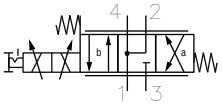
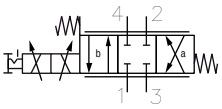
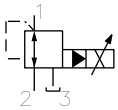
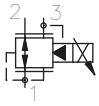
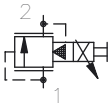
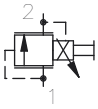
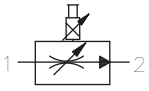
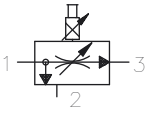
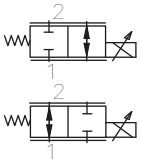
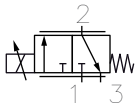
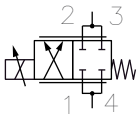
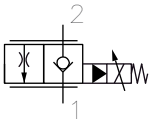
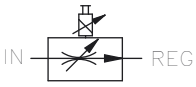
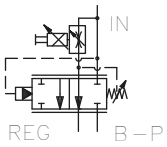
11

# Proportional Valves

| | MODEL | DESCRIPTION | FLOW | CAVITY |
|---|---|---|---|---|
|  | PDFC-4M | 4/3 PROPORTIONAL DIRECTIONAL VALVE | 8 GPM | C1040 |
|  | PDFC-4L | | | |
|  | EPRR-10 | PROPORTIONAL PRESS. REDUCING/RELIEVING | 1 GPM | C1030 |
|  | EPRT-08 | PROPORTIONAL PRESS. REDUCING/RELIEVING | 7 GPM | C0830/AM |
|  | EPRS-10<br>EPRS-12 | PROP. P.O. PRESSURE REDUCING/RELIEVING | 12 GPM<br>24 GPM | C1030<br>C1230 |
|  | ERVP-10<br>ERVP-12 | PROPORTIONAL P.O. PRESSURE RELIEF | 25 GPM<br>60 GPM | C1020<br>C1220 |
|  | ERVD-10 | PROPORTIONAL PRESS. RELIEF, LOW FLOW | 1 GPM | C1020 |
|  | EPFI-10<br>EPFI-12<br>EPFC-16 | PROPORTIONAL PRESS. COMP. FLOW CONTROL | 8 GPM<br>15 GPM<br>20 GPM | C1020<br>C1220<br>C1620 |
|  | EPFB-10<br>EPFB-12<br>EPFD-16 | PROP. PRIORITY PRESS. COMP. FLOW CONTROL | 8 GPM<br>15 GPM<br>20 GPM | C1030<br>C1230<br>C1630 |
|  | PFCV-10<br>PFCV-12<br>PFCV-16 | PROPORTIONAL NON-COMP. FLOW CONTROL | 16 GPM<br>24 GPM<br>36 GPM | C1020<br>C1220<br>C1620 |

# Proportional Valves

| | MODEL | DESCRIPTION | FLOW | CAVITY |
|---|---|---|---|---|
|   | MDR32GN | PROPORTIONAL 3/2 THROTTLE CARTRIGE | 8 GPM | AM |
|   | MDR42A | PROPORTIONAL 4 /2 THROTTLE CARTRIGE | 8 GPM | AN |
|   | MVRPSBA-2G | PROPORTIONAL THR OTTLE CARTRIGE | 13 GPM | C0820/AL |
|   | PIFC-10<br>PIFC-12<br>PIFC-16 | PROP. FLOW CONTROL WITH COMPENSATOR | 16 GPM<br>24 GPM<br>36 GPM | C1020<br>C1220<br>C1620 |
|   | PBFC-10<br>PBFC-12<br>PBFC-16 | PROP. PRIORITY FLOW CONTROL WITH COMP. | 16 GPM<br>24 GPM<br>36 GPM | C1030<br>C1230<br>C1630 |

| | |
|---|---|
| PWM-1400 | PWM MICRO PROPORTIONAL VALVE DRIVER |
| PWM-1401 | PWM PROPORTIONAL DRIVER, COIL MOUNTED |
| PWM-1404 | PWM PROPORTIONAL DRIVER CONTROL BOX |

# 4/3 Proportional Directional Valve, Size SAE 10

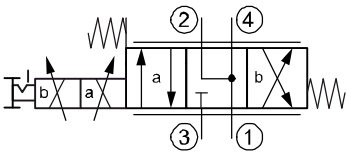
$Q_{max}$ = 8.0 gpm [30 l/min], $p_{max}$ = 4000 psi [280 bar]
Direct acting, sliding-spool design, with solenoid operation
Series PDFC-10…

- Compact construction for cavity type C1040 – 7/8-14 UNF
- Operated by a proportional high pressure wet-armature solenoid
- Minimum current threshold/ dead band (position b) is factory set for better consistency
- Manual over-ride optionally available, detented in neutral position
- Excellent reproducibility and repeatability, and low hysteresis
- All exposed parts with zinc-nickel plating
- 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

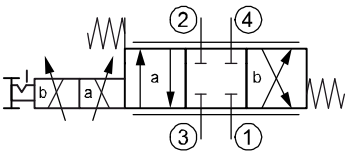
## 1 Description

Series PDFC-10… proportional directional valves are direct acting screw-in cartridges with a sliding spool design and a 7/8-14 UNF mounting thread. In the neutral position, port 3 is closed and depending on the spool type, ports 2 and 4 are connected to tank (1) (spool configuration M) or ports 1, 2 and 4 are all blocked (spool configuration L). The version with the M spool is used in motor control circuits where free-wheeling in the neutral position is required. The L configuration is the version to use for cylinder applications. These cartridges are particularly suitable for precise and controlled lifting and lowering movements and can also be used for reliable operation in mobile and industrial applications. Best controllability is achieved when using the valve with a bypass pressure compensator to control pressure drop through the valve. Using the valve without pressure compensator is not recommended because higher pressure drops cause the flow to be more restricted (see performance graph). The proportional directional valves is optionally equipped with a manual over-ride which is detented in the neutral position. To unlatch the detent mechanism, the button on the back can be pushed. That allows shifting the valve in both directions. Pushing the knob shifts the valve to position (a) (3→2 and 4→1) and pulling shifts it to position (b) (3→4 and 2→1). All external parts of the cartridge are zinc plated and chromited (CrVI-free). 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”.

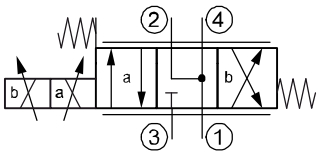
## 2 Symbol



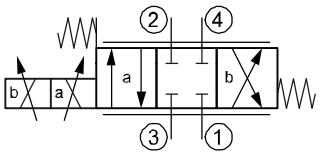

PDFC-10-…-4M-M…




PDFC-10-…-4L-M…




PDFC-10-…-4M-0…




PDFC-10-…-4L-0…

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# 3 Technical data

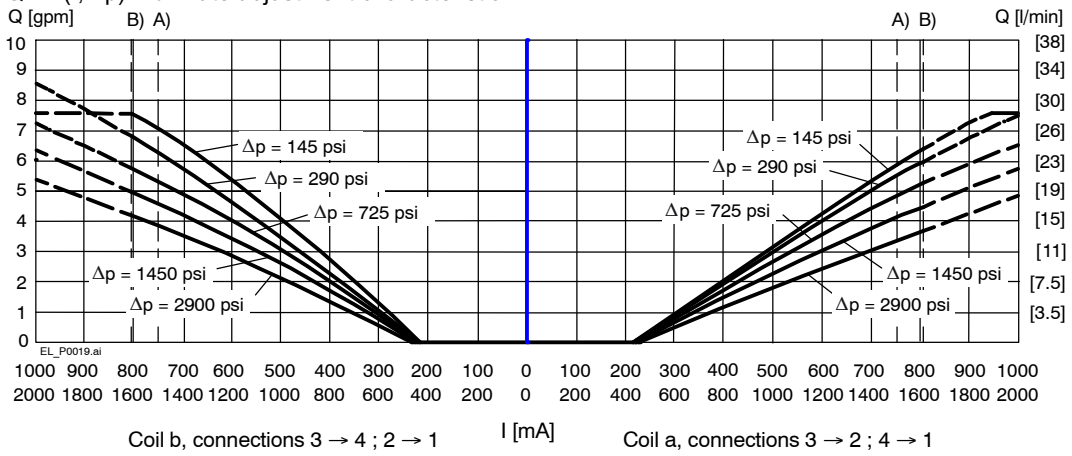
| General characteristics | Description, value, unit |
|---|---|
| Designation | 4/3 proportional directional valve |
| Design | sliding-spool design, direct acting, with solenoid operation |
| Mounting method | screw-in cartridge 7/8-14 UNF |
| Tightening torque | 40…45 ft-lbs [54…61 Nm] |
| Size | size SAE 10, cavity type C1040 |
| Weight | 1.65 lbs [0.75 kg] |
| Mounting attitude | unrestricted (preferably vertical, coil down) |
| Ambient temperature range | -15 °F … +125 °F [-25 °C … +50 °C] |

| Hydraulic characteristics | | Description, value, unit |
|---|---|---|
| Maximum operating pressure | - ports 2, 3, 4<br>- port 1 | 4000 psi [280 bar]<br>2000 psi [140 bar]<br>higher pressure, please consult BUCHER |
| Maximum flow rate | - port 3 → 4 and 2 → 1<br>- port 3 → 2 and 4 → 1 | 7.0 gpm at Δp 140 psi [26 l/min at Δp 10 bar]<br>6.2 gpm at Δp 140 psi [24 l/min at Δp 10 bar]<br>at 100% duty cycle |
| Leakage flow rate | (port to port) | 15 inch$^3$ at 3000 psi [245 ml/min at 210 bar] |
| Hydraulic fluid | | HL and HLP mineral oil to DIN 51 524;<br>for other fluids, please contact BUCHER |
| Hydraulic fluid temperature range | | -15 °F … +160 °F [-25 °C … +70 °C] |
| Viscosity range | | 15…380 mm$^2$/s (cSt), recommended 20...130 mm$^2$/s (cSt) |
| Minimum fluid cleanliness<br>Cleanliness class to ISO 4406 : 1999 | | class 18/16/13 |

| Electrical characteristics | | Description, value, unit |
|---|---|---|
| Supply voltage | | 12 V DC, 24 V DC |
| Control current | | 12 V = 0…1400 mA, 24 V = 0…750 mA (100% duty cycle)<br>12 V = 0…1600 mA, 24 V = 0…880 mA (50% duty cycle) |
| Power consumption at max. control current | | max. 19 W |
| Coil resistance R | - cold value at 20 °C<br>- max. warm value | 12 V = 5.8 Ω / 24 V = 20.9 Ω<br>12 V = 9.1 Ω / 24 V = 32.7 Ω |
| Recommended PWM frequency (dither) | | 200 Hz |
| Hysteresis with PWM | | 2…5 % $I_N$ |
| Reversal error with PWM | | 2…5 % $I_N$ |
| Sensitivity with PWM | | < 1.5 % $I_N$ |
| Reproducibility with PWM | | < 3 % $p_N$ |
| Relative duty cycle | | 100 % / 50 % |
| Protection class to ISO 20 653 / EN 60 529 | | IP 65 / IP 67 / IP 69K, see “Ordering code”<br>(with appropriate mating connector and<br>proper fitting and sealing) |
| Electrical connection | | 3-pin square plug to ISO 4400 / DIN 43 650 (standard)<br>for other connectors, see “Ordering code” |

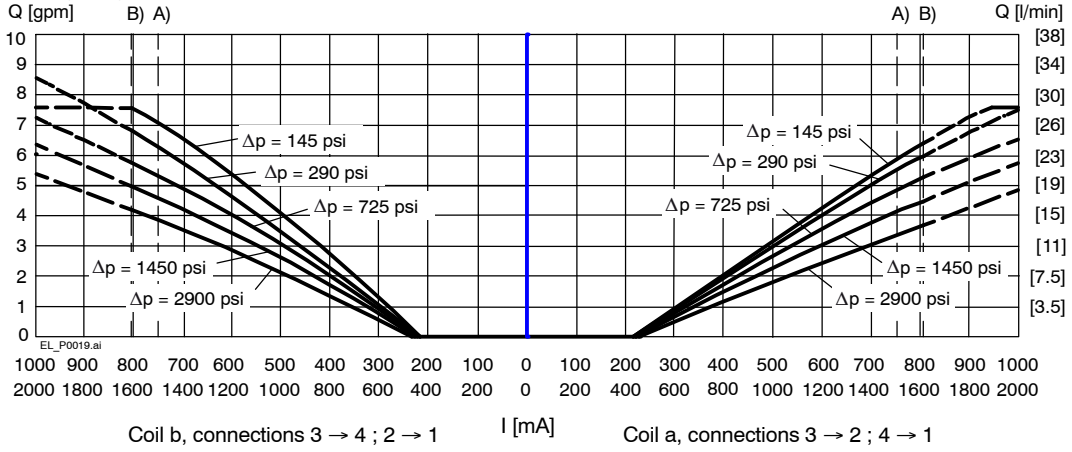
# 4 Performance graphs

Q = f (I; Δp) Flow rate adjustment characteristic 4M



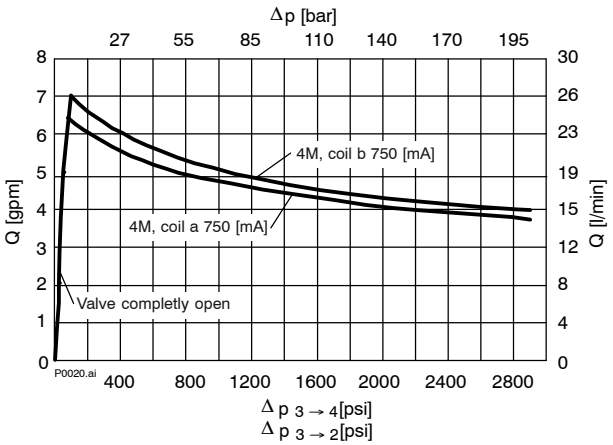

A) 100% duty cycle
B) 50% duty cycle
--- depending on coil temperature, solenoid may draw a voltage higher than the nominal voltage

Q = f (I; Δp) Flow rate adjustment characteristic 4L

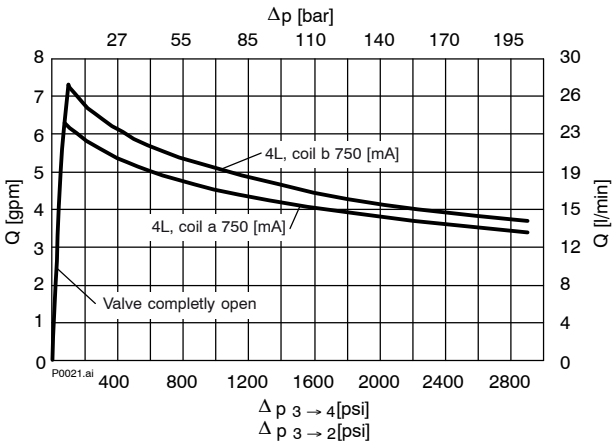



A) 100% duty cycle
B) 50% duty cycle
--- depending on coil temperature, solenoid may draw a voltage higher than the nominal voltage

Δp = f (Q) Pressure drop - Flow rate characteristic 4M




Δp = f (Q) Pressure drop - Flow rate characteristic 4L



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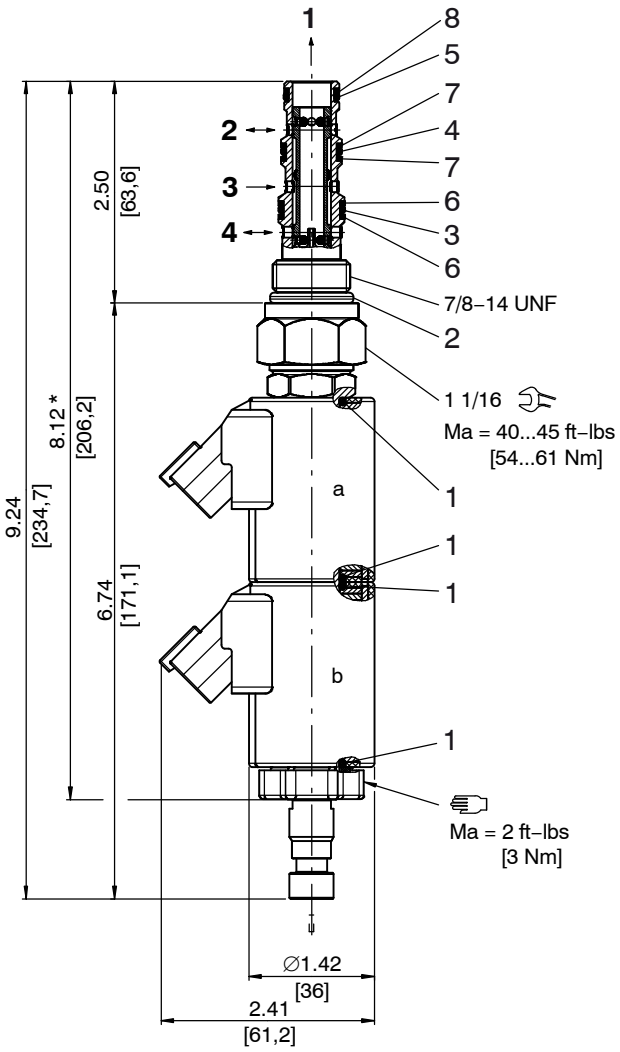
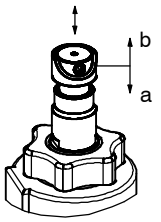
# 5 Dimensions & sectional view

4/3 proportional directional valve




* overall length without manual over-ride

1. Push button to unlatch manual over-ride




2. Push or pull on whole handle to shift valve to position a or b

Seal kit

| Item | Qty. | Description |
|---|---|---|
| 1 | 4 | O-ring 16 x 2 |
| 2 | 1 | O-ring no. 910 ∅ 0.755 x 0.097 [19,18 x 2,46] |
| 3 | 1 | O-ring no. 016 ∅ 0.614 x 0.070 [15,60 x 1,78] |
| 4 | 1 | O-ring no. 015 ∅ 0.551 x 0.070 [14,00 x 1,78] |
| 5 | 1 | O-ring no. 014 ∅ 0.489 x 0.070 [12,42 x 1,78] |
| 6 | 2 | Backup ring ∅ .634 x .052 x .047 [16,10 x 1,32 x 1,19] |
| 7 | 2 | Backup ring ∅ .572 x .052 x .047 [14,53 x 1,32 x 1,19] |
| 8 | 1 | Backup ring ∅ .510 x .052 x .047 [12,95 x 1,32 x 1,19] |

**IMPORTANT!**

Item no. 5207300112 = Seal kit NBR (Buna)

Item no. 5207300113 = Seal kit FKM (Viton)

# 6 Installation information

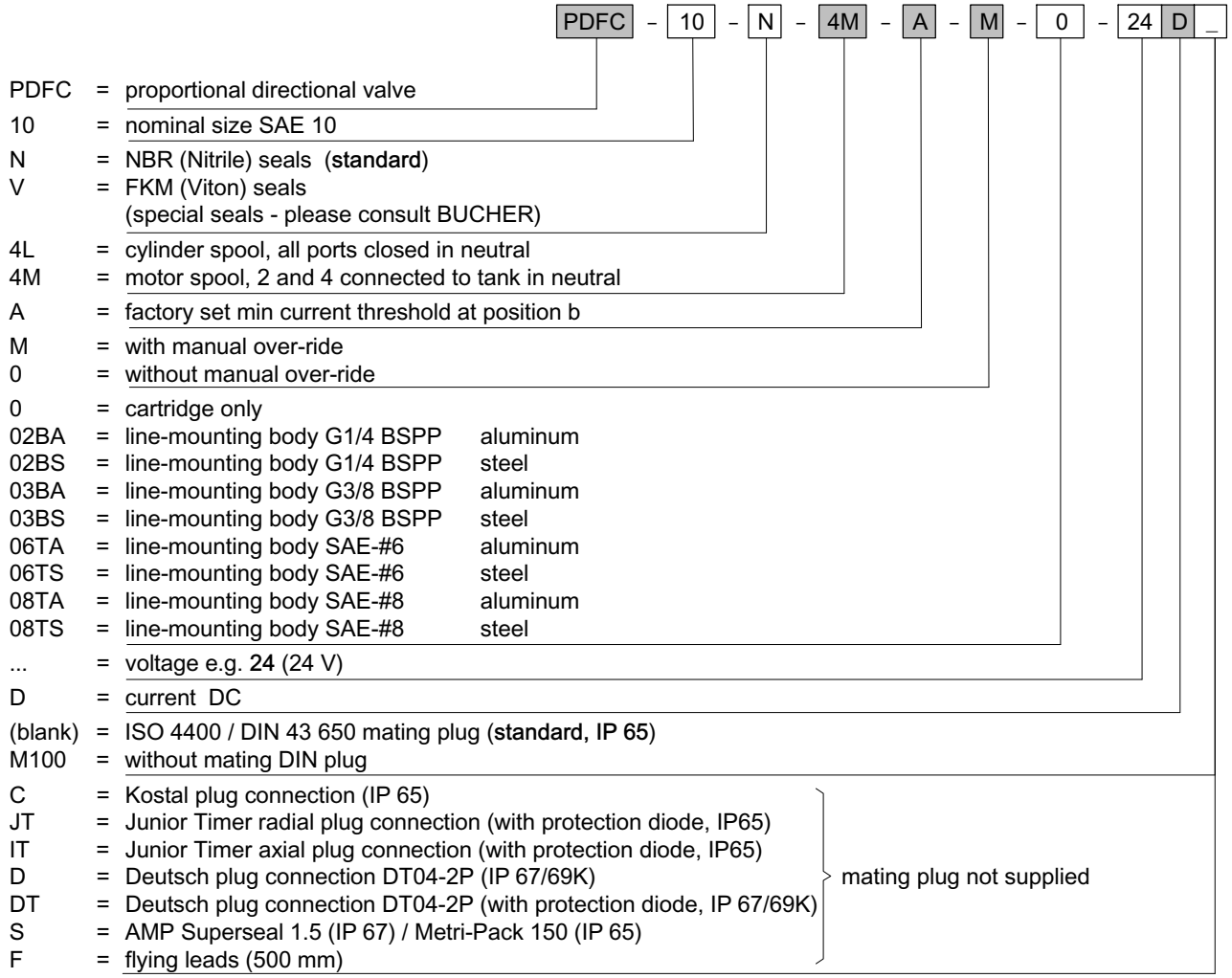
**ATTENTION!**

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.

**IMPORTANT!**

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

# 7 Ordering code




# 8 Related data sheets

| Reference | (Old no.) | Description |
|---|---|---|
| 520-P-000050 | | The form-tool hire programme |
| 520-P-000420 | (0-042.0) | Cavity Type C1040 |
| 520-P-000421 | (0-042.1) | Line-mounting body, 10 Series – 4-way |

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Classification: 430.300.-.305.310.310.300.300

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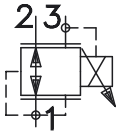
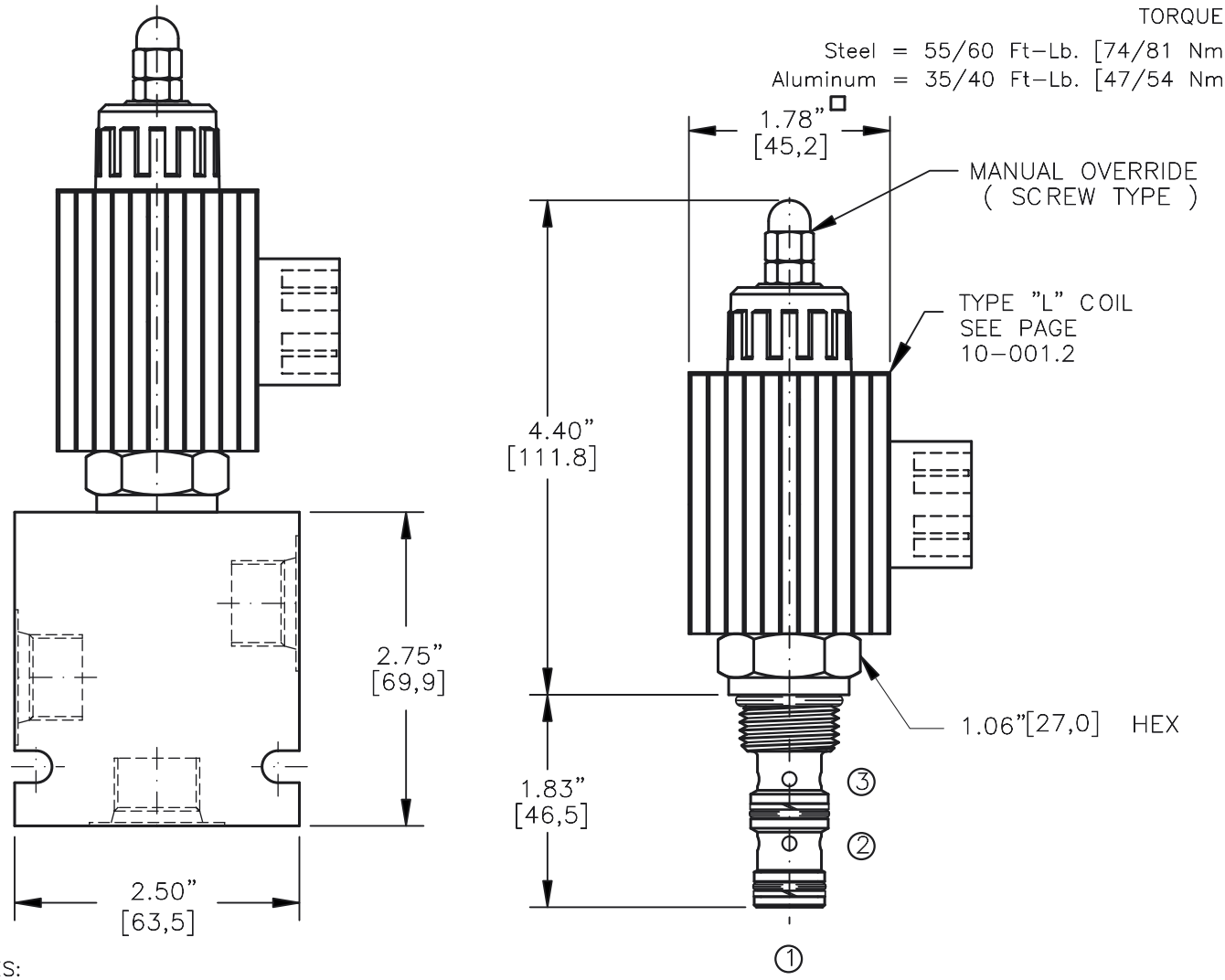
# PROPORTIONAL PRESSURE REDUCING/ RELIEVING. DIRECT ACTING, SPOOL TYPE.




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.

## EPRR-10-X-XX-X-X-XXX X

BASIC

SIZE
10 = 7/8"-14UNF

SEALS
N = BUNA "N"
V = VITON

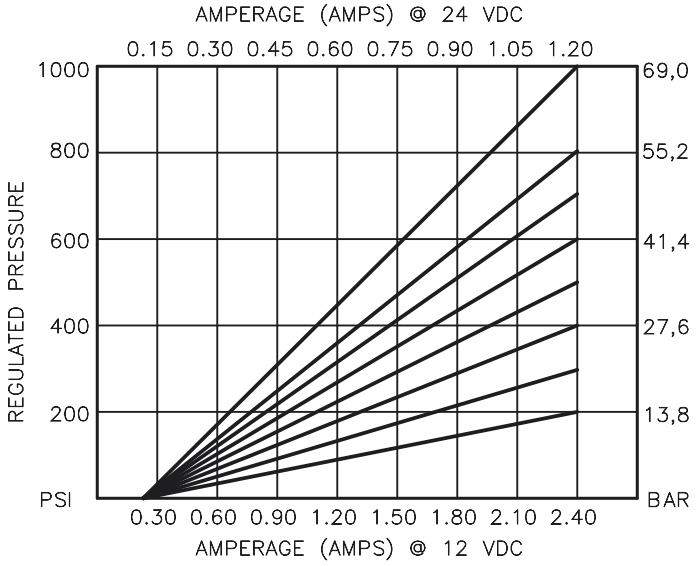
REGULATED PRESSURE
02 = 0 TO 200 PSI
03 = 0 TO 300 PSI
04 = 0 TO 400 PSI
05 = 0 TO 500 PSI
06 = 0 TO 600 PSI
07 = 0 TO 700 PSI
08 = 0 TO 800 PSI
10 = 0 TO 1000 PSI

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

ADJUSTMENT OPTIONS
M = MANUAL OVERRIDE

VOLTAGE AMPS
12D = 12 VDC 3.00
24D = 24 VDC 1.50

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



BUCHER hydraulics

# ELECTRO–HYDRAULIC, PROPORTIONAL, PRESSURE REDUCING/RELIEVING VALVE.

## DESCRIPTION

This unit is a electro–hydraulic, proportional, screw in cartridge style, direct acting, spool type, pressure reducing/relieving flow pressure control valve.

## OPERATIONS

When the coil is de–energized, this valve allows no flow or pressure from port 2 to 1 and port 1 is open to (tank) port 3.
When the coil is energized, the spool in this valve shifts and allows flow and pressure between ports 2 and 1 and blocks port 3 (tank).
When the coil is energized the armature moves a precision bias spring against the metering spool thus varying the pressure at port 1 (Reg.) proportional to the curent input. When the current is increased to the coil the pressure will increase and when decreased it will decrease.

IN THE EVENT OF POWER FAILURE THE VALVE WILL REDUCE REGULATED PRESSURE AT PORT 1 TO ZERO.

## 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.

BUCHER hydraulics

# ELECTRO–HYDRAULIC, PROPORTIONAL, PRESSURE REDUCING/RELIEVING VALVE.

## SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
REGULATED PRESSURE: 0 to 1,000 PSI [0 to 69,0 Bar] See performance chart
FLOW: 1.0 GPM (3.8 l/m) nominal
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.
OPERATING TEMPERATURE: –40° to +250° F. [–40° to +120° C.]
OPERATING MEDIA: All general purpose hydraulic fluids such as MIL–H–5606, SAE–#10, SAE–#20, etc.
RESPONSE: The most efficient method to control this valve is with current control and a 50 Hz dither.
POWER REQUIREMENTS: 12 VDC, Operating current 0.2 to 2.4 AMPS.
24 VDC, Operating current 0.1 to 1.2 AMPS.
SEAL KIT: SKN–1031 Buna "N"
SKV–1031 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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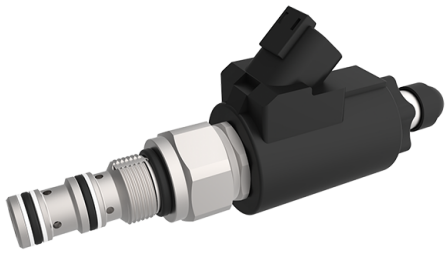
# Prop. Pressure-Reducing/Relieving Cartridge, Size SAE 08

$Q_{max}$ = 7.0 gpm [26 l/min], $p_{max}$ = 3400 psi [240 bar]
Seated pilot, spool-type main stage
Series EPRT-08…

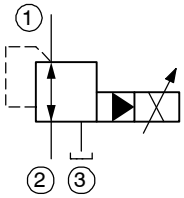


- Compact construction for cavity types: C0830 - 3/4-16 UNF
- Operated by a proportional solenoid
- 3 pressure ranges available
- Full-flow secondary pressure relief
- Internal pilot-oil drain
- Pilot stage protected from dirt by gap filter
- Excellent stability over the whole pressure and flow range
- 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

Series EPRT-08… proportional pressure-reducing / relieving valves are size SAE 08, high performance screw-in cartridges with a 3/4-16 UNF mounting thread. Using the leak-free seat-type pilot cartridge, the secondary pressure in port 1 is dependent on the electrical control signal and it can be continuously varied and set at any desired level. In control mode, the connection 2 → 1 opens until the pressure in port 1 reaches the preset level. If the pressure rises above the preset level, the control spool opens the 1 → 3 connection until balance is attained. These pressure-reducing / relieving cartridges function as full-flow pressure relief valves from port 1 → 3 as soon as the reduced pressure rises above the valve pressure setting. A high degree of functional stability is reached even if the back pressure in the tank line fluctuates. Three pressure ranges are available in order to obtain precise pressure settings over the whole pressure range. These pressure-reducing / relieving cartridges are predominantly used in mobile and industrial applications for reducing a system pressure. All external parts of the cartridge are zinc-nickel plated according to DIN EN ISO 19 598 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°. For self-assembly, please refer to the section related data sheets.

## 2 Symbol




## 3 Technical data

| General characteristics | Description, value, unit |
|---|---|
| Designation | proportional pressure-reducing / relieving cartridge |
| Design | seated pilot, spool-type main stage |
| Mounting method | screw-in cartridge 3/4-16 UNF-2A |
| Tightening torque | 30 ft-lbs ± 10 % [40 Nm ± 10 %] |

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| General characteristics | Description, value, unit |
|---|---|
| Size | size SAE 08 for cavity type C0830<br>fits common cavity ISO 17209: 3/4-03-0-13<br>fits common cavity NFPA/T3.5.50: 0.750-03-0-09 |
| Weight | 0.93 lbs [0.42 kg] |
| Mounting attitude | unrestricted (preferably vertical, coil down) |
| Ambient temperature range | -13 °F … +122 °F [-25 °C … +50 °C] |

| Hydraulic characteristics | | Description, value, unit |
|---|---|---|
| Maximum operating pressure | - ports 1, 2<br>- port 3 | 3400 psi [240 bar]<br>3000 psi [210 bar] 1) |
| Maximum flow rate | | 7 gpm [26 l/min] |
| Nominal pressure ranges | | 1500, 2500, 3000 psi [100, 175, 210 bar]<br>For further pressure ranges, please contact BUCHER |
| Pilot-oil consumption | | 0.05… 0.08 gpm [0,2 … 0,3 l/min] |
| Flow direction | | 2 → 1 pressure reducing<br>1 → 3 pressure relieving |
| Hydraulic fluid | | HL and HLP mineral oil to DIN 51 524;<br>for other fluids, please contact BUCHER |
| Hydraulic fluid temperature range | | -13 °F … +158 °F [-25 °C … +70 °C] |
| Viscosity range | | 15…380 $mm^2/s$ (cSt), recommended 20...130 $mm^2/s$ (cSt) |
| Minimum fluid cleanliness<br>Cleanliness class to ISO 4406 : 1999 | | class 18/16/13 |

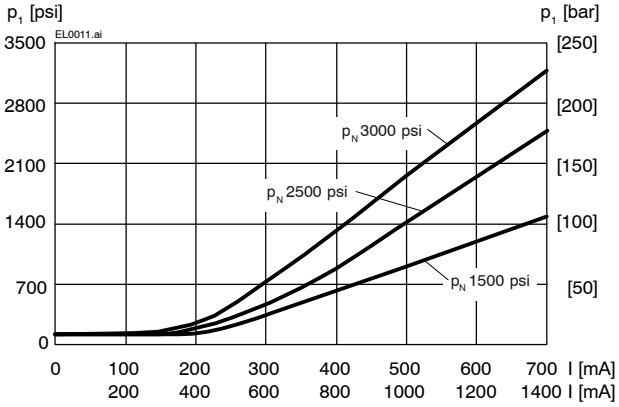
**ATTENTION!**
1) To prevent any pressure surges, port 3 must be routed to tank with the least possible back-pressure.

| Electrical characteristics | | Description, value, unit |
|---|---|---|
| Supply voltage | | 12 V DC, 24 V DC |
| Supply voltage tolerance | | ± 10 % |
| Control current | | 12 V = 0…1400 mA, 24 V = 0…750 mA |
| Power consumption at max. control current | | max. 19 W |
| Coil resistance R | - cold value at 20 °C<br>- max. warm value | 12 V = 5.8 Ω / 24 V = 21 Ω<br>12 V = 8.6 Ω / 24 V = 32 Ω |
| Recommended PWM frequency (dither) | | 200 Hz |
| Hysteresis with PWM | | 2…4 % $I_N$ |
| Reversal error with PWM | | 1…3 % $I_N$ |
| Sensitivity with PWM | | ≤ 1 % $I_N$ |
| Reproducibility with PWM | | < 2 % $p_N$ |

| Electrical characteristics | Description, value, unit |
|---|---|
| Switching time | *Pressure-reducing function*:<br>38 … 45 ms (solenoid ON)<br>8 … 12 ms (solenoid OFF)<br>*Pressure-relief function:*<br>41 … 51 ms (solenoid ON)<br>6 … 12 ms (solenoid OFF)<br>The switching times are strongly influenced by flow rate, pressure, viscosity and the dwell period under pressure. |
| Relative duty cycle | 100 % |
| Protection class to ISO 20 653 / EN 60 529 | IP 65 / IP 67 / IP 69K, see “Ordering code”<br>(with appropriate mating connector and<br>proper fitting and sealing) |
| Electrical connection | DIN EN 175301-803, 3-pin 2 P+E (standard)<br>for other connectors, see “Ordering code” |

## 4 Performance graphs measured with oil viscosity 33 mm²/s (cSt)

p = f (I) Pressure adjustment characteristic



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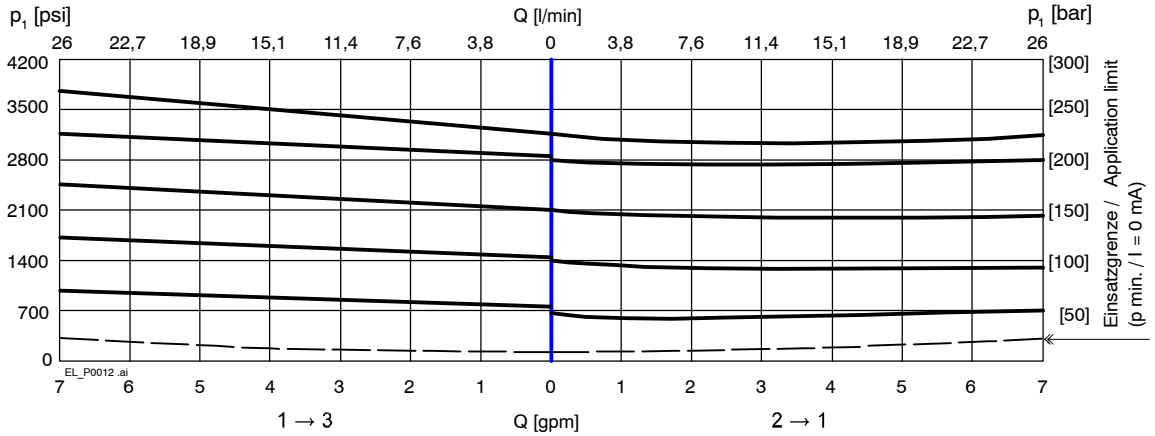
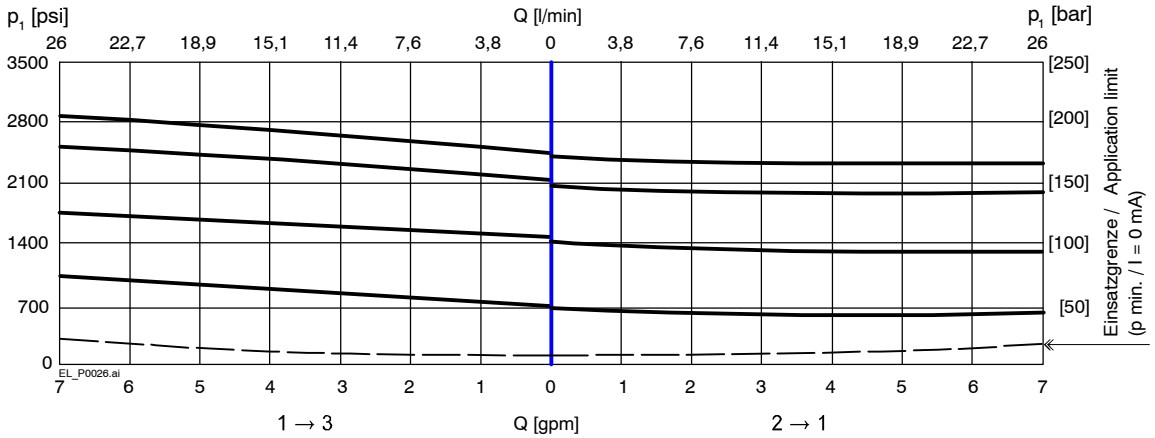
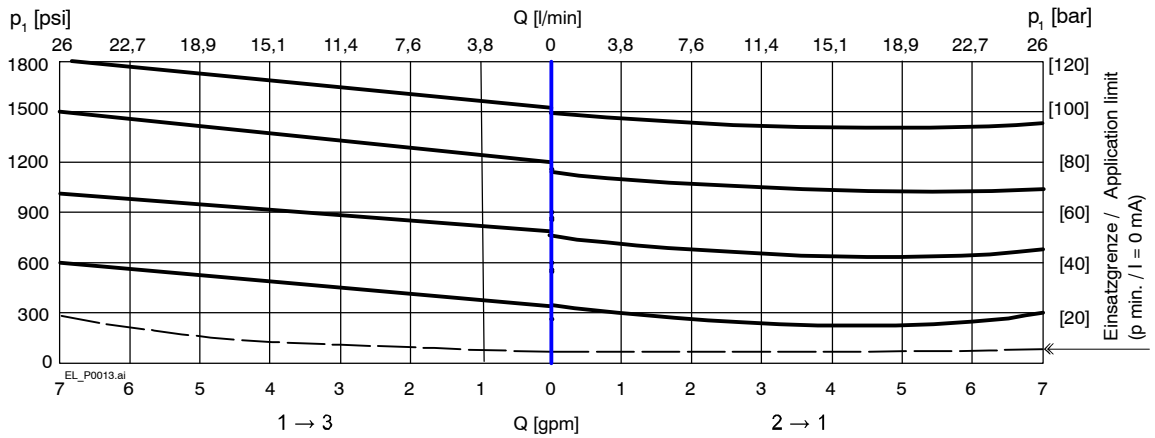
p = f (Q) Pressure - Flow rate characteristic [$p_N$ = 3000 psi]



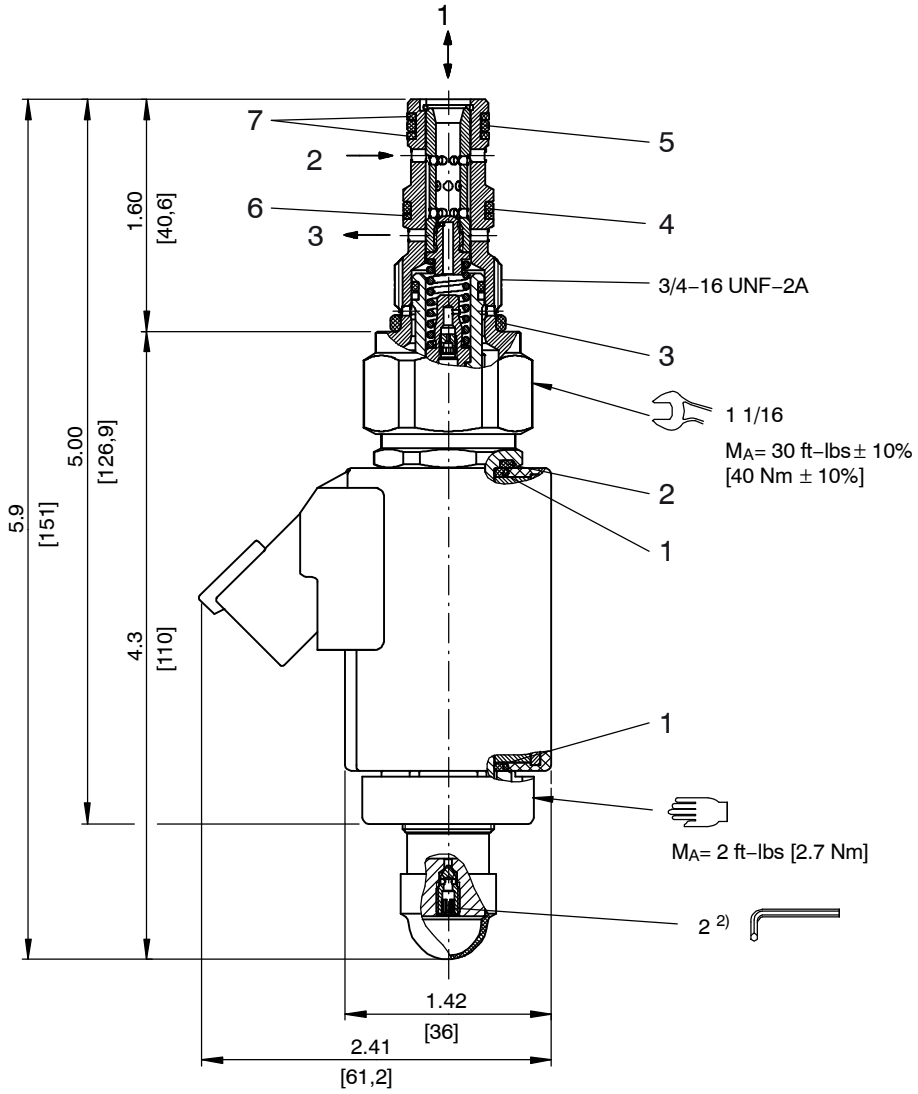

p = f (Q) Pressure - Flow rate characteristic [$p_N$ = 2500 psi]




p = f (Q) Pressure - Flow rate characteristic [$p_N$ = 1500 psi]



# 5 Dimensions & sectional view




# 6 Installation information

**IMPORTANT!**
To achieve the proportional pressure-reducing cartridge's maximum performance rating, fit the solenoid coil as shown (with the plug pins at the bottom). When fitting the cartridges, note the mounting attitude (preferably vertical, with coil down → automatic air bleed) and 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-0832-12-S1 [1)]

| Item | Qty. | Description | | | |
|---|---|---|---|---|---|
| 1 | 2 | O-ring | ∅ 16,00 x 2,00 | FKM | mm |
| 2 | 1 | O-ring | ∅ 18,00 x 2,00 | FKM | mm |
| 3 | 1 | O-ring no. 908 | ∅ 0,644 x 0,087 | N70 | Inch |
| 4 | 1 | O-ring no. 014 | ∅ 0,489 x 0,070 | N70 | Inch |
| 5 | 2 | O-ring no. 013 | ∅ 0,426 x 0,070 | N70 | Inch |
| 6 | 1 | Backup ring FI0751 | ∅ 0,421 x 0,057 x 0,039 | | Inch |
| 7 | 2 | Backup ring FI0751 | ∅ 0,370 x 0,057 x 0,039 | | Inch |

**IMPORTANT!**

1) Seal kit with FKM (Viton) seals, no. SKV-0832-12-S1

2) vent screw to vent valve when mounted coil up screw torqued hand tight.

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# 7 Ordering code

Ex. EPRT - 08 - N - 30 - 0 - 24 D _

| | | | |
|---|---|---|---|
| EPRT | = | prop. pressure-reducing / relieving valve, two stage | |
| 08 | = | nominal size SAE 08 | |
| N | = | NBR (Nitrile) seals (**standard**) | |
| V | = | FKM (Viton) seals<br>(special seals - please contact BUCHER) | |
| 30 | = | Pressure option 3000 psi | |
| 25 | = | Pressure option 2500 psi | |
| 15 | = | Pressure option 1500 psi | |
| 0 | = | cartridge only | |
| 02BA | = | line-mounting body G1/4 BSPP | aluminum |
| 02BS | = | line-mounting body G1/4 BSPP | steel |
| 03BA | = | line-mounting body G3/8 BSPP | aluminum |
| 03BS | = | line-mounting body G3/8 BSPP | steel |
| 06TA | = | line-mounting body SAE-6 | aluminum |
| 06TS | = | line-mounting body SAE-6 | steel |
| ... | = | voltage e.g. **24** (24 V) | |
| D | = | current DC | |
| (blank) | = | DIN EN 175301-803 connection with mating plug (**standard, IP 65**) | |
| M100 | = | DIN EN 175301-803 connection without mating plug | |
| 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 45° DT04-2P (IP67/69K) | |
| DT | = | Deutsch plug connection 45° DT04-2P (with protection diode, IP67/69K) | |
| S | = | AMP Superseal 1.5 (IP67) / Metri-Pack 150 (IP65) plug connection | |
| F | = | flying leads (500 mm) | |

on request

mating plug not supplied

# 8 Related data sheets

| Reference | (Old no.) | Description |
|---|---|---|
| 520-P-000050 | | The form-tool loan program |
| 520-P-000310 | (0-031.0) | Cavity type C0830 |
| 400-P-120110 | (W-2.141) | Coils for screw-in cartridge valves |
| 520-P-000311 | (0-031.1) | Line-mounting body, 8 Series -3-way |

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Classification: 430.300.305.305.320.310

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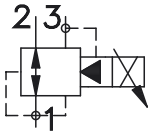
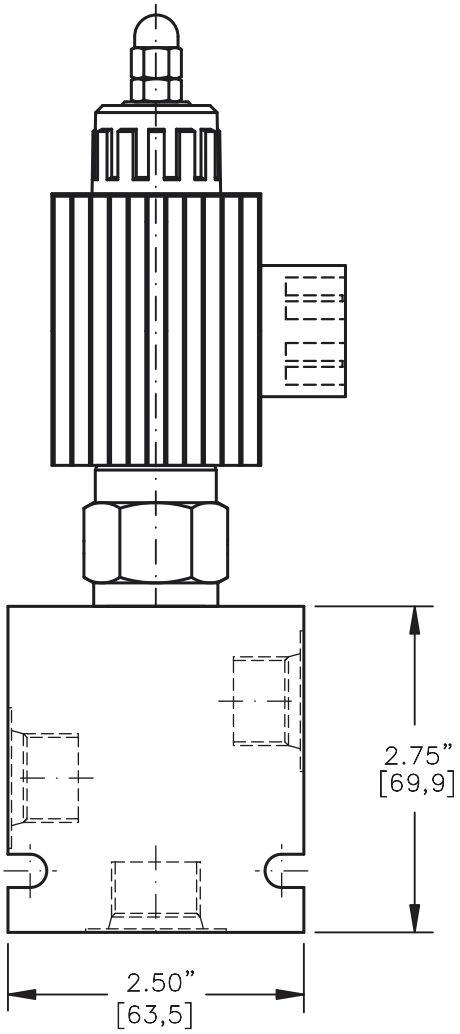
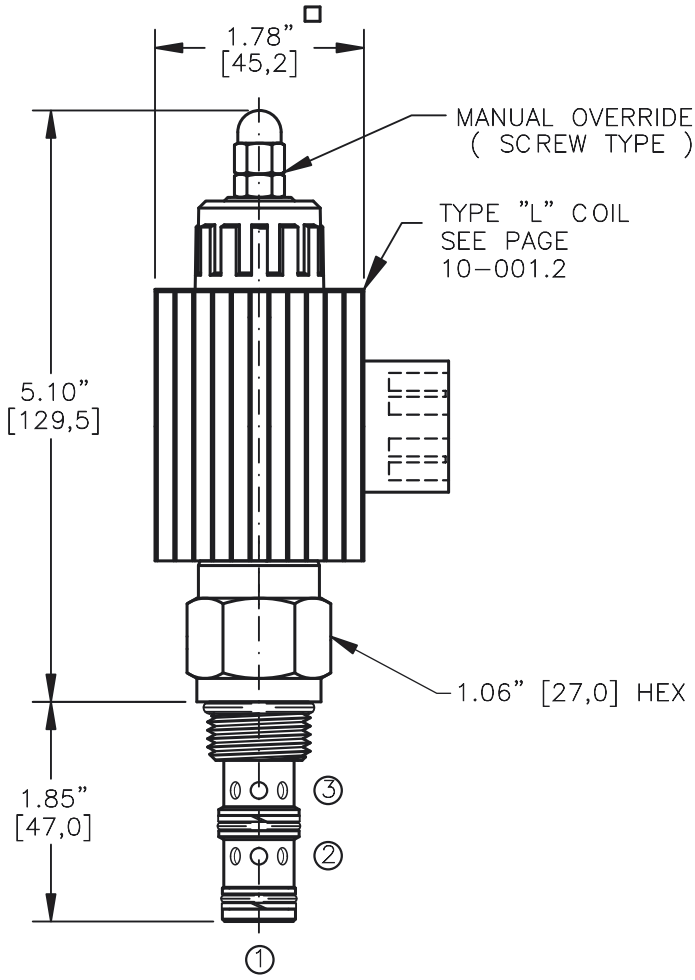
# PROPORTIONAL PRESSURE REDUCING/ RELIEVING. PILOT OPERATED, SLIDING SPOOL




TORQUE:

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

## EPRS-10-X-XX-X-X-XXX X

BASIC

SIZE
10 = 7/8"-14UNF

SEALS
N = BUNA "N"
V = VITON

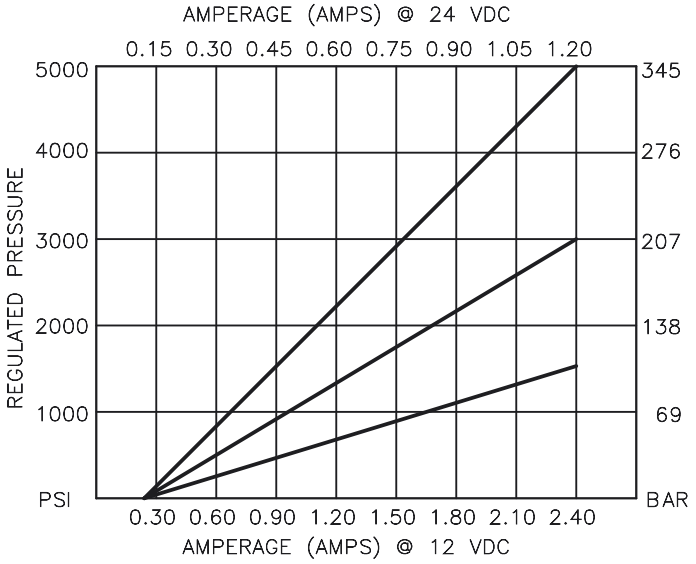
REGULATED PRESSURE
15 = 50 TO 1500 PSI
30 = 50 TO 3000 PSI
50 = 50 TO 5000 PSI

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

ADJUSTMENT OPTIONS
M = MANUAL OVERRIDE

VOLTAGE AMPS
12D = 12 VDC 3.00
24D = 24 VDC 1.50

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



BUCHER hydraulics

# ELECTRO–HYDRAULIC, PROPORTIONAL, PRESSURE REDUCING/RELIEVING VALVE.

## DESCRIPTION

This unit is a electro–hydraulic, proportional, screw in cartridge style, pilot operated, sliding spool type, high pressure reducing and relieving control valve.

## OPERATIONS

When the coil is de–energized, this valve will allow flow from port 2 to port 1 until pressure in port 1 exceeds the spring bias then the spool will shift and block flow from port 2 to port 1 relieving pressure to port 3. When the coil is energized, the armature moves a precision bias spring against the pilot orifice thus varying the pressure at port 1 (reg.) proportional to the current input regardless of the pressure at port 2. Excess pressure at port 1 is relieved to port 3. When the coil current is increased the pressure will increase and when decreased it will decrease. IN THE EVENT OF POWER FAILURE THE VALVE WILL REDUCE REGULATED PRESSURE AT PORT 1 TO 50 PSI.

## FEATURES AND BENEFITS

Continuous–duty, very low heat rise & waterproof solenoid coil.
Pressure in tank port (3) will add to the bias spring setting, and is limited to 2000 PSI.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted spool & sleeve provides reliable, long life.
A unique self aligning (floating) cage provides very low hysteresis and reliable operation.
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.

BUCHER hydraulics

# ELECTRO–HYDRAULIC, PROPORTIONAL, PRESSURE REDUCING/RELIEVING VALVE.

## SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
REGULATED PRESSURE: 50 to 5000 PSI [3,5 to 345] See performance chart.
FLOW: 12.0 GPM [46,0 L/M] nominal.
INTERNAL PILOT FLOW: 20 cu.in/min [0,50 l/m] @ 5,000 PSI [350 Bar]
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
5000 PSI [350 Bar] = Steel – Unplated.
OPERATING TEMPERATURE: –40° to +250° F. [–40° to +120° C.]
OPERATING MEDIA: All general purpose hydraulic fluids such as MIL–H–5606, SAE–#10, SAE–#20, etc.
RESPONSE: The most efficient method to control this valve is with current control and a 50 Hz dither.
POWER REQUIREMENTS: 12 VDC, Operating current 0.2 to 2.4 AMPS.
24 VDC, Operating current 0.1 to 1.2 AMPS.
SEAL KIT: SKN–1031 Buna "N"
SKV–1031 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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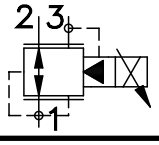
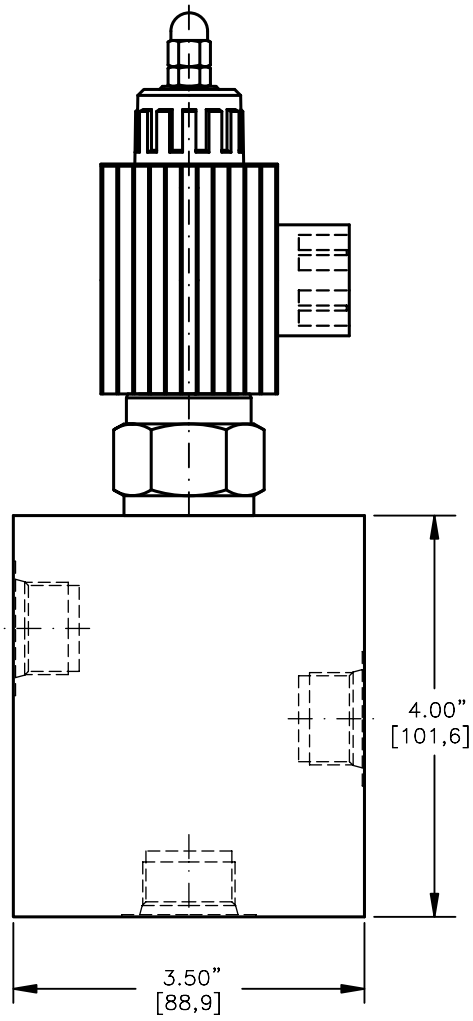
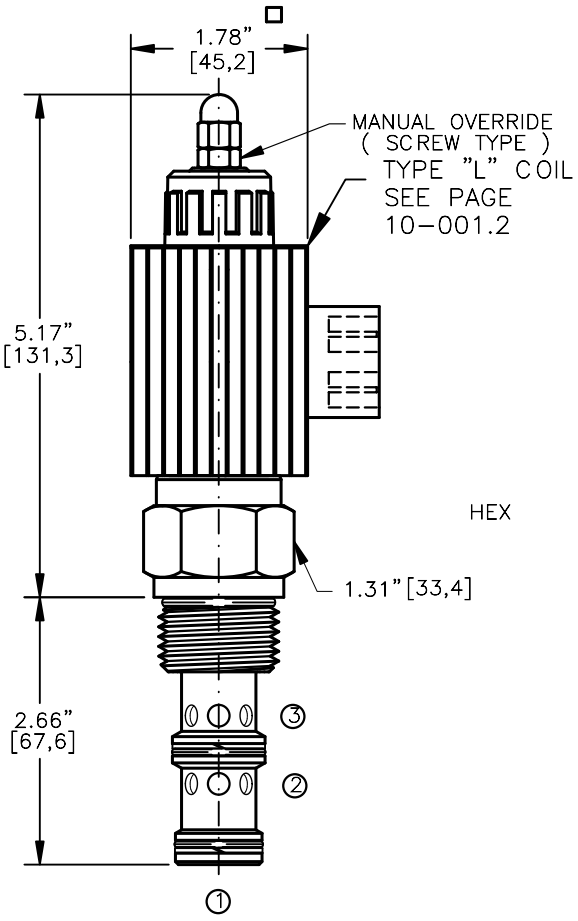
BUCHER hydraulics

# PROPORTIONAL PRESSURE REDUCING/ RELIEVING PILOT OPERATED, SLIDING SPOOL




TORQUE:
Steel = 70/75 Ft-Lb. [95/102 Nm]
Aluminum = 55/60 Ft-Lb. [74/81 Nm]

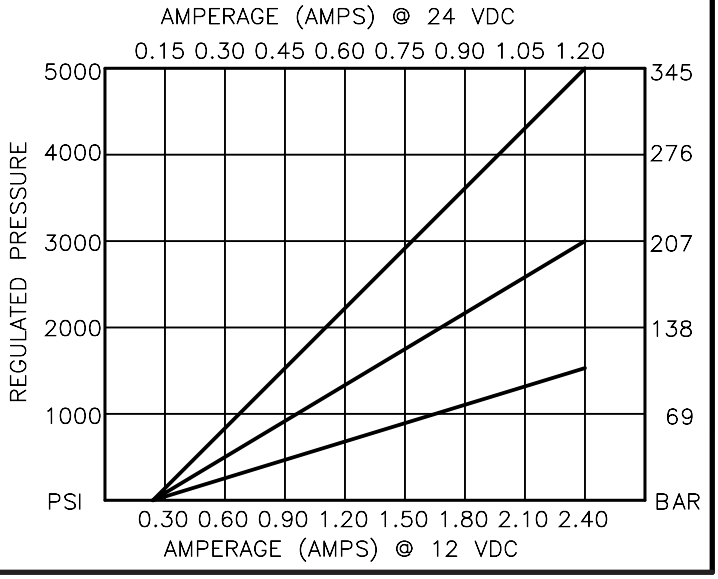



NOTES:
1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-033.1
2. SOLENOIDS AVAILABLE WITH DIODES - CONSULT FACTORY.

## EPRS-12-X-XX-X-X-XXX X

- BASIC
- SIZE
  12 = 1.062"-12UNF
- SEALS
  N = BUNA "N"
  V = VITON
- REGULATED PRESSURE
  15 = 50 TO 1500 PSI
  30 = 50 TO 3000 PSI
  50 = 50 TO 5000 PSI
- PORTS
  0 = CARTRIDGE
  4BX = G 1/2" BSPP
  6BX = G 3/4" BSPP
  10TX = SAE - #10
  12TX = SAE - #12
  "A" - ALUM. HOUSING
  "S" - STEEL HOUSING
- ADJUSTMENT OPTIONS
  M = MANUAL OVERRIDE
- VOLTAGE AMPS
  12D = 12 VDC 3.00
  24D = 24 VDC 1.50
- TERMINALS
  L = 18GA. 24" LEADS
  T = SPADE TERM.
  B = BOLT TERM.
  G = DIN43650
  W = WEATHER-PACK
  D = DEUTSCH-DT04-2P
  M = METRI-PACK CONN.



BUCHER hydraulics

# ELECTRO–HYDRAULIC, PROPORTIONAL, PRESSURE REDUCING/RELIEVING VALVE.

## DESCRIPTION

This unit is a electro–hydraulic, proportional, screw in cartridge style, pilot operated, sliding spool type, high pressure reducing and relieving control valve.

## OPERATIONS

When the coil is de–energized, this valve will allow flow from port 2 to port 1 until pressure in port 1 exceeds the spring bias then the spool will shift and block flow from port 2 to port 1 relieving pressure to port 3. When the coil is energized, the armature moves a precision bias spring against the pilot orifice thus varying the pressure at port 1 (reg.) proportional to the current input regardless of the pressure at port 2. Excess pressure at port 1 is relieved to port 3. When the coil current is increased the pressure will increase and when decreased it will decrease. IN THE EVENT OF POWER FAILURE THE VALVE WILL REDUCE REGULATED PRESSURE AT PORT 1 TO 50 PSI.

## FEATURES AND BENEFITS

Continuous–duty, very low heat rise & waterproof solenoid coil.
Pressure in tank port (3) will add to the bias spring setting, and is limited to 2000 PSI.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted spool & sleeve provides reliable, long life.
A unique self aligning (floating) cage provides very low hysteresis and reliable operation.
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.

BUCHER hydraulics

# ELECTRO–HYDRAULIC, PROPORTIONAL, PRESSURE REDUCING/RELIEVING VALVE.

## SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
REGULATED PRESSURE: 50 to 5000 PSI [3,5 to 345] See performance chart.
FLOW: 24.0 GPM [91,0 L/M] nominal.
INTERNAL PILOT FLOW: 60 cu.in/min [1,0 l/m] @ 5,000 PSI [350 Bar]
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
5000 PSI [350 Bar] = Steel – Unplated.
OPERATING TEMPERATURE: –40° to +250° F. [–40° to +120° C.]
OPERATING MEDIA: All general purpose hydraulic fluids such as MIL–H–5606, SAE–#10, SAE–#20, etc.
RESPONSE: The most efficient method to control this valve is with current control and a 50 Hz dither.
POWER REQUIREMENTS: 12 VDC, Operating current 0.2 to 2.4 AMPS.
24 VDC, Operating current 0.1 to 1.2 AMPS.
SEAL KIT: SKN–1231 Buna "N"
SKV–1231 Viton
INSTALLATION: No restrictions.
WEIGHT: 2.3 lb [1,2 kg] cartridge with coil only.
VALVE CAVITY: #C1230, See Page 0–033.0.

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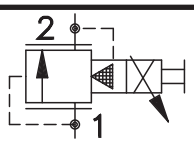
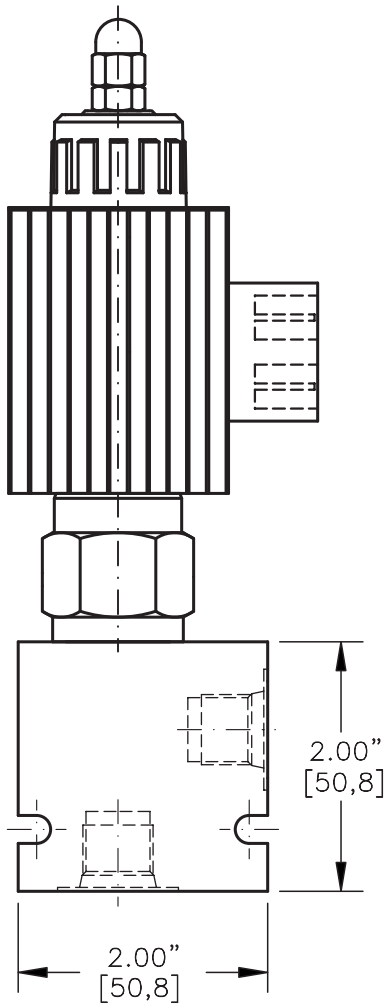
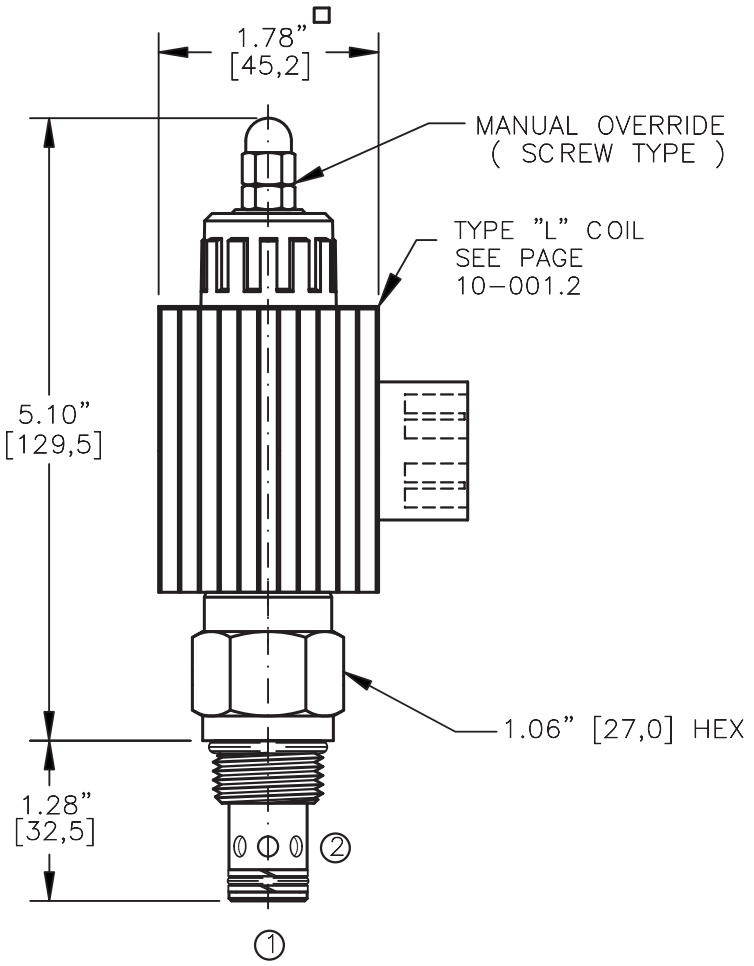
# PROPORTIONAL PRESSURE RELIEF VALVE. PILOT OPERATED, SLIDING SPOOL TYPE.




Pat.#5,546,980

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.

**ERVP–10–X–XX–X–X–XXX X**

BASIC

SIZE
10 = 7/8"–14UNF

SEALS
N = BUNA "N"
V = VITON

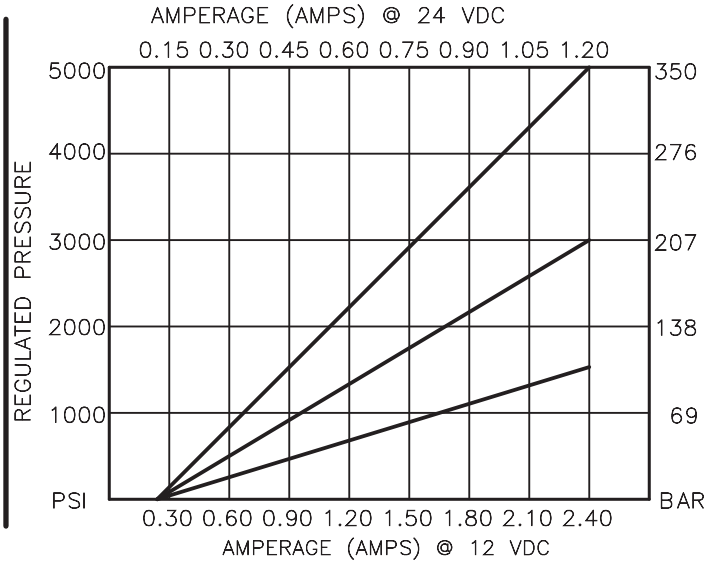
REGULATED PRESSURE
15 = 50 TO 1500 PSI
30 = 50 TO 3000 PSI
50 = 50 TO 5000 PSI

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

ADJUSTMENT OPTIONS
M = MANUAL OVERRIDE

VOLTAGE AMPS
12D = 12 VDC 3.00
24D = 24 VDC 1.50

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



BUCHER hydraulics

# ELECTRO–HYDRAULIC, PROPORTIONAL, PRESSURE RELIEF VALVE.

## DESCRIPTION

This unit is a electro–hydraulic, proportional, screw in cartridge style, pilot operated, sliding spool type, high pressure relief valve.

## OPERATIONS

When the coil is de–energized, this valve allows flow and pressure from port 1 to port 2 if pressure exceeds the spring bias (50 psi). When the coil is energized the armature moves a precision bias spring against the pilot orifice thus varying the pressure setting at port 1 proportional to the current input. When the current is increased to the coil the relief pressure will increase and when decreased it will decrease. IN THE EVENT OF POWER FAILURE THE VALVE RELIEF PRESSURE SETTING AT PORT 1 WILL BE THE SPRING BIAS.

## FEATURES AND BENEFITS

Continuous–duty, very low heat rise & waterproof solenoid coil.
Pressure in tank port (2) will add to the bias spring setting, and is limited to 2000 PSI.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted spool & sleeve provides reliable, long life.
A unique self aligning (floating) cage provides very low hysteresis and reliable operation.
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.

BUCHER hydraulics

# ELECTRO–HYDRAULIC, PROPORTIONAL, PRESSURE RELIEF VALVE.

## SPECIFICATIONS

OPERATING PRESSURE: 5000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
REGULATED PRESSURE: 50 to 5000 PSI [3,5 to 345] See performance chart.
FLOW: 25.0 GPM [95,0 L/M] nominal.
INTERNAL PILOT FLOW: 60 cu.in/min [1,0 l/m] @ 3000 PSI [210 Bar]
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
5000 PSI [350 Bar] = Steel – Unplated.
OPERATING TEMPERATURE: –40° to +250° F. [–40° to +120° C.]
OPERATING MEDIA: All general purpose hydraulic fluids such as MIL–H–5606, SAE–#10, SAE–#20, etc.
RESPONSE: The most efficient method to control this valve is with current control and a 50 Hz dither.
POWER REQUIREMENTS: 12 VDC, Operating current 0.2 to 2.4 AMPS.
24 VDC, Operating current 0.1 to 1.2 AMPS.
SEAL KIT: SKN–1022 Buna "N"
SKV–1022 Viton
INSTALLATION: No restrictions.
WEIGHT: 1.95 lb [.88 kg] cartridge with coil only.
VALVE CAVITY: #C1020, See Page 0–012.0.

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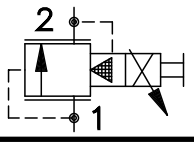
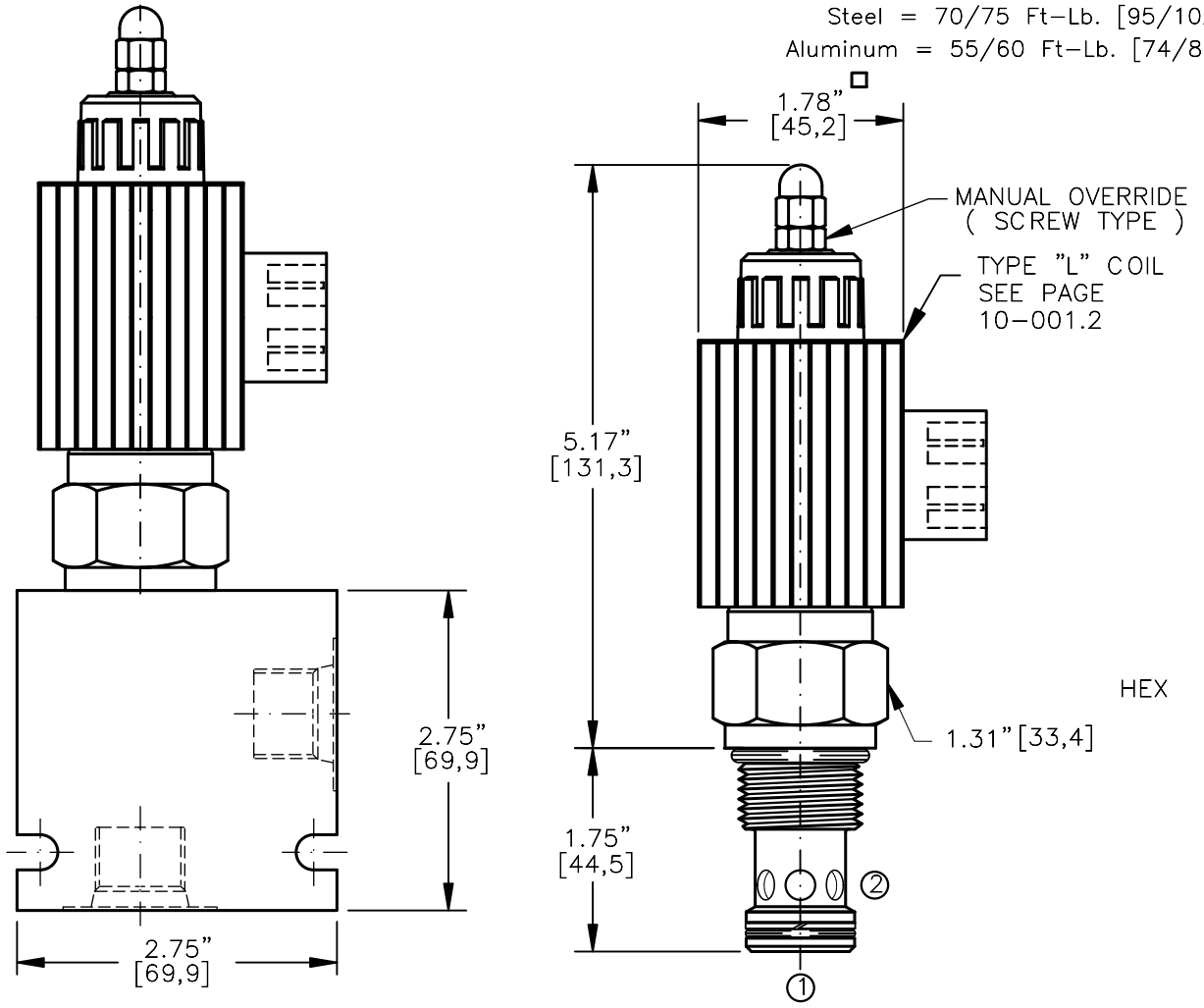
BUCHER hydraulics

# PROPORTIONAL PRESSURE RELIEF VALVE. PILOT OPERATED, SLIDING SPOOL TYPE.




Pat.#5,546,980

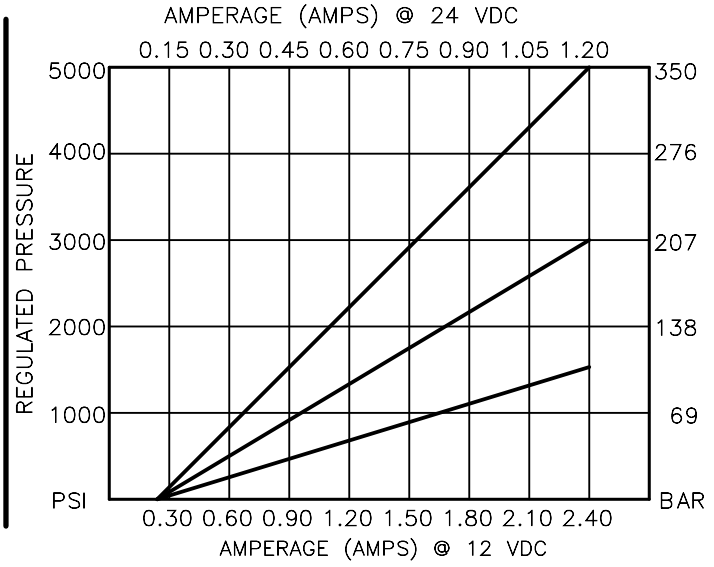
TORQUE:
Steel = 70/75 Ft–Lb. [95/102 Nm]
Aluminum = 55/60 Ft–Lb. [74/81 Nm]




NOTES:
1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0–013.1
2. SOLENOIDS AVAILABLE WITH DIODES – CONSULT FACTORY.

## ERVP–12–X–XX–X–X–XXX X

- BASIC
- SIZE
  12 = 1.062"–12UNF
- SEALS
  N = BUNA "N"
  V = VITON
- REGULATED PRESSURE
  15 = 50 TO 1500 PSI
  30 = 50 TO 3000 PSI
  50 = 50 TO 5000 PSI
- PORTS
  0 = CARTRIDGE
  4BX = G 1/2" BSPP
  6BX = G 3/4" BSPP
  10TX = SAE – #10
  12TX = SAE – #12
  "A" – ALUM. HOUSING
  "S" – STEEL HOUSING
- ADJUSTMENT OPTIONS
  M = MANUAL OVERRIDE
- VOLTAGE AMPS
  12D = 12 VDC 3.00
  24D = 24 VDC 1.50
- TERMINALS
  L =18GA. 24" LEADS
  T =SPADE TERM.
  B =BOLT TERM.
  G =DIN43650
  W =WEATHER–PACK
  D =DEUTSCH–DT04–2P
  M =METRI–PACK CONN.



BUCHER hydraulics

# ELECTRO–HYDRAULIC, PROPORTIONAL, PRESSURE RELIEF VALVE.

## DESCRIPTION

This unit is a electro–hydraulic, proportional, screw in cartridge style, pilot operated, sliding spool type, high pressure relief valve.

## OPERATIONS

When the coil is de–energized, this valve allows flow and pressure from port 1 to port 2 if pressure exceeds the spring bias (50 psi). When the coil is energized the armature moves a precision bias spring against the pilot orifice thus varying the pressure setting at port 1 proportional to the current input. When the current is increased to the coil the relief pressure will increase and when decreased it will decrease. IN THE EVENT OF POWER FAILURE THE VALVE RELIEF PRESSURE SETTING AT PORT 1 WILL BE THE SPRING BIAS.

## FEATURES AND BENEFITS

Continuous–duty, very low heat rise & waterproof solenoid coil.
Pressure in tank port (2) will add to the bias spring setting, and is limited to 2000 PSI.
Interchangeable solenoid coils & terminations options available.
Hardened precision fitted spool & sleeve provides reliable, long life.
A unique self aligning (floating) cage provides very low hysteresis and reliable operation.
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.

BUCHER hydraulics

# ELECTRO–HYDRAULIC, PROPORTIONAL, PRESSURE RELIEF VALVE.

## SPECIFICATIONS

OPERATING PRESSURE: 5000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
REGULATED PRESSURE: 50 to 5000 PSI [3,5 to 345] See performance chart.
FLOW: 60.0 GPM [227,0 L/M] nominal.
INTERNAL PILOT FLOW: 60 cu.in/min [1,0 l/m] @ 3000 PSI [210 Bar]
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
5000 PSI [350 Bar] = Steel – Unplated.
OPERATING TEMPERATURE: –40° to +250° F. [–40° to +120° C.]
OPERATING MEDIA: All general purpose hydraulic fluids such as MIL–H–5606, SAE–#10, SAE–#20, etc.
RESPONSE: The most efficient method to control this valve is with current control and a 50 Hz dither.
POWER REQUIREMENTS: 12 VDC, Operating current 0.2 to 2.4 AMPS.
24 VDC, Operating current 0.1 to 1.2 AMPS.
SEAL KIT: SKN–1222 Buna "N"
SKV–1222 Viton
INSTALLATION: No restrictions.
WEIGHT: 2.25 lb [1,12 kg] cartridge with coil only.
VALVE CAVITY: #C1220, See Page 0–013.0.

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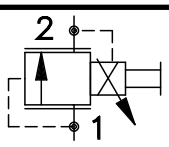
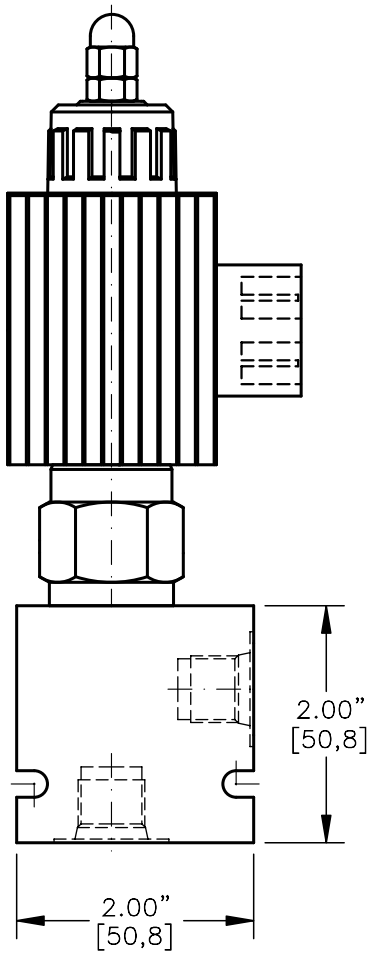
BUCHER hydraulics

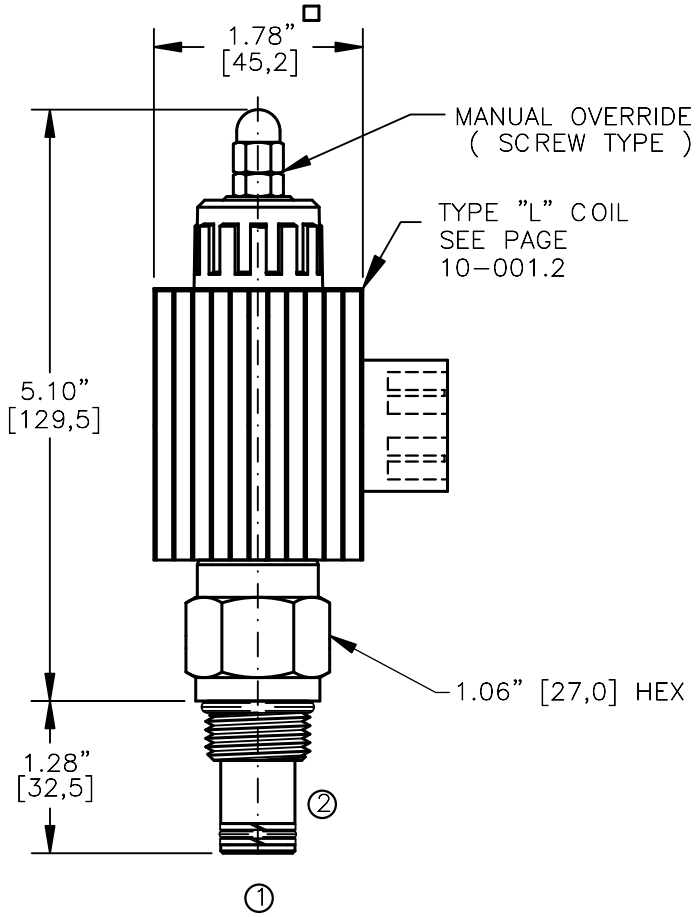
# PROPORTIONAL PRESSURE RELIEF VALVE. DIRECT ACTING, LOW FLOW, POPPET TYPE.




Pat.#5,546,980

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.

## ERVD–10–X–XX–X–X–XXX X

BASIC

SIZE
10 = 7/8"–14UNF

SEALS
N = BUNA "N"
V = VITON

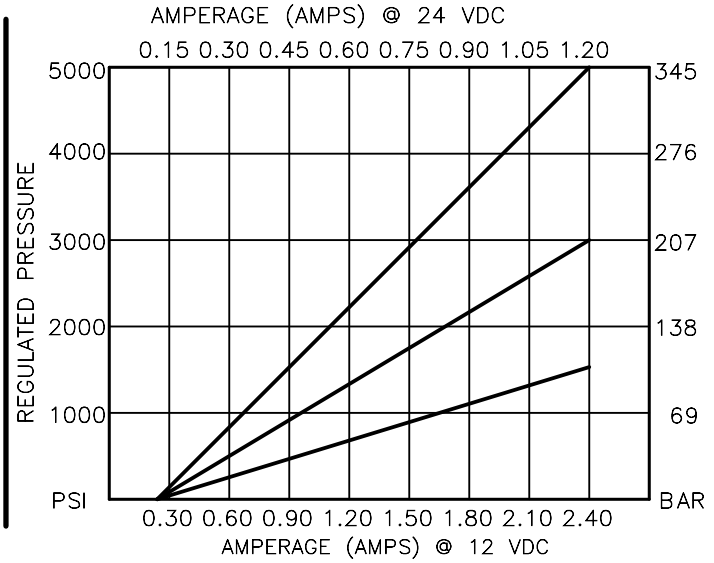
REGULATED PRESSURE
15 = 0 TO 1500 PSI
30 = 0 TO 3000 PSI
50 = 0 TO 5000 PSI

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

ADJUSTMENT OPTIONS
M = MANUAL OVERRIDE

VOLTAGE AMPS
12D = 12 VDC 3.00
24D = 24 VDC 1.50

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



BUCHER hydraulics

# ELECTRO–HYDRAULIC, PROPORTIONAL, PRESSURE RELIEF VALVE.

## DESCRIPTION

This unit is a electro–hydraulic, proportional, screw in cartridge style, direct acting, low flow, poppet type, high pressure relief valve.

## OPERATIONS

When the coil is de–energized, this valve allows flow and pressure from port 1 to port 2 (tank).
When the coil is energized the armature moves a precision bias spring against the metering poppet thus varying the pressure at port 1 proportional to the curent input. When the current is increased to the coil the pressure will increase and when decreased it will decrease.
IN THE EVENT OF POWER FAILURE THE VALVE WILL REDUCE REGULATED PRESSURE AT PORT 1 TO 0 PSI.

## FEATURES AND BENEFITS

Continuous–duty, very low heat rise & waterproof solenoid coil.
Pressure in tank port (2) will add to the bias spring setting, and is limited to 2000 PSI.
Interchangeable solenoid coils & terminations options available.
Hardened precision poppet & pilot seat provides reliable, long life.
A unique self aligning (floating) cage provides very low hysteresis and reliable operation.
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.

BUCHER hydraulics

# ELECTRO–HYDRAULIC, PROPORTIONAL, PRESSURE RELIEF VALVE.

## SPECIFICATIONS

OPERATING PRESSURE: 5000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
REGULATED PRESSURE: 0 to 5000 PSI [0 to 350] See performance chart.
FLOW: 1.0 GPM [3.8 L/M] nominal.
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
5000 PSI [350 Bar] = Steel – Unplated.
OPERATING TEMPERATURE: –40° to +250° F. [–40° to +120° C.]
OPERATING MEDIA: All general purpose hydraulic fluids such as MIL–H–5606, SAE–#10, SAE–#20, etc.
RESPONSE: The most efficient method to control this valve is with 24 VDC, Operating current 0.1 to 1.2 AMPS.
POWER REQUIREMENTS: 12 VDC, Operating current 0.2 to 2.4 AMPS. current control and a 50 Hz dither.
SEAL KIT: SKN–1022 Buna "N"
SKV–1022 Viton
INSTALLATION: No restrictions.
WEIGHT: 1.95 lb [.88 kg] cartridge with coil only.
VALVE CAVITY: #C1020, See Page 0–012.0.

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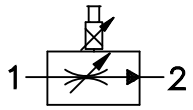
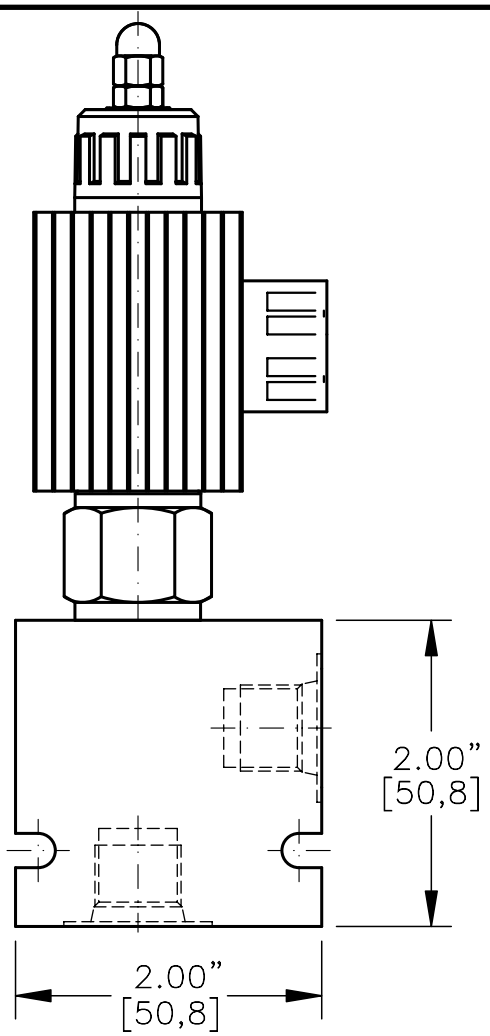
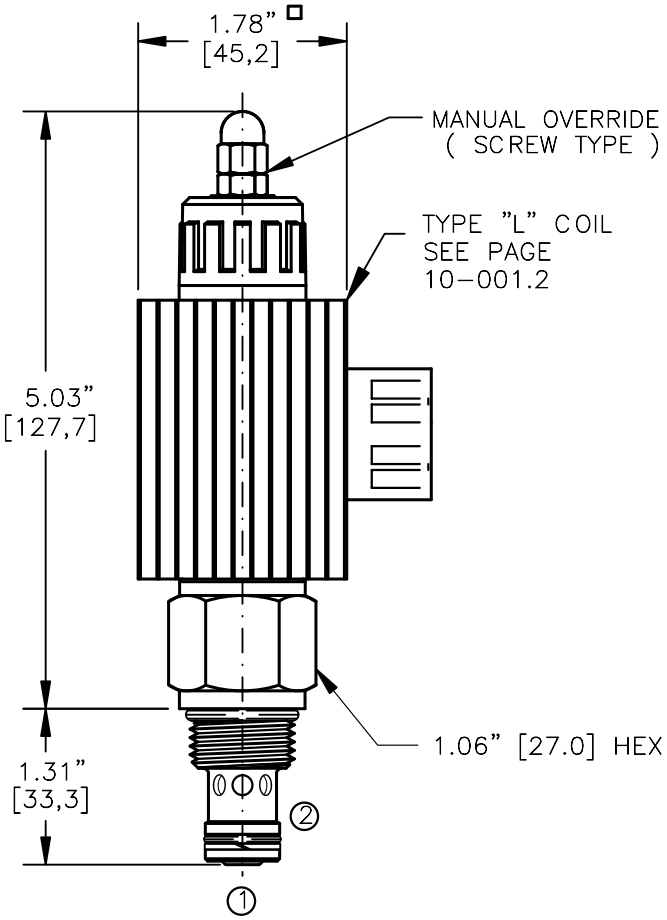
BUCHER hydraulics

# ELECTRO–HYDRAULIC, PROPORTIONAL, PRESSURE COMP, FLOW CONTROL VALVE.




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

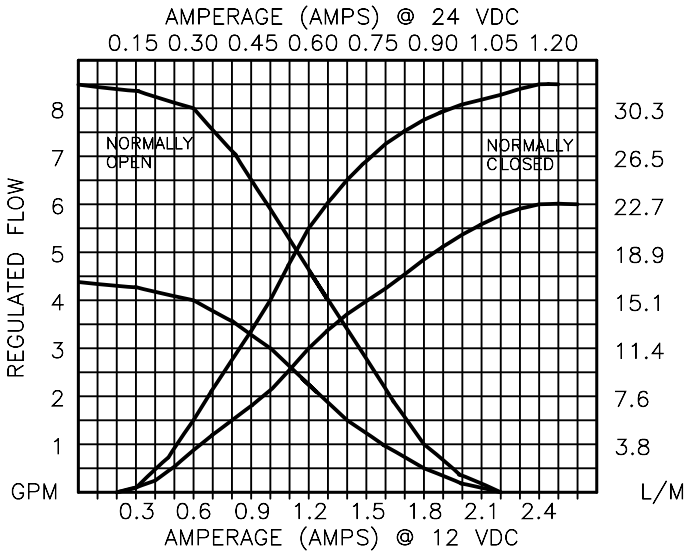



NOTES:
1. FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0–012.1
2. SOLENOIDS AVAILABLE WITH DIODES – CONSULT FACTORY.

**EPFI–10–X–X–XX–X–X–XXX X**

- BASIC
- SIZE
  10 = 7/8"–14UNF
- SEALS
  N = BUNA "N"
  V = VITON
- STYLE
  C = NORMALLY CLOSED
  O = NORMALLY OPEN
- REGULATED FLOW
  04 = 0 TO 4.0 GPM
  08 = 0 TO 8.0 GPM
- PORTS
  = CARTRIDGE ONLY
  0 = G 1/4" BSPP
  02BX = G 3/8" BSPP
  06BX = SAE – #6
  06TX = SAE – #8
  08TX "A" = ALUM. HOUSING
  "S" = STEEL HOUSING
- ADJUSTMENT OPTIONS
  0 = NONE
  M = MANUAL OVERRIDE
- VOLTAGE AMPS
  12D = 12 VDC 3.00
  24D = 24 VDC 1.50
- TERMINALS
  L =18GA. 24" LEADS
  T =SPADE TERM.
  B =BOLT TERM.
  G =DIN43650
  W =WEATHER–PACK
  D =DEUTSCH–DT04–2P
  M =METRI–PACK CONN.



BUCHER hydraulics

# PROPORTIONAL, PRESSURE COMPENSATED, FLOW CONTROL VALVE.

## DESCRIPTION

This valve is a cartridge style, electro–hydraulic, proportional, in–line (RESTRICTIVE) type, pressure compensated, hydraulic flow control. Regulated flow 8.0 GPM [30,2 L/M] max. is proportional to the current input regardless of load or system pressure.

## OPERATIONS

This unit is a direct acting (NO PILOT FLOW), electro hydraulic, proportional, pressure compensated flow control valve. When the coil is energized the armature moves the metering orifice open against a precision bias spring varying the flow. A pressure compensatory spool (HYDROSTAT) modulates the flow at 100 PSI/6,9 Bar delta "P" providing the valve with a constant regulated flow regardless of load or system pressure. For the normally closed product when the current is increased to the coil the flow will increase. For the normally open product as the current is increased to the coil the flow will decrease. IN THE EVENT OF POWER FAILURE THE NORMALLY CLOSED VALVE WILL CLOSE AND THE NORMALLY OPEN VALVE WILL OPEN.

## FEATURES AND BENEFITS

Continuous–duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & termination 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.

BUCHER hydraulics

# PROPORTIONAL, PRESSURE COMPENSATED, FLOW CONTROL VALVE.

## SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
REGULATED FLOW: 8.0 GPM [30,2 l/m] Max. See performance chart.
INTERNAL LEAKAGE: 20/40 $in^3$/min [328/655 cc/m]@3/5K PSI [175/350 Bar]
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
5000 PSI [350 Bar] = Steel – Unplated.
OPERATING TEMPERATURE: –40° to +250° F. [–40° to +120° C.]
OPERATING MEDIA: All general purpose hydraulic fluids such as MIL–H–5606, SAE–#10, SAE–#20, etc.
RESPONSE: The most efficient method to control this valve is with current control and a 50 Hz dither.
POWER REQUIREMENTS: 12 VDC, Operating current 0.2 to 2.2 AMPS.
24 VDC, Operating current 0.1 to 1.1 AMPS.
SEAL KIT: SKN–1022 Buna "N"
SKV–1022 Viton
INSTALLATION: No restrictions.
WEIGHT: 1.9 lb [0,86 kg] cartridge with coil only.
VALVE CAVITY: #C1020, See Page 0–012.0.

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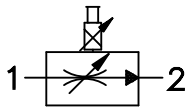
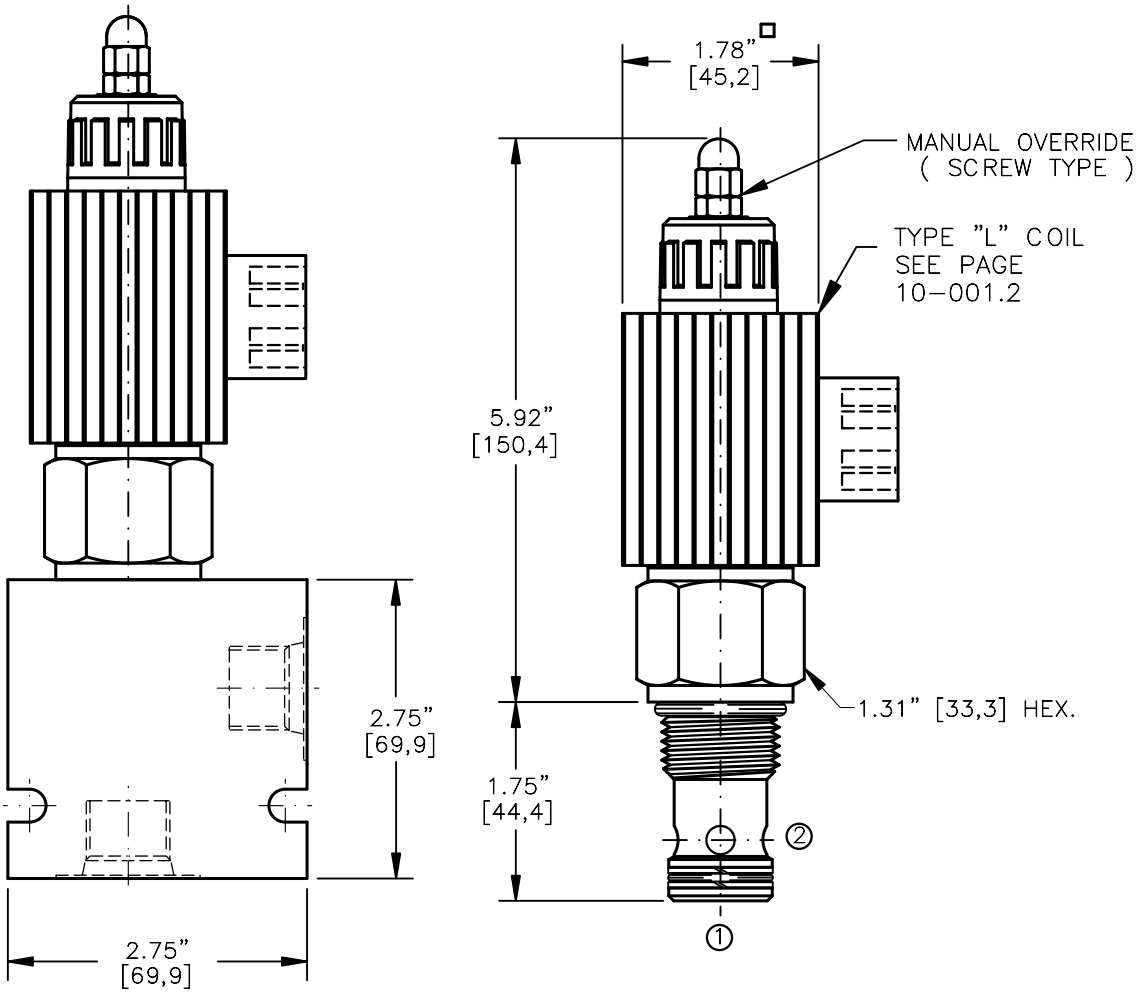
BUCHER hydraulics

# ELECTRO–HYDRAULIC, PROPORTIONAL, PRESSURE COMP, FLOW CONTROL VALVE.




NOTES:
SOLENOIDS AVAILABLE WITH DIODES – CONSULT FACTORY.

TORQUE
Steel = 75/80 Ft–Lb. [102/109 Nm]
Aluminum = 55/60 Ft–Lb. [74/81 Nm]

**EPFI–12–N–X–XX–X–X–XXX X**

BASIC

SIZE
12=1.062"–12UNF

SEALS
N = BUNA "N"
V = VITON

TYPE
C = NORMALLY CLOSED
O = NORMALLY OPEN

REGULATED FLOW
05 = 0 TO 5.0 GPM
10 = 0 TO 10.0 GPM
15 = 0 TO 15.0 GPM

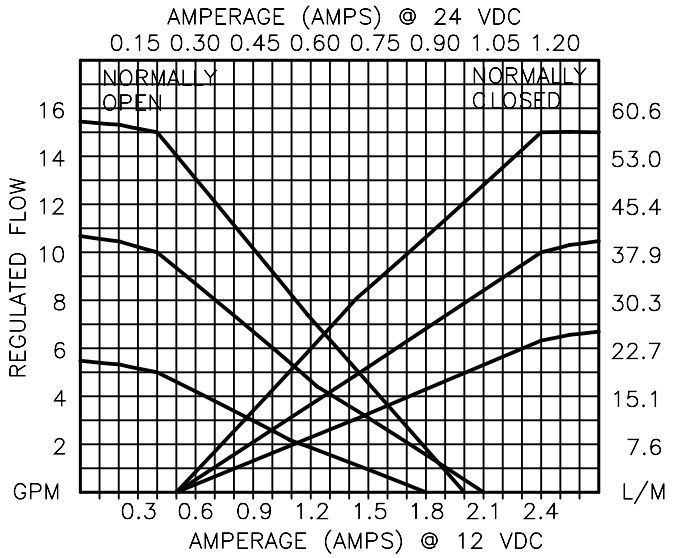
"A" – ALUM. HOUSING
"S" – STEEL HOUSING

PORTS
0 = CARTRIDGE
4BX = G 1/2" BSPP
6BX = G 3/4" BSPP
10TX = SAE – #10
12TX = SAE – #12

ADJUSTMENT OPTIONS
0 = NONE
M = MANUAL OVERRIDE

VOLTAGE AMPS
12D = 12 VDC 3.00
24D = 24 VDC 1.50

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



BUCHER hydraulics

# PROPORTIONAL, PRESSURE COMPENSATED, FLOW CONTROL VALVE.

## DESCRIPTION

This valve is a cartridge style, electro–hydraulic, proportional, in–line (RESTRICTIVE) type, pressure compensated, hydraulic flow control. Regulated flow 15.0 GPM [56,8 l/m] max. is proportional to the current input regardless of load or system pressure.

## OPERATIONS

This unit is a direct acting (NO PILOT FLOW), electro hydraulic, proportional, pressure compensated flow control valve. When the coil is energized, the armature moves the metering orifice open against a precision bias spring varying the flow. A pressure compensator spool (HYDROSTAT) modulates the flow at 100 PSI/6,9 Bar delta "P" providing the valve with a constant regulated flow regardless of load or system pressure. For the normally closed product when the current is increased to the coil, the flow will increase. For the normally open product as the current is increased to the coil the flow will decrease. IN THE EVENT OF POWER FAILURE, THE NORMALLY CLOSED VALVE WILL CLOSE AND THE NORMALLY OPEN VALVE WILL OPEN.

## FEATURES AND BENEFITS

Continuous–duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & termination 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.

BUCHER hydraulics

# PROPORTIONAL, PRESSURE COMPENSATED, FLOW CONTROL VALVE.

## SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
REGULATED FLOW: 15.0 GPM [56,8 l/m] Max. See performance chart.
INTERNAL LEAKAGE: 20/40 $in^3$/min [328/655 cc/m] @ 3/5K PSI [175/350 Bar]
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
5000 PSI [350 Bar] = Steel – Unplated.
OPERATING TEMPERATURE: –40° to +250° F. [–40° to +120° C.]
OPERATING MEDIA: All general purpose hydraulic fluids such as MIL–H–5606, SAE–#10, SAE–#20, etc.
RESPONSE: The most efficient method to control this valve is with current control and a 50 Hz dither.
POWER REQUIREMENTS: 12 VDC, Operating current 0.2 to 2.2 AMPS.
24 VDC, Operating current 0.1 to 1.1 AMPS.
SEAL KIT: SKN–1222 Buna "N"
SKV–1222 Viton
INSTALLATION: No restrictions.
WEIGHT: 2.27 lb [1,03 kg] cartridge with coil only.
VALVE CAVITY: #C1220, See Page 0–013.0.

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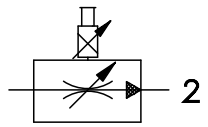
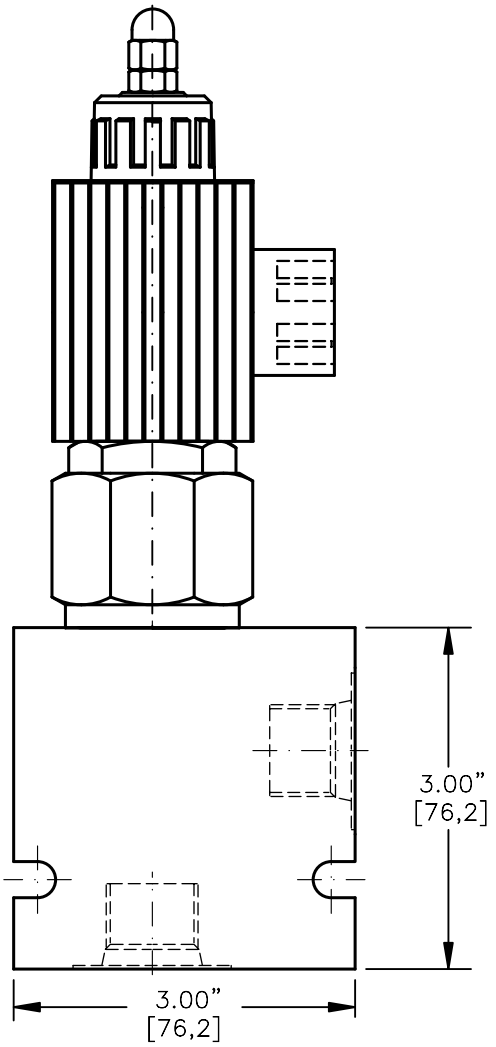
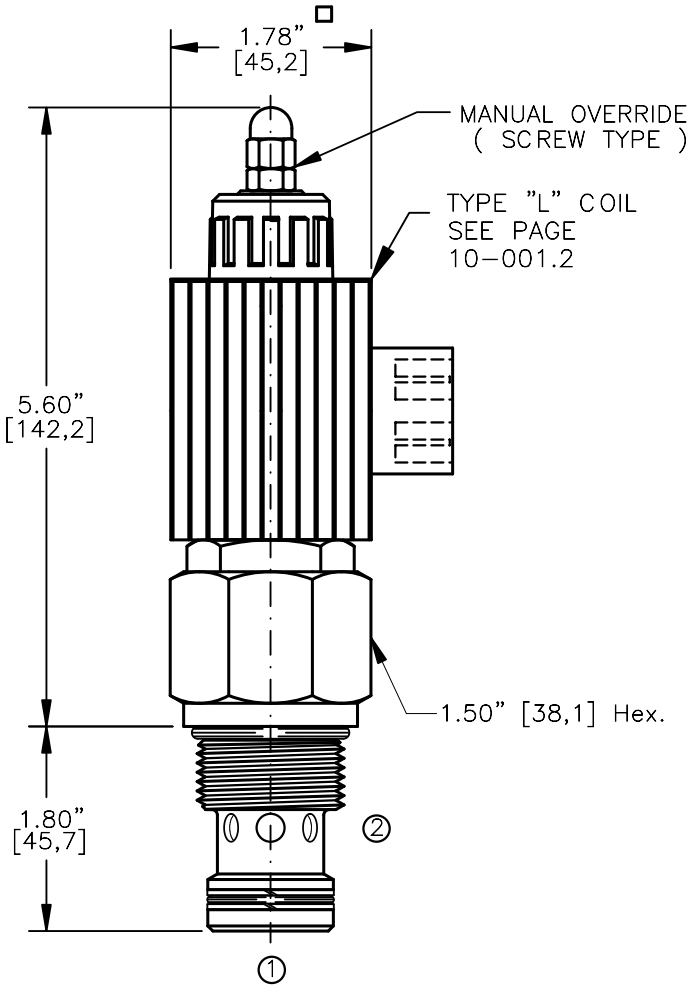
BUCHER hydraulics

# ELECTRO–HYDRAULIC, PROPORTIONAL, IN–LINE, PRESSURE COMP, FLOW CONTROL VALVE.



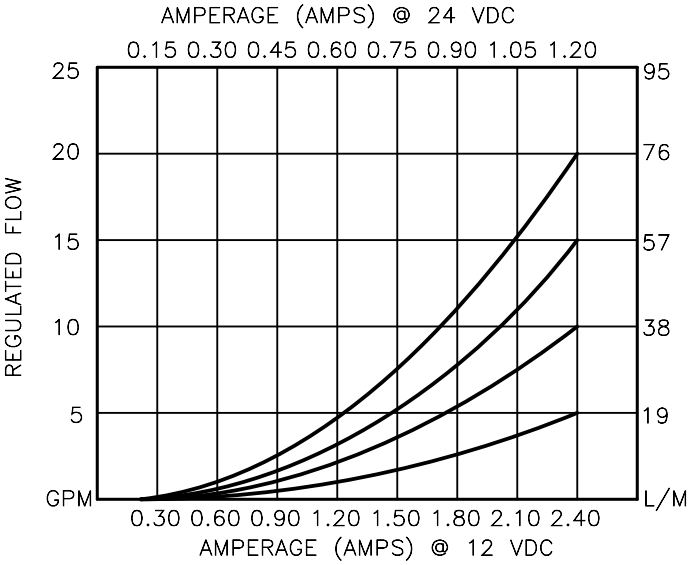




TORQUE:
Steel = 95/100 Ft–Lb. [129/136 Nm]
Aluminum = 70/75 Ft–Lb. [95/102 Nm]

## EPFC–16–X–XX–X–X–XXX X

- BASIC
- SIZE
  16 = 1.312"–12UNF
- SEALS
  N = BUNA "N"
  V = VITON
- REGULATED FLOW
  05 = 0 TO 5.0 GPM
  10 = 0 TO 10.0 GPM
  15 = 0 TO 15.0 GPM
  20 = 0 TO 20.0 GPM
- PORTS = CARTRIDGE ONLY
  0 = G 3/4" BSPP
  06BX = G 1" BSPP
  08BX = SAE – #12
  12TX = SAE – #16
  16TX "A" = ALUM. HOUSING
  "S" = STEEL HOUSING
- ADJUSTMENT OPTIONS
  M = MANUAL OVERRIDE
- VOLTAGE AMPS
  12D = 12 VDC 3.00
  24D = 24 VDC 1.50
- TERMINALS
  L =18GA. 24" LEADS
  T =SPADE TERM.
  B =BOLT TERM.
  G =DIN43650
  W =WEATHER–PACK
  D =DEUTSCH–DT04–2P
  M =METRI–PACK CONN.



BUCHER hydraulics

# PROPORTIONAL, IN–LINE TYPE, FLOW CONTROL VALVE.

## DESCRIPTION

This valve is a cartridge style, electro–hydraulic, proportional, in–line (RESTRICTIVE) type, pressure compensated, hydraulic flow control. Regulated flow 20.0 GPM [76,0 L/M] max. is proportional to the current input regardless of load or system pressure.

## OPERATIONS

This unit is a direct acting (NO PILOT FLOW), electro hydraulic, pro–portional, pressure compensated, flow control valve. When the coil is energized the armature moves the metering orifice open against a pre–cision bias spring varying the flow. A pressure compensator spool (HYDROSTAT) modulates the flow at 100 PSI/6,9 Bar delta "P" providing the valve with a constant regulated flow regardless of load or system pressure. When current is increased to the coil the flow will increase, as the current is decreased the flow will decrease proportionally.
IN THE EVENT OF POWER FAILURE THE VALVE WILL CLOSE.

## 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.

BUCHER hydraulics

# PROPORTIONAL, IN–LINE TYPE, FLOW CONTROL VALVE.

## SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
REGULATED FLOW: 20.0 GPM [76,0 l/m] Max. See performance chart.
INTERNAL LEAKAGE: 20 cu.in/min [330 cc/m] @ 5,000 PSI [350 Bar]
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
5000 PSI [350 Bar] = Steel – Unplated.
OPERATING TEMPERATURE: –40° to +250° F. [–40° to +120° C.]
OPERATING MEDIA: All general purpose hydraulic fluids such as MIL–H–5606, SAE–#10, SAE–#20, etc.
RESPONSE: The most efficient method to control this valve is with current control and a 50 Hz dither.
POWER REQUIREMENTS: 12 VDC, Operating current 0.2 to 2.2 AMPS.
24 VDC, Operating current 0.1 to 1.1 AMPS.
SEAL KIT: SKN–1622 Buna "N"
SKV–1622 Viton
INSTALLATION: No restrictions.
WEIGHT: 2.58 lb [1,17 kg] cartridge with coil only.
VALVE CAVITY: #C1620, See Page 0–014.0.

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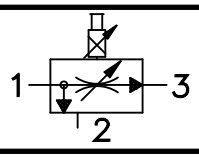
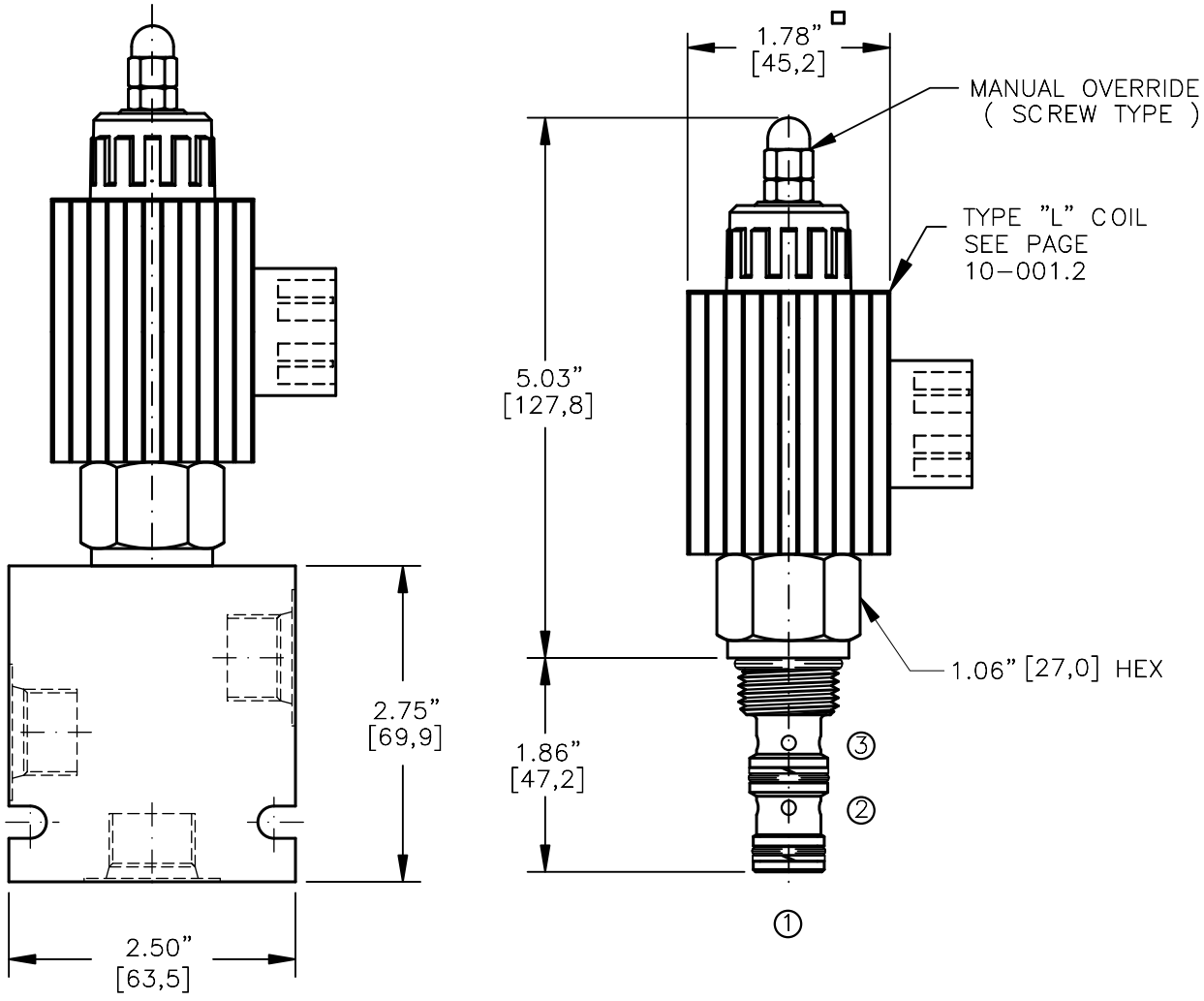
BUCHER hydraulics

# ELECTRO–HYDRAULIC, PROPORTIONAL, PRIORITY, PRESSURE COMP, FLOW CONTROL VALVE.



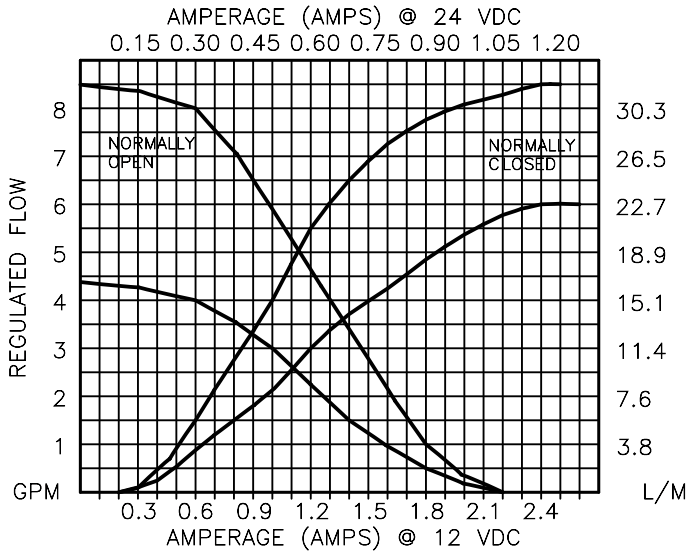




TORQUE:

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

**EPFB–10–X–X–XX–X–X–XXX X**

- BASIC
- SIZE
  10=0.875"–14UNF
- SEALS
  N = BUNA "N"
  V = VITON
- STYLE
  C = NORMALLY CLOSED
  O = NORMALLY OPEN
- REGULATED FLOW
  04 = 0 TO 4.0 GPM
  08 = 0 TO 8.0 GPM
- "A" – ALUM. HOUSING
  "S" – STEEL HOUSING
- PORTS
  0 = CARTRIDGE
  2BX = G 1/4" BSPP
  3BX = G 3/8" BSPP
  6TX = SAE – #6
  8TX = SAE – #8
- ADJUSTMENT OPTIONS
  0 = NONE
  M = MANUAL OVERRIDE
- VOLTAGE / AMPS
  12D = 12 VDC 3.00
  24D = 24 VDC 1.50
- TERMINALS
  L=18GA. 24" LEADS
  T=SPADE TERM.
  B=BOLT TERM.
  G=DIN43650
  W=WEATHER–PACK
  D=DEUTSCH–DT04–2P
  M=METRI–PACK CONN



BUCHER hydraulics

# PROPORTIONAL, PRIORITY TYPE, PRESSURE COMP, FLOW CONTROL VALVE.

## DESCRIPTION

This valve is a cartridge style, electro–hydraulic, proportional, priority (BY–PASS) type, pressure compensated, hydraulic flow control. Regulated flow 8.0 GPM [30,3 L/M] max. is proportional to the current input regardless of load or system pressure. After the priority flow is satisfied the excess flow is diverted to a secondary circuit or to tank. Maximum inlet flow is 10.0 GPM [37,9 L/M].

## OPERATIONS

This unit is a direct acting (NO PILOT FLOW), electro hydraulic, proportional, pressure compensated flow control valve. When the coil is energized, the armature moves the metering orifice open against a precision bias spring varying the flow. A pressure compensator spool (HYDROSTAT) modulates the flow at 100 PSI/6,9 Bar delta "P" providing the valve with a constant regulated flow regardless of load or system pressure. For the normally closed product when the current is increased to the coil, the flow will increase. For the normally open product as the current is increased to the coil the flow will decrease. IN THE EVENT OF POWER FAILURE, THE NORMALLY CLOSED VALVE WILL CLOSE AND THE NORMALLY OPEN VALVE WILL OPEN.

## FEATURES AND BENEFITS

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

BUCHER hydraulics

# PROPORTIONAL, PRIORITY TYPE, PRESSURE COMP, FLOW CONTROL VALVE.

## SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
REGULATED FLOW: 8.0 GPM [30,3 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.
OPERATING TEMPERATURE: –40° to +250° F. [–40° to +120° C.]
OPERATING MEDIA: All general purpose hydraulic fluids such as MIL–H–5606, SAE–#10, SAE–#20, etc.
RESPONSE: The most efficient method to control this valve is with current control and a 50 Hz dither.
POWER REQUIREMENTS: 12 VDC, Operating current 0.2 to 2.2 AMPS.
24 VDC, Operating current 0.1 to 1.1 AMPS.
SEAL KIT: SKN–1032 Buna "N"
SKV–1032 Viton
INSTALLATION: No restrictions.
WEIGHT: 1.93 lb [0,90 kg] cartridge with coil only.
VALVE CAVITY: #C1030, See Page 0–032.0.

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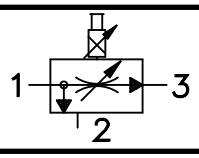
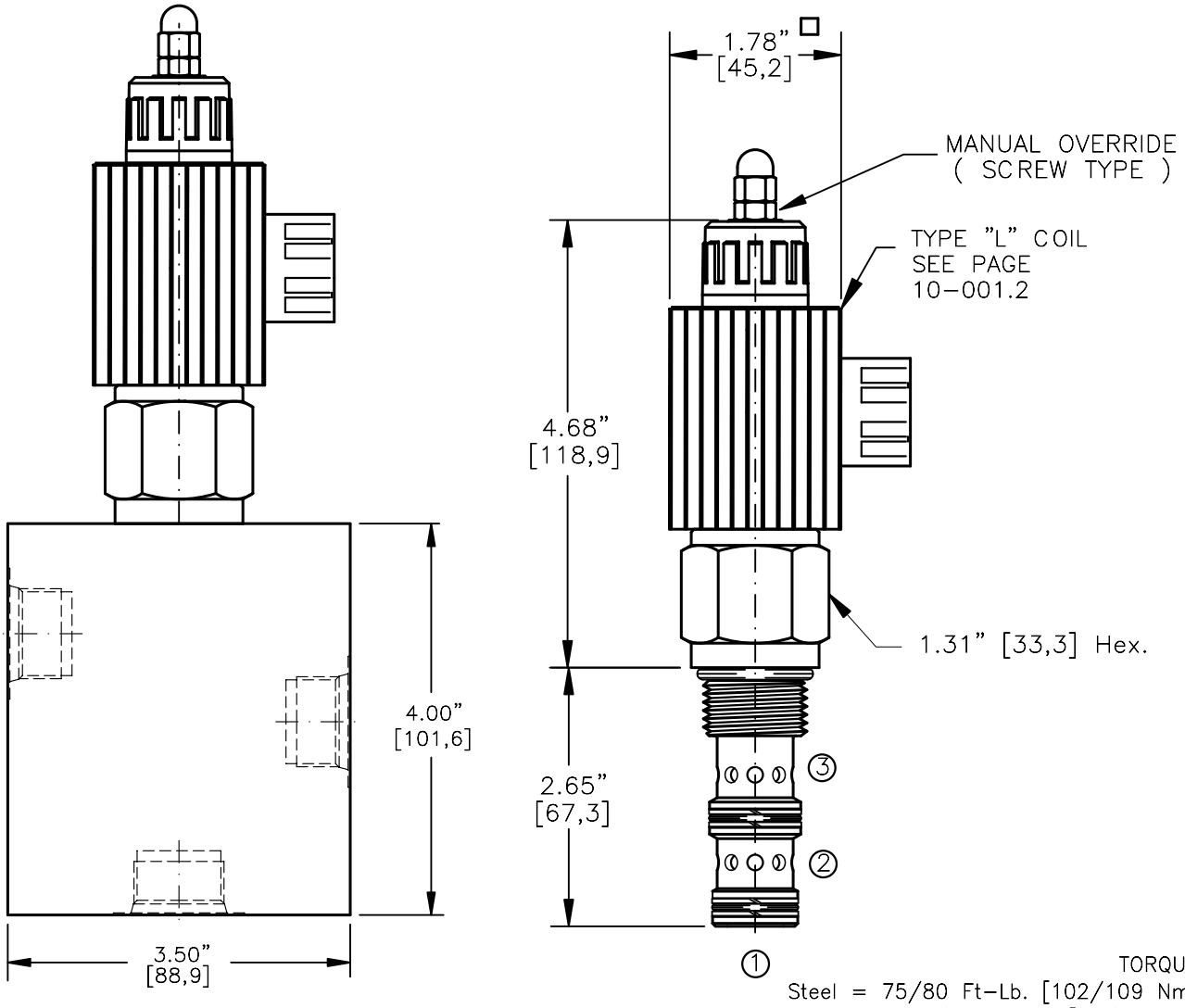
Reference: 520-P-111520-EN-00/09.2015

BUCHER hydraulics

# ELECTRO–HYDRAULIC, PROPORTIONAL, PRIORITY, PRESSURE COMP, FLOW CONTROL VALVE.




TORQUE
Steel = 75/80 Ft–Lb. [102/109 Nm]
Aluminum = 55/60 Ft–Lb. [74/81 Nm]

## EPFB–12–X–X–XX–X–X–XXX X

BASIC

SIZE
12 = 1.062"–12UNF

SEALS
N = BUNA "N"
V = VITON

STYLE
C = NORMALLY CLOSED
O = NORMALLY OPEN

REGULATED FLOW
05 = 0 TO 5.0 GPM
10 = 0 TO 10.0 GPM
15 = 0 TO 15.0 GPM

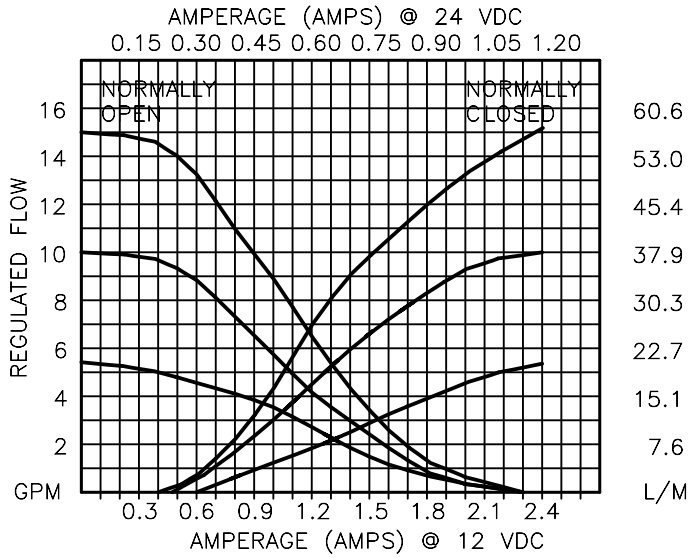
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

PORTS
0 = CARTRIDGE ONLY
04BX = G 1/2"–14 BSPP
06BX = G 3/4"–14 BSPP
10TX = SAE – #10
12TX = SAE – #12

ADJUSTMENT OPTIONS
0 = NONE
M = MANUAL OVERRIDE

VOLTAGE AMPS
12D = 12 VDC 3.00
24D = 24 VDC 1.50

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



BUCHER hydraulics

# PROPORTIONAL, PRIORITY TYPE, PRESSURE COMP, FLOW CONTROL VALVE.

## DESCRIPTION

This valve is a cartridge style, electro–hydraulic, proportional, priority (BY–PASS) type, pressure compensated, hydraulic flow control. Regulated flow 15.0 GPM [56,8 L/M] max. is proportional to the current input regardless of load or system pressure. After the priority flow is satisfied the excess flow is diverted to a secondary circuit or to tank. Maximum inlet flow is 26.0 GPM [98,4 L/M].

## OPERATIONS

This unit is a direct acting (NO PILOT FLOW), electro hydraulic, pro–portional, pressure compensated, flow control valve. When the coil is energized the armature moves the metering orifice open against a pre–cision bias spring varying the flow. A pressure compensator spool (HYDROSTAT) modulates the flow at 100 PSI/6,9 Bar delta "P" providing the valve with a constant regulated flow regardless of load or system pressure. When current is increased to the coil the flow will increase, as the current is decreased the flow will decrease proportionally.
IN THE EVENT OF POWER FAILURE THE VALVE WILL CLOSE.

## FEATURES AND BENEFITS

Continuous–duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & termination 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.

BUCHER hydraulics

# PROPORTIONAL, PRIORITY TYPE, PRESSURE COMP, FLOW CONTROL VALVE.

## SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
REGULATED FLOW: 15.0 GPM [56,7 l/m] Max. See performance chart.
INTERNAL LEAKAGE: 20 cu.in/min [330 cc/m] @ 5,000 PSI [350 Bar]
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
5000 PSI [350 Bar] = Steel – Unplated.
OPERATING TEMPERATURE: –40° to +250° F. [–40° to +120° C.]
OPERATING MEDIA: All general purpose hydraulic fluids such as MIL–H–5606, SAE–#10, SAE–#20, etc.
RESPONSE: The most efficient method to control this valve is with current control and a 50 Hz dither.
POWER REQUIREMENTS: 12 VDC, Operating current 0.2 to 2.2 AMPS.
24 VDC, Operating current 0.1 to 1.1 AMPS.
SEAL KIT: SKN–1232 Buna "N"
SKV–1232 Viton
INSTALLATION: No restrictions.
WEIGHT: 2.66 lb [1,20 kg] cartridge with coil only.
VALVE CAVITY: #C1230, See Page 0–033.0.

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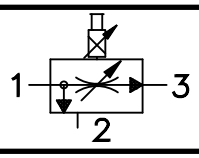
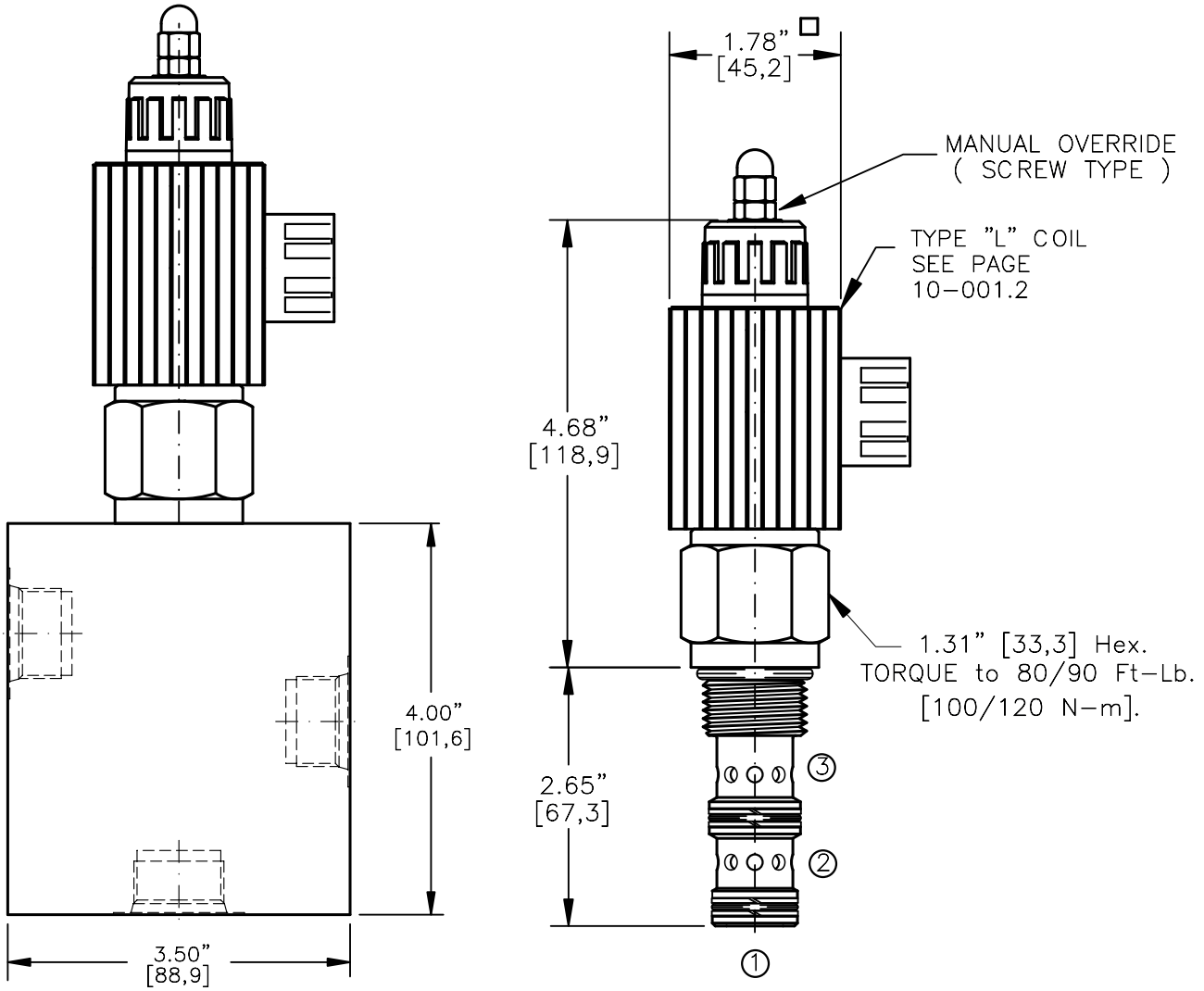
BUCHER hydraulics

# ELECTRO–HYDRAULIC, PROPORTIONAL, PRIORITY, PRESSURE COMP, FLOW CONTROL VALVE.

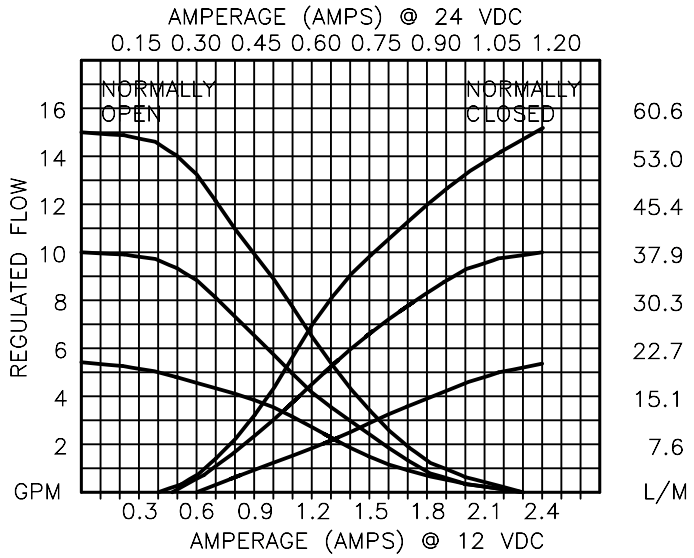



FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0–033.1

## EPFB–12–X–X–XX–X–X–XXX X

- BASIC
- SIZE
  - 12 = 1.062"–12UNF
- SEALS
  - N = BUNA "N"
  - V = VITON
- STYLE
  - C = NORMALLY CLOSED
  - O = NORMALLY OPEN
- REGULATED FLOW
  - 05 = 0 TO 5.0 GPM
  - 10 = 0 TO 10.0 GPM
  - 15 = 0 TO 15.0 GPM
- PORTS
  - 0 = CARTRIDGE ONLY
  - 04BX = G 1/2"–14 BSPP
  - 06BX = G 3/4"–14 BSPP
  - 10TX = SAE – #10
  - 12TX = SAE – #12
- "A" = ALUM. HOUSING
- "S" = STEEL HOUSING
- ADJUSTMENT OPTIONS
  - 0 = NONE
  - M = MANUAL OVERRIDE
- VOLTAGE AMPS
  - 12D = 12 VDC 3.00
  - 24D = 24 VDC 1.50
- TERMINALS
  - L = 18GA. 24" LEADS
  - T = SPADE TERM.
  - B = BOLT TERM.
  - G = DIN43650
  - W = WEATHER–PACK
  - D = DEUTSCH–DT04–2P
  - M = METRI–PACK CONN.



BUCHER hydraulics

# PROPORTIONAL, PRIORITY TYPE, PRESSURE COMP, FLOW CONTROL VALVE.

## DESCRIPTION

This valve is a cartridge style, electro–hydraulic, proportional, priority (BY–PASS) type, pressure compensated, hydraulic flow control. Regulated flow 15.0 GPM [56,8 L/M] max. is proportional to the current input regardless of load or system pressure. After the priority flow is satisfied the excess flow is diverted to a secondary circuit or to tank. Maximum inlet flow is 26.0 GPM [98,4 L/M].

## OPERATIONS

This unit is a direct acting (NO PILOT FLOW), electro hydraulic, pro–portional, pressure compensated, flow control valve. When the coil is energized the armature moves the metering orifice open against a pre–cision bias spring varying the flow. A pressure compensator spool (HYDROSTAT) modulates the flow at 100 PSI/6,9 Bar delta "P" providing the valve with a constant regulated flow regardless of load or system pressure. When current is increased to the coil the flow will increase, as the current is decreased the flow will decrease proportionally.
IN THE EVENT OF POWER FAILURE THE VALVE WILL CLOSE.

## FEATURES AND BENEFITS

Continuous–duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & termination 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.

BUCHER hydraulics

# PROPORTIONAL, PRIORITY TYPE, PRESSURE COMP, FLOW CONTROL VALVE.

## SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
REGULATED FLOW: 15.0 GPM [56,7 l/m] Max. See performance chart.
INTERNAL LEAKAGE: 20 cu.in/min [330 cc/m] @ 5,000 PSI [350 Bar]
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
5000 PSI [350 Bar] = Steel – Unplated.
OPERATING TEMPERATURE: –40° to +250° F. [–40° to +120° C.]
OPERATING MEDIA: All general purpose hydraulic fluids such as MIL–H–5606, SAE–#10, SAE–#20, etc.
RESPONSE: The most efficient method to control this valve is with current control and a 50 Hz dither.
POWER REQUIREMENTS: 12 VDC, Operating current 0.2 to 2.2 AMPS.
24 VDC, Operating current 0.1 to 1.1 AMPS.
SEAL KIT: SKN–1232 Buna "N"
SKV–1232 Viton
INSTALLATION: No restrictions.
WEIGHT: 2.66 lb [1,20 kg] cartridge with coil only.
VALVE CAVITY: #C1230, See Page 0–033.0.

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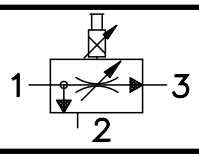
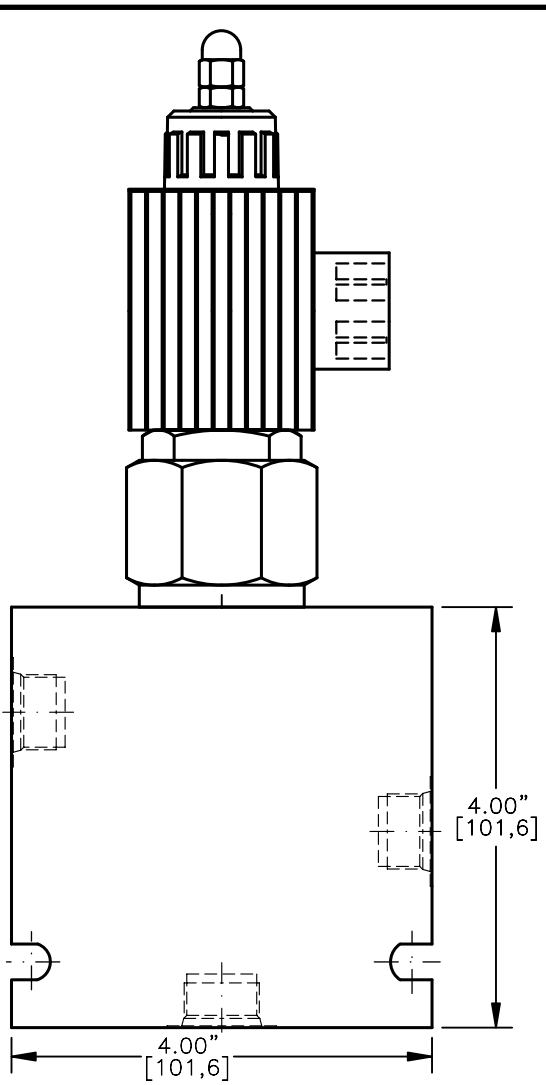
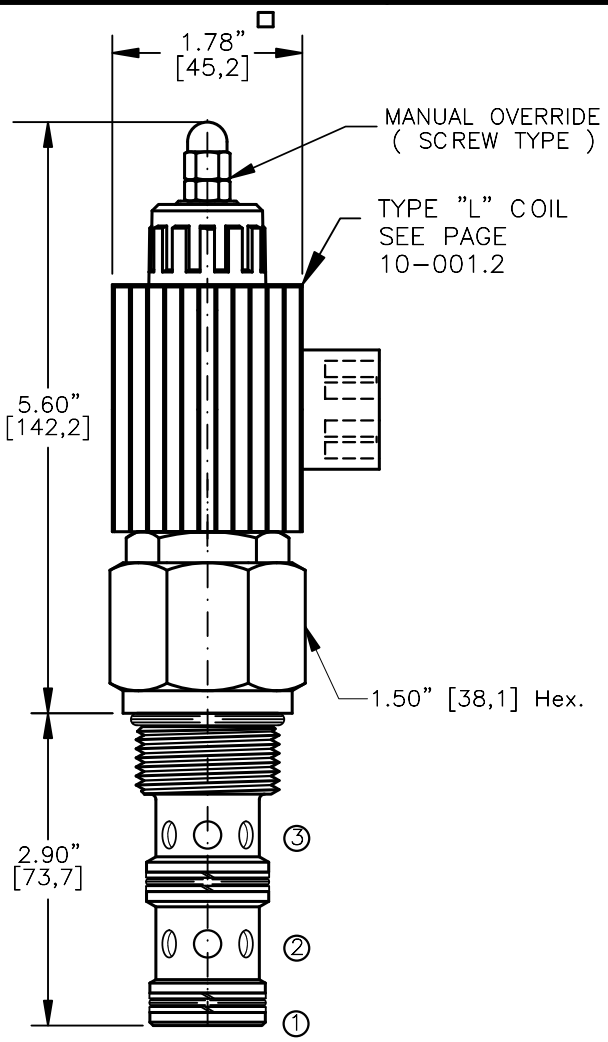
BUCHER hydraulics

# ELECTRO–HYDRAULIC, PROPORTIONAL, PRIORITY, PRESSURE COMP, FLOW CONTROL VALVE.




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

## EPFD–16–X–XX–X–X–XXX X

BASIC

SIZE
16 = 1.312"–12UNF

SEALS
N = BUNA "N"
V = VITON

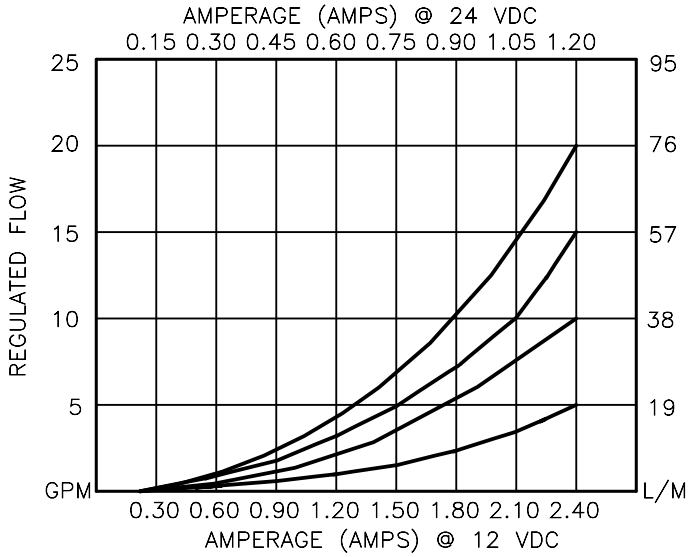
REGULATED FLOW
05 = 0 TO 5.0 GPM
10 = 0 TO 10.0 GPM
15 = 0 TO 15.0 GPM
20 = 0 TO 20.0 GPM

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

ADJUSTMENT OPTIONS
M = MANUAL OVERRIDE

VOLTAGE AMPS
12D = 12 VDC 3.00
24D = 24 VDC 1.50

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



BUCHER hydraulics

# PROPORTIONAL, PRIORITY TYPE, PRESSURE COMP, FLOW CONTROL VALVE.

## DESCRIPTION

This valve is a cartridge style, electro–hydraulic, proportional, priority (BY–PASS) type, pressure compensated, hydraulic flow control. Regulated flow 20.0 GPM [76,0 L/M] max. is proportional to the current input regardless of load or system pressure. After the priority flow is satisfied the excess flow is diverted to a secondary circuit or to tank. Maximum inlet flow is 35.0 GPM [130,0 L/M].

## OPERATIONS

This unit is a direct acting (NO PILOT FLOW), electro hydraulic, pro–portional, pressure compensated, flow control valve. When the coil is energized the armature moves the metering orifice open against a pre–cision bias spring varying the flow. A pressure compensator spool (HYDROSTAT) modulates the flow at 100 PSI/6,9 Bar delta "P" providing the valve with a constant regulated flow regardless of load or system pressure. When current is increased to the coil the flow will increase, as the current is decreased the flow will decrease proportionally.
IN THE EVENT OF POWER FAILURE THE VALVE WILL CLOSE.

## 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.

BUCHER hydraulics

# PROPORTIONAL, PRIORITY TYPE, PRESSURE COMP, FLOW CONTROL VALVE.

## SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
REGULATED FLOW: 20.0 GPM [76,0 l/m] Max. See performance chart.
INTERNAL LEAKAGE: 20 cu.in/min [330 cc/m] @ 5,000 PSI [350 Bar]
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
5000 PSI [350 Bar] = Steel – Unplated.
OPERATING TEMPERATURE: –40° to +250° F. [–40° to +120° C.]
OPERATING MEDIA: All general purpose hydraulic fluids such as MIL–H–5606, SAE–#10, SAE–#20, etc.
RESPONSE: The most efficient method to control this valve is with current control and a 50 Hz dither.
POWER REQUIREMENTS: 12 VDC, Operating current 0.2 to 2.2 AMPS.
24 VDC, Operating current 0.1 to 1.1 AMPS.
SEAL KIT: SKN–1632 Buna "N"
SKV–1632 Viton
INSTALLATION: No restrictions.
WEIGHT: 2.66 lb [1,20 kg] cartridge with coil only.
VALVE CAVITY: #C1630, See Page 0–034.0.

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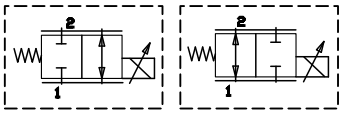
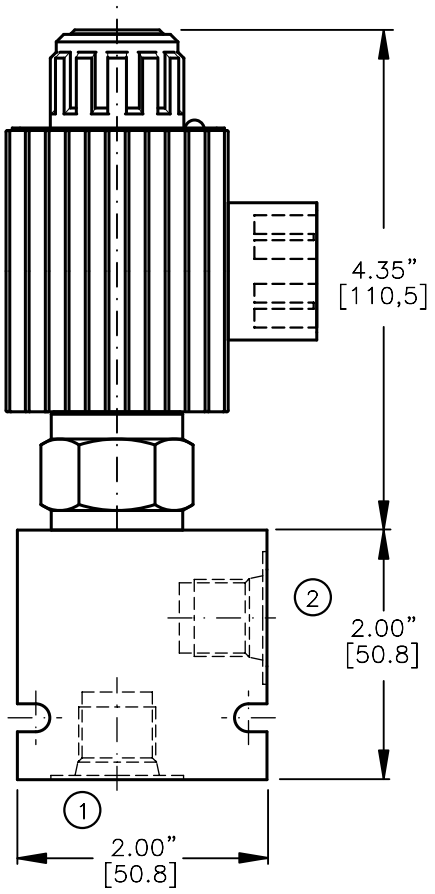
BUCHER hydraulics

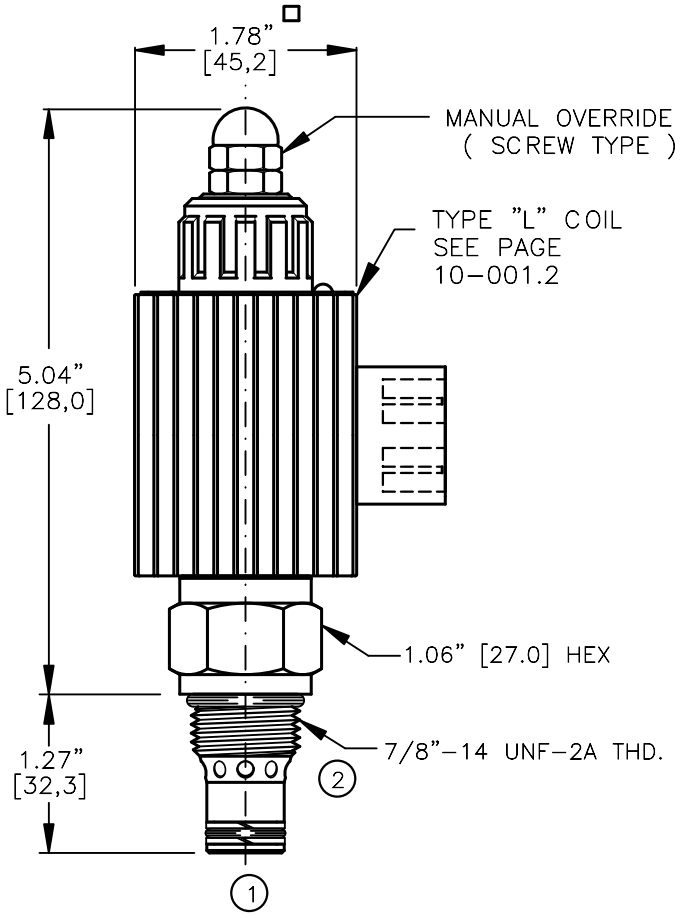
# PROPORTIONAL, NORMALLY CLOSED OR NORMALLY OPEN, IN-LINE, NON-COMPENSATED FLOW CONTROL VALVE.



UL approved coil, IP68 and IP69K rated when used with waterproof connector.

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.

## PFCV-10-X-X-XX-X-X-XXX X

BASIC

SIZE
10 = 7/8"-14UNF

SEALS
N = BUNA "N"
V = VITON

STYLE
C = NORMALLY CLOSED
O = NORMALLY OPEN

REGULATED FLOW
04 = 0 TO 4.0 GPM
08 = 0 TO 8.0 GPM
12 = 0 TO 12.0 GPM
16 = 0 TO 16.0 GPM

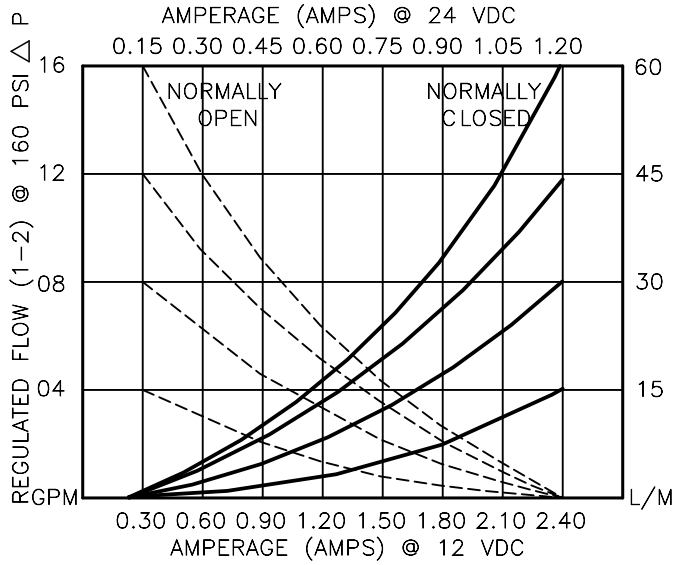
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

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

ADJUSTMENT OPTIONS
0 = NONE
M = MANUAL OVERRIDE

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 |



BUCHER hydraulics

# PROPORTIONAL, IN–LINE TYPE, FLOW CONTROL VALVE.

## DESCRIPTION

This valve is a cartridge style, electro–hydraulic, proportional, in–line (RESTRICTIVE) type, hydraulic non–compensated flow control.
Regulated flow Normally Closed 0 to 16.0 GPM [0 to 61,0 L/m] max.
Normally Open 16.0 to 0 GPM [61,0 to 0 L/m] @ 160 PSI DELTA P.
Flow is proportional to the current input.

## OPERATIONS

This unit is a direct acting (NO PILOT FLOW), electro hydraulic, pro–portional, non–compensated, flow control valve. When the coil is energized the armature moves the metering orifice to open or to closed position against a precision bias spring varying the flow.
When current is increased or decreased to the coil, the flow will increase or decrease proportionally.
IN THE EVENT OF POWER FAILURE THE VALVE WILL CLOSE OR OPEN DEPENDING ON THE VALVE VERSION.

## FEATURES AND BENEFITS

Continuous–duty, very low heat rise & waterproof solenoid coil.
Interchangeable solenoid coils & termination 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.

BUCHER hydraulics

# PROPORTIONAL, IN–LINE TYPE, FLOW CONTROL VALVE.

## SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
REGULATED FLOW: 16.0 GPM [61,0 L/m] Max. See performance chart.
INTERNAL LEAKAGE: 20 cu.in/min [330 cc/m] @ 160 PSI DELTA P [11 Bar]
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
5000 PSI [350 Bar] = Steel – Unplated.
OPERATING TEMPERATURE: –40° to +250° F. [–40° to +120° C.]
OPERATING MEDIA: All general purpose hydraulic fluids such as MIL–H–5606, SAE–#10, SAE–#20, etc.
RESPONSE: The most efficient method to control this valve is with current control and a 50 Hz dither.
POWER REQUIREMENTS: 12 VDC, Operating current 0.4 to 2.4 AMPS.
24 VDC, Operating current 0.2 to 1.2 AMPS.
SEAL KIT: SKN–1022 Buna "N"
SKV–1022 Viton
INSTALLATION: Flow 1–2 preferred, Max Flow 2–1 lower than shown on graph. Use undercuts in cavity to obtain max rated flow when using a pressure compensator in series. Pressure drop across valve must not exceed 300 PSI [21] bar.

WEIGHT: 0.74 lbs [0,34 kg] cartridge only.
1.09 lbs [0,50 kg] coil & housing.
0.35 lbs [0,16 kg] aluminum body.
1.20 lbs [0,54 kg] steel body.
VALVE CAVITY: #C1020, See Page 0–012.0.

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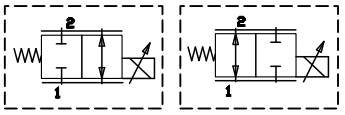
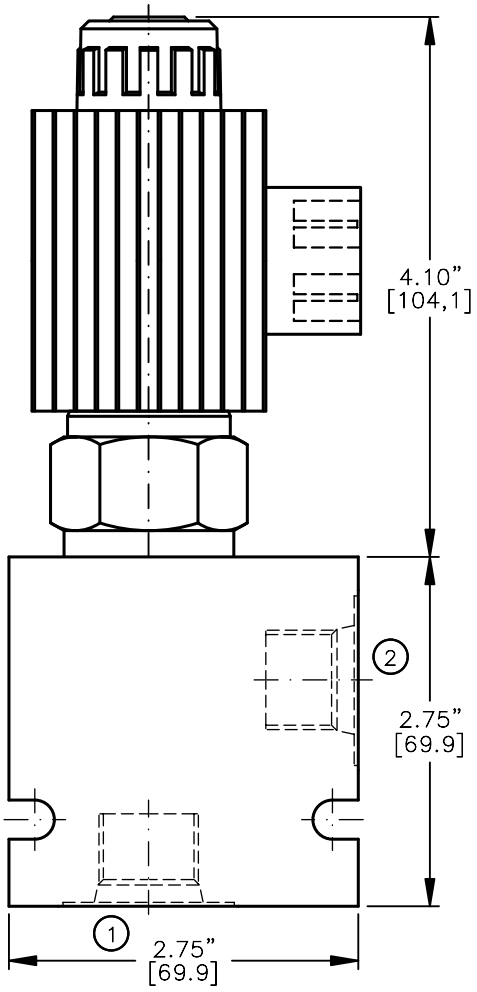
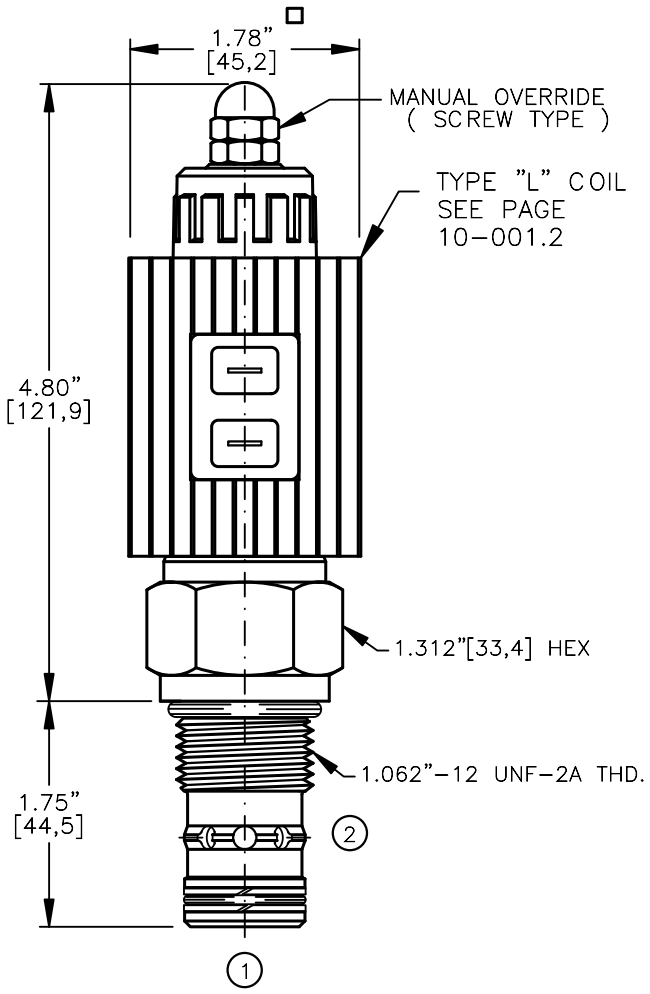
BUCHER hydraulics

# PROPORTIONAL, NORMALLY CLOSED OR NORMALLY OPEN, IN–LINE, NON–COMPENSATED FLOW CONTROL VALVE.



UL approved coil, IP68 and IP69K rated when used with waterproof connector.

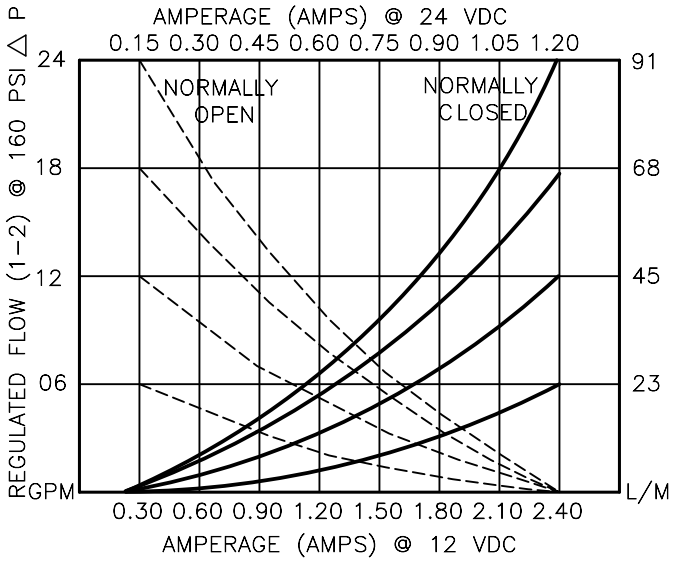



TORQUE:
Steel = 70/75 Ft–Lb. [95/102 Nm]
Aluminum = 55/60 Ft–Lb. [74/81 Nm]

## PFCV–12–X–X–XX–X–X–XXX X

- BASIC
- SIZE
  - 12 = 1.062"–12UNF
- SEALS
  - N = BUNA "N"
  - V = VITON
- STYLE
  - C = NORMALLY CLOSED
  - O = NORMALLY OPEN
- REGULATED FLOW
  - 06 = 0 TO 6.0 GPM
  - 12 = 0 TO 12.0 GPM
  - 18 = 0 TO 18.0 GPM
  - 24 = 0 TO 24.0 GPM
- "A" = ALUM. HOUSING
  "S" = STEEL HOUSING
- PORTS
  - 0 = CARTRIDGE ONLY
  - 04BX = G 1/2" BSPP
  - 06BX = G 3/4" BSPP
  - 10TX = SAE – #10
  - 12TX = SAE – #12
- ADJUSTMENT OPTIONS
  - 0 = NONE
  - M = MANUAL OVERRIDE
- VOLTAGE AMPS
  - 12D = 12 VDC 3.00
  - 24D = 24 VDC 1.50
- TERMINALS
  - L = 18GA. 24" LEADS
  - T = SPADE TERM.
  - B = BOLT TERM.
  - G = DIN43650
  - W = WEATHER–PACK
  - D = DEUTSCH–DT04–2P
  - M = METRI–PACK CONN.



BUCHER hydraulics

# PROPORTIONAL, IN–LINE TYPE, FLOW CONTROL VALVE.

## DESCRIPTION

This valve is a cartridge style, electro–hydraulic, proportional, in–line (RESTRICTIVE) type, hydraulic non–compensated flow control. Regulated flow Normally Closed 0 to 24.0 GPM [0 to 91,2 L/M] max. Normally Open 24.0 to 0 GPM [91,2 to 0 L/m] @ 160 PSI DELTA P. Flow is proportional to the current input.

## OPERATIONS

This unit is a direct acting (NO PILOT FLOW), electro–hydraulic, pro–portional, non–compensated, flow control valve. When the coil is energized the armature moves the metering orifice to open or to closed position against a precision bias spring varying the flow. When current is increased or decreased to the coil the flow will increase or decrease proportionally.
IN THE EVENT OF POWER FAILURE THE VALVE WILL CLOSE OR OPEN DEPENDING ON THE VALVE VERSION.

## 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.

BUCHER hydraulics

# PROPORTIONAL, IN–LINE TYPE, FLOW CONTROL VALVE.

## SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
REGULATED FLOW: 25.0 GPM [94,5 l/m] Max. See performance chart.
INTERNAL LEAKAGE: 30 cu.in/min [495 cc/m] @ 160 PSI DELTA P [11 Bar]
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
5000 PSI [350 Bar] = Steel – Unplated.
OPERATING TEMPERATURE: –40° to +250° F. [–40° to +120° C.]
OPERATING MEDIA: All general purpose hydraulic fluids such as MIL–H–5606, SAE–#10, SAE–#20, etc.
RESPONSE: The most efficient method to control this valve is with current control and a 50 Hz dither.
POWER REQUIREMENTS: 12 VDC, Operating current 0.4 to 2.4 AMPS.
24 VDC, Operating current 0.2 to 1.2 AMPS.
SEAL KIT: SKN–1222 Buna "N"
SKV–1222 Viton
INSTALLATION: Flow 1–2 preferred, Max Flow 2–1 lower than shown on graph. Use undercuts in cavity to obtain max rated flow when using a pressure compensator in series. Pressure drop across valve must not exceed 300 PSI [21] bar.

WEIGHT: 0.84 lbs [0,38 kg] cartridge only.
1.09 lbs [0,50 kg] coil & housing.
1.10 lbs [0,50 kg] aluminum body.
4.20 lbs [1,90 kg] steel body.
VALVE CAVITY: #C1220, See Page 0–013.0.

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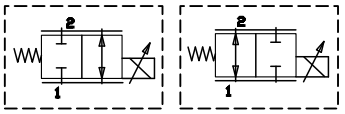
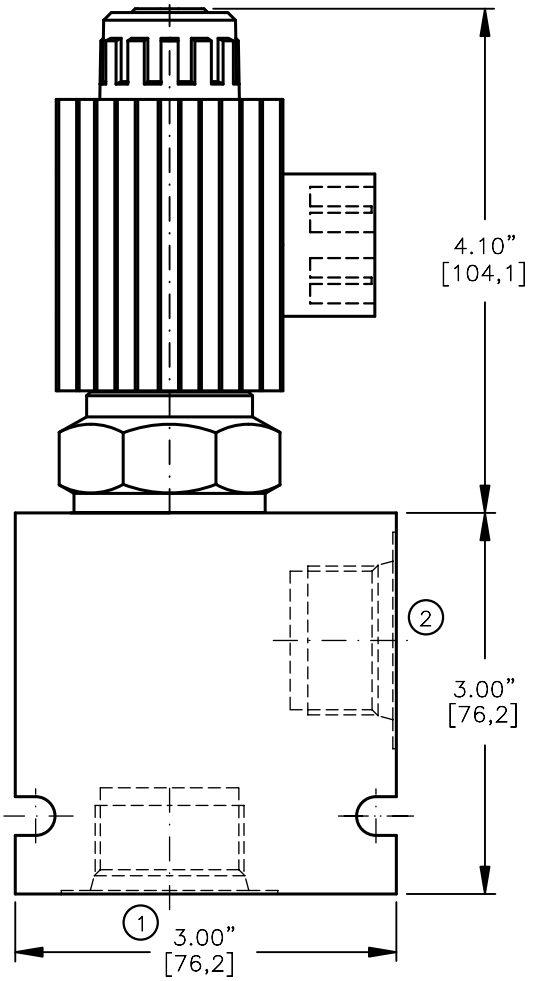
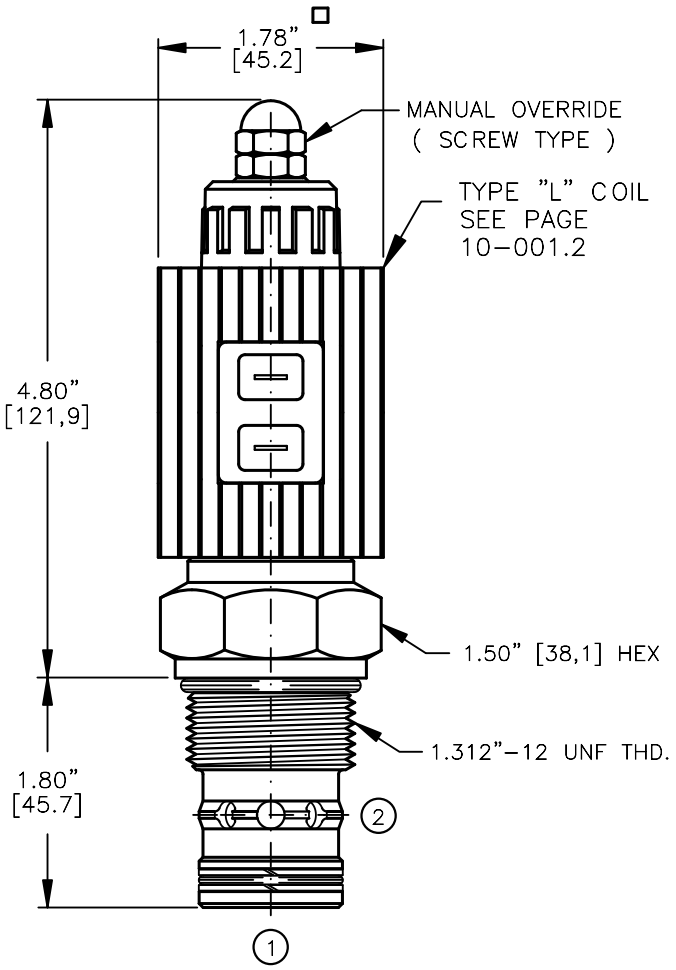
BUCHER hydraulics

# PROPORTIONAL, NORMALLY CLOSED OR NORMALLY OPEN, IN-LINE, NON-COMPENSATED FLOW CONTROL VALVE.



UL approved coil, IP68 and IP69K rated when used with waterproof connector.

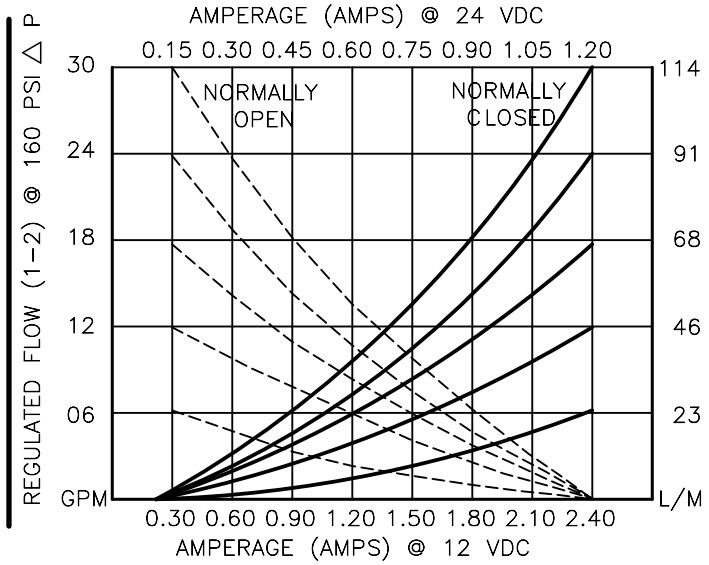



TORQUE:
Steel = 95/100 Ft-Lb. [129/136 Nm]
Aluminum = 70/75 Ft-Lb. [95/102 Nm]

## PFCV-16-X-X-XX-X-X-XXX X

- BASIC
- SIZE: 16 = 1.312"-12UNF
- SEALS: N = BUNA "N", V = VITON
- STYLE: C = NORMALLY CLOSED, O = NORMALLY OPEN
- REGULATED FLOW: 06 = 0 TO 6.0 GPM, 12 = 0 TO 12.0 GPM, 18 = 0 TO 18.0 GPM, 24 = 0 TO 24.0 GPM, 30 = 0 TO 30.0 GPM
- "A" = ALUM. HOUSING, "S" = STEEL HOUSING
- PORTS: 0 = CARTRIDGE ONLY, 06BX = G 3/4" BSPP, 08BX = G 1" BSPP, 12TX = SAE - #12, 16TX = SAE - #16
- ADJUSTMENT OPTIONS: O = NONE, M = MANUAL OVERRIDE
- VOLTAGE AMPS: 12D = 12 VDC 3.00, 24D = 24 VDC 1.50
- TERMINALS: L = 18GA. 24" LEADS, T = SPADE TERM., B = BOLT TERM., G = DIN43650, W = WEATHER-PACK, D = DEUTSCH-DT04-2P, M = METRI-PACK CONN.



BUCHER hydraulics

# PROPORTIONAL, IN–LINE TYPE, FLOW CONTROL VALVE.

## DESCRIPTION

This valve is a cartridge style, electro–hydraulic, proportional, in–line (RESTRICTIVE) type, hydraulic non–compensated flow control. Regulated flow Normally Closed 0 to 36.0 GPM [0 to 137,0 L/M] max. Normally Open 36.0 to 0 GPM [137,0 to 0 L/m] @ 160 PSI DELTA P. Flow is proportional to the current input.

## OPERATIONS

This unit is a direct acting (NO PILOT FLOW), electro–hydraulic, pro–portional, non–compensated, flow control valve. When the coil is energized the armature moves the metering orifice to open or to closed position against a precision bias spring varying the flow. When current is increased or decreased to the coil the flow will increase or decrease proportionally.

IN THE EVENT OF POWER FAILURE THE VALVE WILL CLOSE OR OPEN DEPENDING ON THE VALVE VERSION.

## 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.

BUCHER hydraulics

# PROPORTIONAL, IN–LINE TYPE, FLOW CONTROL VALVE.

## SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
REGULATED FLOW: 36.0 GPM [136,0 l/m] Max. See performance chart.
INTERNAL LEAKAGE: 40 cu.in/min [660 cc/m] @ 160 PSI DELTA P [11 Bar]
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
5000 PSI [350 Bar] = Steel – Unplated.
OPERATING TEMPERATURE: –40° to +250° F. [–40° to +120° C.]
OPERATING MEDIA: All general purpose hydraulic fluids such as MIL–H–5606, SAE–#10, SAE–#20, etc.
RESPONSE: The most efficient method to control this valve is with current control and a 50 Hz dither.
POWER REQUIREMENTS: 12 VDC, Operating current 0.4 to 2.4 AMPS.
24 VDC, Operating current 0.2 to 1.2 AMPS.
SEAL KIT: SKN–1622 Buna "N"
SKV–1622 Viton
INSTALLATION: Flow 1–2 preferred, Max Flow 2–1 lower than shown on graph. Use undercuts in cavity to obtain max rated flow when using a pressure compensator in series. Pressure drop across valve must not exceed 300 PSI [21] bar.
WEIGHT: 0.95 lbs [0,42 kg] cartridge only.
1.09 lbs [0,50 kg] coil & housing.
1.25 lbs [0,57 kg] aluminum body.
4.65 lbs [2,10 kg] steel body.
VALVE CAVITY: #C1620, See Page 0–014.0.

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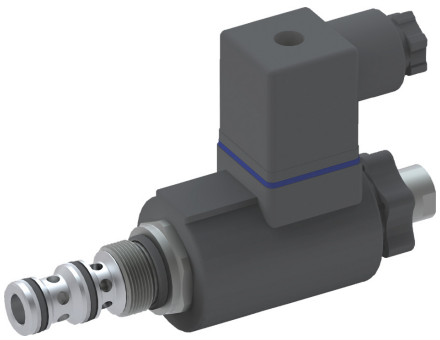
# Proportional 3/2 Throttle Cartridge, Size 5

$Q_{max}$ = 30 l/min, $p_{max}$ = 250 bar
Sliding-spool design, direct acting
Series MDR32GN…-5…

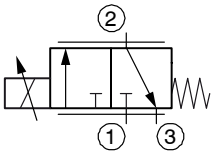


- De-energised closed 1 → 2
- Compact construction for cavity type AM – 3/4-16 UNF
- Very good reproducibility
- Reliable operation over the whole pressure and flow range (even with high pressure differentials)
- With optional manual flow setting
- All exposed parts with zinc-nickel plating
- High pressure 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

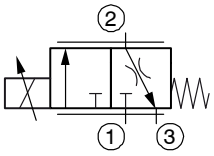
## 1 Description

Series MDR32GN… direct acting proportional 3/2 throttle valves are size 5, high performance 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. In the initial position (de-energised), port 1 is closed and ports 2 → 3 are connected with the full flow rating. In control mode, the flow through the connection 1 → 2 is varied in proportionally to the control current. Three types are available: **Type "A"** - standard model, for general use with or without compensator. **Type "Z"** - special model, only approved for use with compensator (max. Δp 15 bar). **Type "S600"** - special model with optimised characteristic - Q = f (I), also only suitable for use with compensator. With this model, the connection 2 → 3 is only used for unloading (see Performance Graphs). These cartridges are particularly suitable for precise and controlled lifting and lowering movements, but they can also be used for reliable operation in mobile and industrial applications featuring large pressure differences. 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




MDR32GNA5…
MDR32GNZ5…




MDR32GNA5…S600

## 3 Technical data

| General characteristics | Description, value, unit |
|---|---|
| Designation | proportional 3/2 throttle cartridge |
| Design | sliding-spool design, direct acting |
| Mounting method | screw-in cartridge 3/4-16 UNF |
| Tightening torque | 40 Nm ± 10 % |

BUCHER
hydraulics

| General characteristics | Description, value, unit |
|---|---|
| Size | nominal size 5, cavity type AM |
| Weight | 0.40 kg |
| Mounting attitude | unrestricted (preferably vertical, coil down) |
| Ambient temperature range | -25 °C … +50 °C |

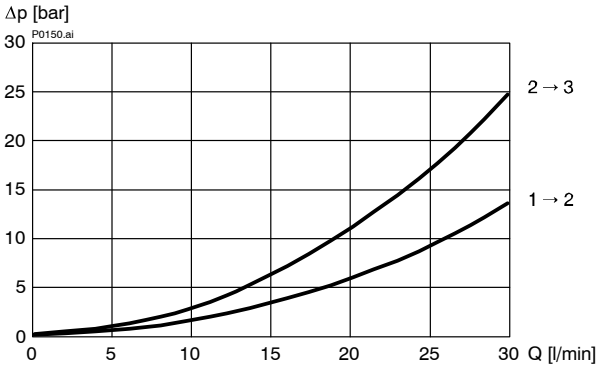
| Hydraulic characteristics | Description, value, unit |
|---|---|
| Maximum operating pressure | 250 bar |
| Maximum flow rate | 30 l/min |
| Nominal flow rate 1 →2 | 25 l/min at $\Delta p$ = 10 bar |
| Leakage flow rate | < 150 $cm^3$/min (with $p_N$ 250 bar)<br>with oil viscosity 33 $mm^2$/s (cSt) |
| Flow direction | see symbols |
| Hydraulic fluid | HL and HLP mineral oil to DIN 51 524;<br>for other fluids, please contact BUCHER |
| Hydraulic fluid temperature range | -25 °C … +70 °C |
| Viscosity range | 15…380 $mm^2$/s (cSt), recommended 20...130 $mm^2$/s (cSt) |
| Minimum fluid cleanliness<br>Cleanliness class to ISO 4406 : 1999 | class 18/16/13 |

| Electrical characteristics | | Description, value, unit |
|---|---|---|
| Supply voltage | | 12 V DC, 24 V DC |
| Control current | | 12 V = 0…1400 mA, 24 V = 0…760 mA |
| Power consumption at max. control current | | max. 19 W |
| Coil resistance R | - cold value at 20 °C<br>- max. warm value | 12 V = 5.8 Ω / 24 V = 21 Ω<br>12 V = 8.6 Ω / 24 V = 32 Ω |
| Recommended PWM frequency (dither) | | 200 Hz |
| Hysteresis with PWM | | 2…4 % $I_N$ |
| Reversal error with PWM | | 2…4 % $I_N$ |
| Sensitivity with PWM | | < 1 % $I_N$ |
| Reproducibility with PWM | | < 2 % $p_N$ |
| Relative duty cycle | | 100 % |
| Protection class to ISO 20 653 / EN 60 529 | | IP 65 / IP 67 / IP 69K, see “Ordering code”<br>(with appropriate mating connector and<br>proper fitting and sealing) |
| Electrical connection | | 3-pin square plug to ISO 4400 / DIN 43 650 (standard)<br>for other connectors, see “Ordering code” |

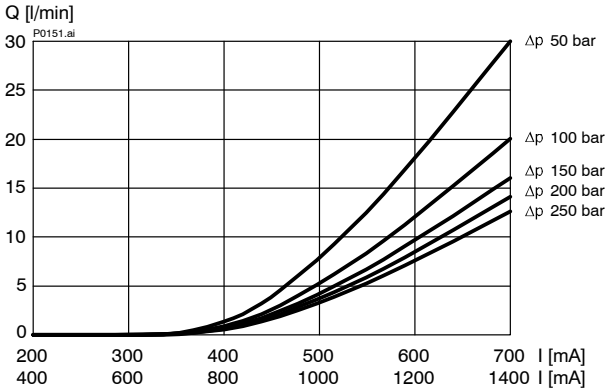
# 4 Performance graphs measured with oil viscosity 33 mm²/s (cSt)

## For general use with / without compensator – type “A”

Δp = f (Q) Pressure drop - Flow rate characteristic

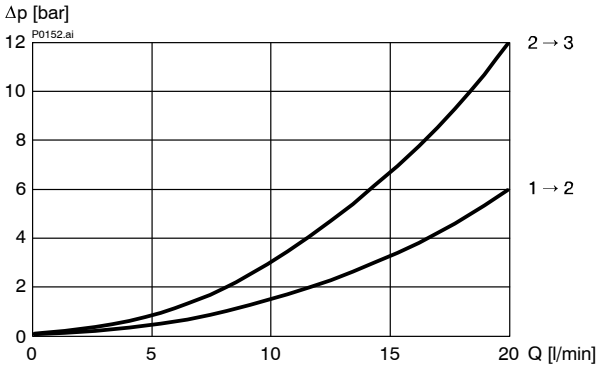



Q = f (I; Δp) Flow rate adjustment characteristic

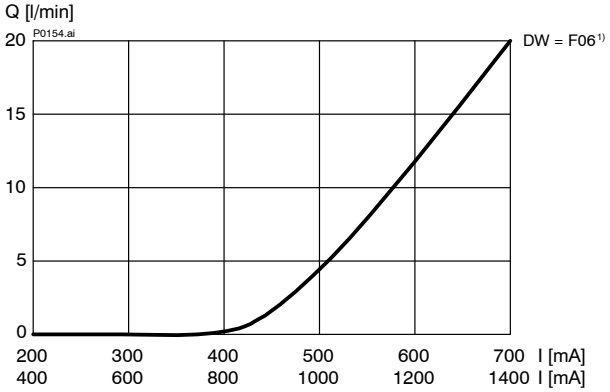



## For use with compensator (max. Δp = 15 bar) – type “Z”

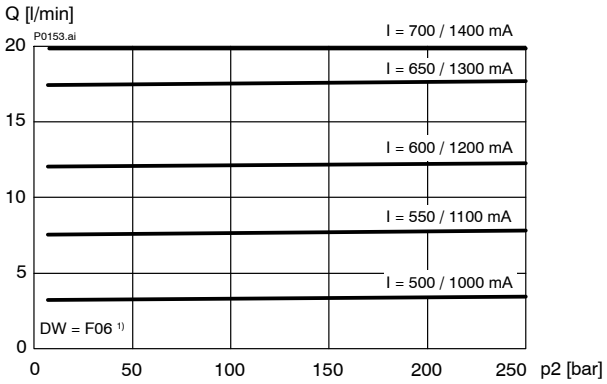
Δp = f (Q) Pressure drop - Flow rate characteristic




Q = f (I; Δp) Flow rate adjustment characteristic




Q = f (Δp; I) Flow rate adjustment characteristic

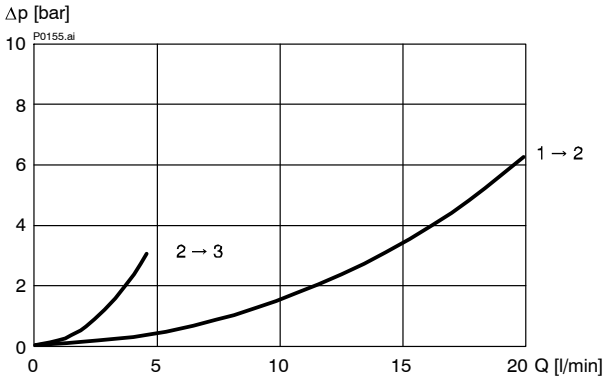



**IMPORTANT!**

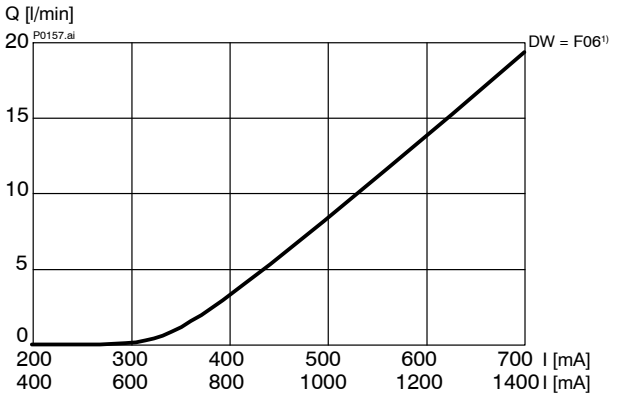
1) Performance graphs measured with compensator model DWDPA-5D-10-F06-2

## With optimised characteristic - Q = f (I), type “S600” – with compensator (max. Δp = 15 bar)

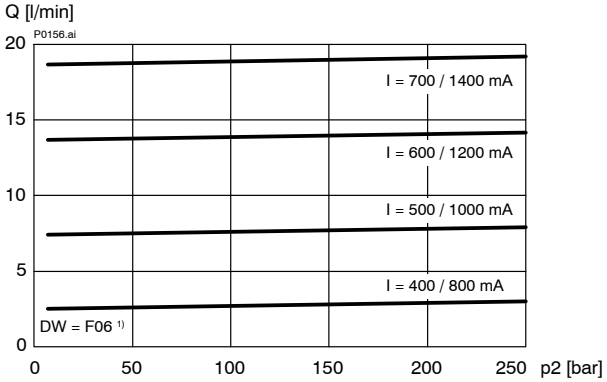
Δp = f (Q) Pressure drop - Flow rate characteristic




Q = f (I; Δp) Flow rate adjustment characteristic




Q = f (Δp; I) Flow rate adjustment characteristic




IMPORTANT!

1) Performance graphs measured with compensator model DWDPA-5D-10-F06-2

# 5 Installation information

IMPORTANT!

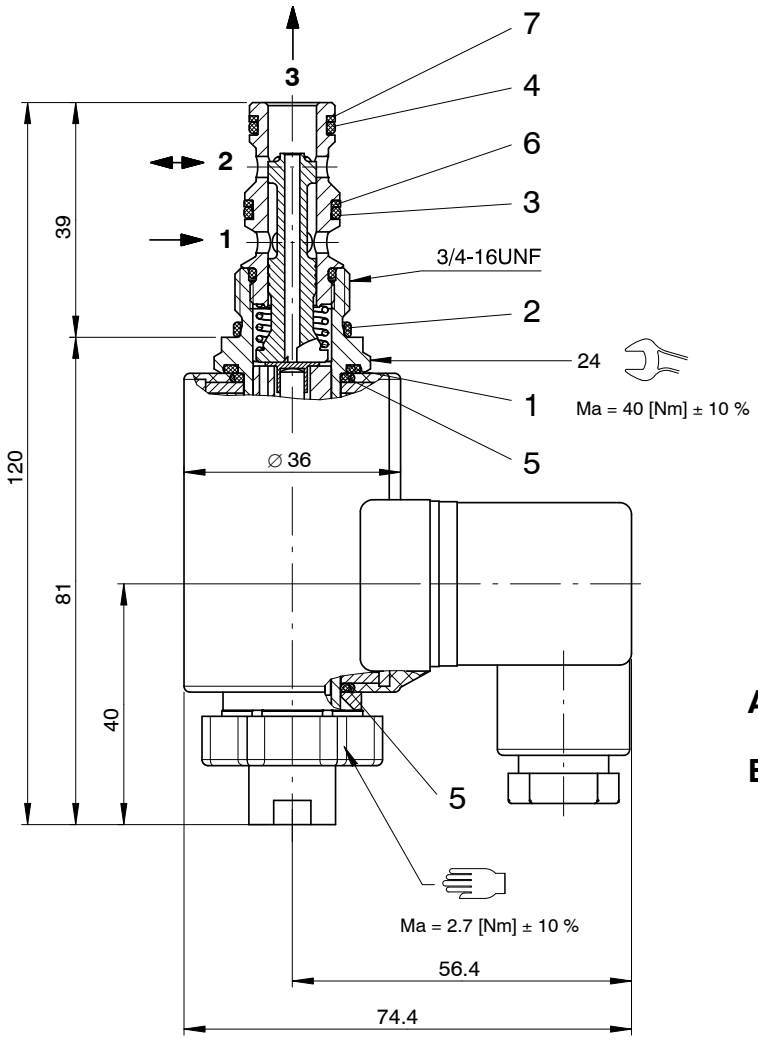
To achieve the proportional 3/2 throttle cartridge's maximum performance rating, fit the solenoid coil as shown (with the plug pins at the bottom). When fitting the cartridges, note the mounting attitude (preferably vertical, with coil down → automatic air bleed) and use the specified tightening torque. No adjustments are necessary, since the cartridges are set in the factory.

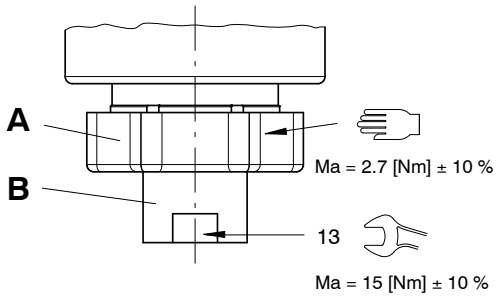
ATTENTION!

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.

# 6 Dimensions & sectional view

## Without manual flow setting – standard




Seal kit NBR no. DS-247-N [2)]

| Item | Qty. | Description |
|---|---|---|
| 1 | 1 | O-ring ⌀ 18,00 x 2,00 FKM |
| 2 | 1 | O-ring no. 017 ⌀ 17,17 x 1,78 N90 |
| 3 | 1 | O-ring no. 014 ⌀ 12,42 x 1,78 N90 |
| 4 | 1 | O-ring no. 013 ⌀ 10,82 x 1,78 N90 |
| 5 | 2 | O-ring ⌀ 16,00 x 2,00 FKM |
| 6 | 2 | Backup ring ⌀ 10.70 x 1.45 x 1.40 FI0751 |
| 7 | 2 | Backup ring ⌀ 09.40 x 1.45 x 1.00 FI0751 |

IMPORTANT!

2) Seal kit with FKM (Viton) seals no. DS-247-V

### Air-bleeding

If necessary, air can be purged from these proportional throttle cartridges by using the cap nut (Item B). The procedure is as follows:

A Knurled nut

B Cap nut

Steps:

1. Slacken and remove the knurled nut.
2. Slacken the cap nut approx. 1.5 turns.

   Caution:
   **Slackening the cap nut allows oil to spray out!**
3. Switch the proportional throttle cartridge ON/OFF several times until no more air bubbles escape.
4. Tighten the cap nut.
5. Refit the knurled nut and tighten it.

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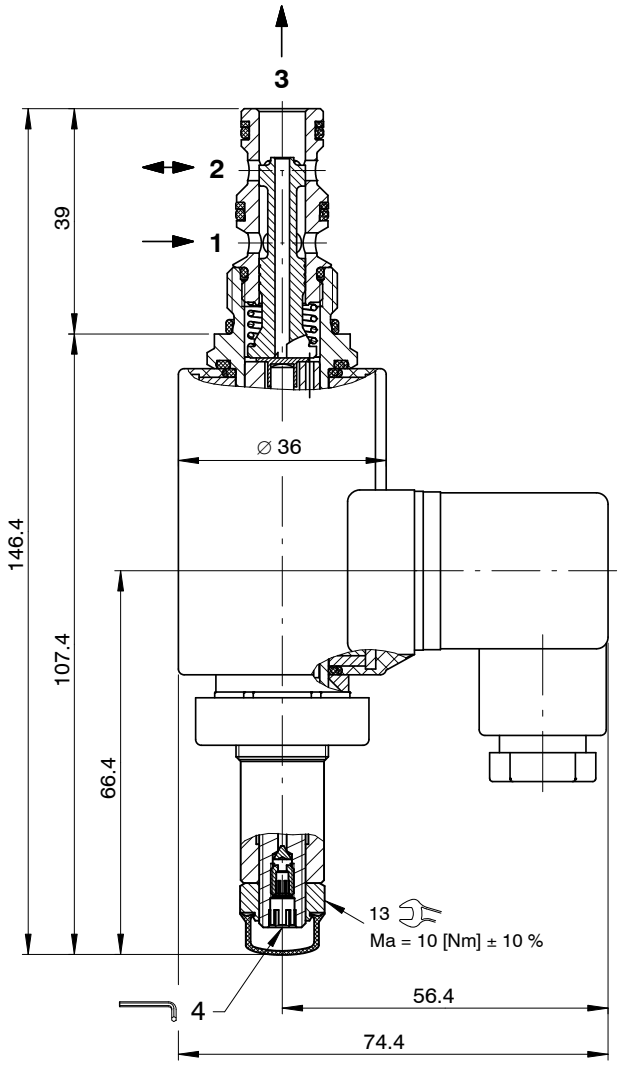
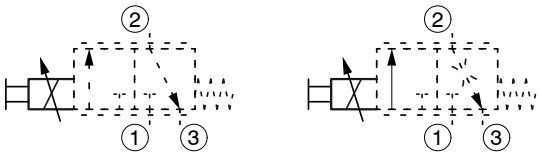
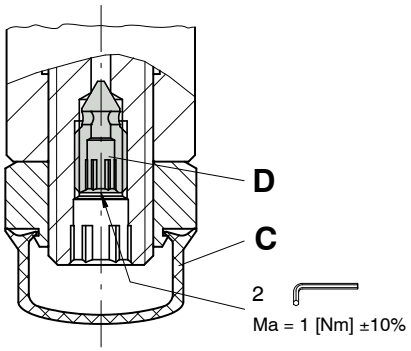
## With manual flow setting – Option “E”




### Integral air-bleeding

If necessary, air can be purged from these proportional throttle cartridges by using the integral air-bleed screw (Item D). The procedure is as follows:

C Protective cap

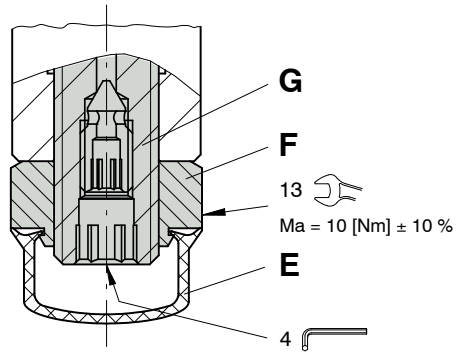
D Air-bleed screw

### Steps:

1. Remove the protective cap.
2. Slacken the air-bleed screw approx. 2 turns.
3. Switch the proportional throttle cartridge ON/OFF several times until no more air bubbles escape.
4. Tighten the air-bleed screw.
5. Fit the protective cap.

# 7 Manual flow setting

Optionally, the proportional throttle cartridges can be supplied with an integral manual flow setting. If a proportional solenoid is faulty, for example, this manual flow setting enables the required flow rate to be set mechanically. **This manual flow setting is not designed for adjusting the flow in a dynamic control mode.**




E Protective cap

F Lock nut (13 A/F)

G Adjusting spindle for volume setting

**Setting the flow rate manually**

Steps:

1. Remove the protective cap.
2. Slacken the lock nut (13 A/F).
3. Screw in (turn to right) the adjusting spindle (4 A/F) until the required flow rate is set.
4. Tighten the lock nut (13 A/F).
5. Fit the protective cap.

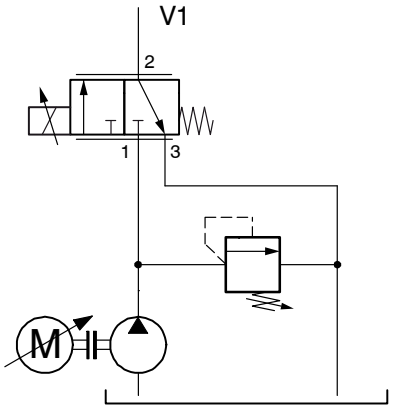
**Restoring the factory settings**

Steps:

1. Solenoid de-energised.
2. Remove the protective cap.
3. Slacken the lock nut (13 A/F).
4. Unscrew the adjusting spindle (4 A/F) to its end-stop, then screw it in 2 turns.
5. Tighten the lock nut (13 A/F).
6. Fit the protective cap.

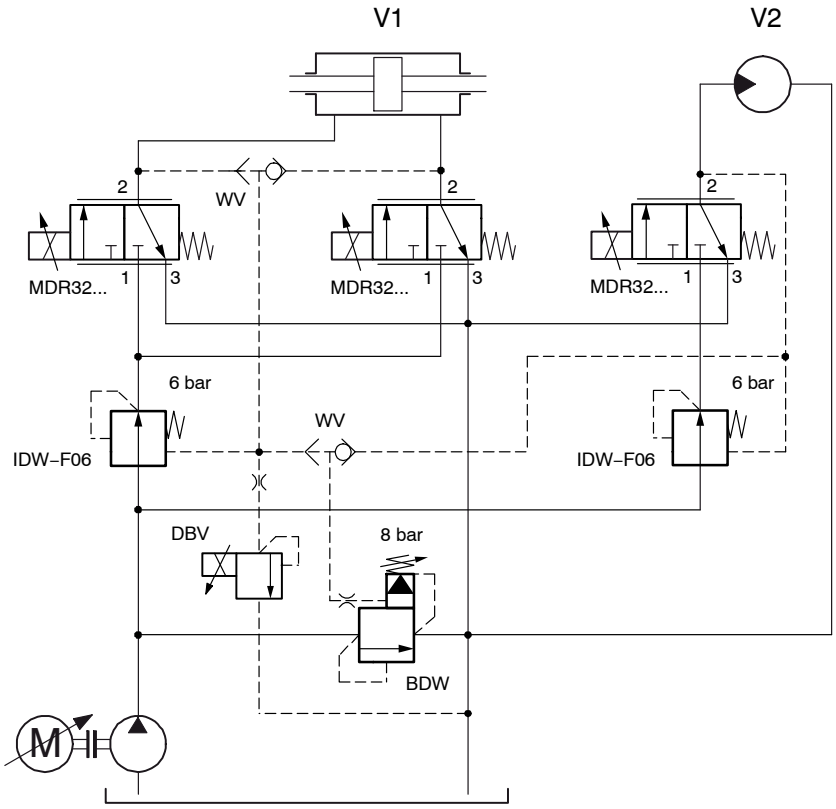
# 8 Application examples

## Standard type “A”



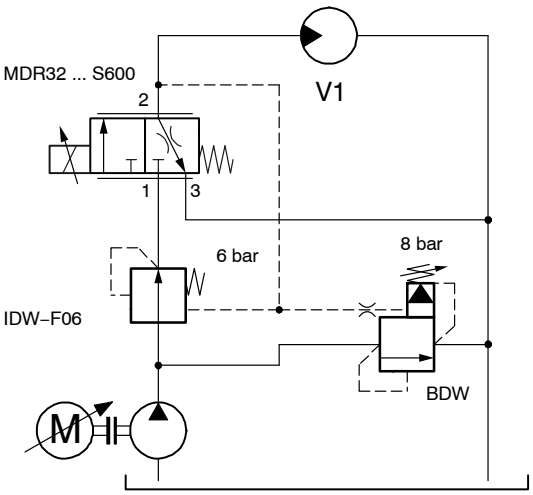

- Can be used **without compensator** (full Δp permissible)
- Full-flow connection 2 → 3
- Control is only available with connection 1 → 2

## Special type “Z” – only to be used with compensator



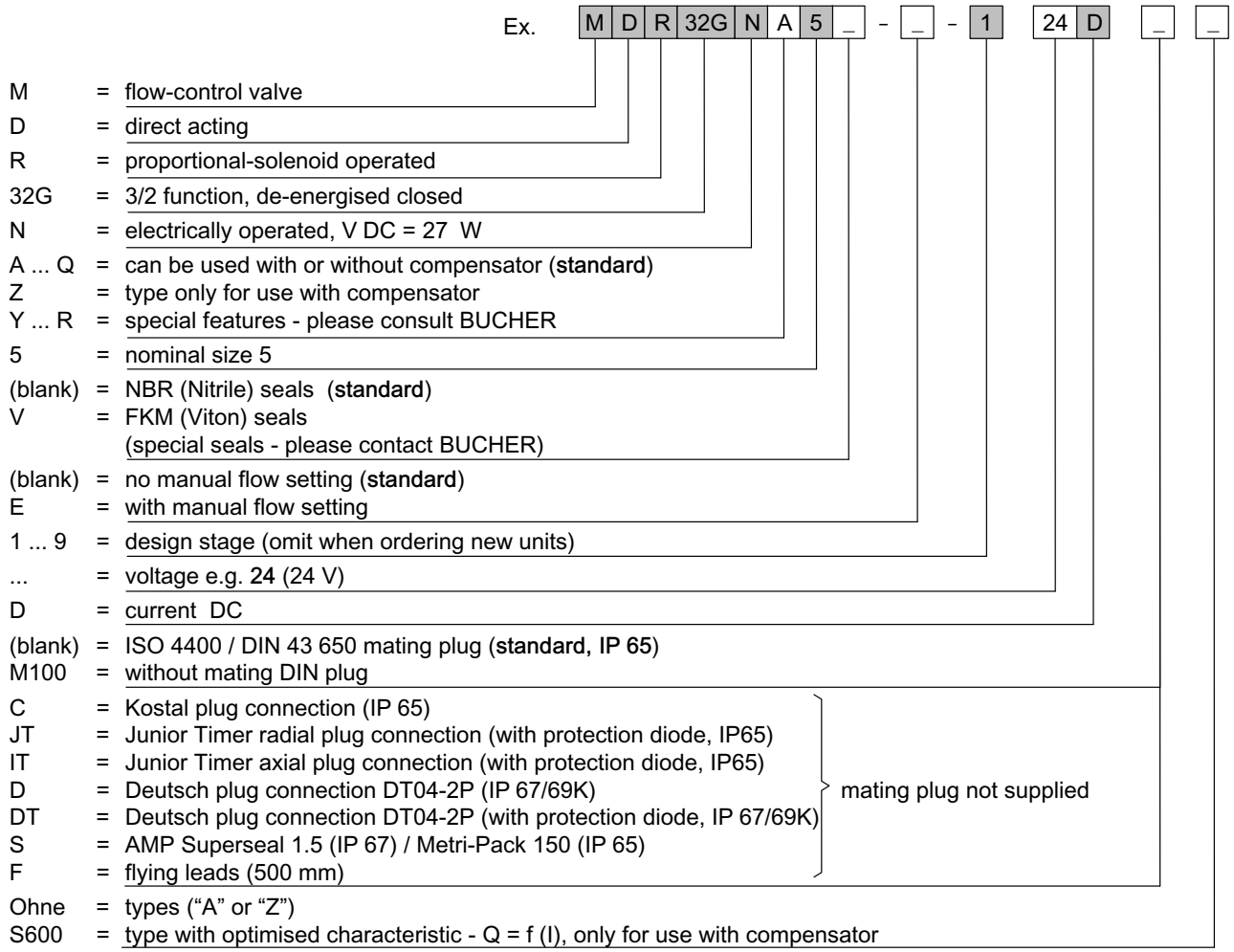

- Only for use **with compensator** (max. Δp = 15 bar)
- Full-flow connection 2 → 3
- Control is only available with connection 1 → 2

## Special type “S600” – only to be used with compensator




- Only for use **with compensator** (max. Δp = 15 bar)
- Connection 2 → 3 is not full flow (suitable for unloading)
- Control is only available with connection 1 → 2

# 9 Ordering code




# 10 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-120110 | (W-2.141) | Coils for screw-in cartridge valves |
| 400-P-510101 | | Amplifier unit for proportional valves (1-channel) PBS - 3A |
| 400-P-511101 | | Amplifier card for proportional valves (1-channel) SAN-535… |
| 400-P-720111 | (G-4.20) | Line-mounting body, type GAMA (G 3/8”) |

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Classification: 430.310.325.305.310.310

# Proportional 4/2 Throttle Cartridge, Size 5

$Q_{max}$ = 30 l/min, $p_{max}$ = 250 bar
Sliding-spool design, direct acting
Series MDR42…-5…

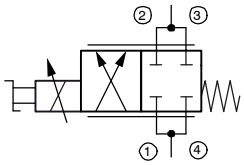
- Compact construction
  for cavity type AN – 3/4-16 UNF
- Dual flow paths for higher flow rate
- Low headloss
- For use with inline or bypass
  pressure-compensator cartridges
- Reliable operation over the whole pressure
  and flow range
- With optional manual flow setting
- All exposed parts with zinc-nickel 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

## 1 Description

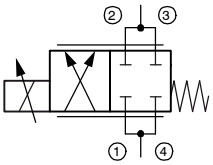
Series MDR42… direct acting proportional 4/2 throttle valves are size 5, high performance screw-in cartridges with a 3/4-16 UNF mounting thread. They are designed on the proven sliding-spool principle. The straightforward design delivers an outstanding price/performance ratio. "De-energised closed" and "de-energised open" functions are available. In control mode, the flow through the connections 1 → 3 und 4 → 2 is varied in proportion to the control current. Thanks to these dual flow paths, a higher flow rate is achieved with low headloss. It is essential that ports 1 + 4, and likewise 2 + 3, are joined together in the valve housing (manifold block). In combination with inline or bypass compensators, these 4/2 throttle cartridges are predominantly used in mobile and industrial applications to allow a flow in hydraulic installations to be controlled electro-proportionally. 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

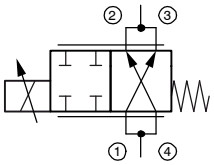
Dual flow paths



MDR42AD…-E



MDR42AD…



MDR42ANK…

IMPORTANT!
To enable the dual flow-path function, ports 1 + 4 and 2 + 3 must be connected within the valve housing (manifold block).

# 3 Technical data

| General characteristics | Description, value, unit |
|---|---|
| Designation | proportional 4/2 throttle cartridge |
| Design | sliding-spool design, direct acting |
| Mounting method | screw-in cartridge 3/4-16 UNF |
| Tightening torque | 40 Nm ± 10 % |
| Size | nominal size 5, cavity type AN |
| Weight | 0.40 kg |
| Mounting attitude | unrestricted (preferably vertical, coil down) |
| Ambient temperature range | -25 °C … +50 °C |

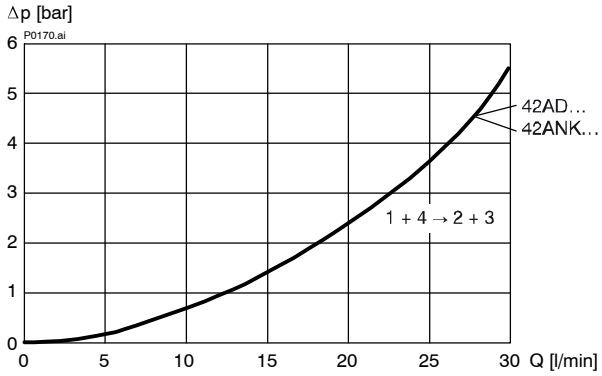
| Hydraulic characteristics | Description, value, unit |
|---|---|
| Maximum operating pressure | 250 bar |
| Maximum flow rate | 30 l/min |
| Nominal flow rate 1 + 4 → 2 + 3 | 25 l/min at $\Delta p$ = 4 bar |
| Leakage flow rate | < 150 $cm^3$/min (with $p_N$ 250 bar)<br>with oil viscosity 33 $mm^2$/s (cSt) |
| Flow direction | see symbols |
| Hydraulic fluid | HL and HLP mineral oil to DIN 51 524;<br>for other fluids, please contact BUCHER |
| Hydraulic fluid temperature range | -25 °C … +70 °C |
| Viscosity range | 15…380 $mm^2$/s (cSt), recommended 20...130 $mm^2$/s (cSt) |
| Minimum fluid cleanliness<br>Cleanliness class to ISO 4406 : 1999 | class 18/16/13 |

| Electrical characteristics | Description, value, unit |
|---|---|
| Supply voltage | 12 V DC, 24 V DC |
| Control current | 12 V = 0…1400 mA, 24 V = 0…760 mA |
| Power consumption at max. control current | max. 19 W |
| Coil resistance R - cold value at 20 °C<br>- max. warm value | 12 V = 5.8 Ω / 24 V = 21 Ω<br>12 V = 8.6 Ω / 24 V = 32 Ω |
| Recommended PWM frequency (dither) | 200 Hz |
| Hysteresis with PWM | 2…4 % $I_N$ |
| Reversal error with PWM | 2…4 % $I_N$ |
| Sensitivity with PWM | < 1 % $I_N$ |
| Reproducibility with PWM | < 2 % $p_N$ |
| Relative duty cycle | 100 % |
| Protection class to ISO 20 653 / EN 60 529 | IP 65 / IP 67 / IP 69K, see “Ordering code”<br>(with appropriate mating connector and<br>proper fitting and sealing) |
| Electrical connection | 3-pin square plug to ISO 4400 / DIN 43 650 (standard)<br>for other connectors, see “Ordering code” |

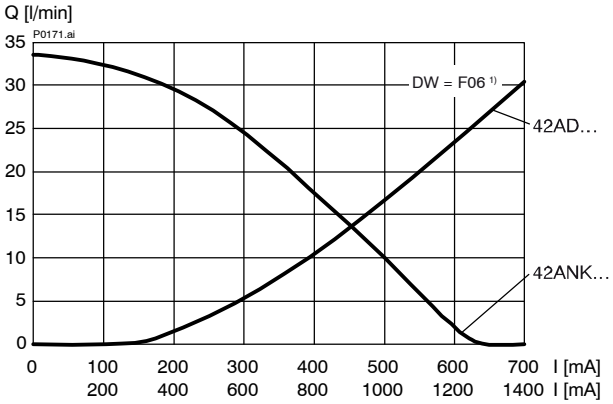
# 4 Performance graphs measured with oil viscosity 33 mm²/s (cSt)

## For use with compensator (max. Δp = 15 bar)

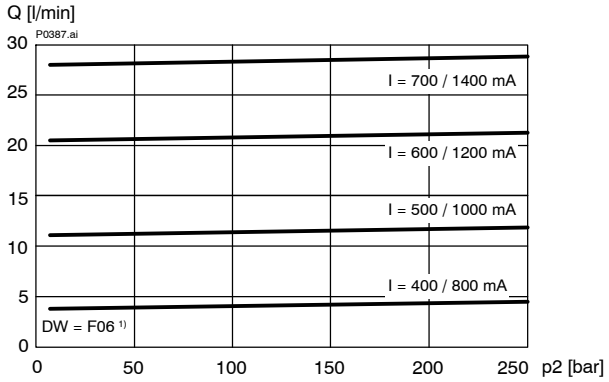
Δp = f (Q) Pressure drop - Flow rate characteristic



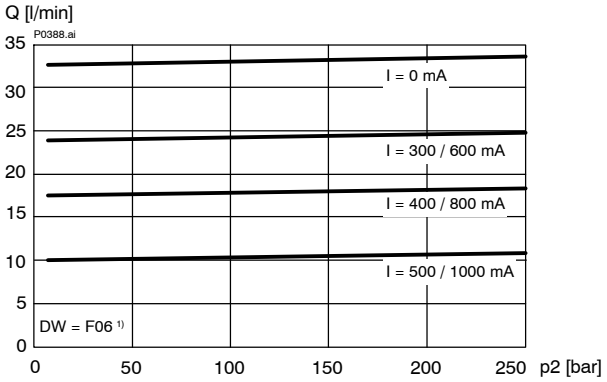

Q = f (I; Δp) Flow rate adjustment characteristic




Q = f (Δp; I) Flow rate adjustment characteristic MDR42AD…




Q = f (Δp; I) Flow rate adjustment characteristic MDR42ANK…




IMPORTANT!

1) Performance graphs measured with compensator model DWDPA-5D-10-F06-2

# 5 Installation information

IMPORTANT!

To achieve the proportional 4/2 throttle cartridge's maximum performance rating, fit the solenoid coil as shown (with the plug pins at the bottom). When fitting the cartridges, note the mounting attitude (preferably vertical, with coil down → automatic air bleed) and 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.

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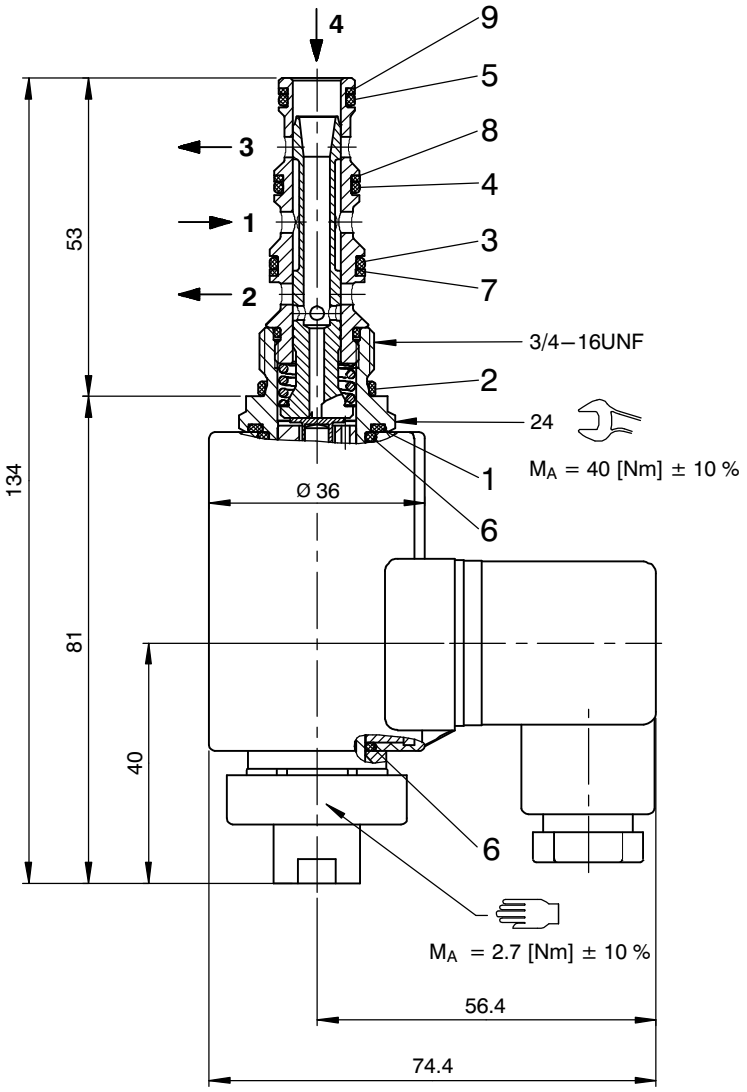
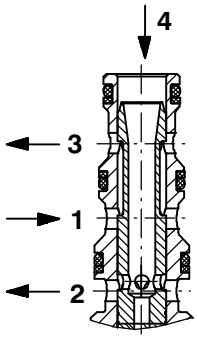
# 6 Dimensions & sectional view

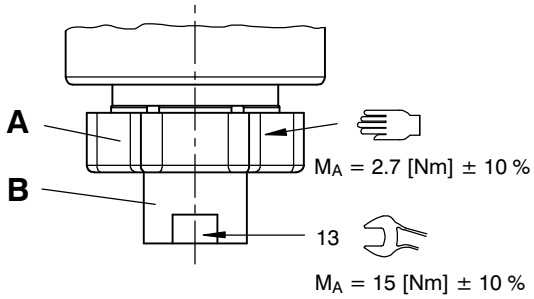
## Without manual flow setting – standard

MDR42AD...




MDR42ANK...




Seal kit no. DS-248-N [2)]

| Item | Qty. | Description | | |
|---|---|---|---|---|
| 1 | 1 | O-ring | ∅ 18,00 x 2,00 | FKM |
| 2 | 1 | O-ring no. 017 | ∅ 17,17 x 1,78 | N90 |
| 3 | 1 | O-ring no. 014 | ∅ 12,42 x 1,78 | N90 |
| 4 | 1 | O-ring no. 013 | ∅ 10,82 x 1,78 | N90 |
| 5 | 1 | O-ring no. 012 | ∅ 09,25 x 1,78 | N90 |
| 6 | 2 | O-ring | ∅ 16,00 x 2,00 | FkM |
| 7 | 1 | Backup ring | ∅ 10.70 x 1.45 x 1.40 | FI0751 |
| 8 | 1 | Backup ring | ∅ 09.40 x 1.45 x 1.00 | FI0751 |
| 9 | 1 | Backup ring | ∅ 07.80 x 1.45 x 1.00 | FI0751 |

IMPORTANT!

2) Seal kit with FKM (Viton) seals no. DS-248-V

### Air-bleeding

If necessary, air can be purged from these proportional throttle cartridges by using the cap nut (Item B). The procedure is as follows:

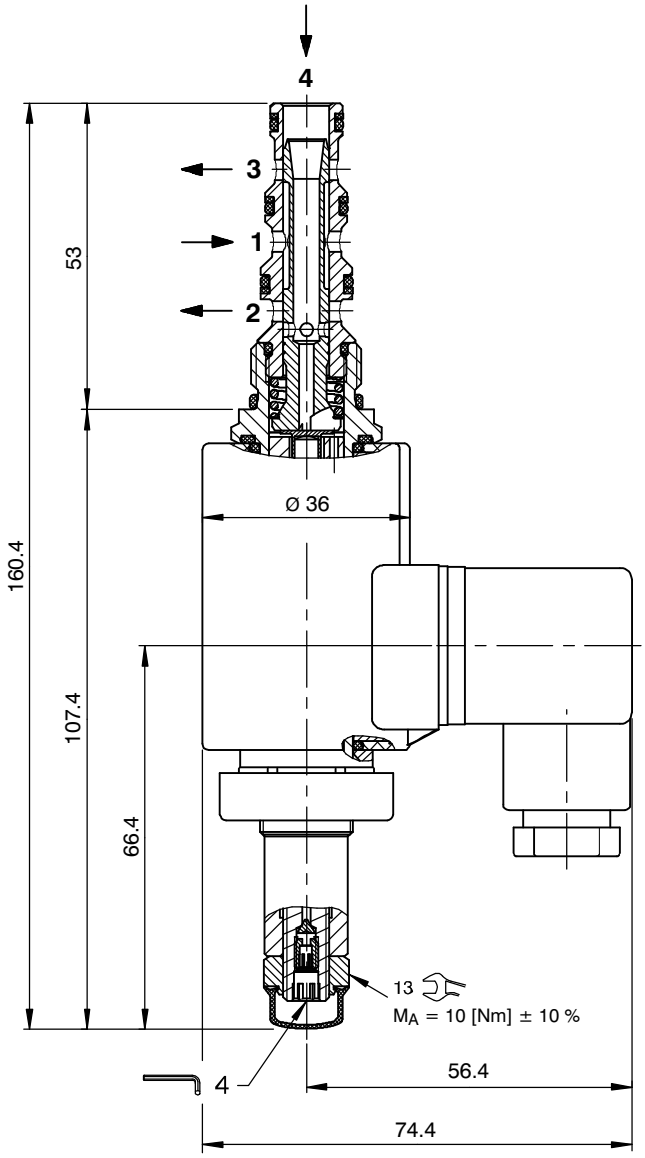
A Knurled nut

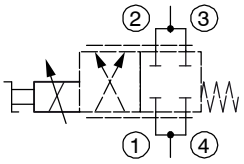
B Cap nut

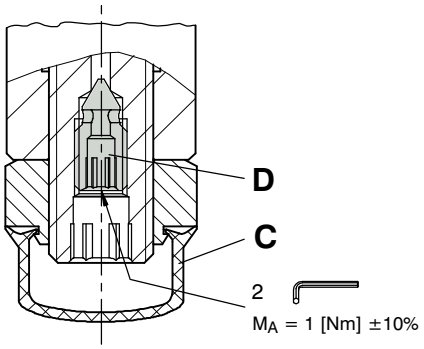
Steps:

1. Slacken and remove the knurled nut.
2. Slacken the cap nut approx. 1.5 turns.
   **Caution: Slackening the cap nut allows oil to spray out!**
3. Switch the proportional throttle cartridge ON/OFF several times until no more air bubbles escape.
4. Tighten the cap nut.
5. Refit the knurled nut and tighten it.

## With manual flow setting – Option “E”




### Integral air-bleeding

If necessary, air can be purged from these proportional throttle cartridges by using the integral air-bleed screw (Item D). The procedure is as follows:

C Protective cap

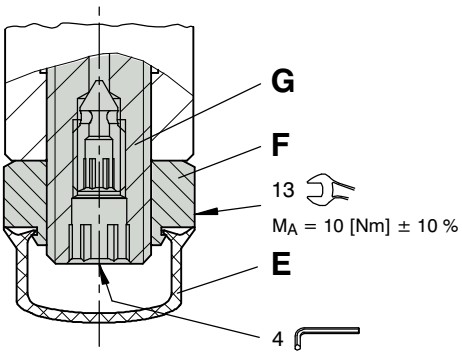
D Air-bleed screw

### Steps:

1. Remove the protective cap.
2. Slacken the air-bleed screw approx. 2 turns.
3. Switch the proportional throttle cartridge ON/OFF several times until no more air bubbles escape.
4. Tighten the air-bleed screw.
5. Fit the protective cap.

# 7 Manual flow setting

Optionally, the proportional throttle cartridges can be supplied with an integral manual flow setting. If a proportional solenoid is faulty, for example, this manual flow setting enables the required flow rate to be set mechanically. **This manual flow setting is not designed for adjusting the flow in a dynamic control mode.**




E Protective cap

F Lock nut (13 A/F)

G Adjusting spindle for volume setting

**Setting the flow rate manually**

Steps:

1. Remove the protective cap.
2. Slacken the lock nut (13 A/F).
3. Screw in (turn to right) the adjusting spindle (4 A/F) until the required flow rate is set.
4. Tighten the lock nut (13 A/F).
5. Fit the protective cap.

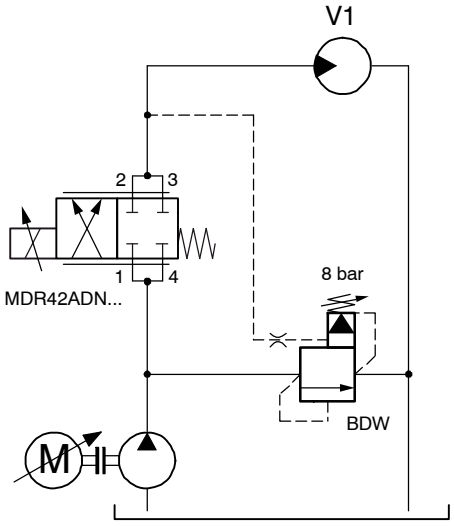
**Restoring the factory settings**

Steps:

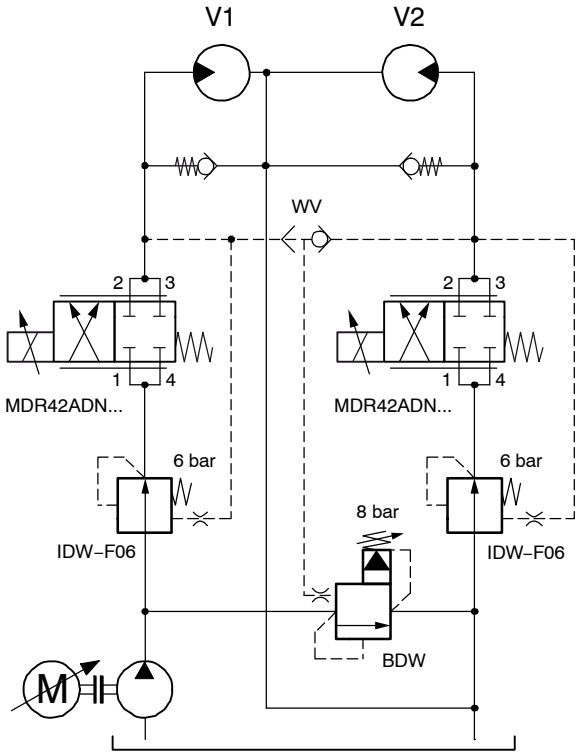
1. Solenoid de-energised.
2. Remove the protective cap.
3. Slacken the lock nut (13 A/F).
4. Unscrew the adjusting spindle (4 A/F) to its end-stop, then screw it in 2 1/8 turns.
5. Tighten the lock nut (13 A/F).
6. Fit the protective cap.

# 8 Application examples

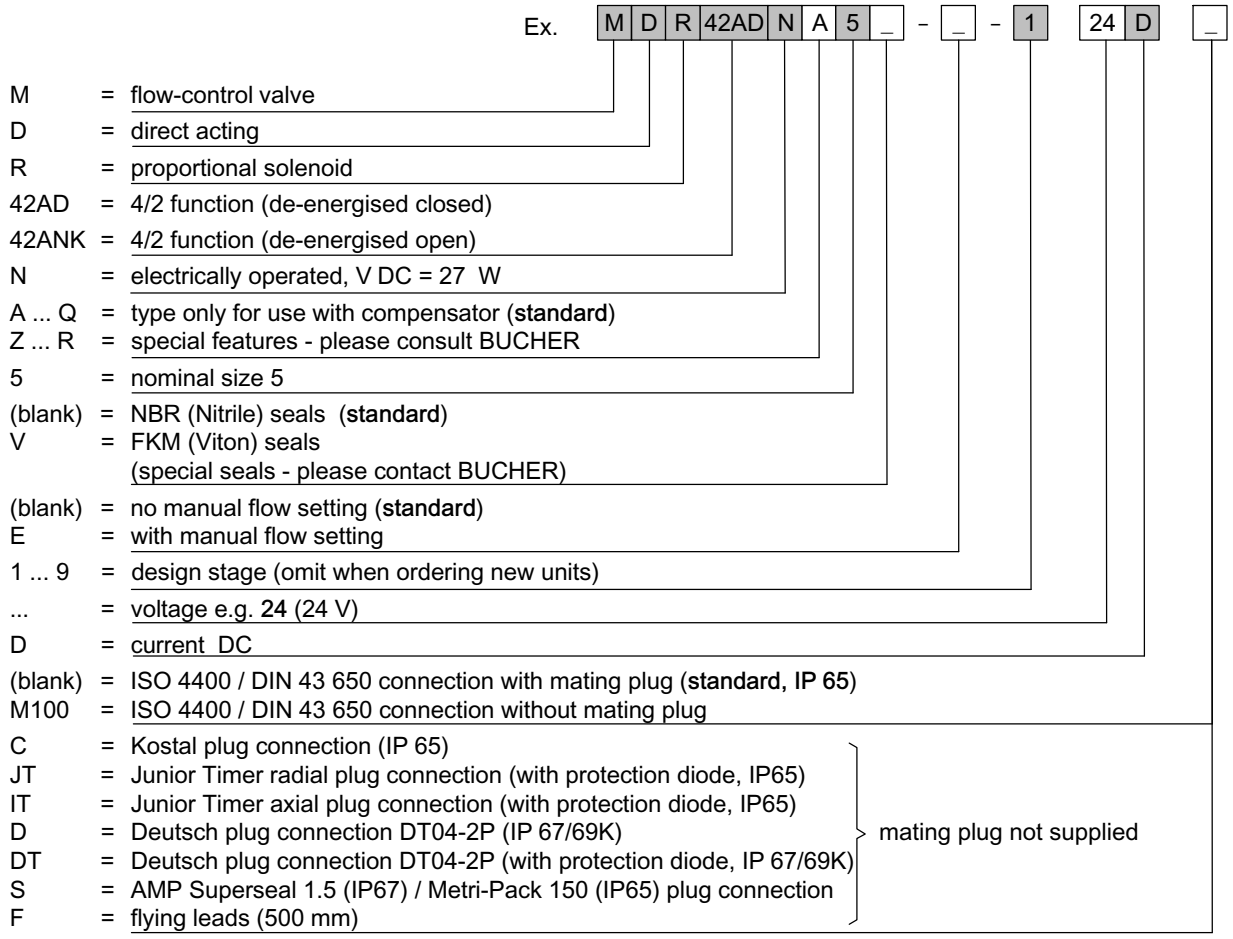
**Used with bypass pressure-compensator cartridge**




**Classic combination with inline and bypass pressure-compensator cartridges**



# 9 Ordering code




# 10 Related data sheets

| Reference | (Old no.) | Description |
|---|---|---|
| 400-P-040011 | (i-32) | The form-tool hire programme |
| 400-P-040181 | (i-33.12) | Cavity type AN |
| 400-P-120110 | (W-2.141) | Coils for screw-in cartridge valves series D36 |
| 400-P-510101 | | Amplifier unit for proportional valves (1-channel) PBS - 3A |
| 400-P-511101 | | Amplifier card for proportional valves (1-channel) SAN-535… |

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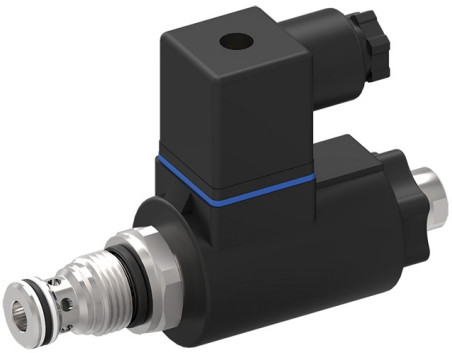
Classification: 430.310.325.305.310.310

# Proportional Throttle Cartridges, Size 5 / SAE 08

$Q_{max}$ = 50 l/min (13 gpm), $p_{max}$ = 250 bar (3600 psi)
Two-Stage, with Seat-Valve Shut-Off
Series MVRPSBA-…



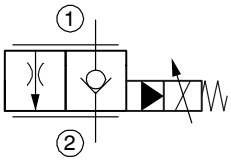
- De-energised closed
- Seat-valve shut-off in flow direction (see symbol)
- $Q_N$ = 20 l/min (5.3 gpm) at Δp 10 bar (140 psi)
- Compact construction for cavity types: AL or C0820 – 3/4-16 UNF
- Reliable operation over the whole pressure and flow range (even at high pressure differences)
- Low headloss
- 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

Series MVRPSBA-… two-stage proportional throttle cartridges are size 5 / SAE 08, high performance screw-in valves with a 3/4-16 UNF mounting thread. The main and pilot stages are designed on the poppet/seat principle and are therefore virtually leak-free in the flow direction (see symbol). With these proportional throttle cartridges, the flow rate is dependent on the electrical control current, and it can be varied continuously and responsively. When used with a pressure compensator, these cartridges are particularly suitable for precise and load-compensated lifting and lowering movements, but they can also be used on their own for reliable operation in mobile and industrial applications with large pressure differences. 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”.

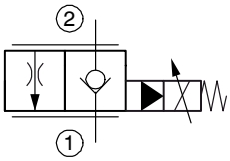
## 2 Symbol

Cavity type AL




MVRPSBA-LG… (size 5)

Cavity type C0820




MVRPSBA-2G… (SAE08)

## 3 Technical data

| General characteristics | Description, value, unit |
|---|---|
| Designation | proportional-throttle cartridge |
| Design | seat-valve shut-off, two stage |
| Mounting method | screw-in cartridge 3/4-16 UNF |
| Tightening torque | 40 Nm ± 10 % (30 ft-lbs ± 10 %) |

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| General characteristics | Description, value, unit |
|---|---|
| Size | nominal size 5 for cavity type AL<br>size SAE 08 for cavity type C0820 |
| Weight | 0.40 kg (0.9 lbs) |
| Mounting attitude | unrestricted (preferably vertical, coil down) |
| Ambient temperature range | -25 °C … +50 °C (-13 °F … +122 °F) |

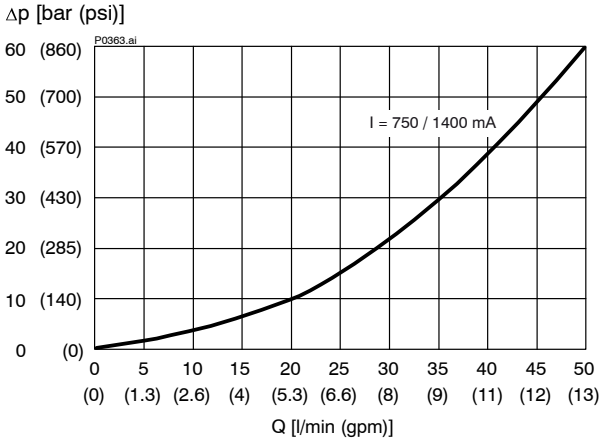
| Hydraulic characteristics | Description, value, unit |
|---|---|
| Maximum operating pressure | 250 bar (3600 psi) |
| Maximum flow rate | 50 l/min (13 gpm) |
| Nominal flow rate | 20 l/min at $\Delta p$ = 10 bar (5.3 gpm at $\Delta p$ = 140 psi) |
| Leakage flow rate | < 0,2 $cm^3$/min (max. 5 drops/min)<br>with oil viscosity 33 $mm^2$/s (cSt) |
| Flow direction | see symbol |
| Hydraulic fluid | HL and HLP mineral oil to DIN 51 524;<br>for other fluids, please contact BUCHER |
| Hydraulic fluid temperature range | -25 °C … +70 °C (-13 °F … +158 °F) |
| Viscosity range | 15…380 $mm^2$/s (cSt), recommended 20...130 $mm^2$/s (cSt) |
| Minimum fluid cleanliness<br>Cleanliness class to ISO 4406 : 1999 | class 18/16/13 |

| Electrical characteristics | | Description, value, unit |
|---|---|---|
| Supply voltage | | 12 V DC, 24 V DC |
| Control current | | 12 V = 0…1400 mA, 24 V = 0…760 mA |
| Coil resistance R | - cold value at 20 °C<br>- max. warm value | 12 V = 5.8 Ω / 24 V = 20.9 Ω<br>12 V = 9.1 Ω / 24 V = 32.7 Ω |
| Recommended PWM frequency (dither) | | 200 Hz |
| Hysteresis with PWM | | 3…6 % $I_N$ |
| Reversal error with PWM | | 3…6 % $I_N$ |
| Sensitivity with PWM | | < 2 % $I_N$ |
| Reproducibility with PWM | | < 3 % $p_N$ |
| Switching time | | see performance graphs |
| Relative duty cycle | | 100 % |
| Protection class to ISO 20 653 / EN 60 529 | | IP 65 / IP 67 / IP 69K, see “Ordering code”<br>(with appropriate mating connector and<br>proper fitting and sealing) |
| Electrical connection | | 3-pin square plug to ISO 4400 / DIN 43 650 (standard)<br>for other connectors, see “Ordering code” |

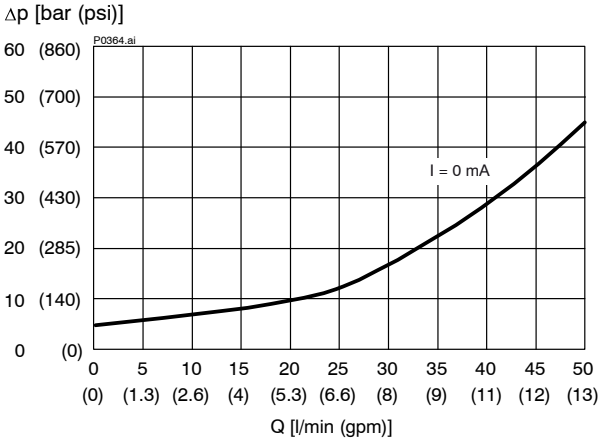
# 4 Performance graphs

measured with oil viscosity 33 $mm^2/s$ (cSt) – for cavity type AL and C0820

Δp = f (Q) Pressure drop - Flow rate characteristic
"energized"

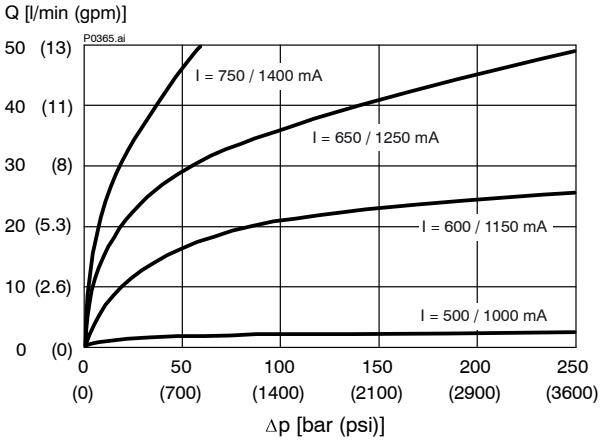



Δp = f (Q) Pressure drop - Flow rate characteristic
"de-energized - through check valve"

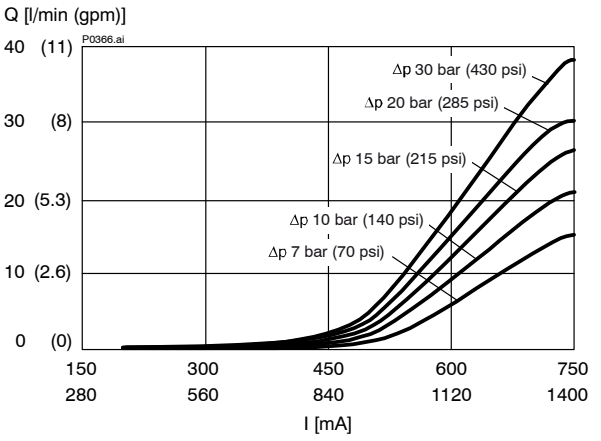



**Attention:**
When flow passes through the check valve and there is a large pressure difference, the poppet in the main stage can be damaged.

Q = f (Δp; I) Flow rate adjustment characteristic




Q = f (I; Δp) Flow rate adjustment characteristic

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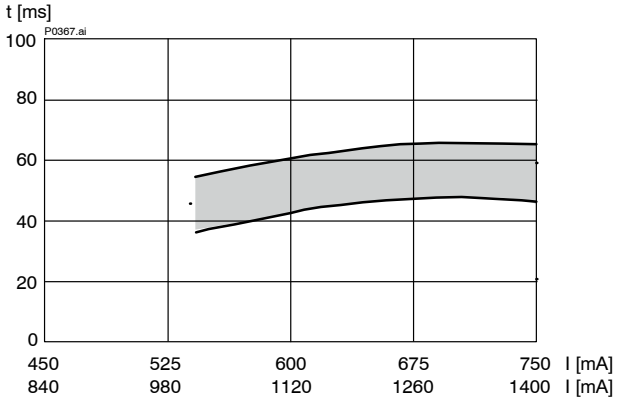
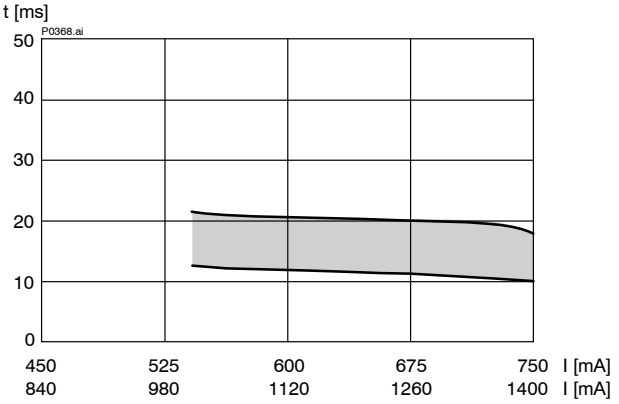
Switching time measured up to 80 % change in the pressure difference. Electrical operation with DC power supply.

t = f (I; Δp) Switching time characteristic **Opening**
at Δp = 10 … 50 bar (140 … 700 psi)



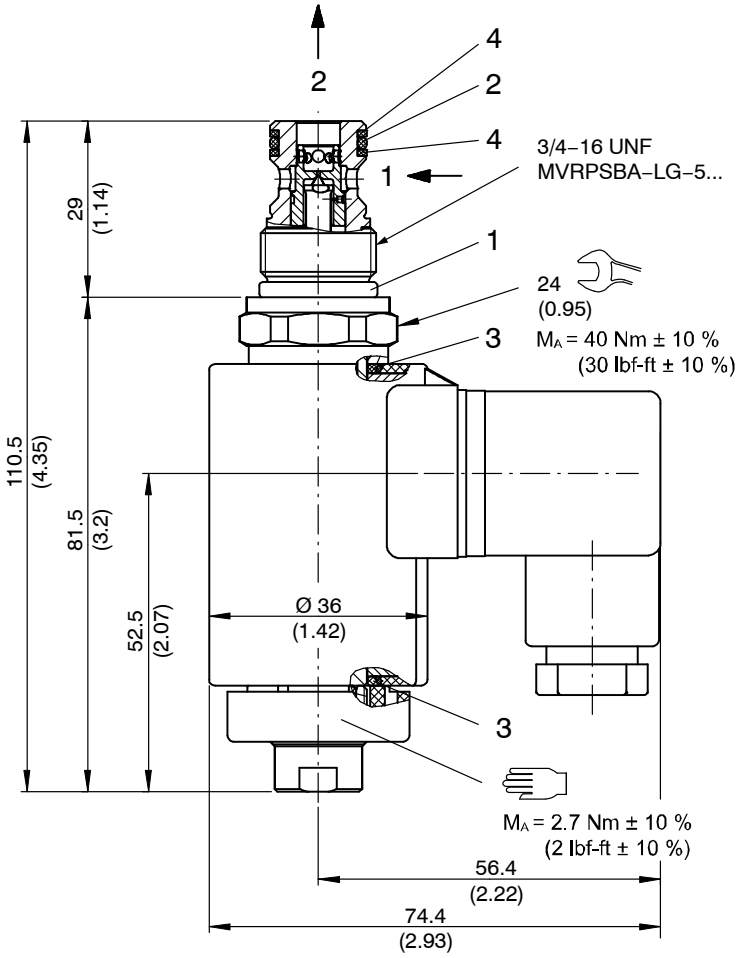

t = f (I; Δp) Switching time characteristic **Closing**
at Δp = 10 … 50 bar (140 … 700 psi])



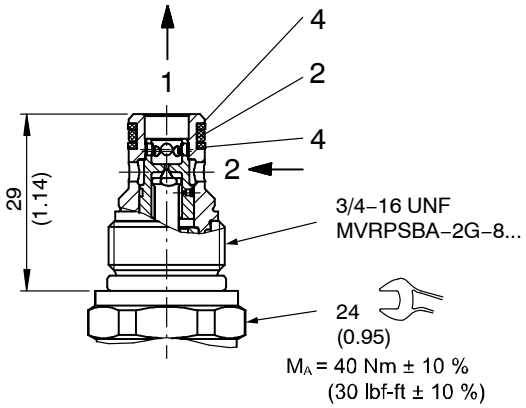
# 5 Dimensions & sectional view

Dimensions in millimeters (inches)

## 5.1 Insertion in cavity type “AL”




## 5.2 Insertion in cavity type “C0820”




# 6 Installation information

Important:
When fitting the cartridges, note the mounting attitude (preferably vertical, with coil down → automatic air bleed) and 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. DS-447-N (cavity type AL) [1)]

| Item | Qty. | Description |
|---|---|---|
| 1 | 1 | O-ring no. 017 ∅ 17.17 x 1.78 N90 |
| 2 | 1 | O-ring no. 014 ∅ 12.42 x 1.78 N90 |
| 3 | 2 | O-ring ∅ 16.00 x 2.00 FKM |
| 4 | 2 | Backup ring ∅ 10.70 x 1.45 x 1.00 FI0751 |

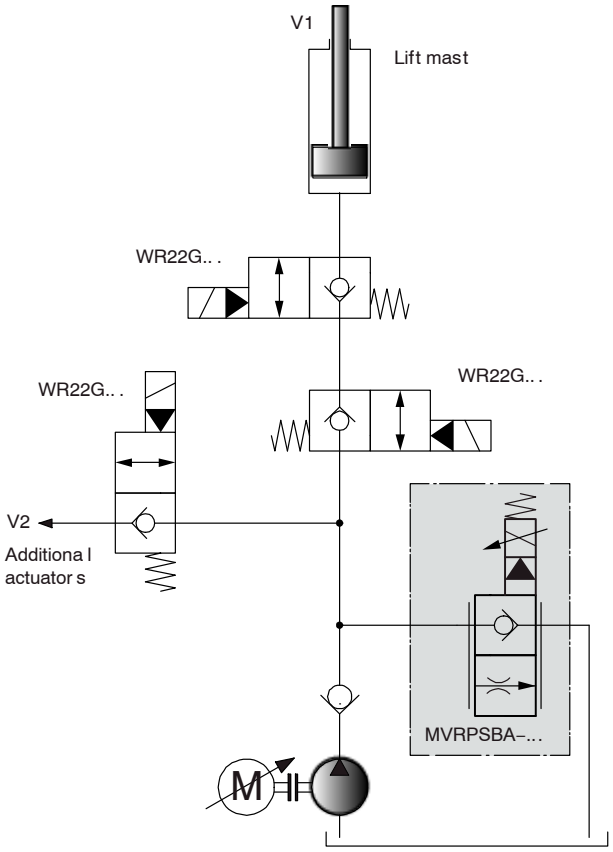
IMPORTANT!
[1)] Seal kit with FKM (Viton) seals, no. DS-447-V

Seal kit NBR no. DS-448-N (cavity type C0820) [2)]

| Item | Qty. | Description |
|---|---|---|
| 1 | 1 | O-ring no. 017 ∅ 17.17 x 1.78 N90 |
| 2 | 1 | O-ring no. 012 ∅ 9.25 x 1.78 N90 |
| 3 | 2 | O-ring ∅ 16.00 x 2.00 FKM |
| 4 | 2 | Backup ring ∅ 7.80 x 1.45 x 1.00 FI0751 |

IMPORTANT!
[2)] Seal kit with FKM (Viton) seals, no. DS-448-V

# 7 Application examples




**Potential applications**

- Lifting and lowering movements on industrial trucks
- In agricultural machines, e.g. proportional scraper-floor controls in self-loading trailers
- In all applications where a load-independent function is required, in combination with our in-line or bypass pressure compensators

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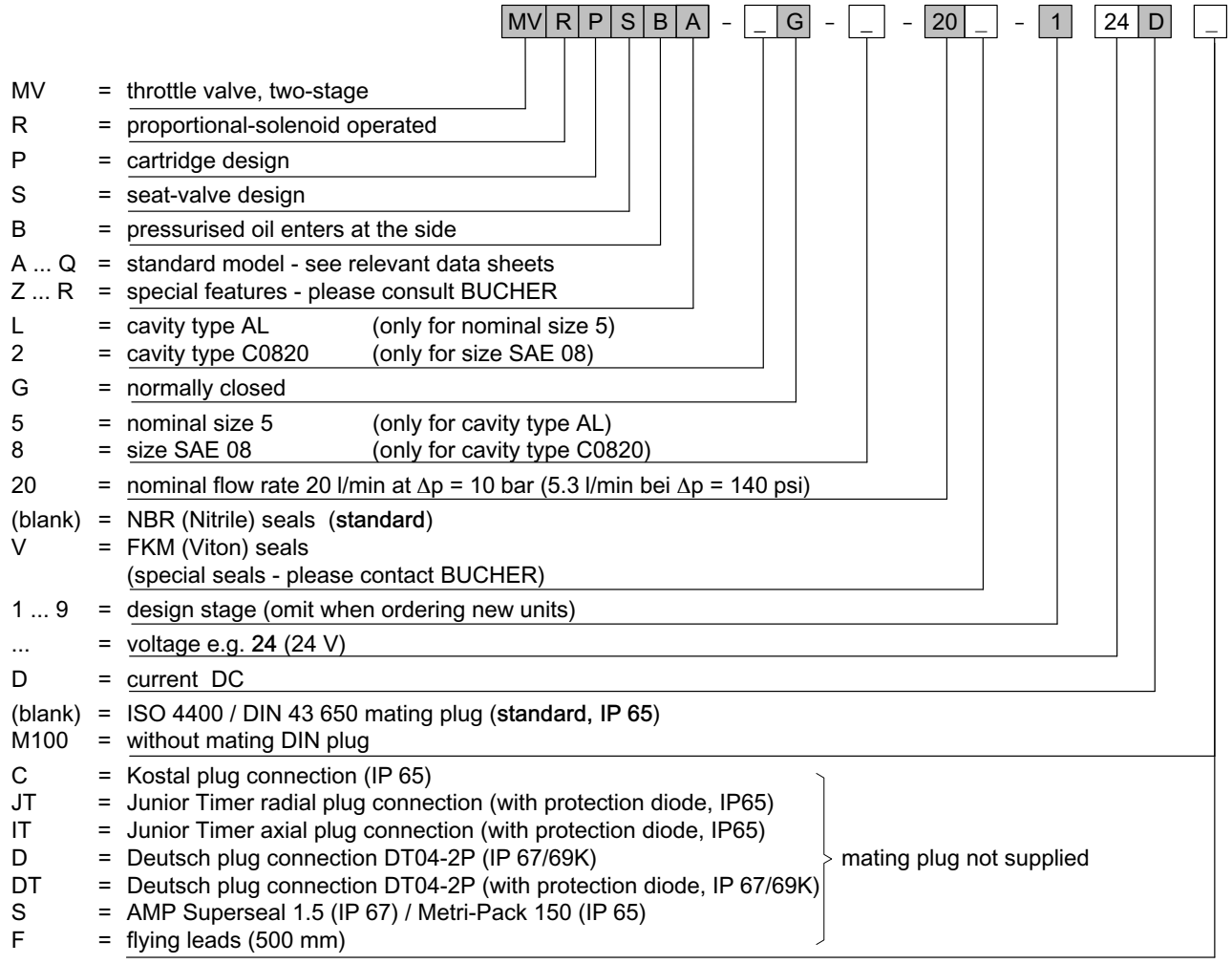
# 8 Ordering code




# 9 Related data sheets

| Reference | (Old no.) | Description |
|---|---|---|
| 400-P-040011 | (i-32) | The form-tool hire programme |
| 400-P-040171 | | Cavity type AL |
| 520-P-000110 | | Cavity type C0820 |
| 400-P-120110 | (W-2.141) | Coils for screw-in cartridge valves |
| 400-P-510101 | | Amplifier unit for proportional valves (1-channel) PBS - 3A |
| 400-P-511101 | | Amplifier card for proportional valves (1-channel) SAN-535… |
| 400-P-720101 | | Line-mounting body, type GALA (G 3/8”) |
| 520-P-000111 | | Line-mounting body, size SAE 08 (G 3/8”) |

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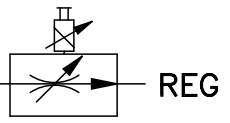
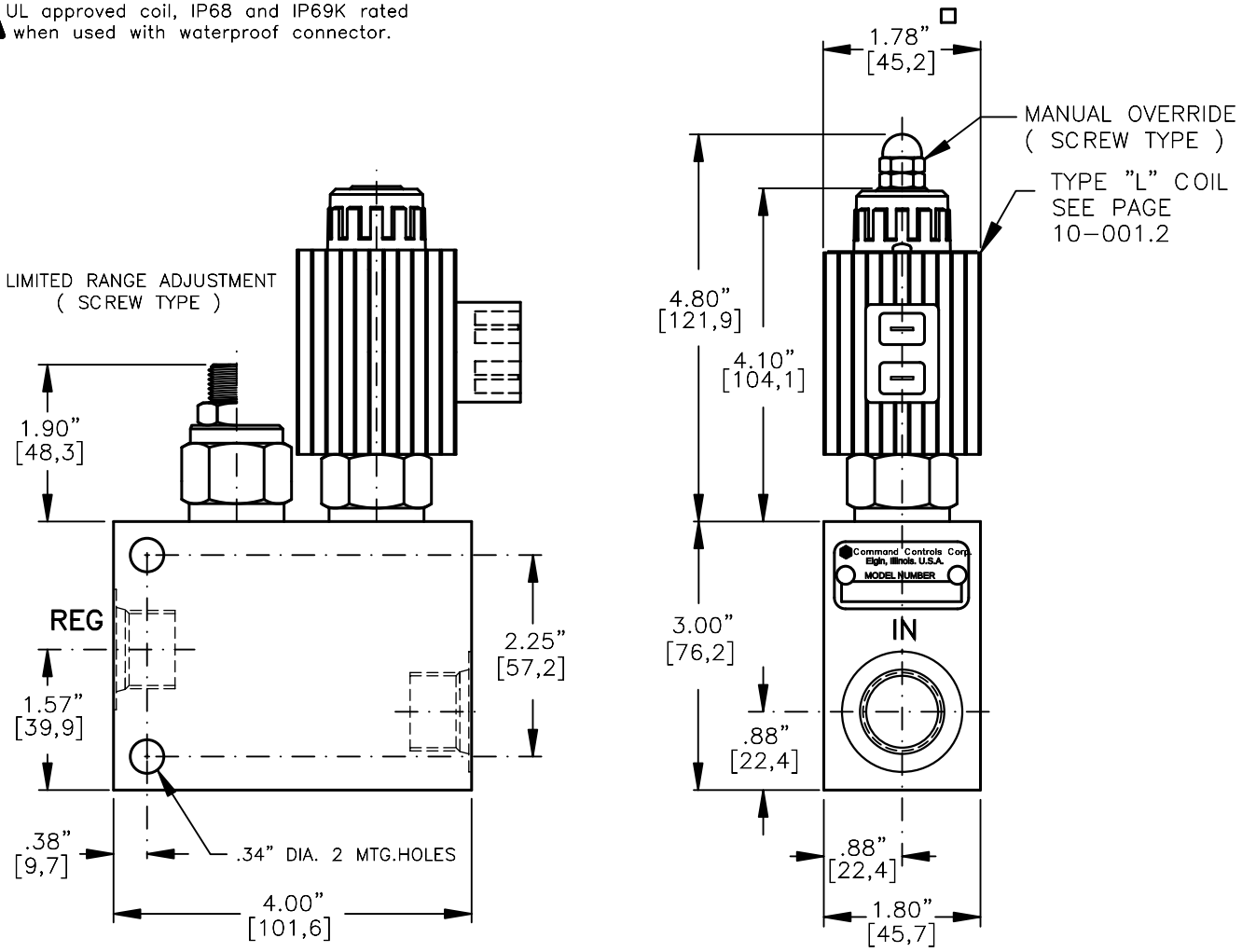
Classification: 430.310.325.305.310.310

BUCHER hydraulics

# PRESSURE COMPENSATED, NORMALLY CLOSED OR NORMALLY OPEN PROPORTIONAL, IN-LINE FLOW CONTROL VALVE.




UL approved coil, IP68 and IP69K rated when used with waterproof connector.




NOTES:
1. SOLENOIDS AVAILABLE WITH DIODES – CONSULT FACTORY.

**PIFC-10-X-X-XX-X-X-X-XXX-XXX X**

BASIC

SIZE
10= 7/8"-14UNF

SEALS
N = BUNA "N"
V = VITON

STYLE
C = NORMALLY CLOSED
O = NORMALLY OPEN

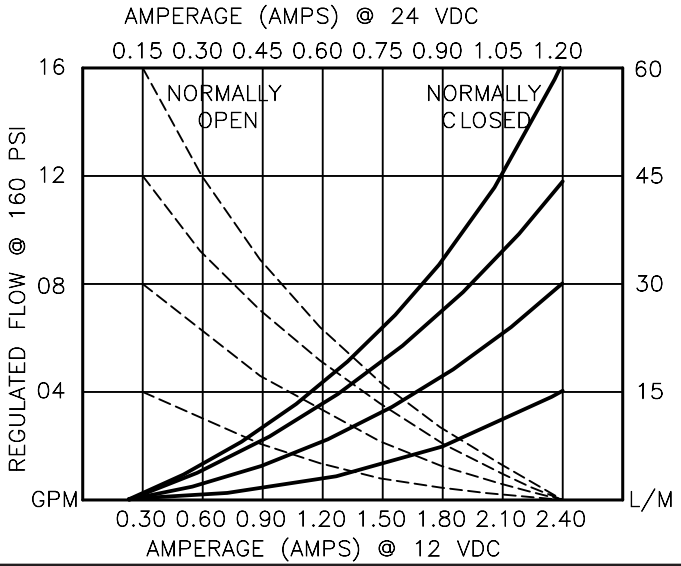
REGULATED FLOW
04 = 0 TO 4.0 GPM
08 = 0 TO 8.0 GPM
12 = 0 TO 12.0 GPM
16 = 0 TO 16.0 GPM

PORTS
10TX = SAE – #10
"A" = ALUM. HOUSING
"S" = STEEL HOUSING

ADJUSTMENT OPTIONS
O-F-100 = NONE
M-F-100 = MANUAL OVERRIDE
O-S-160 = LIMITED RANGE ADJ.
M-S-160 = BOTH MO/LTD ADJ

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



BUCHER hydraulics

# PRESSURE COMPENSATED, PROPORTIONAL, IN–LINE, FLOW CONTROL VALVE.

## DESCRIPTION

This valve is an electro–hydraulic, proportional, in–line (Restrictive) type, pressure compensated, hydraulic flow control. Regulated flow Normally Closed 0 to 16.0 GPM, [0 to 61,0 L/m] max. Normally Open 16.0 to 0 GPM [61,0 to 0 L/m] is proportional to the current input, regardless of load or system pressure.

## OPERATIONS

This unit is a direct acting (NO PILOT FLOW), electro–hydraulic, pro–portional, pressure compensated, flow control valve. When the coil is energized the armature moves the metering orifice open or close against a precision bias spring varying the flow. A pressure compensator spool (HYDROSTAT) modulates the flow at 160 PSI/11,0 Bar delta "P" providing the valve with a constant regulated flow regardless of load or system pressure. When current is increased or decreased to the coil; the flow will increase or decrease proportionally.

IN THE EVENT OF POWER FAILURE THE VALVE WILL CLOSE OR OPEN RESPECTIVELY.

## 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 valves are 100% functionally tested.

BUCHER hydraulics

# PRESSURE COMPENSATED, PROPORTIONAL, IN-LINE, FLOW CONTROL VALVE.

## SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
REGULATED FLOW: 16.0 GPM [61,0 L/m] Max. See performance chart.
INTERNAL LEAKAGE: 15 cu.in/min [245 cc/m] @ 5,000 PSI [350 Bar]
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum - Anodized.
5000 PSI [350 Bar] = Steel - Unplated.
OPERATING TEMPERATURE: -40° to +250° F. [-40° to +120° C.]
OPERATING MEDIA: All general purpose hydraulic fluids such as MIL-H-5606, SAE-#10, SAE-#20, etc.
RESPONSE: The most efficient method to control this valve is with current control and a 50 Hz dither.
POWER REQUIREMENTS: 12 VDC, Operating current 0.4 to 2.4 AMPS.
24 VDC, Operating current 0.2 to 1.2 AMPS.
SEAL KIT: Buna "N": SKN-1022, SKN-1032
VITON: SKV-1022, SKV-1032
INSTALLATION: No restrictions.
WEIGHT: 4.58 lbs [2,09 kg]. aluminum body.
7.65 lbs [3,48 kg]. steel body.

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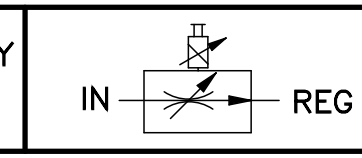
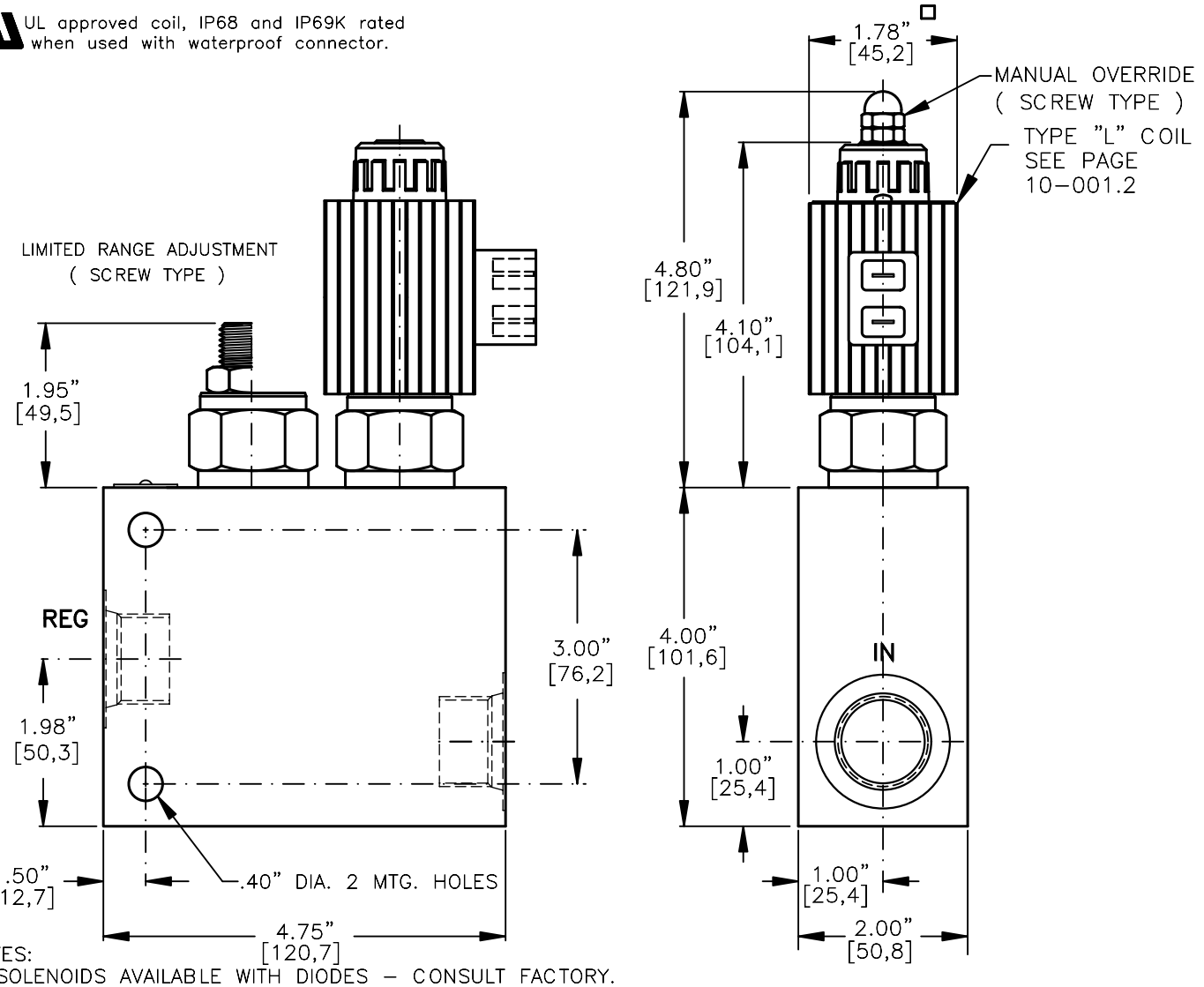
www.bucherhydraulics.com/commoncavity

BUCHER hydraulics

# PRESSURE COMPENSATED, NORMALLY CLOSED OR NORMALLY OPEN PROPORTIONAL, IN-LINE FLOW CONTROL VALVE.



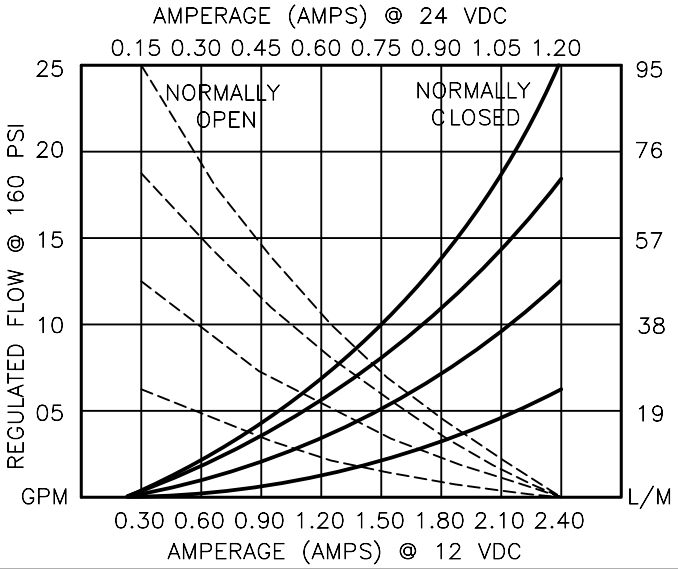

UL approved coil, IP68 and IP69K rated when used with waterproof connector.




NOTES:
1. SOLENOIDS AVAILABLE WITH DIODES – CONSULT FACTORY.

## PIFC-12-X-X-XX-X-X-X-XXX-XXX X

- BASIC
- SIZE
  12=1.062"-12UNF
- SEALS
  N = BUNA "N"
  V = VITON
- STYLE
  C = NORMALLY CLOSED
  O = NORMALLY OPEN
- REGULATED FLOW
  06 = 0 TO 6.0 GPM
  12 = 0 TO 12.0 GPM
  18 = 0 TO 18.0 GPM
  24 = 0 TO 24.0 GPM
- ADJUSTMENT OPTIONS
  O-F-100 = NONE
  M-F-100 = MANUAL OVERRIDE
  O-S-160 = LIMITED RANGE ADJ
  M-S-160 = BOTH MO/LTD ADJ
- PORTS
  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



BUCHER hydraulics

# PRESSURE COMPENSATED, PROPORTIONAL, IN–LINE, FLOW CONTROL VALVE.

## DESCRIPTION

This valve is an electro–hydraulic, proportional, in–line (Restrictive) type, pressure compensated, hydraulic flow control. Regulated flow Normally Closed 0 to 24.0 GPM, [0 to 91,2 L/M] max. Normally Open 24.0 to 0 GPM [91,2 to 0 L/M] is proportional to the current input, regardless of load or system pressure.

## OPERATIONS

This unit is a direct acting (NO PILOT FLOW), electro–hydraulic, pro–portional, pressure compensated, flow control valve. When the coil is energized the armature moves the metering orifice open or close against a precision bias spring varying the flow. A pressure compensator spool (HYDROSTAT) modulates the flow at 160 PSI/11,0 Bar delta "P" providing the valve with a constant regulated flow regardless of load or system pressure. When current is increased or decreased to the coil; the flow will increase or decrease proportionally.

IN THE EVENT OF POWER FAILURE THE VALVE WILL CLOSE OR OPEN RESPECTIVELY.

## 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 valves are 100% functionally tested.

BUCHER hydraulics

# PRESSURE COMPENSATED, PROPORTIONAL, IN–LINE, FLOW CONTROL VALVE.

## SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
REGULATED FLOW: 24.0 GPM [90,7 L/M] Max. See performance chart.
INTERNAL LEAKAGE: 30 cu.in/min [495 cc/m] @ 5,000 PSI [350 Bar]
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
5000 PSI [350 Bar] = Steel – Unplated.
OPERATING TEMPERATURE: –40° to +250° F. [–40° to +120° C.]
OPERATING MEDIA: All general purpose hydraulic fluids such as MIL–H–5606, SAE–#10, SAE–#20, etc.
RESPONSE: The most efficient method to control this valve is with current control and a 50 Hz dither.
POWER REQUIREMENTS: 12 VDC, Operating current 0.4 to 2.4 AMPS.
24 VDC, Operating current 0.2 to 1.2 AMPS.
SEAL KIT: Buna "N": SKN–1222, SKN–1232
VITON: SKV–1222, SKV–1232
INSTALLATION: No restrictions.
WEIGHT: 5.52 lbs [2,51 kg]. aluminum body.
15.60 lbs [7,10 kg]. steel body.

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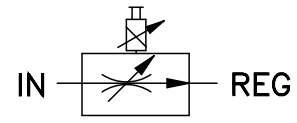
www.bucherhydraulics.com/commoncavity

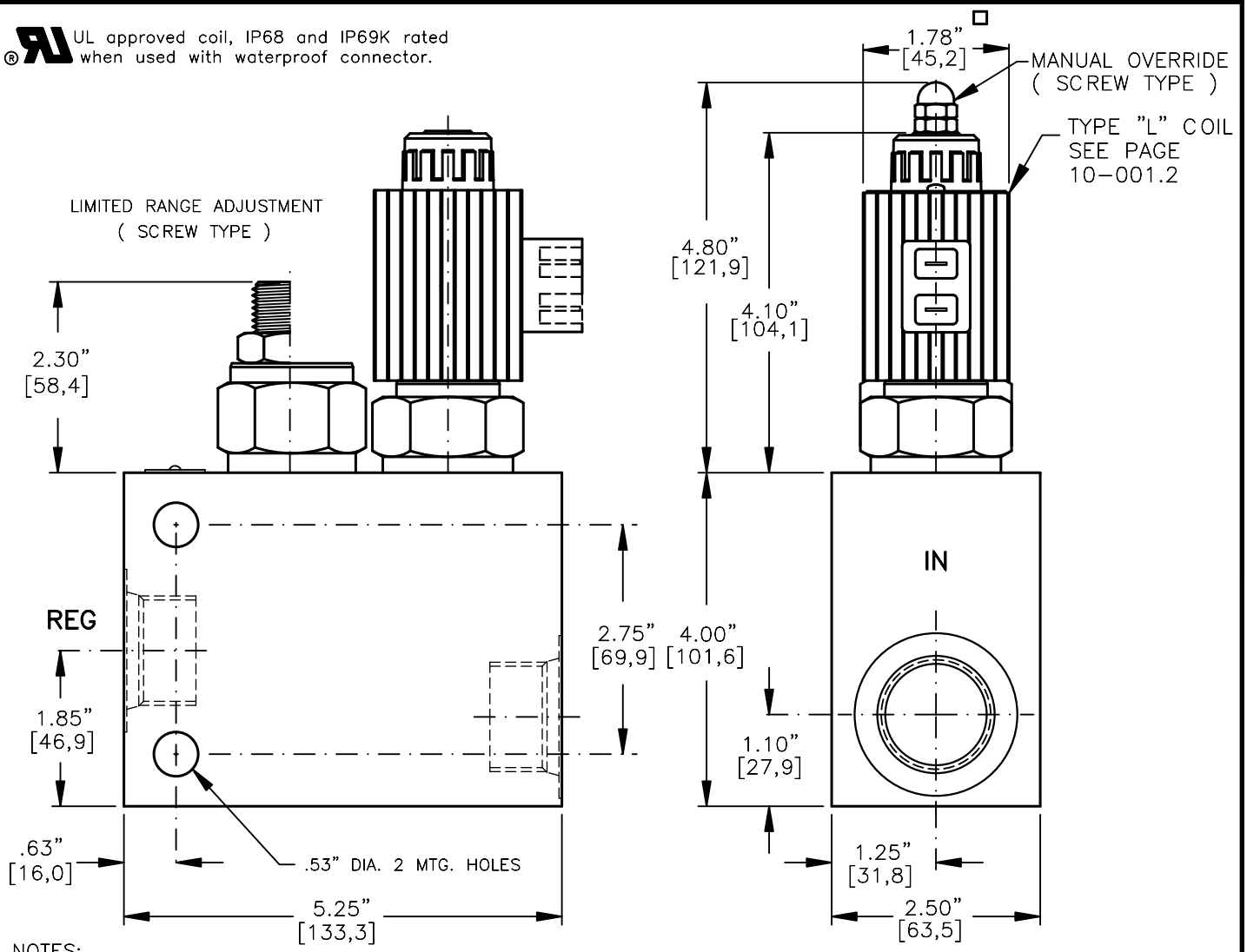
# PIFC-16

BUCHER hydraulics

PRESSURE COMPENSATED, NORMALLY CLOSED OR NORMALLY OPEN PROPORTIONAL, IN-LINE FLOW CONTROL VALVE.




UL approved coil, IP68 and IP69K rated when used with waterproof connector.




NOTES:
1) SOLENOIDS AVAILABLE WITH DIODES – CONSULT FACTORY.

PIFC–16–X–X–XX–X–X–X–XXX–XXX X

BASIC

SIZE
16=1.312"–12UNF

SEALS
N = BUNA "N"
V = VITON

STYLE
C = NORMALLY CLOSED
O = NORMALLY OPEN

REGULATED FLOW
06 = 0 TO 6.0 GPM
12 = 0 TO 12.0 GPM
18 = 0 TO 18.0 GPM
24 = 0 TO 24.0 GPM
30 = 0 TO 30.0 GPM
36 = 0 TO 36.0 GPM 2)

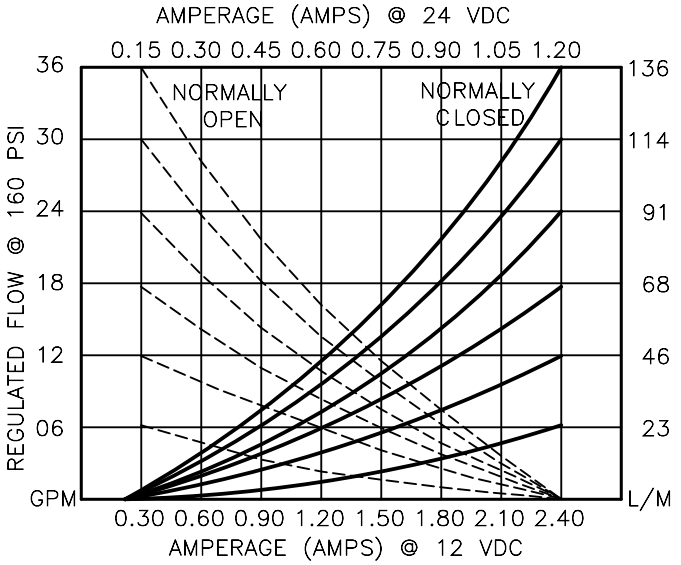
NOTES:
2) AVAILALBE ONLY IN STYLE C (NORMALLY CLOSED)

ADJUSTMENT OPTIONS
O–F–100 = NONE
M–F–100 = MANUAL OVERRIDE
O–S–180 = LIMITED RANGE ADJ.
M–S–180 = BOTH MO/LTD ADJ

PORTS
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



# PIFC-16

BUCHER hydraulics

PRESSURE COMPENSATED, PROPORTIONAL, IN–LINE, FLOW CONTROL VALVE.

## DESCRIPTION

This valve is an electro–hydraulic, proportional, in–line (Restrictive) type, pressure compensated, hydraulic flow control. Regulated flow Normally Closed 0 to 36.0 GPM, [0 to 137,0 L/M] max. Normally Open 36.0 to 0 GPM [137,0 to 0 L/M] is proportional to the current input, regardless of load or system pressure.

## OPERATIONS

This unit is a direct acting (NO PILOT FLOW), electro–hydraulic, pro–portional, pressure compensated, flow control valve. When the coil is energized the armature moves the metering orifice open or close against a precision bias spring varying the flow. A pressure compensator spool (HYDROSTAT) modulates the flow at 160 PSI/11,0 Bar delta "P" providing the valve with a constant regulated flow regardless of load or system pressure. When current is increased or decreased to the coil; the flow will increase or decrease proportionally.

IN THE EVENT OF POWER FAILURE THE VALVE WILL CLOSE OR OPEN RESPECTIVELY.

## 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 valves are 100% functionally tested.

# PIFC-16

BUCHER hydraulics

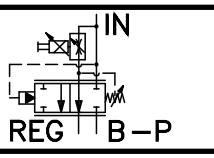
PRESSURE COMPENSATED, PROPORTIONAL, IN–LINE, FLOW CONTROL VALVE.

## SPECIFICATIONS

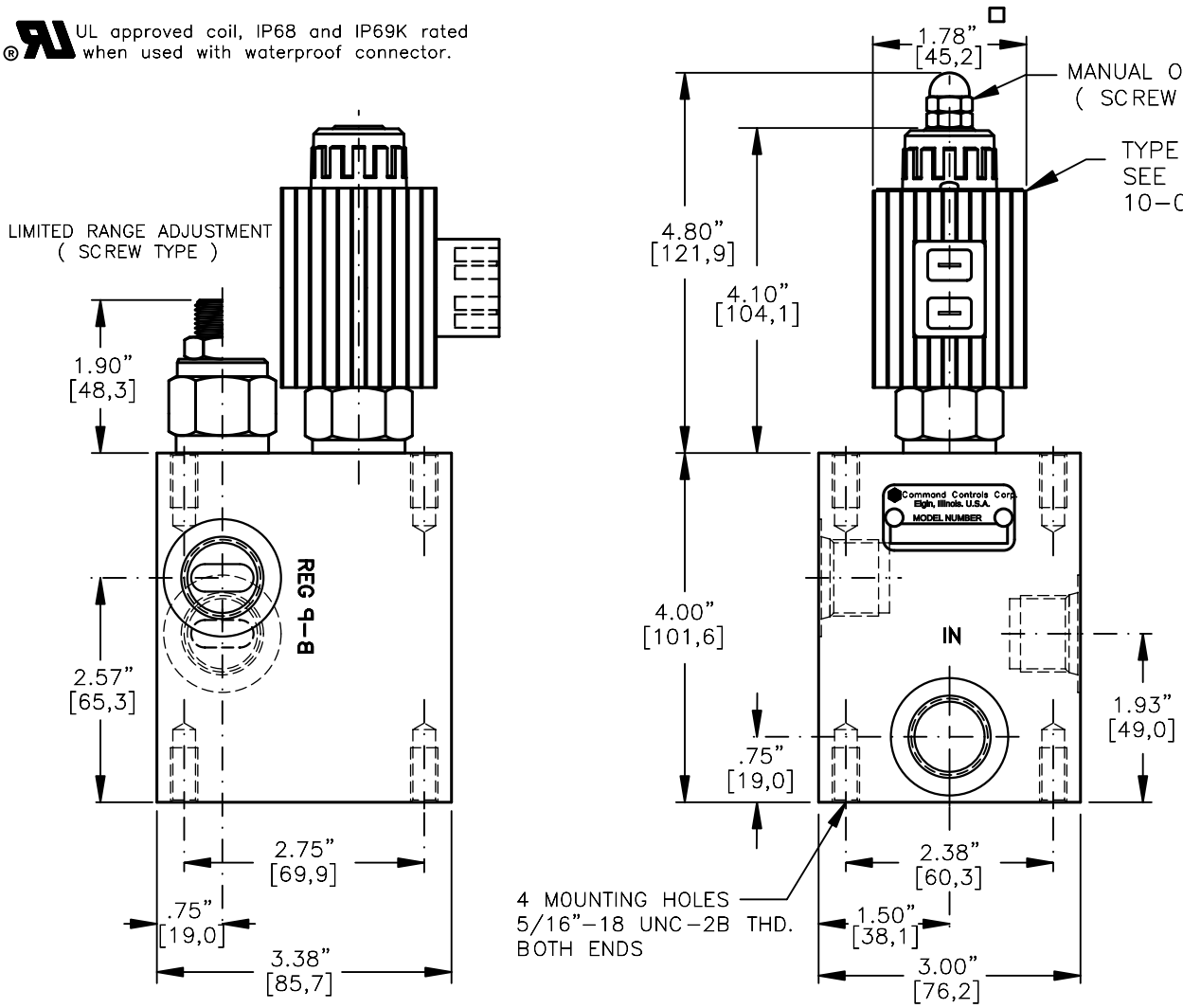
OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
REGULATED FLOW: 36.0 GPM [136,0 L/M] Max. See performance chart.
INTERNAL LEAKAGE: 40 cu.in/min [660 cc/m] @ 5,000 PSI [350 Bar]
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
5000 PSI [350 Bar] = Steel – Unplated.
OPERATING TEMPERATURE: –40° to +250° F. [–40° to +120° C.]
OPERATING MEDIA: All general purpose hydraulic fluids such as MIL–H–5606, SAE–#10, SAE–#20, etc.
RESPONSE: The most efficient method to control this valve is with current control and a 50 Hz dither.
POWER REQUIREMENTS: 12 VDC, Operating current 0.4 to 2.4 AMPS.
24 VDC, Operating current 0.2 to 1.2 AMPS.
SEAL KIT: Buna "N": SKN–1622, SKN–1632
VITON: SKV–1622, SKV–1632
INSTALLATION: No restrictions.
WEIGHT: 7.42 lbs [3,37 kg]. aluminum body.
21.70 lbs [9,86 kg]. steel body.

BUCHER hydraulics

# PRESSURE COMPENSATED, NORMALLY CLOSED OR NORMALLY OPEN PROPORTIONAL, PRIORITY FLOW CONTROL VALVE.




UL approved coil, IP68 and IP69K rated when used with waterproof connector.




NOTES:
1. SOLENOIDS AVAILABLE WITH DIODES – CONSULT FACTORY.

## PBFC–10–X–X–XX–X–X–X–XXX–XXX X

BASIC

SIZE
10 = 7/8"–14UNF

SEALS
N = BUNA "N"
V = VITON

STYLE
C = NORMALLY CLOSED
O = NORMALLY OPEN

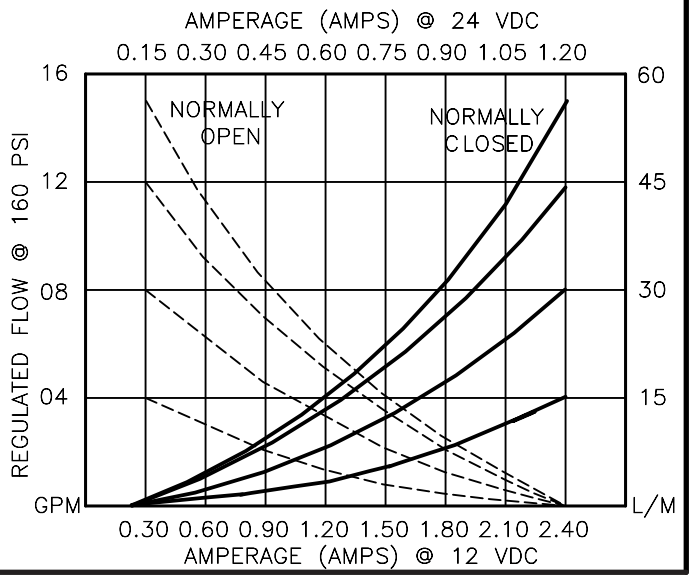
REGULATED FLOW
04 = 0 TO 4.0 GPM
08 = 0 TO 8.0 GPM
12 = 0 TO 12.0 GPM
16 = 0 TO 16.0 GPM

ADJUSTMENT OPTIONS
O–F–100 = NONE
M–F–100 = MANUAL OVERRIDE
O–S–160 = LIMITED RANGE ADJ.
M–S–160 = BOTH MO/LTD ADJ

PORTS
10TX = SAE – #10
"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 |



BUCHER hydraulics

# PRESSURE COMPENSATED, PROPORTIONAL, PRIORITY FLOW CONTROL VALVE.

## DESCRIPTION

This valve is an electro–hydraulic, proportional, priority (By–Pass) type, pressure compensated, hydraulic flow control. Regulated flow normally closed 0 to 16.0 GPM [0 to 61,0 L/m] or normally open 16.0 to 0 GPM [61,0 to 0 L/m] @ 160 PSI DELTA P. is proportional to the current input regardless of load or system pressure. After the priority flow is satisfied the excess flow is diverted to a secondary circuit or to tank. Maximum inlet flow is 25.0 GPM [95,0 L/m].

## OPERATIONS

This unit is a direct acting (NO PILOT FLOW), electro–hydraulic, pro–portional, pressure compensated, flow control valve. When the coil is energized the armature moves the metering orifice open or closed against a precision bias spring varying the flow. A pressure compensator spool (HYDROSTAT) modulates the flow at 160 PSI/11,0 Bar delta "P" providing pressure. When current is increased or decreased to the coil; the flow will increase or decrease proportionally.

IN THE EVENT OF POWER FAILURE THE VALVE WILL CLOSE OR OPEN RESPECTIVELY.

## 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 valves are 100% functionally tested.

BUCHER hydraulics

# PRESSURE COMPENSATED, PROPORTIONAL, PRIORITY FLOW CONTROL VALVE.

## SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
REGULATED FLOW: 16.0 GPM [61,0 L/m] Max. See performance chart.
INTERNAL LEAKAGE: 20 cu.in/min [330 cc/m] @ 5,000 PSI [350 Bar]
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
5000 PSI [350 Bar] = Steel – Unplated.
OPERATING TEMPERATURE: –40° to +250° F. [–40° to +120° C.]
OPERATING MEDIA: All general purpose hydraulic fluids such as MIL–H–5606, SAE–#10, SAE–#20, etc.
RESPONSE: The most efficient method to control this valve is with current control and a 50 Hz dither.
POWER REQUIREMENTS: 12 VDC, Operating current 0.4 to 2.4 AMPS.
24 VDC, Operating current 0.2 to 1.2 AMPS.
SEAL KIT: Buna "N": SKN–1022, SKN–1042
VITON: SKV–1022, SKV–1042
INSTALLATION: No restrictions.
WEIGHT: 4.58 lbs [2,09 kg]. aluminum body.
7.65 lbs [3,48 kg]. steel body.

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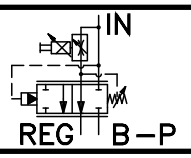
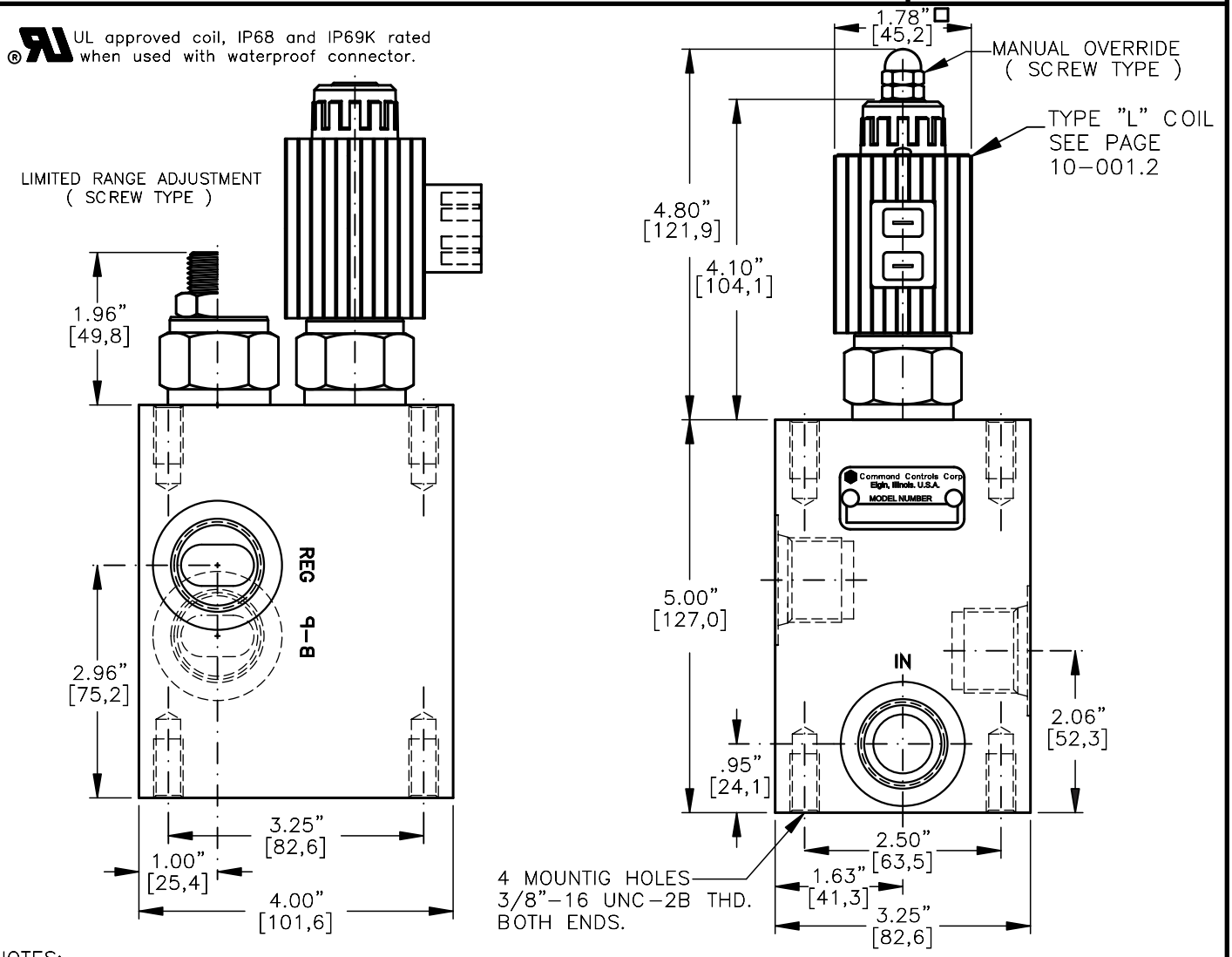
www.bucherhydraulics.com/commoncavity

BUCHER hydraulics

# PRESSURE COMPENSATED, NORMALLY CLOSED OR NORMALLY OPEN PROPORTIONAL, PRIORITY FLOW CONTROL VALVE.




UL approved coil, IP68 and IP69K rated when used with waterproof connector.




NOTES:
1. SOLENOIDS AVAILABLE WITH DIODES – CONSULT FACTORY.

## PBFC–12–X–X–XX–X–X–X–XXX–XXX X

BASIC

SIZE
12=1.062"–12UNF

SEALS
N = BUNA "N"
V = VITON

STYLE
C = NORMALLY CLOSED
O = NORMALLY OPEN

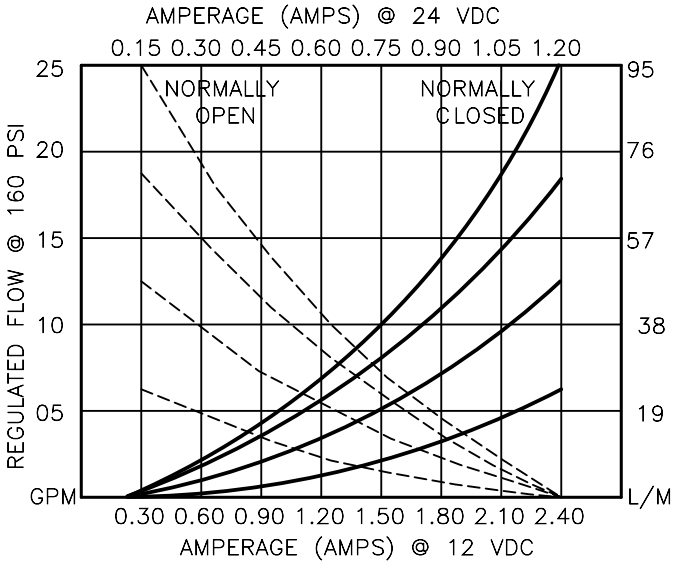
REGULATED FLOW
06 = 0 TO 6.0 GPM
12 = 0 TO 12.0 GPM
18 = 0 TO 18.0 GPM
24 = 0 TO 24.0 GPM

ADJUSTMENT OPTIONS
O–F–100 = NONE
M–F–100 = MANUAL OVERRIDE
O–S–160 = LIMITED RANGE ADJ.
M–S–160 = BOTH MO/LTD ADJ

PORTS
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 |



BUCHER hydraulics

# PRESSURE COMPENSATED, PROPORTIONAL, PRIORITY FLOW CONTROL VALVE.

## DESCRIPTION

This valve is an electro–hydraulic, proportional, priority (By–Pass) type, pressure compensated, hydraulic flow control. Regulated flow normally closed 0 to 24.0 GPM [0 to 91,2 L/M] or normally open 24.0 to 0 GPM [91,2 to 0 L/M] @ 160 PSI DELTA P. is proportional to the current input regardless of load or system pressure. After the priority flow is satisfied the excess flow is diverted to a secondary circuit or to tank. Maximum inlet flow is 35.0 GPM [130,0 L/M].

## OPERATIONS

This unit is a direct acting (NO PILOT FLOW), electro–hydraulic, proportional, pressure compensated, flow control valve. When the coil is energized the armature moves the metering orifice open or closed against a precision bias spring varying the flow. A pressure compensator spool (HYDROSTAT) modulates the flow at 160 PSI/11,0 Bar delta "P" providing pressure. When current is increased or decreased to the coil; the flow will increase or decrease proportionally.

IN THE EVENT OF POWER FAILURE THE VALVE WILL CLOSE OR OPEN RESPECTIVELY.

## 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 valves are 100% functionally tested.

BUCHER hydraulics

# PRESSURE COMPENSATED, PROPORTIONAL, PRIORITY FLOW CONTROL VALVE.

## SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
REGULATED FLOW: 24.0 GPM [91,2 l/m] Max. See performance chart.
INTERNAL LEAKAGE: 30 cu.in/min [495 cc/m] @ 5,000 PSI [350 Bar]
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
5000 PSI [350 Bar] = Steel – Unplated.
OPERATING TEMPERATURE: –40° to +250° F. [–40° to +120° C.]
OPERATING MEDIA: All general purpose hydraulic fluids such as MIL–H–5606, SAE–#10, SAE–#20, etc.
RESPONSE: The most efficient method to control this valve is with current control and a 50 Hz dither.
POWER REQUIREMENTS: 12 VDC, Operating current 0.4 to 2.4 AMPS.
24 VDC, Operating current 0.2 to 1.2 AMPS.
SEAL KIT: Buna "N": SKN–1222, SKN–1242
VITON: SKV–1222, SKV–1242
INSTALLATION: No restrictions.
WEIGHT: 5.58 lbs [2,54 kg]. aluminum body.
9.65 lbs [4,38 kg]. steel body.

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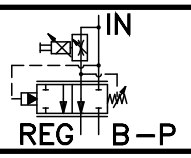
www.bucherhydraulics.com/commoncavity

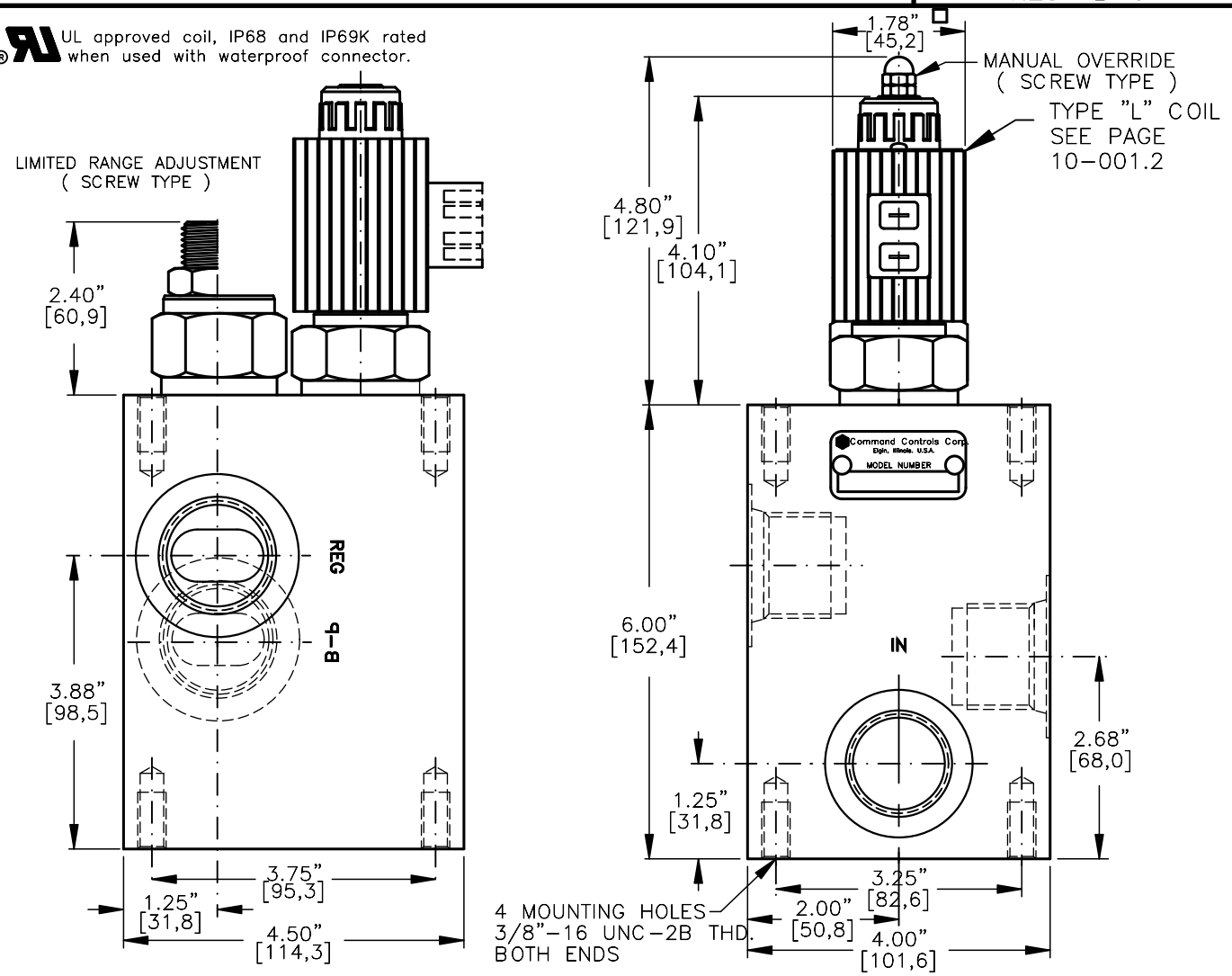
# PBFC-16

BUCHER hydraulics

## PRESSURE COMPENSATED, NORMALLY CLOSED OR NORMALLY OPEN PROPORTIONAL, PRIORITY FLOW CONTROL VALVE.




UL approved coil, IP68 and IP69K rated when used with waterproof connector.




NOTES:
1) SOLENOIDS AVAILABLE WITH DIODES – CONSULT FACTORY.

**PBFC–16–X–X–XX–X–X–X–XXX–XXX X**

BASIC

SIZE
16= 1.312"–12UNF

SEALS
N = BUNA "N"
V = VITON

STYLE
C = NORMALLY CLOSED
O = NORMALLY OPEN

REGULATED FLOW
06 = 0 TO 6.0 GPM
12 = 0 TO 12.0 GPM
18 = 0 TO 18.0 GPM
24 = 0 TO 24.0 GPM
30 = 0 TO 30.0 GPM
36 = 0 TO 36.0 GPM 2)

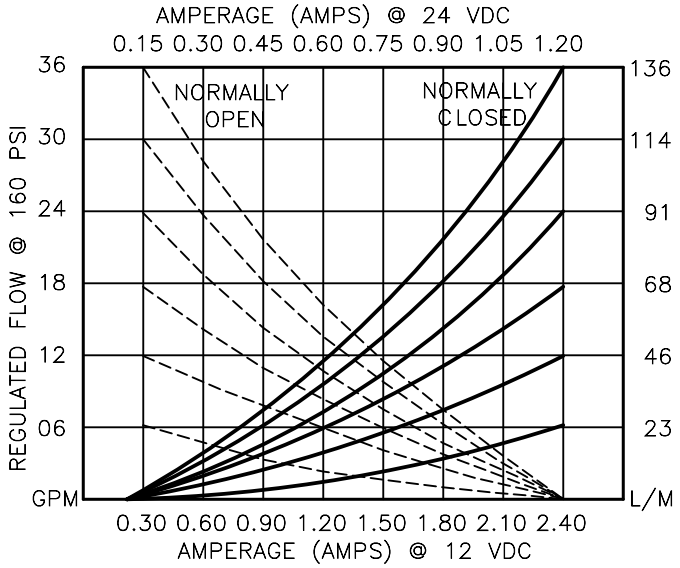
NOTES:
2) AVAILALBE ONLY IN STYLE C (NORMALLY CLOSED)

ADJUSTMENT OPTIONS
O–F–100 = NONE
M–F–100 = MANUAL OVERRIDE
O–S–180 = LIMITED RANGE ADJ.
M–S–180 = BOTH MO/LTD ADJ

PORTS
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 |



# PBFC-16

BUCHER hydraulics

## PRESSURE COMPENSATED, PROPORTIONAL, PRIORITY FLOW CONTROL VALVE.

## DESCRIPTION

This valve is an electro–hydraulic, proportional, priority (By–Pass) type, pressure compensated, hydraulic flow control. Regulated flow normally closed 0 to 36.0 GPM [0 to 136,8 L/M] or normally open 36.0 to 0 GPM [136,8 to 0 L/M] @ 160 PSI DELTA P. is proportional to the current input regardless of load or system pressure. After the priority flow is satisfied the excess flow is diverted to a secondary circuit or to tank. Maximum inlet flow is 50.0 GPM [190,0 L/M].

## OPERATIONS

This unit is a direct acting (NO PILOT FLOW), electro–hydraulic, pro–portional, pressure compensated, flow control valve. When the coil is energized the armature moves the metering orifice open or closed against a precision bias spring varying the flow. A pressure compensator spool (HYDROSTAT) modulates the flow at 160 PSI/11,0 Bar delta "P" providing pressure. When current is increased or decreased to the coil; the flow will increase or decrease proportionally.

IN THE EVENT OF POWER FAILURE THE VALVE WILL CLOSE OR OPEN RESPECTIVELY.

## 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 valves are 100% functionally tested.

# PBFC-16

BUCHER hydraulics

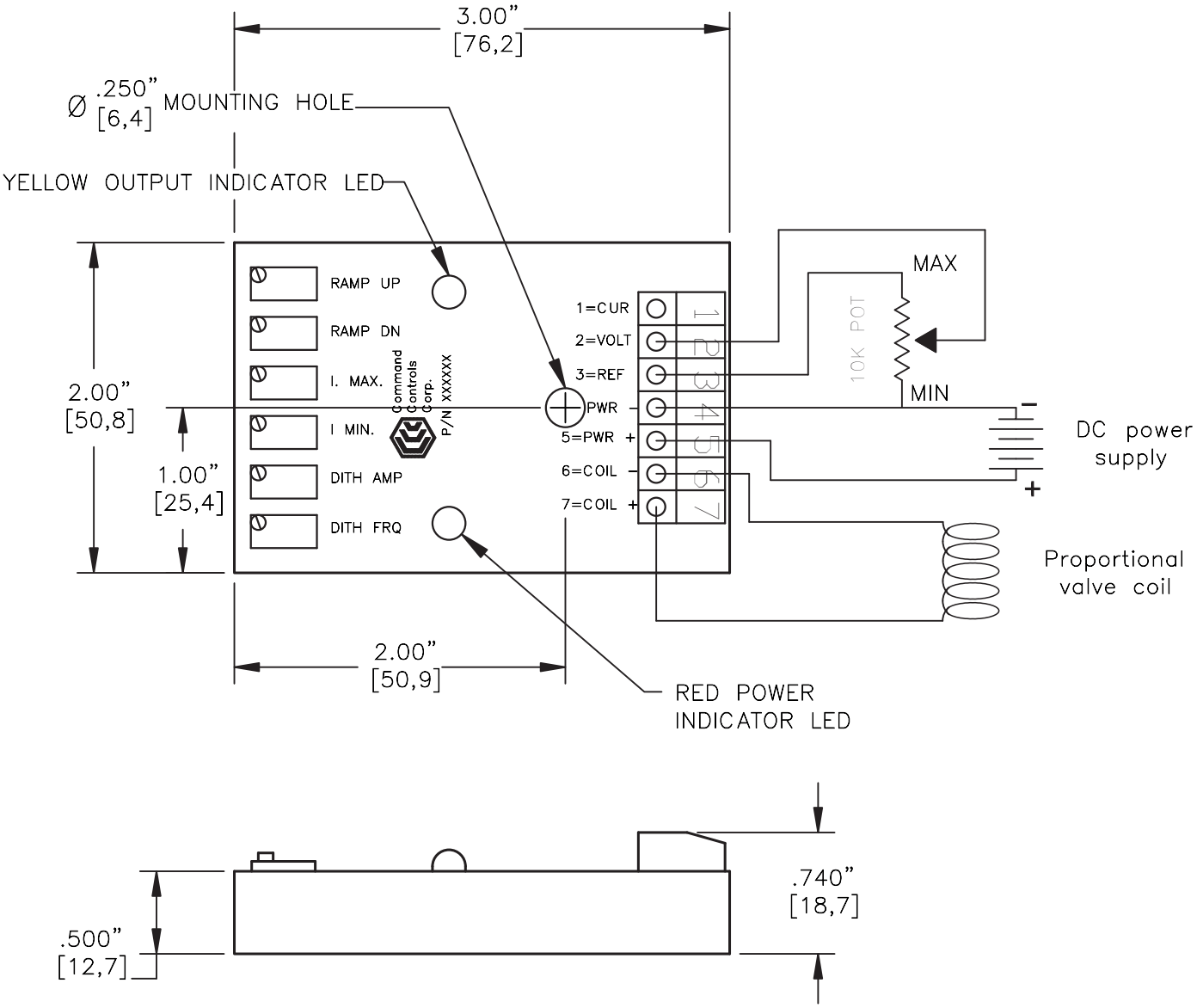
PRESSURE COMPENSATED, PROPORTIONAL, PRIORITY FLOW CONTROL VALVE.

## SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
REGULATED FLOW: 36.0 GPM [136,8 l/m] Max. See performance chart.
INTERNAL LEAKAGE: 40 cu.in/min [660 cc/m] @ 5,000 PSI [350 Bar]
VALVE HOUSINGS: 2500 PSI [175 Bar] = Aluminum – Anodized.
5000 PSI [350 Bar] = Steel – Unplated.
OPERATING TEMPERATURE: –40° to +250° F. [–40° to +120° C.]
OPERATING MEDIA: All general purpose hydraulic fluids such as MIL–H–5606, SAE–#10, SAE–#20, etc.
RESPONSE: The most efficient method to control this valve is with current control and a 50 Hz dither.
POWER REQUIREMENTS: 12 VDC, Operating current 0.4 to 2.4 AMPS.
24 VDC, Operating current 0.2 to 1.2 AMPS.
SEAL KIT: Buna "N": SKN–1622, SKN–1642
VITON: SKV–1622, SKV–1642
INSTALLATION: No restrictions.
WEIGHT: 6.78 lbs [2,54 kg] aluminum body.
9.89 lbs [4,50 kg] steel body.

BUCHER hydraulics

# PWM MICRO PROPORTIONAL VALVE DRIVER




PWM-1400-12..... for use with 12 V.D.C.

PWM-1400-24..... for use with 24 V.D.C.

BUCHER hydraulics

# PWM MICRO PROPORTIONAL VALVE DRIVER

## DESCRIPTION:

The Block Micro Proportional Driver is a electrical circuit built into an epoxy potted enclosure designed to proportionally control the flow of our solenoid valves.

The BMPD provides a Ø0.25 [6,4] mounting hole that is built in the body. Assembly of the unit is accomplished by connecting stranded or solid #10 AWG [Ø3,0] wire, up to to the miniature header that is provided on the top surface of the block.
Adjustments made to the unit are made by turning the adjustment screws located on the top surface of the block. The block also includes a red power indicator LED and a variable intensity yellow LED, to indicate output level, for onboard diagnostics.

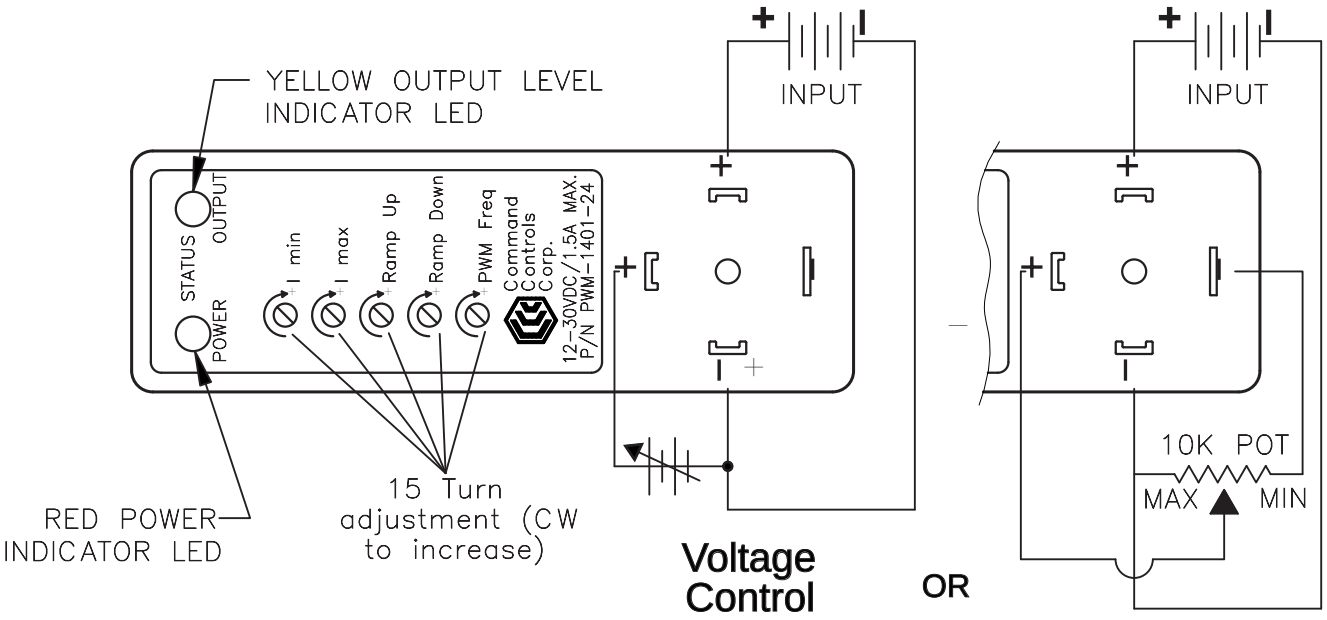
## TECHNICAL DATA:

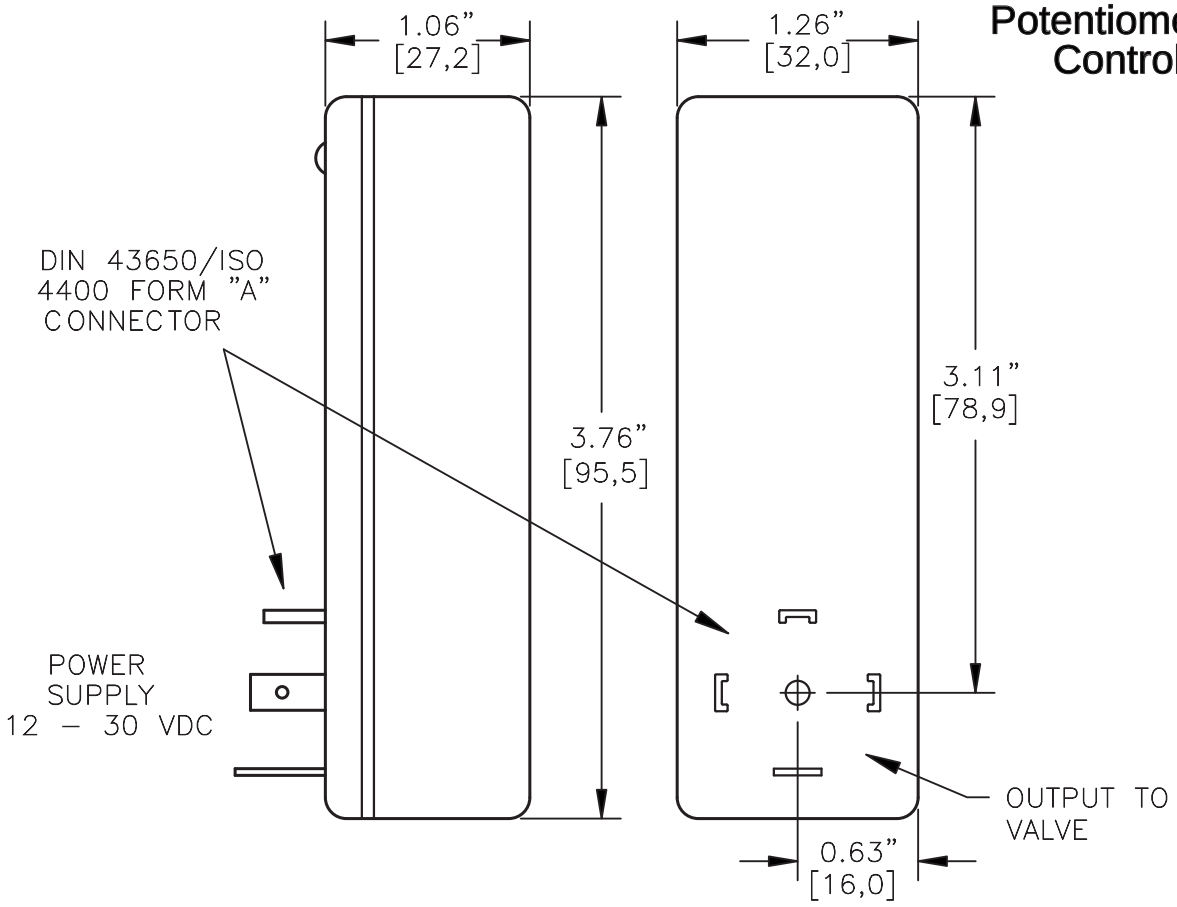
| PARAMETER | ALL VERSIONS |
|---|---|
| SUPPLY VOLTAGE | 9.0 V DC min. −32 VDC max. |
| SUPPLY CURRENT | 45 mA max. (no load) |
| INPUT CONTROL SIGNAL<br>VOLTAGE<br>OR<br>CURRENT | 0 − 5 VDC (300 K ohm impedance)<br><br>0−20 mA (100 ohm impedance) |
| RAMPING UP/DOWN TIME | 0.1 − 20 sec. linear (+/− 0.1%/°C) |
| PWM FREQUENCY | 1.2 KHz fixed |
| OUTPUT LEAP TO I MIN | @ 0.1 V or 0.4 mA control (+/− 15%) |
| DITHERING FREQUENCY | 30 − 150 Hz |
| DITHERING AMPLITUDE | 0 − 500 mA peak to peak |
| VOLTAGE REFERENCE | 5.0V +/− 5% regulated |
| OPERATING TEMP. | −25 to 85 °C |

| PARAMETER | PWM−1400−12 | PWM−1400−24 |
|---|---|---|
| OUTPUT CURRENT @ 25 °C Ta | | |
| CONTINUOUS | 3.0 Amps max. | 1.5 Amps max. |
| PEAK PULSED (16ms) | 17.0A max. | 4.7A max. |
| I MIN. (+/− 20%) | 0 − 1.0A max. | 0 − 0.5A max. |
| I MAX. (+/− 20%) | Imin. + 2.0A max. | Imin. + 1.0A max. |
| REGULATION **D**V | +/− 0.2% / V | |
| REGULATION **D**T | +/− 0.1% / °C | |

BUCHER hydraulics

# PWM MICRO PROPORTIONAL VALVE DRIVER




PWM-1401-12..... for use with 12 V.D.C.

PWM-1401-24..... for use with 24 V.D.C.

BUCHER hydraulics

# PWM MICRO PROPORTIONAL VALVE DRIVER

## DESCRIPTION:

The Micro Proportional Driver is a coil mounted driver unit used to proportionally control the flow of our solenoid valves.

The electronic circuit for the Micro Proportional Driver is built into an environment resistant miniature enclosure. It incorporates a DIN 43650/ISO 4400 form "A" connector male and female interface, and it is mounted on our coils using a mounting screw.

The case for the driver is made from engineered polymers to resist harsh chemicals, foreign substances, and moisture.

The unit meets NEMA 4 environment standards.

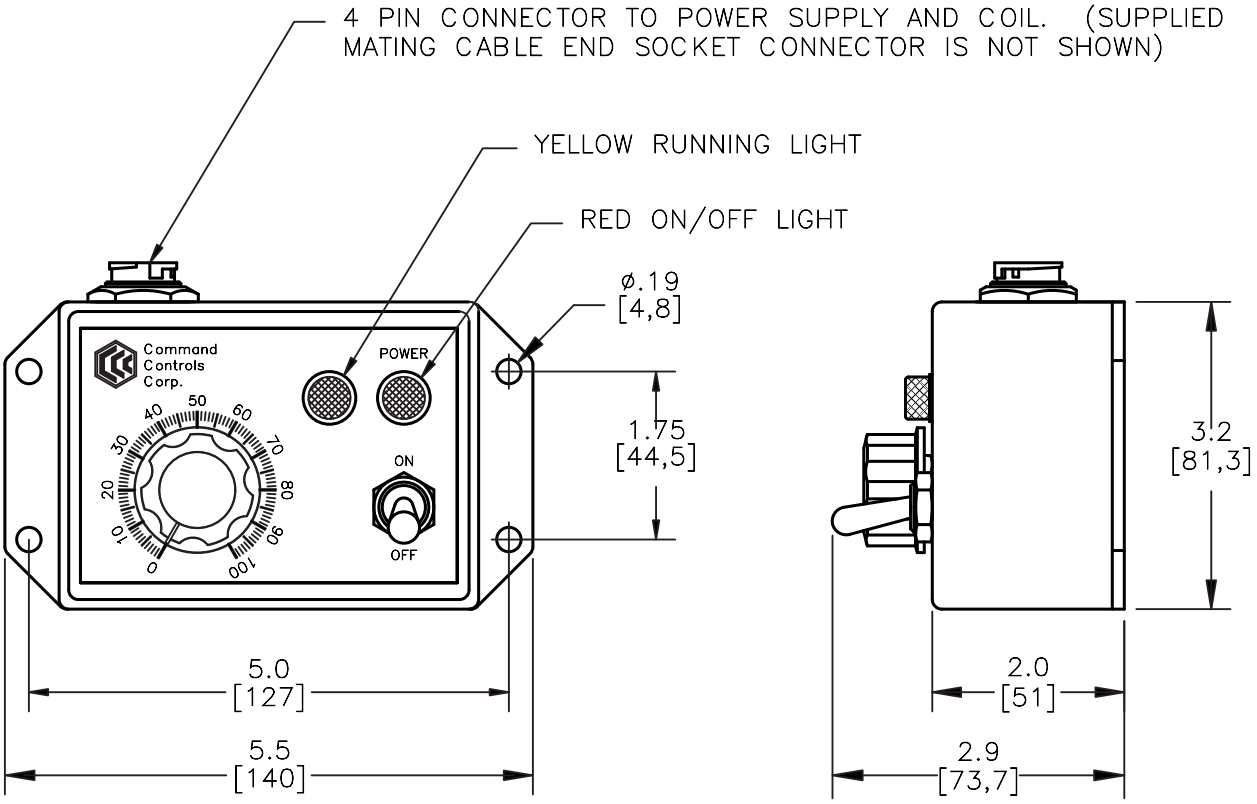
## TECHNICAL DATA:

| PARAMETER | ALL VERSIONS |
|---|---|
| SUPPLY VOLTAGE | 12 V DC min. – 30 VDC max. |
| SUPPLY CURRENT | 45 mA max. (no load) |
| INPUT CONTROL SIGNAL | 0 – 10 VDC (500 K ohm impedance) |
| RAMPING UP/DOWN TIME | 0.1 – 20 sec. linear (+/– 0.1% / °C) |
| PWM FREQUENCY | 95 – 225 Hz |
| OUTPUT LEAP TO I MIN | @ 0.2 V or 0.4 mA control (+/– 15%) |
| OPERATING TEMP. | –25 to 85 °C |

| PARAMETER | PWM–1401–12 | PWM–1401–24 |
|---|---|---|
| OUTPUT CURRENT @ 25°C Ta | | |
| CONTINUOUS | 3.0 Amps max. | 1.5 Amps max. |
| PEAK PULSED (16ms) | 17.0A max. | 4.7A max. |
| I MIN. (+/– 20%) | 0 – 1.0A max. | 0 – 0.5A max. |
| I MAX. (+/– 20%) | Imin. + 2.0A max. | Imin. + 1.0A max. |
| REGULATION **D**V | +/– 0.2% / V | |
| REGULATION **D**T | +/– 0.1% / °C | |

BUCHER hydraulics

# PWM PROPORTIONAL DRIVER CONTROL BOX




PWM-1404-12..... for use with 12 V.D.C.

PWM-1404-24..... for use with 24 V.D.C.

BUCHER hydraulics

# PWM PROPORTIONAL DRIVER CONTROL BOX

## DESCRIPTION:

THE PWM PROPORTIONAL DRIVER CONTROL BOX IS A COMPACT DEVICE, USED TO MANUALLY CONTROL PROPORTIONAL VALVES. IT USES A MICRO PROPORTIONAL DRIVER AND A POTENTIOMETER TO CONTROL THE VOLTAGE OR CURRENT TO THE SOLENOID COIL.

FEATURES INCLUDE A RED AND YELLOW INDICATOR LIGHT FOR ONBOARD DIAGNOSTICS AND A PLASTIC KNOB TO MANUALLY OPERATE THE VALVE.

THE PROPORTIONAL DRIVER CONTROL BOX ALSO INCLUDES A MOUNTING BRACKET WITH FOUR Ø .190 MOUNTING HOLES, FOR EASY MOUNTING.

## TECHNICAL DATA:

| COMPONENTS | PWM–1404–12 | PWM–1404–24 |
|---|---|---|
| POTENTIOMETER | 10K SINGLE TURN TRIMMING POT. | 10K SINGLE TURN TRIMMING POT. |
| LIGHT BULB | 28 V INCANDESCENT BULB | 28 V INCANDESCENT BULB |
| TOGGLE SWITCH | SPDT AC RATED GENERAL PURPOSE | SPDT AC RATED GENERAL PURPOSE |
| PWM DRIVER | PWM–1400–12 | PWM–1400–24 |
| RECEPTACLE | 4 PIN PLASTIC CONNECTOR | 4 PIN PLASTIC CONNECTOR |