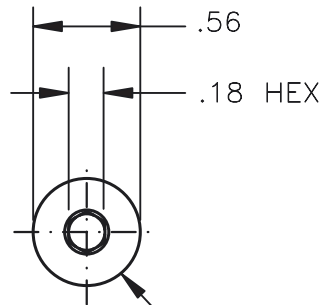
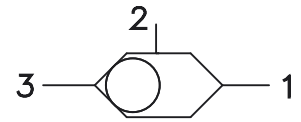


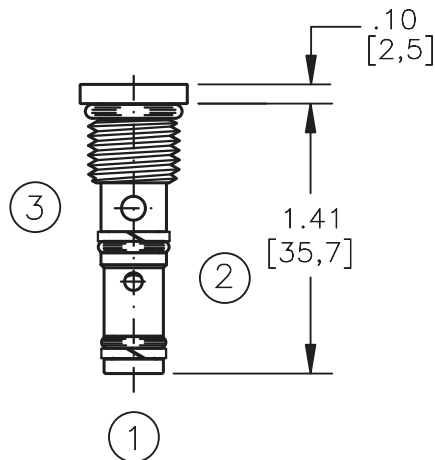
INDEX

S.No.	Description	Model
1	Shuttle Valve	BDSV-04
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		CBPA-12
		CBPA-20M
3	Check Valve	CVFB-04
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10	Logic Cartridge Valve	WL22SD

SHUTTLE VALVE TWO-POSITION, THREE-WAY, BALL TYPE.



TORQUE to 10/12 Ft-Lb.
[14/16 N-m]



BDSV-04-X-3-0-00

BASIC

SIZE

04 = 7/16"-20 UNF

SEALS

N = BUNA "N"

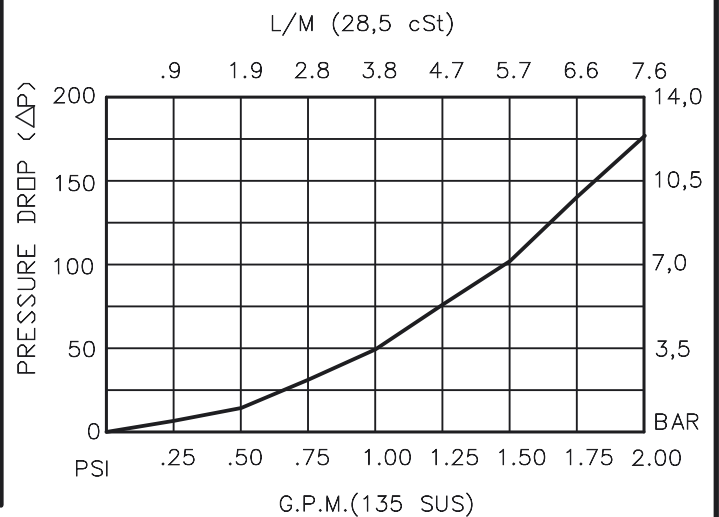
V = VITON

STYLE

3 = 3 WAY

PORTS

00 = CARTRIDGE ONLY



SHUTTLE VALVE TWO-POSITION, THREE-WAY, BALL TYPE.

DESCRIPTION

This unit is a SCREW IN, CARTRIDGE TYPE, THREE PORTED, TWO POSITION, HYDRAULIC SHUTTLE VALVE.

OPERATIONS

This valve senses the higher of the two input pressures port #1 or #3 and routes it to the output port #2.

FEATURES AND BENEFITS

A steel ball and a sharp steel seat assures rugged and reliable performance.

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

All cartridge valves are 100% functionally tested.

Industry common cavity.

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 1.5 GPM [6 l/m] nominal. See performance chart.

INTERNAL LEAKAGE: 5 drops/min maximum at 5,000 PSI.

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.

INSTALLATION: No restriction.

FILTRATION: 25 microns or better.

SEAL KIT NUMBER: SKN-0431 FOR BUNA "N".

SKV-0431 FOR VITON "V".

WEIGHT: 0.03 lb [.014kg] cartridge only.

VALVE CAVITY: #C0430, See Page 0-030.0.

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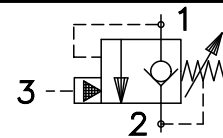
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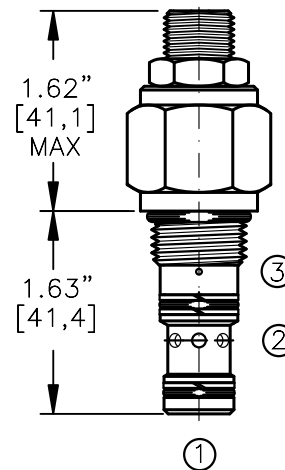
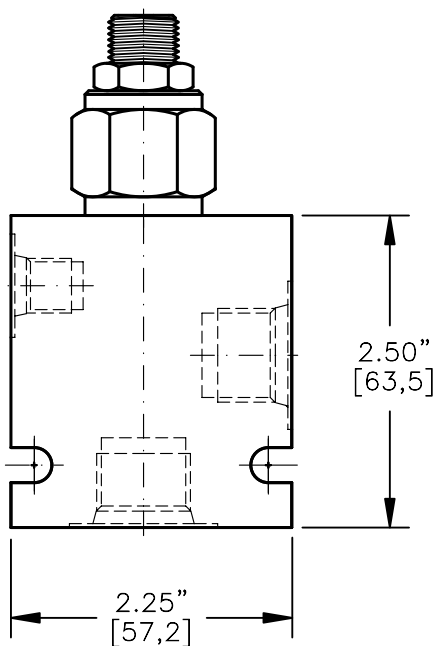
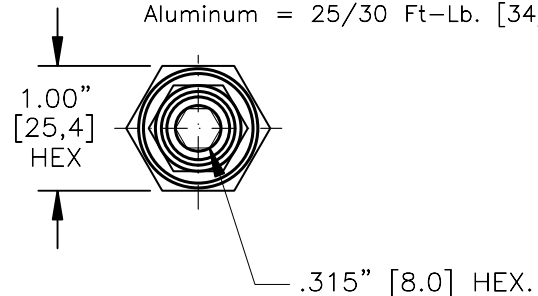
COUNTERBALANCE VALVE POPPET TYPE WITH FREE REVERSE FLOW



TORQUE:

Steel = 35/40 Ft-Lb. [47/54 Nm]

Aluminum = 25/30 Ft-Lb. [34/41 Nm]



FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-021-1.

CBPA-08-X-X-X-XX

BASIC

SIZE

08 = 3/4"-16 UNF

SEALS

N = BUNA "N"

V = VITON

ADJUSTMENT

S = ADJUSTING SCREW

C = CAPPED

T = TAMPERPROOF

K = HANDKNOB

M = METAL HANDKNOB

PRESSURE RANGE

15 = 100 TO 1500 PSI

30 = 300 TO 3000 PSI

50 = 1500 TO 5000 PSI

PORTS

0 = CARTRIDGE ONLY

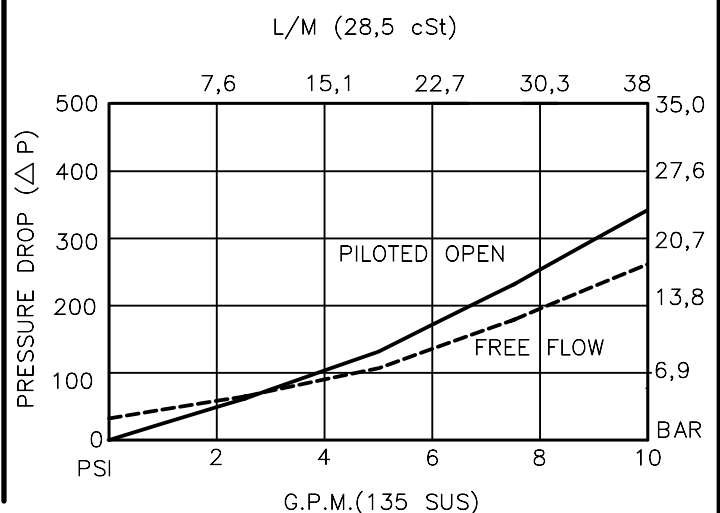
03BX = G 3/8" BSPP

08TX = SAE - #8

"A" - ALUM. HOUSING

"S" - STEEL HOUSING

FOR ADJUSTMENT CONTROL
OPTIONS SEE PAGE 0-050.0



COUNTERBALANCE VALVE POPPET TYPE WITH FREE REVERSE FLOW.

DESCRIPTION

This unit is a DIRECT ACTING, SCREW IN CARTRIDGE STYLE, POPPET TYPE, ADJUSTABLE, PILOT ASSISTED, HYDRAULIC COUNTERBALANCE VALVE.

OPERATIONS

This valve controls moving load and preventing it from running ahead of the pump, locking the load in any position, it also provides static overload and thermal expansion protection.

This valve is a MODULATING DEVICE that allows free flow from port 2 to port 1 and then blocks reverse flow until a pilot pressure INVERSELY PROPORTIONAL to the load pressure is sensed at port 3 modulating flow from port 1 to port 2.

FEATURES AND BENEFITS

Leakproof screw adjustment.

Adjustment screw can not be backed out of the valve.

Overset protection – spring can not go solid.

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

A unibody cage construction and with no dynamic seals on all moving parts provides very low hysteresis (1.5%) and reliable operation.

Minor internal leakage past the pilot piston purges the air from the pilot line thus improving stability.

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

Valve is available with screw, tamperproof, capped and handknob adjustments.

All cartridge valves are 100% functionally tested.

Industry common cavity.

COUNTERBALANCE VALVE POPPET TYPE WITH FREE REVERSE FLOW.

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 10.0 GPM [38 L/M] nominal. See performance chart.

PILOT RATIO: 4 to 1

INTERNAL LEAKAGE: 5 drops/min @ 90% of crack pressure.^{^J}

DEFINITION OF CRACK: evident at 0.06 GPM [0.25 LPM]

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.

INSTALLATION: No restriction.

FILTRATION: 25 microns or better.

SEAL KIT NUMBER: SKN-0828 for buna "N".

SKV-0828 for viton.

WEIGHT: 0.30 lb [.14 kg] cartridge only.

VALVE CAVITY: #C0825, See Page 0-021.0.

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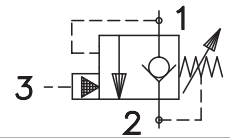
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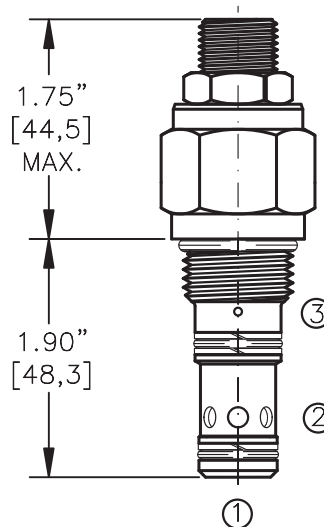
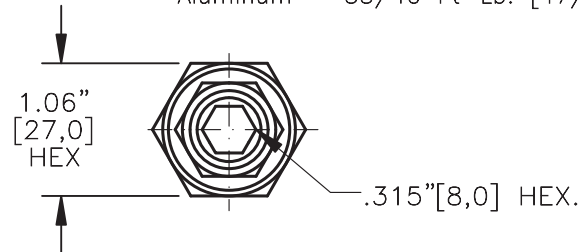
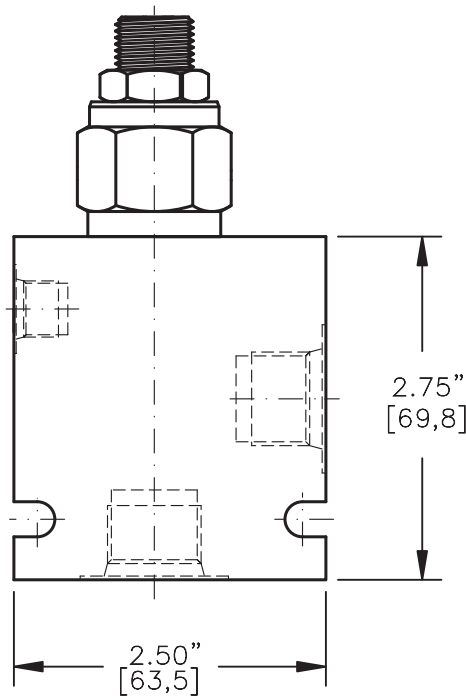
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COUNTERBALANCE VALVE POPPET TYPE WITH FREE REVERSE FLOW.



TORQUE:

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



FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-022-1.

CBPA-10-X-X-X-XX

BASIC

SIZE

10 = 7/8"-14 UNF

SEALS

N = BUNA "N"

V = VITON

ADJUSTMENT

S = ADJUSTING SCREW

C = CAPPED

T = TAMPERPROOF

K = HANDKNOB

M = METAL HANDKNOB

PRESSURE RANGE

15 = 100 TO 1500 PSI

30 = 300 TO 3000 PSI

50 = 500 TO 5000 PSI

PORTS

0 = CARTRIDGE ONLY

03BX = G 3/8" BSP

04BX = G 1/2" BSP

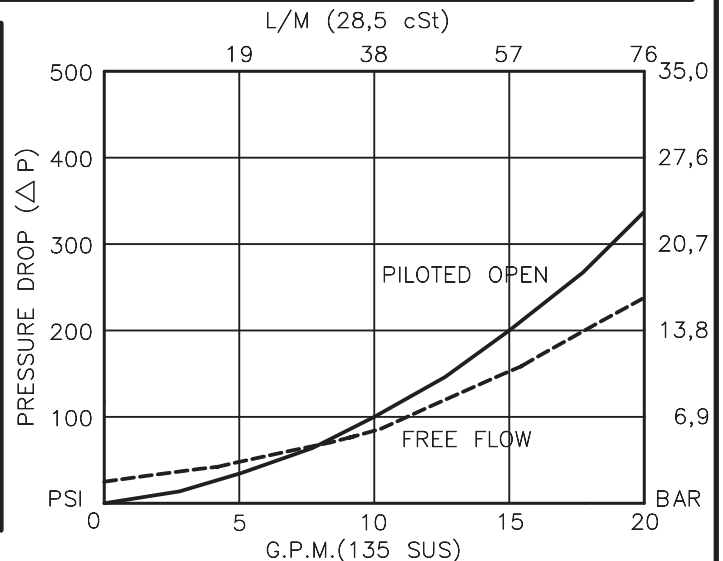
08TX = SAE - #8

10TX = SAE - #10

"A" - ALUM. HOUSING

"S" - STEEL HOUSING

FOR ADJUSTMENT CONTROL
OPTIONS SEE PAGE 0-050.0



COUNTERBALANCE VALVE

POPPET TYPE WITH FREE REVERSE FLOW.

DESCRIPTION

This unit is a DIRECT ACTING, SCREW IN CARTRIDGE STYLE, POPPET TYPE, ADJUSTABLE, PILOT ASSISTED, HYDRAULIC COUNTERBALANCE VALVE.

OPERATIONS

This valve controls moving load and preventing it from running ahead of the pump, locking the load in any position, it also provides static overload and thermal expansion protection.

This valve is a MODULATING DEVICE that allows free flow from port 2 to port 1 and then blocks reverse flow until a pilot pressure INVERSELY PROPORTIONAL to the load pressure is sensed at port 3 modulating flow from port 1 to port 2.

FEATURES AND BENEFITS

Leakproof screw adjustment.

Adjustment screw can not be backed out of the valve.

Overset protection – spring can not go solid.

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

A unibody cage construction and with no dynamic seals on all moving parts provides very low hysteresis (1.5%) and reliable operation.

Minor internal leakage past the pilot piston purges the air from the pilot line thus improving stability.

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

Valve is available with screw, tamperproof, capped and handknob adjustments.

All cartridge valves are 100% functionally tested.

Industry common cavity.

COUNTERBALANCE VALVE

POPPET TYPE WITH FREE REVERSE FLOW.

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 20.0 GPM [76 L/M] nominal. See performance chart.

PILOT RATIO: 4 to 1

INTERNAL LEAKAGE: 5 drops/min @ 90% of crack pressure.^{^J}

DEFINITION OF CRACK: evident at 0.06 GPM [0.25 LPM]

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.

INSTALLATION: No restriction.

FILTRATION: 25 microns or better.

SEAL KIT NUMBER: SKN-1028 for buna "N".

SKV-1028 for viton.

WEIGHT: 0.46 lb [.21 kg] cartridge only.

VALVE CAVITY: #C1025, See Page 0-022.0.

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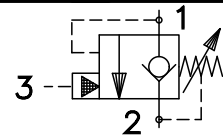
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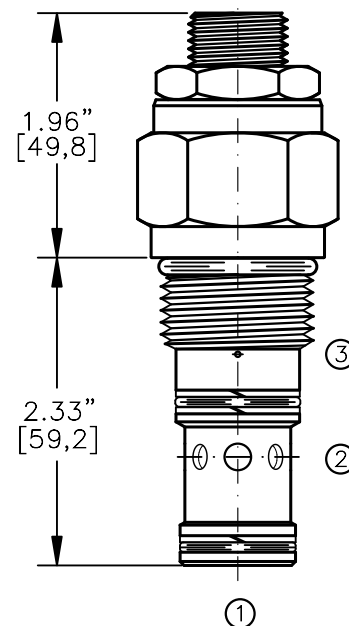
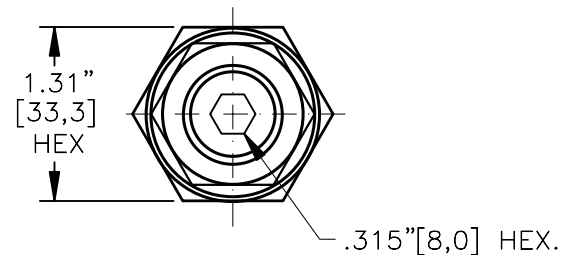
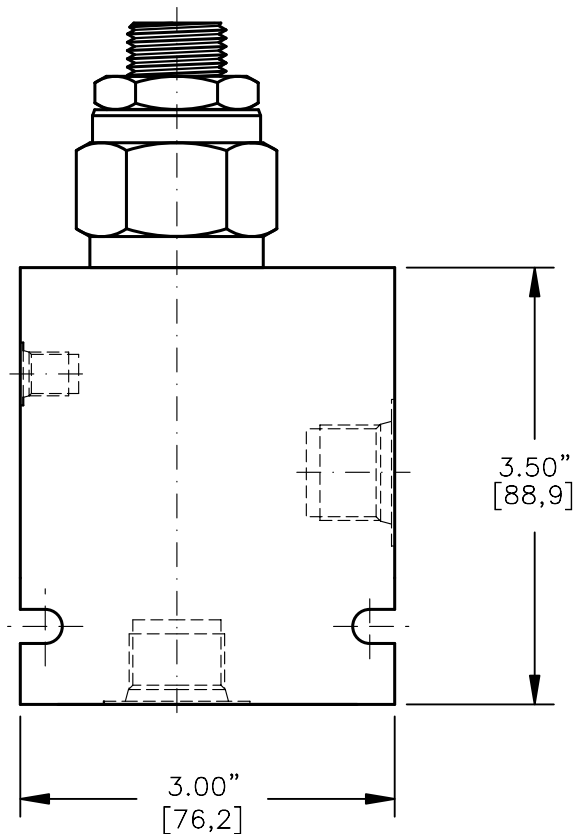
COUNTERBALANCE VALVE POPPET TYPE WITH FREE REVERSE FLOW.



TORQUE:

Steel = 70/75 Ft-Lb. [95/102 Nm]

Aluminum = 55/60 Ft-Lb. [74/81 Nm]



FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-023-1.

CBPA-12-X-X-X-XX

BASIC

SIZE

12 = 1.062"-12 UNF

SEALS

N = BUNA "N"

V = VITON

ADJUSTMENT

S = ADJUSTING SCREW

C = CAPPED

T = TAMPERPROOF

PRESSURE RANGE

15 = 100 TO 1500 PSI

30 = 300 TO 3000 PSI

40 = 600 TO 4000 PSI

PORTS

0 = CARTRIDGE ONLY

04BX = G 1/2" BSPP

06BX = G 3/4" BSPP

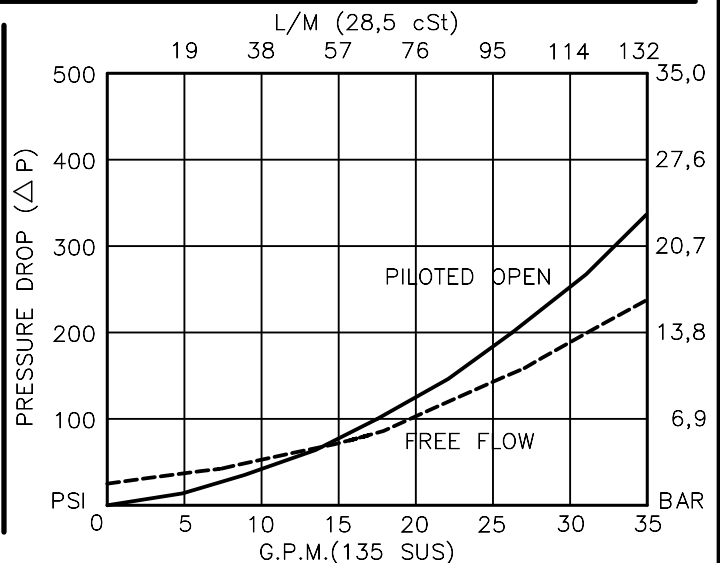
10TX = SAE - #10

12TX = SAE - #12

"A" - ALUM. HOUSING

"S" - STEEL HOUSING

FOR ADJUSTMENT CONTROL
OPTIONS SEE PAGE 0-050.0



COUNTERBALANCE VALVE

POPPET TYPE WITH FREE REVERSE FLOW.

DESCRIPTION

This unit is a DIRECT ACTING, SCREW IN CARTRIDGE STYLE, POPPET TYPE, ADJUSTABLE, PILOT ASSISTED, HYDRAULIC COUNTERBALANCE VALVE.

OPERATIONS

This valve controls moving load and preventing it from running ahead of the pump, locking the load in any position, it also provides static overload and thermal expansion protection.

This valve is a MODULATING DEVICE that allows free flow from port 2 to port 1 and then blocks reverse flow until a pilot pressure INVERSELY PROPORTIONAL to the load pressure is sensed at port 3 modulating flow from port 1 to port 2.

FEATURES AND BENEFITS

Leakproof screw adjustment.

Adjustment screw can not be backed out of the valve.

Overset protection – spring can not go solid.

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

A unibody cage construction and with no dynamic seals on all moving parts provides very low hysteresis (1.5%) and reliable operation.

Minor internal leakage past the pilot piston purges the air from the pilot line thus improving stability.

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

Valve is available with screw, tamperproof, and capped adjustments.

All cartridge valves are 100% functionally tested.

SPECIFICATIONS

OPERATING PRESSURE: 4,000 PSI [276 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 35.0 GPM [132 L/M] nominal. See performance chart.

PILOT RATIO: 4 to 1

INTERNAL LEAKAGE: 5 drops/min @ 90% of crack pressure.^{^J}

DEFINITION OF CRACK: evident at 0.06 GPM [0.25 LPM]

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.

INSTALLATION: No restriction.

FILTRATION: 25 microns or better.

SEAL KIT NUMBER: SKN-1228 for Buna "N".

SKV-1228 for Viton.

WEIGHT: 0.84 lb [0,38 kg] cartridge only.

VALVE CAVITY: #C1225, See Page 0-023.0.

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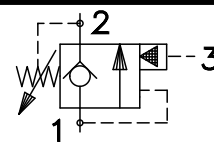
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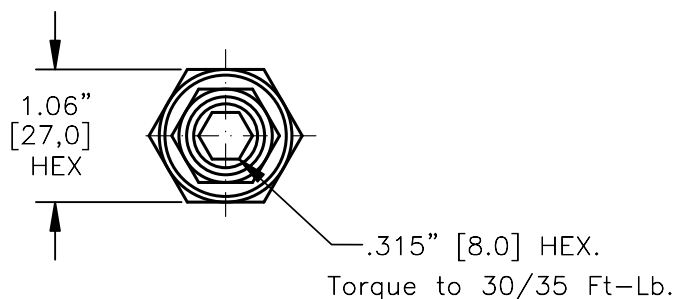
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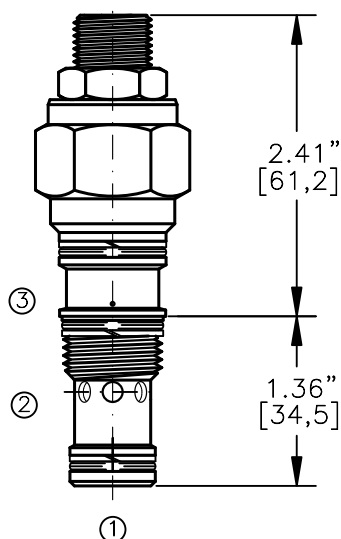
COUNTERBALANCE VALVE POPPET TYPE WITH FREE REVERSE FLOW.



FITS INTO SUN CAVITY #T-11A



Turn screw clockwise to increase the pressure setting.



CBPA-20M-X-X-X-XX

BASIC

SIZE

20M=20,0x1,5MM THD.

SEALS

N = BUNA "N"

V = VITON

ADJUSTMENT

S = ADJUSTING SCREW

C = CAPPED

T = TAMPERPROOF

K = HANDKNOB

M = METAL HANDKNOB

PRESSURE RANGE

15 = 100 TO 1500 PSI

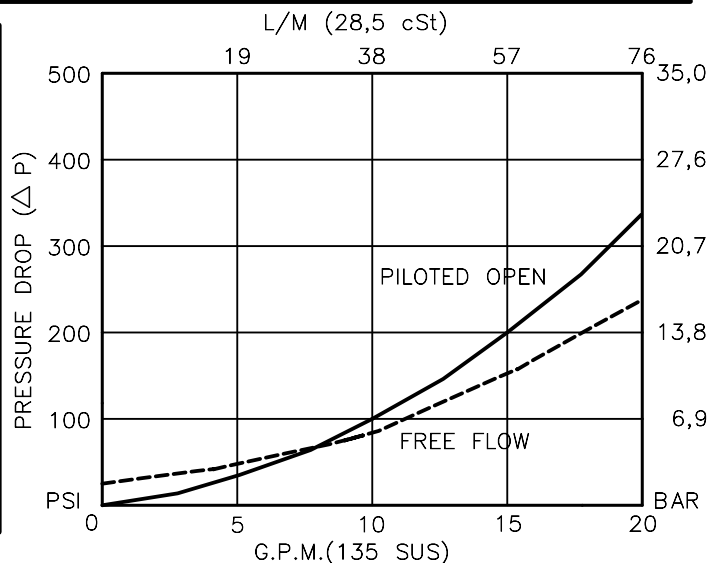
30 = 300 TO 3000 PSI

50 = 500 TO 5000 PSI

PORTS

0 = CARTRIDGE ONLY

FOR ADJUSTMENT CONTROL
OPTIONS SEE PAGE 0-050.0



COUNTERBALANCE VALVE

POPPET TYPE WITH FREE REVERSE FLOW.

DESCRIPTION

This unit is a DIRECT ACTING, SCREW IN CARTRIDGE STYLE, POPPET TYPE, ADJUSTABLE, PILOT ASSISTED, HYDRAULIC COUNTERBALANCE VALVE.

OPERATIONS

This valve controls moving load and preventing it from running ahead of the pump, locking the load in any position, it also provides static overload and thermal expansion protection.

This valve is a MODULATING DEVICE that allows free flow from port 2 to port 1 and then blocks reverse flow until a pilot pressure INVERSELY PROPORTIONAL to the load pressure is sensed at port 3 modulating out flow from port 1 to port 2.

FEATURES AND BENEFITS

Leakproof screw adjustment.

Adjustment screw can not be backed out of the valve.

Overset protection – spring can not go solid.

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

A unibody cage construction and with no dynamic seals on all moving parts provides very low hysteresis (1.5%) and reliable operation.

Minor internal leakage past the pilot piston purges the air from the pilot line thus improving stability.

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

Valve is available with screw, tamperproof, capped and handknob adjustments.

All cartridge valves are 100% functionally tested.

Fits in to SUN cavity # T-11A.

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 20.0 GPM [76 L/M] nominal. See performance chart.

PILOT RATIO: 4 to 1

INTERNAL LEAKAGE: 5 drops/min @ 90% of crack pressure.^{^J}

DEFINITION OF CRACK: evident at 0.06 GPM [0.25 LPM]

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.

INSTALLATION: No restriction.

FILTRATION: 25 microns or better.

SEAL KIT NUMBER: SKN-1029 for buna "N".

SKV-1029 for viton.

WEIGHT: 0.46 lb [.21 kg] cartridge only.

VALVE CAVITY: SUN # T-11A.

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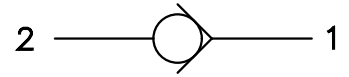
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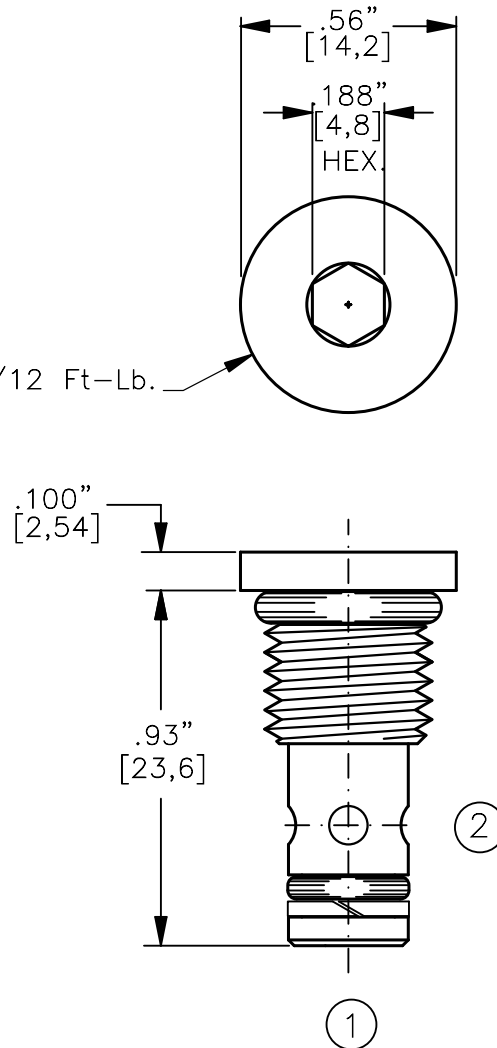
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CHECK VALVE FORWARD GUIDED BALL



TORQUE to 10/12 Ft-Lb.
[14/16 N-m].



CVFB-04-X-0-XXX

BASIC

SIZE

04 = 7/16"-20 UNF

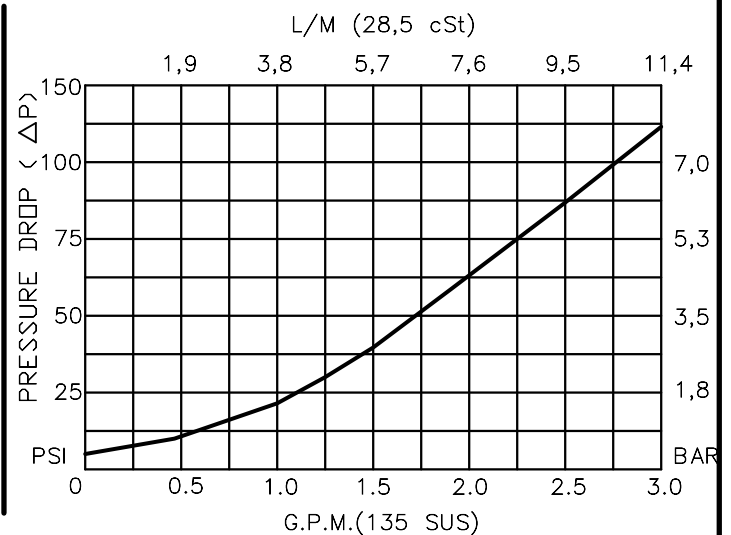
SEALS

N = BUNA "N"
V = VITON

PORTS

0 = CARTRIDGE ONLY
(NO HOUSING OFFERED)

CRACK PRESSURE

005 = 5 PSI
020 = 20 PSI

CHECK VALVE FORWARD GUIDED BALL

DESCRIPTION

This unit is a SCREW IN, cartridge type, guided ball, hydraulic check valve, for use as a blocking or load holding device for high pressure applications.

OPERATIONS

This valve allows free flow from port 1 to port 2 and blocks flow from port 2 to port 1 or holding a load.

FEATURES AND BENEFITS

All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 2.5 GPM [9,5 l/m] nominal. See performance chart.

INTERNAL LEAKAGE: 5 drops per minute maximum @ 5,000 PSI [350 Bar]

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.

INSTALLATION: No restrictions.

SEAL KIT: SKN-0421 Buna "N"

SKV-0421 Viton

WEIGHT: .08 lb [.04 kg] cartridge only.

VALVE CAVITY: #C0420.

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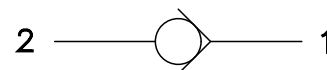
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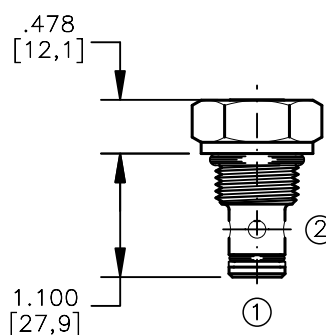
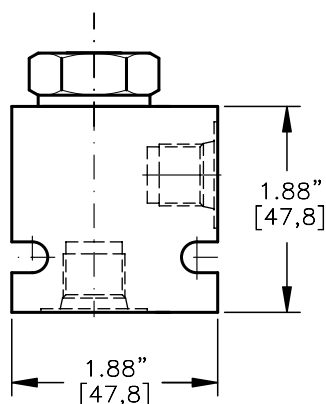
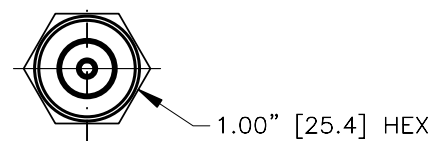
CHECK VALVE FORWARD GUIDED BALL



TORQUE:

Steel = 35/40 Ft-Lb. [47/54 Nm]

Aluminum = 25/30 Ft-Lb. [34/41 Nm]



FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-011.1

CVFB-08-X-X-XXX

BASIC

SIZE

08 = 3/4"-16 UNF

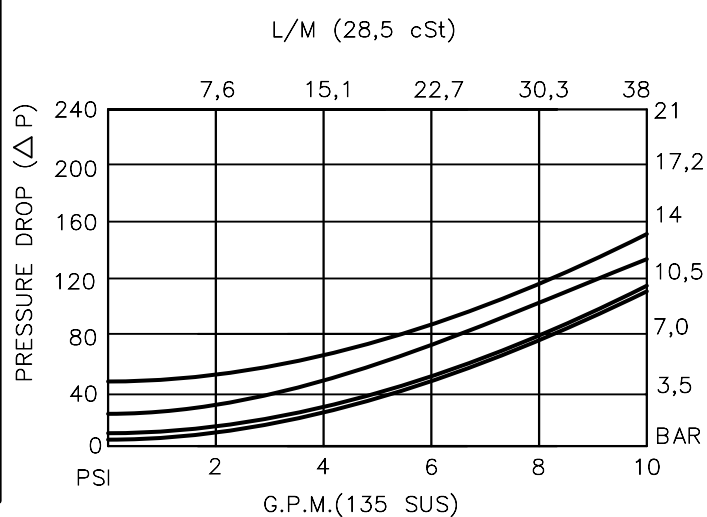
SEALS

N = BUNA "N"
V = VITON

PORTS

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

CRACK PRESSURE

005 = 5 PSI
010 = 10 PSI
025 = 25 PSI
050 = 50 PSI

CHECK VALVE FORWARD GUIDED BALL

DESCRIPTION

This unit is a SCREW IN, cartridge type, guided ball, hydraulic check valve, for use as a blocking or load holding device for high pressure applications.

OPERATIONS

This valve allows free flow from port 1 to port 2 and blocks flow from port 2 to port 1 or holding a load.

FEATURES AND BENEFITS

All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

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

INTERNAL LEAKAGE: 5 drops per minute maximum @ 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.

INSTALLATION: No restrictions.

SEAL KIT: SKN-0821 Buna "N"

SKV-0821 Viton

WEIGHT: .20 lb [.12 kg] cartridge only.

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

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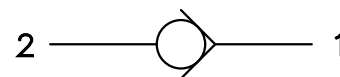
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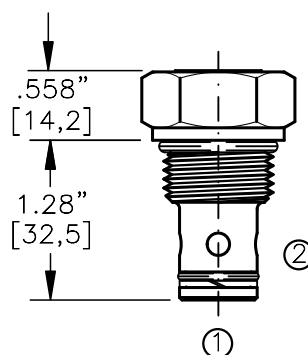
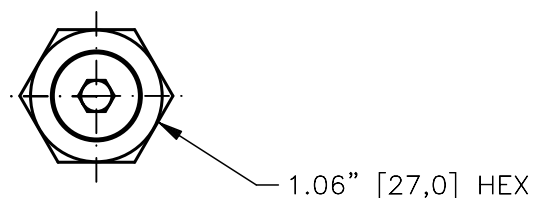
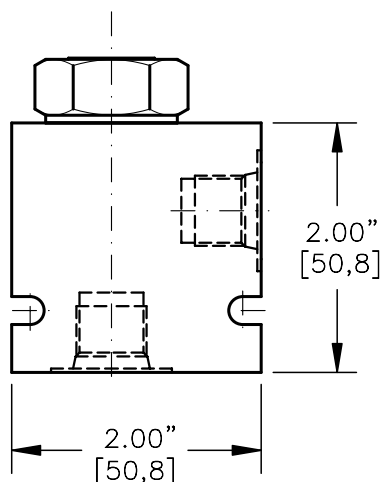
CHECK VALVE FORWARD GUIDED BALL



TORQUE:

Steel = 55/60 Ft-Lb. [74/81 Nm]

Aluminum = 35/40 Ft-Lb. [47/54 Nm]



FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-012.1

CVFB-10-X-X-XXX

BASIC

SIZE

10 = 7/8" - 14 UNF

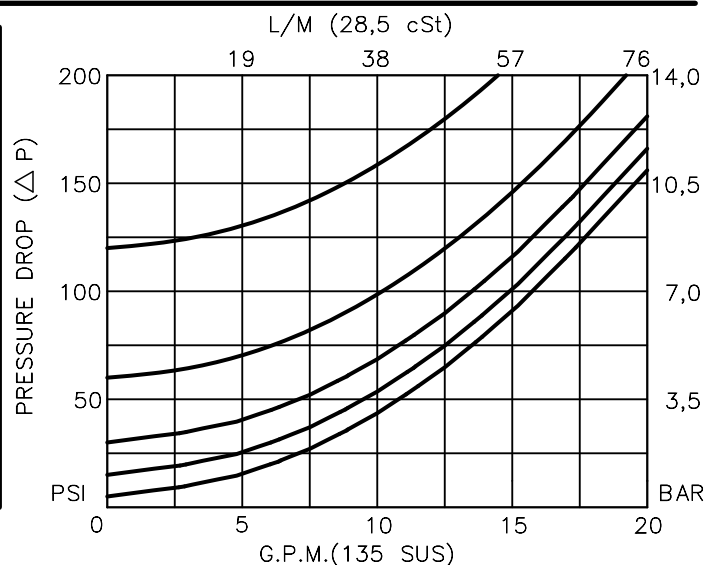
SEALS

N = BUNA "N"
V = VITON

PORTS

0 = CARTRIDGE ONLY
02BX = G 1/2" BSPP
03BX = G 3/4" BSPP
06TX = SAE - #10
08TX = SAE - #12"A" - ALUM. HOUSING
"S" - STEEL HOUSING

CRACK PRESSURE

005 = 5 PSI
015 = 15 PSI
030 = 30 PSI
060 = 60 PSI
120 = 120 PSI

CHECK VALVE FORWARD GUIDED BALL

DESCRIPTION

This unit is a SCREW IN, cartridge type, guided ball, hydraulic check valve, for use as a blocking or load holding device for high pressure applications.

OPERATIONS

This valve allows free flow from port 1 to port 2 and blocks flow from port 2 to port 1 for holding a load.

FEATURES AND BENEFITS

Wide selection of bias springs allows flexibility for back-pressure application.

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

All cartridge valves are 100% functionally tested.

Industry common cavity.

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

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

INTERNAL LEAKAGE: 5 drops per minute maximum @ 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.

INSTALLATION: No restrictions.

SEAL KIT: SKN-1021 Buna "N"

SKV-1021 Viton

WEIGHT: .25 lb [.12 kg] cartridge only.

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

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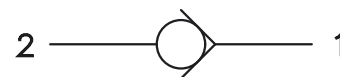
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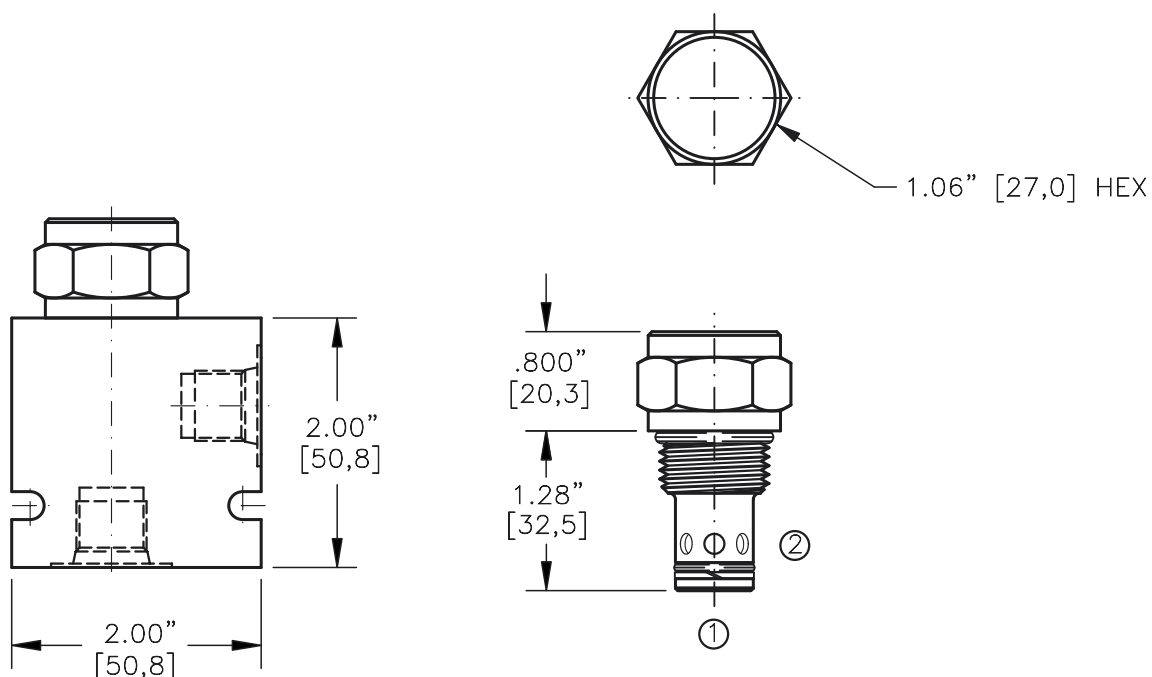
CHECK VALVE FORWARD GUIDED POPPET



TORQUE:

Steel = 55/60 Ft-Lb. [74/81 Nm]

Aluminum = 35/40 Ft-Lb. [47/54 Nm]



FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-012.1

CVFP-10-X-X-XXX

BASIC

SIZE

10 = 7/8"-14 UNF

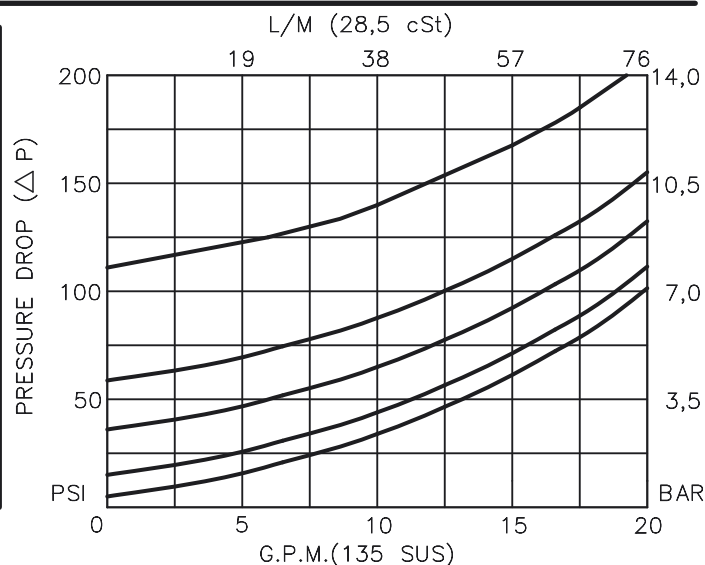
SEALS

N = BUNA "N"
V = VITON

PORTS

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

CRACK PRESSURE

005 = 5 PSI
015 = 15 PSI
030 = 30 PSI
060 = 60 PSI
120 = 120 PSI

CHECK VALVE FORWARD GUIDED POPPET

DESCRIPTION

This unit is a SCREW IN, cartridge type, guided poppet, hydraulic check valve, for use as a blocking or load holding device for high pressure applications.

OPERATIONS

This valve allows free flow from port 1 to port 2 and blocks flow from port 2 to port 1 or holding a load.

FEATURES AND BENEFITS

Wide selection of bias springs allows flexibility for back-pressure application.

All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

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

INTERNAL LEAKAGE: 5 drops per minute maximum @ 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.

INSTALLATION: No restrictions.

SEAL KIT: SKN-1021 Buna "N"

SKV-1021 Viton

WEIGHT: .25 lb [.12 kg] cartridge only.

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

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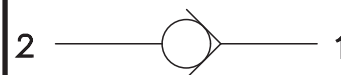
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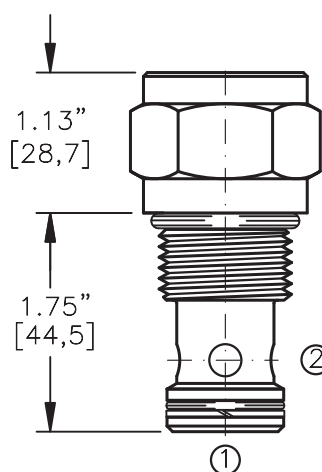
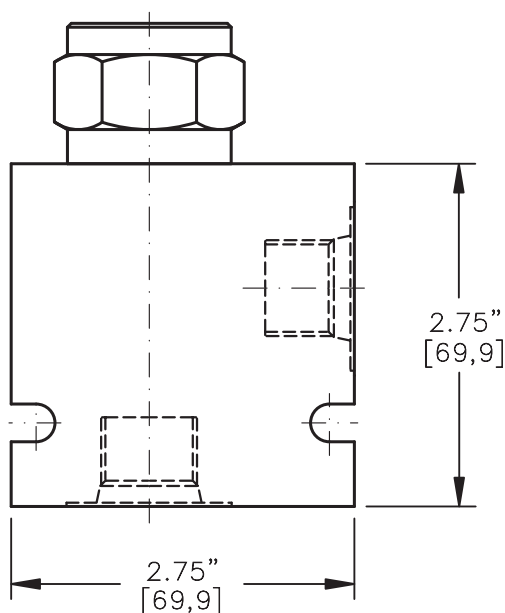
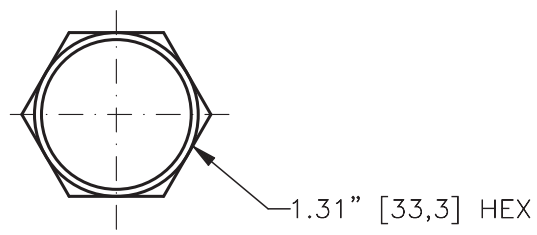
CHECK VALVE FORWARD GUIDED POPPET



TORQUE:

Steel = 70/75 Ft-Lb. [95/102 Nm]

Aluminum = 55/60 Ft-Lb. [74/81 Nm]



FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-013.1

CVFP-12-X-X-XXX

BASIC

SIZE

12 = 1.062"-12 UNF

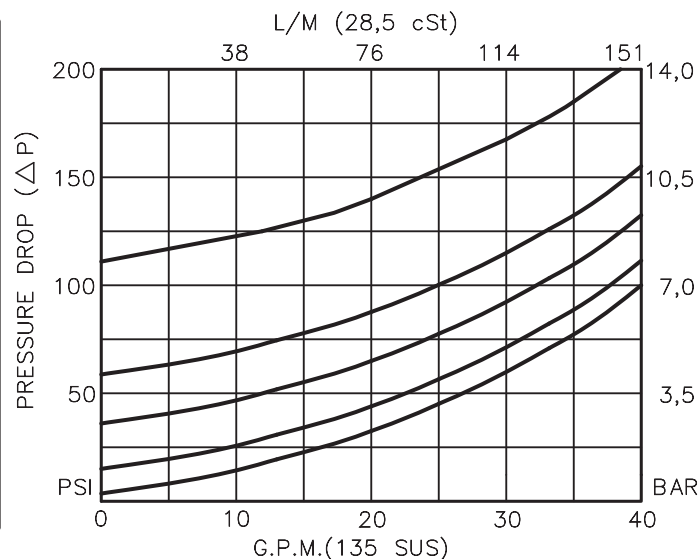
SEALS

N = BUNA "N"
V = VITON

PORTS

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

CRACK PRESSURE

005 = 5 PSI
015 = 15 PSI
030 = 30 PSI
060 = 60 PSI
120 = 120 PSI

CHECK VALVE FORWARD GUIDED POPPET

DESCRIPTION

This unit is a SCREW IN, cartridge type, guided poppet, hydraulic check valve, for use as a blocking or load holding device for high pressure applications.

OPERATIONS

This valve allows free flow from port 1 to port 2 and blocks flow from port 2 to port 1 or holding a load.

FEATURES AND BENEFITS

Wide selection of bias springs allows flexibility for back-pressure application.

All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

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

INTERNAL LEAKAGE: 5 drops per minute maximum @ 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.

INSTALLATION: No restrictions.

SEAL KIT: SKN-1231 Buna "N"

SKV-1231 Viton

WEIGHT: 0.50 lb [0.22 kg] cartridge only.

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

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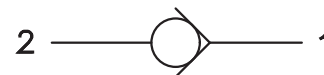
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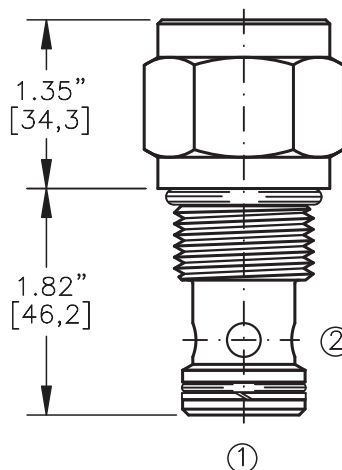
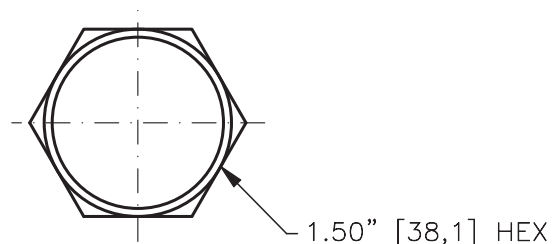
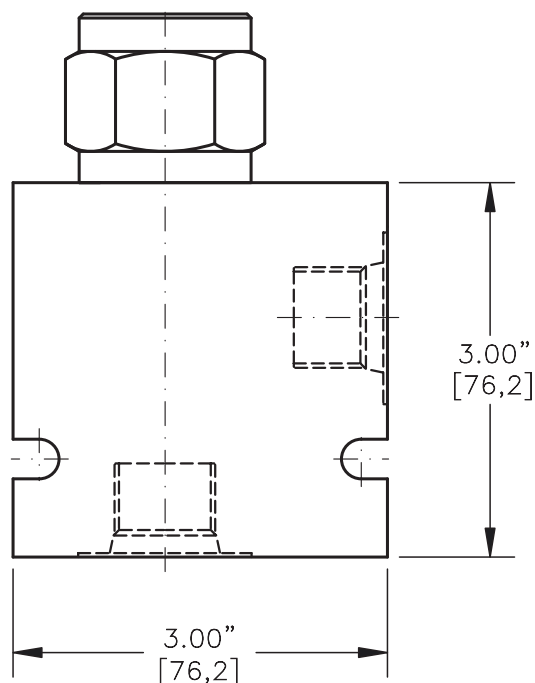
CHECK VALVE FORWARD GUIDED POPPET



TORQUE:

Steel = 95/100 Ft-Lb. [129/136 Nm]

Aluminum = 70/75 Ft-Lb. [95/102 Nm]



FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-014.1

CVFP-16-X-X-XXX

BASIC

SIZE

16 = 1.312"-12 UNF

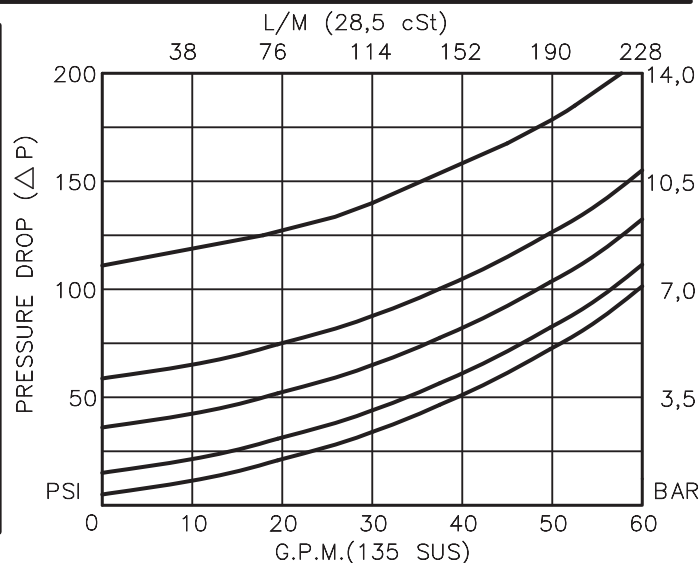
SEALS

N = BUNA "N"
V = VITON

PORTS

0 = CARTRIDGE ONLY
06BX = G 3/4" BSPP
08BX = G 1.0" BSPP
12TX = SAE - #12
16TX = SAE - #16"A" - ALUM. HOUSING
"S" - STEEL HOUSING

CRACK PRESSURE

005 = 5 PSI
015 = 15 PSI
030 = 30 PSI
060 = 60 PSI
120 = 120 PSI

CHECK VALVE FORWARD GUIDED POPPET

DESCRIPTION

This unit is a SCREW IN, cartridge type, guided poppet, hydraulic check valve, for use as a blocking or load holding device for high pressure applications.

OPERATIONS

This valve allows free flow from port 1 to port 2 and blocks flow from port 2 to port 1 or holding a load.

FEATURES AND BENEFITS

Wide selection of bias springs allows flexibility for back-pressure application.

All external carbon steel parts are plated for longer life against the elements. All cartridge valves are 100% functionally tested.

Industry common cavity.

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 60.0 GPM [228 l/m] nominal. See performance chart.

INTERNAL LEAKAGE: 5 drops per minute maximum @ 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.

INSTALLATION: No restrictions.

SEAL KIT: SKN-1621 Buna "N"

SKV-1621 Viton

WEIGHT: 0.86 lb [0.39 kg] cartridge only.

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

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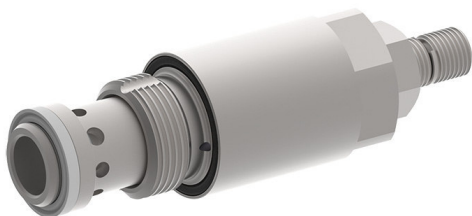
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Pressure-Relief Cartridge Valve, Size 10

$Q_{\max} = 140 \text{ l/min}$, $p_{\max} = 350 \text{ bar}$
 Poppet pilot stage, spool-type main stage
 Series DVPA-1...



- Pilot oil drained internally to port B
- Interchangeable with DVP-1-10 ...
- Very stable in operation
- Improved pressure-setting resolution
- Very tolerant of over-tightening in cavity
- BUCHER cavity type DC

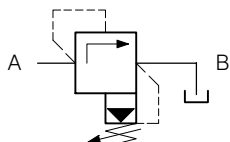
1. Description

Series DVPA-1-10... cartridges are 2-stage pressure relief valves with a positive seat pilot stage and spool-type main stage. When the pilot stage is active (main stage relieving), pilot oil is internally drained to port B. Any pressure in port B is additive to the spring pressure setting, therefore port B should preferably be connected to tank. Thoroughly oil or grease external seals before inserting the cartridge in a DC cavity. The cartridge can be tightened with a 27 A/F OE

spanner (note the recommended tightening torque). Form tools are available for sale or hire, should customers wish to machine cavities in their own control blocks. The BUCHER line- and manifold-mounting body type DC-12 can be used where the application requires a line mounting valve. The cartridge can also be supplied with an integral reverse flow check valve: Type DVPA-RV-1-10 ...

2. Symbols

DVPA-1-10 ...

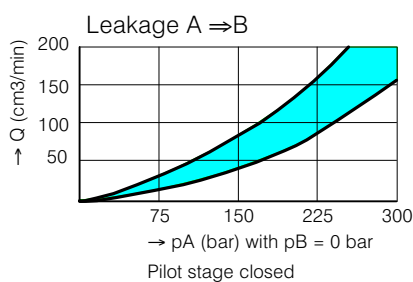
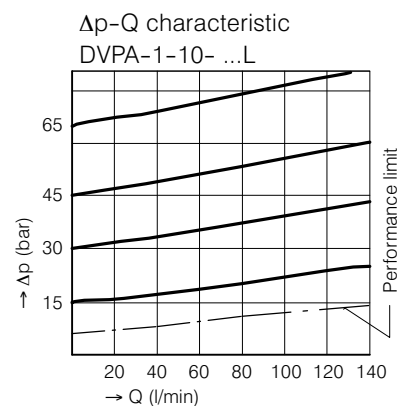
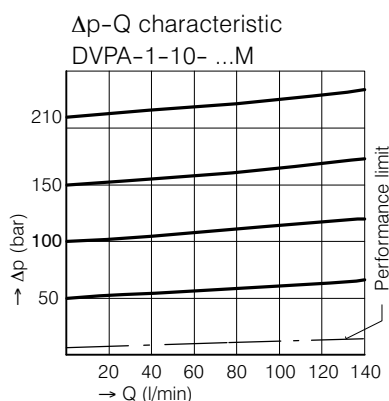
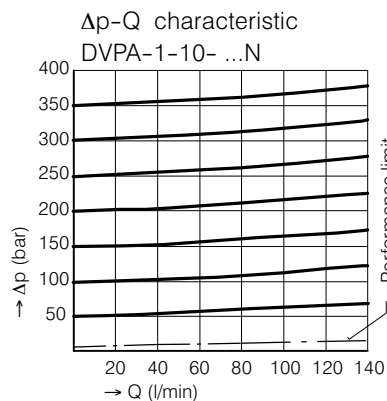


3. Characteristics

Type		pressure relief cartridge valve
Design		poppet pilot stage, spool main stage
Mounting method		screw-in cartridge (M24 x 1,5)
Size		10 mm nominal size, BUCHER cavity type DC
Mass	kg	0,23
Mounting attitude		unrestricted
Flow direction		A ⇒ B, see symbol
Operating pressure	bar	... 350 max. in A and B
Adjustment ranges, see performance curves	bar	pressure range N = 10 ... 350 pressure range M = 10 ... 210 pressure range L = 10 ... 65
Flow rate Q max.	l/min	1 ... 140. see performance characteristics
Fluids		Hydraulic oils HL and HLP to DIN 51 524 other fluids - contact BUCHER
Fluid temperature range	°C	-25 ... +80
Viscosity range	cSt	10 ... 650 mm ² /s, recommended 15 ... 250 mm ² /s
Minimum fluid cleanliness		20/18/15 to ISO 4406 : 1999

4. Performance characteristics

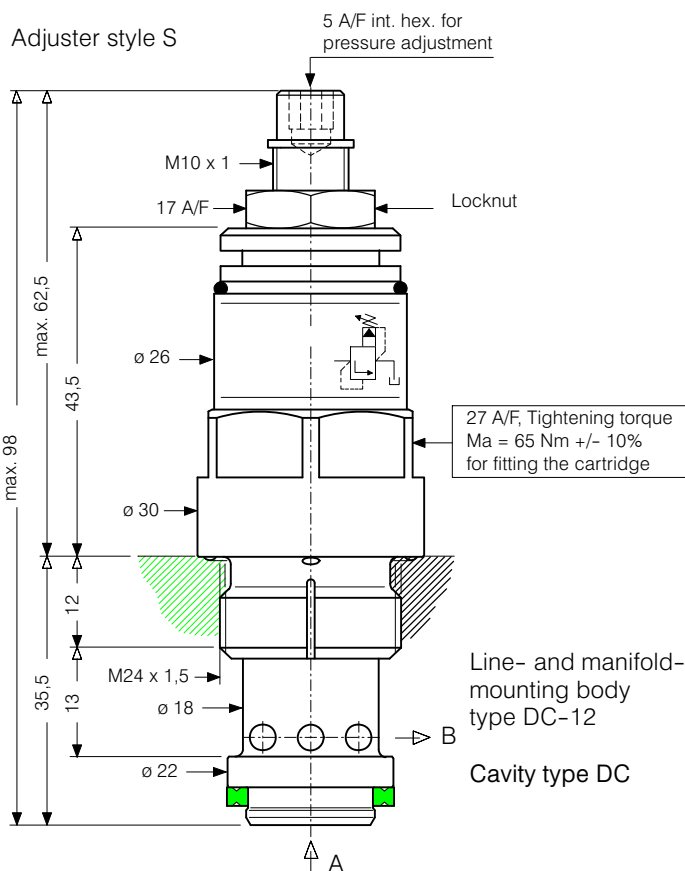
Oil viscosity 33 cSt



Rate of pressure change when
turning the adjusting screw

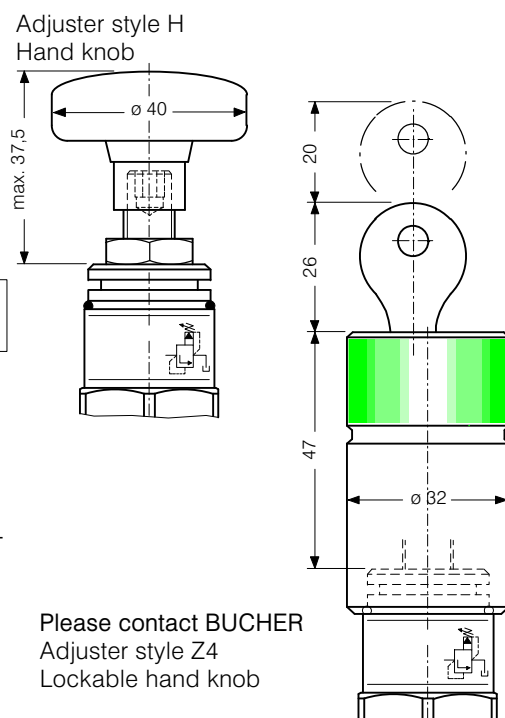
DVPA-1-10-...N: 1 turn \cong	approx. 65 bar
DVPA-1-10-...M: 1 turn \cong	approx. 38 bar
DVPA-1-10-...L: 1 turn \cong	approx. 13 bar

5. Dimensions

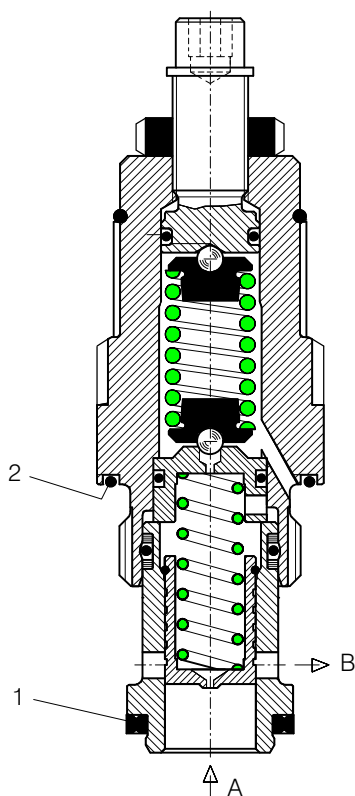


Adjuster styles / OPTIONAL

Cartridges can also be supplied with adjuster styles H and Z4 (see model code key)



6. Schematic section



Seal kit no. DS-216-N comprising:

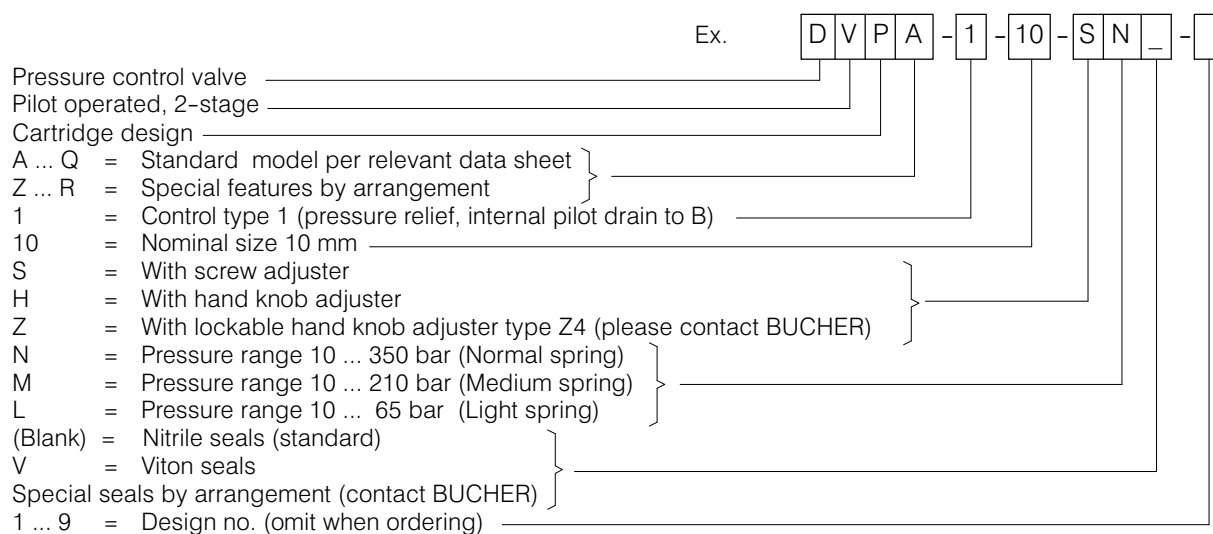
Itm.	Qty.	Description	Size
1	1	Sealing ring	Ø 22,1 / 16,5 x 2,5
2	1	O-ring no. 021	Ø 23,52 x 1,78 N90

7. Installation and servicing

All installation and servicing must be carried out with care, and by qualified personnel only. When changing seals, the

new seals must be thoroughly oiled or greased before they are fitted.

8. Model code key



9. Related data sheets

Old no.	New no.	
D-4.34	400-P-280131-EN	Pressure relief cartridge valve with integral bypass check valve type DVPA-RV-1-10 ...
G-24.20	400-P-740101-EN	BUCHER Line- and manifold-mounting body type DC-12 (G 1/2")
i-32	400-P-040011-EN	The Form Tools hire programme
i-45.1	400-P-060111-EN	BUCHER cavity type DC

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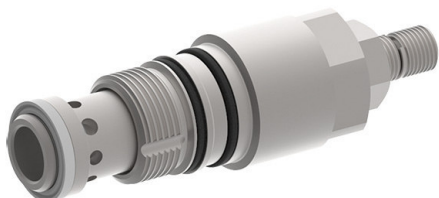
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Classification: 450300.305.320.355

Pressure-Relief Cartridge Valve, Size 10

$Q_{\max} = 140 \text{ l/min}$, $p_{\max} = 350 \text{ bar}$
 Poppet pilot stage, spool-type main stage
 Series DVPA-2...



- Pilot oil drained internally to port B with remote control port Z
- Interchangeable with DVP-2-10 ...
- Very stable in operation
- Improved pressure-setting resolution
- Very tolerant of over-tightening in cavity
- BUCHER cavity type DD

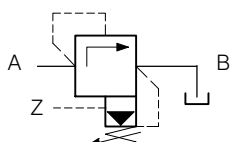
1. Description

Series DVPA-2-10... cartridges are 2-stage pressure relief valves with a positive seat pilot stage and spool-type main stage. When the pilot stage is active (main stage relieving), pilot oil is internally drained to port B. Any pressure in port B is additive to the spring pressure setting, therefore port B should preferably be connected to tank. By connecting a separate pressure control valve (eg. type DPA-3) or directional control valve (eg. type WR22...) to the remote control port Z, the cartridge can be controlled or vented from a dis-

tant location. Thoroughly oil or grease external seals before inserting the cartridge in a DD cavity. The cartridge can be tightened with a 27 A/F OE spanner (note the recommended tightening torque). Form tools are available for sale or hire, should customers wish to machine cavities in their own control blocks. The BUCHERline- and manifold-mounting body type DD-12 can be used where the application requires a line mounting valve.

2. Symbols

DVPA-2-10 ...

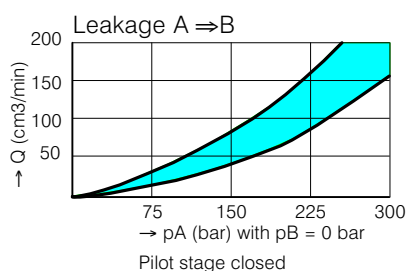
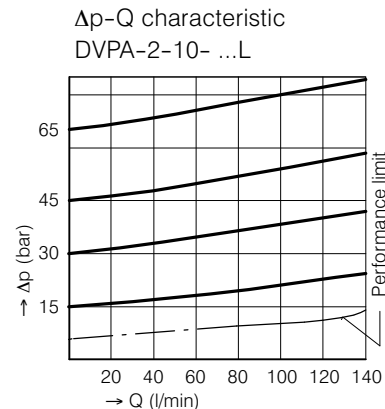
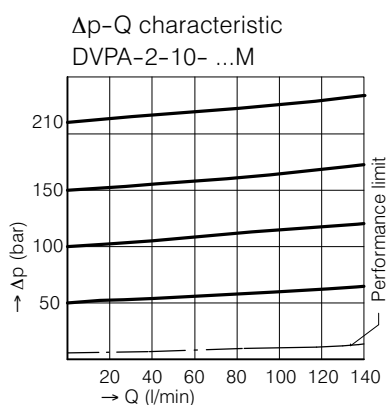
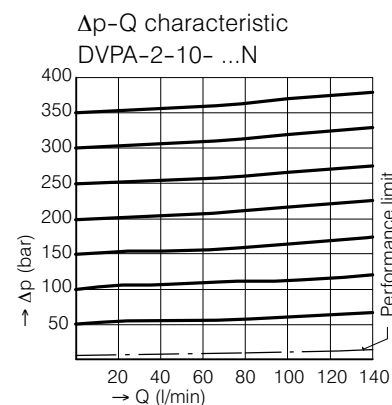


3. Characteristics

Type		pressure relief cartridge valve
Design		poppet pilot stage, spool main stage with remote control port Z
Mounting method		screw-in cartridge (M24 x 1,5)
Size		10 mm nominal size, BUCHER cavity type DD
Mass	kg	0,23
Mounting attitude		unrestricted
Flow direction		A ⇒ B, see symbol
Operating pressure	bar	... 350 max. in A, B and Z
Adjustment ranges, see performance curves	bar	pressure range N = 10 ... 350 pressure range M = 10 ... 210 pressure range L = 10 ... 65
Flow rate Q max.	l/min	1 ... 140 max. see performance characteristics
Fluids		Hydraulic oils HL and HLP to DIN 51 524 other fluids - contact BUCHER
Fluid temperature range	°C	-25 ... +80
Viscosity range	cSt	10 ... 650 mm ² /s, recommended 15 ... 3250 mm ² /s
Minimum fluid cleanliness		20/18/15 to ISO 4406 : 1999

4. Performance characteristics

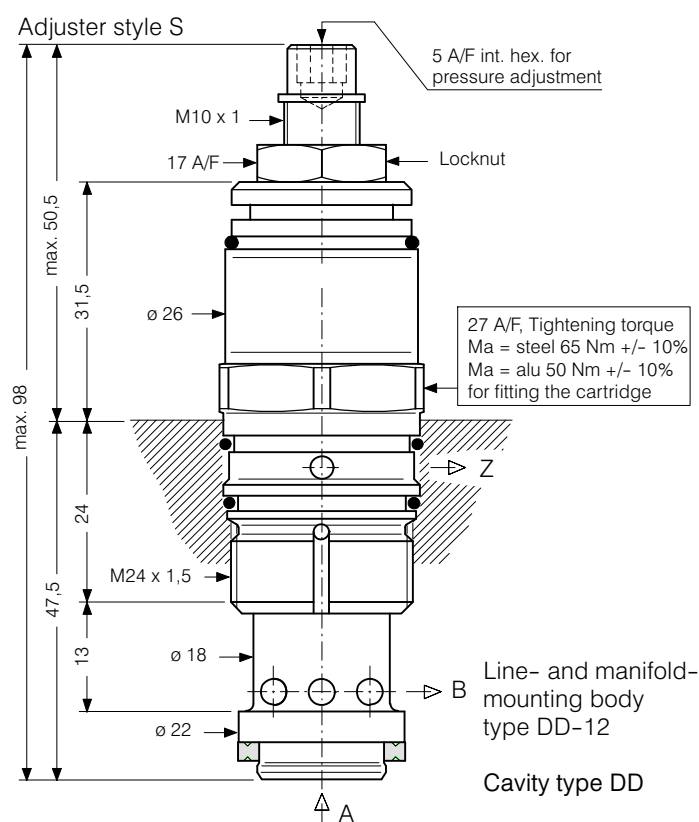
Oil viscosity 36 cSt



Rate of pressure change when turning the adjusting screw

DVPA-2-10-...N: 1 turn \cong approx. 65 bar
DVPA-2-10-...M: 1 turn \cong approx. 38 bar
DVPA-2-10-...L: 1 turn \cong approx. 13 bar

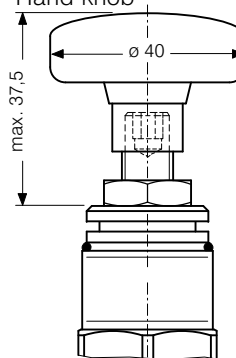
5. Dimensions



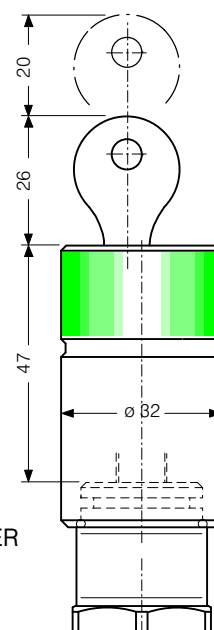
Adjuster styles / OPTIONAL

Cartridges can also be supplied with adjuster styles H and Z4 (see model code key)

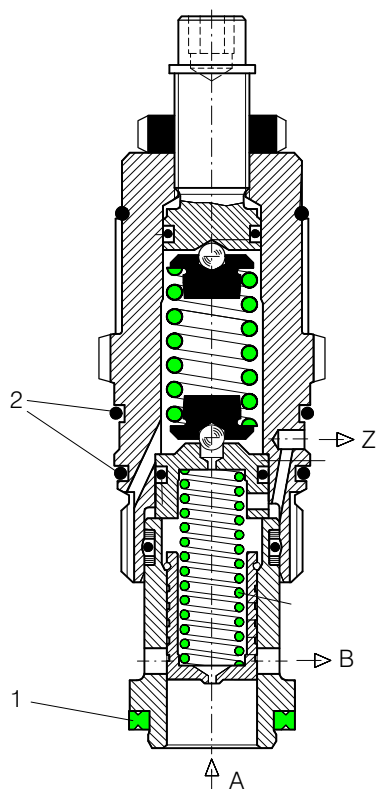
Adjuster style H Hand knob



Please contact BUCHER
Adjuster style Z4
Lockable hand knob



6. Schematic section



Seal kit no. DS-216-N, comprising:

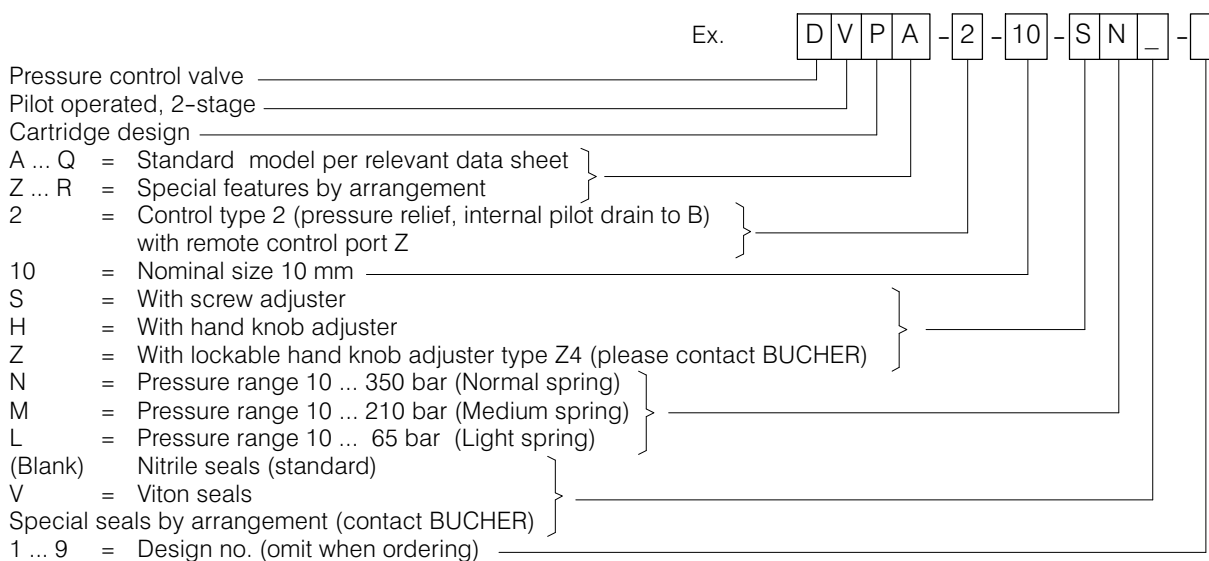
Itm.	Qty.	Description	Size
1	1	Sealing ring	Ø 22,1 / 16,5 x 2,5
2	2	O-ring no. 020	Ø 21,95 x 1,78 N90

7. Installation and servicing

All installation and servicing must be carried out with care, and by qualified personnel only. Use the correct tightening torque when fitting the cartridge. When changing seals, the

new seals must be thoroughly oiled or greased before they are fitted.

8. Model code key



9. Related data sheets

Old no.	New no.	
G-24.21	400-P-740111-EN	BUCHER Line- and manifold-mounting body type DD-12 (G 1/2")
i-32	400-P-040011-EN	The Form tool hire programme
i-45.2	400-P-060121-EN	BUCHER cavity type DD

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Classification: 450300.305.320.355

Pressure-Relief Cartridge Valve, Size 10

$Q_{\max} = 140 \text{ l/min}$, $p_{\max} = 350 \text{ bar}$
Poppet pilot stage, spool-type main stage
Series DVPA-3...



- Pilot oil drained externally to port Z
- Interchangeable with DVP-3-10 ...
- Very stable in operation
- Improved pressure-setting resolution
- Very tolerant of over-tightening in cavity
- BUCHER cavity type DD
- available in ISO / CETOP 5 stack mounting body

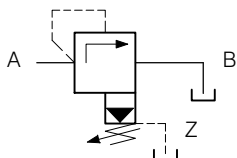
1. Description

Series DVPA-3-10... cartridges are 2-stage pressure relief valves with a positive seat pilot stage and spool-type main stage. When the pilot stage is active (main stage relieving), pilot oil is externally drained to port Z. Port B can therefore be subjected to pressure without influencing the valve's pressure relief setting. When used to provide a pressure sequence function, the pilot oil consumption increases (see pA-Q curves overleaf). Thoroughly oil or grease external seals before inserting the cartridge in a DD cavity. The car-

tridge can be tightened with a 27 A/F OE spanner (note the recommended tightening torque). Form tools are available for sale or hire, should customers wish to machine cavities in their own control blocks. The BUCHER line- and manifold-mounting body type DD-12 can be used where the application requires a line mounting valve. The cartridge can also be supplied with an integral reverse flow check valve: DVPA-RV-3-10...

2. Symbols

DVPA-3-10 ...



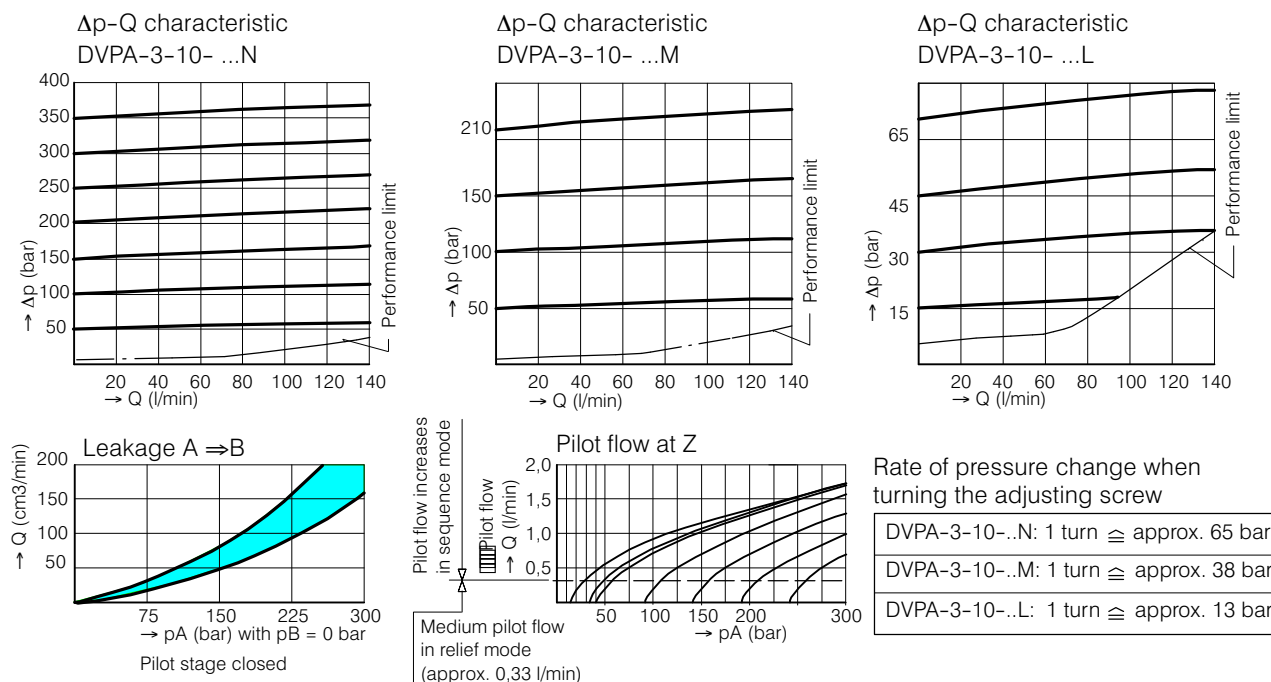
3. Characteristics

Type		pressure relief cartridge valve
Design		poppet pilot stage, spool main stage with external pilot drain to port Z
Mounting method		screw-in cartridge (M24 x 1,5)
Size		10 mm nominal size, BUCHER cavity type DD
Mass	kg	0,23
Mounting attitude		unrestricted
Flow direction		A ⇒ B, see symbol
Operating pressure	bar	... 350 max. in A, B and Z
Adjustment ranges, see performance curves	bar	pressure range N = 10 ... 350 pressure range M = 10 ... 210 pressure range L = 10 ... 65
Flow rate Q max.	l/min	1 ... 140 max. see performance characteristics
Fluids		Hydraulic oils HL and HLP to DIN 51 524 other fluids - contact BUCHER
Fluid temperature range	°C	-25 ... +80
Viscosity range	cSt	10 ... 650 mm ² /s, empfohlen 15 ... 250 mm ² /s
Minimum fluid cleanliness		20/18/15 to ISO 4406 : 1999

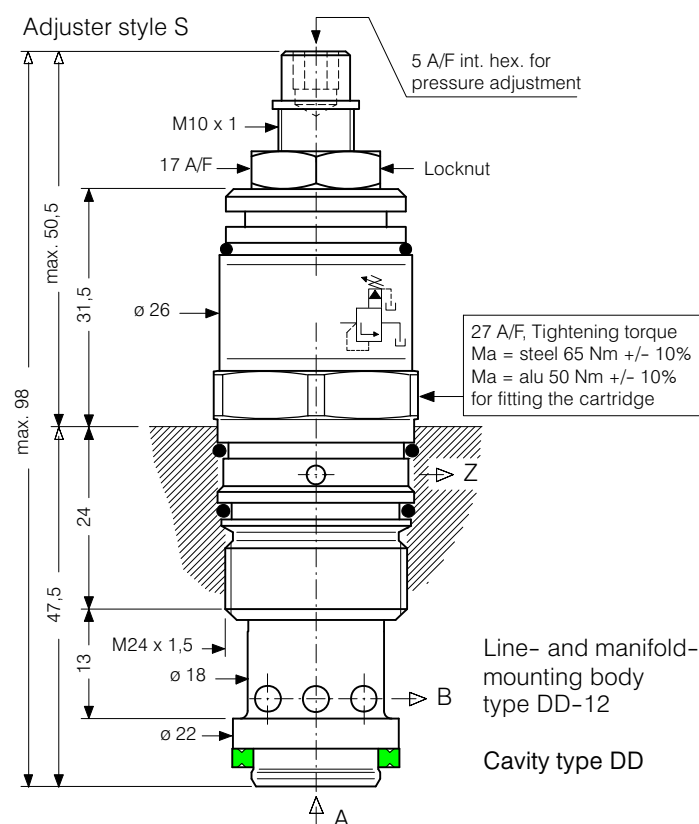
Reference: 400-P-280121-EN-01

4. Performance characteristics

Oil viscosity 33 cSt



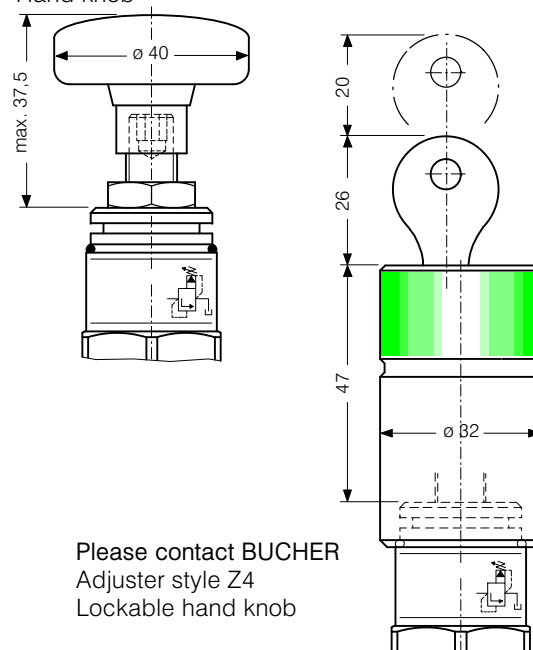
5. Dimensions



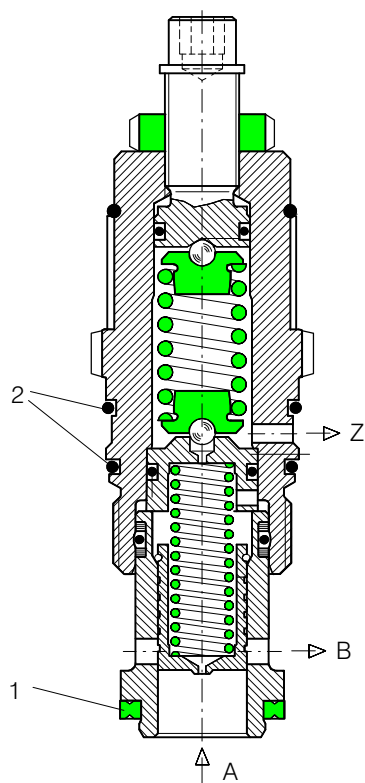
Adjuster styles / OPTIONAL

Cartridges can also be supplied with adjuster styles H and Z4 (see model code key)

Adjuster style H Hand knob



6. Schematic section



Seal kit no. DS-216, comprising :

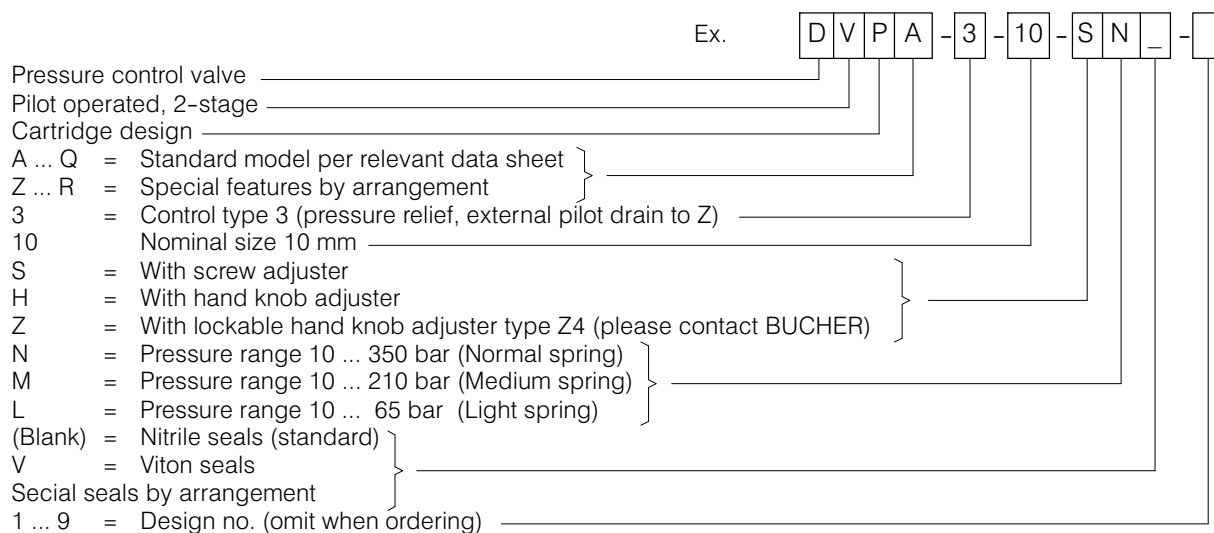
Itm.	Qty.	Description	Size
1	1	Sealing ring	Ø 22,1 / 16,5 x 2,5
2	2	O-ring no. 020	Ø 21,95 x 1,78 N90

7. Installation and servicing

All installation and servicing must be carried out with care, and by qualified personnel only. Use the correct tightening torque when fitting the cartridge. When changing seals, the

new seals must be thoroughly oiled or greased before they are fitted.

8. Model code key



9. Related data sheets

Old no.	New no.	
D-4.35	400-P-280141-EN	Pressure relief cartridge valve with integral bypass check valve type DVPA-RV-3-10 ...
G-24.21	400-P-740111-EN	BUCHER Line- and manifold-mounting body type DD-12 (G 1/2")
i-32	400-P-040011-EN	The Form tool hire programme
i-45.2	400-P-060121-EN	BUCHER cavity type DD

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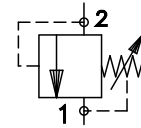
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Classification: 450300.305.320.355

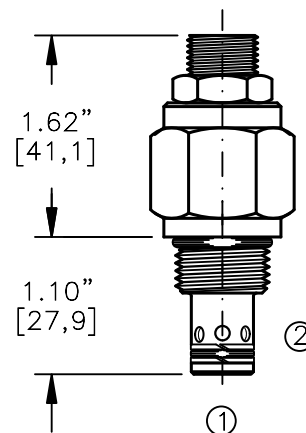
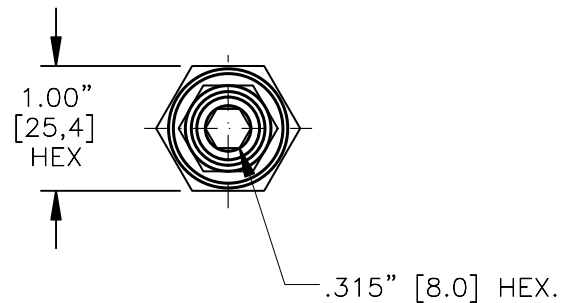
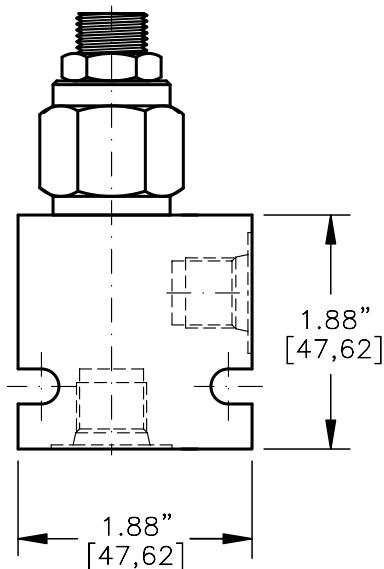
RELIEF VALVE DIFFERENTIAL AREA, POPPET TYPE



TORQUE:

Steel = 35/40 Ft-Lb. [47/54 Nm]

Aluminum = 25/30 Ft-Lb. [34/41 Nm]



FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-011.1

RVDA-08-X-X-X-XX

BASIC

SIZE

08 = 3/4"-16 UNF

SEALS

N = BUNA "N"

V = VITON

ADJUSTMENT

S = ADJUSTING SCREW

C = CAPPED

T = TAMPERPROOF

K = HANDKNOB

M = METAL HANDKNOB

PRESSURE RANGE

15 = 100 TO 1500 PSI

30 = 750 TO 3000 PSI

50 = 1500 TO 5000 PSI

PORTS

0 = CARTRIDGE ONLY

02BX = G 1/4" BSPP

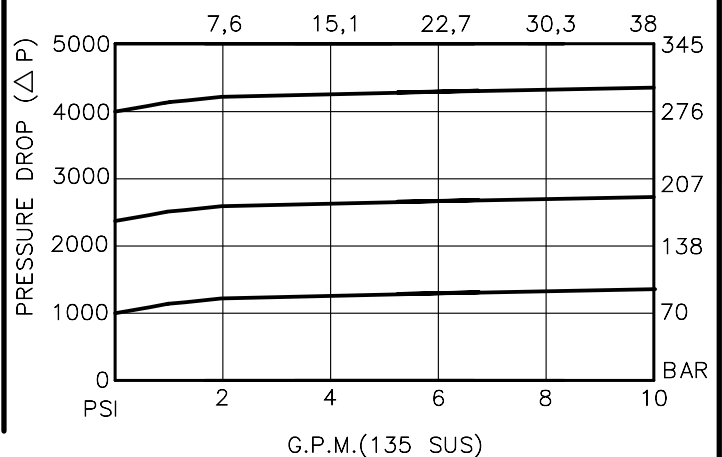
06TX = SAE - #6

"A" - ALUM. HOUSING

"S" - STEEL HOUSING

FOR ADJUSTMENT CONTROL
OPTIONS SEE PAGE 0-050.0

L/M (28,5 cSt)



DIFFERENTIAL AREA, POPPET TYPE

DESCRIPTION

This unit is a DIFFERENTIAL AREA RELIEF VALVE, cartridge type, direct acting, poppet type, low leakage, screw in type, adjustable, pressure control valve.

OPERATIONS

This valve (RVDA) blocks flow from port #2 to port #1 until sufficient pressure is present at port #2 to force the poppet from its seat thus opening the valve.

This cartridge relief valve offers a smooth transition in response to a load change in a hydraulic circuit.

FEATURES AND BENEFITS

Leakproof screw adjustment.

Adjustment screw can not be backed out of valve.

Overset protection – spring can not go solid.

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

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

Valve is available with screw, tamperproof, capped and handknob adjustments.

All cartridge valves are 100% functionally tested.

Industry common cavity.

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 10.0 GPM [38 L/M] nominal. See performance chart.

INTERNAL LEAKAGE: 5 drops/min [.25 cc/m] @ 85% of crack pressure.

DEFINITION OF CRACK: evident at 0.06 GPM [0.25 LPM]

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.

INSTALLATION: No restriction.

FILTRATION: 25 microns or better.

SEAL KIT NUMBER: SKN-0822 for Buna "N".

SKV-0822 for Viton.

WEIGHT: 0.26 lb [.12 kg] cartridge only.

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

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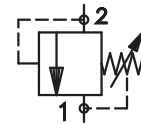
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RELIEF VALVE DIFFERENTIAL AREA, POPPET TYPE

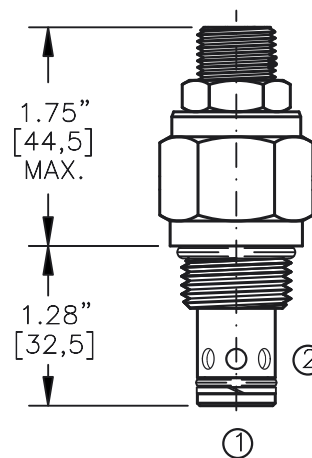
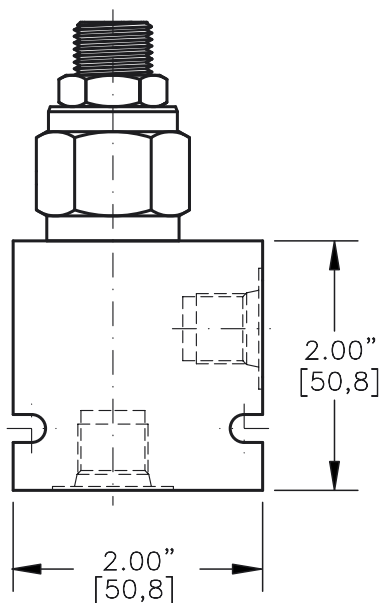
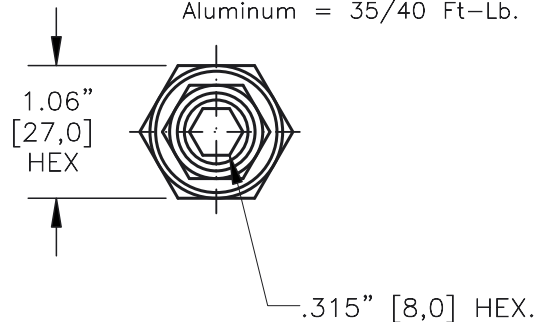


Pat.#5,546,980

TORQUE:

Steel = 55/60 Ft-Lb. [74/81 Nm]

Aluminum = 35/40 Ft-Lb. [47/54 Nm]



FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-012.1

RVDA-10-N-S-O-XX

BASIC
SIZE
10 = 7/8"-14 UNF

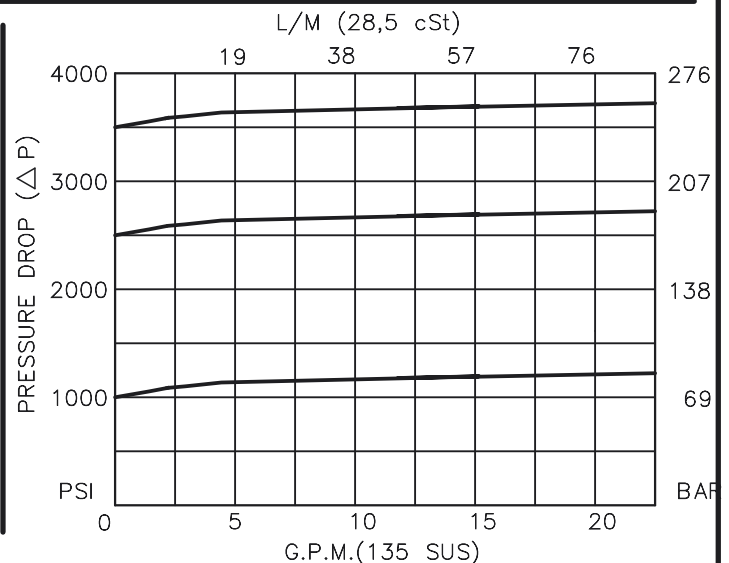
SEALS
N = BUNA "N"
V = VITON

ADJUSTMENT
S = ADJUSTING SCREW
C = CAPPED
T = TAMPERPROOF
K = HANDKNOB
M = METAL HANDKNOB

PRESSURE RANGE
15 = 100 TO 1500 PSI
30 = 300 TO 3000 PSI
50 = 500 TO 5000 PSI

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

FOR ADJUSTMENT CONTROL
OPTIONS SEE PAGE 0-050.0



RELIEF VALVE DIFFERENTIAL AREA, POPPET TYPE

DESCRIPTION

This unit is a DIFFERENTIAL AREA RELIEF VALVE, cartridge type, direct acting, poppet type, low leakage, screw in type, adjustable, pressure control valve.

OPERATIONS

This valve (RVDA) blocks flow from port #2 to port #1 until sufficient pressure is present at port #2 to force the poppet from its seat thus opening the valve.

This cartridge relief valve offers a smooth transition in response to a load change in a hydraulic circuit.

FEATURES AND BENEFITS

Leakproof screw adjustment.

Adjustment screw can not be backed out of valve.

Overset protection – spring can not go solid.

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

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

Valve is available with screw, tamperproof, capped and handknob adjustments.

All cartridge valves are 100% functionally tested.

Industry common cavity.

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 20.0 GPM [76 L/M] nominal. See performance chart.

INTERNAL LEAKAGE: 5 drops/min [.25 cc/m] @ 85% of crack pressure.

DEFINITION OF CRACK: evident at 0.06 GPM [0.25 LPM]

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.

INSTALLATION: No restriction.

FILTRATION: 25 microns or better.

SEAL KIT NUMBER: SKN-1021 for Buna "N".

SKV-1021 for Viton.

WEIGHT: 0.38 lb [.17 kg] cartridge only.

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

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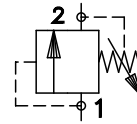
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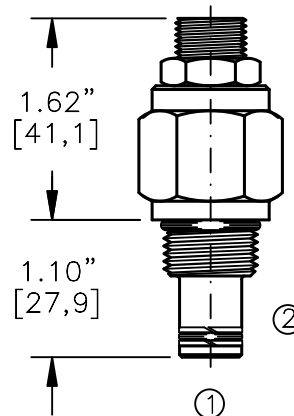
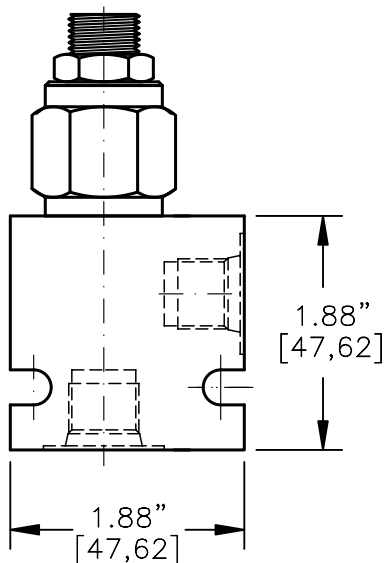
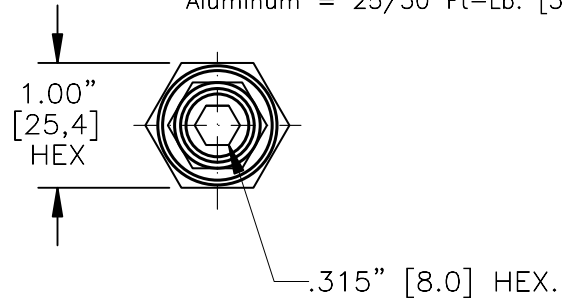
RELIEF VALVE DIRECT ACTING, LOW FLOW, PILOT CONTROL



TORQUE:

Steel = 35/40 Ft-Lb. [47/54 Nm]

Aluminum = 25/30 Ft-Lb. [34/41 Nm]



FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-011.1

RVPD-08-X-X-X-XX

BASIC
SIZE
08 = 3/4"-16 UNF

SEALS
N = BUNA "N"
V = VITON

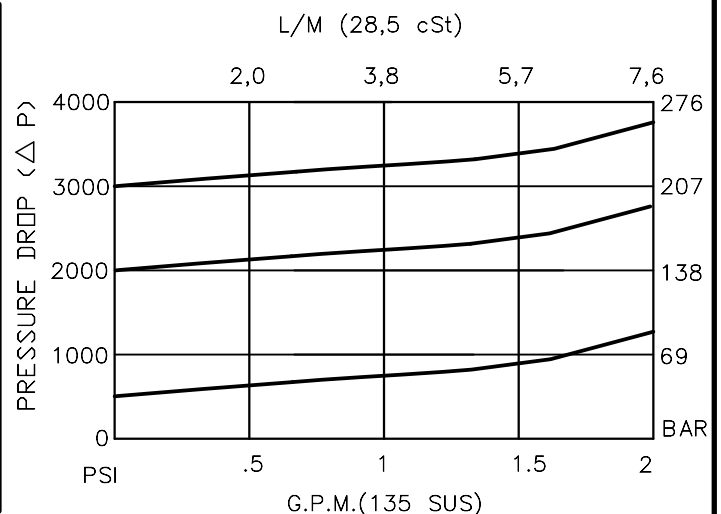
ADJUSTMENT
S = ADJUSTING SCREW
C = CAPPED
T = TAMPERPROOF
K = HANDKNOB
M = METAL HANDKNOB

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

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

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

FOR ADJUSTMENT CONTROL
OPTIONS SEE PAGE 0-050.0



RELIEF VALVE DIRECT ACTING, LOW FLOW, PILOT CONTROL.

DESCRIPTION

This unit is a DIRECT ACTING, REMOTE CONTROL FOR VALVES WITH LOW PILOT FLOW, cartridge type, steel ball, low leakage, screw in type, adjustable, pressure control valve.

OPERATIONS

This valve (RVPD) blocks flow from port #1 to port #2 until sufficient pressure is present at port #1 to force the steel ball from its seat thus opening the valve.

This cartridge relief valve offers a smooth transition in response to a load change in a hydraulic circuit.

FEATURES AND BENEFITS

Leakproof screw adjustment.

Pressure in tank port (2) will add to the bias spring setting, and is limited to 2000 PSI.

Adjustment screw can not be backed out of valve.

Overset protection – spring can not go solid.

Hardened precision steel ball & seat provides reliable, long life.

A unique self aligning (floating) cage provides very low hysteresis and reliable operation.

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

Valve is available with screw, tamperproof, capped and handknob adjustments.

All cartridge valves are 100% functionally tested.

Industry common cavity.

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 2.0 GPM [7.6 L/M] nominal. See performance chart.

INTERNAL LEAKAGE: 5 drops/min [.25 cc/m] @ 85% of crack pressure.

DEFINITION OF CRACK: evident at 0.06 GPM [0.25 LPM]

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.

INSTALLATION: No restriction.

FILTRATION: 25 microns or better.

SEAL KIT NUMBER: SKN-0822 for Buna "N".

SKV-0822 for Viton.

WEIGHT: 0.30 lb [.14 kg] cartridge only.

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

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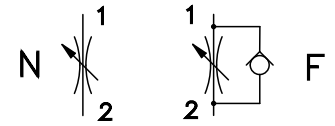
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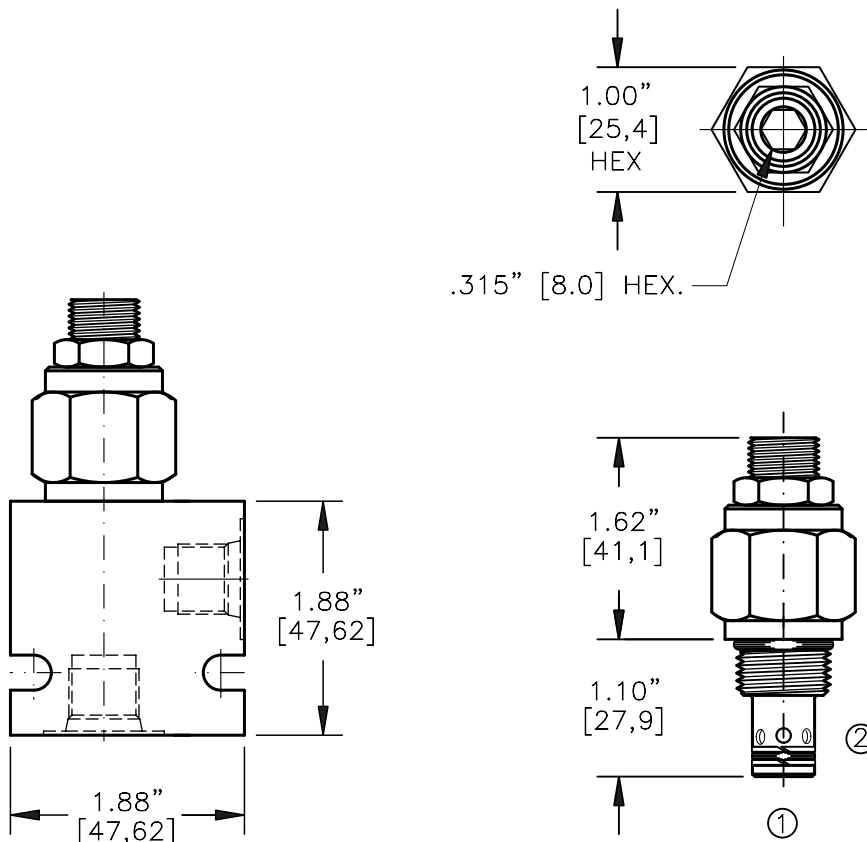
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FLOW CONTROL VALVE WITH OR WITHOUT FREE REVERSE FLOW CHECK

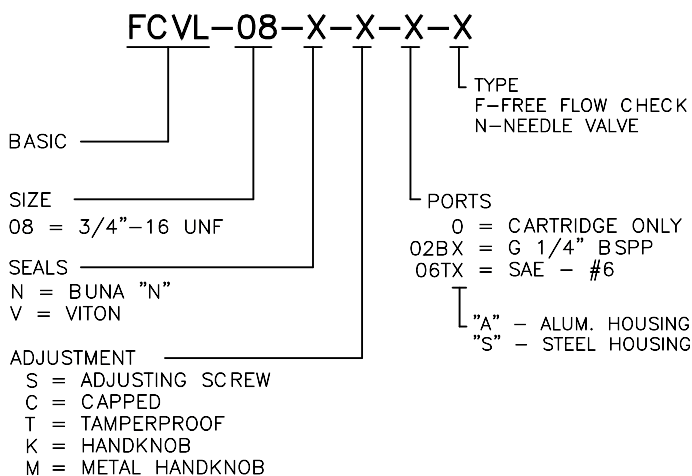


TORQUE:

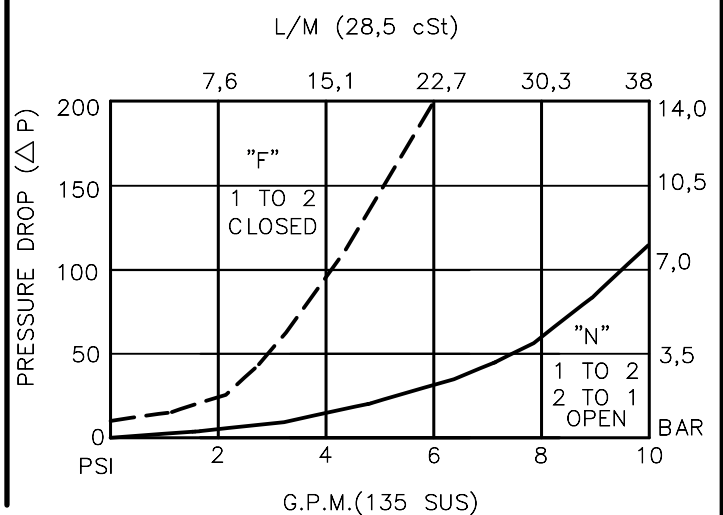
Steel = 35/40 Ft-Lb. [47/54 Nm]
Aluminum = 25/30 Ft-Lb. [34/41 Nm]



FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-011.1



FOR ADJUSTMENT CONTROL
OPTIONS SEE PAGE 0-050.0



FLOW CONTROL VALVE WITH OR WITHOUT FREE REVERSE FLOW CHECK

DESCRIPTION

This unit is a SCREW IN, cartridge type, adjustable, poppet type, hydraulic flow control valve with or without free reverse flow check.

OPERATIONS

This valve increases its orifice value from fully closed to fully open with counter-clockwise rotation.

FEATURES AND BENEFITS

Desired settings can be locked down.
Valve adjustment is difficult while subjected to high pressure.
Valve is available with a screw, tamperproof, capped or knob adjustment.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
FLOW: 10.0 GPM [38,0 l/m] nominal. See performance chart.
INTERNAL LEAKAGE: 5 drops per minute maximum @ 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.
INSTALLATION: No restrictions.
SEAL KIT: SKN-0822 Buna "N".
SKV-0822 Viton.
WEIGHT: .30 lb [.14 kg] cartridge only.
VALVE CAVITY: #C0820, See Page 0-011.0.

info.el@bucherhydraulics.com

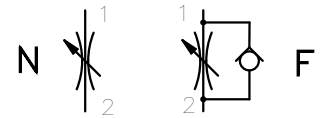
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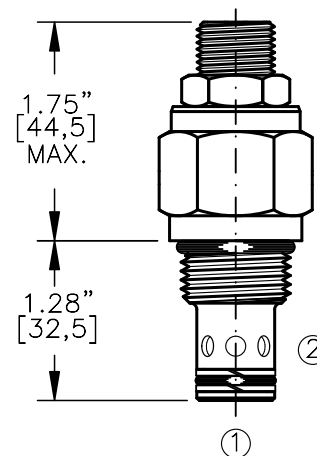
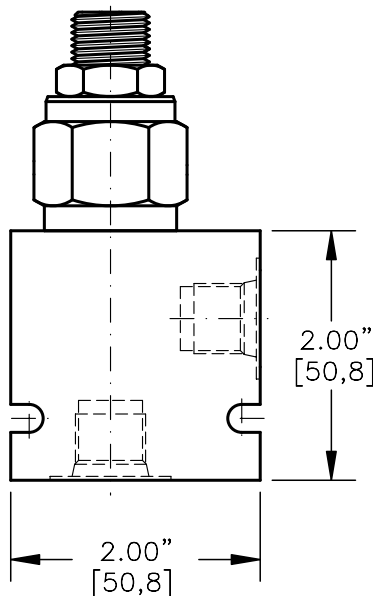
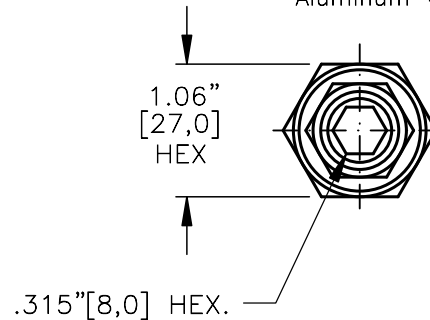
FLOW CONTROL VALVE WITH OR WITHOUT FREE REVERSE FLOW CHECK



TORQUE:

Steel = 55/60 Ft-Lb. [74/81 Nm]

Aluminum = 35/40 Ft-Lb. [47/54 Nm]



FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-012.1

FCVL-10-X-X-X-X

BASIC _____

SIZE _____

10 = 7/8"-14 UNF

SEALS _____

N = BUNA "N"

V = VITON

ADJUSTMENT _____

S = ADJUSTING SCREW

C = CAPPED

T = TAMPERPROOF

K = HANDKNOB

M = METAL HANDKNOB

TYPE

F - FREE FLOW CHECK

N - NEEDLE VALVE

PORTS

0 = CARTRIDGE ONLY

02BX = G 1/4" BSPP

03BX = G 3/8" BSPP

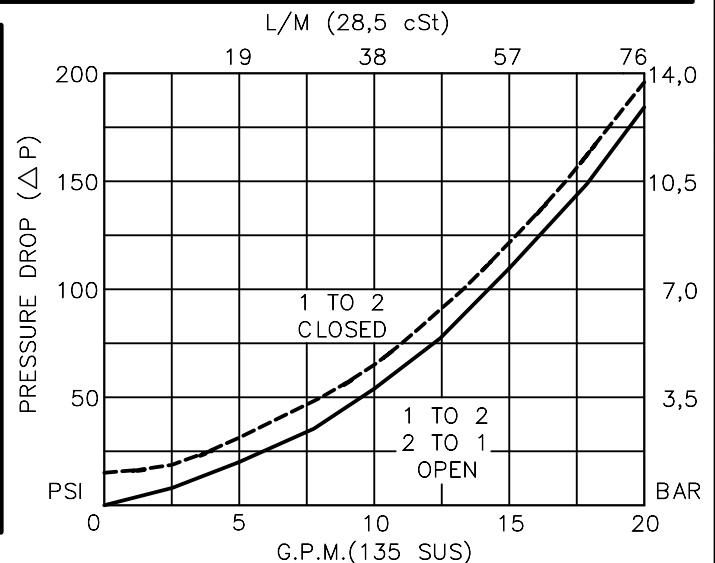
06TX = SAE - #6

08TX = SAE - #8

"A" - ALUM. HOUSING

"S" - STEEL HOUSING

FOR ADJUSTMENT CONTROL
OPTIONS SEE PAGE 0-050.0



FLOW CONTROL VALVE

WITH OR WITHOUT FREE REVERSE FLOW CHECK

DESCRIPTION

This unit is a SCREW IN, cartridge type, adjustable, poppet type, hydraulic flow control valve with or without free reverse flow check.

OPERATIONS

This valve increases its orifice value from fully closed to fully open with counter-clockwise rotation.

FEATURES AND BENEFITS

Desired settings can be locked down.
Valve adjustment is difficult while subjected to high pressure.
Valve is available with a screw, tamperproof, capped or knob adjustment.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
FLOW: 18.0 GPM [68 l/m] nominal. See performance chart.
INTERNAL LEAKAGE: 5 drops per minute maximum @ 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.
INSTALLATION: No restrictions.
SEAL KIT: SKN-1022 Buna "N".
SKV-1022 Viton.
WEIGHT: .38 lb [.17 kg] cartridge only.
VALVE CAVITY: #C1020, See Page 0-012.0.

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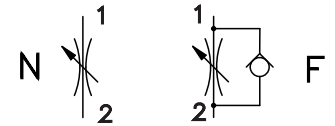
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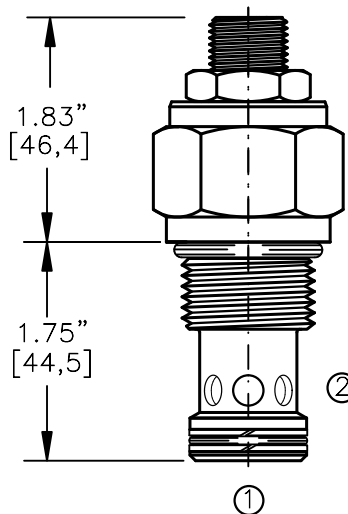
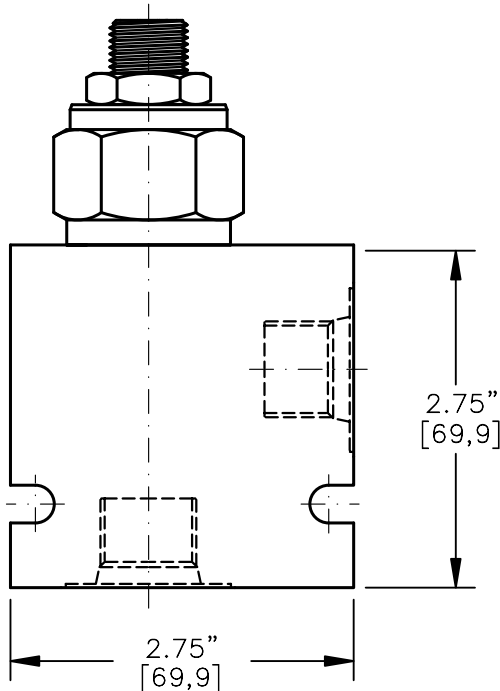
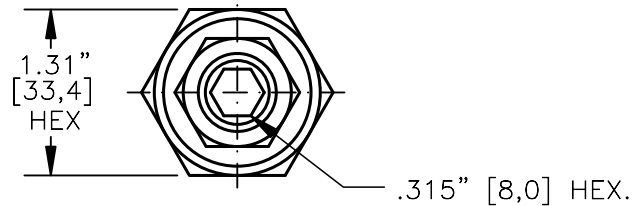
FLOW CONTROL VALVE WITH OR WITHOUT FREE REVERSE FLOW CHECK



TORQUE:

Steel = 70/75 Ft-Lb. [95/102 Nm]

Aluminum = 55/60 Ft-Lb. [74/81 Nm]

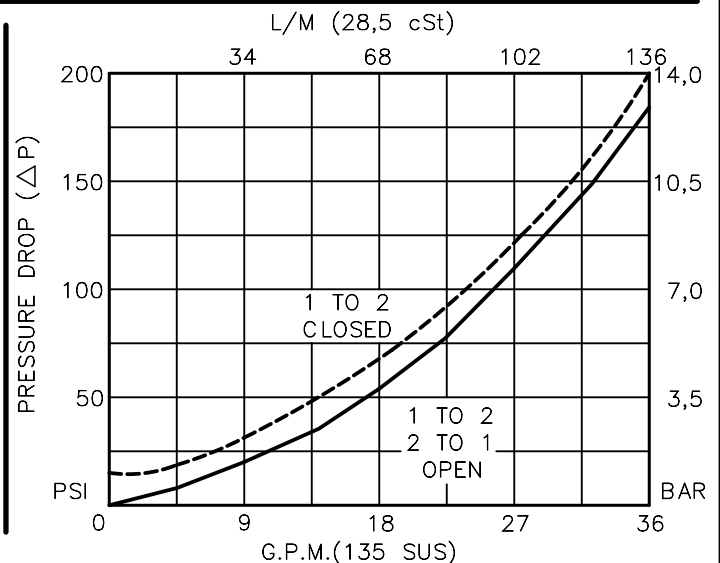


FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-013.1

FCVL-12-X-X-X-X

BASIC	TYPE
SIZE	F - FREE FLOW CHECK
12 = 1.062-12 UNF	N - NEEDLE VALVE
SEALS	PORTS
N = BUNA "N"	0 = CARTRIDGE ONLY
V = VITON	04BX = G 1/2" BSPP
ADJUSTMENT	06BX = G 3/4" BSPP
S = ADJUSTING SCREW	10TX = SAE - #10
C = CAPPED	12TX = SAE - #12
T = TAMPERPROOF	"A" - ALUM. HOUSING
K = HANDKNOB	"S" - STEEL HOUSING
M = METAL HANDKNOB	

FOR ADJUSTMENT CONTROL
OPTIONS SEE PAGE 0-050.0



FLOW CONTROL VALVE WITH OR WITHOUT FREE REVERSE FLOW CHECK

DESCRIPTION

This unit is a SCREW IN, cartridge type, adjustable, poppet type, hydraulic flow control valve with or without free reverse flow check.

OPERATIONS

This valve increases its orifice value from fully closed to fully open with counter-clockwise rotation.

FEATURES AND BENEFITS

Desired settings can be locked down.
Valve adjustment is difficult while subjected to high pressure.
Valve is available with a screw, tamperproof, capped or knob adjustment.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

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

INTERNAL LEAKAGE: 5 drops per minute maximum @ 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.

INSTALLATION: No restrictions.

SEAL KIT: SKN-1222 Buna "N".

SKV-1222 Viton.

WEIGHT: .63 lb [.25 kg] cartridge only.

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

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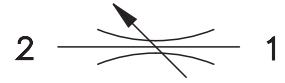
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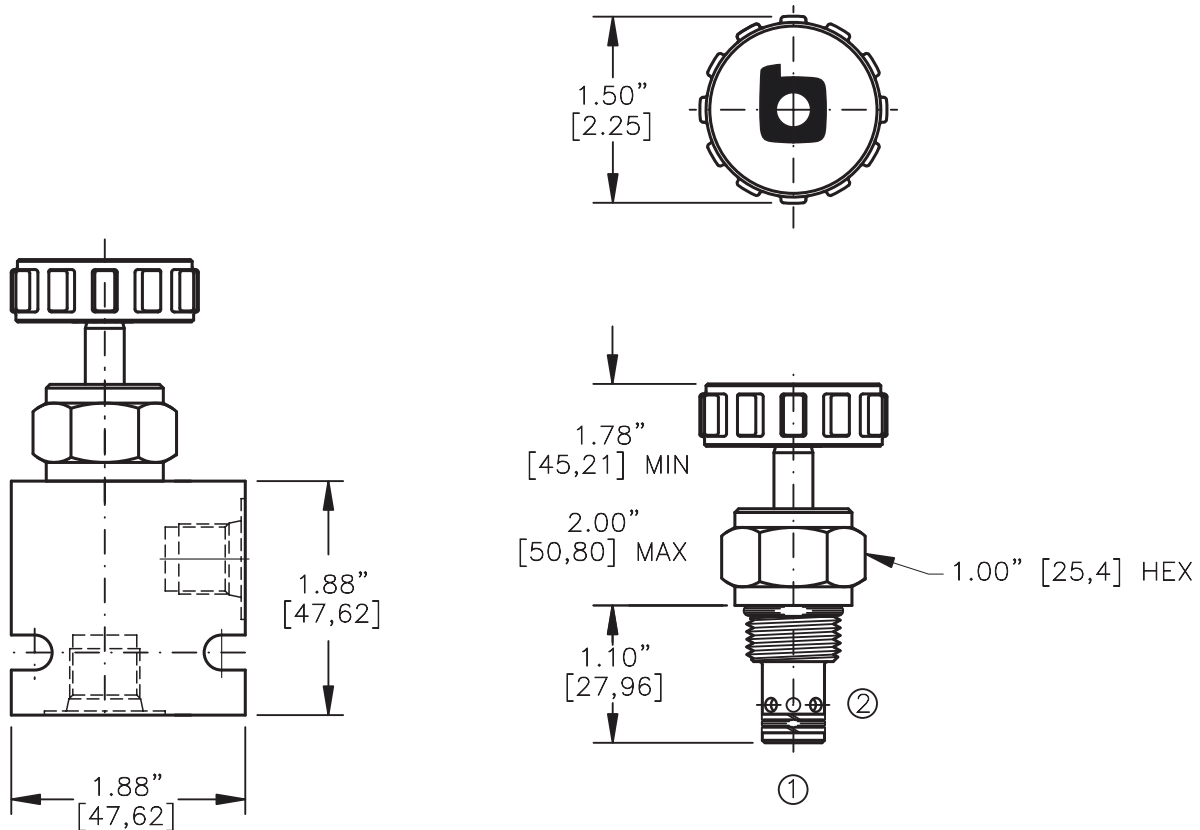
NEEDLE VALVE BI-DIRECTIONAL, POSITIVE SHUT-OFF



TORQUE:

Steel = 35/40 Ft-Lb. [47/54 Nm]

Aluminum = 25/30 Ft-Lb. [34/41 Nm]



FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-011.1

NFCV-08-X-X-X

BASIC

SIZE

08 = 3/4"-16 UNF

SEALS

N = BUNA "N"
V = VITON

ADJUSTMENT

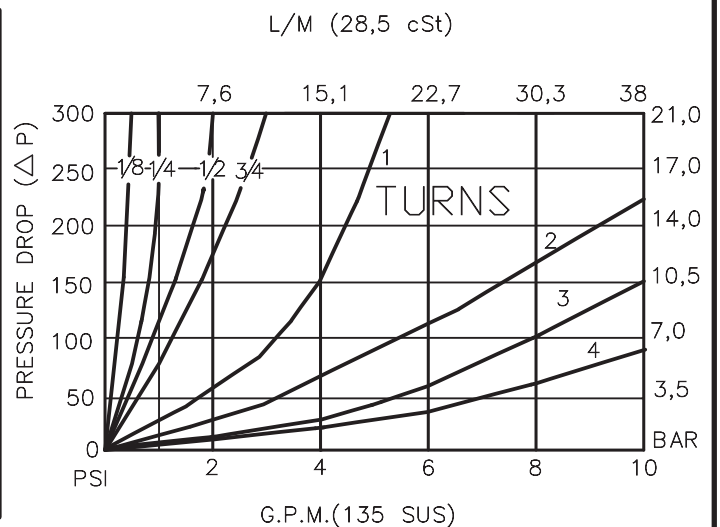
K = HANDKNOB
H = METAL HANDKNOB
O = NO KNOB

FOR ADJUSTMENT CONTROL
OPTIONS SEE PAGE 0-050.0

PORTS

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

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



NEEDLE VALVE BI-DIRECTIONAL, POSITIVE SHUT-OFF

DESCRIPTION

This unit is a SCREW IN, cartridge type, non-compensated, adjustable, bi-directional needle flow control valve.

OPERATIONS

This valve increases its orifice value from fully closed to fully open in 4 1/2 turns with counterclockwise rotation. Positive shut-off.

FEATURES AND BENEFITS

Fine and low effort leakproof adjustment.
Effective adjustment is linear to 4 1/2 turns.
All external carbon steel parts are plated for longer life against the elements.
All cartridge valves are 100% functionally tested.
Industry common cavity.

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]
PROOF PRESSURE: 10,000 PSI [700 Bar]
FLOW: 10.0 GPM [38 l/m] nominal. See performance chart.
INTERNAL LEAKAGE: ZERO drops per minute maximum @ 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.
INSTALLATION: No restrictions.
SEAL KIT: SKN-0822 Buna "N".
SKV-0822 Viton.
WEIGHT: .22 lb [.10 kg] cartridge only.
VALVE CAVITY: #C0820, See Page 0-011.0.

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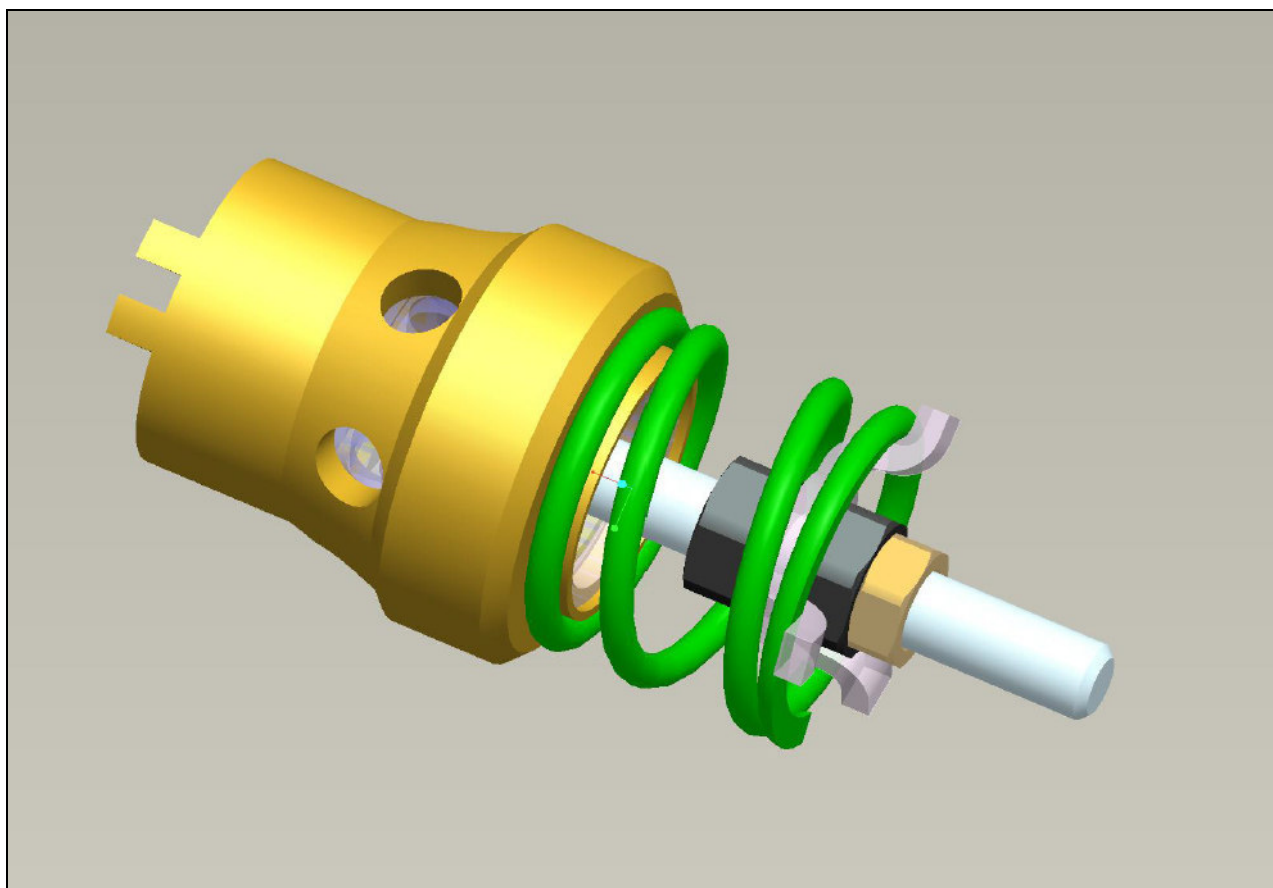
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Flow Limiting Valve



Contents

2.10	Technical specifications	9
2.11	Dimensional data	10
2.12	Performances curves	11
2.13	Spool	13

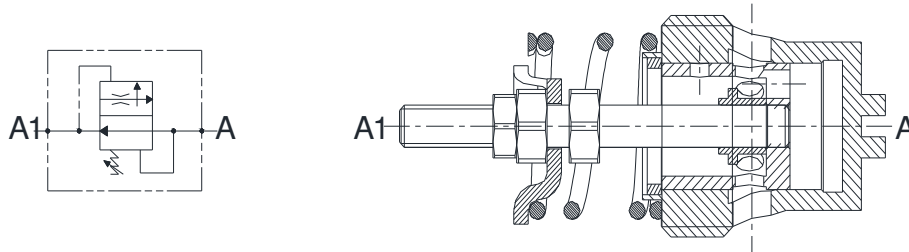
Technical specifications

Material : All the components are steel made

Rated flow : See “controlled flow setting list”

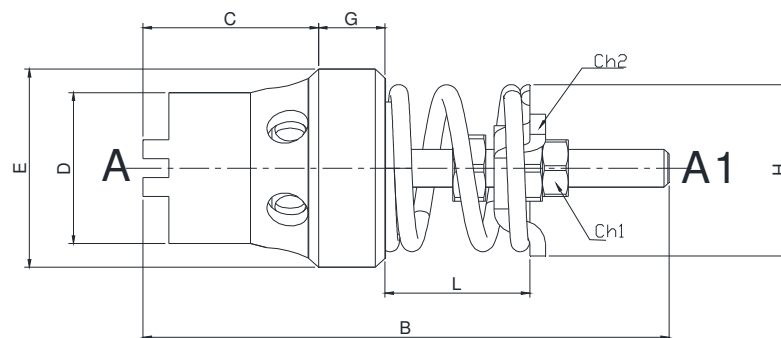
Max.Pressure: 300 bar

FLV-C



Dimensional

FLV – C

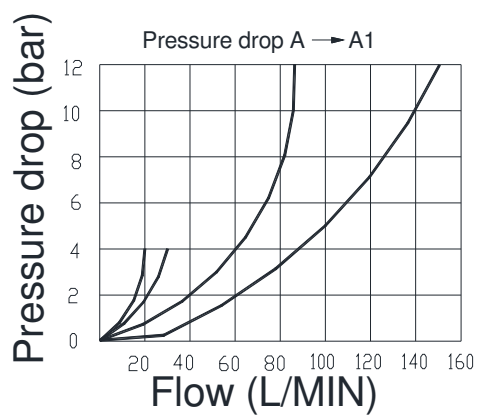


Type	B	C	D	E	L	G	H	CH1	CH2	Weight
	mm	mm	mm	BSPP	mm	mm	mm	mm	mm	Kg
FLV - C- 3/8	45	15.5	12.5	3/8"	See Graphics	5	14	6	7	0.024
FLV - C- 1/2	51	16	16	1/2"		7	18	6	7	0.037
FLV - C- 3/4	62	21	20	3/4"		10	23	6	7	0.070

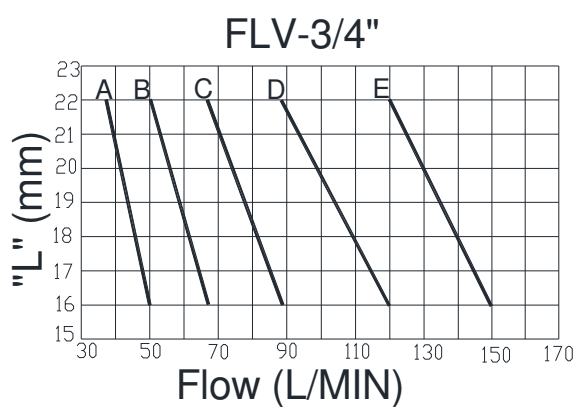
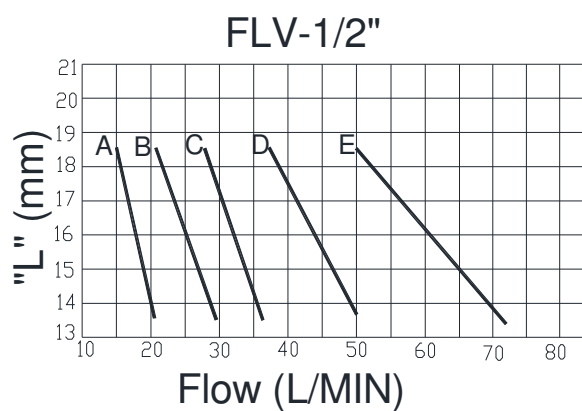
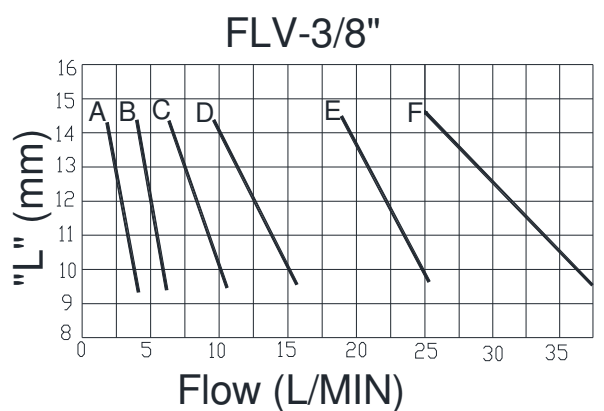
Flow and drop curves

Oil viscosity 24 mm / sec. (3.5 °E)

Temperature 50 °C

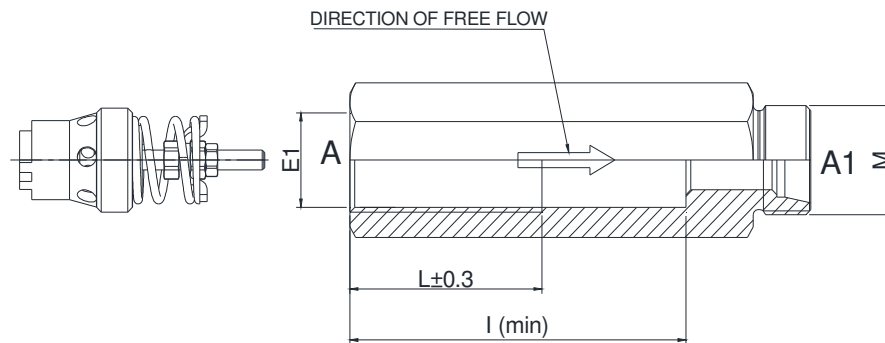


Flow - "L" setting



Dimensional

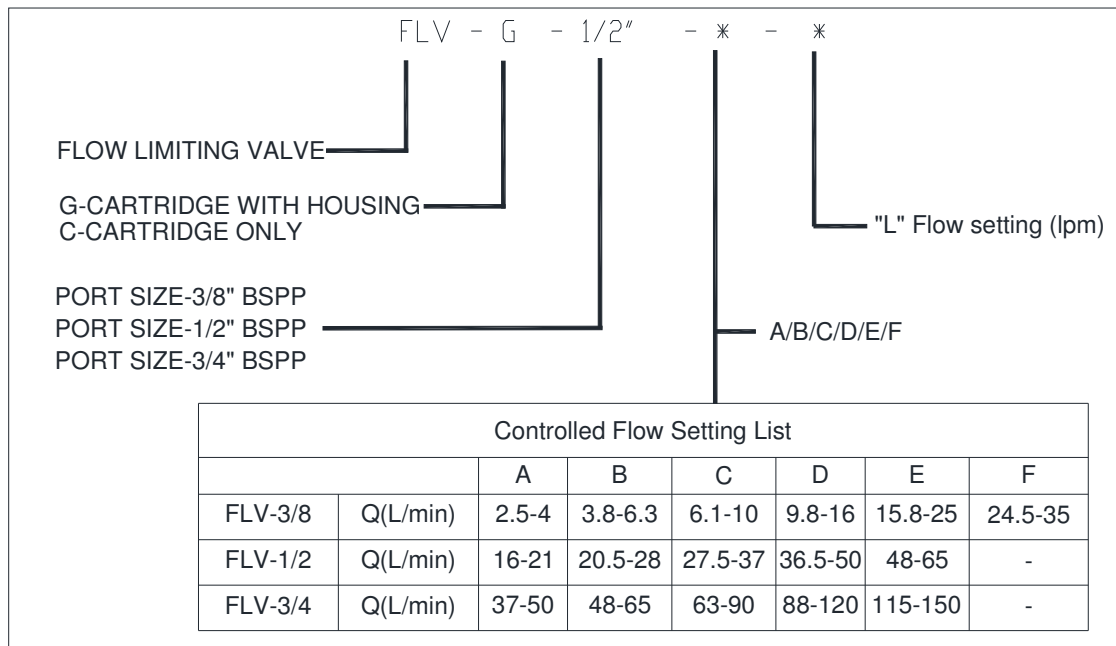
FLV – G



Type	E1	I	L	M	Installation Torque
	BSPP	Mm	mm	BSPP	Nm
FLV - G- 3/8	3/8	61	35	3/8"	8
FLV - G- 1/2	1/2	70	40	1/2"	12
FLV - G- 3/4	3/4	84	51	3/4"	15

Available on request male-female and female-female housing

Ordering code example



RSE and RSG Pipe rupture valves

6.1.2E
P 1/2

1. General description

- prevents uncontrolled movement of the cylinder if a pipe or hose burst occurs.
- settable closing flow

2. Advantages of Beringer's pipe rupture valve

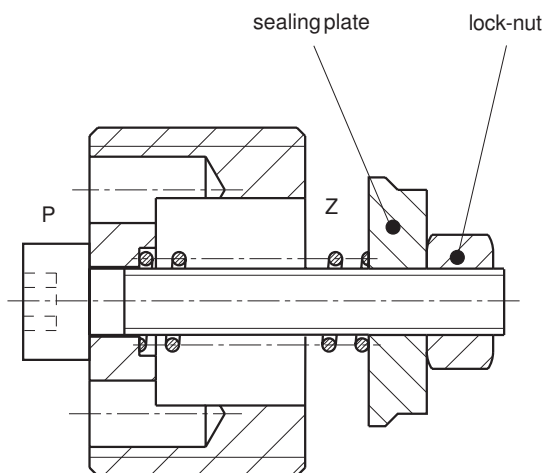
- simple adjustment of flow rates
- minimal spatial requirement thanks to compact design.

3. Application

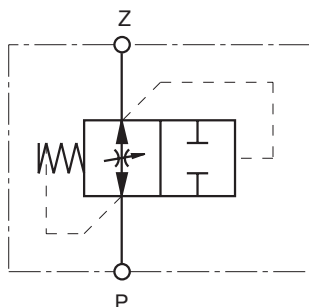
- for protecting hydraulic consumers
- for direct installation in cylinders

4. Functional description, sectional view

- 4.1 If, when the oil is flowing from Z to P, the pressure difference in the valve exceeds a value that corresponds to the preloading pressure (approx. 1 bar), the plate is forced against the valve seat and seals the opening passage leakfree.
- 4.2 The pipe rupture valve is opened again automatically when the pressure at port P is higher than that at port Z.



5. Symbol



6. Characteristics

(Please contact Beringer if machinery is required for use beyond these tolerances)

6.1 General:

- Type: plate valve
- Mounting method: screw-type cartridge
- Ports: P, Z see point 10
- Mounting position: any
- Weight: see point 10

6.2 Hydraulic characteristics:

- Size: 1/4, 3/8, 1/2, 18x1,5
- Min. settable closing flow: 3 l/min (G1/4")
- Max. settable closing flow: 75 l/min (G1/2")
- Max. working pressure: 400 bar
- Hydraulic medium: mineral oil per DIN 51524 and DIN 51525 (HL/HLP), inquire about other media
- Hydraulic medium temperature range: -20°C...+80°C, inquire about other temperatures
- Viscosity range: 2.8 mm²/s up to 380 mm²/s
- Filtering: NAS 1638 class 9, β₁₀ ≥ 75.

7. Safety instructions

- This valve must only be used for the purpose for which it has been designed.
- It must only be adjusted by trained staff.
- The hydraulic system must be depressurized and checked before the valve is disassembled.
- The valve must not be opened without the express permission of the manufacturer.

8. Assembly instructions

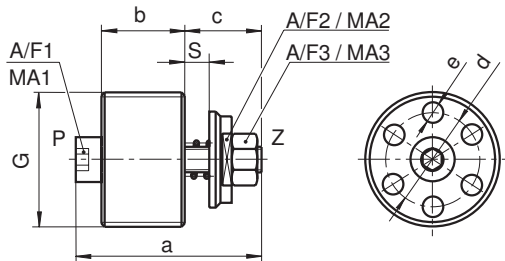
- Observe all port designations.
- Observe the tightening torques (see dimension diagram).
- Bleed the hydraulic system before putting it into operation.

9. Adjustment instructions

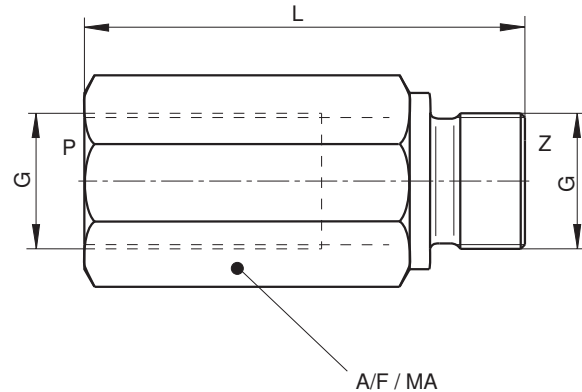
1. Screw in the sealing plate until it sits on the seat.
2. Set the flow acc. to the setting diagrams (see section 11).
3. Tighten the lock-nut to the specified torque (see section 10).

10. Dimension diagram

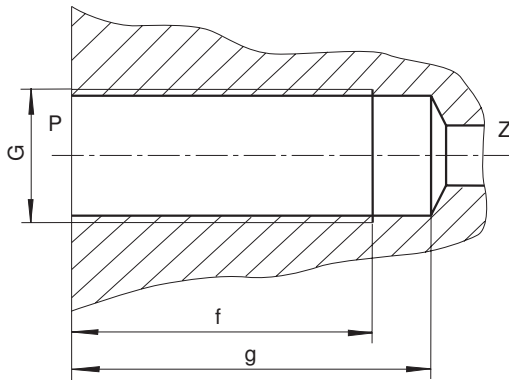
10.1 RSE



10.2 RSG



10.3 Location hole

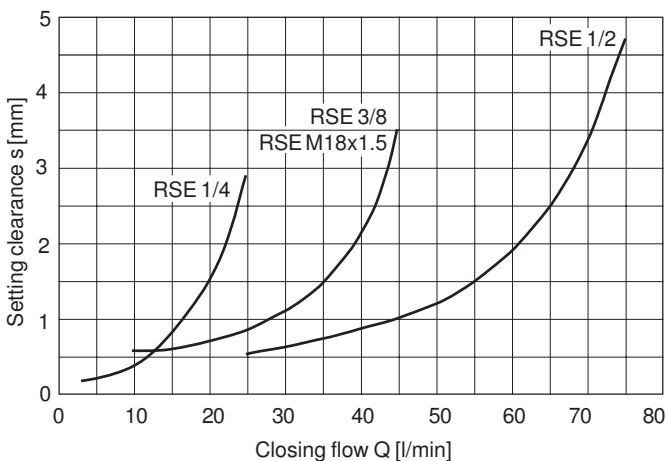


Size	A/F	A/F1	A/F2	A/F3	MA (Nm)	MA1 (Nm)	MA2 (Nm)	MA3 (Nm)
1/4	19	2.5	8	5.5	20	2.1	1.5	1.5
3/8	22	2.5	10	5.5	35	2.1	1.5	1.5
1/2	27	3	12	7	60	4.9	3.5	3.5
M18x1.5	22	2.5	10	5.5	40	2.1	1.5	1.5

Size	G	a	b	c	d	e	f	g	L	Weight (kg) RSE RSG
1/4	G1/4	21	9	9	8.2	2.5	30	36	58	0.006 0.080
3/8	G3/8	23	11	9	10	3.5	32	40	58	0.013 0.115
1/2	G1/2	29	13	12	13.5	4	35	45	65	0.022 0.195
18x1.5	M18x1.5	23	11	9	10	3.5	32	40	58	0.013 0.115

11. Setting diagram

measured at 70 mm²/s



12. Type code

RS	/	/
Pipe rupture valve		
RS	RS	
Type		
E	E	
G	G	
Size		
1/4	1/4	
3/8	3/8	
1/2	1/2	
M18x1.5	M18x1.5	
Settable closing flow		
up to 75 l/min		
(must be min. 40% above max. working flow)	

RSE and RSG Pipe rupture valves

6.1.2E
P 1/2

1. General description

- prevents uncontrolled movement of the cylinder if a pipe or hose burst occurs.
- settable closing flow

2. Advantages of Beringer's pipe rupture valve

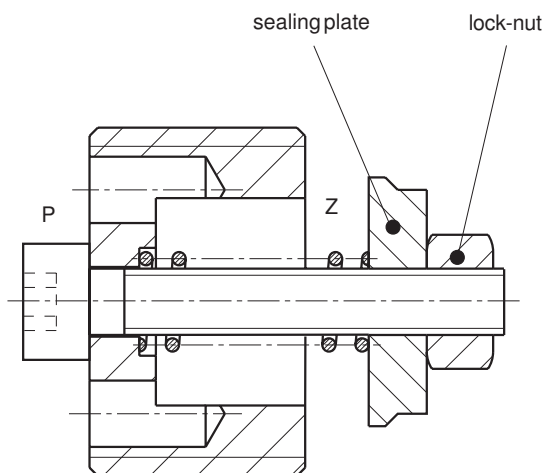
- simple adjustment of flow rates
- minimal spatial requirement thanks to compact design.

3. Application

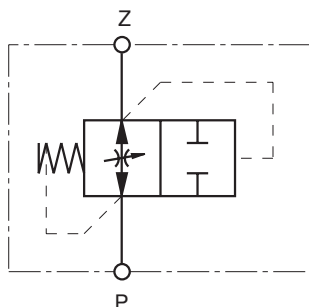
- for protecting hydraulic consumers
- for direct installation in cylinders

4. Functional description, sectional view

- 4.1 If, when the oil is flowing from Z to P, the pressure difference in the valve exceeds a value that corresponds to the preloading pressure (approx. 1 bar), the plate is forced against the valve seat and seals the opening passage leakfree.
- 4.2 The pipe rupture valve is opened again automatically when the pressure at port P is higher than that at port Z.



5. Symbol



6. Characteristics

(Please contact Beringer if machinery is required for use beyond these tolerances)

6.1 General:

- | | |
|----------------------|----------------------|
| • Type: | plate valve |
| • Mounting method: | screw-type cartridge |
| • Ports: | P, Z see point 10 |
| • Mounting position: | any |
| • Weight: | see point 10 |

6.2 Hydraulic characteristics:

- | | |
|---------------------------------------|---|
| • Size: | 1/4, 3/8, 1/2, 18x1,5 |
| • Min. settable closing flow: | 3 l/min (G1/4") |
| • Max. settable closing flow: | 75 l/min (G1/2") |
| • Max. working pressure: | 400 bar |
| • Hydraulic medium: | mineral oil per DIN 51524 and DIN 51525 (HL/HLP), inquire about other media |
| • Hydraulic medium temperature range: | -20°C...+80°C, inquire about other temperatures |
| • Viscosity range: | 2.8 mm ² /s up to 380 mm ² /s |
| • Filtering: | NAS 1638 class 9, β10 ≥ 75. |

7. Safety instructions

- This valve must only be used for the purpose for which it has been designed.
- It must only be adjusted by trained staff.
- The hydraulic system must be depressurized and checked before the valve is disassembled.
- The valve must not be opened without the express permission of the manufacturer.

8. Assembly instructions

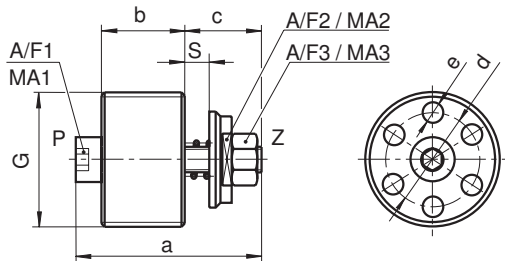
- Observe all port designations.
- Observe the tightening torques (see dimension diagram).
- Bleed the hydraulic system before putting it into operation.

9. Adjustment instructions

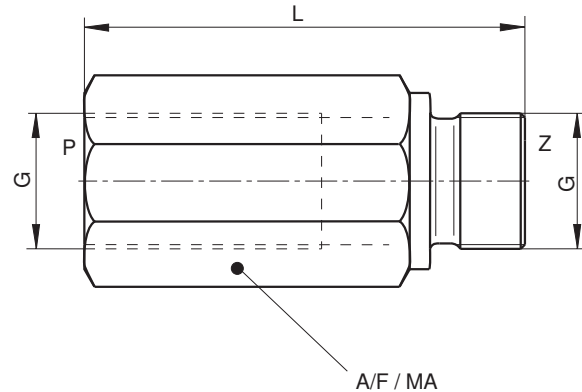
1. Screw in the sealing plate until it sits on the seat.
2. Set the flow acc. to the setting diagrams (see section 11).
3. Tighten the lock-nut to the specified torque (see section 10).

10. Dimension diagram

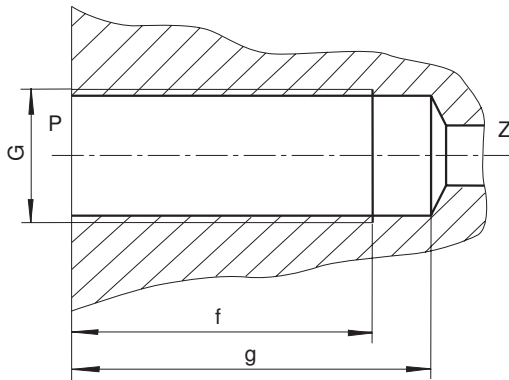
10.1 RSE



10.2 RSG



10.3 Location hole

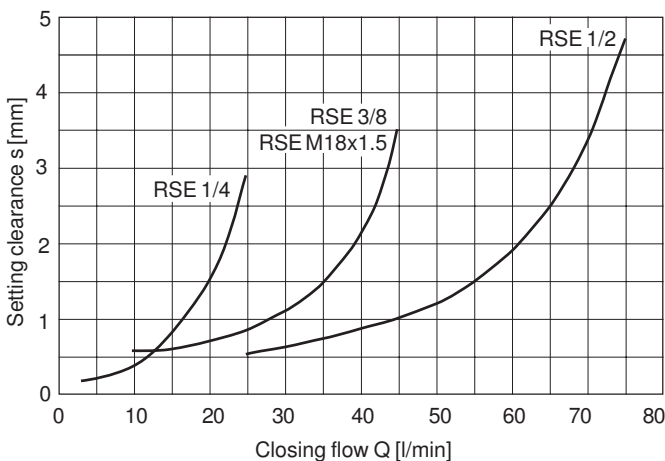


Size	A/F	A/F1	A/F2	A/F3	MA (Nm)	MA1 (Nm)	MA2 (Nm)	MA3 (Nm)
1/4	19	2.5	8	5.5	20	2.1	1.5	1.5
3/8	22	2.5	10	5.5	35	2.1	1.5	1.5
1/2	27	3	12	7	60	4.9	3.5	3.5
M18x1.5	22	2.5	10	5.5	40	2.1	1.5	1.5

Size	G	a	b	c	d	e	f	g	L	Weight (kg) RSE RSG
1/4	G1/4	21	9	9	8.2	2.5	30	36	58	0.006 0.080
3/8	G3/8	23	11	9	10	3.5	32	40	58	0.013 0.115
1/2	G1/2	29	13	12	13.5	4	35	45	65	0.022 0.195
18x1.5	M18x1.5	23	11	9	10	3.5	32	40	58	0.013 0.115

11. Setting diagram

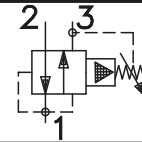
measured at 70 mm²/s



12. Type code

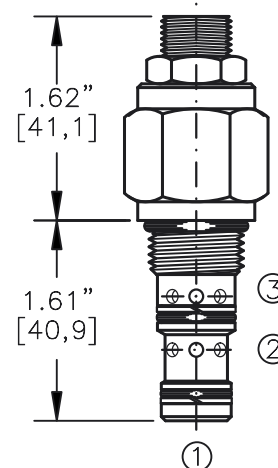
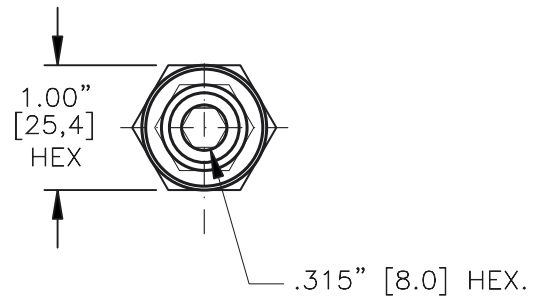
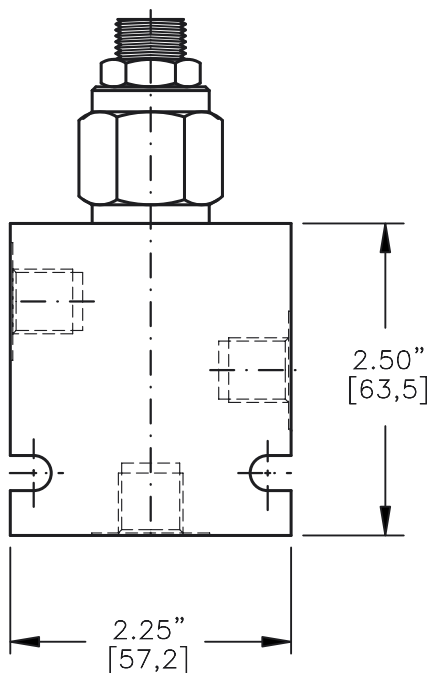
RS	/	/
Pipe rupture valve		
RS	RS	
Type		
E	E	
G	G	
Size		
1/4	1/4	
3/8	3/8	
1/2	1/2	
M18x1.5	M18x1.5	
Settable closing flow		
up to 75 l/min	
(must be min. 40% above max. working flow)		

PRESSURE REDUCING/RELIEVING VALVE PILOT OPERATED, SLIDING SPOOL



TORQUE:

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



FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-031.1

PRRS-08-X-X-X-XX

BASIC
SIZE
08 = 3/4"-16 UNF

SEALS
N = BUNA "N"
V = VITON

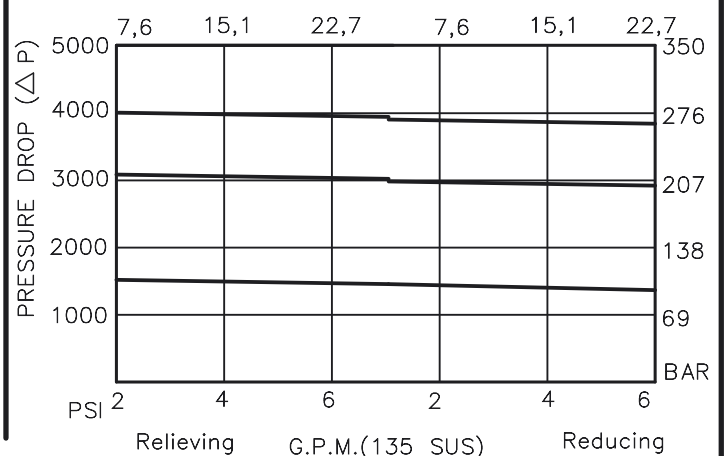
ADJUSTMENT
S = ADJUSTING SCREW
C = CAPPED
T = TAMPERPROOF
K = HANDKNOB
M = METAL HANDKNOB

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

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

FOR ADJUSTMENT CONTROL
OPTIONS SEE PAGE 0-050.0

L/M (28,5 cSt)



PRESSURE REDUCING/RELIEVING VALVE PILOT OPERATED, SLIDING SPOOL

DESCRIPTION

This unit is a PILOT OPERATED, SLIDING SPOOL, SCREW IN CARTRIDGE STYLE, HYDRAULIC PRESSURE REDUCING/RELIEVING VALVE, designated to act as a pressure-regulating device for secondary circuit.

OPERATIONS

This valve will allow flow from port 2 to port 1 until pressure in port 1 exceeds the force of the spring bias then the spool will shift and block flow from port 2 to port 1 and maintain the same pressure as the force of the spring setting regardless of the pressure at port 2. In this mode, the valve will also relieve from port 1 to port 3, regulating pressure at port 1.

FEATURES AND BENEFITS

Leakproof screw adjustment.

Pressure in tank port (3) will add to the bias spring setting, and is limited to 2000 PSI.

Adjusting screw can not be backed out of the valve.

Overset protection—pilot spring can not go solid.

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

A unique self aligning (floating) cage provides very low hysteresis and reliable operation.

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

Valve is available with screw, tamperproof, capped and handknob adjustments.

All cartridge valves are 100% functionally tested.

Industry common cavity.

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 6.0 GPM [23 L/M] nominal. See performance chart.

INTERNAL LEAKAGE: 5 cu.in./min [.82 cc/m] @ 85% of crack pressure.

DEFINITION OF CRACK: evident at 0.06 GPM [0.25 LPM]

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.

INSTALLATION: No restriction.

FILTRATION: 25 microns or better.

SEAL KIT NUMBER: SKN-0831 for buna "N".

SKV-0831 for viton.

WEIGHT: 0.30 lb [.14 kg] cartridge only.

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

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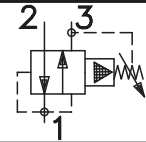
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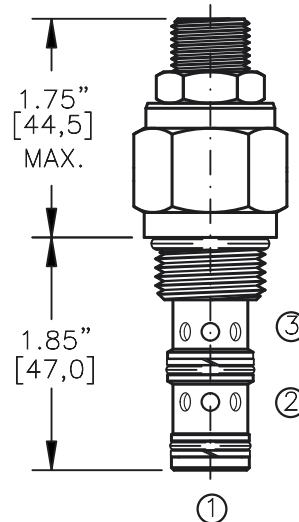
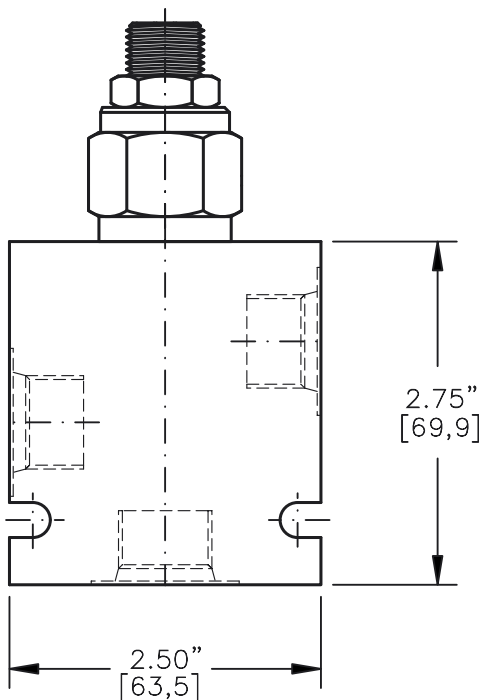
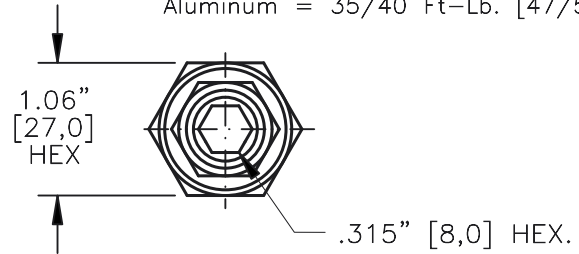
PRESSURE REDUCING/RELIEVING VALVE PILOT OPERATED, SLIDING SPOOL



Pat.#5,546,980

TORQUE:

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



FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-032.1

PRRS-10-X-X-X-XX

BASIC
SIZE
10 = 7/8"-14 UNF

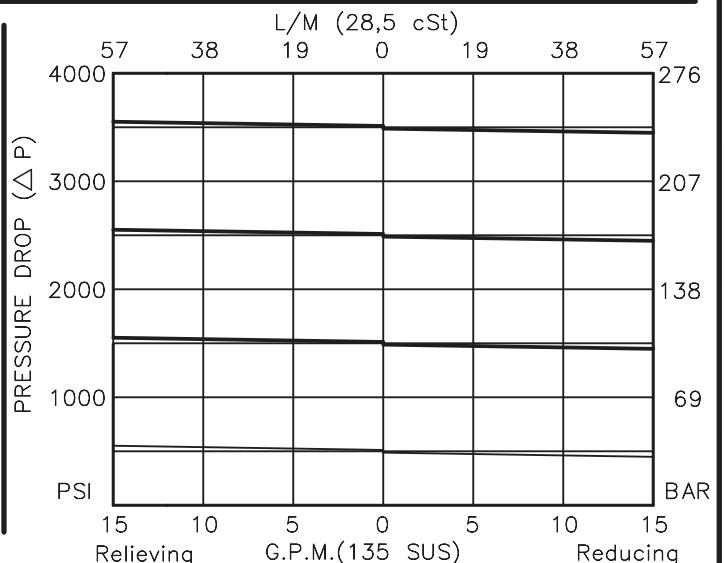
SEALS
N = BUNA "N"
V = VITON

ADJUSTMENT
S = ADJUSTING SCREW
C = CAPPED
T = TAMPERPROOF
K = HANDKNOB
M = METAL HANDKNOB

PRESSURE RANGE
06 = 50 TO 600 PSI
15 = 50 TO 1500 PSI
30 = 50 TO 3000 PSI
50 = 50 TO 5000 PSI

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

FOR ADJUSTMENT CONTROL
OPTIONS SEE PAGE 0-050.0



PRESSURE REDUCING/RELIEVING VALVE PILOT OPERATED, SLIDING SPOOL

DESCRIPTION

This unit is a PILOT OPERATED, SLIDING SPOOL, SCREW IN CARTRIDGE STYLE, HYDRAULIC PRESSURE REDUCING/RELIEVING VALVE, designated to act as a pressure-regulating device for secondary circuit.

OPERATIONS

This valve will allow flow from port 2 to port 1 until pressure in port 1 exceeds the force of the spring bias then the spool will shift and block flow from port 2 to port 1 and maintain the same pressure as the force of the spring setting regardless of the pressure at port 2. In this mode, the valve will also relieve from port 1 to port 3, regulating pressure at port 1.

FEATURES AND BENEFITS

Leakproof screw adjustment.

Pressure in tank port (3) will add to the bias spring setting, and is limited to 2000 PSI.

Adjusting screw can not be backed out of the valve.

Overset protection—pilot spring can not go solid.

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

A unique self aligning (floating) cage provides very low hysteresis and reliable operation.

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

Valve is available with screw, tamperproof, capped and handknob adjustments.

All cartridge valves are 100% functionally tested.

Industry common cavity.

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 12.0 GPM [46 L/M] nominal. See performance chart.

INTERNAL LEAKAGE: 5 cu.in./min [.82 cc/m] @ 85% of crack pressure.

DEFINITION OF CRACK: evident at 0.06 GPM [0.25 LPM]

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.

INSTALLATION: No restriction.

FILTRATION: 25 microns or better.

SEAL KIT NUMBER: SKN-1031 for buna "N".

SKV-1031 for viton.

WEIGHT: 0.42 lb [.19 kg] cartridge only.

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

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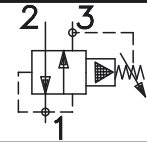
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PRESSURE REDUCING/RELIEVING VALVE PILOT OPERATED, SLIDING SPOOL

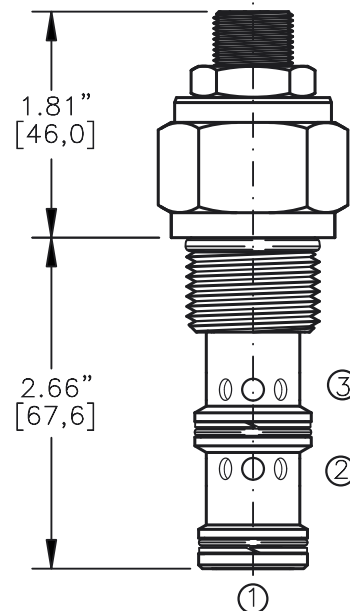
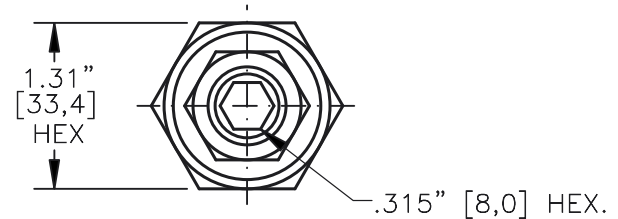
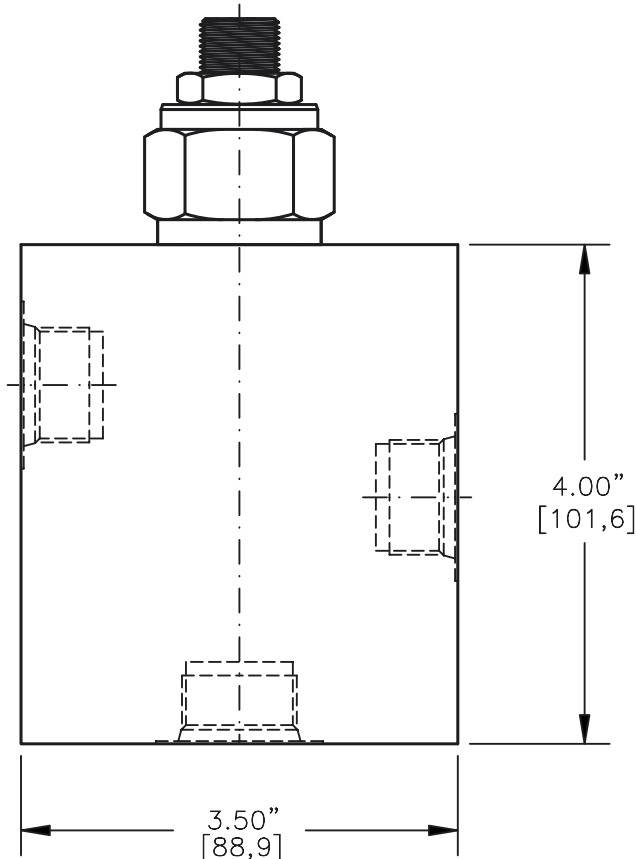


Pat. # 5,546,980

TORQUE:

Steel = 70/75 Ft-Lb. [95/102 Nm]

Aluminum = 55/60 Ft-Lb. [74/81 Nm]



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

PRRS-12-X-X-0-XX

BASIC
SIZE
12 = 1.062"-12 UNF

SEALS
N = BUNA "N"
V = VITON

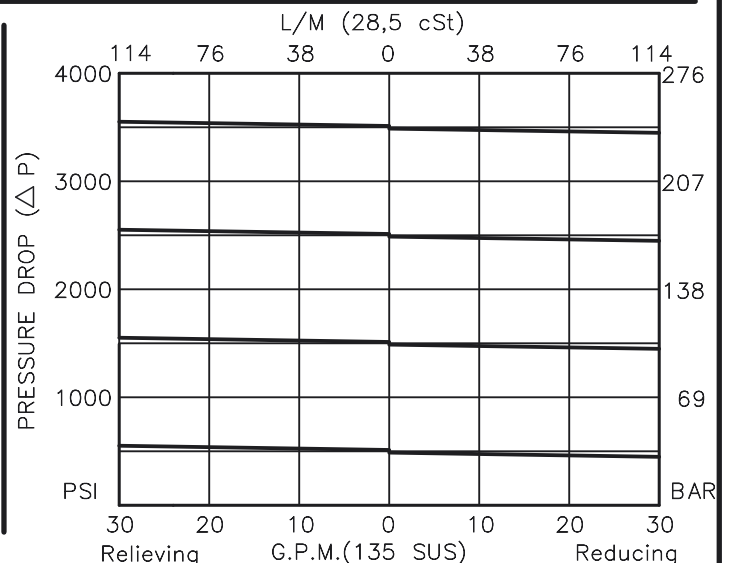
ADJUSTMENT
S = ADJUSTING SCREW
C = CAPPED
T = TAMPERPROOF
K = HANDKNOB
M = METAL HANDKNOB

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

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

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

FOR ADJUSTMENT CONTROL
OPTIONS SEE PAGE 0-050.0



PRESSURE REDUCING/RELIEVING VALVE PILOT OPERATED, SLIDING SPOOL

DESCRIPTION

This unit is a PILOT OPERATED, SLIDING SPOOL, SCREW IN CARTRIDGE STYLE, HYDRAULIC PRESSURE REDUCING/RELIEVING VALVE, designated to act as a pressure-regulating device for secondary circuit.

OPERATIONS

This valve will allow flow from port 2 to port 1 until pressure in port 1 exceeds the force of the spring bias then the spool will shift and block flow from port 2 to port 1 and maintain the same pressure as the force of the spring setting regardless of the pressure at port 2. In this mode, the valve will also relieve from port 1 to port 3, regulating pressure at port 1.

FEATURES AND BENEFITS

Leakproof screw adjustment.

Pressure in tank port (3) will add to the bias spring setting, and is limited to 2000 PSI.

Adjusting screw can not be backed out of the valve.

Overset protection—pilot spring can not go solid.

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

A unique self aligning (floating) cage provides very low hysteresis and reliable operation.

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

Valve is available with screw, tamperproof, capped and handknob adjustments.

All cartridge valves are 100% functionally tested.

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 24.0 GPM [91 L/M] nominal. See performance chart.

INTERNAL LEAKAGE: 5 cu.in./min [.82 cc/m] @ 85% of crack pressure.

DEFINITION OF CRACK: evident at 0.06 GPM [0.25 LPM]

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.

INSTALLATION: No restriction.

FILTRATION: 25 microns or better.

SEAL KIT NUMBER: SKN-1231 for Buna "N".

SKV-1231 for Viton.

WEIGHT: 0.56 lb [0,26 kg] cartridge only.

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

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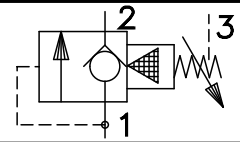
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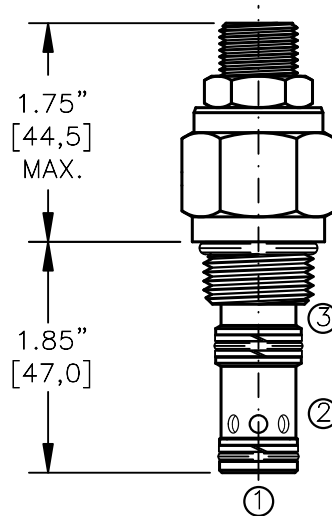
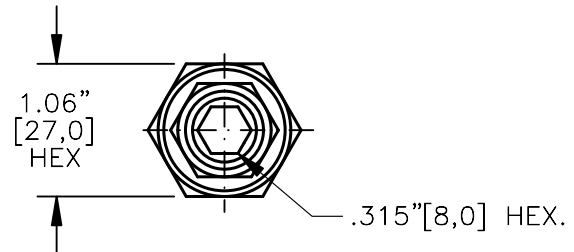
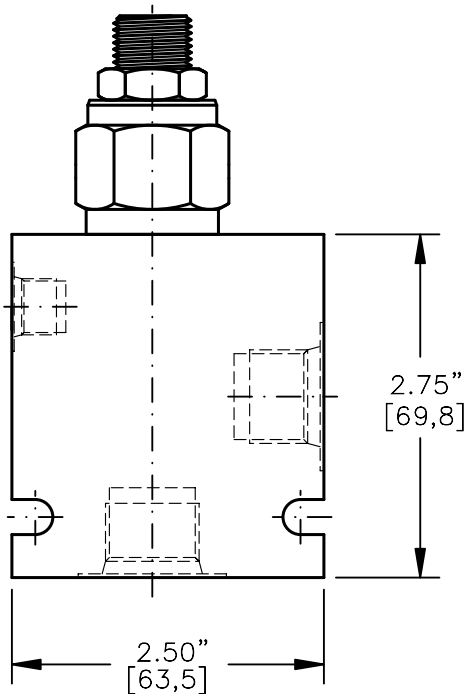
PRESSURE SEQUENCE VALVE POPPET TYPE WITH FREE REVERSE FLOW



Pat.#5,546,980

TORQUE:

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



FOR ALUMINUM OR STEEL VALVE HOUSING CONFIGURATIONS SEE PAGE 0-022.1

PSVP-10-X-X-X-XX

BASIC
SIZE
10 = 7/8"-14 UNF

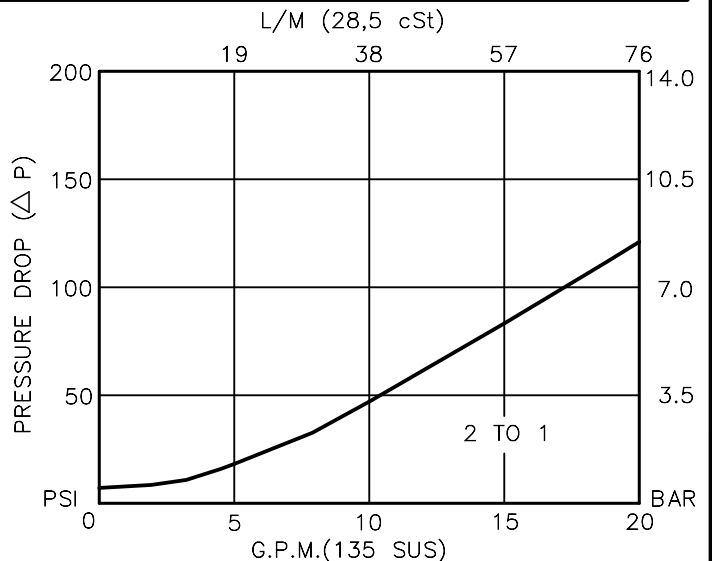
SEALS
N = BUNA "N"
V = VITON

ADJUSTMENT
S = ADJUSTING SCREW
C = CAPPED
T = TAMPERPROOF
K = HANDKNOB
M = METAL HANDKNOB

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

PORTS
0 = CARTRIDGE ONLY
03BX = G 3/8" BSPP
04BX = G 1/2" BSPP
08TX = SAE - #8
10TX = SAE - #10
"A" - ALUM. HOUSING
"S" - STEEL HOUSING

FOR ADJUSTMENT CONTROL
OPTIONS SEE PAGE 0-050.0



PRESSURE SEQUENCE VALVE POPPET TYPE WITH FREE REVERSE FLOW

DESCRIPTION

This unit is a PILOT OPERATED, SCREW IN CARTRIDGE STYLE, POPPET TYPE WITH BUILT IN FREE REVERSE FLOW CHECK, HYDRAULIC PRESSURE SEQUENCE VALVE,

OPERATIONS

This valve (PSVP) blocks flow from port #1 to port #2 until sufficient pressure is present at port #1 to force the pilot poppet from its seat thus opening the valve.

This sequence cartridge valve offers a free reverse flow from port 2 to port 1.

FEATURES AND BENEFITS

Leakproof screw adjustment.

Pressure in tank port (3) will add to the bias spring setting, and is limited to 2000 PSI.

Adjustment screw can not be backed out of the valve.

Overset protection—pilot spring can not go solid.

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

A unique self aligning (floating) cage provides very low hysteresis and reliable operation.

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

Valve is available with screw, tamperproof, capped and handknob adjustments.

All cartridge valves are 100% functionally tested.

Industry common cavity.

SPECIFICATIONS

OPERATING PRESSURE: 5,000 PSI [350 Bar]

PROOF PRESSURE: 10,000 PSI [700 Bar]

FLOW: 20.0 GPM [76 L/M] nominal. See performance chart.

INTERNAL LEAKAGE: 5 drops/min (.25 cc/m) @ 85% of crack pressure.

DEFINITION OF CRACK: evident at 0.06 GPM (0.25 LPM)

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.

INSTALLATION: No restriction.

FILTRATION: 25 microns or better.

SEAL KIT NUMBER: SKN-1028 for buna "N".

SKV-1028 for viton.

WEIGHT: 0.42 lb [.19 kg] cartridge only.

VALVE CAVITY: #C1025, See Page 0-022.0.

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2/2 Logic Cartridge Valve, Size 10

$Q_{\max} = 150 \text{ l/min}$, $p_{\max} = 420 \text{ bar}$

Active Control, Seated Design

Series WL22SD...



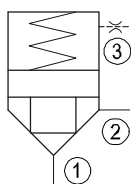
- Active control
- Area ratio 2 : 1
- High flow rates with low Δp
- Seat-valve shut-off from A \rightarrow B and B \rightarrow A
- No pilot oil consumption at Z
- With or without seal on the seated valve spool
- Various opening pressures
- With integral orifice for pilot port
- All external parts zinc plated, chromited (CrVI-free)
- Can be fitted in a line-mounting body

1 Description

Series WL22SD... actively controlled 2/2 logic valves are size 10, high performance screw-in cartridges with an M27 x 2 mounting thread. The conical-seat design ensures that the cartridges are leak-tight from A \rightarrow B and from B \rightarrow A. When the same pressure exists at ports A, B and Z, the valve spool is held in its closed position by the $\geq 2 \text{ bar}$ compression spring. The A \rightarrow B and B \rightarrow A connection is opened or closed by relieving or pressurising the pilot port

Z, bearing in mind the corresponding area- and pressure-ratios. 2/2 logic cartridge valves can be used in both mobile and industrial applications. All external parts are zinc plated and chromited (CrVI-free) and are thus suitable for use in the harshest operating environments. 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



WL22SD ...

3 Technical data

General characteristics	Description, value, unit
Designation	2/2 logic cartridge valve
Design	actively controlled, conical-seat type
Mounting method	screw-in cartridge M27 x 2
Tightening torque	150 Nm \pm 10 %
Size	nominal 10 mm, cavity type DJ
Weight	0.21 kg
Mounting attitude	unrestricted
Ambient temperature range	-25 °C ... +80 °C
Flow direction	A \rightarrow B / B \rightarrow A, see symbol

Hydraulic characteristics	Description, value, unit
Maximum operating pressure	420 bar
Maximum flow rate	150 l/min
Pressure drop	$\Delta p < 5$ bar at 100 l/min
Opening pressure: - standard - optional	2.0 bar 0.4 ¹⁾ / 1.0 ¹⁾ / 3.0 / 6.0 / 7.5 / 13 bar
Hydraulic fluid	HL and HLP hydraulic oils to DIN 51 524; for other fluids, please consult Bucher
Hydraulic fluid temperature range	-25 °C ... +80 °C
Viscosity range	10 ... 650 mm ² /s (cSt), recommended 15...250 mm ² /s (cSt)
Minimum fluid cleanliness level Cleanliness class to ISO 4406: 1999	class 20/18/15

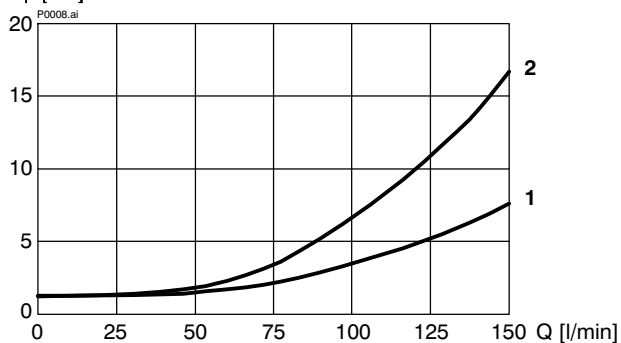
1) only recommended for use when the seated valve spool is not fitted with a seal.

4 Performance graphs

measured with oil viscosity 33 mm²/s (cSt)

$\Delta p = f(Q)$ Pressure drop - Flow rate characteristic

Δp [bar]



1 = cavity type DJ with annular groove

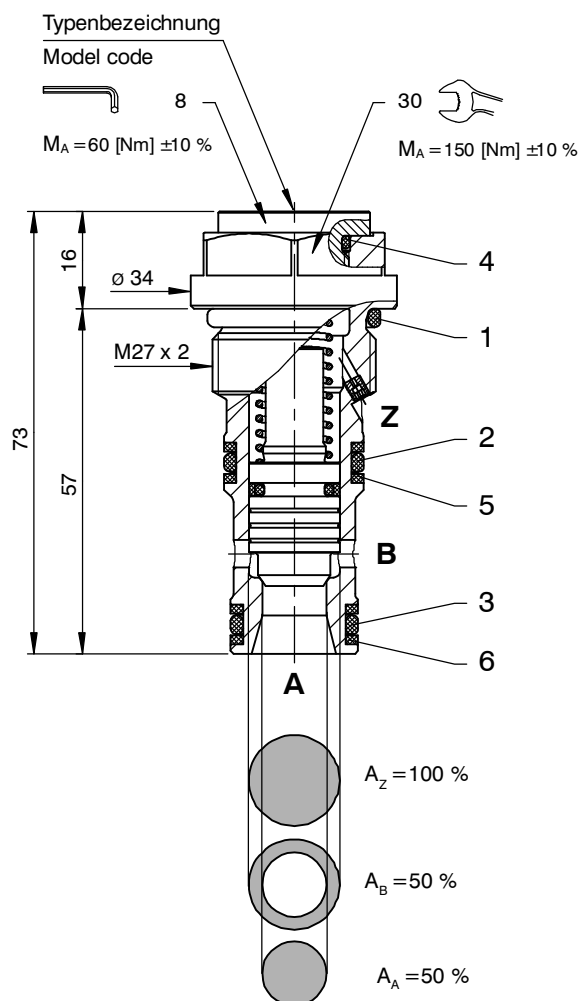
2 = cavity type DJ without annular groove



Attention:

The Δp characteristic is valid when the load pressure in the A → B / B → A connection is higher than the opening pressure. If the load pressure is lower than the opening pressure, the load pressure must first rise to overcome the opening pressure before flow can occur.

5 Dimensions, sectional view



6 Installation information



Important:

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 needed is to check and possibly replace the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

NBR seal kit no. DS-296-N ¹⁾

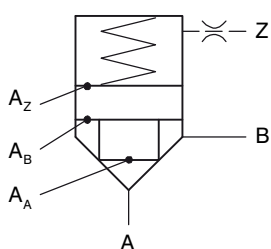
Item	Qty.	Description
1	1	O-ring No. 119 $\varnothing 23.47 \times 2.62$ N90
2	1	O-ring No. 116 $\varnothing 18.72 \times 2.62$ N90
3	1	O-ring No. 114 $\varnothing 15.54 \times 2.62$ N90
4	1	O-ring No. 016 $\varnothing 15.60 \times 1.78$ N90
5	2	Backup ring $\varnothing 17.1 \times 2.0 \times 1.4$ FI0751
6	2	Backup ring $\varnothing 15.3 \times 2.0 \times 1.4$ FI0751



IMPORTANT!

¹⁾ Seal kit with FKM (Viton) seals, no. DS-296-V

7 Area- and pressure-ratios



Area A_Z : Area $A_A = 2 : 1$

Area A_Z : Area $A_B = 2 : 1$

Area A_A : Area $A_B = 1 : 1$

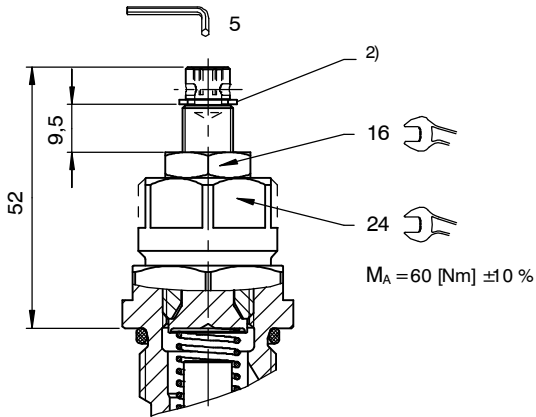
8 Adjuster types (optional)

Type "E" adjuster (WL22S.E2D...)



Important

Can be used to limit the opening stroke, for example, or to block the valve spool in the closed position.



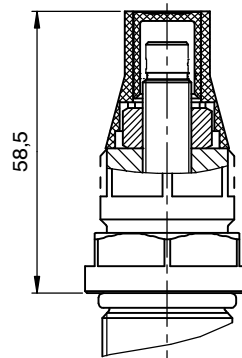
2) Snap ring (remove for "P" model)

"E" adjuster with "P" tamper-proof cap (WL22S.P2D...)



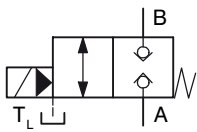
Important

Valve settings can be sealed by fitting the tamper-proof cap. To fit the cap, the snap ring ²⁾ has to be removed. Subsequent adjustment is only possible by destroying the tamper-proof cap.

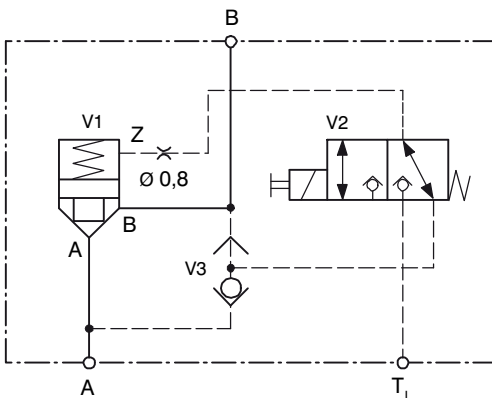


9 Application examples (active control)

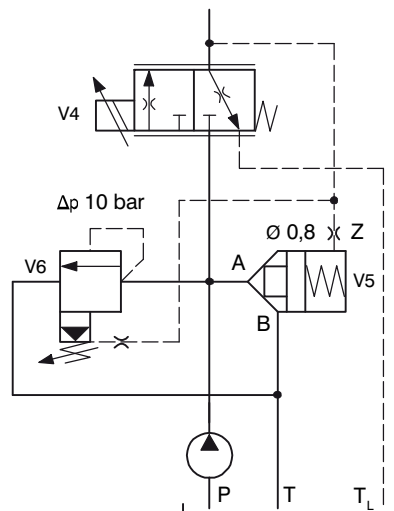
Simplified symbol



Application with seat valve



Logic valve application for lowest possible vented pressure with a proportional throttle and bypass compensator



Advantage

When the logic cartridge valve is open (flow A → B / B → A), there is no continuous flow of pilot oil to Z.

V1 = logic cartridge valve

V2 = 3/2 seat valve

V3 = shuttle valve

V4 = proportional throttle cartridge

V5 = logic cartridge valve

V6 = bypass pressure compensator cartridge

10 Ordering code

Ex.

WL22	SD		2	D1	3	B	-	10		-	
------	----	--	---	----	---	---	---	----	--	---	--

- WL22 = 2/2 logic cartridge valve
- SD = seat valve with spool seal (standard)
- S (*) = seat valve without spool seal
- (blank) = non-adjustable (standard)
- E = adjustable
- P = adjustable; adjuster is sealed
- 2 = area ratio (main spool : seat = 2 : 1)
- D1 = fixed orifice in port Z Ø 0.8 (standard)
- D2 = orifice Ø 0.6
- D3 = orifice Ø 1.5
- D4 = orifice Ø 1.4
- D5 = orifice Ø 1.3
- D6 = orifice Ø 1.2
- D7 = orifice Ø 1.1
- D8 = orifice Ø 1.0
- D9 = orifice Ø 0.9
- D0 = orifice Ø 0.7
- (blank) = no orifice
- 1 (*) = opening pressure 0.4 bar
- 2 (*) = opening pressure 1.0 bar
- 3 = opening pressure 2.0 bar (standard)
- 4 = opening pressure 3.0 bar
- 5 = opening pressure 6.0 bar
- 6 = opening pressure 7.5 bar
- 7 = opening pressure 13 bar
- B ... Q = standard model - see relevant data sheets
- Z ... R = special features - please consult Bucher
- 10 = nominal size 10 mm
- (blank) = Nitrile seals (standard)
- V = Viton seals
(special seals - please consult Bucher)
- 1 ... 9 = design number (omit when ordering new units)

(*) In applications with an opening pressure of less than 2 bar, valve type WL22S2 ... must be used.
I.e. the seal on the spool is omitted, and the valve is not leak-tight from A → B.

11 Related data sheets

Reference no.	(Old no.)	Description
400-P-040011	(i-32)	The form-tool hire programme
400-P-060181	(i-45.11)	Cavity type DJ
400-P-740131	(G-24.31)	Line-mounting body, type GADJA (G 3/4")

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