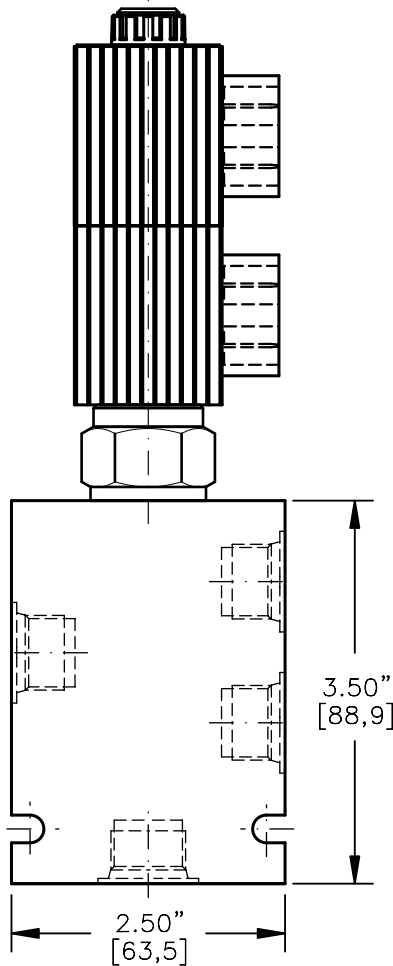
VALVE CAVITY: #C0840, See Page 0-041.0.

SOLENOID VALVE, 4-WAY, 3-POSITION, DIRECT ACTING SPOOL



TORQUE:

Steel = 55/60 Ft-Lb. [74/81 Nm]
Aluminum = 35/40 Ft-Lb. [47/54 Nm]



NOTES:

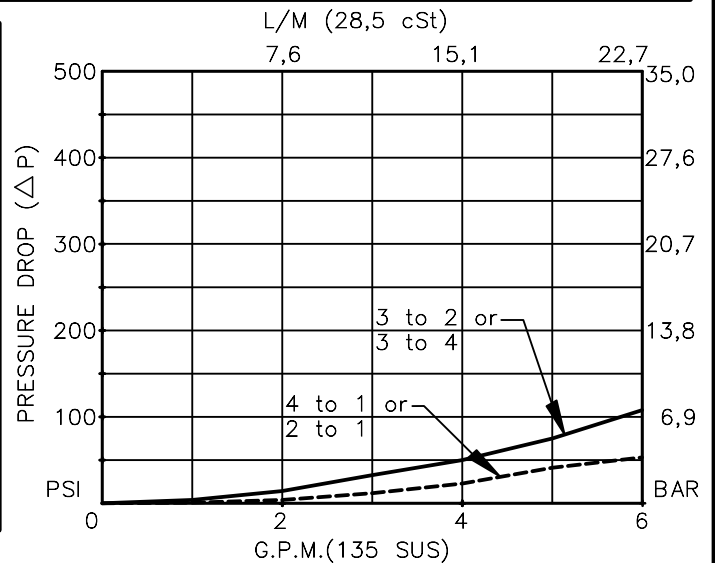
1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-042.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.

EMBV-10-X-4M-X-XXX X

BASIC _____
SIZE _____
 10 = 7/8"-14 UNF
SEALS _____
 N = BUNA "N"
 V = VITON
TYPE _____
 4M = "M" SPOOL
 4-WAY, 3-POSITION
PORTS _____
 0 = CARTRIDGE ONLY
 02BX = G 1/4", BSPP
 03BX = G 3/8", BSPP
 06TX = SAE - #6
 08TX = SAE - #8
 "A" - ALUM. HOUSING
 "S" - STEEL HOUSING

TERMINALS
 L = 18GA. 24" LEADS
 T = SPADE TERM.
 B = BOLT TERM.
 G = DIN 43650
 W = WEATHER-PACK
 D = DEUTSCH-DT04-2P
 M = METRI-PACK CONN.

VOLTAGE	AMPS
12D = 12 VDC	1.85
24D = 24 VDC	.92
36D = 36 VDC	.62
48D = 48 VDC	.46



SOLENOID VALVE, 4-WAY, 3-POSITION, DIRECT ACTING SPOOL

DESCRIPTION

This unit is a FOUR-WAY, THREE POSITION, cartridge type, spool type, direct acting, screw in type, solenoid operated, double coil, bidirectional motor spool selector valve.

OPERATIONS

At the initial position, this valve allows flow between ports 4, 2 & 1. When the upper solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 2 and ports 3 and 4. When the lower solenoid coil is energized, the spool in this valve is shifted and allows flow between ports 1 and 4 and ports 2 and 3.

FEATURES AND BENEFITS

Continuous-duty, very low heat rise & waterproof solenoid coils.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted spool & sleeve provides reliable, long life.
Very efficient, wet-armature solenoid core tube construction.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

**SOLENOID VALVE, 4-WAY, 3-POSITION,
DIRECT ACTING SPOOL****SPECIFICATIONS**

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 6.0 GPM [22,7 l/m] max. (SEE PERFORMANCE CHART)

INTERNAL LEAKAGE: 10 cu.in./min [164 cc/m] @ 5,000 PSI [350 Bar]

VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.

5000 PSI [350 Bar] = Steel – Unplated.

OIL TEMPERATURE: -40° to +175° F. [-40° to +80° C.]

AMBIENT TEMPERATURE: -40° to +122° F. [-40° to +50° C.]

Please consult factory for continuously energized or
high ambient temperature application (>122° F [50°C])

OPERATING MEDIA: All general purpose hydraulic fluids such as

MIL-H-5606, SAE-#10, SAE-#20, etc.

RESPONSE TIME: First indication of change in pressure with 100%
voltage supplied @ 80% of nominal flow rating.

* Pull-in: 50 ms

* Drop-Out: 50 ms

SEAL KIT: SKN-1042 Buna "N"

SKV-1042 Viton

WEIGHT: 2.1 lb [.95 kg] cartridge with coils only.

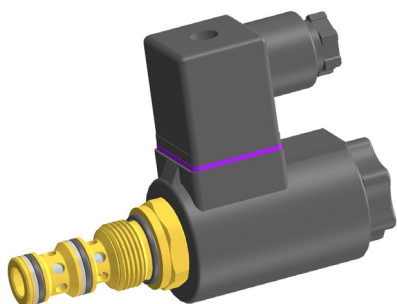
VALVE CAVITY: #C1040, See Page 0-042.0.

3/2 Cartridge Spool Valve, Size 1

$Q_{max} = 5 \text{ l/min}$, $p_{max} = 420 \text{ bar}$

Pilot valve, with solenoid operation, direct acting

Series WKP32GLA1.../ WKP32OLA1...



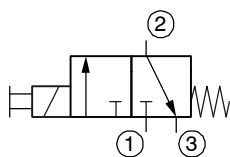
- Can be used as a high-pressure pilot valve
- “Low-Watt” model (8 W)
- Compact construction for cavity type AM – 3/4-16 UNF
- All exposed parts with zinc-nickel plating
- High pressure wet-armature solenoids
- The slip-on coil can be rotated, and it can be replaced without opening the hydraulic envelope
- Various plug-connector systems and voltages are available
- With manual override
- Can be fitted in a line-mounting body

1 Description

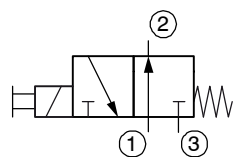
These direct acting 3/2 solenoid operated spool valves, series WKP32GLA1.../ WKP32OLA1..., are size 1, pressure balanced screw-in cartridges with a 3/4-16 UNF mounting thread. They are designed on the proven sliding-spool principle. “De-energised closed” and “de-energised open” functions are available. In addition, these solenoid operated spool valves are fitted with a low-watt coil (nominal power consumption 8 W). The straightforward design delivers an outstanding price/performance ratio. These 3/2 solenoid operated spool valves are primarily used in mobile and indu-

ustrial applications as pilot valves for controlling the travel direction of actuators such as hydraulic motors and cylinders. All external parts of the cartridge are zinc-nickel plated to DIN 50 979 and are thus suitable for use in the harshest operating environments. The slip-on coils can be replaced without opening the hydraulic envelope and can be positioned at any angle through 360°. If you intend to manufacture your own cavities or are designing a line-mounting installation, please refer to the section “Related data sheets”.

2 Symbol



WKP32GLA1...



WKP32OLA1...

3 Technical data

General characteristics	Description, value, unit
Designation	3/2 cartridge spool valve
Design	pilot valve, with solenoid operation, direct acting
Mounting method	screw-in cartridge 3/4-16 UNF
Tightening torque	60 Nm ± 10 %
Size	nominal size 1, cavity type AM
Weight	0.48 kg
Mounting attitude	unrestricted
Ambient temperature range	-25 °C ... +50 °C

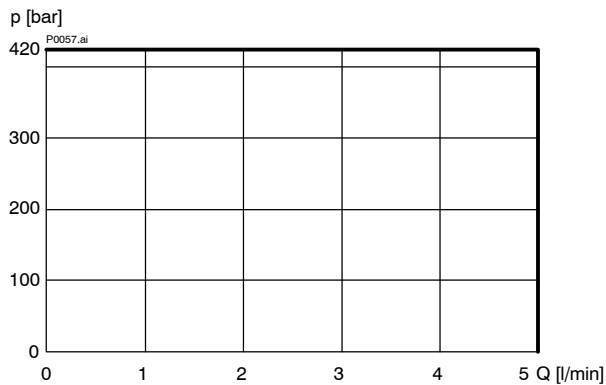
Reference: 400-P-120621-EN-00

Hydraulic characteristics		Description, value, unit
Maximum operating pressure	- ports 1 and 2 - port 3	420 bar 250 bar
Maximum flow rate		5 l/min
Flow direction		see symbols
Hydraulic fluid		HL and HLP mineral oil to DIN 51 524; for other fluids, please contact BUCHER
Hydraulic fluid temperature range		-25 °C ... +80 °C
Viscosity range		10...500 mm ² /s (cSt), recommended 15...250 mm ² /s (cSt)
Minimum fluid cleanliness Cleanliness class to ISO 4406 : 1999		class 20/18/15
Electrical characteristics		Description, value, unit
Supply voltage		12 V DC, 24 V DC
Supply voltage tolerance		± 10 %
Nominal power consumption		8 W
Relative duty cycle		100 %
Protection class to ISO 20 653 / EN 60 529		IP 65 / IP 67 / IP 69K, see "Ordering code" (with appropriate mating connector and proper fitting and sealing)
Electrical connection		3-pin square plug to ISO 4400 / DIN 43 650 (standard) for other connectors, see "Ordering code"

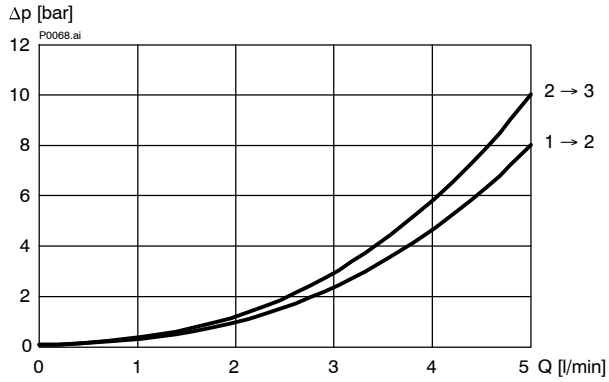
4 Performance graphs

measured with oil viscosity 33 mm²/s (cSt), coil at steady-state temperature and 10 % undervoltage

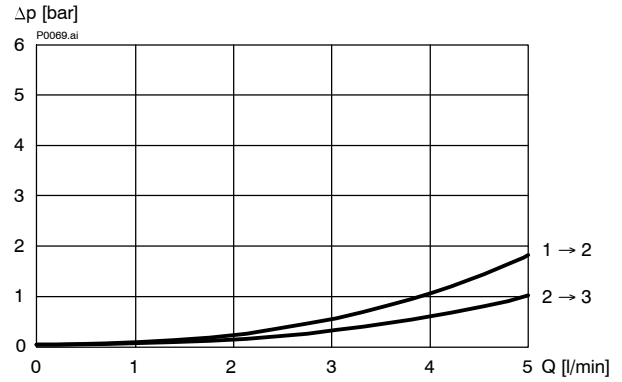
$p = f(Q)$ Performance limits



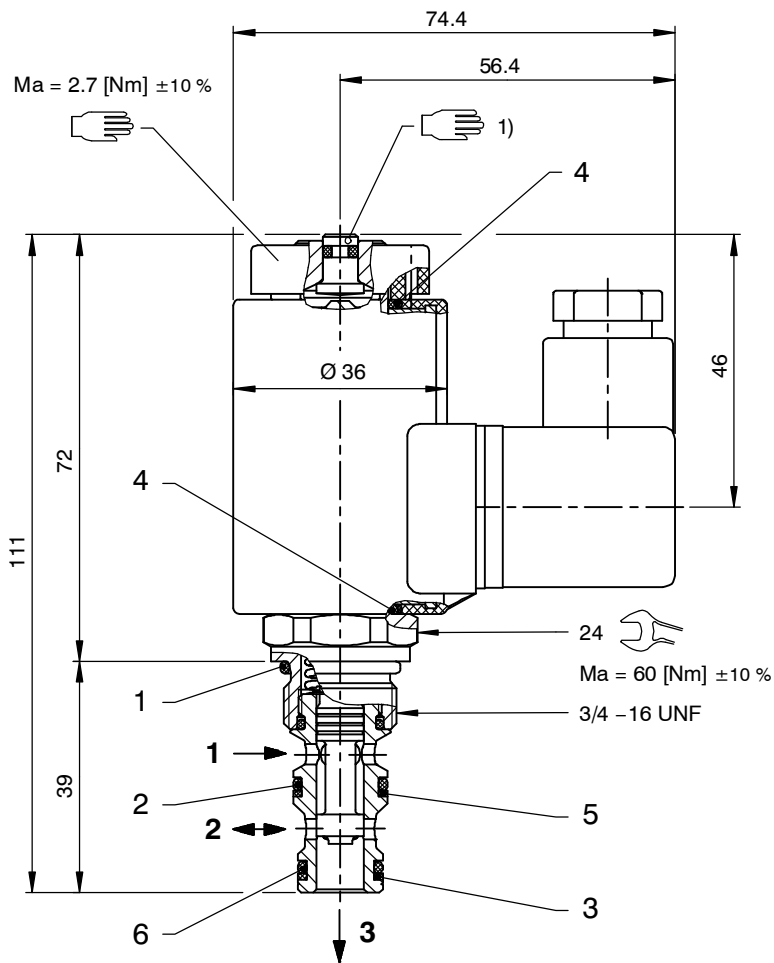
$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic
[WKP32G...]



$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic
[WKP32O...]



5 Dimensions & sectional view



IMPORTANT!:

1) With manual override

6 Installation information



IMPORTANT!

When fitting the cartridges, use the specified tightening torque. No adjustments are necessary, since the cartridges are set in the factory.



ATTENTION!

Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be undertaken is to check, and possibly replace, the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

NBR seal kit no. DS-247-N ¹⁾

Item	Qty.	Description
1	1	O-ring no. 017 Ø 17,17 x 1,78 N90
2	1	O-ring no. 014 Ø 12,42 x 1,78 N90
3	1	O-ring no. 013 Ø 10,82 x 1,78 N90
4	2	O-ring Ø 16,00 x 2,00 Viton
5	1	Backup ring Ø 10,70 x 1,45 x 1,00 F10751
6	1	Backup ring Ø 9,40 x 1,45 x 1,00 F10751



IMPORTANT!

1) Seal kit with FKM (Viton) seals, no. DS-247-V

7 Ordering code

Ex.

W	K	P	32G	L	A	1	_
---	---	---	-----	---	---	---	---

 -

1

24 VDC

_

<p>W = directional valve</p> <p>K = spool-type, direct acting</p> <p>P = high-pressure model, 420 bar</p> <p>32G = 3/2 function, de-energised closed</p> <p>32O = 3/2 function, de-energised open</p> <p>L = electrically operated, VDC = 8 W</p> <p>A ... Q = standard model - see relevant data sheets</p> <p>Y... R = special features - please consult BUCHER</p> <p>1 = nominal size 1 (primarily for pilot controls)</p> <p>(blank) = NBR (Nitrile) seals (standard)</p> <p>V = FKM (Viton) seals (special seals - please contact BUCHER)</p> <p>1 ... 9 = design stage (omit when ordering new units)</p> <p>... = voltage e.g. 24 (24 V)</p> <p>(blank) = ISO 4400 / DIN 43 650 mating plug (standard, IP 65)</p> <p>M100 = without mating DIN plug</p>	<p>for the following plug-variants, please consult Bucher:</p> <p>C = Kostal plug connection (IP 65)</p> <p>JT = Junior Timer radial plug connection (with protection diode, IP65)</p> <p>IT = Junior Timer axial plug connection (with protection diode, IP65)</p> <p>D = Deutsch plug connection DT04-2P (IP 67/69K)</p> <p>DT = Deutsch plug connection DT04-2P (with protection diode, IP 67/69K)</p> <p>S = AMP Superseal 1.5 (IP 67) / Metri-Pack 150 (IP 65)</p> <p>F = flying leads (500 mm)</p>	<p>} mating plug not supplied</p>
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8 Related data sheets

Reference	(Old no.)	Description
400-P-040011	(i-32)	The form-tool hire programme
400-P-040181	(i-33.11)	Cavity type AM
400-P-120100	(W-2.140)	Overview directional solenoid cartridge valve Size 1...5
400-P-120110	(W-2.141)	Coils for screw-in cartridge valves
400-P-720111	(G-4.20)	Line-mounting body, type GAMA (G 3/8")

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www.bucherhydraulics.com

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Data is provided for the purpose of product description only, and must not be construed as warranted characteristics in the legal sense. The information does not relieve users from the duty of conducting their own evaluations and tests. Because the products are subject to continual improvement, we reserve the right to amend the product specifications contained in this catalogue.

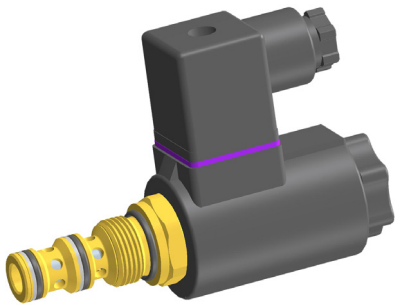
Classification: 430.300.-.305.300.300

3/2 Cartridge Spool Valve, Size 3

$Q_{\max} = 15 \text{ l/min}$, $p_{\max} = 420 \text{ bar}$

Pilot valve, with solenoid operation, direct acting

Series WKP32GNA3.../ WKP32ONA3...



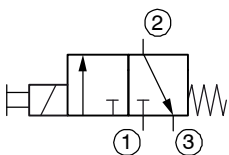
- Can be used as a high-pressure pilot valve
- Compact construction for cavity type AM – 3/4-16 UNF
- All exposed parts with zinc-nickel plating
- High pressure wet-armature solenoids
- The slip-on coil can be rotated, and it can be replaced without opening the hydraulic envelope
- Various plug-connector systems and voltages are available
- With manual override
- Can be fitted in a line-mounting body

1 Description

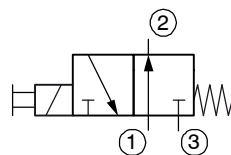
These direct acting 3/2 solenoid operated spool valves, series WKP32GNA3.../ WKP32ONA3..., are size 3, pressure balanced screw-in cartridges with a 3/4-16 UNF mounting thread. They are designed on the proven sliding-spool principle. “De-energised closed” and “de-energised open” functions are available. The straightforward design delivers an outstanding price/performance ratio. These 3/2 solenoid operated spool valves are primarily used in mobile and industrial applications as pilot valves for controlling the travel di-

rection of actuators such as hydraulic motors and cylinders. All external parts of the cartridge are zinc-nickel plated to DIN 50 979 and are thus suitable for use in the harshest operating environments. The slip-on coils can be replaced without opening the hydraulic envelope and can be positioned at any angle through 360°. If you intend to manufacture your own cavities or are designing a line-mounting installation, please refer to the section “Related data sheets”.

2 Symbol



WKP32GNA3...



WKP32ONA3...

3 Technical data

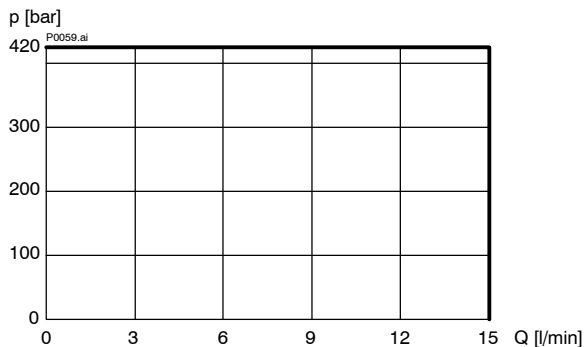
General characteristics	Description, value, unit
Designation	3/2 cartridge spool valve
Design	pilot valve, with solenoid operation, direct acting
Mounting method	screw-in cartridge 3/4-16 UNF
Tightening torque	60 Nm ± 10 %
Size	nominal size 3, cavity type AM
Weight	0.48 kg
Mounting attitude	unrestricted
Ambient temperature range	-25 °C ... +50 °C

Hydraulic characteristics	Description, value, unit
Maximum operating pressure - ports 1 and 2 - port 3	420 bar 250 bar
Maximum flow rate	15 l/min (WKP32G...) 10 l/min (WKP32O...)
Flow direction	see symbols
Hydraulic fluid	HL and HLP mineral oil to DIN 51 524; for other fluids, please contact BUCHER
Hydraulic fluid temperature range	-25 °C ... +80 °C
Viscosity range	10...500 mm ² /s (cSt), recommended 15...250 mm ² /s (cSt)
Minimum fluid cleanliness Cleanliness class to ISO 4406 : 1999	class 20/18/15
Electrical characteristics	Description, value, unit
Supply voltage	12 V DC, 24 V DC / 115 V AC, 230 V AC (50 ... 60 Hz)
Supply voltage tolerance	± 10 %
Nominal power consumption	V DC = 27 W / V AC = 25 W
Relative duty cycle	100 %
Protection class to ISO 20 653 / EN 60 529	IP 65 / IP 67 / IP 69K, see "Ordering code" (with appropriate mating connector and proper fitting and sealing)
Electrical connection	3-pin square plug to ISO 4400 / DIN 43 650 (standard) for other connectors, see "Ordering code"

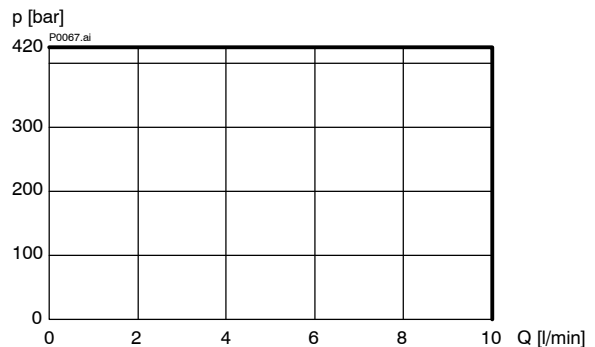
4 Performance graphs

measured with oil viscosity 33 mm²/s (cSt), coil at steady-state temperature and 10 % undervoltage

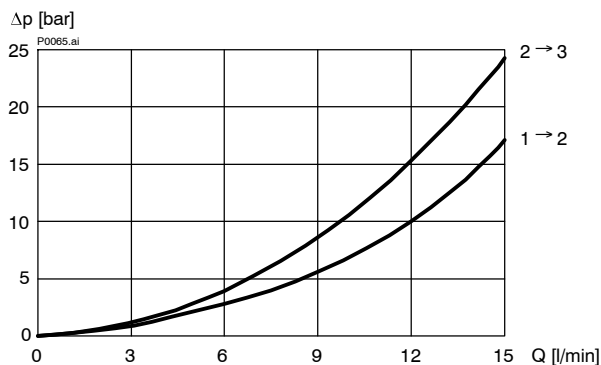
$p = f(Q)$ Performance limits [WKP32G...]



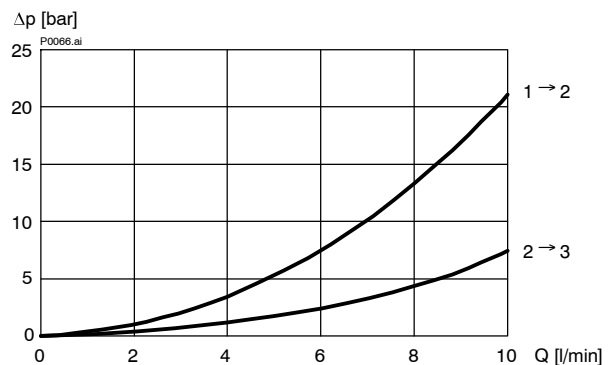
$p = f(Q)$ Performance limits [WKP32O...]



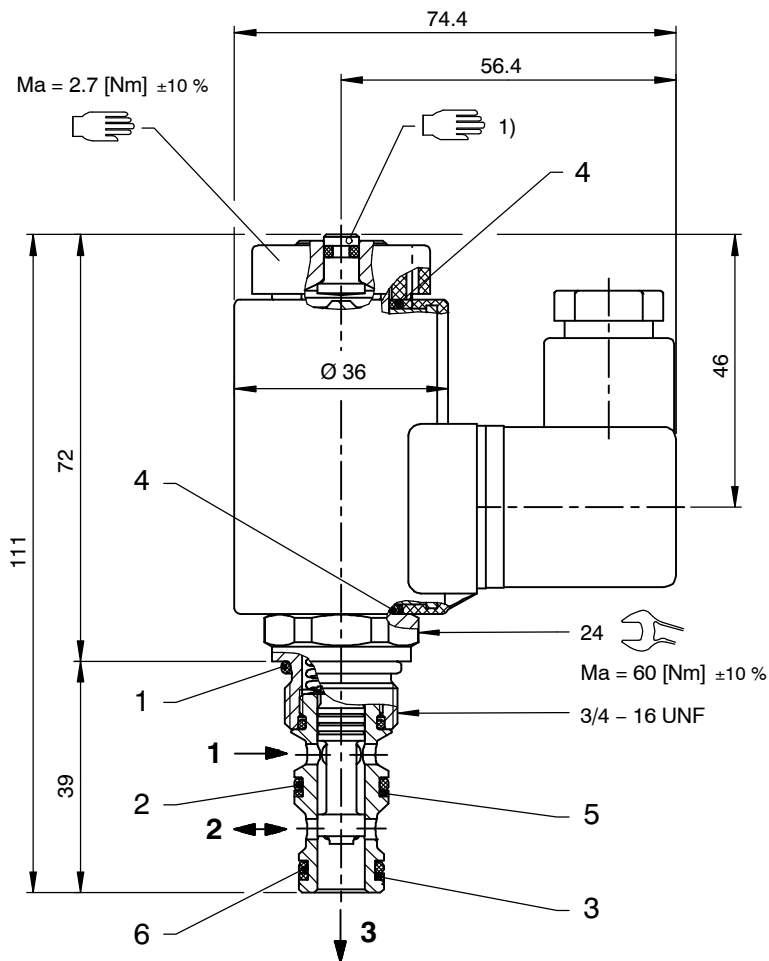
$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic [WKP32G...]



$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic [WKP32O...]



5 Dimensions & sectional view



IMPORTANT!

1) With manual override

6 Installation information



IMPORTANT!

When fitting the cartridges, use the specified tightening torque. No adjustments are necessary, since the cartridges are set in the factory.



ATTENTION!

Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be undertaken is to check, and possibly replace, the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

NBR seal kit no. DS-247-N ²⁾

Item	Qty.	Description
1	1	O-ring no. 017 Ø 17,17 x 1,78 N90
2	1	O-ring no. 014 Ø 12,42 x 1,78 N90
3	1	O-ring no. 013 Ø 10,82 x 1,78 N90
4	2	O-ring Ø 16,00 x 2,00 Viton
5	1	Backup ring Ø 10,70 x 1,45 x 1,00 FI0751
6	1	Backup ring Ø 9,40 x 1,45 x 1,00 FI0751



IMPORTANT!

²⁾ Seal kit with FKM (Viton) seals, no. DS-247-V

7 Ordering code

Ex.

W	K	P	32G	N	A	3	_	-	1	24 VDC	_
---	---	---	-----	---	---	---	---	---	---	--------	---

- W = directional valve
 - K = spool-type, direct acting
 - P = high-pressure model, 420 bar
 - 32G = 3/2 function, de-energised closed
 - 32O = 3/2 function, de-energised open
 - N = electrically operated, V DC = 27 W / V AC = 25 W
 - A ... Q = standard model - see relevant data sheets
 - Z ... R = special features - please consult BUCHER
 - 3 = nominal size 3 (primarily for pilot controls)
 - (blank) = NBR (Nitrile) seals (standard)
 - V = FKM (Viton) seals
(special seals - please contact BUCHER)
 - 1 ... 9 = design stage (omit when ordering new units)
 - ... = voltage e.g. 24 (24 V)
 - (blank) = ISO 4400 / DIN 43 650 mating plug (standard, IP 65)
 - M100 = without mating DIN plug
- | | |
|---|----------------------------|
| C = Kostal plug connection (IP 65) | } mating plug not supplied |
| JT = Junior Timer radial plug connection (with protection diode, IP65) | |
| IT = Junior Timer axial plug connection (with protection diode, IP65) | |
| D = Deutsch plug connection DT04-2P (IP 67/69K) | |
| DT = Deutsch plug connection DT04-2P (with protection diode, IP 67/69K) | |
| S = AMP Superseal 1.5 (IP 67) / Metri-Pack 150 (IP 65) | |
| F = flying leads (500 mm) | |

8 Related data sheets

Reference	(Old no.)	Description
400-P-040011	(i-32)	The form-tool hire programme
400-P-040181	(i-33.11)	Cavity type AM
400-P-120100	(W-2.140)	Overview directional solenoid cartridge valve Size 1...5
400-P-120110	(W-2.141)	Coils for screw-in cartridge valves
400-P-720111	(G-4.20)	Line-mounting body, type GAMA (G 3/8")

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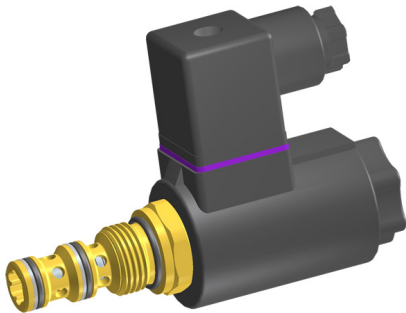
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Data is provided for the purpose of product description only, and must not be construed as warranted characteristics in the legal sense. The information does not relieve users from the duty of conducting their own evaluations and tests. Because the products are subject to continual improvement, we reserve the right to amend the product specifications contained in this catalogue.

Classification: 430.300.-.305.305.300

3/2 Cartridge Spool Valve, Size 5

$Q_{\max} = 30 \text{ l/min}$, $p_{\max} = 250 \text{ bar}$
Direct acting, with solenoid operation
Series WK32G.../ WK32O...



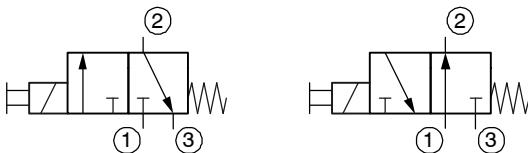
- Compact construction for cavity type AM – 3/4-16 UNF
- Optimised Δp values
- Choice of nominal power rating – 17 W or 27/25 W
- All exposed parts with zinc-nickel plating
- High pressure wet-armature solenoids
- The slip-on coil can be rotated, and it can be replaced without opening the hydraulic envelope
- Various plug-connector systems and voltages are available
- With manual override
- Can be fitted in a line-mounting body

1 Description

These direct acting 3/2 solenoid operated spool valves, series WK32G.../ WK32O..., are size 5, pressure balanced screw-in cartridges with a 3/4-16 UNF mounting thread. They are designed on the proven sliding-spool principle. “De-energised closed” and “de-energised open” functions are available, each with a nominal power consumption of 17 W or 27/25 W. The straightforward design delivers an outstanding price/performance ratio and good Δp values. These 3/2 solenoid operated spool valves are primarily used in mobile and industrial applications for controlling the

travel direction of actuators such as hydraulic motors and cylinders. All external parts of the cartridge are zinc-nickel plated to DIN 50 979 and are thus suitable for use in the harshest operating environments. The slip-on coils can be replaced without opening the hydraulic envelope and can be positioned at any angle through 360°. If you intend to manufacture your own cavities or are designing a line-mounting installation, please refer to the section “Related data sheets”.

2 Symbol



WK32GEA5...
WK32GNA5...

WK32OEA5...
WK32ONA5...

3 Technical data

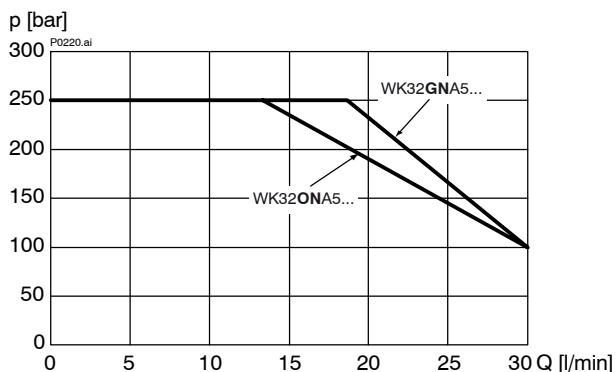
General characteristics	Description, value, unit
Designation	3/2 cartridge spool valve
Design	direct acting, with solenoid operation
Mounting method	screw-in cartridge 3/4-16 UNF
Tightening torque	40 Nm \pm 10 %
Size	nominal size 5, cavity type AM
Weight	0.4 kg
Mounting attitude	unrestricted
Ambient temperature range	-25 °C ... +50 °C

Hydraulic characteristics		Description, value, unit
Maximum operating pressure		250 bar (27 / 25 W) 50 bar (17 W)
Maximum flow rate		30 l/min
Flow direction		see symbols (for other functions, consult BUCHER)
Hydraulic fluid		HL and HLP mineral oil to DIN 51 524; for other fluids, please contact BUCHER
Hydraulic fluid temperature range		-25 °C ... +80 °C
Viscosity range		10...500 mm ² /s (cSt), recommended 15...250 mm ² /s (cSt)
Minimum fluid cleanliness Cleanliness class to ISO 4406 : 1999		class 20/18/15
Electrical characteristics		Description, value, unit
Supply voltage		12 V DC, 24 V DC / 115 V AC, 230 V AC (50 ... 60 Hz)
Supply voltage tolerance		± 10 %
Nominal power consumption	- version "N" - version "E"	V DC = 27 W / V AC = 25 W V DC = 17 W / V AC = 17 W
Switching time		Version "E" (17 W): 25 ... 70 ms (energising) 15 ... 50 ms (deenergising) Version "N" (27 / 25 W): 25 ... 100 ms (energising) 20 ... 70 ms (deenergising) These times are strongly influenced by fluid pressure, flow rate and viscosity, as well as by the dwell time under pressure.
Relative duty cycle		100 %
Protection class to ISO 20 653 / EN 60 529		IP 65 / IP 67 / IP 69K, see "Ordering code" (with appropriate mating connector and proper fitting and sealing)
Electrical connection		3-pin square plug to ISO 4400 / DIN 43 650 (standard) for other connectors, see "Ordering code"

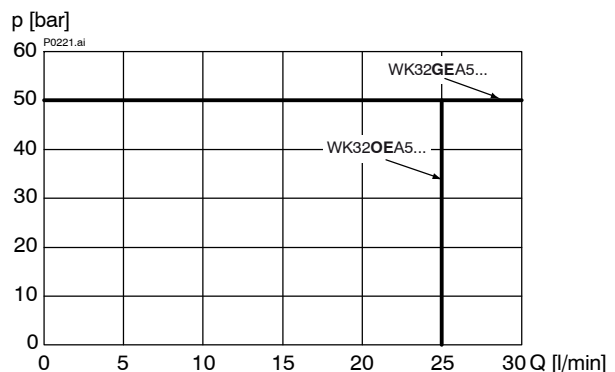
4 Performance graphs

measured with oil viscosity 33 mm²/s (cSt), coil at steady-state temperature and 10 % undervoltage

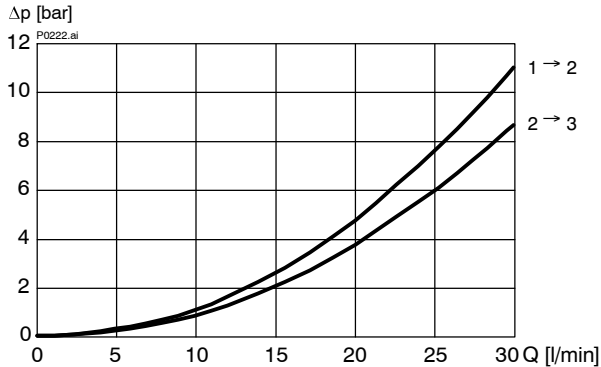
$p = f(Q)$ Performance limits [Version - 27 / 25 W]



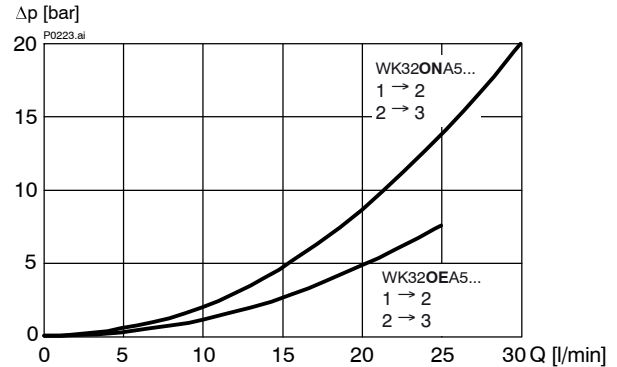
$p = f(Q)$ Performance limits [Version - 17 W]



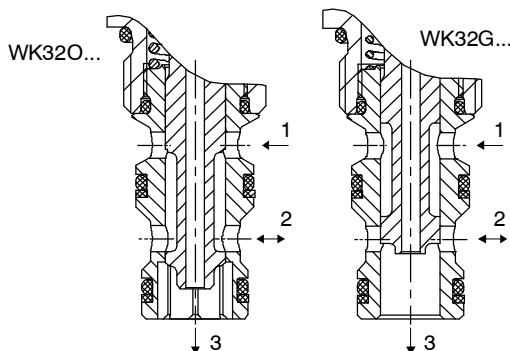
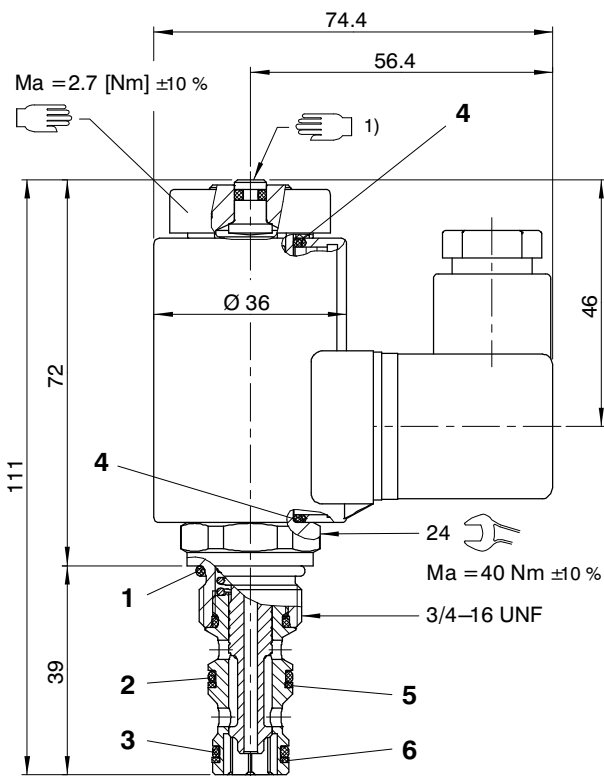
$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic
[WK32GNA5.../ WK32GEA5...]



$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic
[WK32ONA5.../ WK32OEA5...]



5 Dimensions & sectional view



IMPORTANT!

1) With manual override

6 Installation information



IMPORTANT!

When fitting the cartridges, use the specified tightening torque. No adjustments are necessary, since the cartridges are set in the factory.



ATTENTION!

Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be undertaken is to check, and possibly replace, the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

NBR seal kit no. DS-247-N ²⁾

Item	Qty.	Description
1	1	O-ring no. 017 Ø 17,17 x 1,78 N90
2	1	O-ring no. 014 Ø 12,42 x 1,78 N90
3	1	O-ring no. 013 Ø 10,82 x 1,78 N90
4	2	O-ring Ø 16,00 x 2,00 Viton
5	1	Backup ring Ø 10,70 x 1,45 x 1,00 FI0751
6	1	Backup ring Ø 9,40 x 1,45 x 1,00 FI0751



IMPORTANT!

²⁾ Seal kit with FKM (Viton) seals, no. DS-247-V

7 Ordering code

Ex.

W	K	32G	N	A	5	-	1	24 VDC	-
---	---	-----	---	---	---	---	---	--------	---

<p>W = directional valve</p> <p>K = spool-type, direct acting</p> <p>32G = 3/2 function, de-energised closed</p> <p>32O = 3/2 function, de-energised open</p> <p>N = electrically operated, V DC = 27 W / V AC = 25 W</p> <p>E = electrically operated, V DC = 17 W / V AC = 17 W</p> <p>A ... Q = standard model - see relevant data sheets</p> <p>Z ... R = special features - please consult BUCHER</p> <p>5 = nominal size 5</p> <p>(blank) = NBR (Nitrile) seals (standard)</p> <p>V = FKM (Viton) seals (special seals - please contact BUCHER)</p> <p>1 ... 9 = design stage (omit when ordering new units)</p> <p>... = voltage e.g. 24 (24 V)</p> <p>(blank) = ISO 4400 / DIN 43 650 mating plug (standard, IP 65)</p> <p>M100 = without mating DIN plug</p> <p>C = Kostal plug connection (IP 65)</p> <p>JT = Junior Timer radial plug connection (with protection diode, IP65)</p> <p>IT = Junior Timer axial plug connection (with protection diode, IP65)</p> <p>D = Deutsch plug connection DT04-2P (IP 67/69K)</p> <p>DT = Deutsch plug connection DT04-2P (with protection diode, IP 67/69K)</p> <p>S = AMP Superseal 1.5 (IP 67) / Metri-Pack 150 (IP 65)</p> <p>F = flying leads (500 mm)</p>	
---	--

} mating plug not supplied

8 Related data sheets

Reference	(Old no.)	Description
400-P-040011	(i-32)	The form-tool hire programme
400-P-040181	(i-33.11)	Cavity type AM
400-P-120100	(W-2.140)	Overview of directional solenoid cartridge valves, size 1...5
400-P-120110	(W-2.141)	Coils for screw-in cartridge valves
400-P-720111	(G-4.20)	Line-mounting body, type GAMA (G 3/8")

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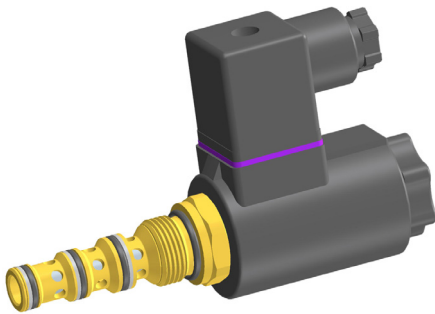
Classification: 430.300.-.305.310.300

4/2 Cartridge Spool Valve, Size 1

$Q_{\max} = 5 \text{ l/min}$, $p_{\max} = 420 \text{ bar}$

Pilot valve, with solenoid operation, direct acting

Series WKP42ALA1...



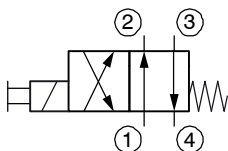
- Can be used as a high-pressure pilot valve
- "Low-Watt" model (8 W)
- Compact construction for cavity type AN – 3/4-16 UNF
- All exposed parts with zinc-nickel plating
- High pressure wet-armature solenoids
- The slip-on coil can be rotated, and it can be replaced without opening the hydraulic envelope
- Various plug-connector systems and voltages are available
- With manual override
- Can be fitted in a line-mounting body

1 Description

These direct acting 4/2 solenoid operated spool valves, series WKP42ALA1..., are size 1, pressure balanced screw-in cartridges with a 3/4-16 UNF mounting thread. They are designed on the proven sliding-spool principle. These solenoid operated spool valves are fitted with a low-watt coil (nominal power consumption 8 W). The straightforward design delivers an outstanding price/performance ratio. These 4/2 solenoid operated spool valves are primarily used in mobile and industrial applications as pilot valves for controlling the

travel direction of actuators such as hydraulic motors and cylinders. All external parts of the cartridge are zinc-nickel plated to DIN 50 979 and are thus suitable for use in the harshest operating environments. The slip-on coils can be replaced without opening the hydraulic envelope and can be positioned at any angle through 360°. If you intend to manufacture your own cavities or are designing a line-mounting installation, please refer to the section "Related data sheets".

2 Symbol



3 Technical data

General characteristics	Description, value, unit
Designation	4/2 cartridge spool valve
Design	pilot valve, with solenoid operation, direct acting
Mounting method	screw-in cartridge 3/4-16 UNF
Tightening torque	60 Nm \pm 10 %
Size	nominal size 1, cavity type AN
Weight	0.48 kg
Mounting attitude	unrestricted
Ambient temperature range	-25 °C ... +50 °C

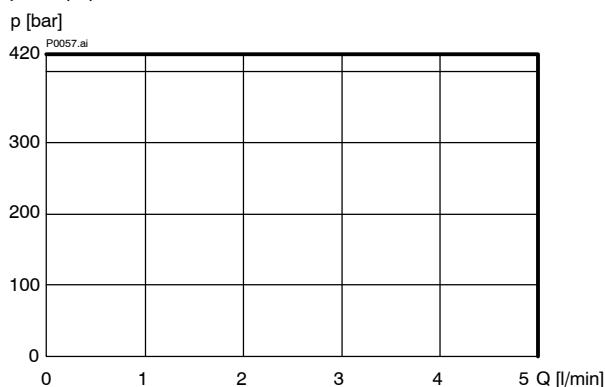
Hydraulic characteristics	Description, value, unit
Maximum operating pressure - ports 1, 2 and 3 - port 4	420 bar 250 bar
Maximum flow rate	5 l/min
Flow direction	see symbol
Hydraulic fluid	HL and HLP mineral oil to DIN 51 524; for other fluids, please contact BUCHER
Hydraulic fluid temperature range	-25 °C ... +80 °C
Viscosity range	10...500 mm ² /s (cSt), recommended 15...250 mm ² /s (cSt)
Minimum fluid cleanliness Cleanliness class to ISO 4406 : 1999	class 20/18/15

Electrical characteristics	Description, value, unit
Supply voltage	12 V DC, 24 V DC
Supply voltage tolerance	± 10 %
Nominal power consumption	8 W
Relative duty cycle	100 %
Protection class to ISO 20 653 / EN 60 529	IP 65 / IP 67 / IP 69K, see "Ordering code" (with appropriate mating connector and proper fitting and sealing)
Electrical connection	3-pin square plug to ISO 4400 / DIN 43 650 (standard) for other connectors, see "Ordering code"

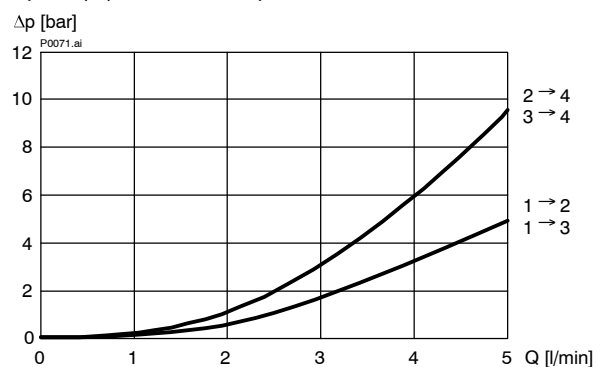
4 Performance graphs

measured with oil viscosity 33 mm²/s (cSt), coil at steady-state temperature and 10 % undervoltage

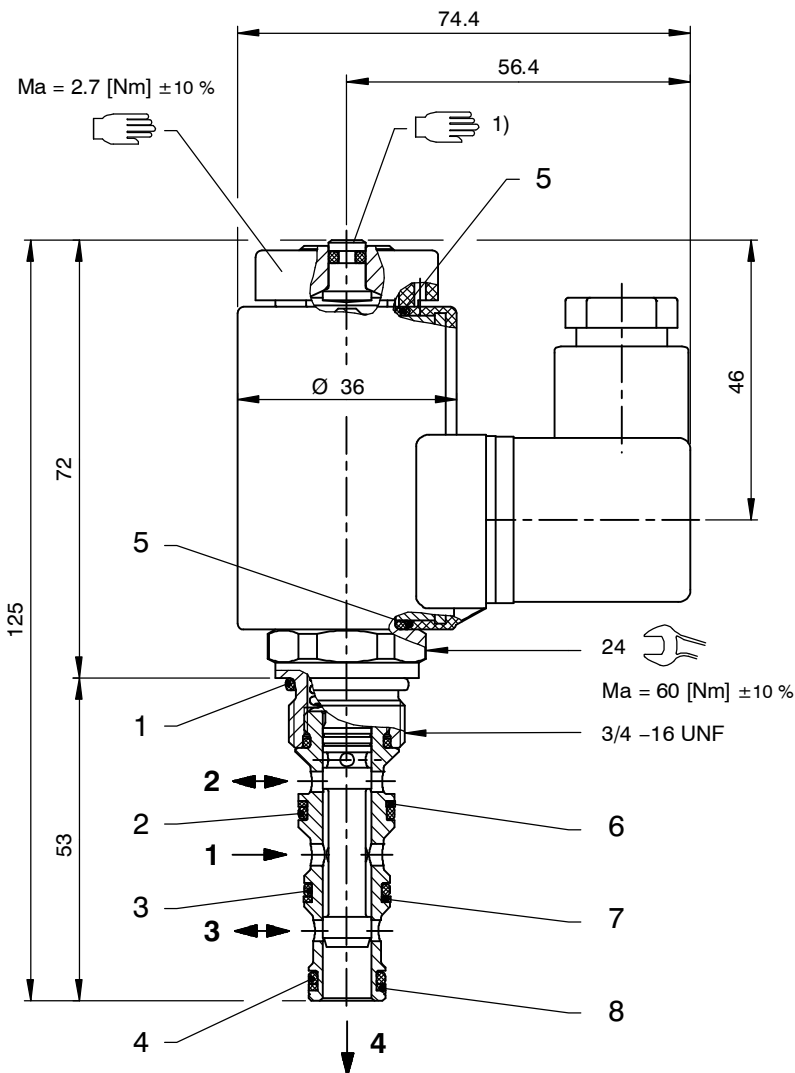
$p = f(Q)$ Performance limits



$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic



5 Dimensions & sectional view



IMPORTANT!

1) With manual override

6 Installation information



IMPORTANT!

When fitting the cartridges, use the specified tightening torque. No adjustments are necessary, since the cartridges are set in the factory.



ATTENTION!

Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be undertaken is to check, and possibly replace, the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

NBR seal kit no. DS-248-N 2)

Item	Qty.	Description
1	1	O-ring no. 017 \varnothing 17,17 x 1,78 N90
2	1	O-ring no. 014 \varnothing 12,42 x 1,78 N90
3	1	O-ring no. 013 \varnothing 10,82 x 1,78 N90
4	1	O-ring no. 012 \varnothing 9,25 x 1,78 N90
5	2	O-ring \varnothing 16,00 x 2,00 Viton
6	1	Backup ring \varnothing 10,70 x 1,45 x 1,00 FI0751
7	1	Backup ring \varnothing 9,40 x 1,45 x 1,00 FI0751
8	1	Backup ring \varnothing 7,80 x 1,45 x 1,00 FI0751



IMPORTANT!

2) Seal kit with FKM (Viton) seals, no. DS-248-V

7 Ordering code

Ex.

W	K	P	42A	L	A	1	_	-	1	24 VDC	_
---	---	---	-----	---	---	---	---	---	---	--------	---

- W = directional valve
- K = spool-type, direct acting
- P = high-pressure model, 420 bar
- 42A = 4/2 function, A-type spool
- L = electrically operated, VDC = 8 W
- A ... Q = standard model - see relevant data sheets
- Y ... R = special features - please consult BUCHER
- 1 = nominal size 1 (primarily for pilot controls)
- (blank) = NBR (Nitrile) seals (standard)
- V = FKM (Viton) seals
(special seals - please contact BUCHER)
- 1 ... 9 = design stage (omit when ordering new units)
- ... = voltage e.g. 24 (24 V)
- (blank) = ISO 4400 / DIN 43 650 mating plug (standard, IP 65)
- M100 = without mating DIN plug

for the following plug-variants, please consult Bucher:

<ul style="list-style-type: none"> C = Kostal plug connection (IP 65) JT = Junior Timer radial plug connection (with protection diode, IP65) IT = Junior Timer axial plug connection (with protection diode, IP65) D = Deutsch plug connection DT04-2P (IP 67/69K) DT = Deutsch plug connection DT04-2P (with protection diode, IP 67/69K) S = AMP Superseal 1.5 (IP 67) / Metri-Pack 150 (IP 65) F = flying leads (500 mm) 	}	mating plug not supplied
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8 Related data sheets

Reference	(Old no.)	Description
400-P-040011	(i-32)	The form-tool hire programme
400-P-040191	(i-33.12)	Cavity type AN
400-P-120100	(W-2.140)	Overview directional solenoid cartridge valve Size 1...5
400-P-120110	(W-2.141)	Coils for screw-in cartridge valves
400-P-720121	(G-4.30)	Line-mounting body, type GANA (G 3/8")

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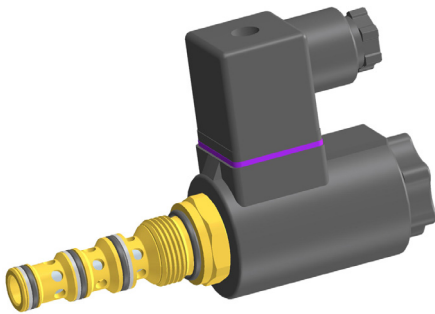
Classification: 430.300.-.305.300.300

4/2 Cartridge Spool Valve, Size 3

$Q_{\max} = 15 \text{ l/min}$, $p_{\max} = 420 \text{ bar}$

Pilot valve, with solenoid operation, direct acting

Series WKP42ANA3...



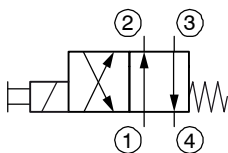
- Can be used as a high-pressure pilot valve
- Compact construction for cavity type AN – 3/4-16 UNF
- All exposed parts with zinc-nickel plating
- High pressure wet-armature solenoids
- The slip-on coil can be rotated, and it can be replaced without opening the hydraulic envelope
- Various plug-connector systems and voltages are available
- With manual override
- Can be fitted in a line-mounting body

1 Description

These direct acting 4/2 solenoid operated spool valves, series WKP42ANA3..., are size 3, pressure balanced screw-in cartridges with a 3/4-16 UNF mounting thread. They are designed on the proven sliding-spool principle. The straightforward design delivers an outstanding price/performance ratio. These 4/2 solenoid operated spool valves are primarily used in mobile and industrial applications as pilot valves for controlling the travel direction of actuators such

as hydraulic motors and cylinders. All external parts of the cartridge are zinc-nickel plated to DIN 50 979 and are thus suitable for use in the harshest operating environments. The slip-on coils can be replaced without opening the hydraulic envelope and can be positioned at any angle through 360°. If you intend to manufacture your own cavities or are designing a line-mounting installation, please refer to the section "Related data sheets".

2 Symbol



3 Technical data

General characteristics	Description, value, unit
Designation	4/2 cartridge spool valve
Design	pilot valve, with solenoid operation, direct acting
Mounting method	screw-in cartridge 3/4-16 UNF
Tightening torque	60 Nm \pm 10 %
Size	nominal size 3, cavity type AN
Weight	0.48 kg
Mounting attitude	unrestricted
Ambient temperature range	-25 °C ... +50 °C

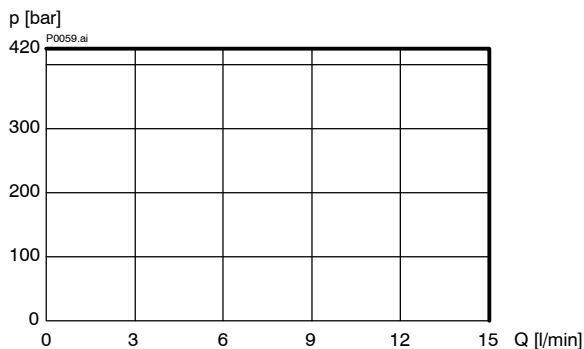
Hydraulic characteristics	Description, value, unit
Maximum operating pressure - ports 1, 2 and 3 - port 4	420 bar 250 bar
Maximum flow rate	15 l/min
Flow direction	see symbol
Hydraulic fluid	HL and HLP mineral oil to DIN 51 524; for other fluids, please contact BUCHER
Hydraulic fluid temperature range	-25 °C ... +80 °C
Viscosity range	10...500 mm ² /s (cSt), recommended 15...250 mm ² /s (cSt)
Minimum fluid cleanliness Cleanliness class to ISO 4406 : 1999	class 20/18/15

Electrical characteristics	Description, value, unit
Supply voltage	12 V DC, 24 V DC 115 V AC, 230 V AC (50 ... 60 Hz)
Supply voltage tolerance	± 10 %
Nominal power consumption	V DC = 27 W V AC = 25 W
Relative duty cycle	100 %
Protection class to ISO 20 653 / EN 60 529	IP 65 / IP 67 / IP 69K, see "Ordering code" (with appropriate mating connector and proper fitting and sealing)
Electrical connection	3-pin square plug to ISO 4400 / DIN 43 650 (standard) for other connectors, see "Ordering code"

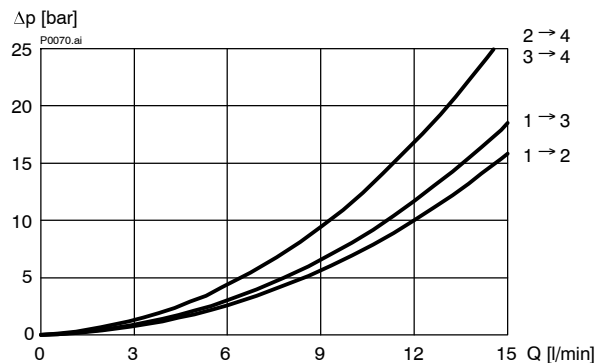
4 Performance graphs

measured with oil viscosity 33 mm²/s (cSt), coil at steady-state temperature and 10 % undervoltage

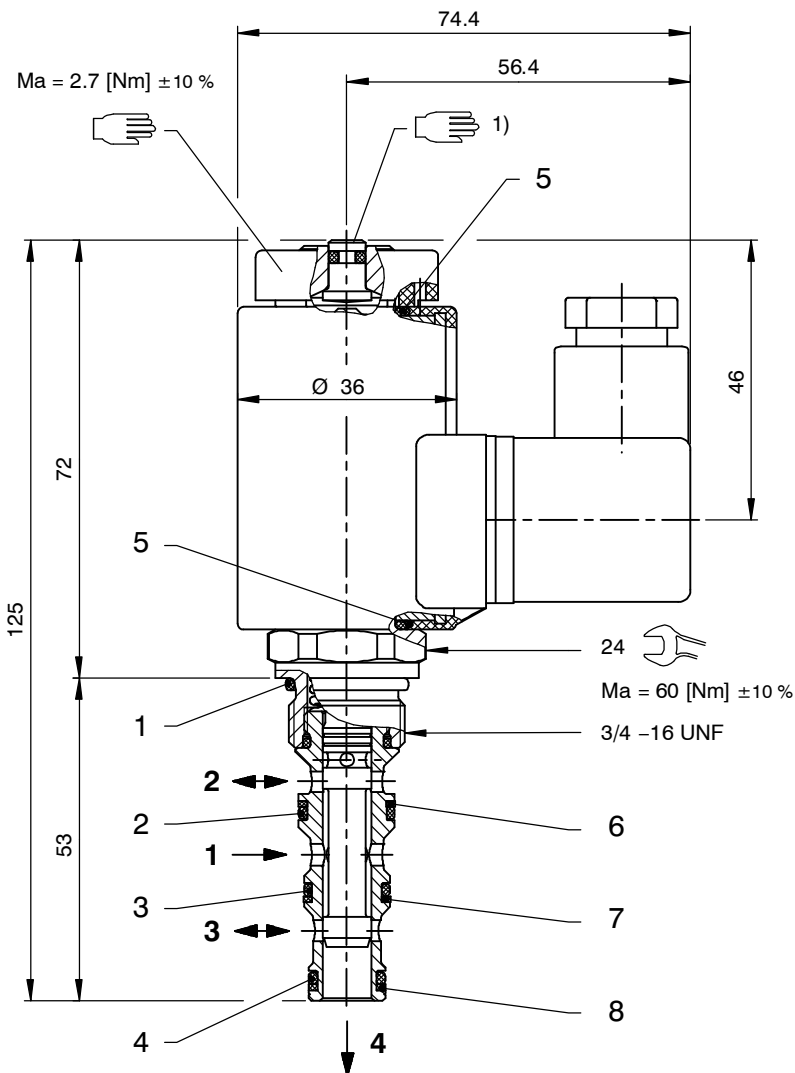
$p = f(Q)$ Performance limits



$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic



5 Dimensions & sectional view



IMPORTANT!

1) With manual override

6 Installation information



IMPORTANT!

When fitting the cartridges, use the specified tightening torque. No adjustments are necessary, since the cartridges are set in the factory.



ATTENTION!

Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be undertaken is to check, and possibly replace, the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

NBR seal kit no. DS-248-N ²⁾

Item	Qty.	Description
1	1	O-ring no. 017 \varnothing 17,17 x 1,78 N90
2	1	O-ring no. 014 \varnothing 12,42 x 1,78 N90
3	1	O-ring no. 013 \varnothing 10,82 x 1,78 N90
4	1	O-ring no. 012 \varnothing 9,25 x 1,78 N90
5	2	O-ring \varnothing 16,00 x 2,00 Viton
6	1	Backup ring \varnothing 10,70 x 1,45 x 1,00 FI0751
7	1	Backup ring \varnothing 9,40 x 1,45 x 1,00 FI0751
8	1	Backup ring \varnothing 7,80 x 1,45 x 1,00 FI0751



IMPORTANT!

2) Seal kit with FKM (Viton) seals, no. DS-248-V

7 Ordering code

Ex.

W	K	P	42A	N	A	3	_	-	1	24 VDC	_
---	---	---	-----	---	---	---	---	---	---	--------	---

- W = directional valve
- K = spool-type, direct acting
- P = high-pressure model, 420 bar
- 42A = 4/2 function, A-type spool
- N = electrically operated, V DC = 27 W / V AC = 25 W
- A ... Q = standard model - see relevant data sheets
- Y ... R = special features - please consult BUCHER
- 3 = nominal size 3 (primarily for pilot controls)
- (blank) = NBR (Nitrile) seals (standard)
- V = FKM (Viton) seals
(special seals - please contact BUCHER)
- 1 ... 9 = design stage (omit when ordering new units)
- ... = voltage e.g. 24 (24 V)
- (blank) = ISO 4400 / DIN 43 650 mating plug (standard, IP 65)
- M100 = without mating DIN plug

<ul style="list-style-type: none"> C = Kostal plug connection (IP 65) JT = Junior Timer radial plug connection (with protection diode, IP65) IT = Junior Timer axial plug connection (with protection diode, IP65) D = Deutsch plug connection DT04-2P (IP 67/69K) DT = Deutsch plug connection DT04-2P (with protection diode, IP 67/69K) S = AMP Superseal 1.5 (IP 67) / Metri-Pack 150 (IP 65) F = flying leads (500 mm) 	} mating plug not supplied
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8 Related data sheets

Reference	(Old no.)	Description
400-P-040011	(i-32)	The form-tool hire programme
400-P-040191	(i-33.12)	Cavity type AN
400-P-120100	(W-2.140)	Overview directional solenoid cartridge valve Size 1...5
400-P-120110	(W-2.141)	Coils for screw-in cartridge valves
400-P-720121	(G-4.30)	Line-mounting body, type GANA (G 3/8")

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Classification: 430.300.-.305.305.300

4/2 Cartridge Spool Valve, Size 5

$Q_{max} = 30 \text{ l/min}$, $p_{max} = 250 \text{ bar}$
direct acting, with solenoid operation
Series WK42A...



- High flow rates
- High pressure wet-armature solenoids
- Coils can be changed without opening hydraulic envelope
- All exposed parts with zinc-nickel plating
- 3/4-16 UNF mounting thread
- BUCHER cavity type AN
- Line mounting body (G 3/8") is available
- Can be fitted in "VV" stacking assemblies

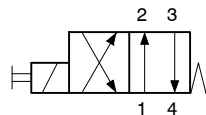
1. Description

The WK42A ... series of 4/2 directional valves are solenoid actuated screw-in cartridges, nominal size 5 mm. They are direct acting, spool type units. The range is based on the 3/4-16 UNF mounting thread. The straightforward design delivers an outstanding price/ performance ratio and good Δp -Q characteristics. All exposed steel parts are zinc-plated and the valves are suitable for use in the harshest operating environments. The core tube/slip-on coil design allows coils to be changed without opening the hydraulic envelope, even when the valve is under pressure. Coils can

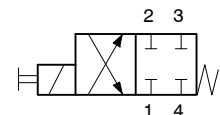
be secured at any angle through 360° and are available with the common electrical connectors. The valves are designed to be fitted with a normal 24 A/F OE spanner in BUCHER cavity type AN but can also be installed in some other makes of 3/4-16 UNF cavity. For customers who manufacture their own manifold blocks, we offer form tool sets for sale or hire. The G 3/8" threaded body GANA is available for line mounting applications. In combination with other cartridges from series WK..-6 and series W1.. the valves can be fitting in BUCHER "VV" stacking assemblies.

2. Symbols

WK42ANA5
WK42AEA5



WK42ADNA5
WK42ADEA5



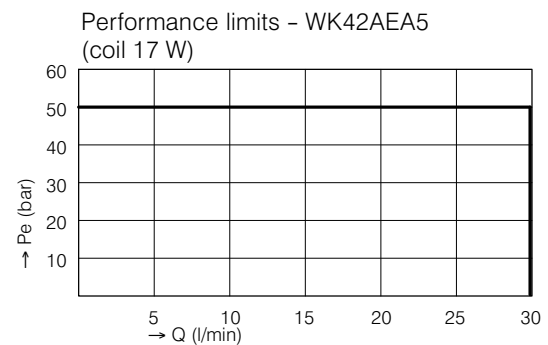
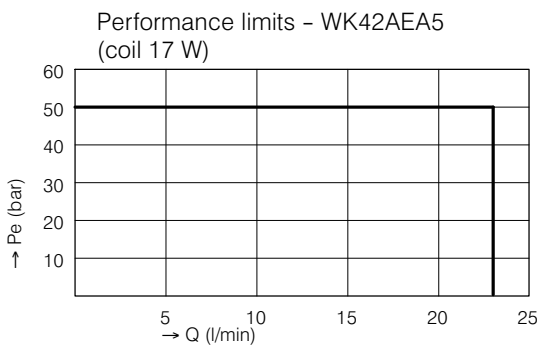
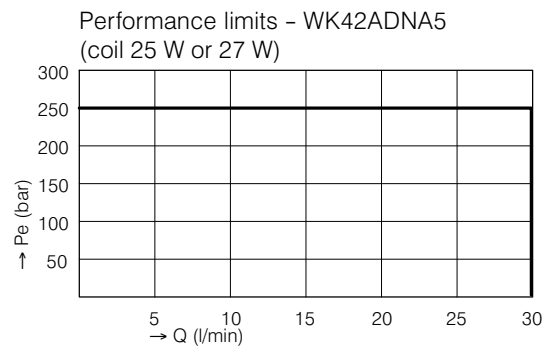
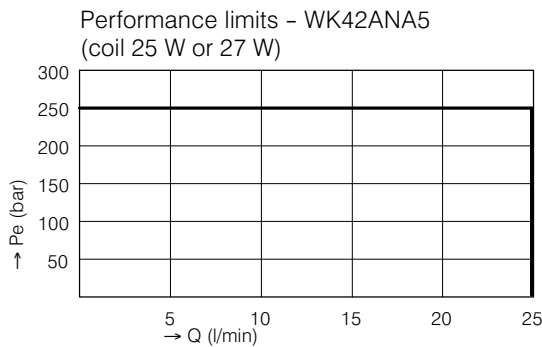
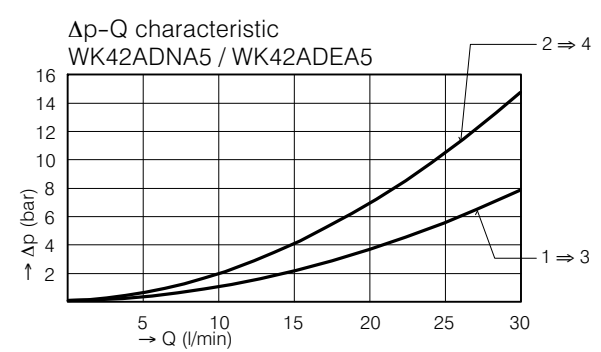
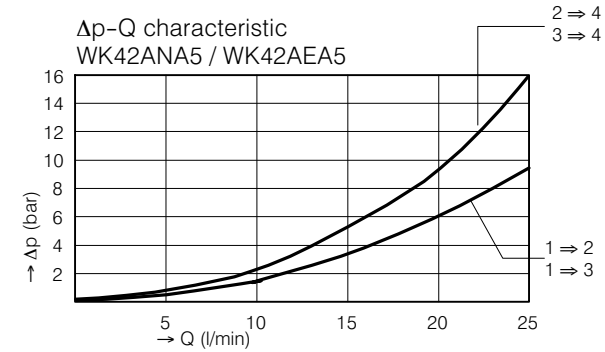
3. Characteristics

Type		4/2 cartridge spool valve
Design		direct acting, with solenoid operation
Mounting method		screw-in cartridge 3/4-16 UNF
Size		nominal size 5, cavity type AN
Mass	kg	0.40
Mounting attitude		unrestricted
Flow direction		see symbols
Operating pressure	bar	to 250 in 1, 2, 3 and 4
Flow rate Q max.	l/min	30
Hydraulic fluid		HL and HLP mineral oil to DIN 51 524 for other fluids, please contact BUCHER
Hydraulic fluid temperature range	°C	-25 ... +80
Ambient temperature range	°C	-25 ... +50
Viscosity range	cSt	10 ... 500 mm ² /s, recommended 15 ... 250 mm ² /s
Minimum fluid cleanliness		20/18/15 to ISO 4406 : 1999
Standard voltages	VAC VDC	115, 230 50 ... 60 Hz 12, 24
Nom. voltage tolerance	%	± 10

Nominal power consumption	W	VAC: optionally 17 or 25 VDC: optionally 17 or 27
Duty cycle	% ED	100 % energisation
Enclosure protection		IP 65 to DIN 40050
Electrical connection		3-pin square plug to DIN 43 650 / ISO 4400 (standard) for other connectors, see "Ordering code"

4. Performance characteristics

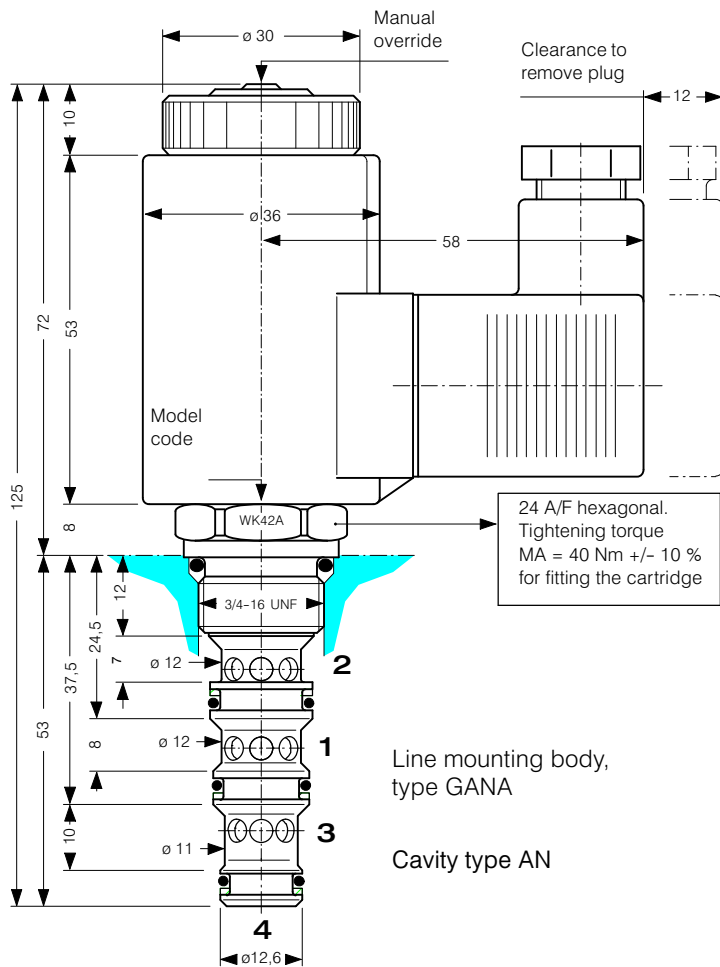
Oil viscosity 33 cSt solenoid at steady-state temperature, 10% under-voltage



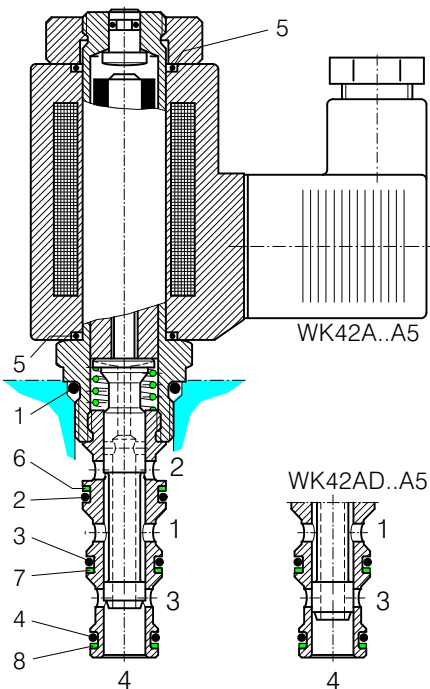
Switching times	WK42ANA5 27/25 W	WK42AEA5 17 W	WK42ADNA5 27/25 W	WK42ADEA5 17 W
Solenoid ON	32 ... 80 ms	45 ... 80 ms	32 ... 80 ms	45 ... 80 ms
Solenoid OFF	15 ... 60 ms	20 ... 45 ms	15 ... 60 ms	20 ... 45 ms

These times are strongly influenced by fluid pressure, flow rate and viscosity.

5. Dimensions



6. Schematic section



Seal kit no. DS-248-N, comprising:

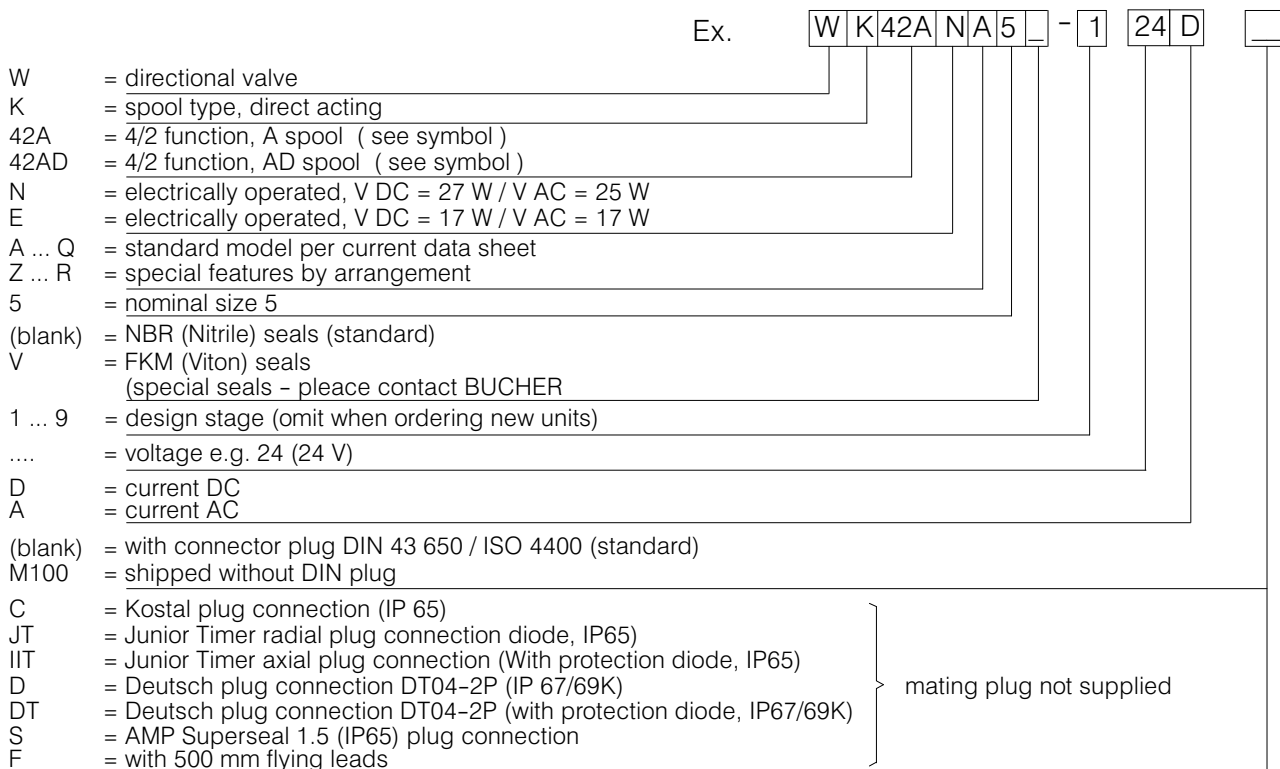
Itm.	Qty.	Description	Dimension
1	1	O-ring no. 017	Ø 17,17 x 1,78 N90
2	1	O-ring no. 014	Ø 12,42 x 1,78 N90
3	1	O-ring no. 013	Ø 10,82 x 1,78 N90
4	1	O-ring no. 012	Ø 9,25 x 1,78 N90
5	2	O-ring	Ø 16,00 x 2,00 Viton
6	1	Backup ring	Ø 7,8 x 1,45 x 1,0 FI0751
7	1	Backup ring	Ø 9,4 x 1,45 x 1,0 FI0751
8	1	Backup ring	Ø 10,7 x 1,45 x 1,0 FI0751

7. Installation and servicing

All installation and servicing must be carried out with care, and by qualified personnel only. When changing seals, the new seals must be thoroughly oiled or greased before they

are fitted. Use the correct tightening torque when fitting the cartridge.

8. Model code key



9. Related data sheets

Old no.	New no.	Description
W-2.140	400-P-120100-EN	Solenoid directional cartridge valves, 5 mm (overview)
W-2.141	400-P-120110-EN	Optional coils for solenoid operated directional valves
G-4.30	400-P-720121-EN	Line mounting body, type GANA (G 3/8")
I-32	400-P-140011-EN	The Form tools hire programme
i-33.12	400-P-040191-EN	BUCHER cavity type AN

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Classification: 450300.305.310.300

4/3 Cartridge Spool Valve, Size 5

$Q_{\max} = 30 \text{ l/min}$, $p_{\max} = 250 \text{ bar}$
 direct acting, with solenoid operation
 Series WK43D.../ WK43G...



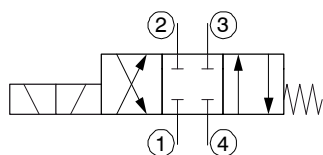
- Compact construction for cavity type AN – 3/4-16 UNF
- Low headloss
- Choice of nominal power rating – 17 W or 27 / 25 W
- All exposed parts with zinc-nickel plating
- High pressure wet-armature solenoids
- The slip-on coil can be rotated, and it can be replaced without opening the hydraulic envelope
- Various plug-connector systems and voltages are available
- Can be fitted in a line-mounting body

1 Description

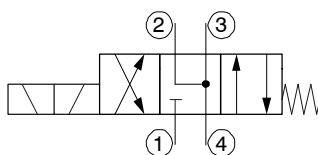
These direct acting 4/3 solenoid operated spool valves, series WK43D.../ WK43G..., are size 5, pressure balanced screw-in cartridges with a 3/4-16 UNF mounting thread. They are designed on the proven sliding-spool principle. These 4/3 spool valves equipped with solenoid operated spools and are available with 17 W or 27/25 W coils. The straightforward design delivers an outstanding price/performance ratio and good Δp values. These 4/3 solenoid operated spool valves are used in mobile and industrial applica-

tions as pilot valves for controlling the travel direction of actuators such as hydraulic motors and cylinders. All external parts of the cartridge are zinc-nickel plated to DIN 50 979 and are thus suitable for use in the harshest operating environments. The slip-on coils can be replaced without opening the hydraulic envelope and can be positioned at any angle through 360°. If you intend to manufacture your own cavities or are designing a line-mounting installation, please refer to the section "Related data sheets".

2 Symbol



WK43D...



WK43G...

3 Technical data

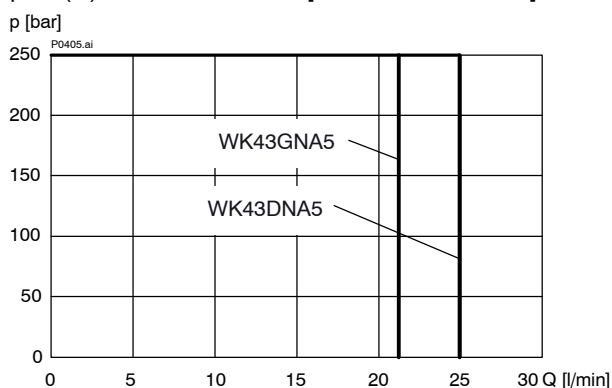
General characteristics	Description, value, unit
Designation	4/3 cartridge spool valve
Design	direct acting, with solenoid operation
Mounting method	screw-in cartridge 3/4-16 UNF
Tightening torque	40 Nm \pm 10 %
Size	nominal size 5, cavity type AN
Weight	0.64 kg
Mounting attitude	unrestricted
Ambient temperature range	-25 °C ... +50 °C

Hydraulic characteristics		Description, value, unit
Maximum operating pressure	- ports 1,2,3 and 4	250 bar
Maximum flow rate		30 l/min
Flow direction		see symbols
Hydraulic fluid		HL and HLP mineral oil to DIN 51 524; for other fluids, please contact BUCHER
Hydraulic fluid temperature range		-25 °C ... +80 °C
Viscosity range		10...500 mm ² /s (cSt), recommended 15...250 mm ² /s (cSt)
Minimum fluid cleanliness Cleanliness class to ISO 4406 : 1999		class 20/18/15
Electrical characteristics		Description, value, unit
Supply voltage		12 V DC, 24 V DC / 115 V AC, 230 V AC (50 ... 60 Hz)
Supply voltage tolerance		± 10 %
Nominal power consumption	- version "N" - version "E"	V DC = 27 W / V AC = 25 W V DC = 17 W / V AC = 17 W
Switching time	- version WK43DNA5... - version WK43DEA5... - version WK43GNA5... - version WK43GEA5...	40 ... 100 ms (energising) 30 ... 50 ms (deenergising) 45 ... 100 ms (energising) 15 ... 50 ms (deenergising) 50 ... 180 ms (energising) 30 ... 65 ms (deenergi 50 ... 110 ms (energising) 40 ... 60 ms (deenergising) Depending on pressure, flow rate and viscosity as well as dwell time under pressure, the switching times may vary from the the stated values.
Relative duty cycle		100 %
Protection class to ISO 20 653 / EN 60 529		IP 65 / IP 67 / IP 69K, see "Ordering code" (with appropriate mating connector and proper fitting and sealing)
Electrical connection		3-pin square plug to ISO 4400 / DIN 43 650 (standard) for other connectors, see "Ordering code"

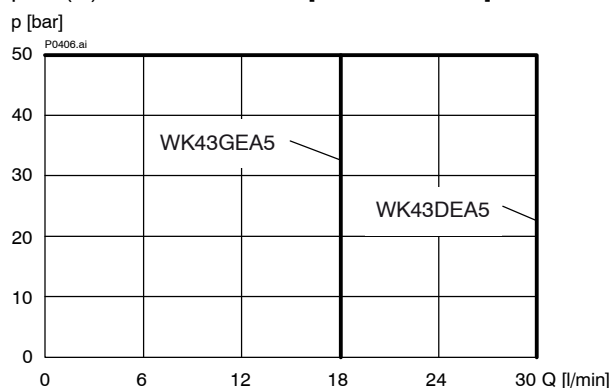
4 Performance graphs

measured with oil viscosity 33 mm²/s (cSt), coil at steady-state temperature and 10 % undervoltage

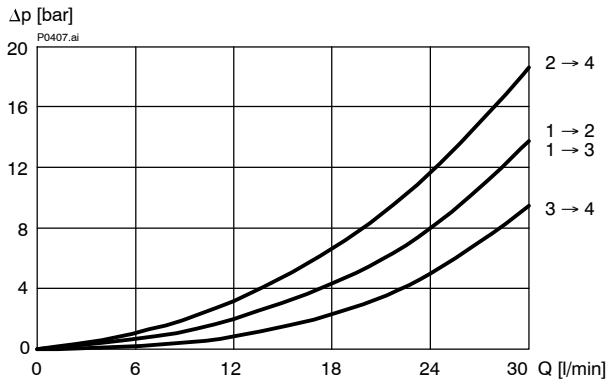
$p = f(Q)$ Performance limits [Version - 27 / 25 W]



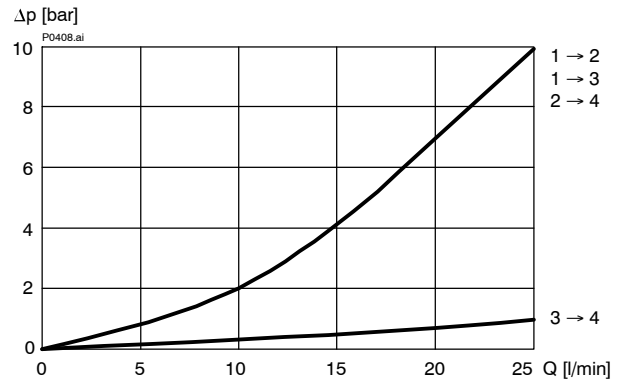
$p = f(Q)$ Performance limits [Version - 17 W]



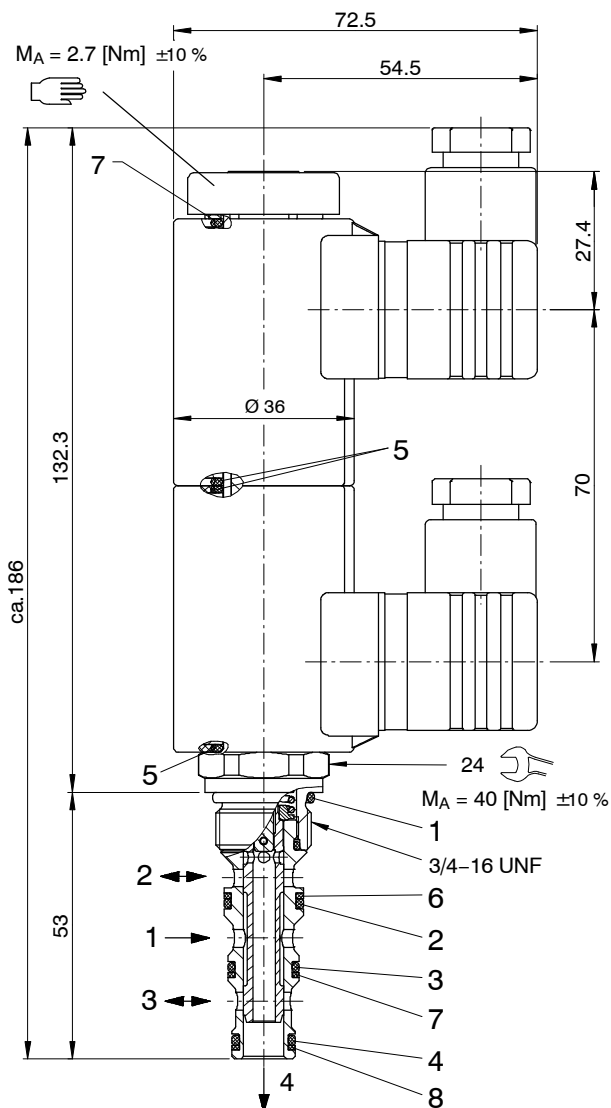
$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic [WK43D...]



$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic [WK32G...]



5 Dimensions & sectional view



6 Installation information



IMPORTANT!

When fitting the cartridges, use the specified tightening torque. No adjustments are necessary, since the cartridges are set in the factory.



ATTENTION!

Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be undertaken is to check, and possibly replace, the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

NBR seal kit no. DS-248-N ²⁾

Item	Qty.	Description
1	1	O-ring no. 017 Ø 17,17 x 1,78 N90
2	1	O-ring no. 014 Ø 12,42 x 1,78 N90
3	1	O-ring no. 013 Ø 10,82 x 1,78 N90
4	1	O-ring no. 012 Ø 9,25 x 1,78 N90
5	4	O-ring Ø 16,00 x 2,00 Viton
6	1	Backup ring Ø 10,70 x 1,45 x 1,00 FI0751
7	1	Backup ring Ø 9,40 x 1,45 x 1,00 FI0751
8	1	Backup ring Ø 7,80 x 1,45 x 1,00 FI0751



IMPORTANT!

²⁾ Seal kit with FKM (Viton) seals, no. DS-248-V

7 Ordering code

Ex.

W	K	43D	N	A	5	_	-	1	24	D	_
---	---	-----	---	---	---	---	---	---	----	---	---

<p>W = directional valve</p> <p>K = spool-type, direct acting</p> <p>43D = 4/3 function, de-energised closed</p> <p>43G = 4/3 function, de-energised open</p> <p>N = electrically operated, V DC = 27 W / V AC = 25 W</p> <p>E = electrically operated, V DC = 17 W / V AC = 17 W</p> <p>A ... Q = standard model - see relevant data sheets</p> <p>Z ... R = special features - please consult BUCHER</p> <p>5 = nominal size 5</p> <p>(blank) = NBR (Nitrile) seals (standard)</p> <p>V = FKM (Viton) seals (special seals - please contact BUCHER)</p> <p>1 ... 9 = design stage (omit when ordering new units)</p> <p>... = voltage e.g. 24 (24 V)</p> <p>D = current DC</p> <p>A = current AC</p> <p>(blank) = ISO 4400 / DIN 43 650 connection with mating plug (standard, IP 65)</p> <p>M100 = ISO 4400 / DIN 43 650 connection without mating plug</p> <p>C = Kostal plug connection (IP 65)</p> <p>JT = Junior Timer radial plug connection (with protection diode, IP65)</p> <p>IT = Junior Timer axial plug connection (with protection diode, IP65)</p> <p>D = Deutsch plug connection DT04-2P (IP 67/69K)</p> <p>DT = Deutsch plug connection DT04-2P (with protection diode, IP 67/69K)</p> <p>S = AMP Superseal 1.5 (IP67) / Metri-Pack 150 (IP65) plug connection</p> <p>F = flying leads (500 mm)</p>	<p style="text-align: right; margin-right: 20px;">} mating plug not supplied</p>
--	--

8 Related data sheets

Reference	(Old no.)	Description
400-P-040011	(i-32)	The form-tool hire programme
400-P-040191	(i-33.12)	Cavity type AN
400-P-120100	(W-2.140)	Overview directional solenoid cartridge valve Size 1...5
400-P-120110	(W-2.141)	Coils for screw-in cartridge valves
400-P-720121	(G-4.20)	Line-mounting body, type GANA (G 1/8")

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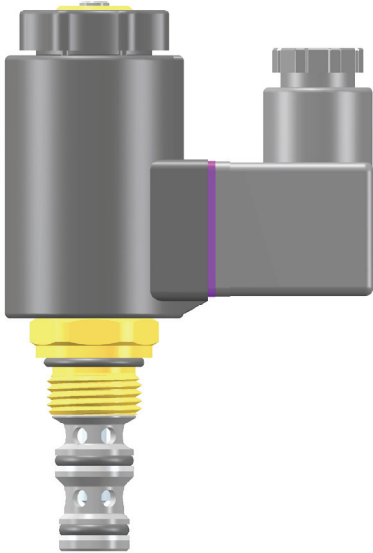
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3/2 Solenoid Cartridge Valve 5 mm Seated Design, Direct Acting Series WS32GNA5



- Pmax 250 bar / Qmax 22 l/min
- Wet-armature solenoid with high-pressure core tube and slip-on coil

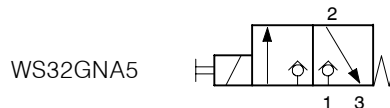
- Coils can be changed without opening hydraulic envelope
- All exposed steel parts are corrosion-protected to ISO 4042-A3C
- 3/4"-16 UNF Mounting Thread
- BUCHER Cavity AM
- Line mounting body (G 3/8") is available
- Can be fitted in "VV" stacking assemblies

1. Description

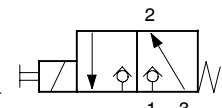
Series WS32GNA5... directional valves are 3/2 solenoid operated screw-in cartridges, nominal size 5 mm. They are direct acting seat valves. The mounting thread is the well-known 3/4"-16 UNF pattern. The straightforward design delivers an outstanding Price/Performance ratio. All exposed steel parts are corrosion-protected to

ISO 4042, grade A3C, and the valves are suitable for use in the harshest operating environments. The core tube / slip-on coil design allows coils to be changed without opening the hydraulic envelope, even when the valve is under pressure. Coils can be secured at any angle through 360° and are available with most of the common electrical connectors. Using normal OE spanners (24 A/F), the valves can be fitted in the BUCHER type AM cavity and also in some other makes of 3/4"-16 UNF cavity. For customers who manufacture their own manifold blocks, we offer form tool sets for sale or hire. The GAMA body with G 3/8" port threads is available for line mounting applications. The valves can be fitted in "VV" stacking assemblies in combination with cartridges from the W1... and WK...-6 series.

2. Symbols



A "normally open" function can also be created by using the appropriate port connections (see Performance data)



3. Characteristics

Type		3/2 solenoid directional valve
Design		direct acting, seat type
Mounting method		screw-in cartridge
Size		5 mm nominal size, BUCHER cavity AM
Mass	kg	0.38
Mounting attitude		unrestricted
Flow direction		see symbols
Operating pressure	bar	to 250 in 1, 2 and 3
Flow rate Q max.	l/min	22
Fluids		Hydraulic oils HL and HLP to DIN 51 524 other fluids - contact BUCHER
Fluid temperature range	°C	-25 ... +80
Ambient temperature range	°C	-25 ... +50
Viscosity range	cSt	10 ... 500, recommended 15 ... 250
Minimum fluid cleanliness		18/14 to ISO 4406 /CETOP RP70H 8 ... 9 to NAS 1638
Standard voltages	VAC	115, 230
	VDC	50 ... 60 Hz 12, 24
Nom. voltage tolerance	%	± 10
Nom. power consumption	W	VAC: 25, VDC: 27
Duty cycle	% ED	100 % energisation

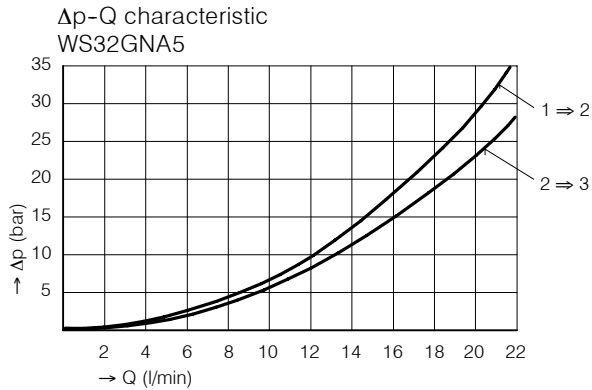
Enclosure protection
Electrical connection

IP 65 to DIN 40050

3-pin square plug to DIN 43 650 / ISO 4400 (standard)
other connectors - see data sheet ..120110..

4. Performance data

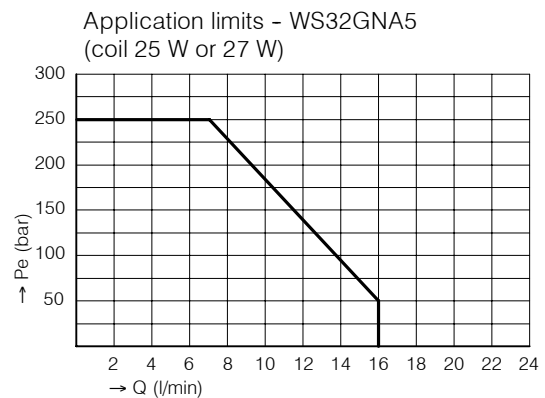
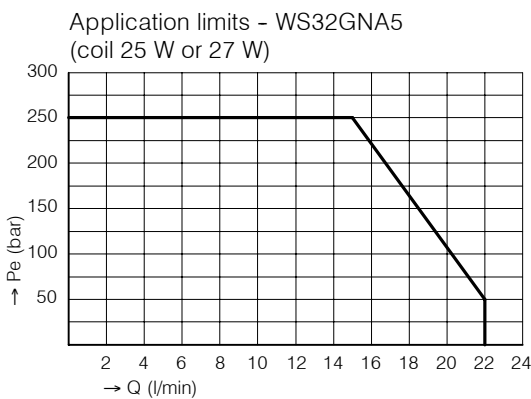
Oil viscosity 33 cSt solenoid at steady-state temperature, 10% under-voltage



Switching times: Flow direction 1 \Rightarrow 2 and 2 \Rightarrow 3

Solenoid ON	34 ... 300 ms
Solenoid OFF	10 ... 30 ms

These times are strongly influenced by fluid pressure, flow rate and viscosity.

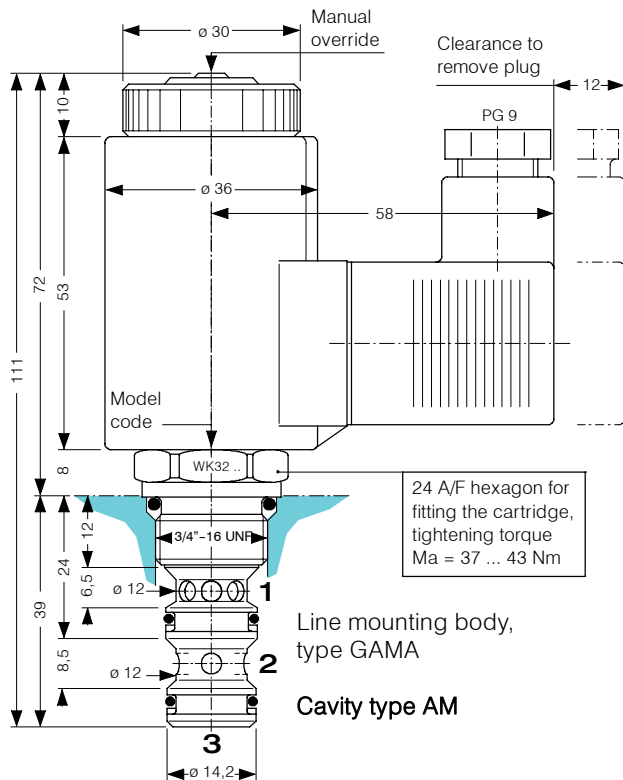


Valid for:

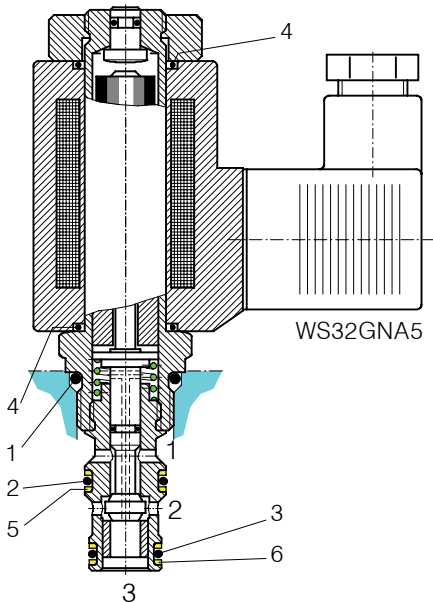
Flow directions: 1 \Rightarrow 2 and 2 \Rightarrow 3 3 \Rightarrow 2 and 2 \Rightarrow 1 unrestricted

Maximum pressures: in 1 and 2 = 250 bar in 2 and 3 = 250 bar all ports = 250 bar
in 3 = 20 bar in 1 = 20 bar

5. Dimensions



6. Schematic section



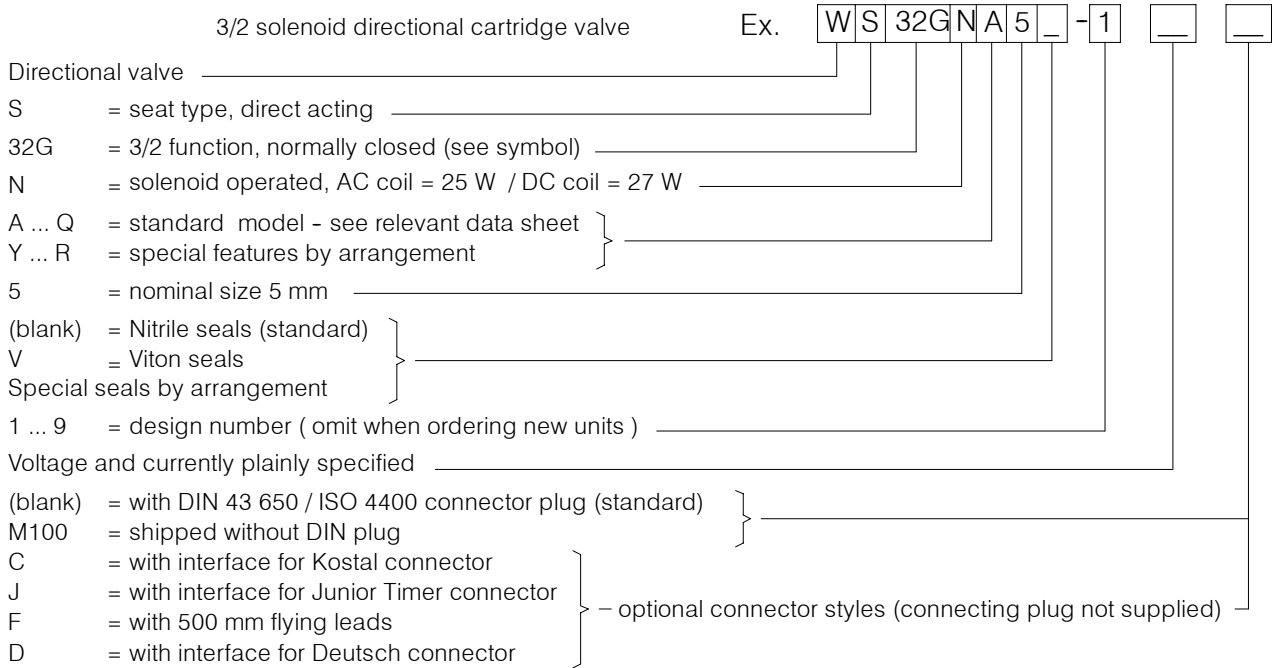
Seal kit no. DS-247, comprising:

Itm.	Qty.	Description	Dimension
1	1	O-ring no. 017	$\phi 17,17 \times 1,78 \text{ N90}$
2	1	O-ring no. 014	$\phi 12,42 \times 1,78 \text{ N90}$
3	1	O-ring no. 013	$\phi 10,82 \times 1,78 \text{ N90}$
4	2	O-ring	$\phi 16,00 \times 2,00 \text{ Viton}$
5	2	Backup ring	$\phi 10,7 \times 1,45 \times 1,0$
6	2	Backup ring	$\phi 9,4 \times 1,45 \times 1,0$

7. Installation and servicing

All installation and servicing must be carried out with care, and by qualified personnel only. When changing seals, the new seals must be thoroughly oiled or greased before they are fitted. Use the specified tightening torque when fitting the cartridge.

8. Model code key



9. Related data sheets

Old no.	New no.	
W-2.140	400-P-120100-E	Solenoid directional cartridge valves, 5 mm (overview)
W-2.141	400-P-120110-E	Optional coils for solenoid operated directional valves
G-4.20	400-P-720101-E	Line mounting body, type GAMA (G 3/8")
i-33.11	400-P-040181-E	BUCHER cavity type AM

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4/2 Solenoid Cartridge Valve, NG 8 / SAE 10

$Q_{max} = 30 \text{ l/min (8 gpm)}$, $p_{max} = 315 \text{ bar (4500 psi)}$

all ports seat-valve shut-off, direct acting

Series WS42GNA-8...



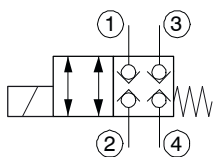
- All ports seat-valve shut-off
- Normally closed
- Compact construction
- For common cavities:
Fits: AT or C1040 – 7/8-14 UNF
- The functions of two 2/2 directional seat valves are integrated in one cartridge, but requires only one electrical connection
- All exposed parts with zinc-nickel plating
- High pressure wet-armature solenoids
- The slip-on coil can be rotated and replaced without opening the hydraulic envelope or removing the electronics
- Various plug-connector systems and voltages are available
- Can be fitted in a line-mounting body

1 Description

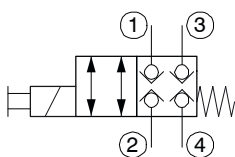
These 4/2 solenoid-operated directional valves are NG 8 / SAE 10, direct acting, high performance screw-in cartridges with a 7/8-14 UNF mounting thread. They are designed on the poppet/seat principle, and are therefore virtually leak-free in all flow directions. The function “de-energised closed” is available. These 4/2 solenoid cartridge valves are available with various manual override options. As well as the standard “O” model without manual override, a “no code” model with a push-pin manual override and an “S” model with a screw-in manual override are available. The straightforward design delivers an outstanding price/performance ratio. These screw-in cartridges are predominantly

used in certain mobile and industrial applications where leak-tight shut-off functions are crucially important. Examples are where loads, tensions, or clamping forces must be held without leakage. All external parts of the cartridge are zinc-nickel plated to DIN 50 979 and are thus suitable for use in the harshest operating environments. The slip-on coils can be replaced without opening the hydraulic envelope and can be positioned at any angle through 360°. If you intend to manufacture your own cavities or are designing a line-mounting installation, please refer to the section “Related data sheets”.

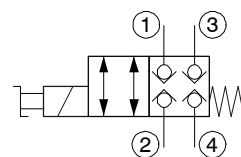
2 Symbol



WS42GNA-80...



WS42GNA-8...



WS42GNA-8S...

3 Technical data

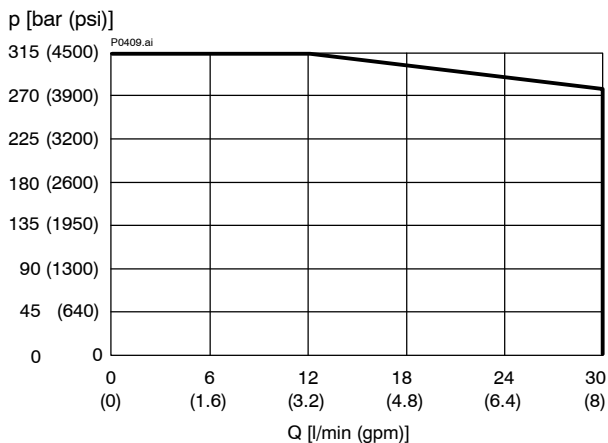
General characteristics	Description, value, unit
Designation	4/2 solenoid cartridge valve
Design	All ports seat-valve shut-off, direct acting
Mounting method	screw-in cartridge 7/8-14 UNF
Tightening torque	80 Nm ± 10 % (60 ft-lbs ± 10 %)
Size	nominal NG 8, cavity type AT SAE 10, cavity type C1040

General characteristics		Description, value, unit
Weight		0.74 kg (1.6 lbs)
Mounting attitude		unrestricted
Ambient temperature range		-25 °C ... +50 °C (-13 °F ... +122 °F)
Hydraulic characteristics		Description, value, unit
Maximum operating pressure		315 bar (4500 psi)
Maximum flow rate		30 l/min (8 gpm)
Leakage flow rate		< 0,2 cm ³ /min (max. 5 drops/min) with oil viscosity 33 mm ² /s (cSt)
Flow direction	- inlet - actuator	preferably to ports 2 and 4 preferably to ports 1 and 3
Hydraulic fluid		HL and HLP mineral oil to DIN 51 524; for other fluids, please contact BUCHER
Hydraulic fluid temperature range		-25 °C ... +80 °C (-13 °F ... +176 °F)
Viscosity range		10...500 mm ² /s (cSt), recommended 15...250 mm ² /s (cSt)
Minimum fluid cleanliness Cleanliness class to ISO 4406 : 1999		class 20/18/15
Electrical characteristics		Description, value, unit
Supply voltage		12 V DC, 24 V DC / 115 V AC, 230 V AC (50 ... 60 Hz)
Supply voltage tolerance		± 10 %
Nominal power consumption		V DC = 30...32 W / V AC = 31...32 W
Switching time		30 ... 250 ms (energising) 20 ... 70 ms (deenergising) <small>These times are strongly influenced by fluid pressure, flow rate and viscosity, as well as by the dwell time under pressure.</small>
Relative duty cycle		100 %
Protection class to ISO 20 653 / EN 60 529		IP 65 / IP 67 / IP 69K, see "Ordering code" (with appropriate mating connector and proper fitting and sealing)
Electrical connection		3-pin square plug to ISO 4400 / DIN 43 650 (standard) for other connectors, see "Ordering code"

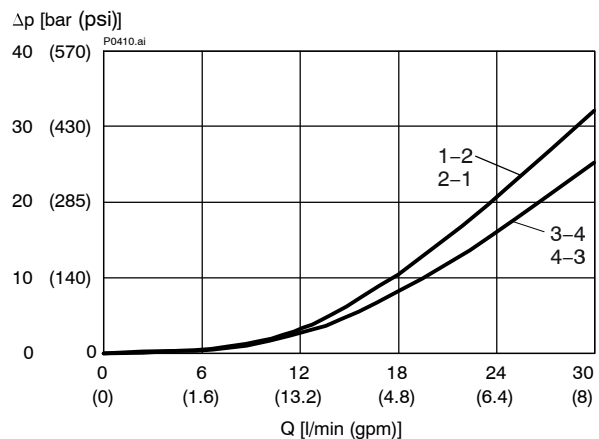
4 Performance graphs

measured with oil viscosity 33 mm²/s (cSt), coil at steady-state temperature and 10 % undervoltage

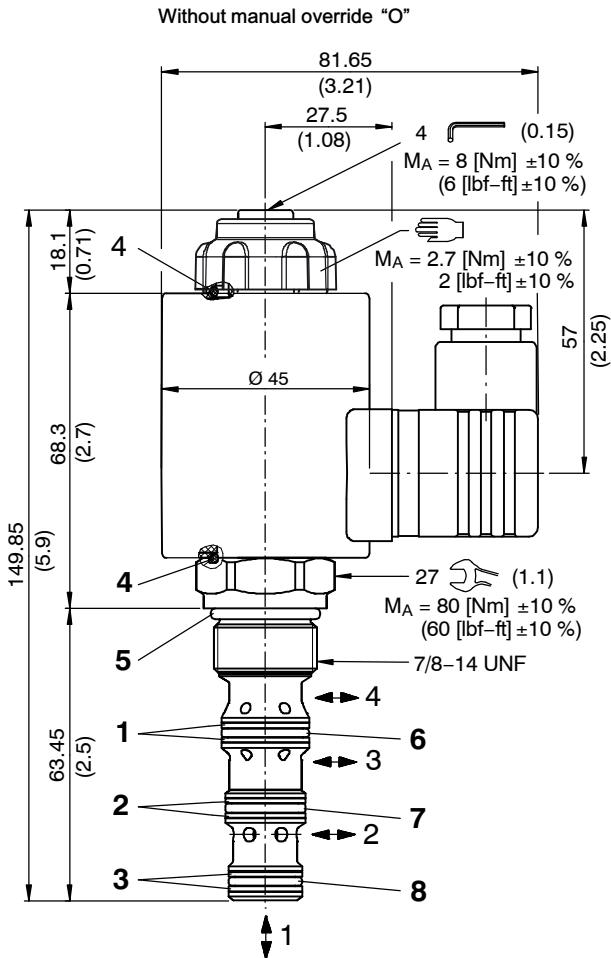
$p = f(Q)$ Performance limits



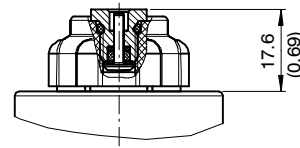
$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic



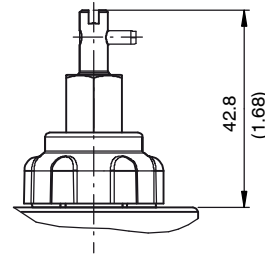
5 Dimensions & sectional view



With manual override



With screw-in manual override "S"



NBR seal kit no. DS-463-N ³⁾

Item	Qty.	Description
1	2	Seal ring \varnothing 14,60 / 1,45 x 1,00
2	2	Seal ring \varnothing 12,00 / 1,45 x 1,00
3	2	Seal ring \varnothing 10,70 / 1,45 x 1,00
4	2	O-ring \varnothing 20,00 x 2,00 viton83
5	1	O-ring \varnothing 19,30 x 2,20 N90
6	1	O-ring no. 016 \varnothing 15,60 x 1,78 N90
7	1	O-ring no. 015 \varnothing 14,00 x 1,78 N90
8	1	O-ring no. 014 \varnothing 12,42 x 1,78 N90



IMPORTANT!

³⁾ Seal kit with FKM (Viton) seals, no. DS-463-V

6 Installation information



IMPORTANT!

When fitting the cartridges, use the specified tightening torque. No adjustments are necessary, since the cartridges are set in the factory.



ATTENTION!

Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be undertaken is to check, and possibly replace, the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.



ATTENTION!

When used with a differential cylinder, port "1" should be connected to the head (full bore) end and port "3" to the rod (annulus) end. This will prevent pressure peaks during switchover.

7 Ordering code

Ex. W S 42G N A - 8 O _ - 1 24 D _

- W = directional valve
- S = seat-valve design (all ports seat-valve)
- 42G = 4/2 function, normally closed
- N = solenoid operated
- A ... Q = standard model - see relevant data sheets
- Z ... R = special features - please contact BUCHER
- 8 = nominal size 8 / SAE 10
- O = without manual override (standard)
- blank = with manual override
- S = with screw-in manual override
- (blank) = NBR (Nitrile) seals (standard)
- V = FKM (Viton) seals
(special seals - please contact BUCHER)
- 1 ... 9 = design stage (omit when ordering new units)
- ... = voltage e.g. 24 (24 V)
- D = current DC
- A = current AC
- (blank) = ISO 4400 / DIN 43 650 mating plug (standard, IP 65)
- M100 = without mating DIN plug

for the following plug-variants, please consult Bucher:

- DT = Deutsch plug connection DT04-2P (with quenching diode, IP 67/69K)
- JT = Junior Timer radial plug connection (with quenching diode, IP 65)
- F = flying leads (600mm) (IP 65)

} mating plug not supplied

8 Related data sheets

Reference	(Old no.)	Description
400-P-040011	(i-32)	The form-tool hire programme
400-P-040205		Cavity type AT
520-P-000420		Cavity type C1040
400-P-120120		Coils for screw-in cartridge valves series D45/207
520-P-000421		Line- and manifold-mounting body, type 10-4-way

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Data is provided for the purpose of product description only, and must not be construed as warranted characteristics in the legal sense. The information does not relieve users from the duty of conducting their own evaluations and tests. Because the products are subject to continual improvement, we reserve the right to amend the product specifications contained in this catalogue.

Classification: 430.300.-.305.315.300

IMPORTANT INFORMATION CONCERNING 115 VOLT A.C. AND 230 VOLT A.C. 50 OR 60 CYCLE (Hz) RECTIFIED SOLENOID COILS.

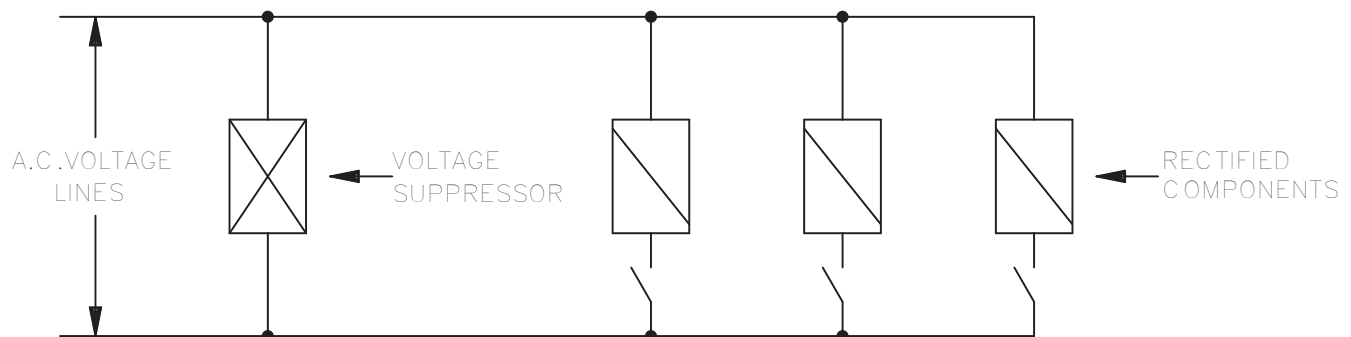
The Type "L" A.C. Solenoids have a full-wave bridge rectifier molded into the solenoid coil assembly. Types "S" & "H" A.C. coils do not have a molded in rectifier. Instead, an internally rectified DIN 43650 connector is available; use part number 20828.

Silicon rectifiers offer important advantages with regards to size, efficiency and performance. Silicon rectifiers require protection from high voltage surges in some electrical circuits containing highly inductive or capacitive components including certain types of motors, solenoids, relays and transformers.

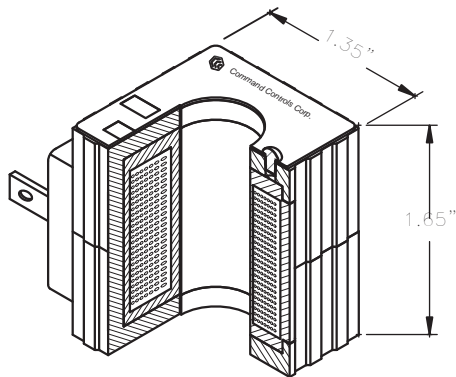
Protection is simple and inexpensive. Protection consists of installing a commercially available voltage surge suppressor across the A.C. lines supplying the rectified components.

The wiring diagram below illustrates the typical method. Note that single suppressor will normally protect all the rectified components in the circuit. However, when protection is required, we recommend General Electric Varistor: V150LA10A or Siemens: S10R150 or equivalent for 115 volt A.C. or General Electric Varistor: V250LA40A or Siemens: S20R250 or equivalent for 230 volt A.C.

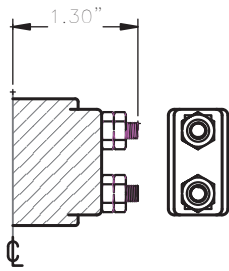
AC Induction specifications do not apply to DC rectified coils.



SOLENOID COILS TYPES "S" & "H"

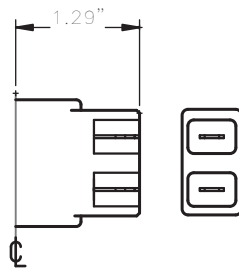


- DIN TYPE CONNECTOR MEETS IP69K STANDARD
- FULLY ENCAPSULATED COIL
- STABLE OPERATING TEMPERATURE
- EXTERIOR HOUSING PROTECTS COIL AGAINST DAMAGE
- TYPE "S" 22 WATTS NOMINAL
- TYPE "H" 28 WATTS NOMINAL
- SEE CATALOG PAGE 10-001.0 FOR AC COIL INFORMATION
- FOR DOUBLE COIL KIT, ORDER 60190-XXXX



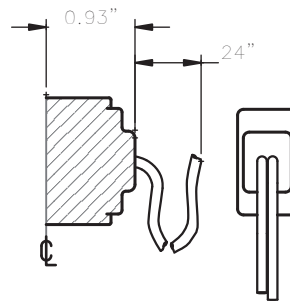
B

#8-32 Bolt Terminals



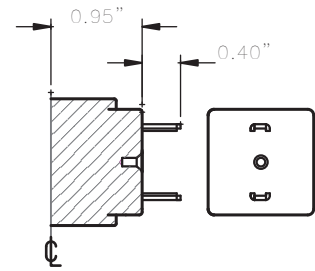
T

1/4" Spade Terminals



L

18 Ga. 24" Long Leads



G

ISO 4400/DIN 43650

TYPE S SOLENOID COIL ASSEMBLY PART NUMBERS

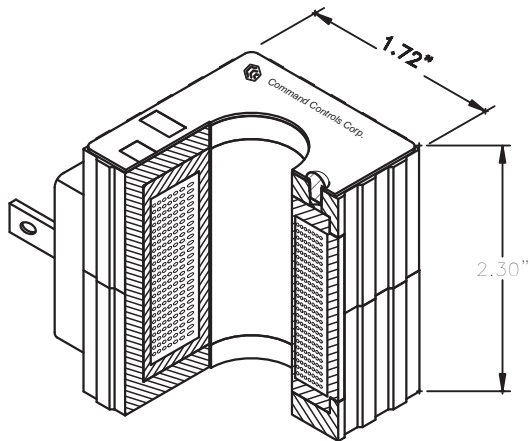
VOLTAGE	" B " BOLTS	" T " SPADES	" L " LEADS	" G " DIN 43650	" W " WEATHER-PACK®	" D " DEUTSCH DT04-2F	" M " METRI-PACK®
12DC	60186-12DB	60186-12DT	60186-12DL	60186-12DG	60186-12DW	60186-12DD	60186-12DM
24DC	60186-24DB	60186-24DT	60186-24DL	60186-24DG	60186-24DW	60186-24DD	60186-24DM
36DC		60186-36DT	60186-36DL	60186-36DG			
48DC		60186-48DT	60186-48DL	60186-48DG			
115DC				60186-115DG			
230DC				60186-230DG			

TYPE H SOLENOID COIL ASSEMBLY PART NUMBERS

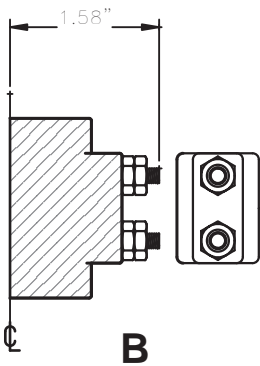
VOLTAGE	" B " BOLTS	" T " SPADES	" L " LEADS	" G " DIN 43650	" W " WEATHER-PACK®	" D " DEUTSCH DT04-2F	" M " METRI-PACK®
12DC		60186-12DTH	60186-12DLH	60186-12DGH			
24DC		60186-24DTH	60186-24DLH	60186-24DGH			

For diodes and other configurations – Consult Factory

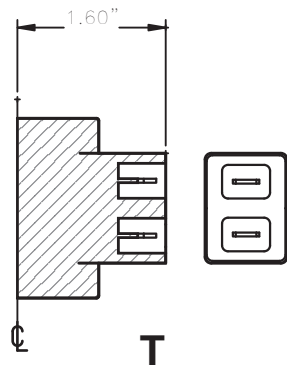
SOLENOID COILS TYPE "L"



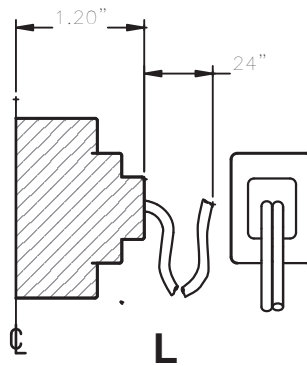
- DIN TYPE CONNECTOR MEETS IP69K STANDARD
- FULLY ENCAPSULATED COIL
- STABLE OPERATING TEMPERATURE
- EXTERIOR HOUSING PROTECTS COIL AGAINST DAMAGE
- FOR CONTINUOUS DUTY OPERATION PLEASE REFER TO DATASHEET OF SPECIFIC VALVE OR CONTACT BUCHER HYDRAULICS ELGIN
- 36 WATTS NOMINAL
- SEE CATALOG PAGE 10-001.0 FOR AC COIL INFORMATION



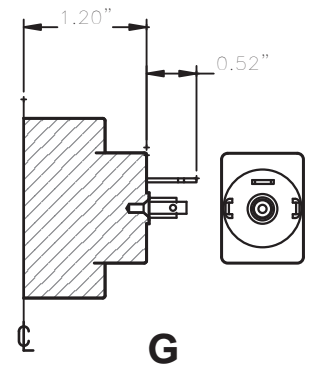
#8-32 Bolt Terminals



1/4" Spade Terminals



18 Ga. 24" Long Leads

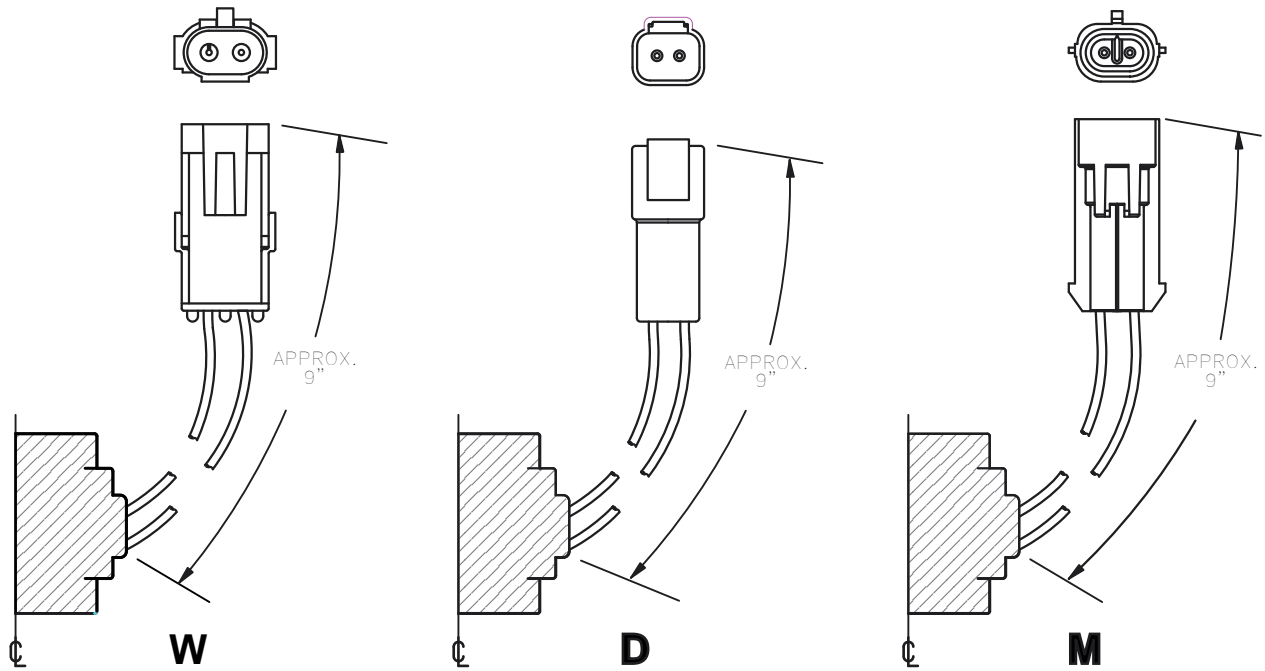


ISO 4400/Din 43650

TYPE L SOLENOID COIL ASSEMBLY PART NUMBERS

VOLTAGE	" B " BOLTS	" T " SPADES	" L " LEADS	" G " DIN 43650	" W " WEATHER-PACK®	" D " DEUTSCH DT04-2P	" M " METRI-PACK®
12DC	60191-12DB	60191-12DT	60191-12DL	60191-12DG	60191-12DW	60191-12DD	60191-12DM
24DC	60191-24DB	60191-24DT	60191-24DL	60191-24DG	60191-24DW	60191-24DD	60191-24DM
36DC	60191-36DB	60191-36DT	60191-36DL	60191-36DG			
48DC	60191-48DB	60191-48DT	60191-48DL	60191-48DG			
110DC				60191-110DG			
115AC				60191-115AG			
230AC				60191-230AG			

For diodes and other configurations – Consult Factory

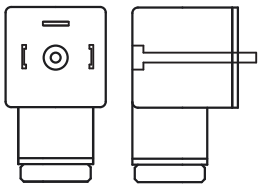


Weather-Pack® Connector
Mating Connector
Delphi - 12015792

Deutsch DT04-2P Connector
Mating Connector
Deutsch - DT06-2S

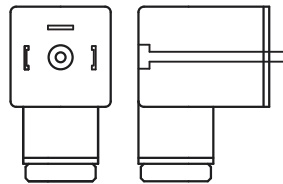
Metri-Pack® 150 Connector
Mating Connector
Delphi - 12052641

SOLENOID ACCESSORIES



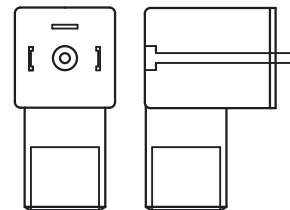
Standard DIN

PART# 20956
For ISO 4400/Din 43650
(PG9 CABLE GLAND)



Rectified DIN

PART# 20828
For ISO 4400/Din 43650
(PG9 CABLE GLAND)



1/2" Conduit Connector

PART# 21048 - STANDARD
PART# 21049 - RECTIFIED
For ISO 4400/Din 43650

Coils for Solenoid Valves

external diameter D2.2" (56 mm) / internal diameter D.875" (22.2 mm)
Series D2.2"/.875"...



- All DC voltages
- AC application can only be used on DIN Connector with external rectifier
- Facilitates compact assemblies
- Power consumptions 27 W or 30 W
- With optional protection Bi-directional diode
- Protection class IP 65 / IP 67 / IP 69K
- For core tube \varnothing .875" (22.2 mm)
- Metal housing of coil is zinc plated
- UL 429 and CAN/CSA 22.2 approved

1 Description

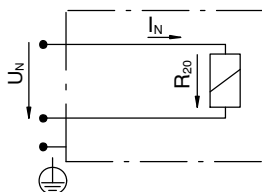
The slip-on coils can be replaced without opening the hydraulic envelope and can be positioned at any angle through 360°. When combined with the appropriate core tube, the coils produce an on/off solenoid function or a proportional solenoid function. Thanks to the wide variety of connector types and voltages, these coils are suitable for

widespread use in mobile and industrial applications. These coils are very adaptable in use, a benefit that is enhanced by various power ratings and an optional protection diode. The coil encapsulation and the plug base are glass-fibre reinforced thermoplastic.

2 Symbol

Connector type to DIN EN (DC) – >48V

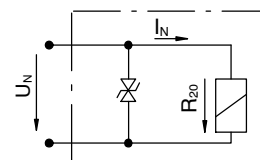
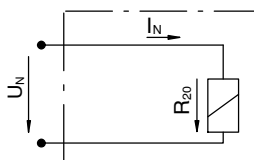
Ground connection required



All connector types except DIN EN (DC) – ≤48V

Without protection diode

With bipolar protection diode



3 Technical data

General characteristics	Description, value, unit
Designation	coil, D2.2" (56 mm) / .875" (22.2 mm)
Design	slip-on, rotatable 360°
Mounting method	core tube, knurled nut
Ambient temperature range	-22 °F ... +140 °F (-30 °C ... +60 °C) Note: O-Ring temperature may restrict further
Coil weight	1.95 ... 2.20 lb (885 ... 998 g) (dependent on type of connection)

Electrical characteristics	Description, value, unit
Electrical connection:	- Deutsch plug connection DT04-2P (IP 67/69K) ¹⁾ - 1/4" Spade terminals connection, 2-pole - flying leads, 2-pole – 18 inch (450 mm) - ISO 4400 / DIN 43 650 connection, 2-pole (IP 65)
Insulation class to VDE 0580	N – 392 °F (200 °C)
Protection class to ISO 20 653 / EN 60 529	see "Ordering code" (with appropriate mating connector and proper fitting and sealing)
Relative duty cycle	100 %
Supply voltage tolerance	± 10 %
Standard - supply voltages / power ratings:	Nominal power consumption: 12 V DC, 24 V DC 27 W 115 V AC ^{2), 3)} , 230 V AC ^{2), 3)} 30 W ^{2), 3)}
More - supply voltages / power ratings:	see Coil resistance R
Coil Polarity:	The coil polarity doesn't matter, but it must be powered with DC.
Electrical compliance:	UL 429 and CAN/CSA 22.2 approved

Coil resistance R:	Description, value, unit		
Supply voltages / power ratings:	Cold value at +77 °F (+25 °C)	Cold value at -22 °F (-30 °C)	Max. warm value +140 °F (+60 °C)
12 V DC / 27 W	5.3 Ω	4.2 Ω	8.2 Ω
24 V DC / 27 W	20.9 Ω	16.4 Ω	32.3 Ω
28 V DC / 27 W	28.8 Ω	22.6 Ω	44.5 Ω
36 V DC / 27 W	47.0 Ω	38.6 Ω	72.7 Ω
^{2), 3), 4)} 115 V AC / 30 VA	357.0 Ω	280.0 Ω	552.0 Ω
^{2), 3), 5)} 230 V AC / 30 VA	1436.0 Ω	1126.0 Ω	2220.0 Ω

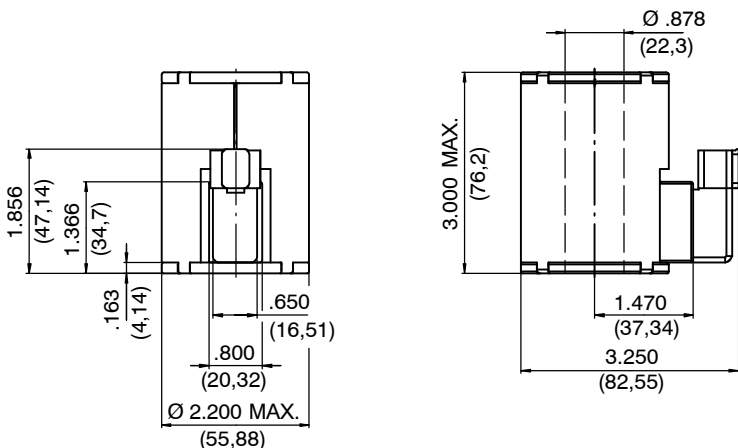
Note:

- 1) only up to 48 V
- 2) for AC applications an external rectifier circuit is required, for DC application of 103 VDC or 206 VDC coils – please consult BUCHER
- 3) above 48 V a ground connection to the metal housing of the coil is required
- 4) 103 V DC with external rectifier for 115 V AC / 30 VA
- 5) 206 V DC with external rectifier für 230 V AC / 30 VA

4 Dimensions

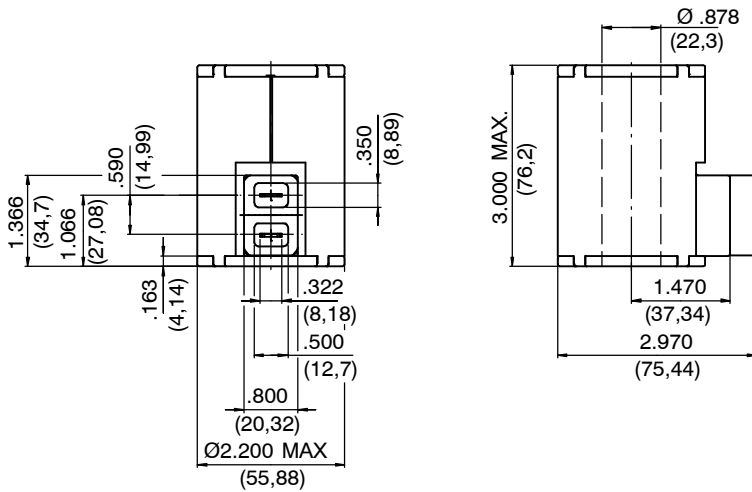
Coil with Deutsch DT04-2P axial plug connection, 2-pole ¹⁾

- Type T without protection diode
- Type TR with protection diode (see ordering code)



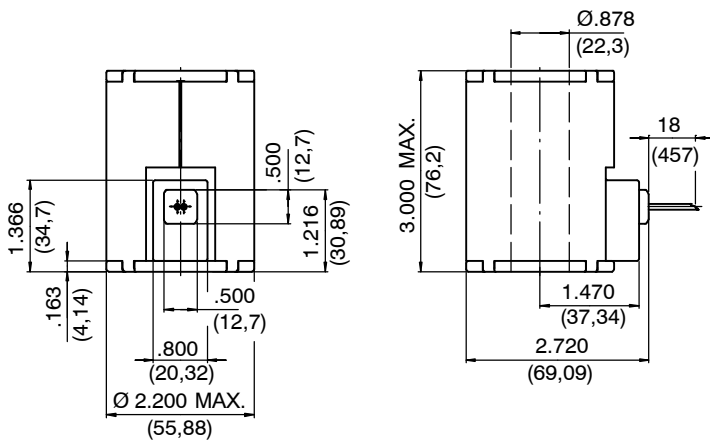
Coil with 1/4" Spade terminals connection, 2-pole

- Type S (see ordering code)



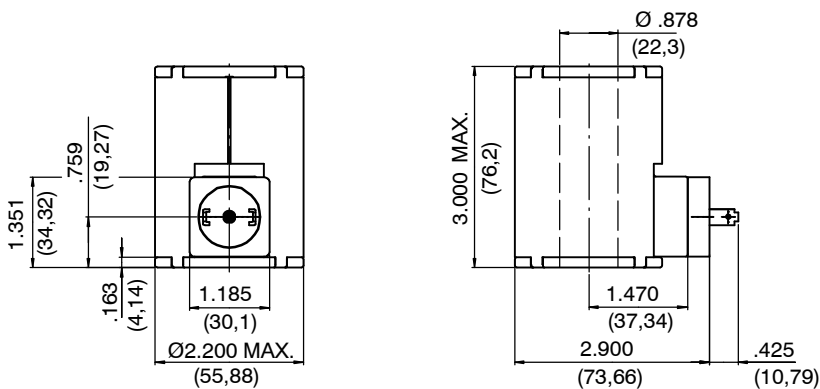
Coil with flying leads, 2-pole

- Type F (see ordering code)



Coil with ISO 4400 / DIN 43 650 connection, 2-pole

- Type H (see ordering code)



5 Installation information

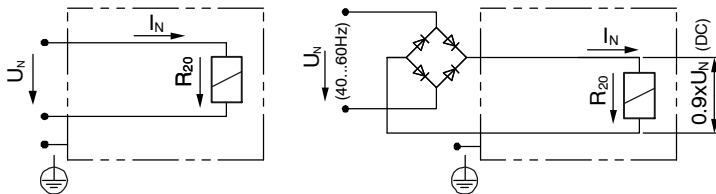


Attention.
Because of the danger of overheating, the coil must only be operated when it is properly fitted on a valve.



Attention.
Delivery is done without mating connector.

6 Application examples



Alternating current AC-DIN connector

* External rectifier is require for AC application



All connector type (DC)

* without protection diode

All connector type (DC)

* Only 12 V DC and 24 V DC have the option of a bipolar protection diode.

7 Ordering code

Ex.

COIL	D2.2/.875"	24	D	-	27W
------	------------	----	---	---	-----

COIL = coil

D2.2/.875 = \varnothing 2.2" (56 mm outside \varnothing) / \varnothing 8" (22.3 mm inside \varnothing)

... = voltage e.g. 24 (24 V), see "Electrical characteristics" - supply voltage

D = current DC

mating plug not supplied:

T = Deutsch axial plug connection DT04-2P (IP 67/69K) ¹⁾

TR = Deutsch axial plug connection DT04-2P (with protection diode, IP 67/69K) on request ¹⁾

S = 1/4" Spade terminals connection

F = flying leads – 18 inch (450 mm)

H = ISO / DIN plug connection, 2-pole (IP 65)

... = Nominal power consumption, see "Electrical characteristics"

info.el@bucherhydraulics.com

www.bucherhydraulics.com/commoncavity

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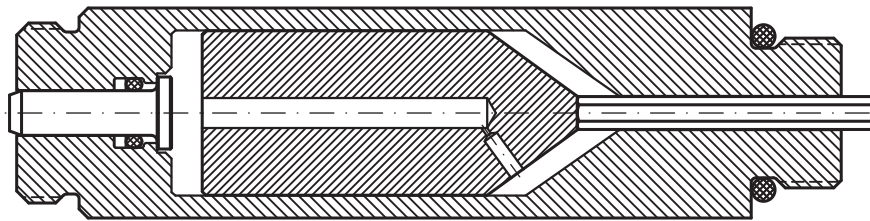
Data is provided for the purpose of product description only, and must not be construed as warranted characteristics in the legal sense. The information does not relieve users from the duty of conducting their own evaluations and tests. Because the products are subject to continual improvement, we reserve the right to amend the product specifications contained in this catalogue.

Classification: 430.395...

SOLENOID VERSION FOR SOFT SHIFT VALVE FOR 10, 12 AND 16 SIZE VALVES

MANY PUSH TYPE SOLENIOD VALVES ARE AVAILABLE WITH A SOFT SHIFT OPTION. CONSULT FACTORY FOR DETAILS.

THE SOFT SHIFT IS ACCOMPLISHED BY REPLACING THE STANDARD SOLENIOD CORE TUBE ASSEMBLY NUMBER 60005 WITH A SOFT SHIFT SOLENIOD CORE TUBE ASSEMBLY NUMBER 60079.

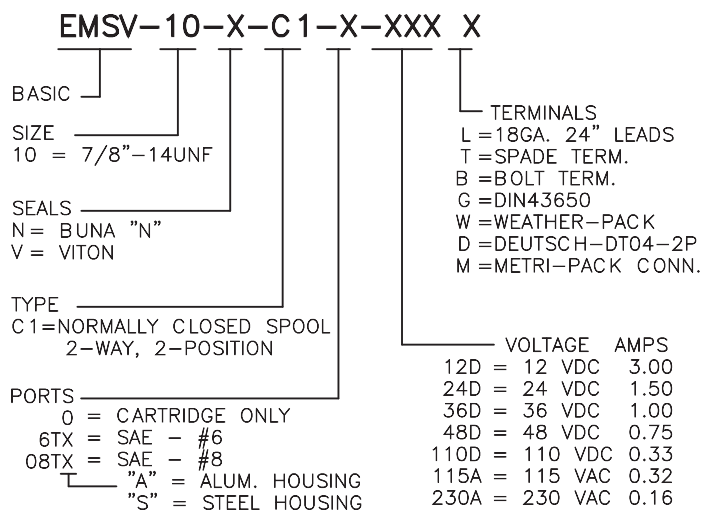


THE SOFT SHIFT CORE TUBE ASSEMBLY IS A HYDRAULICALLY DASH-POTTED ARMATURE. THE HYDRAULIC FLUID IS DISPLACED FROM ONE SIDE OF THE ARMATURE TO THE OTHER SIDE OF THE ARMATURE THRU A SMALL ORIFICE (DASH-POT). THEREFORE SLOWING THE SHIFT TIME OF THE VALVE TO APPROXIMATELY 300 MILLISECOND AT FULL STROKE USING 135 SUS HYDRAULIC FLUID.

HOW TO ORDER

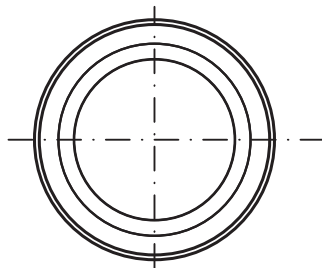
CHECK AVAILABILITY OF THE REQUESTED MODEL WITH BHEL
IN THE MODEL NUMBER REPLACE "EMDV" WITH "EMSV"

EXAMPLE

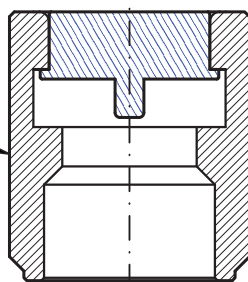


ALL L TYPE A.C. COILS ARE INTERNALLY A.C TO D.C. RECTIFIED.
ALL S TYPE A.C. COILS USE A RECTIFIED DIN CONNECTOR

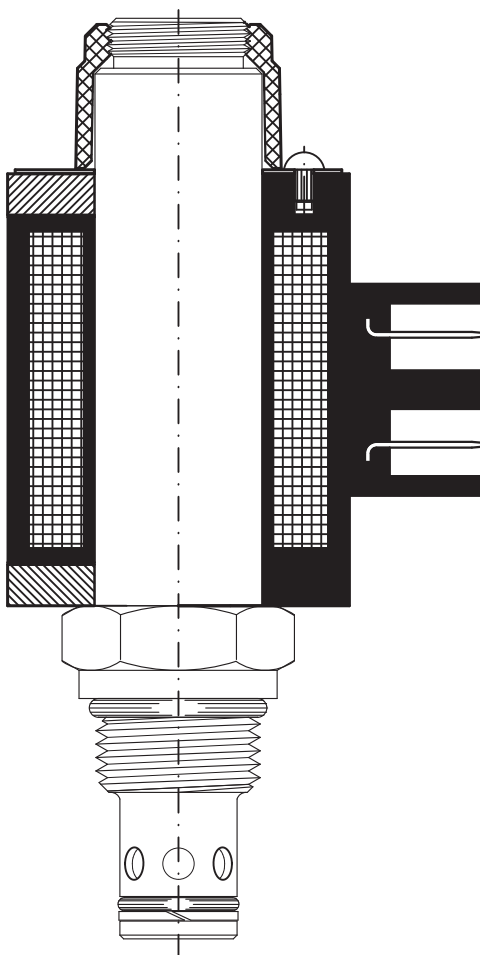
MANUAL OVER-RIDE BUTTON



ASSEMBLY #60193



THIS BUTTON FITS ONTO ALL PUSH TYPE 10,12&16 SIZE SOLENOID VALVES.



ASSEMBLY INSTRUCTIONS:

1. REMOVE PLASTIC NUT.
2. INSTALL MANUAL OVER-RIDE BUTTON 60193 (DO NOT OVERTORQUE).