

SERIES	DESCRIPTION	PAGE NO.	SERIES	DESCRIPTION	PAGE NO.
65FL	Relief With Unloading Valve	PC1-PC5	MHB-015	Counterbalance Valves	LM6-LM9
65TL	Relief With Unloading Valve	PC6-PC10	MHB-030	Counterbalance Valves	LM10-LM13
ASH	Shuttle Valves	CS35-CS36	MHB-060	Counterbalance Valves	LM14-LM17
CB101	Counterbalance Valves	LM40-LM42	MHB-120	Counterbalance Valves	LM18-LM21
CFL	4 Bolt Flange Check Valves	CS20-CS21	MHC-010	Counterbalance Valves	LM22-LM25
CV081P	Check Valves	CS1-CS3	MHC-022	Counterbalance Valves	LM26-LM29
CV103P	Check Valves	CS4-CS6	MHC-025	Counterbalance Valves	LM30-LM33
CVH121P	Check Valves	CS7-CS9	MHC-050	Counterbalance Valves	LM34-LM37
CVH161P	Check Valves	CS10-CS12	MHC-120	Counterbalance Valves	LM38-LM39
CVH201P	Check Valves	CS13-CS15	MMB-015	Motor Control Valves	LM43-LM48
DS085	Spool-Type, Four-Way, Three Pos. Valves	SV90-SV93	MMB-025	Motor Control Valves	LM49-LM54
DS105	Spool-Type, Four-Way, Three Pos. Valves	SV94-SV97	MMB-100	Motor Control Valves	LM55-LM60
DS123B	Spool-Type, Three-Way Valves	SV67-SV69	MMB-160	Motor Control Valves	LM55-LM60
DS161	Poppet-Type, Two-Way Valves	SV25-SV28	MPB-008	Single & Dual P.O. Check Valves	CS22-CS25
DS162	Spool-Type, Two-Way Valves	SV47-SV50	MPB-025	Single & Dual P.O. Check Valves	CS26-CS29
DS163	Spool-Type, Three-Way Valves	SV70-SV73	PR103	Direct Acting Pressure Reducing/ Relieving Valves	PC53-PC55
DS201	Poppet-Type, Two-Way Valves	SV29-SV32	PRCH101	Pressure Reducing/Relieving Valves With Free Reverse Flow Check	PC56-PC58
DSH081	Poppet-Type, Two-Way Valves	SV5-SV8	PRH081	P.O. Pressure Reducing/Relieving Valves	PC41-PC43
DSH082	Spool-Type, Two-Way Valves	SV36-SV38	PRH101	P.O. Pressure Reducing/Relieving Valves	PC44-PC46
DSH083	Spool-Type, Three-Way Valves	SV55-SV58	PRH121	P.O. Pressure Reducing/Relieving Valves	PC47-PC49
DSH084	Spool-Type, Four-Way Valves	SV78-SV81	PRH161	P.O. Pressure Reducing/Relieving Valves	PC50-PC52
DSH101	Poppet-Type, Two-Way Valves	SV13-SV16	QA & QD	Flow Control Valves	SP1-SP5
DSH102	Spool-Type, Two-Way Valves	SV43-SV46	QLF	Velocity Fuses (Bleed)	VC5-VC7
DSH103	Spool-Type, Three-Way Valves	SV63-SV66	RAH081	P.O. Relief Valves	PC20-PC22
DSH104	Spool-Type, Four-Way Valves	SV86-SV89	RAH101	P.O. Relief Valves	PC23-PC25
DSH121	Poppet-Type, Two-Way Valves	SV21-SV24	RAH101V	P.O. Ventable Relief Valves	PC35-PC37
DSL081	Poppet-Type, Two-Way Valves	SV1-SV4	RAH121	P.O. Relief Valves	PC26-PC28
DSL082	Spool-Type, Two-Way Valves	SV33-SV35	RAH161	P.O. Relief Valves	PC29-PC31
DSL083	Spool-Type, Three-Way Valves	SV51-SV54	RAH201	P.O. Relief Valves	PC32-PC34
DSL084	Spool-Type, Four-Way Valves	SV74-SV77	RD163	Direct Acting Relief Valves	PC17-PC19
DSL101	Poppet-Type, Two-Way Valves	SV9-SV12	RDH083	Direct Acting Relief Valves	PC11-PC13
DSL102	Spool-Type, Two-Way Valves	SV39-SV42	RDH103	Direct Acting Relief Valves	PC14-PC16
DSL103	Spool-Type, Three-Way Valves	SV59-SV62	SVH081	Sequence Valves	PC59-PC61
DSL104	Spool-Type, Four-Way Valves	SV82-SV85	SVH082	P.O. Sequence Valves	PC71-PC73
DSL121	Poppet-Type, Two-Way Valves	SV17-SV20	SVH101	Sequence Valves	PC62-PC64
FL101	Filter Cartridge	SP6-SP7	SVH102	P.O. Sequence Valves	PC74-PC76
LD1	Decompression Check Valves	CS30-CS32	SVH121	Sequence Valves	PC65-PC67
LD2-16	Decompression Check Valves	CS33-CS34	SVH122	P.O. Sequence Valves	PC77-PC79
MCC-008	Ball Type Check Valves	CS16-CS17	SVH161	Sequence Valves	PC68-PC70
MCC-025	Ball Type Check Valves	CS18-CS19	SVH162	P.O. Sequence Valves	PC80-PC82
MFB-025	Priority By-Pass Flow Control	VC1-VC4	VLS	Velocity Fuses (Shutoff)	VC5-VC7
MFB-050	Priority By-Pass Flow Control	VC1-VC4	XRDH103	Cross-Over Relief Valves	PC38-PC40
MFB-060	Priority By-Pass Flow Control	VC1-VC4			
MFB-070	Priority By-Pass Flow Control	VC1-VC4			

SERIES	DESCRIPTION	PAGE NO.
Single Function Bodies		
B08-2**	Single Function, Two Step Bodies	VB1
B08-3**	Single Function, Three Step Bodies	VB2
B08-4**	Single Function, Four Step Bodies	VB3
B10-2**	Single Function, Two Step Bodies	VB4
B10-3**	Single Function, Three Step Bodies	VB5
B10-4**	Single Function, Four Step Bodies	VB6
B12-2**	Single Function, Two Step Bodies	VB7
B12-3**	Single Function, Three Step Bodies	VB8
B12-4**	Single Function, Four Step Bodies	VB9
B16-2**	Single Function, Two Step Bodies	VB10
B16-3**	Single Function, Three Step Bodies	VB11
B20-2**	Single Function, Two Step Bodies	VB12

Cartridge Coils

1/2" I.D.	"DS" Coils	CL1-CL2
5/8" I.D.	"DS" Coils	CL3-CL4
1" I.D.	"DS" Coils	CL5-CL6
1/2" I.D.	"DSL" and "DSH" Unicoils	CL7-CL8
5/8" I.D.	"DSL" and "DSH" Unicoils	CL9-CL10
1/2" I.D.	"DSL" and "DSH" Waterproof Coils	CL11
5/8" I.D.	"DSL" and "DSH" Waterproof Coils	CL12

SERIES	DESCRIPTION	PAGE NO.
Cavity Details		
	Installation Data	TD1
C08-2	Two Way Cavity Detail	TD2
C08-3	Three Way Cavity Detail	TD2
C08-4	Four Way Cavity Detail	TD3
C10-2	Two Way Cavity Detail	TD4
C10-3	Three Way Cavity Detail	TD4
C10-4	Four Way Cavity Detail	TD5
C12-2	Two Way Cavity Detail	TD6
C12-3	Three Way Cavity Detail	TD6
C12-4	Four Way Cavity Detail	TD7
C16-2	Two Way Cavity Detail	TD8
C16-3	Three Way Cavity Detail	TD8
C20-2	Two Way Cavity Detail	TD9
CDD-1008	MPB-008 Cavity Detail (Single with Shuttle)	TD10
CDD-1009	MPB-025 Cavity Detail (Single with Shuttle)	TD10
CDD-1010	MHC-010 Cavity Detail	TD11
CDD-1012	MHC-025 Cavity Detail	TD11
CDD-1013	MHC-050 Cavity Detail	TD12
CDD-1014	MHC-120 Cavity Detail	TD12
CDD-1022	MCC-008 Cavity Detail	TD13
CDD-1023	MCC-025 Cavity Detail	TD13
CDD-1030	MPB-008 Cavity Detail (Dual with Shuttle)	TD14
CDD-1031	MPB-025 Cavity Detail (Dual with Shuttle)	TD14
CDD-1036	MHC-022 Cavity Detail	TD15

SERIES	DESCRIPTION	PAGE NO.
B08-2**	Single Function, Two Step Bodies	VB1
B08-3**	Single Function, Three Step Bodies	VB2
B08-4**	Single Function, Four Step Bodies	VB3
B10-2**	Single Function, Two Step Bodies	VB4
B10-3**	Single Function, Three Step Bodies	VB5
B10-4**	Single Function, Four Step Bodies	VB6
B12-2**	Single Function, Two Step Bodies	VB7
B12-3**	Single Function, Three Step Bodies	VB8
B12-4**	Single Function, Four Step Bodies	VB9
B16-2**	Single Function, Two Step Bodies	VB10
B16-3**	Single Function, Three Step Bodies	VB11
B20-2**	Single Function, Two Step Bodies	VB12

CHECKS &
SHUTTLESLOAD & MOTOR
CONTROLSVOLUME
CONTROLSPRESSURE
CONTROLSSOLENOID
VALVESSPECIALTY
VALVES

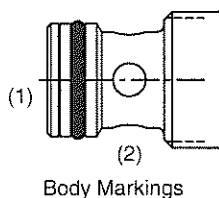
COILS

BODIESTECHNICAL
DATA

General Description

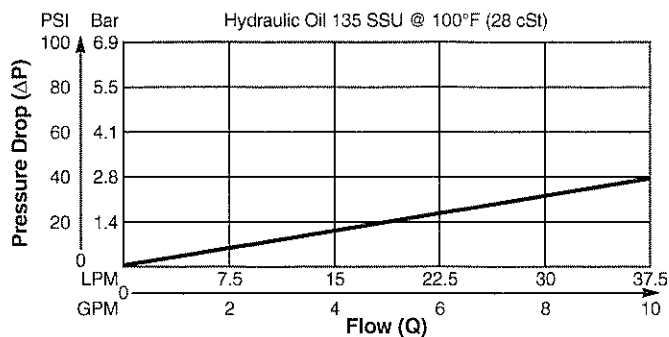
The B08-2-** Series Bodies are designed to be used in conjunction with No. 08 two step cartridges. (Parker Common Cavity C08-2)

Cartridge Flow Path

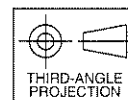
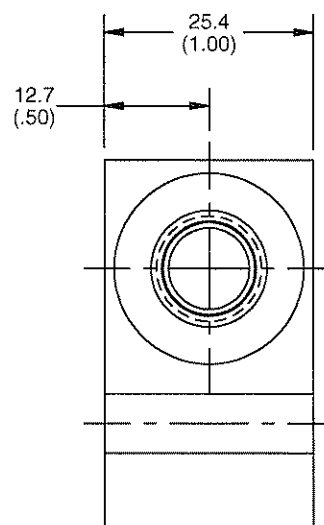
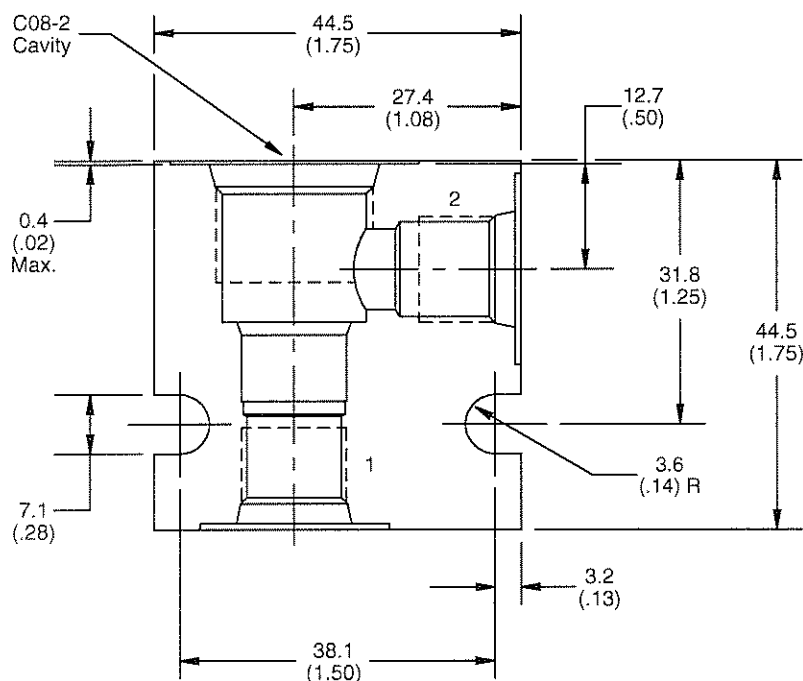


Performance Curve

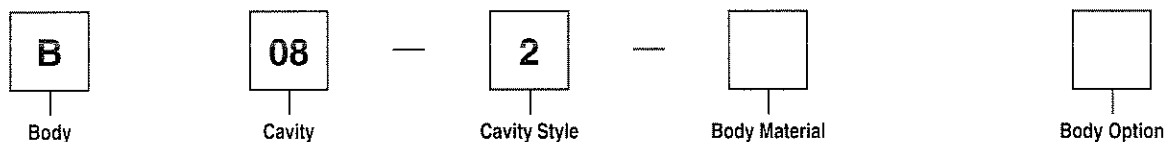
Pressure Drop vs. Flow (Through cartridge only)



Dimensions *Inch equivalents for millimeter dimensions are shown in (**)



Ordering Information



3/4-16 UNF-2B
 Threaded Cavity
 with .50" Dia. Seat

2-Way
 C08-2 Cavity

Code	Material
Omit	Steel
A	Aluminum

Code	Port Size
4P	1/4" NPTF (B08-2-4P)
6P	3/8" NPTF (B08-2-6P)
4T	SAE-4 (B08-2-4T)
6T	SAE-6 (B08-2-6T)
2B	1/8" BSPG (B08-2-2B)
4B	1/4" BSPG (B08-2-4B)
6B	3/8" BSPG (B08-2-6B)

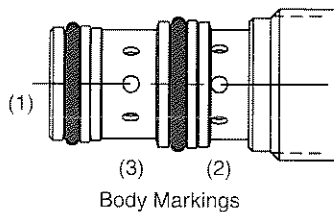
Shipping Weight .11 kg (.25 lbs.)

b08-2.pm6.5, bl, gn

General Description

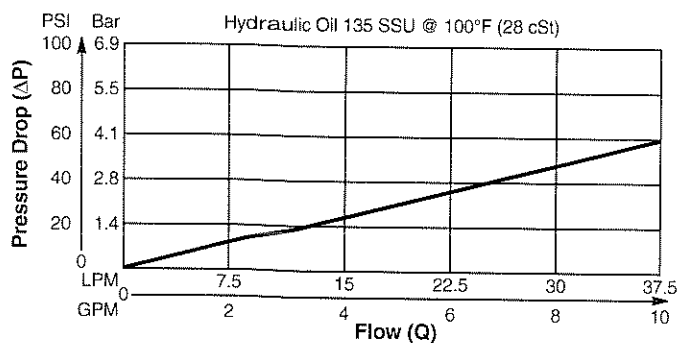
The B08-3-** Series Bodies are designed to be used in conjunction with No. 08 three step cartridges. (Parker Common Cavity C08-3)

Cartridge Flow Path



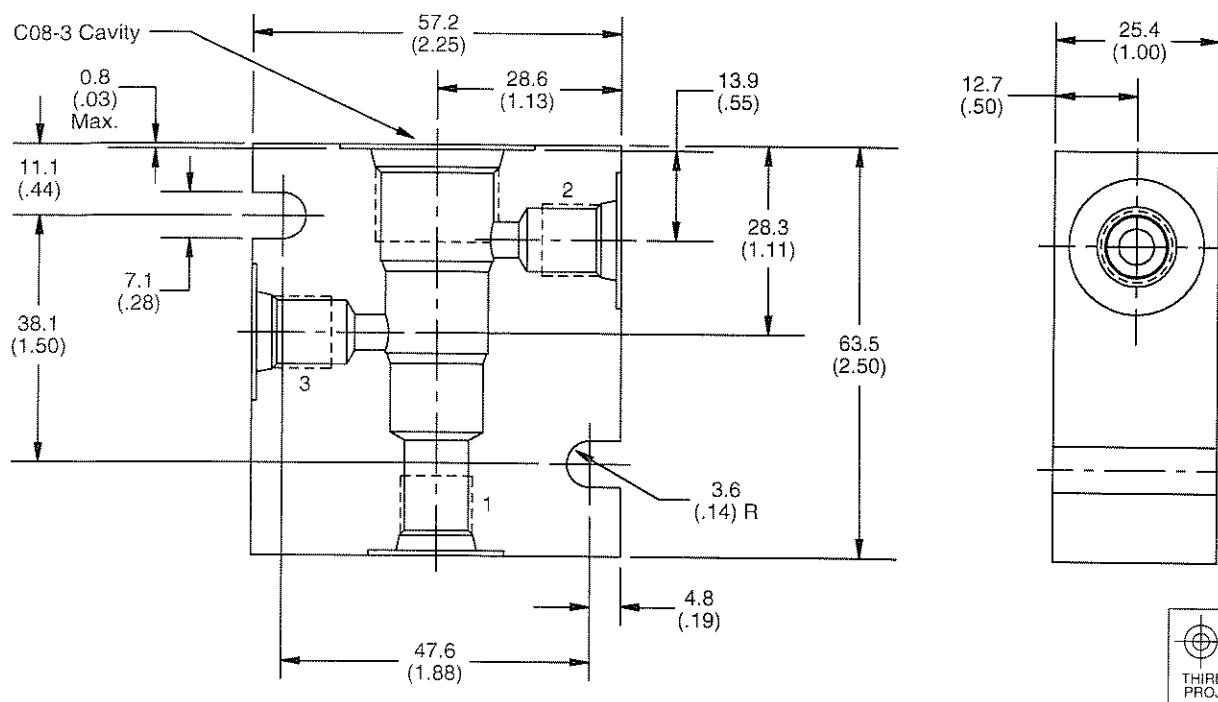
Performance Curve

Pressure Drop vs. Flow (Through cartridge only)

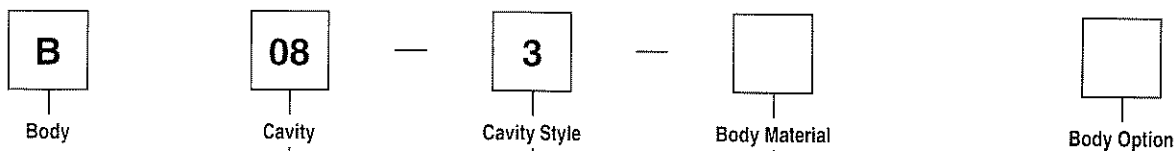


Dimensions

*Inch equivalents for millimeter dimensions are shown in (**)



Ordering Information



3/4-16 UNF-2B
 Threaded Cavity
 with .56" Dia. Seat

3-Way
 C08-3 Cavity

Code	Material
Omit	Steel
A	Aluminum

Code	Port Size
4P	1/4" NPTF (B08-3-4P)
6P	3/8" NPTF (B08-3-6P)
4T	SAE-4 (B08-3-4T)
6T	SAE-6 (B08-3-6T)
4B	1/4" BSPG (B08-3-4B)
6B	3/8" BSPG (B08-3-6B)

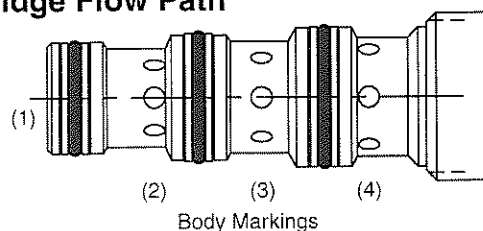
Shipping Weight .27 kg (.60 lbs.)

b08-3 pm6.5, bl, gn

General Description

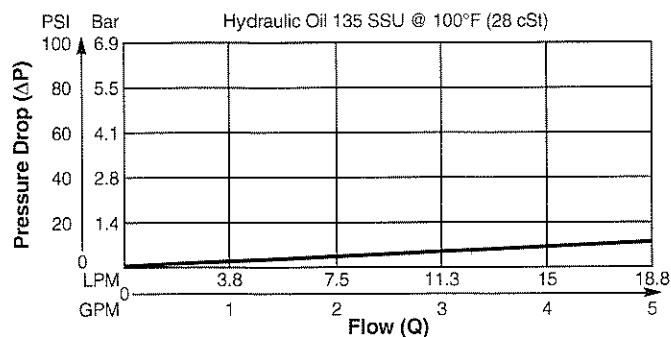
The B08-4-**- Series Bodies are designed to be used in conjunction with No. 08 four step cartridges. (Parker Common Cavity C08-4)

Cartridge Flow Path



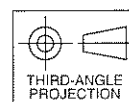
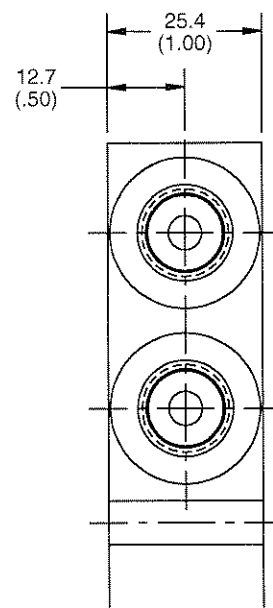
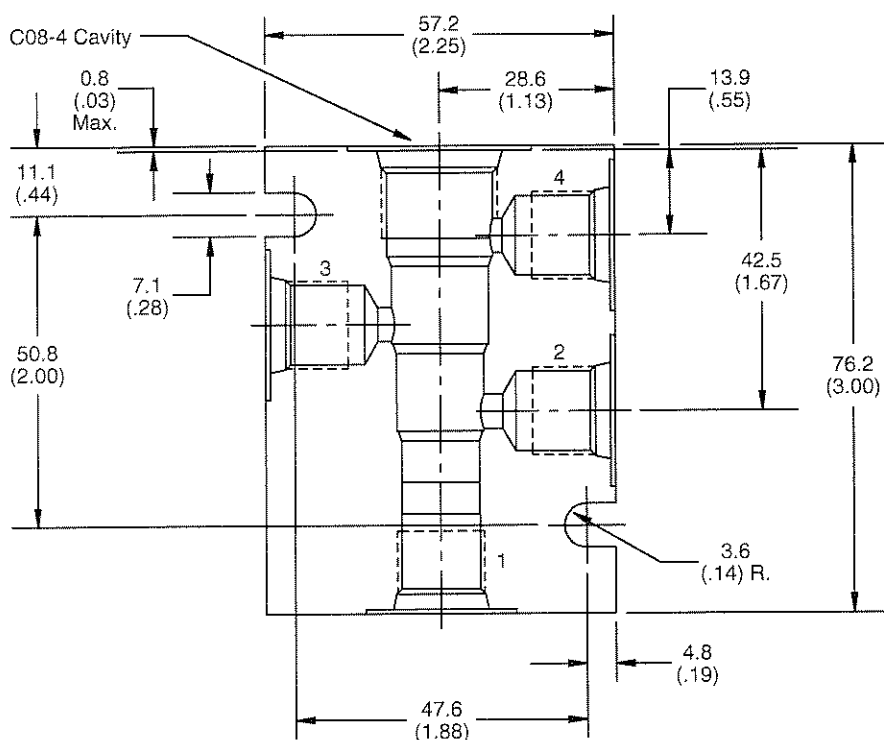
Performance Curve

Pressure Drop vs. Flow (Through cartridge only)

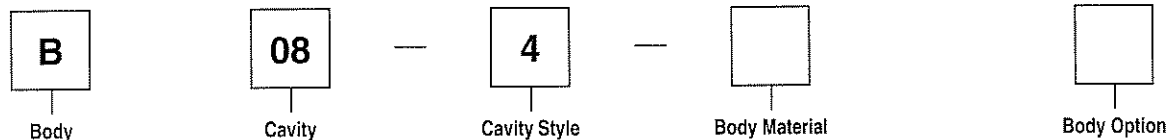


Dimensions

*Inch equivalents for millimeter dimensions are shown in (**)



Ordering Information



3/4-16 UNF-2B
 Threaded Cavity
 with .62" Dia. Seat

4-Way
 C08-4 Cavity

Code	Material
Omit	Steel
A	Aluminum

Code	Port Size
4P	1/4" NPTF (B08-4-4P)
6P	3/8" NPTF (B08-4-6P)
4T	SAE-4 (B08-4-4T)
6T	SAE-6 (B08-4-6T)
4B	1/4" BSPG (B08-4-4B)
6B	3/8" BSPG (B08-4-6B)

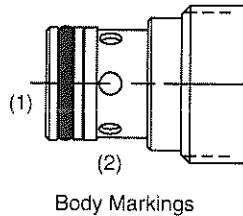
Shipping Weight .45 kg (1.0 lbs.)

b08-4.pm6.5, bl, gn

General Description

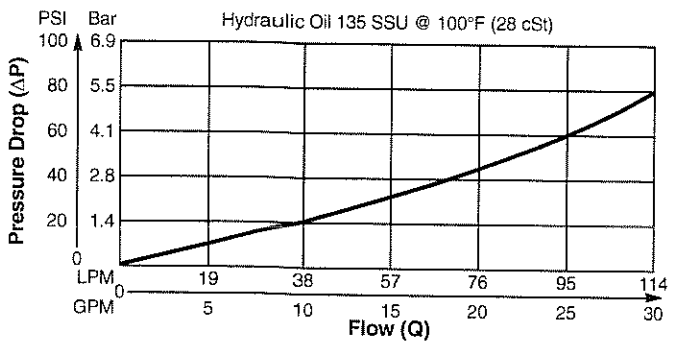
The B10-2-** Series Bodies are designed to be used in conjunction with No. 10 two step cartridges. (Parker Common Cavity C10-2)

Cartridge Flow Path



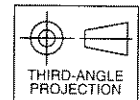
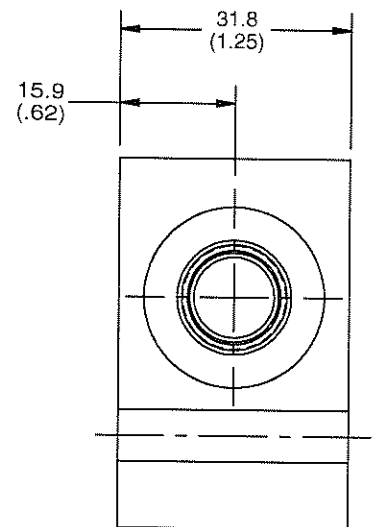
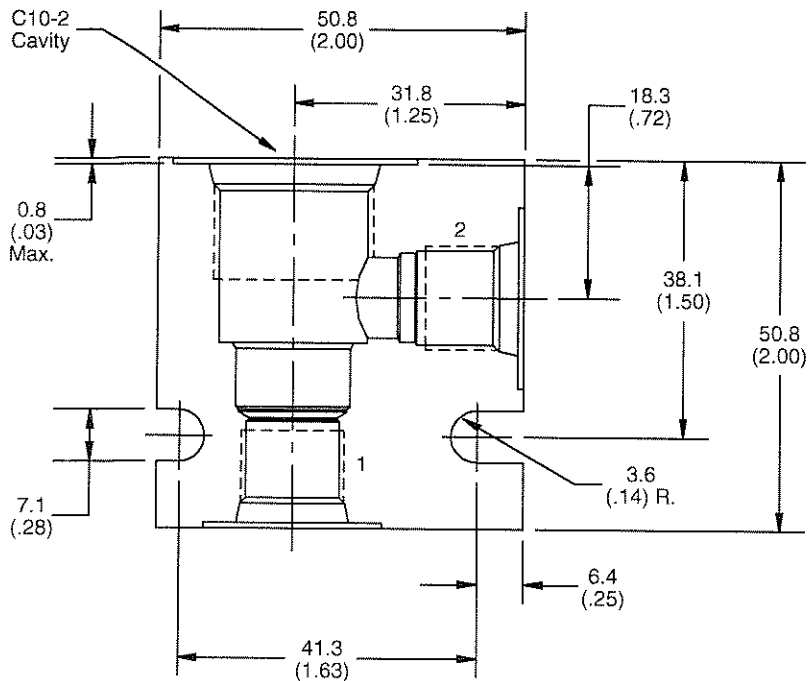
Performance Curve

Pressure Drop vs. Flow (Through cartridge only)

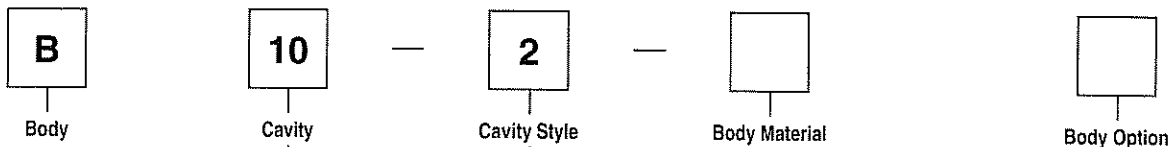


Dimensions

*Inch equivalents for millimeter dimensions are shown in (**)



Ordering Information



7/8-14 UNF-2B
Threaded Cavity
with .62" Dia. Seat

2-Way
C10-2 Cavity

Code	Material
Omit	Steel
A	Aluminum

Code	Port Size
4P	1/4" NPTF (B10-2-4P)
6P	3/8" NPTF (B10-2-6P)
8P	1/2" NPTF (B10-2-8P)
6T	SAE-6 (B10-2-6T)
8T	SAE-8 (B10-2-8T)
4B	1/4" BSPG (B10-2-4B)
6B	3/8" BSPG (B10-2-6B)
8B	1/2" BSPG (B10-2-8B)

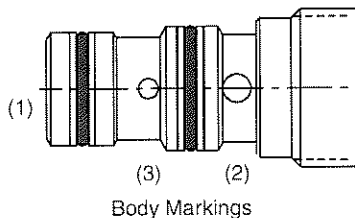
Shipping Weight .45 kg (1.0 lbs.)

b10-2.pm6.5, bl, gn

General Description

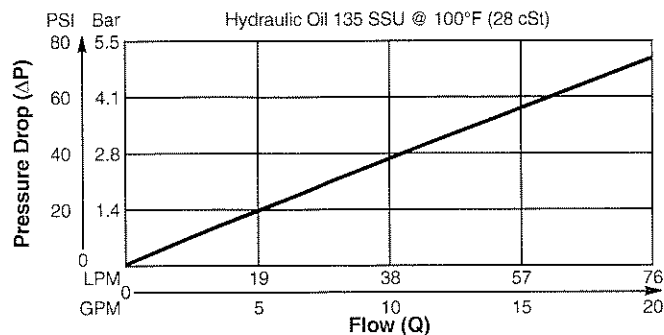
The B10-3-** Series Bodies are designed to be used in conjunction with No. 10 three step cartridges. (Parker Common Cavity C10-3)

Cartridge Flow Path

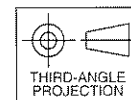
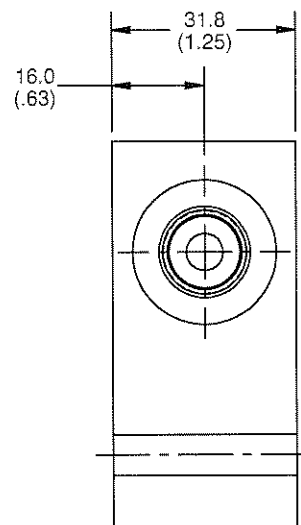
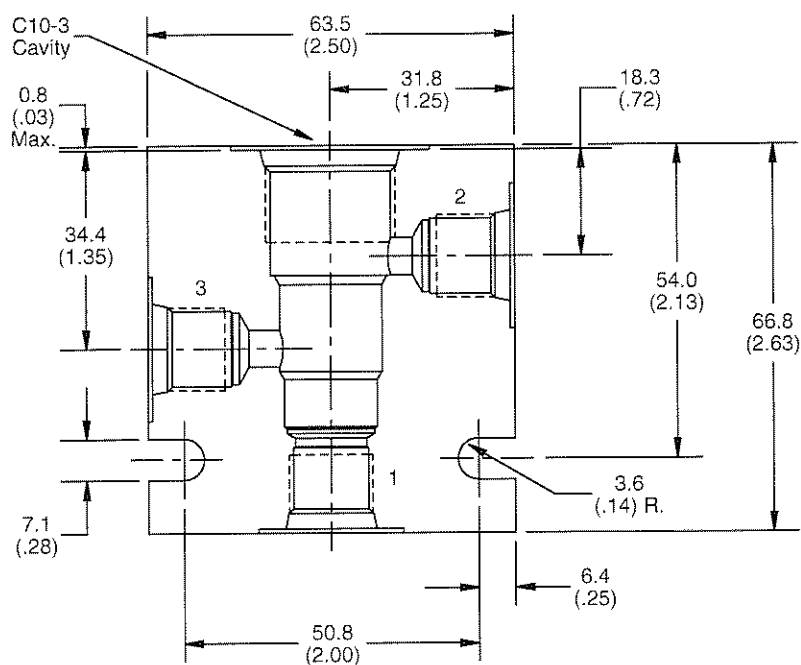


Performance Curve

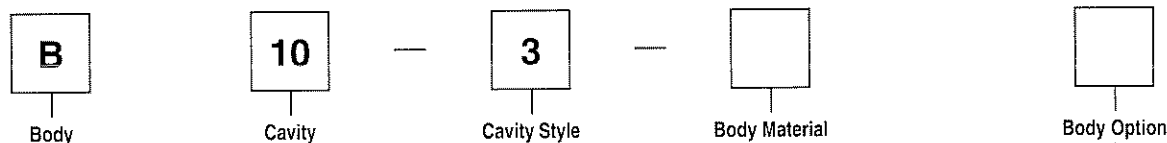
Pressure Drop vs. Flow (Through cartridge only)



Dimensions *Inch equivalents for millimeter dimensions are shown in (**)



Ordering Information



7/8-14 UNF-2B
 Threaded Cavity
 with .62" Dia. Seat

3-Way
 C10-3 Cavity

Code	Material
Omit	Steel
A	Aluminum

Code	Port Size & Material
4P	1/4" NPTF (B10-3-4P)
6P	3/8" NPTF (B10-3-6P)
8P	1/2" NPTF (B10-3-8P)
6T	SAE-6 (B10-3-6T)
8T	SAE-8 (B10-3-8T)
4B	1/4" BSPG (B10-3-4B)
6B	3/8" BSPG (B10-3-6B)
8B	1/2" BSPG (B10-3-8B)

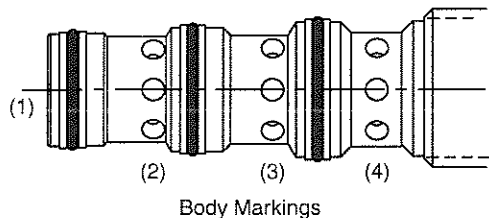
Shipping Weight .77 kg (1.7 lbs.)

b10-3.pm6.5, bl, gn

General Description

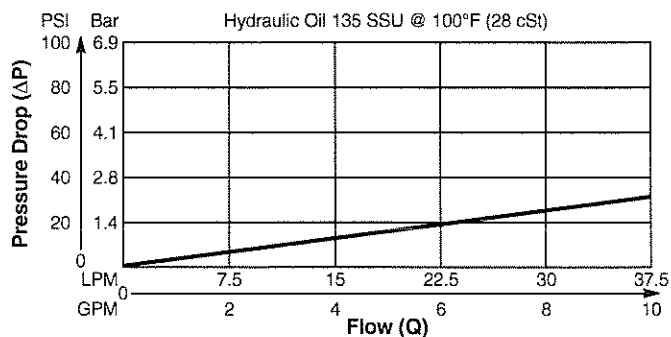
The B10-4-** Series Bodies are designed to be used in conjunction with No. 10 four step cartridges. (Parker Common Cavity C10-4)

Cartridge Flow Path

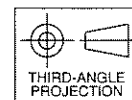
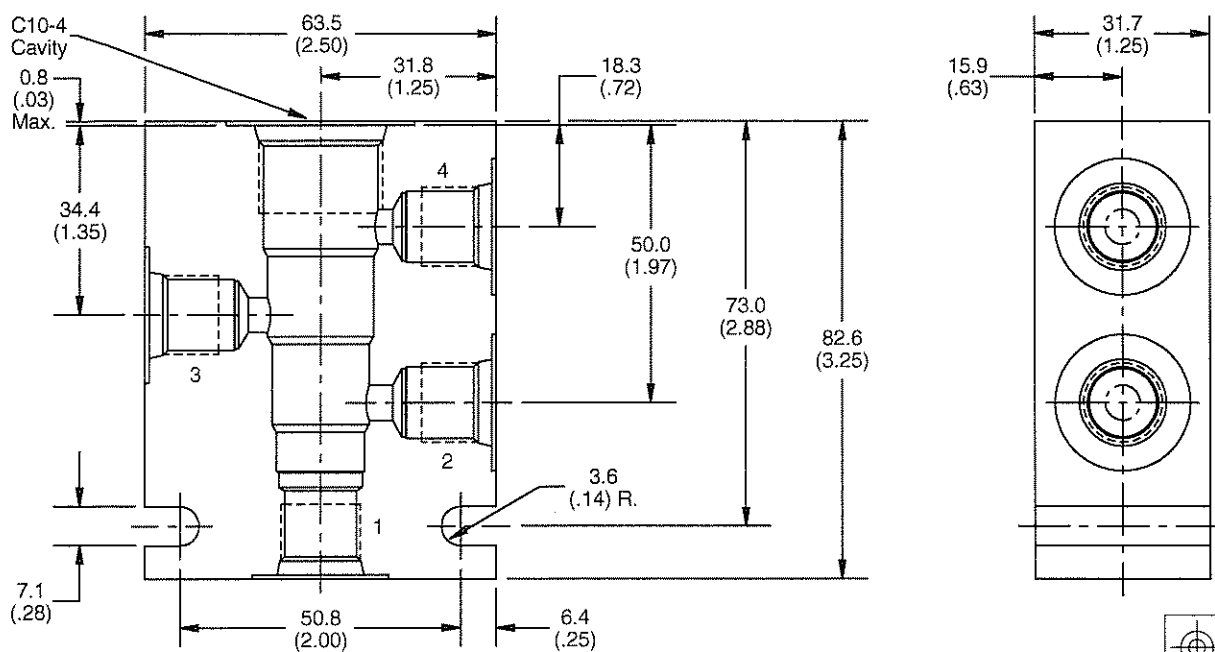


Performance Curve

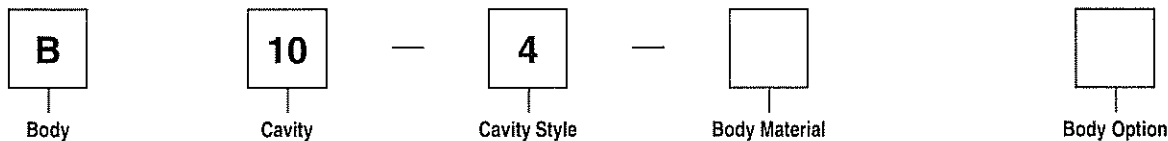
Pressure Drop vs. Flow (Through cartridge only)



Dimensions *Inch equivalents for millimeter dimensions are shown in (**)



Ordering Information



7/8-14 UNF-2B
 Threaded Cavity
 with .62" Dia. Seat

4-Way
 C10-4 Cavity

Code	Material
Omit	Steel
A	Aluminum

Code	Port Size
4P	1/4" NPTF (B10-4-4P)
6P	3/8" NPTF (B10-4-6P)
8P	1/2" NPTF (B10-4-8P)
6T	SAE-6 (B10-4-6T)
8T	SAE-8 (B10-4-8T)
4B	1/4" BSPG (B10-4-4B)
6B	3/8" BSPG (B10-4-6B)
8B	1/2" BSPG (B10-4-8B)

Shipping Weight .90 kg (2.0 lbs.)

b10-4.pm6.5, bl, gn

CHECKS &
SHUTTLES

LOAD & MOTOR
CONTROLS

VOLUME
CONTROLS

PRESSURE
CONTROLS

SOLENOID
VALVES

SPECIALTY
VALVES

COILS

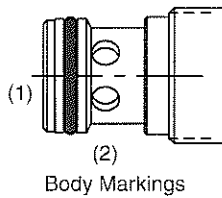
BODIES

TECHNICAL
DATA

General Description

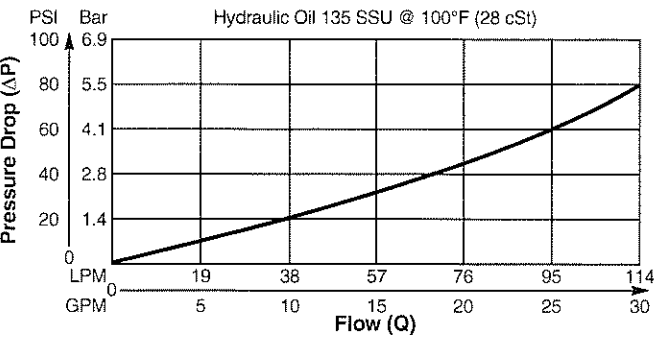
The B12-2-** Series Bodies are designed to be used in conjunction with No. 12 two step cartridges. (Parker Common Cavity C12-2)

Cartridge Flow Path

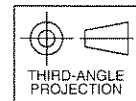
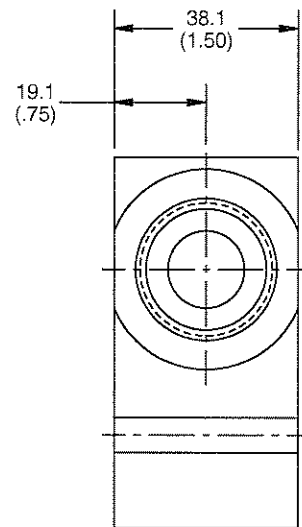
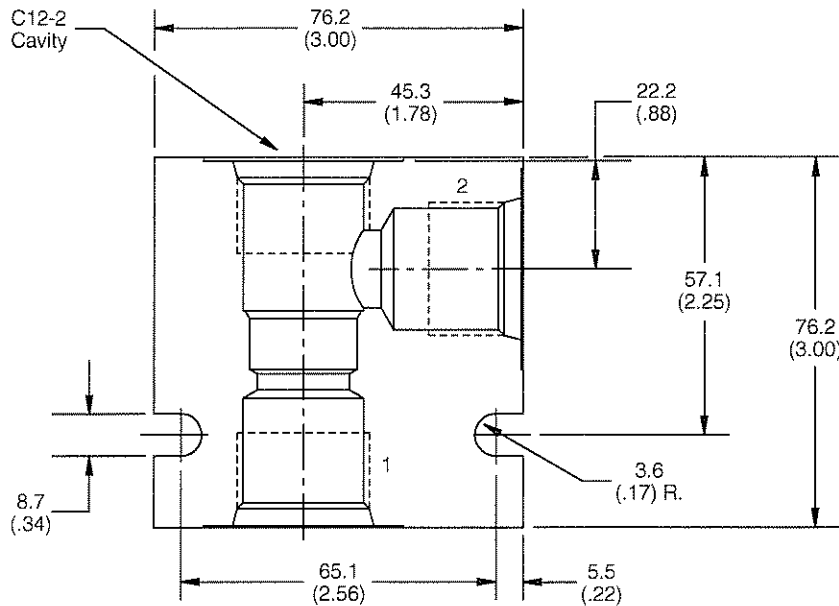


Performance Curve

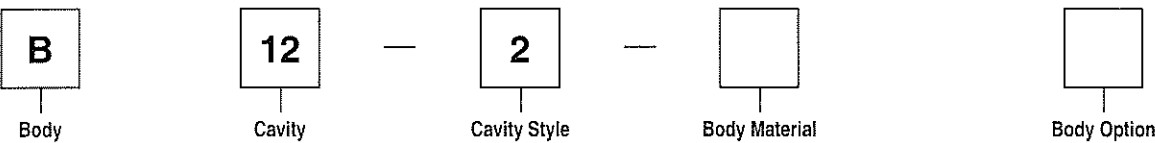
Pressure Drop vs. Flow (Through cartridge only)



Dimensions *Inch equivalents for millimeter dimensions are shown in (**)



Ordering Information



1 1/16-12 UNF-2B
Threaded Cavity
with .87" Dia. Seat

2-Way
C12-2 Cavity

Code	Material
Omit	Steel
A	Aluminum

Code	Port Size
6P	3/8" NPTF (B12-2-6P)
8P	1/2" NPTF (B12-2-8P)
12P	3/4" NPTF (B12-2-12P)
6T	SAE-6 (B12-2-6T)
8T	SAE-8 (B12-2-8T)
12T	SAE-12 (B12-2-12T)
6B	3/8" BSPG (B12-2-6B)
8B	1/2" BSPG (B12-2-8B)
12B	3/4" BSPG (B12-2-12B)

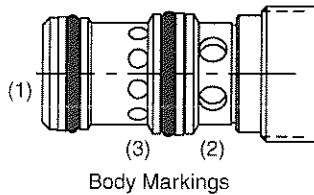
Shipping Weight .45 kg (1.0 lbs.)

b12-2.pm6.5, bl, gn

General Description

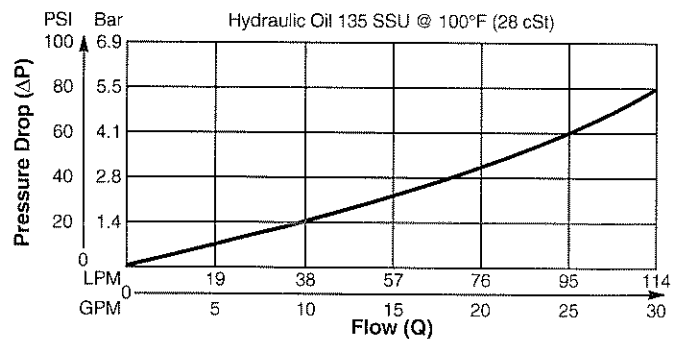
The B12-3-** Series Bodies are designed to be used in conjunction with No. 12 three step cartridges. (Parker Common Cavity C12-3)

Cartridge Flow Path

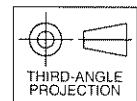
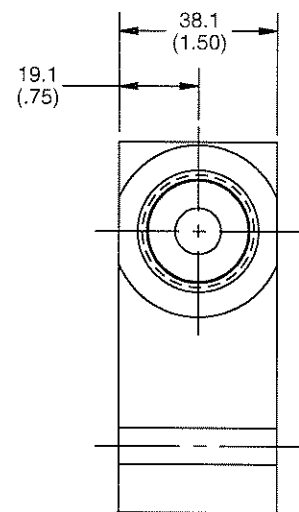
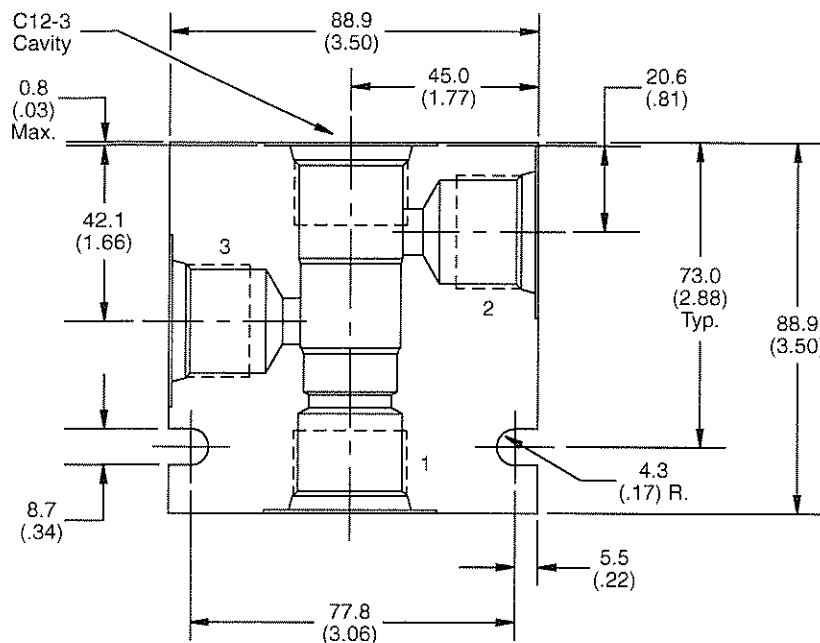


Performance Curve

Pressure Drop vs. Flow (Through cartridge only)



Dimensions *Inch equivalents for millimeter dimensions are shown in (**)



Ordering Information

B	12	3		
Body	Cavity	Cavity Style	Body Material	Body Option
	1 1/16-12 UN-2B Threaded Cavity with .87" Dia. Seat	3-Way C12-3 Cavity		

Code	Material
Omit	Steel
A	Aluminum

Code	Port Size
6P	3/8" NPTF (B12-3-6P)
8P	1/2" NPTF (B12-3-8P)
12P	3/4" NPTF (B12-3-12P)
6T	SAE-6 (B12-3-6T)
8T	SAE-8 (B12-3-8T)
12T	SAE-12 (B12-3-12T)
6B	3/8" BSPG (B12-3-6B)
8B	1/2" BSPG (B12-3-8B)
12B	3/4" BSPG (B12-3-12B)

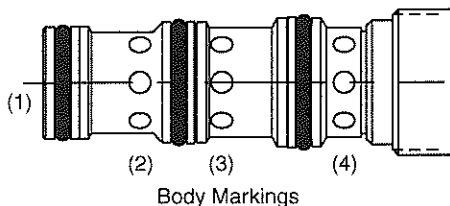
Shipping Weight 2.0 kg (4.5 lbs.)

b12-3.pm6.5, bl, gn

General Description

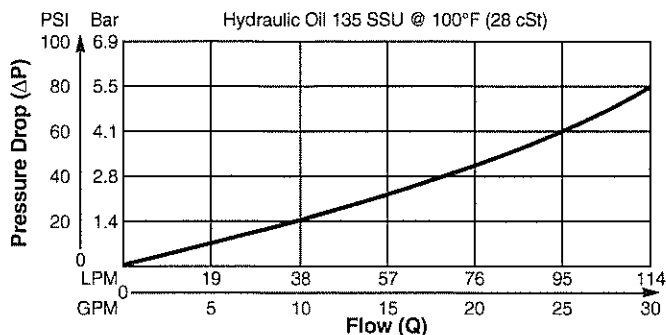
The B12-4-** Series Bodies are designed to be used in conjunction with No. 12 four step cartridges. (Parker Common Cavity C12-4)

Cartridge Flow Path

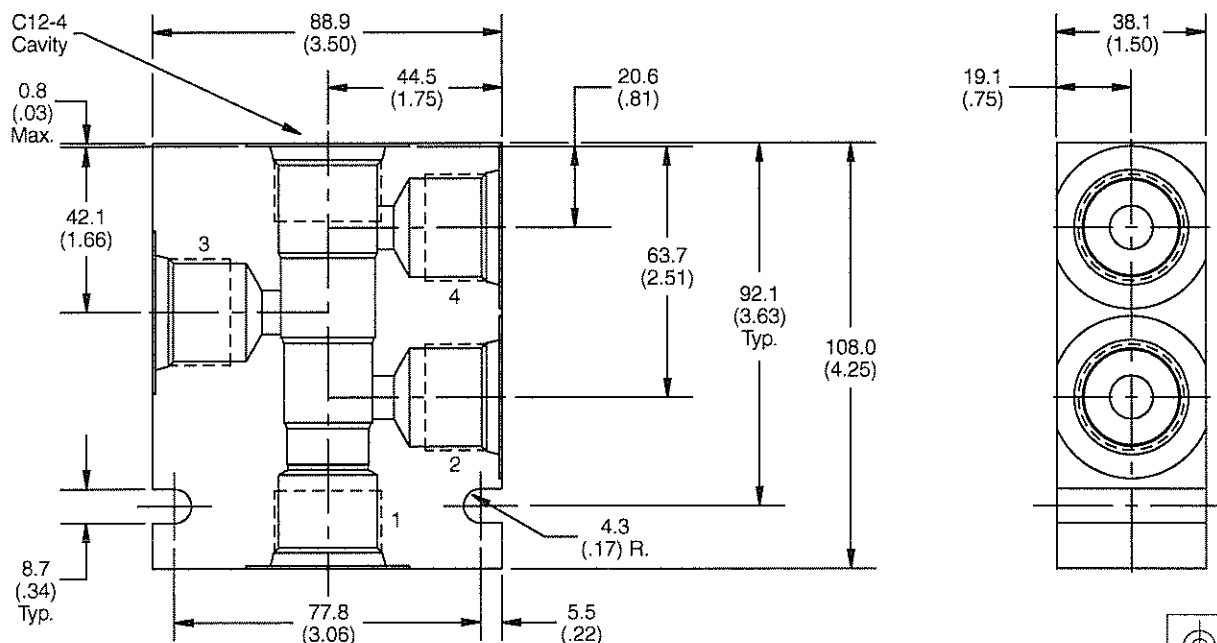


Performance Curve

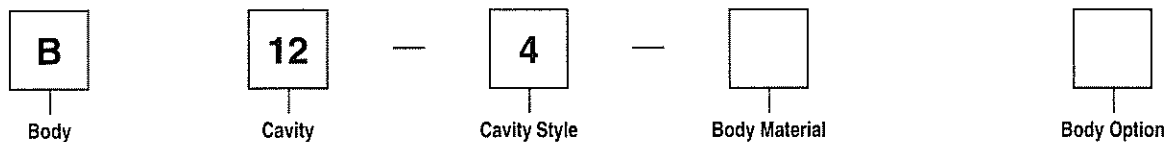
Pressure Drop vs. Flow (Through cartridge only)



Dimensions *Inch equivalents for millimeter dimensions are shown in (**)



Ordering Information



1 1/16-12 UNF-2B
 Threaded Cavity
 with .87" Dia. Seat

4-Way
 C12-4 Cavity

Code	Material
Omit	Steel
A	Aluminum

Code	Port Size
6P	3/8" NPTF (B12-4-6P)
8P	1/2" NPTF (B12-4-8P)
12P	3/4" NPTF (B12-4-12P)
6T	SAE-6 (B12-4-6T)
8T	SAE-8 (B12-4-8T)
12T	SAE-12 (B12-4-12T)
6B	3/8" BSPG (B12-4-6B)
8B	1/2" BSPG (B12-4-8B)
12B	3/4" BSPG (B12-4-12B)

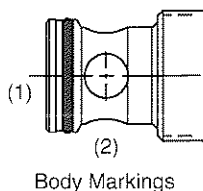
Shipping Weight 3.3 kg (7.3 lbs.)

b12-4.pm6.5, bl, gn

General Description

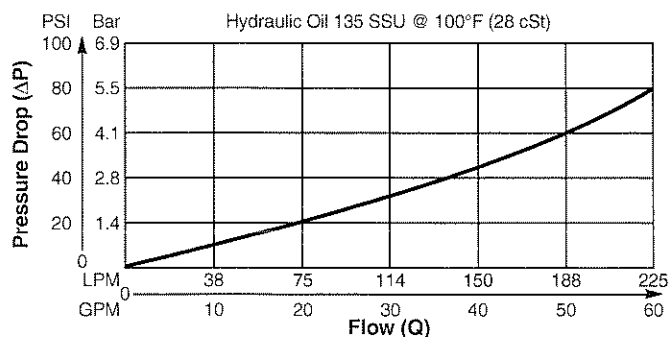
The B16-2-** Series Bodies are designed to be used in conjunction with No. 16 two step cartridges. (Parker Common Cavity C16-2)

Cartridge Flow Path



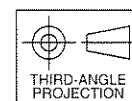
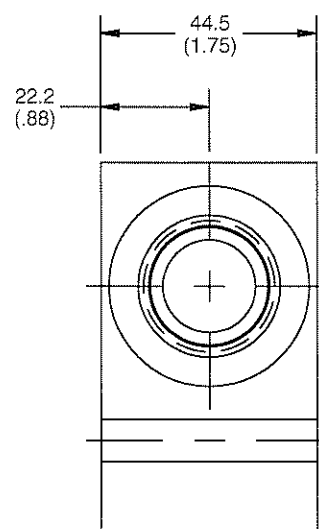
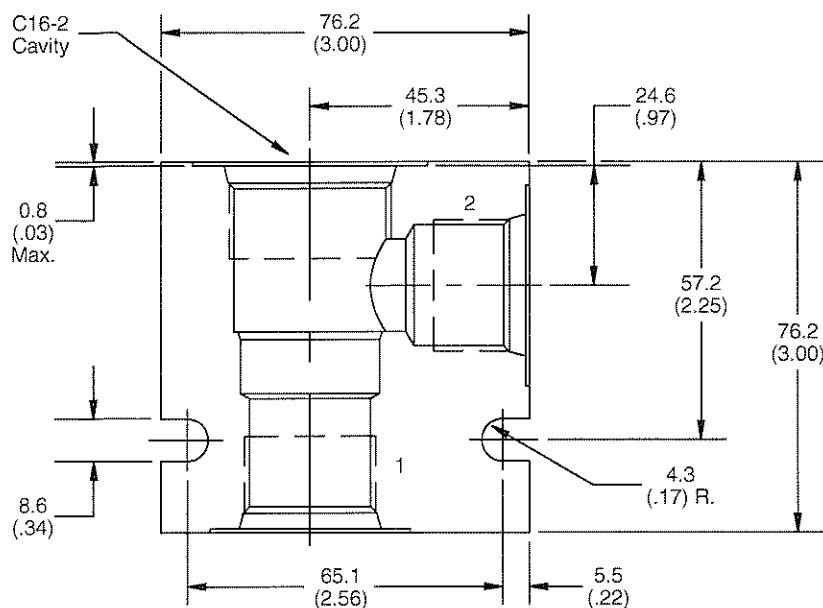
Performance Curve

Pressure Drop vs. Flow (Through cartridge only)

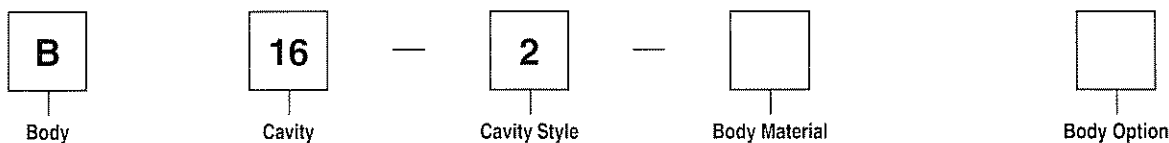


Dimensions

*Inch equivalents for millimeter dimensions are shown in (**)



Ordering Information



1 5/16-12 UN-2B
 Threaded Cavity
 with 1.12" Dia. Seat

2-Way
 C16-2 Cavity

Code	Material
Omit	Steel
A	Aluminum

Code	Port Size
8P	1/2" NPTF (B16-2-8P)
12P	3/4" NPTF (B16-2-12P)
16P	1" NPTF (B16-2-16P)
8T	SAE-8 (B16-2-8T)
10T	SAE-10 (B16-2-10T)
12T	SAE-12 (B16-2-12T)
16T	SAE-16 (B16-2-16T)
8B	1/2" BSPG (B16-2-8B)
12B	3/4" BSPG (B16-2-12B)
16B	1" BSPG (B16-2-16B)

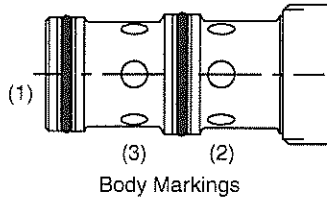
Shipping Weight 1.5 kg (3.4 lbs.)

b16-2.pm6.5, bl, gn

General Description

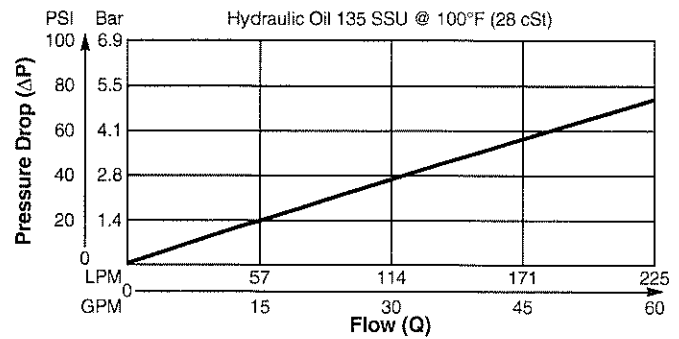
The B16-3-** Series Bodies are designed to be used in conjunction with No. 16 three step cartridges. (Parker Common Cavity C16-3)

Cartridge Flow Path

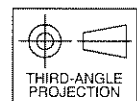
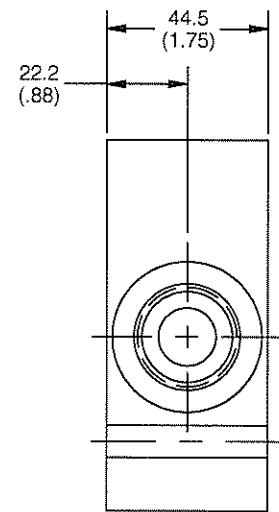
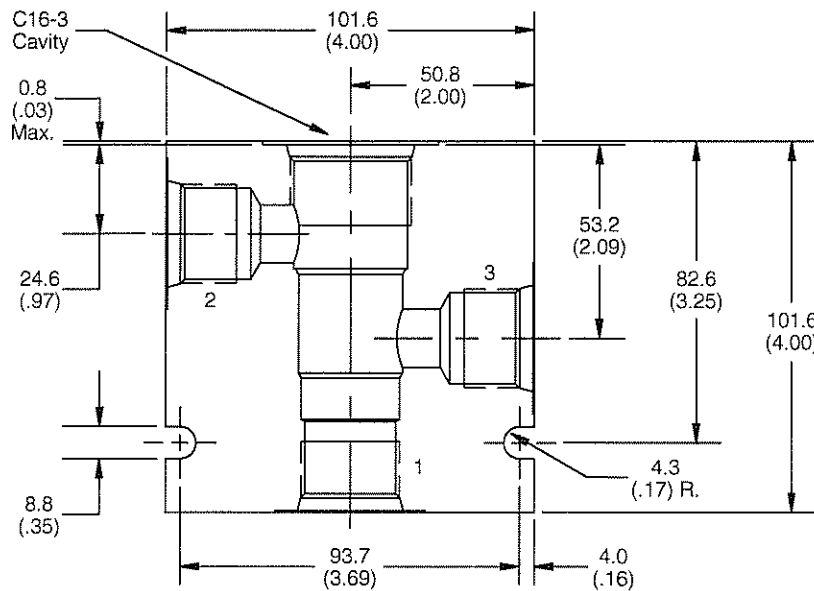


Performance Curve

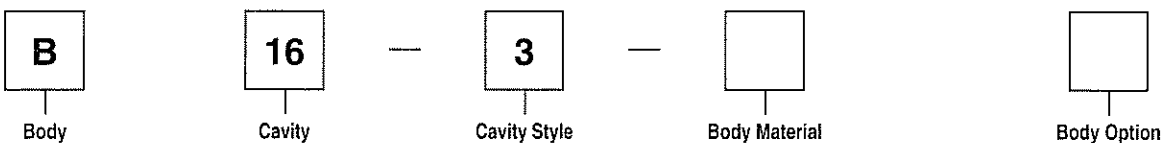
Pressure Drop vs. Flow (Through cartridge only)



Dimensions *Inch equivalents for millimeter dimensions are shown in (**)



Ordering Information



1 5/16-12 UNF-2B
 Threaded Cavity
 with 1.12" Dia. Seat

3-Way
 C16-3 Cavity

Code	Material
Omit	Steel
A	Aluminum

Code	Port Size
8P	1/2" NPTF (B16-3-8P)
12P	3/4" NPTF (B16-3-12P)
16P	1" NPTF (B16-3-16P)
8T	SAE-8 (B16-3-8T)
10T	SAE-10 (B16-3-10T)
12T	SAE-12 (B16-3-12T)
16T	SAE-16 (B16-3-16T)
8B	1/2" BSPG (B16-3-8B)
12B	3/4" BSPG (B16-3-12B)
16B	1" BSPG (B16-3-16B)

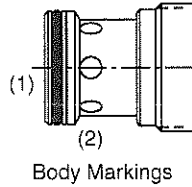
Shipping Weight 1.5 kg (3.4 lbs.)

b16-3.pm6.5, bl, gn

General Description

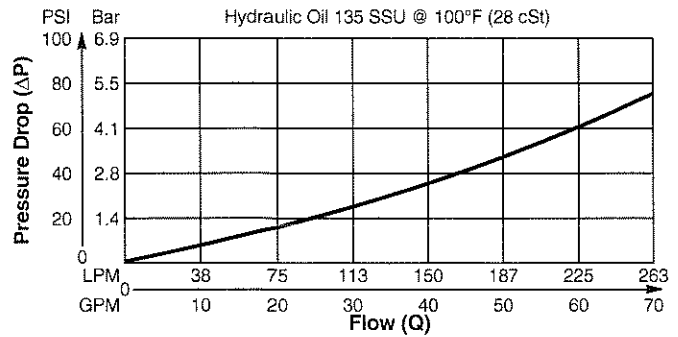
The B20-2-** Series Bodies are designed to be used in conjunction with No. 20 two step cartridges. (Parker Common Cavity C20-2)

Cartridge Flow Path



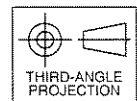
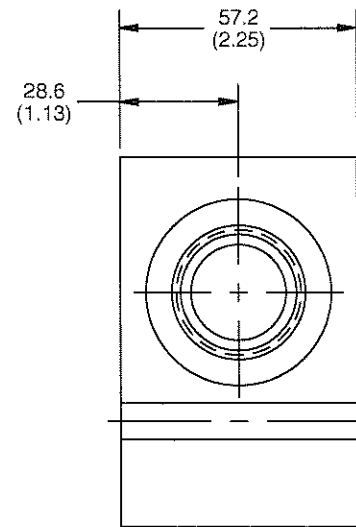
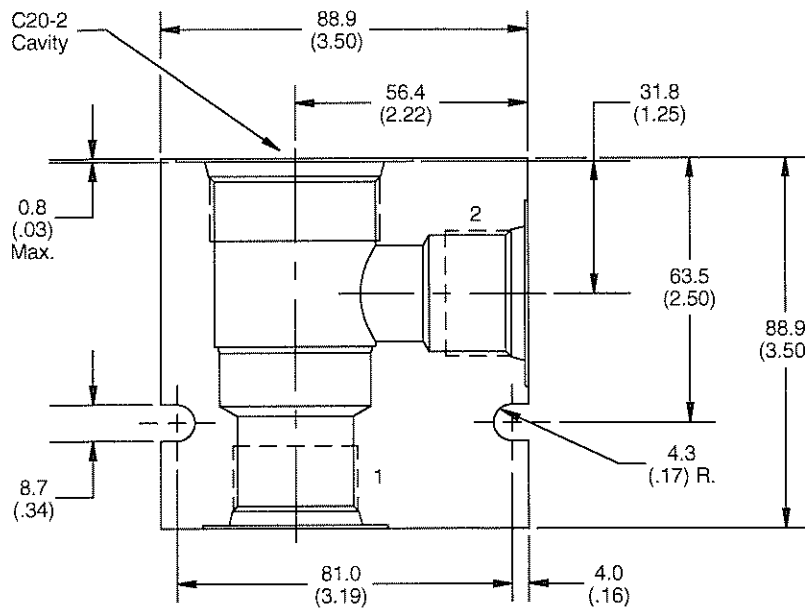
Performance Curve

Pressure Drop vs. Flow (Through cartridge only)

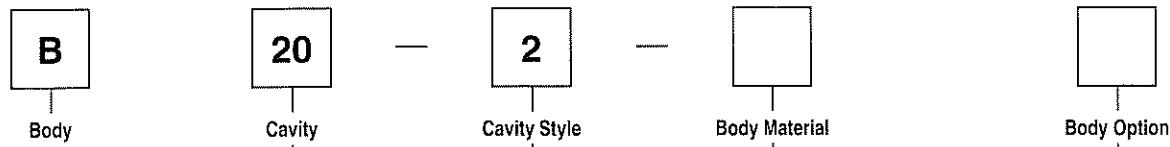


Dimensions

*Inch equivalents for millimeter dimensions are shown in (**)



Ordering Information



1 5/8-12 UNF-2B
 Threaded Cavity
 with 1.44" Dia. Seat

2-Way
 C20-2 Cavity

Code	Material
Omit	Steel
A	Aluminum

Code	Port Size
12P	3/4" NPTF (B20-2-12P)
16P	1" NPTF (B20-2-16P)
20P	1-1/4" NPTF (B20-2-20P)
12T	SAE-12 (B20-2-12T)
14T	SAE-14 (B20-2-14T)
16T	SAE-16 (B20-2-16T)
20T	SAE-20 (B20-2-20T)
12B	3/4" BSPG (B20-2-12B)
16B	1" BSPG (B20-2-16B)
20B	1-1/4" BSPG (B20-2-20B)

Shipping Weight 6.3 kg (14 lbs.)

b20-2.pm6.5, bl, gn

CAVITY	DESCRIPTION	PAGE NO.	
Installation Data		TD1	CHECKS & SHUTTLES
C08-2	Two Way Cavity Detail	TD2	
C08-3	Three Way Cavity Detail	TD2	
C08-4	Four Way Cavity Detail	TD3	LOAD & MOTOR CONTROLS
C10-2	Two Way Cavity Detail	TD4	
C10-3	Three Way Cavity Detail	TD4	
C10-4	Four Way Cavity Detail	TD5	
C12-2	Two Way Cavity Detail	TD6	VOLUME CONTROLS
C12-3	Three Way Cavity Detail	TD6	
C12-4	Four Way Cavity Detail	TD7	
C16-2	Two Way Cavity Detail	TD8	
C16-3	Three Way Cavity Detail	TD8	
C20-2	Two Way Cavity Detail	TD9	PRESSURE CONTROLS
CDD-1008	MPB-008 Cavity Detail (Single with Shuttle)	TD10	
CDD-1009	MPB-025 Cavity Detail (Single with Shuttle)	TD10	
CDD-1010	MHC-010 Cavity Detail	TD11	
CDD-1012	MHC-025 Cavity Detail	TD11	SOLENOID VALVES
CDD-1013	MHC-050 Cavity Detail	TD12	
CDD-1014	MHC-120 Cavity Detail	TD12	
CDD-1022	MCC-008 Cavity Detail	TD13	
CDD-1023	MCC-025 Cavity Detail	TD13	
CDD-1030	MPB-008 Cavity Detail (Dual with Shuttle)	TD14	SPECIALTY VALVES
CDD-1031	MPB-025 Cavity Detail (Dual with Shuttle)	TD14	
CDD-1036	MHC-022 Cavity Detail	TD15	
Offer of Sale		TD16	COILS
			BODIES
			TECHNICAL DATA

General Recommendations for Using Parker Products

Pressure Ratings

Unless otherwise specified, all Parker cartridges and valves have the continuous duty pressure ratings as shown in this catalog. All cartridge valve pressure ratings above 207 Bar (3000 PSI) apply to cartridge valves installed in steel carrier blocks only. The maximum rated operating pressure for Parker cartridges installed in aluminum alloy carrier blocks is 207 Bar (3000 PSI).

Cartridge Installation

Cartridges must be lubricated prior to installation to prevent seal damage. Install and torque to the following values to prevent leakage and potential cartridge back-out.

Torque Specifications		
Cartridge Size	210 Bar (3000 PSI)	345 Bar (5000 PSI)
#04	7 N.m. (65 In./Lbs.)	9 N.m. (80 In./Lbs.)
#06	14 N.m. (120 In./Lbs.)	16 N.m. (140 In./Lbs.)
#07	20 N.m. (180 In./Lbs.)	31 N.m. (275 In./Lbs.)
#08	20 N.m. (180 In./Lbs.)	31 N.m. (275 In./Lbs.)
#09	20 N.m. (180 In./Lbs.)	31 N.m. (275 In./Lbs.)
#10	22 N.m. (190 In./Lbs.)	65 N.m. (575 In./Lbs.)
#12	28 N.m. (250 In./Lbs.)	76 N.m. (672 In./Lbs.)
#16	54 N.m. (475 In./Lbs.)	99 N.m. (876 In./Lbs.)
#20	113 N.m. (1000 In./Lbs.)	133 N.m. (1176 In./Lbs.)

Note: Do not exceed these torque values, as it may result in damage to the block or valve malfunction.

Service

Integrated hydraulic circuit valves designed with Parker cartridge valves are easily serviced by simply unscrewing the defective cartridge and replacing with a new one. Parker cartridge valves are not field serviceable with the exception of the external seals. Replacement seal kits for the external seals are available for all Parker cartridge valves.

Cartridge Porting

Prior to installation of individual cartridges or cartridges in bodies, please review flows on individual cartridges and on bodies.

System Cleanliness

Any hydraulic system that includes Parker valves should be carefully protected against dirt and fluid contamination. Life of the valves, as well as of all other components, will be greatly lengthened. Operation will be smoother and more precise. Maintenance and repairs will be reduced. Lost production because of low pressure and flow will be minimized.

Fluid contamination should be maintained to less than 500 particles larger than 10 micrometers per milliliter of fluid (SAE Class 4 or better / ISO Code 16/13).

Hydraulic Fluids

Parker recommends using top-quality hydraulic fluids having a viscosity range of 150 to 250 SSU (32 to 54 cSt.) at 38°C (100°F). The absolute viscosity range should be 80 to 1000 SSU (16 to 220 cSt.). Fluids should have highest anti-wear characteristics and be treated to avoid rust and oxidation.

Seals

When used with water-glycol, water/oil emulsions, and high-grade petroleum base hydraulic fluids, Parker standard nitrile seals are suitable.

When using phosphate esters fluids or their blends, specify Parker optional seals made of Dupont Fluorocarbon. Synthetic fire-resistant fluids require special seal materials which your Parker representative can recommend.

Special Requirements

Consult your Parker representative for factory recommendations on such situations as:

- Installation that will operate regularly at pressures higher than published catalog ratings;
- Use of hydraulic fluids other than those mentioned above;
- Operations where fluid temperature will exceed 121°C (250°F).

Parker

Common Cavity Concept.

Features

- Reduces number of form tools required
- Increases manifold design efficiency
- Increases manifold machining efficiency

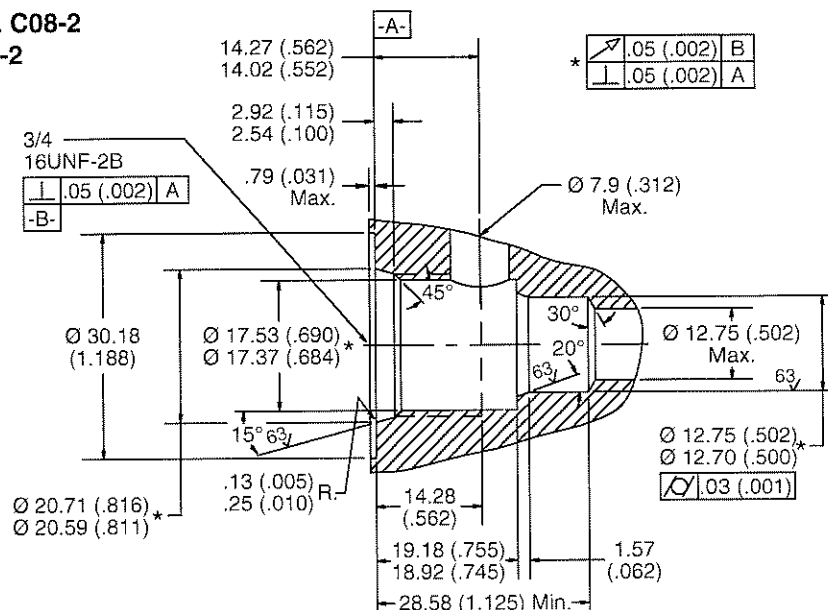
Benefits

The Parker line of cartridge valves were designed to fit a limited number of common cavity configurations. As a result, a wide variety of cartridge valves fit a common cavity or machined body.

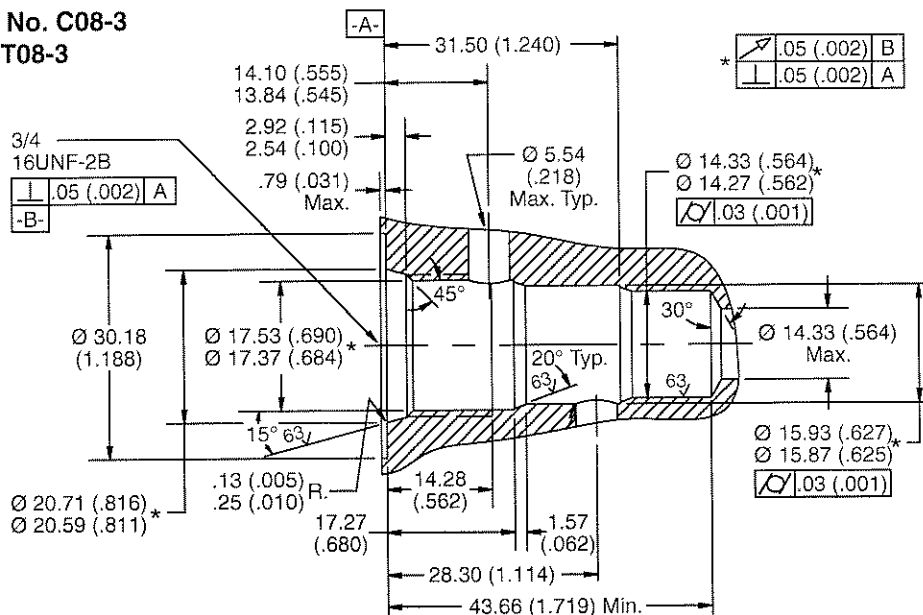
Dimensions

*Inch equivalents for millimeter dimensions are shown in (**)

Common Cavity No. C08-2 Form Tool No. FT08-2

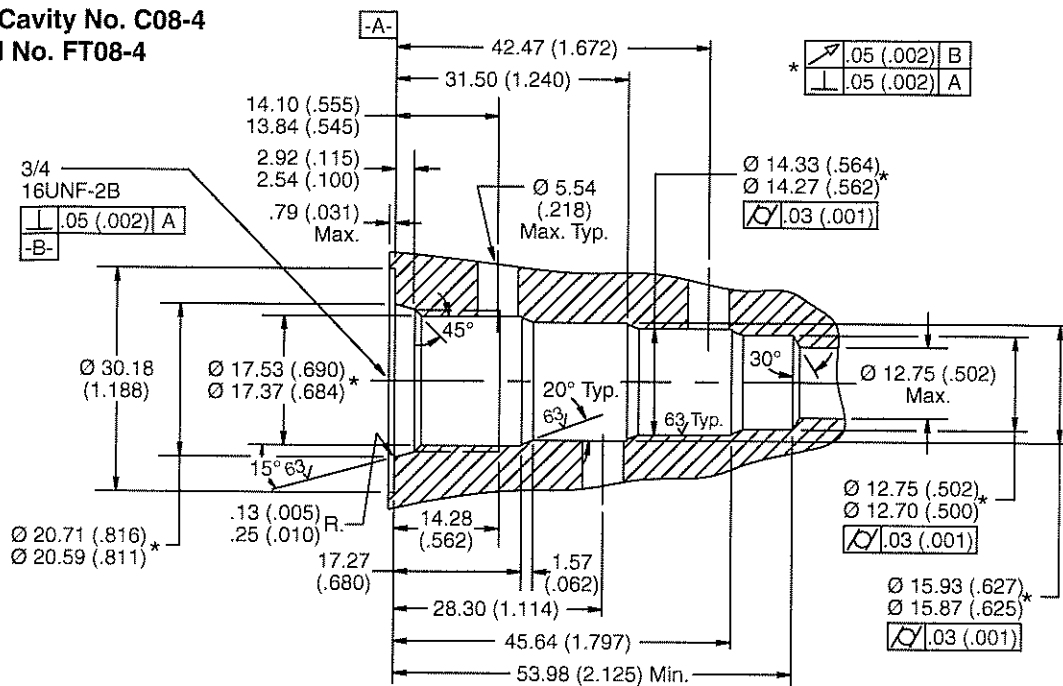


Common Cavity No. C08-3 Form Tool No. FT08-3



Dimensions *Inch equivalents for millimeter dimensions are shown in (**)

Common Cavity No. C08-4
Form Tool No. FT08-4



cav08.pm6.5, bl, gn

Parker

Common Cavity Concept.

Features

- Reduces number of form tools required
- Increases manifold design efficiency
- Increases manifold machining efficiency

Benefits

The Parker line of cartridge valves were designed to fit a limited number of common cavity configurations. As a result, a wide variety of cartridge valves fit a common cavity or machined body.

Dimensions

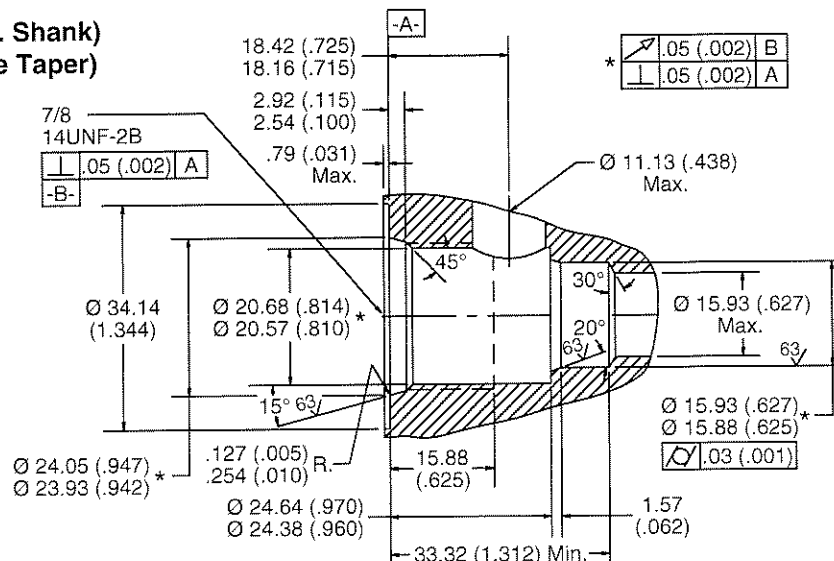
*Inch equivalents for millimeter dimensions are shown in (**)

Common Cavity No. C10-2

Form Tool No.

FT10-2 (3/4" Str. Shank)

FT10-2-T (Morse Taper)

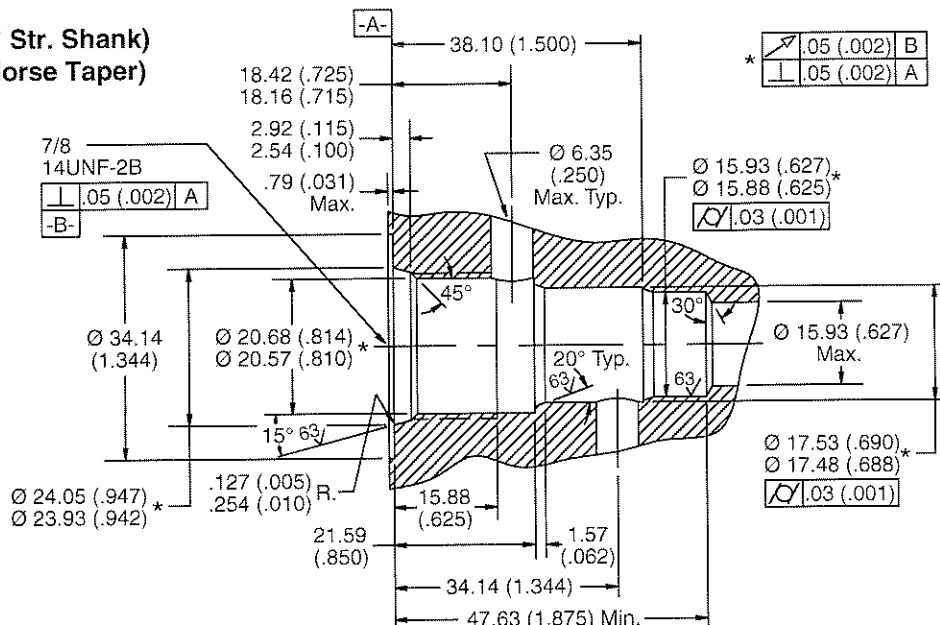


Common Cavity No. C10-3

Form Tool No.

FT10-3 (3/4" Str. Shank)

FT10-3-T (Morse Taper)



Dimensions *Inch equivalents for millimeter dimensions are shown in (**)**Common Cavity No. C10-4****Form Tool No.**

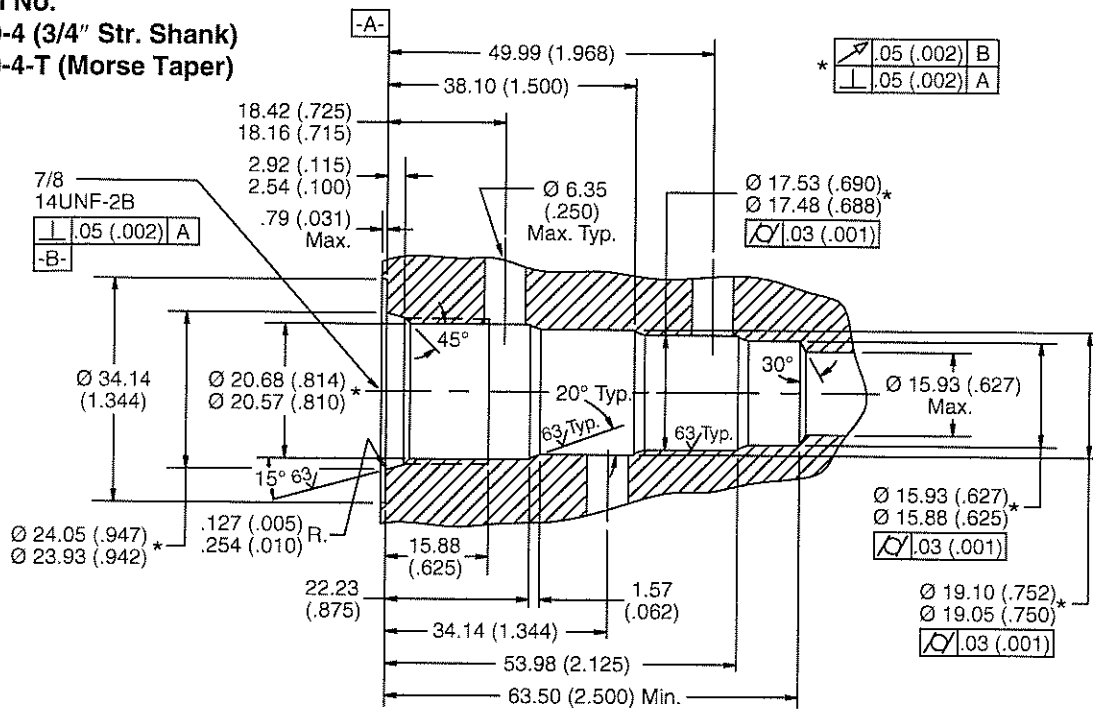
FT10-4 (3/4" Str. Shank)

FT10-4-T (Morse Taper)

Step Drill No.

FD10-4 (3/4" Str. Shank)

FD10-4-T (Morse Taper)



Parker

Common Cavity Concept.

Features

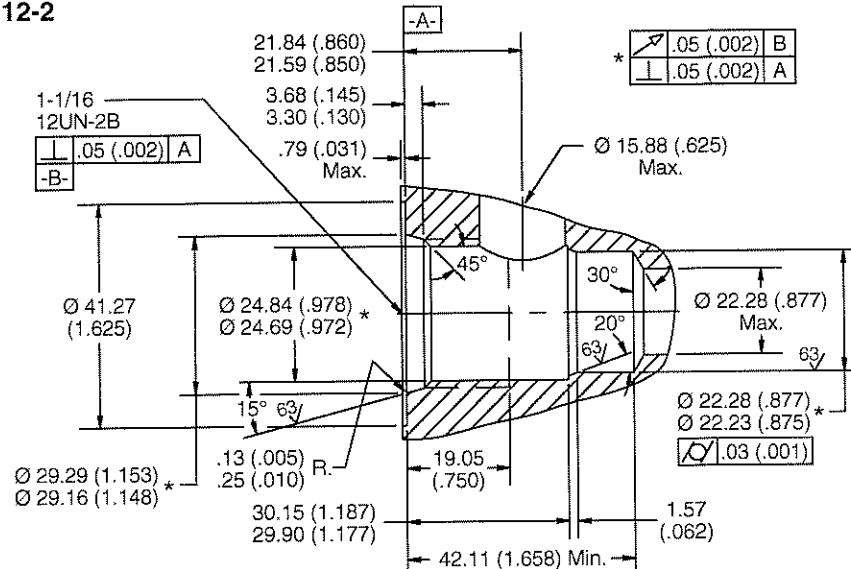
- Reduces number of form tools required
- Increases manifold design efficiency
- Increases manifold machining efficiency

Benefits

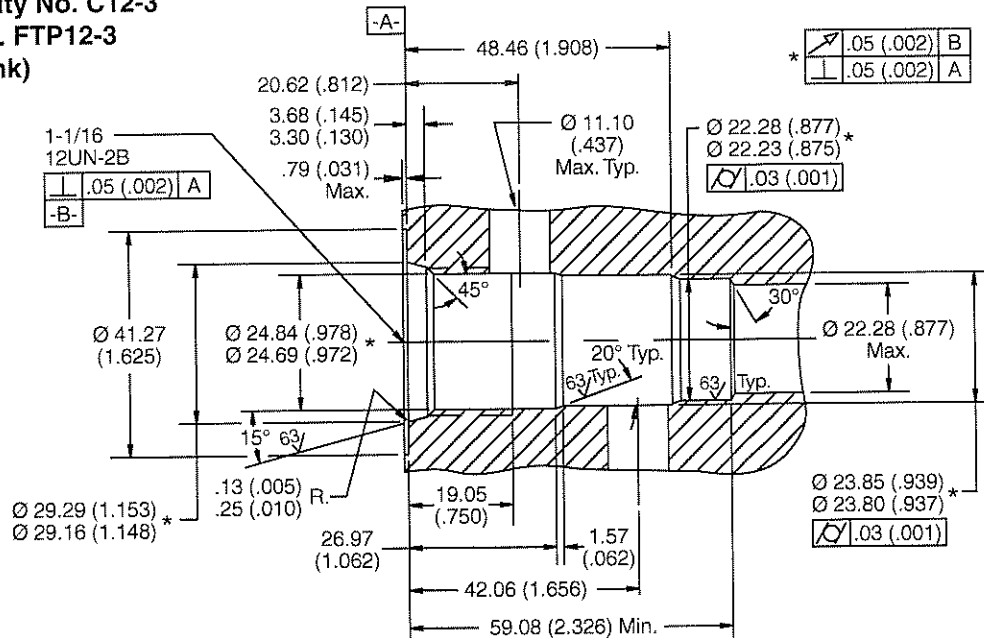
The Parker line of cartridge valves were designed to fit a limited number of common cavity configurations. As a result, a wide variety of cartridge valves fit a common cavity or machined body.

Dimensions *Inch equivalents for millimeter dimensions are shown in (**)

Common Cavity No. C12-2
Form Tool No. FTP12-2
(3/4" Str. Shank)



Common Cavity No. C12-3
Form Tool No. FTP12-3
(3/4" Str. Shank)



Parker

Common Cavity Concept.

Features

- Reduces number of form tools required
- Increases manifold design efficiency
- Increases manifold machining efficiency

Benefits

The Parker line of cartridge valves were designed to fit a limited number of common cavity configurations. As a result, a wide variety of cartridge valves fit a common cavity or machined body.

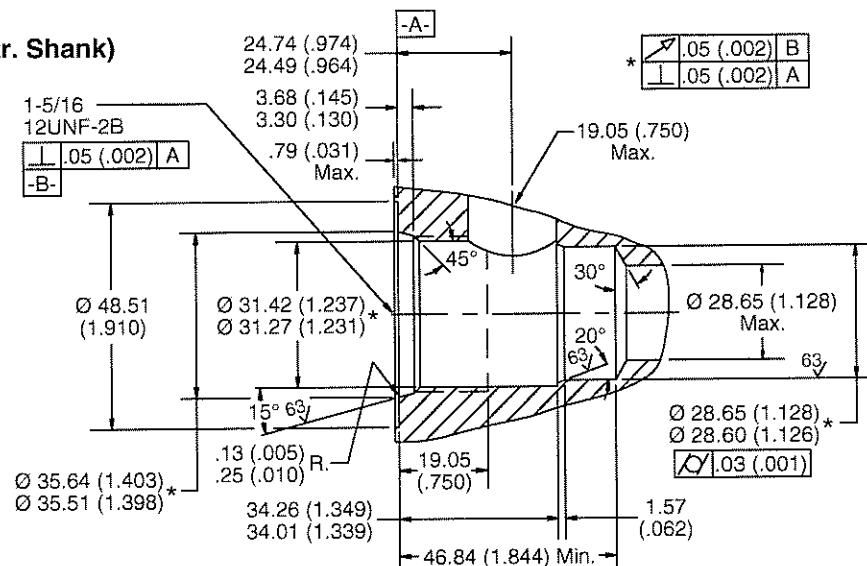
Dimensions

*Inch equivalents for millimeter dimensions are shown in (**)

Common Cavity No. C16-2

Form Tool No.

FT16-2 (3/4" Str. Shank)



Common Cavity No. C16-3

Form Tool No.

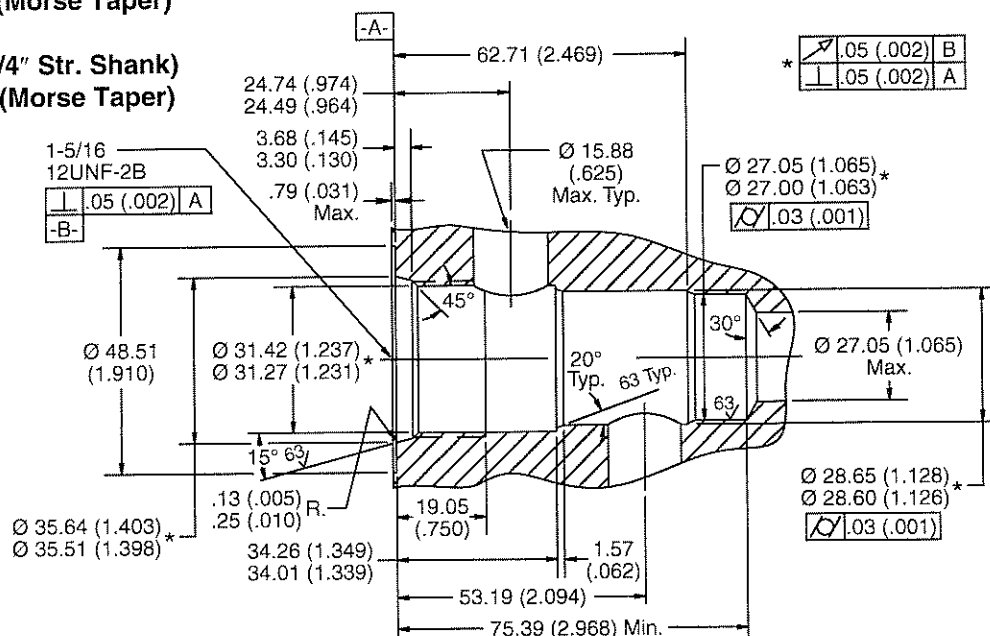
FT16-3 (3/4" Str. Shank)

FT16-3-T (Morse Taper)

Step Drill No.

FD16-3 (3/4" Str. Shank)

FD16-3-T (Morse Taper)



cav16.pm6.5, bl, gn

Parker

Common Cavity Concept.

Features

- Reduces number of form tools required
- Increases manifold design efficiency
- Increases manifold machining efficiency

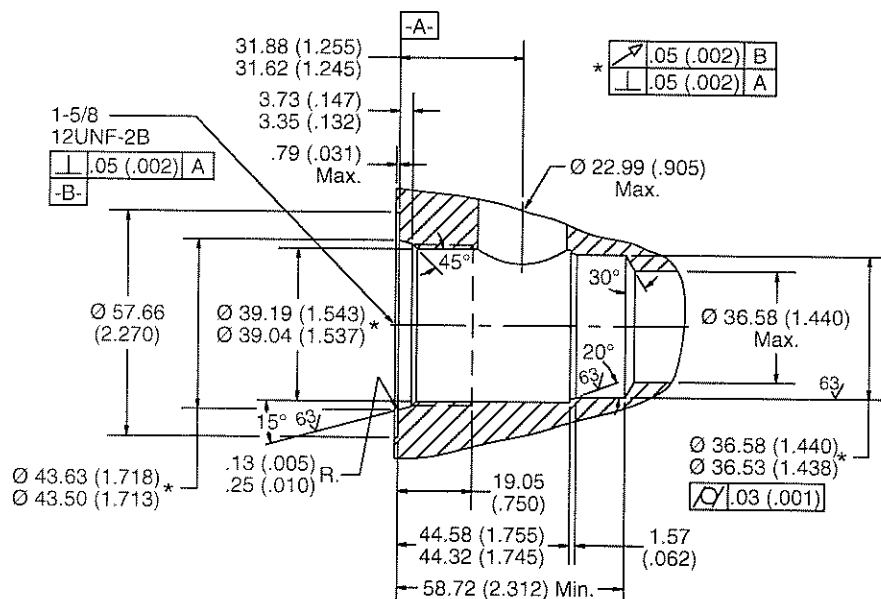
Benefits

The Parker line of cartridge valves were designed to fit a limited number of common cavity configurations. As a result, a wide variety of cartridge valves fit a common cavity or machined body.

Dimensions *Inch equivalents for millimeter dimensions are shown in (**)

Common Cavity No. C20-2

Form Tool No. FT20-2



Parker

Cavity Concept.

Features

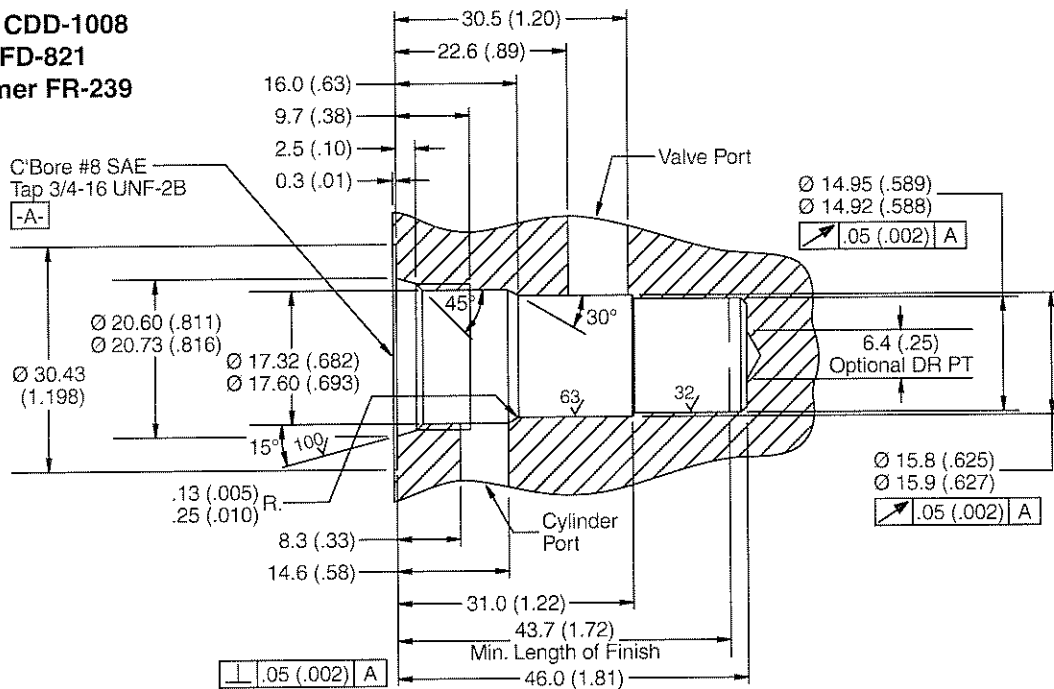
- Reduces number of form tools required
- Increases manifold design efficiency
- Increases manifold machining efficiency

Benefits

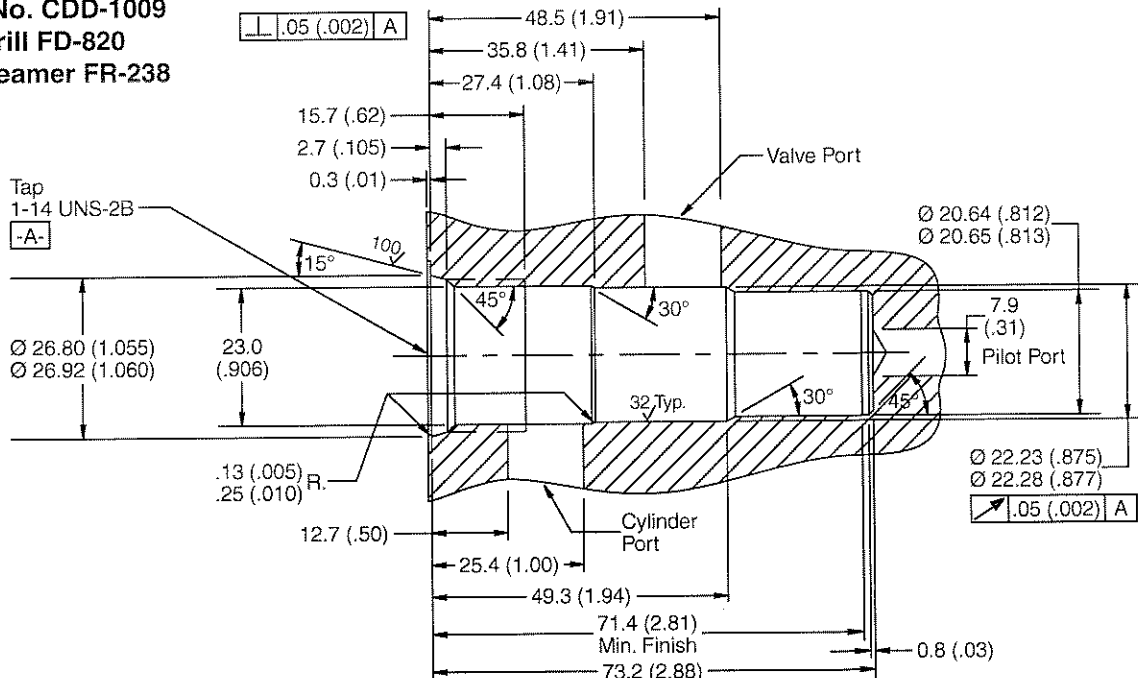
The Parker line of cartridge valves were designed to fit a limited number of common cavity configurations. As a result, a wide variety of cartridge valves fit a common cavity or machined body.

Dimensions *Inch equivalents for millimeter dimensions are shown in (**)

Cavity No. CDD-1008
Form Drill FD-821
Form Reamer FR-239



Cavity No. CDD-1009
Form Drill FD-820
Form Reamer FR-238



cdd cavities.pm6.5, bl, gn

Parker

Cavity Concept.

Features

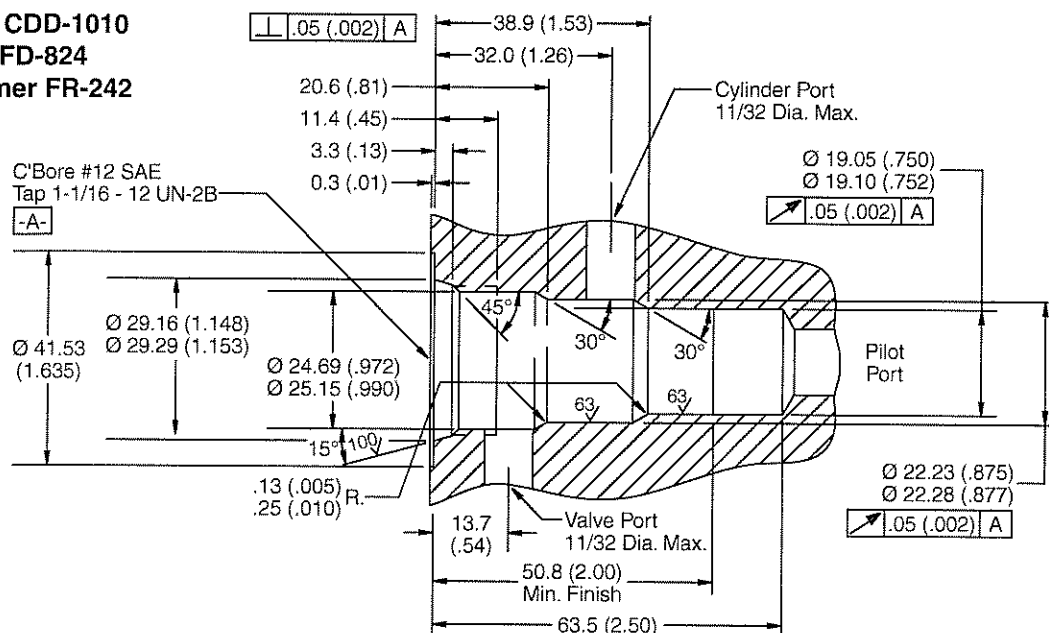
- Reduces number of form tools required
- Increases manifold design efficiency
- Increases manifold machining efficiency

Benefits

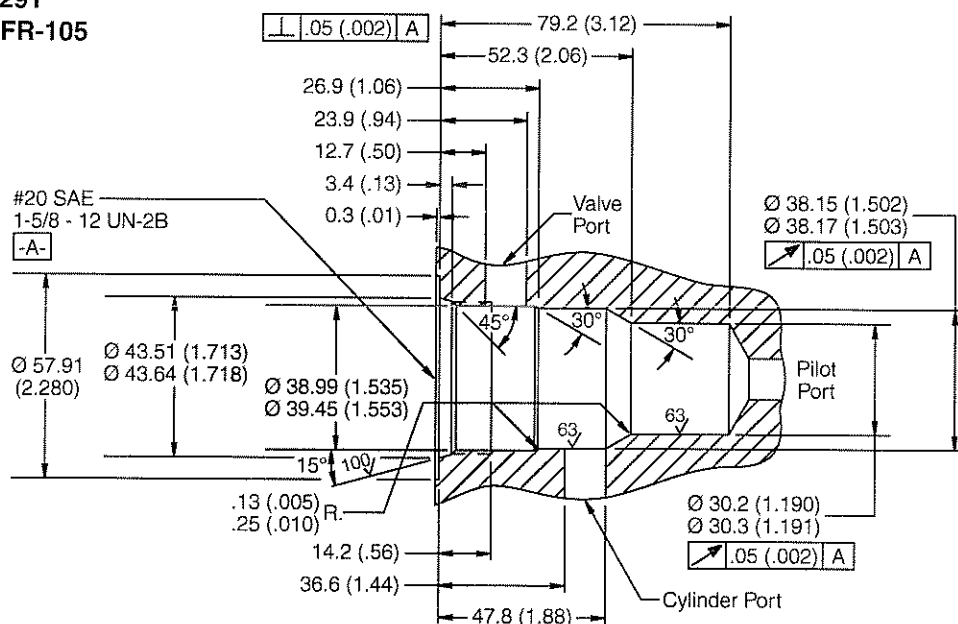
The Parker line of cartridge valves were designed to fit a limited number of common cavity configurations. As a result, a wide variety of cartridge valves fit a common cavity or machined body.

Dimensions *Inch equivalents for millimeter dimensions are shown in (**)

Cavity No. CDD-1010
Form Drill FD-824
Form Reamer FR-242



Cavity No. CDD-1012
Form Drill FD-291
Form Reamer FR-105



cdd cavities.pm6.5, bl, gn

Parker

Cavity Concept.

Features

- Reduces number of form tools required
- Increases manifold design efficiency
- Increases manifold machining efficiency

Benefits

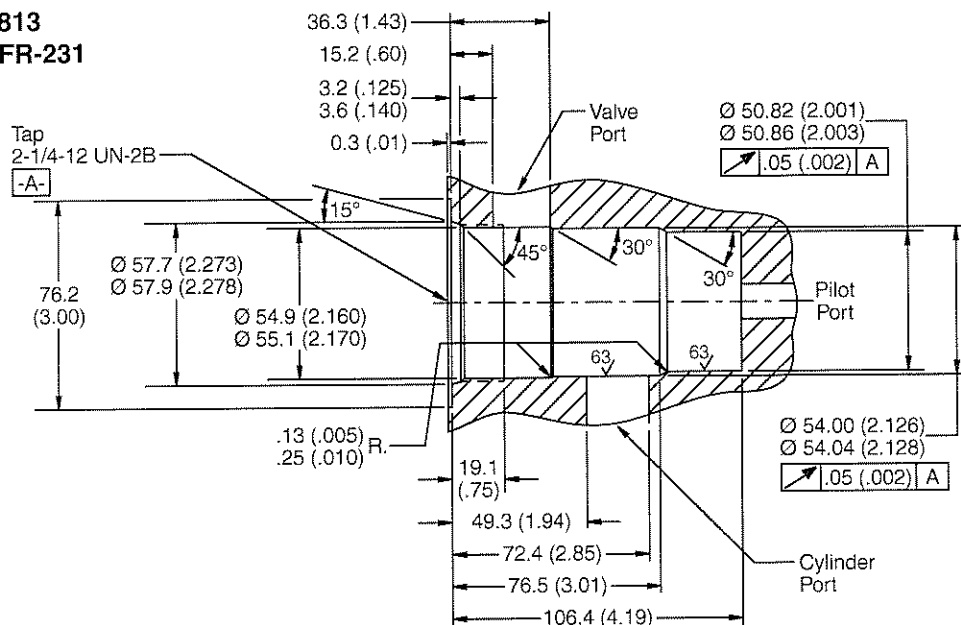
The Parker line of cartridge valves were designed to fit a limited number of common cavity configurations. As a result, a wide variety of cartridge valves fit a common cavity or machined body.

Dimensions *Inch equivalents for millimeter dimensions are shown in (**)

Cavity No. CDD-1013

Form Drill FD-813

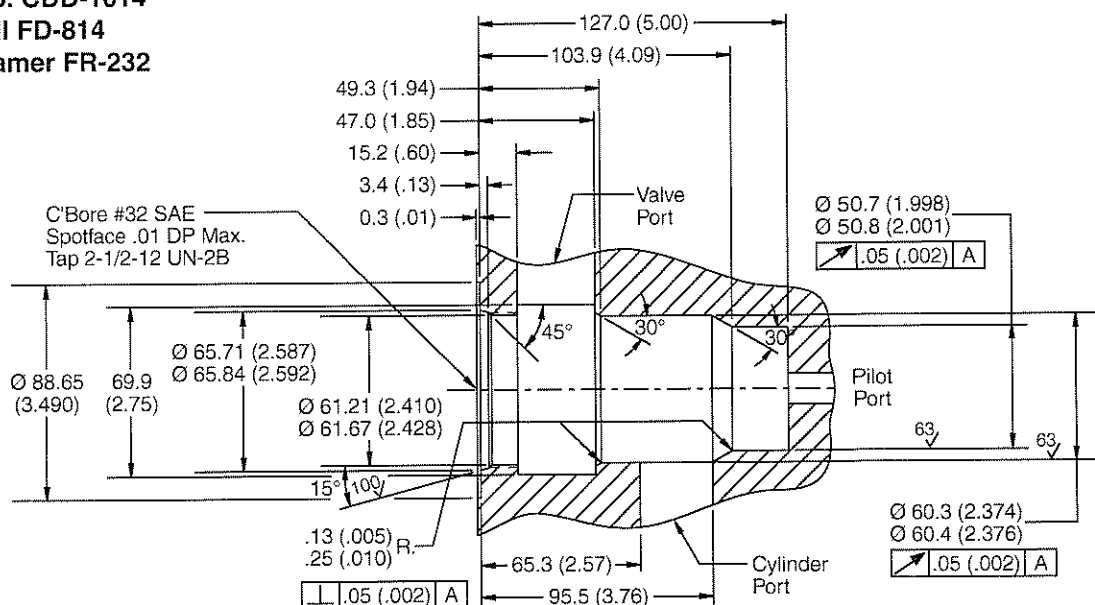
Form Reamer FR-231



Cavity No. CDD-1014

Form Drill FD-814

Form Reamer FR-232



Parker

Cavity Concept.

Features

- Reduces number of form tools required
- Increases manifold design efficiency
- Increases manifold machining efficiency

Benefits

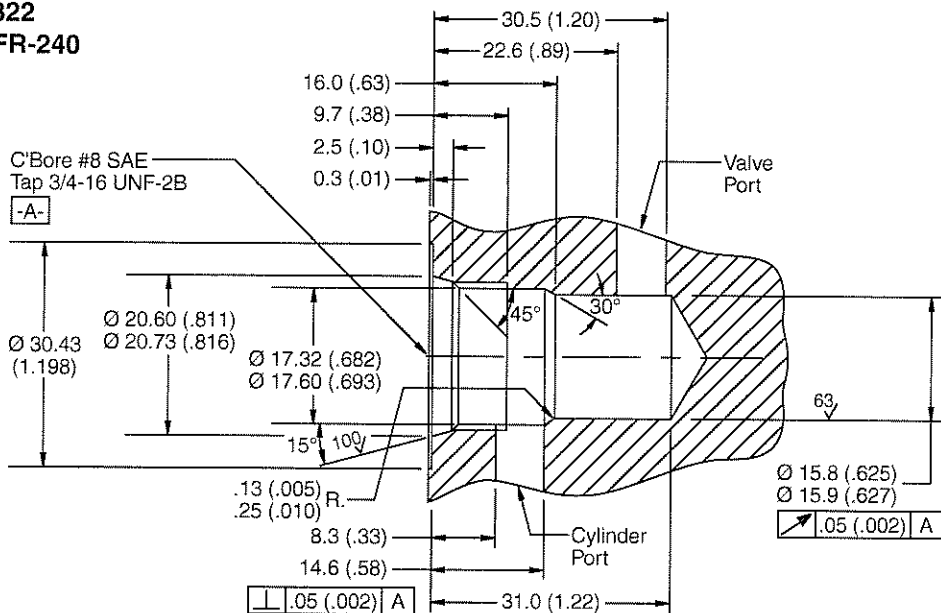
The Parker line of cartridge valves were designed to fit a limited number of common cavity configurations. As a result, a wide variety of cartridge valves fit a common cavity or machined body.

Dimensions *Inch equivalents for millimeter dimensions are shown in (**)

Cavity No. CDD-1022

Form Drill FD-822

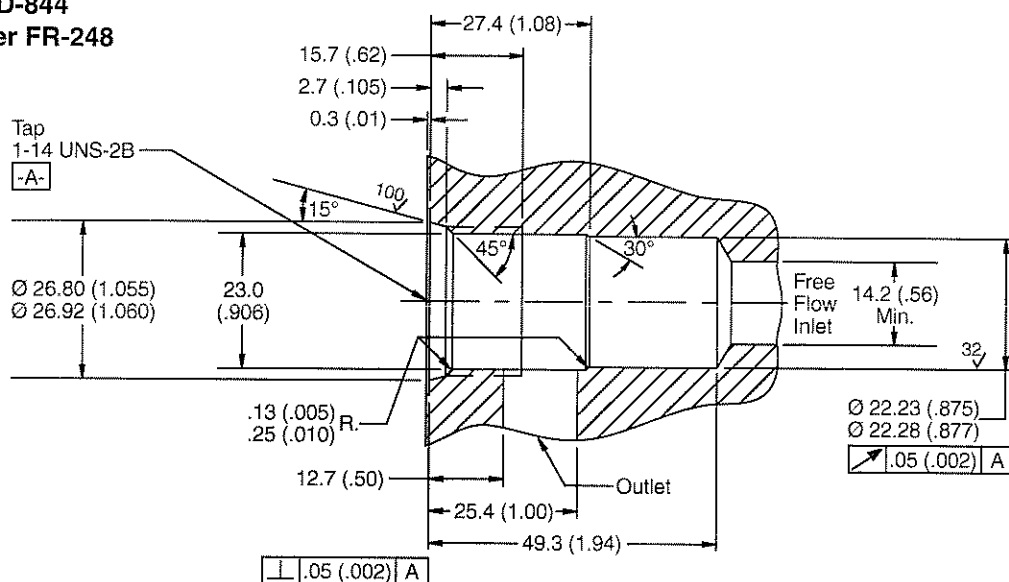
Form Reamer FR-240



Cavity No. CDD-1023

Form Drill FD-844

Form Reamer FR-248



cdd cavities pm6.5, bl, gn

Parker

Cavity Concept.

Features

- Reduces number of form tools required
- Increases manifold design efficiency
- Increases manifold machining efficiency

Benefits

The Parker line of cartridge valves were designed to fit a limited number of common cavity configurations. As a result, a wide variety of cartridge valves fit a common cavity or machined body.

Dimensions *Inch equivalents for millimeter dimensions are shown in (**)

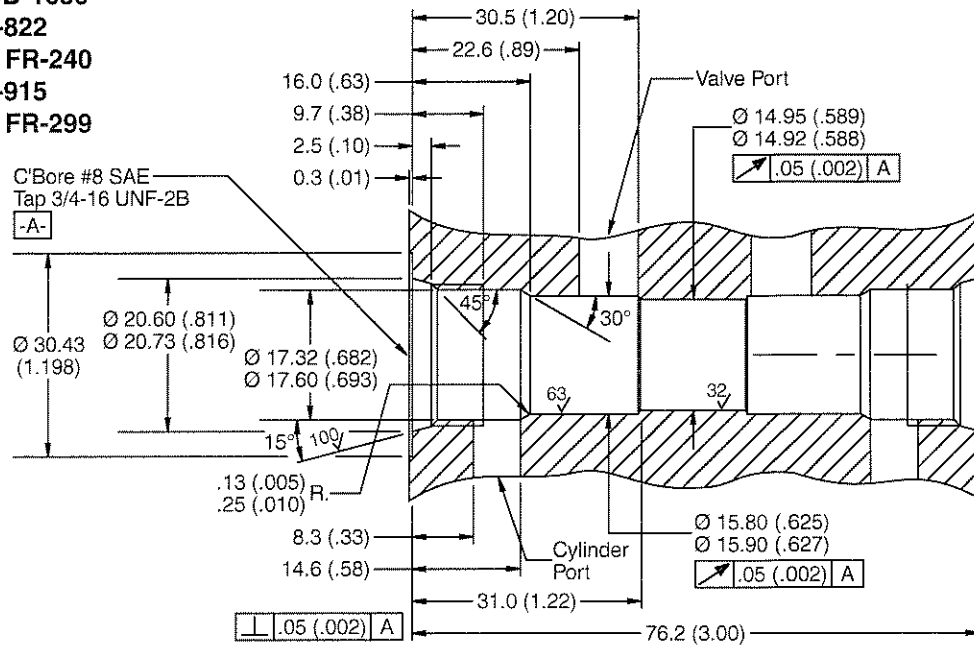
Cavity No. CDD-1030

Form Drill FD-822

Form Reamer FR-240

Form Drill FD-915

Form Reamer FR-299

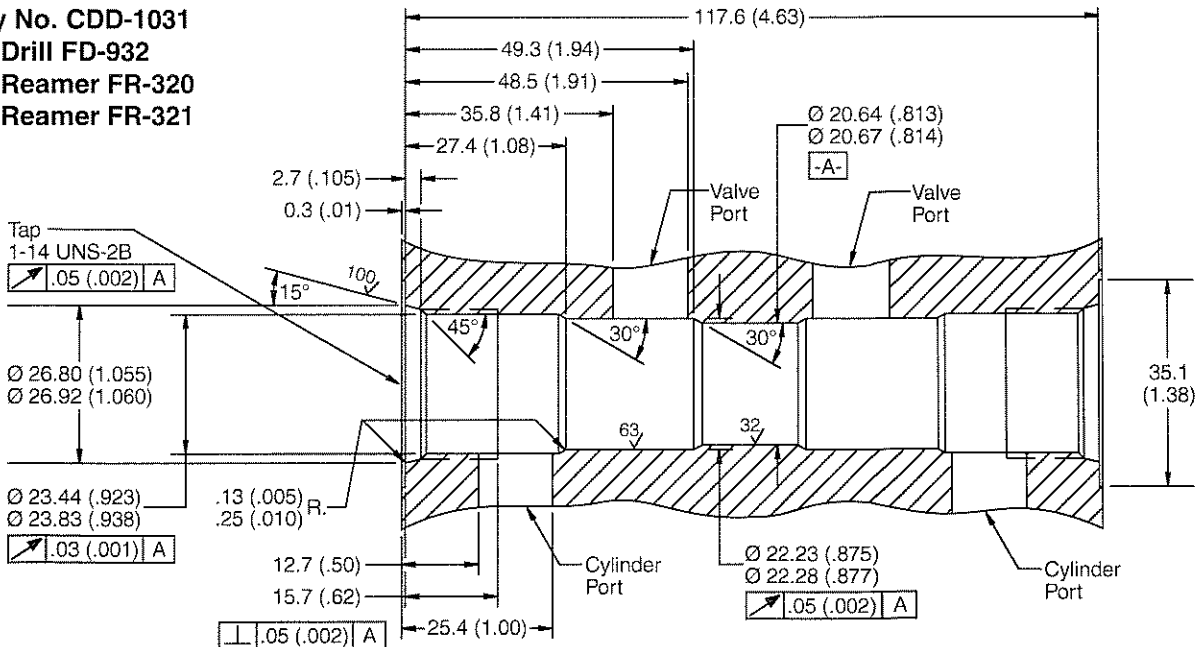


Cavity No. CDD-1031

Form Drill FD-932

Form Reamer FR-320

Form Reamer FR-321



Parker

Cavity Concept.

Features

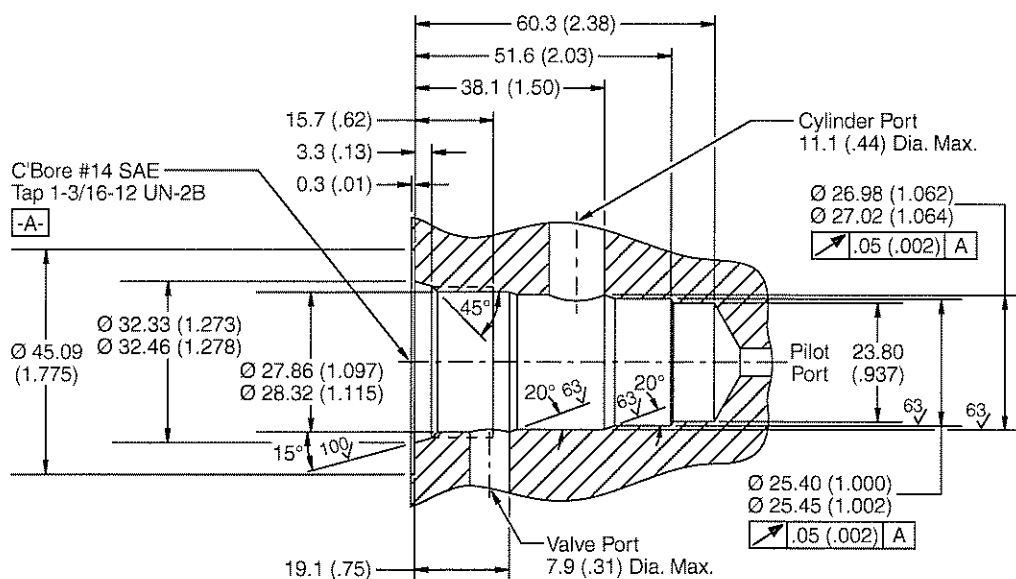
- Reduces number of form tools required
- Increases manifold design efficiency
- Increases manifold machining efficiency

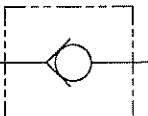
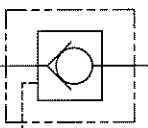
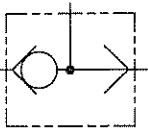
Benefits

The Parker line of cartridge valves were designed to fit a limited number of common cavity configurations. As a result, a wide variety of cartridge valves fit a common cavity or machined body.

Dimensions *Inch equivalents for millimeter dimensions are shown in (**)

Cavity No. CDD-1036



	SERIES	DESCRIPTION	FLOW	PRESSURE	PAGE NO.
	CV081P	Check Valves	10 GPM	3000 PSI	CS1-CS3
	CV103P	Check Valves	22 GPM	3000 PSI	CS4-CS6
	CVH121P	Check Valves	32 GPM	5000 PSI	CS7-CS9
	CVH161P	Check Valves	60 GPM	5000 PSI	CS10-CS12
	CVH201P	Check Valves	100 GPM	5000 PSI	CS13-CS15
	MCC-008	Ball Type Check Valves	8 GPM	3000 PSI	CS16-CS17
	MCC-025	Ball Type Check Valves	25 GPM	3000 PSI	CS18-CS19
	CFL-75	4 Bolt Flange Check Valves	40 GPM	3000 PSI	CS20-CS21
	CFL-100	4 Bolt Flange Check Valves	90 GPM	3000 PSI	CS20-CS21
	CFL-125	4 Bolt Flange Check Valves	130 GPM	3000 PSI	CS20-CS21
	CFL-150	4 Bolt Flange Check Valves	160 GPM	3000 PSI	CS20-CS21
	CFL-200	4 Bolt Flange Check Valves	160 GPM	3000 PSI	CS20-CS21
	MPB-008	Single & Dual P.O. Check Valves	8 GPM	3000 PSI	CS22-CS25
	MPB-025	Single & Dual P.O. Check Valves	25 GPM	3000 PSI	CS26-CS29
	LD1-25	Decompression Check Valves	8 GPM	3000 PSI	CS30-CS32
	LD1-**	Decompression Check Valves	25 GPM	3000 PSI	CS30-CS32
	LD2-16	Decompression Check Valves	50 GPM	3000 PSI	CS33-CS34
	ASH-04	Shuttle Valves	3 GPM	3000 PSI	CS35-CS36
	ASH-06	Shuttle Valves	6 GPM	3000 PSI	CS35-CS36
	ASH-12	Shuttle Valves	30 GPM	3000 PSI	CS35-CS36
	ASH-25	Shuttle Valves	6 GPM	3000 PSI	CS35-CS36

CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

SOLENOID VALVES

SPECIALTY VALVES

COILS

BODIES

TECHNICAL DATA

General Description

The CV081P Series, Poppet-Type, Check Valves allow free flow in one direction while preventing flow in the reverse direction. They can be used to isolate portions of a hydraulic circuit or to provide a free flow path around a restrictive valve.

Operation

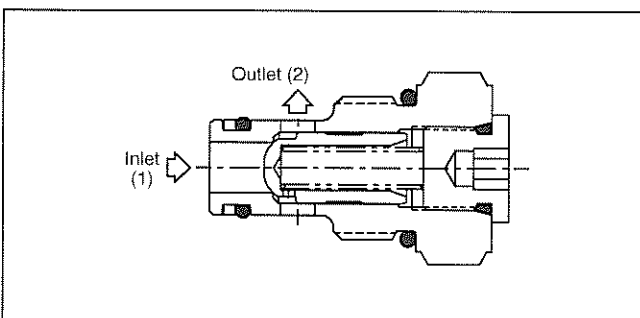
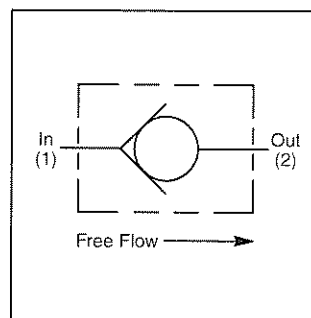
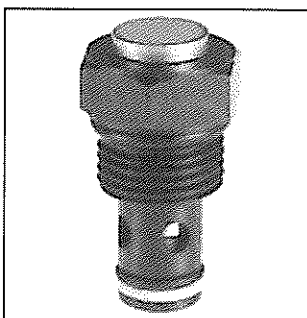
Pressure on the inlet of the check creates a force against the poppet, pushing it off its seat and permitting free flow. Reverse flow through the check is blocked by the poppet.

Features

- Hardened, precision ground parts for durability
- Compact size for reduced space requirements
- Low leakage design
- Fully guided poppet for smooth operation

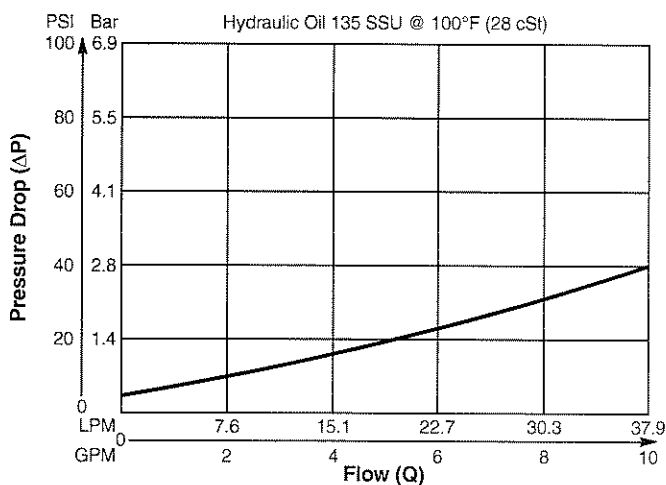
Specifications

Maximum Flow	37.5 LPM (10 GPM)
Maximum Inlet Pressure	210 Bar (3000 PSI)
Leakage	5 drops/min. (.33 cc/min.) at 210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO code 16/13, SAE Class 4 or better
Mounting	No Restrictions
Cavity	Common Cavity No. C08-2



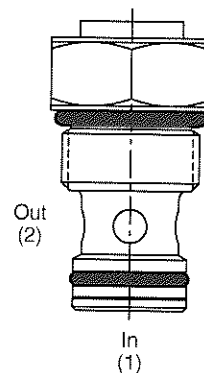
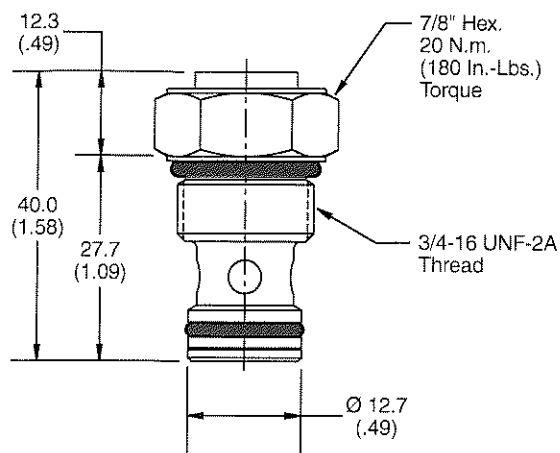
Performance Curve

Flow vs. Pressure Drop
 (Through cartridge only)

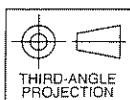
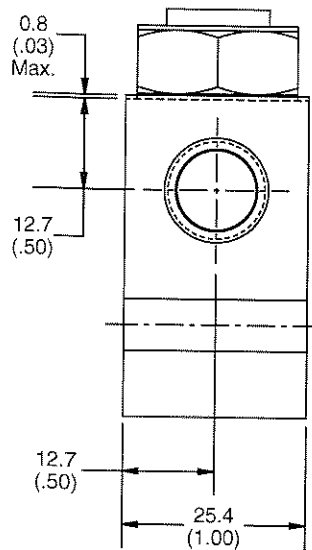
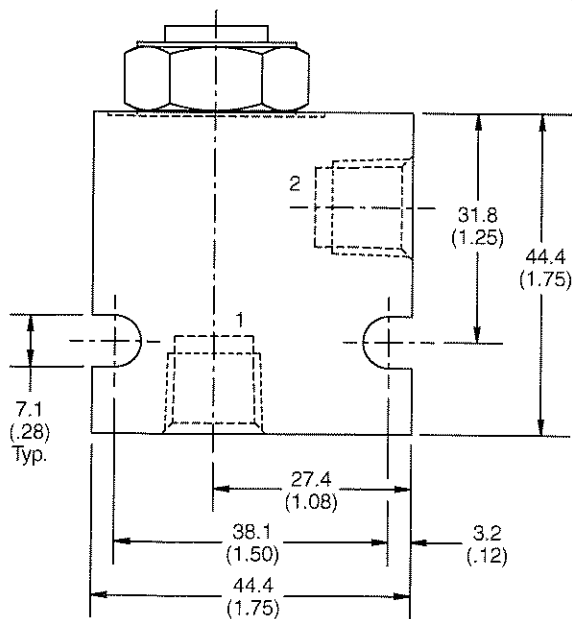


*Inch equivalents for millimeter dimensions are shown in (**)

Cartridge Only



Cartridge In Body



cv081p.pm6.5, bl. gn

CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

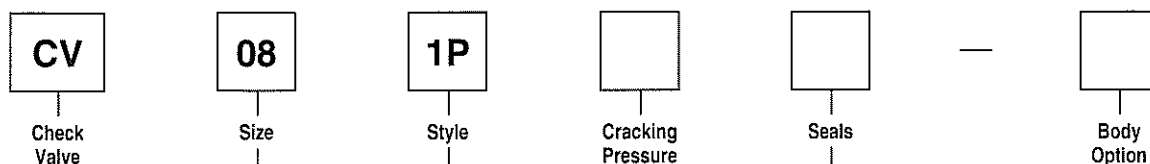
SOLENOID VALVES

SPECIALTY VALVES

COILS

BODIES

TECHNICAL DATA



Code	Type
08	3/4-16 UNF-2B Threaded Cavity with .500" Dia. Seat

Code	Style
1P	Guided Poppet

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Type
Omit	0.3 Bar (5 PSI)
10	0.7 Bar (10 PSI)
30	2.1 Bar (30 PSI)
65	4.5 Bar (65 PSI)
100	6.9 Bar (100 PSI)
150	10.3 Bar (150 PSI)
175	12.1 Bar (175 PSI)
230	15.8 Bar (230 PSI)

Code	Port Size & Material
Omit	Cartridge Only
4P	1/4" NPTF (B08-2-4P) Steel
A4P	1/4" NPTF (B08-2-A4P) Aluminum
6P	3/8" NPTF (B08-2-6P) Steel
A6P	3/8" NPTF (B08-2-A6P) Aluminum
4T	SAE-4 (B08-2-4T) Steel
A4T	SAE-4 (B08-2-A4T) Aluminum
6T	SAE-6 (B08-2-6T) Steel
A6T	SAE-6 (B08-2-A6T) Aluminum
4B	1/4" BSPG (B08-2-4B) Steel
A4B	1/4" BSPG (B08-2-A4B) Aluminum
6B	3/8" BSPG (B08-2-6B) Steel
A6B	3/8" BSPG (B08-2-A6B) Aluminum

SERVICE PARTS

Nitrile Seal Kit: SK08-2

Fluorocarbon Seal Kit: SK08-2V

Shipping Weight

Cartridge Only .06 kg (.13 lbs.)

General Description

The CV103P Series, Poppet-Type, High Flow, Check Valves allow free flow in one direction while preventing flow in the reverse direction. They can be used to isolate portions of a hydraulic circuit or to provide a free flow path around a restrictive valve.

Operation

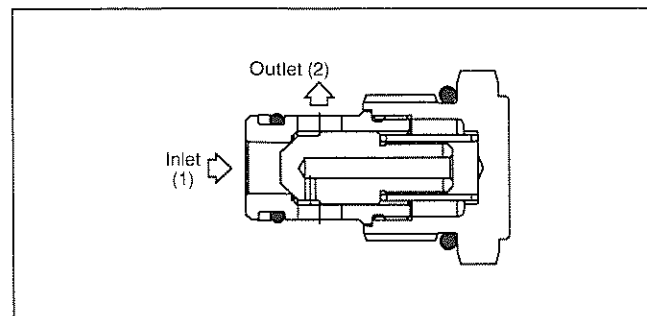
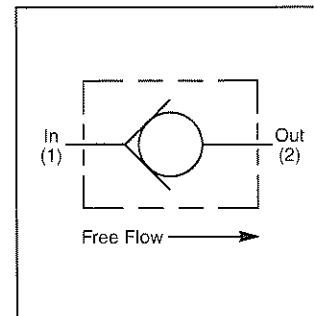
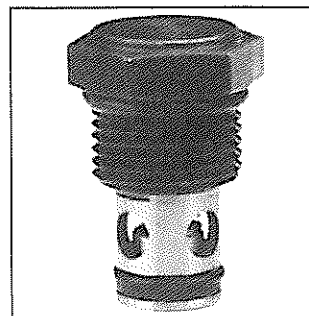
Pressure on the inlet of the check creates a force against the poppet, pushing it off its seat and permitting free flow. Reverse flow through the check is blocked by the poppet.

Features

- Hardened, precision ground parts for durability
- Compact size for reduced space requirements
- Low leakage design
- Fully guided poppet for smooth operation

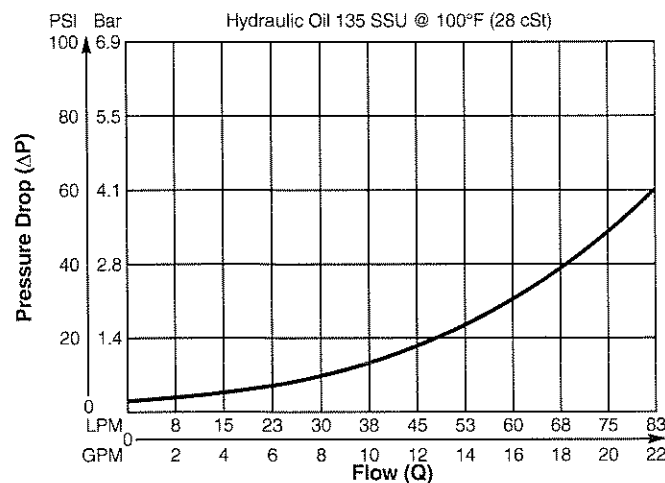
Specifications

Maximum Flow	82.5 LPM (22 GPM)
Maximum Inlet Pressure	210 Bar (3000 PSI)
Leakage	5 drops/min. (.33 cc/min.) at 210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO code 16/13, SAE Class 4 or better
Mounting	No Restrictions
Cavity	Common Cavity No. C10-2



Performance Curve

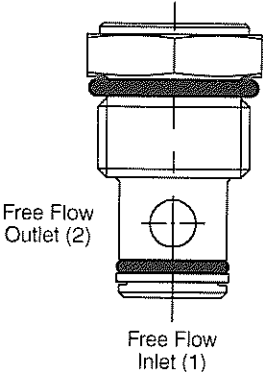
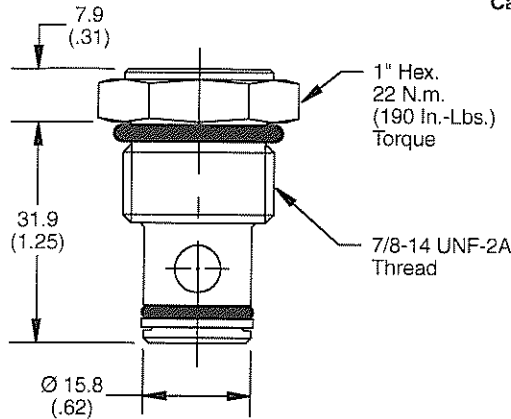
Flow vs. Pressure Drop
(Through cartridge only)



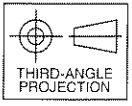
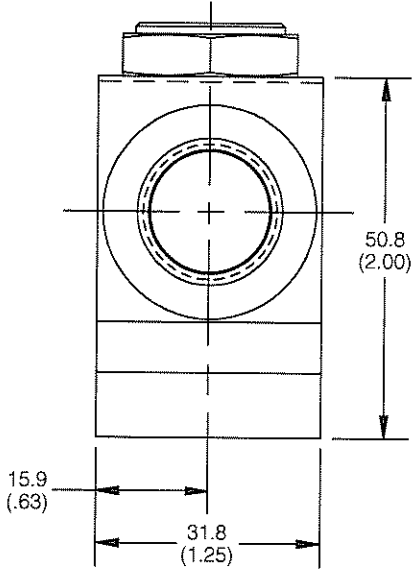
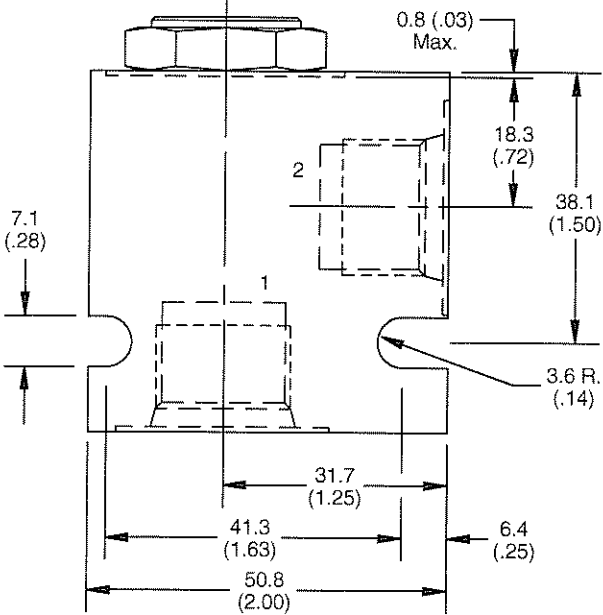
*Inch equivalents for millimeter dimensions are shown in (**)

CHECKS & SHUTTLES
LOAD & MOTOR CONTROLS
VOLUME CONTROLS
PRESSURE CONTROLS
SOLENOID VALVES
SPECIALTY VALVES
COILS
BODIES
TECHNICAL DATA

Cartridge Only



Cartridge In Body



cv103p.pm6.5, bl, gn

CV Check Valve	10 Size	3P Style	Cracking Pressure	Seals	Body Option																																															
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Code</th> <th>Type</th> </tr> <tr> <td>10</td> <td>7/8-14 UNF-2B Threaded Cavity</td> </tr> </table>	Code	Type	10	7/8-14 UNF-2B Threaded Cavity	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Code</th> <th>Style</th> </tr> <tr> <td>3P</td> <td>Poppet-Type, High Flow</td> </tr> </table>	Code	Style	3P	Poppet-Type, High Flow		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Code</th> <th>Type</th> </tr> <tr> <td>Omit</td> <td>Nitrile</td> </tr> <tr> <td>V</td> <td>Fluorocarbon</td> </tr> </table>	Code	Type	Omit	Nitrile	V	Fluorocarbon																																		
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Omit	Cartridge Only																																																			
4P	1/4" NPTF (B10-2-4P) Steel																																																			
A4P	1/4" NPTF (B10-2-A4P) Aluminum																																																			
6P	3/8" NPTF (B10-2-6P) Steel																																																			
A6P	3/8" NPTF (B10-2-A6P) Aluminum																																																			
8P	1/2" NPTF (B10-2-8P) Steel																																																			
A8P	1/2" NPTF (B10-2-A8P) Aluminum																																																			
6T	SAE-6 (B10-2-6T) Steel																																																			
A6T	SAE-6 (B10-2-A6T) Aluminum																																																			
8T	SAE-8 (B10-2-8T) Steel																																																			
A8T	SAE-8 (B10-2-A8T) Aluminum																																																			
4B	1/4" BSPG (B10-2-4B) Steel																																																			
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8B	1/2" BSPG (B10-2-8B) Steel																																																			
A8B	1/2" BSPG (B10-2-A8B) Aluminum																																																			

SERVICE PARTS

Nitrile Seal Kit: SK10-2

Fluorocarbon Seal Kit: SK10-2V

Shipping Weight

Cartridge Only .09 kg (0.2 lbs.)



General Description

The CVH121P Series, Poppet-Type, Check Valves allow free flow in one direction while preventing flow in the reverse direction. They can be used to isolate portions of a hydraulic circuit or to provide a free flow path around a restrictive valve.

Operation

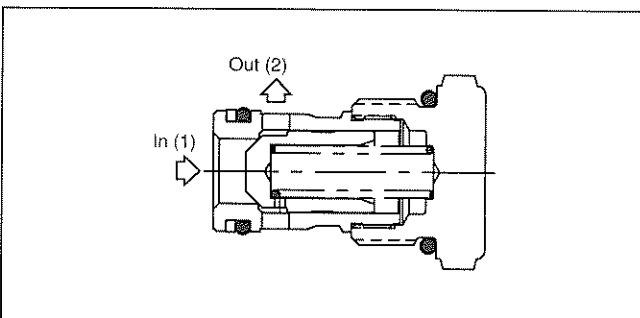
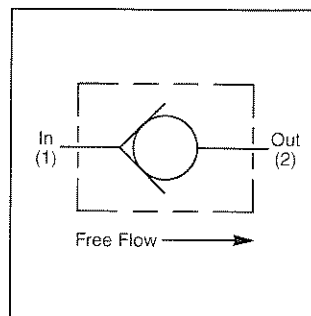
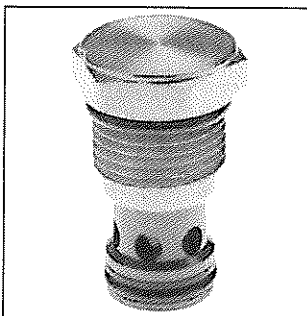
Pressure on the inlet of the check creates a force against the poppet, pushing it off its seat and permitting free flow. Reverse flow through the check is blocked by the poppet.

Features

- Hardened, precision ground parts for durability
- Compact size for reduced space requirements
- Low leakage design
- Fully guided poppet for smooth operation

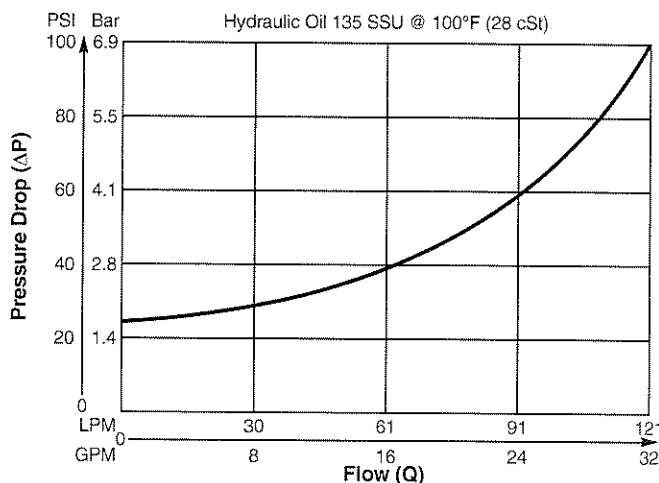
Specifications

Maximum Flow	121 LPM (32 GPM)
Maximum Inlet Pressure	340 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Leakage	5 drops/min. (.33 cc/min.) at 345 Bar (5000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO code 16/13, SAE Class 4 or better
Mounting	No Restrictions
Cavity	Common Cavity No. C12-2



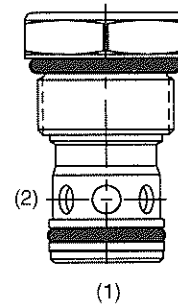
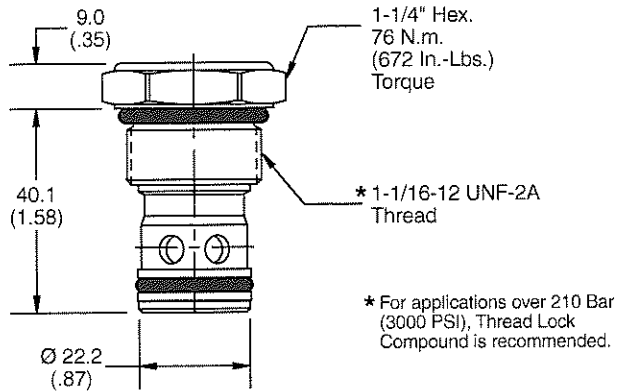
Performance Curve

Pressure Drop vs. Flow
(Through cartridge only)

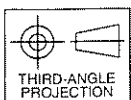
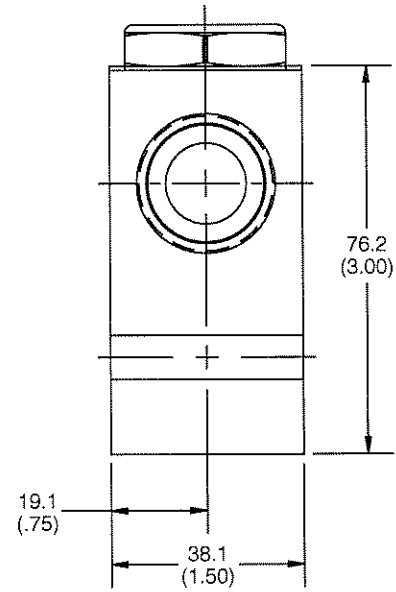
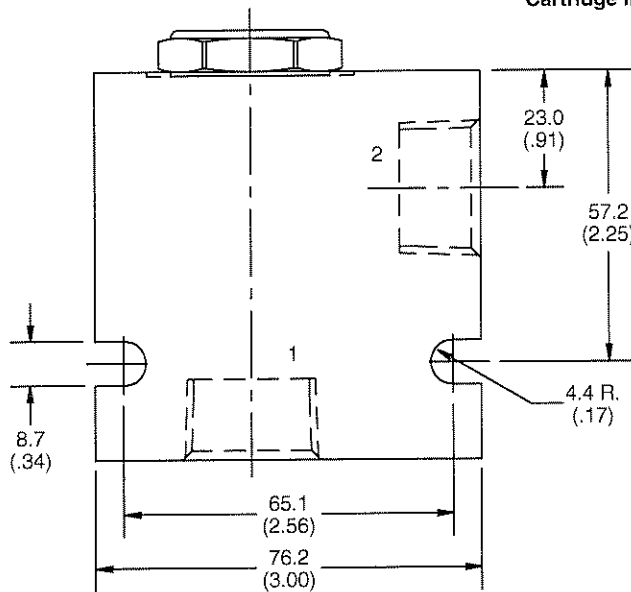


*Inch equivalents for millimeter dimensions are shown in (**)

Cartridge Only



Cartridge In Body



cvh121p.pm6.5, bl, gn

CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

SOLENOID VALVES

SPECIALTY VALVES

COILS

BODIES

TECHNICAL DATA

CVH

5000 PSI
Design
Check Valve

12

Size

1P

Style

Code	Style
1P	Guided Poppet

Cracking
Pressure

Seals

Code	Type
Omit	Nitrile
V	Fluorocarbon

Body
Option

Code	Type
12	1-1/16-12 UNF-2B Threaded Cavity

Code	Type
Omit	1.7 Bar (25 PSI)
65	4.5 Bar (65 PSI)

Code	Port Size & Material
Omit	Cartridge Only
6P	3/8" NPTF (B12-2-6P) Steel
A6P	3/8" NPTF (B12-2-A6P) Aluminum
8P	1/2" NPTF (B12-2-8P) Steel
A8P	1/2" NPTF (B12-2-A8P) Aluminum
12P	3/4" NPTF (B12-2-12P) Steel
A12P	3/4" NPTF (B12-2-A12P) Aluminum
6T	SAE-6 (B12-2-6T) Steel
A6T	SAE-6 (B12-2-A6T) Aluminum
8T	SAE-8 (B12-2-8T) Steel
A8T	SAE-8 (B12-2-A8T) Aluminum
12T	SAE-12 (B12-2-12T) Steel
A12T	SAE-12 (B12-2-A12T) Aluminum
6B	3/8" BSPG (B12-2-6B) Steel
A6B	3/8" BSPG (B12-2-A6B) Aluminum
8B	1/2" BSPG (B12-2-8B) Steel
A8B	1/2" BSPG (B12-2-A8B) Aluminum
12B	3/4" BSPG (B12-2-12B) Steel
A12B	3/4" BSPG (B12-2-A12B) Aluminum

SERVICE PARTS

Nitrile Seal Kit: SK12-2

Fluorocarbon Seal Kit: SK12-2V

Shipping Weight

Cartridge Only .14 kg (.30 lbs.)

NOTE:

If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

General Description

The CVH161P Series, Poppet-Type, Check Valves allow free flow in one direction while preventing flow in the reverse direction. They can be used to isolate portions of a hydraulic circuit or to provide a free flow path around a restrictive valve.

Operation

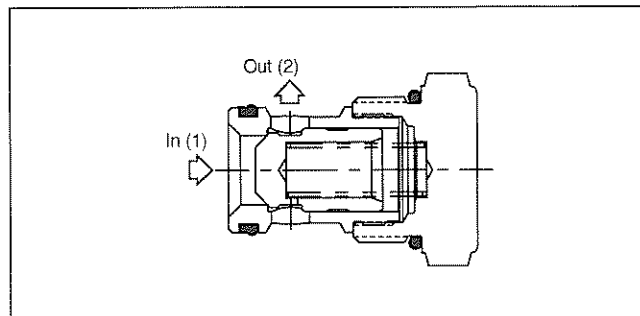
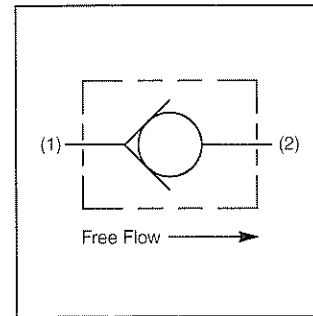
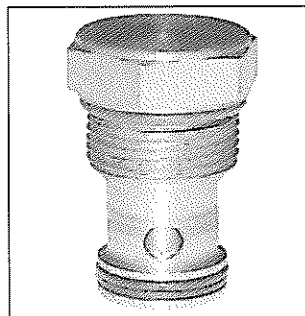
Pressure on the inlet of the check creates a force against the poppet, pushing it off its seat and permitting free flow. Reverse flow through the check is blocked by the poppet.

Features

- Hardened, precision ground parts for durability
- Compact size for reduced space requirements
- Low leakage design
- Fully guided poppet for smooth operation

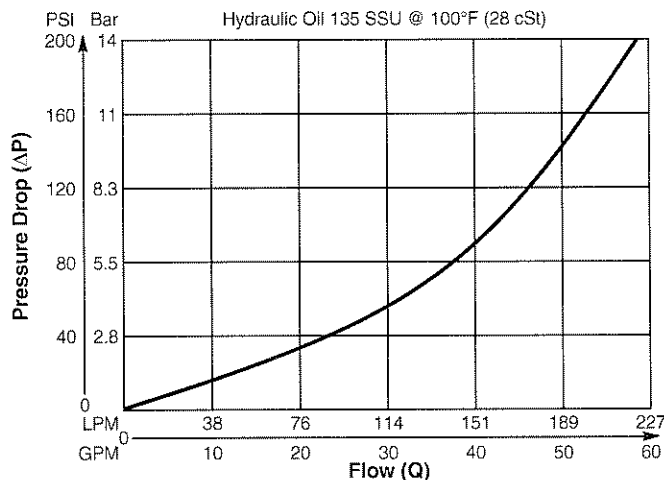
Specifications

Maximum Flow	225 LPM (60 GPM)
Maximum Inlet Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Leakage	5 drops/min. (.33 cc/min.) at 345 Bar (5000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO code 16/13, SAE Class 4 or better
Mounting	No Restrictions
Cavity	Common Cavity No. C16-2



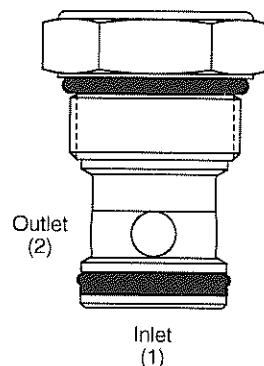
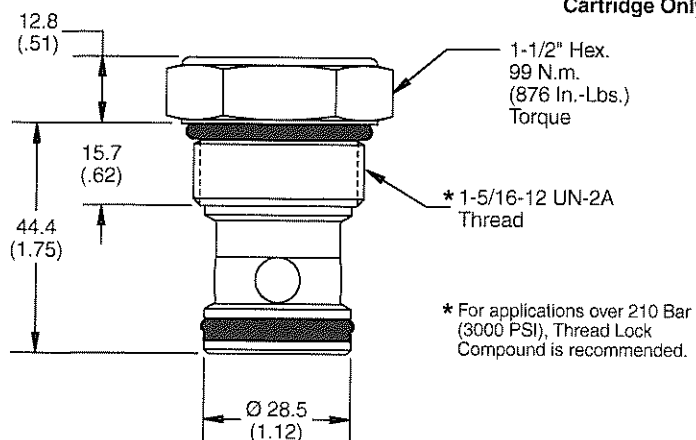
Performance Curve

Flow vs. Pressure Drop
(Through cartridge only)

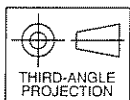
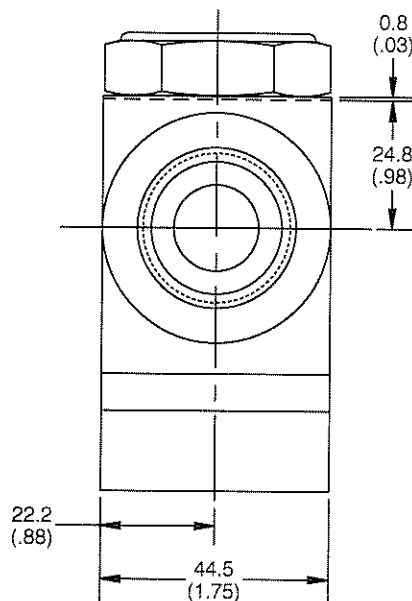
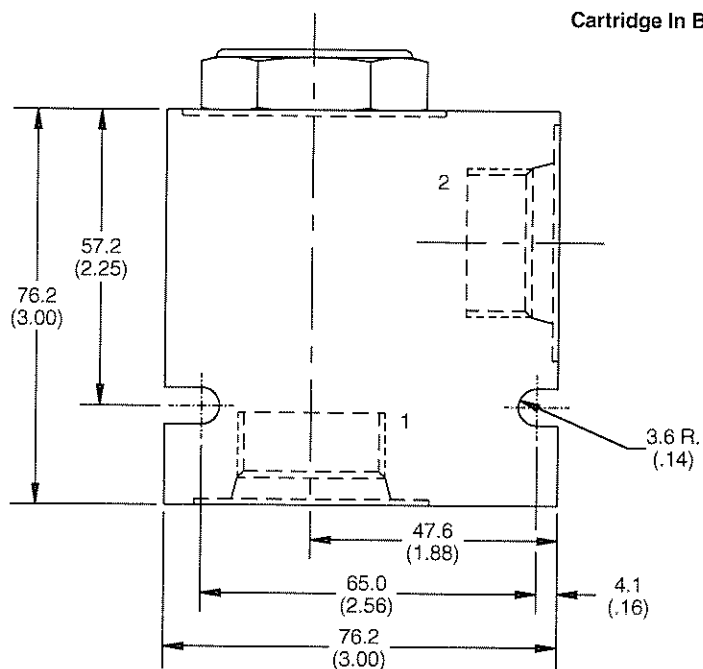


*Inch equivalents for millimeter dimensions are shown in (**)

Cartridge Only



Cartridge In Body



cvh161p, pm6.5, bl, gn

CVH 5000 PSI Design Check Valve	16 Size	1P Style	Cracking Pressure	Seals	Body Option																																																		
	<table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <tr> <th>Code</th> <th>Type</th> </tr> <tr> <td>16</td> <td>1-5/16-12 UN-2B Threaded Cavity</td> </tr> </table>	Code	Type	16	1-5/16-12 UN-2B Threaded Cavity	<table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <tr> <th>Code</th> <th>Style</th> </tr> <tr> <td>1P</td> <td>Guided Poppet</td> </tr> </table>	Code	Style	1P	Guided Poppet		<table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <tr> <th>Code</th> <th>Type</th> </tr> <tr> <td>Omit</td> <td>Nitrile</td> </tr> <tr> <td>V</td> <td>Fluorocarbon</td> </tr> </table>	Code	Type	Omit	Nitrile	V	Fluorocarbon																																					
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Code	Type																																																						
Omit	0.3 Bar (5 PSI)																																																						
20	1.4 Bar (20 PSI)																																																						
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175	12.1 Bar (175 PSI)																																																						
Code	Port Size & Material																																																						
Omit	Cartridge Only																																																						
8P	1/2" NPTF (B16-2-8P) Steel																																																						
A8P	1/2" NPTF (B16-2-A8P) Aluminum																																																						
12P	3/4" NPTF (B16-2-12P) Steel																																																						
A12P	3/4" NPTF (B16-2-A12P) Aluminum																																																						
16P	1" NPTF (B16-2-16P) Steel																																																						
A16P	1" NPTF (B16-2-A16P) Aluminum																																																						
8T	SAE-8 (B16-2-8T) Steel																																																						
A8T	SAE-8 (B16-2-A8T) Aluminum																																																						
12T	SAE-12 (B16-2-12T) Steel																																																						
A12T	SAE-12 (B16-2-A12T) Aluminum																																																						
16T	SAE-16 (B16-2-16T) Steel																																																						
A16T	SAE-16 (B16-2-A16T) Aluminum																																																						
8B	1/2" BSPG (B16-2-8B) Steel																																																						
A8B	1/2" BSPG (B16-2-A8B) Aluminum																																																						
12B	3/4" BSPG (B16-2-12B) Steel																																																						
A12B	3/4" BSPG (B16-2-A12B) Aluminum																																																						
16B	1" BSPG (B16-2-16B) Steel																																																						
A16B	1" BSPG (B16-2-A16B) Aluminum																																																						

SERVICE PARTS

Nitrile Seal Kit: SK16-2

Fluorocarbon Seal Kit: SK16-2V

Shipping Weight

Cartridge Only .27 kg (0.6 lbs.)

NOTE:

If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

SOLENOID VALVES

SPECIALTY VALVES

COILS

BODIES

TECHNICAL DATA

General Description

The CVH201P Series, Poppet-Type, Check Valves allow free flow in one direction while preventing flow in the reverse direction. They can be used to isolate portions of a hydraulic circuit or to provide a free flow path around a restrictive valve.

Operation

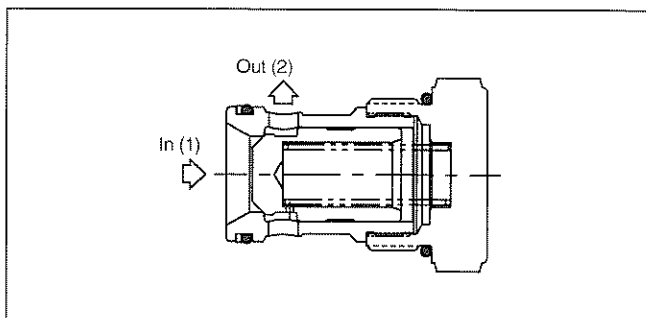
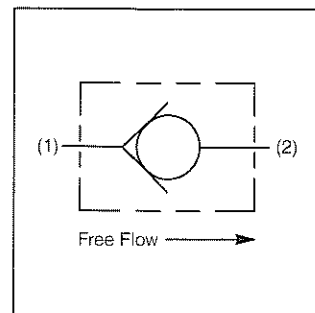
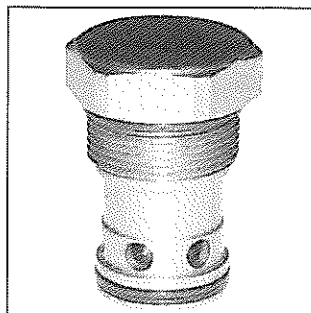
Pressure on the inlet of the check creates a force against the poppet, pushing it off its seat and permitting free flow. Reverse flow through the check is blocked by the poppet.

Features

- Hardened, precision ground parts for durability
- Compact size for reduced space requirements
- Low leakage design
- Fully guided poppet for smooth operation

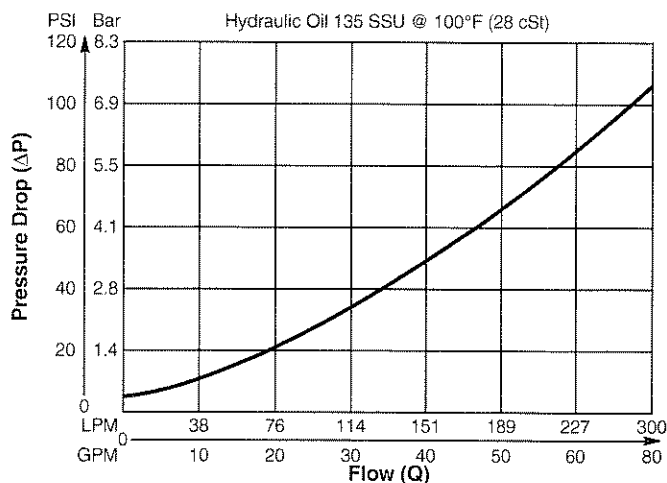
Specifications

Maximum Flow	375 LPM (100 GPM)
Maximum Inlet Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Leakage	5 drops/min. (.33 cc/min.) at 345 Bar (5000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO code 16/13, SAE Class 4 or better
Mounting	No Restrictions
Cavity	Common Cavity No. C20-2



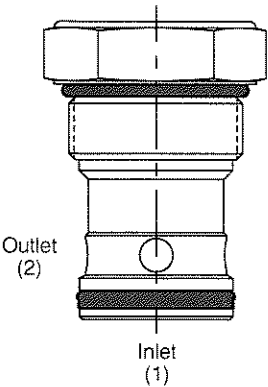
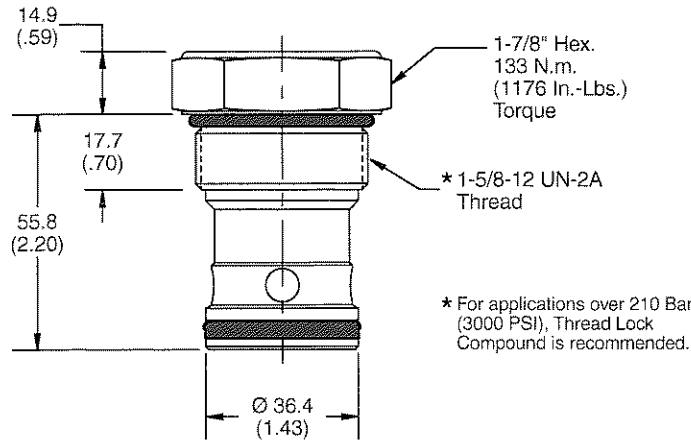
Performance Curve

Flow vs. Pressure Drop
(Through cartridge only)

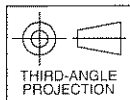
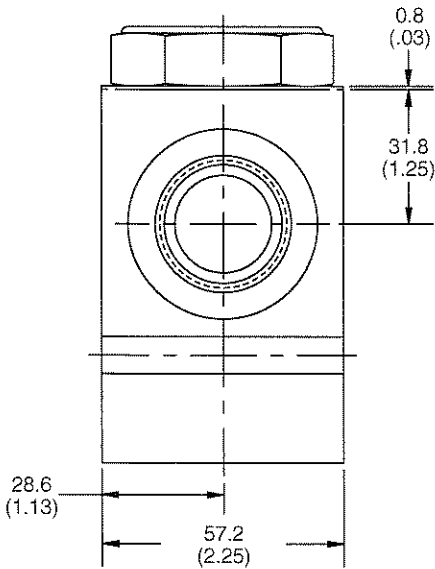
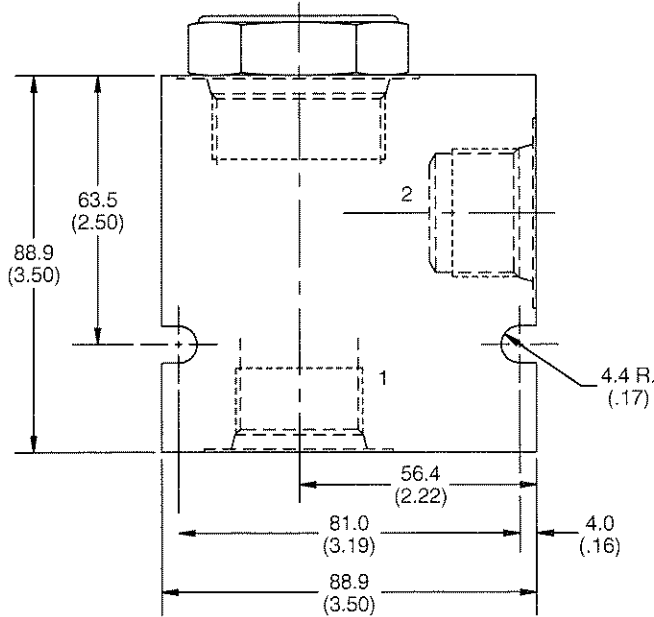


*Inch equivalents for millimeter dimensions are shown in (**)

Cartridge Only



Cartridge In Body



cvh201p.pm6.5, bl, gn

CHECKS & SHUTTLES
 LOAD & MOTOR CONTROLS
 VOLUME CONTROLS
 PRESSURE CONTROLS
 SOLENOID VALVES
 SPECIALTY VALVES
 COILS
 BODIES
 TECHNICAL DATA

CVH

5000 PSI Design Check Valve

20

Size

Code	Type
20	1-5/8-12 UN-2B Threaded Cavity

1P

Style

Code	Style
1P	Guided Poppet

Cracking Pressure

Code	Type
Omit	0.3 Bar (5 PSI)
20	1.4 Bar (20 PSI)
65	4.5 Bar (65 PSI)

Seals

Code	Type
Omit	Nitrile
V	Fluorocarbon

Body Option

Code	Port Size & Material
Omit	Cartridge Only
12P	3/4" NPTF (B20-2-12P) Steel
A12P	3/4" NPTF (B20-2-A12P) Aluminum
16P	1" NPTF (B20-2-16P) Steel
A16P	1" NPTF (B20-2-A16P) Aluminum
20P	1-1/4" NPTF (B20-2-20P) Steel
A20P	1-1/4" NPTF (B20-2-A20P) Aluminum
12T	SAE-12 (B20-2-12T) Steel
A12T	SAE-12 (B20-2-A12T) Aluminum
16T	SAE-16 (B20-2-16T) Steel
A16T	SAE-16 (B20-2-A16T) Aluminum
20T	SAE-20 (B20-2-20T) Steel
A20T	SAE-20 (B20-2-A20T) Aluminum
12B	3/4" BSPG (B20-2-12B) Steel
A12B	3/4" BSPG (B20-2-A12B) Aluminum
16B	1" BSPG (B20-2-16B) Steel
A16B	1" BSPG (B20-2-A16B) Aluminum
20B	1-1/4" BSPG (B20-2-20B) Steel
A20B	1-1/4" BSPG (B20-2-A20B) Aluminum

SERVICE PARTS

Nitrile Seal Kit: SK20-2

Fluorocarbon Seal Kit: SK20-2V

Shipping Weight

Cartridge Only .27 kg (0.6 lbs.)

NOTE:
 If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

General Description

The MCC-008 Series, ball type check valves allow free flow in one direction while preventing flow in the reverse direction. They can be used to isolate portions of a hydraulic circuit or to provide a free flow path around a restrictive valve.

Operation

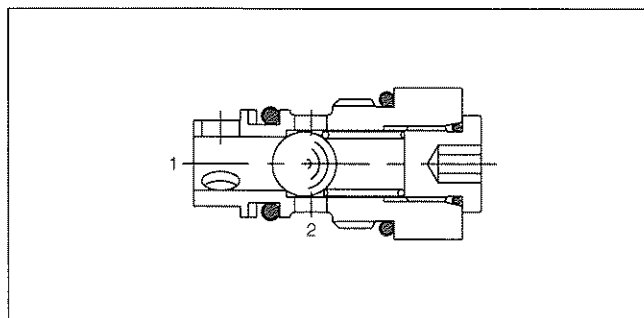
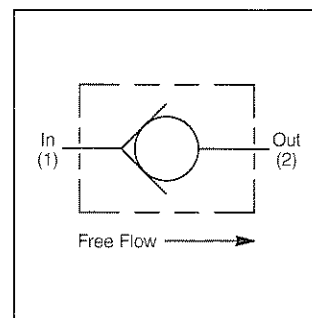
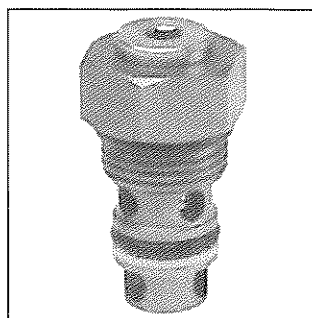
Pressure on the inlet of the check valve creates a force against the ball, pushing it off of its seat and permitting free flow. Reverse flow through the check is blocked by the ball.

Features

- Hardened and precision ground parts for long life
- Low leakage design
- Fluorocarbon seals standard

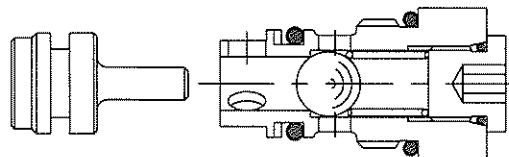
Specifications

Maximum Flow	22.5 LPM (8 GPM)
Operating Press.	210 Bar (3000 PSI)
Leakage	1 drop/min. (.07 cc/min.) @ 210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-31.7°C to +121.1°C (-25°F to +250°F) (Fluorocarbon Seals Only)
Filtration	ISO code 16/13, SAE Class 4 or better
Check Valve Cavity	CDD-1022
Check Valve Cavity with Single Pilot Piston	CDD-1008
Check Valve Cavity with Dual Pilot Piston	CDD-1030

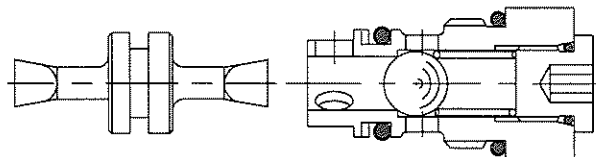


Construction

Check Valve with Single Piston
for Single P.O. Check

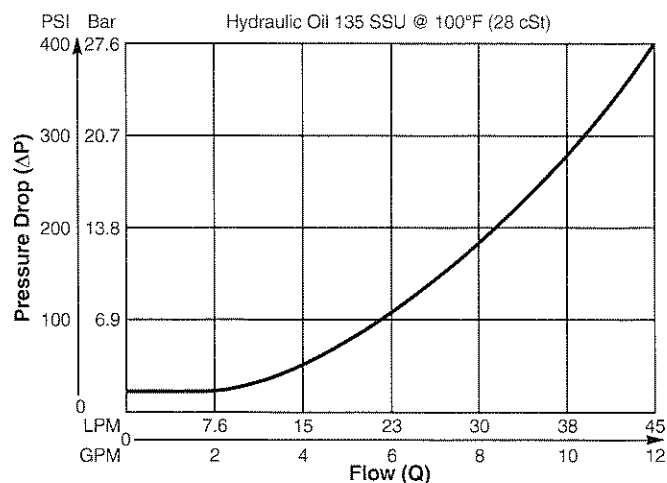


Check Valve with Dual Piston
for Double PO Check



Performance Curve

Flow vs. Pressure Drop (Through cartridge only)

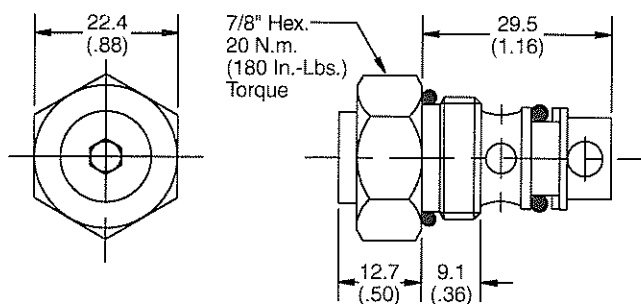


mcc-008.pm6.5, bl, gn

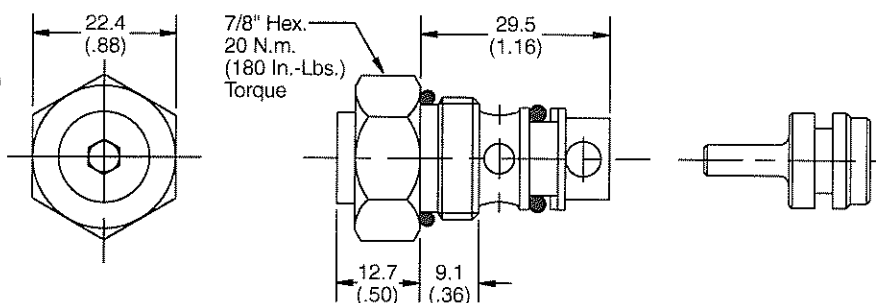
Dimensions

*Inch equivalents for millimeter dimensions are shown in (**)

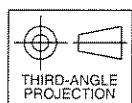
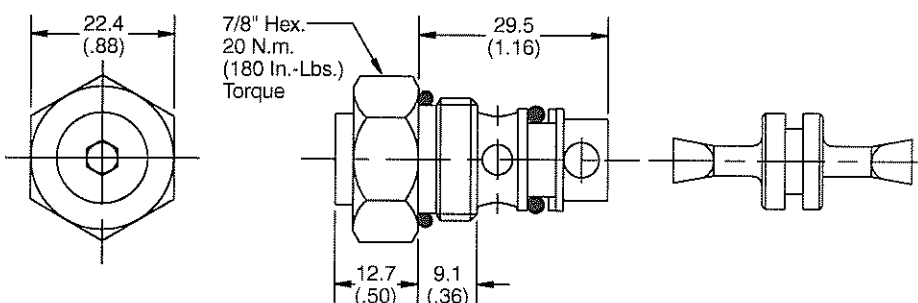
Check Valve



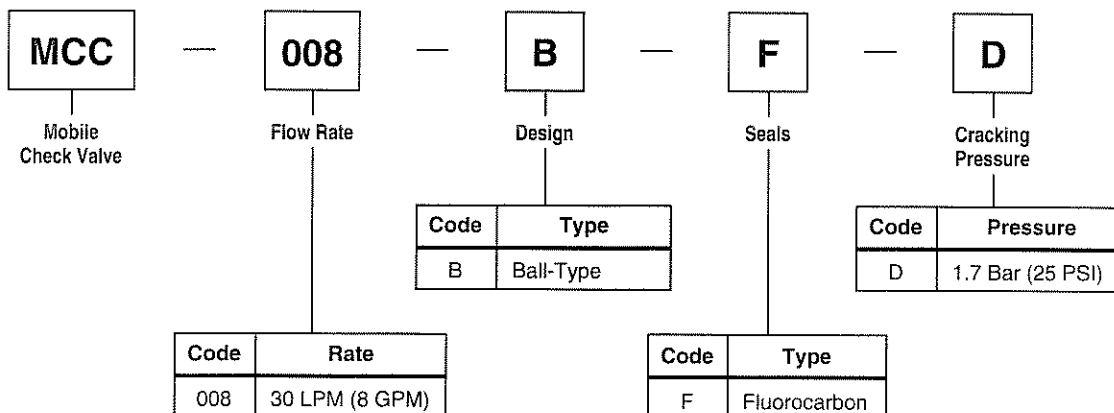
Check Valve with Single Piston for Single PO Check Single Pilot Piston - P/N 360750



Check Valve with Double Piston for Dual PO Check Dual Pilot Piston - P/N 360381



Ordering Information



Shipping Weight
 Cartridge Only .11 kg (0.4 lbs.)

mcc-008.pm6.5, bl, gn

General Description

The MCC-025 Series, Ball-Type, Check Valves allow free flow in one direction while preventing flow in the reverse direction. They can be used to isolate portions of a hydraulic circuit or to provide a free flow path around a restrictive valve. This valve is ideal for installation into a cylinder or other type of actuator.

Operation

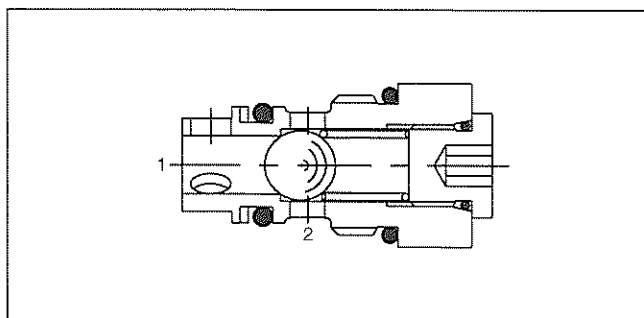
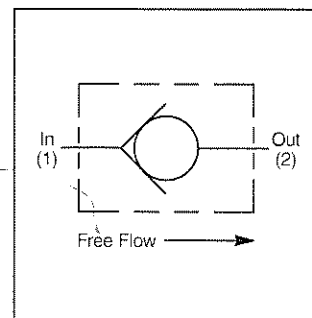
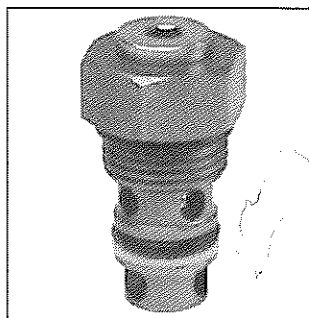
Pressure on the inlet of the check valve creates a force against the ball, pushing it off of its seat and permitting free flow. Reverse flow through the check is blocked by the ball.

Features

- Hardened and precision ground parts for long life
- Low leakage design
- Fluorocarbon seals standard

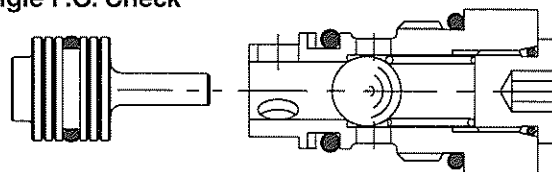
Specifications

Maximum Flow	93.8 LPM (25 GPM)
Operating Press.	210 Bar (3000 PSI)
Leakage	1 drop/min. (.07 cc/min.) at 210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-31.7°C to +121.1°C (-25°F to +250°F) (Fluorocarbon Seals Only)
Filtration	ISO code 16/13, SAE Class 4 or better
Check Valve Cavity	CDD-1023
Check Valve Cavity with Single Pilot Piston	CDD-1009
Check Valve Cavity with Dual Pilot Piston	CDD-1031

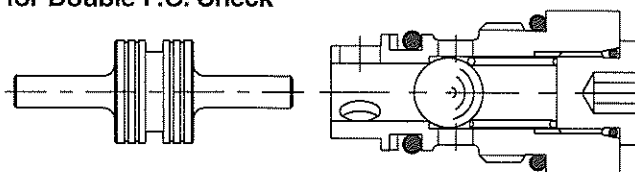


Construction

Check Valve with Single Piston for Single P.O. Check

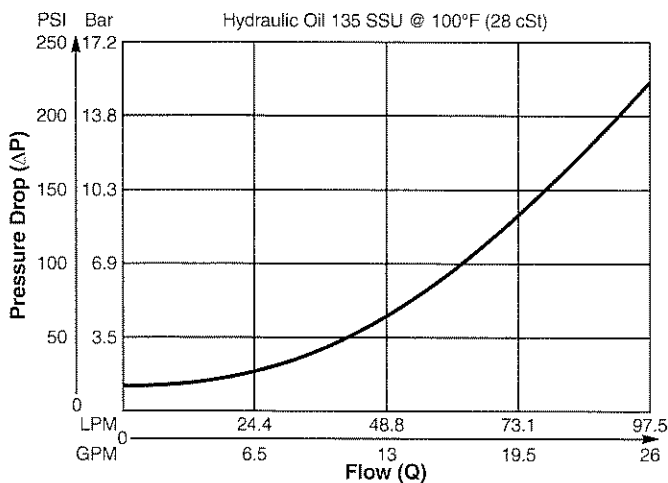


Check Valve with Dual Piston for Double P.O. Check



Performance Curve

Flow vs. Pressure Drop (Through cartridge only)

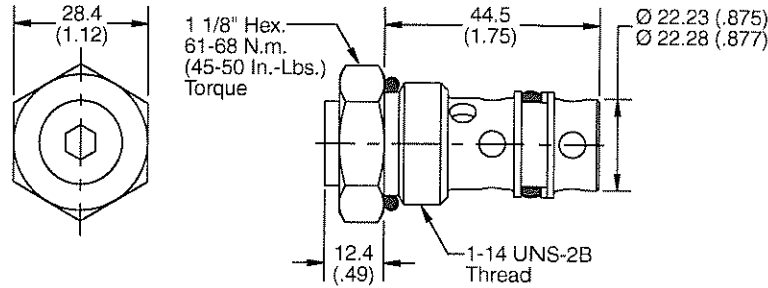


mcc-025.pm6.5, bf, gn

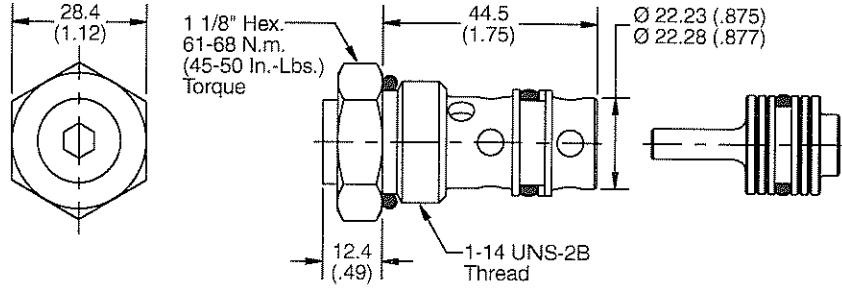
Dimensions

*Inch equivalents for millimeter dimensions are shown in (**)

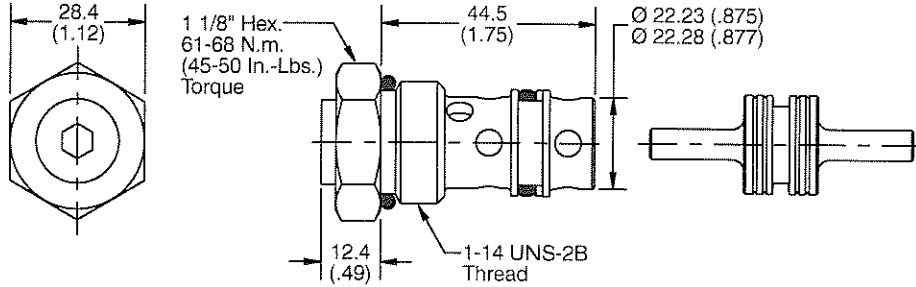
Check Valve



**Check Valve with Single
Piston for Single PO Check
Single Pilot Piston - P/N 360755**



**Check Valve with Double
Piston for Dual PO Check
Dual Pilot Piston - P/N 360760**



Ordering Information

MCC — **025** — **B** — **F** — **D**

Mobile Check Valve Flow Rate Design Seals Cracking Pressure

Code	Type
B	Ball-Type

Code	Pressure
D	1.7 Bar (25 PSI)

Code	Rate
025	93.8 LPM (25 GPM)

Code	Type
F	Fluorocarbon

Shipping Weight
Cartridge Only .17 kg (0.6 lbs.)

mcc-025.pm6.5, bl, gn

General Description

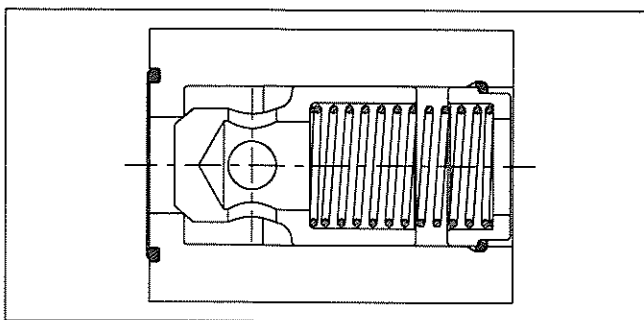
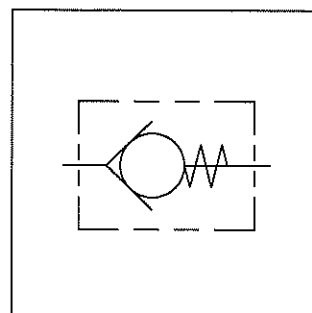
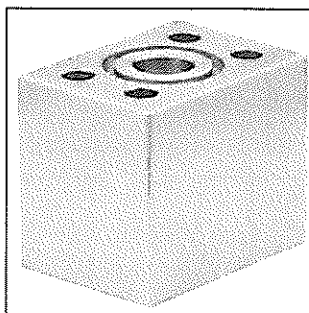
The CFL Series, Flange Mounted Check Valve is an integrated check assembly with a 4-bolt flange mount arrangement. The 4-bolt flange is ideal for close coupling the check directly to a pump outlet or valve plate, thus reducing the number of fittings and adaptors required.

Operation

Pressure on the inlet of the check creates forces against the poppet, pushing it off its seat and permitting free flow. The poppet blocks reverse flow through the check valve.

Specifications

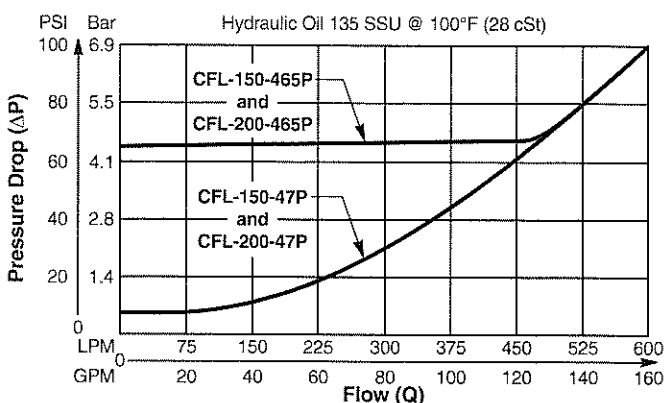
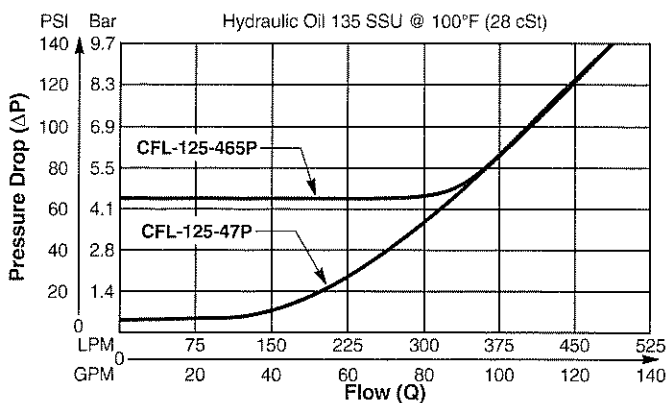
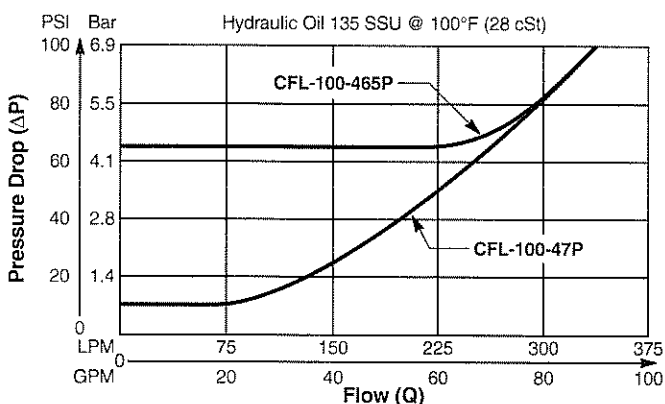
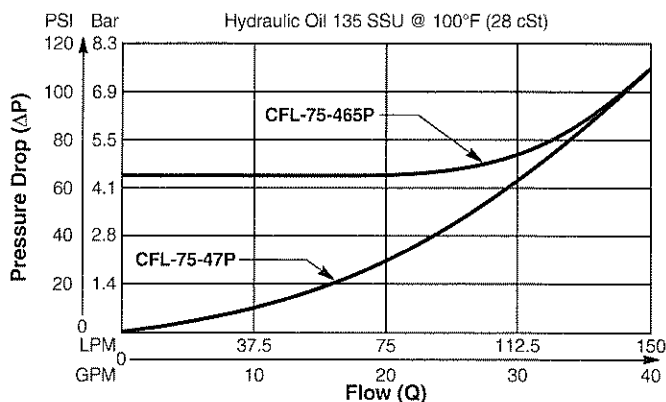
Inlet Flow	CFL-75 150 LPM (40 GPM) CFL-100 338 LPM (90 GPM) CFL-125 488 LPM (130 GPM) CFL-150 600 LPM (160 GPM) CFL-200 600 LPM (160 GPM)
Max. Inlet Press.	210 Bar (3000 PSI)
Leakage	5 drops/min. (.33 cc/min.)
Operating Temp. Range (Ambient)	-31.7°C to +121.1°C (-25°F to +250°F) (Fluorocarbon Seals Only)
Body Material	Steel (Chromate Plated)
Filtration	ISO code 16/13, SAE Class 4 or better
Mounting	No Restrictions



Features

- Hardened steel poppet for long life
- Steel body
- Four bolt flange mounting eliminates extra cost and helps prevent external leakage

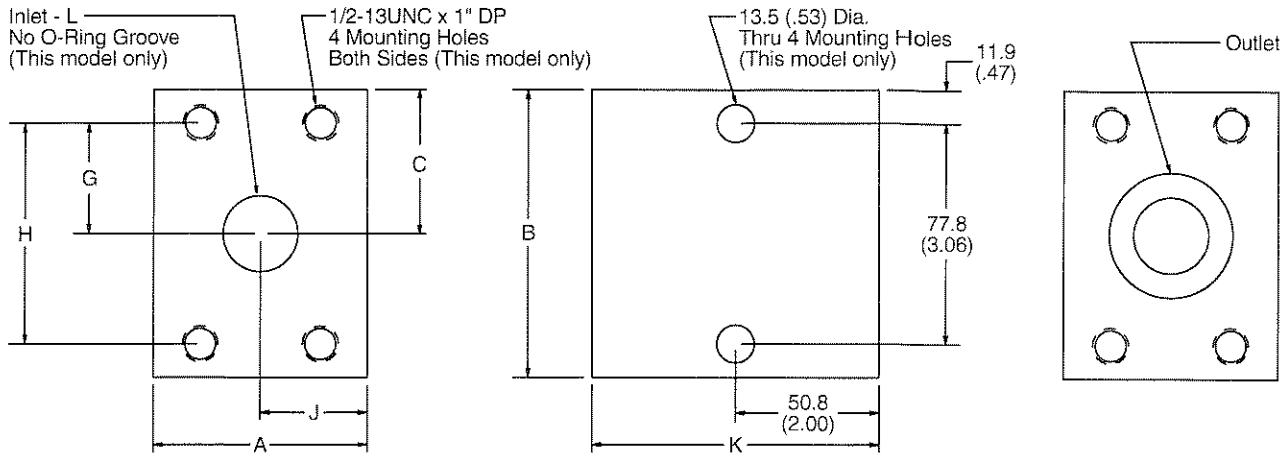
Performance Curves Flow vs. Pressure Drop (Through cartridge only)



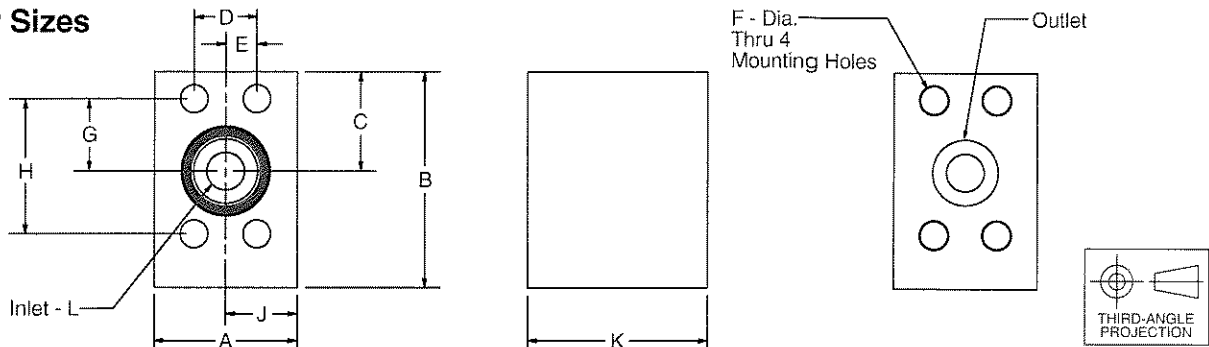
cfl-75.pm6.5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)

Series CFL-200



All Other Sizes



Model	A	B	C	D	E	F	G	H	J	K	L
CFL-75	50.8 (2.00)	76.2 (3.00)	41.1 (1.62)	22.2 (0.88)	11.1 (0.44)	10.1 (0.40)	23.8 (0.94)	47.6 (1.88)	25.4 (1.00)	63.5 (2.50)	13.5 (0.53)
CFL-100	50.8 (2.00)	76.2 (3.00)	38.1 (1.50)	26.2 (1.03)	13.1 (0.52)	10.1 (0.40)	26.2 (1.03)	52.4 (2.06)	25.4 (1.00)	74.7 (2.94)	19.8 (0.78)
CFL-125	63.5 (2.50)	88.9 (3.50)	44.5 (1.75)	30.2 (1.19)	15.1 (0.59)	11.9 (0.47)	29.4 (1.16)	58.7 (2.31)	31.8 (1.25)	74.7 (2.94)	22.2 (0.88)
CFL-150	76.2 (3.00)	101.6 (4.00)	50.8 (2.00)	35.7 (1.41)	17.9 (0.70)	13.5 (0.53)	34.9 (1.38)	69.9 (2.75)	34.0 (1.34)	101.6 (4.00)	27.0 (1.06)
CFL-200	76.2 (3.00)	101.6 (4.00)	50.8 (2.00)	42.9 (1.69)	21.4 (0.84)	*	38.9 (1.53)	77.8 (3.06)	38.1 (1.50)	101.6 (4.00)	27.0 (1.06)

* 1/2"-13 UNC x 1"

Ordering Information

CFL

Flange Mounted Check Valve

Port Size

Code	Size
75	3/4"
100	1"
125	1-1/4"
150	1-1/2"
200	2"

4

Port Type

Code	Type
4	4 bolt flange

Cracking Pressure

Code	Pressure
7	0.5 Bar (7 PSI)
65	4.4 Bar (65 PSI)

P

Pilot Port

Code	Description
P	Internal pilot port Pugged or not machined

1.8 kg (4.0 lbs.)

2.3 kg (5.0 lbs.)

3.2 kg (7.0 lbs.)

5.0 kg (11.0 lbs.)

5.0 kg (11.0 lbs.)

Shipping Weight
 Cartridge in Body

CFL-75	1.8 kg (4.0 lbs.)
CFL-100	2.3 kg (5.0 lbs.)
CFL-125	3.2 kg (7.0 lbs.)
CFL-150	5.0 kg (11.0 lbs.)
CFL-200	5.0 kg (11.0 lbs.)

cfl-75 pm6.5, bl, gn

General Description

The MPB-008 Series Valves are single or double Pilot Operated Check Valves. A single Pilot Operated Check Valve can be used to isolate portions of a hydraulic circuit or to provide a free flow path around a restrictive valve. A double Pilot Operated Check Valve will positively lock double acting actuators in position and not allow movement until the actuators are powered into position.

Operation

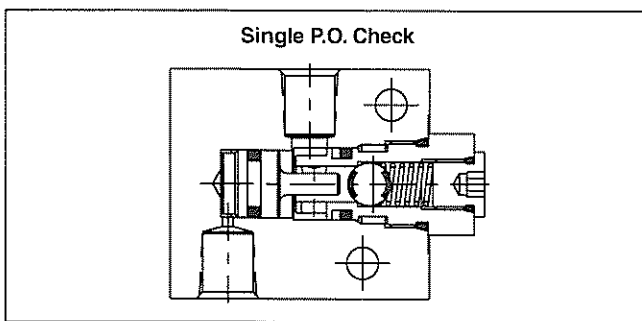
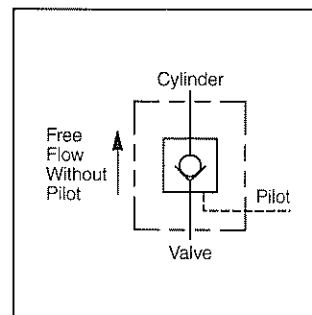
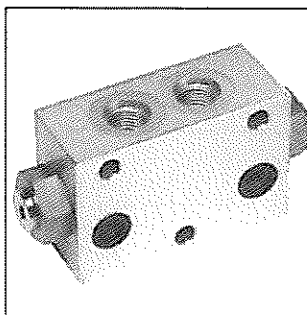
In a single Pilot Operated Check Valve, pressure on the inlet of the check valve creates a force against the ball, pushing it off of its seat and permitting free flow. Reverse flow through the check is blocked by the ball. In the absence of flow and pressure on the valve ports, a double Pilot Operated Check Valve will hold the load in a locked position by the two check valves. The valve allows an actuator to be powered into motion by permitting free flow from the actuator through the opposite check, which is internally piloted, open by the shuttle. This valve works best when used in conjunction with a control valve that vents the valve ports to tank when centered.

Features

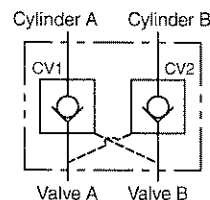
- Hardened and precision ground parts for long life
- Low leakage design
- Fluorocarbon seals standard

Specifications

Maximum Flow	22.5 LPM (8 GPM)
Operating Press.	210 Bar (3000 PSI)
Leakage	1 drop/min. (.07 cc/min.) @ 210 Bar (3000 PSI)
Pilot Ratio	3.5:1
Cracking Press.	1.7 Bar (25 PSI)
Operating Temp. Range (Ambient)	-31.7°C to +121.1°C (-25°F to +250°F) (Fluorocarbon Seals Only)
Body Material	Aluminum
Filtration	ISO code 16/13 SAE Class 4 or better
Mounting	No Restrictions
Single PO Check & Shuttle Cavity	CDD-1008
Double PO Check & Shuttle Cavity	CDD-1030

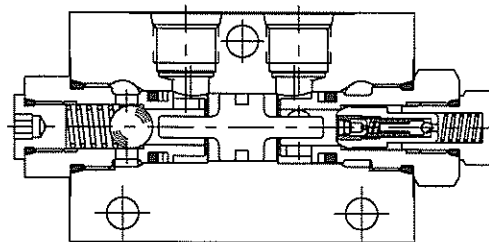


Symbol



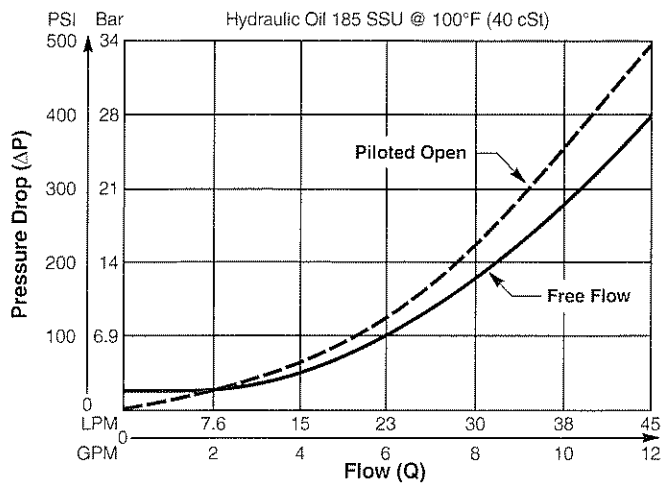
Construction

Dual P.O. Check with Thermal Relief Option

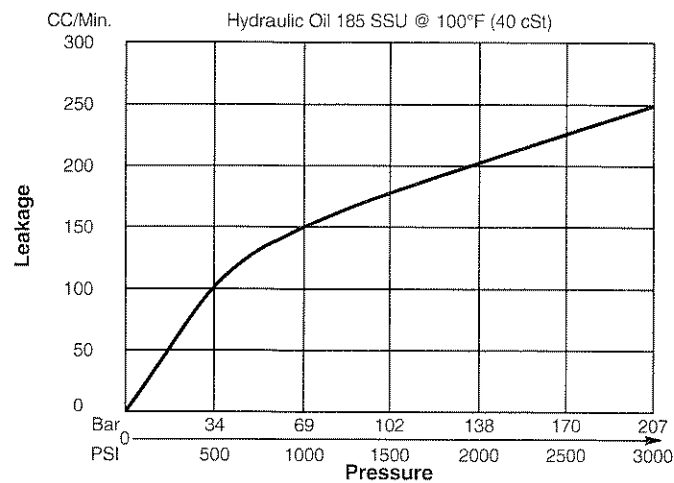


Performance Curves

Flow vs. Pressure Drop



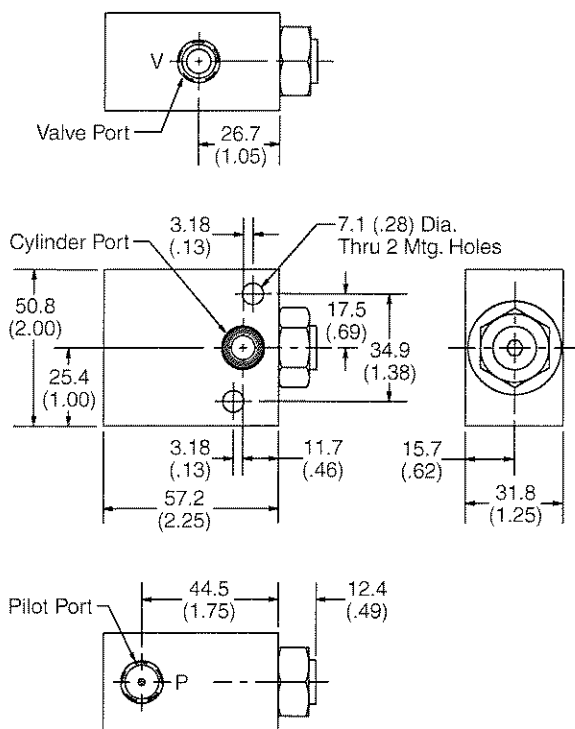
Typical Pilot Piston Leakage



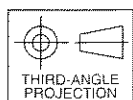
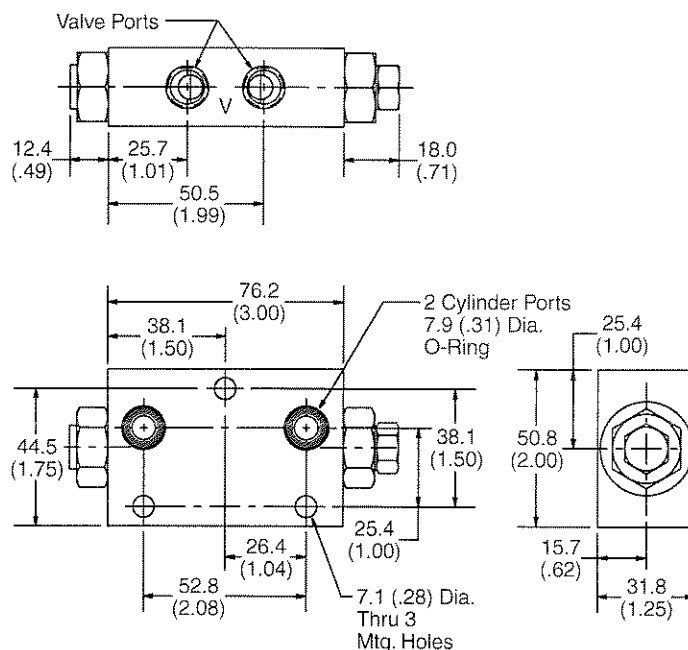
Note: Pilot pistons with O-rings are available for systems where typical leakage would be detrimental to valve performance. See "Seals" segment on the "Ordering Information" page.

Dimensions *Inch equivalents for millimeter dimensions are shown in (**)

Single P.O. Check Gasket Mount



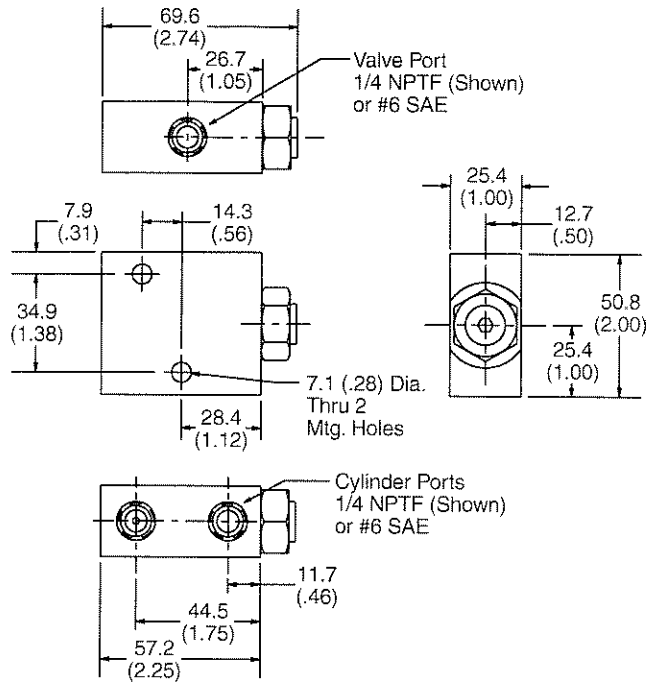
Dual P.O. Check Gasket Mount



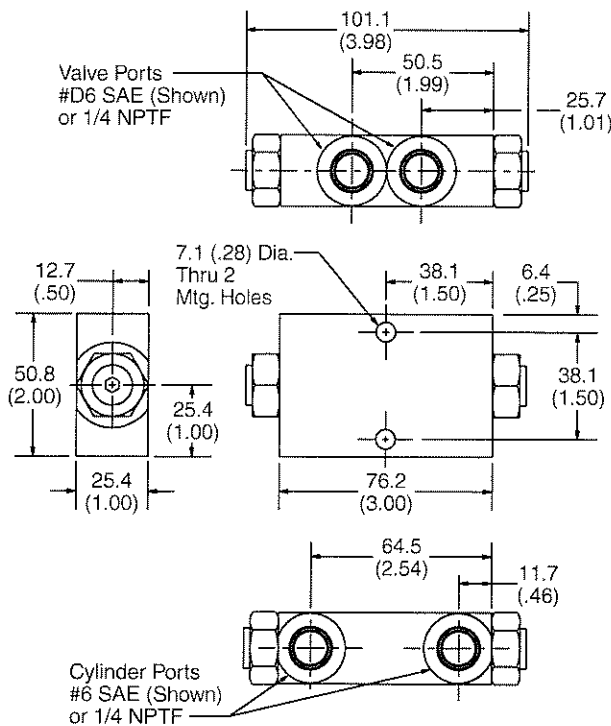
mpb-008,pm6.5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)

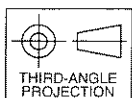
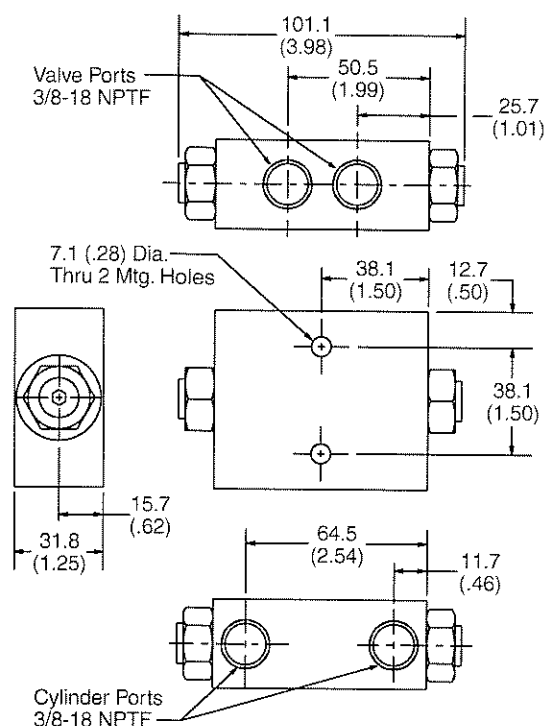
Single - Inline
6 SAE and 1/4 NPTF



Double - Inline
6 SAE and 1/4 NPTF



Double - Inline
3/8-18 NPTF



mpb-008.pm6.5. bf, gn

CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

SOLENOID VALVES

SPECIALTY VALVES

COILS

BODIES

TECHNICAL DATA

MPB	008	D																																																				
Mobile Pilot Operated Check Valve	Flow Rate	Design	Seals	Body Style	Internal Thermal Options	Ports																																																
	<table border="1"> <thead> <tr> <th>Code</th> <th>Rate</th> </tr> </thead> <tbody> <tr> <td>008</td> <td>30 LPM (8 GPM)</td> </tr> </tbody> </table>	Code	Rate	008	30 LPM (8 GPM)	<table border="1"> <thead> <tr> <th>Code</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>D</td> <td>Direct Spring</td> </tr> </tbody> </table>	Code	Type	D	Direct Spring	<table border="1"> <thead> <tr> <th>Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>F</td> <td>Fluorocarbon</td> </tr> <tr> <td>R</td> <td>Fluorocarbon with O-Ring on Pilot Piston</td> </tr> </tbody> </table>	Code	Description	F	Fluorocarbon	R	Fluorocarbon with O-Ring on Pilot Piston	<table border="1"> <thead> <tr> <th>Code</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Single Inline</td> </tr> <tr> <td>B</td> <td>Single Gasket</td> </tr> <tr> <td>D</td> <td>Dual Inline</td> </tr> <tr> <td>E</td> <td>Dual Gasket</td> </tr> </tbody> </table>	Code	Type	A	Single Inline	B	Single Gasket	D	Dual Inline	E	Dual Gasket	<table border="1"> <thead> <tr> <th>Code</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>A Port Thermal</td> </tr> <tr> <td>B</td> <td>B Port Thermal</td> </tr> <tr> <td>D</td> <td>Dual Thermal</td> </tr> <tr> <td>N</td> <td>No Thermal</td> </tr> </tbody> </table>	Code	Type	A	A Port Thermal	B	B Port Thermal	D	Dual Thermal	N	No Thermal	<table border="1"> <thead> <tr> <th>Code</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>04B</td> <td>1/4" NPTF Single P.O.</td> </tr> <tr> <td>04N</td> <td>1/4" NPTF Dual P.O.</td> </tr> <tr> <td>06C</td> <td>3/8" NPTF Single P.O. (Inline Body Only)</td> </tr> <tr> <td>06N</td> <td>3/8" NPTF Dual P.O. (Inline Body Only)</td> </tr> <tr> <td>51E</td> <td>SAE-6 Single P.O.</td> </tr> <tr> <td>51N</td> <td>SAE-6 Dual P.O.</td> </tr> </tbody> </table>	Code	Type	04B	1/4" NPTF Single P.O.	04N	1/4" NPTF Dual P.O.	06C	3/8" NPTF Single P.O. (Inline Body Only)	06N	3/8" NPTF Dual P.O. (Inline Body Only)	51E	SAE-6 Single P.O.	51N	SAE-6 Dual P.O.
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06N	3/8" NPTF Dual P.O. (Inline Body Only)																																																					
51E	SAE-6 Single P.O.																																																					
51N	SAE-6 Dual P.O.																																																					

Shipping Weight
 Single 0.27 kg (0.6 lbs.)
 Double 0.45 kg (1.0 lbs.)

06B 3/8" w/ 1/4" Pilot Port

Note: For external thermal options contact factory.

General Description

The MPB-025 Series Valves are single or double Pilot Operated Check Valves. A single Pilot Operated Check Valve can be used to isolate portions of a hydraulic circuit or to provide a free flow path around a restrictive valve. A double Pilot Operated Check Valve will positively lock double acting actuators in position and not allow movement until the actuators are powered into position.

Operation

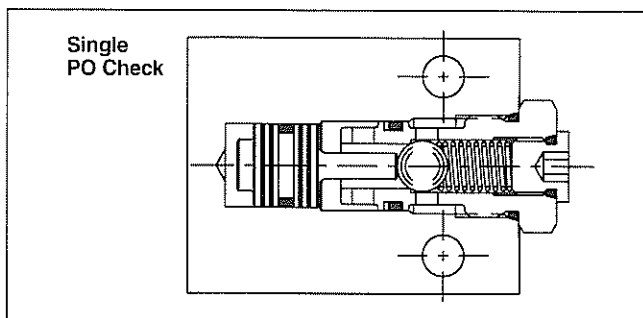
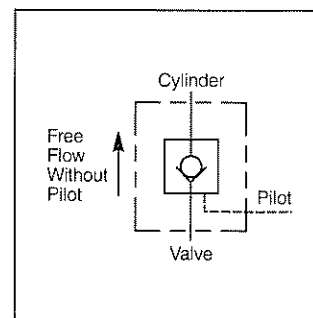
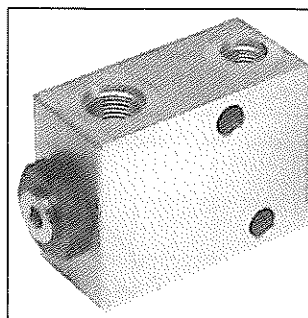
In a single Pilot Operated Check Valve, pressure on the inlet of the check valve creates a force against the ball, pushing it off of its seat and permitting free flow. Reverse flow through the check is blocked by the ball. In the absence of flow and pressure on the valve ports, a double Pilot Operated Check Valve will hold the load in a locked position by the two check valves. The valve allows an actuator to be powered into motion by permitting free flow from the actuator through the opposite check, which is internally piloted, open by the shuttle. This valve works best when used in conjunction with a control valve that vents the valve ports to tank when centered.

Features

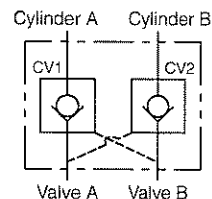
- Hardened and precision ground parts for long life
- Low leakage design
- Fluorocarbon seals standard

Specifications

Maximum Flow	93.8 LPM (25 GPM)
Operating Press.	210 Bar (3000 PSI)
Leakage	1 drop/min. (.07 cc/min.) @ 210 Bar (3000 PSI)
Pilot Ratio	3.3:1
Cracking Press.	1.7 Bar (25 PSI)
Operating Temp. Range (Ambient)	-31.7°C to +121.1°C (-25°F to +250°F) (Fluorocarbon Seals Only)
Body Material	Aluminum
Filtration	ISO code 16/13 SAE Class 4 or better
Mounting	No Restrictions
Single PO Check & Shuttle Cavity	CDD-1009
Double PO Check & Shuttle Cavity	CDD-1031

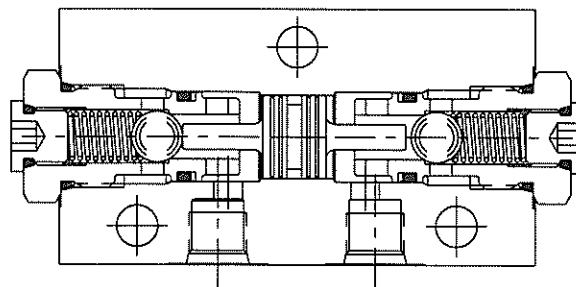


Symbol



Construction

Dual PO Check



CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

SOLENOID VALVES

SPECIALTY VALVES

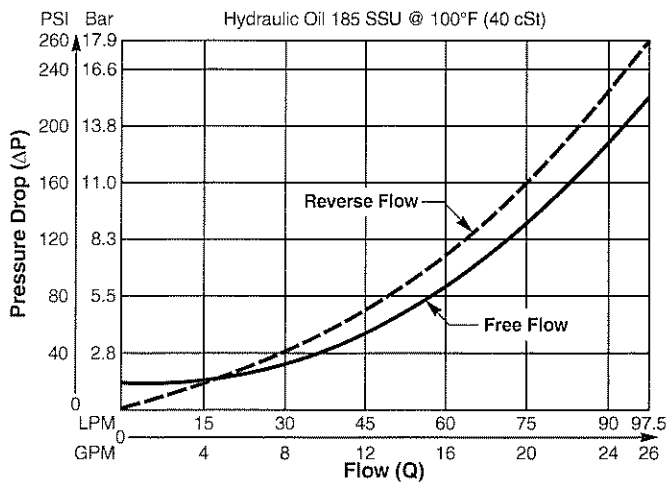
COILS

BODIES

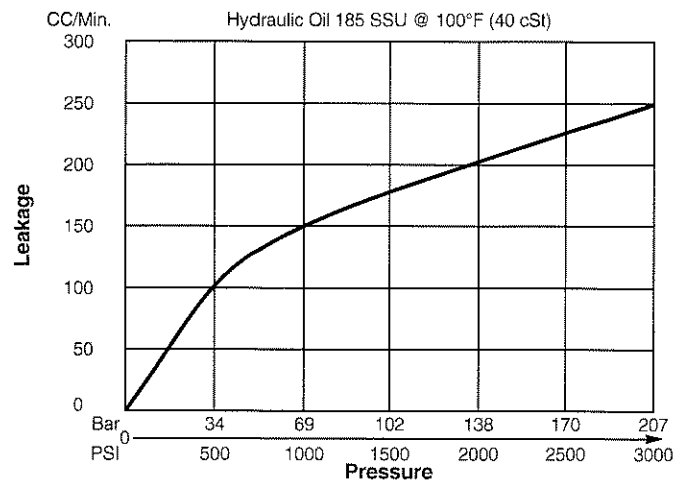
TECHNICAL DATA

Performance Curves

Flow vs. Pressure Drop



Typical Pilot Piston Leakage

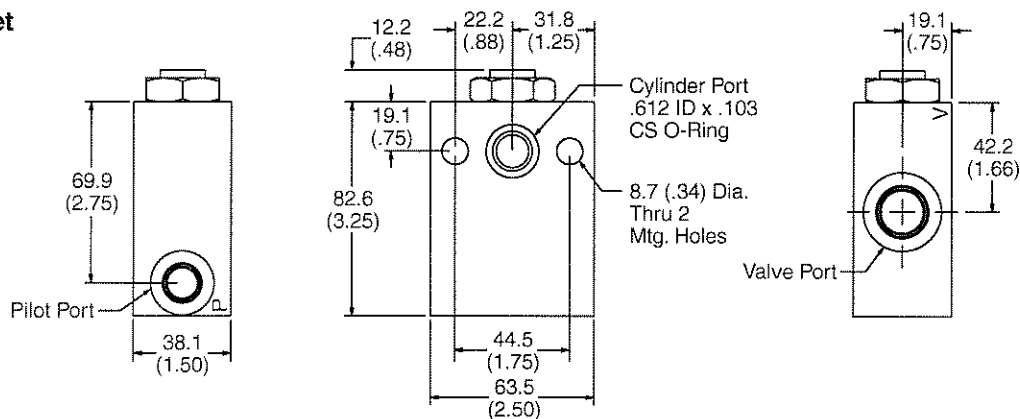


— Free Flow from Valve Port to Cylinder Port.
 - - - Reverse Flow from Cylinder Port to Valve Port.

Note: Pilot pistons with O-rings are available for systems where typical leakage would be detrimental to valve performance. See "Seals" segment on the "Ordering Information" page.

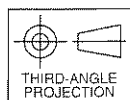
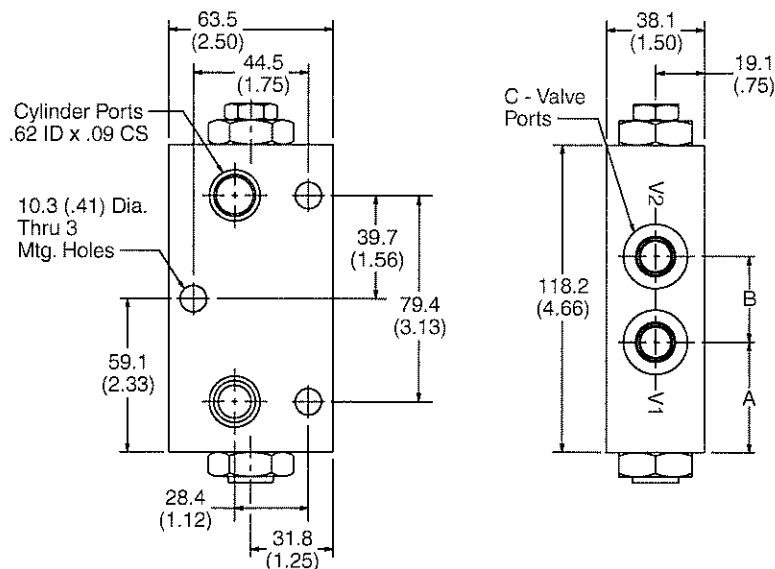
Dimensions *Inch equivalents for millimeter dimensions are shown in (**)

Single Gasket



Dual Gasket

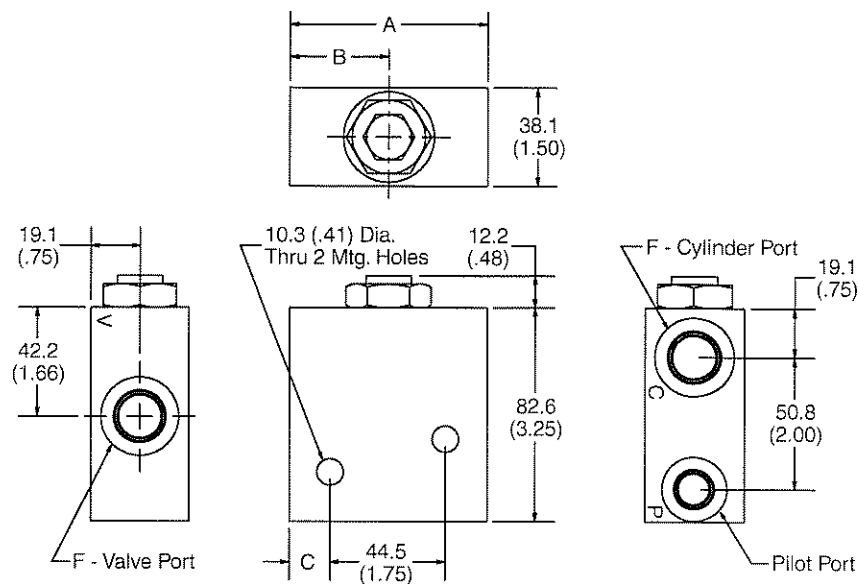
A	B	Ports C
42.1 (1.66)	33.3 (1.31)	3/8 NPTF or SAE-8
1.56 (39.7)	38.1 (1.50)	1/2 NPTF or SAE-10



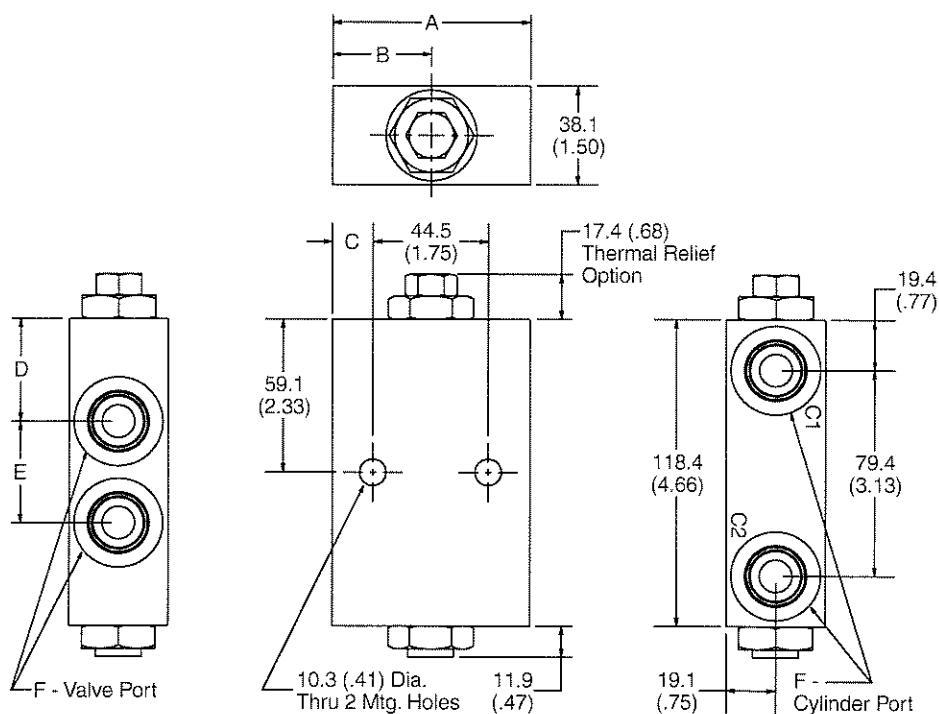
mpb-025.pm6.5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)

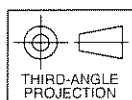
Single Inline



Dual Inline



A	B	C	D	E	Ports F
63.5 (2.50)	31.8 (1.25)	9.5 (.38)	42.1 (1.66)	33.3 (1.31)	3/8 NPTF or SAE-8
63.5 (2.50)	31.8 (1.25)	9.5 (.38)	39.7 (1.56)	33.3 (1.31)	1/2 NPTF or SAE-10
76.2 (3.00)	38.1 (1.50)	15.9 (.62)	37.3 (1.47)	42.9 (1.69)	3/4 NPTF or SAE-12



mpb-025.pm6.5, bl, gn

CHECKS & SHUTTLES
LOAD & MOTOR CONTROLS
VOLUME CONTROLS
PRESSURE CONTROLS
SOLENOID VALVES
SPECIALTY VALVES
COILS
BODIES
TECHNICAL DATA

MPB

Mobile Pilot Operated Check Valve

—

025

Flow Rate

—

D

Design

—

Seals

—

Body Style

—

Internal Thermal Options

—

Ports

Code	Type
D	Direct Spring

Code	Rate
025	93.8 LPM (25 GPM)

Code	Description
F	Fluorocarbon
R	Fluorocarbon with O-Ring on Pilot Piston

Code	Type
A	Single Inline
B	Single Gasket
D	Dual Inline
E	Dual Gasket

Code	Type
A	A Port Thermal
B	B Port Thermal
D	Dual Thermal
N	No Thermal

Code	Type
06B	Single P.O. NPTF 3/8" Work Port, 1/4" Pilot Port
06N	Dual P.O. NPTF 3/8" Work Ports
08B	Single P.O. NPTF 1/2" Work Port, 1/4" Pilot Port
08N	Dual P.O. NPTF 1/2" Work Ports
12B	Single P.O. NPTF (Inline Body Only) 3/4" Work Port, 1/4" Pilot Port
12N	Dual P.O. NPTF (Inline Body Only) 3/4" Work Ports
52E	Single P.O. SAE SAE-8 Work Port, SAE-6 Pilot Port
52N	Dual P.O. SAE SAE-8 Work Ports
53E	Single P.O. SAE SAE-10 Work Port, SAE-6 Pilot Port
53N	Dual P.O. SAE SAE-10 Work Ports
54E	Single P.O. SAE (Inline Body Only) SAE-12 Work Port, SAE-6 Pilot Port
54N	Dual P.O. SAE (Inline Body Only) SAE-12 Work Ports

Note: For external thermal options contact factory.

Shipping Weight
Single 0.45 kg (1.0 lbs.)
Double 0.68 kg (1.5 lbs.)

mpb-025 pm6.5, bf, gn

General Description

The LD1 Series Single and Double Pilot Operated Check Valve will positively lock an actuator or permit flow to a portion of a circuit and not allow reverse flow until adequate pilot pressure is applied to the pilot port. In addition, the LD1 has a compound poppet allowing a decompression function.

Operation

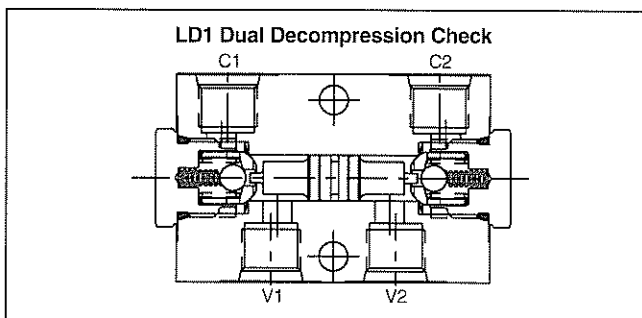
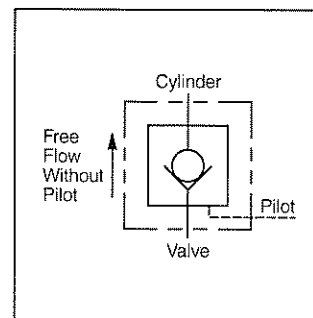
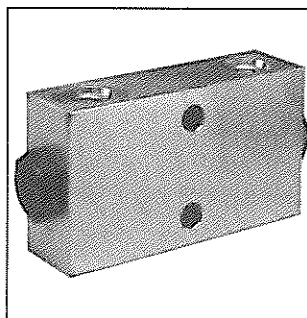
Free flow is permitted from the valve port to the cylinder port through the check valve. In the absence of pilot pressure, this check prevents reverse flow. The compound poppet consists of an internal spherical poppet (ball) within the main poppet. When pilot pressure is applied by the piston, it unseats the spherical poppet. Flow through this small seat area lowers the load or locked pressure. This is known as the decompression stage. With the load pressure reduced, the main poppet is then piloted open allowing full reverse flow.

Features

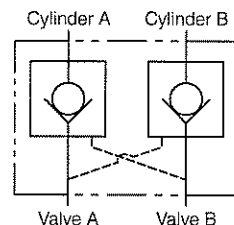
- Hardened, precision ground poppets for durability
- Low leakage design
- Smooth operation
- Fluorocarbon seals standard

Specifications

Maximum Inlet Flow	25 single & dual body 30 LPM (8 GPM) 38, 50, 06, & 08 dual bodies 93.75 LPM (25 GPM)
Max. Inlet Press.	210 Bar (3000 PSI)
Leakage	5 drops/min. (.33 cc/min.) @ 210 Bar (3000 PSI)
Decompression Ratio	25 single body - 10:1 25 dual body - 8:1 38, 50, 06, & 08 single body - 15:1 38, 50, 06, & 08 dual body - 11:1
Opening Ratio	25 single body - 1.3:1 25 dual body - 1:1 38, 50, 06, & 08 single body - 1.4:1 38, 50, 06, & 08 dual body - 1:1
Operating Temp. Range (Ambient)	-31.7°C to +121.1°C (-25°F to +250°F) (Fluorocarbon Seals Only)
Body Material	Steel
Filtration	ISO code 16/13, SAE Class 4 or better
Mounting	No Restrictions

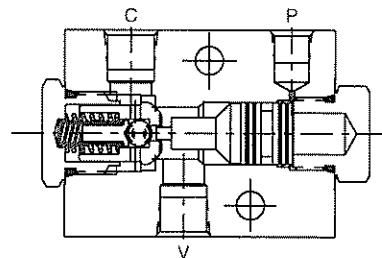


Symbol

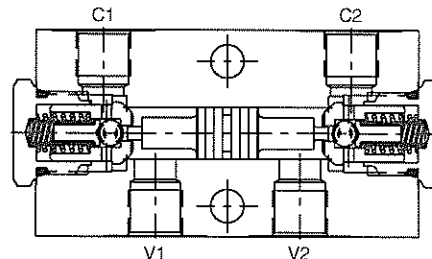


Construction

LD1 Single Decompression Check



LD1 Dual Decompression Check



General Description

The LD2 Series Double Pilot Operated Check Valve will positively lock an actuator or permit flow to a portion of a circuit and not allow reverse flow until adequate pilot pressure is applied to the pilot port. In addition, the LD2 has a compound poppet allowing a decompression function. The valve is particularly well suited to high flow dump applications in conjunction with an extending cylinder. This type of application is frequently seen on the packing cylinder of a refuse truck.

Operation

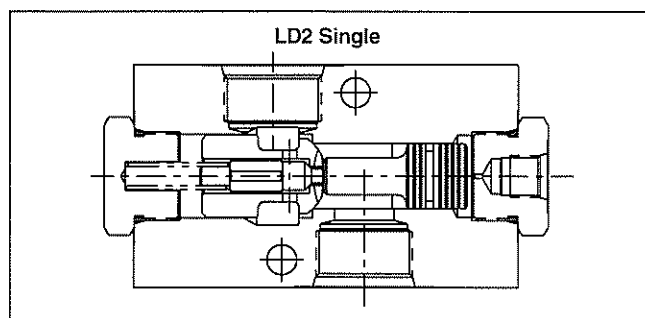
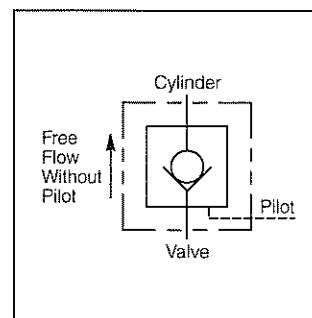
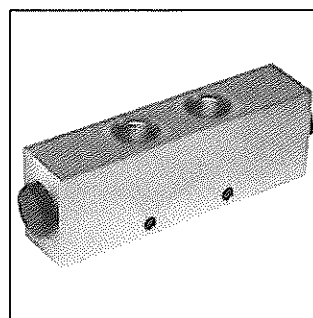
Free flow is permitted from the valve port to the cylinder port through the check valve. In the absence of pilot pressure, this check prevents reverse flow. The compound poppet consists of an internal spherical poppet (ball) within the main poppet. When pilot pressure is applied by the piston, it unseats the spherical poppet. Flow through this small seat area lowers the load or locked pressure. This is known as the decompression stage. With the load pressure reduced, the main poppet is then piloted open allowing full reverse flow.

Features

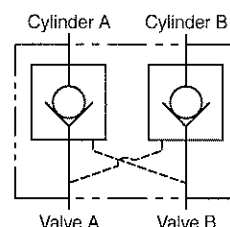
- Hardened, precision ground poppets for durability
- Low leakage design
- Smooth operation
- Fluorocarbon seals standard

Specifications

Max. Inlet Flow	187.5 L/M (50 GPM)
Maximum Inlet Pressure	210 Bar (3000 PSI)
Leakage	5 drops/min. (.33 cc/min.) @ 210 Bar (3000 PSI)
Decompression Ratio	12:1
Opening Ratio	1:1
Operating Temp. Range (Ambient)	-31.7°C to +121.1°C (-25°F to +250°F) (Fluorocarbon Seals Only)
Body Material	Steel
Filtration	ISO code 16/13, SAE Class 4 or better
Mounting	No Restrictions

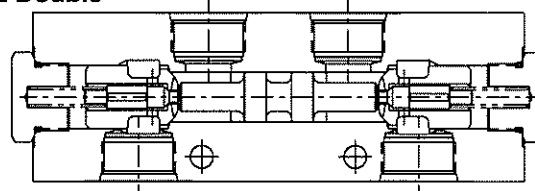


Symbol



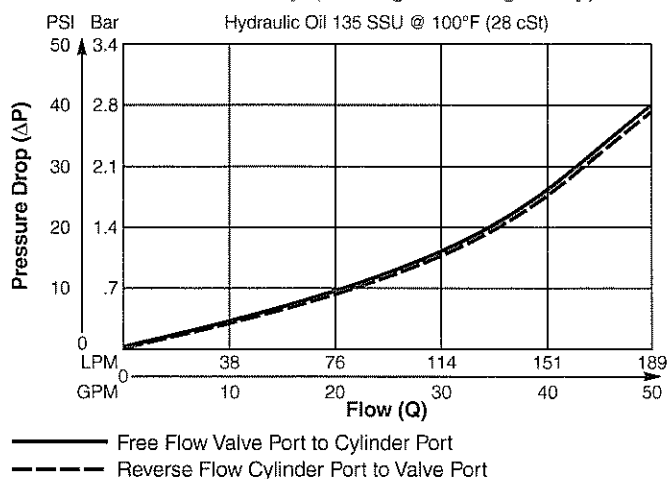
Construction

LD2 Double



Performance Curves

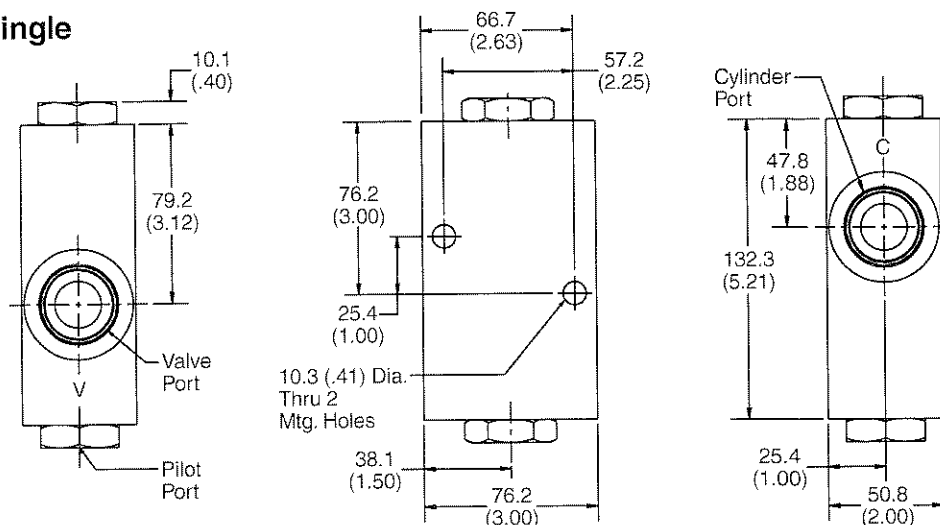
Flow vs. Pressure Drop (Through cartridge only)



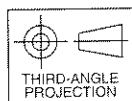
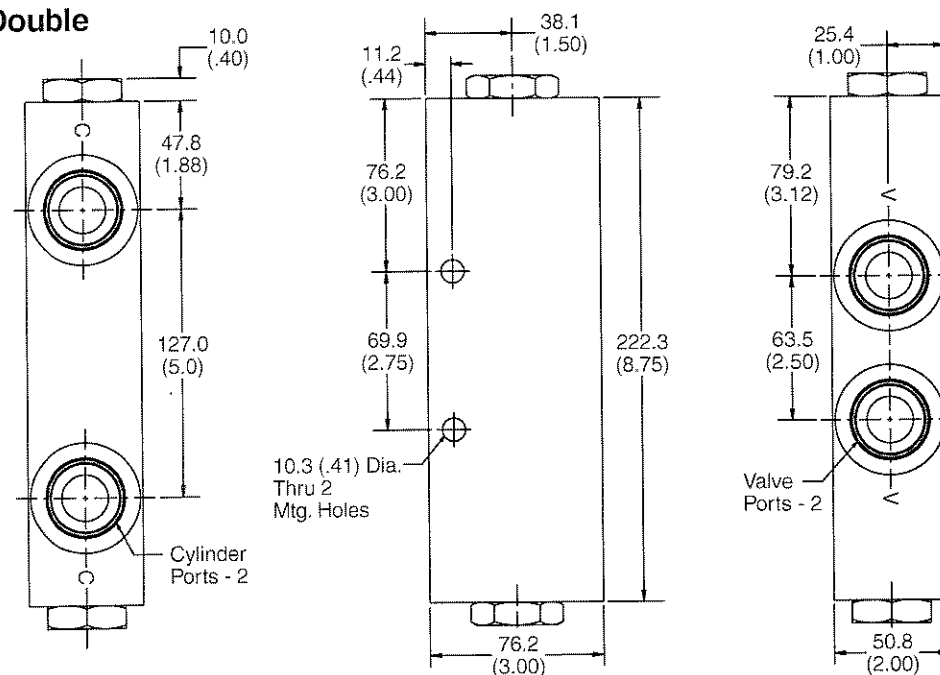
ld2.pm6.5, bl, gn

Dimensions *Inch equivalents for millimeter dimensions are shown in (**)

Series LD2 Single



Series LD2 Double



Ordering Information

LD2

Lock Valve

—

16

Port Size

Code	Size
16	SAE 16

—

2

Port Type

Code	Type
2	SAE

Type

Code	Type
S	Single
D	Double

Piston Options

Code	Description
Omit	Without O-Ring (Std.)
R	With O-Ring

Shipping Weight

Shipping Weight

LD2 Single – 2.72 kg (6 lbs.)

LD2 Double – 4.76 kg (10.5 lbs.)

General Description

The ASH Series, In-line Shuttle Valves are typically used in load sensing, pilot circuits to select the greatest pressure, and hydraulic brake release applications. They provide pressure to the outlet port regardless of which actuator port has the greatest pressure.

Operation

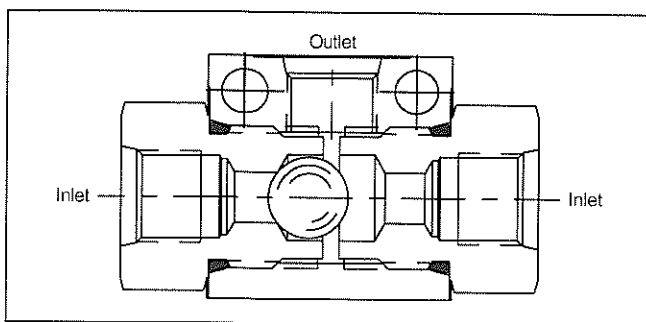
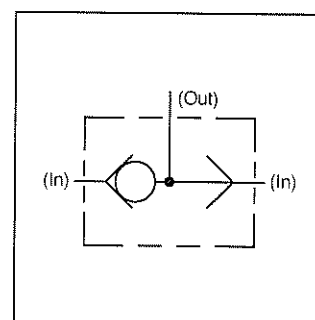
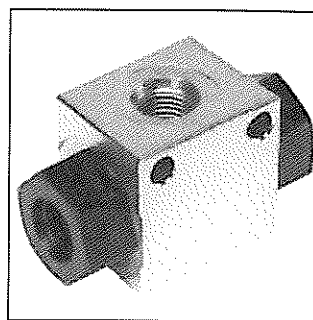
The valve consists of a single ball placed between two opposing check seats. When one inlet port is pressurized, the ball is forced against the opposite seat, blocking that inlet and providing a flow path to the outlet port.

Features

- Compact in size
- In-line mounting
- Easily adaptable to various applications

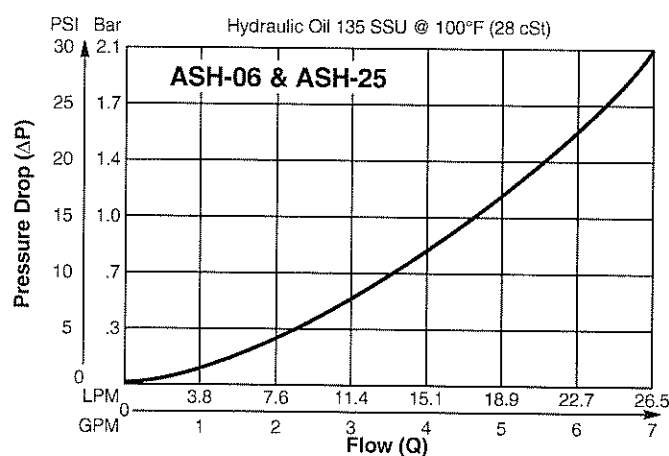
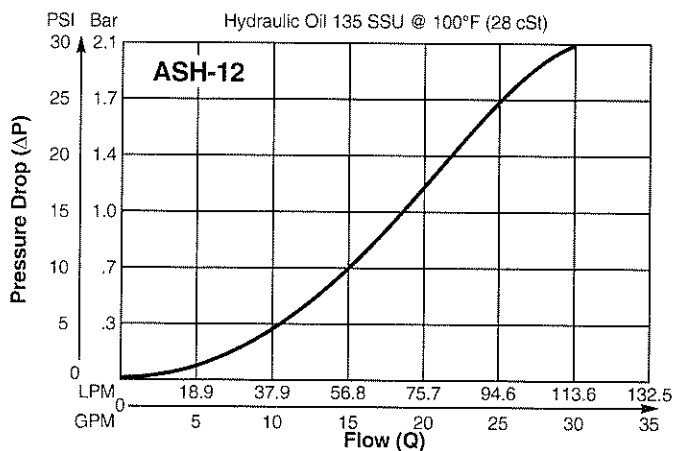
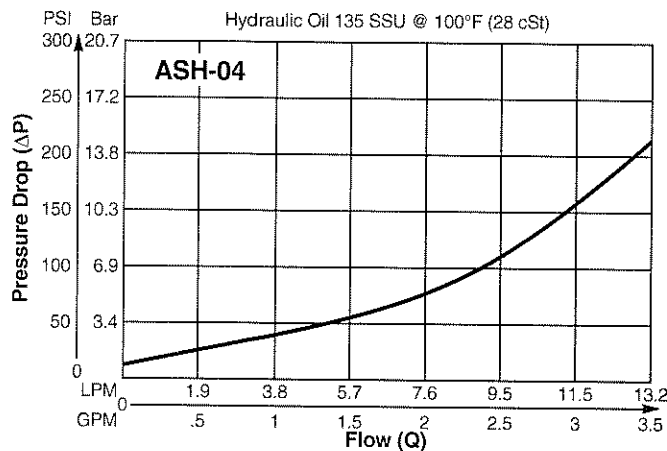
Specifications

Inlet Flow	ASH-04-3 11.3 LPM (3 GPM) ASH-06-2 22.5 LPM (6 GPM) ASH-25-1 22.5 LPM (6 GPM) ASH-12-2 112.5 LPM (30 GPM)
Maximum Inlet Pressure	210 Bar (3000 PSI)
Leakage	5 drops/min. (.33 cc/min.) at 172 Bar (2500 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (-40°F to +200°F) (Nitrile Seals Only)
Body Material	ASH-04-3 Steel (Chromate Plated) ASH-06-2 Steel (Chromate Plated) ASH-25-1 Steel (Chromate Plated) ASH-12-2 Aluminum (Anodized)
Filtration	ISO code 16/13, SAE Class 4 or better
Mounting	No Restrictions



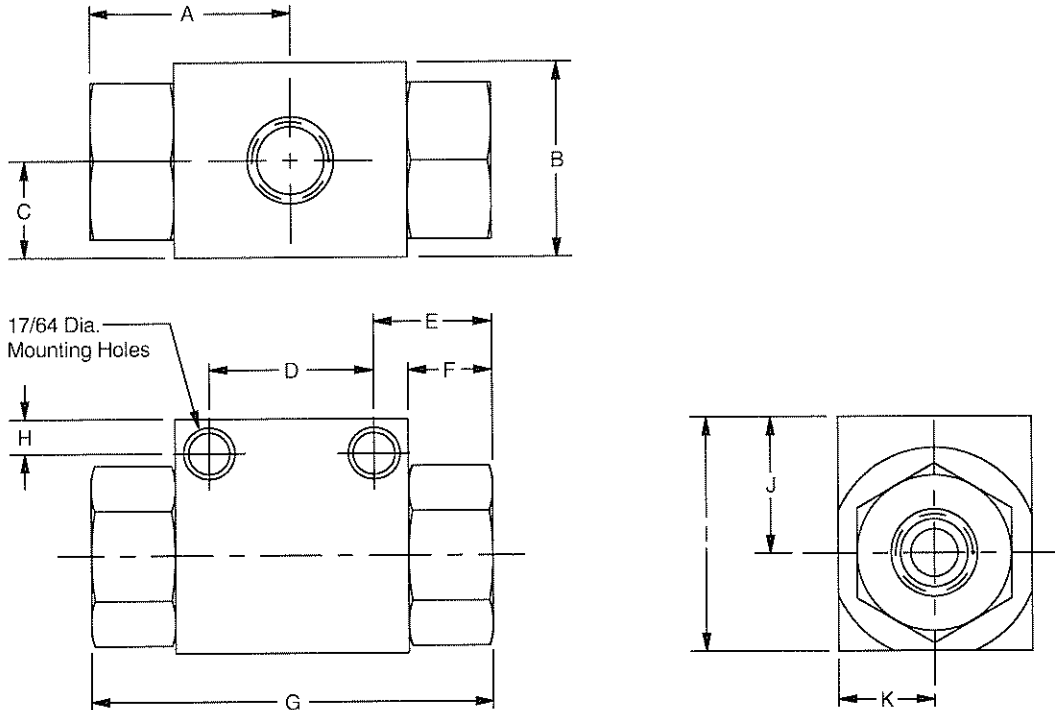
Performance Curves

Flow vs. Pressure Drop
 (Through cartridge only)

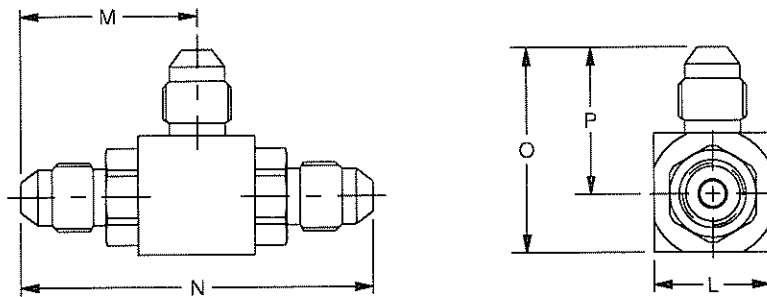


ash-04, pm6.5, bl, gn

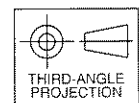
Dimensions *Inch equivalents for millimeter dimensions are shown in (**)



Model	A	B	C	D	E	F	G	H	I	J	K
ASH-06-2	32.8	31.8	15.7	26.9	19.3	13.7	65.5	5.6	38.1	22.2	15.7
ASH-25-1	(1.29)	(1.25)	(.62)	(1.06)	(.76)	(.54)	(2.58)	(.22)	(1.50)	(.88)	(.62)
ASH-12-2	46.2	47.8	25.4	N/A	N/A	22.4	95.0	N/A	63.5	39.1	23.9
	(1.82)	(1.88)	(1.00)			(.88)	(3.74)		(2.50)	(1.54)	(.94)



Model	L	M	N	O	P
ASH-04-3	19.1	28.8	57.4	33.3	23.9
	(.75)	(1.14)	(2.26)	(1.31)	(.94)



Ordering Information



Inline
Shuttle Valve



Port Size



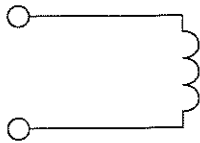
Port Type

Shipping Weight

Cartridge Only	ASH-04-3	.36 kg (0.8 lbs.)
	ASH-06-2	.45 kg (1.0 lbs.)
	ASH-25-1	.45 kg (1.0 lbs.)
	ASH-12-2	.90 kg (2.0 lbs.)

Code	Size
04	1/4" JIC
06	SAE-6
12	SAE-12
25	1/4" NPTF

Code	Type
1	NPTF
2	SAE (#6 & #12)
3	Male JIC (1/4" only)

	COIL SIZE	DESCRIPTION	PAGE NO.
	1/2" I.D.	"DS" Coils	CL1-CL2
	5/8" I.D.	"DS" Coils	CL3-CL4
	1" I.D.	"DS" Coils	CL5-CL6
	1/2" I.D.	"DSL" and "DSH" Unicoils	CL7-CL8
	5/8" I.D.	"DSL" and "DSH" Unicoils	CL9-CL10
	1/2" I.D.	"DSL" and "DSH" Waterproof Coils	CL11
	5/8" I.D.	"DSL" and "DSH" Waterproof Coils	CL12

CHECKS &
SHUTTLESLOAD & MOTOR
CONTROLSVOLUME
CONTROLSPRESSURE
CONTROLSSOLENOID
VALVESSPECIALTY
VALVES

COILS

BODIES

TECHNICAL
DATA

General Description

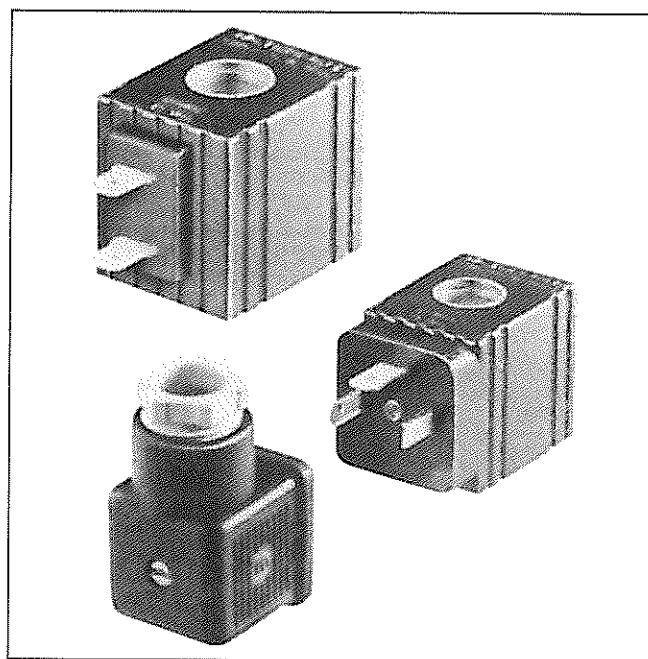
Coils are used on "DS" Series up to 210 Bar (3000 PSI) pressure application. The coils are smaller (height and width) than the Unicoils used on "DSL" Series operating at 210 Bar (3000 PSI) or "DSH" Series operating at 345 Bar (5000 PSI) and also **non-interchangeable**.

Features

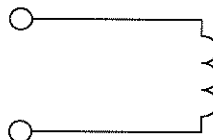
- One piece compact encapsulated design
- Minimal amperage draw
- Numerous terminals and voltages
- High watt design available for intermittent operation
- Heavy gauge color coded lead wire with built-in strain relief
- U.L. recognized on most DC coils (consult factory)
- For C.S.A. approval consult factory
- 180°C Class H wire standard
- 200°C Class N wire on high watt models

Specifications

Wattage	12 Watts — Standard 25 Watts — High Watt
Duty Rating	Continuous @ 100% voltage
Wire Class	Class H for all voltages 12 Watt Class N for all voltages 25 Watt
A.C. Rectifier	Integral full wave bridge
Lead Wire	18 gauge 24" long, 600 volt rating
Lead Wire Strain Relief	34 kg (75 lbs.) @ 21°C (70°F) & 18 kg (40 lbs.) @ 93°C (200°F)
Encapsulating Material	Glass filled nylon, resistant to moisture, caustic solutions, fungus, and temperatures from -40°C (-40°F) to 200°C (392°F)
Color	Black — Standard Red — High Watt



Symbol

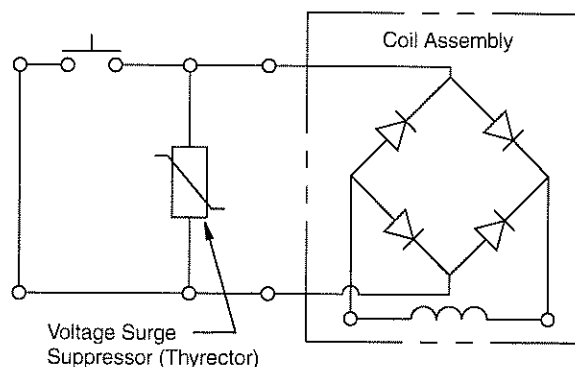


NOTE:

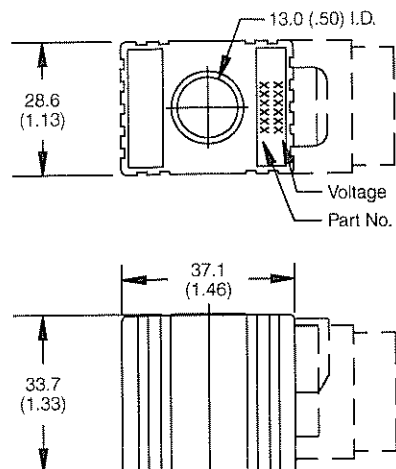
Parker A.C. Coils incorporate integrally molded full wave rectifiers which are rated for reverse voltage peaks of 1000 volts maximum. For voltage transients greater than 1000 volts P.I.V., Harris Thyrector V150LA10A or V150LA20A for 115 VAC and V250LA15A or V250LA40A for 200 VAC is recommended.

Coil Assembly

No inductive or capacitive loads can be installed between surge suppressor and rectified valves.



Terminal Styles and Dimensions



NOTES:

1. Coil to be installed with part number on nut side.
2. Lead wires are 18 gauge, 24" long. Available with different weather pack connectors.
3. For additional terminals, voltages and wattages, consult factory for details.

Type P Dual Spade Thru Hole Tinned Brass SAE 1B-0.25 33.5 (1.32)	Type W Double Lead 18 Gauge 24" Long 25.8 (1.02)	Type W1 Single Lead (Internal Ground) 18 Gauge 24" Long 25.9 (1.02)	Type S1 Single Screw (Internal Ground) 8-32 Screw & Nut 33.1 (1.31)
Type C Double Lead With Conduit Connector (1/2" NPTF) 18 Gauge 24" Long 40.4 (1.59)	Type D ISO Standard DIN 43650 Plug Face Only 36.6 (1.44)	Type S Double Screw 8-32 Screw & Nut 33.1 (1.31)	Type J AMP Junior Timer Type C 40.8 (1.61)
Type P1 Single Spade Thru Hole Tinned Brass SAE 1B-0.25 33.5 (1.32)	Type M Metri-Pack Mating Connector Delphi #12162193 49.4 (1.94)		

Coil Part Numbers

Voltage	Watts	Type P Double Spade	Type W Double Lead	Type W1 Single Lead	Type S1 Single Screw	Type C Conduit Connector	Type D DIN Plug Face	Type S Double Screw	Amps*	Lead Wire Color
6 VDC	12	851007-006	851009-006	851015-006	851013-006	851003-006	851005-006	851011-006	2.22	Black
	25	851008-006	851010-006	851016-006	851014-006	851004-006	851006-006	851012-006	3.90	
10 VDC	12	851007-010	851009-010	851015-010	851013-010	851003-010	851005-010	851011-010	1.43	Yellow
	25	851008-010	851010-010	851016-010	851014-010	851004-010	851006-010	851012-010	2.48	
12 VDC	12	851007-012	851009-012	851015-012	851013-012	851003-012	851005-012	851011-012	1.05	Red
	25	851008-012	851010-012	851016-012	851014-012	851004-012	851006-012	851012-012	1.94	
18 VDC	12	851007-018	851009-018	851015-018	851013-018	851003-018	851005-018	851011-018	0.75	Gray
	25	851008-018	851010-018	851016-018	851014-018	851004-018	851006-018	851012-018	1.42	
24 VDC	12	851007-024	851009-024	851015-024	851013-024	851003-024	851005-024	851011-024	0.52	Blue
	25	851008-024	851010-024	851016-024	851014-024	851004-024	851006-024	851012-024	1.17	
36 VDC	12	851007-036	851009-036	851015-036	851013-036	851003-036	851005-036	851011-036	0.38	Orange
	25	851008-036	851010-036	851016-036	851014-036	851004-036	851006-036	851012-036	0.73	
48 VDC	12	851007-048	851009-048	851015-048	851013-048	851003-048	851005-048	851011-048	0.26	Green
	25	851008-048	851010-048	851016-048	851014-048	851004-048	851006-048	851012-048	0.59	
120 VAC	12					851003-120	851005-120		0.14	Brown
	25					851004-120	851006-120		0.23	
230 VAC	12					851003-240	851005-240		0.08	White
	25					851004-240	851006-240		0.12	
440 VAC	12					851003-480	851005-480		0.04	Violet
	25					851004-480	851006-480		0.07	

*Amperage draw @ 21°C (70°F)

General Description

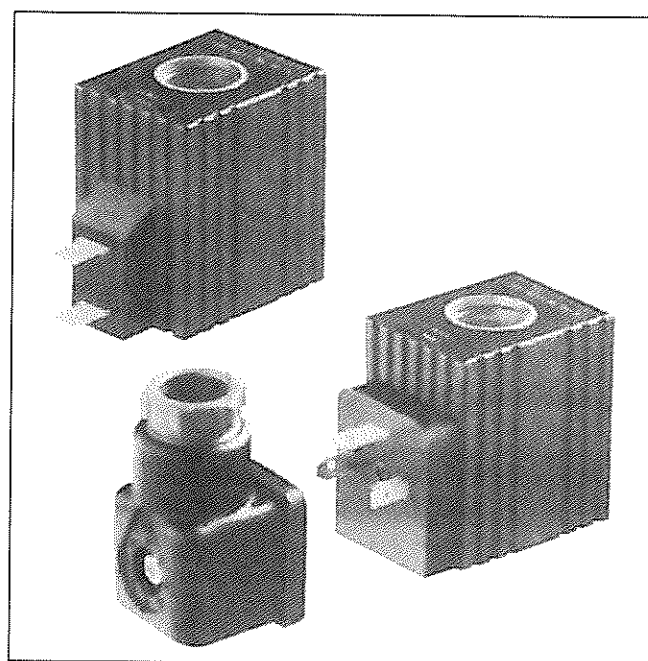
Coils are used on "DS" Series up to 210 Bar (3000 PSI) pressure application. The coils are smaller (height and width) than the Unicoils used on "DSL" Series operating at 210 Bar (3000 PSI) or "DSH" Series operating at 345 Bar (5000 PSI) and also **non-interchangeable**.

Features

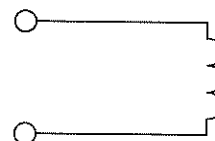
- One piece compact encapsulated design
- Minimal amperage draw
- Numerous terminals and voltages
- Coil interchangeability with all Series 10, 12, 16 and 20 valves
- High watt design optional
- Heavy gauge color coded lead wire with built-in strain relief
- 180°C Class H wire standard
- 200°C Class N wire on high watt models

Specifications

Wattage	17 Watts — Standard 30 Watts — High Watt
Duty Rating	Continuous @ 100% voltage
Wire Class	Class H for all voltages 17 Watt Class N for all voltages 30 Watt
A.C. Rectifier	Integral full wave bridge
Lead Wire	18 gauge 24" long, 600 volt rating
Lead Wire Strain Relief	34 kg (75 lbs.) @ 21°C (70°F) & 18 kg (40 lbs.) @ 93°C (200°F)
Encapsulating Material	Glass filled nylon, resistant to moisture, caustic solutions, fungus, and temperatures from -40°C (-40°F) to 200°C (392°F)
Color	Black — Standard Red — High Watt



Symbol

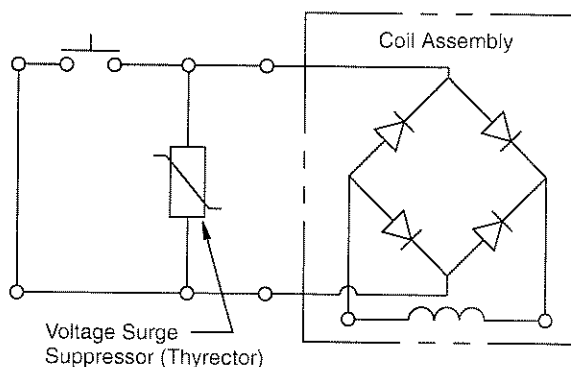


NOTE:

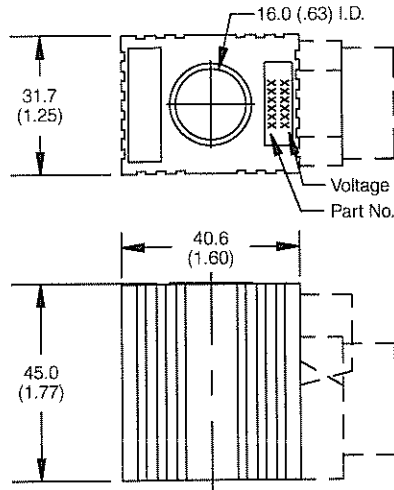
Parker A.C. Coils incorporate integrally molded full wave rectifiers which are rated for reverse voltage peaks of 1000 volts maximum. For voltage transients greater than 1000 volts P.I.V., Harris Thyrector V150LA10A or V150LA20A for 115 VAC and V250LA15A or V250LA40A for 200 VAC is recommended.

Coil Assembly

No inductive or capacitive loads can be installed between surge suppressor and rectified valves.



Terminal Styles and Dimensions



NOTES:

1. Coil to be installed with part number on nut side.
2. Lead wires are 18 gauge, 24" long. Available with different weather pack connectors.
3. For additional terminals, voltages and wattages, consult factory for details.

Type P Dual Spade Thru Hole Tinned Brass SAE 1B-0.25 	Type W Double Lead 18 Gauge 24" Long 	Type W1 Single Lead (Internal Ground) 18 Gauge 24" Long 	Type S1 Single Screw (Internal Ground) 8-32 Screw & Nut
Type C Double Lead With Conduit Connector (1/2" NPTF) 18 Gauge 24" Long 	Type D ISO Standard DIN 43650 Plug Face Only 	Type S Double Screw 8-32 Screw & Nut 	Type J AMP Junior Timer Type C
Type P1 Single Spade Thru Hole Tinned Brass SAE 1B-0.25 	Type M Metri-Pack Mating Connector Delphi #12162193		

Coil Part Numbers

Voltage	Watts	Type P Double Spade	Type W Double Lead	Type W1 Single Lead	Type S1 Single Screw	Type C Conduit Connector	Type D DIN Plug Face	Type S Double Screw	Amps*	Lead Wire Color
6 VDC	17	851021-006	851023-006	851027-006	851025-006	851017-006	851019-006	851053-006	2.43	Black
	30	851022-006	851024-006	851028-006	851026-006	851018-006	851020-006	851054-006	4.84	
10 VDC	17	851021-010	851023-010	851027-010	851025-010	851017-010	851019-010	851053-010	1.58	Yellow
	30	851022-010	851024-010	851028-010	851026-010	851018-010	851020-010	851054-010	3.28	
12 VDC	17	851021-012	851023-012	851027-012	851025-012	851017-012	851019-012	851053-012	1.44	Red
	30	851022-012	851024-012	851028-012	851026-012	851018-012	851020-012	851054-012	2.30	
18 VDC	17	851021-018	851023-018	851027-018	851025-018	851017-018	851019-018	851053-018	0.94	Gray
	30	851022-018	851024-018	851028-018	851026-018	851018-018	851020-018	851054-018	1.86	
24 VDC	17	851021-024	851023-024	851027-024	851025-024	851017-024	851019-024	851053-024	0.72	Blue
	30	851022-024	851024-024	851028-024	851026-024	851018-024	851020-024	851054-024	1.20	
36 VDC	17	851021-036	851023-036	851027-036	851025-036	851017-036	851019-036	851053-036	0.43	Orange
	30	851022-036	851024-036	851028-036	851026-036	851018-036	851020-036	851054-036	0.88	
48 VDC	17	851021-048	851023-048	851027-048	851025-048	851017-048	851019-048	851053-048	0.30	Green
	30	851022-048	851024-048	851028-048	851026-048	851018-048	851020-048	851054-048	0.58	
120 VAC	17					851017-120	851019-120		0.15	Brown
	30					851018-120	851020-120		0.24	
230 VAC	17					851017-240	851019-240		0.08	White
	30					851018-240	851020-240		0.13	
440 VAC	17					851017-480	851019-480		0.04	Violet
	30					851018-480	851020-480		0.07	

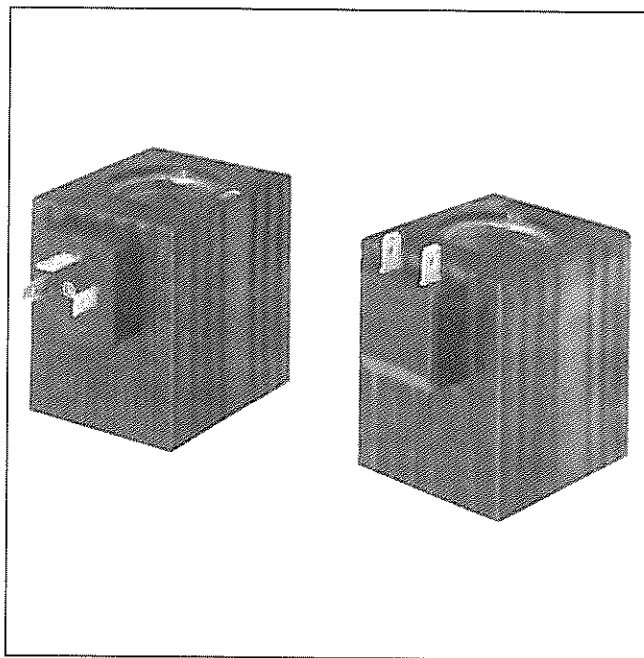
*Amperage draw @ 21°C (70°F)

General Description

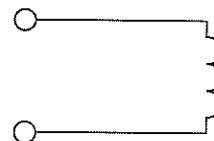
Coils are used on applications up to 210 Bar (3000 PSI). See coil specifications for 30 watts and 42 watts.

Features

- One piece compact encapsulated design
- Numerous terminals and voltages
- Heavy gauge color coded lead wire with built-in strain relief
- 200°C Class N wire standard
- U.L. recognized on most DC coils (consult factory)



Symbol



Specifications

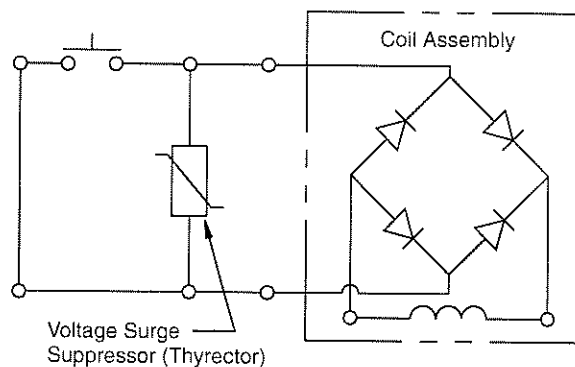
Wattage	42 Watts — Standard 30 Watts — Low Watt
Duty Rating	Continuous @ 100% voltage
Wire Class	Class N for all voltages
Lead Wire	18 gauge 24" long, 600 volt rating
Lead Wire Strain Relief	34 kg (75 lbs.) @ 21°C (70°F) & 18 kg (40 lbs.) @ 93°C (200°F)
Encapsulating Material	Glass filled nylon, resistant to moisture, caustic solutions, fungus, and temperatures from -40°C (-40°F) to 200°C (392°F)
Color	Black

NOTE:

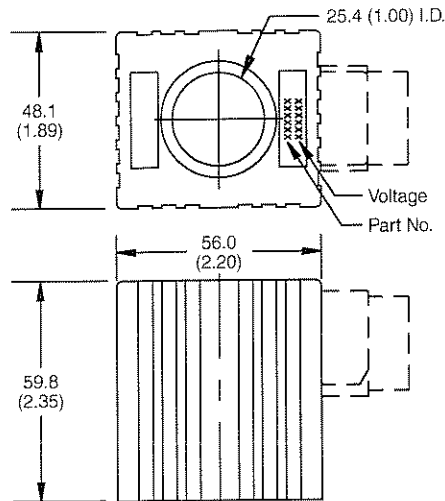
Parker A.C. Coils incorporate integrally molded full wave rectifiers which are rated for reverse voltage peaks of 1000 volts maximum. For voltage transients greater than 1000 volts P.I.V., Harris Thyrector V150LA10A or V150LA20A for 115 VAC and V250LA15A or V250LA40A for 200 VAC is recommended.

Coil Assembly

No inductive or capacitive loads can be installed between surge suppressor and rectified valves.

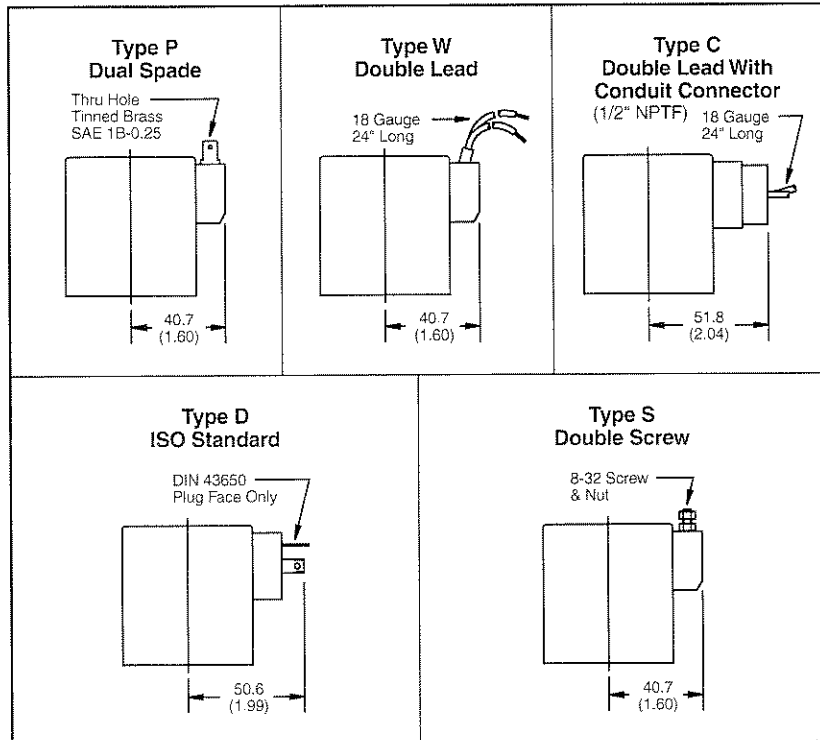


Terminal Styles and Dimensions



NOTES:

1. Coil to be installed with part number on nut side.
2. Lead wires are 18 gauge, 24" long. Available with different weather pack connectors.
3. For additional terminals, voltages and wattages, consult factory for details.



Coil Part Numbers

Wattage	Voltage	Type P Double Spade	Type W Double Lead	Type D ISO STANDARD	Amps	Lead Wire Color
42 Watts	12 VDC	851060-012	851062-012	851058-012	3.53	Red
42 Watts	24 VDC	851060-024	851062-024	851058-024	1.79	Blue
30 Watts	12 VDC	853496-012	853497-012	853495-012	2.50	Red
30 Watts	24 VDC	853496-024	853497-024	853495-024	1.25	Blue

General Description

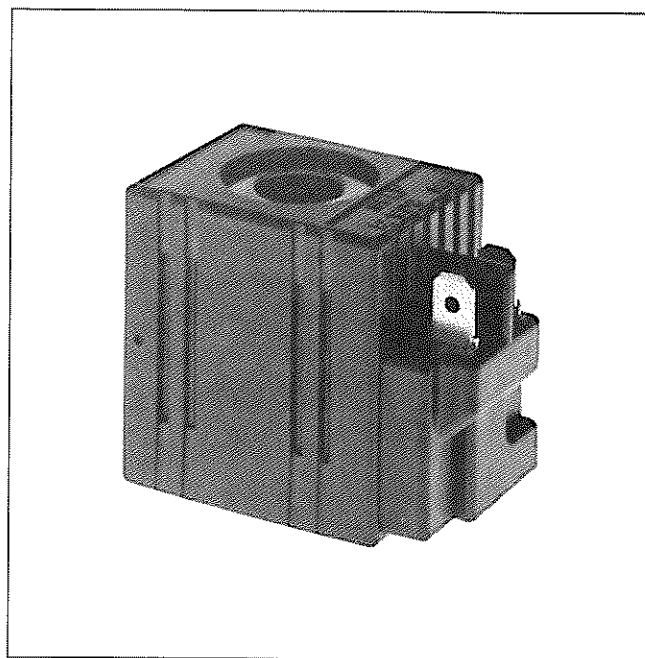
Unicoils are used on all DSL* Unisol 210 Bar (3000 PSI) and DSH* 345 Bar (5000 PSI) rated valves only. These coils are larger (height and width) than the coils used on DS* valves operating at 210 Bar (3000 PSI). The coils for DS*, 210 Bar (3000 PSI) valves are **non-interchangeable**. For specifications and ordering information for coils used on DS* valves rated to 210 Bar (3000 PSI), see basic specification coil data.

Features

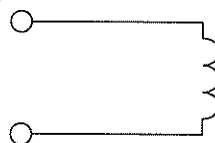
- One piece compact encapsulated design
- Minimal amperage draw
- Numerous terminals and voltages
- Coils made with high quality 200°C Class N magnet wire
- Superior thick internal iron frame surrounding copper windings to increase coil's flux density
- More ampere turns to deliver more magnetic flux per input voltage
- A.C. coil operates @ 50/60 cycle (Hz)

Specifications

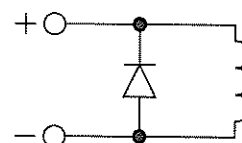
Wattage	14 Watts
Duty Rating	Continuous @ 100% voltage
Wire Class	Class N - 200°C (392°F)
A.C. Rectifier	Integral full wave bridge
Lead Wire	18 gauge 24" long, 600 volt rating
Lead Wire Strain Relief	34 kg (75 lbs.) @ 21°C (70°F) & 18 kg (40 lbs.) @ 93°C (200°F)
Encapsulating Material	Rynite, resistant to moisture, caustic solutions, fungus, and temperatures from -40°C (-40°F) to 200°C (392°F)
Color	Coil - Black Frame - Yellow zinc dichromate



Symbols



Standard
(Without Diode)



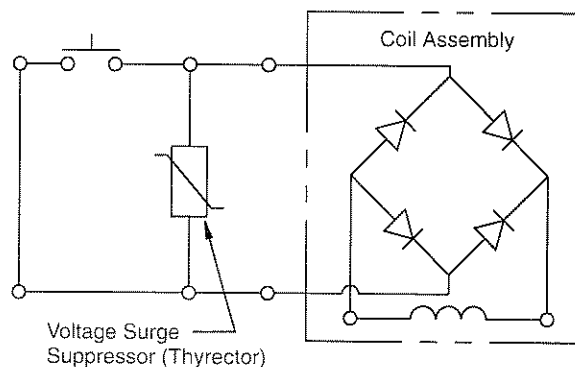
Optional
(With Diode Consult Factory)

NOTE:

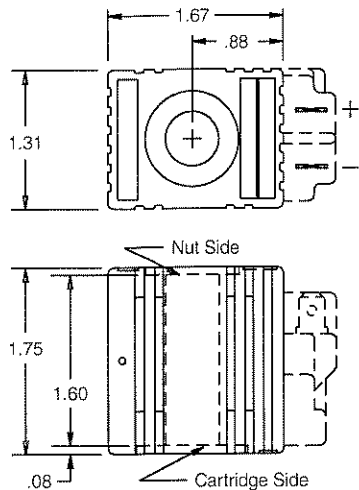
Parker A.C. Coils incorporate integrally molded full wave rectifiers which are rated for reverse voltage peaks of 1000 volts maximum. For voltage transients greater than 1000 volts P.I.V., Harris Thyrector V150LA10A or V150LA20A for 115 VAC and V250LA15A or V250LA40A for 200 VAC is recommended.

Coil Assembly

No inductive or capacitive loads can be installed between surge suppressor and rectified valves.



Terminal Styles and Dimensions



NOTES:

1. Coil to be installed with part number on nut side.
2. Lead wires are 18 gauge, 24" long. Available with different weather pack connectors.
3. For additional terminals, voltages & wattages, consult factory for details.

Type P Dual Spade Thru Holes Tinned Brass SAE 1B-0.25 1.12 1.51	Type W Double Lead 18 Gauge 24" Long 1.36	Type W1 Single Lead 18 Gauge 24" Long 1.36	Type S1 Single Screw 8-32 Screw & Nut 1.20 1.58	Type C Conduit Conn. Double Lead 1/2" NPTF 1.49
Type D DIN Plug Face ISO Standard DIN 43650 Plug Face Only 1.47	Type S Double Screw 8-32 Screw & Nut 1.20 1.58	Type J AMP Junior Type C - Male Connector 1.20	Type P1 Single Spade Thru Holes Tinned Brass SAE 1B-0.25 1.12 1.51	Type M Metri-Pack Mating Connector Delphi #12162193 1.20

Coil Part Numbers

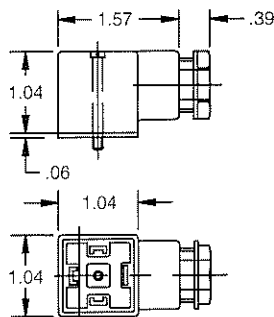
Voltage	Type P Double Spade	Type W Double Wire	Type C Conduit Conn.	Type D DIN Plug Face	Amps*	Ohms	Watts	Lead Wire Color
10 VDC	S8LPD010	S8LWD010	S8LCD010	S8LDD010	1.45	6.9	14.4	Yellow
12 VDC	S8LPD012	S8LWD012	S8LCD012	S8LDD012	1.17	10.2	14.1	Red
24 VDC	S8LPD024	S8LWD024	S8LCD024	S8LDD024	0.57	41.8	13.8	Blue
120 VAC	—	—	S8LCA120	S8LDA120	0.127	832	13.4	Brown
230 VAC	—	—	S8LCA240	S8LDA240	0.07	3032	14.7	White

*Amperage draw @ 21°C (70°F)

Coil Accessories For DIN Connector 43650

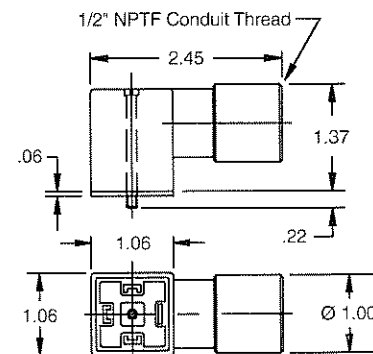
Cable Gland

Type	Non-Rectified	Rectified	Color	Cable Dim. Range
PG9	710549-00	712126-01	Black	Ø .240 to .310 in.
PG11	692914	712126-00	Black	Ø .310 to .400 in.
PG11	692915	—	Grey	Ø .310 to .400 in.



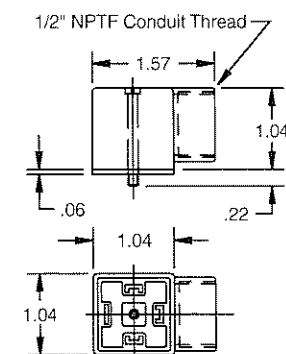
Conduit

Rectified	Color
712704-00	Black



Conduit

Non-Rectified	Color
710549-02	Black

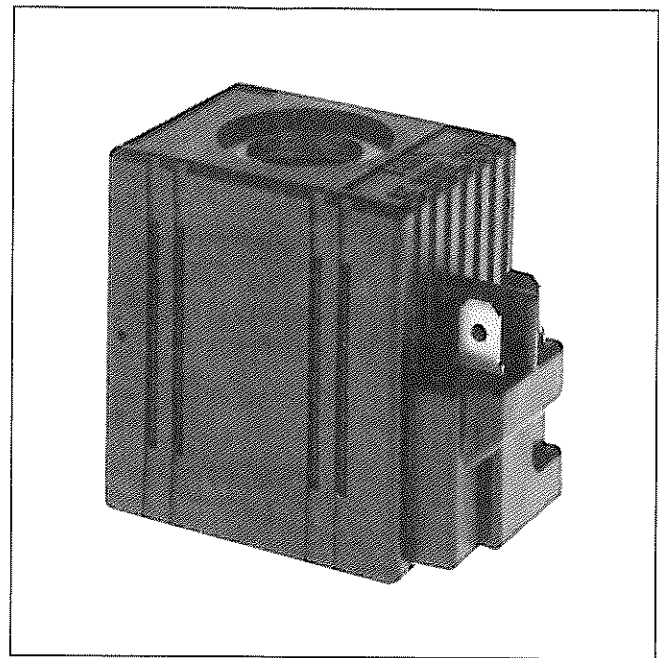


General Description

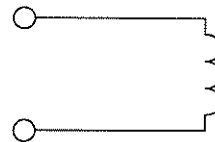
Unicoils are used on all DSL* Unisol 210 Bar (3000 PSI) and DSH* 345 Bar (5000 PSI) rated valves only. These coils are larger (height and width) than the coils used on DS* valves operating at 210 Bar (3000 PSI). The coils for DS*, 210 Bar (3000 PSI) valves are **non-interchangeable**. For specifications and ordering information for coils used on DS* valves rated to 210 Bar (3000 PSI), see basic specification coil data.

Features

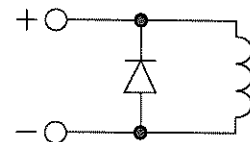
- One piece compact encapsulated design
- Minimal amperage draw
- Numerous terminals and voltages
- Coils made with high quality 200°C Class N magnet wire
- Superior thick internal iron frame surrounding copper windings to increase coil's flux density
- More ampere turns to deliver more magnetic flux per input voltage
- A.C. coil operates @ 50/60 cycle (Hz)



Symbols



Standard
(Without Diode)



Optional
(With Diode Consult Factory)

Specifications

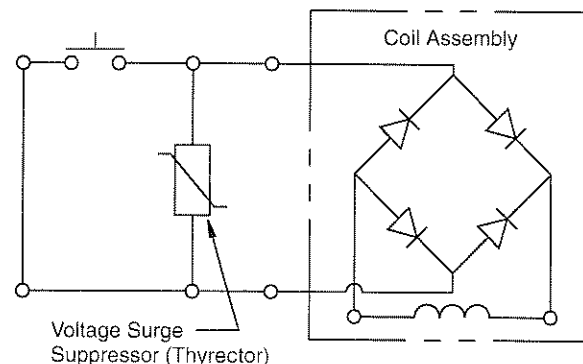
Wattage	20 Watts
Duty Rating	Continuous @ 100% voltage
Wire Class	Class N - 200°C (392°F)
A.C. Rectifier	Integral full wave bridge
Lead Wire	18 gauge 24" long, 600 volt rating
Lead Wire Strain Relief	34 kg (75 lbs.) @ 21°C (70°F) & 18 kg (40 lbs.) @ 93°C (200°F)
Encapsulating Material	Rynite, resistant to moisture, caustic solutions, fungus, and temperatures from -40°C (-40°F) to 200°C (392°F)
Color	Coil - Black Frame - Yellow zinc dichromate

NOTE:

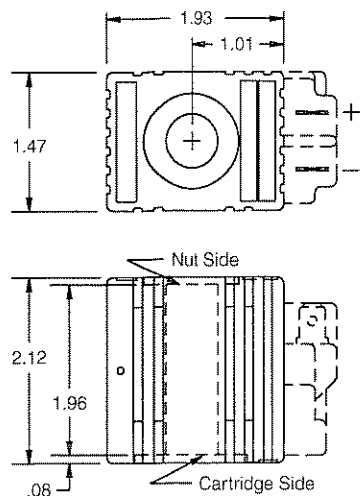
Parker A.C. Coils incorporate integrally molded full wave rectifiers which are rated for reverse voltage peaks of 1000 volts maximum. For voltage transients greater than 1000 volts P.I.V., Harris Thyrector V150LA10A or V150LA20A for 115 VAC and V250LA15A or V250LA40A for 200 VAC is recommended.

Coil Assembly

No inductive or capacitive loads can be installed between surge suppressor and rectified valves.



Terminal Styles and Dimensions



NOTES:

1. Coil to be installed with part number on nut side.
2. Lead wires are 18 gauge, 24" long. Available with different weather pack connectors.
3. For additional terminals, voltages & wattages, consult factory for details.

Type P Dual Spade Thru Holes Tinned Brass SAE 1B-0.25 1.14 1.52	Type W Double Lead 18 Gauge 24" Long 1.38	Type W1 Single Lead 18 Gauge 24" Long 1.37	Type S1 Single Screw 8-32 Screw & Nut 1.22 1.59	Type C Conduit Conn. Double Lead 1/2" NPTF 1.50
Type D DIN Plug Face ISO Standard DIN 43650 Plug Face Only 1.49	Type S Double Screw 8-32 Screw & Nut 1.22 1.59	Type J AMP Junior Type C - Male Connector 1.22	Type P1 Single Spade Thru Holes Tinned Brass SAE 1B-0.25 1.14 1.52	Type M Metri-Pack Mating Connector Delphi #12162193 1.22

Coil Part Numbers

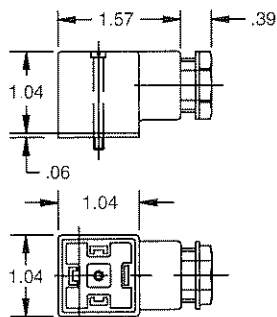
Voltage	Type P Double Spade	Type W Double Wire	Type C Conduit Conn.	Type D DIN Plug Face	Amps*	Ohms	Watts	Lead Wire Color
10 VDC	S10LPD010	S10LWD010	S10LCD010	S10LDD010	2.1	4.8	21	Yellow
12 VDC	S10LPD012	S10LWD012	S10LCD012	S10LDD012	1.67	7.2	20	Red
24 VDC	S10LPD024	S10LWD024	S10LCD024	S10LDD024	0.88	27.4	21	Blue
120 VAC	—	—	S10LCA120	S10LDA120	0.17	626	17.8	Brown
230 VAC	—	—	S10LCA240	S10LDA240	0.09	2400	18.6	White

*Amperage draw @ 21°C (70°F)

Coil Accessories For DIN Connector 43650

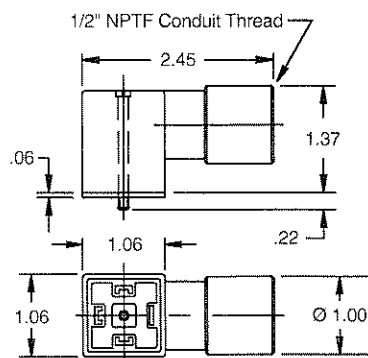
Cable Gland

Type	Non-Rectified	Rectified	Color	Cable Dim. Range
PG9	710549-00	712126-01	Black	Ø .240 to .310 in.
PG11	692914	712126-00	Black	Ø .310 to .400 in.
PG11	692915	—	Grey	Ø .310 to .400 in.



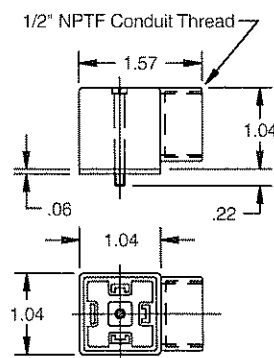
Conduit

Rectified	Color
712704-00	Black



Conduit

Non-Rectified	Color
710549-02	Black



Features

- Waterproof to IP67 and NEMA 6+ rating
- External yoke over mold design
- Minimal amperage draw
- Coil designed for use with 1/2", Unisol "DSL" 210 Bar (3000 PSI) and "DSH" 345 Bar (5000 PSI), type valves only
- Coils made with high quality 200°C Class N magnet wire
- More ampere turns to deliver more magnetic flux per input voltage
- Lead wires are 16 guage, 24 inches long

Coil Part Numbers

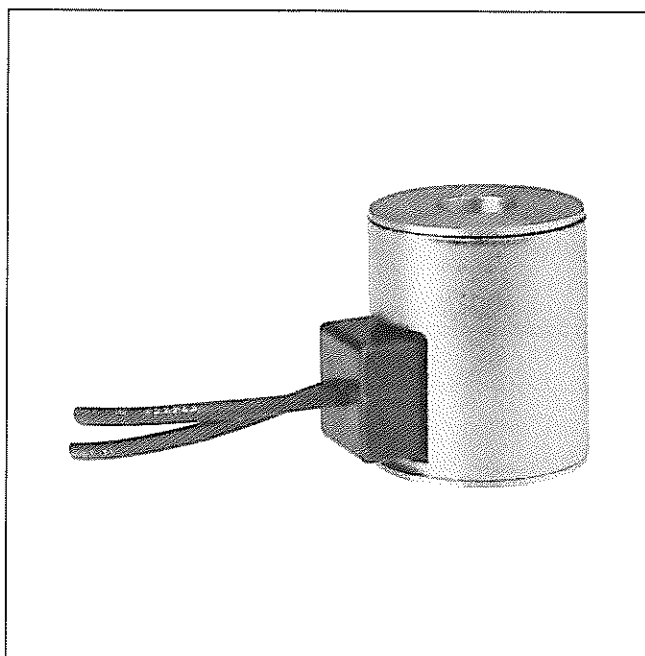
Voltage	Type WP Double Wire	Amps*	Ohms	Watts
10 VDC	SW8LWD010	1.4	7.1	14
12 VDC	SW8LWD012	1.17	10.3	14
24 VDC	SW8LWD024	0.61	39.5	14.6

*Amperage draw @ 21°C (70°F)

NOTE: For additional voltages and wattages, consult factory for details.

Specifications

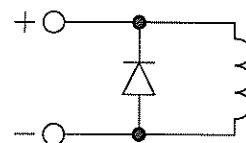
Wattage	14 Watts
Duty Rating	Continuous @ 100% voltage
Wire Class	Class N - 200°C (392°F)
Lead Wire	16 gauge 24" long, 600 volt rating
Lead Wire Strain Relief	34 kg (75 lbs.) @ 21°C (70°F) & 18 kg (40 lbs.) @ 93°C (200°F)
Encapsulating Material	Cyglass, resistant to moisture, caustic solutions, fungus, and temperatures from -40°C (-40°F) to 200°C (392°F)
Ratings	IP67 and NEMA 6+
Color	Coil - Black Frame - Yellow zinc dichromate



Symbols

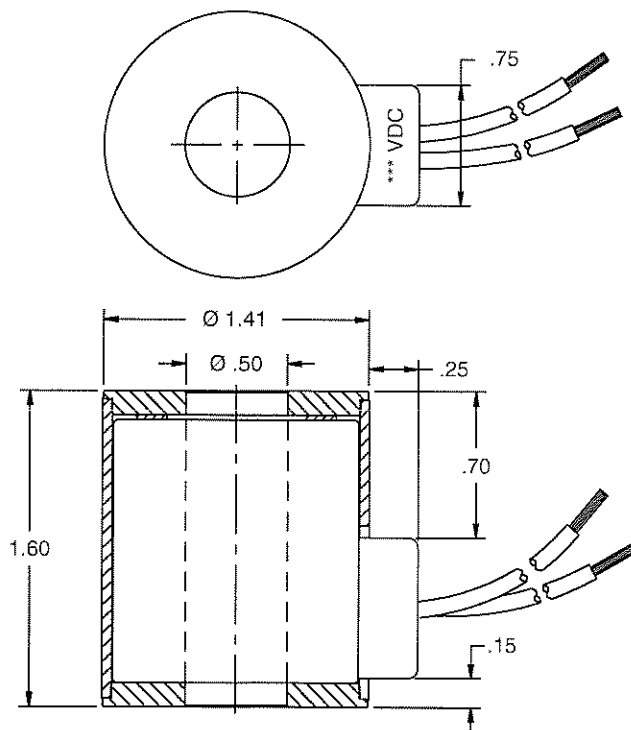


Standard
(Without Diode)



Optional
(With Diode Consult Factory)

Dimensions



Features

- Waterproof to IP67 and NEMA 6+ rating
- External yoke over mold design
- Minimal amperage draw
- Coil designed for use with 5/8", Unisol "DSL" 210 Bar (3000 PSI) and "DSH" 345 Bar (5000 PSI), type valves only
- Coils made with high quality 200°C Class N magnet wire
- More ampere turns to deliver more magnetic flux per input voltage
- Lead wires are 16 guage, 24 inches long

Coil Part Numbers

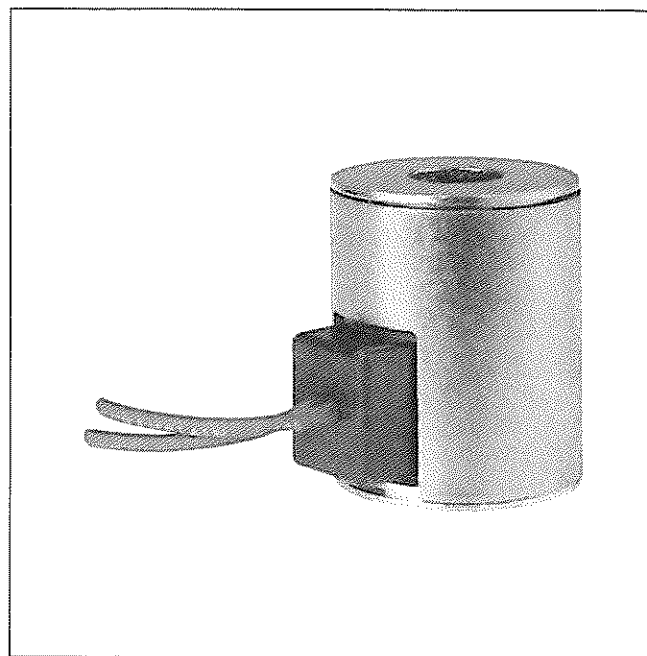
Voltage	Type WP Double Wire	Amps*	Ohms	Watts
10 VDC	SW10LWD010	2.2	4.5	22
12 VDC	SW10LWD012	1.67	7.2	20
24 VDC	SW10LWD024	0.92	28.2	22

*Amperage draw @ 21°C (70°F)

NOTE: For additional voltages and wattages, consult factory for details.

Specifications

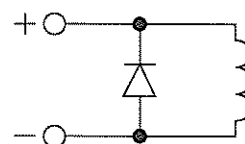
Wattage	20 Watts
Duty Rating	Continuous @ 100% voltage
Wire Class	Class N - 200°C (392°F)
Lead Wire	16 gauge 24" long, 600 volt rating
Lead Wire Strain Relief	34 kg (75 lbs.) @ 21°C (70°F) & 18 kg (40 lbs.) @ 93°C (200°F)
Encapsulating Material	Cyglass, resistant to moisture, caustic solutions, fungus, and temperatures from -40°C (-40°F) to 200°C (392°F)
Ratings	IP67 and NEMA 6+
Color	Coil - Black Frame - Yellow zinc dichromate



Symbols

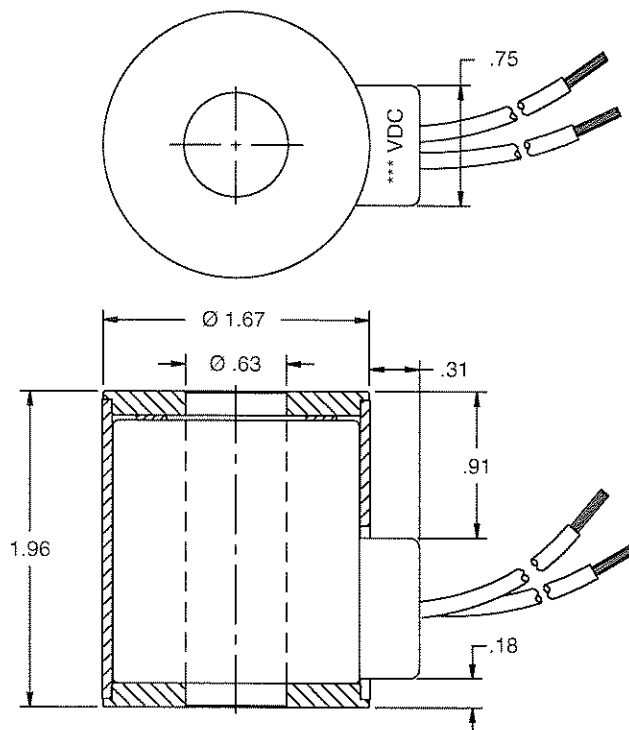


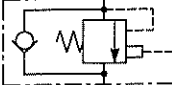
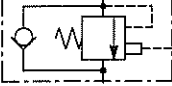
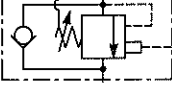
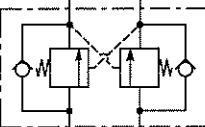
Standard
(Without Diode)



Optional
(With Diode Consult Factory)

Dimensions



SERIES	DESCRIPTION	FLOW	PRESSURE	PAGE NO.
	Technical Tips			LM1-LM5
Single Counterbalance	MHB-015 Counterbalance Valves	15 GPM	3000 PSI	LM6-LM9
	MHB-030 Counterbalance Valves	30 GPM	3000 PSI	LM10-LM13
Non-Vented	MHB-060 Counterbalance Valves	60 GPM	5000 PSI	LM14-LM17
	MHB-120 Counterbalance Valves	120 GPM	5000 PSI	LM18-LM21
Vented				
Single Counterbalance	MHC-010 Counterbalance Valves	10 GPM	5000 PSI	LM22-LM25
	MHC-022 Counterbalance Valves	25 GPM	5000 PSI	LM26-LM29
Non-Vented	MHC-025 Counterbalance Valves	38 GPM	5000 PSI	LM30-LM33
	MHC-050 Counterbalance Valves	80 GPM	5000 PSI	LM34-LM37
Vented	MHC-120 Counterbalance Valves	180 GPM	5000 PSI	LM38-LM39
	CB101 Counterbalance Valves	12 GPM	5000 PSI	LM40-LM42
Dual Motor Control without Vent Port	MMB-015 Motor Control Valves	15 GPM	3000 PSI	LM43-LM48
	MMB-025 Motor Control Valves	25 GPM	3000 PSI	LM49-LM54
	MMB-100 Motor Control Valves	100 GPM	3000 PSI	LM55-LM60
	MMB-160 Motor Control Valves	200 GPM	3000 PSI	LM55-LM60

CHECKS &
SHUTTLESLOAD & MOTOR
CONTROLSVOLUME
CONTROLSPRESSURE
CONTROLSSOLENOID
VALVESSPECIALTY
VALVES

COILS

BODIES

TECHNICAL
DATA

Introduction

Counterbalance valves are one of the most misunderstood products in the hydraulic industry. Many people tend to complicate the task of selecting a counterbalance valve and as such avoid opportunities. The goal of this Technical Tips Section is to hopefully eliminate some of this confusion and help you choose the correct valve for your application. It is only a guide! It is not meant to be your only method of input, nor is it meant to replace good hydraulic common sense and reasoning.

Application

DO I NEED A COUNTERBALANCE VALVE?

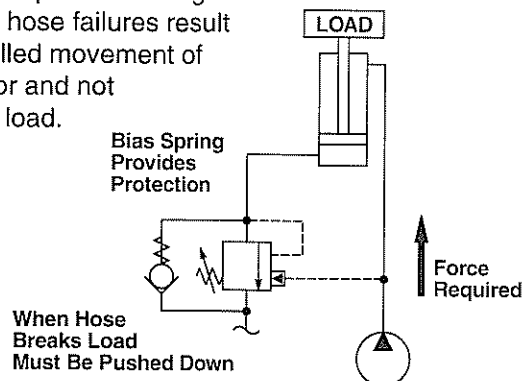
A counterbalance is generally used for one or more of the following purposes:

Control an Overrunning Load – It restricts the flow from an actuator, thus forcing the load to be pushed through the restriction and providing control of the potential runaway load. This also helps in the prevention of cavitation.

Control in Critical Metering Applications – The outward restriction also helps to gain control of systems with varying loads and speeds.

Holding a Load – Much like a pilot operated check valve, a load is held in one direction until the appropriate pilot pressure is available unseat the check and pass fluid.

Help Protect Against Hose Failures – Since the fluid must be pushed through a restriction, hose failures result in a controlled movement of the actuator and not a runaway load.



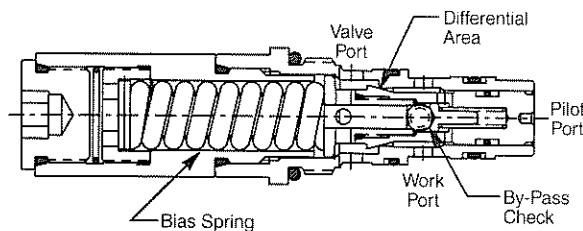
NOTE: Counterbalance Valves are only needed if the application calls for varying loads or varying speeds. If the load and speed are fixed, flow control valves and pilot operated check valves may be substituted at generally a lower cost.

Operation

An understanding of the general operation of a counterbalance valve is required before proceeding further into valve selection.

The counterbalance valve is a pressure control device and functions as follows: Pressure is developed at the Work Port of the holding valve when the actuator is pressurized. This pressure acts on the differential area, and the force generated is counteracted by the bias spring. When there is sufficient pressure present to overcome the spring setting, the poppet begins to shift, allowing fluid to pass through the valve to tank.

To assist in the shifting of the poppet, an external pressure source (generally the opposite side of the actuator) is connected to the pilot port. This pressure is applied to the pilot area and assists the differential area in opening the valve. The pilot assist reduces load pressure required to open the valve, and allows for a reduction in the horsepower required to move the load. If the load attempts to "run away" (move faster than the pump can supply flow), the pilot signal will diminish and the piston will begin to close restricting flow to tank and thus controlling the load. The counterbalance piston will maintain a position that maintains a positive pilot signal and will control the descent of the load.



An added feature of the counterbalance valve is its built-in thermal relief characteristic. A temperature rise can cause thermal expansion of the hydraulic fluid trapped between the actuator and the counterbalance valve's poppet. As the pressure increases and reaches the bias spring setting, the poppet unseats and a few drops of oil are allowed to escape through the valve port of the counterbalance valve. This relieves the thermal expansion of oil, allowing the counterbalance valve to continue holding the load in the same position.

When the flow is reversed to the actuator, then pressure unseats the built-in bypass check portion of the counterbalance valve allowing flow to pass from the valve port to the work port. When no pressure is applied to either port of the counterbalance valve, the load is held in place.

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Valve Series

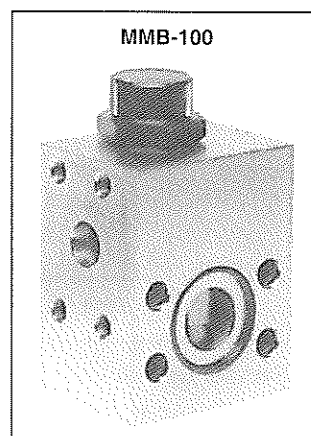
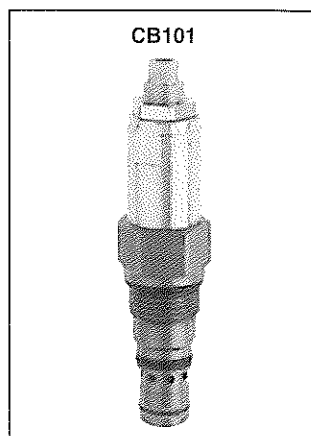
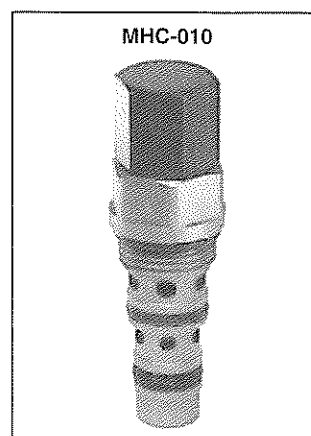
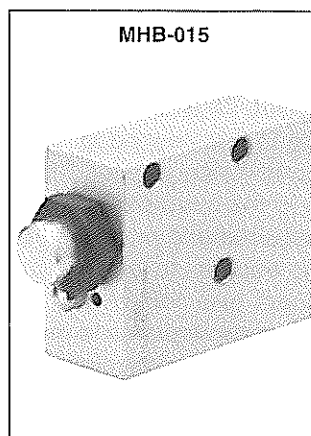
Parker offers the four series of products outlined below:

MHB – The MHB series is a body style counterbalance valve. It is an in-line valve and is ideal for mounting directly to an actuator port. There are various flow rates, pilot ratios, and mounting styles available in the MHB series.

MHC – The MHC series is a threaded cartridge style counterbalance valve. This series is ideal for incorporating into an integrated manifold or for installation directly into the port of the actuator. There are various flow rates and pilot ratios available for the MHC Series.

CB101 – The CB101 is also a threaded cartridge style counterbalance valve. It also is ideal for incorporating into an integrated manifold or for installation directly into the port of the actuator. The CB101 has an industry common cavity (C10-3) and is available in three pilot ratios.

MMB – The MMB is a motor control valve. It is manifold mounted to fit the Parker, TB, TE, TF, & TG motors. It is available in an equal area or a 10:1 pilot ratio. While the basic concept is the same, motor control systems have different characteristics and requirements than cylinder applications. For assistance in applying a motor control valve, consult the Motor Control Section of the Technical Tips.



Selecting Options

Below is a walk through of the options available on the ordering information pages and a brief description of when each would be used.

Flow Selection – Generally the counterbalance valve is sized according to the actual flow the valve will see and not the system flow. Note that the ordering information callout is the nominal flow rate and not the maximum. In other words, refer to the pressure drop curves when sizing the valves. For example: A MHC-010 can flow 25 GPM, but is rated as a 10 GPM valve. It is possible to oversize a counterbalance valve! If the counterbalance is oversized, the annulus between the poppet and the seat is too large, thus the poppet opens too far causing instability. Remember you are gaining control by causing a restriction. If you oversize the counterbalance valve, the restriction is reduced and so is the control.

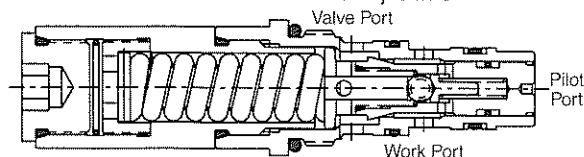
Vented versus Non-Vented – With a standard counterbalance valve, the bias spring is internally vented to tank. This means any pressure on the tank line is sensed in the bias spring chamber and additive to the setting. Thus, the pressure at the work port now must

be greater than the bias spring plus the tank pressure before the counterbalance poppet will shift allowing flow.

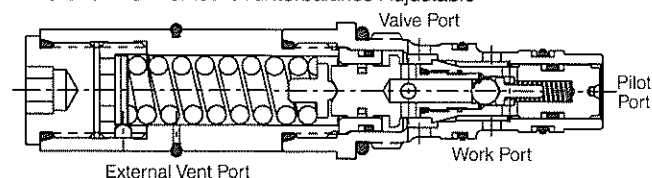
A vented style counterbalance valve relieves the bias spring chamber to atmosphere. Thus, the spring chamber is in no way related to the tank chamber of the counterbalance valve. So, if the pressure on the tank line is high, or if the pressure setting is critical, then a vented style counterbalance valve would be required.

Parker's counterbalance valves are externally vented. This means no extra porting or manifold costs are incurred when a vented counterbalance is needed.

MHC-010-S*S* Non-Vented Counterbalance Adjustable



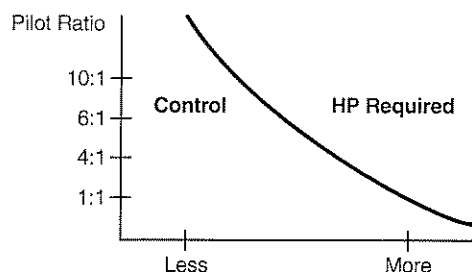
MHC-010-V*S* Vented Counterbalance Adjustable



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Selection Options (Continued)

Pilot Ratio – The pilot ratio is the ratio of the pilot area versus the differential area poppet. Thus, the higher the pilot ratio, the less pressure that is needed to assist the load pressure in unseating the poppet. This means there is less restriction to the overrunning load, resulting in less horsepower required and more control of the load. So higher pilot ratio equates to less restriction to the overrunning load, less control and less horsepower required. Lower ratio equates to more restriction to the overrunning load, more control and more horsepower required. The pilot ratio decision is one of Horsepower versus Control. For reference the most popular ratio is 6:1.



Sample Ratios:

50:1 and 25:1

Primary function is load holding or hose break protection

10:1

Primary function is load holding or hose break protection
Loads moving at fast speeds and positioning is not critical

7:1, 6:1 and 5:1

Most popular starting ratio

4:1 and 3:1

Positioning is critical such as a pick and place application
Instability with 6:1 ratio

1:1

Motor control application

ADJUSTMENT TYPE

Parker offers counterbalance valves with adjustable and non-adjustable pressure settings. The non-adjustable or shimmed version is recommended for most applications as it prevents tampering or improper adjustment uneducated end user.

SELECTING SETTINGS

There are three basic settings to consider before finalizing a counterbalance valve for your application.

Holding Setting – The holding setting is sometimes referred to as the counterbalance setting. It is the

maximum load setting you expect the counterbalance to hold. Note that the counterbalance valve should be set for the absolute maximum hold pressure required. Also note that counterbalance valves are restrictive type devices and as such are not ideal for low pressure applications, such as those below 750 psi. The holding setting is the setting you choose when selecting a counterbalance valve.

Thermal Setting – Counterbalance valves have a built-in thermal relief valve that compensates for the expansion of oil, due to temperature, by bleeding off excess pressure. In other words, the thermal setting is the pressure that the counterbalance will unload at if no pressure is present at the pilot port. Obviously, this setting should be above the holding setting. The Parker counterbalance valves are automatically set 1000 psi above the holding setting of the valve. You do not specify this setting.

Pilot Area – The pilot pressure required to lower the cylinder when fully loaded and unloaded can also be determined before applying the valve. The pilot pressure can be determined by the below equation:

$$P_p = (T_s - L) / R_p$$

P_p = Pilot Pressure

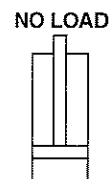
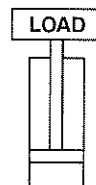
T_s = Thermal Setting

L = Induced Load

R_p = Pilot Ratio

Example:

The maximum load is 3000 psi. A 6:1 Pilot Ratio was chosen and the thermal relief setting is the standard 1000 psi over load setting. What is the pilot pressure required to retract the cylinder if it is fully loaded? What pilot pressure is required to retract the cylinder if there is no load?



FULLY LOADED:

$$P_p = (4000 \text{ psi} - 3000 \text{ psi}) / 6$$

$$P_p = 1000 \text{ psi} / 6$$

$$P_p = 167 \text{ psi}$$

Thus, any time the pilot line sees at least 167 psi, the cylinder could lower the load.

UNLOADED:

$$P_p = (4000 \text{ psi} - 0 \text{ psi}) / 6$$

$$P_p = 4000 \text{ psi} / 6$$

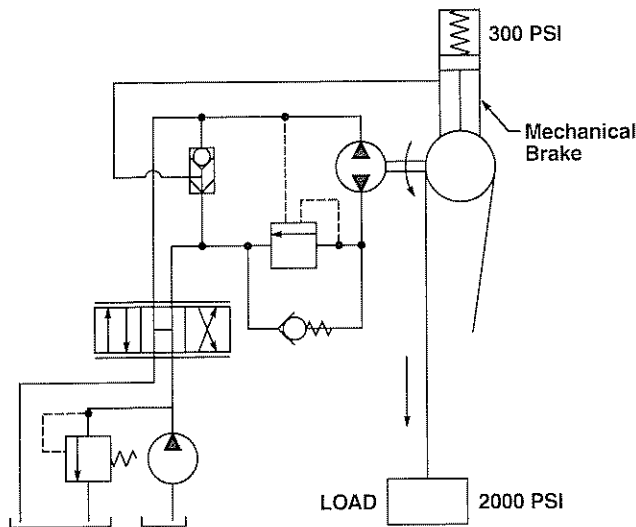
$$P_p = 667 \text{ psi}$$

Thus, at least 667 psi will be needed to lower the cylinder when it is unloaded.

Motor Controls

Counterbalance valves are used in motor circuits to stop overrunning loads and prevent cavitation. Since hydraulic motors leak internally, the counterbalance valve by itself cannot be used to hold the load. So, a mechanical brake is used to hold the load on the motor in place, as shown below. Some typical applications include winches, swing drives, and traction drives.

Brake Applications



When the directional control valve is shifted, hydraulic pressure (usually 300 psi) releases the mechanical brake and allows the load to be moved. The counterbalance valve is needed to provide back pressure to open the brake, then immediately counterbalance the load. Ideally, the brake will be disengaged before the motor begins to rotate. If this sequence is not achieved, the motor will try to rotate against the applied brake reducing the life of the brake. This would be the equivalent of trying to drive with your emergency brake applied. Remember that hydraulic motors are equal area devices. So, in an effort to avoid the movement of the motor prior to the release of the brake, an equal area ratio counterbalance is used. To demonstrate let's look again at the above example with a 10:1 Ratio Counterbalance valve installed and a maximum thermal setting of 3000 psi.

10:1 Example

NO LOAD

$$P_p = (T_s - L) / R_p$$

$$P_p = (3000 \text{ psi} - 0 \text{ psi}) / 10$$

$$P_p = 3000 \text{ psi} / 10$$

$$P_p = 300 \text{ psi}$$

2000 PSI LOAD

$$P_p = (T_s - L) / R_p$$

$$P_p = (3000 \text{ psi} - 2000 \text{ psi}) / 10$$

$$P_p = 1000 \text{ psi} / 10$$

$$P_p = 100 \text{ psi}$$

Thus, when there is no load on the motor, the counterbalance opens at 300 psi, or just as the brake is being released. When there is a 2000 psi load on the motor, the counterbalance will start to open with a pilot pressure of 100 psi. The brake requires 300 psi, so the motor can start to rotate before the brake is released, causing wear on the brake. To offset this problem, you could increase the maximum thermal setting to 5000 psi, but this is very inefficient.

1:1 (Equal Area) Example

Equal area counterbalance valves are used primarily in brake applications to avoid the wear problem described above. With an Equal Area counterbalance valve, there is no thermal relief valve, and there is no differential area to work on. In other words, the counterbalance valve only opens when the pilot pressure is greater than the valve setting. The applied load has nothing to do with the pilot pressure required. Thus you will want to choose a pressure setting for the equal area counterbalance valve that is just slightly above the brake release pressure (usually 350 psi).

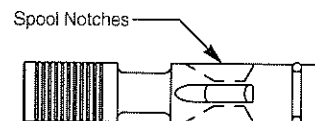
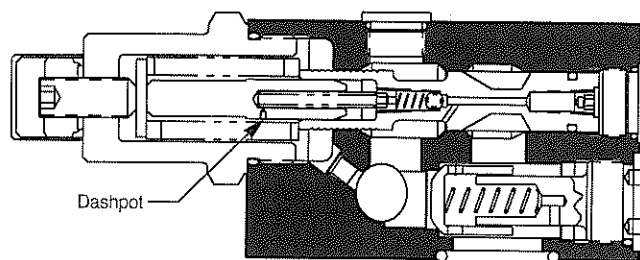
In our example, the valve would be set at 350 psi. This would allow the brake to release before the counterbalance allows the load to move. Since the equal counterbalance valve always opens at 350 psi pilot pressure and is not dependent on the load, it is the best valve for brake applications.

Large Pressure Spike Application – Keep in mind that equal area counterbalance valves do not have a built-in thermal relief valve. As such, if there are large pressure spikes caused by the stopping of heavy loads, then a ratioed counterbalance, such as a 10:1 should be used. In most cases these are non-brake type applications.

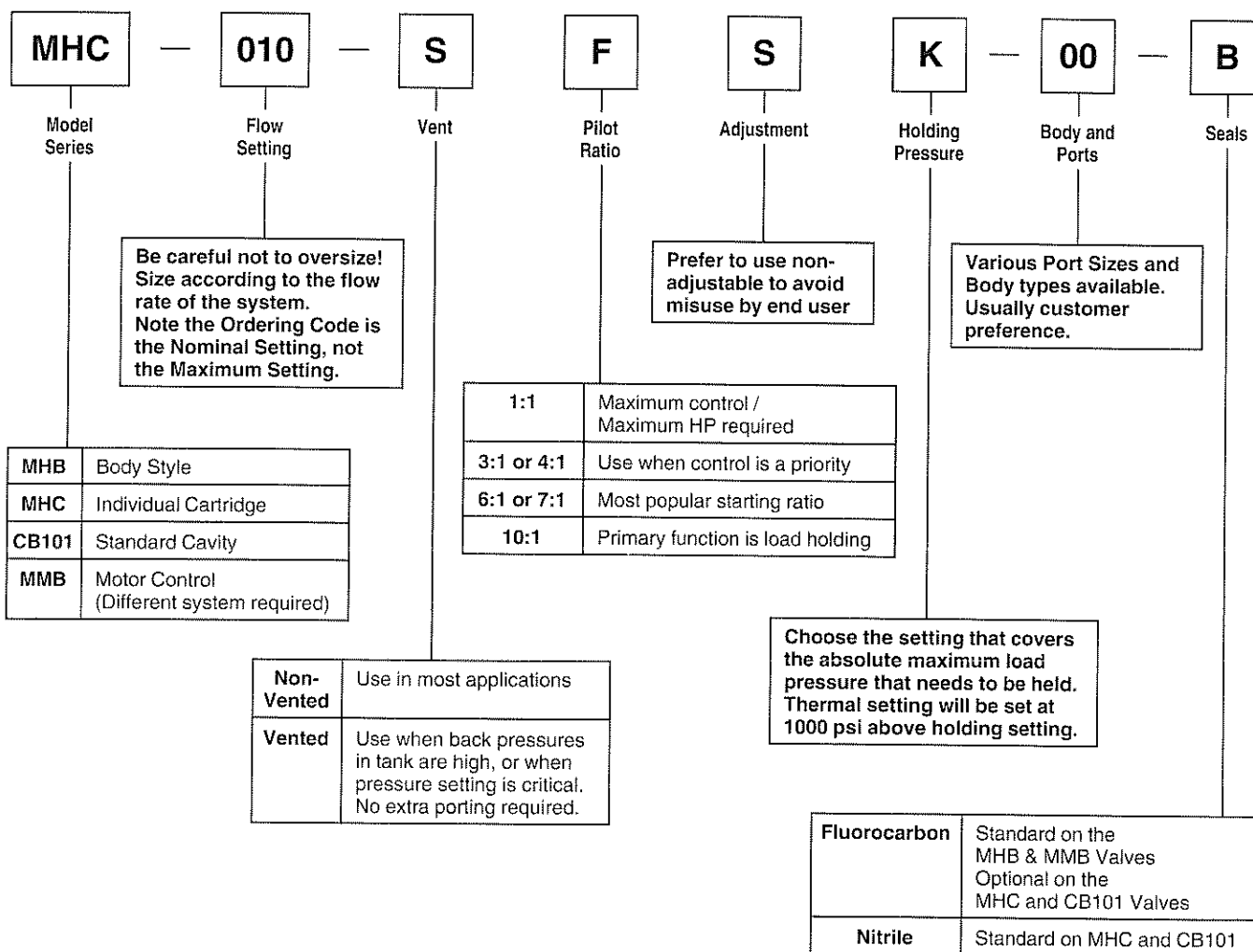
High Flow Application (Over 25 GPM) – The high flow applications present a new set of issues that a designer needs to consider. In high flow applications you have large volume of oil in compression that acts as a media for transmitting pressure ripples. Thus, a ripple in a pump or motor cause a big ripple as it is transmitted through the large volume of oil to the system causing inconsistent control. To eliminate this problem a spool type counterbalance valve, such as the MMB-100 or MMB-160 must be used instead of a poppet style. Spool style counterbalance valves allow for a longer stroke than poppet valves and as such can be tailored to effectively reduce the ripple generated by the pump or motor.

Notches on a spool valve provide controlled counterbalance back pressure from 0 GPM to the maximum flow. A spool with a long stroke also allows the effective use of hydraulic dashpots to prevent spool over

travel. Since poppets move such a short distance and the volume displaced is so small, the orifice size of an effective dashpot is too small and susceptible to contamination.



Application Reference Tree



General Description

MHB-015 series counterbalance valves are load holding valves with a pilot assist. They can control moving loads, prevent loads from running ahead of the pump, lock loads in any position without drift, and provide static overload relief and thermal expansion relief with open center directional control valves.

Operation

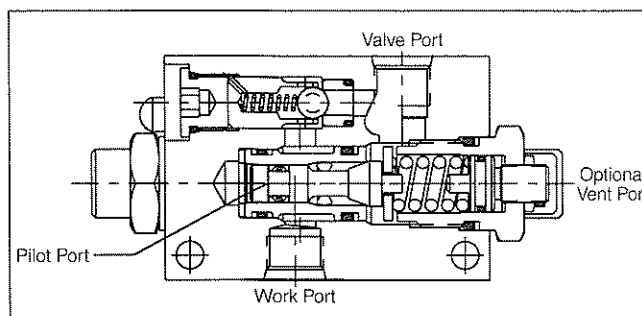
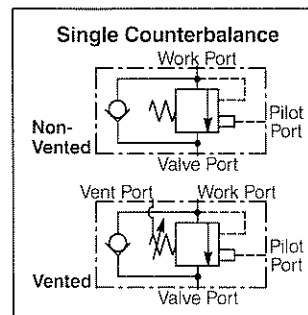
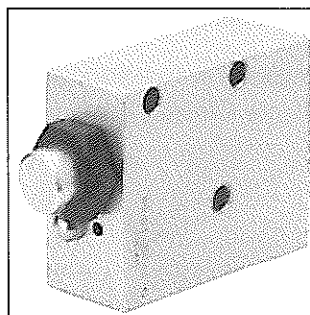
See Technical Tips.

Features

- Conical Poppet design provides longer metering stroke
- Hardened seat provides reliable load holding
- External vent option available for high back pressure applications
- Tamper resistant cap for added safety and security
- Various pilot ratios available for application flexibility

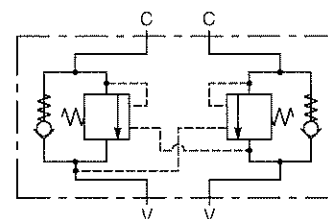
Specifications

Rated Flow	46.25 LPM (15 GPM)
Maximum Inlet Pressure	207 Bar (3000 PSI)
Leakage	5 drops/min (.33 cc/min.) @ 207 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-31.7°C to +121.1°C (-25°F to +250°F) (Fluorocarbon Seals Only)
Seal Compound	Fluorocarbon
Valve Material	All parts steel. All operating parts hardened steel.
Body Material	Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No Restrictions
Cavity	None – Parts in Body

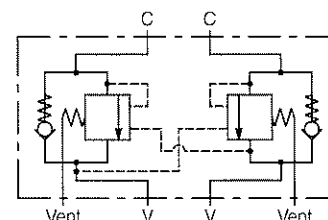


Symbols

Non-Vented Dual Counterbalance

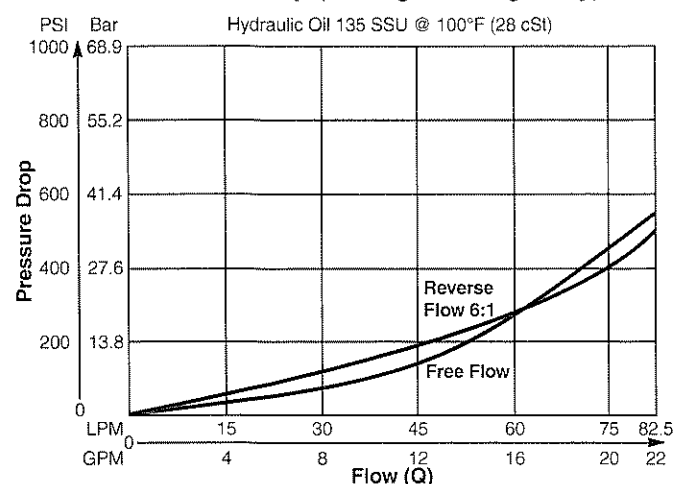


Vented Dual Counterbalance



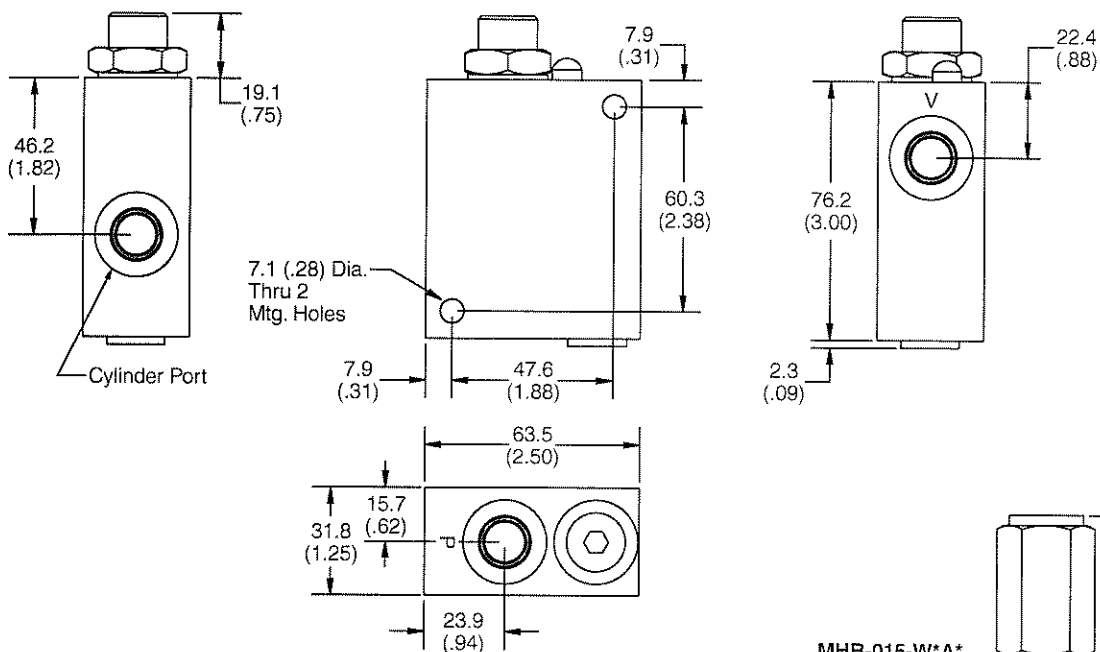
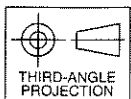
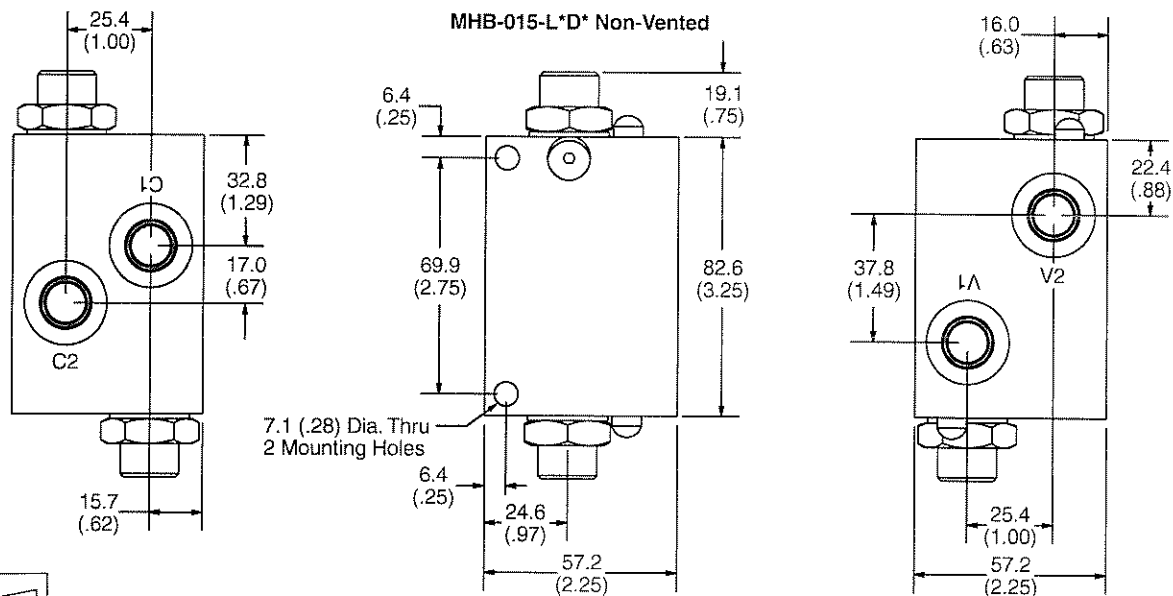
Performance Curve

Flow vs. Pressure Drop (Through cartridge only)



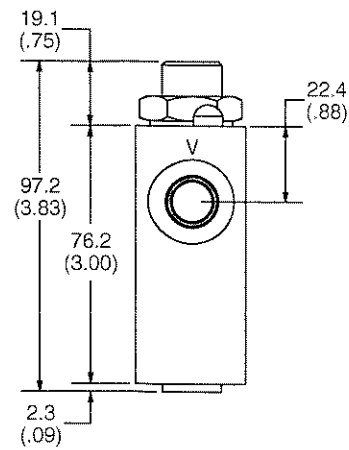
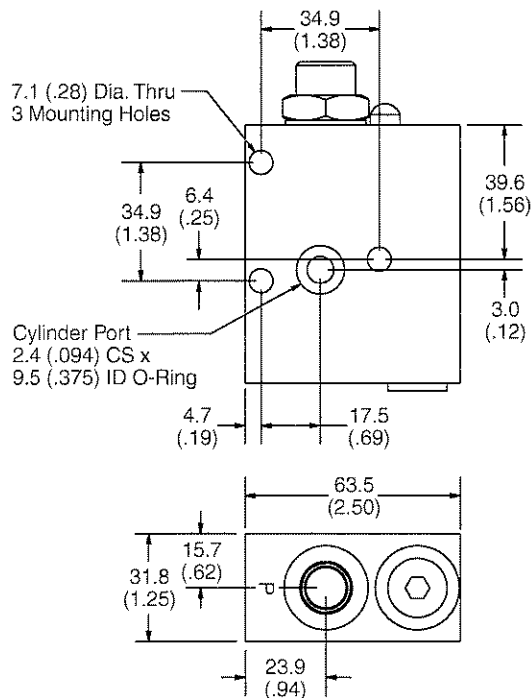
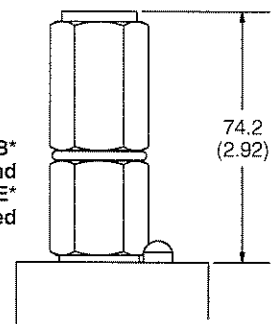
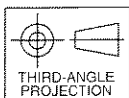
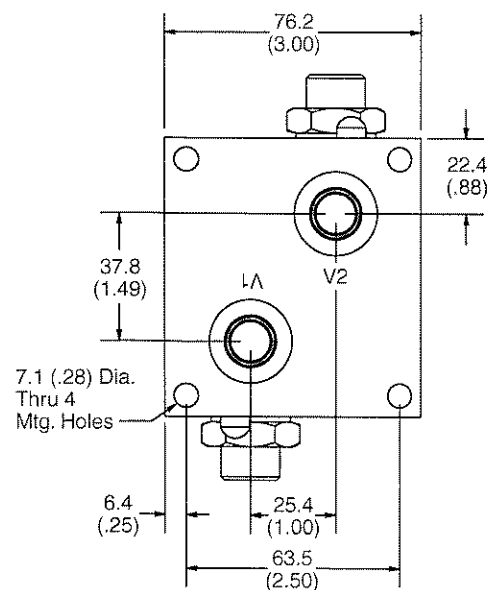
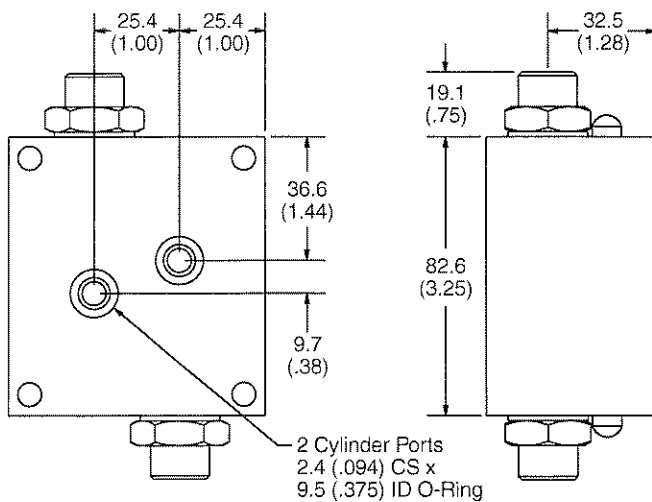
mhb-015.pm6.5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)

Series MHB-015-L*A* Single Counterbalance, Non-Vented, In-line Mount**Series MHB-015-W*A*** Single Counterbalance, Vented, In-line Mount**MHB-015-L*A* Non-Vented****MHB-015-W*A*
and
MHB-015-W*D*
Vented****Series MHB-015-L*D*** Dual Counterbalance, Non-Vented, In-line Mount**Series MHB-015-W*D*** Dual Counterbalance, Vented, In-line Mount

mhb-015.pm6.5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)

Series MHB-015-L*B* Single Counterbalance, Non-Vented, Gasket Mount**Series MHB-015-W*B*** Single Counterbalance, Vented, Gasket Mount**MHB-015-L*B* Non-Vented****MHB-015-W*B*
and
MHB-015-W*E*
Vented****Series MHB-015-L*E*** Dual Counterbalance, Non-Vented, Gasket Mount**Series MHB-015-W*E*** Dual Counterbalance, Vented, Gasket Mount**MHB-015-L*E* Non-Vented**

mhb-015.pm6.5, bl, gn

CHECKS & SHUTTLES
 LOAD & MOTOR CONTROLS
 VOLUME CONTROLS
 PRESSURE CONTROLS
 SOLENOID VALVES
 SPECIALTY VALVES
 COILS
 BODIES
 TECHNICAL DATA

MHB	—	015	—		—		—		—		—		—		—																								
Counterbalance Parts In Body		Nominal Flow Rating		Vent Setting		Pilot Ratio		Body Style		Holding Pressure		Porting		Pilot Port																									
				<table border="1"> <thead> <tr> <th>Code</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>L</td> <td>Non-vented</td> </tr> <tr> <td>W</td> <td>Vented</td> </tr> </tbody> </table>	Code	Type	L	Non-vented	W	Vented				<table border="1"> <thead> <tr> <th>Code</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Single Inline</td> </tr> <tr> <td>B</td> <td>Single Gasket</td> </tr> <tr> <td>D</td> <td>Double Inline</td> </tr> <tr> <td>E</td> <td>Double Gasket</td> </tr> </tbody> </table>	Code	Type	A	Single Inline	B	Single Gasket	D	Double Inline	E	Double Gasket			<table border="1"> <thead> <tr> <th>Code</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>51</td> <td>SAE-6</td> </tr> <tr> <td>52</td> <td>SAE-8 (Gasket mount only)</td> </tr> <tr> <td>04</td> <td>1/4" NPTF</td> </tr> </tbody> </table>	Code	Type	51	SAE-6	52	SAE-8 (Gasket mount only)	04	1/4" NPTF				
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L	Non-vented																																						
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B	Single Gasket																																						
D	Double Inline																																						
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52	SAE-8 (Gasket mount only)																																						
04	1/4" NPTF																																						
		<table border="1"> <thead> <tr> <th>Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>015</td> <td>46.3 LPM (15 GPM)</td> </tr> </tbody> </table>	Code	Description	015	46.3 LPM (15 GPM)			<table border="1"> <thead> <tr> <th>Code</th> <th>Ratio</th> </tr> </thead> <tbody> <tr> <td>*A</td> <td>1:1 Equal Area</td> </tr> <tr> <td>B</td> <td>3:1</td> </tr> <tr> <td>E</td> <td>6:1</td> </tr> <tr> <td>J</td> <td>10:1</td> </tr> </tbody> </table> * Equal Area does not have a thermal relief.	Code	Ratio	*A	1:1 Equal Area	B	3:1	E	6:1	J	10:1			<table border="1"> <thead> <tr> <th>Code</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>C</td> <td>17.2 to 34.5 Bar (250 to 500 PSI) 1:1 Pilot only</td> </tr> <tr> <td>E</td> <td>34.5 to 103.4 Bar (500 to 1500 PSI)</td> </tr> <tr> <td>H</td> <td>69 to 210 Bar (1000 to 3000 PSI)</td> </tr> </tbody> </table>	Code	Type	C	17.2 to 34.5 Bar (250 to 500 PSI) 1:1 Pilot only	E	34.5 to 103.4 Bar (500 to 1500 PSI)	H	69 to 210 Bar (1000 to 3000 PSI)									
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N	Internal Pilot (Dual valve only)																																						
E	SAE-6 (Code 51 & 52 bodies only)																																						
B	1/4" NPTF (Code 04 body only)																																						

Shipping Weight
 Single 0.68 kg (1.5 lbs.)
 Double 1.36 kg (3.0 lbs.)

mhb-015.pm6.5, bl, gn

General Description

MHB-030 series counterbalance valves are load holding valves with a pilot assist. They can control moving loads, prevent loads from running ahead of the pump, lock loads in any position without drift, and provide static overload relief and thermal expansion relief with open center directional control valves.

Operation

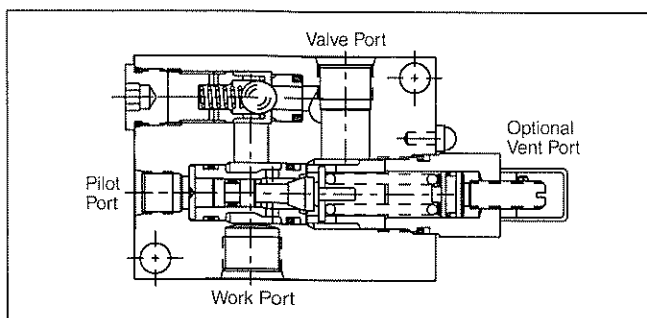
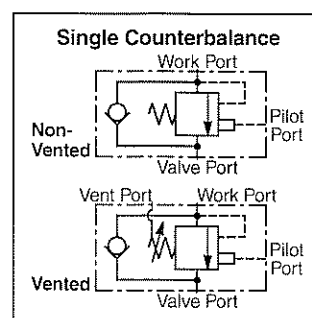
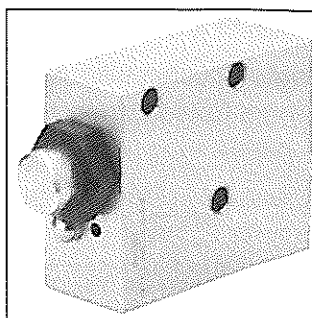
See Technical Tips.

Features

- Conical Poppet design provides longer metering stroke
- Hardened seat provides reliable load holding
- External vent option available for high back pressure applications
- Tamper resistant cap for added safety and security
- Various pilot ratios available for application flexibility

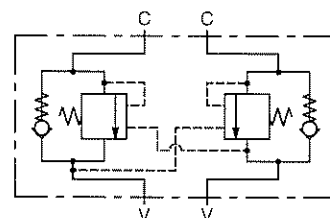
Specifications

Rated Flow	112.5 LPM (30 GPM)
Maximum Inlet Pressure	207 Bar (3000 PSI)
Leakage	5 drops/min (.33 cc/min.) @ 207 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-31.7°C to +121.1°C (-25°F to +250°F) (Fluorocarbon Seals Only)
Seal Compound	Fluorocarbon
Valve Material	All parts steel. All operating parts hardened steel.
Body Material	Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No Restrictions
Cavity	None – Parts in Body

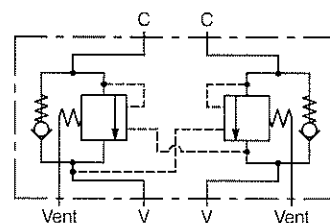


Symbols

Non-Vented Dual Counterbalance

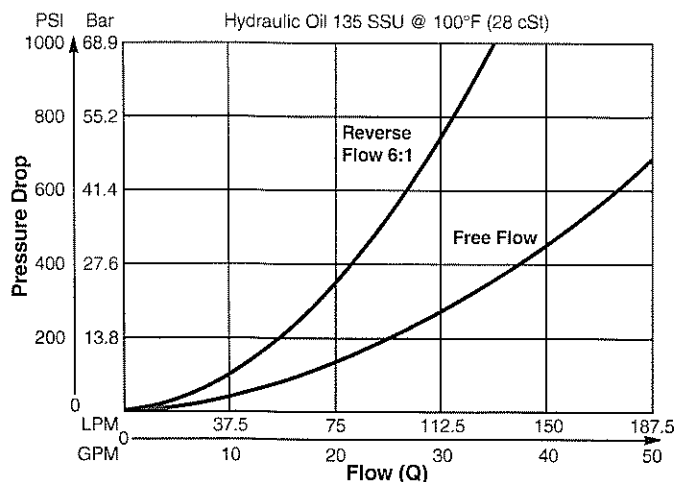


Vented Dual Counterbalance

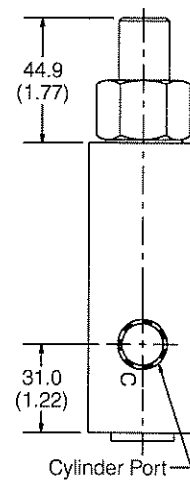
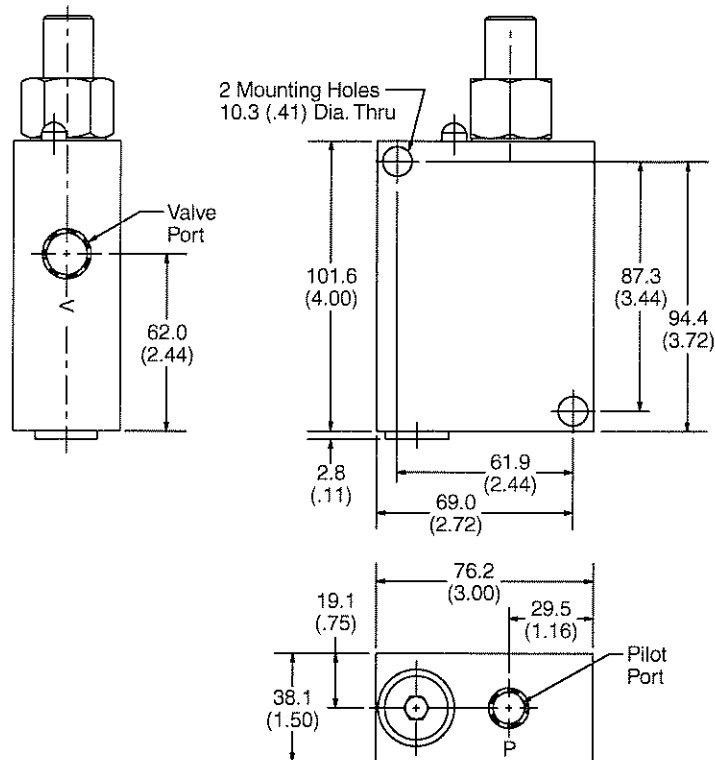
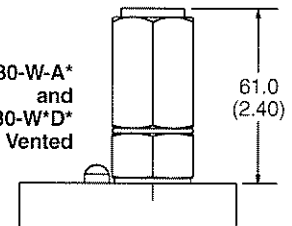
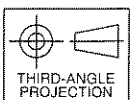
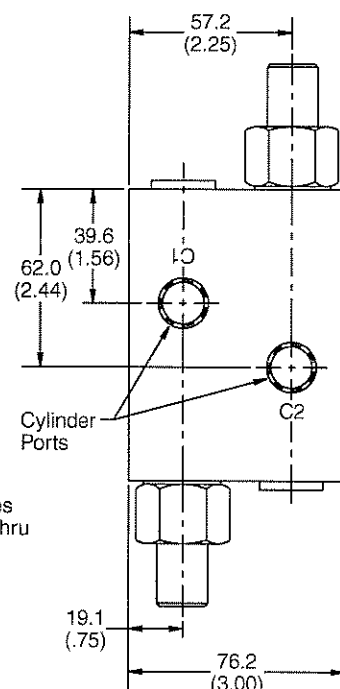
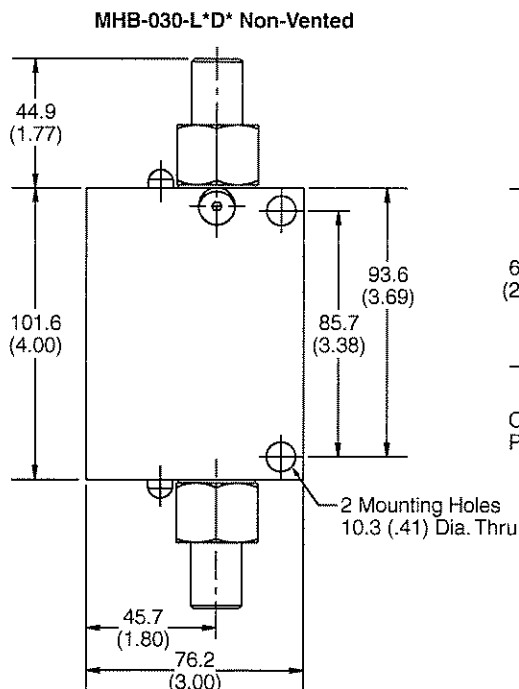
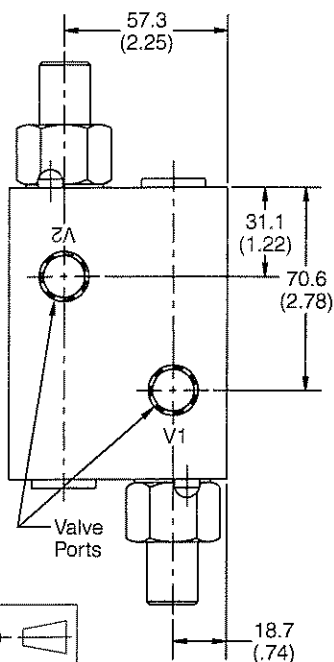


Performance Curve

Flow vs. Pressure Drop (Through cartridge only)

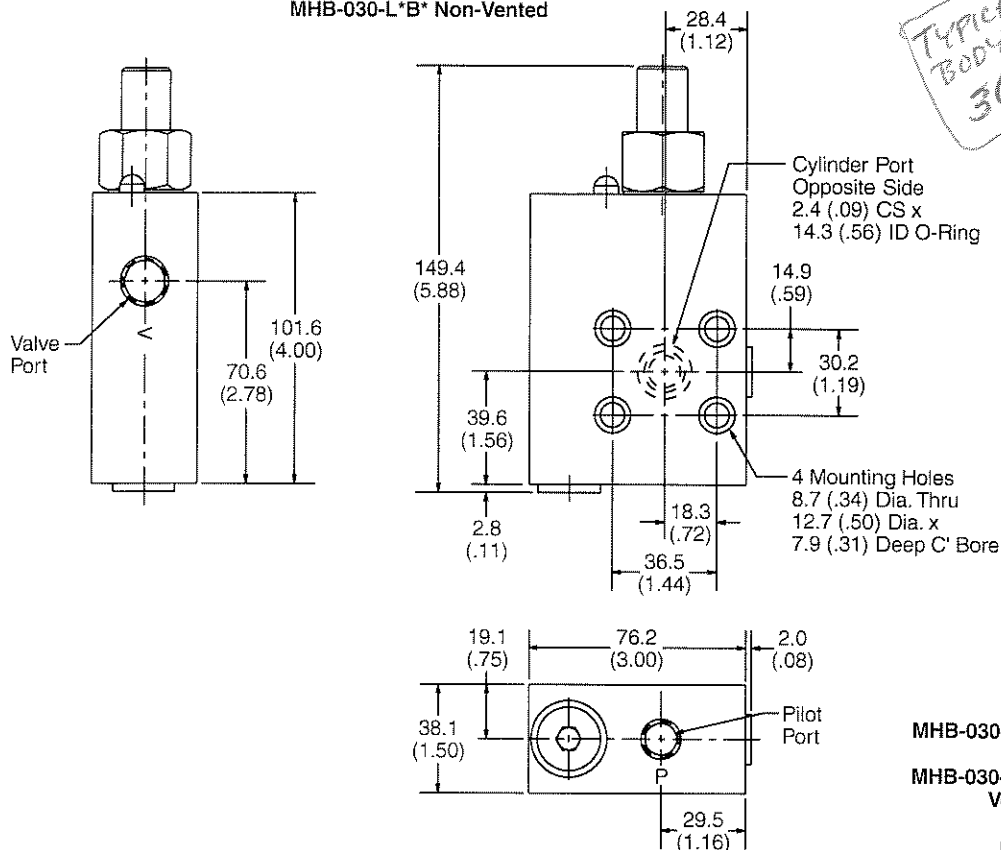
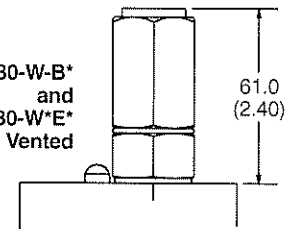
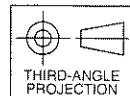
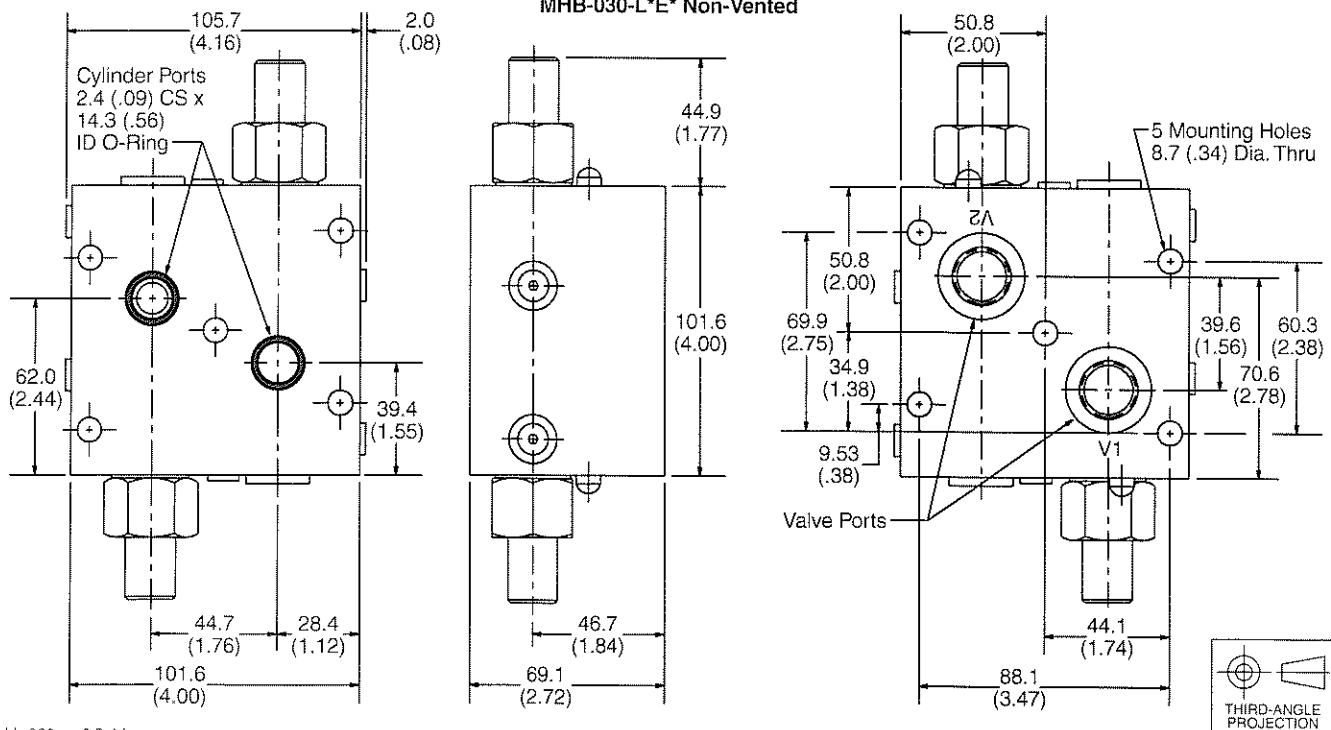


*Inch equivalents for millimeter dimensions are shown in (**)

Series MHB-030-L*A* Single Counterbalance, Non-Vented, In-line Mount**Series MHB-030-W*A*** Single Counterbalance, Vented, In-line Mount**MHB-030-L*A* Non-Vented****MHB-030-W*A*
and
MHB-030-W*D*
Vented****Series MHB-030-L*D*** Dual Counterbalance, Non-Vented, In-line Mount**Series MHB-030-W*D*** Dual Counterbalance, Vented, In-line Mount**MHB-030-L*D* Non-Vented**

mhb-030.pm6.5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)

Series MHB-030-L*B* Single Counterbalance, Non-Vented, Gasket Mount**Series MHB-030-W*B*** Single Counterbalance, Vented, Gasket Mount**MHB-030-L*B* Non-Vented****MHB-030-W*B* and MHB-030-W*E* Vented****Series MHB-030-L*E*** Dual Counterbalance, Non-Vented, Gasket Mount**Series MHB-030-W*E*** Dual Counterbalance, Vented, Gasket Mount**MHB-030-L*E* Non-Vented**

mhb-030.pm&5, bl, gn

CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

SOLENOID VALVES

SPECIALTY VALVES

COILS

BODIES

TECHNICAL DATA

MHB	—	030	—		—		—		—		—		—		—		—	
Counterbalance Parts In Body		Nominal Flow Rating		Vent Setting		Pilot Ratio		Body Style		Holding Pressure		Porting		Pilot Port				

Code	Type
L	Non-vented
W	Vented

Code	Description
030	112.5 LPM (30 GPM)

Code	Ratio
*A	1:1 Equal Area
B	3:1
E	6:1
J	10:1

* Equal Area does not have a thermal relief.

Code	Type
A	Single Inline
B	Single Gasket
D	Double Inline
E	Double Gasket

Code	Type
C	17.2 to 34.5 Bar (250 to 500 PSI) 1:1 Pilot ratio only
E	34.5 to 103.4 Bar (500 to 1500 PSI)
H	69 to 210 Bar (1000 to 3000 PSI)

Code	Type
52	SAE-8
53	SAE-10 (Gasket mount only)
06	3/8" NPTF
08	1/2" NPTF

Code	Type
N	Internal Pilot (Dual valve only)
E	SAE-6 (Code 52 & 53 bodies only)
B	1/4" NPTF (Code 06 and 08 bodies only)

Shipping Weight

Single 1.13 kg (2.5 lbs.)
 Double 2.05 kg (4.5 lbs.)

362169

General Description

MHB-060 series counterbalance valves are load holding valves with a pilot assist. They can control moving loads, prevent loads from running ahead of the pump, lock loads in any position without drift, and provide static overload relief and thermal expansion relief with open center directional control valves.

Operation

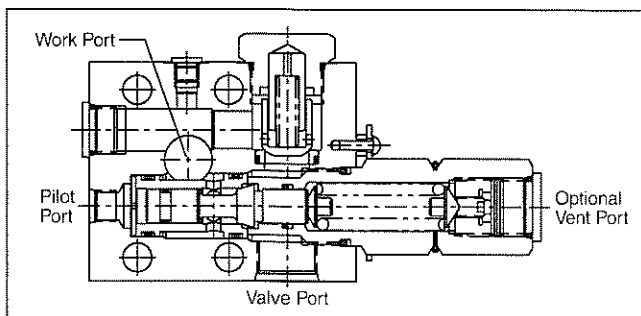
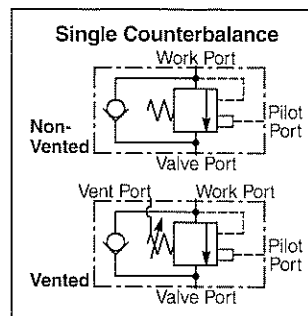
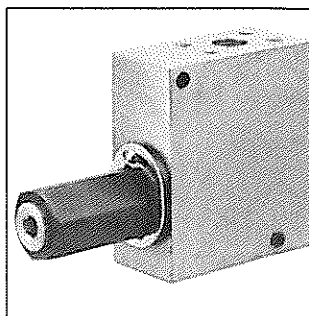
See Technical Tips.

Features

- Conical Poppet design provides longer metering stroke
- Hardened seat provides reliable load holding
- External vent option available for high back pressure applications
- Tamper resistant cap for added safety and security
- Various pilot ratios available for application flexibility

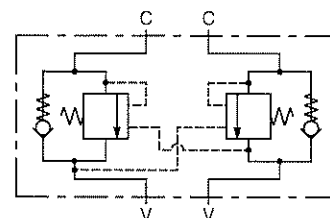
Specifications

Rated Flow	225 LPM (60 GPM)
Maximum Inlet Pressure	350 Bar (5000 PSI)
Leakage	5 drops/min (.33 cc/min.) @ 207 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-31.7°C to +121.1°C (-25°F to +250°F) (Fluorocarbon Seals Only)
Seal Compound	Fluorocarbon
Valve Material	All parts steel. All operating parts hardened steel.
Body Material	Steel
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No Restrictions
Cavity	None – Parts in Body

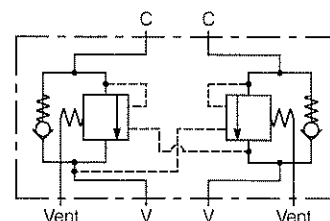


Symbols

Non-Vented Dual Counterbalance

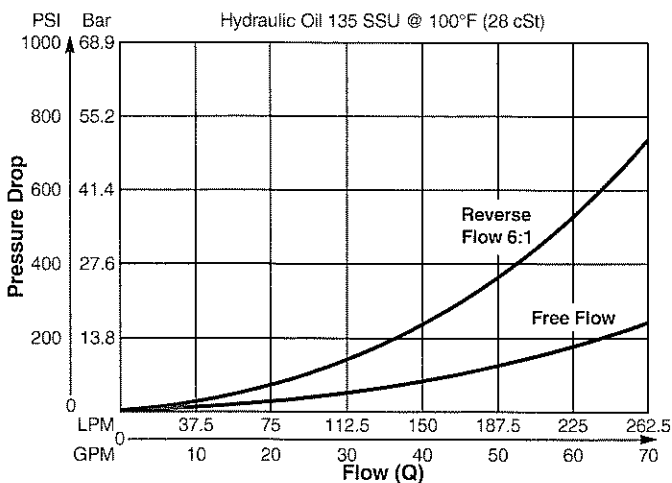


Vented Dual Counterbalance



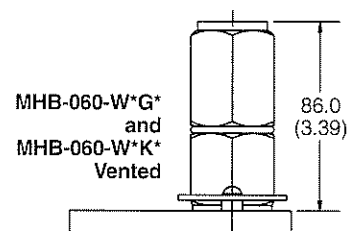
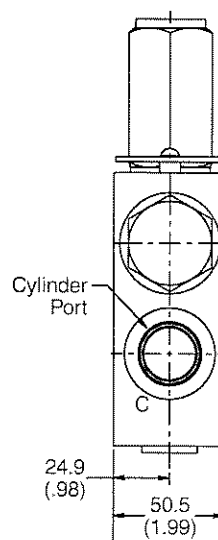
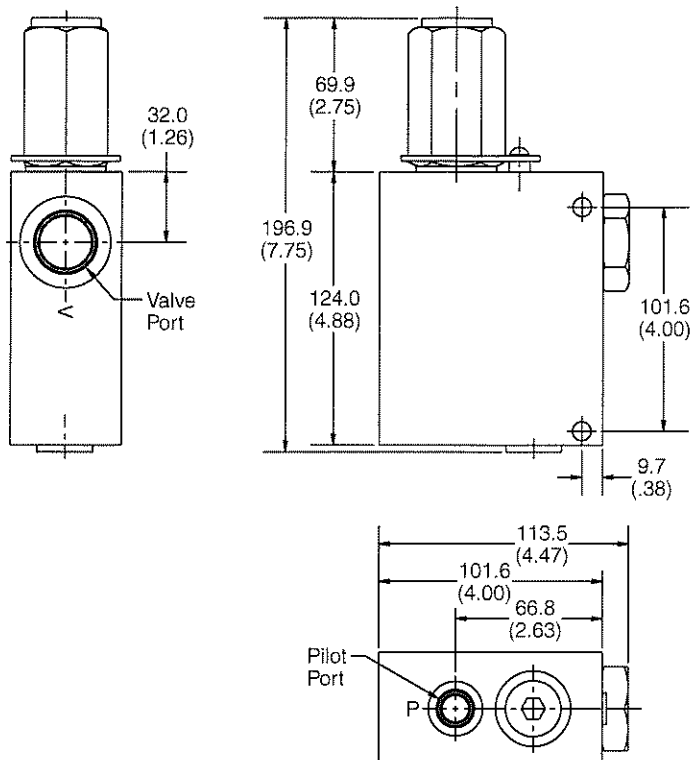
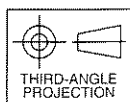
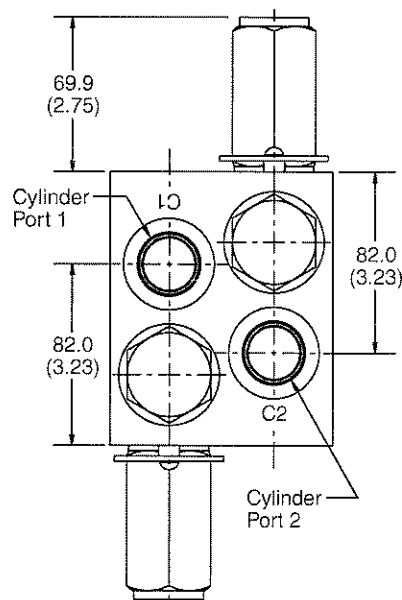
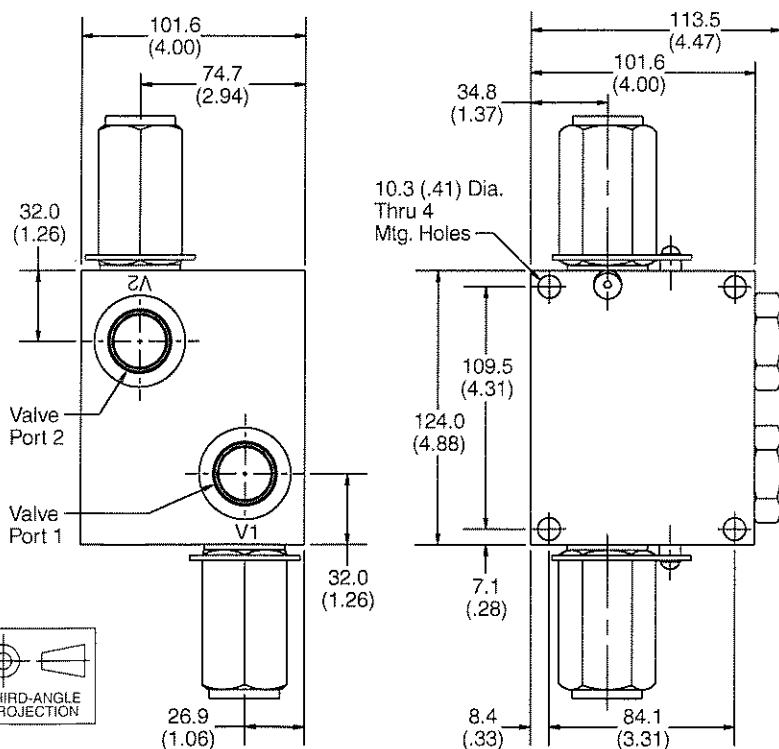
Performance Curve

Flow vs. Pressure Drop (Through cartridge only)



mhb-060.pm6.5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)

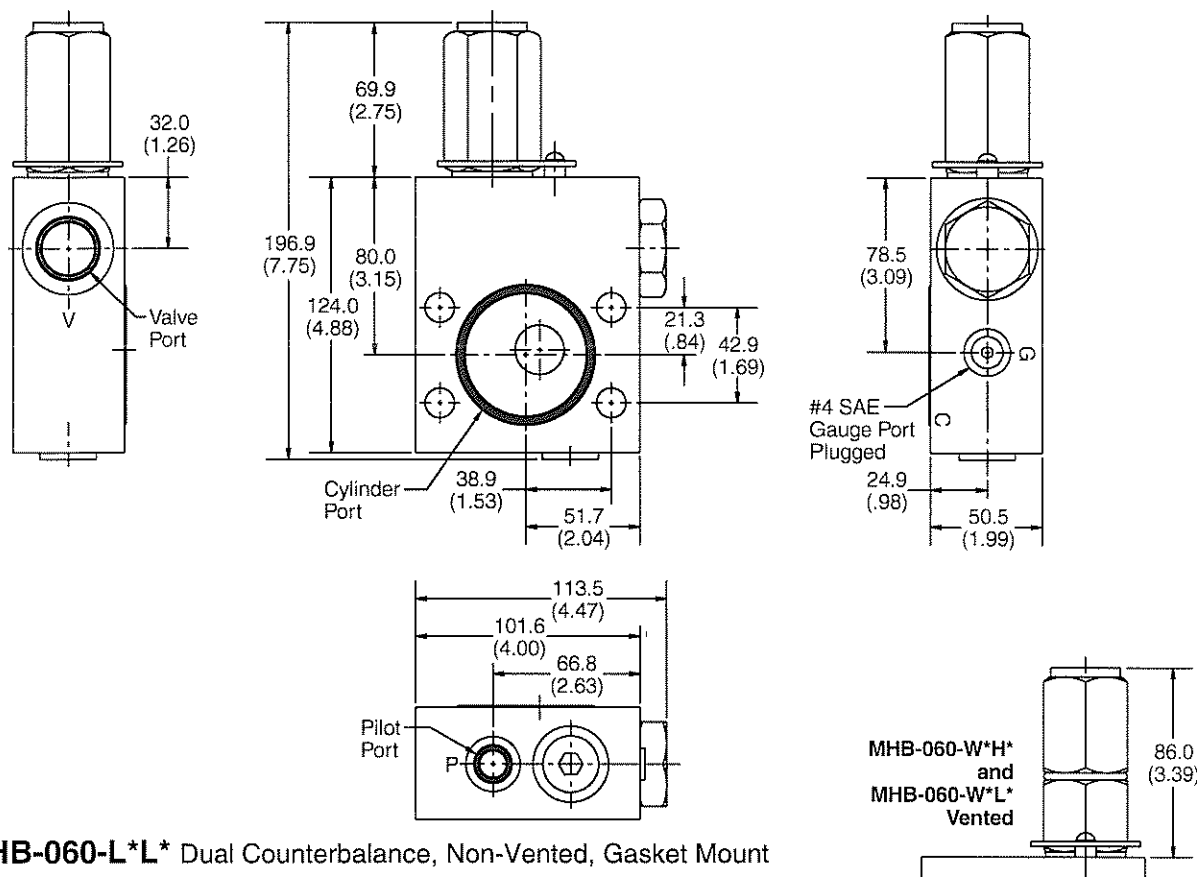
Series MHB-060-L*G* Single Counterbalance, Non-Vented, In-line Mount**Series MHB-060-W*G*** Single Counterbalance, Vented, In-line Mount**MHB-060-L*G* Non-Vented****Series MHB-060-L*K*** Dual Counterbalance, Non-Vented, In-line Mount**Series MHB-060-W*K*** Dual Counterbalance, Vented, In-line Mount**MHB-060-L*K* Non-Vented**

mhb-060.pm6.5, bl, gn

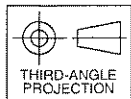
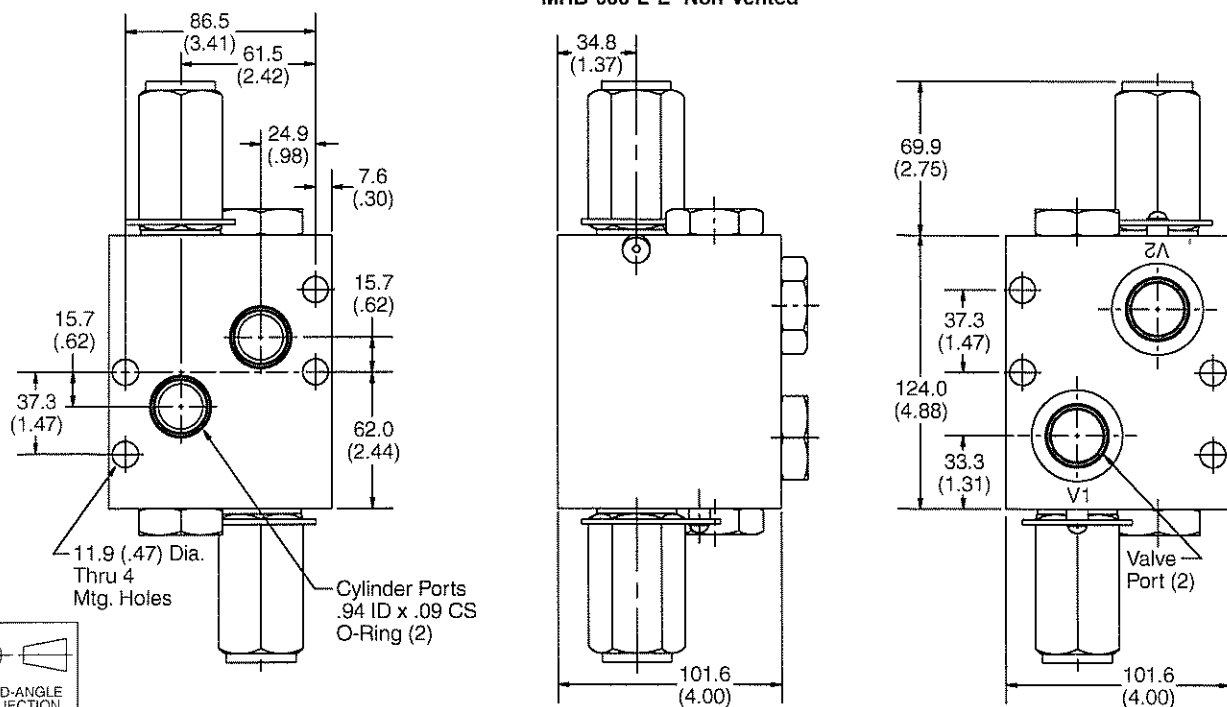
*Inch equivalents for millimeter dimensions are shown in (**)

Series MHB-060-L*H* Single Counterbalance, Non-Vented, Gasket Mount**Series MHB-060-W*H*** Single Counterbalance, Vented, Gasket Mount

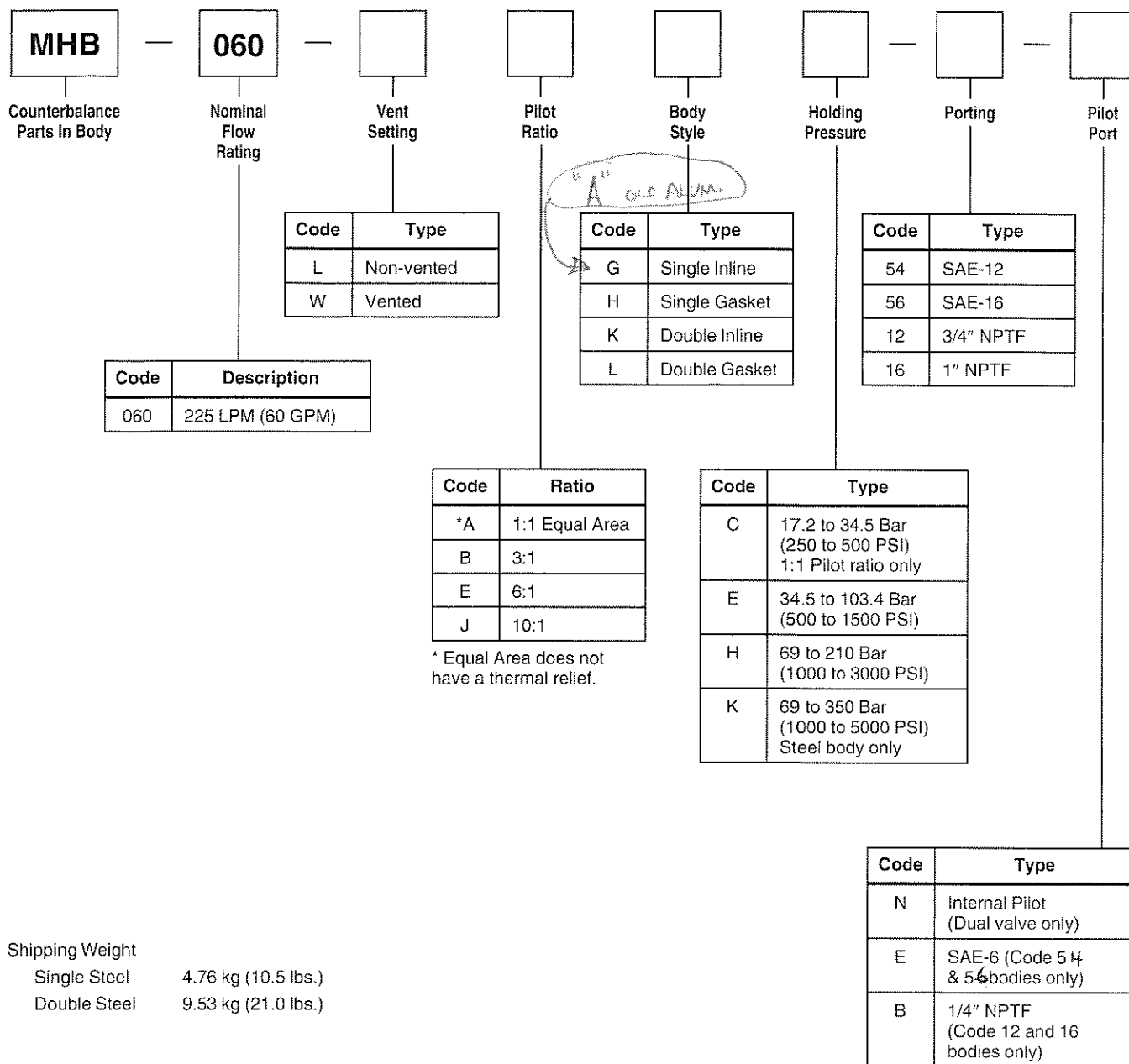
MHB-060-L*H* Non-Vented

**Series MHB-060-L*L*** Dual Counterbalance, Non-Vented, Gasket Mount**Series MHB-060-W*L*** Dual Counterbalance, Vented, Gasket Mount

MHB-060-L*L* Non-Vented



mhb-060.pm6.5, bl. gn



General Description

MHB-120 series counterbalance valves are load holding valves with a pilot assist. They can control moving loads, prevent loads from running ahead of the pump, lock loads in any position without drift, and provide static overload relief and thermal expansion relief with open center directional control valves.

Operation

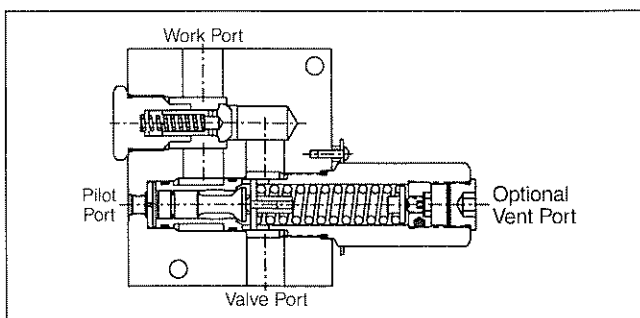
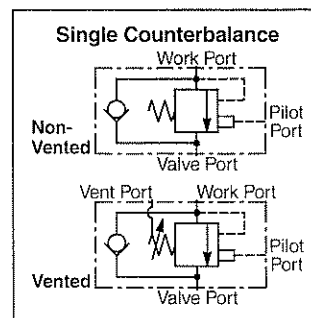
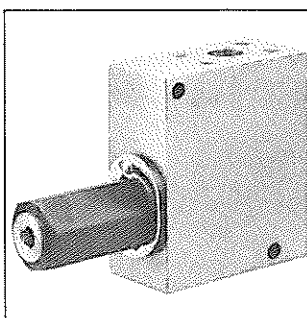
See Technical Tips.

Features

- Conical Poppet design provides longer metering stroke
- Hardened seat provides reliable load holding
- External vent option available for high back pressure applications
- Tamper resistant cap for added safety and security
- Various pilot ratios available for application flexibility

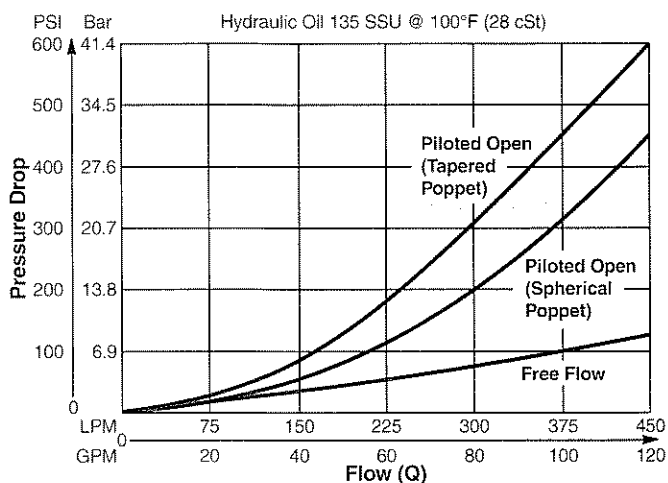
Specifications

Rated Flow	450 L/M (120 GPM)
Maximum Inlet Pressure	350 Bar (5000 PSI)
Leakage	5 drops/min (.33 cc/min.) @ 207 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-31.7°C to +121.1°C (-25°F to +250°F) (Fluorocarbon Seals Only)
Seal Compound	Fluorocarbon
Valve Material	All parts steel. All operating parts hardened steel.
Body Material	Steel
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No Restrictions
Cavity	None – Parts in Body

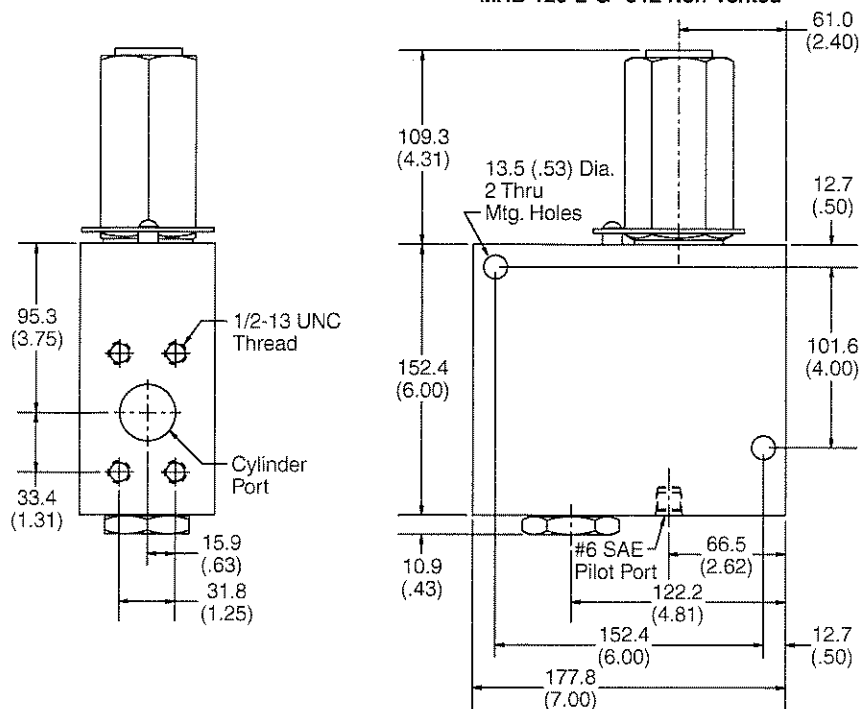
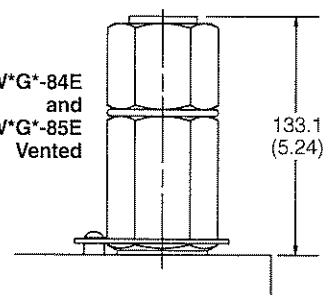
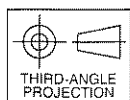
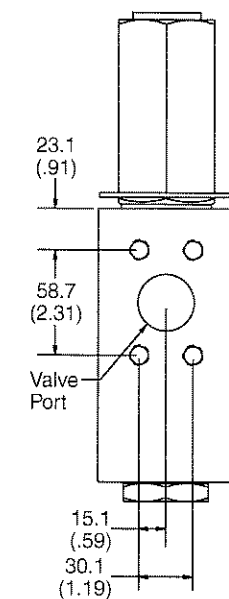
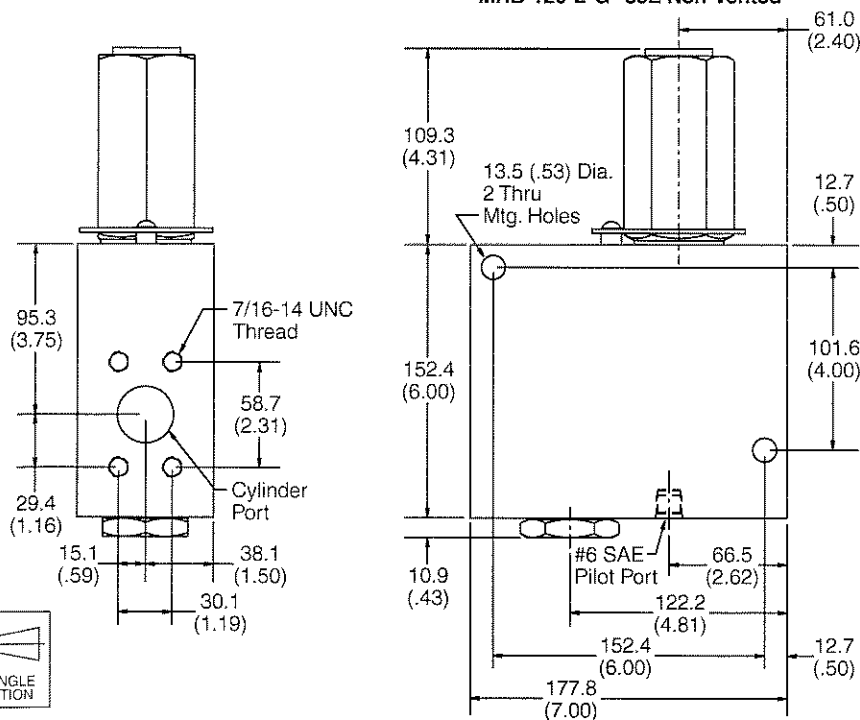


Performance Curve

Flow vs. Pressure Drop (Through cartridge only)



*Inch equivalents for millimeter dimensions are shown in (**)

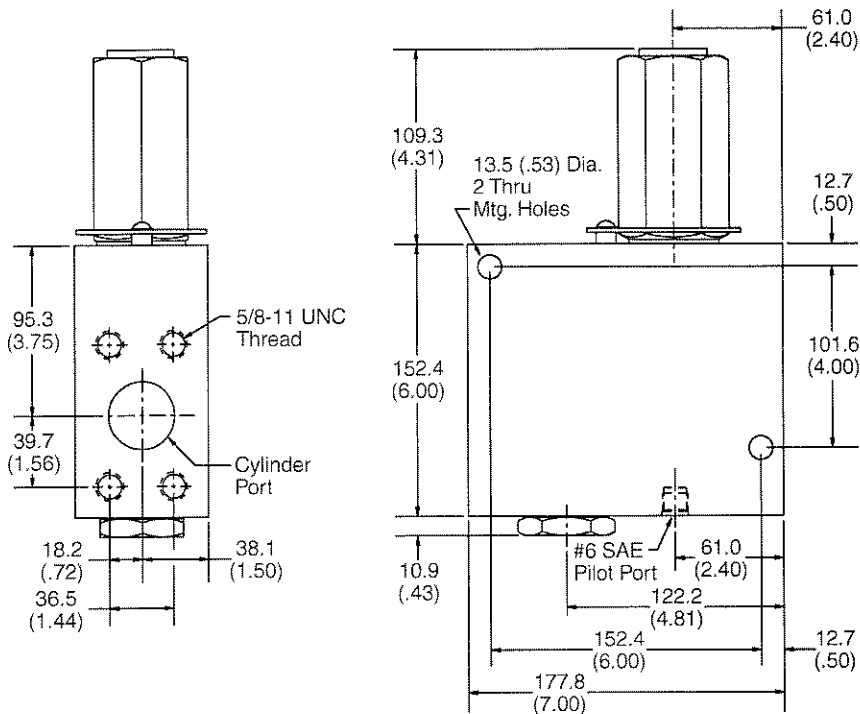
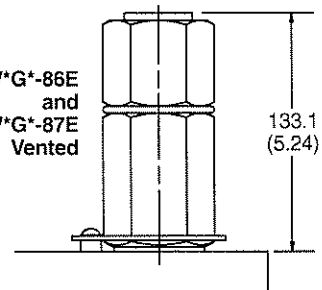
Series MHB-120-L*G*-84E Single Counterbalance, Non-Vented, In-line Mount**Series MHB-120-W*G*-84E** Single Counterbalance, Vented, In-line Mount**MHB-120-L*G*-84E Non-Vented****MHB-120-W*G*-84E and MHB-120-W*G*-85E Vented****Series MHB-120-L*G*-85E** Single Counterbalance, Non-Vented, In-line Mount**Series MHB-120-W*G*-85E** Single Counterbalance, Vented, In-line Mount**MHB-120-L*G*-85E Non-Vented**

mhb-120.pm6.5, bl, gn

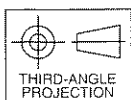
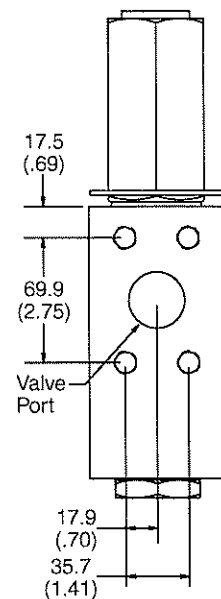
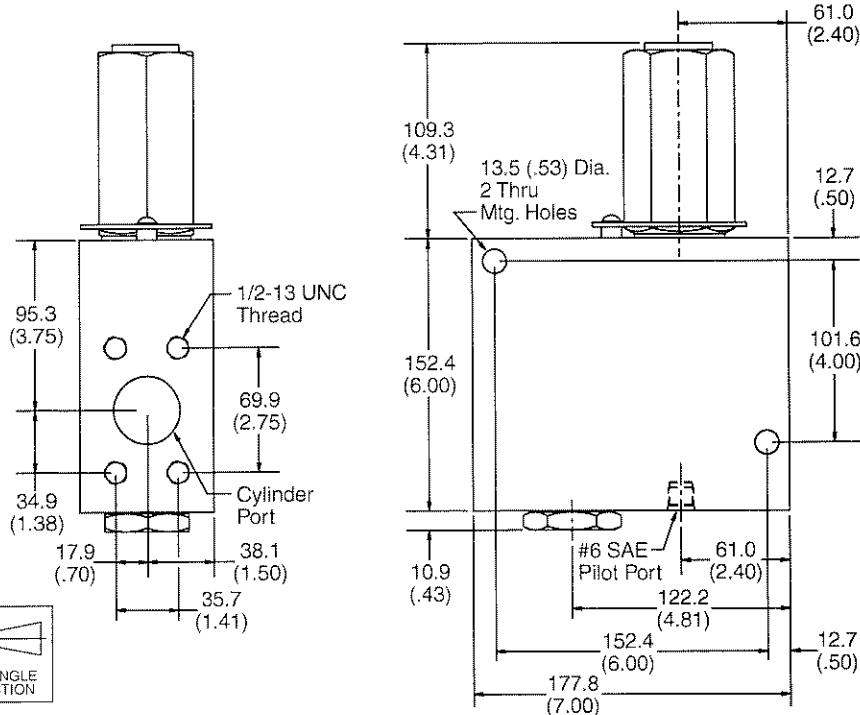
*Inch equivalents for millimeter dimensions are shown in (**)

Series MHB-120-L*G*-86E Single Counterbalance, Non-Vented, In-line Mount**Series MHB-120-W*G*-86E** Single Counterbalance, Vented, In-line Mount

MHB-120-L*G*-86E Non-Vented

MHB-120-W*G*-86E
and
MHB-120-W*G*-87E
Vented**Series MHB-120-L*G*-87E** Single Counterbalance, Non-Vented, In-line Mount**Series MHB-120-W*G*-87E** Single Counterbalance, Vented, In-line Mount

MHB-120-L*G*-87E Non-Vented



mhb-120.pm6.5, bl, gn

CHECKS &
SHUTTLES

LOAD & MOTOR
CONTROLS

VOLUME
CONTROLS

PRESSURE
CONTROLS

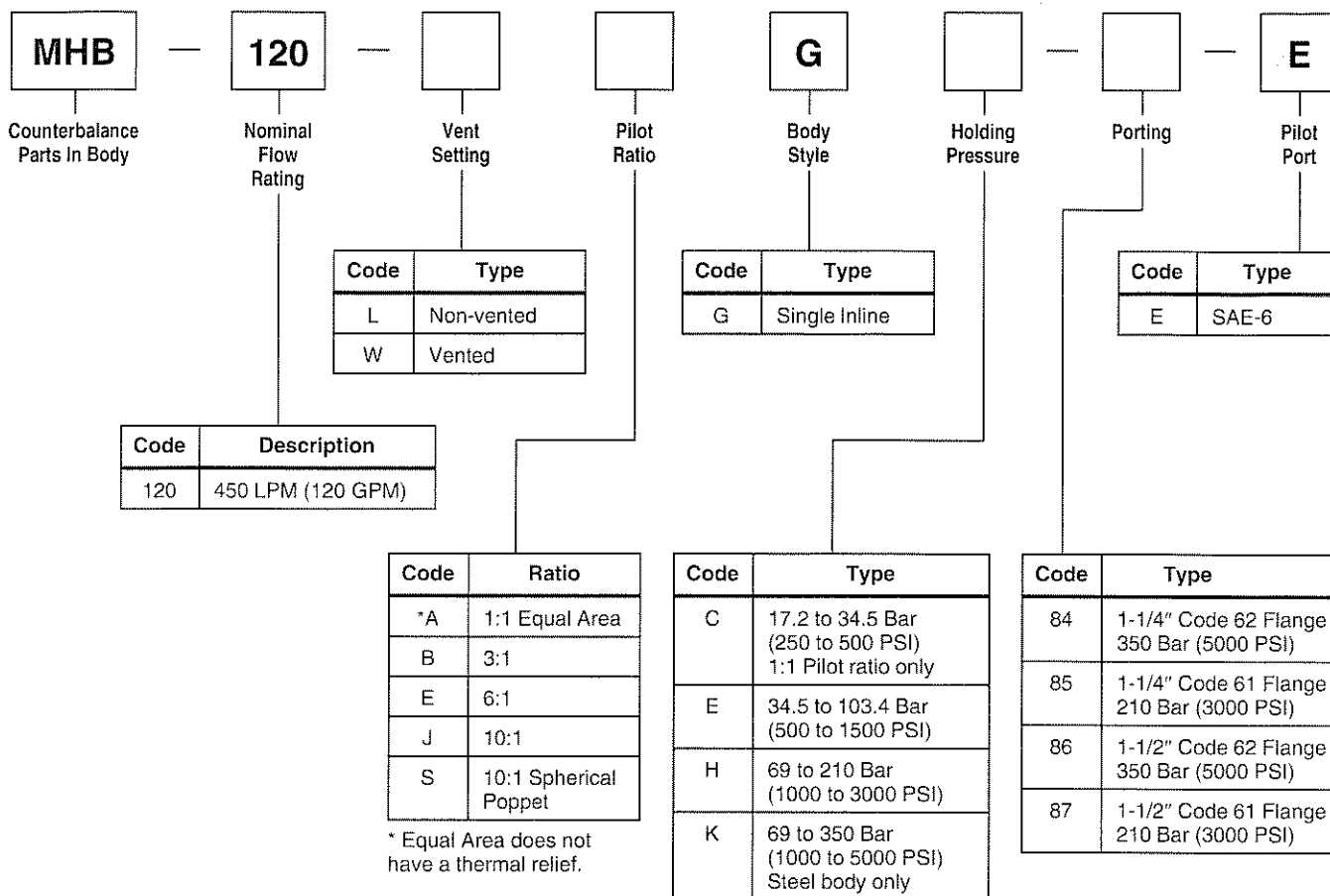
SOLENOID
VALVES

SPECIALTY
VALVES

COILS

BODIES

TECHNICAL
DATA



Shipping Weight

Steel 9.53 kg (21.0 lbs.)

mhb-120,pm6.5, bl, gn

(1/8" HV)

General Description

The MHC-010 series counterbalance valves are load-holding valves with a pilot assist. They can control moving loads, prevent loads from running ahead of the pump, lock loads in any position without drift, and provide static overload relief and thermal expansion relief with open center directional control valves.

Operation

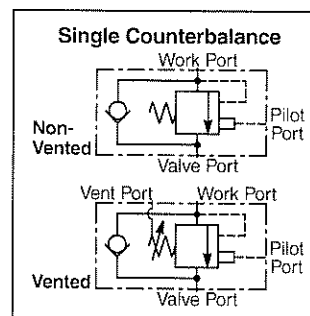
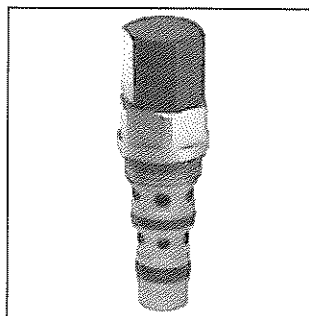
See Technical Tips.

Features

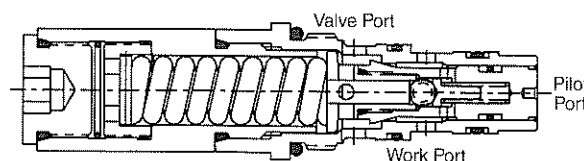
- Conical Poppet design provides longer metering stroke
- Hardened seat provides reliable load holding
- External vent option available for high back pressure applications
- Tamper resistant cap for added safety and security
- Various pilot ratios available for application flexibility
- Unique cavity prevents other valves from being "accidentally" installed

Specifications

Rated Flow	37.5 LPM (10 GPM)
Maximum Inlet Pressure	350 Bar (5000 PSI)
Leakage	5 drops/min (.33 cc/min.) @ 207 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No Restrictions
Cavity	CDD-1010

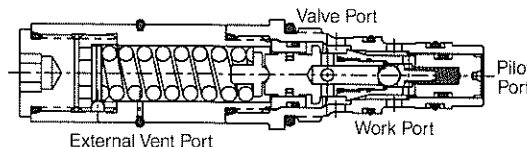


MHC-010-S*S* Non-Vented Counterbalance Adjustable

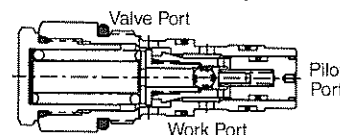


Construction

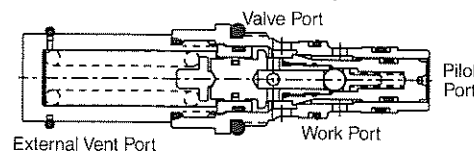
MHC-010-V*S* Vented Counterbalance Adjustable



MHC-010-S*N* Non-Vented Counterbalance Non-Adjustable

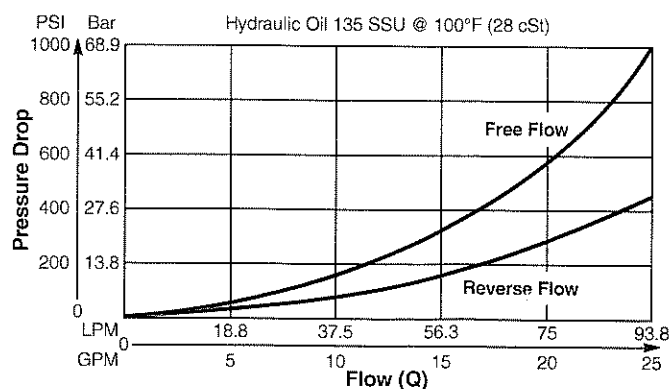


MHC-010-V*N* Vented Counterbalance Non-Adjustable



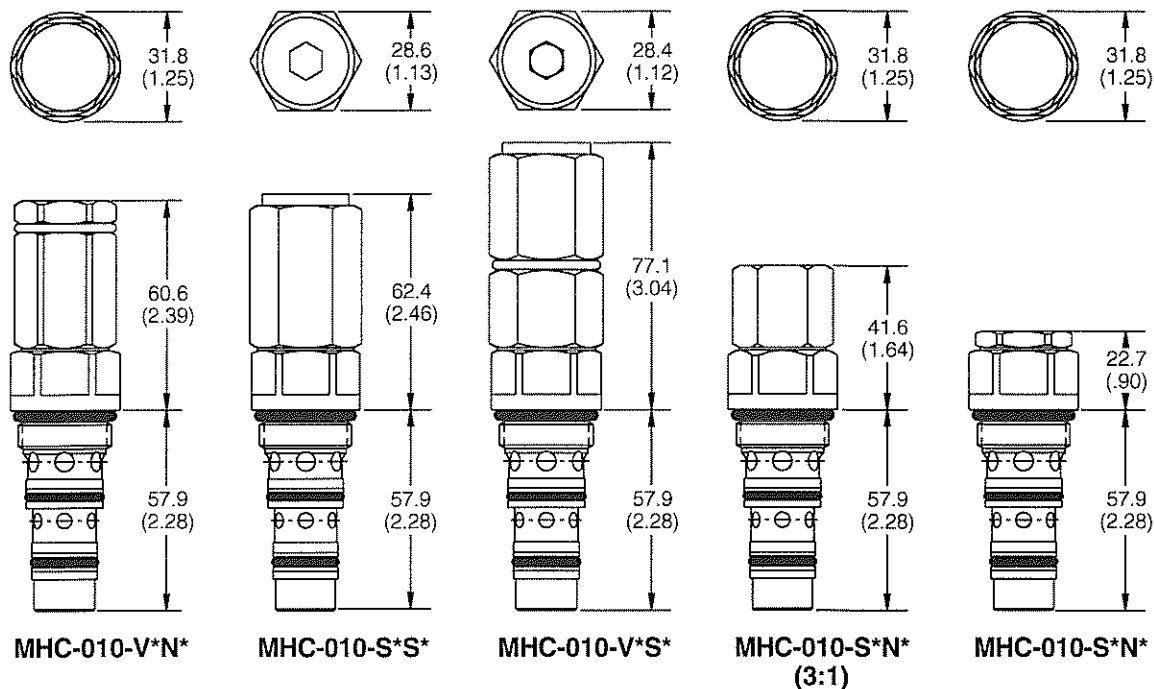
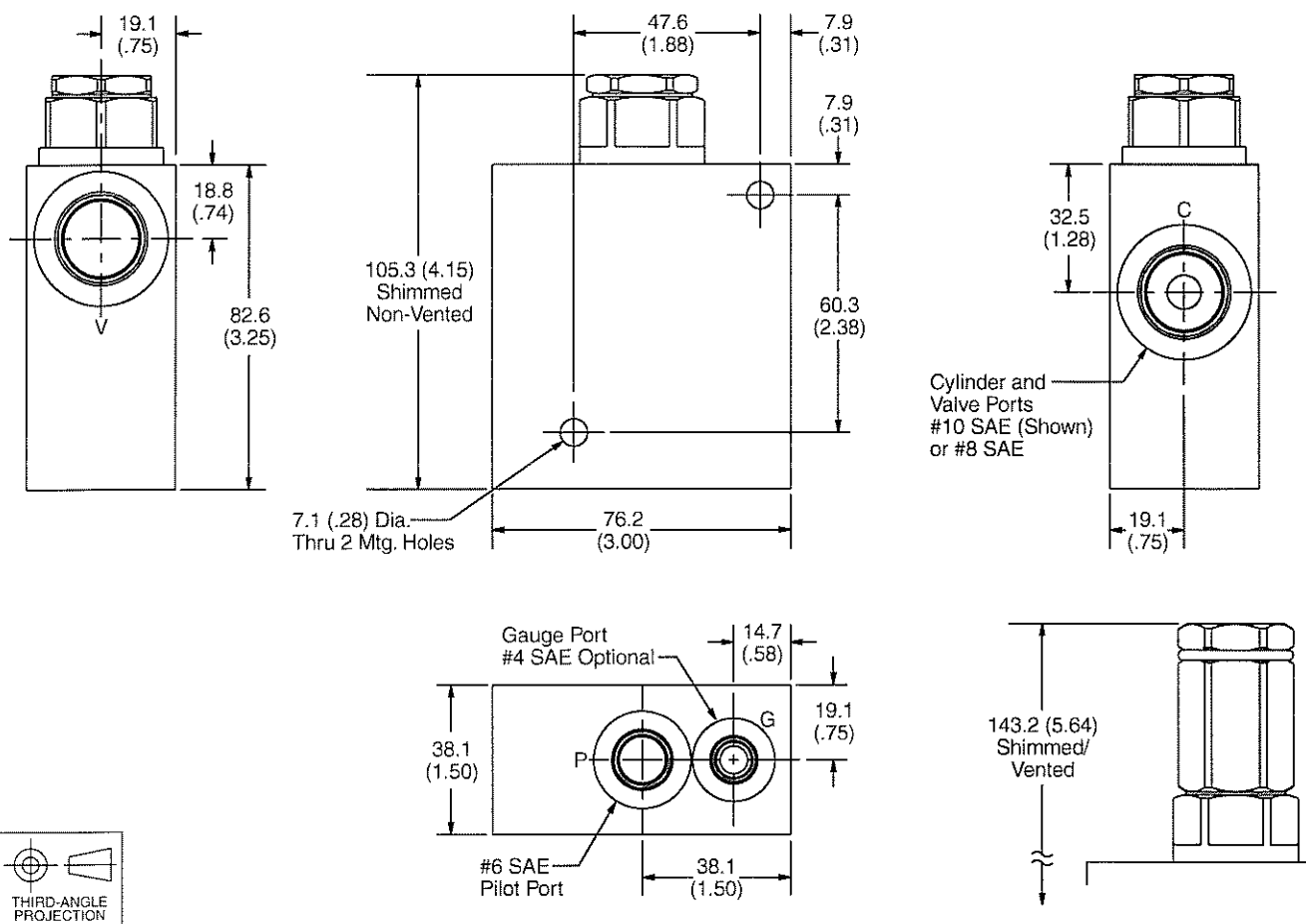
Performance Curve

Flow vs. Pressure Drop (Through cartridge only)



mhc-010.pm6.5, bl, gn

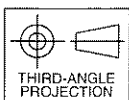
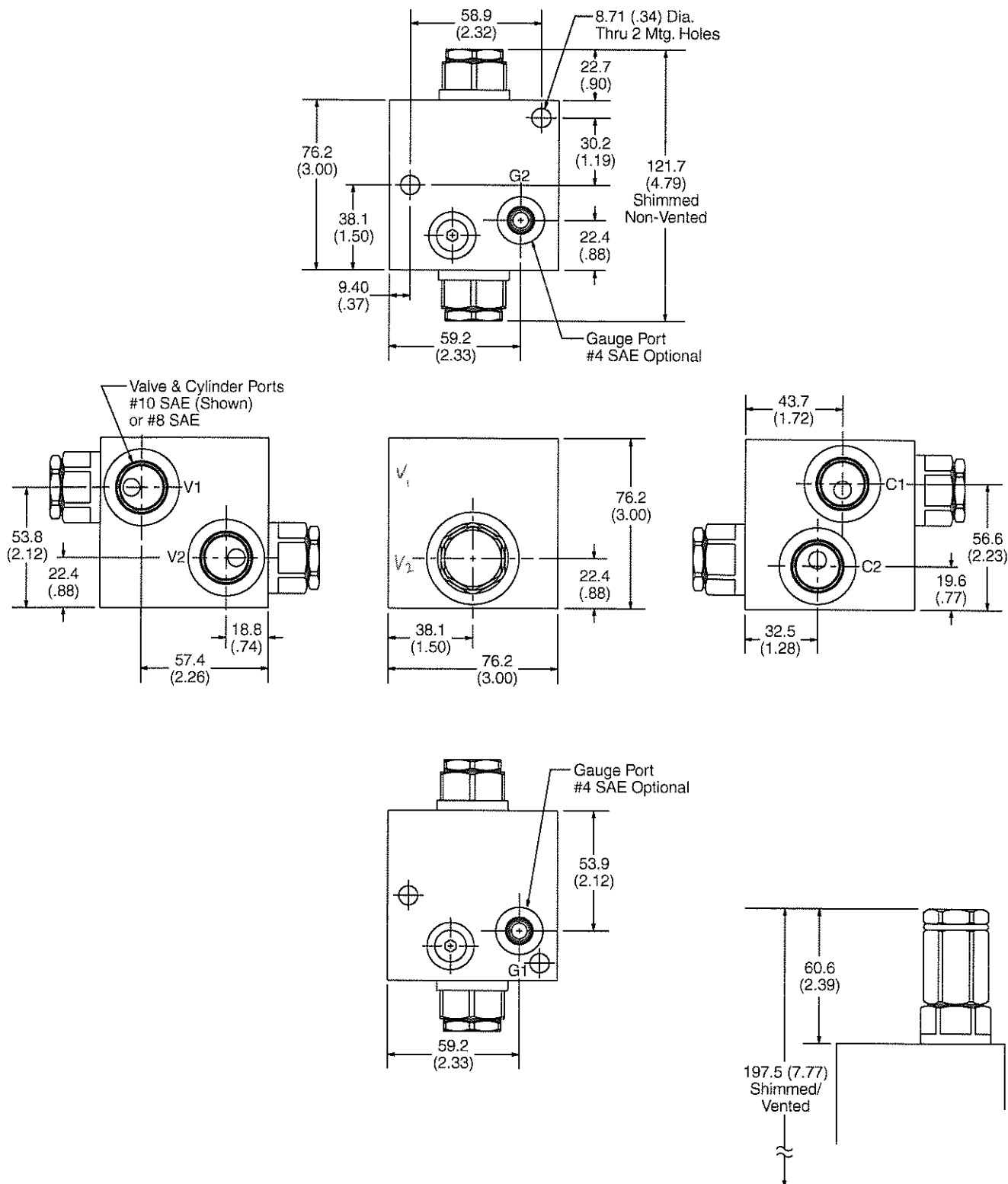
*Inch equivalents for millimeter dimensions are shown in (**)

**Series MHC-010 in Body Single In-line**

mhc-010.pm6.5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)

Series MHC-010 in Body Double In-line



mhc-010.pm6.5, bl, gn

CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

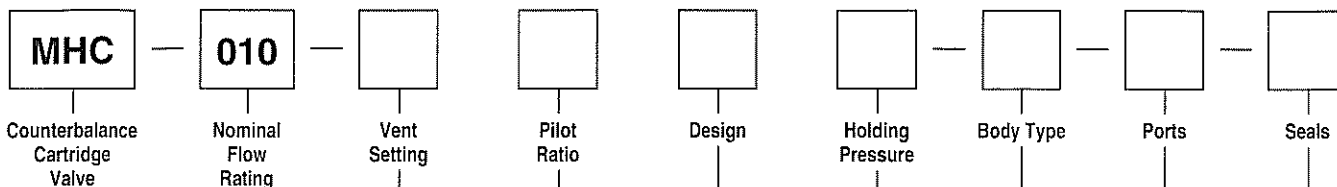
SOLENOID VALVES

SPECIALTY VALVES

COILS

BODIES

TECHNICAL DATA



Code	Flow
010	37.5 LPM (10 GPM)

Code	Ratio
A	Equal Area (1:1)
B	4:1
F	7:1 (Standard)
J	10:1

Code	Description
Omit	No Body
A	Single
D	Dual

Code	Type
S	Standard (non-vented)
V	Vented

Code	Type
S	Standard (adjustable)
N	Shimmed (non-adjustable)

Code	Description
00	No Ports
53	SAE-10 through port

Code	Type
C	Equal area
D	69 Bar (1000 PSI) Shim adjustable version only
E	103.4 Bar (1500 PSI) Shim adjustable version only
F	137.9 Bar (2000 PSI) Shim adjustable version only
G	172.4 Bar (2500 PSI) Shim adjustable version only
H	207 Bar (3000 PSI) Standard version

Code	Type
B	Nitrile
V	Fluorocarbon

Shipping Weight
 Cartridge Only .38 kg (.88 lbs.)

L 4200

General Description

Parker MHC-022 series counterbalance valves are load holding valves with a pilot assist. They can control moving loads, prevent loads from running ahead of the pump, lock loads in any position without drift, and provide static overload relief and thermal expansion relief with open center directional control valves.

Operation

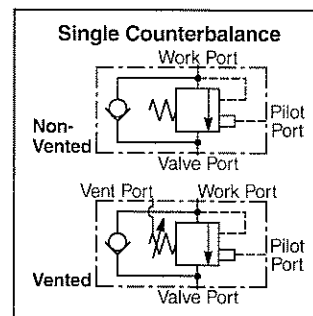
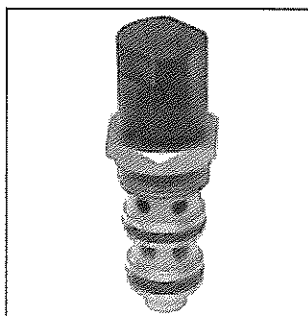
See Technical Tips.

Features

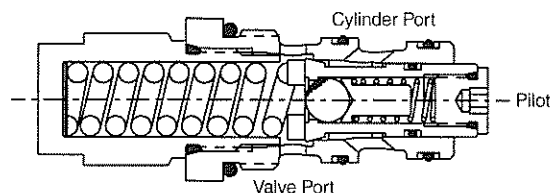
- Conical Poppet design provides longer metering stroke
- Hardened seat provides reliable load holding
- External vent option available for high back pressure applications
- Tamper resistant cap for added safety and security
- Various pilot ratios available for application flexibility
- Unique cavity prevents other valves from being "accidentally" installed

Specifications

Rated Flow	93.75 LPM (25 GPM)
Maximum Inlet Pressure	350 Bar (5000 PSI)
Leakage	5 drops/min (.33 cc/min.) @ 207 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No Restrictions
Cavity	CDD-1036

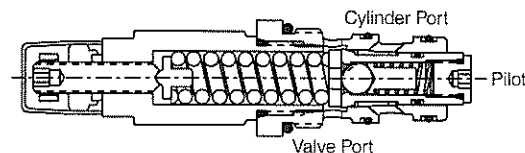


MHC-022-S*N* Non-Vented Counterbalance Non-Adjustable

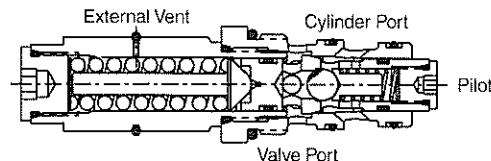


Construction

MHC-022-S*S* Non-Vented Counterbalance Adjustable

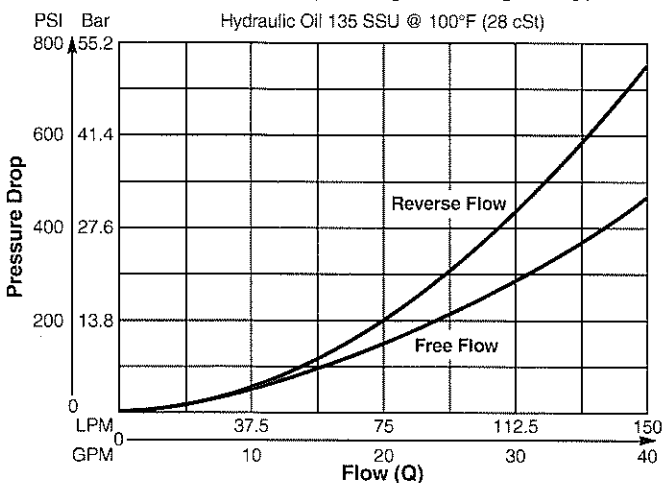


MHC-022-V*N* Vented Counterbalance Non-Adjustable

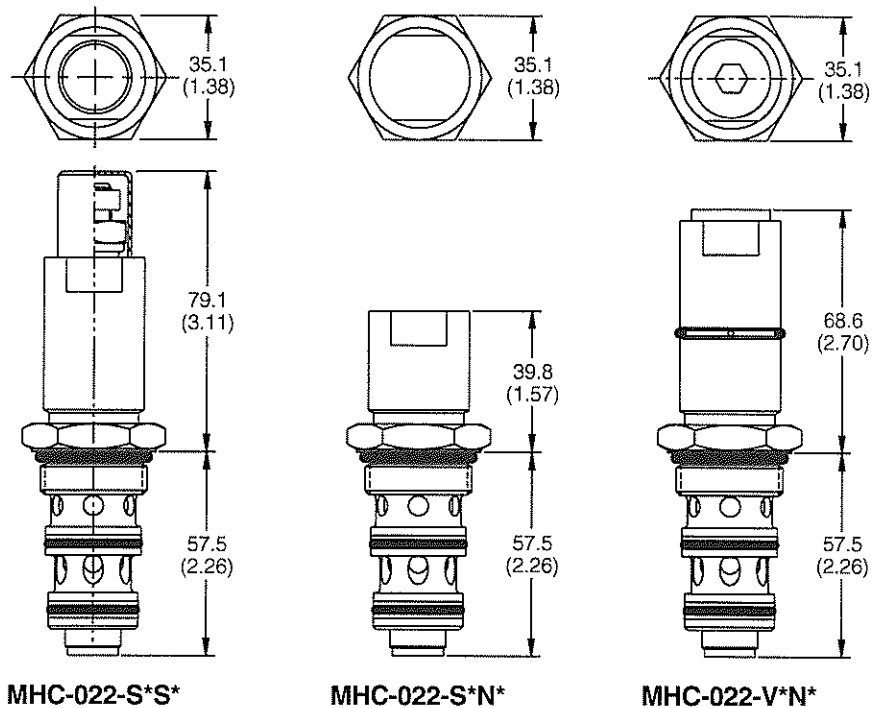


Performance Curve

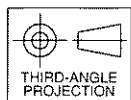
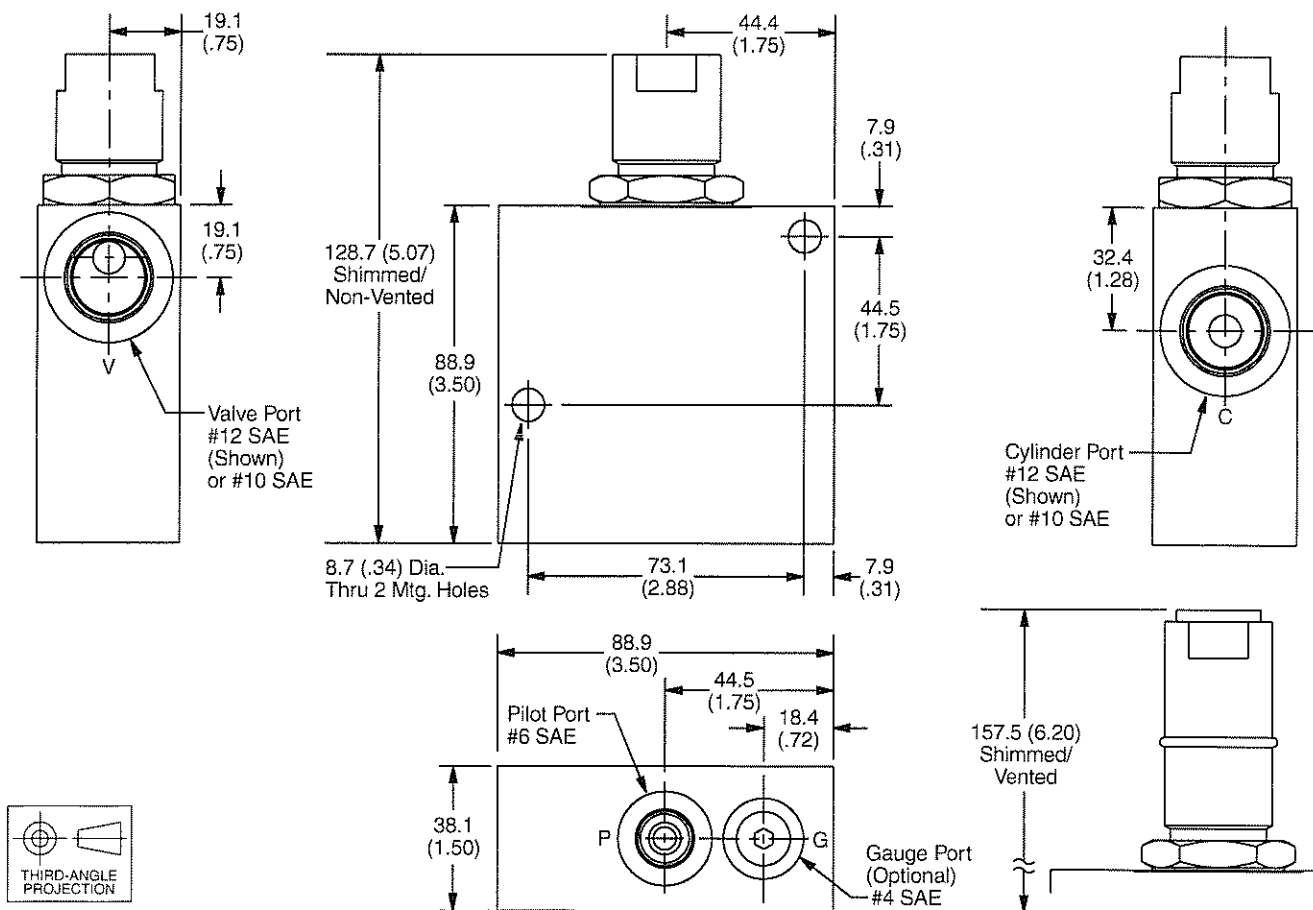
Flow vs. Pressure Drop (Through cartridge only)



*Inch equivalents for millimeter dimensions are shown in (**)



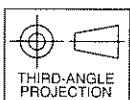
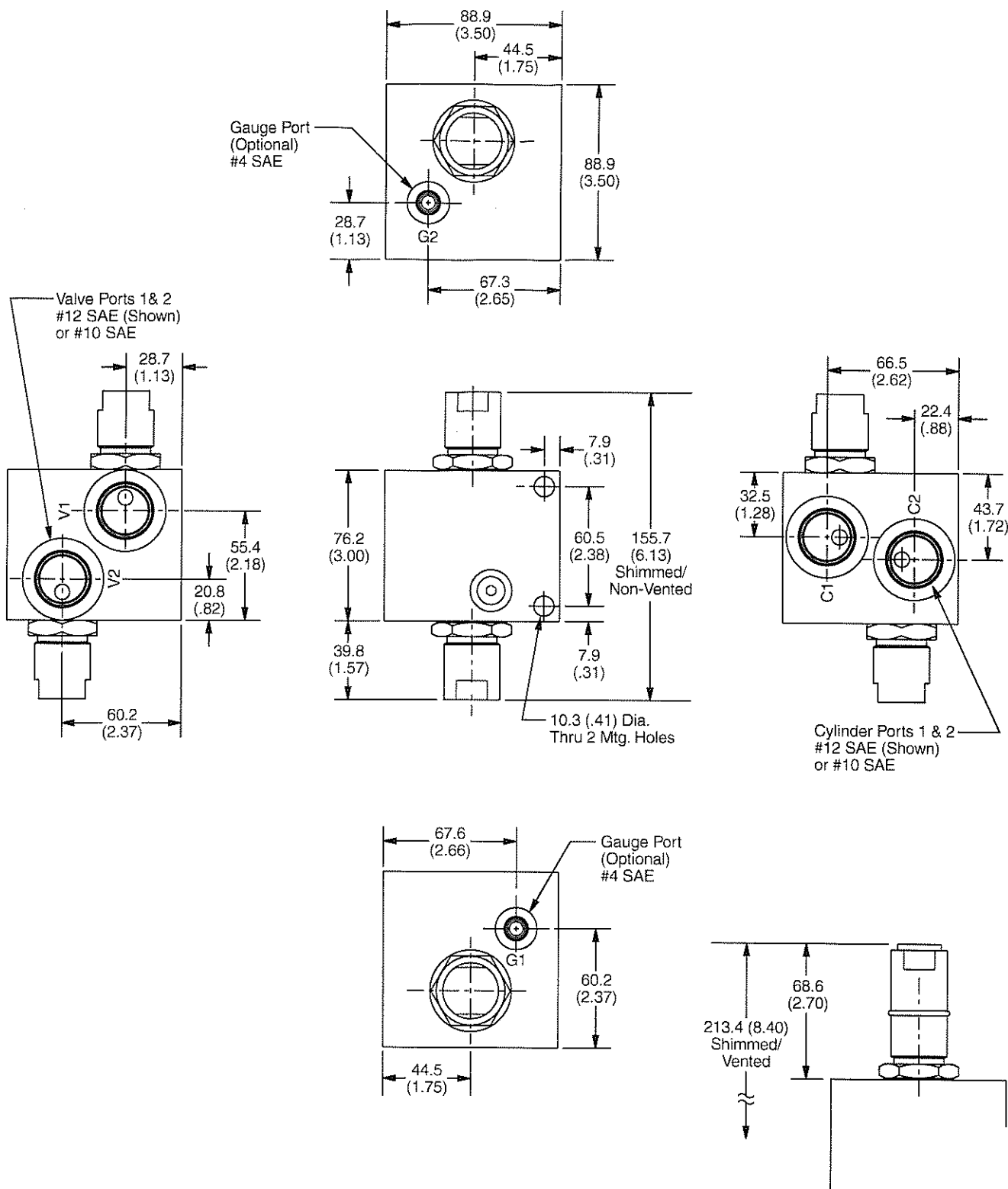
Series MHC-022 in Body, Single In-line



mhc-022.pm6.5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)

Series MHC-022 in Body, Double In-line



mhc-022.pm6.5, bl, gn

CHECKS &
SHUTTLES

LOAD & MOTOR
CONTROLS

VOLUME
CONTROLS

PRESSURE
CONTROLS

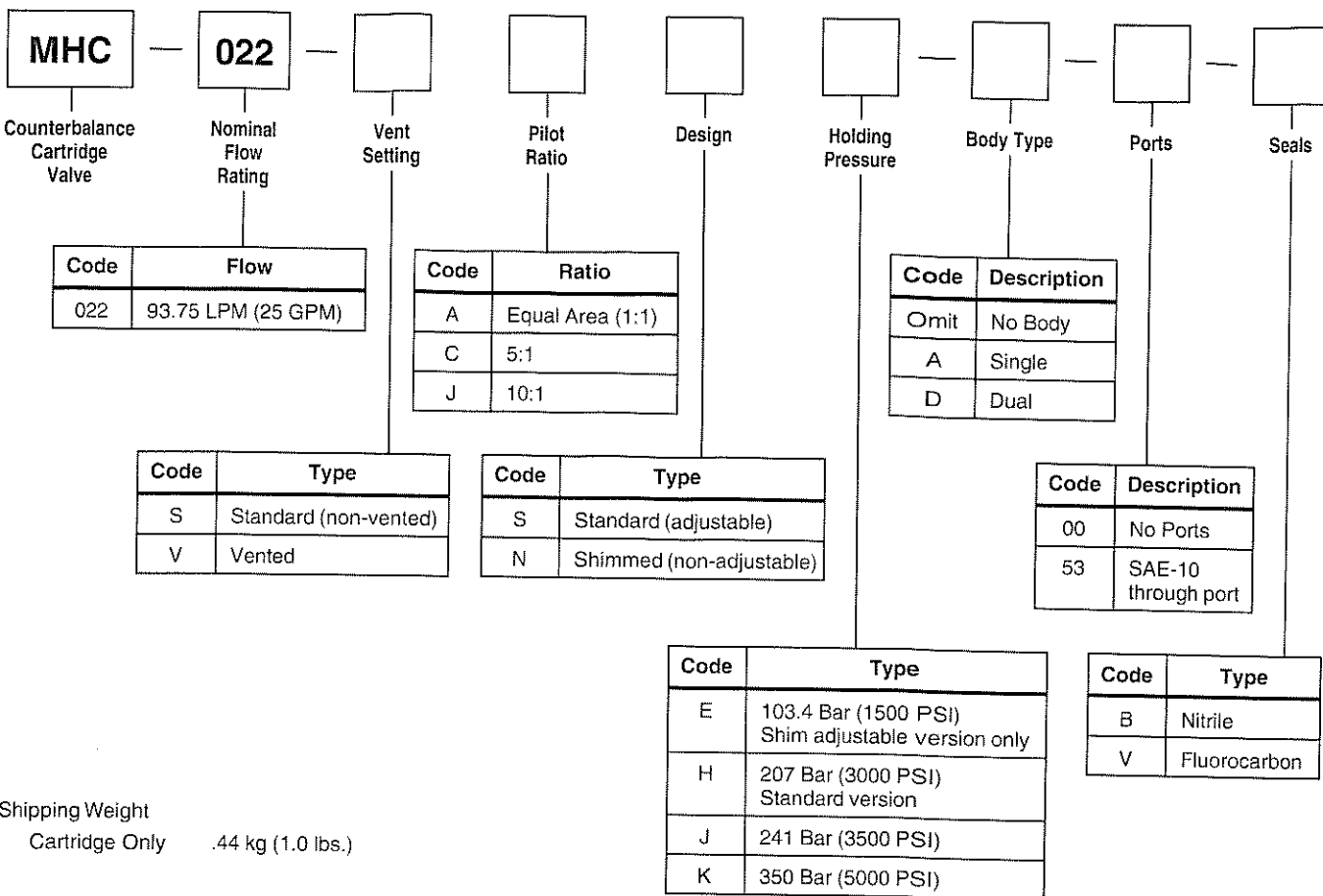
SOLENOID
VALVES

SPECIALTY
VALVES

COILS

BODIES

TECHNICAL
DATA



General Description

The MHC-025 series counterbalance valves are load-holding valves with a pilot assist. They can control moving loads, prevent loads from running ahead of the pump, lock loads in any position without drift, and provide static overload relief and thermal expansion relief with open center directional control valves.

Operation

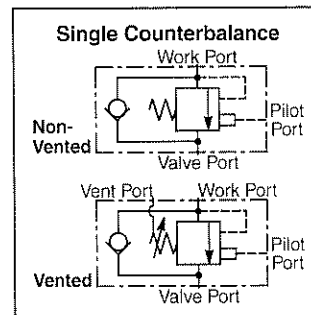
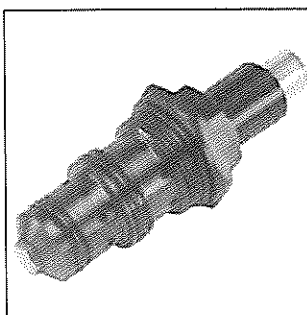
See Technical Tips.

Features

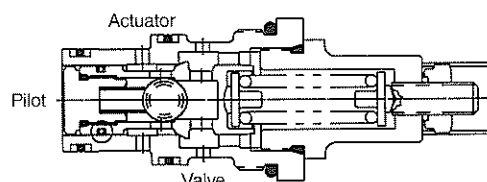
- Conical Poppet design provides longer metering stroke
- Hardened seat provides reliable load holding
- External vent option available for high back pressure applications
- Tamper resistant cap for added safety and security
- Various pilot ratios available for application flexibility
- Unique cavity prevents other valves from being "accidentally" installed

Specifications

Rated Flow	142.5 LPM (38 GPM)
Maximum Inlet Pressure	350 Bar (5000 PSI)
Leakage	5 drops/min (.33 cc/min.) @ 207 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No Restrictions
Cavity	CDD-1012

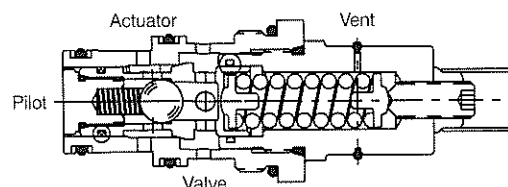


MHC-025-S*S* Non-Vented Counterbalance Adjustable



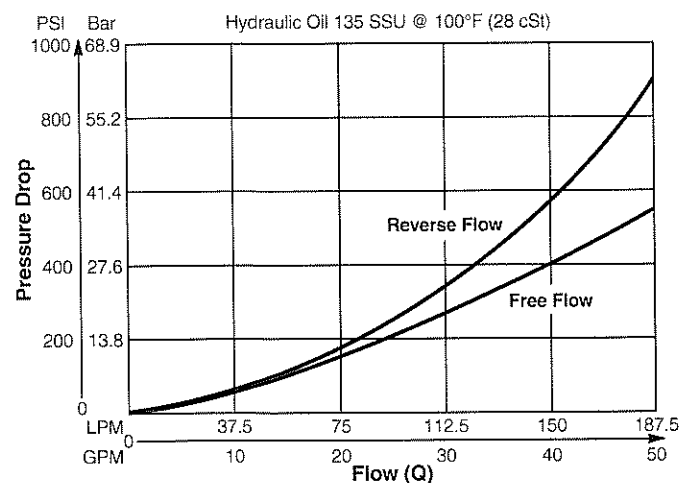
Construction

MHC-025-V*S* Vented Counterbalance Adjustable

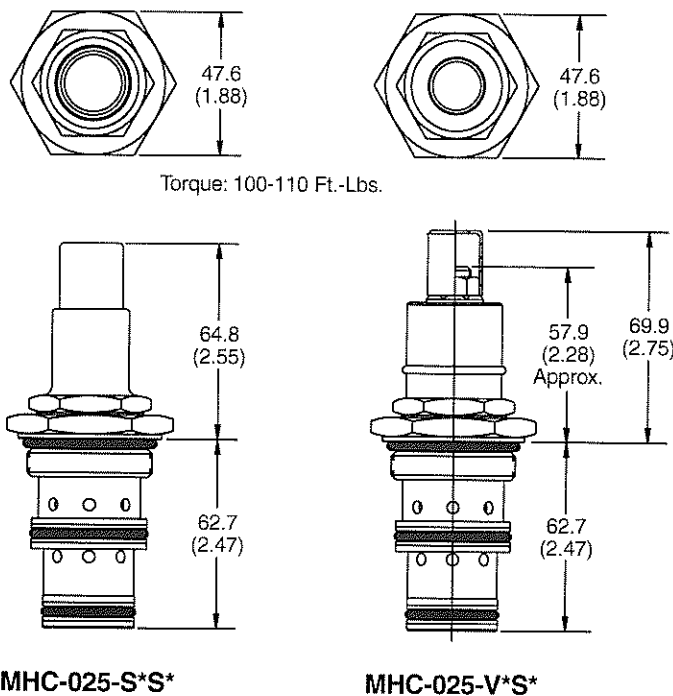


Performance Curve

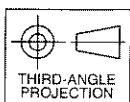
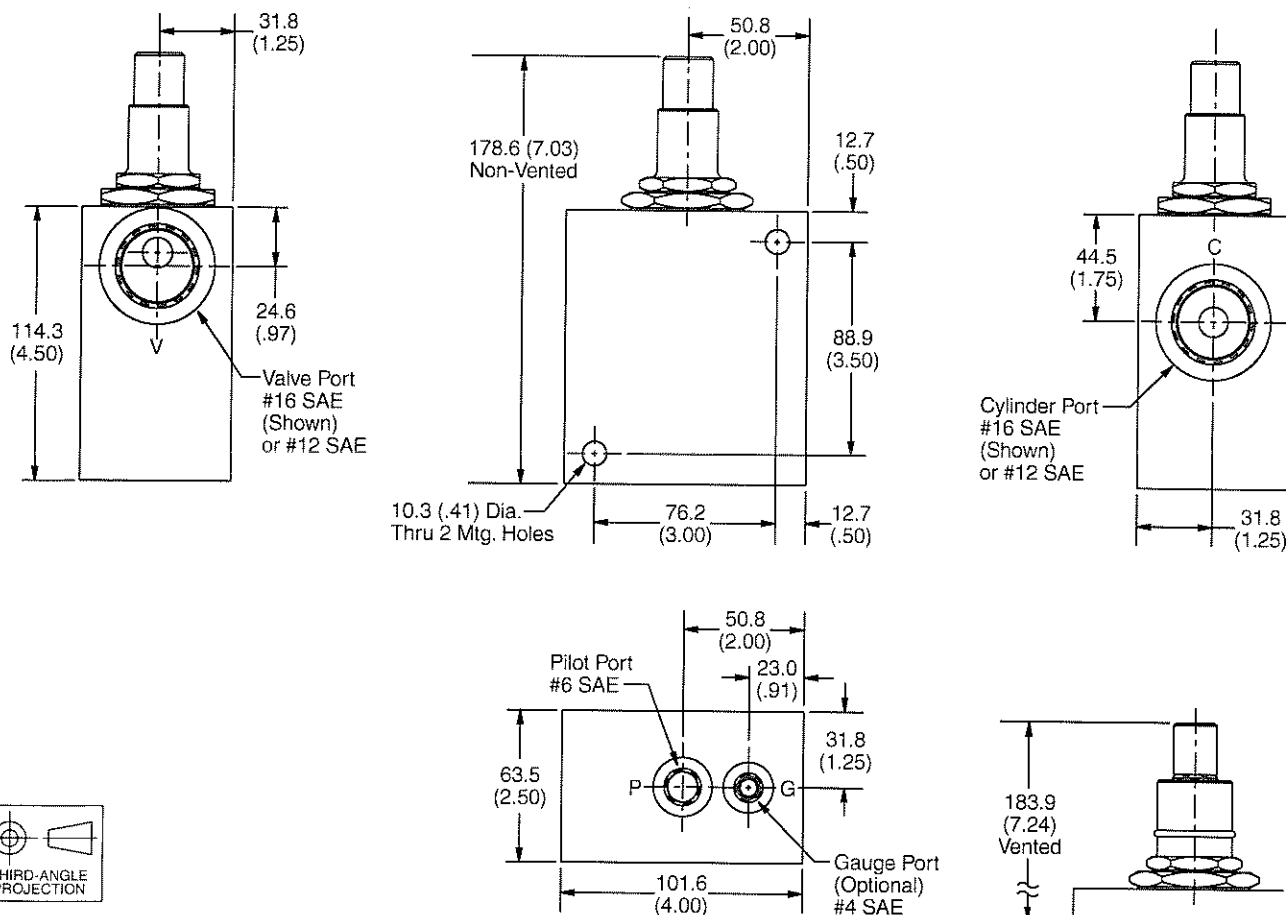
Flow vs. Pressure Drop (Through cartridge only)



*Inch equivalents for millimeter dimensions are shown in (**)



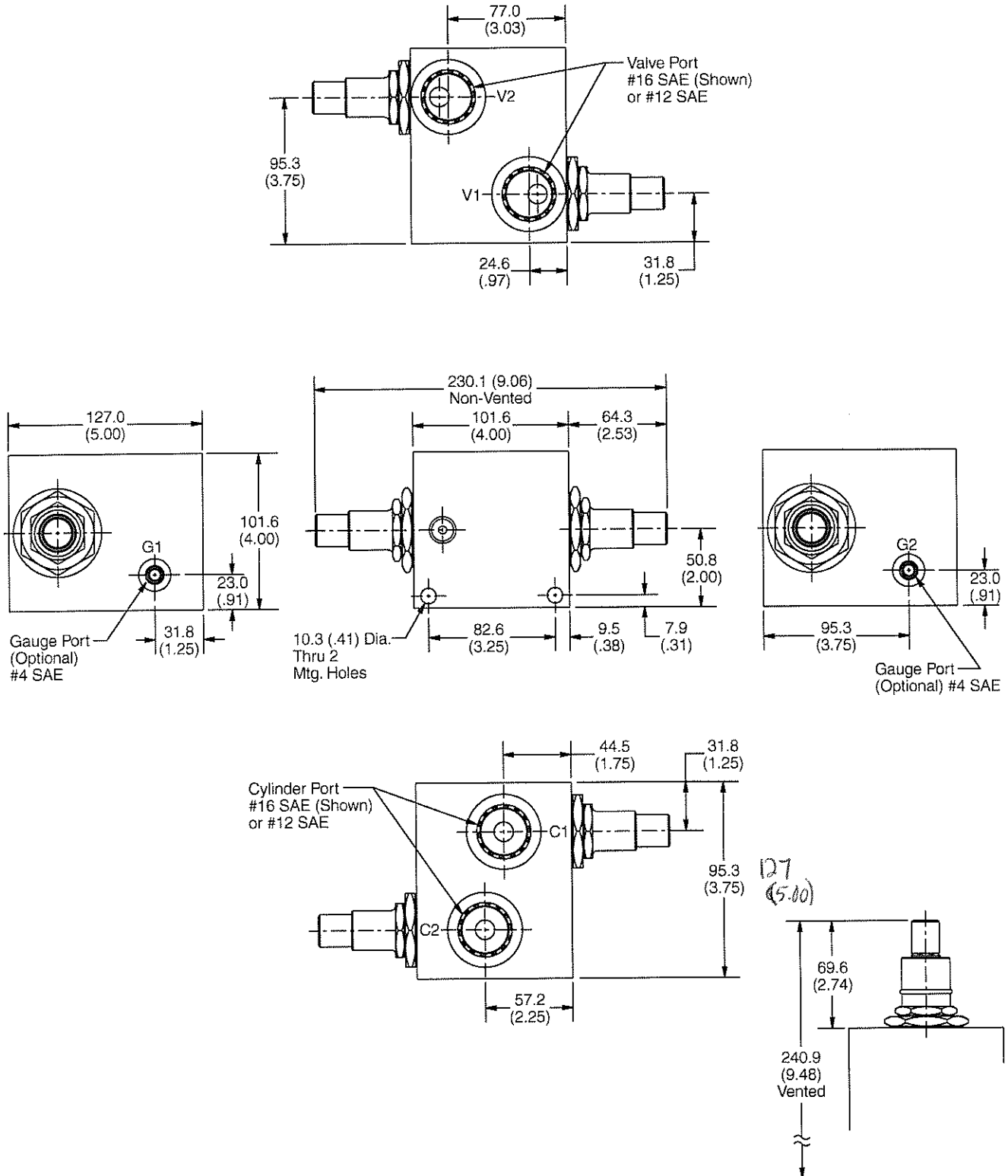
Series MHC-025 in Body, Single In-line



mhc-025.pm8.5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)

Series MHC-025 in Body, Double In-line



mhc-025.pm6.5, bl, gn

CHECKS &
SHUTTLES

LOAD & MOTOR
CONTROLS

VOLUME
CONTROLS

PRESSURE
CONTROLS

SOLENOID
VALVES

SPECIALTY
VALVES

COILS

BODIES

TECHNICAL
DATA

MHC	025			S																								
Counterbalance Cartridge Valve	Nominal Flow Rating	Vent Setting	Pilot Ratio	Adjustment Style	Holding Pressure	Body Type	Ports	Seals																				
	<table border="1"> <thead> <tr> <th>Code</th> <th>Flow</th> </tr> </thead> <tbody> <tr> <td>025</td> <td>142.5 LPM (38 GPM)</td> </tr> </tbody> </table>	Code	Flow	025	142.5 LPM (38 GPM)		<table border="1"> <thead> <tr> <th>Code</th> <th>Ratio</th> </tr> </thead> <tbody> <tr> <td>B</td> <td>4:1</td> </tr> <tr> <td>J</td> <td>10:1</td> </tr> <tr> <td>M</td> <td>25:1 (Standard)</td> </tr> </tbody> </table>	Code	Ratio	B	4:1	J	10:1	M	25:1 (Standard)			<table border="1"> <thead> <tr> <th>Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Omit</td> <td>No Body</td> </tr> <tr> <td>A</td> <td>Single</td> </tr> <tr> <td>D</td> <td>Dual</td> </tr> </tbody> </table>	Code	Description	Omit	No Body	A	Single	D	Dual		
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J	241 Bar (3500 PSI)																											
K	350 Bar (5000 PSI)																											
Code	Type																											
B	Nitrile																											
V	Fluorocarbon																											
Shipping Weight Cartridge Only		.64 kg (1.4 lbs.)																										

mhc-025.pm6.5, bl, gn

General Description

The MHC-050 series counterbalance valves are load-holding valves with a pilot assist. They can control moving loads, prevent loads from running ahead of the pump, lock loads in any position without drift, and provide static overload relief and thermal expansion relief with open center directional control valves.

Operation

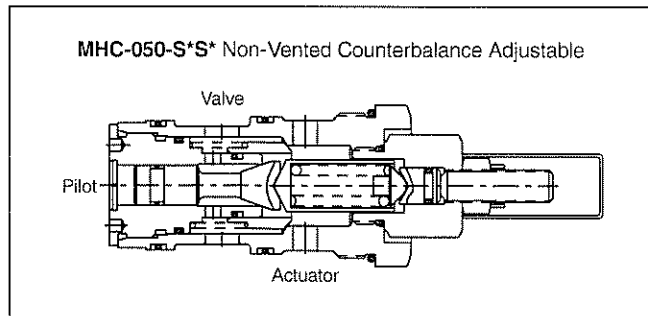
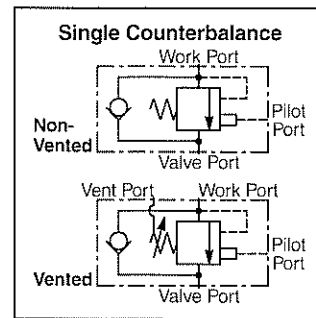
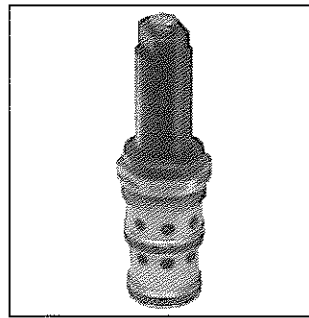
See Technical Tips.

Features

- Conical Poppet design provides longer metering stroke
- Hardened seat provides reliable load holding
- External vent option available for high back pressure applications
- Tamper resistant cap for added safety and security
- Various pilot ratios available for application flexibility
- Unique cavity prevents other valves from being “accidentally” installed

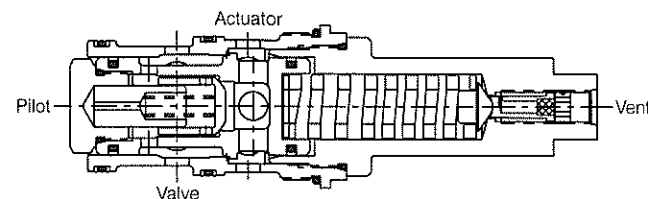
Specifications

Rated Flow	300 LPM (80 GPM)
Maximum Inlet Pressure	350 Bar (5000 PSI)
Leakage	5 drops/min (.33 cc/min.) @ 207 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No Restrictions
Cavity	CDD-1013



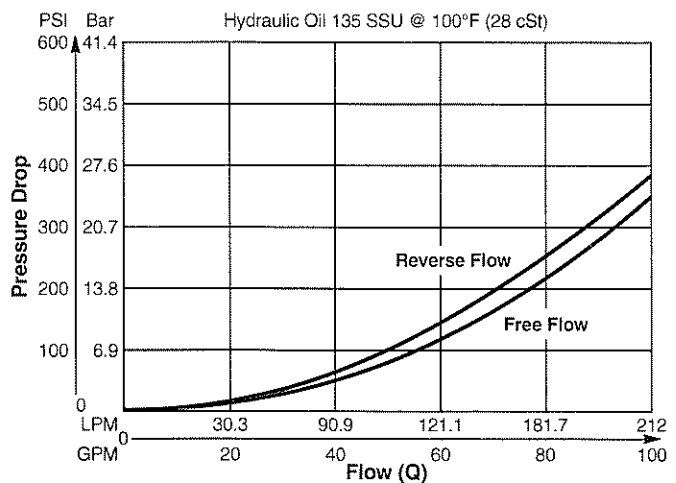
Construction

MHC-050-V*S* Vented Counterbalance Adjustable

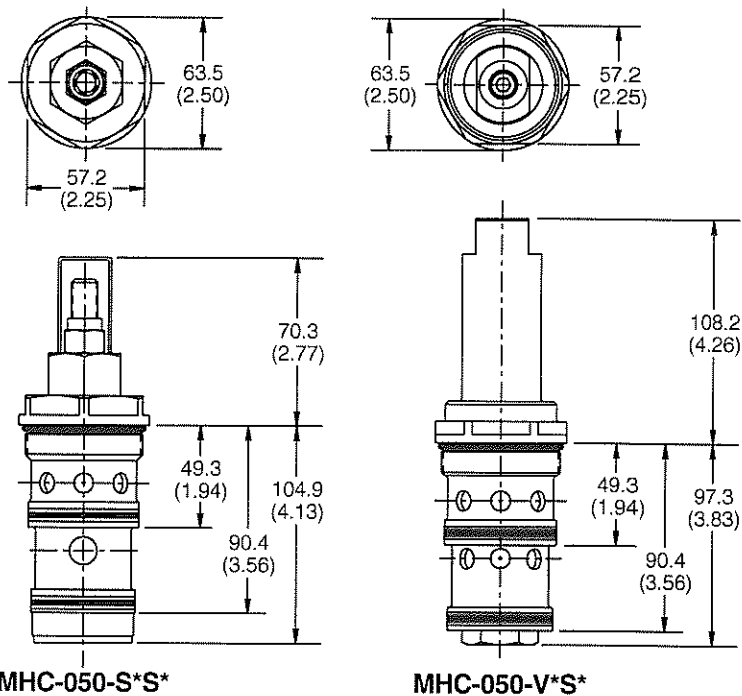


Performance Curve

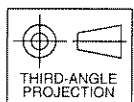
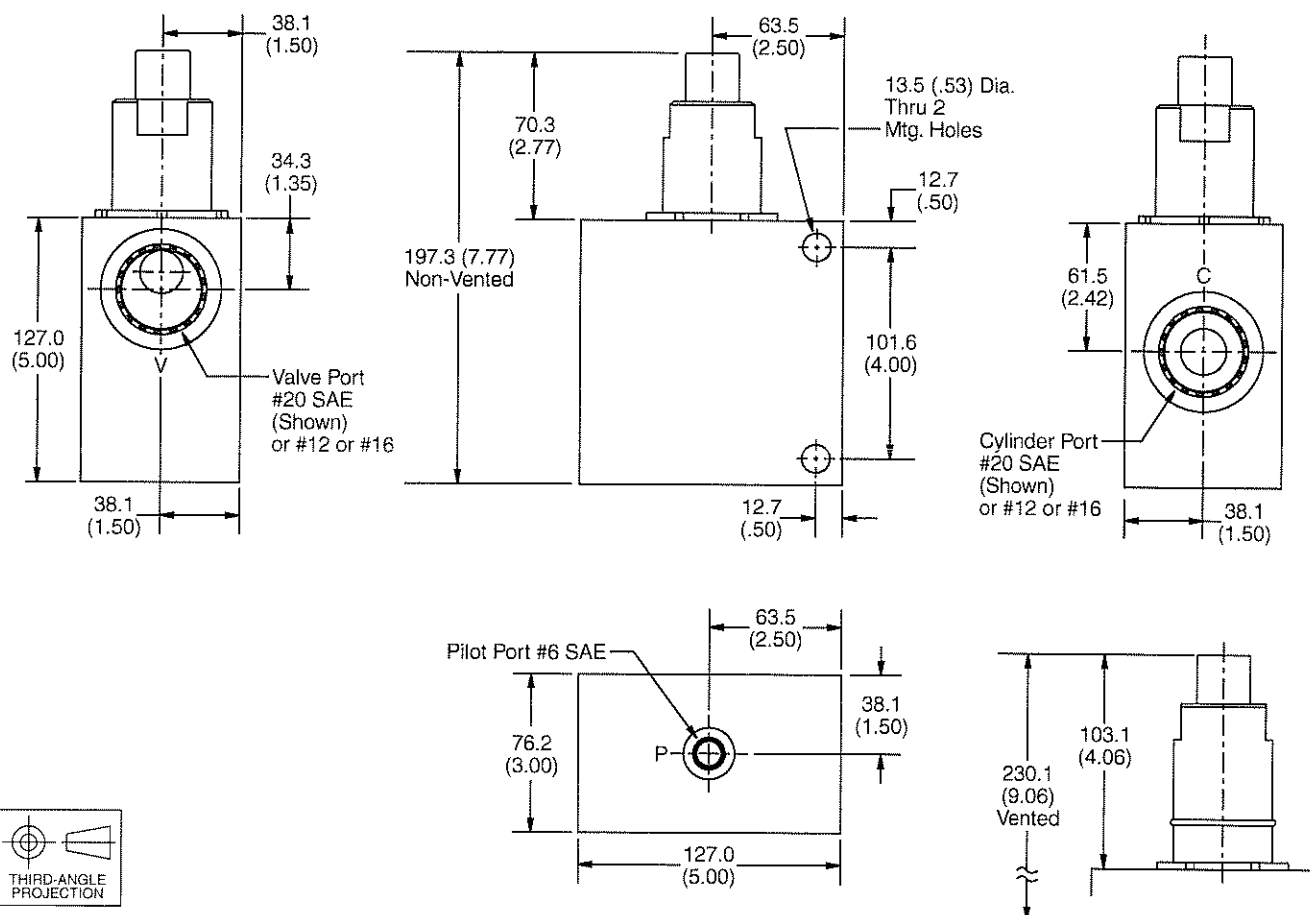
Flow vs. Pressure Drop (Through cartridge only)



*Inch equivalents for millimeter dimensions are shown in (**)



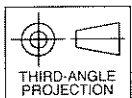
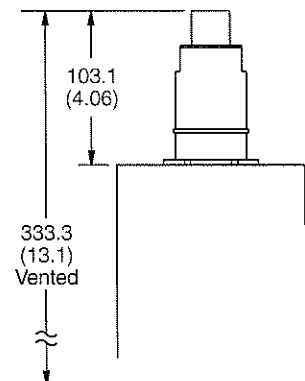
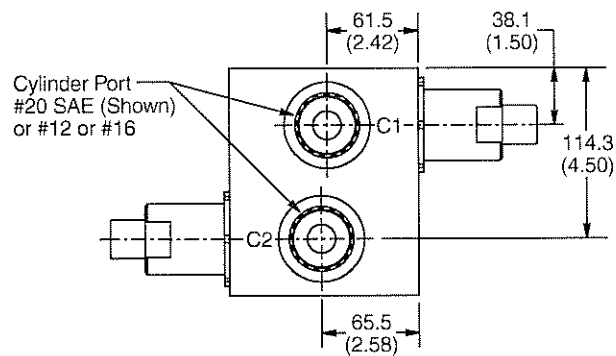
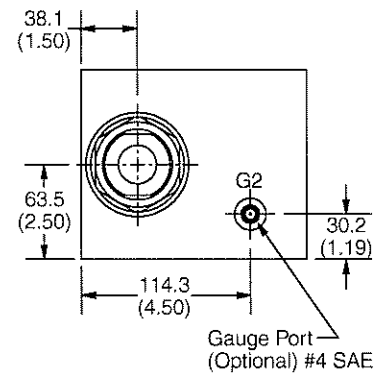
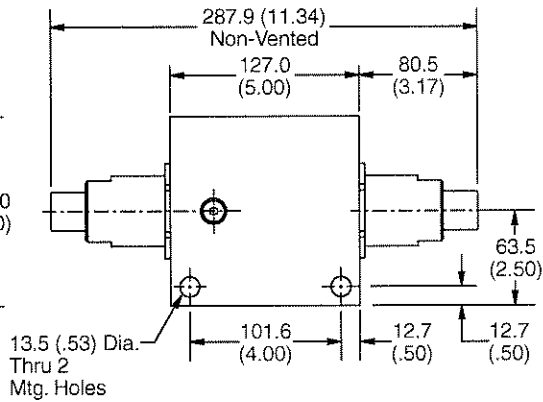
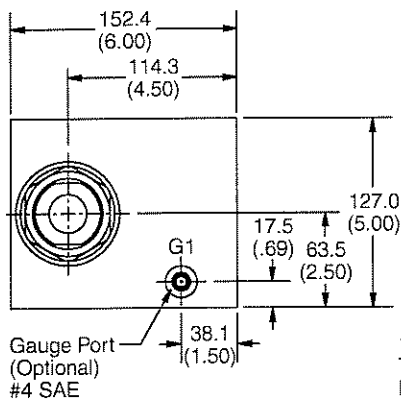
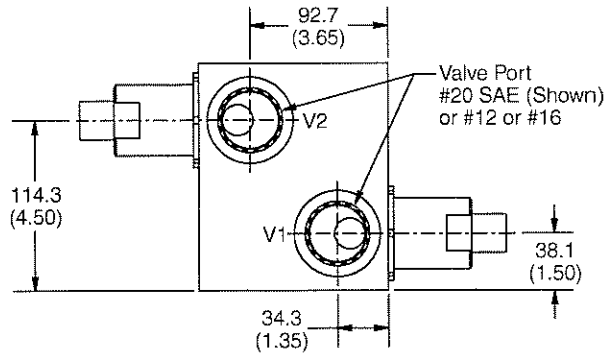
Series MHC-050 in Body, Single In-line



mhc-050.pm6.5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)

Series MHC-050 in Body, Double In-line



mhc-050,pm6.5, bl, gn

CHECKS &
SHUTTLES

LOAD & MOTOR
CONTROLS

VOLUME
CONTROLS

PRESSURE
CONTROLS

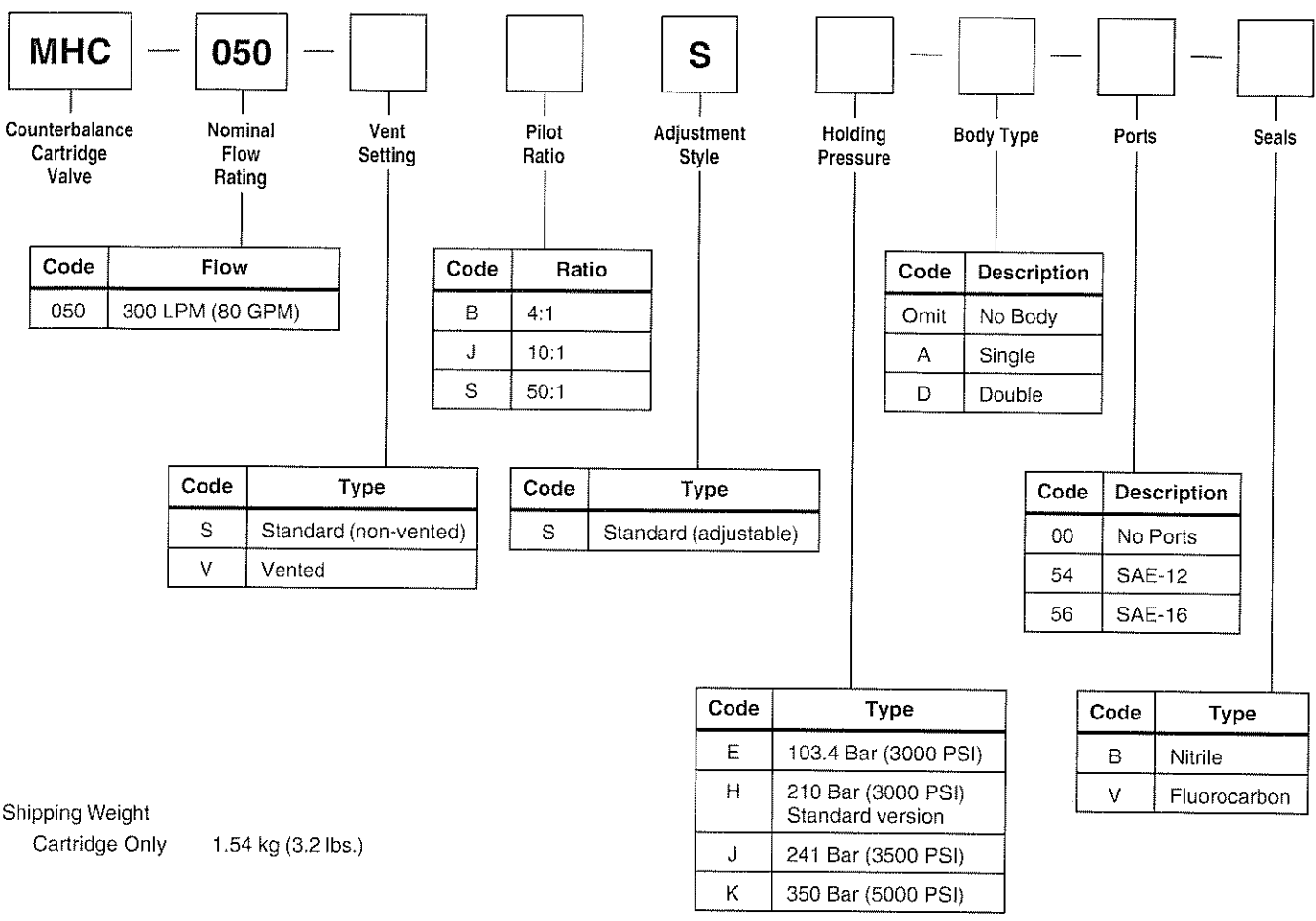
SOLENOID
VALVES

SPECIALTY
VALVES

COILS

BODIES

TECHNICAL
DATA



mhc-050,pm6.5, bl, gn

General Description

The MHC-120 series counterbalance valves are load-holding valves with a pilot assist. They can control moving loads, prevent loads from running ahead of the pump, lock loads in any position without drift, and provide static overload relief and thermal expansion relief with open center directional control valves.

Operation

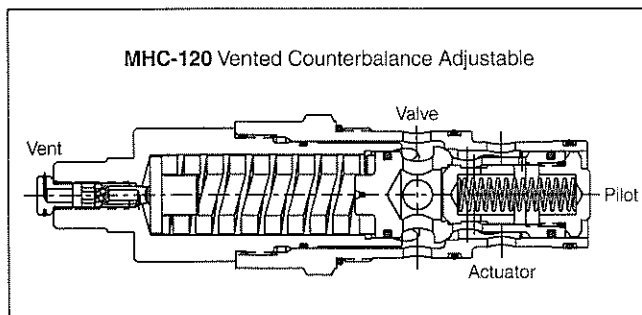
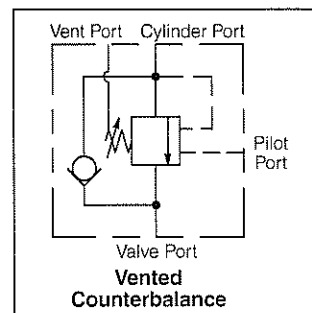
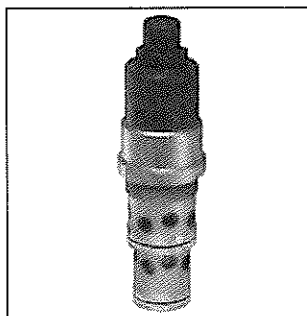
See Technical Tips.

Features

- Conical Poppet design provides longer metering stroke
- Hardened seat provides reliable load holding
- External vent style for high back pressure applications
- Tamper resistant cap for added safety and security
- Various pilot ratios available for application flexibility
- Unique cavity prevents other valves from being "accidentally" installed

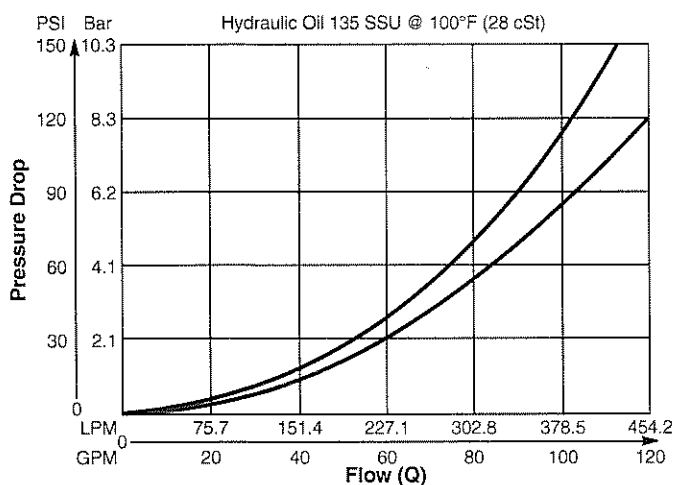
Specifications

Rated Flow	675 LPM (180 GPM)
Maximum Inlet Pressure	350 Bar (5000 PSI)
Leakage	5 drops/min (.33 cc/min.) @ 207 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No Restrictions
Cavity	CDD-1014



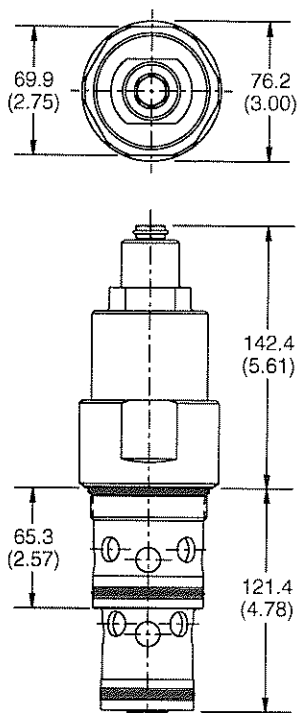
Performance Curve

Flow vs. Pressure Drop (Through cartridge only)



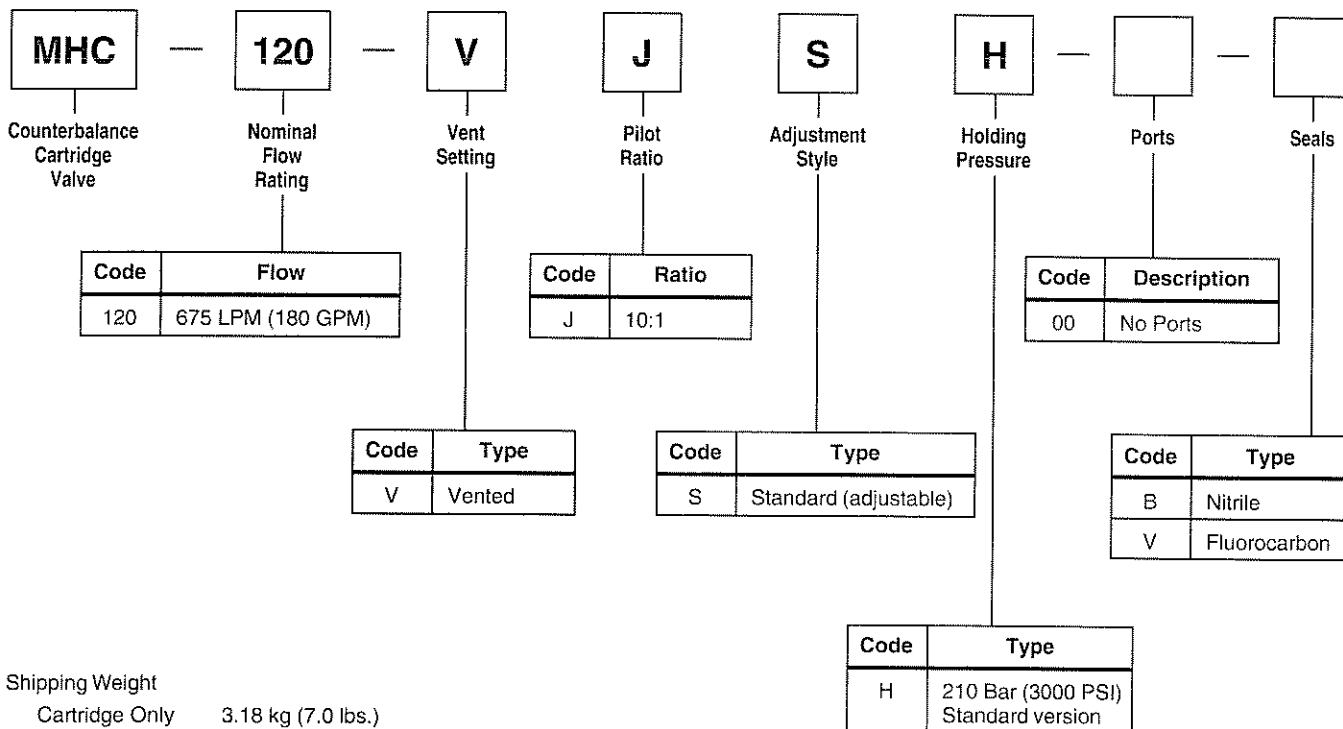
Dimensions

*Inch equivalents for millimeter dimensions are shown in (**)



MHC-120-V*S*

Ordering Information



mhc-120 pm6.5, bl, gn

General Description

CB101 series counterbalance valves are load holding valves with a pilot assist. They can control moving loads, prevent loads from running ahead of the pump, lock loads in any position without drift, and provide static overload relief and thermal expansion relief with open center directional control valves.

Operation

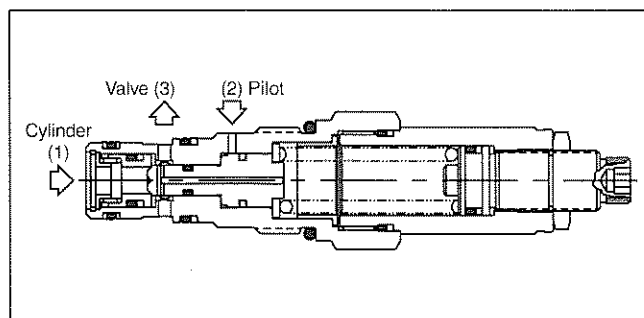
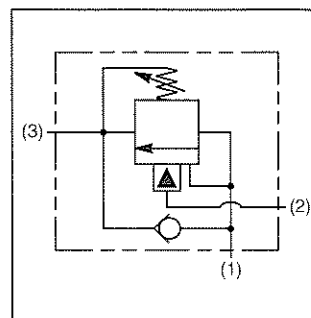
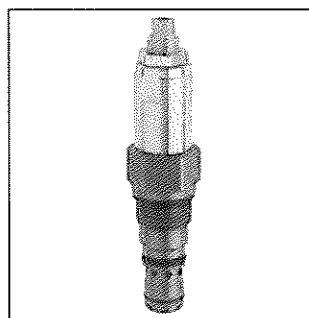
See Technical Tips.

Features

- Sealed spool type design for improved stability and accuracy as well as low leakage
- Low leakage poppet-type check valve for reliable load holding
- All external parts have yellow zinc dichromate finish. This coating enables them to withstand a 200 hour salt spray test
- Parker cartridge design for ease of installation and maintenance
- Compact size for reduced space requirements

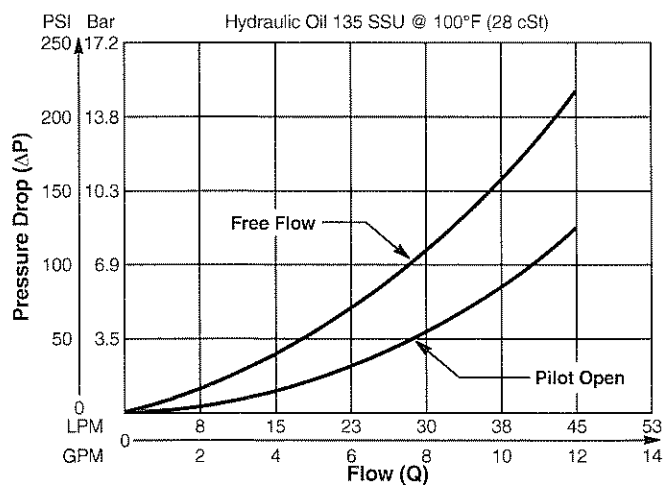
Specifications

Maximum Flow	45 LPM (12 GPM)
Maximum Inlet Pressure	380 Bar (5500 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Setting Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Min. Operating Pressure	20.7 Bar (300 PSI)
Reseat Pressure	80% of crack pressure (Valve returns to non-relieving mode)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No Restrictions
Cavity	Common Cavity No. C10-3



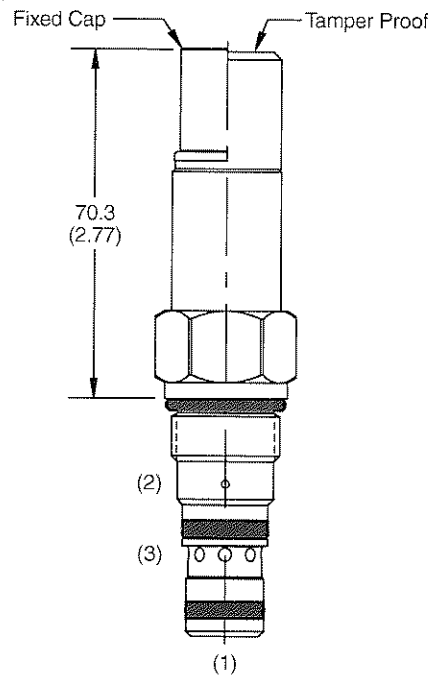
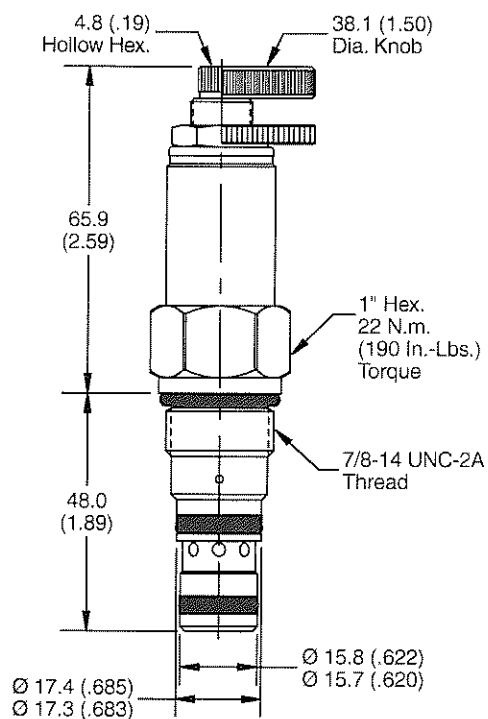
Performance Curve

Pressure Drop vs. Flow (Through cartridge only)

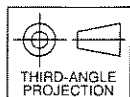
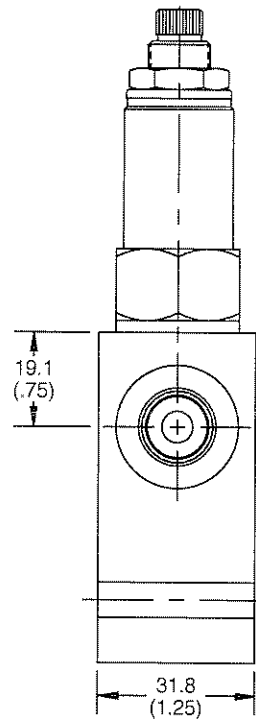
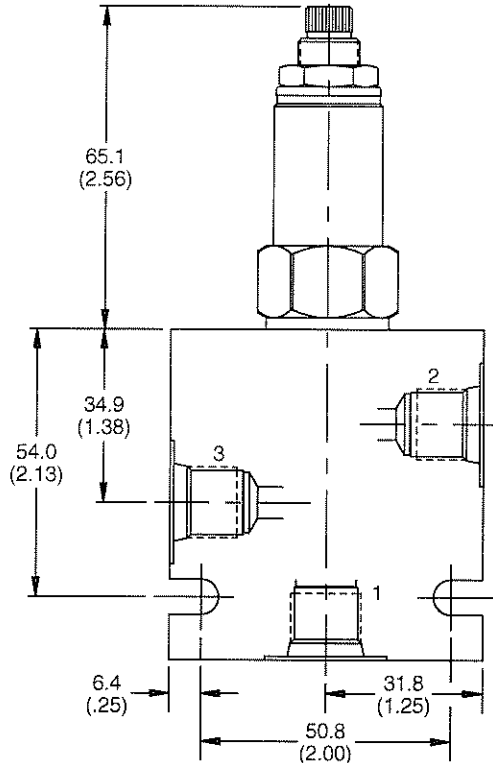


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Cartridge Only



Cartridge In Body



cb101.pm6.5, bl, gn

CB	10	1																																																																	
Counterbalance Valve	Size	Style	Pilot Ratio	Adjustment Style	Pressure Range	Seals	Optional Pressure Setting	Body Option																																																											
	7/8-14 UNC-2B Threaded Cavity with .62" Dia. Seat	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Code</th> <th>Pilot Ratio</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>3:1</td> </tr> <tr> <td>B</td> <td>4.5:1</td> </tr> <tr> <td>C</td> <td>7:1</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Code</th> <th>Style</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Pilot Assisted Spool</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Code</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>F</td> <td>Fixed style, preset at factory. Specify desired pressure setting @ 11.3 LPM (3 GPM). For other flow rates, consult factory.</td> </tr> <tr> <td>K</td> <td>Knob Adjust</td> </tr> <tr> <td>S</td> <td>Screw Adjust</td> </tr> <tr> <td>T</td> <td>Tamper Resistant Cap</td> </tr> </tbody> </table>	Code	Pilot Ratio	A	3:1	B	4.5:1	C	7:1	Code	Style	1	Pilot Assisted Spool	Code	Type	F	Fixed style, preset at factory. Specify desired pressure setting @ 11.3 LPM (3 GPM). For other flow rates, consult factory.	K	Knob Adjust	S	Screw Adjust	T	Tamper Resistant Cap				<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Code</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>Omit</td> <td>Nitrile</td> </tr> <tr> <td>V</td> <td>Fluorocarbon</td> </tr> </tbody> </table> Description Pressure ÷ 10 i.e. 235 = 2350 PSI Setting Range: 300 to 5000 PSI All settings at 11.3 LPM (3 GPM) <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Code</th> <th>Port Size & Material</th> </tr> </thead> <tbody> <tr> <td>Omit</td> <td>Cartridge Only</td> </tr> <tr> <td>4P</td> <td>1/4" NPTF (B10-3-4P) Steel</td> </tr> <tr> <td>A4P</td> <td>1/4" NPTF (B10-3-A4P) Aluminum</td> </tr> <tr> <td>6P</td> <td>3/8" NPTF (B10-3-6P) Steel</td> </tr> <tr> <td>A6P</td> <td>3/8" NPTF (B10-3-A6P) Aluminum</td> </tr> <tr> <td>8P</td> <td>1/2" NPTF (B10-3-8P) Steel</td> </tr> <tr> <td>A8P</td> <td>1/2" NPTF (B10-3-A8P) Aluminum</td> </tr> <tr> <td>6T</td> <td>SAE-6 (B10-3-6T) Steel</td> </tr> <tr> <td>A6T</td> <td>SAE-6 (B10-3-A6T) Aluminum</td> </tr> <tr> <td>8T</td> <td>SAE-8 (B10-3-8T) Steel</td> </tr> <tr> <td>A8T</td> <td>SAE-8 (B10-3-A8T) Aluminum</td> </tr> <tr> <td>4B</td> <td>1/4" BSPG (B10-3-4B) Steel</td> </tr> <tr> <td>A4B</td> <td>1/4" BSPG (B10-3-A4B) Aluminum</td> </tr> <tr> <td>6B</td> <td>3/8" BSPG (B10-3-6B) Steel</td> </tr> <tr> <td>A6B</td> <td>3/8" BSPG (B10-3-A6B) Aluminum</td> </tr> </tbody> </table>	Code	Type	Omit	Nitrile	V	Fluorocarbon	Code	Port Size & Material	Omit	Cartridge Only	4P	1/4" NPTF (B10-3-4P) Steel	A4P	1/4" NPTF (B10-3-A4P) Aluminum	6P	3/8" NPTF (B10-3-6P) Steel	A6P	3/8" NPTF (B10-3-A6P) Aluminum	8P	1/2" NPTF (B10-3-8P) Steel	A8P	1/2" NPTF (B10-3-A8P) Aluminum	6T	SAE-6 (B10-3-6T) Steel	A6T	SAE-6 (B10-3-A6T) Aluminum	8T	SAE-8 (B10-3-8T) Steel	A8T	SAE-8 (B10-3-A8T) Aluminum	4B	1/4" BSPG (B10-3-4B) Steel	A4B	1/4" BSPG (B10-3-A4B) Aluminum	6B	3/8" BSPG (B10-3-6B) Steel	A6B	3/8" BSPG (B10-3-A6B) Aluminum	
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SERVICE PARTS

Knob Kit Option: 717784-10

Tamper Kit Option: 717785

Nitrile Seal Kit: SK10-3

Fluorocarbon Seal Kit: SK10-3V

Shipping Weight

Cartridge Only

.23 kg (0.5 lbs.)

General Description

The MMB-015 Series Motor Control Valves are used in motor circuits to insure positive control of overrunning loads and to prevent open loop motor cavitation. They are ideally suited for hydraulic winch control, conveyor control, or traction drive circuits. For applications in closed loop motor circuits, vented spring cavities are required. Please contact the factory for part numbers. The valve body is manifold mounted, and its mounting face will fit the TB, TE, TF, & TG series Parker motors.

Operation

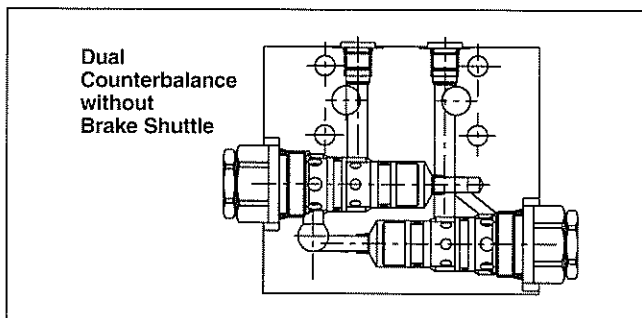
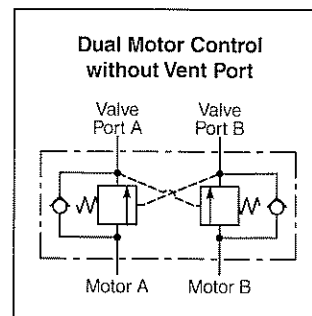
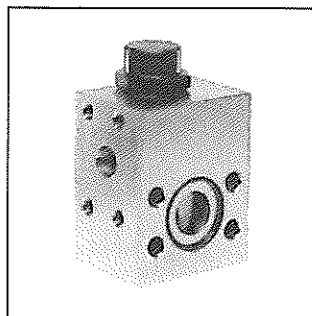
Free flow to the motor is allowed through the internal check valve. In the controlled flow direction, the oil passes across a metering poppet. The position of the metering poppet is determined by an external pilot signal from the other side of the motor. In an open loop motor circuit, this pilot signal will be a 1:1 ratio. The reason an equal ratio pilot signal is utilized is to provide positive control as well as to release mechanical brakes (when used in a braking circuit). In applications where the motor will see overrunning loads in both directions (such as a traction drive circuit), a dual MMB-015 or two single MMB-015 valves must be used.

Features

- Hardened and precision ground parts for long life
- Compact size for reduced space requirements
- Low leakage design
- Fluorocarbon seals standard

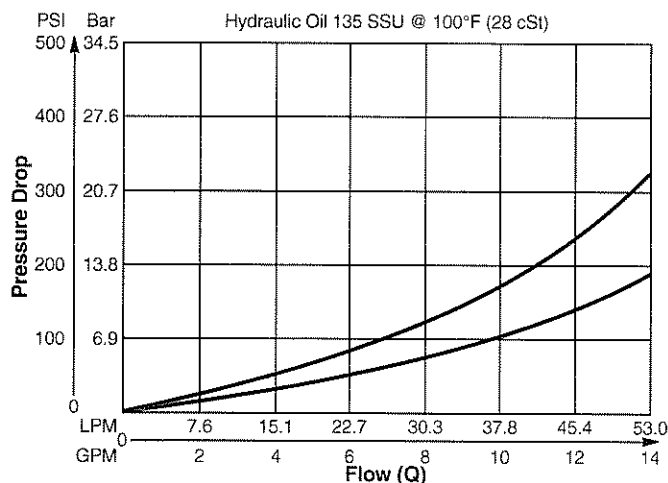
Specifications

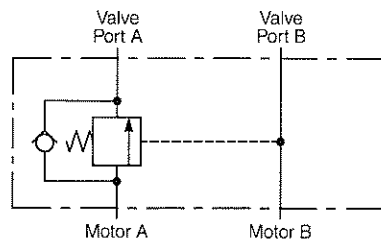
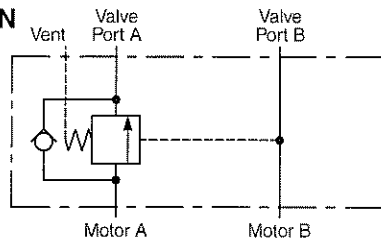
Maximum Flow	56.25 LPM (15 GPM)
Operating Press.	210 Bar (3000 PSI)
Minimum Pilot Pressure	20.7 Bar (300 PSI)
Leakage	5 drops/min. (.33 cc/min.) @ 210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-31.7°C to +121.1°C (-25°F to +250°F) (Fluorocarbon Seals Only)
Filtration	ISO code 16/13 SAE Class 4 or better
Cavity	CDD-1010



Performance Curve

Flow vs. Pressure Drop

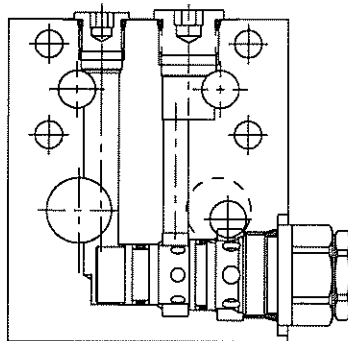
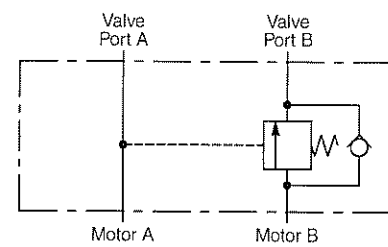
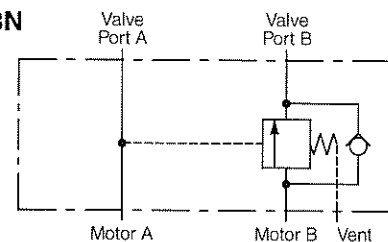


MMB-015-A*MH-53NA Port Motor Control
Non-Vented Cartridge**MMB-015-V-A*MH-53N**A Port Motor Control
Vented Cartridge**MMB-015-A*MH-53N**

(Non-Vented)

MMB-015-V-A*MH-53N

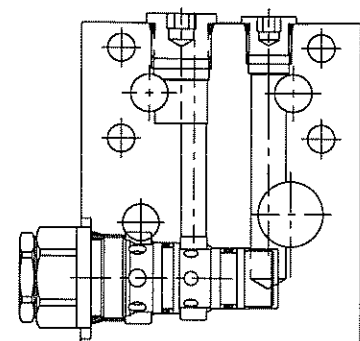
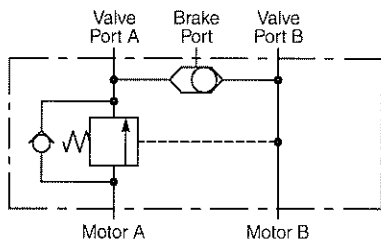
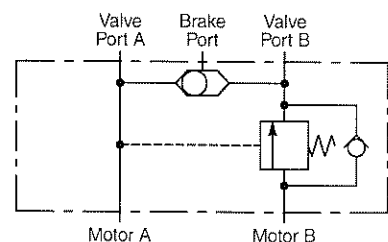
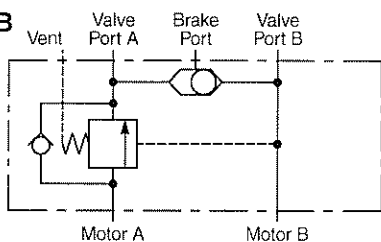
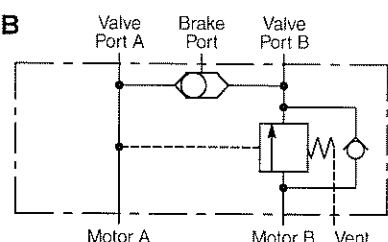
(Vented)

A Port Counterbalance
without Brake Shuttle**MMB-015-B*MH-53N**B Port Motor Control
Non-Vented Cartridge**MMB-015-V-B*MH-53N**B Port Motor Control
Vented Cartridge**MMB-015-B*MH-53N**

(Non-Vented)

MMB-015-V-B*MH-53N

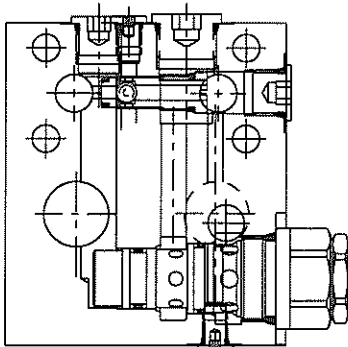
(Vented)

B Port Counterbalance
without Brake Shuttle**MMB-015-A*MH-53B**A Port Motor Control
with Brake Release Shuttle,
Non-Vented Cartridge**MMB-015-B*MH-53B**B Port Motor Control
with Brake Release Shuttle,
Non-Vented Cartridge**MMB-015-V-A*MH-53B**A Port Motor Control
with Brake Release Shuttle,
Vented Cartridge**MMB-015-V-B*MH-53B**B Port Motor Control
with Brake Release Shuttle,
Vented Cartridge**MMB-015-A*MH-53B**

(Non-Vented)

MMB-015-V-A*MH-53B

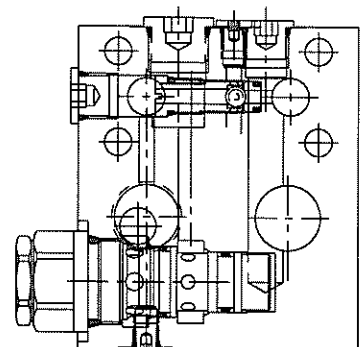
(Vented)

A Port Motor Control
Manifold Mount
with Brake Shuttle**MMB-015-B*MH-53B**

(Non-Vented)

MMB-015-V-B*MH-53B

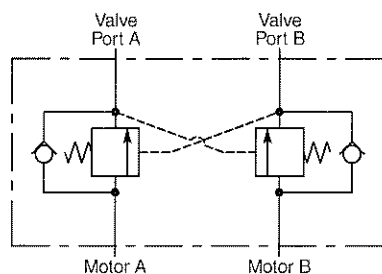
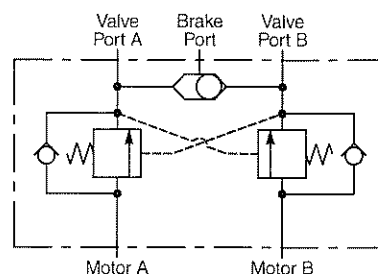
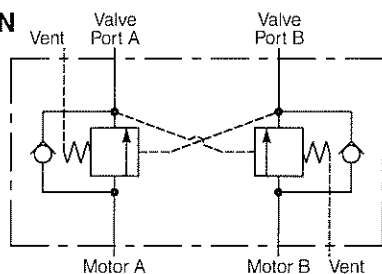
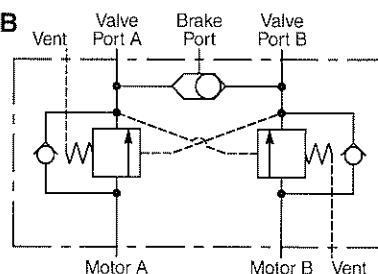
(Vented)

B Port Motor Control
Manifold Mount with
Brake ShuttleCHECKS &
SHUTTLESLOAD & MOTOR
CONTROLSVOLUME
CONTROLSPRESSURE
CONTROLSSOLENOID
VALVESSPECIALTY
VALVES

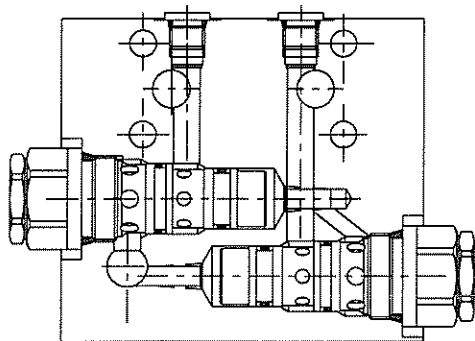
COILS

BODIES

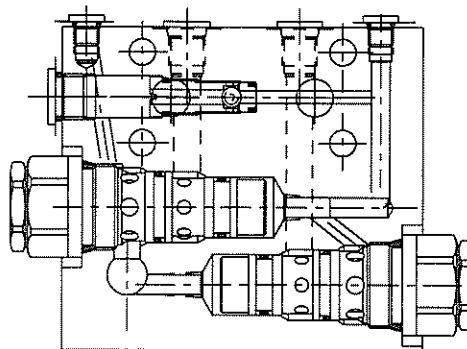
TECHNICAL
DATA

MMB-015-D*MH-53NDual Motor Control,
Non-Vented Cartridges**MMB-015-D*MH-53B**Dual Motor Control
with Brake Release Shuttle,
Non-Vented Cartridges**MMB-015-V-D*MH-53N**Dual Motor Control,
Vented Cartridges**MMB-015-V-D*MH-53B**Dual Motor Control
with Brake Release Shuttle,
Vented Cartridges**MMB-015-D*MH-53N (Non-Vented)****MMB-015-V-D*MH-53N (Vented)**

Dual Counterbalance without Brake Shuttle

**MMB-015-D*MH-53B (Non-Vented)****MMB-015-V-D*MH-53B (Vented)**

Dual Counterbalance with Brake Shuttle

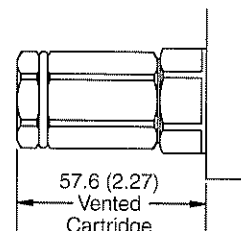
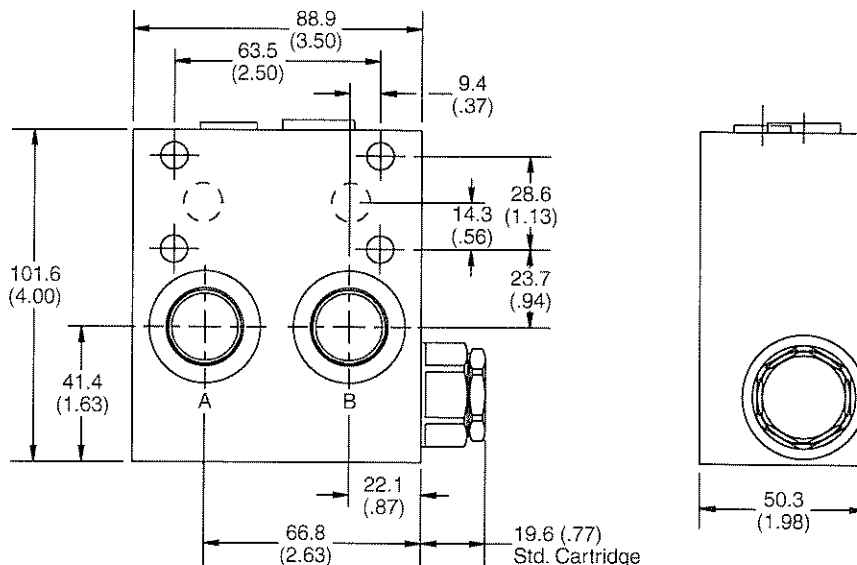


*Inch equivalents for millimeter dimensions are shown in (**)

Series MMB-015-B*MH-53N

B Port Motor Control Non-Vented Cartridge

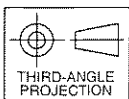
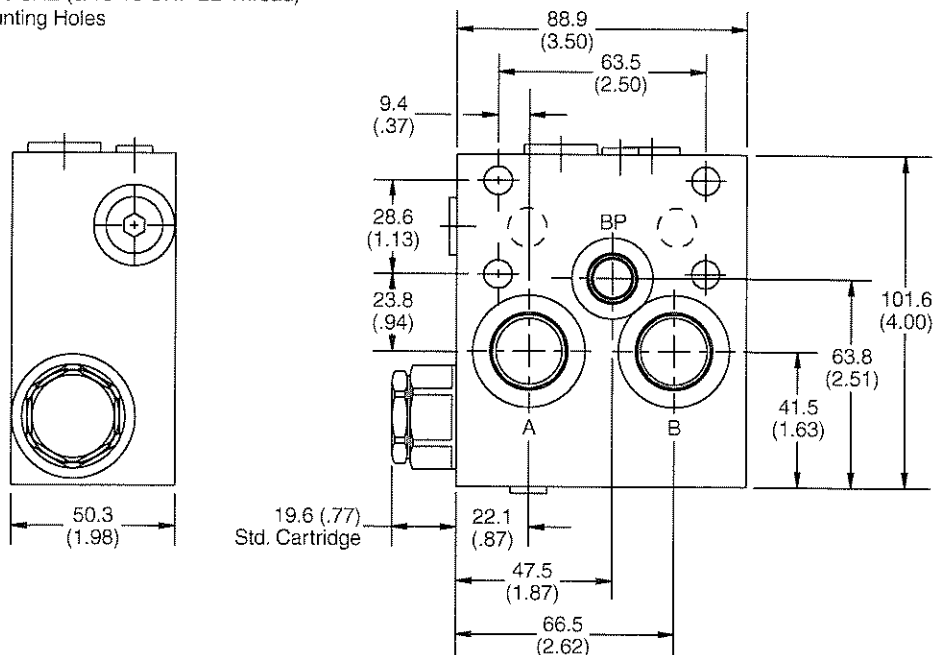
A & B Ports are #10 SAE (7/8-14 UNF-2B Thread)
 .343 Dia. Thru (4) Mounting Holes



Series MMB-015-A*MH-53B

A Port Motor Control Non-Vented Cartridge

A & B Ports are #10 SAE (7/8-14 UNF-2B Thread)
 Brake Shuttle Port is #6 SAE (9/16-18 UNF-2B Thread)
 .343 Dia. Thru (4) Mounting Holes



mmb-015.pm6.5, bl, gn

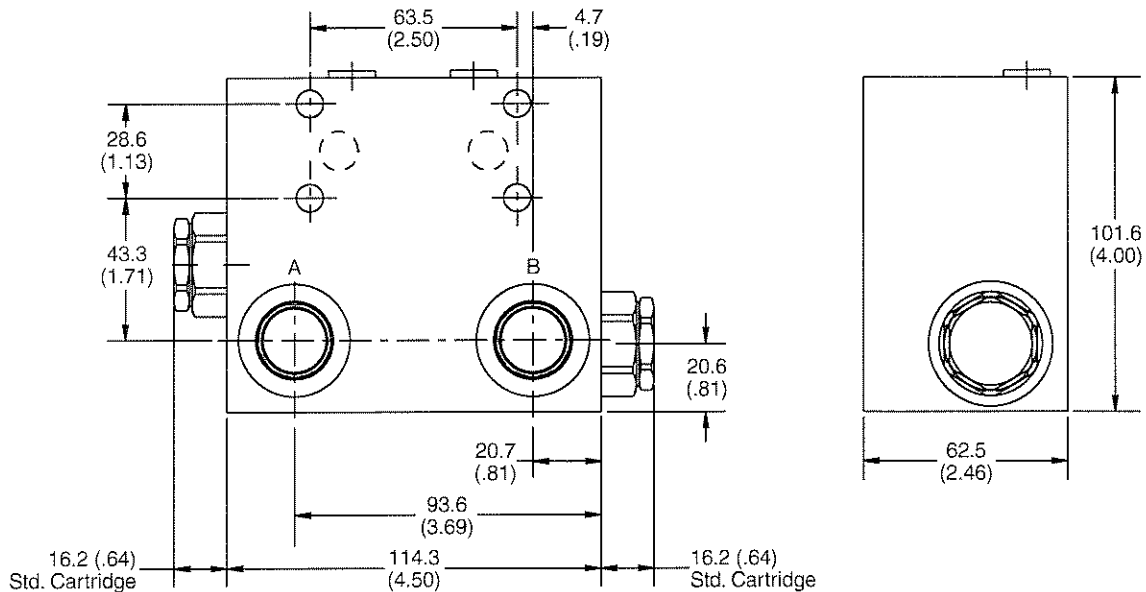
Dimensions

*Inch equivalents for millimeter dimensions are shown in (**)

Series MMB-015-D*MH-53N

Dual Motor Control Valve Non-Vented Cartridges

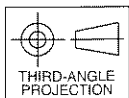
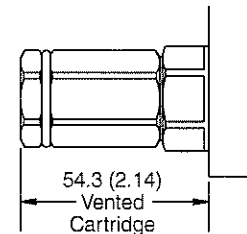
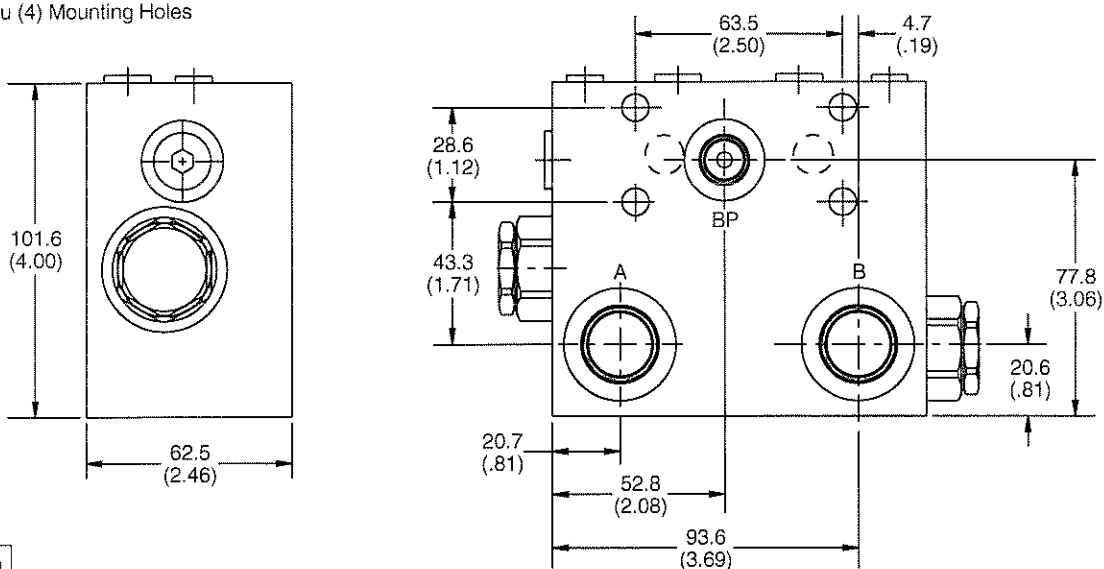
SAE-10 Porting

A & B Ports are #10 SAE (7/8-14 UNC-2B Thread)
.343 Dia. Thru (4) Mounting Holes

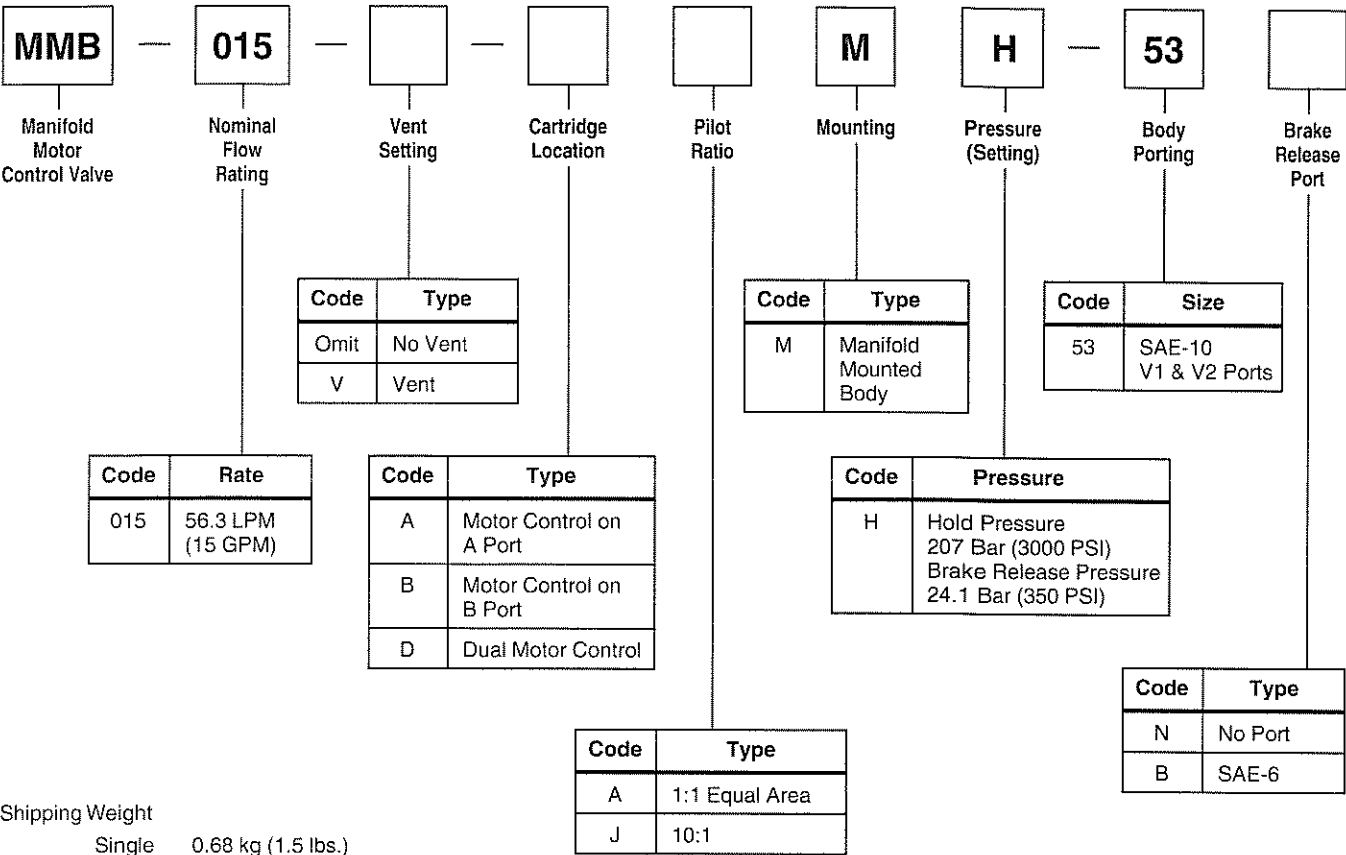
Series MMB-015-D*MH-53B

Dual Motor Control Valve Non-Vented Cartridges

SAE-10 Porting with SAE-6 Brake Port

A & B Ports are #10 SAE (7/8-14 UNC-2B Thread)
Brake Shuttle Port is #6 SAE (9/16-18 UN-2B Thread)
.343 Dia. Thru (4) Mounting Holes

mmb-015.pm6.5, bl, gn



Shipping Weight

Single	0.68 kg (1.5 lbs.)
Double	1.36 kg (3.0 lbs.)

CHECKS & SHUTTLES
LOAD & MOTOR CONTROLS
VOLUME CONTROLS
PRESSURE CONTROLS
SOLENOID VALVES
SPECIALTY VALVES
COILS
BODIES
TECHNICAL DATA

General Description

The MMB-025 Series Motor Control Valves are used in motor circuits to insure positive control of overrunning loads and to prevent open loop motor cavitation. They are ideally suited for hydraulic winch control, conveyor control, or traction drive circuits. For applications in closed loop motor circuits, vented spring cavities are required. Please contact the factory for part numbers. The valve body is manifold mounted, and its mounting face will fit the TB, TE, TF, & TG series Parker motors.

Operation

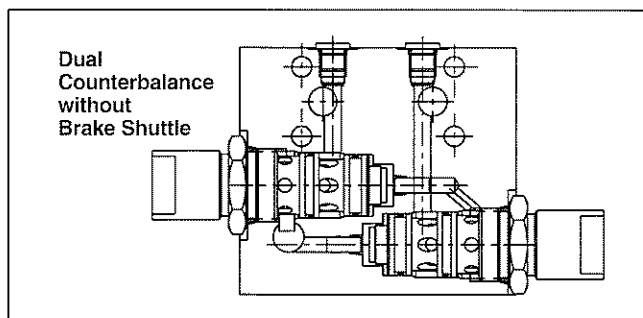
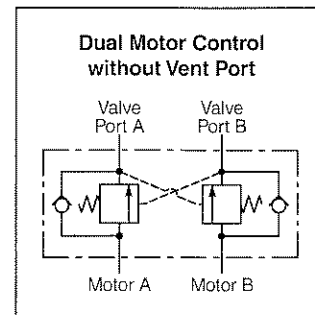
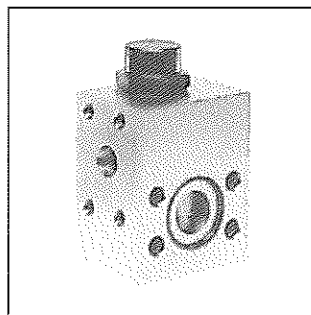
Free flow to the motor is allowed through the internal check valve. In the controlled flow direction, the oil passes across a metering poppet. The position of the metering poppet is determined by an external pilot signal from the other side of the motor. In an open loop motor circuit, this pilot signal will be a 1:1 ratio. The reason an equal ratio pilot signal is utilized is to provide positive control as well as to release mechanical brakes (when used in a braking circuit). In applications where the motor will see overrunning loads in both directions (such as a traction drive circuit), a dual MMB-025 or two single MMB-025 valves must be used.

Features

- Hardened and precision ground parts for long life
- Compact size for reduced space requirements
- Low leakage design
- Fluorocarbon seals standard

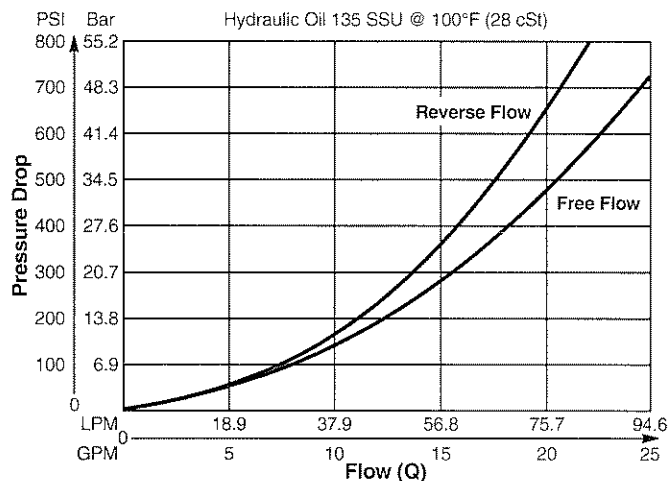
Specifications

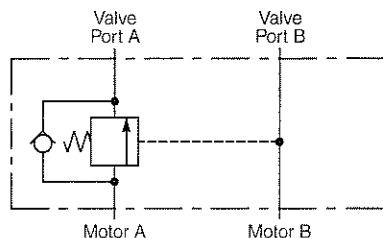
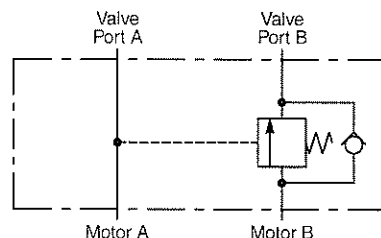
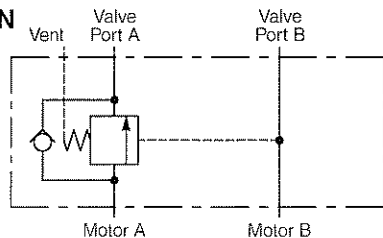
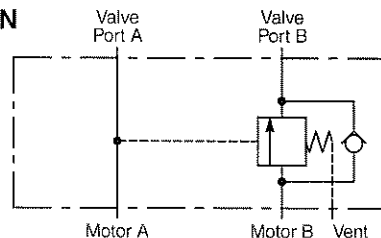
Maximum Flow	93.75 LPM (25 GPM)
Operating Press.	210 Bar (3000 PSI)
Minimum Pilot Pressure	20.7 Bar (300 PSI)
Leakage	5 drops/min. (.33 cc/min.) @ 210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-31.7°C to +121.1°C (-25°F to +250°F) (Fluorocarbon Seals Only)
Filtration	ISO code 16/13 SAE Class 4 or better
Cavity	CDD-1036



Performance Curve

Flow vs. Pressure Drop

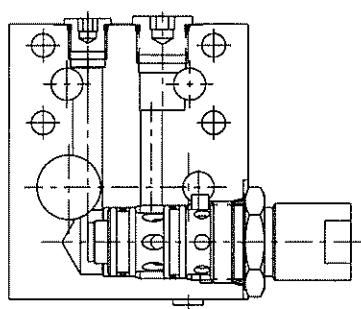


MMB-025-A*MH-54NA Port Motor Control
Non-Vented Cartridge**MMB-025-B*MH-54N**B Port Motor Control
Non-Vented Cartridge**MMB-025-V-A*MH-54N**A Port Motor Control
Vented Cartridge**MMB-025-V-B*MH-54N**B Port Motor Control
Vented Cartridge**MMB-025-A*MH-54N**

(Non-Vented)

MMB-025-V-A*MH-54N

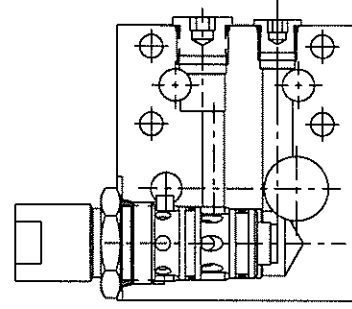
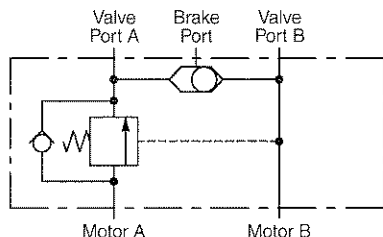
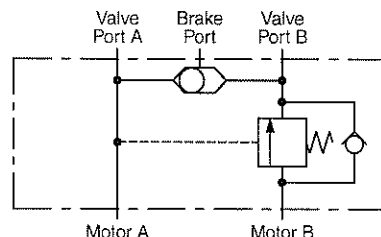
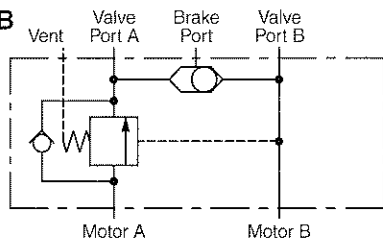
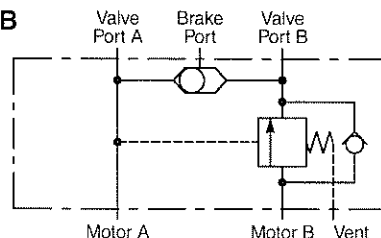
(Vented)

A Port Motor Control
without Brake Release Shuttle**MMB-025-B*MH-54N**

(Non-Vented)

MMB-025-V-B*MH-54N

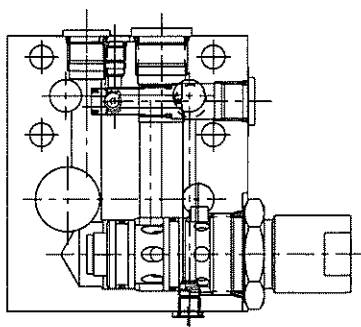
(Vented)

B Port Motor Control
without Brake Release Shuttle**MMB-025-A*MH-54B**A Port Motor Control
with Brake Release Shuttle,
Non-Vented Cartridge**MMB-025-B*MH-54B**B Port Motor Control
with Brake Release Shuttle,
Non-Vented Cartridge**MMB-025-V-A*MH-54B**A Port Motor Control
with Brake Release Shuttle,
Vented Cartridge**MMB-025-V-B*MH-54B**B Port Motor Control
with Brake Release Shuttle,
Vented Cartridge**MMB-025-A*MH-54B**

(Non-Vented)

MMB-025-V-A*MH-54B

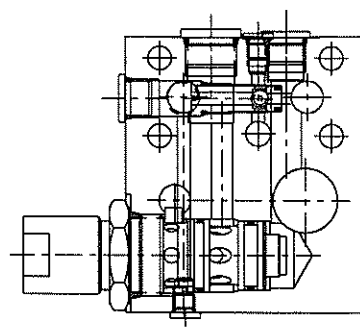
(Vented)

A Port Motor Control
with Brake Release Shuttle**MMB-025-B*MH-54B**

(Non-Vented)

MMB-025-V-B*MH-54B

(Vented)

B Port Motor Control
with Brake Release Shuttle

CHECKS &
SHUTTLES

LOAD & MOTOR
CONTROLS

VOLUME
CONTROLS

PRESSURE
CONTROLS

SOLENOID
VALVES

SPECIALTY
VALVES

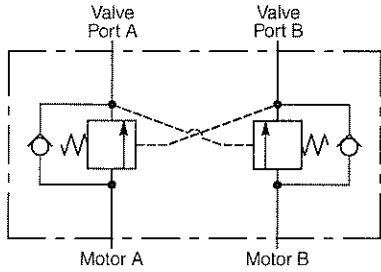
COILS

BODIES

TECHNICAL
DATA

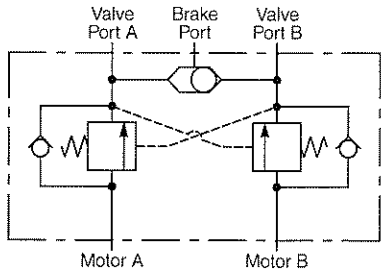
MMB-025-D*MH-54N

Dual Motor Control,
Non-Vented Cartridges



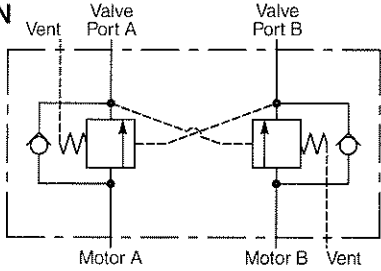
MMB-025-D*MH-54B

Dual Motor Control
with Brake Release Shuttle,
Non-Vented Cartridges



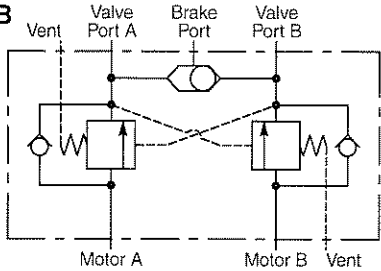
MMB-025-V-D*MH-54N

Dual Motor Control,
Vented Cartridges



MMB-025-V-D*MH-54B

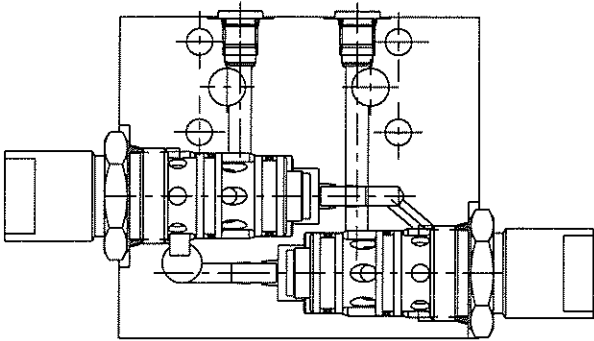
Dual Motor Control
with Brake Release Shuttle,
Vented Cartridges



MMB-025-D*MH-54N (Non-Vented)

MMB-025-V-D*MH-54N (Vented)

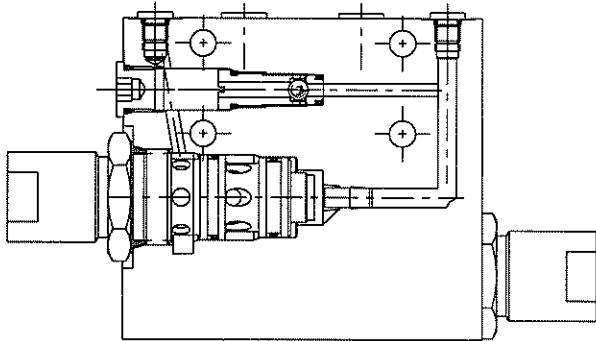
Dual Motor Control without Brake Release Shuttle



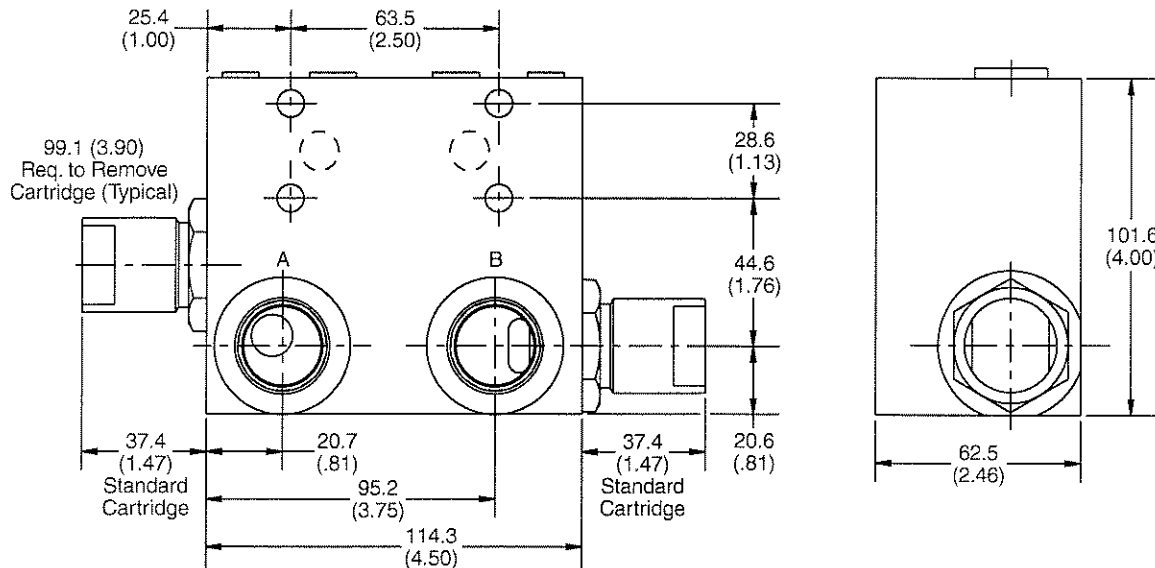
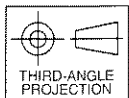
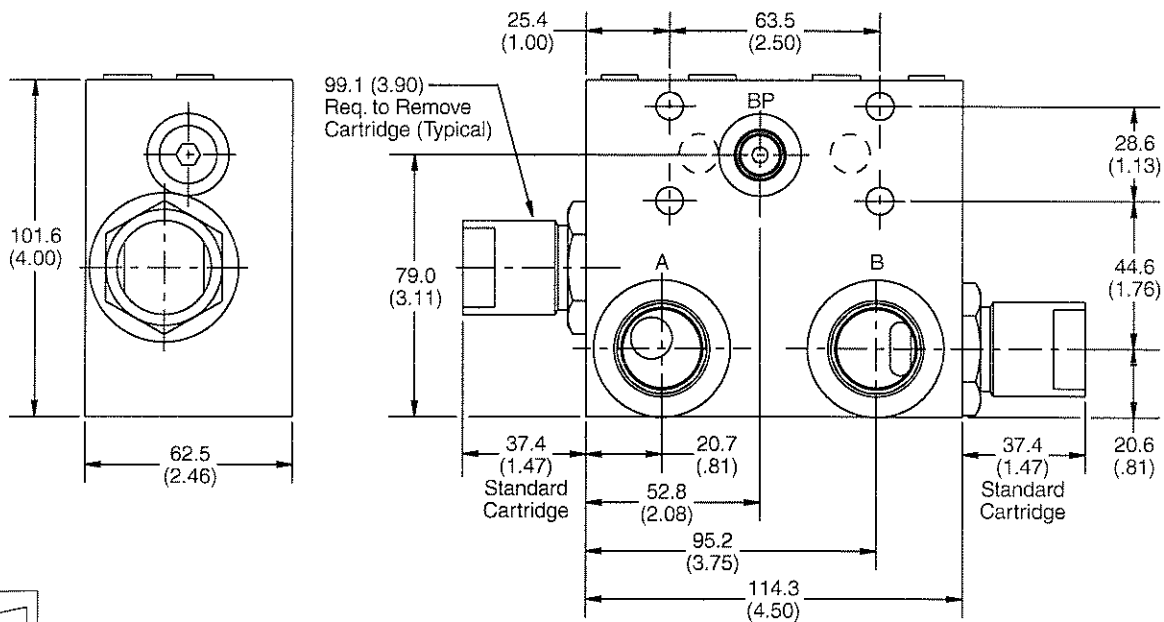
MMB-025-D*MH-54B (Non-Vented)

MMB-025-V-D*MH-54B (Vented)

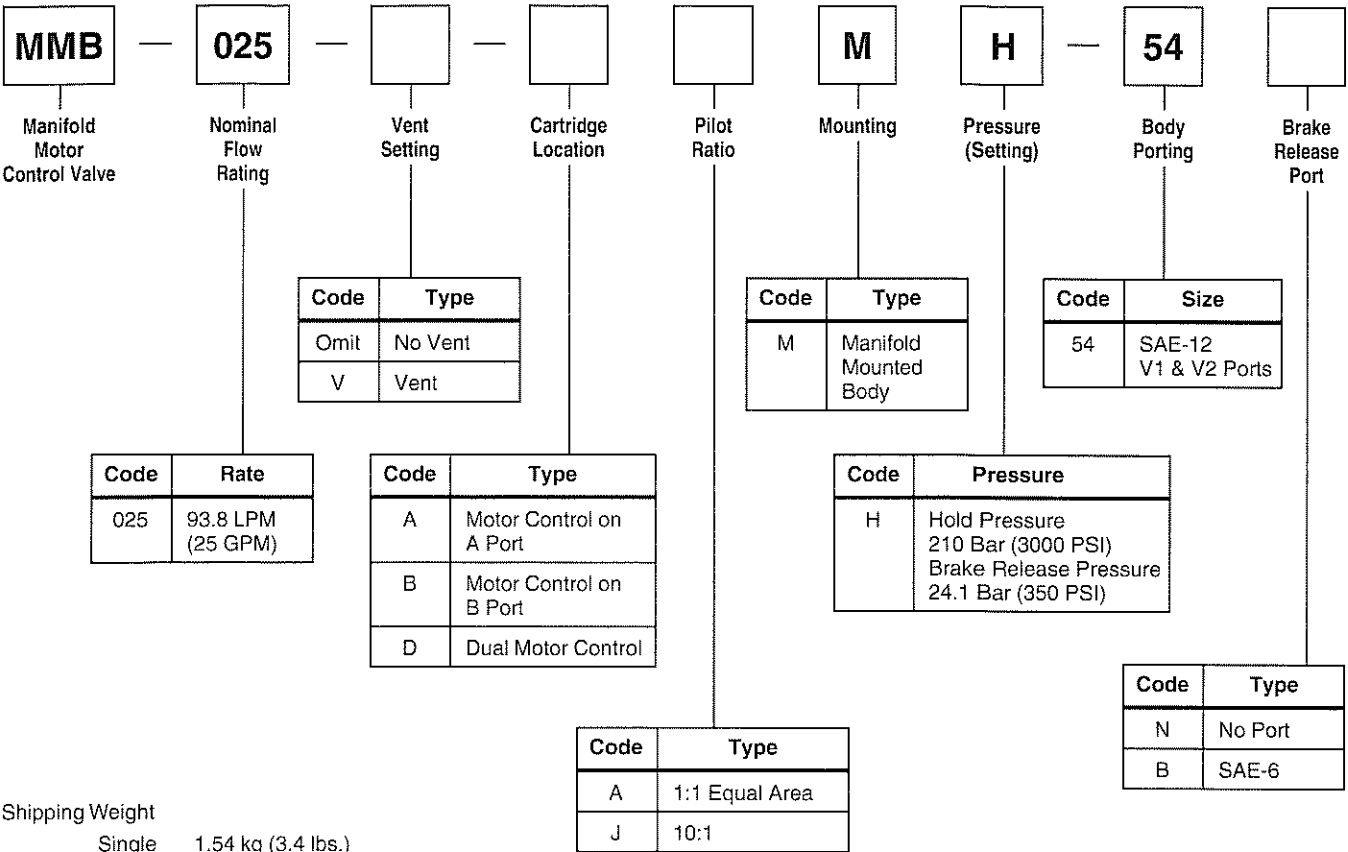
Dual Motor Control with Brake Release Shuttle



*Inch equivalents for millimeter dimensions are shown in (**)

Series MMB-025-D*MH-54N**Dual Motor Control Valve Non-Vented Cartridges**A & B Ports are #12 SAE (1/16-12 UN-2B Thread)
.344 Dia. Thru (4) Mounting Holes**Series MMB-025-D*MH-54B****Dual Motor Control Valve Non-Vented Cartridges**A & B Ports are #12 SAE (1/16-12 UN-2B Thread)
Brake Shuttle Port is #6 SAE (9/16-18 UNF-2B Thread)
.344 Dia. Thru (4) Mounting Holes

mmb-025.pm6.5, bl, gn



Shipping Weight
Single 1.54 kg (3.4 lbs.)
Double 3.10 kg (6.8 lbs.)

CHECKS & SHUTTLES
LOAD & MOTOR CONTROLS
VOLUME CONTROLS
PRESSURE CONTROLS
SOLENOID VALVES
SPECIALTY VALVES
COILS
BODIES
TECHNICAL DATA

General Description

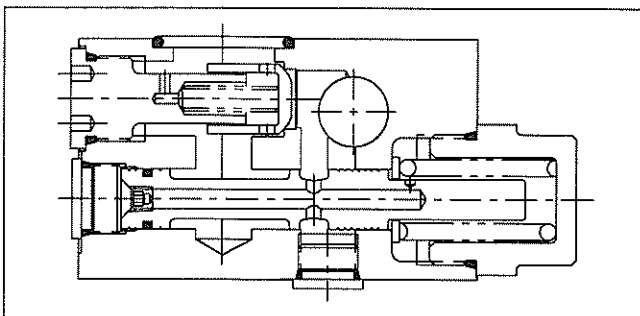
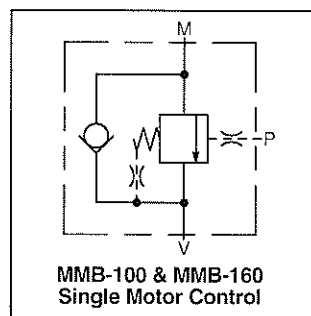
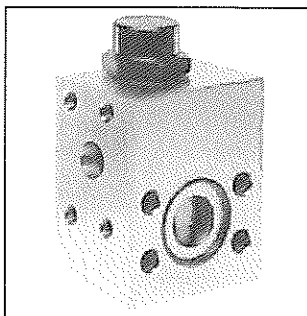
The MMB-100 and MMB-160 Series Motor Control Valves are used in motor circuits to insure positive control of overrunning loads and to prevent open loop motor cavitation. They are ideally suited for hydraulic winch control, conveyor control, or traction drive circuits. For applications in closed loop motor circuits, vented spring cavities are required. Please contact the factory for part numbers. The valve body offers optional SAE 1-1/4", SAE 1-1/2", and SAE 2" four bolt flanges.

Operation

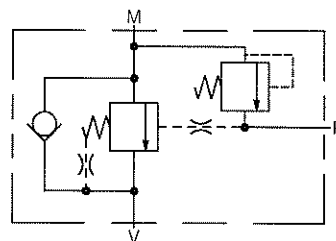
Free flow to the motor is allowed through the internal check valve. In the controlled flow direction, the oil passes across a metering spool. The position of the metering spool is determined by an external pilot signal from the other side of the motor. In an open loop motor circuit, this pilot signal will be a 1:1 ratio. The reason an equal ratio pilot signal is utilized is to provide positive control as well as to release mechanical brakes (when used in a braking circuit). An optional motor relief valve can be incorporated in the valve to protect the motor from pressure spikes due to sudden braking or deceleration. In applications where the motor will see overrunning loads in both directions (such as a traction drive circuit), two valves must be used.

Specifications

Maximum Flow	MMB-100 - 487.5 LPM (100 GPM) MMB-160 - 750 LPM (200 GPM)
Operating Press.	345 Bar (5000 PSI)
Min. Pilot Press.	20.7 Bar (300 PSI)
Optional Relief Valve Range	345 Bar (5000 PSI)
Operating Temp. Range (Ambient)	-31.7°C to +121.1°C (-25°F to +250°F) (Fluorocarbon Seals Only)
Filtration	ISO code 16/13 SAE Class 4 or better



Symbol

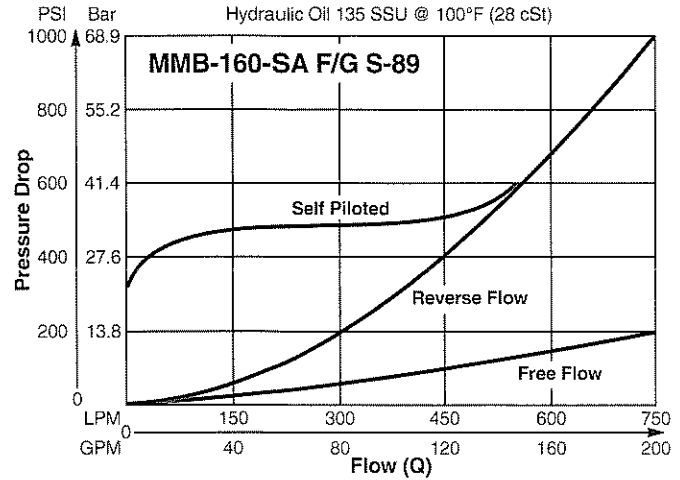
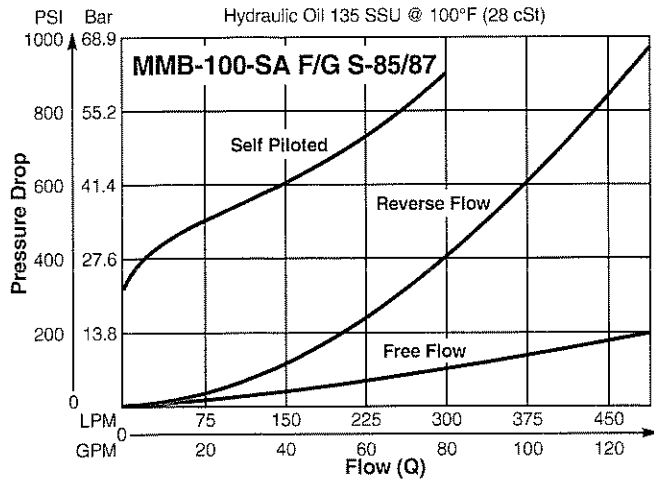


**MMB-100 & MMB-160
Single Motor Control with Relief Valve**

Features

- Hardened and precision ground parts for long life
- Compact size for reduced space requirements
- Low leakage design
- Fluorocarbon seals standard

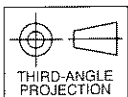
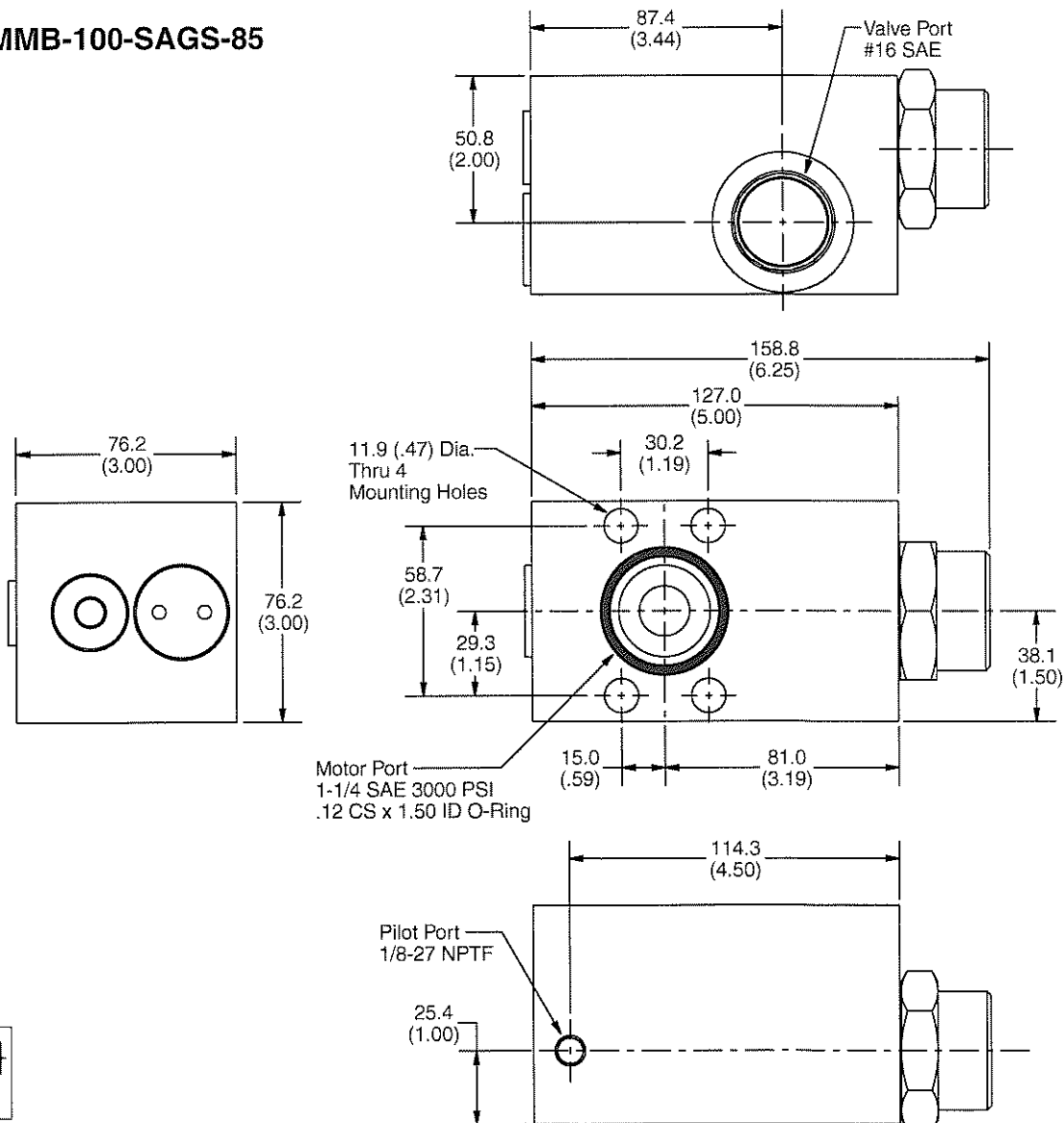
Performance Curves Flow vs. Pressure Drop



Dimensions

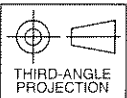
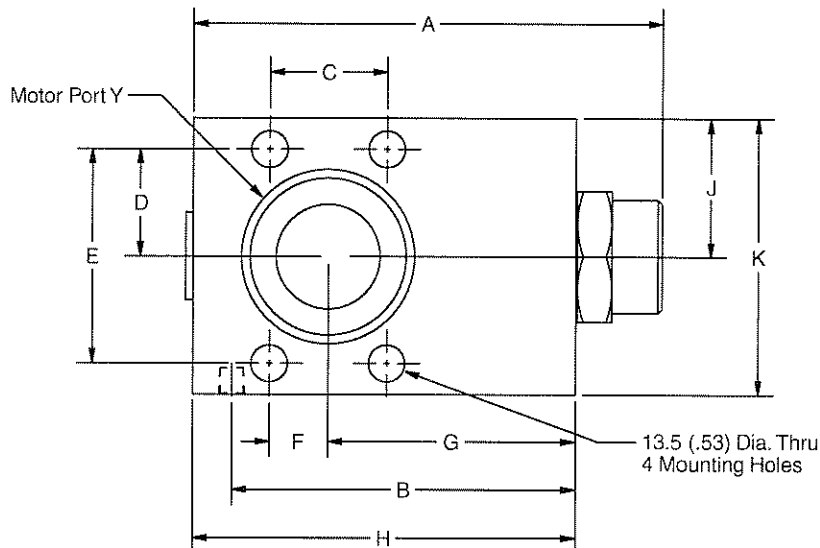
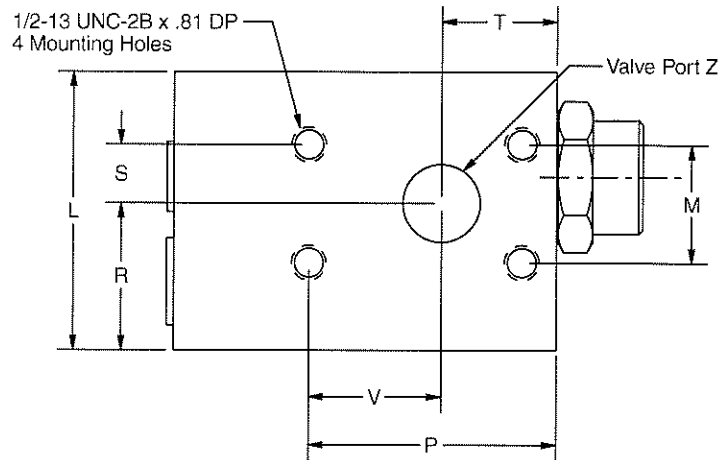
*Inch equivalents for millimeter dimensions are shown in (**)

Series MMB-100-SAGS-85



mmb-100&160.pm6.5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)

Series MMB-100-SAGS-87 and
Series MMB-160-SAGS-89

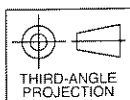
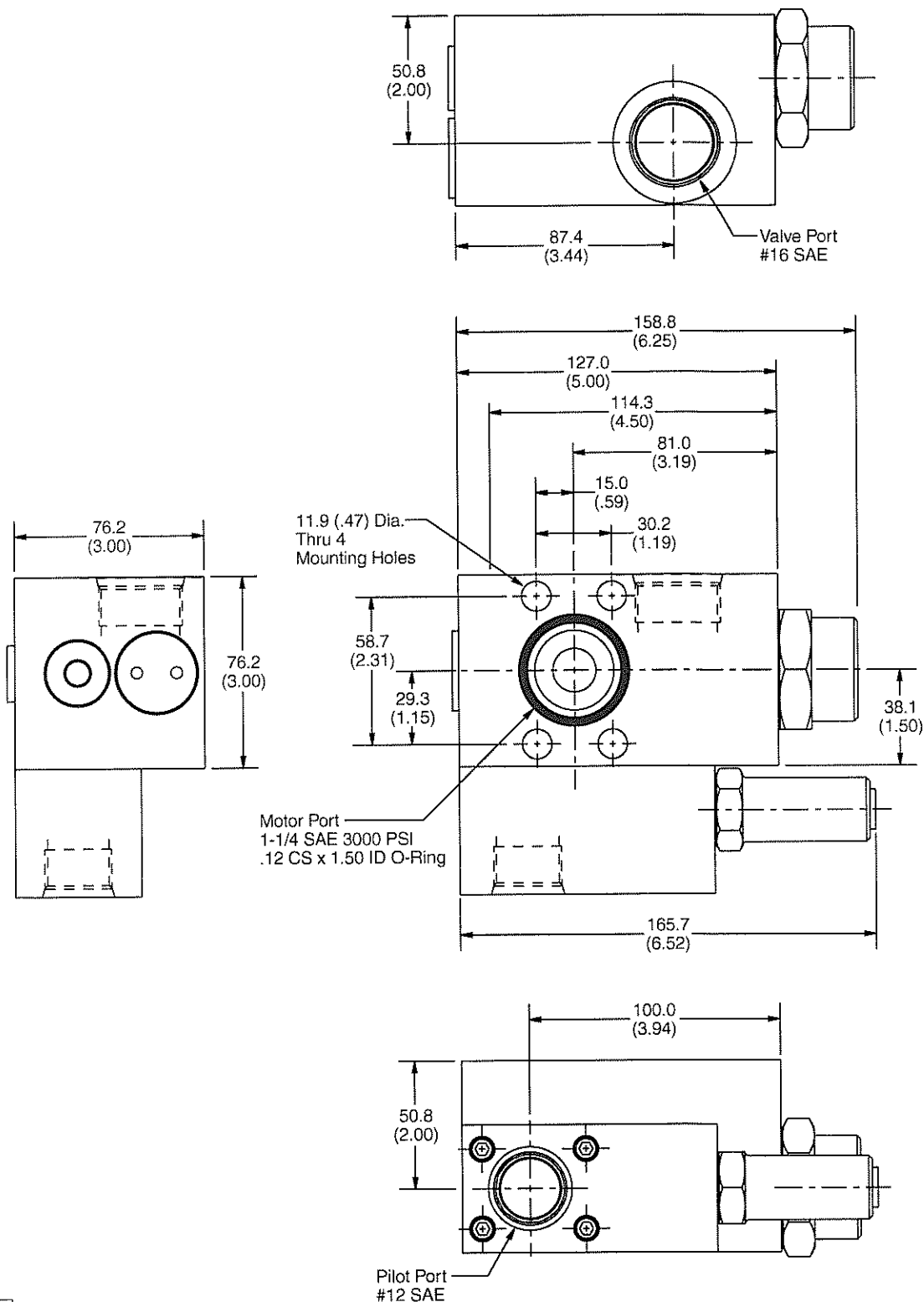
Valve Size	A	B	C	D	E	F	G	H	J	K	L	M
MMB-100-SAGS-87	158.8 (6.25)	114.3 (4.50)	35.7 (1.41)	34.9 (1.38)	70.0 (2.75)	17.9 (.70)	81.0 (3.19)	127.0 (5.00)	50.8 (2.00)	101.6 (4.00)	76.2 (3.00)	35.7 (1.41)
MMB-160-SAGS-89	200.9 (7.91)	125.4 (4.94)	42.9 (1.69)	38.9 (1.53)	77.8 (3.06)	21.4 (.84)	90.5 (3.56)	139.7 (5.50)	50.8 (2.00)	101.6 (4.00)	101.6 (4.00)	42.9 (1.69)

Valve Size	N	P	R	S	T	V	Motor Port Y	Valve Port Z
MMB-100-SAGS-87	50.8 (2.00)	69.9 (2.75)	41.3 (1.62)	17.9 (.70)	42.9 (1.69)	38.1 (1.50)	1-1/2" SAE 3000 PSI .12 CS x 1.88 ID O-Ring	1-1/2" SAE 3000 PSI Flange
MMB-160-SAGS-89	63.5 (2.50)	77.8 (3.06)	54.0 (2.12)	21.4 (.84)	41.9 (1.65)	48.5 (1.91)	2" SAE 3000 PSI .12 CS x 2.25 ID O-Ring	2" SAE 3000 PSI Flange

mmb-100&160.pm6.5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)

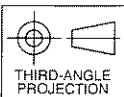
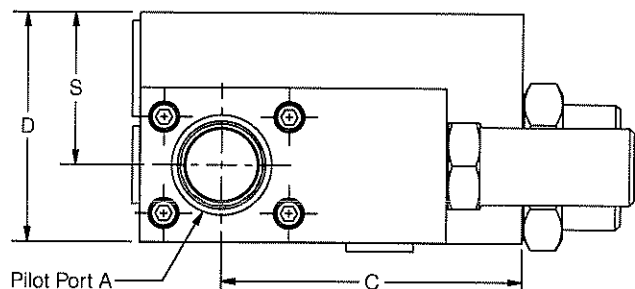
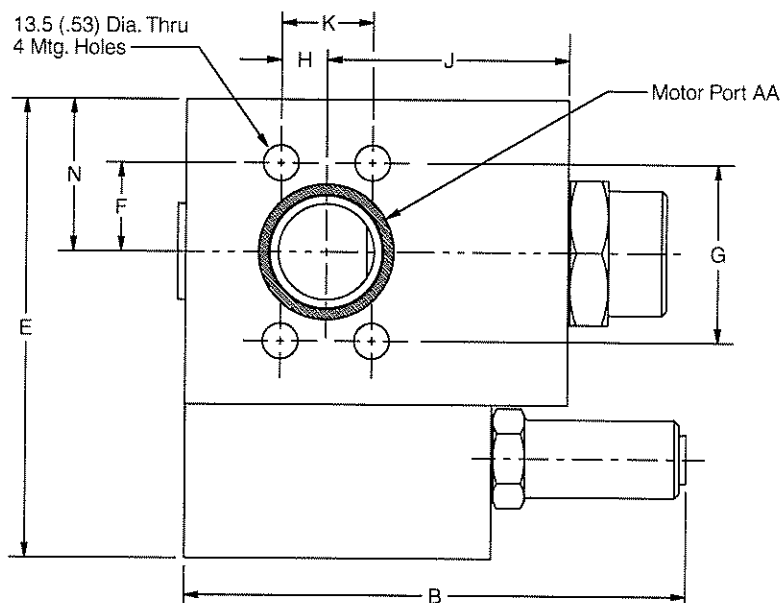
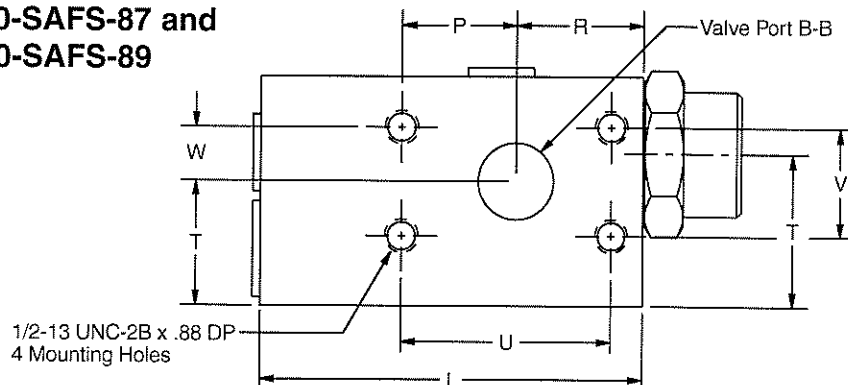
Series MMB-100-SAFS-85



mmb-100&160.pm6.5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)

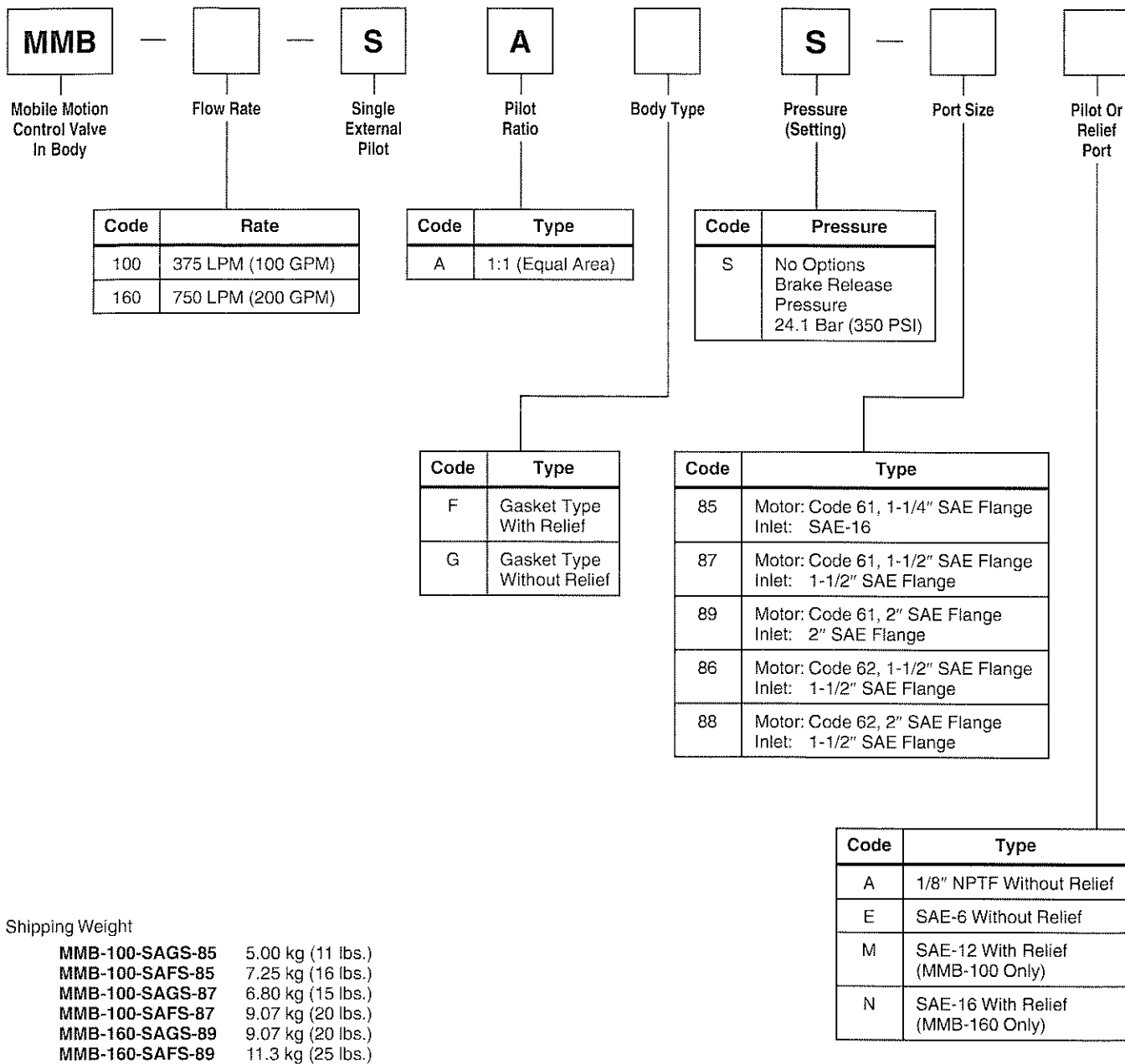
**Series MMB-100-SAFS-87 and
Series MMB-160-SAFS-89**



Valve Size	A	B	C	D	E	F	G	H	J	K	L	N	O
MMB-100-SAFS-87	#12 SAE	166.7 (6.56)	100.0 (3.94)	76.2 (3.00)	152.4 (6.00)	34.9 (1.38)	70.0 (2.75)	17.9 (.70)	81.0 (3.19)	35.7 (1.41)	127.0 (5.00)	50.8 (2.00)	101.6 (4.00)
MMB-160-SAFS-89	#16 SAE	166.7 (6.56)	117.4 (4.62)	101.6 (4.00)	139.7 (5.50)	38.9 (1.53)	77.1 (3.06)	21.4 (.84)	90.5 (3.56)	42.9 (1.69)	139.7 (5.50)	50.8 (2.00)	101.6 (4.00)

Valve Size	P	R	S	T	U	V	W	Motor Port AA	Valve Port BB
MMB-100-SAFS-87	38.1 (1.50)	42.9 (1.69)	50.8 (2.00)	41.3 (1.62)	69.9 (2.75)	35.7 (1.41)	17.9 (.70)	1-1/2" SAE 3000 PSI .12 CS x 1.88 ID O-Ring	1-1/2" SAE 3000 PSI Flange
MMB-160-SAFS-89	48.5 (1.91)	41.9 (1.65)	63.5 (2.50)	54.0 (2.12)	77.8 (3.06)	42.9 (1.69)	21.4 (.84)	2" SAE 3000 PSI .12 CS x 2.25 ID O-Ring	2" SAE 3000 PSI Flange

mmb-100&160.pm6.5, bl, gn



CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

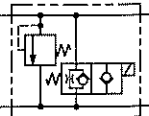
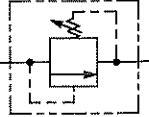
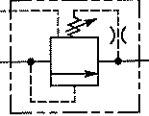
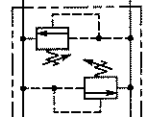
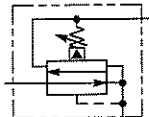
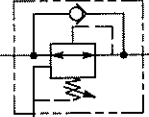
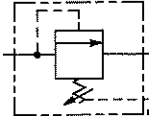
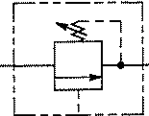
SOLENOID VALVES

SPECIALTY VALVES

COILS

BODIES

TECHNICAL DATA

	SERIES	DESCRIPTION	FLOW	PRESSURE	PAGE NO.	
	65FL	Relief With Unloading Valve	75 GPM	3000 PSI	PC1-PC5	CHECKS & SHUTTLES
	65TL	Relief With Unloading Valve	75 GPM	3000 PSI	PC6-PC10	
	RDH083	Direct Acting Relief Valves	12 GPM	5000 PSI	PC11-PC13	LOAD & MOTOR CONTROLS
	RDH103	Direct Acting Relief Valves	20 GPM	5000 PSI	PC14-PC16	
	RD163	Direct Acting Relief Valves	40 GPM	3000 PSI	PC17-PC19	VOLUME CONTROLS
	RAH081	P.O. Relief Valves	20 GPM	5000 PSI	PC20-PC22	
	RAH101	P.O. Relief Valves	30 GPM	5000 PSI	PC23-PC25	PRESSURE CONTROLS
	RAH121	P.O. Relief Valves	50 GPM	5000 PSI	PC26-PC28	
	RAH161	P.O. Relief Valves	80 GPM	5000 PSI	PC29-PC31	SOLENOID VALVES
	RAH201	P.O. Relief Valves	100 GPM	5000 PSI	PC32-PC34	
	RAH101V	P.O. Ventable Relief Valves	18 GPM	5000 PSI	PC35-PC37	SPECIALTY VALVES
	XRDH103	Cross-Over Relief Valves	20 GPM	5000 PSI	PC38-PC40	
	PRH081	P.O. Pressure Reducing/ Relieving Valves	8 GPM	5000 PSI	PC41-PC43	COILS
	PRH101	P.O. Pressure Reducing/ Relieving Valves	15 GPM	5000 PSI	PC44-PC46	
	PRH121	P.O. Pressure Reducing/ Relieving Valves	30 GPM	5000 PSI	PC47-PC49	BODIES
	PRH161	P.O. Pressure Reducing/ Relieving Valves	40 GPM	5000 PSI	PC50-PC52	
	PR103	Direct Acting Pressure Reducing/ Relieving Valves	15 GPM	3000 PSI	PC53-PC55	TECHNICAL DATA
	PRCH101	Pressure Reducing/Relieving Valves With Free Reverse Flow Check	15 GPM	5000 PSI	PC56-PC58	
	SVH081	Sequence Valves	12 GPM	5000 PSI	PC59-PC61	
	SVH101	Sequence Valves	15 GPM	5000 PSI	PC62-PC64	
	SVH121	Sequence Valves	30 GPM	5000 PSI	PC65-PC67	
	SVH161	Sequence Valves	40 GPM	5000 PSI	PC68-PC70	
	SVH082	P.O. Sequence Valves	10 GPM	5000 PSI	PC71-PC73	
	SVH102	P.O. Sequence Valves	15 GPM	5000 PSI	PC74-PC76	
	SVH122	P.O. Sequence Valves	30 GPM	5000 PSI	PC77-PC79	
	SVH162	P.O. Sequence Valves	40 GPM	5000 PSI	PC80-PC82	

General Description

The 65FL Series is a 4 Bolt, Flange Mounted, Vented Relief Valve with an optional Solenoid Unloading Valve. The 4 bolt flange provides easy installation of the 65FL to the pump inlet.

The vent port can be plumbed externally to other valving to remotely achieve multiple pressures or remote proportional pressure control. The unloading valve option also allows the user to electrically unload pump flow on request.

Operation

The 65FL Series Flange Mounted relief valves use pilot flow through a dampening orifice to operate the pilot poppet. When inlet pressure overcomes the spring setting of the pilot poppet, it shifts allowing the pilot flow to go to tank. This creates a differential across the main poppet. This differential then allows the main poppet to overcome its spring force and divert full flow to tank.

By adding secondary relief components to the vent line, multiple pressure can be achieved.

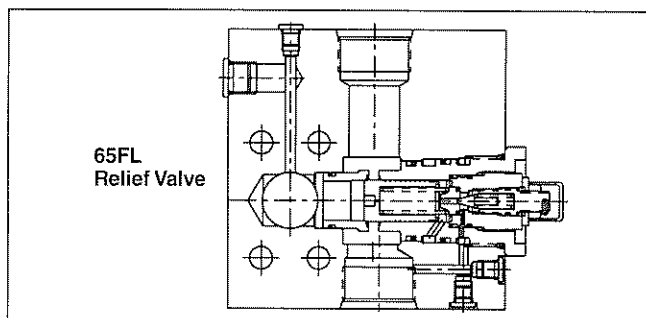
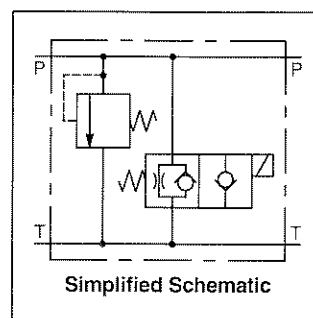
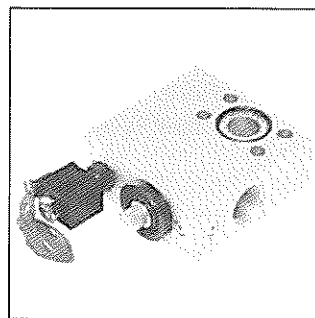
By adding the optional normally open or normally closed two-way solenoid valve to the 65FL relief valve, remote control of the relief valve is possible. It is also possible to create high/low multiple pressure circuits.

Features

- Hardened and precision ground parts for long life
- High flow capacity
- Normally open or normally closed solenoid options available
- Multiple vent capabilities for remote control
- Direct Mounting capability to various pumps
- Low leakage design

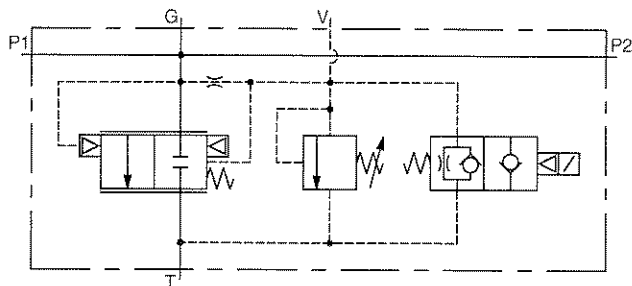
Specifications

Maximum Flow	281 LPM (75 GPM)
Operating Press.	210 Bar (3000 PSI)
Minimum Press.	24.5 Bar (500 PSI)
Leakage	5 drops/min. (.33 CC/min.) @ 210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (-40°F to +200°F) (Nitrile Seals)
Filtration	ISO code 16/13 SAE Class 4 or better
Cavity	None – parts in body



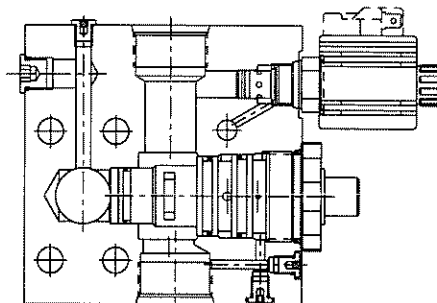
Symbol (Expanded Schematic)

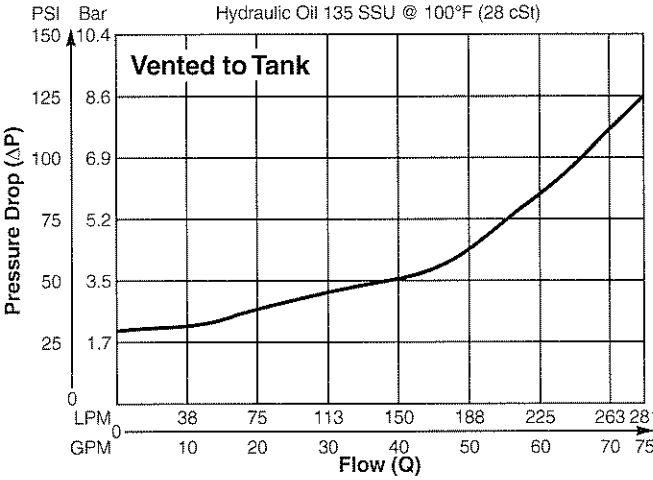
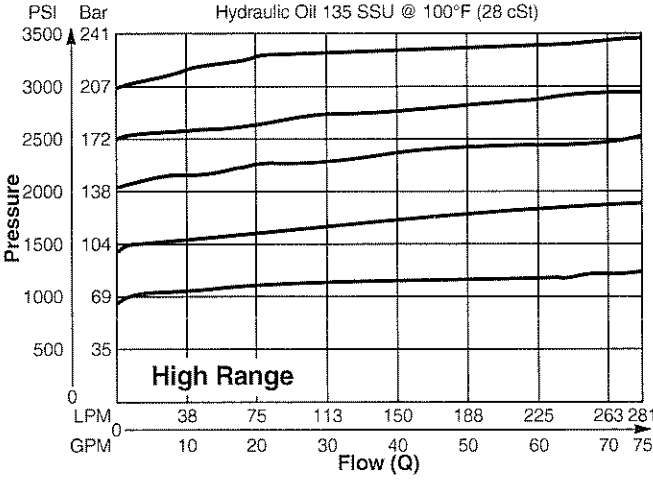
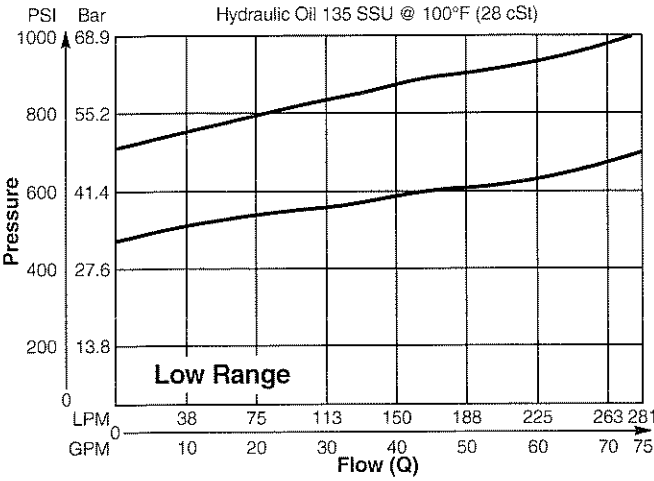
65FL Relief with Solenoid Unloading Valve Option (Normally Open Shown)



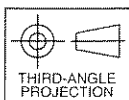
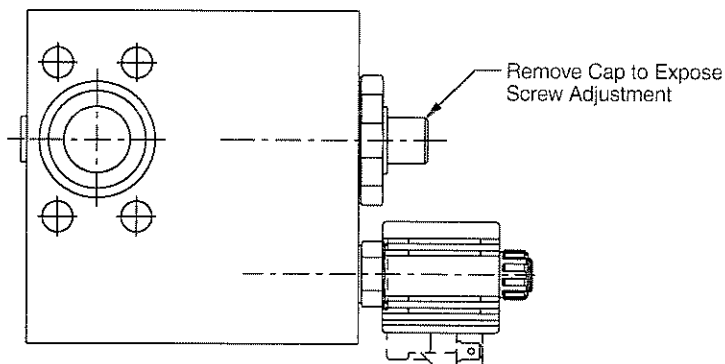
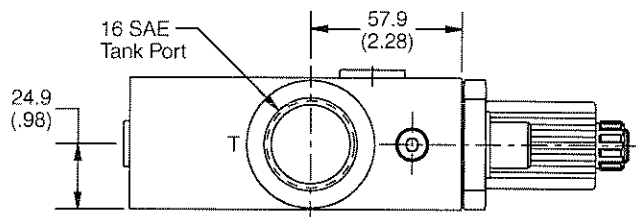
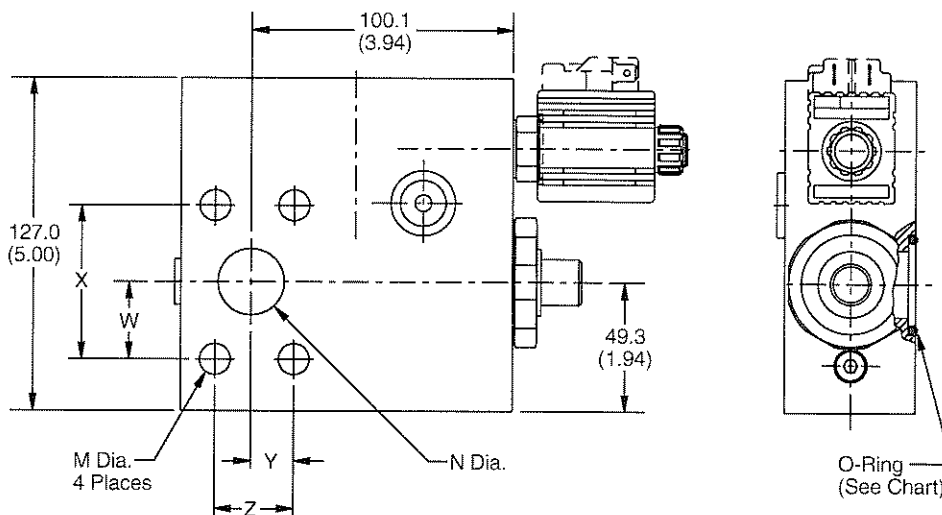
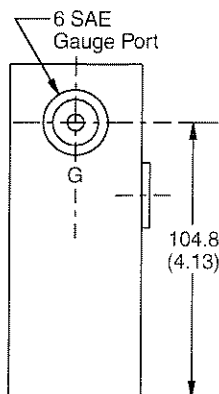
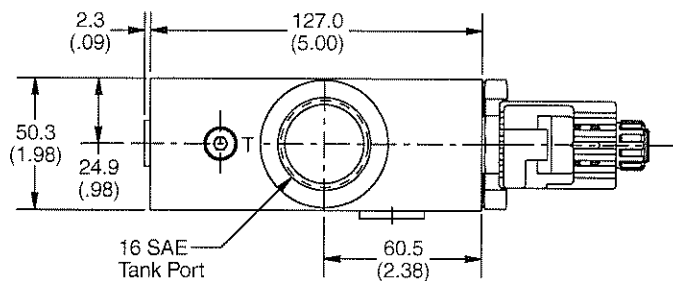
Construction

65FL Relief with Solenoid Unloading Valve Option





*Inch equivalents for millimeter dimensions are shown in (**)

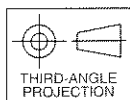
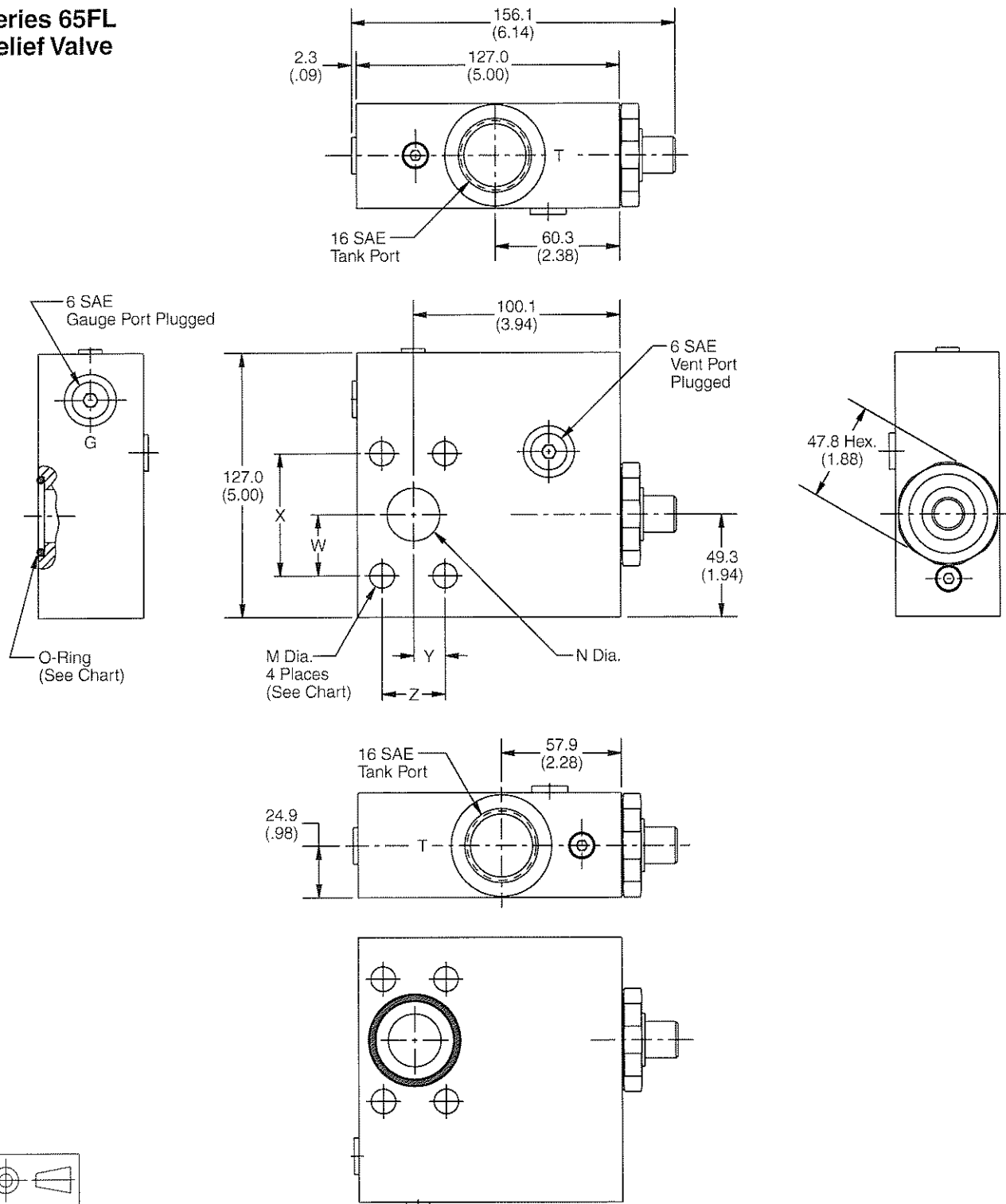
Series 65FL Relief with Solenoid Unloading Valve Option

Flange Size - Inlet	W	X	Y	Z	M	O-Ring	N
075 - 3/4" Flange Code 61	23.8 (.938)	47.6 (1.875)	11.1 (.438)	22.2 (.875)	10.3 (.406)	AS #214	19.1 (0.75)
100 - 1" Flange Code 61	26.2 (1.031)	52.4 (2.062)	13.2 (.52)	26.2 (1.031)	10.3 (.406)	AS #219	25.4 (1.00)
125 - 1-1/4" Flange Code 61	29.4 (1.156)	58.7 (2.312)	15.0 (.59)	30.2 (1.188)	11.9 (.468)	AS #222	31.8 (1.25)

65fl.pn6.5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)

**Series 65FL
Relief Valve**



Flange Size - Inlet	W	X	Y	Z	M	O-Ring	N
075 - 3/4" Flange Code 61	23.8 (.938)	47.6 (1.875)	11.1 (.438)	22.2 (.875)	10.3 (.406)	ARP #214	19.1 (0.75)
100 - 1" Flange Code 61	26.2 (1.031)	52.4 (2.062)	13.2 (.52)	26.2 (1.031)	10.3 (.406)	ARP #219	25.4 (1.00)
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65fl pm6.5, bl, gn

CHECKS &
SHUTTLES

LOAD & MOTOR
CONTROLS

VOLUME
CONTROLS

PRESSURE
CONTROLS

SOLENOID
VALVES

SPECIALTY
VALVES

COILS

BODIES

TECHNICAL
DATA

65FL	—		—	016	—		—	H	—		—																																				
Pilot Operated Flange Mounted Relief Valve		Inlet Porting		Tank Port		Vent Option		Pressure Range		Coil Voltage		Coil Termination																																			
		<table border="1"> <thead> <tr> <th>Code</th> <th>Size</th> </tr> </thead> <tbody> <tr> <td>075</td> <td>3/4" 4 Bolt Split Flange</td> </tr> <tr> <td>100</td> <td>1" 4 Bolt Split Flange</td> </tr> <tr> <td>125</td> <td>1-1/4" 4 Bolt Split Flange</td> </tr> </tbody> </table>	Code	Size	075	3/4" 4 Bolt Split Flange	100	1" 4 Bolt Split Flange	125	1-1/4" 4 Bolt Split Flange			<table border="1"> <thead> <tr> <th>Code</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>V</td> <td>Plugged</td> </tr> <tr> <td>E</td> <td>N.O. Solenoid (DSL081N)</td> </tr> <tr> <td>C</td> <td>N.C. Solenoid (DSL081C)</td> </tr> </tbody> </table>	Code	Type	V	Plugged	E	N.O. Solenoid (DSL081N)	C	N.C. Solenoid (DSL081C)		<table border="1"> <thead> <tr> <th>Code</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>Omit</td> <td>Plugged</td> </tr> <tr> <td>12</td> <td>12 VDC</td> </tr> <tr> <td>24</td> <td>24 VDC</td> </tr> <tr> <td>100</td> <td>120 VAC</td> </tr> </tbody> </table>	Code	Type	Omit	Plugged	12	12 VDC	24	24 VDC	100	120 VAC		<table border="1"> <thead> <tr> <th>Code</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>Omit</td> <td>Plugged</td> </tr> <tr> <td>A</td> <td>AC DIN (S8LDA120)</td> </tr> <tr> <td>B</td> <td>DC Dual Spade (S8LPD***)</td> </tr> <tr> <td>C</td> <td>DC Dual Wire (S8LWD***)</td> </tr> <tr> <td>D</td> <td>DC DIN (S8LDD***)</td> </tr> </tbody> </table>	Code	Type	Omit	Plugged	A	AC DIN (S8LDA120)	B	DC Dual Spade (S8LPD***)	C	DC Dual Wire (S8LWD***)	D	DC DIN (S8LDD***)
Code	Size																																														
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				<table border="1"> <thead> <tr> <th>Code</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>016</td> <td>SAE-16</td> </tr> </tbody> </table>	Code	Type	016	SAE-16		<table border="1"> <thead> <tr> <th>Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>H</td> <td>34.5 - 210 Bar (500 - 3000 PSI)</td> </tr> </tbody> </table>	Code	Description	H	34.5 - 210 Bar (500 - 3000 PSI)																																	
Code	Type																																														
016	SAE-16																																														
Code	Description																																														
H	34.5 - 210 Bar (500 - 3000 PSI)																																														

Shipping Weight 2.95 kg (6.5 lbs.)

*** Denotes voltage, 012 or 024.

General Description

The 65TL Series is an In-line Mounted, Vented Relief Valve with an optional Solenoid Unloading Valve.

The vent port can be plumbed externally to other valving to remotely achieve multiple pressures or remote proportional pressure control. The unloading valve option also allows the user to electrically unload pump flow on request.

Operation

The 65TL Series Line Mounted relief valves use pilot flow through a dampening orifice to operate the pilot poppet. When inlet pressure overcomes the spring setting of the pilot poppet, it shifts allowing the pilot flow to go to tank. This creates a differential across the main poppet. This differential then allows the main poppet to overcome its spring force and divert full flow to tank.

By adding secondary relief components to the vent line, multiple pressure can be achieved.

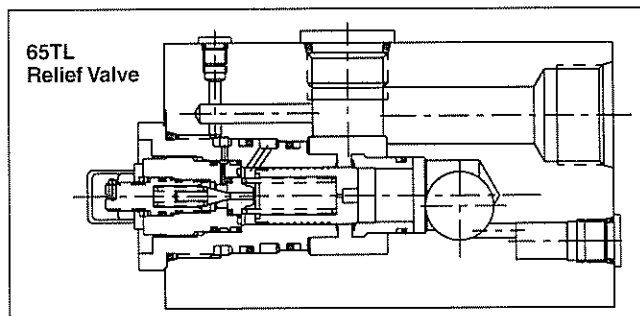
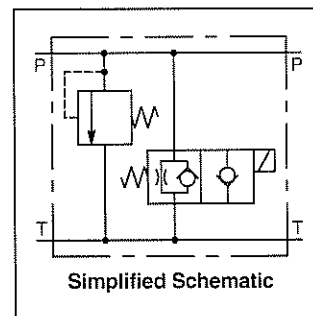
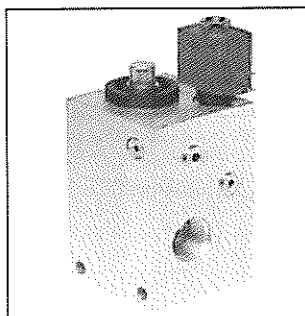
By adding the optional normally open or normally closed two-way solenoid valve to the 65TL relief valve, remote control of the relief valve is possible. It is also possible to create high/low multiple pressure circuits.

Features

- Hardened and precision ground parts for long life
- High flow capacity
- Normally open or normally closed solenoid options available
- Multiple vent capabilities for remote control
- Low leakage design

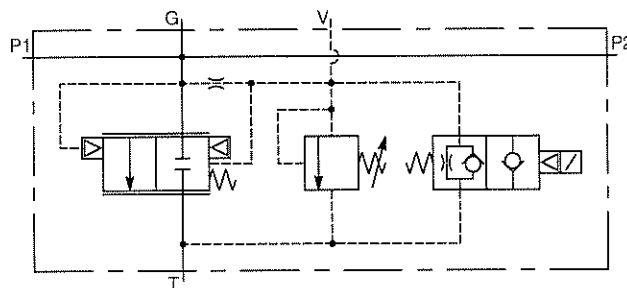
Specifications

Maximum Flow	281 LPM (75 GPM)
Operating Press.	210 Bar (3000 PSI)
Minimum Press.	24.5 Bar (500 PSI)
Leakage	5 drops/min. (.33 CC/min.) @ 210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (-40°F to +200°F) (Nitrile Seals)
Filtration	ISO code 16/13 SAE Class 4 or better
Cavity	None – parts in body



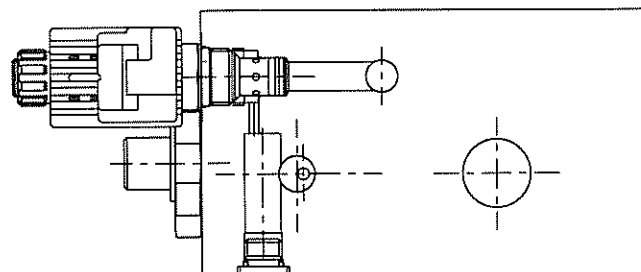
Symbol (Expanded Schematic)

65TL Relief with Solenoid Unloading Valve Option (Normally Open Shown)



Construction

65TL Relief with Solenoid Unloading Valve Option



CHECKS &
SHUTTLES

LOAD & MOTOR
CONTROLS

VOLUME
CONTROLS

PRESSURE
CONTROLS

SOLENOID
VALVES

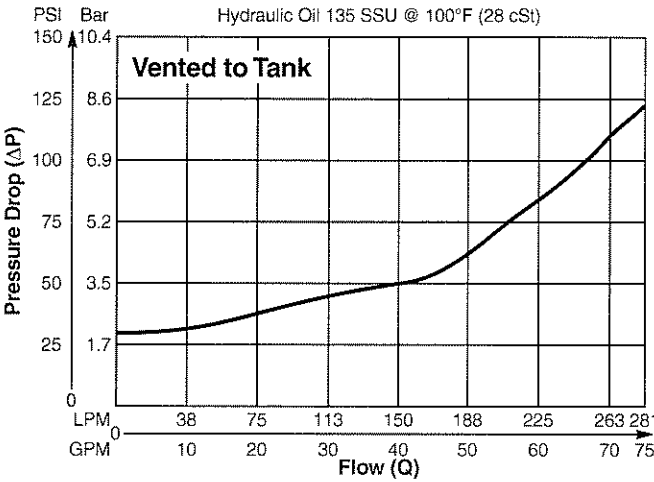
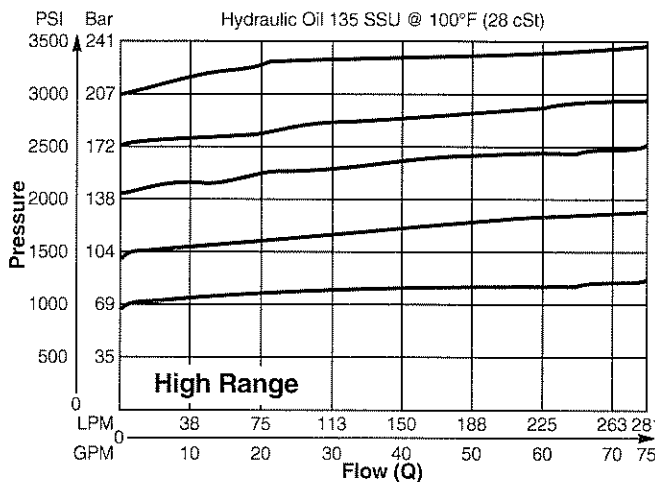
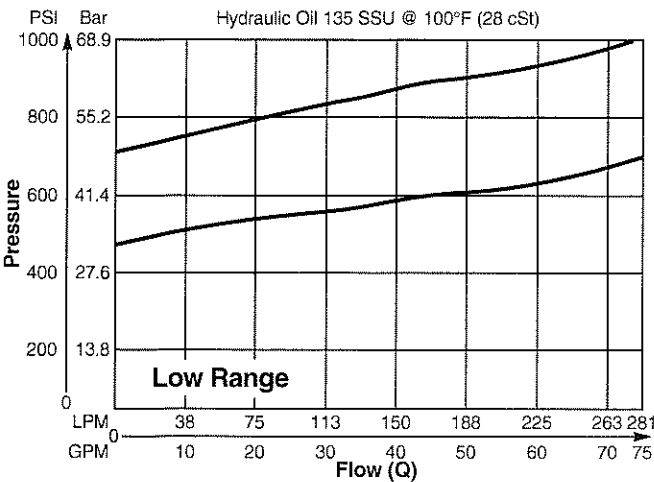
SPECIALTY
VALVES

COILS

BODIES

TECHNICAL
DATA

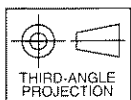
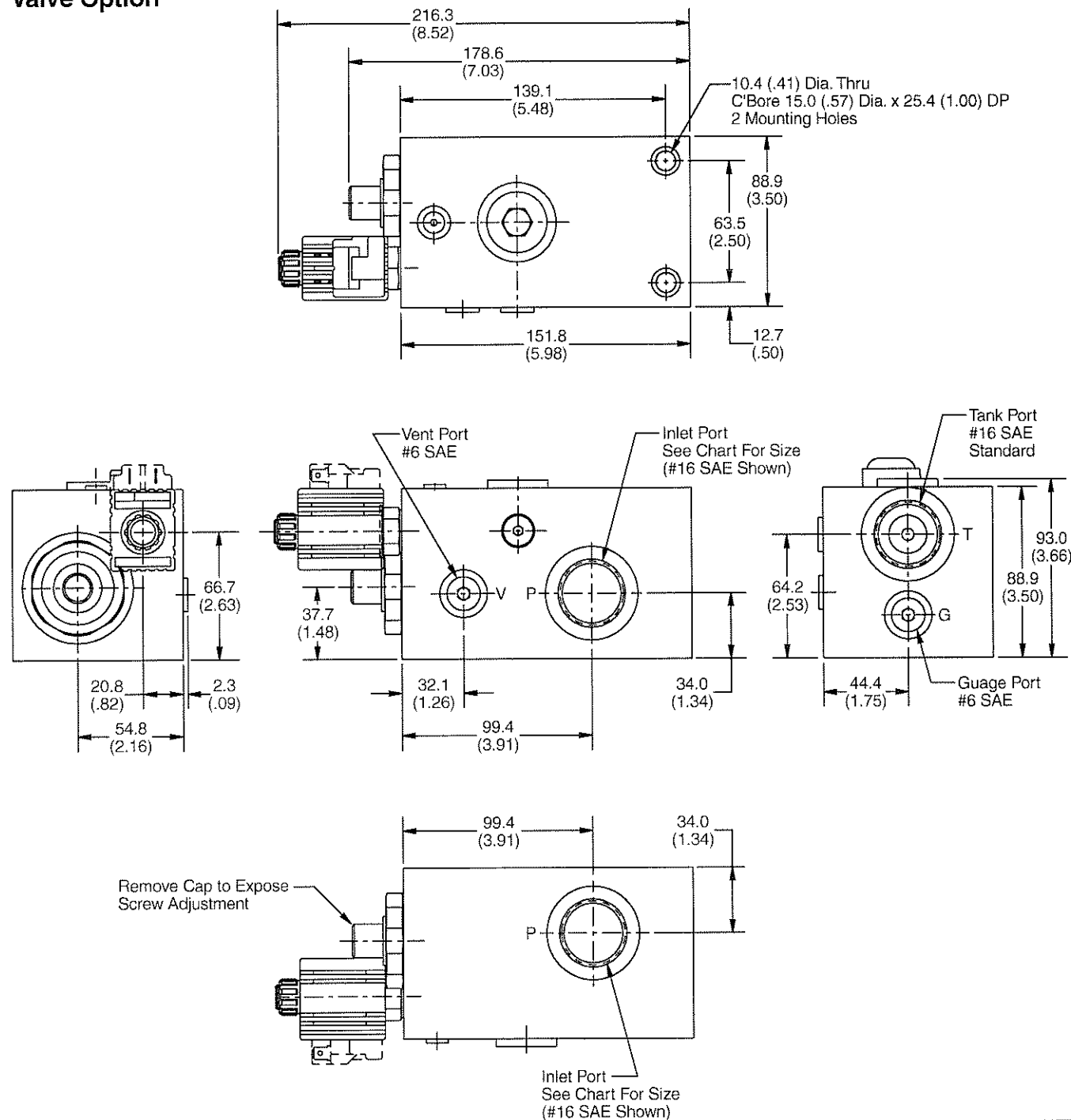
- CHECKS & SHUTTLES
- LOAD & MOTOR CONTROLS
- VOLUME CONTROLS
- PRESSURE CONTROLS**
- SOLENOID VALVES
- SPECIALTY VALVES
- COILS
- BODIES
- TECHNICAL DATA



65tl, pm6.5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)

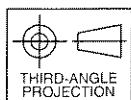
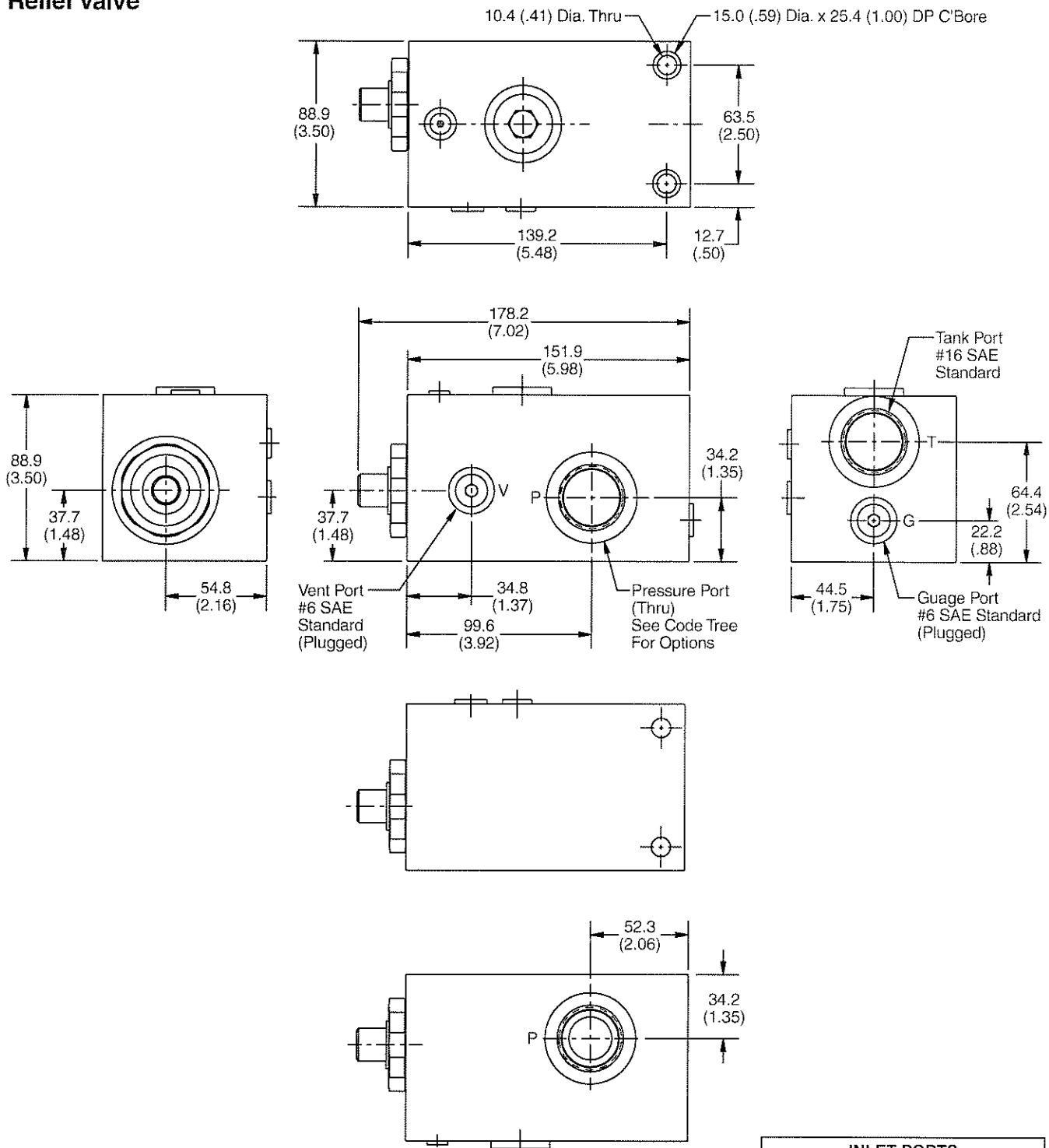
**Series 65TL Relief with
Solenoid Unloading
Valve Option**



65tl.pm6.5, bl, gn

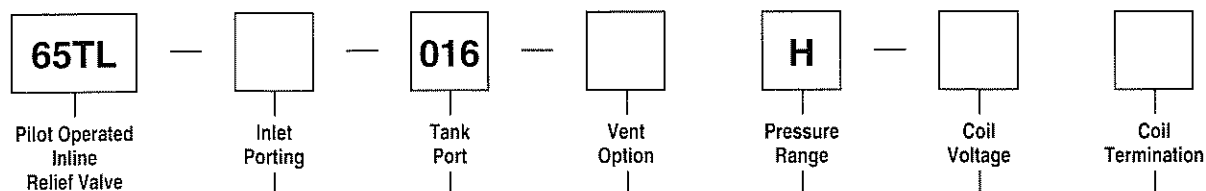
INLET PORTS		
010	10 SAE	7/8-14 UN-2B Thread
012	12 SAE	1-1/16-12 UN-2B Thread
016	16 SAE	1-5/16-12 UN-2B Thread

*Inch equivalents for millimeter dimensions are shown in (**)

Series 65TL
Relief Valve

INLET PORTS		
010	10 SAE	7/8-14 UN-2B Thread
012	12 SAE	1-1/16-12 UN-2B Thread
016	16 SAE	1-5/16-12 UN-2B Thread

65tl.pm6.5, bl, gn



Code	Size
010	SAE-10
012	SAE-12
016	SAE-16

Code	Type
V	Plugged
E	N.O. Solenoid (DSL081N)
C	N.C. Solenoid (DSL081C)

Code	Type
Omit	Plugged
12	12 VDC
24	24 VDC
100	120 VAC

Code	Type
016	SAE-16

Code	Description
H	34.5 - 210 Bar (500 - 3000 PSI)

Code	Type
Omit	Plugged
A	AC DIN (S8LDA120)
B	DC Dual Spade (S8LPD***)
C	DC Dual Wire (S8LWD***)
D	DC DIN (S8LDD***)

Shipping Weight 2.95 kg (6.5 lbs.)

*** Denotes voltage, 012 or 024.

CHECKS &
SHUTTLES

LOAD & MOTOR
CONTROLS

VOLUME
CONTROLS

PRESSURE
CONTROLS

SOLENOID
VALVES

SPECIALTY
VALVES

COILS

BODIES

TECHNICAL
DATA

General Description

The RDH083 Series, Direct Acting, Differential Area Relief Valves are best suited for intermittent duty applications as overload protection and shock protection relief.

Operation

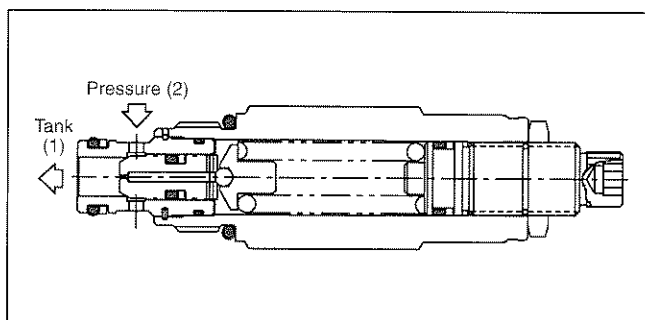
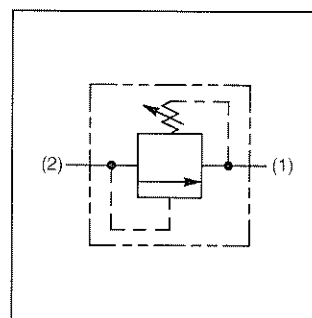
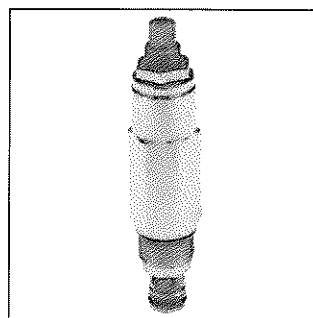
Pressure on the inlet of the valve acts on the differential area of the poppet (area difference between the O.D. of the poppet and the seat diameter) to produce a force which is opposed by the spring force. When pressure reaches the valve setting, the poppet is pushed off its seat, permitting flow to tank.

Features

- Hardened, precision ground parts for durability
- Fast response
- Low leakage design
- High flow capacity
- Adjustment design prohibits spring from going solid
- All external parts have yellow zinc dichromate. This coating allows them to withstand a 96 hour salt spray.

Specifications

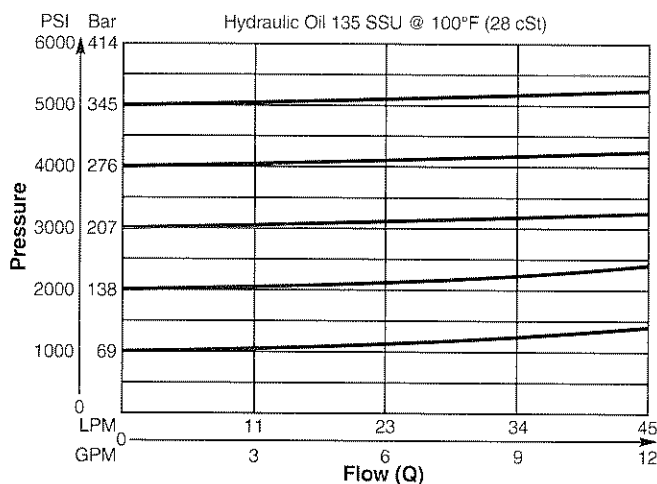
Maximum Flow	45.4 LPM (12 GPM)
Maximum Inlet Pressure	380 Bar (5500 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Setting Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Reseat Pressure	75% of crack pressure
Leakage	.67 cc/min. (10 drops/min.) at 75% of crack pressure
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C08-2



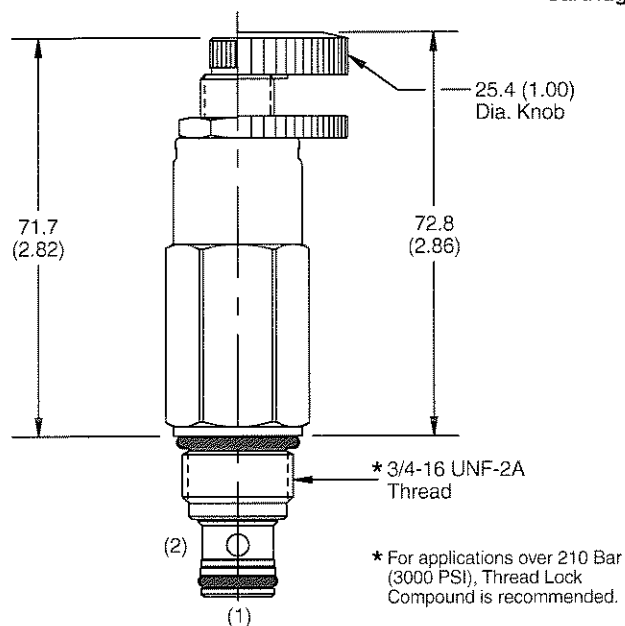
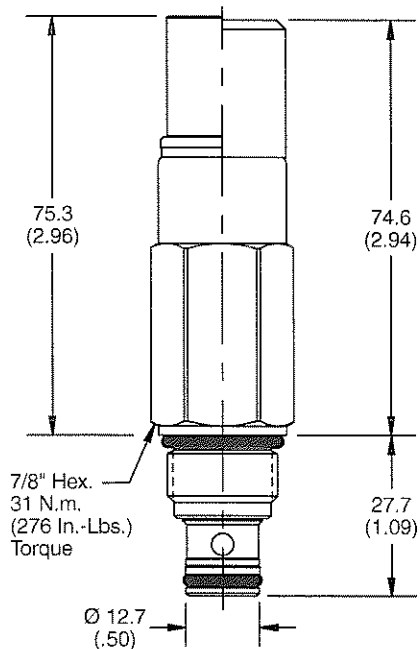
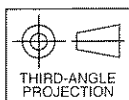
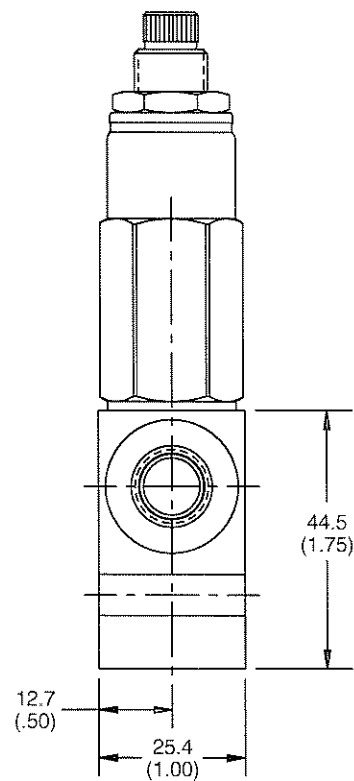
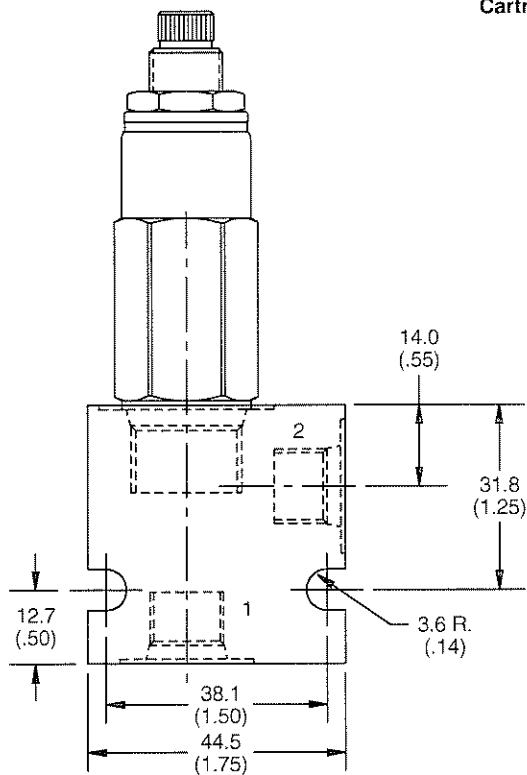
Performance Curve

Flow vs. Inlet Pressure

(Pressure rise through cartridge only)

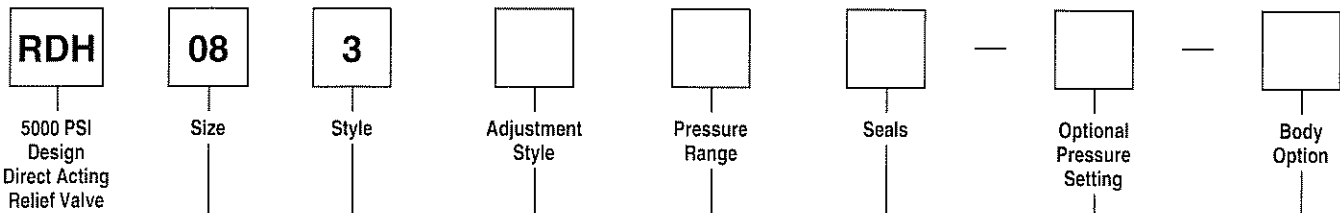


*Inch equivalents for millimeter dimensions are shown in (**)

Cartridge Only**Screw/Knob Version****Fixed Cap/Tamper Resistant Version****Cartridge In Body**

rdh083.pm6.5, bl, gn

CHECKS & SHUTTLES
LOAD & MOTOR CONTROLS
VOLUME CONTROLS
PRESSURE CONTROLS
SOLENOID VALVES
SPECIALTY VALVES
COILS
BODIES
TECHNICAL DATA



Code	Type
F	Fixed style, preset at factory. Specify desired pressure setting @ 11.3 LPM (3 GPM). For other flow rates, consult factory.
K	Knob Adjust
S	Screw Adjust
T	Tamper Resistant Cap

Code	Type
15	6.9 - 103 Bar (100-1500 PSI) Standard Setting: 51.7 Bar (750 PSI) @ 11.3 LPM (3 GPM)
30	69 - 207 Bar (1000-3000 PSI) Standard Setting: 103 Bar (1500 PSI) @ 11.3 LPM (3 GPM)
50	138 - 345 Bar (2000-5000 PSI) Standard Setting: 172.4 Bar (2500 PSI) @ 11.3 LPM (3 GPM)

Code	Port Size & Material
Omit	Cartridge Only
4P	1/4" NPTF (B08-2-4P) Steel
A4P	1/4" NPTF (B08-2-A4P) Aluminum
6P	3/8" NPTF (B08-2-6P) Steel
A6P	3/8" NPTF (B08-2-A6P) Aluminum
4T	SAE-4 (B08-2-4T) Steel
A4T	SAE-4 (B08-2-A4T) Aluminum
6T	SAE-6 (B08-2-6T) Steel
A6T	SAE-6 (B08-2-A6T) Aluminum
4B	1/4" BSPG (B08-2-4B) Steel
A4B	1/4" BSPG (B08-2-A4B) Aluminum
6B	3/8" BSPG (B08-2-6B) Steel
A6B	3/8" BSPG (B08-2-A6B) Aluminum

NOTE:
If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used.
Higher pressures require steel bodies.

SERVICE PARTS
Knob Kit Option: 717784-10
Tamper Kit Option: 717785
Nitrile Seal Kit: SK08-2
Fluorocarbon Seal Kit: SK08-2V

Shipping Weight
Cartridge Only .19 kg (.43 lbs.)

rdh083.pm6.5, bl, gn

General Description

The RDH103 Series, Direct Acting, Differential Area Relief Valves are best suited for intermittent duty applications as overload protection and shock protection relief.

Operation

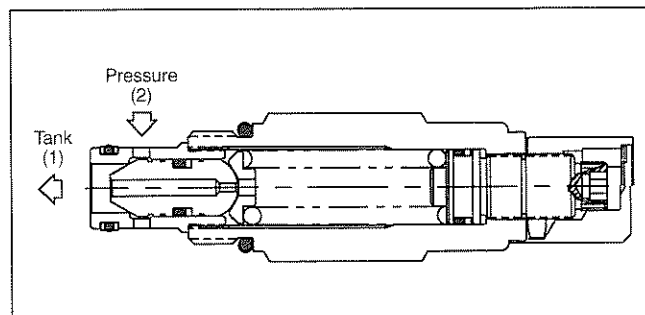
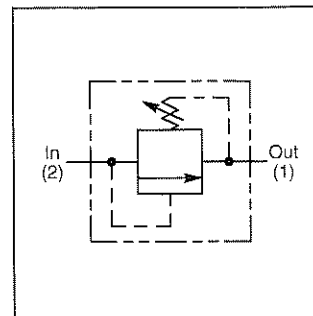
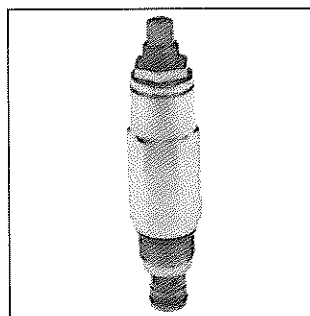
Pressure on the inlet of the valve acts on the differential area of the poppet (area difference between the O.D. of the poppet and the seat diameter) to produce a force which is opposed by the spring force. When pressure reaches the valve setting, the poppet is pushed off its seat, permitting flow to tank.

Features

- Hardened, precision ground parts for durability
- Fast response
- Low leakage design
- High flow capacity
- Valve design prohibits spring solidification
- All external parts have yellow zinc dichromate. This coating allows them to withstand a 96 hour salt spray.

Specifications

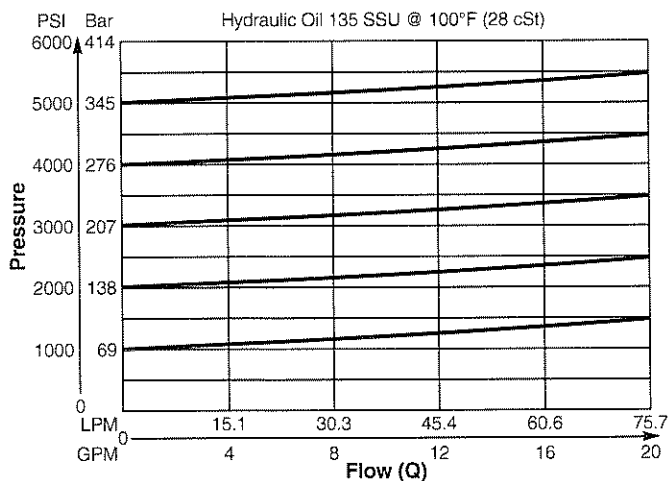
Maximum Flow	75 LPM (20 GPM)
Maximum Inlet Pressure	380 Bar (5500 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Setting Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Reseat Pressure	80% of crack pressure
Leakage	.67 cc/min. (10 drops/min.) at 75% of crack pressure
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C10-2



Performance Curve

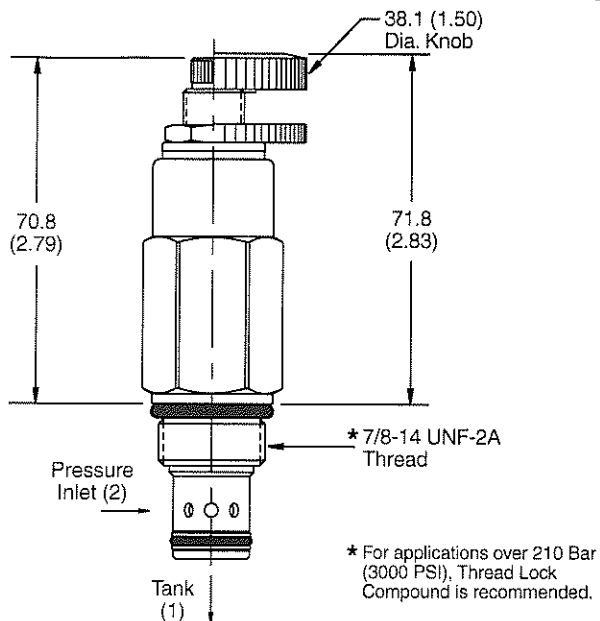
Flow vs. Inlet Pressure

(Pressure rise through cartridge only)

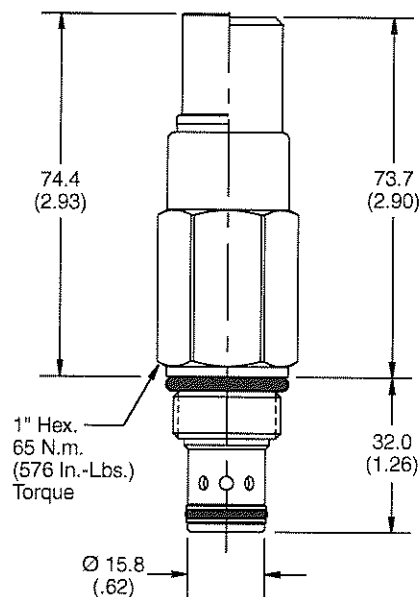


*Inch equivalents for millimeter dimensions are shown in (**)

Cartridge Only

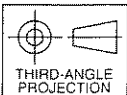
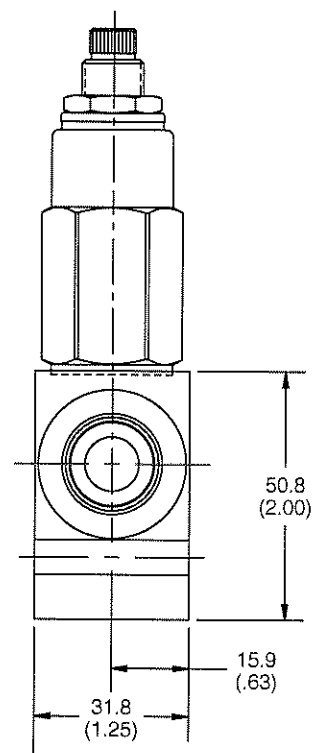
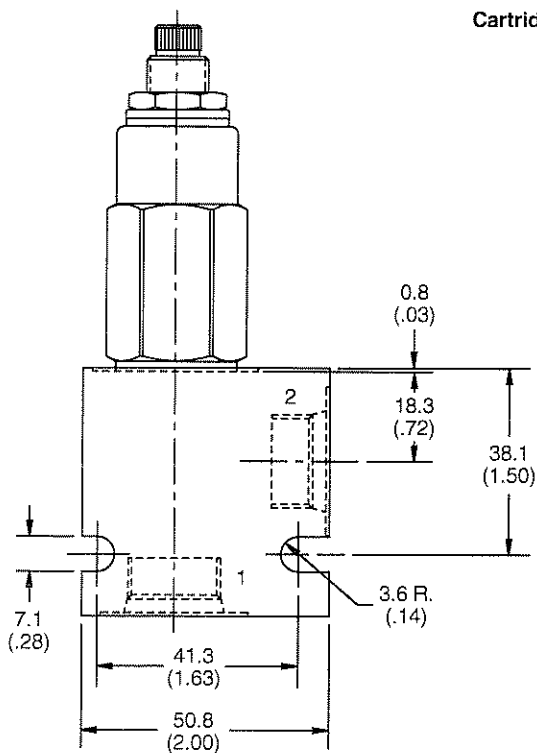


Screw/Knob Version



Fixed Cap/Tamper Resistant Version

Cartridge In Body



rdh103.pm6.5, bl, gn

RDH 5000 PSI Design Direct Acting Relief Valve	10 Size	3 Style	Adjustment Style	Pressure Range	Seals	Optional Pressure Setting	Body Option

7/8-14 UNF-2B
Threaded Cavity
with .62" Dia. Seat

Code	Style
3	Differential Area

Code	Type
F	Fixed style, preset at factory. Specify desired pressure setting @ 11.3 LPM (3 GPM). For other flow rates, consult factory.
K	Knob Adjust
S	Screw Adjust
T	Tamper Resistant Cap

Code	Type
10	6.9 - 69 Bar (100 - 1000 PSI) Standard Setting: 34.5 Bar (500 PSI) @ 11.3 LPM (3 GPM)
20	34.5 - 138 Bar (500 - 2000 PSI) Standard Setting: 69 Bar (1000 PSI) @ 11.3 LPM (3 GPM)
30	69 - 207 Bar (1000 - 3000 PSI) Standard Setting: 103.5 Bar (1500 PSI) @ 11.3 LPM (3 GPM)
50	138 - 345 Bar (2000 - 5000 PSI) Standard Setting: 172.4 Bar (2500 PSI) @ 11.3 LPM (3 GPM)

Code	Type
Omit	Nitrile
V	Fluorocarbon

Description
Pressure ÷ 10
i.e. 235 = 2350 PSI
Setting Range:
100 to 5000 PSI
All settings at .4 LPM (.1 GPM)

Code	Port Size & Material
Omit	Cartridge Only
4P	1/4" NPTF (B10-2-4P) Steel
A4P	1/4" NPTF (B10-2-A4P) Aluminum
6P	3/8" NPTF (B10-2-6P) Steel
A6P	3/8" NPTF (B10-2-A6P) Aluminum
8P	1/2" NPTF (B10-2-8P) Steel
A8P	1/2" NPTF (B10-2-A8P) Aluminum
6T	SAE-6 (B10-2-6T) Steel
A6T	SAE-6 (B10-2-A6T) Aluminum
8T	SAE-8 (B10-2-8T) Steel
A8T	SAE-8 (B10-2-A8T) Aluminum
4B	1/4" BSPG (B10-2-4B) Steel
A4B	1/4" BSPG (B10-2-A4B) Aluminum
6B	3/8" BSPG (B10-2-6B) Steel
A6B	3/8" BSPG (B10-2-A6B) Aluminum
8B	1/2" BSPG (B10-2-8B) Steel
A8B	1/2" BSPG (B10-2-A8B) Aluminum

SERVICE PARTS

Knob Kit Option: 717784-10
Tamper Kit Option: 717785
Nitrile Seal Kit: SK10-2
Fluorocarbon Seal Kit: SK10-2V

Shipping Weight
Cartridge Only .23 kg (0.5 lbs.)

NOTE:

If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

rdh103.pm6.5, bf, gn

General Description

The RD163 Series, Direct Acting, Differential Area Relief Valves are best suited for intermittent duty applications as overload protection and shock protection relief.

Operation

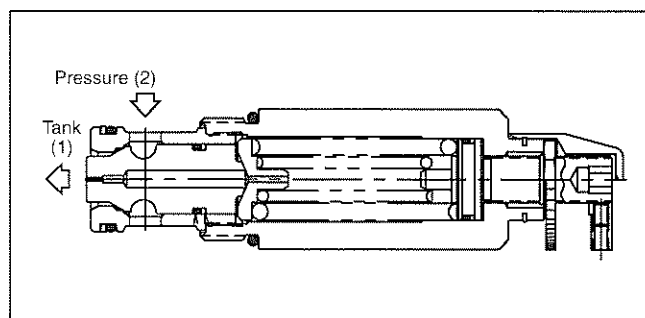
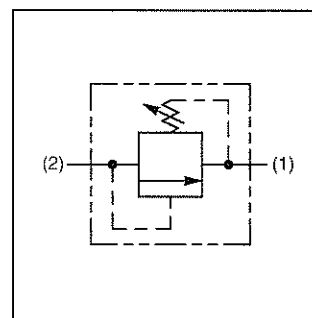
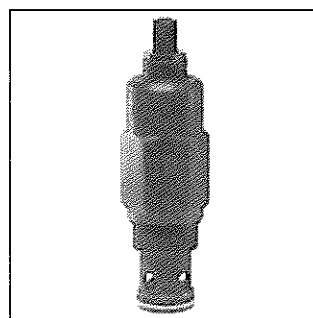
Pressure on the inlet of the valve acts on the differential area of the poppet (area difference between the O.D. of the poppet and the seat diameter) to produce a force which is opposed by the spring force. When pressure reaches the valve setting, the poppet is pushed off its seat, permitting flow to tank.

Features

- Hardened, precision ground parts for durability
- Compact size for reduced space requirements
- Low leakage design
- Fast response

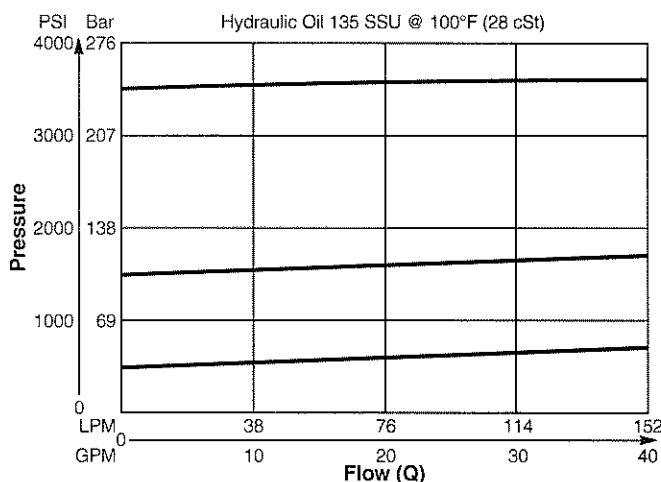
Specifications

Maximum Flow	75 LPM (40 GPM)
Maximum Inlet Pressure	240 Bar (3500 PSI)
Maximum Setting Pressure	210 Bar (3000 PSI)
Reseat Pressure (Valve returns to non-relieving mode)	80% of crack pressure
Leakage	.67 cc/min. (10 drops/min.) at 25% of crack pressure
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C16-2

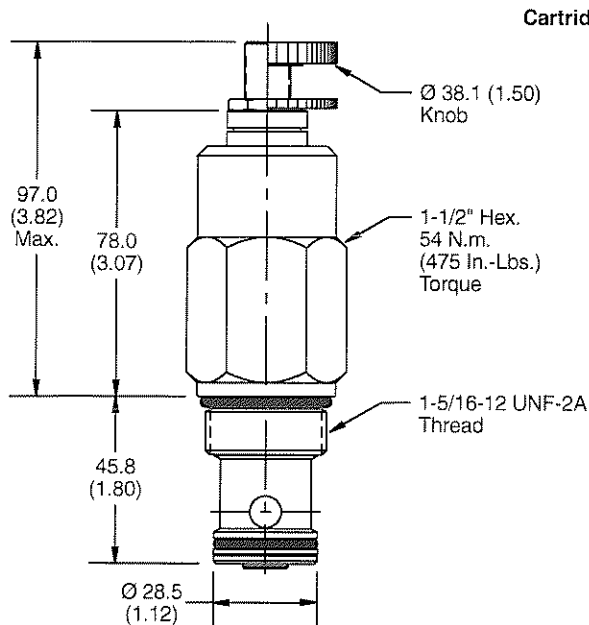


Performance Curve

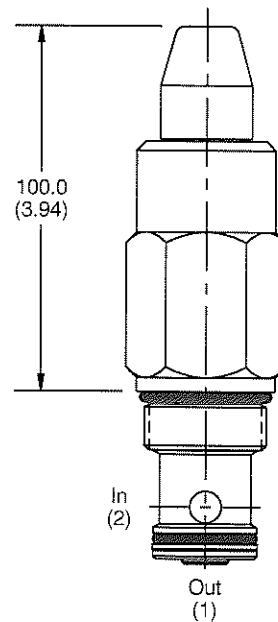
Flow vs. Inlet Pressure (Through cartridge only)



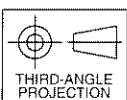
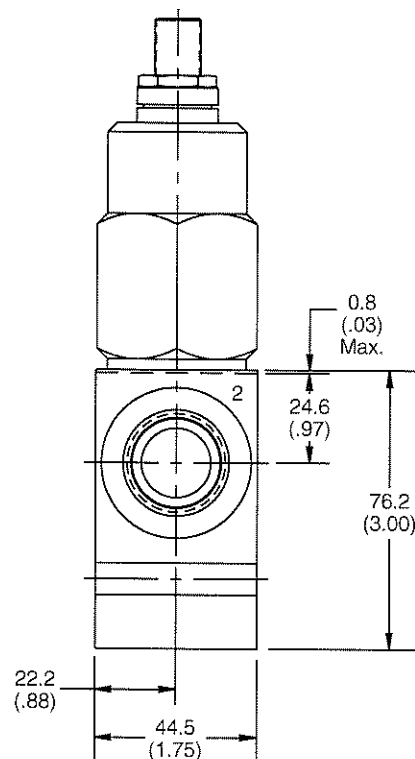
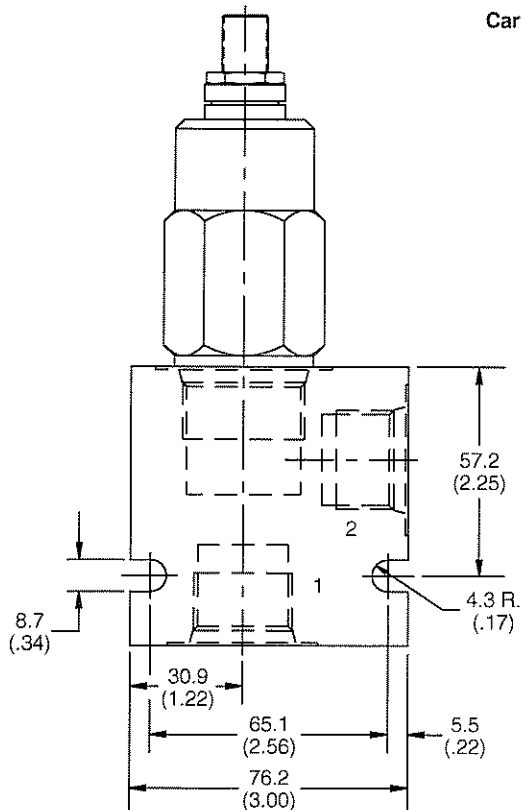
*Inch equivalents for millimeter dimensions are shown in (**)



Screw/Knob Version



Tamper Resistant Version



rd163.pm8.5, bl, gn

CHECKS &
SHUTTLES

LOAD & MOTOR
CONTROLS

VOLUME
CONTROLS

PRESSURE
CONTROLS

SOLENOID
VALVES

SPECIALTY
VALVES

COILS

BODIES

TECHNICAL
DATA

RD Direct Acting Relief Valve	16 Size 1-5/16-12 UNF-2B Threaded Cavity with 1.12" Dia. Seat	3 Style Code Style 3 Differential Area	 Adjustment Style Code Type K Knob Adjust S Screw Adjust T Tamper Resistant Cap	 Pressure Range Code Type 10 13.8 - 69 Bar (200-1000 PSI) Standard Setting: 34.5 Bar (500 PSI) @ 11.3 LPM (3 GPM) 20 27.6 - 138 Bar (400-2000 PSI) Standard Setting: 69 Bar (1000 PSI) @ 11.3 LPM (3 GPM) 30 41.4 - 207 Bar (600-3000 PSI) Standard Setting: 103.5 Bar (1500 PSI) @ 11.3 LPM (3 GPM)	 Seals Code Type Omit Nitrile V Fluorocarbon	 Optional Pressure Setting Description Pressure ÷ 10 i.e. 235 = 2350 PSI Setting Range: 100 to 3000 PSI All settings at 11.3 LPM (3 GPM)	 Body Option Code Port Size & Material Omit Cartridge Only 8P 1/2" NPTF (B16-2-8P) Steel A8P 1/2" NPTF (B16-2-A8P) Aluminum 12P 3/4" NPTF (B16-2-12P) Steel A12P 3/4" NPTF (B16-2-A12P) Aluminum 16P 1" NPTF (B16-2-16P) Steel A16P 1" NPTF (B16-2-A16P) Aluminum 8T SAE-8 (B16-2-8T) Steel A8T SAE-8 (B16-2-A8T) Aluminum 12T SAE-12 (B16-2-12T) Steel A12T SAE-12 (B16-2-A12T) Aluminum 16T SAE-16 (B16-2-16T) Steel A16T SAE-16 (B16-2-A16T) Aluminum 8B 1/2" BSPG (B16-2-8B) Steel A8B 1/2" BSPG (B16-2-A8B) Aluminum 12B 3/4" BSPG (B16-2-12B) Steel A12B 3/4" BSPG (B16-2-A12B) Aluminum 16B 1" BSPG (B16-2-16B) Steel A16B 1" BSPG (B16-2-A16B) Aluminum

SERVICE PARTS

Knob Option: 717782

Tamper Kit Option: 717783

Nitrile Seal Kit: SK16-2

Fluorocarbon Seal Kit: SK16-2V

Shipping Weight

Cartridge Only .91 kg (2.0 lbs.)

General Description

The RAH081 Series, Pilot Operated, Spool-Type Relief Valves are suited for continuous duty applications and are primarily used to limit main system pressure.

Operation

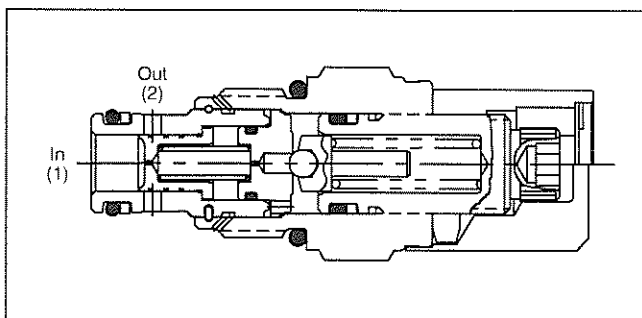
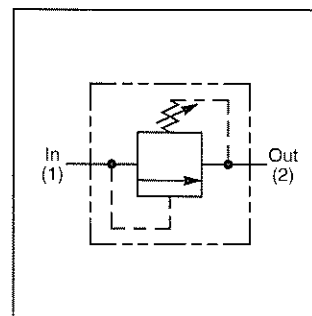
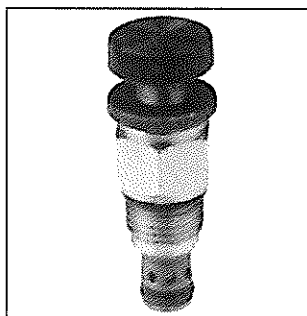
When inlet pressure exceeds the valve setting, the pilot section opens. This pilot flow creates a pressure imbalance across the main section causing the valve to open, permitting relief flow to tank.

Features

- Low override curve
- Ball-type pilot for added stability
- High accuracy - pilot operated design
- Hardened, precision ground parts for durability
- Compact size for reduced space requirements
- All external parts have yellow zinc dichromate. This coating allows them to withstand a 96 hour salt spray.

Specifications

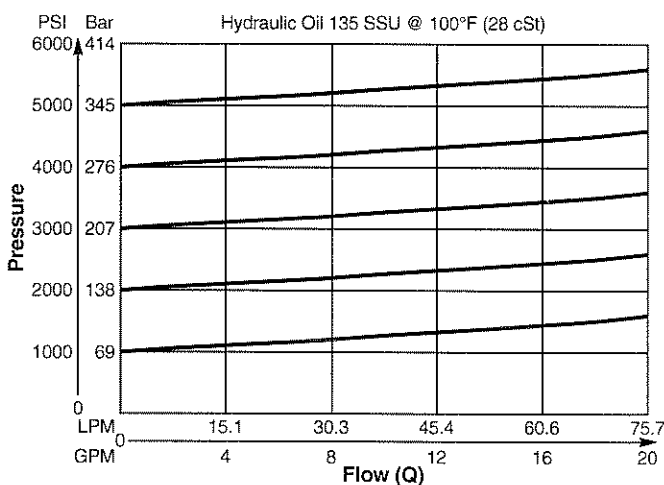
Rated Flow	75.8 LPM (20 GPM)
Maximum Inlet Pressure	380 Bar (5500 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Setting Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Reseat Pressure (Valve returns to non-relieving mode)	80% of crack pressure
Leakage	82 cc/min. at 75% of crack pressure.
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C08-2



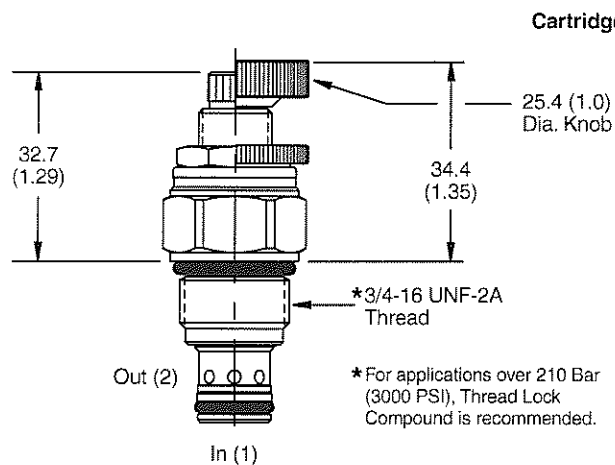
Performance Curve

Flow vs. Inlet Pressure

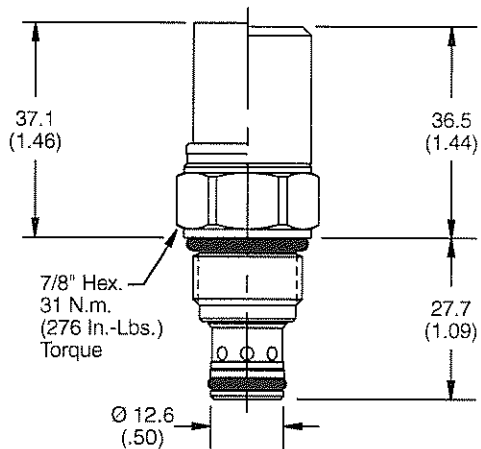
(Pressure rise through cartridge only)



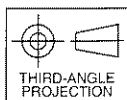
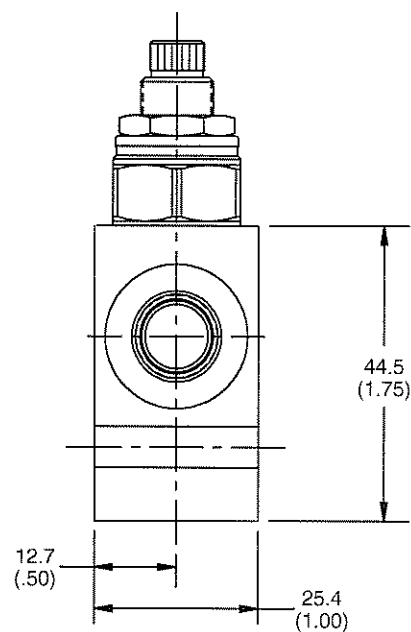
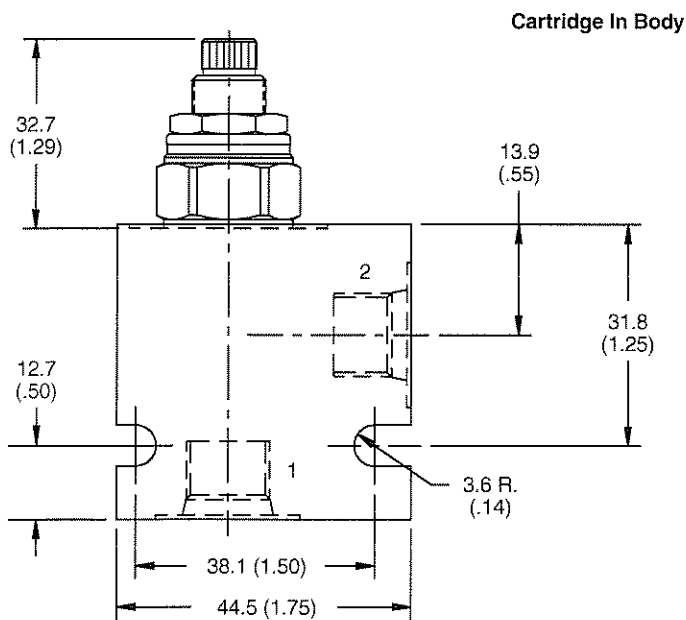
*Inch equivalents for millimeter dimensions are shown in (**)



Screw/Knob Version



Fixed Cap/Tamper Resistant Version



rah081.pm6.5, bl, gn

RAH	08	1				—	—																																	
5000 PSI Design Pilot Operated Relief Valve	Size	Style	Adjustment Style	Pressure Range	Seals		Optional Pressure Setting	Body Option																																
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 50%;">Code</th> <th style="width: 50%;">Style</th> </tr> <tr> <td style="text-align: center;">1</td> <td>Pilot Operated Spool - Type</td> </tr> </table>	Code	Style	1	Pilot Operated Spool - Type			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 50%;">Code</th> <th style="width: 50%;">Type</th> </tr> <tr> <td style="text-align: center;">Omit</td> <td>Nitrile</td> </tr> <tr> <td style="text-align: center;">V</td> <td>Fluorocarbon</td> </tr> </table>	Code	Type	Omit	Nitrile	V	Fluorocarbon																									
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<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 20%;">Code</th> <th style="width: 80%;">Type</th> </tr> <tr> <td style="text-align: center;">08</td> <td>3/4"-16 UNF-2B Threaded Cavity with .50" Dia. Seat</td> </tr> </table>	Code	Type	08	3/4"-16 UNF-2B Threaded Cavity with .50" Dia. Seat																																				
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			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 15%;">Code</th> <th style="width: 85%;">Type</th> </tr> <tr> <td style="text-align: center;">F</td> <td>Fixed style, preset at factory. Specify desired pressure setting @ 11.3 LPM (3 GPM). For other flow rates, consult factory.</td> </tr> <tr> <td style="text-align: center;">K</td> <td>Knob Adjust</td> </tr> <tr> <td style="text-align: center;">S</td> <td>Screw Adjust</td> </tr> <tr> <td style="text-align: center;">T</td> <td>Tamper Resistant Cap</td> </tr> </table>	Code	Type	F	Fixed style, preset at factory. Specify desired pressure setting @ 11.3 LPM (3 GPM). For other flow rates, consult factory.	K	Knob Adjust	S	Screw Adjust	T	Tamper Resistant Cap																											
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				<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 100%;">Description</th> </tr> <tr> <td>Pressure ÷ 10 i.e. 235 = 2350 PSI Setting Range: 100 to 5000 PSI All settings at 11.3 LPM (3 GPM)</td> </tr> </table>	Description	Pressure ÷ 10 i.e. 235 = 2350 PSI Setting Range: 100 to 5000 PSI All settings at 11.3 LPM (3 GPM)																																		
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							<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 15%;">Code</th> <th style="width: 85%;">Port Size & Material</th> </tr> <tr> <td style="text-align: center;">Omit</td> <td>Cartridge Only</td> </tr> <tr> <td style="text-align: center;">4P</td> <td>1/4" NPTF (B08-2-4P) Steel</td> </tr> <tr> <td style="text-align: center;">A4P</td> <td>1/4" NPTF (B08-2-A4P) Aluminum</td> </tr> <tr> <td style="text-align: center;">6P</td> <td>3/8" NPTF (B08-2-6P) Steel</td> </tr> <tr> <td style="text-align: center;">A6P</td> <td>3/8" NPTF (B08-2-A6P) Aluminum</td> </tr> <tr> <td style="text-align: center;">4T</td> <td>SAE-4 (B08-2-4T) Steel</td> </tr> <tr> <td style="text-align: center;">A4T</td> <td>SAE-4 (B08-2-A4T) Aluminum</td> </tr> <tr> <td style="text-align: center;">5T</td> <td>SAE-5 (B08-2-5T) Steel</td> </tr> <tr> <td style="text-align: center;">A5T</td> <td>SAE-5 (B08-2-A5T) Aluminum</td> </tr> <tr> <td style="text-align: center;">6T</td> <td>SAE-6 (B08-2-6T) Steel</td> </tr> <tr> <td style="text-align: center;">A6T</td> <td>SAE-6 (B08-2-A6T) Aluminum</td> </tr> <tr> <td style="text-align: center;">4B</td> <td>1/4" BSPG (B08-2-4B) Steel</td> </tr> <tr> <td style="text-align: center;">A4B</td> <td>1/4" BSPG (B08-2-A4B) Aluminum</td> </tr> <tr> <td style="text-align: center;">6B</td> <td>3/8" BSPG (B08-2-6B) Steel</td> </tr> <tr> <td style="text-align: center;">A6B</td> <td>3/8" BSPG (B08-2-A6B) Aluminum</td> </tr> </table>	Code	Port Size & Material	Omit	Cartridge Only	4P	1/4" NPTF (B08-2-4P) Steel	A4P	1/4" NPTF (B08-2-A4P) Aluminum	6P	3/8" NPTF (B08-2-6P) Steel	A6P	3/8" NPTF (B08-2-A6P) Aluminum	4T	SAE-4 (B08-2-4T) Steel	A4T	SAE-4 (B08-2-A4T) Aluminum	5T	SAE-5 (B08-2-5T) Steel	A5T	SAE-5 (B08-2-A5T) Aluminum	6T	SAE-6 (B08-2-6T) Steel	A6T	SAE-6 (B08-2-A6T) Aluminum	4B	1/4" BSPG (B08-2-4B) Steel	A4B	1/4" BSPG (B08-2-A4B) Aluminum	6B	3/8" BSPG (B08-2-6B) Steel	A6B	3/8" BSPG (B08-2-A6B) Aluminum	
Code	Port Size & Material																																							
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4T	SAE-4 (B08-2-4T) Steel																																							
A4T	SAE-4 (B08-2-A4T) Aluminum																																							
5T	SAE-5 (B08-2-5T) Steel																																							
A5T	SAE-5 (B08-2-A5T) Aluminum																																							
6T	SAE-6 (B08-2-6T) Steel																																							
A6T	SAE-6 (B08-2-A6T) Aluminum																																							
4B	1/4" BSPG (B08-2-4B) Steel																																							
A4B	1/4" BSPG (B08-2-A4B) Aluminum																																							
6B	3/8" BSPG (B08-2-6B) Steel																																							
A6B	3/8" BSPG (B08-2-A6B) Aluminum																																							
			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 15%;">Code</th> <th style="width: 85%;">Type</th> </tr> <tr> <td style="text-align: center;">10</td> <td>6.9 - 69 Bar (100 - 1000 PSI) Standard Setting: 34.5 Bar (500 PSI) @ 11.3 LPM (3 GPM)</td> </tr> <tr> <td style="text-align: center;">20</td> <td>13.8 - 138 Bar (200 - 2000 PSI) Standard Setting: 69 Bar (1000 PSI) @ 11.3 LPM (3 GPM)</td> </tr> <tr> <td style="text-align: center;">30</td> <td>20.7 - 207 Bar (300 - 3000 PSI) Standard Setting: 103.5 Bar (1500 PSI) @ 11.3 LPM (3 GPM)</td> </tr> <tr> <td style="text-align: center;">50</td> <td>34.5 - 345 Bar (500 - 5000 PSI) Standard Setting: 172.4 Bar (2500 PSI) @ 11.3 LPM (3 GPM)</td> </tr> </table>	Code	Type	10	6.9 - 69 Bar (100 - 1000 PSI) Standard Setting: 34.5 Bar (500 PSI) @ 11.3 LPM (3 GPM)	20	13.8 - 138 Bar (200 - 2000 PSI) Standard Setting: 69 Bar (1000 PSI) @ 11.3 LPM (3 GPM)	30	20.7 - 207 Bar (300 - 3000 PSI) Standard Setting: 103.5 Bar (1500 PSI) @ 11.3 LPM (3 GPM)	50	34.5 - 345 Bar (500 - 5000 PSI) Standard Setting: 172.4 Bar (2500 PSI) @ 11.3 LPM (3 GPM)																											
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30	20.7 - 207 Bar (300 - 3000 PSI) Standard Setting: 103.5 Bar (1500 PSI) @ 11.3 LPM (3 GPM)																																							
50	34.5 - 345 Bar (500 - 5000 PSI) Standard Setting: 172.4 Bar (2500 PSI) @ 11.3 LPM (3 GPM)																																							

NOTE:
 If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

SERVICE PARTS

Knob Kit Option: 717784-10

Tamper Kit Option: 717785

Nitrile Seal Kit: SK08-2

Fluorocarbon Seal Kit: SK08-2V

Shipping Weight
 Cartridge Only .46 kg (1.01 lbs.)

General Description

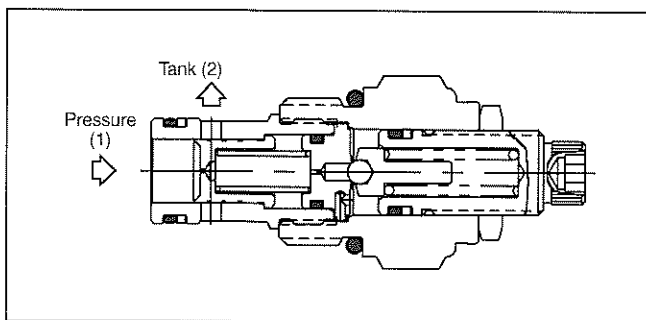
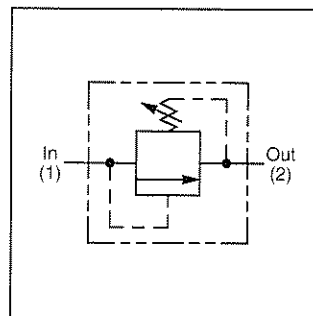
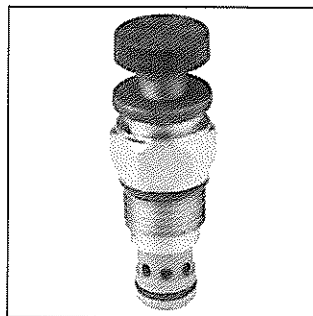
The RAH101 Series, Pilot Operated, Spool-Type Relief Valves are suited for continuous duty applications and are primarily used to limit main system pressure.

Operation

When inlet pressure exceeds the valve setting, the pilot section opens. This pilot flow creates a pressure imbalance across the main section causing the valve to open, permitting relief flow to tank.

Features

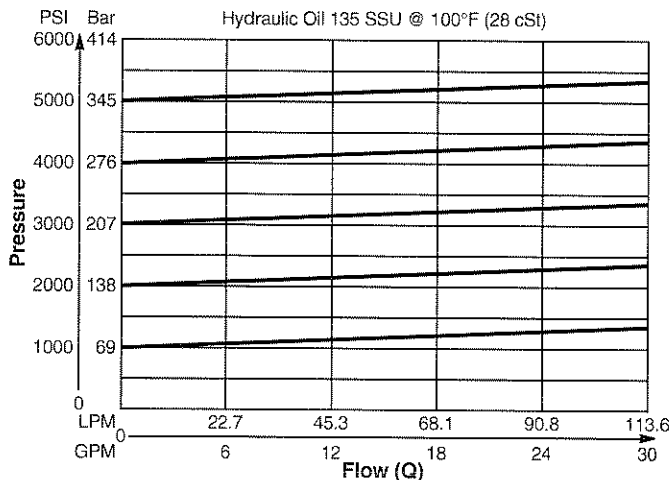
- Low override curve
- Ball-type pilot for added stability
- High accuracy - pilot operated design
- Hardened, precision ground parts for durability
- Compact size for reduced space requirements
- All external parts have yellow zinc dichromate. This coating allows them to withstand a 96 hour salt spray.



Performance Curve

Flow vs. Inlet Pressure

(Pressure rise through cartridge only)



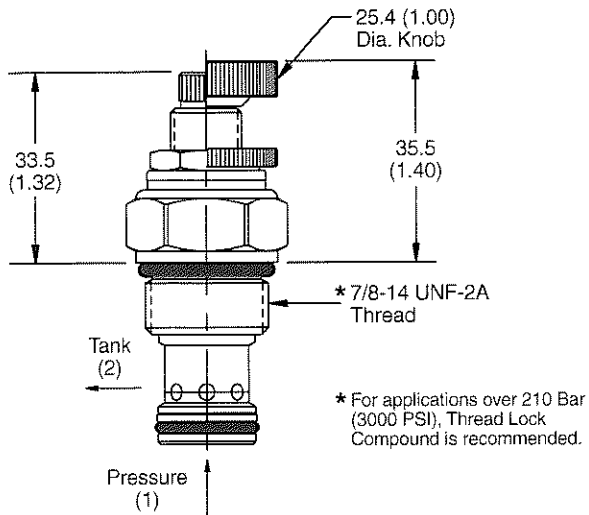
Specifications

Rated Flow	112.5 LPM (30 GPM)
Maximum Inlet Pressure	380 Bar (5500 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Setting Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Reseat Pressure (Valve returns to non-relieving mode)	80% of crack pressure
Leakage	82 cc/min. at 75% of crack pressure
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C10-2

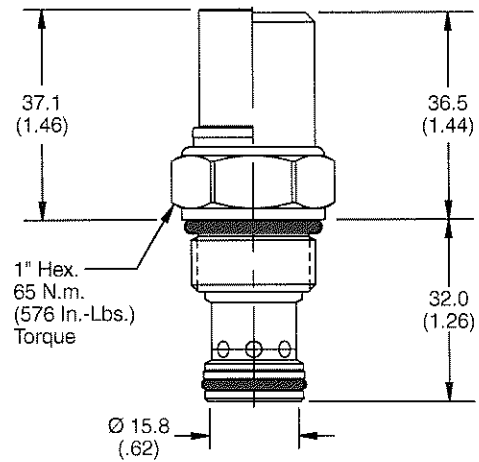
rah101.pm6.5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)

Cartridge Only

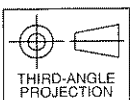
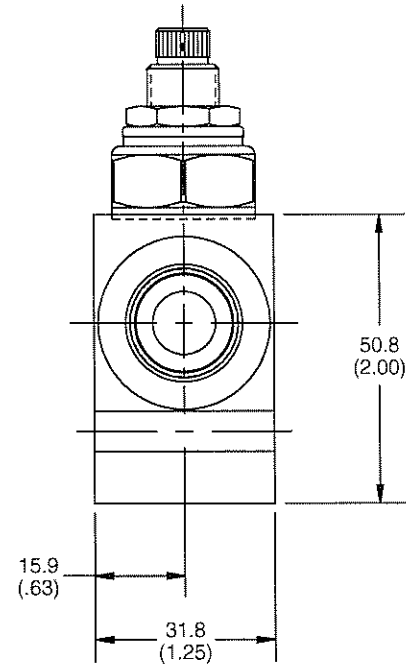
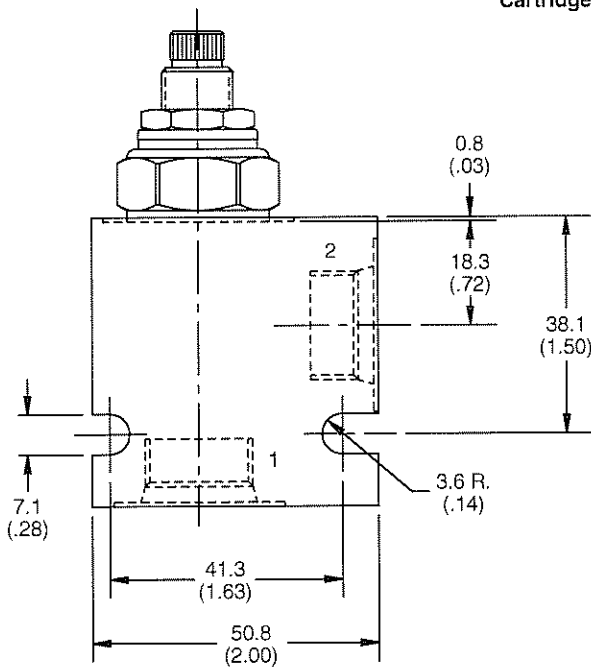


Screw/Knob Version



Fixed Cap/Tamper Resistant Version

Cartridge In Body



rah101.pm6.5, bl, gn

CHECKS & SHUTTLES
 LOAD & MOTOR CONTROLS
 VOLUME CONTROLS
 PRESSURE CONTROLS
 SOLENOID VALVES
 SPECIALTY VALVES
 COILS
 BODIES
 TECHNICAL DATA

RAH

5000 PSI
 Design
 Pilot
 Operated
 Relief Valve

10

Size

7/8-14 UNF-2B
 Threaded Cavity
 with .62" Dia. Seat

1

Style

Code	Style
1	Pilot Operated Spool - Type

Adjustment
 Style

Code	Type
F	Fixed style, preset at factory. Specify desired pressure setting @ 11.3 LPM (3 GPM). For other flow rates, consult factory.
K	Knob Adjust
S	Screw Adjust
T	Tamper Resistant Cap

Pressure
 Range

Code	Type
10	6.9 - 69 Bar (100 - 1000 PSI) Standard Setting: 34.5 Bar (500 PSI) @ 11.3 LPM (3 GPM)
20	13.8 - 138 Bar (200 - 2000 PSI) Standard Setting: 69 Bar (1000 PSI) @ 11.3 LPM (3 GPM)
30	20.7 - 207 Bar (300 - 3000 PSI) Standard Setting: 103.5 Bar (1500 PSI) @ 11.3 LPM (3 GPM)
50	34.5 - 345 Bar (500 - 5000 PSI) Standard Setting: 172.4 Bar (2500 PSI) @ 11.3 LPM (3 GPM)

Seals

Code	Type
Omit	Nitrile
V	Fluorocarbon

Optional
 Pressure
 Setting

Description
Pressure ÷ 10 i.e. 235 = 2350 PSI Setting Range: 100 to 5000 PSI All settings at 11.3 LPM (3 GPM)

Body
 Option

Code	Port Size & Material
Omit	Cartridge Only
4P	1/4" NPTF (B10-2-4P) Steel
A4P	1/4" NPTF (B10-2-A4P) Aluminum
6P	3/8" NPTF (B10-2-6P) Steel
A6P	3/8" NPTF (B10-2-A6P) Aluminum
8P	1/2" NPTF (B10-2-8P) Steel
A8P	1/2" NPTF (B10-2-A8P) Aluminum
6T	SAE-6 (B10-2-6T) Steel
A6T	SAE-6 (B10-2-A6T) Aluminum
8T	SAE-8 (B10-2-8T) Steel
A8T	SAE-8 (B10-2-A8T) Aluminum
4B	1/4" BSPG (B10-2-4B) Steel
A4B	1/4" BSPG (B10-2-A4B) Aluminum
6B	3/8" BSPG (B10-2-6B) Steel
A6B	3/8" BSPG (B10-2-A6B) Aluminum
8B	1/2" BSPG (B10-2-8B) Steel
A8B	1/2" BSPG (B10-2-A8B) Aluminum

NOTE:
 If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used.
 Higher pressures require steel bodies.

SERVICE PARTS

Knob Kit Option: 717784-10
 Tamper Kit Option: 717785
 Nitrile Seal Kit: SK10-2
 Fluorocarbon Seal Kit: SK10-2V

Shipping Weight
 Cartridge Only .23 kg (.50 lbs.)

rah101.pm6.5, bt, gn

General Description

The RAH121 Series, Pilot Operated, Spool-Type Relief Valves are suited for continuous duty applications and are primarily used to limit main system pressure.

Operation

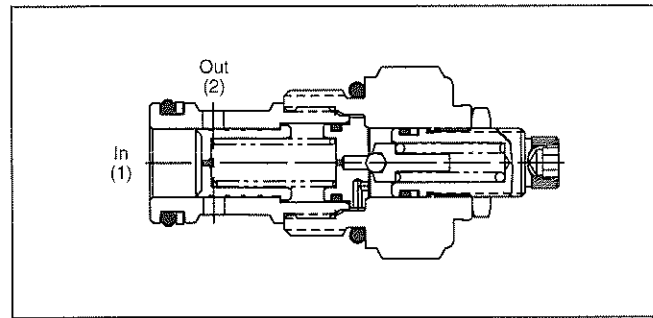
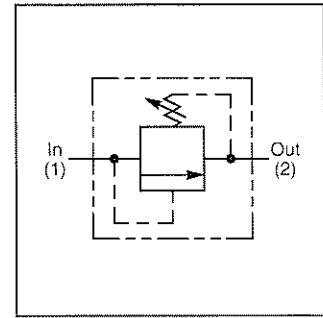
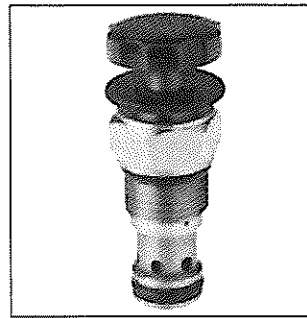
When inlet pressure (1) exceeds the valve setting, the pilot section opens. This pilot flow creates a pressure imbalance across the main section causing the valve to open, permitting relief flow to tank (2).

Features

- Low override curve
- Ball-type pilot for added stability
- High accuracy - pilot operated design
- Hardened, precision ground parts for durability
- Compact size for reduced space requirements
- All external parts have yellow zinc dichromate. This coating allows them to withstand a 96 hour salt spray.

Specifications

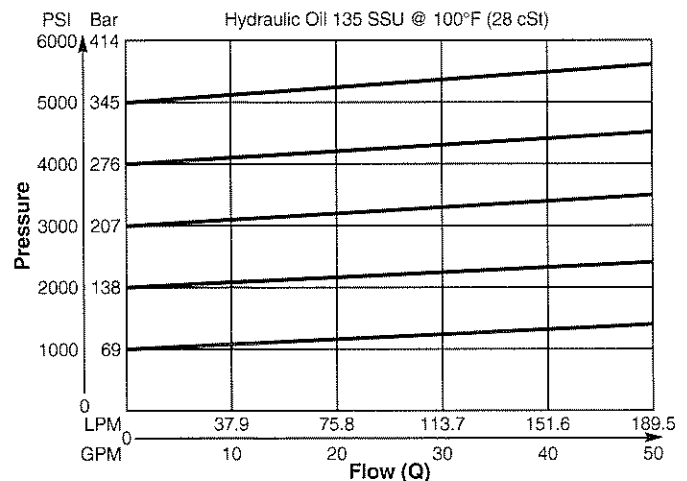
Rated Flow	189.5 LPM (50 GPM)
Maximum Inlet Pressure	380 Bar (5500 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Setting Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Reseat Pressure (Valve returns to non-relieving mode)	80% of crack pressure
Leakage	82 cc/min. at 75% of crack pressure
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C12-2



Performance Curve

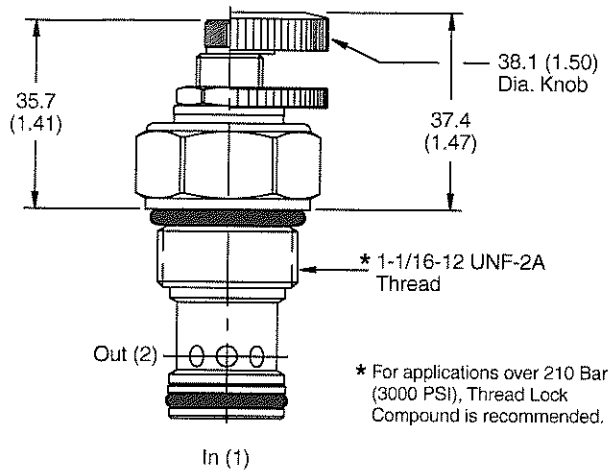
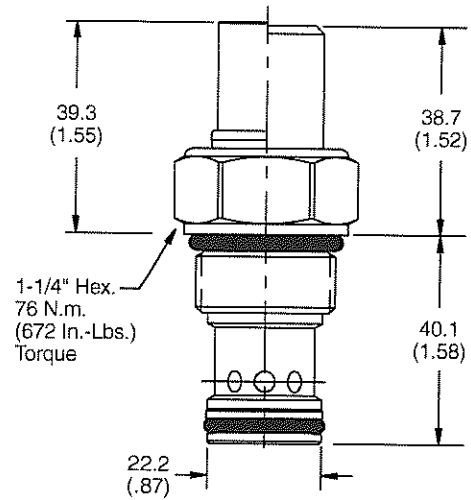
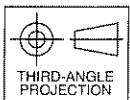
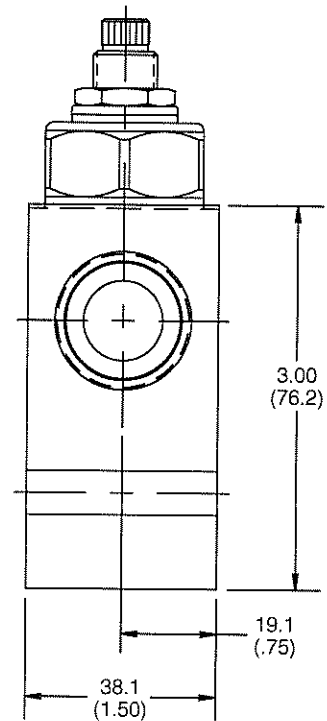
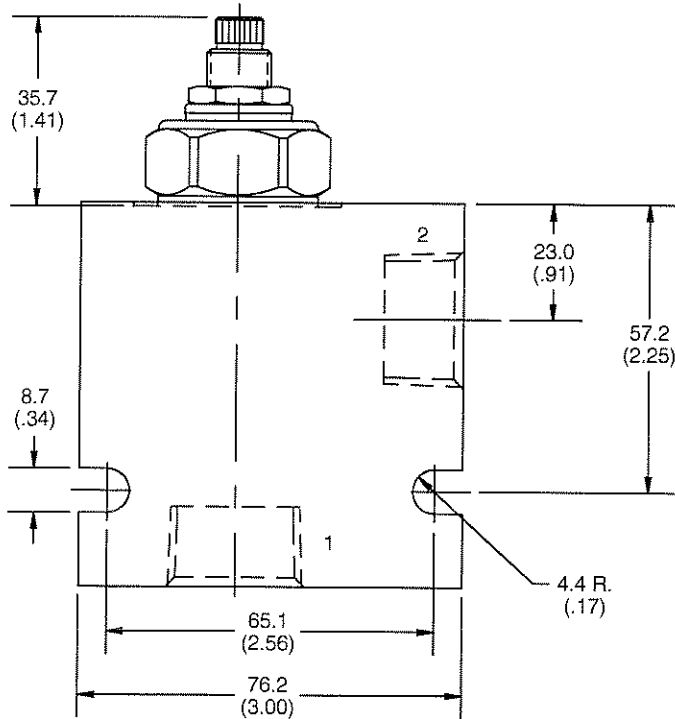
Flow vs. Inlet Pressure

(Pressure rise through cartridge only)



Dimensions**P.O. Relief Valves
Series RAH121**

*Inch equivalents for millimeter dimensions are shown in (**)

Cartridge Only**Screw/Knob Version****Fixed Cap/Tamper Resistant Version****Cartridge In Body**

rah121.pm6.5, bl, gn

RAH

5000 PSI
 Design
 Pilot
 Operated
 Relief Valve

12

Size

1-1/16-12 UNF-2B
 Threaded Cavity
 with .87" Dia. Seat

1

Style

Code	Style
1	Pilot Operated Spool - Type

Adjustment
 Style

Code	Type
F	Fixed style, preset at factory. Specify desired pressure setting @ 11.3 LPM (3 GPM). For other flow rates, consult factory.
K	Knob Adjust
S	Screw Adjust
T	Tamper Resistant Cap

Pressure
 Range

Code	Type
10	6.9 - 69 Bar (100 - 1000 PSI) Standard Setting: 34.5 Bar (500 PSI) @ 11.3 LPM (3 GPM)
20	13.8 - 138 Bar (200 - 2000 PSI) Standard Setting: 69 Bar (1000 PSI) @ 11.3 LPM (3 GPM)
30	20.7 - 207 Bar (300 - 3000 PSI) Standard Setting: 103.5 Bar (1500 PSI) @ 11.3 LPM (3 GPM)
50	34.5 - 345 Bar (500 - 5000 PSI) Standard Setting: 172.4 Bar (2500 PSI) @ 11.3 LPM (3 GPM)

Seals

Code	Type
Omit	Nitrile
V	Fluorocarbon

Optional
 Pressure
 Setting

Description
Pressure ÷ 10 i.e. 235 = 2350 PSI Setting Range: 100 to 5000 PSI All settings at 11.3 LPM (3 GPM)

Body
 Option

Code	Port Size & Material
Omit	Cartridge Only
6P	3/8" NPTF (B12-2-6P) Steel
A6P	3/8" NPTF (B12-2-A6P) Aluminum
8P	1/2" NPTF (B12-2-8P) Steel
A8P	1/2" NPTF (B12-2-A8P) Aluminum
12P	3/4" NPTF (B12-2-12P) Steel
A12P	3/4" NPTF (B12-2-A12P) Aluminum
6T	SAE-6 (B12-2-6T) Steel
A6T	SAE-6 (B12-2-A6T) Aluminum
8T	SAE-8 (B12-2-8T) Steel
A8T	SAE-8 (B12-2-A8T) Aluminum
12T	SAE-12 (B12-2-12T) Steel
A12T	SAE-12 (B12-2-A12T) Aluminum
6B	3/8" BSPG (B12-2-6B) Steel
A6B	3/8" BSPG (B12-2-A6B) Aluminum
8B	1/2" BSPG (B12-2-8B) Steel
A8B	1/2" BSPG (B12-2-A8B) Aluminum
12B	3/4" BSPG (B12-2-12B) Steel
A12B	3/4" BSPG (B12-2-A12B) Aluminum

SERVICE PARTS

Knob Kit Option: 717784-15

Tamper Kit Option: 717785

Nitrile Seal Kit: SK12-2

Fluorocarbon Seal Kit: SK12-2V

Shipping Weight

Cartridge Only .22 kg (.48 lbs.)

NOTE:

If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

CHECKS &
 SHUTTLES

LOAD & MOTOR
 CONTROLS

VOLUME
 CONTROLS

PRESSURE
 CONTROLS

SOLENOID
 VALVES

SPECIALTY
 VALVES

COILS

BODIES

TECHNICAL
 DATA

General Description

The RAH161 Series, Pilot Operated, Spool-Type Relief Valves are suited for continuous duty applications and are primarily used to limit main system pressure.

Operation

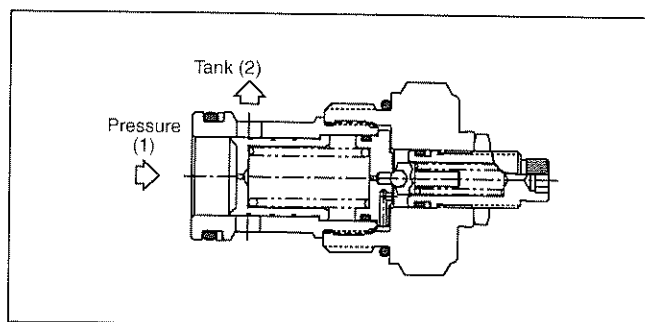
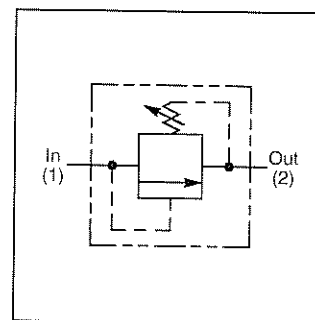
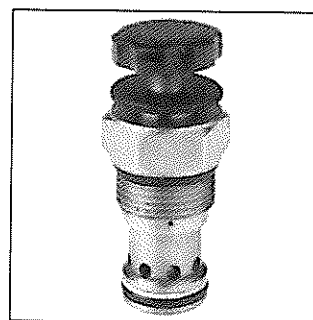
When inlet pressure exceeds the valve setting, the pilot section opens. This pilot flow creates a pressure imbalance across the main section causing the valve to open, permitting relief flow to tank.

Features

- Low override curve
- Ball-type pilot for added stability
- High accuracy - pilot operated design
- Hardened, precision ground parts for durability
- Compact size for reduced space requirements
- All external parts have yellow zinc dichromate. This coating allows them to withstand a 96 hour salt spray.

Specifications

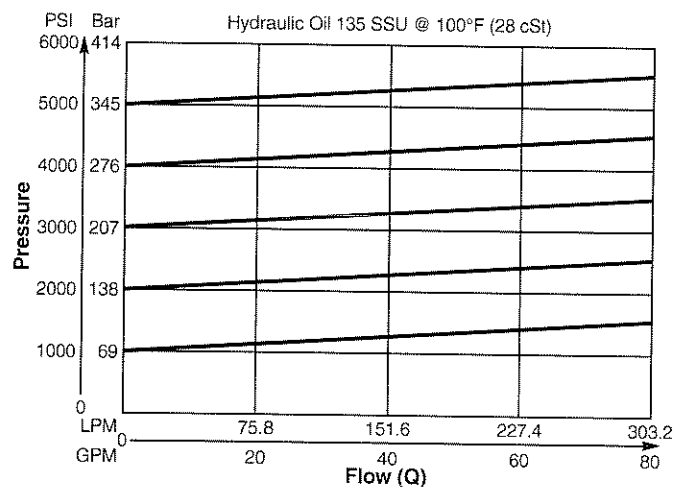
Rated Flow	300 LPM (80 GPM)
Maximum Inlet Pressure	380 Bar (5500 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Setting Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Reseat Pressure (Valve returns to non-relieving mode)	80% of crack pressure
Leakage	82 cc/min. at 75% of crack pressure
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C16-2



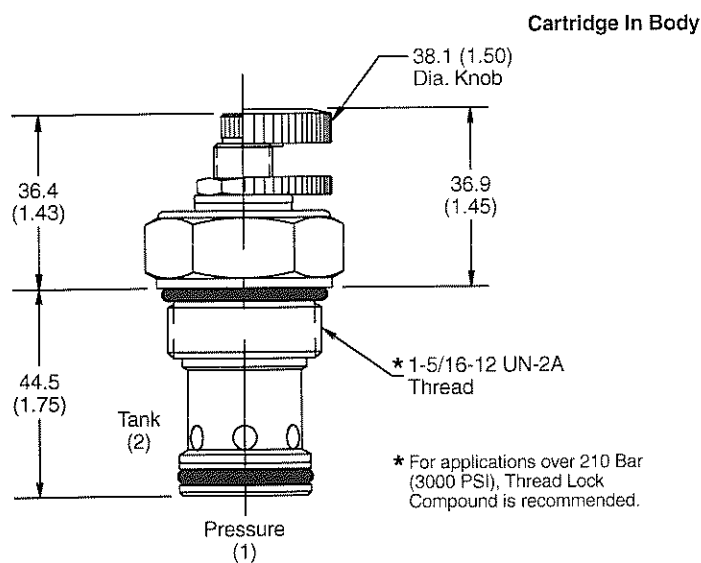
Performance Curve

Flow vs. Inlet Pressure

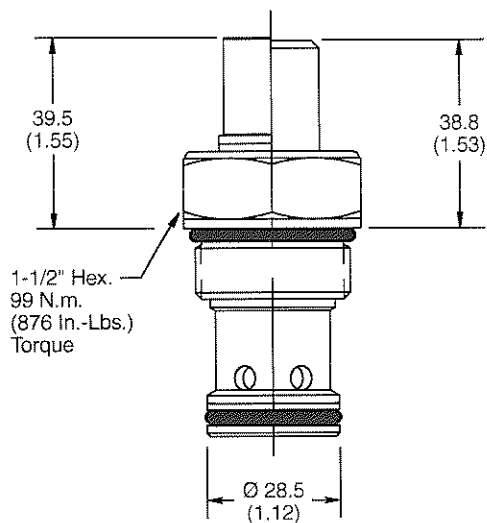
(Pressure rise through cartridge only)



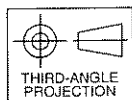
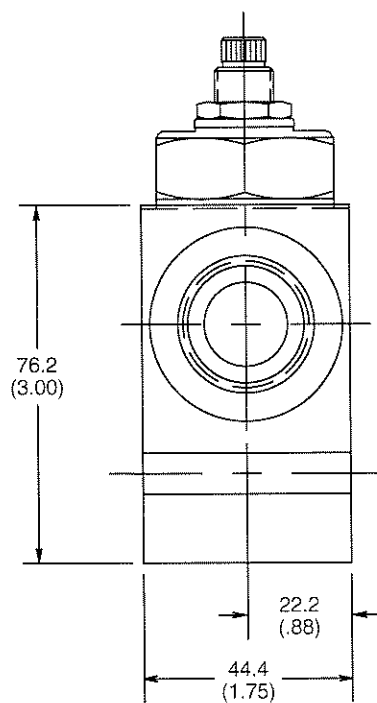
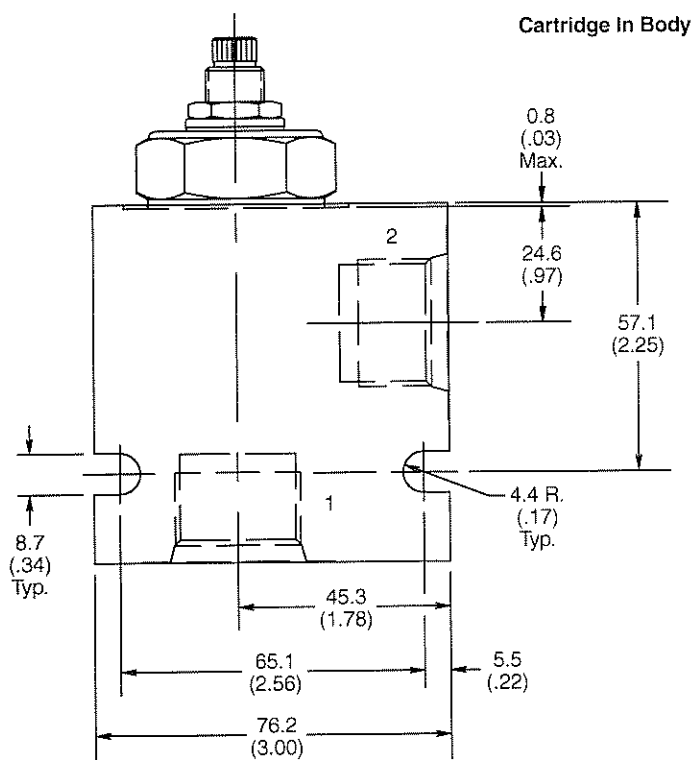
*Inch equivalents for millimeter dimensions are shown in (**)



Screw/Knob Version

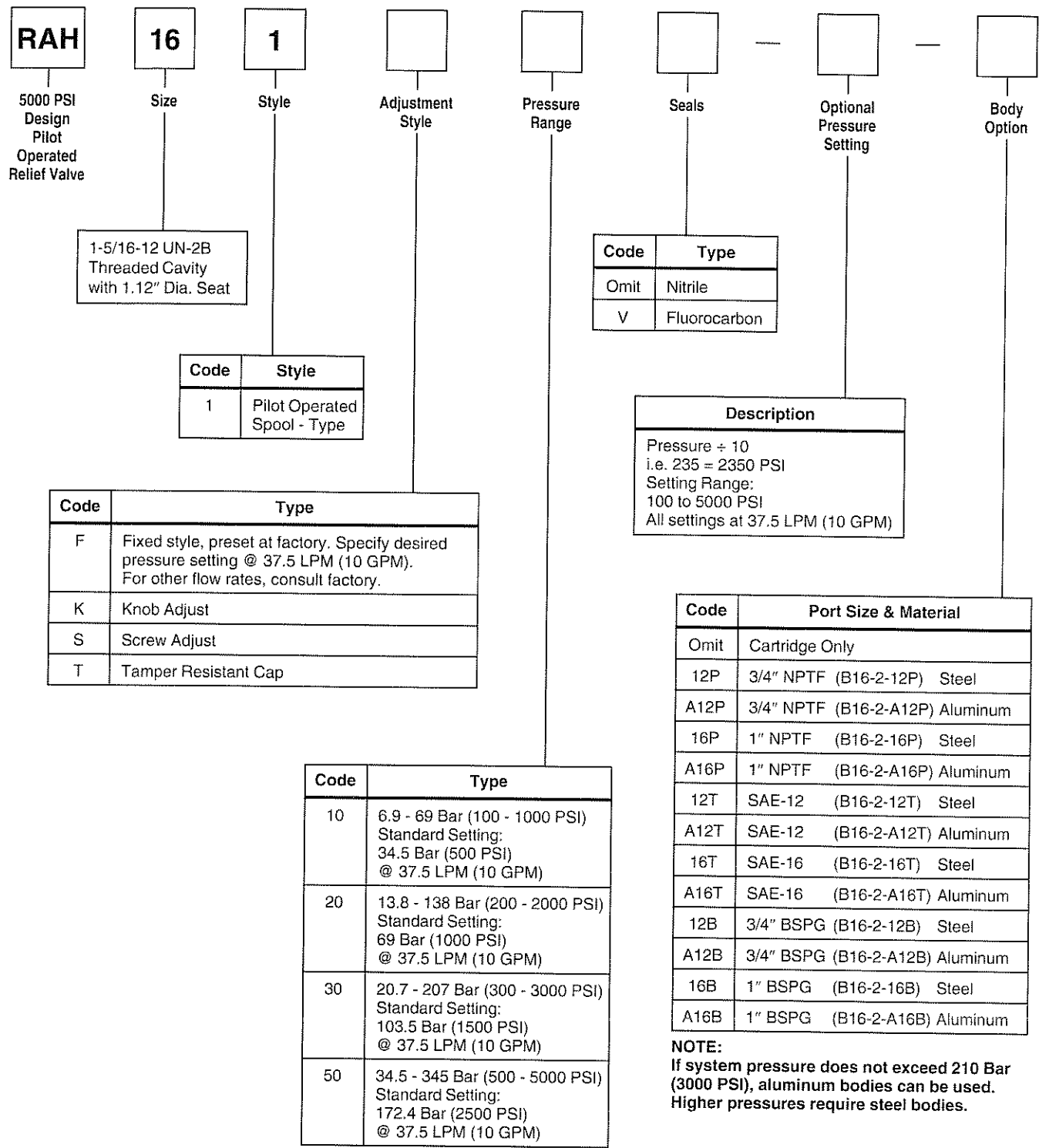


Fixed Cap/Tamper Resistant Version



rah161.pm6.5, bl, gn

CHECKS & SHUTTLES
 LOAD & MOTOR CONTROLS
 VOLUME CONTROLS
 PRESSURE CONTROLS
 SOLENOID VALVES
 SPECIALTY VALVES
 COILS
 BODIES
 TECHNICAL DATA



NOTE:
 If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

SERVICE PARTS
 Knob Kit Option: 717784-15
 Tamper Kit Option: 717785
 Nitrile Seal Kit: SK16-2
 Fluorocarbon Seal Kit: SK16-2V

Shipping Weight
 Cartridge Only 0.9 kg (2.0 lbs.)

rah161.pm6.5, bl, gn

General Description

The RAH201 Series, Pilot Operated, Spool-Type Relief Valves are suited for continuous duty applications and are primarily used to limit main system pressure.

Operation

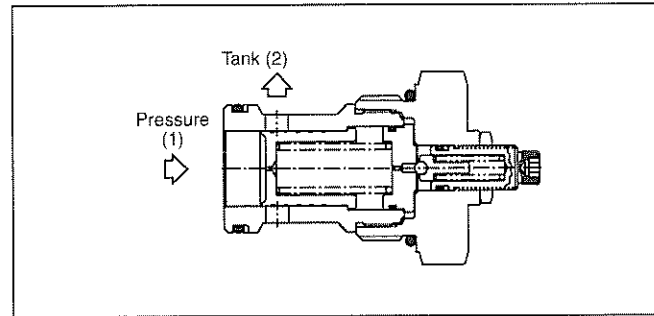
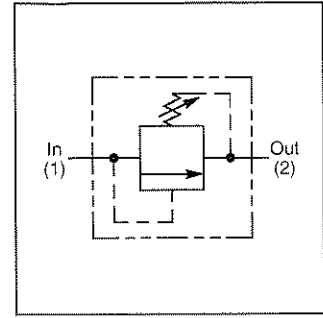
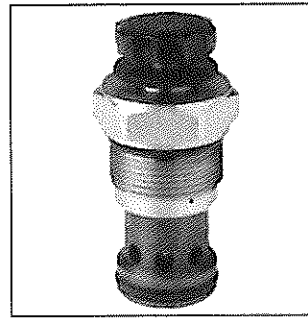
When inlet pressure exceeds the valve setting, the pilot section opens. This pilot flow creates a pressure imbalance across the main section causing the valve to open, permitting relief flow to tank.

Features

- Low override curve
- Ball-type pilot for added stability
- High accuracy - pilot operated design
- Hardened, precision ground parts for durability
- Compact size for reduced space requirements
- All external parts have yellow zinc dichromate. This coating allows them to withstand a 96 hour salt spray.

Specifications

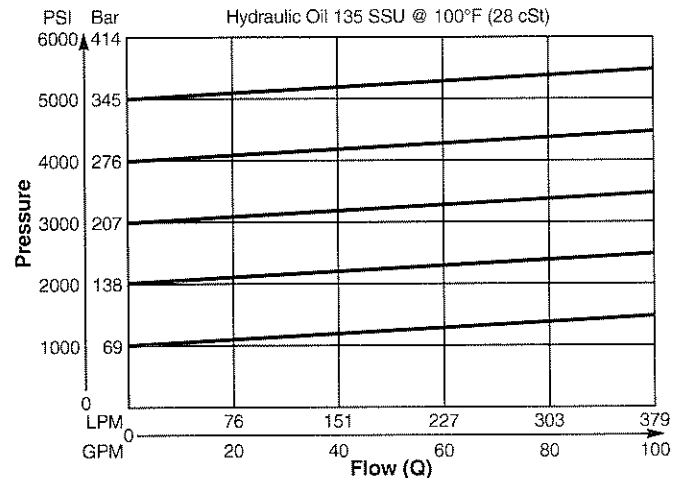
Rated Flow	379 LPM (100 GPM)
Maximum Inlet Pressure	380 Bar (5500 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Setting Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Reseat Pressure (Valve returns to non-relieving mode)	80% of crack pressure
Leakage	82 cc/min. at 75% of crack pressure
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C20-2



Performance Curve

Flow vs. Inlet Pressure

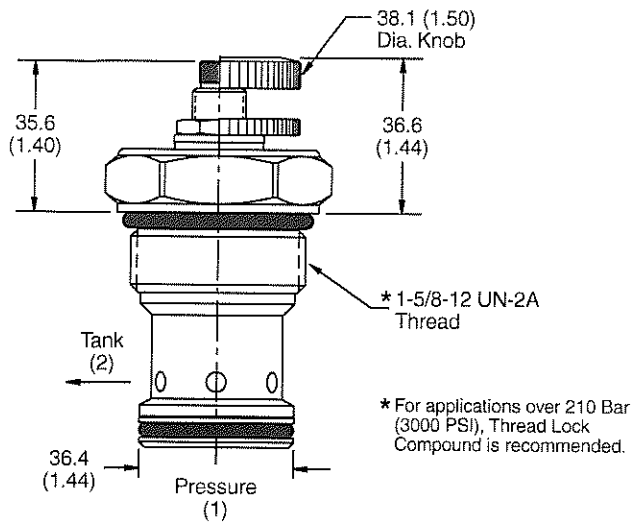
(Pressure rise through cartridge only)



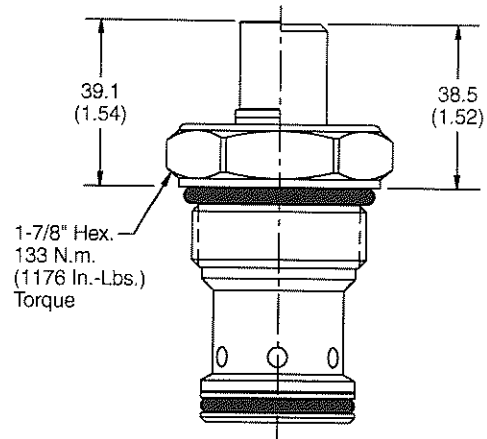
Dimensions

*Inch equivalents for millimeter dimensions are shown in (**)

Cartridge Only

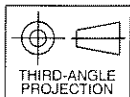
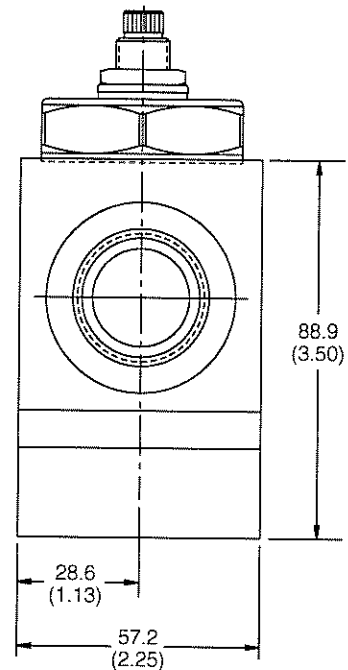
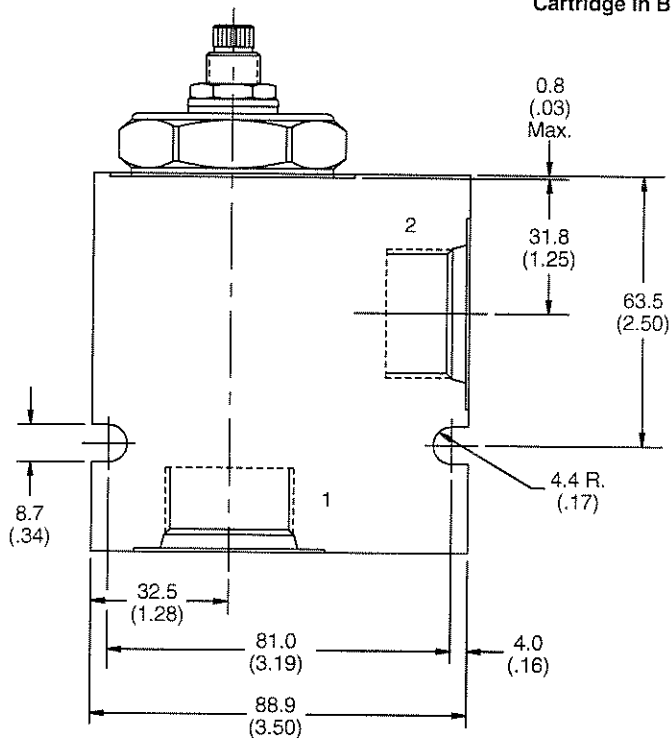


Screw/Knob Version

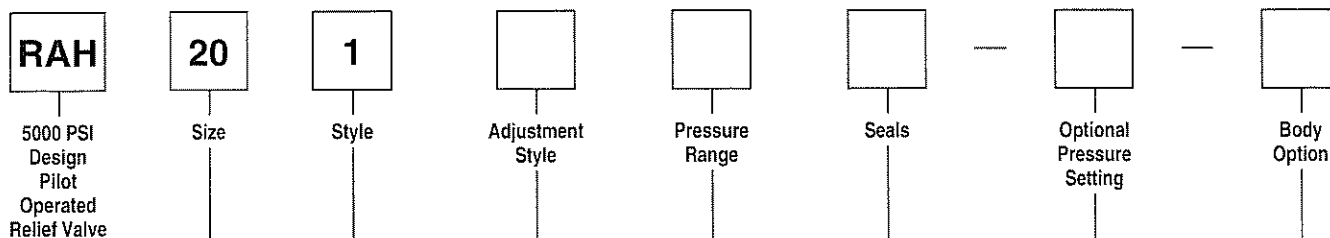


Fixed Cap/Tamper Resistant Version

Cartridge In Body



rah201.pm6.5, bl, gn



1-5/8-12 UN-2B
Threaded Cavity
with 1.44" Dia. Seat

Code	Style
1	Pilot Operated Spool - Type

Code	Type
F	Fixed style, preset at factory. Specify desired pressure setting @ 37.5 LPM (10 GPM). For other flow rates, consult factory.
K	Knob Adjust
S	Screw Adjust
T	Tamper Resistant Cap

Code	Type
Omit	Nitrile
V	Fluorocarbon

Description
Pressure ÷ 10 i.e. 235 = 2350 PSI Setting Range: 100 to 5000 PSI All settings at 37.5 LPM (10 GPM)

Code	Type
10	6.9 - 69 Bar (100 - 1000 PSI) Standard Setting: 34.5 Bar (500 PSI) @ 37.5 LPM (10 GPM)
20	13.8 - 138 Bar (200 - 2000 PSI) Standard Setting: 69 Bar (1000 PSI) @ 37.5 LPM (10 GPM)
30	20.7 - 207 Bar (300 - 3000 PSI) Standard Setting: 103.5 Bar (1500 PSI) @ 37.5 LPM (10 GPM)
50	34.5 - 345 Bar (500 - 5000 PSI) Standard Setting: 172.4 Bar (2500 PSI) @ 37.5 LPM (10 GPM)

Code	Port Size & Material
Omit	Cartridge Only
12P	3/4" NPTF (B20-2-12P) Steel
A12P	3/4" NPTF (B20-2-A12P) Aluminum
16P	1" NPTF (B20-2-16P) Steel
A16P	1" NPTF (B20-2-A16P) Aluminum
20P	1-1/4" NPTF (B20-2-20P) Steel
A20P	1-1/4" NPTF (B20-2-A20P) Aluminum
12T	SAE-12 (B20-2-12T) Steel
A12T	SAE-12 (B20-2-A12T) Aluminum
14T	SAE-14 (B20-2-14T) Steel
A14T	SAE-14 (B20-2-A14T) Aluminum
16T	SAE-16 (B20-2-16T) Steel
A16T	SAE-16 (B20-2-A16T) Aluminum
20T	SAE-20 (B20-2-20T) Steel
A20T	SAE-20 (B20-2-A20T) Aluminum
12B	3/4" BSPG (B20-2-12B) Steel
A12B	3/4" BSPG (B20-2-A12B) Aluminum
16B	1" BSPG (B20-2-16B) Steel
A16B	1" BSPG (B20-2-A16B) Aluminum
20B	1-1/4" BSPG (B20-2-20B) Steel
A20B	1-1/4" BSPG (B20-2-A20B) Aluminum

SERVICE PARTS

Knob Kit Option: 717784-15

Tamper Kit Option: 717785

Nitrile Seal Kit: SK20-2

Fluorocarbon Seal Kit: SK20-2V

Shipping Weight
 Cartridge Only 0.9 kg (2.0 lbs.)

NOTE:

If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

General Description

The RAH101V Series, Pilot Operated, Spool-Type Relief Valves can be used in-line to control down stream pressure or as a remote controlled relief valve where the vent line is controlled by another device such as a solenoid valve. The vent line can be used to reduce the pressure setting below that of the adjusted valve.

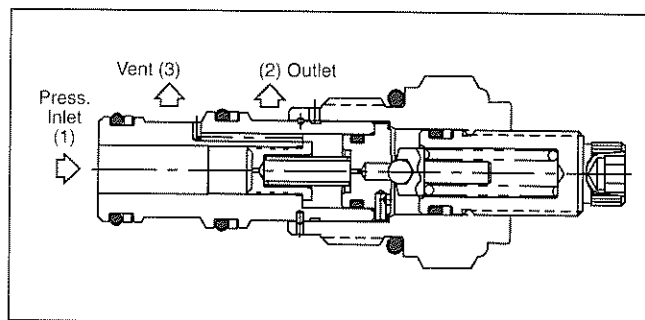
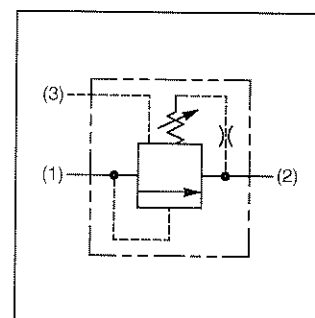
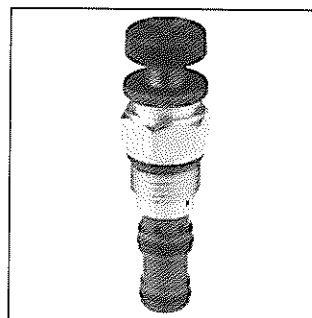
Operation

The RAH101V valve can be controlled by the adjustment setting on the valve, or a remote circuit via the vent line. When the vent line is used, the smaller of the two pressure settings will determine the valve setting. In other words, if the pressure setting of the remote circuit is less than the adjusted setting, then the RAH101V will relieve at the remote setting. If the pressure setting of the remote circuit is greater than the adjusted setting, then the RAH101V will relieve at the adjusted setting.

With the vent port (3) blocked, the valve operates like the standard RAH101 relief valve and relieves at the adjusted setting.

Specifications

Rated Flow	68 LPM (18 GPM)
Maximum Inlet Pressure	380 Bar (5500 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Setting Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Reseat Pressure (Valve returns to non-relieving mode)	80% of crack pressure
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C10-3



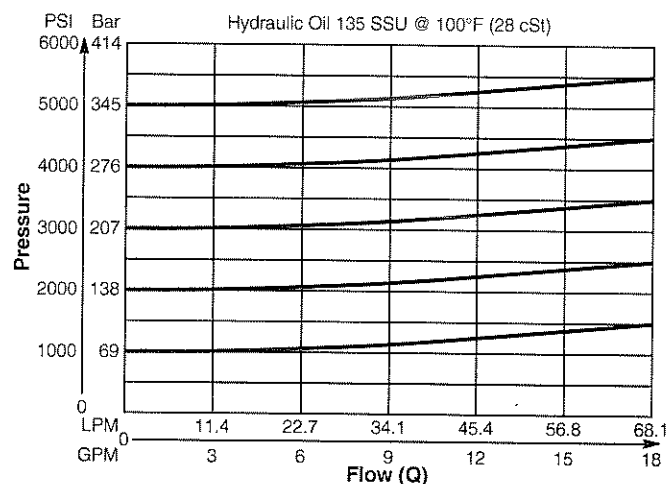
Features

- Low override curve
- Ball-type pilot for added stability
- High accuracy - pilot operated design
- Hardened, precision ground parts for durability
- Compact size for reduced space requirements
- All external parts have yellow zinc dichromate. This coating allows them to withstand a 96 hour salt spray.

Performance Curve

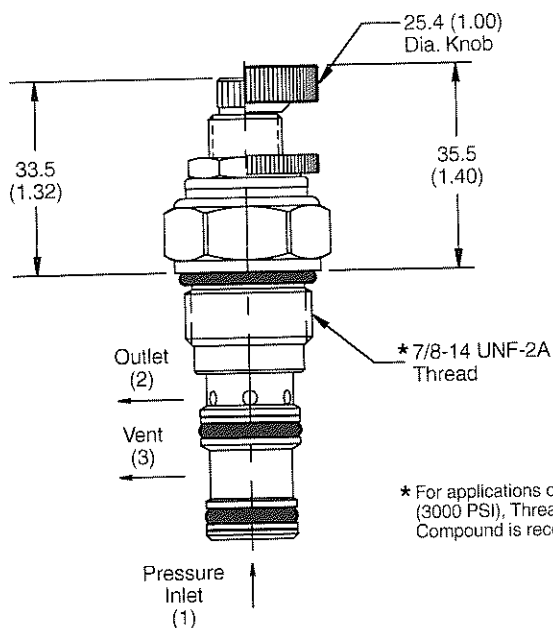
Flow vs. Inlet Pressure

(Pressure rise through cartridge only)

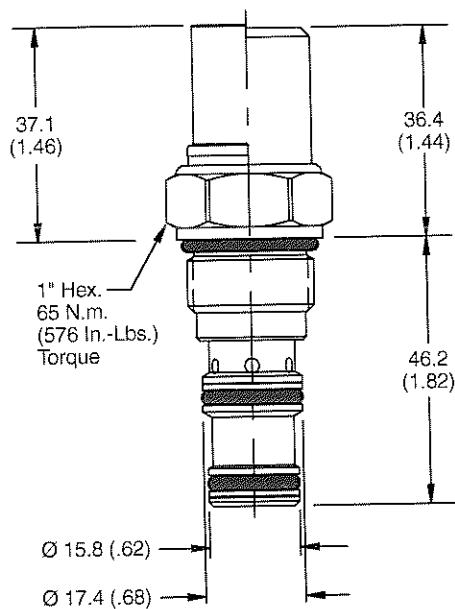


*Inch equivalents for millimeter dimensions are shown in (**)

Cartridge Only

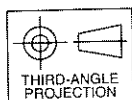
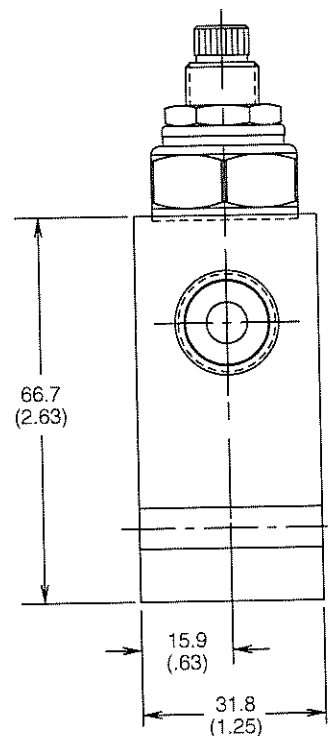
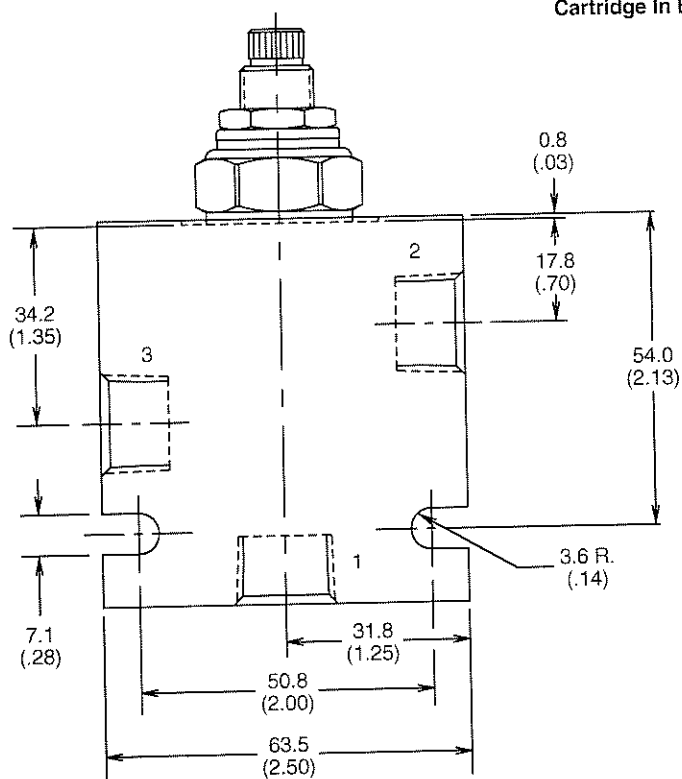


Screw/Knob Version



Fixed Cap/Tamper Resistant Version

Cartridge In Body



rah101v.pm6.5, bl, gn

CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

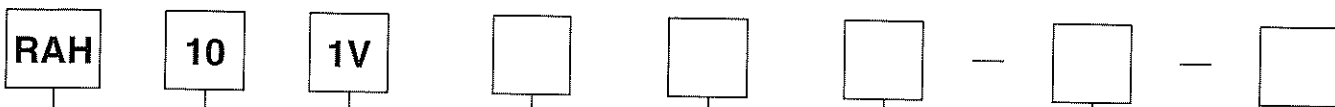
SOLENOID VALVES

SPECIALTY VALVES

COILS

BODIES

TECHNICAL DATA



RAH
 5000 PSI
 Design
 Pilot
 Operated
 Relief Valve

10

Size

7/8-14 UNF-2B
 Threaded Cavity
 with .62" Dia. Seat

1V

Style

Code	Style
1V	Pilot Operated Ventalbe



Adjustment
 Style



Pressure
 Range



Seals

Code	Type
Omit	Nitrile
V	Fluorocarbon



Optional
 Pressure
 Setting

Description
Pressure ÷ 10 i.e. 235 = 2350 PSI Setting Range: 100 to 5000 PSI All settings at 11.3 LPM (3 GPM)



Body
 Option

Code	Type
F	Fixed style, preset at factory. Specify desired pressure setting @ 11.3 LPM (3 GPM). For other flow rates, consult factory.
K	Knob Adjust
S	Screw Adjust
T	Tamper Resistant Cap

Code	Type
10	6.9 - 69 Bar (100 - 1000 PSI) Standard Setting: 34.5 Bar (500 PSI) @ 11.3 LPM (3 GPM)
20	13.8 - 138 Bar (200 - 2000 PSI) Standard Setting: 69 Bar (1000 PSI) @ 11.3 LPM (3 GPM)
30	20.7 - 207 Bar (300 - 3000 PSI) Standard Setting: 103.5 Bar (1500 PSI) @ 11.3 LPM (3 GPM)
50	34.5 - 345 Bar (500 - 5000 PSI) Standard Setting: 172.4 Bar (2500 PSI) @ 11.3 LPM (3 GPM)

Code	Port Size & Material
Omit	Cartridge Only
4P	1/4" NPTF (B10-3-4P) Steel
A4P	1/4" NPTF (B10-3-A4P) Aluminum
6P	3/8" NPTF (B10-3-6P) Steel
A6P	3/8" NPTF (B10-3-A6P) Aluminum
8P	1/2" NPTF (B10-3-8P) Steel
A8P	1/2" NPTF (B10-3-A8P) Aluminum
6T	SAE-6 (B10-3-6T) Steel
A6T	SAE-6 (B10-3-A6T) Aluminum
8T	SAE-8 (B10-3-8T) Steel
A8T	SAE-8 (B10-3-A8T) Aluminum
4B	1/4" BSPG (B10-3-4B) Steel
A4B	1/4" BSPG (B10-3-A4B) Aluminum
6B	3/8" BSPG (B10-3-6B) Steel
A6B	3/8" BSPG (B10-3-A6B) Aluminum
8B	1/2" BSPG (B10-3-8B) Steel
A8B	1/2" BSPG (B10-3-A8B) Aluminum

SERVICE PARTS

Knob Kit Option: 717784-01
 Tamper Kit Option: 717785
 Nitrile Seal Kit: SK10-3
 Fluorocarbon Seal Kit: SK10-3V

Shipping Weight
 Cartridge Only .23 kg (.50 lbs.)

NOTE:
 If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

rah101v.pm6.5, bl, gn

General Description

The XRDH103 Series Cross-Over Relief Valves are designed to provide overload and shock protection for small gerotor motors with a manifold mounting pattern, such as the Parker TB and TE series. Close coupling the valve to the motor provides ideal protection and eliminates plumbing.

Operation

The valve relieves oil from one side of the motor to the other reducing shock and preventing overload. It also eliminates cavitation and the need for a separate tank connection.

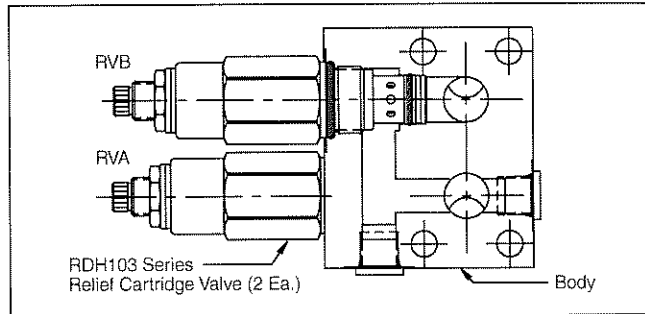
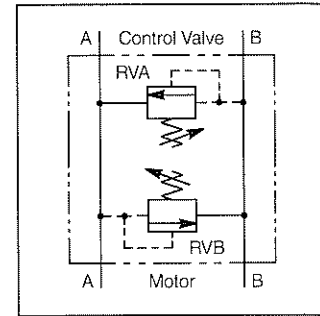
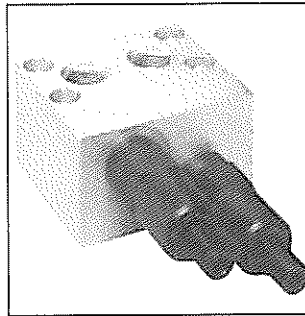
Features

- Hardened, precision ground parts for durability
- Fast acting differential area reliefs
- Low Leakage
- Cartridge design
- All external parts have yellow zinc dichromate. This coating allows them to withstand a 96 hour salt spray.

Specifications

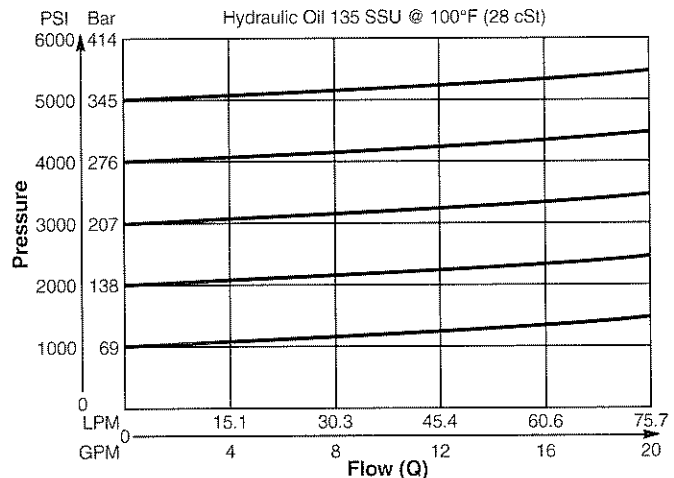
Maximum Flow	75 LPM (20 GPM)
Maximum Inlet Pressure	380 Bar (5500 PSI)
Maximum Setting Pressure	345 Bar (5000 PSI)
Reseat Pressure (Valve returns to non-relieving mode)	80% of crack pressure
Leakage	.67 cc/min. (10 drops/min.) per relief at 75% of crack pressure
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions

Note: A 6.9 Bar (100 PSI) pressure differential must be maintained between the two relief valve settings.



Performance Curve

Flow vs. Inlet Pressure
 (Through cartridge only)



CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

SOLENOID VALVES

SPECIALTY VALVES

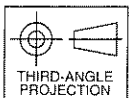
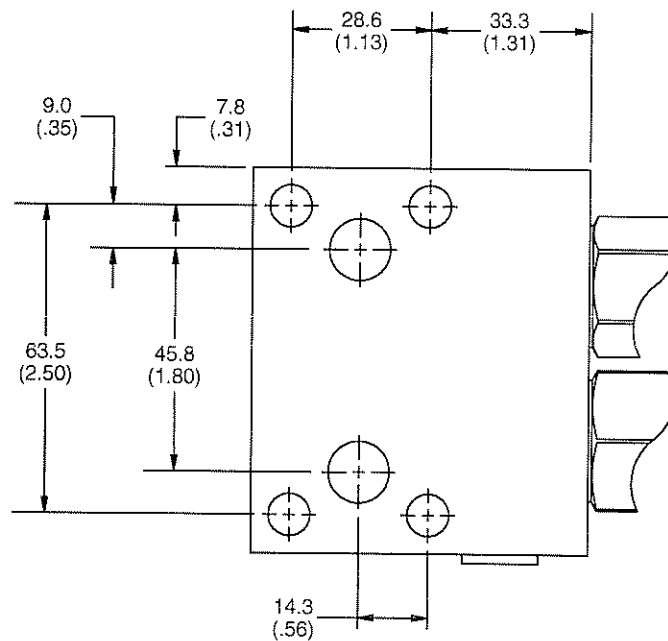
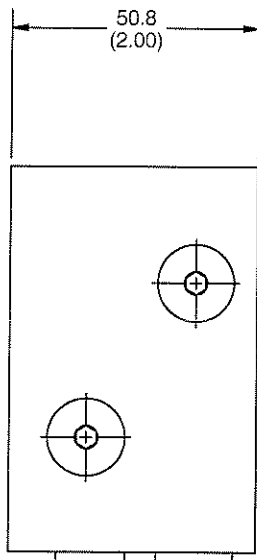
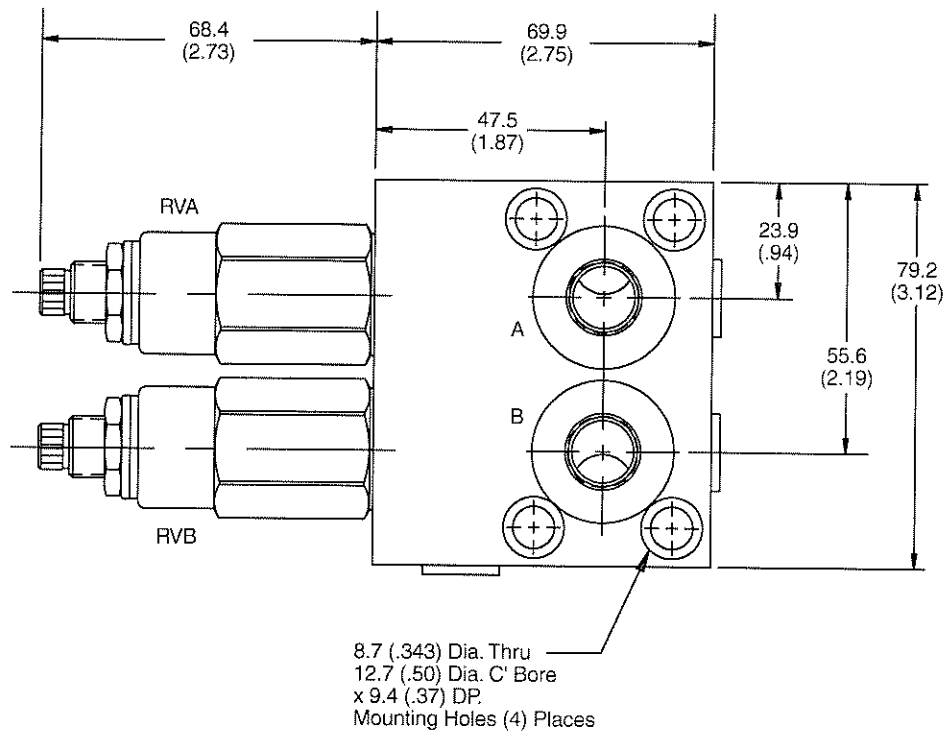
COILS

BODIES

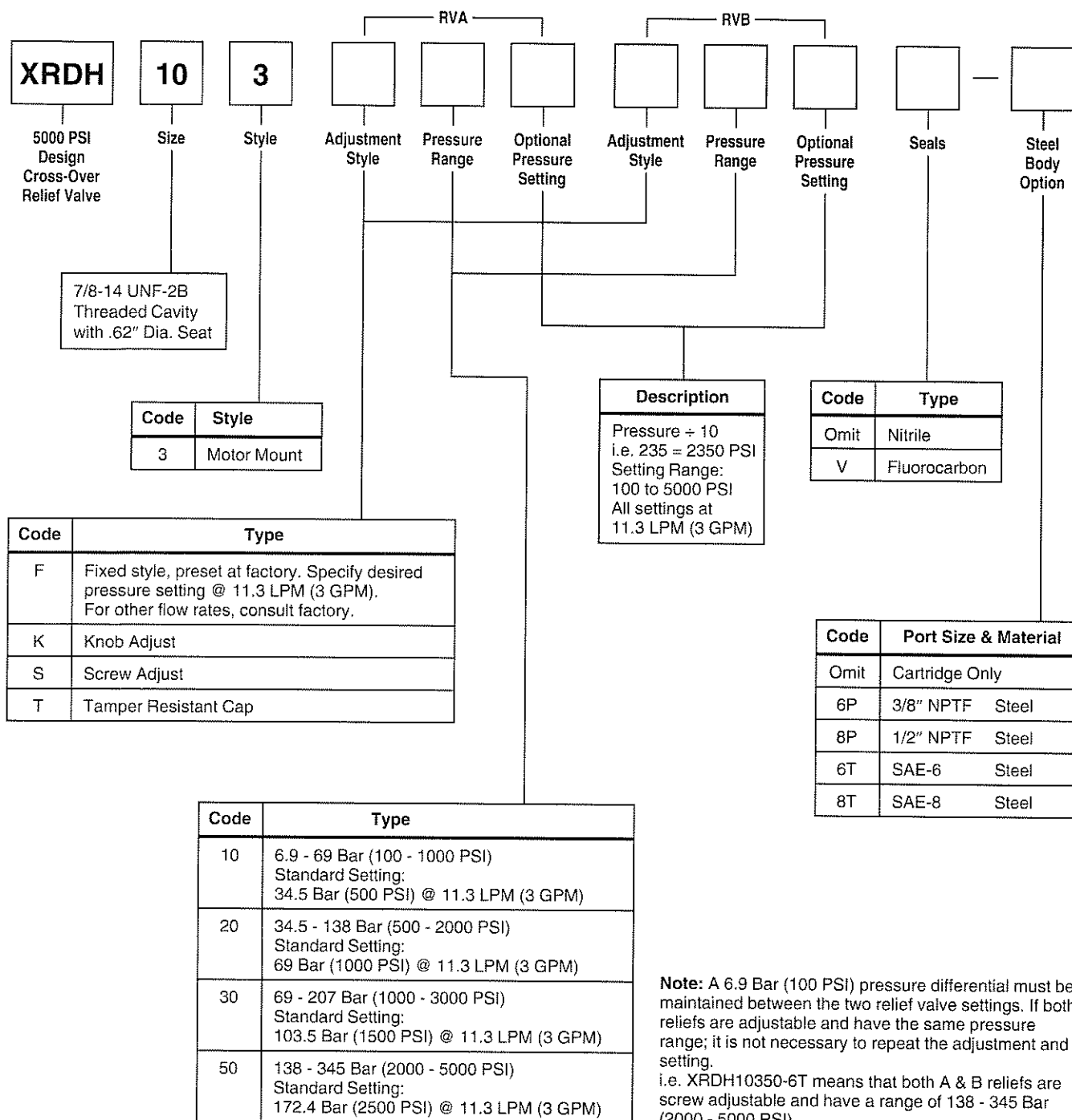
TECHNICAL DATA

Dimensions**Cross-Over Relief Valves
Series XRDH103**

*Inch equivalents for millimeter dimensions are shown in (**)



xrdh103.pm6.5, bl, gn



SERVICE PARTS

Knob Kit Option: 717784-10 (2 Needed)
Tamper Kit Option: 717785 (2 Needed)

Shipping Weight
2.0 kg (4.5 lbs.)

CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

SOLENOID VALVES

SPECIALTY VALVES

COILS

BODIES

TECHNICAL DATA

General Description

The PRH081 Series, Pilot Operated, Pressure Reducing/Relieving Valves can be used in any application where a regulated pressure lower than system pressure is required. The valve also acts as a relief valve, relieving any shocks or surges that occur between its regulated pressure port and the actuator. When the valve is in the relieving mode the inlet port is blocked.

Operation

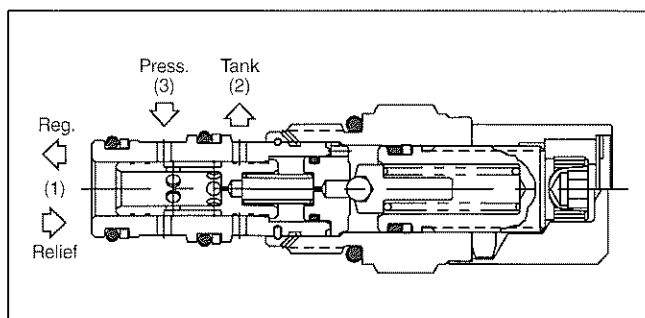
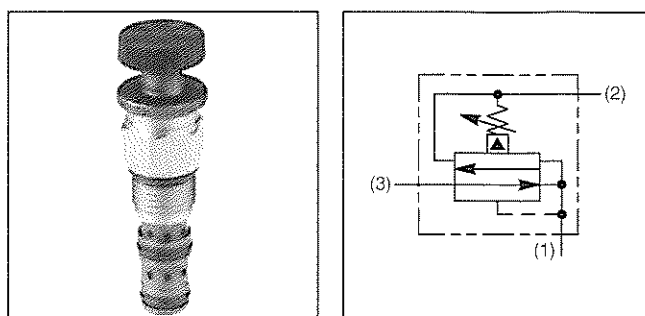
A common pilot section controls the valve setting whether reducing or relieving. As pressure at the regulated port exceeds the valve setting, the valve throttles or closes in order to maintain constant downstream pressure. A shock or surge at the regulated port further shifts the spool relieving flow to tank.

Features

- Hardened, precision ground parts for durability
- High accuracy, pilot operation design
- Ball-type pilot for added stability
- Choice of external adjustment options
- Performs job of two separate valves in one
- All external parts have yellow zinc dichromate. This coating allows them to withstand a 96 hour salt spray.

Specifications

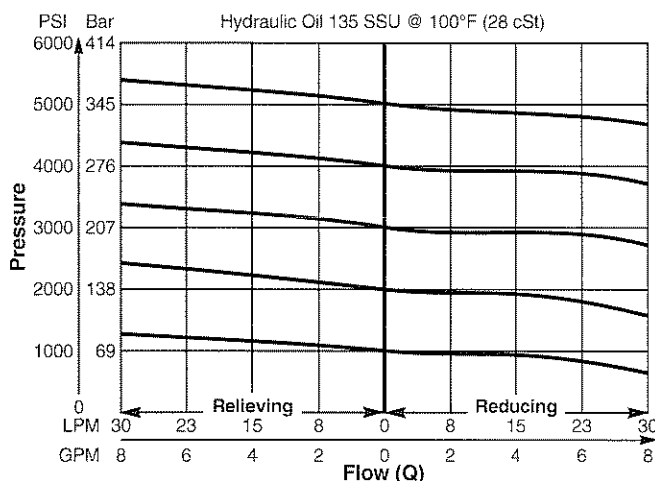
Maximum Flow	30 LPM (8 GPM)
Maximum Inlet Pressure	380 Bar (5500 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Max. Reducing or Relieving Setting Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C08-3



Performance Curve

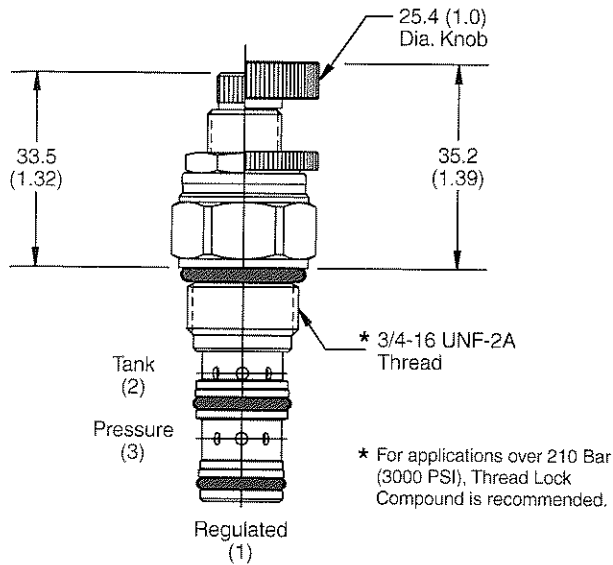
Flow vs. Regulated Pressure

(Through cartridge only)

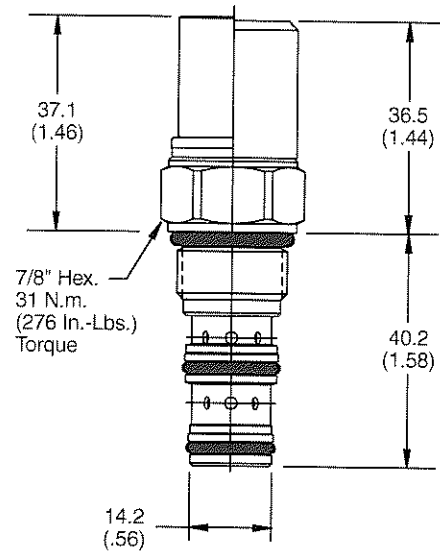


*Inch equivalents for millimeter dimensions are shown in (**)

Cartridge Only

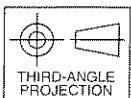
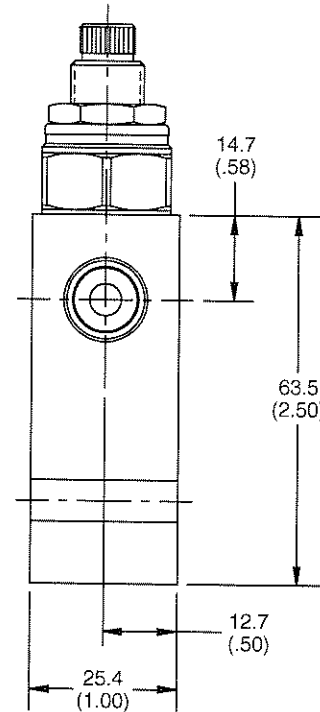
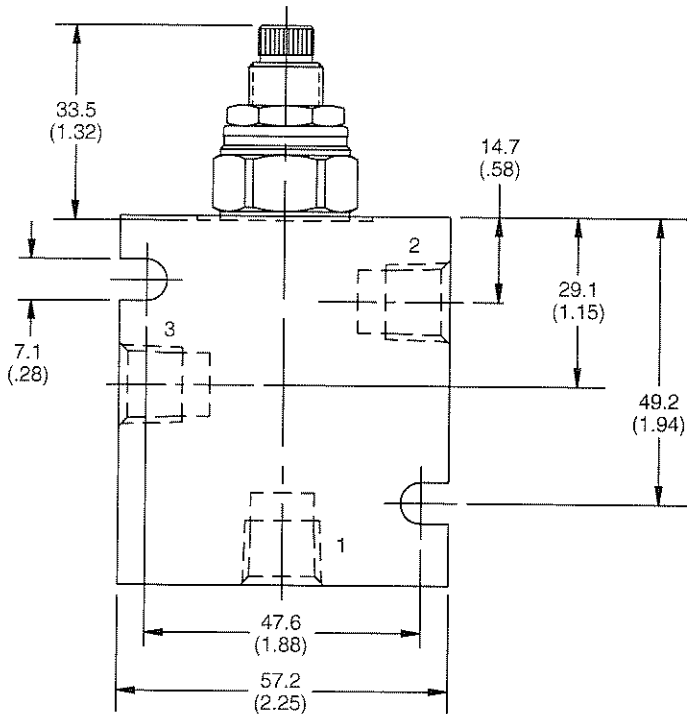


Screw/Knob Version



Fixed Cap/Tamper Resistant Version

Cartridge In Body



prh081.pm6.5, bt, gn

CHECKS &
SHUTLES

LOAD & MOTOR
CONTROLS

VOLUME
CONTROLS

PRESSURE
CONTROLS

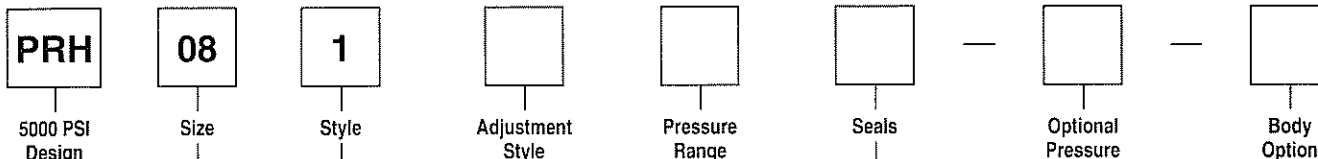
SOLENOID
VALVES

SPECIALTY
VALVES

COILS

BODIES

TECHNICAL
DATA



3/4-16 UNF-2B
Threaded Cavity
with .56" Dia. Seat

Code	Style
1	Pressure Reducing/Relieving Valve

Code	Type
F	Fixed style, preset at factory. Specify desired pressure setting @ 11.3 LPM (3 GPM). For other flow rates, consult factory.
K	Knob Adjust
S	Screw Adjust
T	Tamper Resistant Cap

Code	Type
Omit	Nitrile
V	Fluorocarbon

Description
Pressure ÷ 10 i.e. 235 = 2350 PSI Setting Range: 100 to 5000 PSI All settings at 11.3 LPM (3 GPM)

Code	Type
10	6.9 - 69 Bar (100 - 1000 PSI) Standard Setting: 34.5 Bar (500 PSI) @ 11.3 LPM (3 GPM)
20	13.8 - 138 Bar (200 - 2000 PSI) Standard Setting: 69 Bar (1000 PSI) @ 11.3 LPM (3 GPM)
30	20.7 - 207 Bar (300 - 3000 PSI) Standard Setting: 103.5 Bar (1500 PSI) @ 11.3 LPM (3 GPM)
50	34.5 - 345 Bar (500 - 5000 PSI) Standard Setting: 172.4 Bar (2500 PSI) @ 11.3 LPM (3 GPM)

Code	Port Size & Material
Omit	Cartridge Only
4P	1/4" NPTF (B08-3-4P) Steel
A4P	1/4" NPTF (B08-3-A4P) Aluminum
6P	3/8" NPTF (B08-3-6P) Steel
A6P	3/8" NPTF (B08-3-A6P) Aluminum
4T	SAE-4 (B08-3-4T) Steel
A4T	SAE-4 (B08-3-A4T) Aluminum
6T	SAE-6 (B08-3-6T) Steel
A6T	SAE-6 (B08-3-A6T) Aluminum
4B	1/4" BSPG (B08-3-4B) Steel
A4B	1/4" BSPG (B08-3-A4B) Aluminum
6B	3/8" BSPG (B08-3-6B) Steel
A6B	3/8" BSPG (B08-3-A6B) Aluminum

NOTE:
 If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used.
 Higher pressures require steel bodies.

SERVICE PARTS

Knob Kit Option: 717784-10

Tamper Kit Option: 717785

Nitrile Seal Kit: SK08-3

Fluorocarbon Seal Kit: SK08-3V

Shipping Weight
 Cartridge Only .09 kg (.20 lbs.)

General Description

The PRH101 Series, Pilot Operated, Pressure Reducing/Relieving Valves can be used in any application where a regulated pressure lower than system pressure is required. The valve also acts as a relief valve, relieving any shocks or surges that occur between its regulated pressure port and the actuator. When the valve is in the relieving mode the inlet port is blocked.

Operation

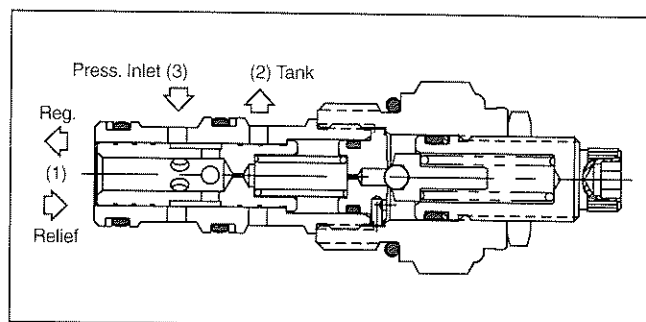
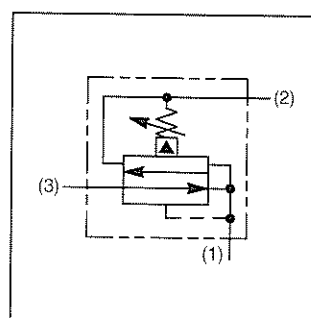
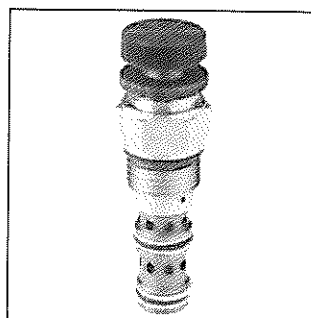
A common pilot section controls the valve setting whether reducing or relieving. As pressure at the regulated port exceeds the valve setting, the valve throttles or closes in order to maintain constant downstream pressure. A shock or surge at the regulated port further shifts the spool relieving flow to tank.

Features

- Hardened, precision ground parts for durability
- Ball-type pilot for added stability
- Full capacity reducing/relieving
- Performs job of two separate valves in one
- All external parts have yellow zinc dichromate. This coating allows them to withstand a 96 hour salt spray.

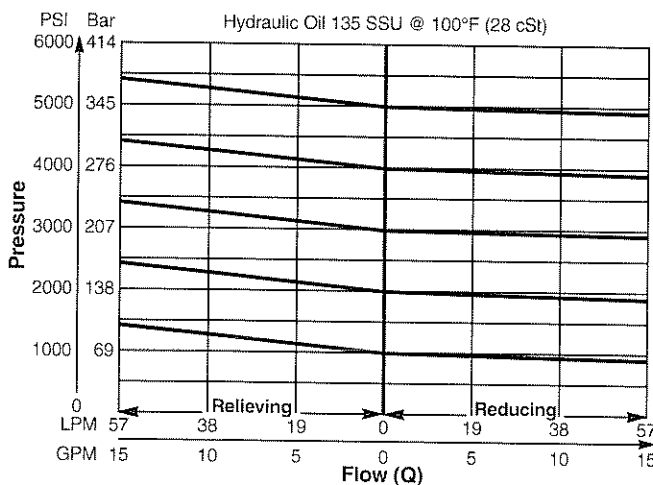
Specifications

Maximum Flow	56.3 LPM (15.0 GPM) Inlet 0.94 LPM (0.25 GPM) Tank (Cont.) 56.3 LPM (15.0 GPM) Regulated
Maximum Inlet Pressure	380 Bar (5500 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Max. Reducing or Relieving Setting Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C10-3



Performance Curve

Flow vs. Regulated Pressure
(Through cartridge only)



CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

SOLENOID VALVES

SPECIALTY VALVES

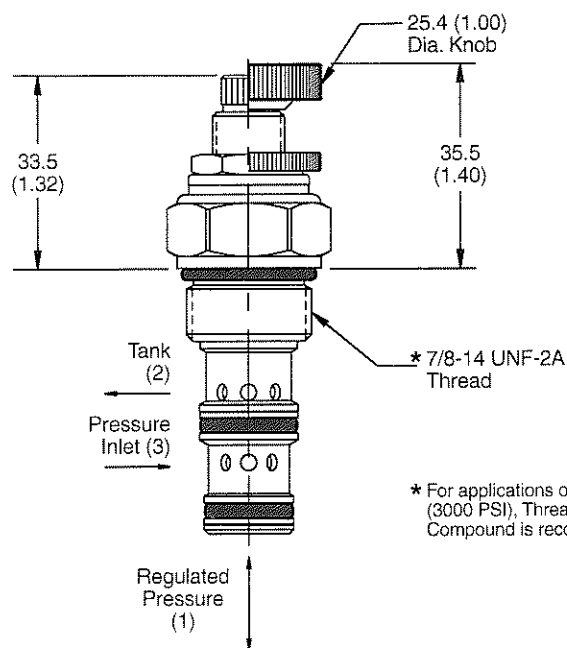
COILS

BODIES

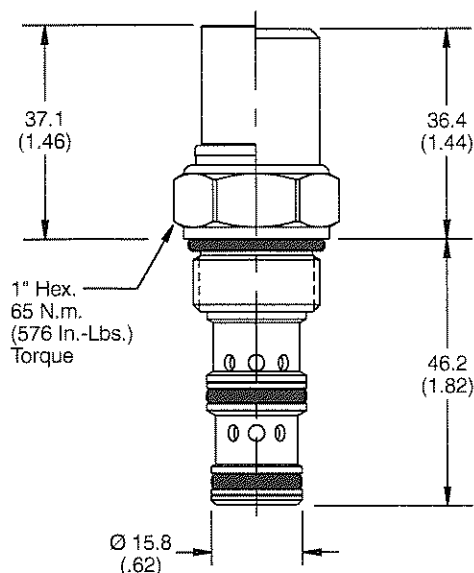
TECHNICAL DATA

*Inch equivalents for millimeter dimensions are shown in (**)

Cartridge Only

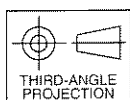
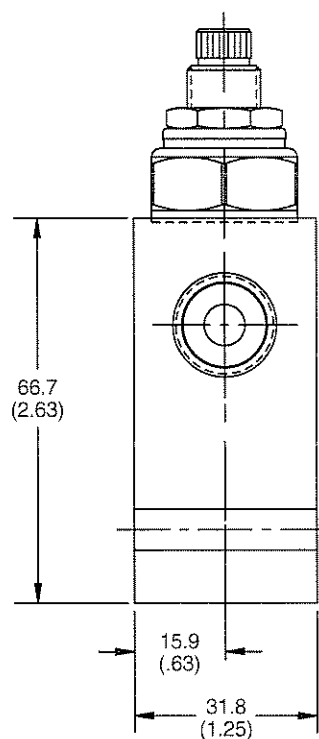
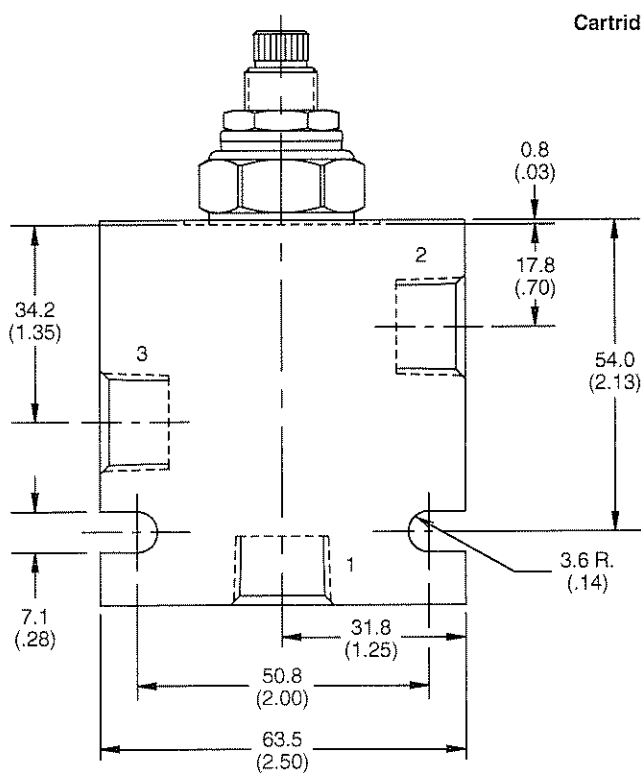


Screw/Knob Version

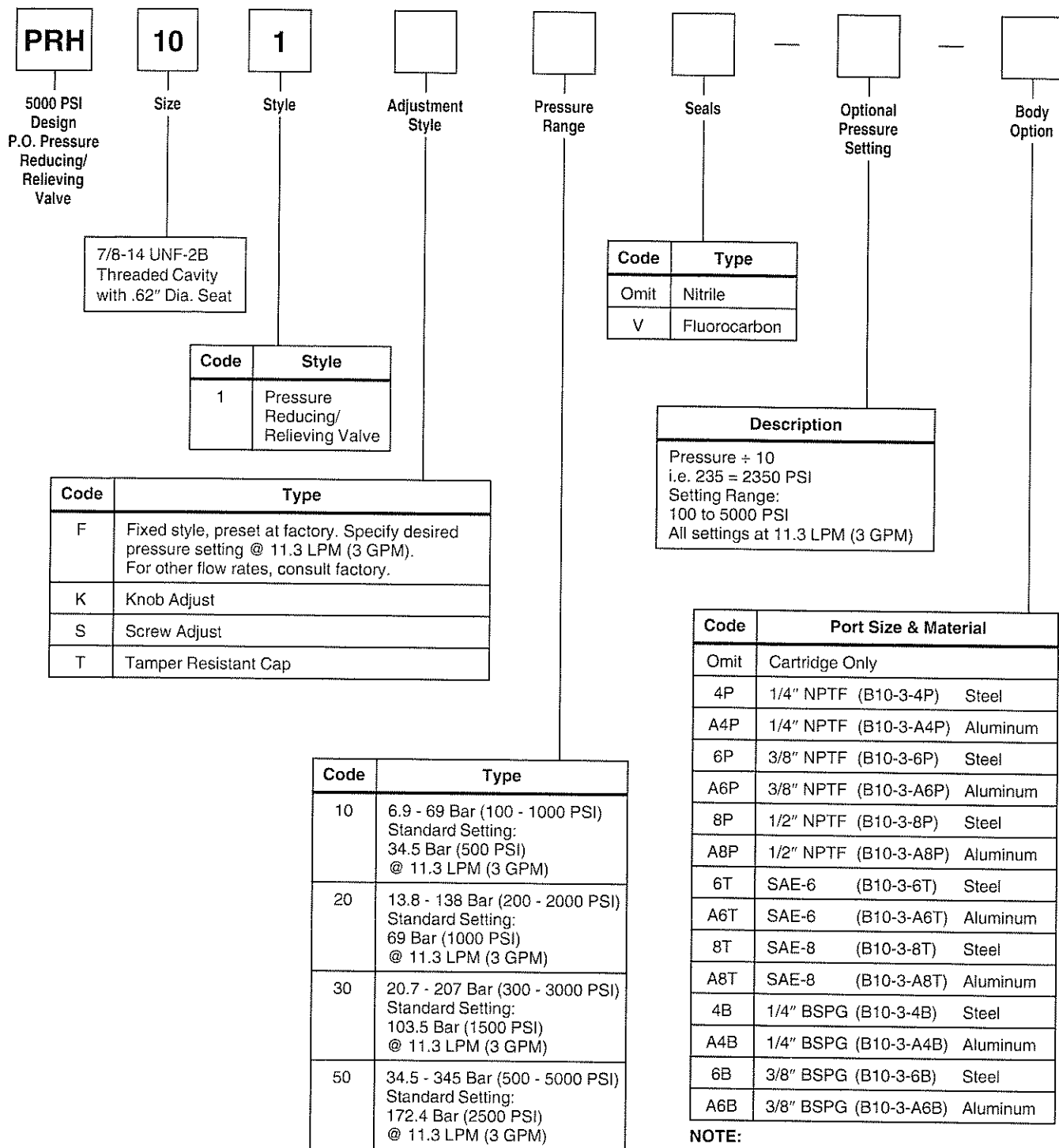


Fixed Cap/Tamper Resistant Version

Cartridge In Body



prh101.pm6 5, bl, gn



CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

SOLENOID VALVES

SPECIALTY VALVES

COILS

BODIES

TECHNICAL DATA

SERVICE PARTS

Knob Kit Option: 717784-10

Tamper Kit Option: 717785

Nitrile Seal Kit: SK10-3

Fluorocarbon Seal Kit: SK10-3V

Shipping Weight

Cartridge Only .23 kg (0.5 lbs.)

NOTE:

If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

General Description

The PRH121 Series, Pilot Operated, Pressure Reducing/Relieving Valves can be used in any application where a regulated pressure lower than system pressure is required. The valve also acts as a relief valve, relieving any shocks or surges that occur between its regulated pressure port and the actuator. When the valve is in the relieving mode the inlet port is blocked.

Operation

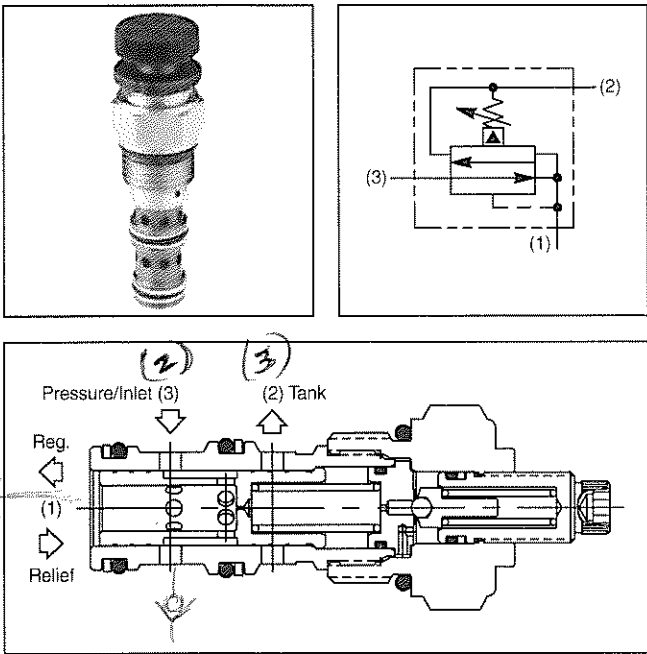
A common pilot section controls the valve setting whether reducing or relieving. As pressure at the regulated port exceeds the valve setting, the valve throttles or closes in order to maintain constant downstream pressure. A shock or surge at the regulated port further shifts the spool relieving flow to tank.

Features

- Hardened, precision ground parts for durability
- Ball-type pilot for added stability
- Full capacity reducing/relieving
- Performs job of two separate valves in one
- All external parts have yellow zinc dichromate. This coating allows them to withstand a 96 hour salt spray.

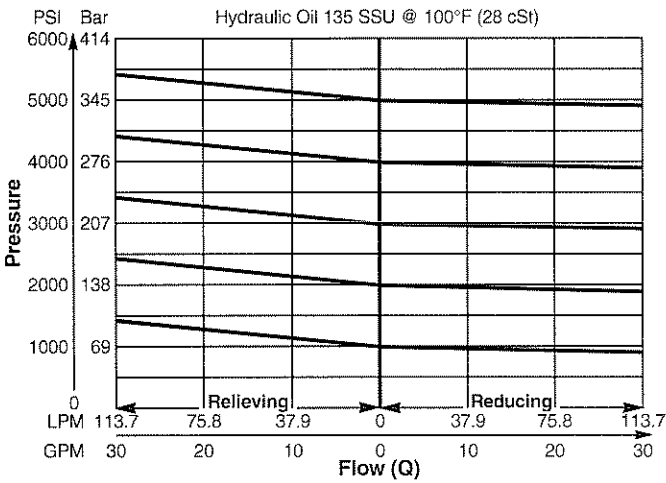
Specifications

Maximum Flow	113.7 LPM (30 GPM)
Maximum Inlet Pressure	380 Bar (5500 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Max. Reducing or Relieving Setting Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C12-3



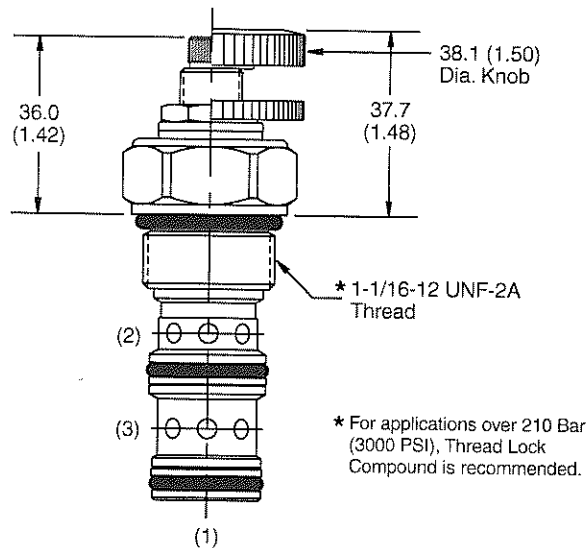
Performance Curve

Flow vs. Regulated Pressure
(Through cartridge only)

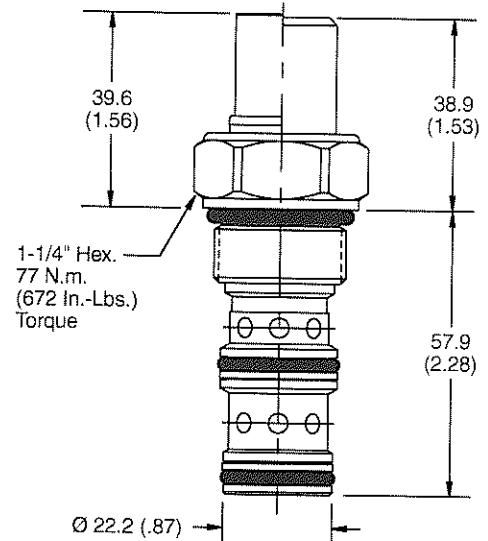


*Inch equivalents for millimeter dimensions are shown in (**)

Cartridge Only

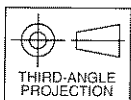
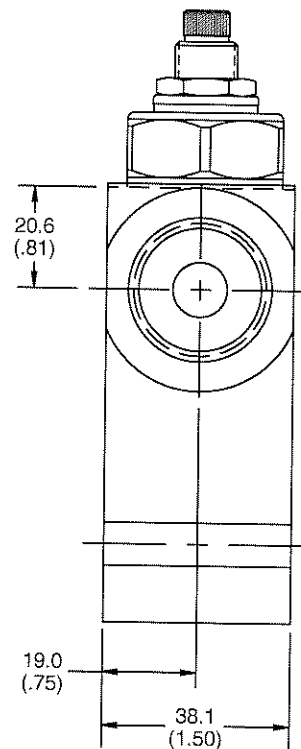
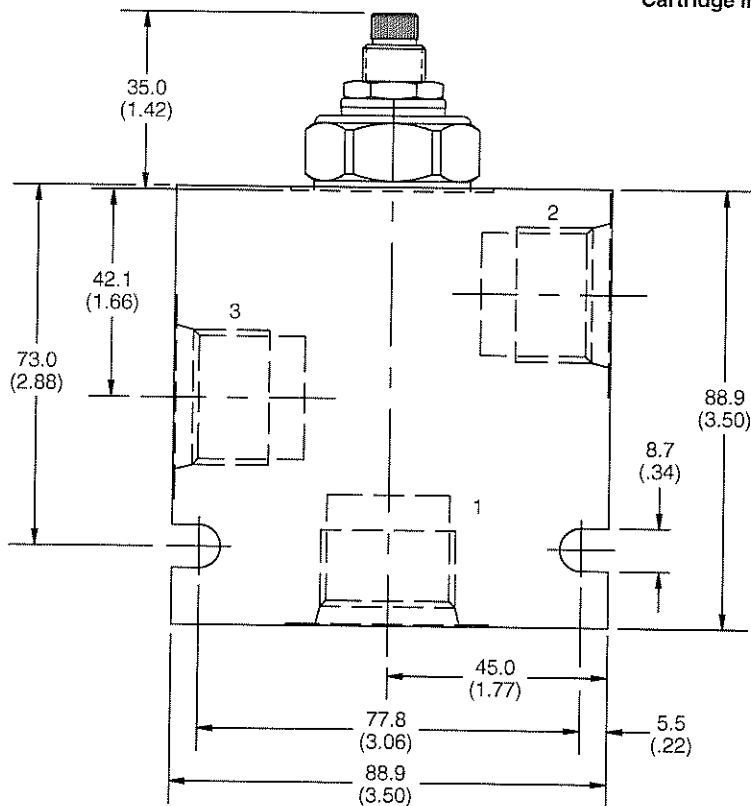


Screw/Knob Version



Fixed Cap/Tamper Resistant Version

Cartridge In Body



prh121.pm6.5, bl, gn

CHECKS &
SHUTTLES

LOAD & MOTOR
CONTROLS

VOLUME
CONTROLS

PRESSURE
CONTROLS

SOLENOID
VALVES

SPECIALTY
VALVES

COILS

BODIES

TECHNICAL
DATA

PRH 5000 PSI Design P.O. Pressure Reducing/ Relieving Valve	12 Size	1 Style	Adjustment Style	Pressure Range	Seals	Optional Pressure Setting	Body Option

1-11/16-12 UNF-2B
Threaded Cavity with
.87" Dia. Seat

Code	Style
1	Pressure Reducing/ Relieving Valve

Code	Type
F	Fixed style, preset at factory. Specify desired pressure setting @ 11.3 LPM (3 GPM). For other flow rates, consult factory.
K	Knob Adjust
S	Screw Adjust
T	Tamper Resistant Cap

Code	Type
Omit	Nitrile
V	Fluorocarbon

Description
Pressure ± 10 i.e. 235 = 2350 PSI Setting Range: 100 to 5000 PSI All settings at 11.3 LPM (3 GPM)

Code	Port Size & Material
Omit	Cartridge Only
6P	3/8" NPTF (B12-3-6P) Steel
A6P	3/8" NPTF (B12-3-A6P) Aluminum
8P	1/2" NPTF (B12-3-8P) Steel
A8P	1/2" NPTF (B12-3-A8P) Aluminum
12P	3/4" NPTF (B12-3-12P) Steel
A12P	3/4" NPTF (B12-3-A12P) Aluminum
6T	SAE-6 (B12-3-6T) Steel
A6T	SAE-6 (B12-3-A6T) Aluminum
8T	SAE-8 (B12-3-8T) Steel
A8T	SAE-8 (B12-3-A8T) Aluminum
6B	3/8" BSPG (B12-3-6B) Steel
A6B	3/8" BSPG (B12-3-A6B) Aluminum
8B	1/2" BSPG (B12-3-8B) Steel
A8B	1/2" BSPG (B12-3-A8B) Aluminum
12B	3/4" BSPG (B12-3-12B) Steel
A12B	3/4" BSPG (B12-3-A12B) Aluminum

Code	Type
10	6.9 - 69 Bar (100 - 1000 PSI) Standard Setting: 34.5 Bar (500 PSI) @ 11.3 LPM (3 GPM)
20	13.8 - 138 Bar (200 - 2000 PSI) Standard Setting: 69 Bar (1000 PSI) @ 11.3 LPM (3 GPM)
30	20.7 - 207 Bar (300 - 3000 PSI) Standard Setting: 103.5 Bar (1500 PSI) @ 11.3 LPM (3 GPM)
50	34.5 - 345 Bar (500 - 5000 PSI) Standard Setting: 172.4 Bar (2500 PSI) @ 11.3 LPM (3 GPM)

SERVICE PARTS
Knob Kit Option: 717784-15
Tamper Kit Option: 717785
Nitrile Seal Kit: SK12-3
Fluorocarbon Seal Kit: SK12-3V

Shipping Weight
Cartridge Only .91 kg (0.6 lbs.)

NOTE:
If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

General Description

The PRH161 Series, Pilot Operated, Pressure Reducing/Relieving Valves can be used in any application where a regulated pressure lower than system pressure is required. The valve also acts as a relief valve, relieving any shocks or surges that occur between its regulated pressure port and the actuator. When the valve is in the relieving mode the inlet port is blocked.

Operation

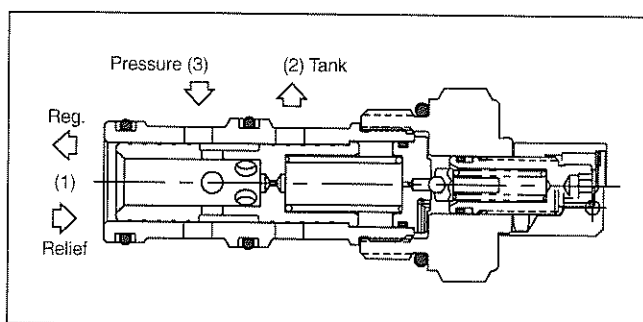
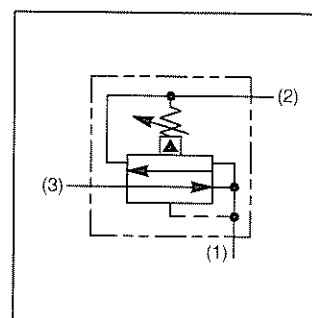
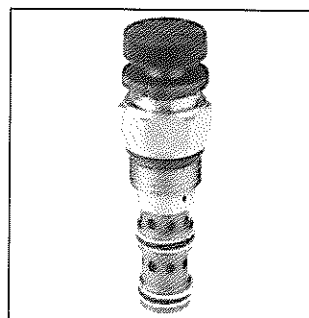
A common pilot section controls the valve setting whether reducing or relieving. As pressure at the regulated port exceeds the valve setting, the valve throttles or closes in order to maintain constant downstream pressure. A shock or surge at the regulated port further shifts the spool relieving flow to tank.

Features

- Hardened, precision ground parts for durability
- Ball-type pilot for added stability
- Full capacity reducing/relieving
- Performs job of two separate valves in one
- All external parts have yellow zinc dichromate. This coating allows them to withstand a 96 hour salt spray.

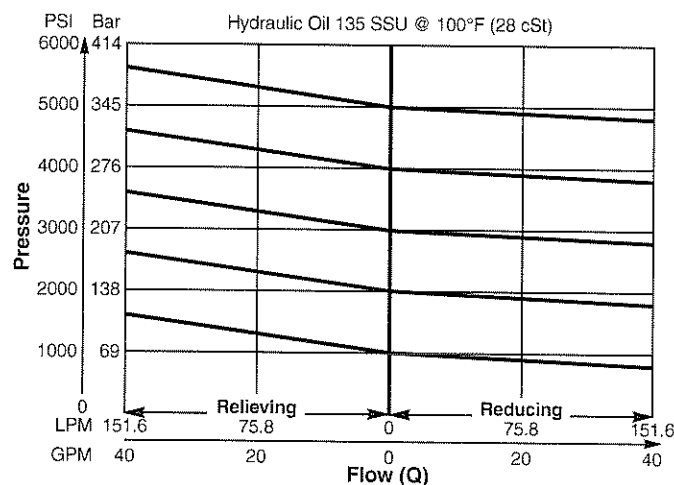
Specifications

Maximum Flow	150 LPM (40 GPM) Inlet 1.9 LPM (0.5 GPM) Tank (Cont.) 150 LPM (40 GPM) Regulated
Maximum Inlet Pressure	380 Bar (5500 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Max. Reducing or Relieving Setting Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C16-3



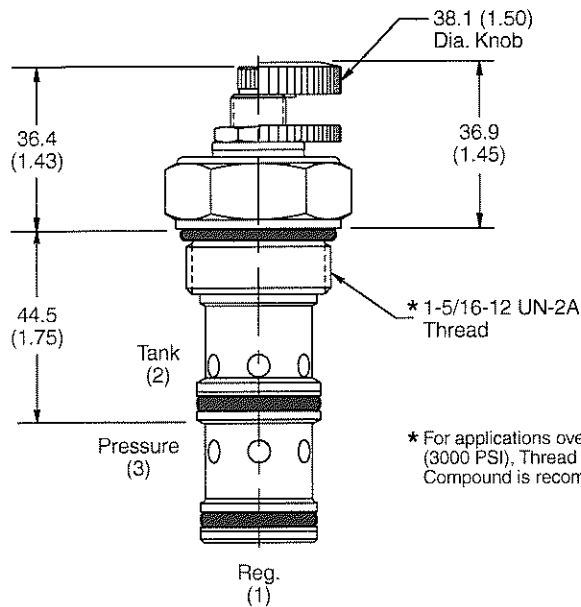
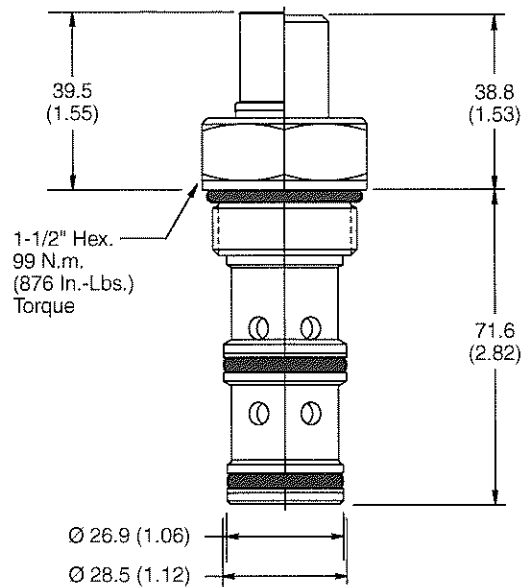
Performance Curve

Flow vs. Regulated Pressure (Through cartridge only)

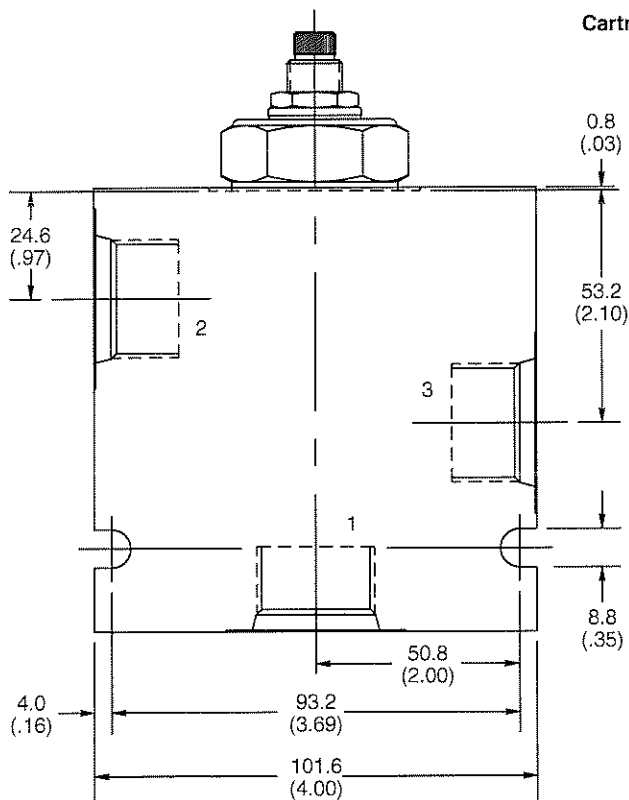


*Inch equivalents for millimeter dimensions are shown in (**)

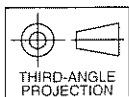
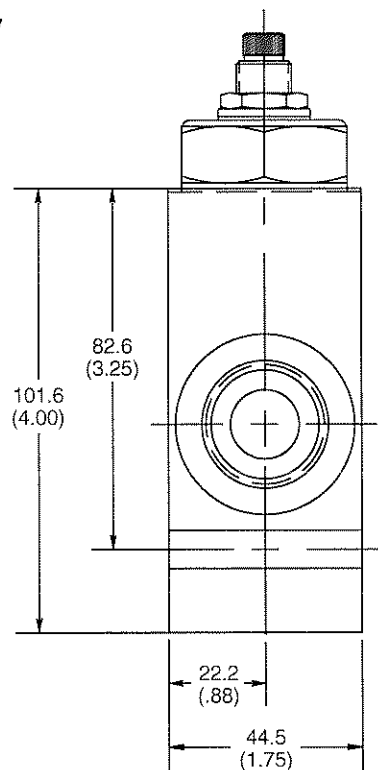
Cartridge Only

* For applications over 210 Bar
(3000 PSI), Thread Lock
Compound is recommended.

Screw/Knob Version



Cartridge In Body



prh161.pm6.5, bl, gn

PRH 5000 PSI Design P.O. Pressure Reducing/ Relieving Valve	16 Size	1 Style	Adjustment Style	Pressure Range	Seals	Optional Pressure Setting	Body Option

1-5/16-14 UNF-2B
Threaded Cavity
with 1.06" Dia. Seat

Code	Style
1	Pressure Reducing/ Relieving Valve

Code	Type
F	Fixed style, preset at factory. Specify desired pressure setting @ 11.3 LPM (3 GPM). For other flow rates, consult factory.
K	Knob Adjust
S	Screw Adjust
T	Tamper Resistant Cap

Code	Type
10	6.9 - 69 Bar (100 - 1000 PSI) Standard Setting: 34.5 Bar (500 PSI) @ 11.3 LPM (3 GPM)
20	13.8 - 138 Bar (200 - 2000 PSI) Standard Setting: 69 Bar (1000 PSI) @ 11.3 LPM (3 GPM)
30	20.7 - 207 Bar (300 - 3000 PSI) Standard Setting: 103.5 Bar (1500 PSI) @ 11.3 LPM (3 GPM)
50	34.5 - 345 Bar (500 - 5000 PSI) Standard Setting: 172.4 Bar (2500 PSI) @ 11.3 LPM (3 GPM)

Code	Type
Omit	Nitrile
V	Fluorocarbon

Description
Pressure ÷ 10 i.e. 235 = 2350 PSI Setting Range: 100 to 5000 PSI All settings at 11.3 LPM (3 GPM)

Code	Port Size & Material
Omit	Cartridge Only
12P	3/4" NPTF (B16-3-12P) Steel
A12P	3/4" NPTF (B16-3-A12P) Aluminum
16P	1" NPTF (B16-3-16P) Steel
A16P	1" NPTF (B16-3-A16P) Aluminum
12T	SAE-12 (B16-3-12T) Steel
A12T	SAE-12 (B16-3-A12T) Aluminum
16T	SAE-16 (B16-3-16T) Steel
A16T	SAE-16 (B16-3-A16T) Aluminum

NOTE:
 If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used.
 Higher pressures require steel bodies.

SERVICE PARTS

Knob Kit Option: 717784-15

Tamper Kit Option: 717785

Nitrile Seal Kit: SK16-3

Fluorocarbon Seal Kit: SK16-3V

Shipping Weight

Cartridge Only 0.9 kg (2.0 lbs.)

General Description

The PR103 Series, Direct Acting, Pressure Reducing/Relieving Valves can be used in any applications where a regulated pressure lower than system pressure is required. The valve also acts as a relief valve, relieving any shocks or surges that occur between its regulated pressure port and the actuator. When the valve is in the relieving mode the inlet port is blocked.

Operation

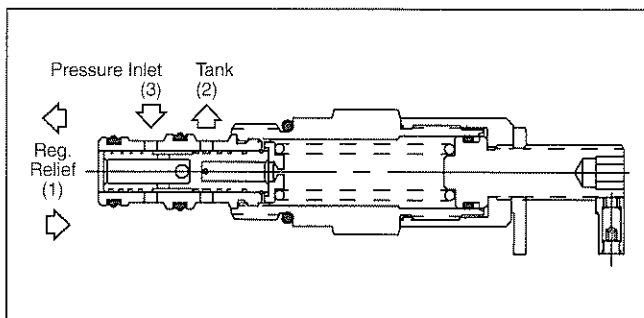
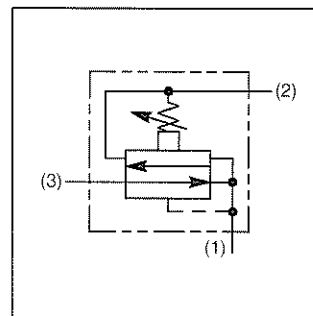
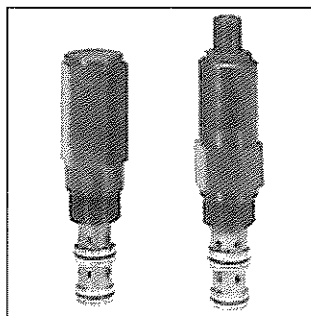
A common pilot section controls the valve setting whether reducing or relieving. As pressure at the regulated port exceeds the valve setting, the valve throttles or closes in order to maintain constant downstream pressure. A shock or surge at the regulated port further shifts the spool relieving flow to tank.

Features

- Hardened, precision ground parts for durability
- Full capacity reducing/relieving
- Performs job of two separate valves in one
- Cartridge design

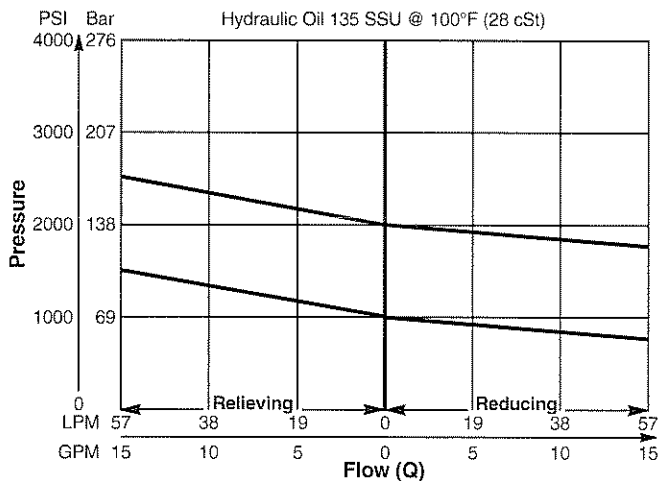
Specifications

Maximum Flow	56.3 LPM (15.0 GPM) Inlet 0.94 LPM (0.25 GPM) Tank (Cont.) 56.3 LPM (15.0 GPM) Regulated
Maximum Inlet Pressure	245 Bar (3500 PSI)
Max. Reducing or Relieving Setting Pressure	210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C10-3

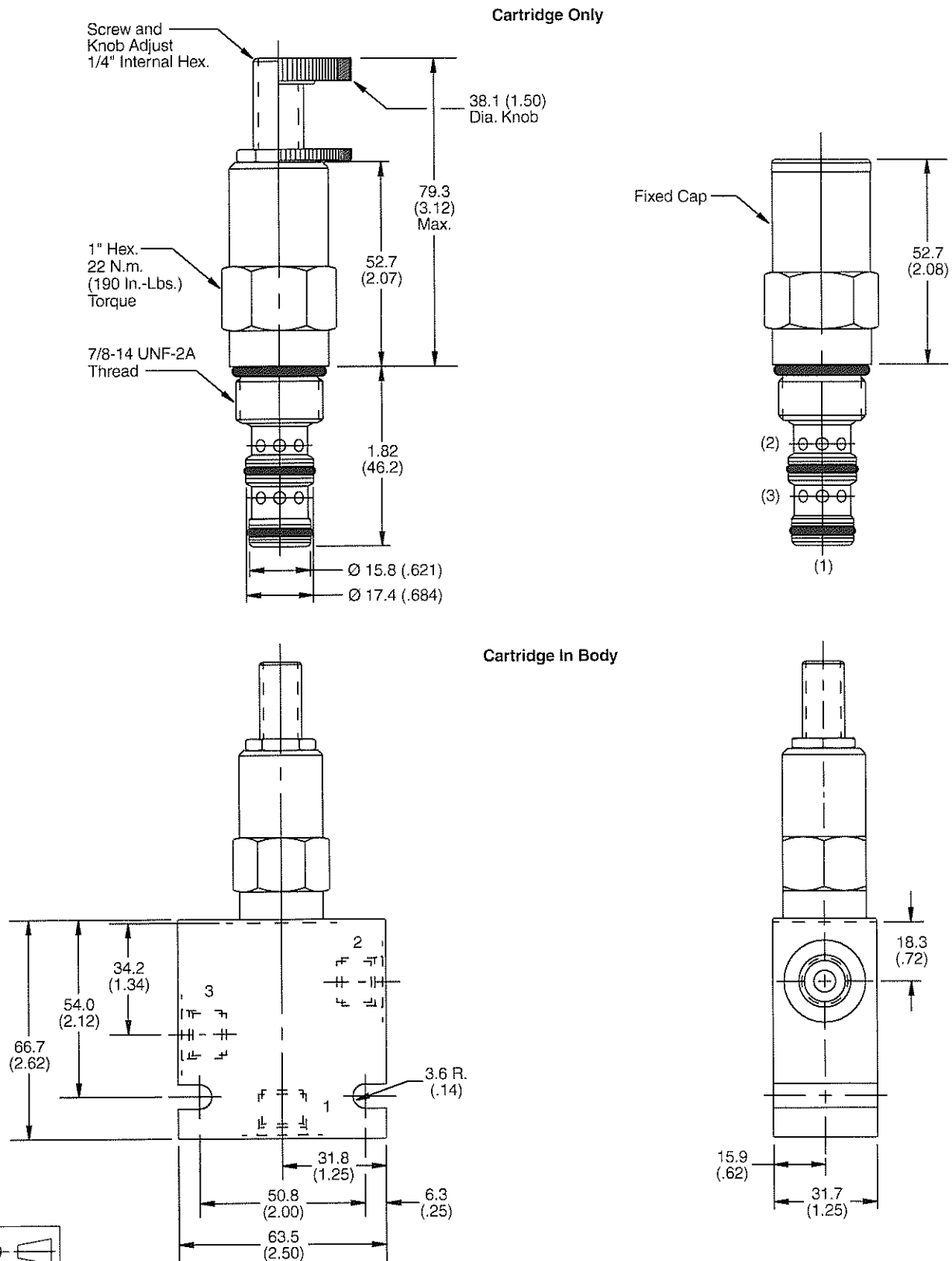


Performance Curve

Flow vs. Regulated Pressure (Through cartridge only)

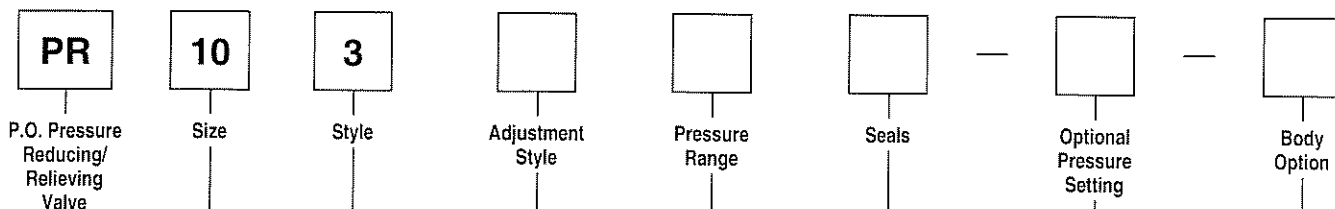


*Inch equivalents for millimeter dimensions are shown in (**)



pr103.pm6.5, bl, gn

CHECKS & SHUTTLES
 LOAD & MOTOR CONTROLS
 VOLUME CONTROLS
 PRESSURE CONTROLS
 SOLENOID VALVES
 SPECIALTY VALVES
 COILS
 BODIES
 TECHNICAL DATA



7/8-14 UNF-2B
 Threaded Cavity
 with .62" Dia. Seat

Code	Style
3	Direct Acting Pressure Reducing/Relieving Valve

Code	Type
F	Fixed style, preset at factory. Specify desired pressure setting @ 19 LPM (5 GPM). For other flow rates, consult factory.
K	Knob Adjust
S	Screw Adjust

Code	Type
Omit	Nitrile
V	Fluorocarbon

Description
Pressure ÷ 10 i.e. (235 = 2350 PSI) Omit if standard setting is used. All settings at 11.3 LPM (3 GPM)

Code	Range
02	3.5 - 13.8 Bar (50 - 200 PSI) Standard Setting: 6.9 Bar (100 PSI) @ 11.3 LPM (3 GPM)
06	6.9 - 41.4 Bar (100 - 600 PSI) Standard Setting: 20.7 Bar (300 PSI) @ 11.3 LPM (3 GPM)
12	13.8 - 83 Bar (200 - 1200 PSI) Standard Setting: 69 Bar (1000 PSI) @ 11.3 LPM (3 GPM)
24	27.6 - 166 Bar (400 - 2400 PSI) Standard Setting: 138 Bar (2000 PSI) @ 11.3 LPM (3 GPM)

Code	Port Size & Material
Omit	Cartridge Only
4P	1/4" NPTF (B10-3-4P) Steel
A4P	1/4" NPTF (B10-3-A4P) Aluminum
6P	3/8" NPTF (B10-3-6P) Steel
A6P	3/8" NPTF (B10-3-A6P) Aluminum
8P	1/2" NPTF (B10-3-8P) Steel
A8P	1/2" NPTF (B10-3-A8P) Aluminum
6T	SAE-6 (B10-3-6T) Steel
A6T	SAE-6 (B10-3-A6T) Aluminum
8T	SAE-8 (B10-3-8T) Steel
A8T	SAE-8 (B10-3-A8T) Aluminum
4B	1/4" BSPG (B10-3-4B) Steel
A4B	1/4" BSPG (B10-3-A4B) Aluminum
6B	3/8" BSPG (B10-3-6B) Steel
A6B	3/8" BSPG (B10-3-A6B) Aluminum
S6P	3/8" NPTF with 1/4" NPTF Drain (B10-3-S6P) Steel
S8P	1/2" NPTF with 1/4" NPTF Drain (B10-3-S8P) Steel
S8T	SAE-8 with 1/4" NPTF Drain (B10-3-S8T) Steel

SERVICE PARTS

Knob Kit Option: 840208K

Nitrile Seal Kit: SK10-3

Fluorocarbon Seal Kit: SK10-3V

Panel Mount Kit: PMK101

Shipping Weight

Cartridge Only .23 kg (0.5 lbs.)

General Description

The PRCH101 Series Pressure Reducing/Relieving Valves can be used in any application where a regulated pressure lower than system pressure is required. The valve also acts as a relief valve, relieving any shocks or surges at the regulated port to tank. The integral check valve allows reverse free flow through the valve.

Operation

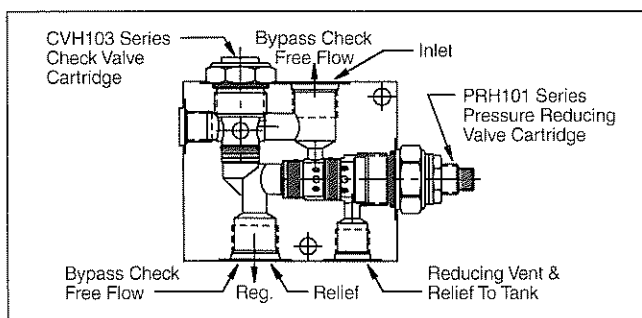
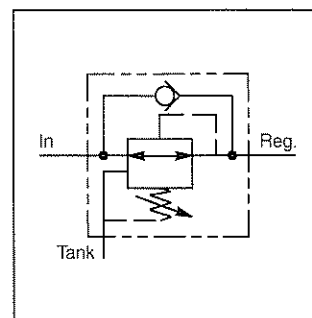
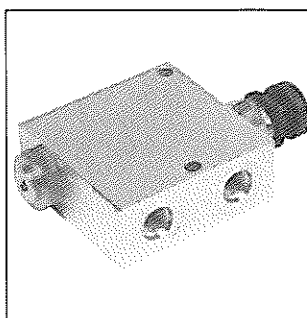
A common pilot section controls the valve setting whether reducing or relieving. As pressure at the regulated port exceeds the valve setting, the valve throttles or closes in order to maintain constant downstream pressure. A shock or surge at the regulated port further shifts the spool, relieving flow to tank. Reverse free flow is permitted through the check section of the valve.

Features

- Hardened, precision ground parts for durability
- Built-in reverse flow check reduces plumbing
- Cartridge design
- All external parts have yellow zinc dichromate. This coating allows them to withstand a 96 hour salt spray.

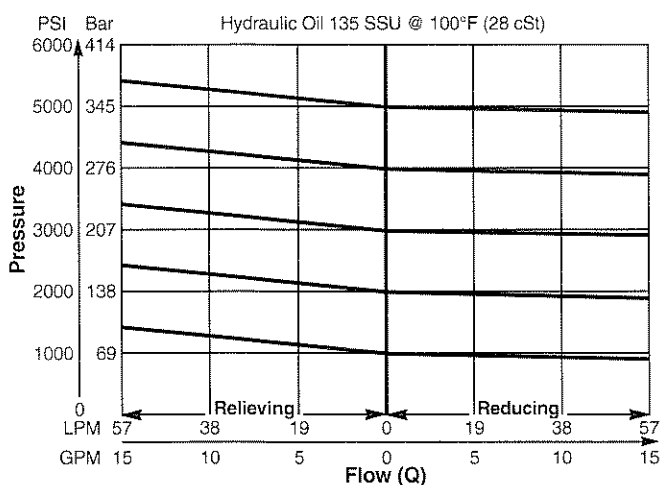
Specifications

Maximum Flow	56.3 LPM (15 GPM)
Maximum Inlet Press. (Reducing/Relieving mode)	380 Bar (5500 PSI) - Steel
Maximum Inlet Press. (Free Flow Check mode)	380 Bar (5500 PSI) - Steel
Maximum Setting Press. (Reducing/Relieving mode)	345 Bar (5000 PSI) - Steel
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel only
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C10-3

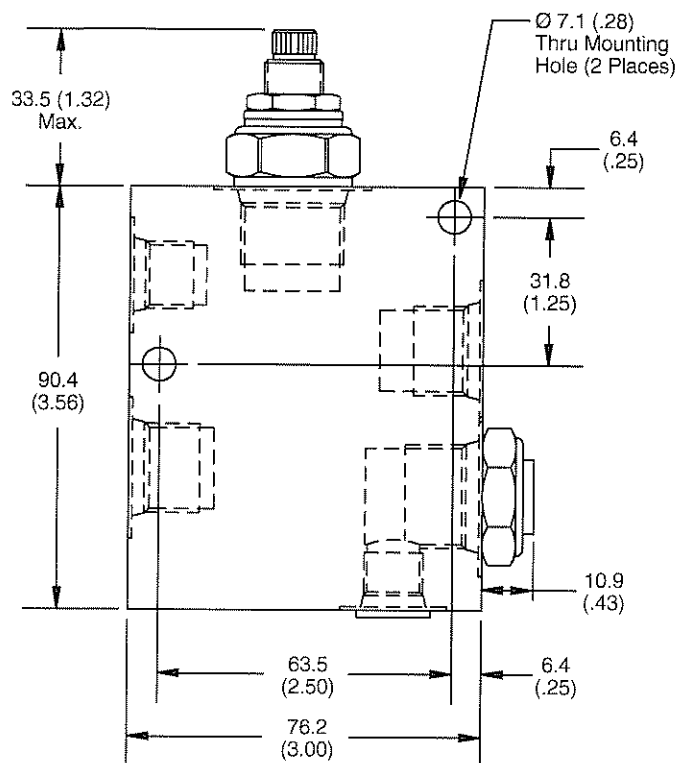


Performance Curve

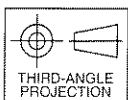
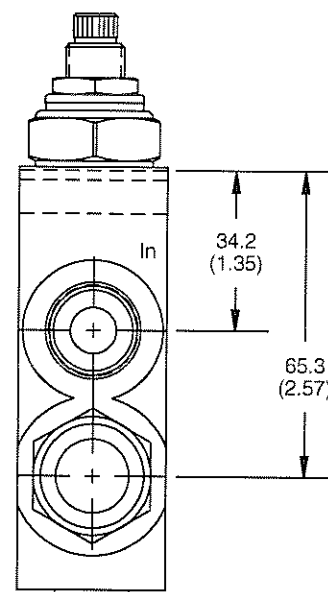
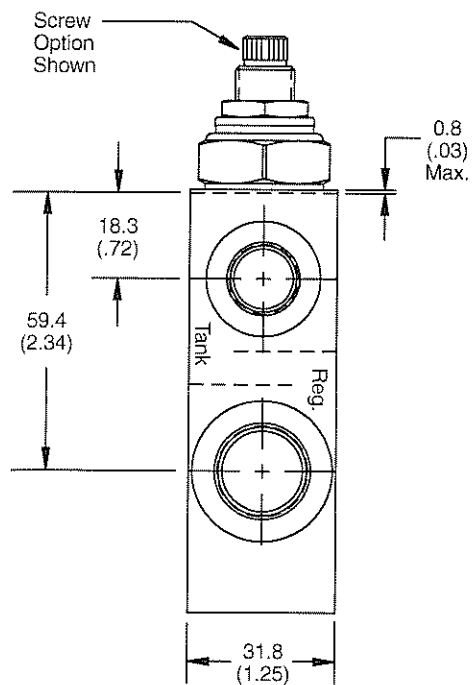
Flow vs. Regulated Pressure (Through cartridge only)



*Inch equivalents for millimeter dimensions are shown in (**)



	IN	REG	TANK
6P	3/8"-18 NPTF	3/8"-18 NPTF	1/4"-18 NPTF
8P	1/2"-14 NPTF	1/2"-14 NPTF	1/4"-18 NPTF
6T	SAE-6	SAE-6	SAE-6
8T	SAE-8	SAE-8	SAE-6
6B	3/8"-19 BSPG	3/8"-19 BSPG	1/4"-19 BSPG
8B	1/2"-14 BSPG	1/2"-14 BSPG	1/4"-19 BSPG



prch101.pm6.5, bl, gn

PRCH	10	1						

5000 PSI
 Design
 P.O. Pressure
 Reducing/
 Relieving
 Valve

Size

Style

Adjustment
 Style

Pressure
 Range

Optional
 Pressure
 Setting

Check Valve
 Cracking
 Pressure

Seals

Body
 Option
 For Steel
 Body Only

7/8-14 UNF-2B
 Threaded Cavity
 with .62" Dia. Seat

Code	Style
1	Pressure Reducing/ Relieving Valve with Reverse Flow Check

Code	Type
F	Fixed style, preset at factory. Specify desired pressure setting @ 19 LPM (5 GPM). For other flow rates, consult factory.
K	Knob Adjust
S	Screw Adjust
T	Tamper Resistant Cap

Description
Pressure ÷ 10 i.e. 235 = 2350 PSI Setting Range: 100 to 5000 PSI All settings at 11.3 LPM (3 GPM)

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Pressure
Omit	0.3 Bar (5 PSI)
P15	1.0 Bar (15 PSI)
P20	1.4 Bar (20 PSI)
P40	2.8 Bar (40 PSI)
P50	3.5 Bar (50 PSI)
P65	4.5 Bar (65 PSI)
P80	5.5 Bar (80 PSI)

Note: Consult factory for other cracking pressures. Cracking pressure is defined as the pressure at which the poppet begins to unseat. It occurs when leakage exceeds 1/3 cc/min. (5 drops/min.)

Code	Type
10	6.9 - 69 Bar (100 - 1000 PSI) Standard Setting: 34.5 Bar (500 PSI) @ 11.3 LPM (3 GPM)
20	13.8 - 138 Bar (200 - 2000 PSI) Standard Setting: 69 Bar (1000 PSI) @ 11.3 LPM (3 GPM)
30	20.7 - 207 Bar (300 - 3000 PSI) Standard Setting: 172.4 Bar (2500 PSI) @ 11.3 LPM (3 GPM)
50	34.5 - 345 Bar (500 - 5000 PSI) Standard Setting: 241.4 Bar (3500 PSI) @ 11.3 LPM (3 GPM)

Code	Port Size & Material
6P	3/8" NPTF Steel
8P	1/2" NPTF Steel
6T	SAE-6 Steel
8T	SAE-8 Steel
6B	3/8" BSPG Steel
8B	1/2" BSPG Steel

SERVICE PARTS

Knob Kit Option: 717784-10

Tamper Kit Option: 717785

Nitrile Seal Kit: SK10-3

Fluorocarbon Seal Kit: SK10-3V

Shipping Weight

Cartridge in Body 1.0 kg (2.2 lbs.)

CHECKS &
SHUTTLES

LOAD & MOTOR
CONTROLS

VOLUME
CONTROLS

PRESSURE
CONTROLS

SOLENOID
VALVES

SPECIALTY
VALVES

COILS

BODIES

TECHNICAL
DATA

General Description

The SVH081 Series, Pilot Operated, Sequence Valves are used to control the sequence of operation of two or more hydraulic actuators by assuring priority hydraulic pressure to one actuator before another.

Operation

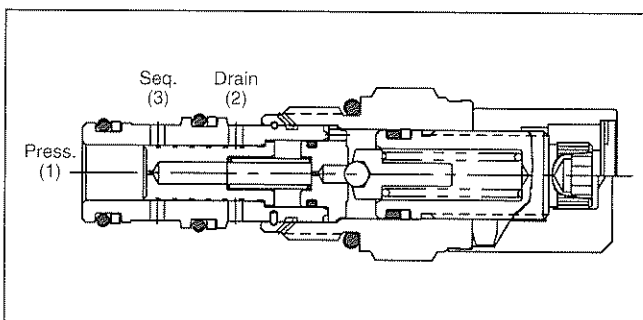
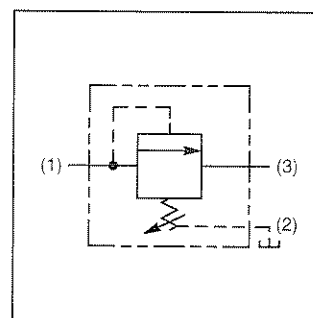
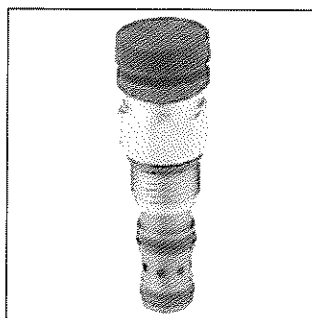
When inlet pressure exceeds the valve setting, the pilot section opens. This pilot flow creates a pressure imbalance across the main section causing the valve to open and permitting flow from inlet to sequence. By externally draining the pilot flow directly to tank the valve is insensitive to back pressure at the sequence port.

Features

- Hardened, precision ground parts for durability
- High accuracy, pilot operation design
- Ball-type pilot for added stability
- All external parts have yellow zinc dichromate. This coating allows them to withstand a 96 hour salt spray.

Specifications

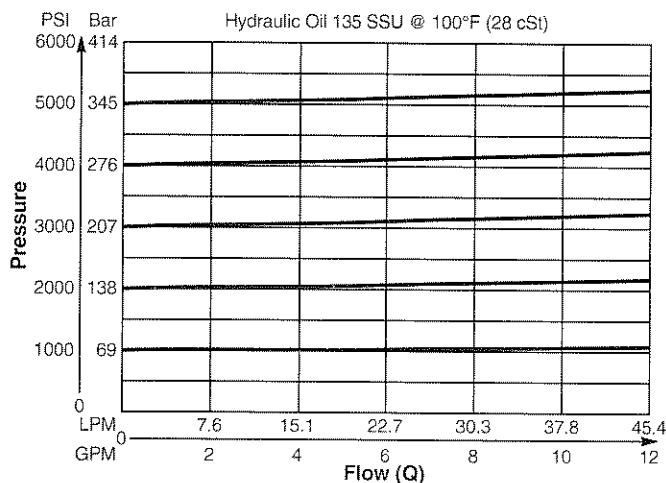
Maximum Flow	45 LPM (12 GPM)
Maximum Inlet Pressure	380 Bar (5500 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Setting Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Drain Flow	.94 LPM (.25 GPM)
Reseat Pressure	80% of crack pressure
Leakage	82 cc/min.
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C08-3



Performance Curve

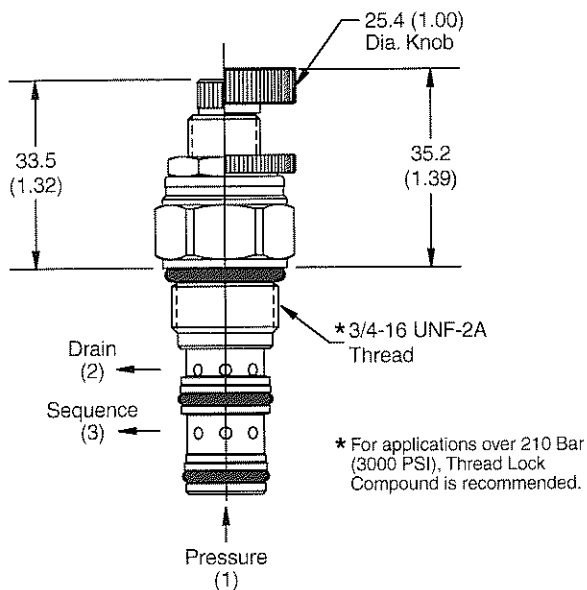
Flow vs. Inlet Pressure

(Pressure rise through cartridge only)

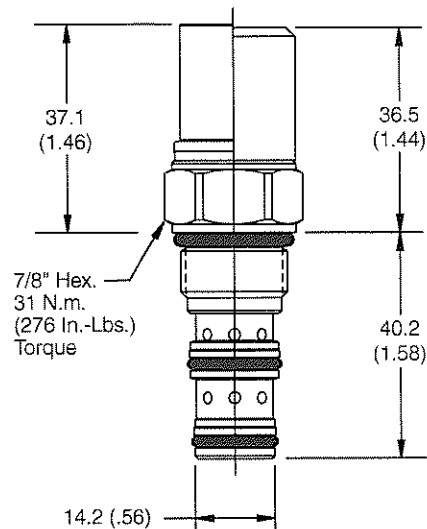


*Inch equivalents for millimeter dimensions are shown in (**)

Cartridge Only

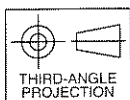
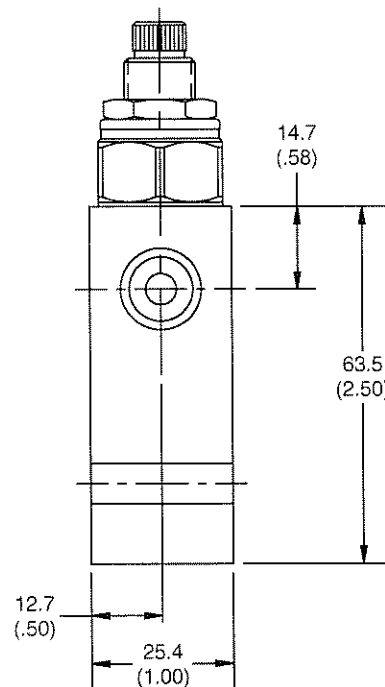
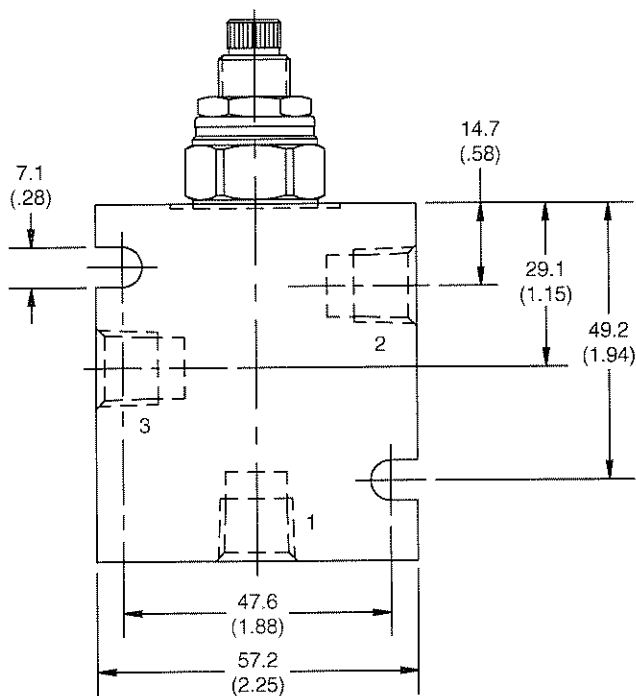


Screw/Knob Version



Fixed Cap/Tamper Resistant Version

Cartridge In Body



svh081.pm6.5.bl.gn

CHECKS & SHUTTLES
 LOAD & MOTOR CONTROLS
 VOLUME CONTROLS
 PRESSURE CONTROLS
 SOLENOID VALVES
 SPECIALTY VALVES
 COILS
 BODIES
 TECHNICAL DATA

SVH	08	1				—		—																													
5000 PSI Design P.O. Sequence Valve	Size	Style	Adjustment Style	Pressure Range	Seals		Optional Pressure Setting		Body Option																												
	3/4-16 UNF-2B Threaded Cavity with .56" Dia. Seat																																				
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A4P	1/4" NPTF (B08-3-A4P) Aluminum																																				
6P	3/8" NPTF (B08-3-6P) Steel																																				
A6P	3/8" NPTF (B08-3-A6P) Aluminum																																				
4T	SAE-4 (B08-3-4T) Steel																																				
A4T	SAE-4 (B08-3-A4T) Aluminum																																				
6T	SAE-6 (B08-3-6T) Steel																																				
A6T	SAE-6 (B08-3-A6T) Aluminum																																				
4B	1/4" BSPG (B08-3-4B) Steel																																				
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6B	3/8" BSPG (B08-3-6B) Steel																																				
A6B	3/8" BSPG (B08-3-A6B) Aluminum																																				

NOTE:
 If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

SERVICE PARTS

Knob Kit Option: 717784-10

Tamper Kit Option: 717785

Nitrile Seal Kit: SK08-3

Fluorocarbon Seal Kit: SK08-3V

Shipping Weight

Cartridge Only .09 kg (.20 lbs.)

svh081.pm6.5, bl, gn

General Description

The SVH101 Series, Pilot Operated, Sequence Valves are used to control the sequence of operation of two or more hydraulic actuators by assuring priority hydraulic pressure to one actuator before another.

Operation

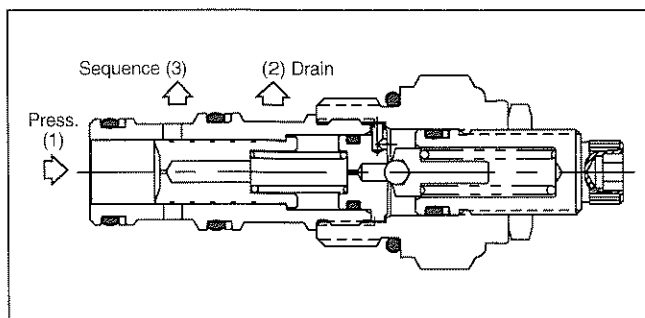
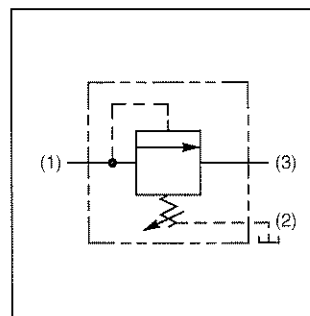
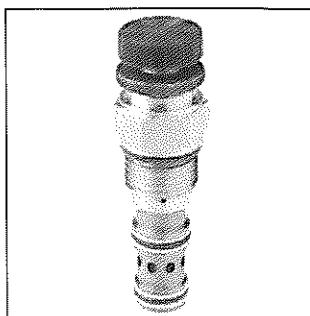
When pilot pressure exceeds the valve setting, the pilot section opens. This pilot flow creates a pressure imbalance across the main section causing the valve to open and permitting flow from inlet to sequence. By externally draining the pilot flow directly to tank the valve is insensitive to back pressure at the sequence port.

Features

- Hardened, precision ground parts for durability
- High accuracy, pilot operation design
- Ball-type pilot for added stability
- All external parts have yellow zinc dichromate. This coating allows them to withstand a 96 hour salt spray.

Specifications

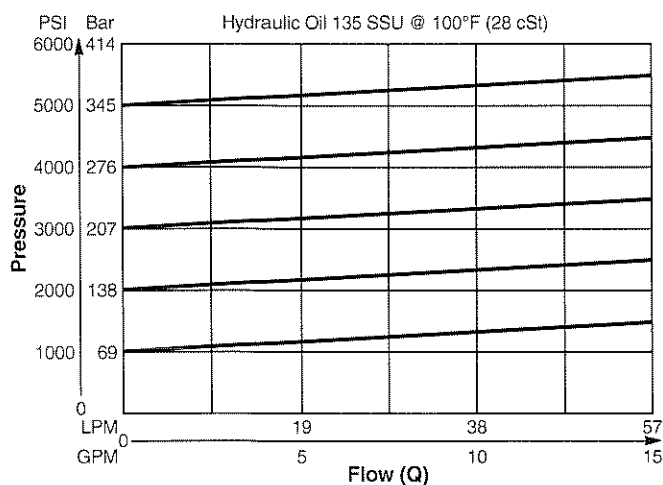
Maximum Flow	56.3 LPM (15 GPM)
Maximum Inlet Pressure	380 Bar (5500 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Setting Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Drain Flow	.94 LPM (.25 GPM)
Reseat Pressure	80% of crack pressure
Leakage	82 cc/min.
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C10-3



Performance Curve

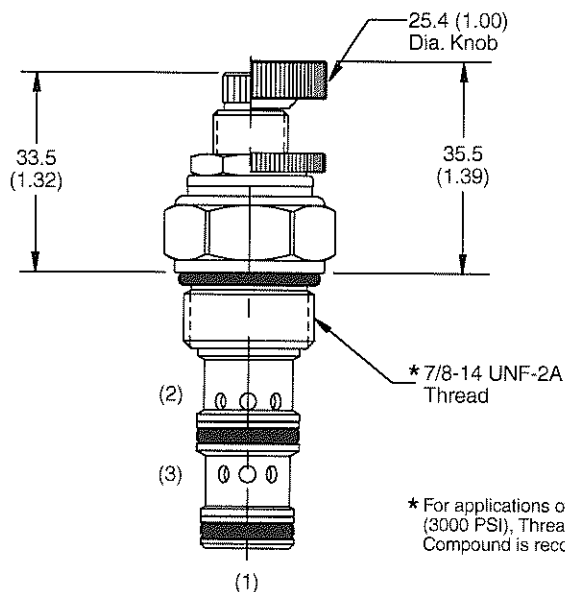
Flow vs. Inlet Pressure

(Pressure rise through cartridge only)

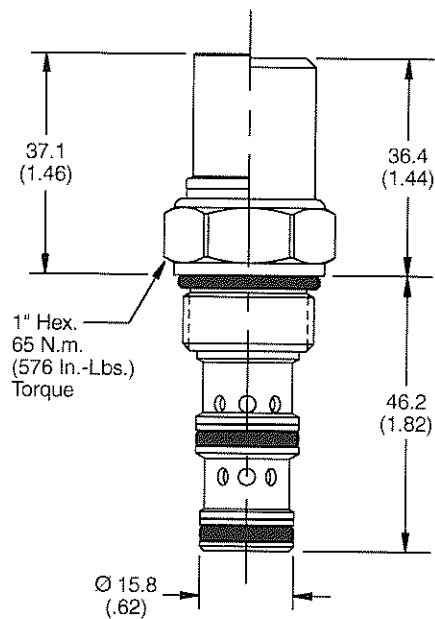


*Inch equivalents for millimeter dimensions are shown in (**)

Cartridge Only

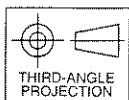
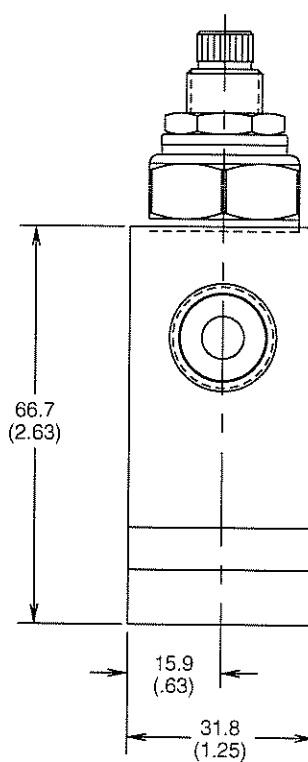
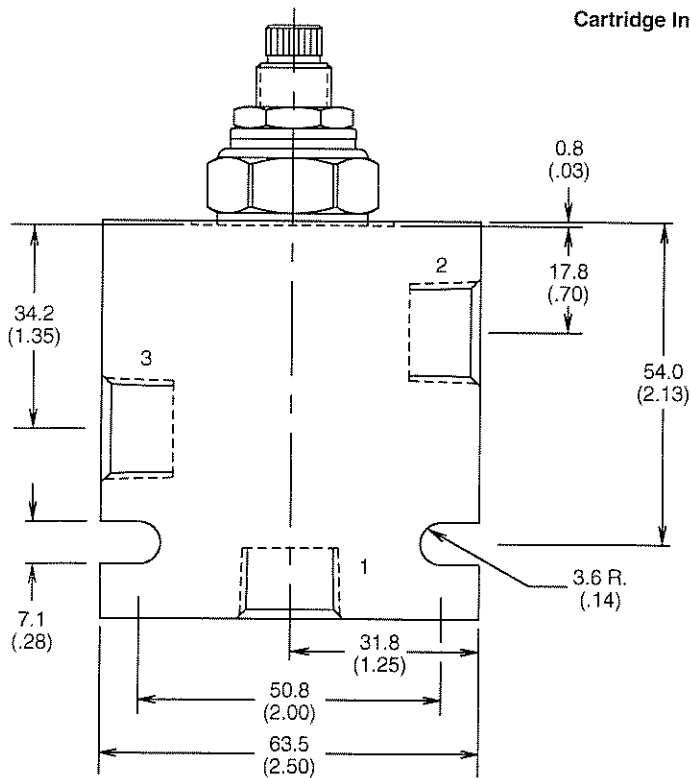


Screw/Knob Version



Fixed Cap/Tamper Resistant Version

Cartridge In Body



svh101.pm6.5, bl, gn

SVH 5000 PSI Design P.O. Sequence Valve	10 Size	1 Style	Adjustment Style	Pressure Range	Seals	— Optional Pressure Setting	— Body Option

7/8-14 UNF-2B
Threaded Cavity
with .62" Dia. Seat

Code	Style
1	Internal Pilot External Drain

Code	Type
F	Fixed style, preset at factory. Specify desired pressure setting @ 11.3 LPM (3 GPM). For other flow rates, consult factory.
K	Knob Adjust
S	Screw Adjust
T	Tamper Resistant Cap

Code	Type
10	6.9 - 69 Bar (100 - 1000 PSI) Standard Setting: 34.5 Bar (500 PSI) @ 11.3 LPM (3 GPM)
20	13.8 - 138 Bar (200 - 2000 PSI) Standard Setting: 69 Bar (1000 PSI) @ 11.3 LPM (3 GPM)
30	20.7 - 207 Bar (300 - 3000 PSI) Standard Setting: 103.5 Bar (1500 PSI) @ 11.3 LPM (3 GPM)
50	34.5 - 345 Bar (500 - 5000 PSI) Standard Setting: 172.4 Bar (2500 PSI) @ 11.3 LPM (3 GPM)

Code	Type
Omit	Nitrile
V	Fluorocarbon

Description
Pressure ÷ 10 i.e. 235 = 2350 PSI Setting Range: 100 to 5000 PSI All settings at 11.3 LPM (3 GPM)

Code	Port Size & Material
Omit	Cartridge Only
4P	1/4" NPTF (B10-3-4P) Steel
A4P	1/4" NPTF (B10-3-A4P) Aluminum
6P	3/8" NPTF (B10-3-6P) Steel
A6P	3/8" NPTF (B10-3-A6P) Aluminum
8P	1/2" NPTF (B10-3-8P) Steel
A8P	1/2" NPTF (B10-3-A8P) Aluminum
6T	SAE-6 (B10-3-6T) Steel
A6T	SAE-6 (B10-3-A6T) Aluminum
8T	SAE-8 (B10-3-8T) Steel
A8T	SAE-8 (B10-3-A8T) Aluminum
4B	1/4" BSPG (B10-3-4B) Steel
A4B	1/4" BSPG (B10-3-A4B) Aluminum
6B	3/8" BSPG (B10-3-6B) Steel
A6B	3/8" BSPG (B10-3-A6B) Aluminum

NOTE:

If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

SERVICE PARTS

Knob Kit Option: 717784-10

Tamper Kit Option: 717785

Nitrile Seal Kit: SK10-3

Fluorocarbon Seal Kit: SK10-3V

Shipping Weight

Cartridge Only .45 kg (1.0 lbs.)

General Description

The SVH121 Series, Pilot Operated, Sequence Valves are used to control the sequence of operation of two or more hydraulic actuators by assuring priority hydraulic pressure to one actuator before another.

Operation

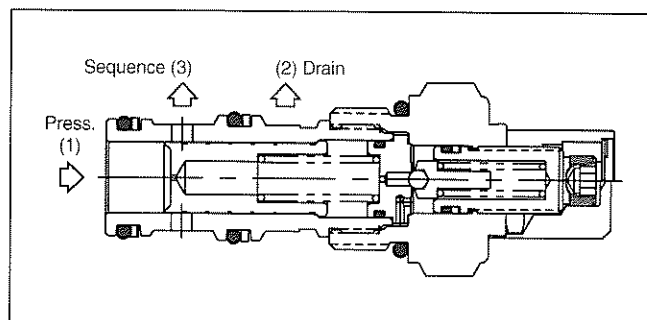
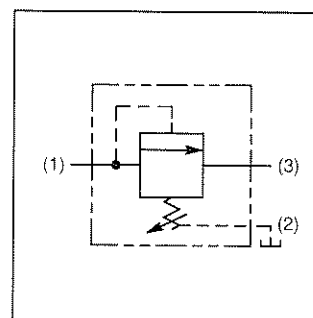
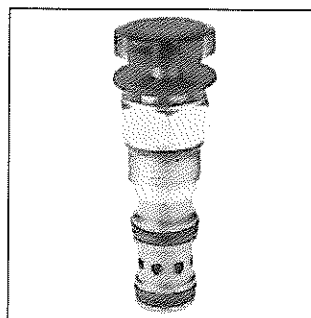
When inlet pressure exceeds the valve setting, the pilot section opens. This pilot flow creates a pressure imbalance across the main section causing the valve to open and permitting flow from inlet to sequence. By externally draining the pilot flow directly to tank the valve is insensitive to back pressure at the sequence port.

Features

- Hardened, precision ground parts for durability
- High accuracy, pilot operation design
- Ball-type pilot for added stability
- All external parts have yellow zinc dichromate. This coating allows them to withstand a 96 hour salt spray.

Specifications

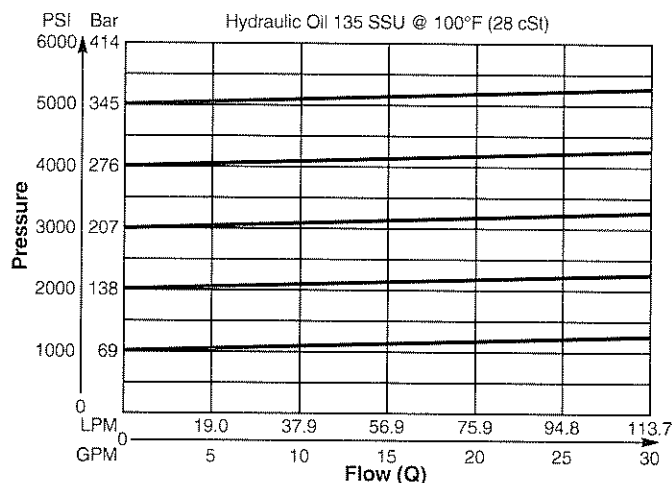
Maximum Flow	113.7 LPM (30 GPM)
Maximum Inlet Pressure	380 Bar (5500 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Setting Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Drain Flow	1.9 LPM (.5 GPM)
Reseat Pressure	80% of crack pressure
Leakage	82 cc/min.
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C12-3



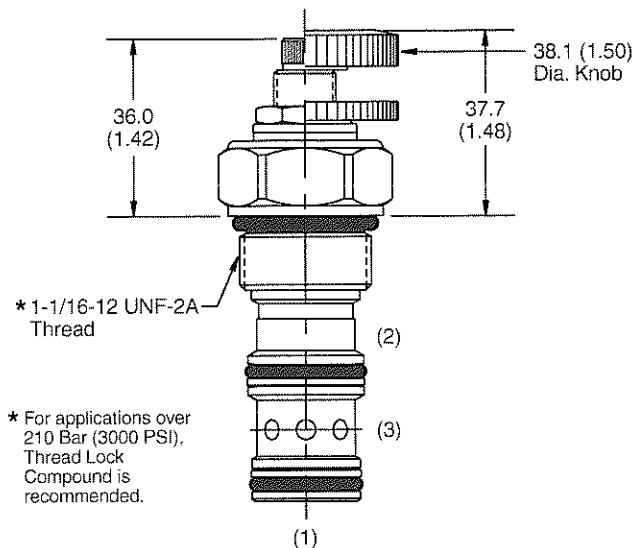
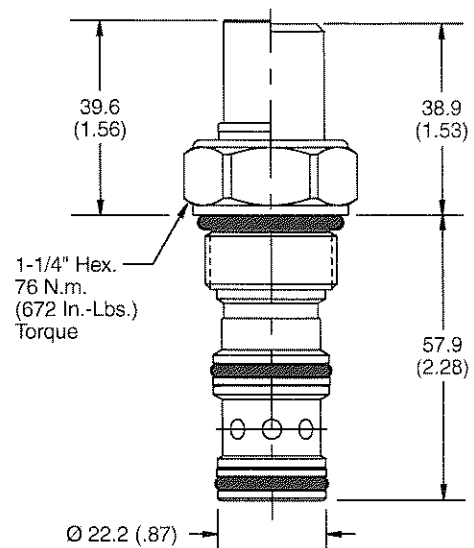
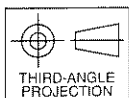
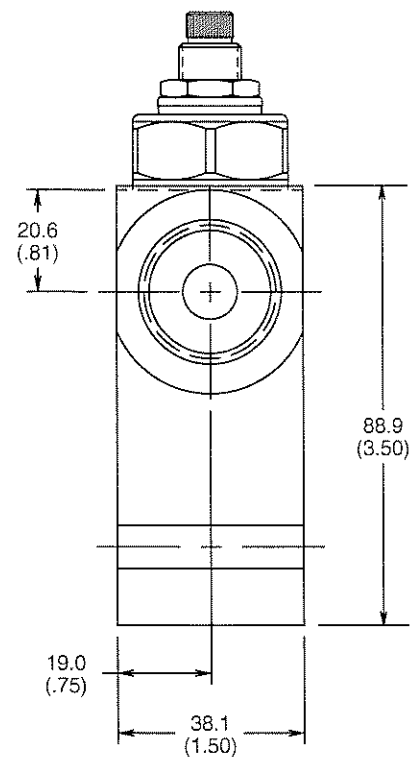
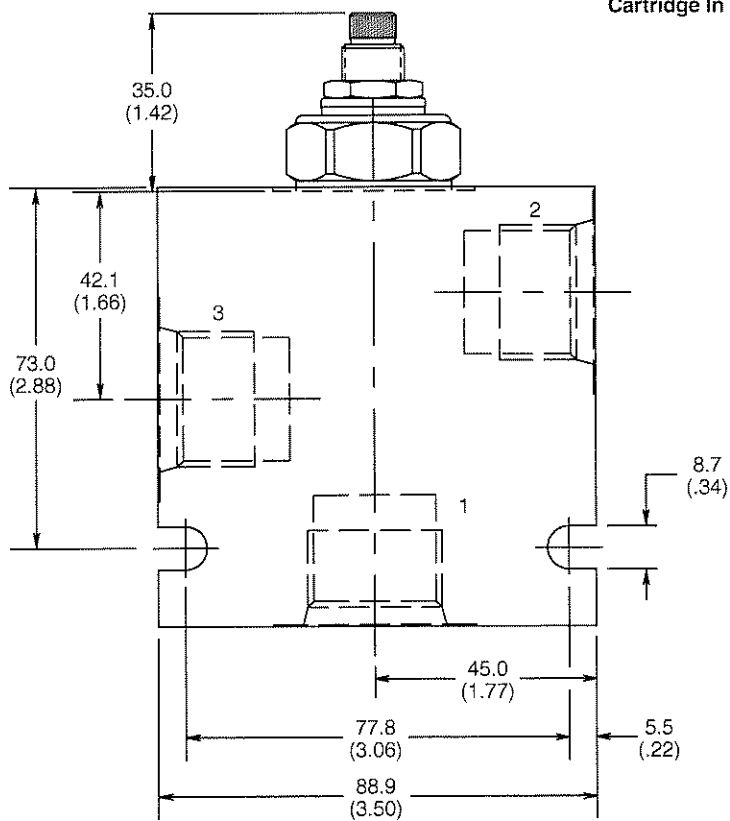
Performance Curve

Flow vs. Inlet Pressure

(Pressure rise through cartridge only)



*Inch equivalents for millimeter dimensions are shown in (**)

Cartridge Only**Screw/Knob Version****Fixed Cap/Tamper Resistant Version****Cartridge In Body**

svh121.pm6.5, bl, gn

CHECKS & SHUTTLES
 LOAD & MOTOR CONTROLS
 VOLUME CONTROLS
 PRESSURE CONTROLS
 SOLENOID VALVES
 SPECIALTY VALVES
 COILS
 BODIES
 TECHNICAL DATA

SVH	12	1				—		—																																				
5000 PSI Design P.O. Sequence Valve	Size	Style	Adjustment Style	Pressure Range	Seals		Optional Pressure Setting		Body Option																																			
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Code	Port Size & Material																																											
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6P	3/8" NPTF (B12-3-6P) Steel																																											
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8P	1/2" NPTF (B12-3-8P) Steel																																											
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12P	3/4" NPTF (B12-3-12P) Steel																																											
A12P	3/4" NPTF (B12-3-A12P) Aluminum																																											
6T	SAE-6 (B12-3-6T) Steel																																											
A6T	SAE-6 (B12-3-A6T) Aluminum																																											
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12B	3/4" BSPG (B12-3-12B) Steel																																											
A12B	3/4" BSPG (B12-3-A12B) Aluminum																																											

SERVICE PARTS
 Knob Kit Option: 717784-15
 Tamper Kit Option: 717785
 Nitrile Seal Kit: SK12-3
 Fluorocarbon Seal Kit: SK12-3V

Shipping Weight
 Cartridge Only .27 kg (0.6 lbs.)

NOTE:
 If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

svh121.pm6.5, bl, gn

General Description

The SVH161 Series, Pilot Operated, Sequence Valves are used to control the sequence of operation of two or more hydraulic actuators by assuring priority hydraulic pressure to one actuator before another.

Operation

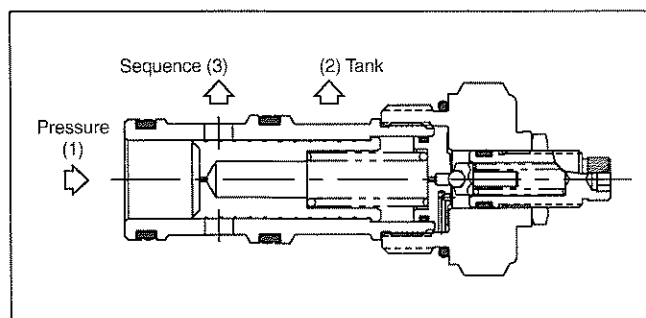
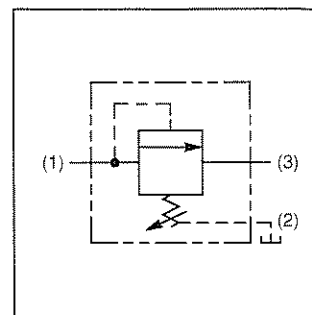
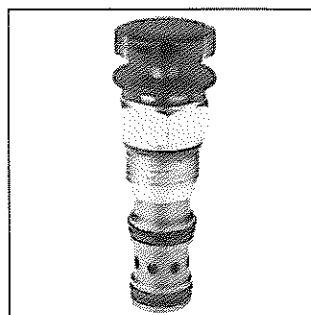
When inlet pressure exceeds the valve setting, the pilot section opens. This pilot flow creates a pressure imbalance across the main section causing the valve to open and permitting flow from inlet to sequence. By externally draining the pilot flow directly to tank the valve is insensitive to back pressure at the sequence port.

Features

- Hardened, precision ground parts for durability
- High accuracy, pilot operation design
- Ball-type pilot for added stability
- All external parts have yellow zinc dichromate. This coating allows them to withstand a 96 hour salt spray.

Specifications

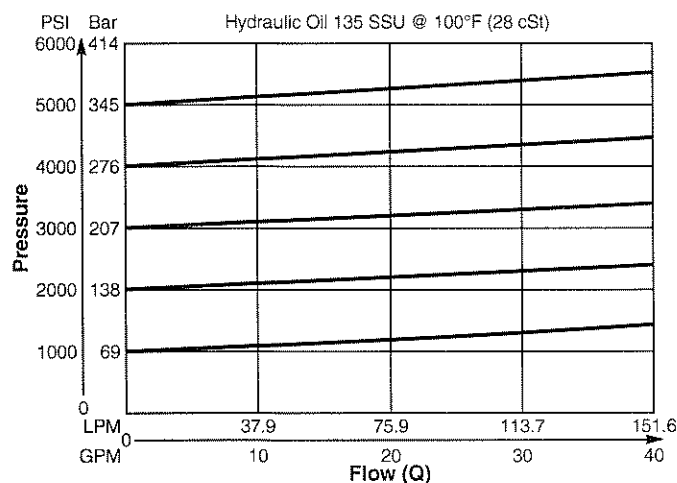
Maximum Flow	151.6 LPM (40 GPM)
Maximum Inlet Pressure	380 Bar (5500 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Setting Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Drain Flow	1.9 LPM (.5 GPM)
Reseat Pressure	80% of crack pressure
Leakage	82 cc/min.
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C16-3



Performance Curve

Flow vs. Inlet Pressure

(Pressure rise through cartridge only)



CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

SOLENOID VALVES

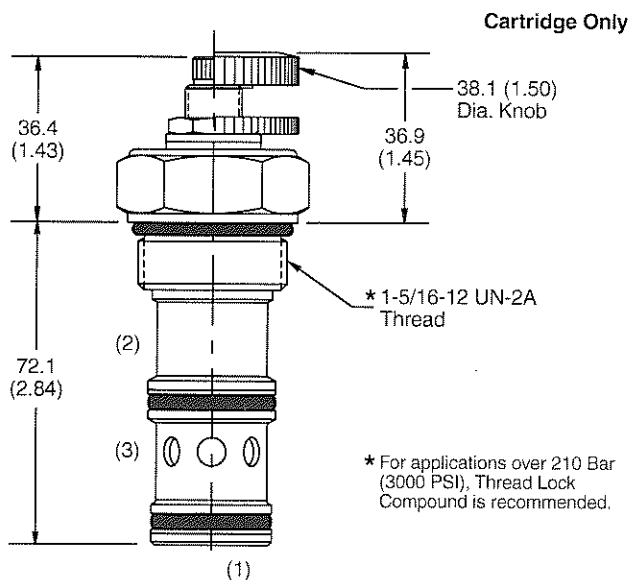
SPECIALTY VALVES

COILS

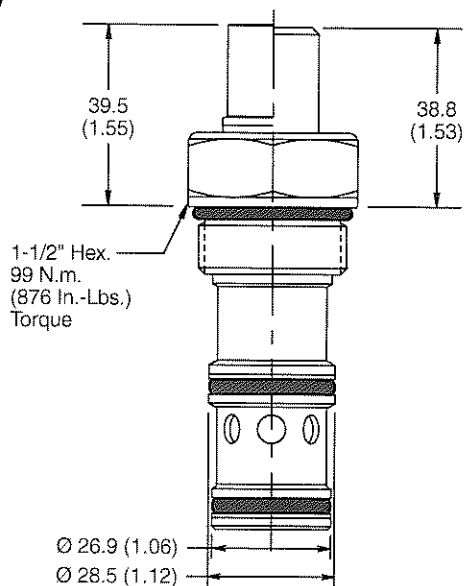
BODIES

TECHNICAL DATA

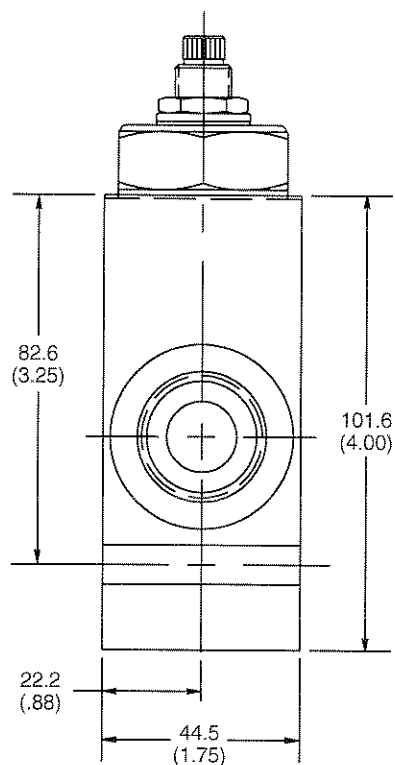
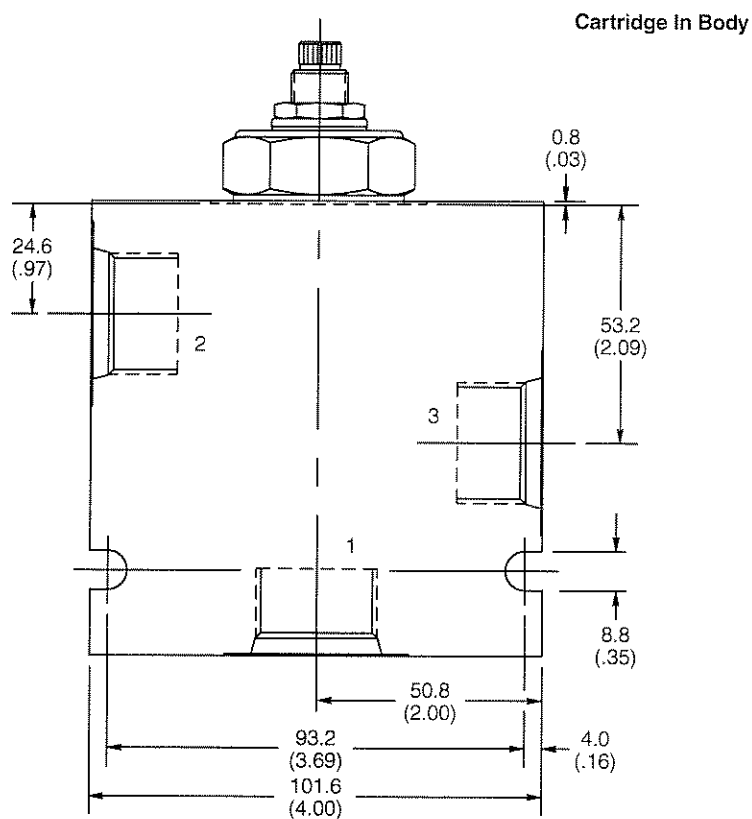
*Inch equivalents for millimeter dimensions are shown in (**)



Screw/Knob Version



Fixed Cap/Tamper Resistant Version



svh161.pm6.5, bl, gn

SVH 5000 PSI Design P.O. Sequence Valve	16 Size	1 Style	Adjustment Style	Pressure Range	Seals	Optional Pressure Setting	Body Option

1-5/16-12 UN-2B Threaded Cavity with 1.06" Dia. Seat

Code	Style
1	Internal Pilot External Drain

Code	Type
F	Fixed style, preset at factory. Specify desired pressure setting @ 11.3 LPM (3 GPM). For other flow rates, consult factory.
K	Knob Adjust
S	Screw Adjust
T	Tamper Resistant Cap

Code	Type
10	6.9 - 69 Bar (100 - 1000 PSI) Standard Setting: 34.5 Bar (500 PSI) @ 11.3 LPM (3 GPM)
20	13.8 - 138 Bar (200 - 2000 PSI) Standard Setting: 69 Bar (1000 PSI) @ 11.3 LPM (3 GPM)
30	20.7 - 207 Bar (300 - 3000 PSI) Standard Setting: 103.5 Bar (1500 PSI) @ 11.3 LPM (3 GPM)
50	34.5 - 345 Bar (500 - 5000 PSI) Standard Setting: 172.4 Bar (2500 PSI) @ 11.3 LPM (3 GPM)

Code	Type
Omit	Nitrile
V	Fluorocarbon

Description
Pressure ÷ 10 i.e. 235 = 2350 PSI Setting Range: 100 to 5000 PSI All settings at 11.3 LPM (3 GPM)

Code	Port Size & Material
Omit	Cartridge Only
12P	3/4" NPTF (B16-3-12P) Steel
A12P	3/4" NPTF (B16-3-A12P) Aluminum
16P	1" NPTF (B16-3-16P) Steel
A16P	1" NPTF (B16-3-A16P) Aluminum
12T	SAE-12 (B16-3-12T) Steel
A12T	SAE-12 (B16-3-A12T) Aluminum
16T	SAE-16 (B16-3-16T) Steel
A16T	SAE-16 (B16-3-A16T) Aluminum

SERVICE PARTS

Knob Kit Option: 717784-15

Tamper Kit Option: 717785

Nitrile Seal Kit: SK16-3

Fluorocarbon Seal Kit: SK16-3V

Shipping Weight

Cartridge Only .40 kg (.90 lbs.)

NOTE:

If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

General Description

The SVH082 Series, Pilot Operated, Sequence Valves are typically used as unloading valves in hi-lo and other applications.

Operation

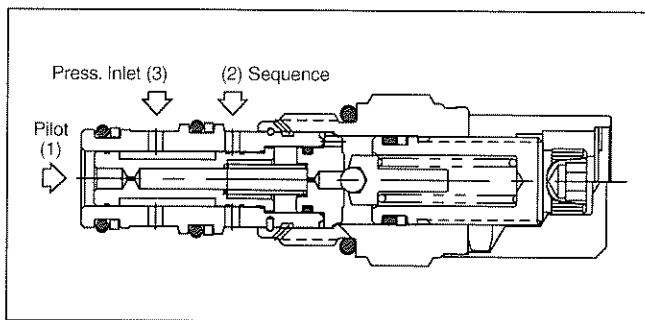
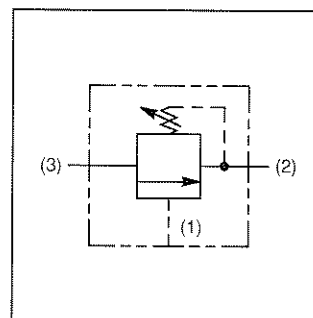
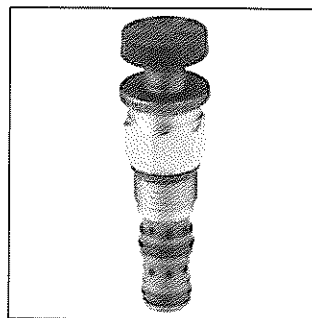
When pilot pressure exceeds the pressure setting of the valve the pilot section opens. This pilot flow creates a pressure imbalance across the main section causing the valve to open, thus permitting flow from inlet to sequence.

Features

- Hardened, precision ground parts for durability
- High accuracy, pilot operation design
- Ball-type pilot for added stability
- All external parts have yellow zinc dichromate. This coating allows them to withstand a 96 hour salt spray.

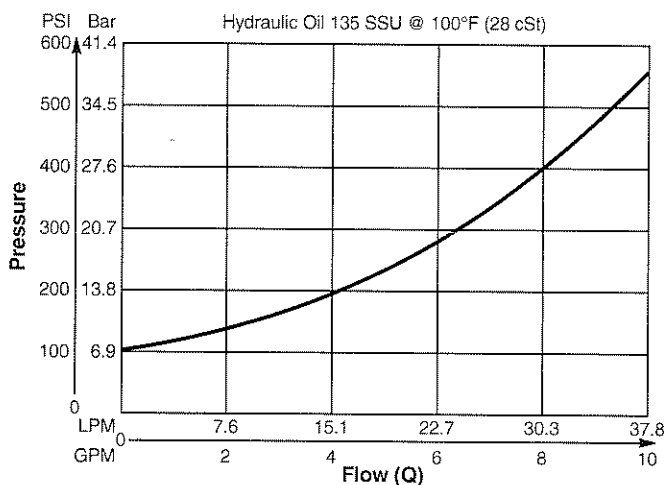
Specifications

Maximum Flow	37.8 LPM (10 GPM)
Maximum Inlet Pressure	380 Bar (5500 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Setting Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Drain Flow	.94 LPM (.25 GPM)
Reseat Pressure	80% of crack pressure
Leakage	82 cc/min.
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C08-3



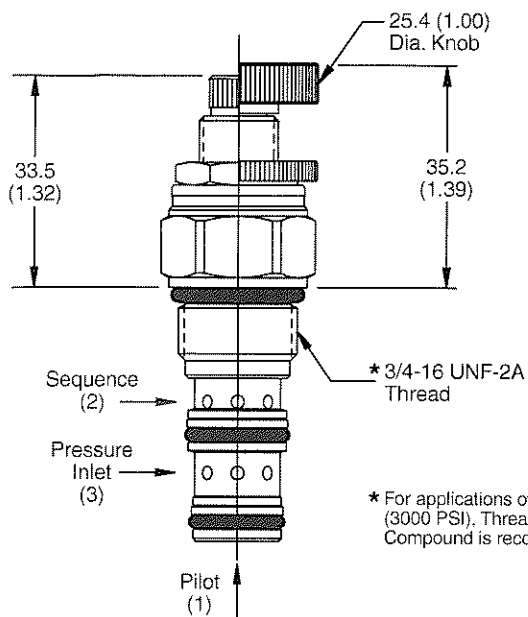
Performance Curve

Flow vs. Inlet Pressure (Through cartridge only)

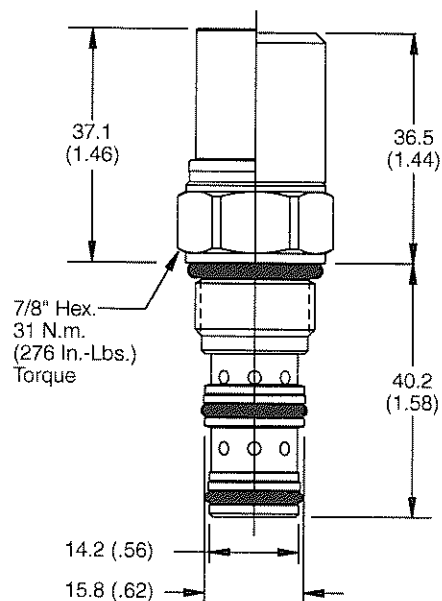


*Inch equivalents for millimeter dimensions are shown in (**)

Cartridge Only

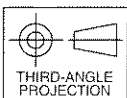
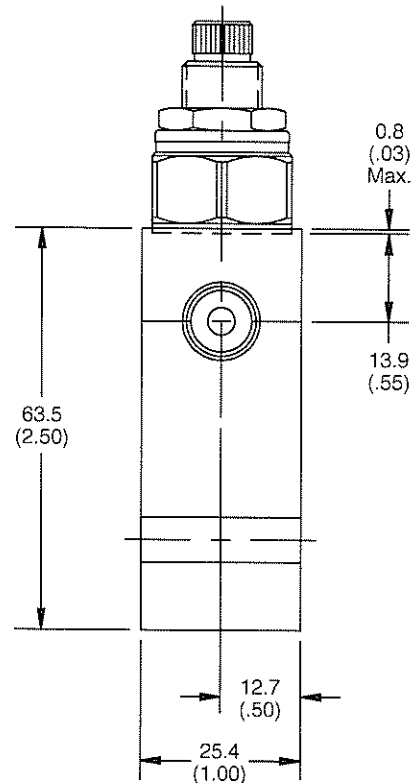
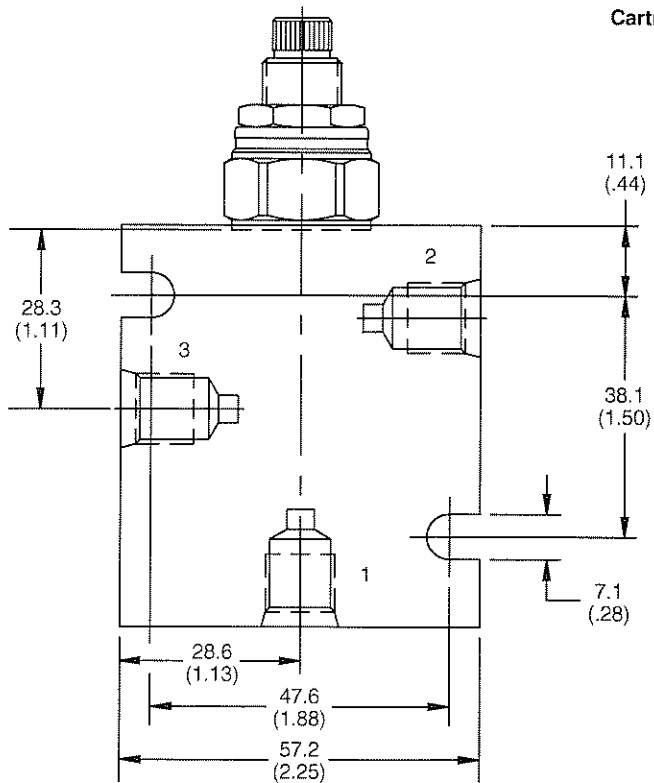


Screw/Knob Version



Fixed Cap/Tamper Resistant Version

Cartridge Only



CHECKS & SHUTTLES
LOAD & MOTOR CONTROLS
VOLUME CONTROLS
PRESSURE CONTROLS
SOLENOID VALVES
SPECIALTY VALVES
COILS
BODIES
TECHNICAL DATA

SVH

5000 PSI
Design
P.O. Sequence
Valve

08

Size

3/4-16 UNF-2B
Threaded Cavity
with .56" Dia. Seat

2

Style

Code	Style
2	External Pilot Internal Drain

Adjustment
Style

Code	Type
F	Fixed style, preset at factory. Specify desired pressure setting @ 11.3 LPM (3 GPM). For other flow rates, consult factory.
K	Knob Adjust
S	Screw Adjust
T	Tamper Resistant Cap

Pressure
Range

Code	Type
10	6.9 - 69 Bar (100 - 1000 PSI) Standard Setting: 34.5 Bar (500 PSI) @ 11.3 LPM (3 GPM)
20	13.8 - 138 Bar (200 - 2000 PSI) Standard Setting: 69 Bar (1000 PSI) @ 11.3 LPM (3 GPM)
30	20.7 - 207 Bar (300 - 3000 PSI) Standard Setting: 103.5 Bar (1500 PSI) @ 11.3 LPM (3 GPM)
50	34.5 - 345 Bar (500 - 5000 PSI) Standard Setting: 172.4 Bar (2500 PSI) @ 11.3 LPM (3 GPM)

Seals

Code	Type
Omit	Nitrile
V	Fluorocarbon

Optional
Pressure
Setting

Description
Pressure ÷ 10 i.e. 235 = 2350 PSI Setting Range: 100 to 5000 PSI All settings at 11.3 LPM (3 GPM)

Body
Option

Code	Port Size & Material
Omit	Cartridge Only
4P	1/4" NPTF (B08-3-4P) Steel
A4P	1/4" NPTF (B08-3-A4P) Aluminum
6P	3/8" NPTF (B08-3-6P) Steel
A6P	3/8" NPTF (B08-3-A6P) Aluminum
4T	SAE-4 (B08-3-4T) Steel
A4T	SAE-4 (B08-3-A4T) Aluminum
6T	SAE-6 (B08-3-6T) Steel
A6T	SAE-6 (B08-3-A6T) Aluminum
4B	1/4" BSPG (B08-3-4B) Steel
A4B	1/4" BSPG (B08-3-A4B) Aluminum
6B	3/8" BSPG (B08-3-6B) Steel
A6B	3/8" BSPG (B08-3-A6B) Aluminum

SERVICE PARTS

Knob Kit Option: 717784-10

Tamper Kit Option: 717785

Nitrile Seal Kit: SK08-3

Fluorocarbon Seal Kit: SK08-3V

Shipping Weight

Cartridge Only .10 kg (.20 lbs.)

General Description

The SVH102 Series, Pilot Operated, Sequence Valves are typically used as unloading valves in hi-lo and other applications.

Operation

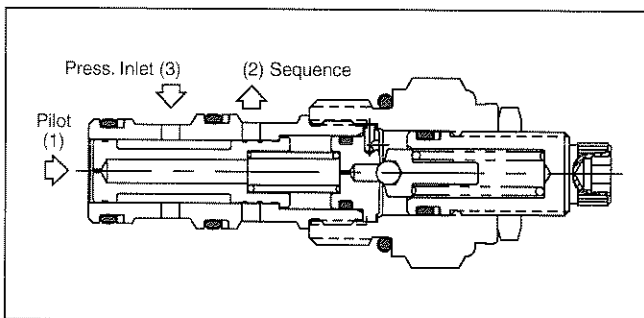
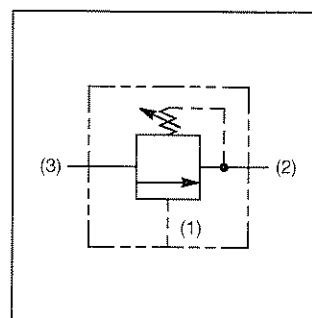
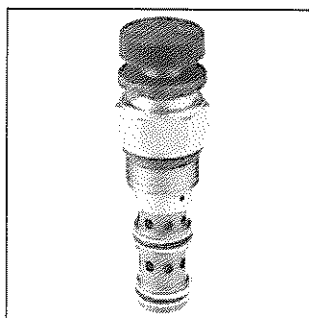
When pilot pressure exceeds the pressure setting of the valve the pilot section opens. This pilot flow creates a pressure imbalance across the main section causing the valve to open, thus permitting flow from inlet to sequence.

Features

- Hardened, precision ground parts for durability
- High accuracy, pilot operation design
- Ball-type pilot for added stability
- All external parts have yellow zinc dichromate. This coating allows them to withstand a 96 hour salt spray.

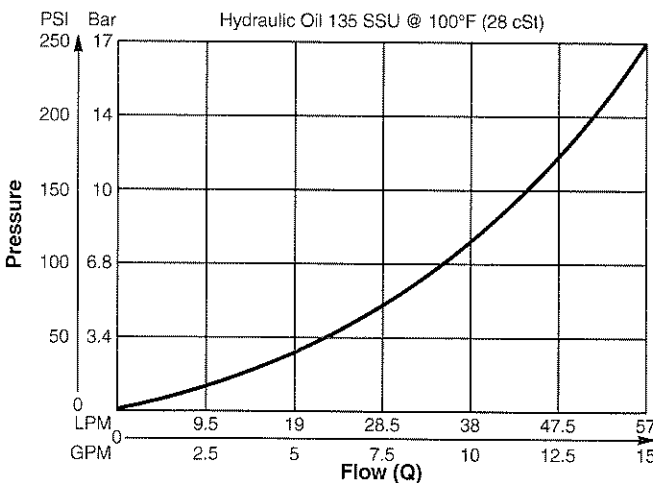
Specifications

Maximum Flow	56.3 LPM (15 GPM)
Maximum Inlet Pressure	380 Bar (5500 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Setting Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Drain Flow	.94 LPM (.25 GPM)
Reseat Pressure	80% of crack pressure
Leakage	82 cc/min.
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C10-3



Performance Curve

Flow vs. Inlet Pressure
 (Through cartridge only)



CHECKS &
SHUTTLES

LOAD & MOTOR
CONTROLS

VOLUME
CONTROLS

PRESSURE
CONTROLS

SOLENOID
VALVES

SPECIALTY
VALVES

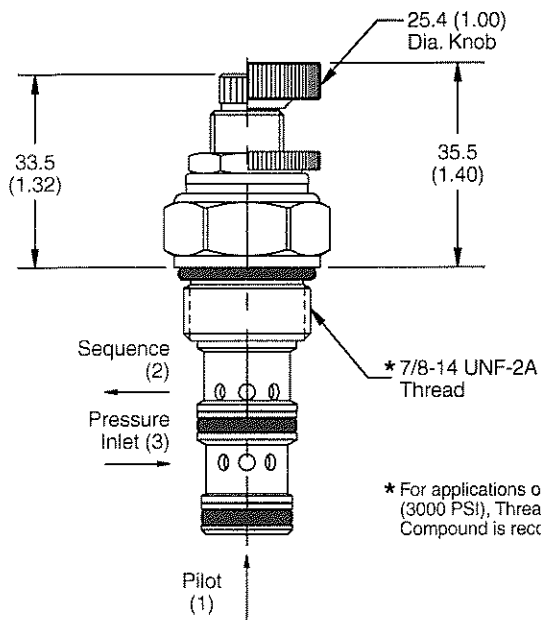
COILS

BODIES

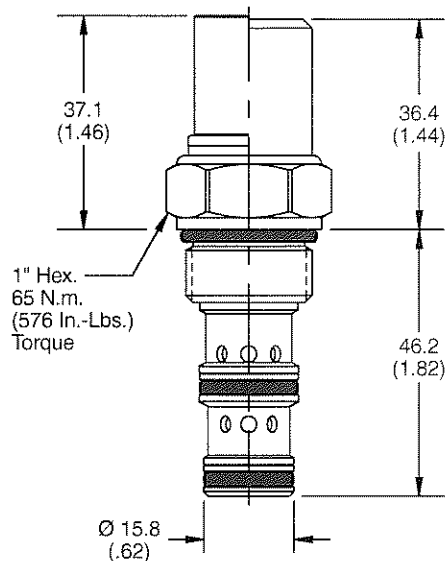
TECHNICAL
DATA

*Inch equivalents for millimeter dimensions are shown in (**)

Cartridge Only

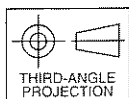
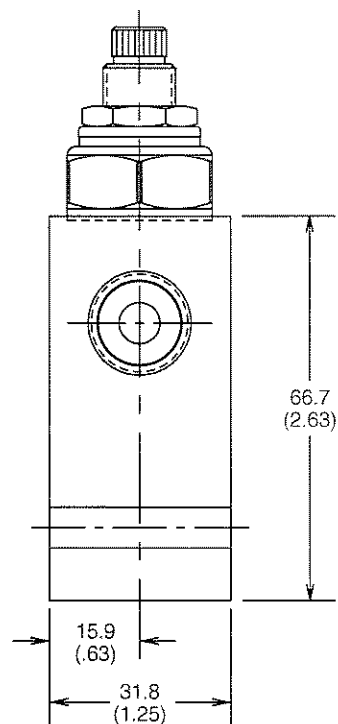
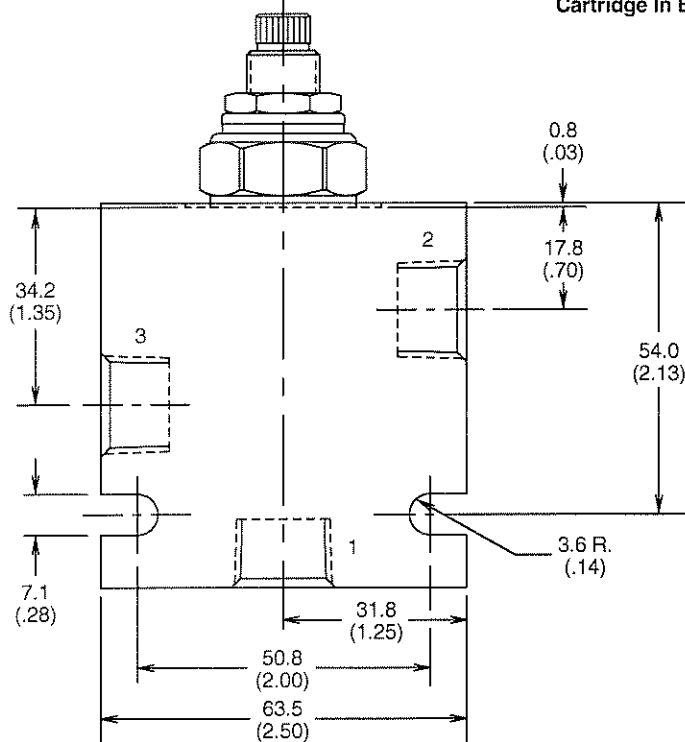


Screw/Knob Version



Fixed Cap/Tamper Resistant Version

Cartridge In Body



svh102.pm6.5, bl, gn

SVH	10	2				—		—																																								
5000 PSI Design P.O. Sequence Valve	Size	Style	Adjustment Style	Pressure Range	Seals		Optional Pressure Setting		Body Option																																							
	7/8-14 UNF-2B Threaded Cavity with .62" Dia. Seat																																															
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 20%;">Code</th> <th>Style</th> </tr> <tr> <td style="text-align: center;">2</td> <td>External Pilot Internal Drain</td> </tr> </table>	Code	Style	2	External Pilot Internal Drain			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 20%;">Code</th> <th>Type</th> </tr> <tr> <td style="text-align: center;">Omit</td> <td>Nitrile</td> </tr> <tr> <td style="text-align: center;">V</td> <td>Fluorocarbon</td> </tr> </table>	Code	Type	Omit	Nitrile	V	Fluorocarbon																																	
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A8P	1/2" NPTF (B10-3-A8P) Aluminum																																															
6T	SAE-6 (B10-3-6T) Steel																																															
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NOTE:
 If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

SERVICE PARTS

Knob Kit Option: 717784-10

Tamper Kit Option: 717785

Nitrile Seal Kit: SK10-3

Fluorocarbon Seal Kit: SK10-3V

Shipping Weight
 Cartridge Only .45 kg (1.0 lbs.)

General Description

The SVH122 Series, Pilot Operated, Sequence Valves are typically used as unloading valves in hi-lo and other applications.

Operation

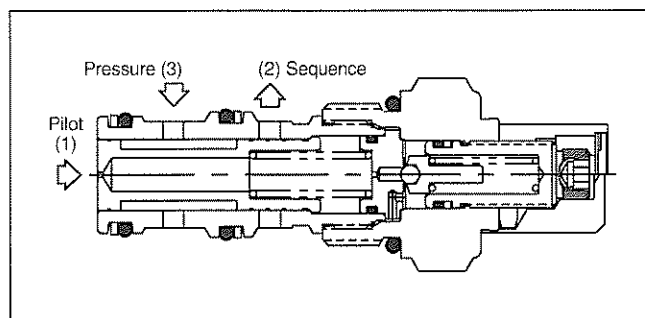
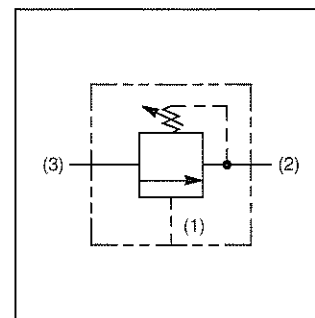
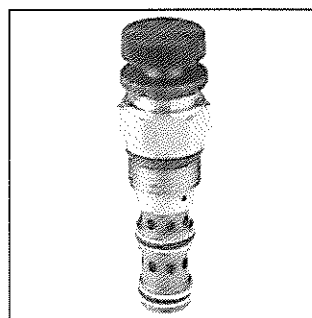
When pilot pressure exceeds the pressure setting of the valve the pilot section opens. This pilot flow creates a pressure imbalance across the main section causing the valve to open, thus permitting flow from inlet to sequence.

Features

- Hardened, precision ground parts for durability
- High accuracy, pilot operation design
- Ball-type pilot for added stability
- All external parts have yellow zinc dichromate. This coating allows them to withstand a 96 hour salt spray.

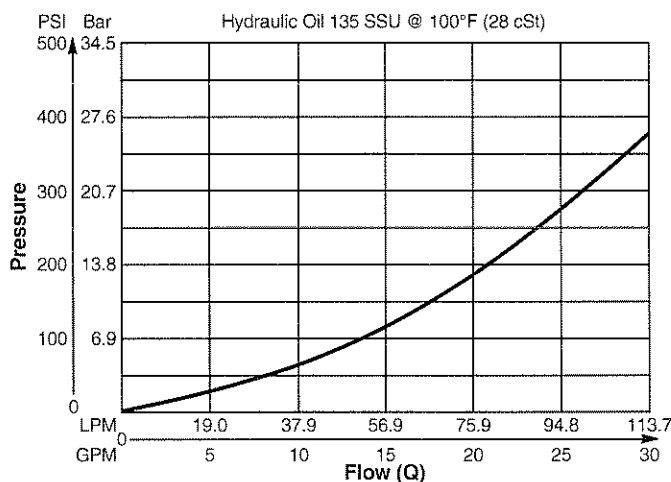
Specifications

Maximum Flow	113.7 LPM (30 GPM)
Maximum Inlet Pressure	380 Bar (5500 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Setting Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Drain Flow	1.9 LPM (.5 GPM)
Reseat Pressure	80% of crack pressure
Leakage	82 cc/min.
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C12-3



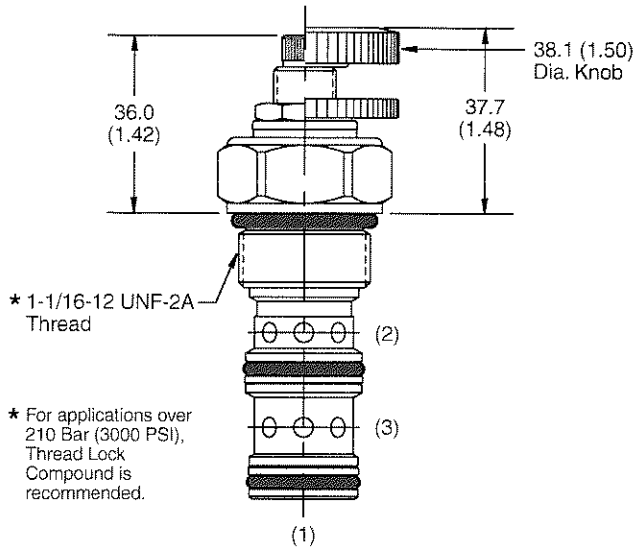
Performance Curve

Flow vs. Inlet Pressure
(Through cartridge only)

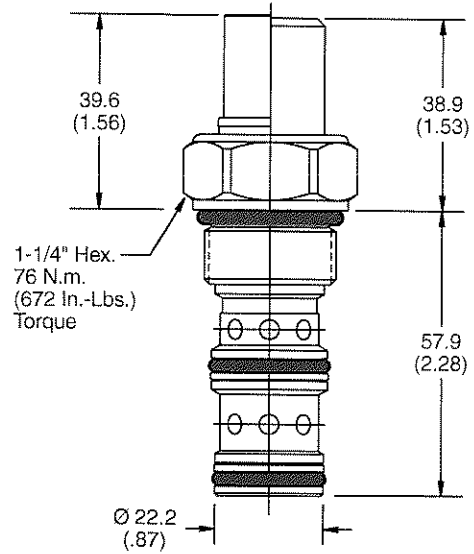


*Inch equivalents for millimeter dimensions are shown in (**)

Cartridge Only

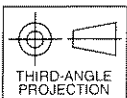
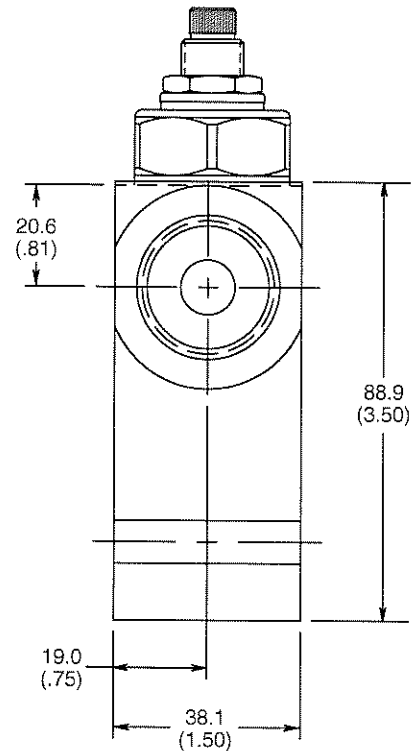
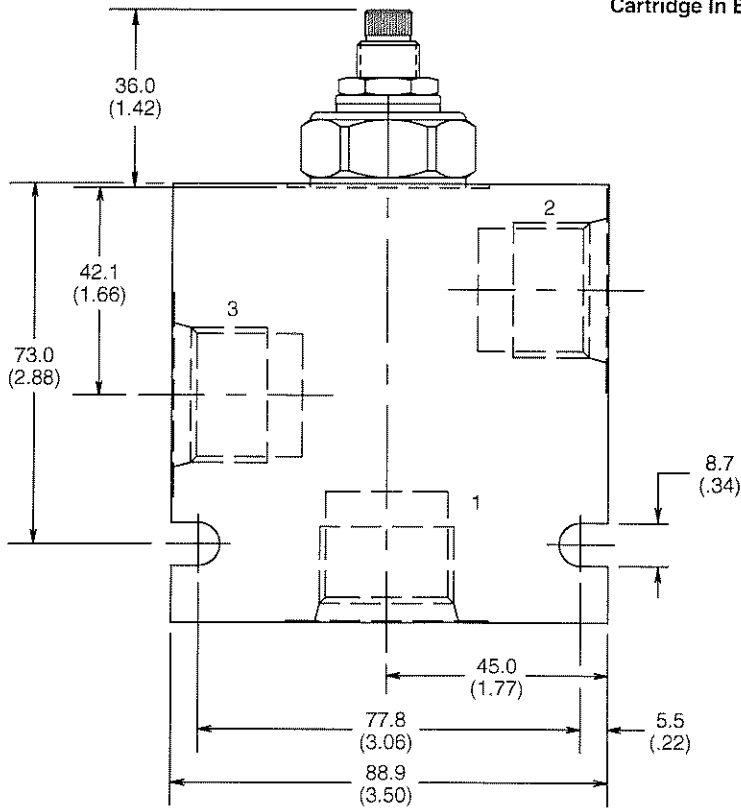


Screw/Knob Version



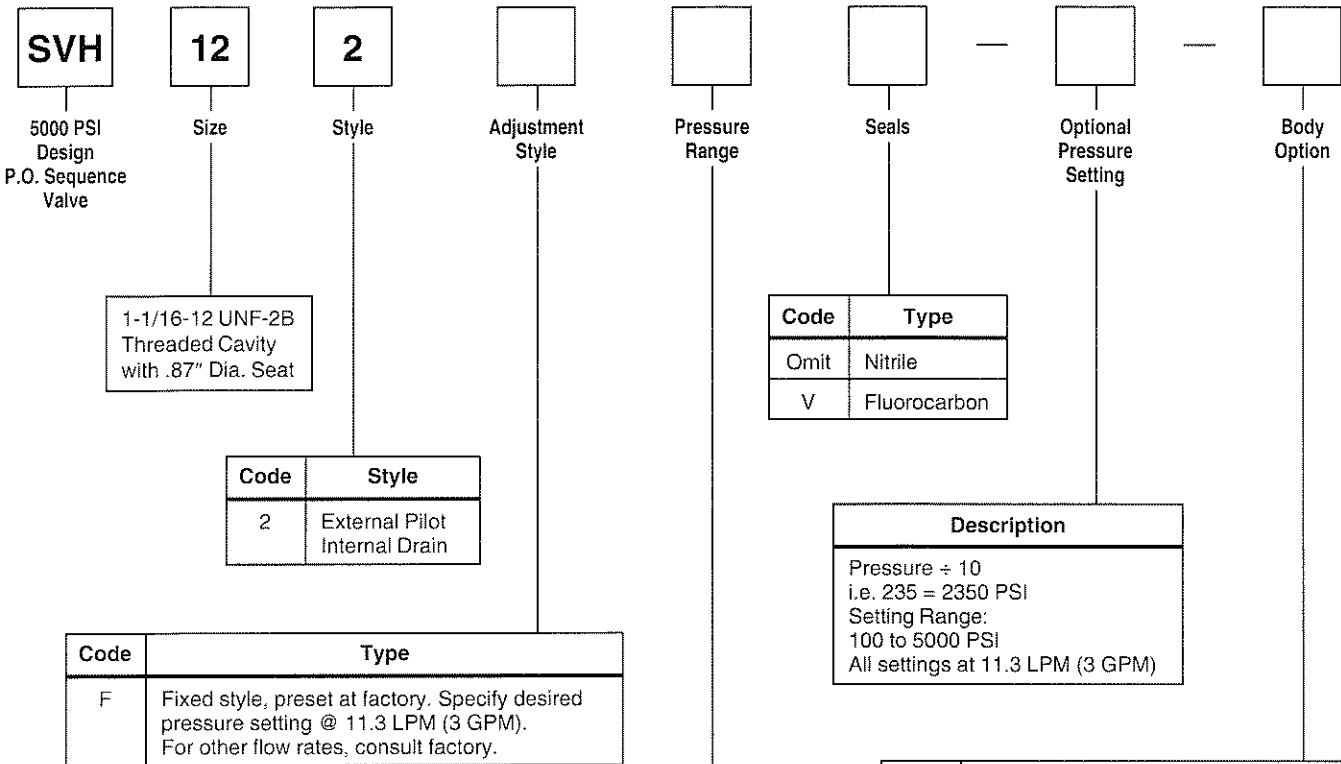
Fixed Cap/Tamper Resistant Version

Cartridge In Body



svh122.pm6.5, bf, gn

CHECKS & SHUTTLES
LOAD & MOTOR CONTROLS
VOLUME CONTROLS
PRESSURE CONTROLS
SOLENOID VALVES
SPECIALTY VALVES
COILS
BODIES
TECHNICAL DATA



SERVICE PARTS
Knob Kit Option: 717784-15
Tamper Kit Option: 717785
Nitrile Seal Kit: SK12-3
Fluorocarbon Seal Kit: SK12-3V

Shipping Weight
Cartridge Only .27 kg (0.6 lbs.)

NOTE:
If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

General Description

The SVH162 Series, Externally, Pilot Operated, Sequence Valves are typically used as unloading valves in hi-lo and other applications.

Operation

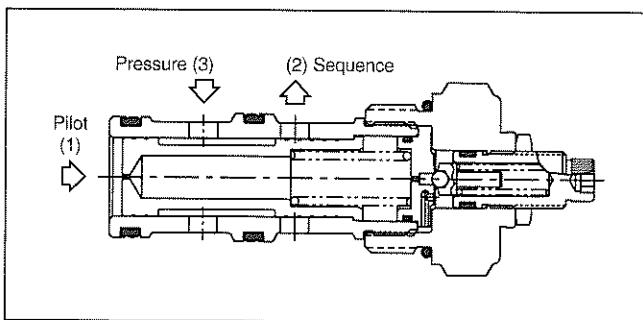
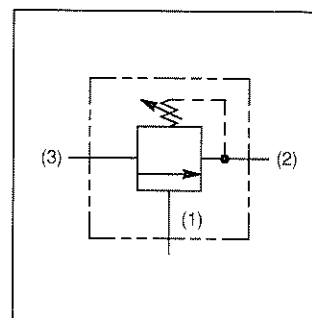
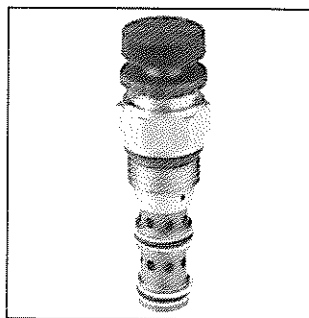
When pilot pressure exceeds the pressure setting of the valve the pilot section opens. This pilot flow creates a pressure imbalance across the main section causing the valve to open, thus permitting flow from inlet to sequence.

Features

- Hardened, precision ground parts for durability
- High accuracy, pilot operation design
- Ball-type pilot for added stability
- All external parts have yellow zinc dichromate. This coating allows them to withstand a 96 hour salt spray.

Specifications

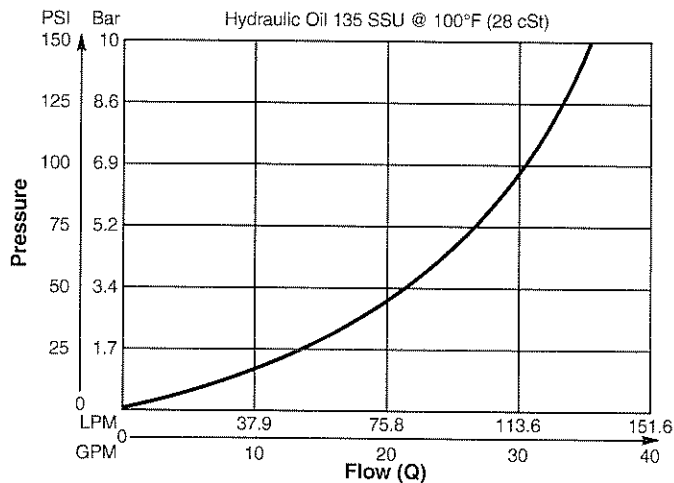
Maximum Flow	151.6 LPM (40 GPM)
Maximum Inlet Pressure	380 Bar (5500 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Setting Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Maximum Drain Flow	1.9 LPM (.5 GPM)
Reseat Pressure	80% of crack pressure
Leakage	82 cc/min.
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C16-3



Performance Curve

Flow vs. Inlet Pressure

(Pressure rise through cartridge only)



CHECKS &
SHUTTLES

LOAD & MOTOR
CONTROLS

VOLUME
CONTROLS

PRESSURE
CONTROLS

SOLENOID
VALVES

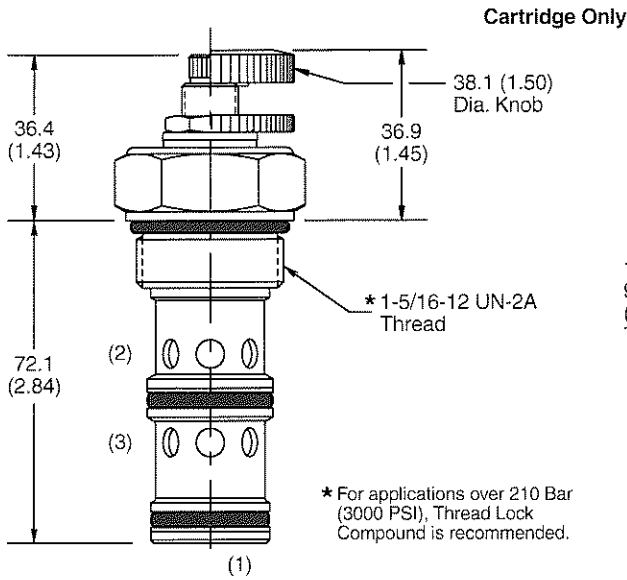
SPECIALTY
VALVES

COILS

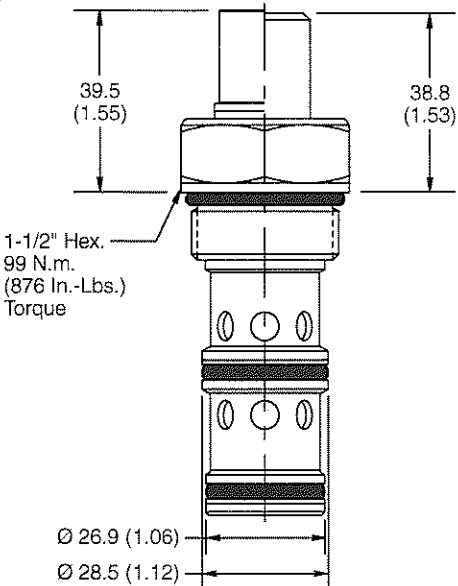
BODIES

TECHNICAL
DATA

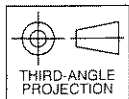
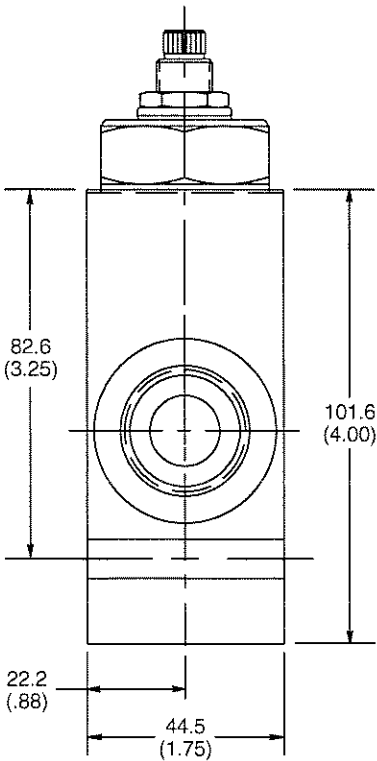
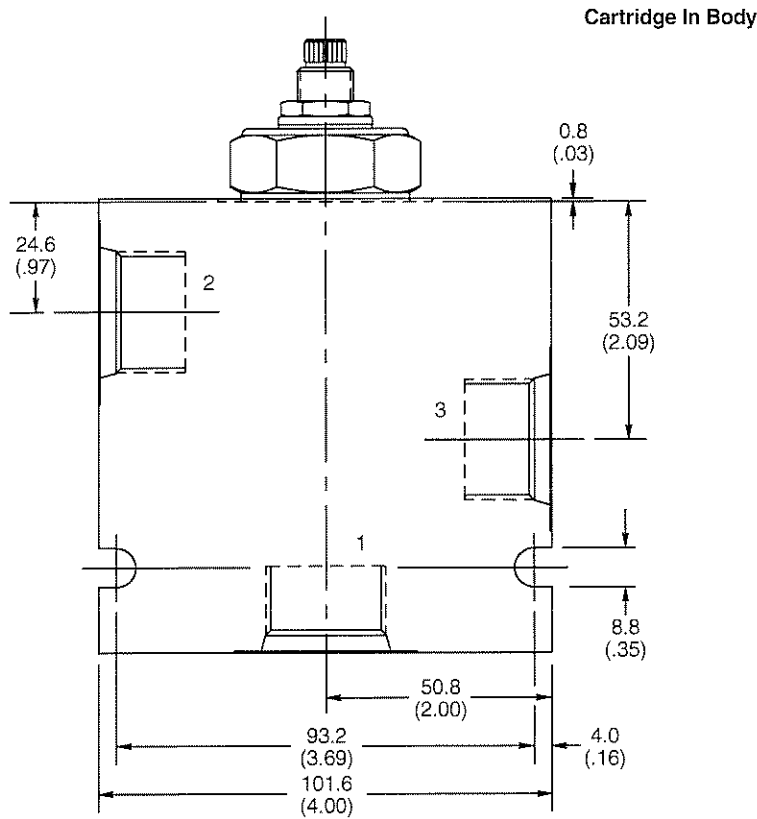
*Inch equivalents for millimeter dimensions are shown in (**)



Screw/Knob Version



Fixed Cap/Tamper Resistant Version



svh162 pm6.5, bl, gn

SVH 5000 PSI Design P.O. Sequence Valve	16 Size	2 Style	Adjustment Style	Pressure Range	Seals	Optional Pressure Setting	Body Option

1-5/16-12 UN-2B Threaded Cavity with 1.06" Dia. Seat

Code	Style
2	External Pilot Internal Drain

Code	Type
F	Fixed style, preset at factory. Specify desired pressure setting @ 11.3 LPM (3 GPM). For other flow rates, consult factory.
K	Knob Adjust
S	Screw Adjust
T	Tamper Resistant Cap

Code	Type
10	6.9 - 69 Bar (100 - 1000 PSI) Standard Setting: 34.5 Bar (500 PSI) @ 11.3 LPM (3 GPM)
20	13.8 - 138 Bar (200 - 2000 PSI) Standard Setting: 69 Bar (1000 PSI) @ 11.3 LPM (3 GPM)
30	20.7 - 207 Bar (300 - 3000 PSI) Standard Setting: 103.5 Bar (1500 PSI) @ 11.3 LPM (3 GPM)
50	34.5 - 345 Bar (500 - 5000 PSI) Standard Setting: 172.4 Bar (2500 PSI) @ 11.3 LPM (3 GPM)

Code	Type
Omit	Nitrile
V	Fluorocarbon

Description
Pressure ÷ 10 i.e. 235 = 2350 PSI Setting Range: 100 to 5000 PSI All settings at 11.3 LPM (3 GPM)

Code	Port Size & Material
Omit	Cartridge Only
12P	3/4" NPTF (B16-3-12P) Steel
A12P	3/4" NPTF (B16-3-A12P) Aluminum
16P	1" NPTF (B16-3-16P) Steel
A16P	1" NPTF (B16-3-A16P) Aluminum
12T	SAE-12 (B16-3-12T) Steel
A12T	SAE-12 (B16-3-A12T) Aluminum
16T	SAE-16 (B16-3-16T) Steel
A16T	SAE-16 (B16-3-A16T) Aluminum

SERVICE PARTS

Knob Kit Option: 717784-15

Tamper Kit Option: 717785

Nitrile Seal Kit: SK16-3

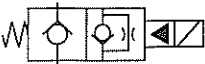
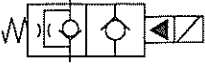
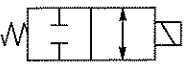
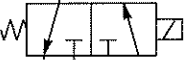
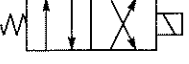
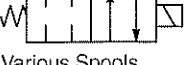
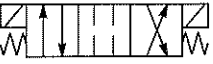
Fluorocarbon Seal Kit: SK16-3V

Shipping Weight

Cartridge Only .40 kg (.90 lbs.)

NOTE:

If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

	SERIES	DESCRIPTION	FLOW	PRESSURE	PAGE NO.
 Normally Closed	DSL081	Poppet-Type, Two-Way Valves	8 GPM	3000 PSI	SV1-SV4
	DSH081	Poppet-Type, Two-Way Valves	8 GPM	5000 PSI	SV5-SV8
 Normally Open	DSL101	Poppet-Type, Two-Way Valves	15 GPM	3000 PSI	SV9-SV12
	DSH101	Poppet-Type, Two-Way Valves	15 GPM	5000 PSI	SV13-SV16
	DSL121	Poppet-Type, Two-Way Valves	24 GPM	3000 PSI	SV17-SV20
	DSH121	Poppet-Type, Two-Way Valves	24 GPM	5000 PSI	SV21-SV24
	DS161	Poppet-Type, Two-Way Valves	40 GPM	3000 PSI	SV25-SV28
	DS201	Poppet-Type, Two-Way Valves	70 GPM	3000 PSI	SV29-SV32
 Normally Closed	DSL082	Spool-Type, Two-Way Valves	3.5 GPM	3000 PSI	SV33-SV35
	DSH082	Spool-Type, Two-Way Valves	3.5 GPM	5000 PSI	SV36-SV38
 Normally Open	DSL102	Spool-Type, Two-Way Valves	7 GPM	3000 PSI	SV39-SV42
	DSH102	Spool-Type, Two-Way Valves	7 GPM	5000 PSI	SV43-SV46
	DS162	Spool-Type, Two-Way Valves	20 GPM	3000 PSI	SV47-SV50
 Various Spools Available	DSL083	Spool-Type, Three-Way Valves	3 GPM	3000 PSI	SV51-SV54
	DSH083	Spool-Type, Three-Way Valves	3 GPM	5000 PSI	SV55-SV58
	DSL103	Spool-Type, Three-Way Valves	6 GPM	3000 PSI	SV59-SV62
	DSH103	Spool-Type, Three-Way Valves	6 GPM	5000 PSI	SV63-SV66
	DS123B	Spool-Type, Three-Way Valves	12 GPM	3000 PSI	SV67-SV69
	DS163	Spool-Type, Three-Way Valves	15 GPM	3000 PSI	SV70-SV73
 Various Spools Available	DSL084	Spool-Type, Four-Way Valves	3 GPM	3000 PSI	SV74-SV77
	DSH084	Spool-Type, Four-Way Valves	3 GPM	5000 PSI	SV78-SV81
 Various Spools Available	DSL104	Spool-Type, Four-Way Valves	5 GPM	3000 PSI	SV82-SV85
	DSH104	Spool-Type, Four-Way Valves	5 GPM	5000 PSI	SV86-SV89
 Various Spools Available	DS085	Spool-Type, Four-Way, Three Position Valves	3 GPM	3000 PSI	SV90-SV93
	DS105	Spool-Type, Four-Way, Three Position Valves	5 GPM	3000 PSI	SV94-SV97

CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

SOLENOID VALVES

SPECIALTY VALVES

COILS

BODIES

TECHNICAL DATA

General Description

The DSL081 solenoid valves are used in circuits requiring on/off valves and low leakage. Single acting cylinder applications typically utilize valves of this type. Valves can be used for bleed down flow and/or raising and lowering a vertical cylinder. Normally open and normally closed configurations plus manual overrides are available.

Operation

Normally Closed

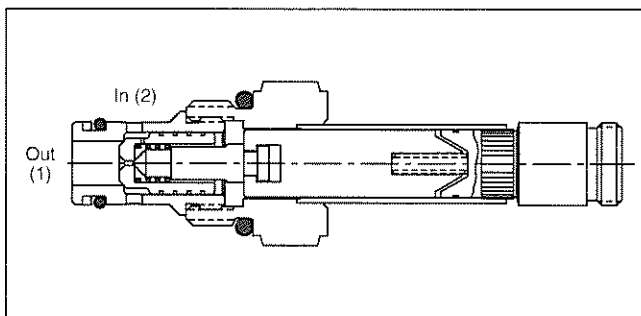
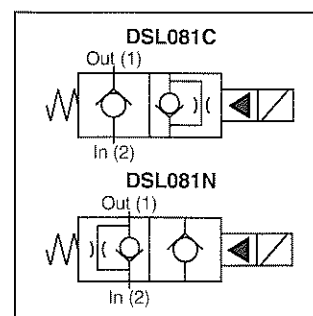
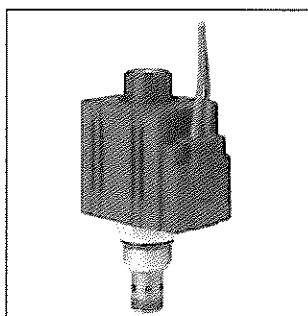
The valve pilot is held on its seat by spring force, blocking pilot flow, allowing pressure at the inlet to hold the poppet on its seat, thus, preventing flow through the valve (inlet to outlet). When the coil is energized, the valve pilot is pulled off its seat, venting pressure inside the poppet to the outlet port creating a pressure imbalance across the main poppet which allows flow from the inlet to the outlet.

Normally Open

The valve pilot is held off of its seat by spring force. Pilot flow is vented to the outlet port, creating a pressure imbalance which moves the main poppet off it's seat; flow then passes from the inlet to the outlet. When the coil is energized, the valve pilot and main poppet are seated, thus blocking flow from the inlet to the outlet.

Features

- Low hysteresis
- Replaceable, one piece encapsulated, coils with minimal amperage draw
- Variety of coil terminations and voltages
- Variety of manual override options available

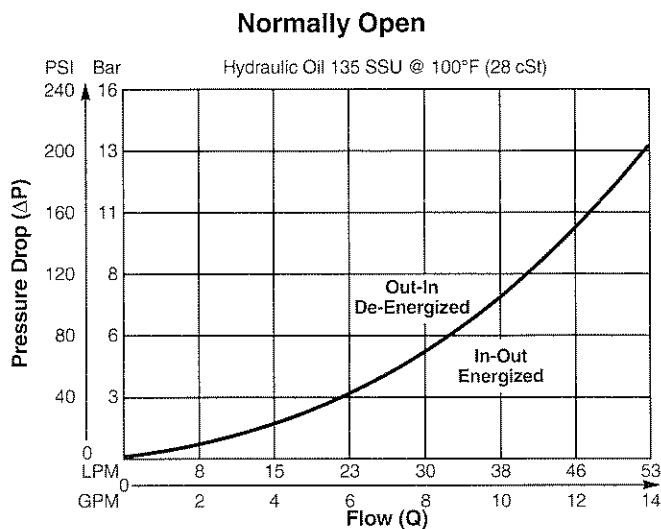
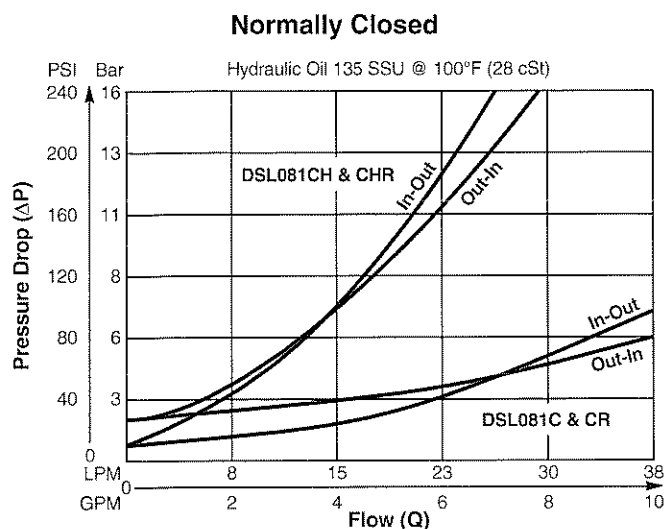


Specifications

Rated Flow (At 70 PSI ΔP)	N.C. 30 LPM (8 GPM) N.C. Fast Res. 11 LPM (3 GPM) N.O. 30 LPM (8 GPM)
Maximum Inlet Pressure	210 Bar (3000 PSI)
Leakage	10 drops/min. (.67 cc/min.) at 210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C08-2

Performance Curves

Pressure Drop vs. Flow (Through cartridge only)



Solenoid Coil Specifications

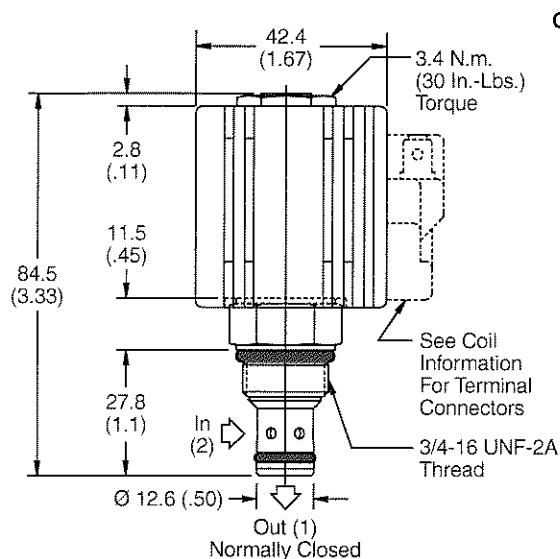
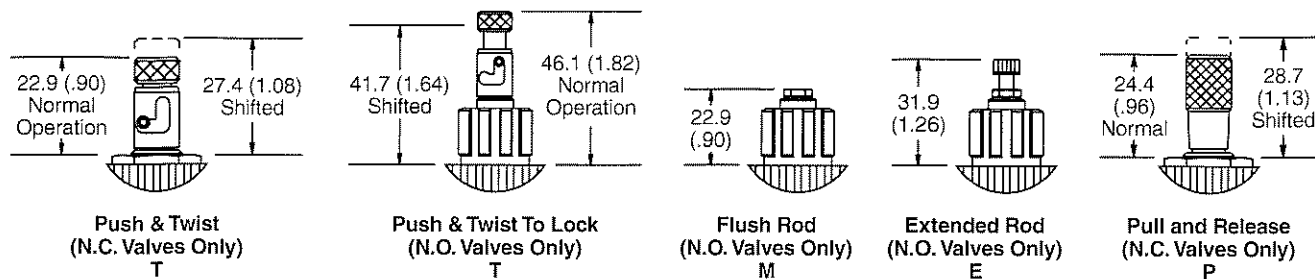
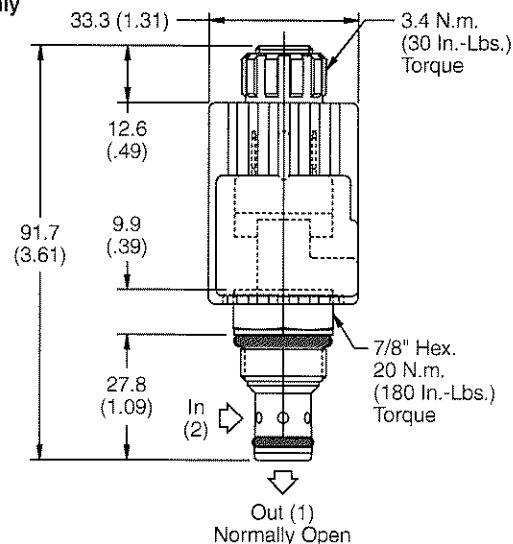
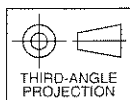
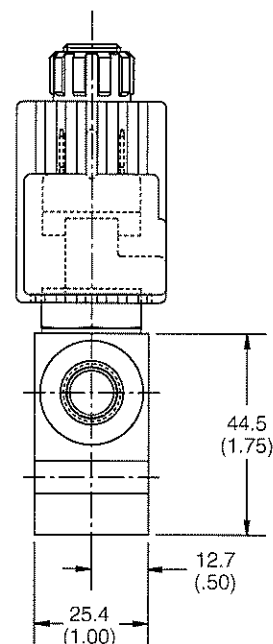
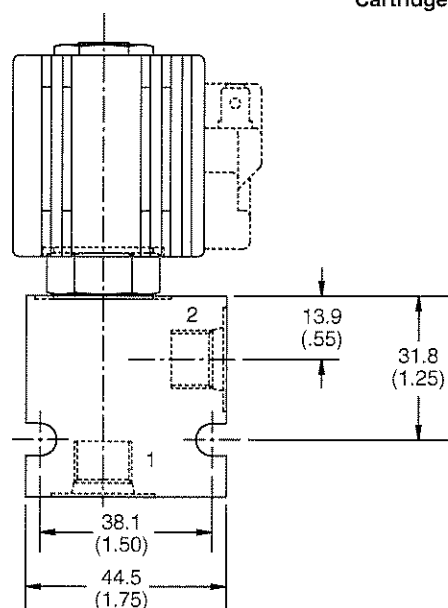
Voltage	10 VDC	12 VDC	24 VDC	120 VAC	240 VAC
Watts	14	14	14	14	14
Amps	1.45	1.17	0.57	.144	.079

Response Time (at nominal flow, 3000 PSI)	DSL081C & CR (Normally Closed)	DSL081CH & CHR (N.C. Fast Res.)	DSL081N & NR (Normally Open)
Open	50ms	30ms	50ms
Close	80ms	60ms	50ms

Wire Class	"N" for all voltages
A.C. Rectifiers	Integral full wave bridge

Dimensions**Poppet-Type, Two-Way Valves
Series DSL081**

*Inch equivalents for millimeter dimensions are shown in (**)

**Cartridge Only****Cartridge In Body**

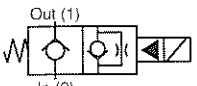
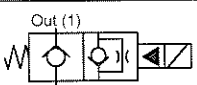
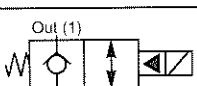
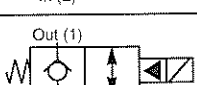
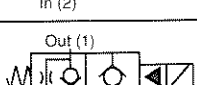
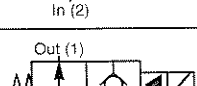
dsl081.pm6.5, bl, gn

DSL	08	1							
Solenoid Valve	Size	Poppet Type	Style	Override Option	Seals	Coil Voltage	Coil Wattage	Coil Termination	Body Option

Code	Style
08	3/4"-16 UNF-2B Threaded Cavity

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Type
Omit	Without Manual Override
E	Push Type Manual Override with Extended Rod (Normally Open Only)
M	Push Type Manual Override with Flush Rod (Normally Open Only)
P	Pull and Release Manual Override (Normally Closed Only)
T	Push & Twist Manual Override

Code	Description
C	Normally Closed, Metered reverse flow. 
CH	Normally Closed, Metered reverse flow. Fast response 
CHR	Normally Closed, Full reverse flow. Fast response 
CR	Normally Closed, Full reverse flow. 
N	Normally Open, Metered reverse flow. 
NR	Normally Open, Full reverse flow. 

Code	Description
Omit	Cartridge without Coil
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120/110 VAC, 60/50 Hz
A240	240/220 VAC, 60/50 Hz

Code	Description
Omit	Cartridge without Coil
C	1/2" NPTF Conduit Connector with 24" 18 AWG Wires
D	DIN 43650 (Hirschmann) Plug Face
P	SAE 1B-0.25 SAE Double Spade (DC Only)
W	Double Wire, 24" 18 AWG (DC Only)
WP	Waterproof Double Wire, 24" 16 AWG (DC Only)

Code	Port Size & Material
Omit	Cartridge Only
4P	1/4" NPTF (B08-2-4P) Steel
A4P	1/4" NPTF (B08-2-A4P) Aluminum
6P	3/8" NPTF (B08-2-6P) Steel
A6P	3/8" NPTF (B08-2-A6P) Aluminum
4T	SAE-4 (B08-2-4T) Steel
A4T	SAE-4 (B08-2-A4T) Aluminum
6T	SAE-6 (B08-2-6T) Steel
A6T	SAE-6 (B08-2-A6T) Aluminum
4B	1/4" BSPG (B08-2-4B) Steel
A4B	1/4" BSPG (B08-2-A4B) Aluminum
6B	3/8" BSPG (B08-2-6B) Steel
A6B	3/8" BSPG (B08-2-A6B) Aluminum

CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

SOLENOID VALVES

SPECIALTY VALVES

COILS

BODIES

TECHNICAL DATA

SERVICE PARTS

Coil Size	Coil Wattage	Coil Termination	Coil Voltage																																		
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%;">Code</th> <th style="width: 90%;">Size</th> </tr> <tr> <td style="text-align: center;">S8</td> <td>1/2" I.D.</td> </tr> <tr> <td style="text-align: center;">SW8</td> <td>1/2" I.D.</td> </tr> </table>	Code	Size	S8	1/2" I.D.	SW8	1/2" I.D.	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%;">Code</th> <th style="width: 90%;">Type</th> </tr> <tr> <td style="text-align: center;">L</td> <td>14 Watts</td> </tr> </table>	Code	Type	L	14 Watts	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%;">Code</th> <th style="width: 90%;">Description</th> </tr> <tr> <td style="text-align: center;">C</td> <td>Conduit</td> </tr> <tr> <td style="text-align: center;">D</td> <td>DIN 43650</td> </tr> <tr> <td style="text-align: center;">P</td> <td>Double Spade</td> </tr> <tr> <td style="text-align: center;">W</td> <td>Double Wire</td> </tr> <tr> <td style="text-align: center;">WP</td> <td>Waterproof Double Wire</td> </tr> </table>	Code	Description	C	Conduit	D	DIN 43650	P	Double Spade	W	Double Wire	WP	Waterproof Double Wire	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%;">Code</th> <th style="width: 90%;">Description</th> </tr> <tr> <td style="text-align: center;">D010</td> <td>10 VDC</td> </tr> <tr> <td style="text-align: center;">D012</td> <td>12 VDC</td> </tr> <tr> <td style="text-align: center;">D024</td> <td>24 VDC</td> </tr> <tr> <td style="text-align: center;">A120</td> <td>120 VAC</td> </tr> <tr> <td style="text-align: center;">A240</td> <td>240 VAC</td> </tr> </table>	Code	Description	D010	10 VDC	D012	12 VDC	D024	24 VDC	A120	120 VAC	A240	240 VAC
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DIN Connector:
 PG9 Black—710549-00
 PG11 Black — 692914
 PG11 Grey — 692915

Coil Nut:
 DSL081C Series — 118127-00
 DSL081N Series — 118194-01

Nitrile Seal Kit:
 DSL081 Series — SK08-2

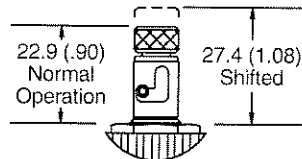
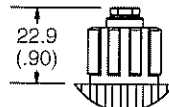
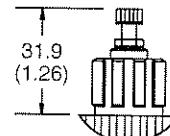
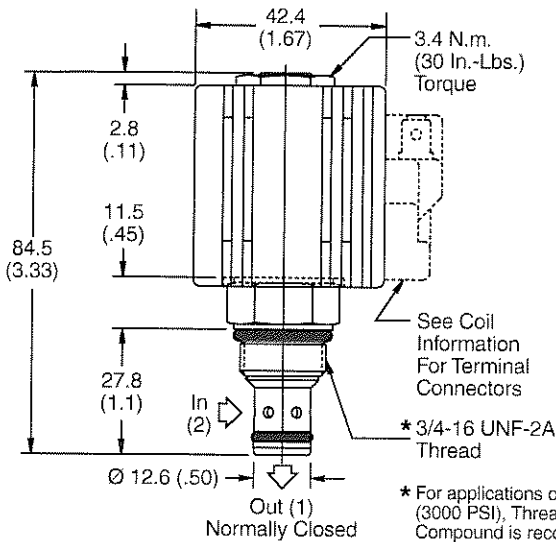
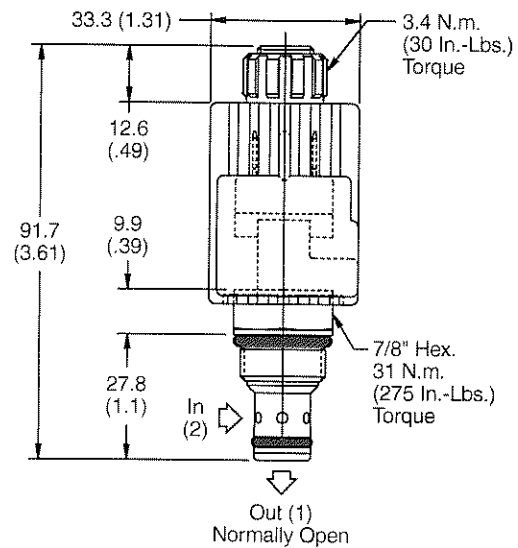
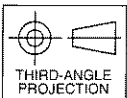
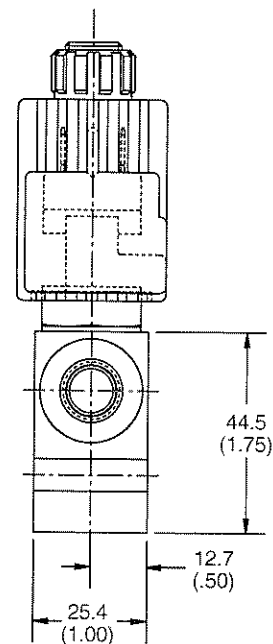
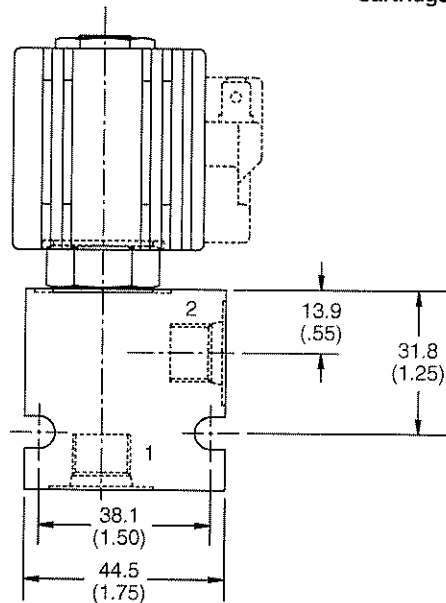
Fluorocarbon Seal Kit:
 DSL081 Series — SK08-2V

Notes: See 1/2" Unicoids Data Sheet for more options.
 For other coil voltages and terminations, consult factory.
 S8 Coil applies to all terminations except WP.
 SW8 Coil applies to WP termination only.

Shipping Weight
 Cartridge Only .10 kg (.23 lbs.)

Dimensions**Poppet-Type, Two-Way Valves
Series DSH081**

*Inch equivalents for millimeter dimensions are shown in (**)

**Push & Twist
(N.C. Valves Only)**
T**Flush Rod
(N.O. Valves Only)**
M**Extended Rod
(N.O. Valves Only)**
E**Cartridge Only****Cartridge In Body**

dsh081.pm6.5, bl, gn

DSH	08	1							
Solenoid Valve	Size	Poppet Type	Style	Override Option	Seals	Coil Voltage	Coil Wattage	Coil Termination	Body Option

Code	Style
08	3/4"-16 UNF-2B Threaded Cavity

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Type
Omit	Cartridge without Coil
L	14 Watt

Code	Description	
C	Normally Closed, Metered reverse flow.	
CH	Normally Closed, Metered reverse flow. Fast response	
CHR	Normally Closed, Full reverse flow. Fast response	
CR	Normally Closed, Full reverse flow.	
N	Normally Open, Metered reverse flow.	
NR	Normally Open, Full reverse flow.	

Code	Type
Omit	Without Manual Override
E	Push Type Manual Override with Extended Rod (Normally Open Only)
M	Push Type Manual Override with Flush Rod (Normally Open Only)
T	Push & Twist Manual Override (Normally Closed Only)

Code	Description
Omit	Cartridge without Coil
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120/110 VAC, 60/50 Hz
A240	240/220 VAC, 60/50 Hz

Code	Description
Omit	Cartridge without Coil
C	1/2" NPTF Conduit Connector with 24" 18 AWG Wires
D	DIN 43650 (Hirschmann) Plug Face
P	SAE 1B-0.25 SAE Double Spade (DC Only)
W	Double Wire, 24" 18 AWG (DC Only)
WP	Waterproof Double Wire, 24" 16 AWG (DC Only)

Code	Port Size & Material
Omit	Cartridge Only
4P	1/4" NPTF (B08-2-4P) Steel
A4P	1/4" NPTF (B08-2-A4P) Aluminum
6P	3/8" NPTF (B08-2-6P) Steel
A6P	3/8" NPTF (B08-2-A6P) Aluminum
4T	SAE-4 (B08-2-4T) Steel
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SERVICE PARTS

Coil Size	Coil Wattage	Coil Termination	Coil Voltage										
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S8	1/2" I.D.												
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DIN Connector:
 PG9 Black — 710549-00
 PG11 Black — 692914
 PG11 Grey — 692915

Coil Nut:
 DSH081C Series — 118127-00
 DSH081N Series — 118194-01

Nitrile Seal Kit:
 DSH081 Series — SK08-2

Fluorocarbon Seal Kit:
 DSH081 Series — SK08-2V

Code	Description
C	Conduit
D	DIN 43650
P	Double Spade
W	Double Wire
WP	Waterproof Double Wire

Code	Description
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120 VAC
A240	240 VAC

Notes: See 1/2" Unicolls Data Sheet for more options. For other coil voltages and terminations, consult factory. S8 Coil applies to all terminations except WP. SW8 Coil applies to WP termination only.

NOTE:
 If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

Shipping Weight
 Cartridge Only .23 kg (.50 lbs.)

General Description

The DSL101C and DSL101N 2-way, poppet-type, solenoid valves are used in applications requiring on/off valves and low leakage. Single acting cylinder applications typically utilize valves of this type. Valves can be used for bleed down flow and/or raising and lowering a vertical cylinder. Normally open and normally closed configurations plus manual overrides are available.

Operation

Normally Closed

The valve pilot is held on its seat by spring force, blocking pilot flow. This allows pressure at the inlet to hold the poppet on its seat, thus, preventing flow through the valve (inlet to outlet). When the coil is energized, the valve pilot is pulled off its seat. This vents pressure inside the poppet to the outlet port, creating a pressure imbalance across the main poppet which allows flow from the inlet to the outlet.

Normally Closed, Fast Response

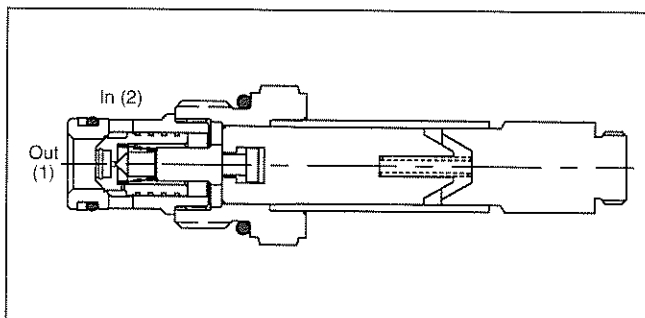
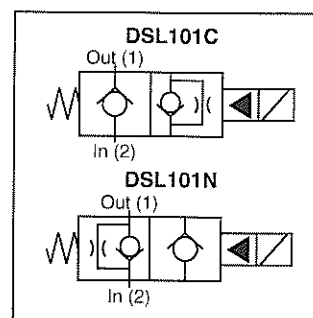
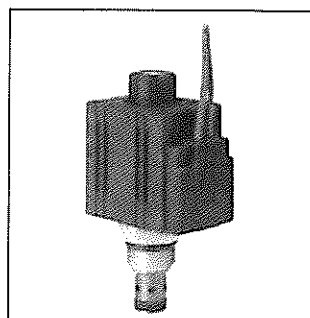
The operation of this version is identical to the normally closed valve except for the travel of the poppet. The distance that the poppet travels is much shorter. This gives the fast response valve a faster opening time and a reduced maximum flow rate.

Normally Open

The valve pilot is held off of its seat by spring force. Pilot flow is vented to the outlet port, creating a pressure imbalance that moves the main poppet off its seat, allowing flow from the inlet to the outlet. When the coil is energized, the valve pilot and main poppet are forced to close, thus blocking flow from the inlet to the outlet.

Features

- Low hysteresis
- Replaceable, one piece encapsulated, coils with minimal amperage draw
- Variety of coil terminations and voltages
- Variety of manual override options available

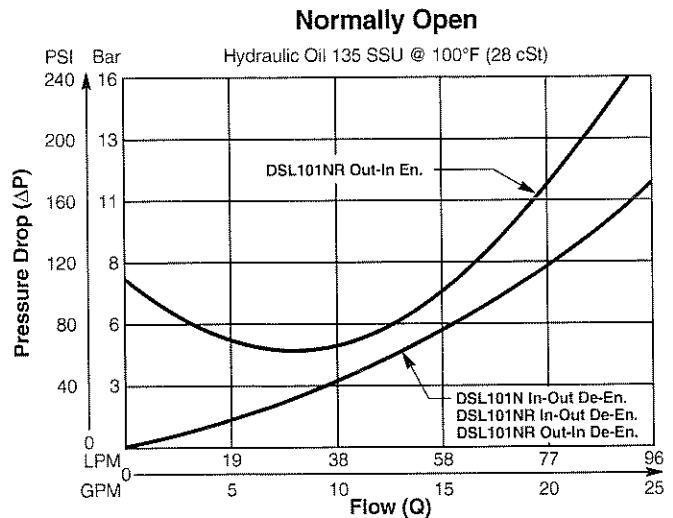
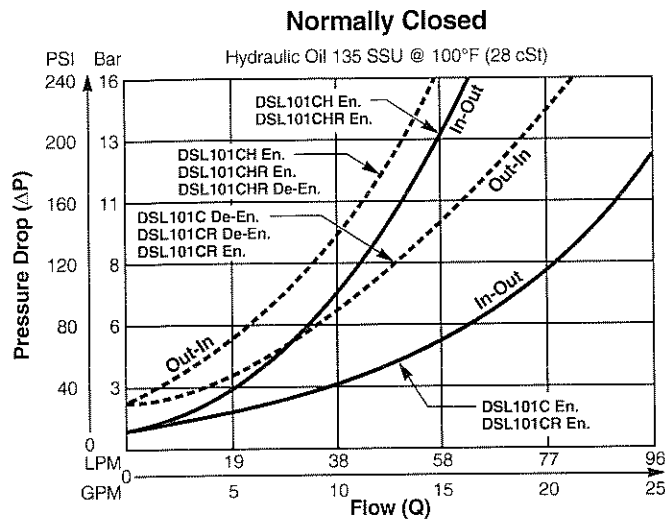


Specifications

Rated Flow (At 70 PSI ΔP)	DSL101CH & DSL101CHR 30 LPM (8 GPM) All other versions 60 LPM (15 GPM)
Maximum Inlet Pressure	210 Bar (3000 PSI)
Leakage	10 drops/min. (.67 cc/min.) at 210 Bar (3000 PSI)
Minimum Operating Voltage	90% of rated voltage at 210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C10-2

Performance Curves

Pressure Drop vs. Flow (Through cartridge only)



Solenoid Coil Specifications

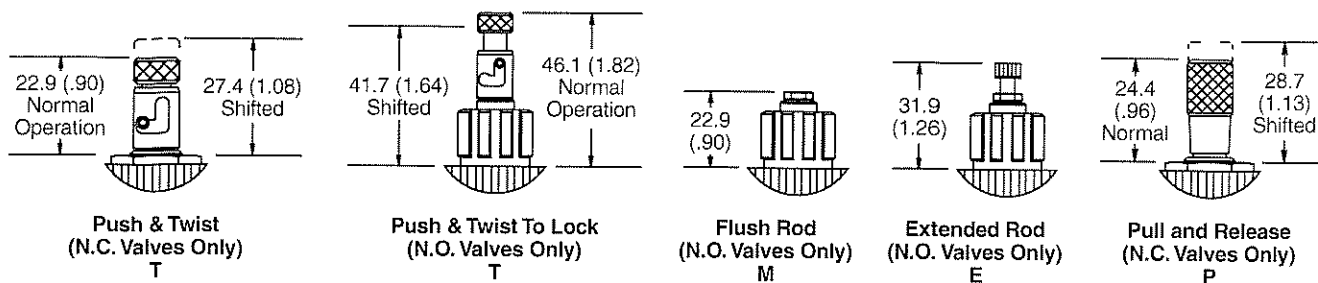
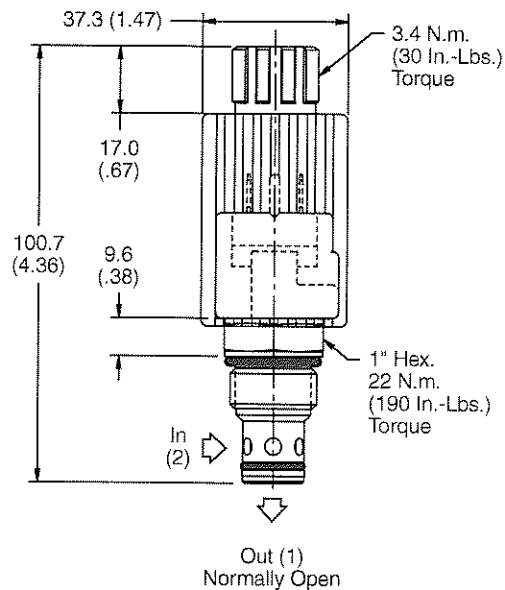
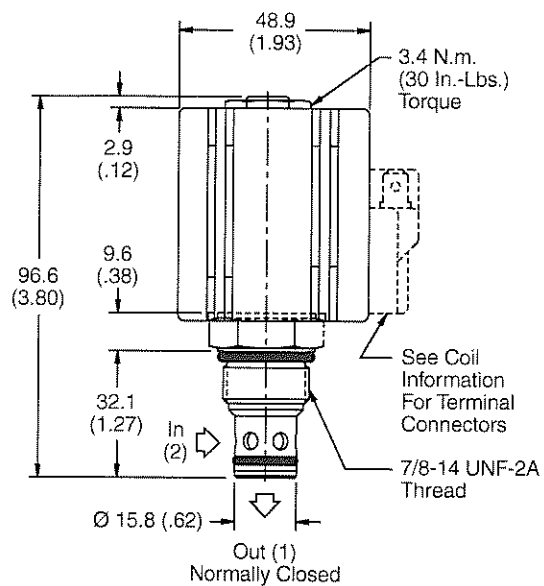
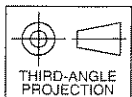
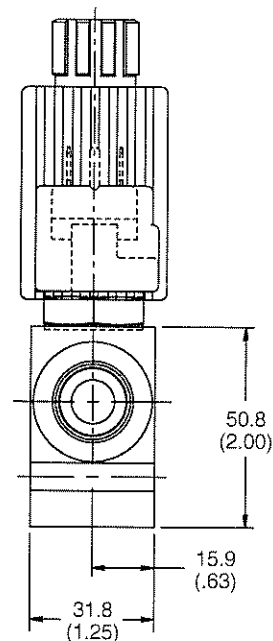
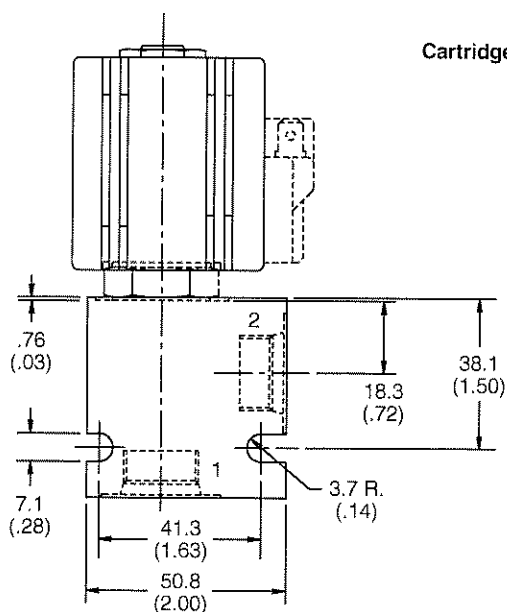
Voltage	10 VDC	12 VDC	24 VDC	120 VAC	240 VAC
Watts	21	20	21	17.8	18.6
Amps	2.1	1.67	.88	.17	.09

Response Time (at nominal flow, 3000 PSI)	DSL101C & DSL101CR (Normally Closed)	DSL101CH & DSL101CHR (N.C. Fast Res.)	DSL101N & DSL101NR (Normally Open)
Open	80ms	50ms	35ms
Close	150ms	50ms	175ms

Wire Class	"N" for all voltages
A.C. Rectifiers	Integral full wave bridge

Dimensions**Poppet-Type, Two-Way Valves
Series DSL101**

*Inch equivalents for millimeter dimensions are shown in (**)

**Cartridge Only****Cartridge In Body**

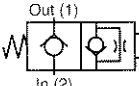
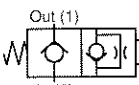
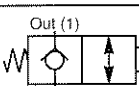
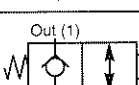
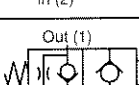
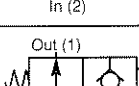
dsl101.pm6.5, bl, gn

DSL	10	1							
Solenoid Valve	Size	Poppet Type	Style	Override Option	Seals	Coil Voltage	Coil Wattage	Coil Termination	Body Option

Code	Style
10	7/8"-14 UNF-2B Threaded Cavity

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Type
Omit	Cartridge without Coil
L	20 Watt

Code	Description	
C	Normally Closed, Metered reverse flow.	
CH	Normally Closed, Metered reverse flow. Fast response	
CHR	Normally Closed, Full reverse flow. Fast response	
CR	Normally Closed, Full reverse flow.	
N	Normally Open, Metered reverse flow.	
NR	Normally Open, Full reverse flow.	

Code	Type
Omit	Without Manual Override
E	Push Type Manual Override with Extended Rod (Normally Open Only)
M	Push Type Manual Override with Flush Rod (Normally Open Only)
P	Pull & Release Manual Override (Normally Closed Only)
T	Push & Twist Manual Override

Code	Description
Omit	Cartridge without Coil
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120/110 VAC, 60/50 Hz
A240	240/220 VAC, 60/50 Hz

Code	Description
Omit	Cartridge without Coil
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120 VAC
A240	240 VAC

Code	Port Size & Material
Omit	Cartridge Only
4P	1/4" NPTF (B10-2-4P) Steel
A4P	1/4" NPTF (B10-2-A4P) Aluminum
6P	3/8" NPTF (B10-2-6P) Steel
A6P	3/8" NPTF (B10-2-A6P) Aluminum
8P	1/2" NPTF (B10-2-8P) Steel
A8P	1/2" NPTF (B10-2-A8P) Aluminum
6T	SAE-6 (B10-2-6T) Steel
A6T	SAE-6 (B10-2-A6T) Aluminum
8T	SAE-8 (B10-2-8T) Steel
A8T	SAE-8 (B10-2-A8T) Aluminum
4B	1/4" BSPG (B10-2-4B) Steel
A4B	1/4" BSPG (B10-2-A4B) Aluminum
6B	3/8" BSPG (B10-2-6B) Steel
A6B	3/8" BSPG (B10-2-A6B) Aluminum
8B	1/2" BSPG (B10-2-8B) Steel
A8B	1/2" BSPG (B10-2-A8B) Aluminum

Shipping Weight
 Cartridge Only .20 kg (0.41 lbs.)

SERVICE PARTS

Coil Size	Coil Wattage	Coil Termination	Coil Voltage										
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 20%;">Code</th> <th style="width: 80%;">Size</th> </tr> <tr> <td>S10</td> <td>5/8" I.D.</td> </tr> <tr> <td>SW10</td> <td>5/8" I.D.</td> </tr> </table>	Code	Size	S10	5/8" I.D.	SW10	5/8" I.D.	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 20%;">Code</th> <th style="width: 80%;">Type</th> </tr> <tr> <td>L</td> <td>20 Watts</td> </tr> </table>	Code	Type	L	20 Watts		
Code	Size												
S10	5/8" I.D.												
SW10	5/8" I.D.												
Code	Type												
L	20 Watts												

Code	Description
C	Conduit
D	DIN 43650
P	Double Spade
W	Double Wire
WP	Waterproof Double Wire

Code	Description
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120 VAC
A240	240 VAC

DIN Connector:
 PG9 Black — 710549-00
 PG11 Black — 692914
 PG11 Grey — 692915

Coil Nut:
 DSL101C, CR, CH — 118127-00
 DSL101N, NR — 118113-00

Nitrile Seal Kit:
 DSL101 — SK10-2

Fluorocarbon Seal Kit:
 DSL101 — SK10-2V

Notes: See 5/8" Unicoids Data Sheet for more options.
 For other coil voltages and terminations, consult factory.
 S10 Coil applies to all terminations except WP.
 SW10 Coil applies to WP termination only.

dsl101.pm6.5, bl, gn

General Description

The DSH101C and DSH101N 2-way, poppet-type, solenoid valves are used in applications requiring on/off valves and low leakage. Single acting cylinder applications typically utilize valves of this type. Valves can be used for bleed down flow and/or raising and lowering a vertical cylinder. Normally open and normally closed configurations plus manual overrides are available.

Operation

Normally Closed

The valve pilot is held on its seat by spring force, blocking pilot flow. This allows pressure at the inlet to hold the poppet on its seat, thus, preventing flow through the valve (inlet to outlet). When the coil is energized, the valve pilot is pulled off its seat. This vents pressure inside the poppet to the outlet port, creating a pressure imbalance across the main poppet which allows flow from the inlet to the outlet.

Normally Closed, Fast Response

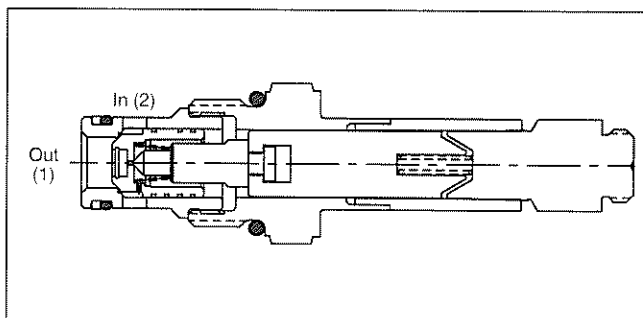
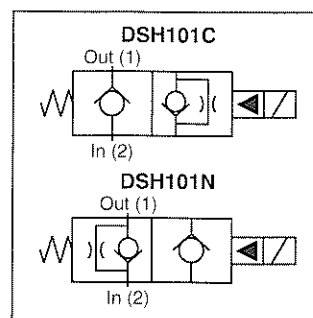
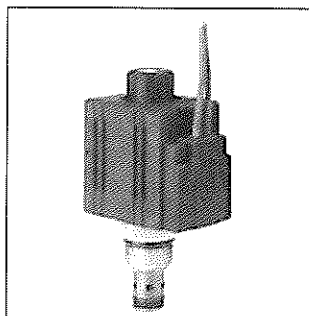
The operation of this version is identical to the normally closed valve except for the travel of the poppet. The distance that the poppet travels is much shorter. This gives the fast response valve a faster opening time and a reduced maximum flow rate.

Normally Open

The valve pilot is held off of its seat by spring force. Pilot flow is vented to the outlet port, creating a pressure imbalance that moves the main poppet off its seat, allowing flow from the inlet to the outlet. When the coil is energized, the valve pilot and main poppet are forced to close, thus blocking flow from the inlet to the outlet.

Features

- Low hysteresis
- Replaceable, one piece encapsulated, coils with minimal amperage draw
- Variety of coil terminations and voltages
- Variety of manual override options available

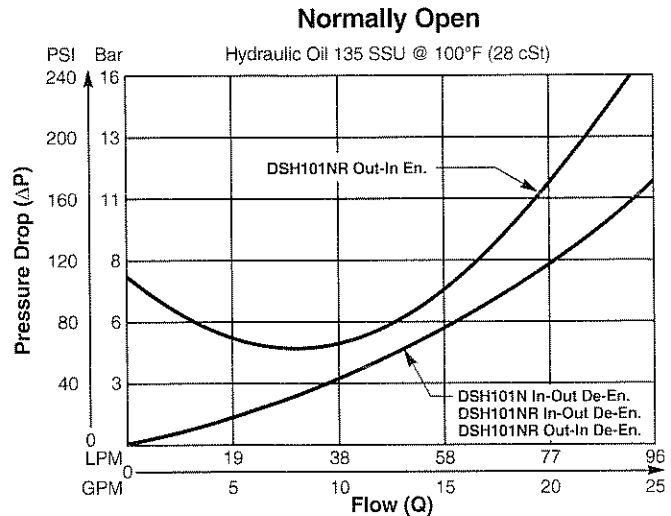
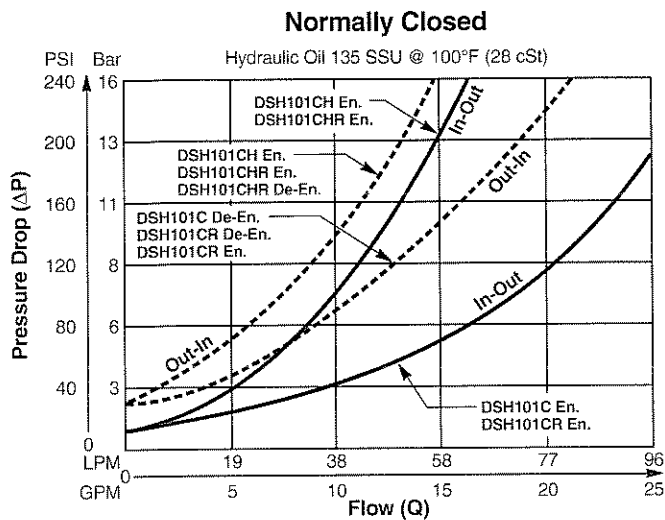


Specifications

Rated Flow (At 70 PSI ΔP)	DSH101CH & DSH101CHR 30 LPM (8 GPM) All other versions 60 LPM (15 GPM)
Maximum Inlet Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Leakage	10 drops/min. (.67 cc/min.) at 345 Bar (5000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C10-2

Performance Curves

Pressure Drop vs. Flow (Through cartridge only)



Solenoid Coil Specifications

Voltage	10 VDC	12 VDC	24 VDC	120 VAC	240 VAC
Watts	21	20	21	17.8	18.6
Amps	2.1	1.67	.88	.17	.09

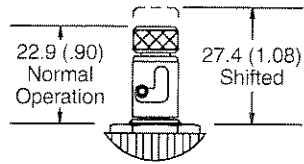
Response Time (at nominal flow, 5000 PSI)	DSH101C & DSH101CR (Normally Closed)	DSH101CH & DSH101CHR (N.C. Fast Res.)	DSH101N & DSH101NR (Normally Open)
Open	100ms	50ms	35ms
Close	175ms	90ms	175ms

Wire Class	"N" for all voltages
A.C. Rectifiers	Integral full wave bridge

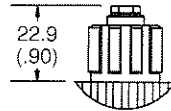
Dimensions

Poppet-Type, Two-Way Valves
Series DSH101

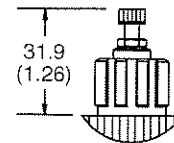
*Inch equivalents for millimeter dimensions are shown in (**)



Push & Twist
(N.C. Valves Only)
T

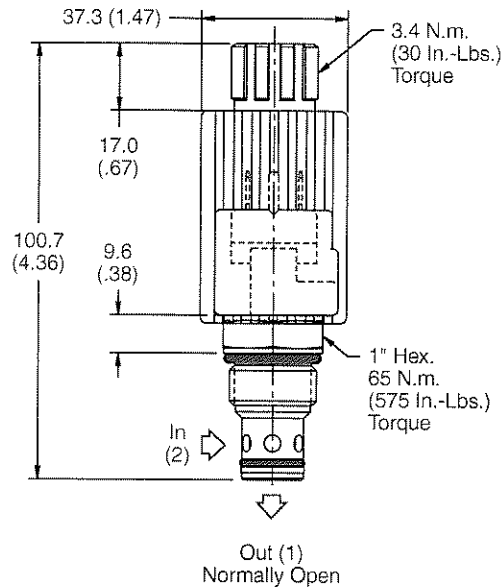
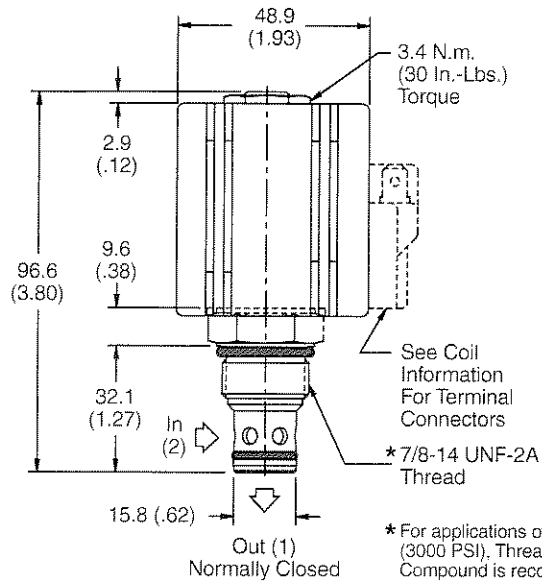


Flush Rod
(N.O. Valves Only)
M

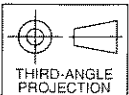
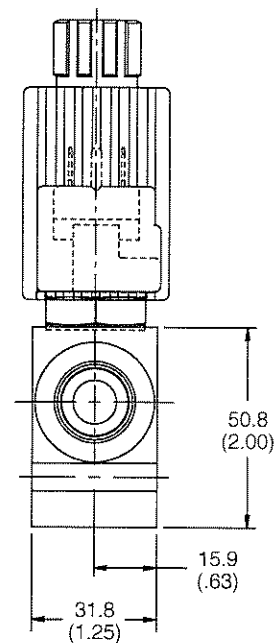
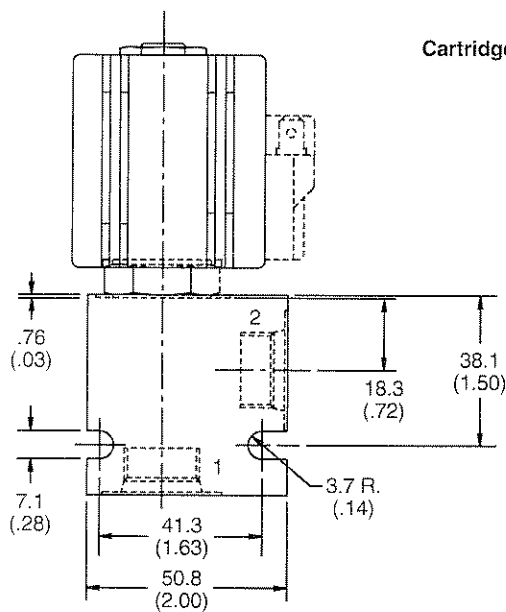


Extended Rod
(N.O. Valves Only)
E

Cartridge Only



Cartridge In Body



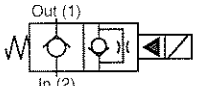
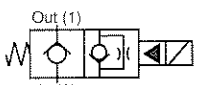
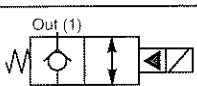
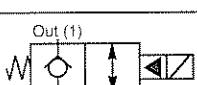
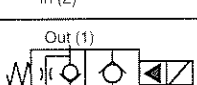
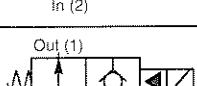
dsh101.pm6.5, bl, gn

DSH	10	1							
Solenoid Valve	Size	Poppet Type	Style	Override Option	Seals	Coil Voltage	Coil Wattage	Coil Termination	Body Option

Code	Style
10	7/8"-14 UNF-2B Threaded Cavity

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Type
Omit	Cartridge without Coil
L	20 Watt

Code	Description
C	Normally Closed, Metered reverse flow. 
CH	Normally Closed, Metered reverse flow. Fast response 
CHR	Normally Closed, Full reverse flow. Fast response 
CR	Normally Closed, Full reverse flow. 
N	Normally Open, Metered reverse flow. 
NR	Normally Open, Full reverse flow. 

Code	Type
Omit	Without Manual Override
E	Push Type Manual Override with Extended Rod (Normally Open Only)
M	Push Type Manual Override with Flush Rod (Normally Open Only)
T	Push & Twist Manual Override (Normally Closed Only)

Code	Description
Omit	Cartridge without Coil
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120/110 VAC, 60/50 Hz
A240	240/220 VAC, 60/50 Hz

Code	Description
Omit	Cartridge without Coil
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120 VAC
A240	240 VAC

Code	Description
Omit	Cartridge Only
4P	1/4" NPTF (B10-2-4P) Steel
A4P	1/4" NPTF (B10-2-A4P) Aluminum
6P	3/8" NPTF (B10-2-6P) Steel
A6P	3/8" NPTF (B10-2-A6P) Aluminum
8P	1/2" NPTF (B10-2-8P) Steel
A8P	1/2" NPTF (B10-2-A8P) Aluminum
6T	SAE-6 (B10-2-6T) Steel
A6T	SAE-6 (B10-2-A6T) Aluminum
8T	SAE-8 (B10-2-8T) Steel
A8T	SAE-8 (B10-2-A8T) Aluminum
4B	1/4" BSPG (B10-2-4B) Steel
A4B	1/4" BSPG (B10-2-A4B) Aluminum
6B	3/8" BSPG (B10-2-6B) Steel
A6B	3/8" BSPG (B10-2-A6B) Aluminum
8B	1/2" BSPG (B10-2-8B) Steel
A8B	1/2" BSPG (B10-2-A8B) Aluminum

CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

SOLENOID VALVES

SPECIALTY VALVES

COILS

BODIES

TECHNICAL DATA

SERVICE PARTS

Code	Size
S10	5/8" I.D.
SW10	5/8" I.D.

DIN Connector:
 PG9 Black — 710549-00
 PG11 Black — 692914
 PG11 Grey — 692915

Coil Nut:
 DSH101C, CR, CH — 118127-00
 DSH101N, NR — 118113-00

Nitrile Seal Kit:
 DSH101 — SK10-2

Fluorocarbon Seal Kit:
 DSH101 — SK10-2V

Code	Description
C	Conduit
D	DIN 43650
P	Double Spade
W	Double Wire
WP	Waterproof Double Wire

Notes: See 5/8" Unicoids Data Sheet for other options.
 For other coil voltages and terminations, consult factory.
 S10 Coil applies to all terminations except WP.
 SW10 Coil applies to WP termination only.

Shipping Weight
 Cartridge Only .20 kg (0.41 lbs.)

NOTE: If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

dsH101.pm6.5, bl, gn

General Description

The DSL121C and DSL121N 2-way, poppet-type, solenoid valves are used in applications requiring on/off valves and low leakage. Single acting cylinder applications typically utilize valves of this type. Valves can be used for bleed down flow and/or raising and lowering a vertical cylinder. Normally open and normally closed configurations plus manual overrides are available.

Operation

Normally Closed

The valve pilot is held on its seat by spring force, blocking pilot flow. This allows pressure at the inlet to hold the poppet on its seat, thus, preventing flow through the valve (inlet to outlet). When the coil is energized, the valve pilot is pulled off its seat. This vents pressure inside the poppet to the outlet port, creating a pressure imbalance across the main poppet which allows flow from the inlet to the outlet.

Normally Closed, Fast Response

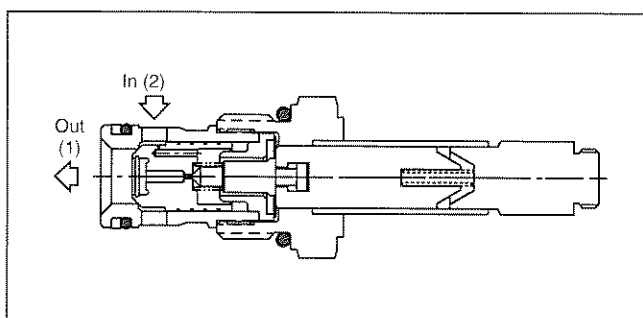
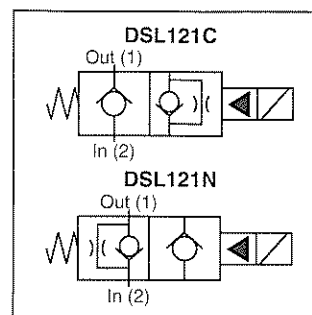
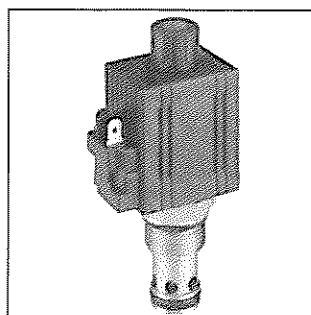
The operation of this version is identical to the normally closed valve except for the travel of the poppet. The distance that the poppet travels is much shorter. This gives the fast response valve a faster opening time and a reduced maximum flow rate.

Normally Open

The valve pilot is held off of its seat by spring force. Pilot flow is vented to the outlet port, creating a pressure imbalance that moves the main poppet off its seat, allowing flow from the inlet to the outlet. When the coil is energized, the valve pilot and main poppet are forced to close, thus blocking flow from the inlet to the outlet.

Features

- Low hysteresis
- Replaceable, one piece encapsulated, coils with minimal amperage draw
- Variety of coil terminations and voltages
- Variety of manual override options available

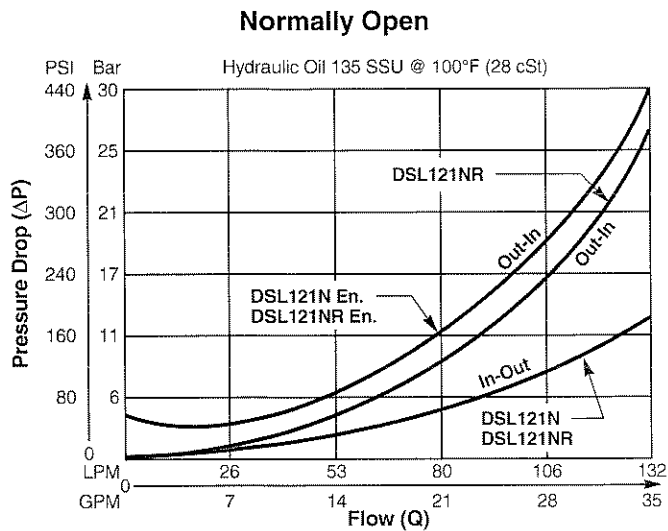
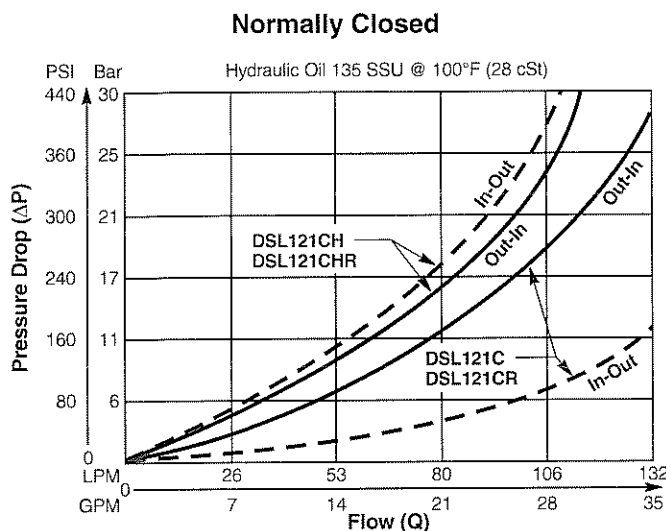


Specifications

Rated Flow (At 70 PSI ΔP)	DSL121C 90 LPM (24 GPM) DSL121N 90 LPM (24 GPM)
Maximum Inlet Pressure	210 Bar (3000 PSI)
Leakage	10 drops/min. (.67 cc/min.) at 210 Bar (3000 PSI)
Minimum Operating Voltage	90% of rated voltage at 210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C12-2

Performance Curves

Pressure Drop vs. Flow (Through cartridge only)



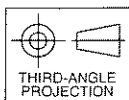
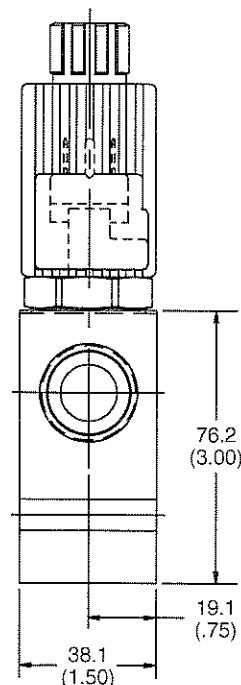
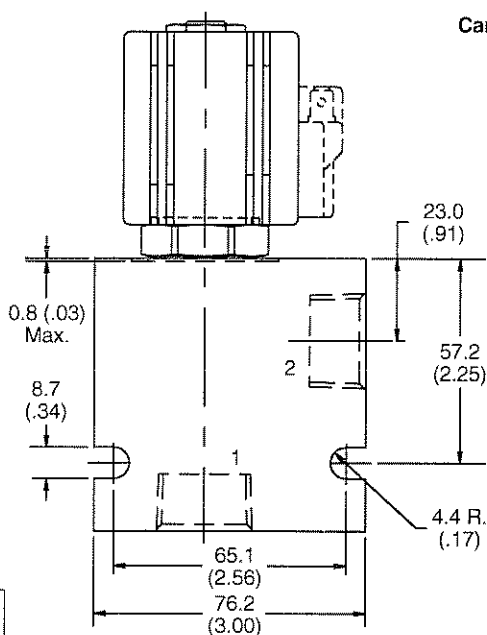
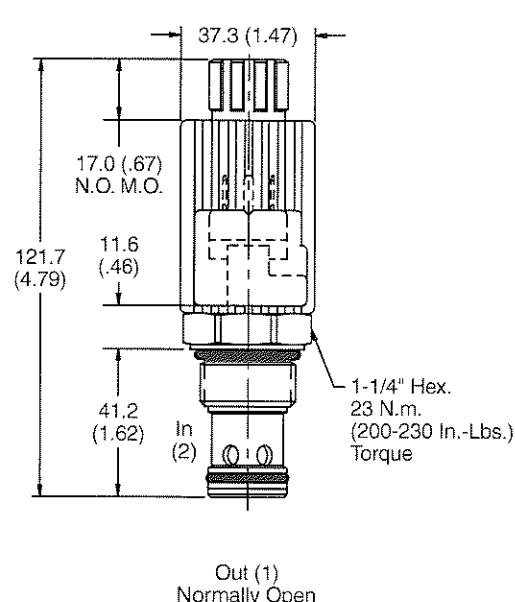
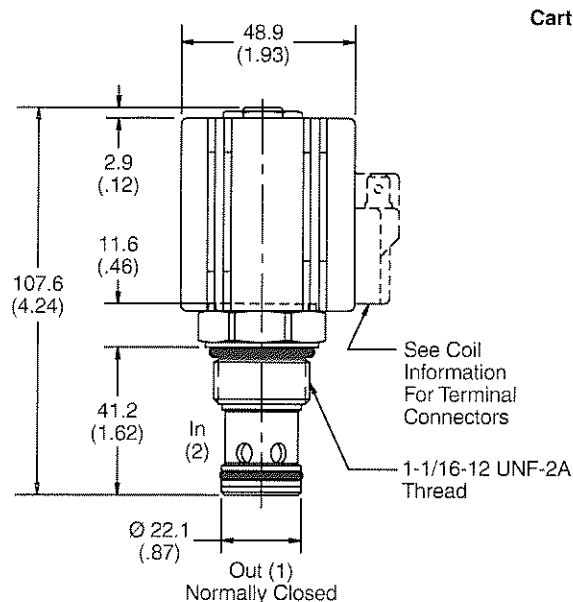
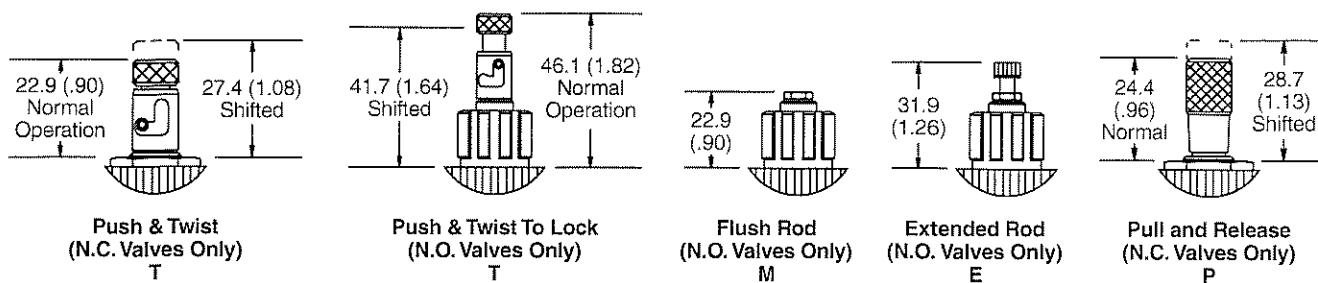
Solenoid Coil Specifications

Voltage	10 VDC	12 VDC	24 VDC	120 VAC	240 VAC
Watts	21	20	21	17.8	18.6
Amps	2.1	1.67	.88	.17	.09

Response Time (at nominal flow, 3000 PSI)	DSL121C & DSL121CR (Normally Closed)	DSL121CH & DSL121CHR (N.C. Fast Res.)	DSL121N & DSL121NR (Normally Open)
Open	100ms	60ms	150ms
Close	150ms	60ms	70ms

Wire Class	"N" for all voltages
A.C. Rectifiers	Integral full wave bridge

*Inch equivalents for millimeter dimensions are shown in (**)



dsl121.pm6.5, bl, gn

DSL	12	1							
Solenoid Valve	Size	Poppet Type	Style	Override Option	Seals	Coil Voltage	Coil Wattage	Coil Termination	Body Option

Code	Style
12	1-1/16"-12 UNF-2B Threaded Cavity

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Type
Omit	Cartridge without Coil
L	20 Watt

Code	Description	
C	Normally Closed, Metered reverse flow.	
CH	Normally Closed, Metered reverse flow. Fast response	
CHR	Normally Closed, Full reverse flow. Fast response	
CR	Normally Closed, Full reverse flow.	
N	Normally Open, Metered reverse flow.	
NR	Normally Open, Full reverse flow.	

Code	Type
Omit	Without Manual Override
E	Push Type Manual Override with Extended Rod (Normally Open Only)
M	Push Type Manual Override with Flush Rod (Normally Open Only)
P	Pull & Release Manual Override (Normally Closed Only)
T	Push & Twist Manual Override

Code	Description
Omit	Cartridge without Coil
C	1/2" NPTF Conduit Connector with 24" 18 AWG Wires
D	DIN 43650 (Hirschmann) Plug Face
P	SAE 1B-0.25 SAE Double Spade (DC Only)
W	Double Wire, 24" 18 AWG (DC Only)
WP	Waterproof Double Wire, 24" 16 AWG (DC Only)

Code	Description
Omit	Cartridge without Coil
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120/110 VAC, 60/50 Hz
A240	240/220 VAC, 60/50 Hz

Code	Port Size & Material
Omit	Cartridge Only
6P	3/8" NPTF (B12-2-6P) Steel
A6P	3/8" NPTF (B12-2-A6P) Aluminum
8P	1/2" NPTF (B12-2-8P) Steel
A8P	1/2" NPTF (B12-2-A8P) Aluminum
12P	3/4" NPTF (B12-2-12P) Steel
A12P	3/4" NPTF (B12-2-A12P) Aluminum
6T	SAE-6 (B12-2-6T) Steel
A6T	SAE-6 (B12-2-A6T) Aluminum
8T	SAE-8 (B12-2-8T) Steel
A8T	SAE-8 (B12-2-A8T) Aluminum
12T	SAE-12 (B12-2-12T) Steel
A12T	SAE-12 (B12-2-A12T) Aluminum
6B	3/8" BSPG (B12-2-6B) Steel
A6B	3/8" BSPG (B12-2-A6B) Aluminum
8B	1/2" BSPG (B12-2-8B) Steel
A8B	1/2" BSPG (B12-2-A8B) Aluminum
12B	3/4" BSPG (B12-2-12B) Steel
A12B	3/4" BSPG (B12-2-A12B) Aluminum

Shipping Weight
 Cartridge Only .50 kg (1.1 lbs.)

SERVICE PARTS

Coil Size		Coil Wattage		Coil Termination		Coil Voltage	
Code	Size	Code	Type				
S10	5/8" I.D.	L	20 Watts				
SW10	5/8" I.D.						

Code	Description
C	Conduit
D	DIN 43650
P	Double Spade
W	Double Wire
WP	Waterproof Double Wire

Code	Description
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120 VAC
A240	240 VAC

DIN Connector:
 PG9 Black—710549-00
 PG11 Black—692914
 PG11 Grey—692915

Coil Nut:
 DSL121C, CR, CH — 118127-00
 DSL121N, NR — 118113-00

Nitrile Seal Kit:
 DSL121 — SK12-2

Fluorocarbon Seal Kit:
 DSL121 — SK12-2V

Notes: See 5/8" Unicoids Data Sheet for more options.
 For other coil voltages and terminations, consult factory.
 S10 Coil applies to all terminations except WP.
 SW10 Coil applies to WP termination only.

dsl121.pm6.5, bl, gn

General Description

The DSH121C and DSH121N solenoid valves are used in applications requiring on/off valves and low leakage. Single acting cylinder applications typically utilize valves of this type. Valves can be used for bleed down flow and/or raising and lowering a vertical cylinder. Normally open and normally closed configurations plus manual overrides are available.

Operation

Normally Closed

The valve pilot is held on its seat by spring force, blocking pilot flow. This allows pressure at the inlet to hold the poppet on its seat, thus, preventing flow through the valve (inlet to outlet). When the coil is energized, the valve pilot is pulled off its seat. This vents pressure inside the poppet to the outlet port, creating a pressure imbalance across the main poppet which allows flow from the inlet to the outlet.

Normally Closed, Fast Response

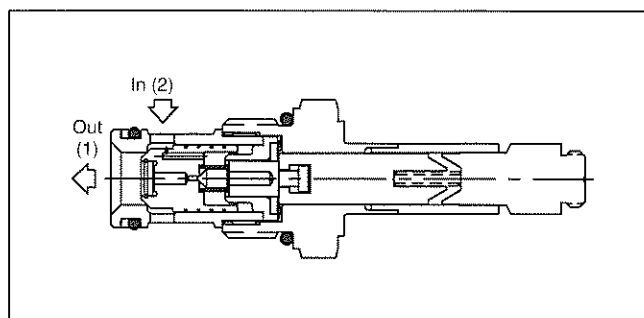
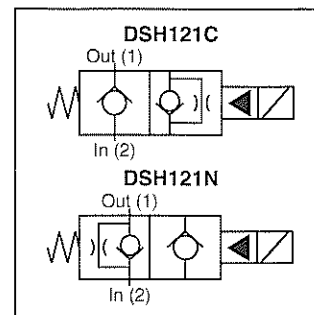
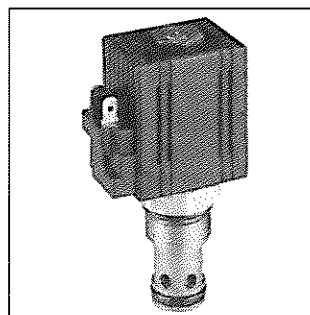
The operation of this version is identical to the normally closed valve except for the travel of the poppet. The distance that the poppet travels is much shorter. This gives the fast response valve a faster opening time and a reduced maximum flow rate.

Normally Open

The valve pilot is held off of its seat by spring force. Pilot flow is vented to the outlet port, creating a pressure imbalance that moves the main poppet off its seat, allowing flow from the inlet to the outlet. When the coil is energized, the valve pilot and main poppet are forced to close, thus blocking flow from the inlet to the outlet.

Features

- Low hysteresis
- Replaceable, one piece encapsulated, coils with minimal amperage draw
- Variety of coil terminations and voltages
- Variety of manual override options available

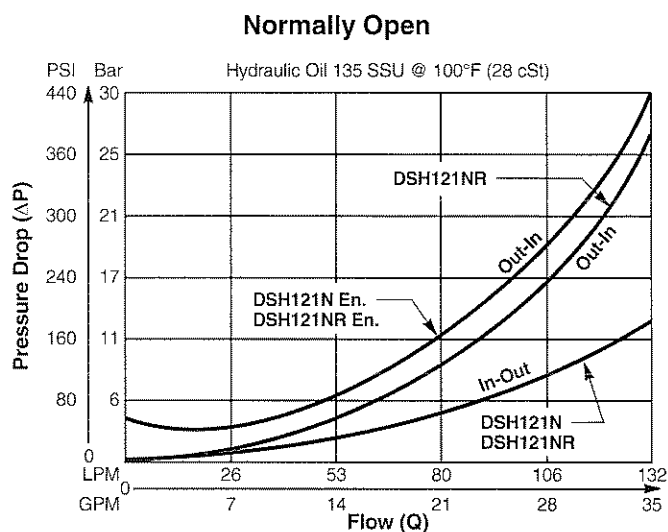
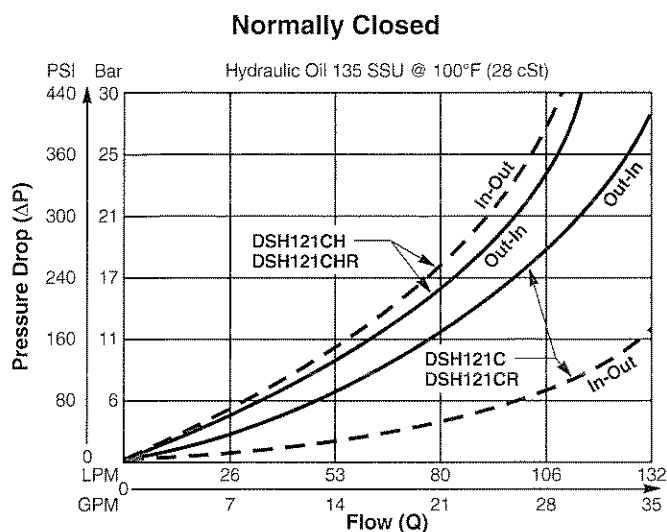


Specifications

Rated Flow	DSH121C 90 LPM (24 GPM) DSH121N 90 LPM (24 GPM)
Maximum Inlet Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Leakage	10 drops/min. (.67 cc/min.) at 345 Bar (5000 PSI)
Minimum Operating Voltage	90% of rated voltage at 345 Bar (5000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C12-2

Performance Curves

Pressure Drop vs. Flow (Through cartridge only)



Solenoid Coil Specifications

Voltage	10 VDC	12 VDC	24 VDC	120 VAC	240 VAC
Watts	21	20	21	17.8	18.6
Amps	2.1	1.67	.88	.17	.09

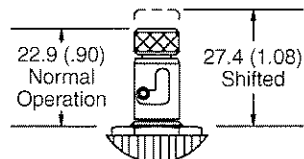
Response Time (at nominal flow, 5000 PSI)	DSH121C & DSH121CR (Normally Closed)	DSH121CH & DSH121CHR (N.C. Fast Res.)	DSH121N & DSH121NR (Normally Open)
Open	100ms	60ms	150ms
Close	150ms	60ms	70ms

Wire Class	"N" for all voltages
A.C. Rectifiers	Integral full wave bridge

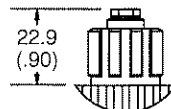
Dimensions

Poppet-Type, Two-Way Valves Series DSH121

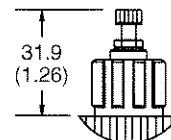
*Inch equivalents for millimeter dimensions are shown in (**)



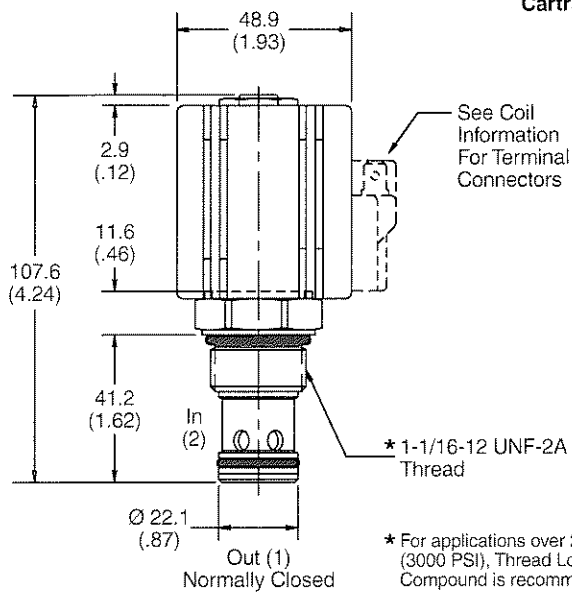
**Push & Twist
(N.C. Valves Only)**
T



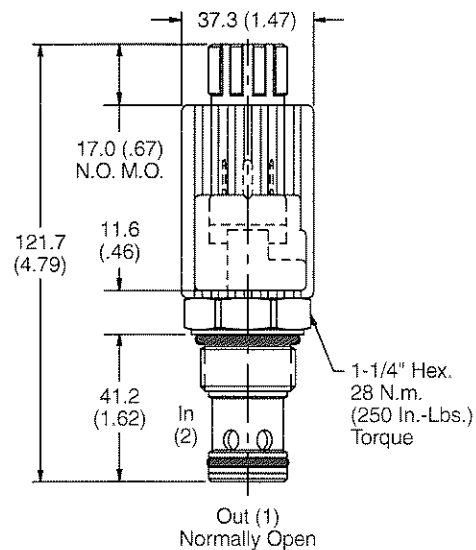
**Flush Rod
(N.O. Valves Only)**
M



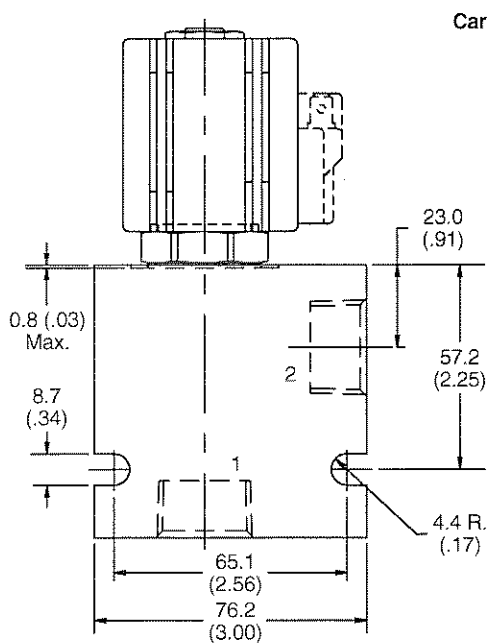
**Extended Rod
(N.O. Valves Only)**
E



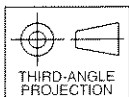
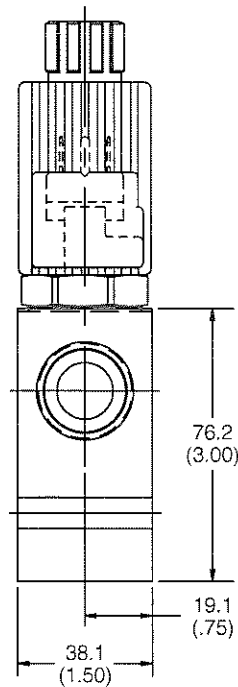
Cartridge Only



* For applications over 210 Bar (3000 PSI), Thread Lock Compound is recommended.



Cartridge In Body



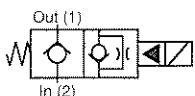
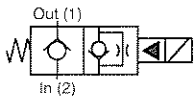
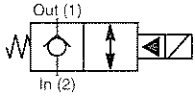
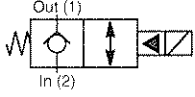
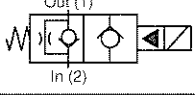
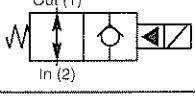
dsh121.pm6.5, bl, gn

DSH	12	1							
Solenoid Valve	Size	Poppet Type	Style	Override Option	Seals	Coil Voltage	Coil Wattage	Coil Termination	Body Option

Code	Style
12	1-1/16"-12 UNF-2B Threaded Cavity

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Type
Omit	Cartridge without Coil
L	20 Watt

Code	Description
C	Normally Closed, Metered reverse flow. 
CH	Normally Closed, Metered reverse flow. Fast response 
CHR	Normally Closed, Full reverse flow. Fast response 
CR	Normally Closed, Full reverse flow. 
N	Normally Open, Metered reverse flow. 
NR	Normally Open, Full reverse flow. 

Code	Type
Omit	Without Manual Override
E	Push Type Manual Override with Extended Rod (Normally Open Only)
M	Push Type Manual Override with Flush Rod (Normally Open Only)
T	Push & Twist Manual Override (Normally Closed Only)

Code	Description
Omit	Cartridge without Coil
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120/110 VAC, 60/50 Hz
A240	240/220 VAC, 60/50 Hz

Code	Description
Omit	Cartridge without Coil
C	1/2" NPTF Conduit Connector with 24" 18 AWG Wires
D	DIN 43650 (Hirschmann) Plug Face
P	SAE 1B-0.25 SAE Double Spade (DC Only)
W	Double Wire, 24" 18 AWG (DC Only)
WP	Waterproof Double Wire, 24" 16 AWG (DC Only)

Code	Port Size & Material	
Omit	Cartridge Only	
6P	3/8" NPTF (B12-2-6P)	Steel
A6P	3/8" NPTF (B12-2-A6P)	Aluminum
8P	1/2" NPTF (B12-2-8P)	Steel
A8P	1/2" NPTF (B12-2-A8P)	Aluminum
12P	3/4" NPTF (B12-2-12P)	Steel
A12P	3/4" NPTF (B12-2-A12P)	Aluminum
6T	SAE-6 (B12-2-6T)	Steel
A6T	SAE-6 (B12-2-A6T)	Aluminum
8T	SAE-8 (B12-2-8T)	Steel
A8T	SAE-8 (B12-2-A8T)	Aluminum
12T	SAE-12 (B12-2-12T)	Steel
A12T	SAE-12 (B12-2-A12T)	Aluminum
6B	3/8" BSPG (B12-2-6B)	Steel
A6B	3/8" BSPG (B12-2-A6B)	Aluminum
8B	1/2" BSPG (B12-2-8B)	Steel
A8B	1/2" BSPG (B12-2-A8B)	Aluminum
12B	3/4" BSPG (B12-2-12B)	Steel
A12B	3/4" BSPG (B12-2-A12B)	Aluminum

SERVICE PARTS

Coil Size <table border="1"> <thead> <tr> <th>Code</th> <th>Size</th> </tr> </thead> <tbody> <tr> <td>S10</td> <td>5/8" I.D.</td> </tr> <tr> <td>SW10</td> <td>5/8" I.D.</td> </tr> </tbody> </table>	Code	Size	S10	5/8" I.D.	SW10	5/8" I.D.	Coil Wattage <table border="1"> <thead> <tr> <th>Code</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>L</td> <td>20 Watts</td> </tr> </tbody> </table>	Code	Type	L	20 Watts	Coil Termination <table border="1"> <thead> <tr> <th>Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>C</td> <td>Conduit</td> </tr> <tr> <td>D</td> <td>DIN 43650</td> </tr> <tr> <td>P</td> <td>Double Spade</td> </tr> <tr> <td>W</td> <td>Double Wire</td> </tr> <tr> <td>WP</td> <td>Waterproof Double Wire</td> </tr> </tbody> </table>	Code	Description	C	Conduit	D	DIN 43650	P	Double Spade	W	Double Wire	WP	Waterproof Double Wire	Coil Voltage <table border="1"> <thead> <tr> <th>Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>D010</td> <td>10 VDC</td> </tr> <tr> <td>D012</td> <td>12 VDC</td> </tr> <tr> <td>D024</td> <td>24 VDC</td> </tr> <tr> <td>A120</td> <td>120 VAC</td> </tr> <tr> <td>A240</td> <td>240 VAC</td> </tr> </tbody> </table>	Code	Description	D010	10 VDC	D012	12 VDC	D024	24 VDC	A120	120 VAC	A240	240 VAC
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A240	240 VAC																																				

DIN Connector:
 PG9 Black—710549-00
 PG11 Black—692914
 PG11 Grey—692915

Coil Nut:
 DSH121C, CR, CH — 118127-00
 DSH121N, NR — 123477

Nitrile Seal Kit:
 DSH121 — SK12-2

Fluorocarbon Seal Kit:
 DSH121 — SK12-2V

Notes: See 5/8" Unicoids Data Sheet for more options.
 For other coil voltages and terminations, consult factory.
 S10 Coil applies to all terminations except WP.
 SW10 Coil applies to WP termination only.

Shipping Weight
 Cartridge Only .50 kg (1.1 lbs.)

NOTE: If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

dsh121.pm6.5, bl, gn

CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

SOLENOID VALVES

SPECIALTY VALVES

COILS

BODIES

TECHNICAL DATA

General Description

The DS161C and DS161N solenoid valves are used in circuits requiring on/off valves and low leakage. Single acting cylinder applications typically utilize valves of this type. Valves can be used for bleed down flow and/or raising and lowering a vertical cylinder. Normally open and normally closed configurations plus manual overrides are available.

Operation

Normally Closed

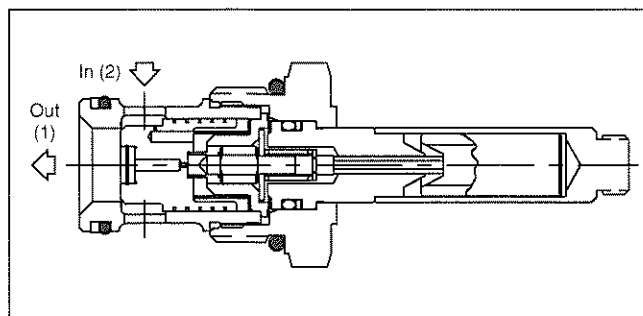
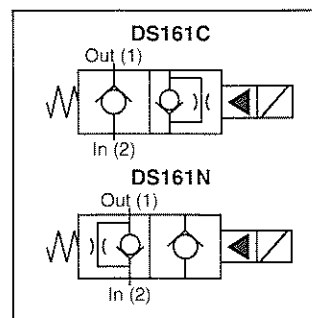
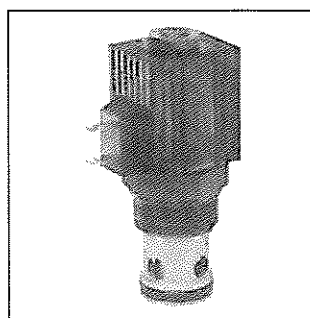
The valve pilot is held on its seat by spring force, blocking pilot flow. This allows pressure at the inlet to hold the poppet on its seat, thus, preventing flow through the valve (inlet to outlet). When the coil is energized, the valve pilot is pulled off its seat. This vents pressure inside the poppet to the outlet port, creating a pressure imbalance across the main poppet which allows flow from the inlet to the outlet.

Normally Open

The valve pilot is held off of its seat by spring force. Pilot flow is vented to the outlet port, creating a pressure imbalance which moves the main poppet off it's seat, allowing flow from the inlet to the outlet. When the coil is energized, the valve pilot and main poppets are forced to close, thus blocking flow from the inlet to the outlet.

Features

- Low hysteresis
- Replaceable, one piece encapsulated, coils with minimal amperage draw
- Variety of coil terminations and voltages
- Variety of manual override options available

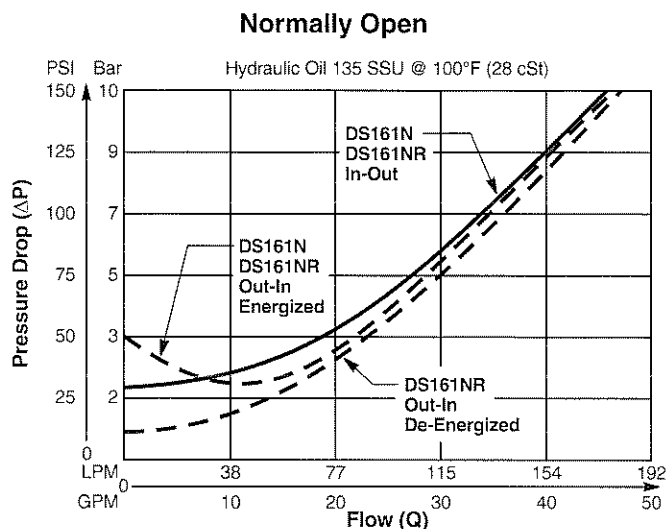
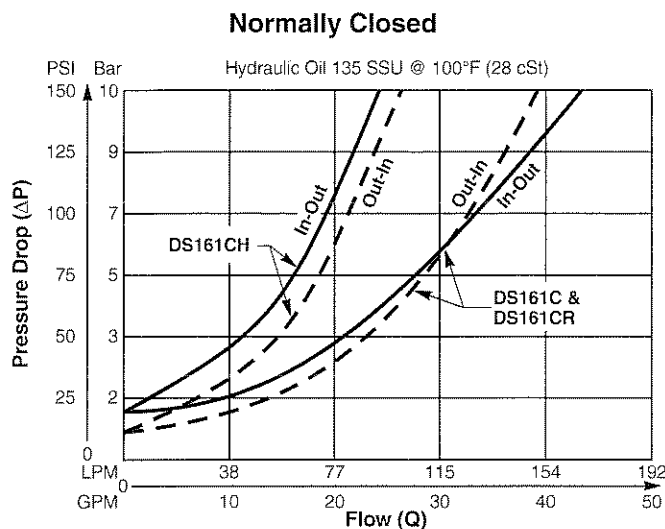


Specifications

Rated Flow	DS161CH 60 LPM (15 GPM) All other versions 150 LPM (40 GPM)
Maximum Inlet Pressure	210 Bar (3000 PSI)
Leakage	20 drops/min. (1.33 cc/min.) at 210 Bar (3000 PSI)
Minimum Operating Voltage	90% of rated voltage at 210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C16-2

Performance Curves

Pressure Drop vs. Flow (Through cartridge only)



Solenoid Coil Specifications

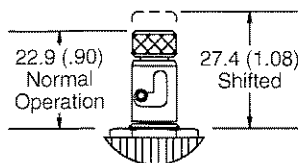
Voltage	6 VDC		10 VDC		12 VDC		18 VDC		24 VDC		36 VDC		48 VDC		120 VAC		240 VAC		480 VAC	
Duty	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.
Watts	17	30	17	30	17	30	17	30	17	30	17	30	17	30	17	30	17	30	17	N/A
Amps	2.43	4.84	1.58	3.20	1.44	2.30	0.94	1.86	0.72	1.20	0.43	0.88	0.30	0.58	0.15	0.26	.075	.125	.038	N/A

Response Time (at nominal flow, 3000 PSI)	DS161C & DS161CR (Normally Closed)	DS161CH (N.C. Fast Res.)	DS161N & DS161NR (Normally Open)
Open	50ms	40ms	45ms
Close	130ms	60ms	75ms

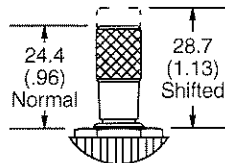
Wire Class	"H" for all voltages
A.C. Rectifiers	Integral full wave bridge

Dimensions

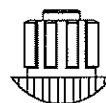
*Inch equivalents for millimeter dimensions are shown in (**)



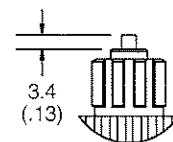
Push & Twist
(N.C. Valves Only)
T



Pull and Release
(N.C. Valves Only)
P

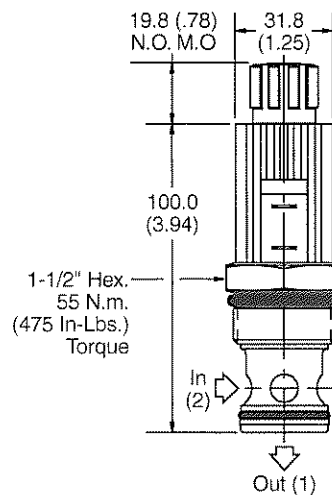
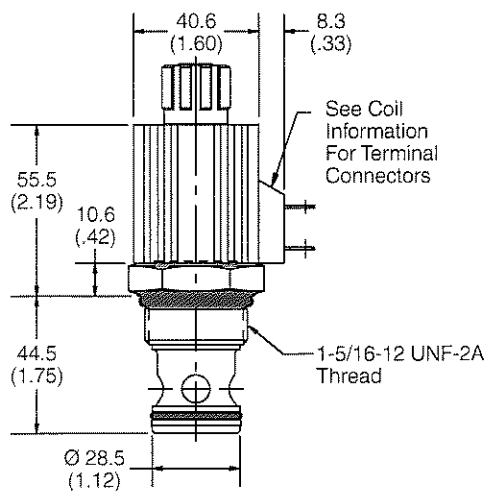


Flush Rod
(N.O. Valves Only)
M

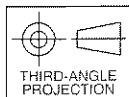
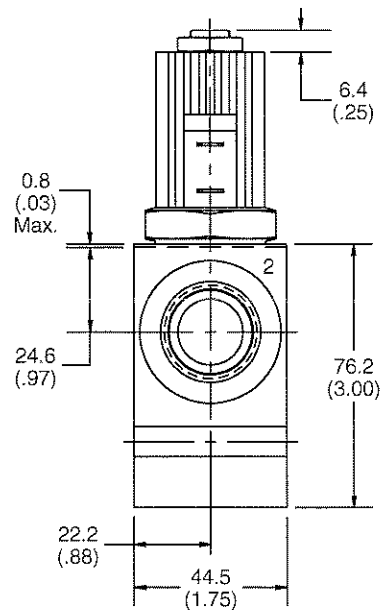
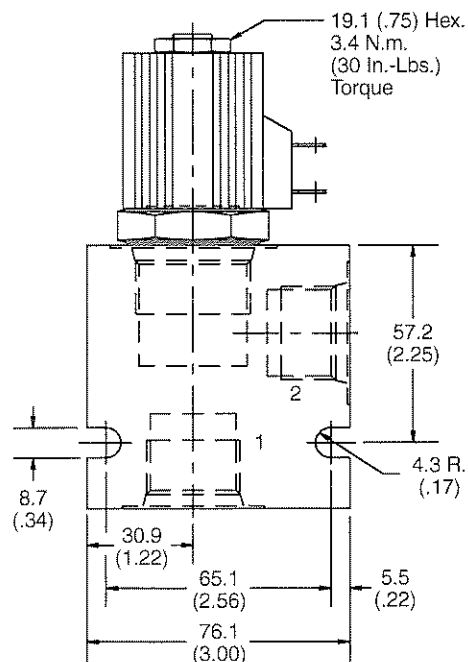


Extended Rod
(N.O. Valves Only)
E

Cartridge Only



Cartridge In Body



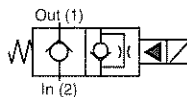
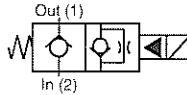
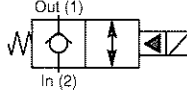
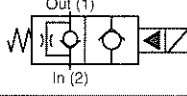
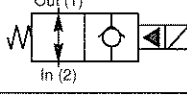
ds161.pm6.5. bl. gn

DS	16	1							
Solenoid Valve	Size	Poppet Type	Style	Override Option	Seals	Coil Voltage	Coil Wattage	Coil Termination	Body Option

Code	Style
16	1-5/16"-12 UNF-2B Threaded Cavity

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Type
Omit	Cartridge without Coil
L	17 Watt
H	30 Watt

Code	Description
C	Normally Closed, Metered reverse flow. 
CH	Normally Closed, Metered reverse flow. Fast response (15 GPM Max.) 
CR	Normally Closed, Full reverse flow. 
N	Normally Open, Metered reverse flow. 
NR	Normally Open, Full reverse flow. 

Code	Type
Omit	Without Manual Override
E	Push Type Manual Override with Extended Rod (Normally Open Only)
M	Push Type Manual Override with Flush Rod (Normally Open Only)
P	Pull and Release Manual Override (Normally Closed Only)
T	Push & Twist Manual Override (Normally Closed Only)

Code	Description
Omit	Cartridge without Coil
D006	6 VDC
D010	10 VDC
D012	12 VDC
D018	18 VDC
D024	24 VDC
D036	36 VDC
D048	48 VDC
A120	120/110 VAC, 60/50 Hz
A240	240/220 VAC, 60/50 Hz
A480	480/440 VAC, 60/50 Hz

Code	Description
Omit	Cartridge without Coil
C	1/2" NPTF Conduit Connector with 24" 18 AWG Wires
D	DIN 43650 (Hirschmann) Plug Face
P	SAE 1B-0.25 SAE Double Spade (DC Only)
S1	Single 8-32 Screw & Nut, internally ground (DC Only)
W	Double Wire, 24" 18 AWG (DC Only)
W1	Single Wire, internally ground, 24" 18 AWG (DC Only)

Code	Port Size & Material
Omit	Cartridge Only
8P	1/2" NPTF (B16-2-8P) Steel
A8P	1/2" NPTF (B16-2-A8P) Aluminum
12P	3/4" NPTF (B16-2-12P) Steel
A12P	3/4" NPTF (B16-2-A12P) Aluminum
16P	1" NPTF (B16-2-16P) Steel
A16P	1" NPTF (B16-2-A16P) Aluminum
8T	SAE-8 (B16-2-8T) Steel
A8T	SAE-8 (B16-2-A8T) Aluminum
12T	SAE-12 (B16-2-12T) Steel
A12T	SAE-12 (B16-2-A12T) Aluminum
16T	SAE-16 (B16-2-16T) Steel
A16T	SAE-16 (B16-2-A16T) Aluminum
8B	1/2" BSPG (B16-2-8B) Steel
A8B	1/2" BSPG (B16-2-A8B) Aluminum
12B	3/4" BSPG (B16-2-12B) Steel
A12B	3/4" BSPG (B16-2-A12B) Aluminum
16B	1" BSPG (B16-2-16B) Steel
A16B	1" BSPG (B16-2-A16B) Aluminum

Shipping Weight
Cartridge Only .58 kg (1.3 lbs.)

SERVICE PARTS

DIN Connector:
PG9 Black—710549-00
PG11 Black — 692914
PG11 Grey — 692915

Coil Nut:
DS161C, CH, CR—
118127-00
DS161N, NR—
118113-00

Nitrile Seal Kit:
SK16-2

Fluorocarbon Seal Kit:
SK16-2V

Coil Assemblies

851017*****	17 Watt Conduit Coil
851018*****	30 Watt Conduit Coil
851019*****	17 Watt DIN (Hirschmann) Coil
851020*****	30 Watt DIN (Hirschmann) Coil
851021*****	17 Watt Double Spade Coil
851022*****	30 Watt Double Spade Coil
851023*****	17 Watt Double Wire Coil
851024*****	30 Watt Double Wire Coil
851025*****	17 Watt Single Screw Coil
851026*****	30 Watt Single Screw Coil
851027*****	17 Watt Single Wire Coil
851028*****	30 Watt Single Wire Coil

(*****Calls out voltage. For example: 851021-012VDC is a 12 volt, 17 watt Double Spade Coil.)

General Description

The DS201 solenoid valves are used in applications requiring on/off valves and low leakage. Single acting cylinder applications typically utilize valves of this type. Valves can be used for bleed down flow and/or raising and lowering a vertical cylinder. Normally open and normally closed configurations plus manual overrides are available.

Operation

Normally Closed

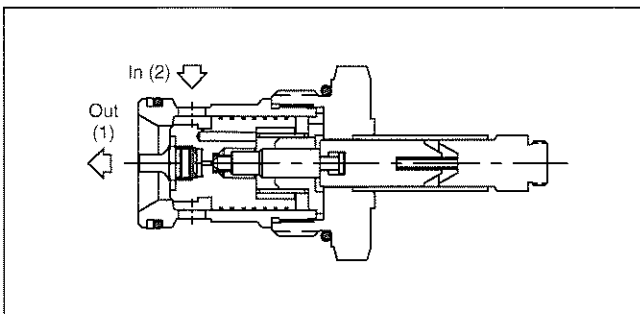
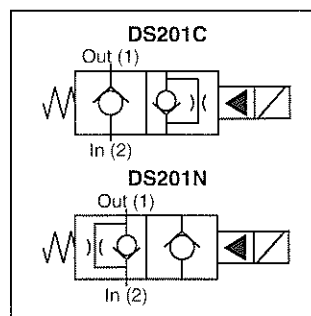
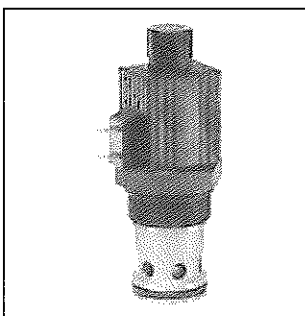
The valve pilot is held on its seat by spring force, blocking pilot flow. This allows pressure at the inlet to hold the poppet on its seat, thus preventing flow through the valve (inlet to outlet). When the coil is energized, the valve pilot is pulled off its seat. This vents pressure inside the poppet to the outlet port, creating a pressure imbalance across the main poppet which allows flow from the inlet to the outlet.

Normally Open

The valve pilot is held off of its seat by spring force. Pilot flow is vented to the outlet port, creating a pressure imbalance which moves the main poppet off its seat, allowing flow from the inlet to the outlet. When the coil is energized, the valve pilot and main poppets are forced to close, thus blocking flow from the inlet to the outlet.

Features

- Low hysteresis
- Replaceable, one piece encapsulated, coils with minimal amperage draw
- Variety of coil terminations and voltages
- Variety of manual override options available

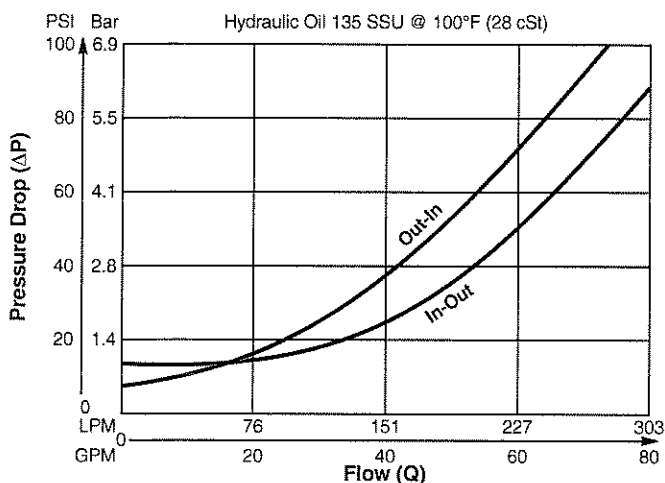


Specifications

Rated Flow (At 70 PSI ΔP)	260 LPM (70 GPM)
Maximum Inlet Pressure	210 Bar (3000 PSI)
Leakage	20 drops/min. (1.33 cc/min.) at 210 Bar (3000 PSI)
Minimum Operating Voltage	90% of rated voltage at 210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C20-2

Performance Curve

Pressure Drop vs. Flow (Through cartridge only)



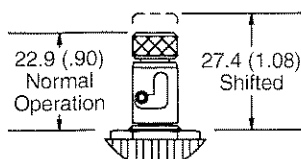
Solenoid Coil Specifications

Voltage	6 VDC		10 VDC		12 VDC		18 VDC		24 VDC		36 VDC		48 VDC		120 VAC		240 VAC		480 VAC	
Duty	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.
Watts	17	30	17	30	17	30	17	30	17	30	17	30	17	30	17	30	17	30	17	N/A
Amps	2.43	4.84	1.58	3.20	1.44	2.30	0.94	1.86	0.72	1.20	0.43	0.88	0.30	0.58	0.15	0.26	.075	.125	.038	N/A

Response Time (at nominal flow, 3000 PSI)	DS201C & DS201CR (Normally Closed)	DS201N & DSS201NR (Normally Open)
Open	160ms	45ms
Close	350ms	300ms

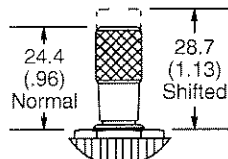
Wire Class	"H" for all voltages
A.C. Rectifiers	Integral full wave bridge

*Inch equivalents for millimeter dimensions are shown in (**)



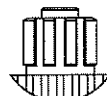
**Push & Twist
 (N.C. Valves Only)**

T



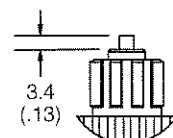
**Pull and Release
 (N.C. Valves Only)**

P



**Flush Rod
 (N.O. Valves Only)**

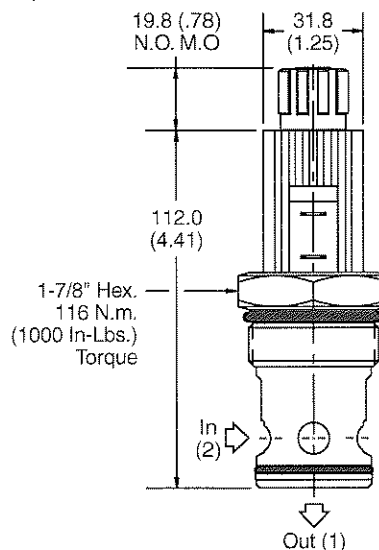
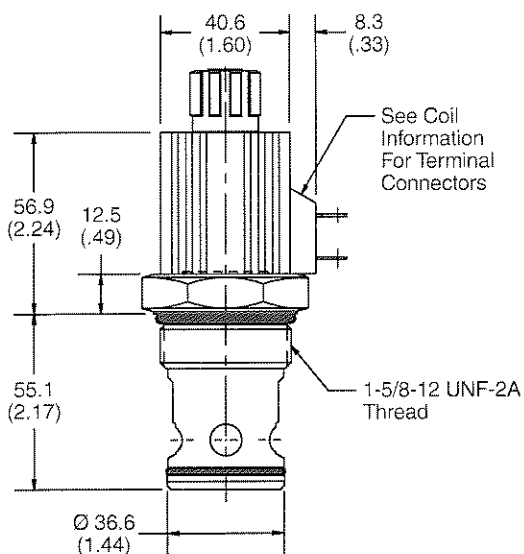
M



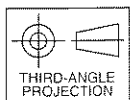
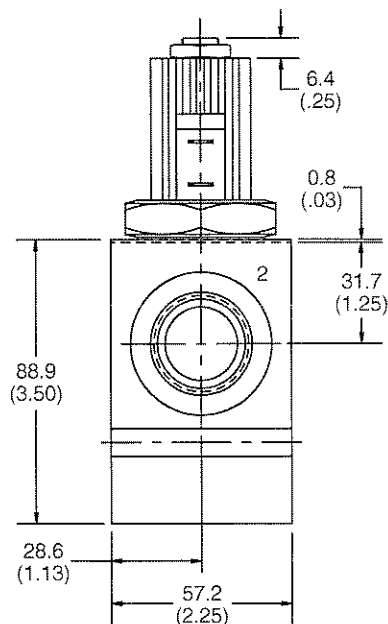
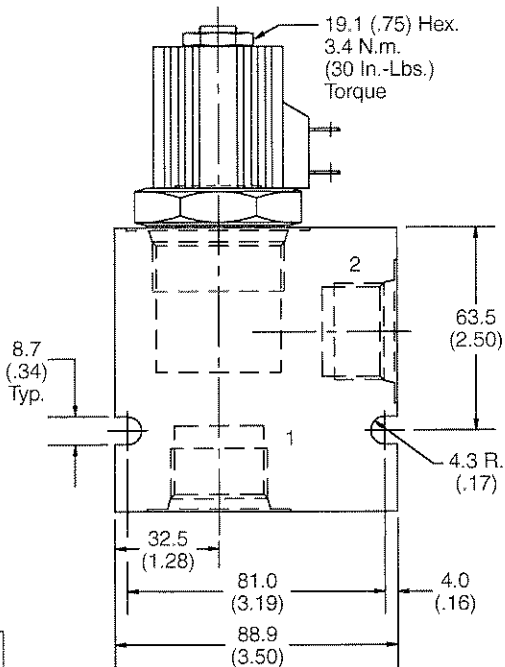
**Extended Rod
 (N.O. Valves Only)**

E

Cartridge Only



Cartridge In Body



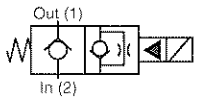
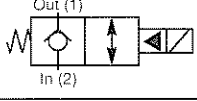
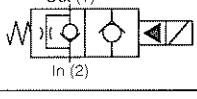
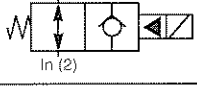
ds201.pm6.5, bl, gn

DS	20	1							
Solenoid Valve	Size	Poppet Type	Style	Override Option	Seals	Coil Voltage	Coil Wattage	Coil Termination	Body Option

Code	Style
20	1-5/8"-12 UNF-2B Threaded Cavity

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Type
Omit	Cartridge without Coil
L	17 Watt
H	30 Watt

Code	Description
C	Normally Closed, Metered reverse flow. 
CR	Normally Closed, Full reverse flow. 
N	Normally Open, Metered reverse flow. 
NR	Normally Open, Full reverse flow. 

Code	Type
Omit	Without Manual Override
E	Push Type Manual Override with Extended Rod (Normally Open Only)
M	Push Type Manual Override with Flush Rod (Normally Open Only)
P	Pull and Release Manual Override (Normally Closed Only)
T	Push & Twist Manual Override (Normally Closed Only)

Code	Description
Omit	Cartridge without Coil
D006	6 VDC
D010	10 VDC
D012	12 VDC
D018	18 VDC
D024	24 VDC
D036	36 VDC
D048	48 VDC
A120	120/110 VAC, 60/50 Hz
A240	240/220 VAC, 60/50 Hz
A480	480/440 VAC, 60/50 Hz

Code	Description
Omit	Cartridge without Coil
C	1/2" NPTF Conduit Connector with 24" 18 AWG Wires
D	DIN 43650 (Hirschmann) Plug Face
P	SAE 1B-0.25 SAE Double Spade (DC Only)
S1	Single 8-32 Screw & Nut, internally ground (DC Only)
W	Double Wire, 24" 18 AWG (DC Only)
W1	Single Wire, internally ground, 24", 18 AWG (DC Only)

Code	Port Size & Material
Omit	Cartridge Only
12P	3/4" NPTF (B20-2-12P) Steel
A12P	3/4" NPTF (B20-2-A12P) Aluminum
16P	1" NPTF (B20-2-16P) Steel
A16P	1" NPTF (B20-2-A16P) Aluminum
20P	1-1/4" NPTF (B20-2-20P) Steel
A20P	1-1/4" NPTF (B20-2-A20P) Aluminum
12T	SAE-12 (B20-2-12T) Steel
A12T	SAE-12 (B20-2-A12T) Aluminum
16T	SAE-16 (B20-2-16T) Steel
A16T	SAE-16 (B20-2-A16T) Aluminum
20T	SAE-20 (B20-2-20T) Steel
A20T	SAE-20 (B20-2-A20T) Aluminum
12B	3/4" BSPG (B20-2-12B) Steel
A12B	3/4" BSPG (B20-2-A12B) Aluminum
16B	1" BSPG (B20-2-16B) Steel
A16B	1" BSPG (B20-2-A16B) Aluminum
20B	1-1/4" BSPG (B20-2-20B) Steel
A20B	1-1/4" BSPG (B20-2-A20B) Aluminum

Shipping Weight
 Cartridge Only .75 kg (1.70 lbs.)

SERVICE PARTS	Coil Assemblies
DIN Connector: PG9 Black — 710549-00 PG11 Black — 692914 PG11 Grey — 692915	851017***** 17 Watt Conduit Coil 851018***** 30 Watt Conduit Coil 851019***** 17 Watt DIN (Hirschmann) Coil 851020***** 30 Watt DIN (Hirschmann) Coil 851021***** 17 Watt Double Spade Coil 851022***** 30 Watt Double Spade Coil 851023***** 17 Watt Double Wire Coil 851024***** 30 Watt Double Wire Coil 851025***** 17 Watt Single Screw Coil 851026***** 30 Watt Single Screw Coil 851027***** 17 Watt Single Wire Coil 851028***** 30 Watt Single Wire Coil
Coil Nut: DS201C, CH— 118127-00 DS201N, NR— 118113-00	(*****Calls out voltage. For example: 851021-012VDC is a 12 volt, 17 watt Double Spade Coil.)
Nitrile Seal Kit: SK20-2	
Fluorocarbon Seal Kit: SK20-2V	

ds201.pm6.5, bl, gn

General Description

The DSL082, 2-way spool valves are used in circuits requiring flow to be blocked in both directions and/or flow to pass in both directions. When considering this valve series, allow for normal spool valve leakage. Normally open and normally closed configuration plus manual override models are available.

Operation

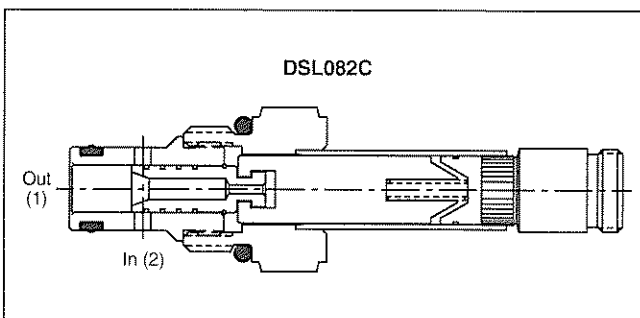
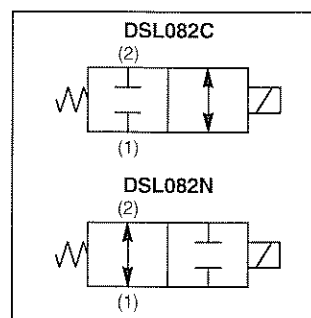
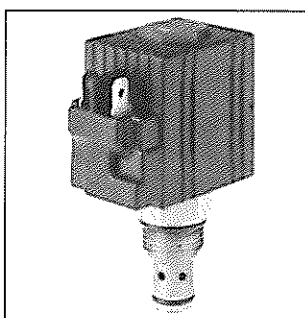
In the de-energized mode, the spool is positioned by spring force. The solenoid, when energized, directly shifts the spool against the spring, thus opening a normally closed valve or closing a normally open valve.

Features

- High flow capacity with reduced space requirements
- Standard valve bodies and common cavities
- One-piece encapsulated coil with minimal amperage draw
- Manual overrides, seal variations and other options available
- No dynamic seals
- Variety of coil terminations

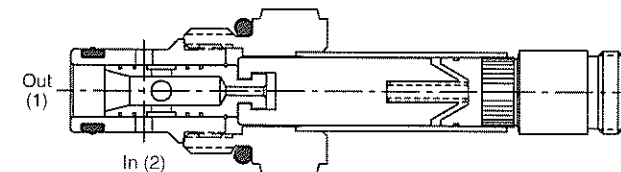
Specifications

Rated Flow (At 70 PSI ΔP)	DSL082C N.C. 14 LPM (3.5 GPM) DSL082N N.O. 14 LPM (3.5 GPM)
Maximum Inlet Pressure	210 Bar (3000 PSI)
Leakage	160 cc/min. (10 cu. in./min.) maximum at 210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C08-2



Construction

DSL082N



Solenoid Coil Specifications

Voltage	Watts	Amps
10 VDC	14	1.45
12 VDC	14	1.17
24 VDC	14	0.57
120 VAC	14	.144
240 VAC	14	.079

Response Time

(at nominal flow and maximum pressure)

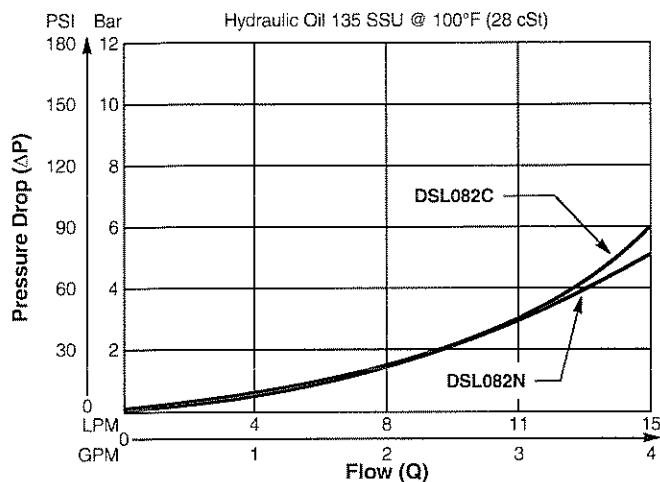
Normally Closed	Open - 60 ms Close - 40 ms
Normally Open	Open - 80 ms Close - 40 ms

Wire Class	"N" for all voltages
A.C. Rectifiers	Integral full wave bridge

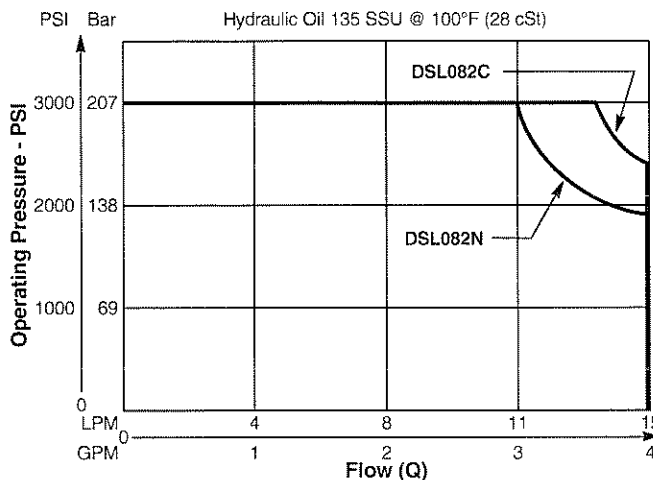
dsl082.pm6.5, bl, gn

Performance Curves

Pressure Drop vs. Flow (Through cartridge only)

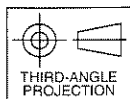
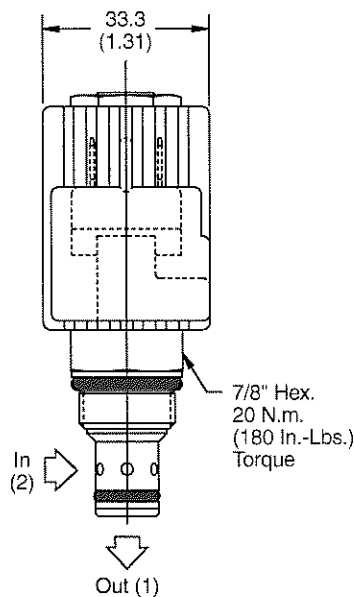
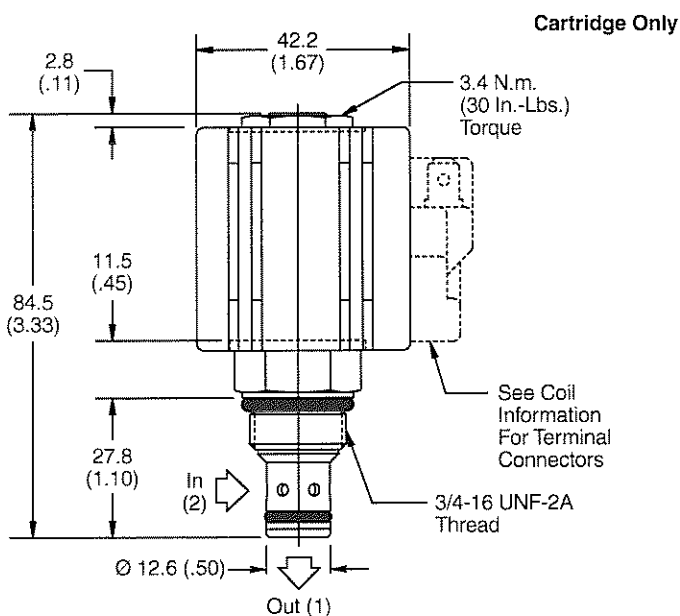
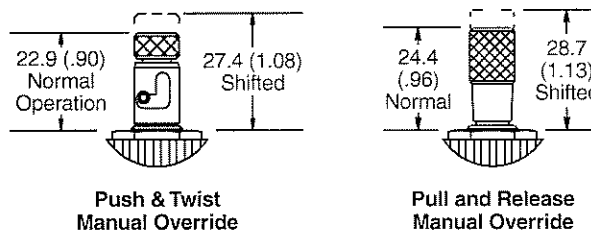


Shift Limit Characteristics (Through cartridge only)



Dimensions

*Inch equivalents for millimeter dimensions are shown in (**)



dsl082.pm6.5, bl, gn

Ordering Information

Spool-Type, Two-Way Valves
Series DSL082

DSL	08	2							
Solenoid Valve	Size	Spool Type	Style	Override Option	Seals	Coil Voltage	Coil Wattage	Coil Termination	Body Option

Code	Style
08	3/4"-14 UNF-2B Threaded Cavity

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Type
Omit	Without Manual Override
P	Push & Release Manual Override
T	Push & Twist Manual Override

Code	Type
Omit	Cartridge without Coil
L	14 Watt

Code	Description
C	 (2) (1)
N	 (2) (1)

Code	Description
Omit	Cartridge without Coil
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120/110 VAC, 60/50 Hz
A240	240/220 VAC, 60/50 Hz

Code	Description
Omit	Cartridge without Coil
C	1/2" NPTF Conduit Connector with 24" 18 AWG Wires
D	DIN 43650 (Hirschmann) Plug Face
P	SAE 1B-0.25 SAE Double Spade (DC Only)
W	Double Wire, 24" 18 AWG (DC Only)
WP	Waterproof Double Wire, 24" 16 AWG (DC Only)

SERVICE PARTS					
Coil Size		Coil Wattage		Coil Termination	Coil Voltage
Code	Size	Code	Type		
S8	1/2" I.D.	L	14 Watts		
SW8	1/2" I.D.				

Code	Description
C	Conduit
D	DIN 43650
P	Double Spade
W	Double Wire
WP	Waterproof Double Wire

Code	Description
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120 VAC
A240	240 VAC

DIN Connector:
PG9 Black — 710549-00
PG11 Black — 692914
PG11 Grey — 692915

Coil Nut:
DSL082 — 118127-00

Nitrile Seal Kit:
DSL082 — SK08-2

Fluorocarbon Seal Kit:
DSL082 — SK08-2V

Notes: See 1/2" Unicoids Data Sheet for more options.
For other coil voltages and terminations, consult factory.
S8 Coil applies to all terminations except WP.
SW8 Coil applies to WP termination only.

Code	Port Size & Material	
Omit	Cartridge Only	
4P	1/4" NPTF (B08-2-4P)	Steel
A4P	1/4" NPTF (B08-2-A4P)	Aluminum
6P	3/8" NPTF (B08-2-6P)	Steel
A6P	3/8" NPTF (B08-2-A6P)	Aluminum
4T	SAE-4 (B08-2-4T)	Steel
A4T	SAE-4 (B08-2-A4T)	Aluminum
6T	SAE-6 (B08-2-6T)	Steel
A6T	SAE-6 (B08-2-A6T)	Aluminum
4B	1/4" BSPG (B08-2-4B)	Steel
A4B	1/4" BSPG (B08-2-A4B)	Aluminum
6B	3/8" BSPG (B08-2-6B)	Steel
A6B	3/8" BSPG (B08-2-A6B)	Aluminum

Shipping Weight

Cartridge Only .11 kg (.25 lbs.)

dsl082.pm6.5, bl, gn

General Description

The DSH082, 2-way spool valves are used in circuits requiring flow to be blocked in both directions and/or flow to pass in both directions. When considering this valve series, allow for normal spool valve leakage. Normally open and normally closed configuration plus manual override models are available.

Operation

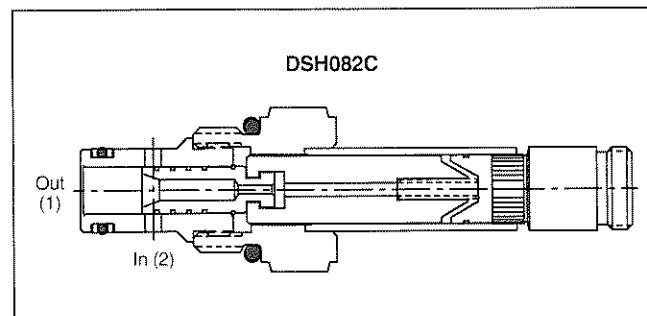
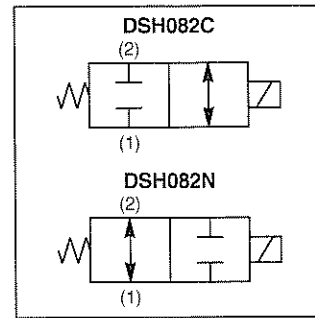
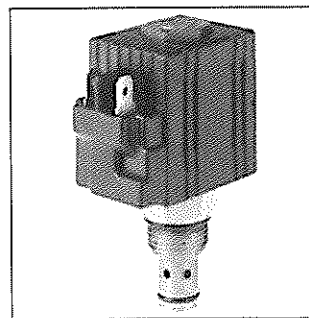
In the de-energized mode, the spool is positioned by spring force. The solenoid, when energized, directly shifts the spool against the spring, thus opening a normally closed valve or closing a normally open valve.

Features

- High flow capacity with reduced space requirements
- Standard valve bodies and common cavities
- One-piece encapsulated coil with minimal amperage draw
- Manual overrides, seal variations and other options available
- No dynamic seals
- Variety of coil terminations

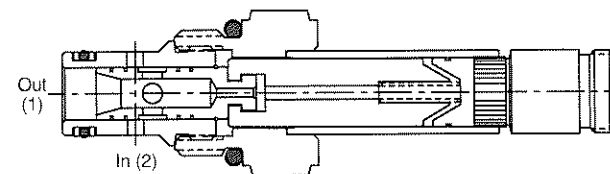
Specifications

Rated Flow	DSH082C N.C. 14 LPM (3.5 GPM) DSH082N N.O. 14 LPM (3.5 GPM)
Maximum Inlet Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Leakage	160 cc/min. (10 cu. in./min.) maximum at 210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C08-2



Construction

DSH082N



Solenoid Coil Specifications

Voltage	Watts	Amps
10 VDC	14	1.45
12 VDC	14	1.17
24 VDC	14	0.57
120 VAC	14	.144
240 VAC	14	.079

Response Time

(at nominal flow and maximum pressure)

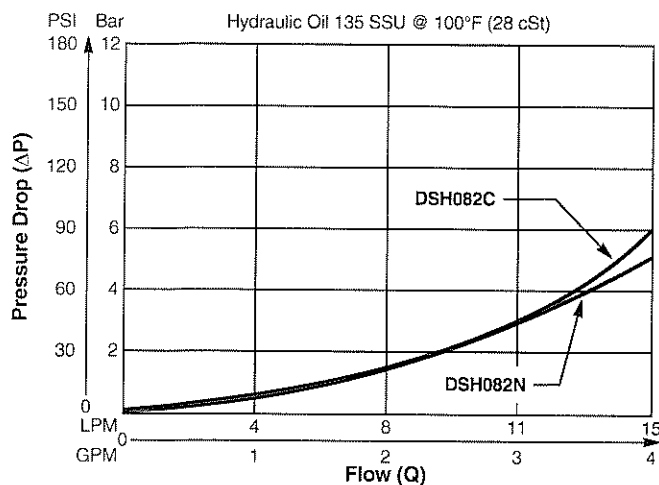
Normally Closed	Open - 60 ms Close - 20 ms
Normally Open	Open - 80 ms Close - 40 ms

Wire Class	"N" for all voltages
A.C. Rectifiers	Integral full wave bridge

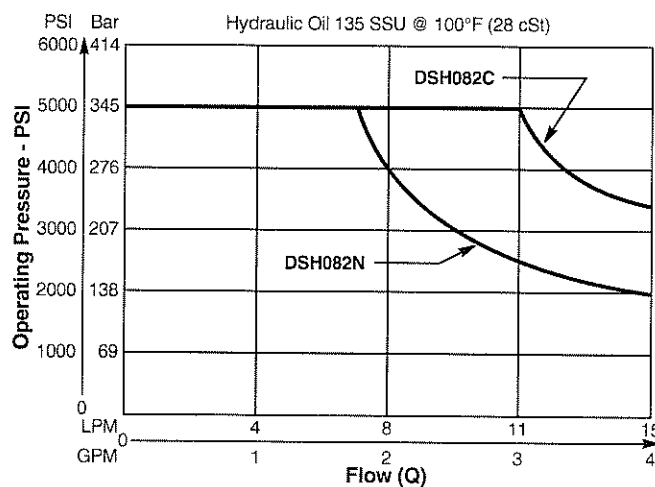
dsh082.pm6.5, bl, gn

Performance Curves

Pressure Drop vs. Flow (Through cartridge only)



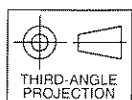
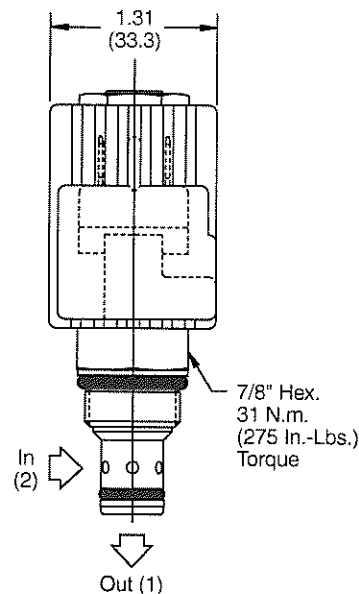
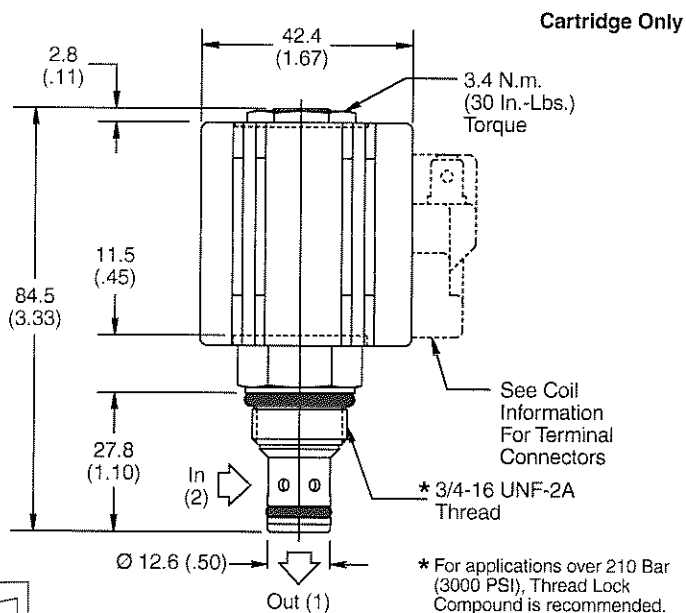
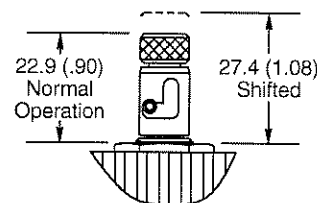
Shift Limit Characteristics (Through cartridge only)



Dimensions

*Inch equivalents for millimeter dimensions are shown in (**)

**Push and Twist
Manual Override**



dsh082.pm6.5, bl, gn

DSH	08	2							
Solenoid Valve	Size	Spool Type	Style	Override Option	Seals	Coil Voltage	Coil Wattage	Coil Termination	Body Option

Code	Style
08	3/4"-14 UNF-2B Threaded Cavity

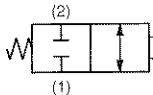
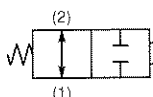
Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Type
Omit	Without Manual Override
T	Push & Twist Manual Override

Code	Type
Omit	Cartridge without Coil
L	14 Watt

Code	Description
C	1/2" NPTF Conduit Connector with 24" 18 AWG Wires
D	DIN 43650 (Hirschmann) Plug Face
P	SAE 1B-0.25 SAE Double Spade (DC Only)
W	Double Wire, 24" 18 AWG (DC Only)
WP	Waterproof Double Wire, 24" 16 AWG (DC Only)

Code	Description
Omit	Cartridge without Coil
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120/110 VAC, 60/50 Hz
A240	240/220 VAC, 60/50 Hz

Code	Description
C	
N	

CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

SOLENOID VALVES

SPECIALTY VALVES

COILS

BODIES

TECHNICAL DATA

SERVICE PARTS

Coil Size	Coil Wattage	Coil Termination	Coil Voltage										
<table border="1"> <thead> <tr> <th>Code</th> <th>Size</th> </tr> </thead> <tbody> <tr> <td>S8</td> <td>1/2" I.D.</td> </tr> <tr> <td>SW8</td> <td>1/2" I.D.</td> </tr> </tbody> </table>	Code	Size	S8	1/2" I.D.	SW8	1/2" I.D.	<table border="1"> <thead> <tr> <th>Code</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>L</td> <td>14 Watts</td> </tr> </tbody> </table>	Code	Type	L	14 Watts		
Code	Size												
S8	1/2" I.D.												
SW8	1/2" I.D.												
Code	Type												
L	14 Watts												

Code	Description
C	Conduit
D	DIN 43650
P	Double Spade
W	Double Wire
WP	Waterproof Double Wire

Code	Description
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120 VAC
A240	240 VAC

DIN Connector:
PG9 Black — 710549-00
PG11 Black — 692914
PG11 Grey — 692915

Coil Nut:
DSH082 — 118127-00

Nitrile Seal Kit:
DSH082 — SK08-2

Fluorocarbon Seal Kit:
DSH082 — SK08-2V

Notes: See 1/2" Unicolls Data Sheet for more options.
For other coil voltages and terminations, consult factory.
S8 Coil applies to all terminations except WP.
SW8 Coil applies to WP termination only.

Code	Port Size & Material	
Omit	Cartridge Only	
4P	1/4" NPTF (B08-2-4P)	Steel
A4P	1/4" NPTF (B08-2-A4P)	Aluminum
6P	3/8" NPTF (B08-2-6P)	Steel
A6P	3/8" NPTF (B08-2-A6P)	Aluminum
4T	SAE-4 (B08-2-4T)	Steel
A4T	SAE-4 (B08-2-A4T)	Aluminum
6T	SAE-6 (B08-2-6T)	Steel
A6T	SAE-6 (B08-2-A6T)	Aluminum
4B	1/4" BSPG (B08-2-4B)	Steel
A4B	1/4" BSPG (B08-2-A4B)	Aluminum
6B	3/8" BSPG (B08-2-6B)	Steel
A6B	3/8" BSPG (B08-2-A6B)	Aluminum

NOTE:
If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used.
Higher pressures require steel bodies.

Shipping Weight
Cartridge Only .11 kg (.25 lbs.)

General Description

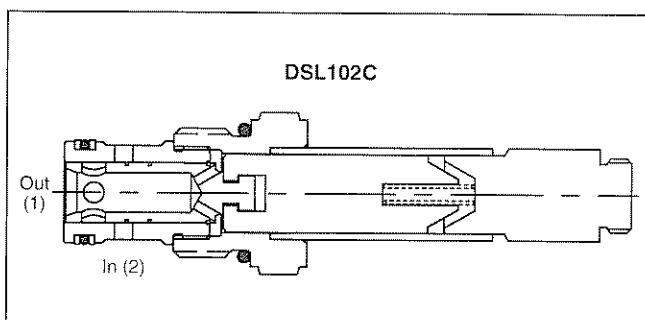
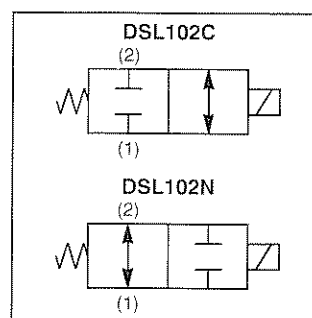
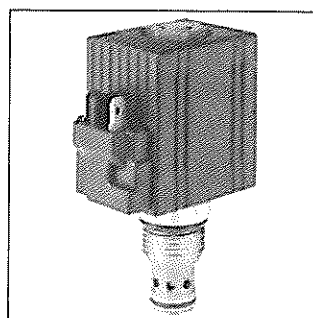
The DSL102, 2-way spool valves are used in circuits requiring flow to be blocked in both directions and/or flow to pass in both directions. When considering this valve series, allow for normal spool valve leakage. Normally open and normally closed configuration plus manual override models are available.

Operation

In the de-energized mode, the spool is positioned by spring force. The solenoid, when energized, directly shifts the spool against the spring, thus opening a normally closed valve or closing a normally open valve.

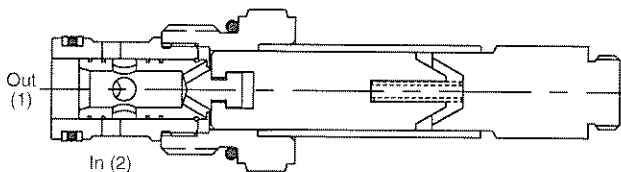
Specifications

Rated Flow (At 70 PSI ΔP)	DSL102C N.C. 30 LPM (8 GPM) DSL102N N.O. 26 LPM (7 GPM)
Maximum Inlet Pressure	210 Bar (3000 PSI)
Leakage	160 cc/min. (10 cu. in./min.) maximum at 210 Bar (3000 PSI)
Minimum Operating Voltage	90% of rated voltage at 210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C10-2



Construction

DSL102N



Features

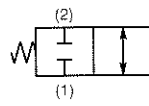
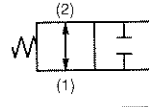
- High flow capacity with reduced space requirements
- Standard valve bodies and common cavities
- One-piece encapsulated coil with minimal amperage draw
- Manual overrides, seal variations and other options available
- No dynamic seals
- Variety of coil terminations

DSL	10	2							
Solenoid Valve	Size	Spool Type	Style	Override Option	Seals	Coil Voltage	Coil Wattage	Coil Termination	Body Option

Code	Style
10	7/8"-14 UNF-2B Threaded Cavity

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Type
Omit	Without Manual Override
P	Push & Release Manual Override
T	Push & Twist Manual Override

Code	Description
C	
N	

Code	Description
Omit	Cartridge without Coil
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120/110 VAC, 60/50 Hz
A240	240/220 VAC, 60/50 Hz

Code	Description
Omit	Cartridge without Coil
C	1/2" NPTF Conduit Connector with 24" 18 AWG Wires
D	DIN 43650 (Hirschmann) Plug Face
P	SAE 1B-0.25 SAE Double Spade (DC Only)
W	Double Wire, 24" 18 AWG (DC Only)
WP	Waterproof Double Wire, 24" 16 AWG (DC Only)

Shipping Weight
 Cartridge Only .17 kg (.38 lbs.)

SERVICE PARTS Coil Size <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Code</th> <th>Size</th> </tr> <tr> <td>S10</td> <td>5/8" I.D.</td> </tr> <tr> <td>SW10</td> <td>5/8" I.D.</td> </tr> </table> DIN Connector: PG9 Black — 710549-00 PG11 Black — 692914 PG11 Grey — 692915 Coil Nut: DSL102 — 118127-00 Nitrile Seal Kit: DSL102 — SK10-2 Fluorocarbon Seal Kit: DSL102 — SK10-2V	Code	Size	S10	5/8" I.D.	SW10	5/8" I.D.	Coil Wattage <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Code</th> <th>Type</th> </tr> <tr> <td>L</td> <td>20 Watts</td> </tr> </table>	Code	Type	L	20 Watts	Coil Termination <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Code</th> <th>Description</th> </tr> <tr> <td>C</td> <td>Conduit</td> </tr> <tr> <td>D</td> <td>DIN 43650</td> </tr> <tr> <td>P</td> <td>Double Spade</td> </tr> <tr> <td>W</td> <td>Double Wire</td> </tr> <tr> <td>WP</td> <td>Waterproof Double Wire</td> </tr> </table>	Code	Description	C	Conduit	D	DIN 43650	P	Double Spade	W	Double Wire	WP	Waterproof Double Wire	Coil Voltage <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Code</th> <th>Description</th> </tr> <tr> <td>D010</td> <td>10 VDC</td> </tr> <tr> <td>D012</td> <td>12 VDC</td> </tr> <tr> <td>D024</td> <td>24 VDC</td> </tr> <tr> <td>A120</td> <td>120 VAC</td> </tr> <tr> <td>A240</td> <td>240 VAC</td> </tr> </table>	Code	Description	D010	10 VDC	D012	12 VDC	D024	24 VDC	A120	120 VAC	A240	240 VAC
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A240	240 VAC																																				

Notes: See 5/8" Unicoids Data Sheet for more options.
 For other coil voltages and terminations, consult factory.
 S10 Coil applies to all terminations except WP.
 SW10 Coil applies to WP termination only.

Code	Port Size & Material	
Omit	Cartridge Only	
4P	1/4" NPTF (B10-2-4P)	Steel
A4P	1/4" NPTF (B10-2-A4P)	Aluminum
6P	3/8" NPTF (B10-2-6P)	Steel
A6P	3/8" NPTF (B10-2-A6P)	Aluminum
8P	1/2" NPTF (B10-2-8P)	Steel
A8P	1/2" NPTF (B10-2-A8P)	Aluminum
6T	SAE-6 (B10-2-6T)	Steel
A6T	SAE-6 (B10-2-A6T)	Aluminum
8T	SAE-8 (B10-2-8T)	Steel
A8T	SAE-8 (B10-2-A8T)	Aluminum
4B	1/4" BSPG (B10-2-4B)	Steel
A4B	1/4" BSPG (B10-2-A4B)	Aluminum
6B	3/8" BSPG (B10-2-6B)	Steel
A6B	3/8" BSPG (B10-2-A6B)	Aluminum
8B	1/2" BSPG (B10-2-8B)	Steel
A8B	1/2" BSPG (B10-2-A8B)	Aluminum

General Description

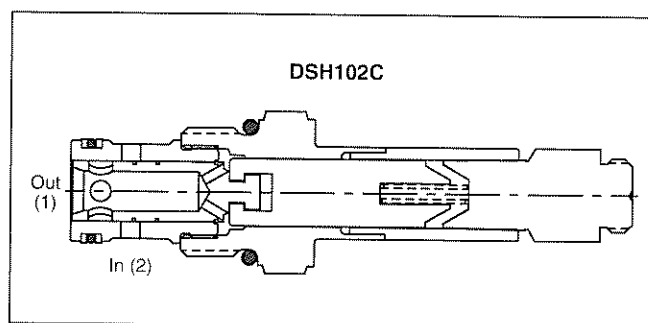
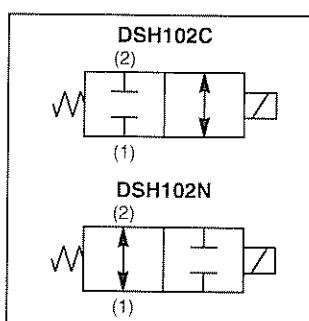
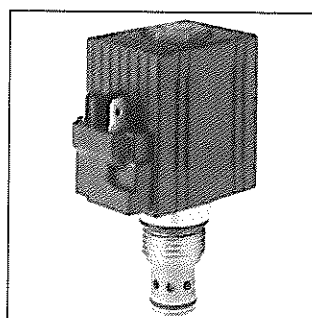
The DSH102, 2-way spool valves are used in circuits requiring flow to be blocked in both directions and/or flow to pass in both directions. When considering this valve series, allow for normal spool valve leakage. Normally open and normally closed configuration plus manual override models are available.

Operation

In the de-energized mode, the spool is positioned by spring force. The solenoid, when energized, directly shifts the spool against the spring, thus opening a normally closed valve or closing a normally open valve.

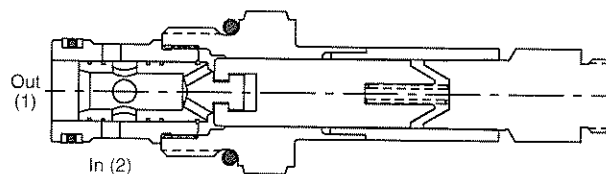
Specifications

Rated Flow	DSH102C N.C. 30 LPM (8 GPM) DSH102N N.O. 26 LPM (7 GPM)
Maximum Inlet Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Leakage	160 cc/min. (10 cu. in./min.) maximum at 210 Bar (3000 PSI)
Minimum Operating Voltage	90% of rated voltage at 345 Bar (5000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C10-2



Construction

DSH102N

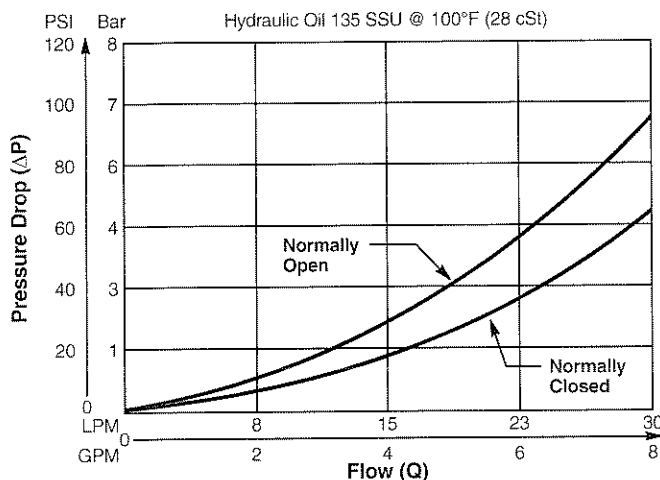


Features

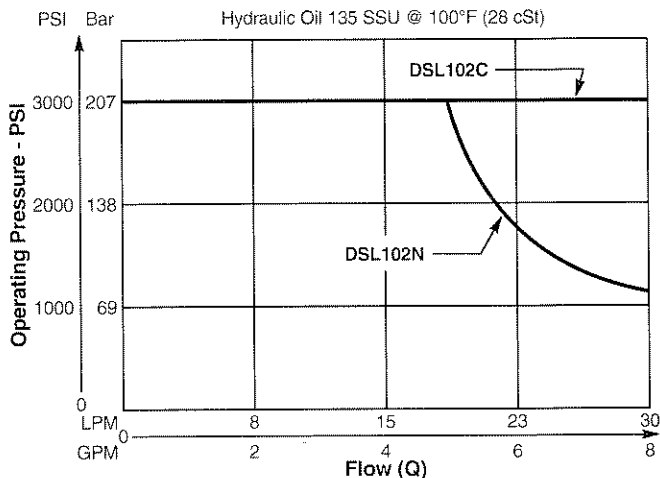
- High flow capacity with reduced space requirements
- Standard valve bodies and common cavities
- One-piece encapsulated coil with minimal amperage draw
- Manual overrides, seal variations and other options available
- No dynamic seals
- Variety of coil terminations

Performance Curves

Pressure Drop vs. Flow (Through cartridge only)



Shift Limit Characteristics (Through cartridge only)



Solenoid Coil Specifications

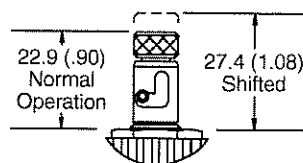
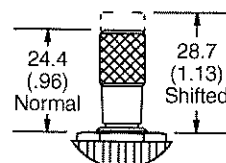
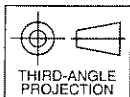
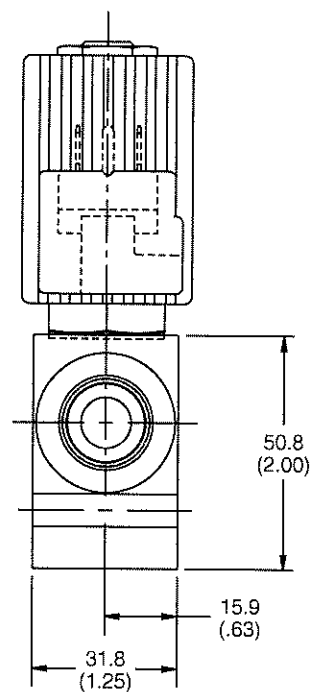
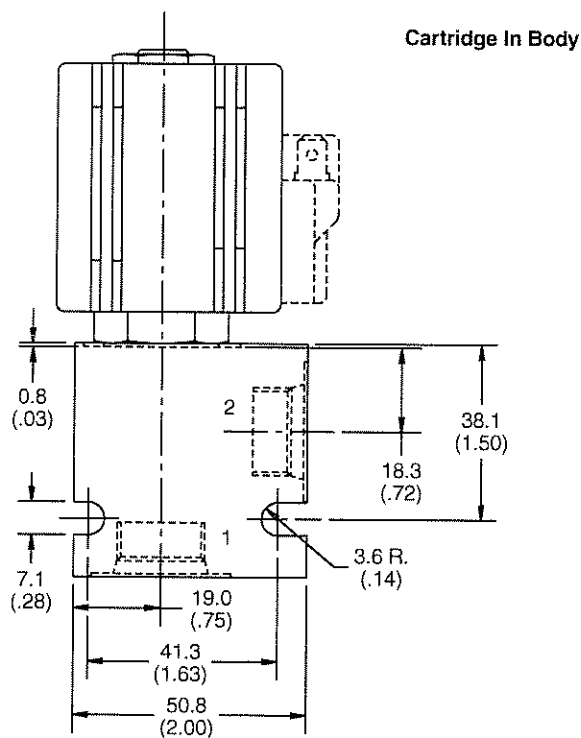
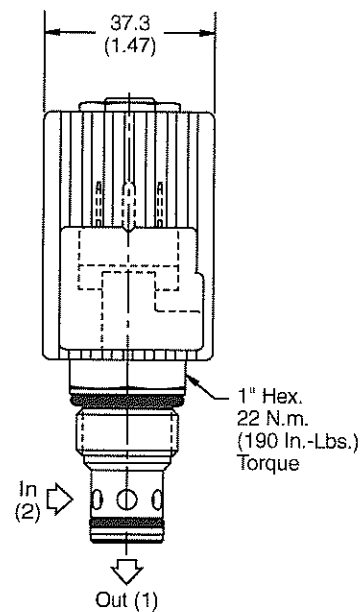
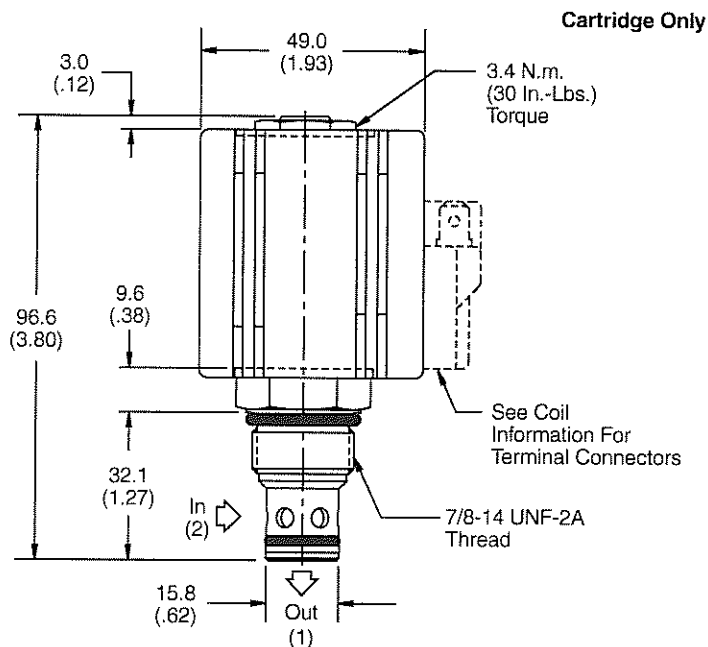
Voltage	10 VDC	12 VDC	24 VDC	120 VAC	240 VAC
Watts	21	20	21	17.8	18.6
Amps	2.1	1.67	.88	.17	.09

Response Time (at nominal flow and maximum pressure)	
Normally Closed	Open - 60 ms Close - 40 ms
Normally Open	Open - 80 ms Close - 40 ms

Wire Class	"N" for all voltages
A.C. Rectifiers	Integral full wave bridge

Dimensions**Spool-Type, Two-Way Valves
Series DSL102**

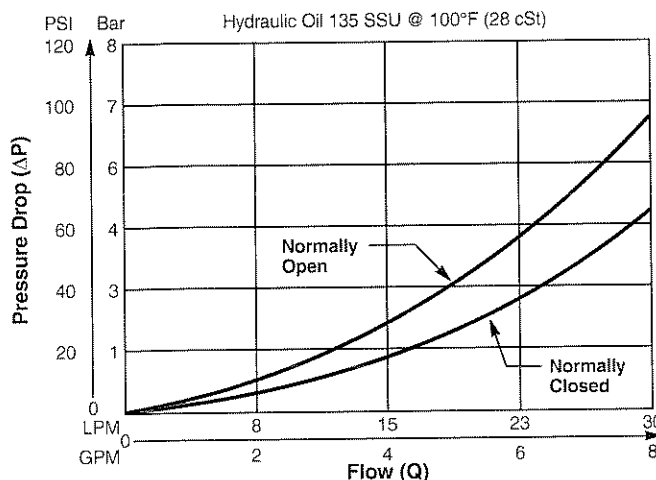
*Inch equivalents for millimeter dimensions are shown in (**)

**Push & Twist
Manual Override****Pull and Release
Manual Override**

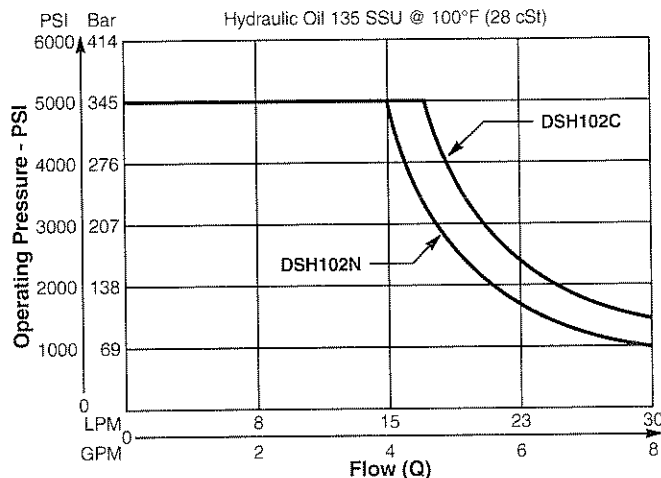
dsl102.pm6.5, bl, gn

Performance Curves

Pressure Drop vs. Flow (Through cartridge only)



Shift Limit Characteristics (Through cartridge only)



Solenoid Coil Specifications

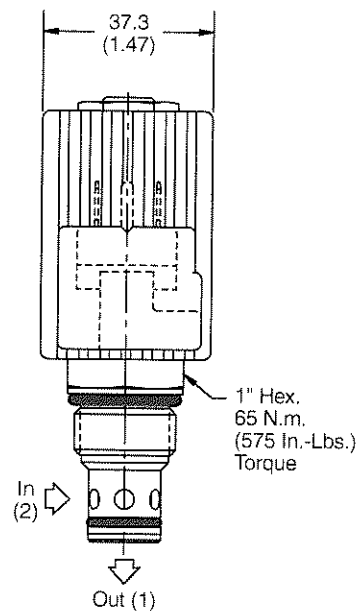
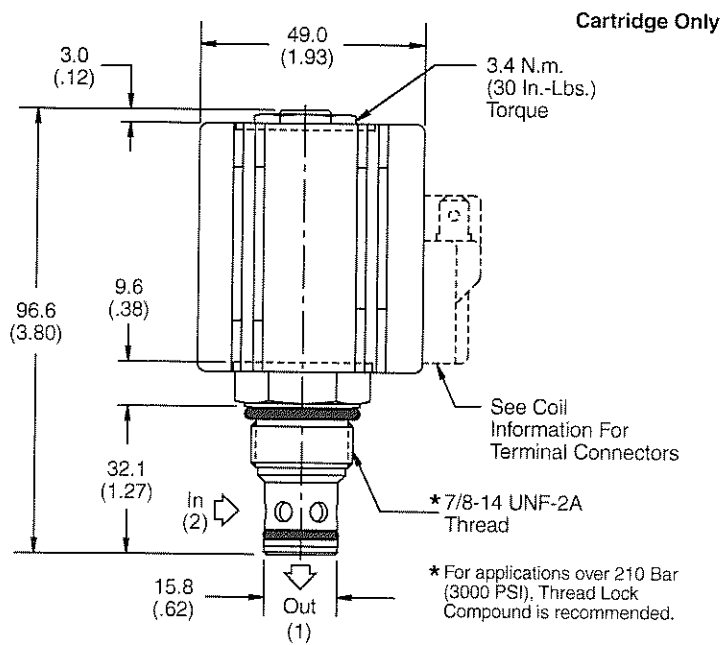
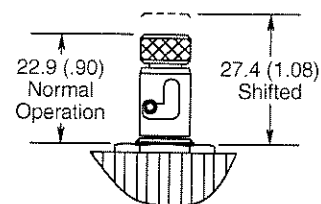
Voltage	10 VDC	12 VDC	24 VDC	120 VAC	240 VAC
Watts	21	20	21	17.8	18.6
Amps	2.1	1.67	.88	.17	.09

Response Time (at nominal flow and maximum pressure)	
Normally Closed	Open - 60 ms Close - 20 ms
Normally Open	Open - 80 ms Close - 40 ms

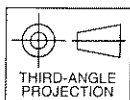
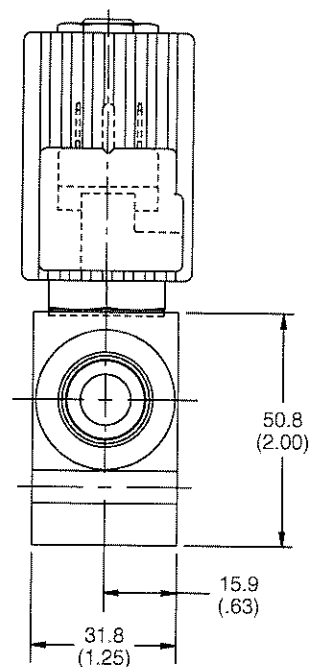
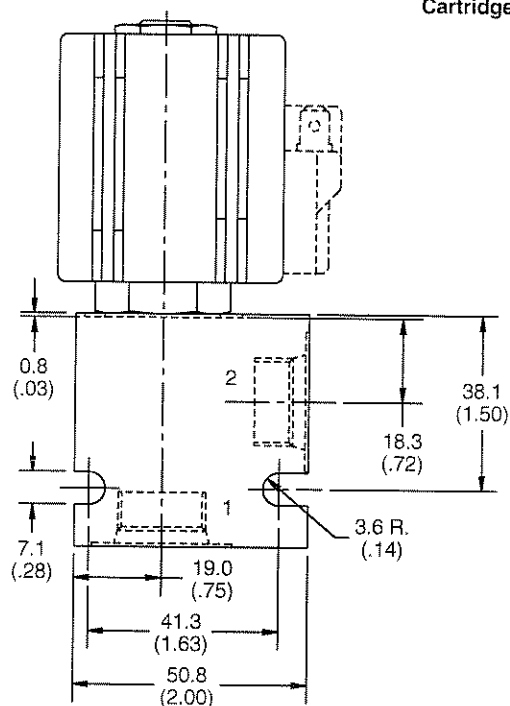
Wire Class	"N" for all voltages
A.C. Rectifiers	Integral full wave bridge

*Inch equivalents for millimeter dimensions are shown in (**)

**Push and Twist
Manual Override**



Cartridge In Body



dsh102.pm6.5, bl, gn

DSH	10	2							
Solenoid Valve	Size	Spool Type	Style	Override Option	Seals	Coil Voltage	Coil Wattage	Coil Termination	Body Option

Code	Style
10	7/8"-14 UNF-2B Threaded Cavity

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Type
Omit	Without Manual Override
T	Push & Twist Manual Override

Code	Type
Omit	Cartridge without Coil
L	20 Watt

Code	Description
Omit	Cartridge without Coil
C	1/2" NPTF Conduit Connector with 24" 18 AWG Wires
D	DIN 43650 (Hirschmann) Plug Face
P	SAE 1B-0.25 SAE Double Spade (DC Only)
W	Double Wire, 24" 18 AWG (DC Only)
WP	Waterproof Double Wire, 24" 16 AWG (DC Only)

Code	Description
Omit	Cartridge without Coil
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120/110 VAC, 60/50 Hz
A240	240/220 VAC, 60/50 Hz

Code	Description
C	 (2) (1)
N	 (2) (1)

CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

SOLENOID VALVES

SPECIALTY VALVES

COILS

BODIES

TECHNICAL DATA

SERVICE PARTS

Coil Size	Coil Wattage	Coil Termination	Coil Voltage																																		
<table border="1"> <thead> <tr> <th>Code</th> <th>Size</th> </tr> </thead> <tbody> <tr> <td>S10</td> <td>5/8" I.D.</td> </tr> <tr> <td>SW10</td> <td>5/8" I.D.</td> </tr> </tbody> </table>	Code	Size	S10	5/8" I.D.	SW10	5/8" I.D.	<table border="1"> <thead> <tr> <th>Code</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>L</td> <td>20 Watts</td> </tr> </tbody> </table>	Code	Type	L	20 Watts	<table border="1"> <thead> <tr> <th>Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>C</td> <td>Conduit</td> </tr> <tr> <td>D</td> <td>DIN 43650</td> </tr> <tr> <td>P</td> <td>Double Spade</td> </tr> <tr> <td>W</td> <td>Double Wire</td> </tr> <tr> <td>WP</td> <td>Waterproof Double Wire</td> </tr> </tbody> </table>	Code	Description	C	Conduit	D	DIN 43650	P	Double Spade	W	Double Wire	WP	Waterproof Double Wire	<table border="1"> <thead> <tr> <th>Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>D010</td> <td>10 VDC</td> </tr> <tr> <td>D012</td> <td>12 VDC</td> </tr> <tr> <td>D024</td> <td>24 VDC</td> </tr> <tr> <td>A120</td> <td>120 VAC</td> </tr> <tr> <td>A240</td> <td>240 VAC</td> </tr> </tbody> </table>	Code	Description	D010	10 VDC	D012	12 VDC	D024	24 VDC	A120	120 VAC	A240	240 VAC
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A240	240 VAC																																				

DIN Connector:
 PG9 Black — 710549-00
 PG11 Black — 692914
 PG11 Grey — 692915

Coil Nut:
 DSH102 — 118127-00

Nitrile Seal Kit:
 DSH102 — SK10-2

Fluorocarbon Seal Kit:
 DSH102 — SK10-2V

Notes: See 5/8" Unicoids Data Sheet for more options.
 For other coil voltages and terminations, consult factory.
 S10 Coil applies to all terminations except WP.
 SW10 Coil applies to WP termination only.

Code	Port Size & Material	
Omit	Cartridge Only	
4P	1/4" NPTF (B10-2-4P)	Steel
A4P	1/4" NPTF (B10-2-A4P)	Aluminum
6P	3/8" NPTF (B10-2-6P)	Steel
A6P	3/8" NPTF (B10-2-A6P)	Aluminum
8P	1/2" NPTF (B10-2-8P)	Steel
A8P	1/2" NPTF (B10-2-A8P)	Aluminum
6T	SAE-6 (B10-2-6T)	Steel
A6T	SAE-6 (B10-2-A6T)	Aluminum
8T	SAE-8 (B10-2-8T)	Steel
A8T	SAE-8 (B10-2-A8T)	Aluminum
4B	1/4" BSPG (B10-2-4B)	Steel
A4B	1/4" BSPG (B10-2-A4B)	Aluminum
6B	3/8" BSPG (B10-2-6B)	Steel
A6B	3/8" BSPG (B10-2-A6B)	Aluminum
8B	1/2" BSPG (B10-2-8B)	Steel
A8B	1/2" BSPG (B10-2-A8B)	Aluminum

Shipping Weight
 Cartridge Only .17 kg (.38 lbs.)

NOTE: If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

General Description

The DS162C and DS162N, 2-way spool valves are used on-off, single acting cylinder and all other 2-way applications where low leakage is not critical. The DS162C is used in a normally closed application where it is necessary to energize the valve to provide flow. The DS162N is used in a normally open application where it is necessary to energize the valve to block flow.

Operation

DS162N De-Energized

When the solenoid is de-energized, the spool is positioned allowing free flow from either 2 Port to 1 Port, or 1 Port to 2 Port.

DS162N Energized

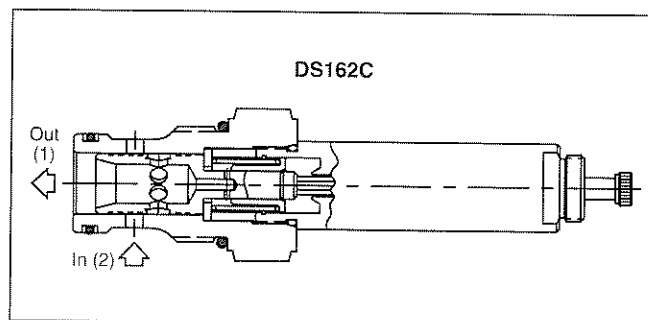
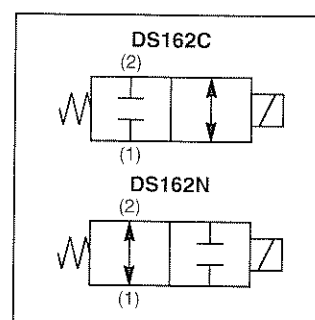
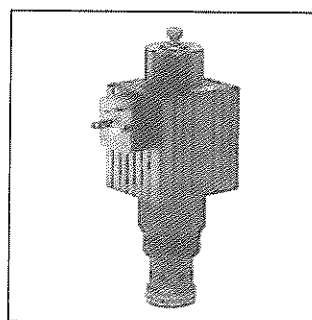
When the solenoid is energized, the spool shifts blocking flow from both 2 Port to 1 Port, or 1 Port to 2 Port.

Features

- Low hysteresis
- One-piece encapsulated coil with minimal amperage draw
- Variety of coil terminations and voltages
- Variety of manual override options available

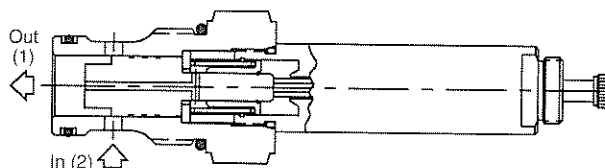
Specifications

Rated Flow (At 70 PSI ΔP)	DS162C & DS162N 75 LPM (20 GPM)
Maximum Inlet Pressure	210 Bar (3000 PSI)
Leakage	82 cc/min at 210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C16-2



Construction

DS162N



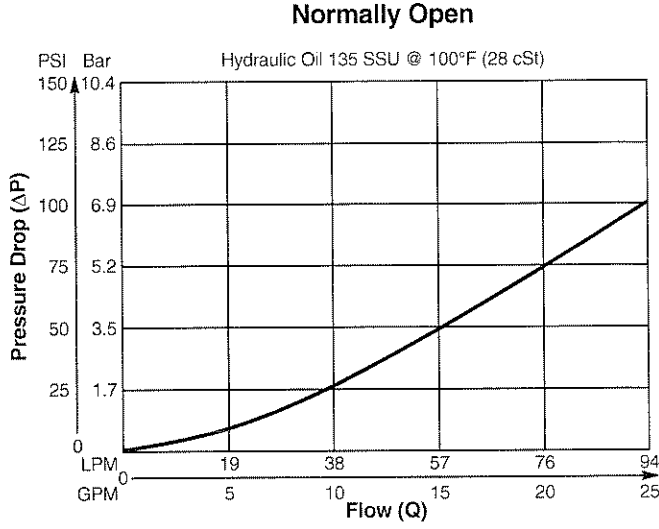
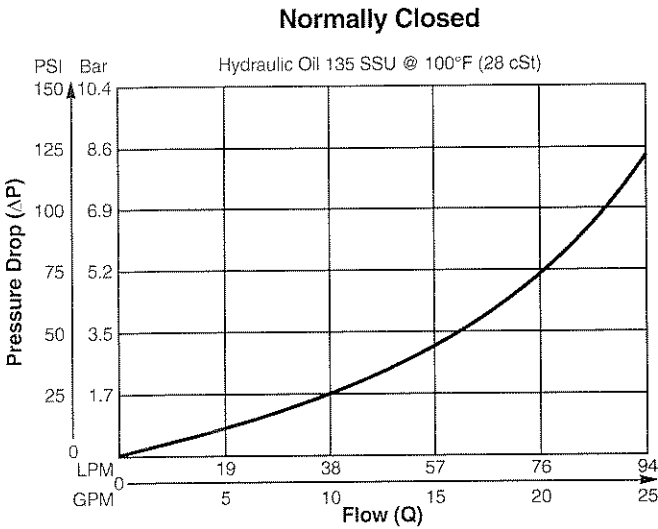
Solenoid Coil Specifications

Voltage	12 VDC	24 VDC	120 VAC
Duty	HD.	HD.	HD.
Watts	42	42	55
Amps	3.5	1.75	.48

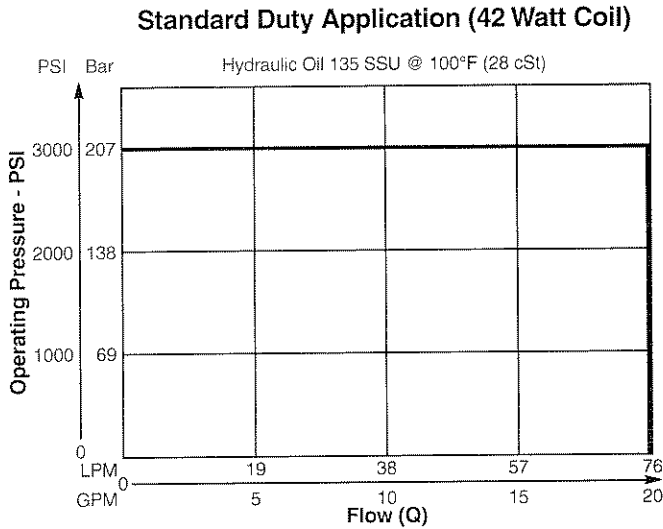
Response Time (at nominal flow and maximum pressure)	
Normally Closed	Up to 90ms
Normally Open	Up to 100ms

Wire Class	"N" for all voltages
A.C. Rectifiers	Integral full wave bridge

Pressure Drop vs. Flow (Through cartridge only)



Shift Limit Characteristics (Through cartridge only)



CHECKS &
SHUTTLES

LOAD & MOTOR
CONTROLS

VOLUME
CONTROLS

PRESSURE
CONTROLS

SOLENOID
VALVES

SPECIALTY
VALVES

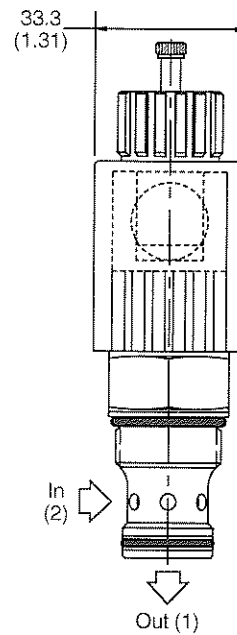
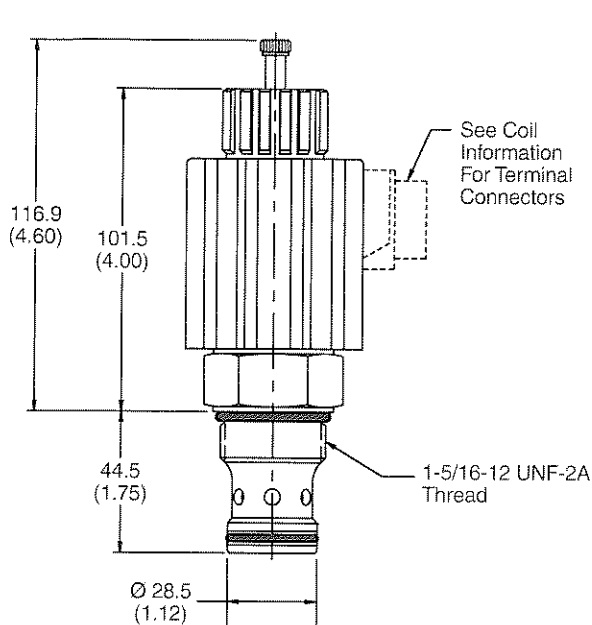
COILS

BODIES

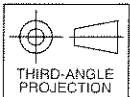
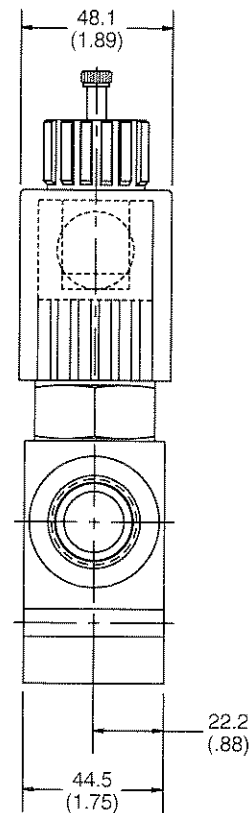
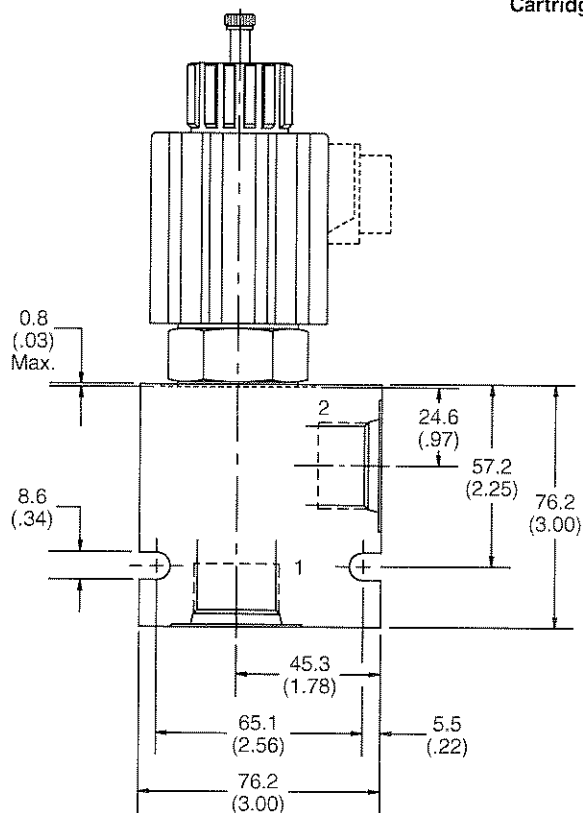
TECHNICAL
DATA

*Inch equivalents for millimeter dimensions are shown in (**)

Cartridge Only



Cartridge In Body

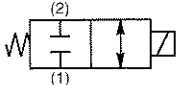
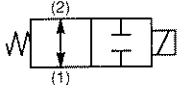


ds162.pm6.5, bl, gn

DS	16	2						
Solenoid Valve	Size	Spool Type	Style	Seals	Coil Voltage	Coil Termination	—	Body Option

Code	Style
16	1-5/16"-12 UNF-2B Threaded Cavity

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Option
C	Normally Closed 
N	Normally Open 

Code	Description
D012	12 VDC
D024	24 VDC
A120	120/110 VAC, 60/50 Hz

NOTE: All valves furnished with extended push type manual overrides.

Due to flow requirements, the DS162 valves use coils that are different than the coils used on the DS161 series valves.

Code	Description
Omit	Cartridge without Coil
C	1/2" NPTF Conduit Connector with 24" 18 AWG Wires
D	DIN 43650 (Hirschmann) Plug Face
PV	SAE 1B-0.25 SAE Double Spade, Vertically-Oriented (DC Only)
SV	Double 8-32 Screw and Nut, Internally Ground (DC Only)
S1V	Single 8-32 Screw and Nut, Internally Ground (DC Only)
W	Double Wire, 24" 18 AWG (DC Only)

SERVICE PARTS	
DIN Connector: PG9 Black — 710549-00 PG11 Black — 692914 PG11 Grey — 692915	Coil Assemblies 851057***** Conduit Coil 851058***** DIN (Hirschmann) Coil 851060***** Double Spade Vertically-Oriented Coil 851062***** Double Wire Coil 851064***** Double Screw Vertically-Oriented Coil 851065***** Single Screw Vertically-Oriented Coil
Coil Nut: 118378-00	
Nitrile Seal Kit: SK16-2	
Fluorocarbon Seal Kit: SK16-2V	(*****Calls out voltage. For example: 851060-012VDC is a 12 volt, 42 watt Double Spade Coil.)

Code	Port Size & Material	
Omit	Cartridge Only	
12P	3/4" NPTF (B16-2-12P)	Steel
A12P	3/4" NPTF (B16-2-A12P)	Aluminum
16P	1" NPTF (B16-2-16P)	Steel
A16P	1" NPTF (B16-2-A16P)	Aluminum
12T	SAE-12 (B16-2-12T)	Steel
A12T	SAE-12 (B16-2-A12T)	Aluminum
16T	SAE-16 (B16-2-16T)	Steel
A16T	SAE-16 (B16-2-A16T)	Aluminum
12B	3/4" BSPG (B16-2-12B)	Steel
A12B	3/4" BSPG (B16-2-A12B)	Aluminum
16B	1" BSPG (B16-2-16B)	Steel
A16B	1" BSPG (B16-2-A16B)	Aluminum

Shipping Weight
 Cartridge Only 1.0 kg (2.2 lbs.)

ds162.pm6.5, bl, gn

General Description

The DSL083, 3-way spool valves are used as low flow directional valves, pilot valves, or selector valves. They can be used in normally open or normally closed applications.

Operation

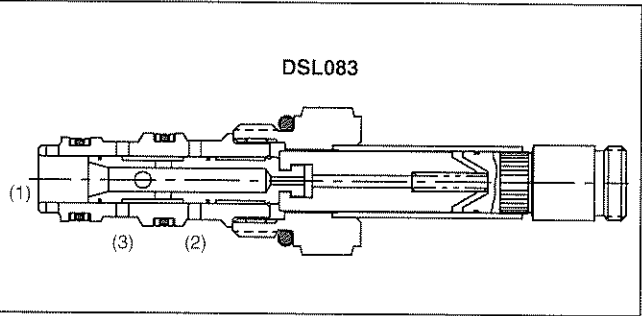
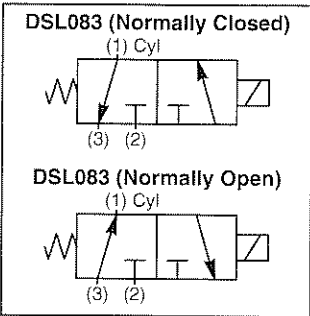
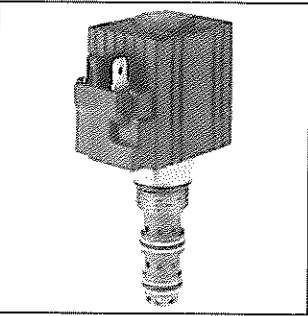
In the de-energized mode, the spool is positioned by spring force. The solenoid, when energized, directly shifts the spool against the spring, thus changing the flow path through the valve.

Features

- High flow capacity with reduced space requirements
- Standard valve bodies and common cavities
- One-piece encapsulated coil with minimal amperage draw
- Manual overrides, seal variations and other options available
- No dynamic seals
- Variety of coil terminations

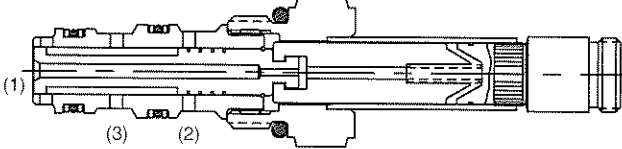
Specifications

Rated Flow (At 70 PSI ΔP)	DSL083
	N.O. 11.3 LPM (3.0 GPM)
	N.C. 7.5 LPM (2.0 GPM)
	Selector 5.6 LPM (1.5 GPM)
	DSL083B
	N.O. 9.4 LPM (2.5 GPM)
	N.C. 11.3 LPM (3.0 GPM)
	Selector 9.4 LPM (2.5 GPM)
	DSL083N
	N.O. 11.3 LPM (3.0 GPM)
	N.C. 9.4 LPM (2.5 GPM)
	Selector 11.3 LPM (3.0 GPM)
Maximum Inlet Pressure	210 Bar (3000 PSI)
Leakage	160 cc/min. (10 cu. in./min.) maximum at 210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C08-3

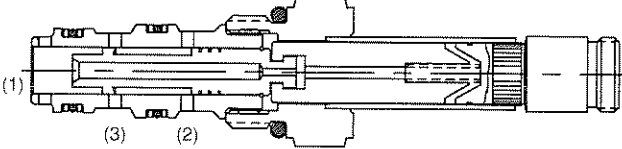


Construction

DSL083B



DSL083N



Solenoid Coil Specifications

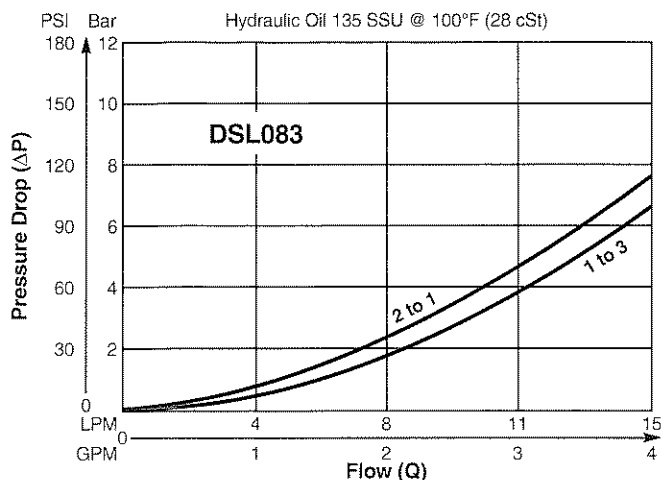
Voltage	Watts	Amps
10 VDC	14	1.45
12 VDC	14	1.17
24 VDC	14	0.57
120 VAC	14	.144
240 VAC	14	.079

Response Time (Dependent on flow and pressure)	50 ms to 150 ms

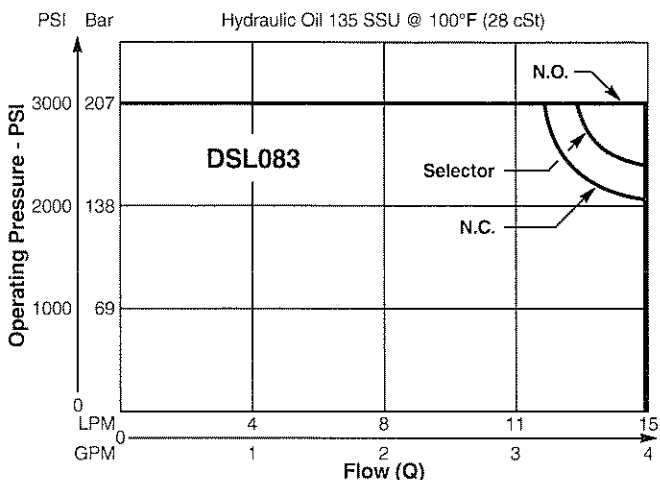
Wire Class	"N" for all voltages
A.C. Rectifiers	Integral full wave bridge

dsl083 pm6 5, bl, gn

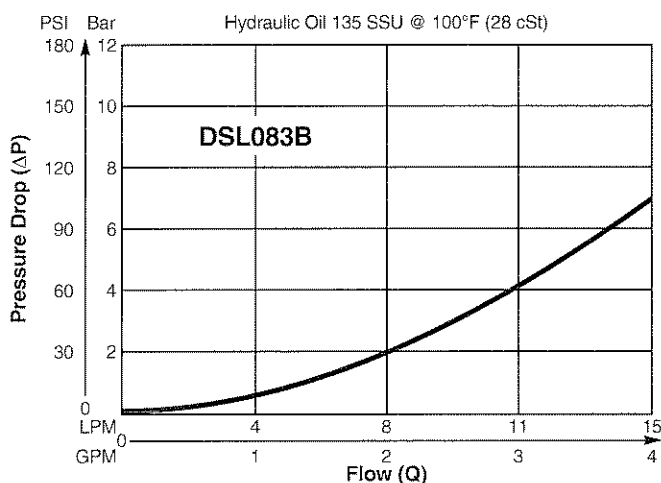
Pressure Drop vs. Flow (Through cartridge only)



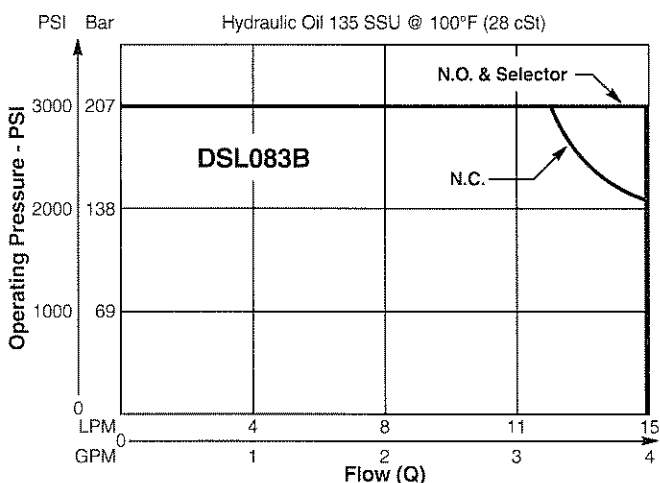
Shift Limit Characteristics (Through cartridge only)



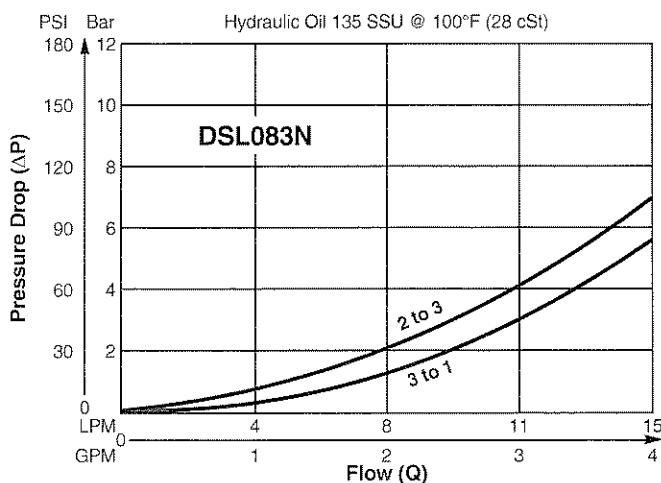
Pressure Drop vs. Flow (Through cartridge only)



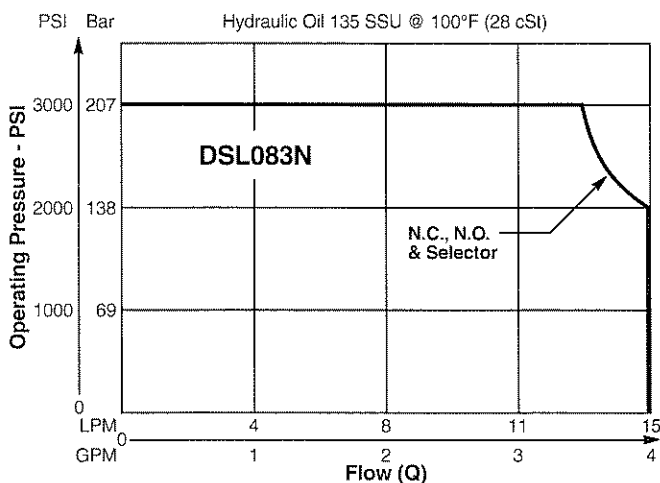
Shift Limit Characteristics (Through cartridge only)



Pressure Drop vs. Flow (Through cartridge only)



Shift Limit Characteristics (Through cartridge only)



CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

SOLENOID VALVES

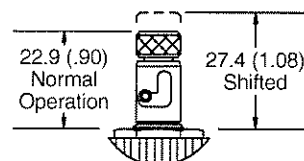
SPECIALTY VALVES

COILS

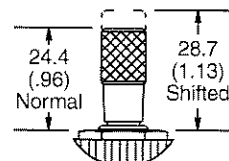
BODIES

TECHNICAL DATA

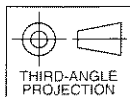
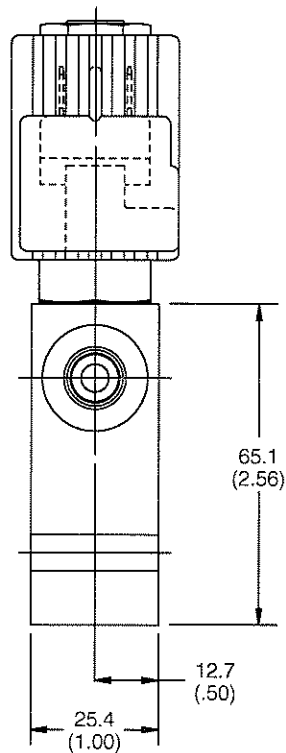
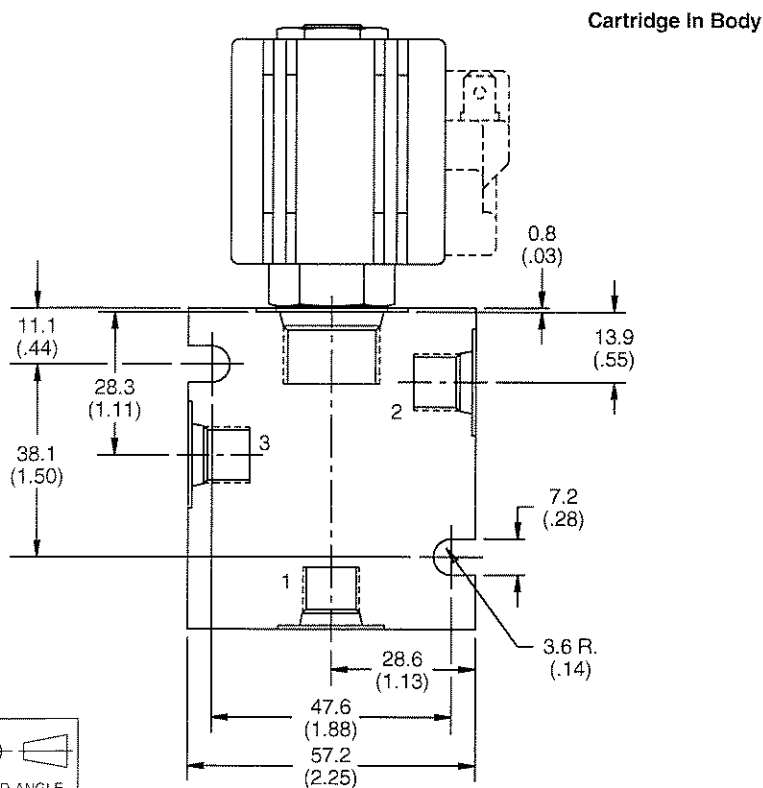
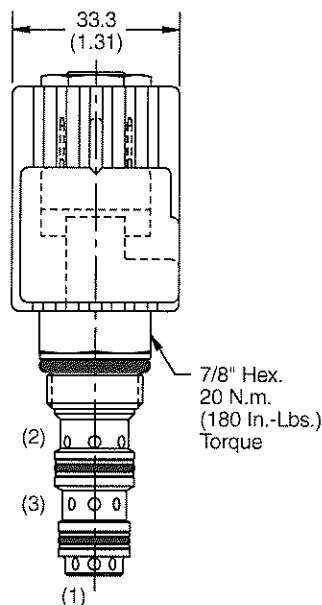
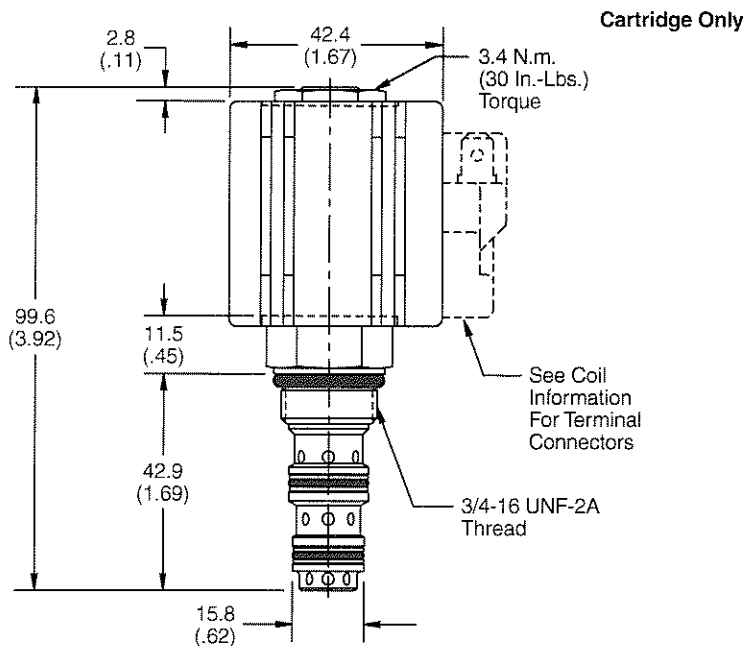
*Inch equivalents for millimeter dimensions are shown in (**)



**Push & Twist
Manual Override**



**Pull and Release
Manual Override**



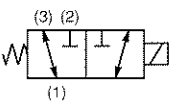
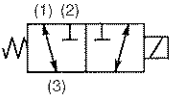
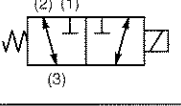
dsl083.pm6.5, bl, gn

DSL	08	3							
Solenoid Valve	Size	Spool Type	Style	Override Option	Seals	Coil Voltage	Coil Wattage	Coil Termination	Body Option

Code	Style
08	3/4"-16 UNF-2B Threaded Cavity

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Type
Omit	Cartridge without Coil
L	14 Watt

Code	Description
Omit	
B	
N	

Code	Type
Omit	Without Manual Override
P	Pull & Release Manual Override
T	Push & Twist Manual Override

Code	Description
Omit	Cartridge without Coil
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120/110 VAC, 60/50 Hz
A240	240/220 VAC, 60/50 Hz

Code	Description
Omit	Cartridge without Coil
C	1/2" NPTF Conduit Connector with 24" 18 AWG Wires
D	DIN 43650 (Hirschmann) Plug Face
P	SAE 1B-0.25 SAE Double Spade (DC Only)
W	Double Wire, 24" 18 AWG (DC Only)
WP	Waterproof Double Wire, 24" 16 AWG (DC Only)

Shipping Weight
 Cartridge Only .13 kg (.28 lbs.)

SERVICE PARTS Coil Size <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 15%;">Code</th> <th style="width: 85%;">Size</th> </tr> <tr> <td>S8</td> <td>1/2" I.D.</td> </tr> <tr> <td>SW8</td> <td>1/2" I.D.</td> </tr> </table> DIN Connector: PG9 Black — 710549-00 PG11 Black — 692914 PG11 Grey — 692915 Coil Nut: DSL083 — 118127-00 Nitrile Seal Kit: DSL083 — SK08-3 Fluorocarbon Seal Kit: DSL083 — SK08-3V	Code	Size	S8	1/2" I.D.	SW8	1/2" I.D.	Coil Wattage <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 15%;">Code</th> <th style="width: 85%;">Type</th> </tr> <tr> <td>L</td> <td>14 Watts</td> </tr> </table>	Code	Type	L	14 Watts	Coil Termination <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 15%;">Code</th> <th style="width: 85%;">Description</th> </tr> <tr> <td>C</td> <td>Conduit</td> </tr> <tr> <td>D</td> <td>DIN 43650</td> </tr> <tr> <td>P</td> <td>Double Spade</td> </tr> <tr> <td>W</td> <td>Double Wire</td> </tr> <tr> <td>WP</td> <td>Waterproof Double Wire</td> </tr> </table>	Code	Description	C	Conduit	D	DIN 43650	P	Double Spade	W	Double Wire	WP	Waterproof Double Wire	Coil Voltage <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 15%;">Code</th> <th style="width: 85%;">Description</th> </tr> <tr> <td>D010</td> <td>10 VDC</td> </tr> <tr> <td>D012</td> <td>12 VDC</td> </tr> <tr> <td>D024</td> <td>24 VDC</td> </tr> <tr> <td>A120</td> <td>120 VAC</td> </tr> <tr> <td>A240</td> <td>240 VAC</td> </tr> </table>	Code	Description	D010	10 VDC	D012	12 VDC	D024	24 VDC	A120	120 VAC	A240	240 VAC
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A240	240 VAC																																				

Notes: See 1/2" Unicoids Data Sheet for more options.
 For other coil voltages and terminations, consult factory.
 S8 Coil applies to all terminations except WP.
 SW8 Coil applies to WP termination only.

Code	Port Size & Material
Omit	Cartridge Only
4P	1/4" NPTF (B08-3-4P) Steel
A4P	1/4" NPTF (B08-3-A4P) Aluminum
6P	3/8" NPTF (B08-3-6P) Steel
A6P	3/8" NPTF (B08-3-A6P) Aluminum
4T	SAE-4 (B08-3-4T) Steel
A4T	SAE-4 (B08-3-A4T) Aluminum
6T	SAE-6 (B08-3-6T) Steel
A6T	SAE-6 (B08-3-A6T) Aluminum
4B	1/4" BSPG (B08-3-4B) Steel
A4B	1/4" BSPG (B08-3-A4B) Aluminum
6B	3/8" BSPG (B08-3-6B) Steel
A6B	3/8" BSPG (B08-3-A6B) Aluminum

General Description

The DSH083, 3-way spool valves are used as low flow directional valves, pilot valves, or selector valves. They can be used in normally open or normally closed applications.

Operation

In the de-energized mode, the spool is positioned by spring force. The solenoid, when energized, directly shifts the spool against the spring, thus changing the flow path through the valve.

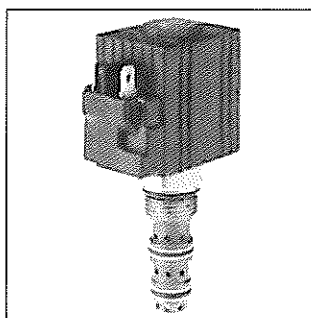
Features

- High flow capacity with reduced space requirements
- Standard valve bodies and common cavities
- One-piece encapsulated coil with minimal amperage draw
- Manual overrides, seal variations and other options available
- No dynamic seals
- Variety of coil terminations

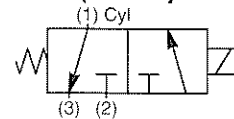
Specifications

Rated Flow	DSH083
	N.O. 11.3 LPM (3.0 GPM)
	N.C. 7.5 LPM (2.0 GPM)
	Selector 5.6 LPM (1.5 GPM)
	DSH083B
	N.O. 9.4 LPM (2.5 GPM)
	N.C. 11.3 LPM (3.0 GPM)
	Selector 9.4 LPM (2.5 GPM)
	DSH083N
	N.O. 11.3 LPM (3.0 GPM)
	N.C. 9.4 LPM (2.5 GPM)
	Selector 11.3 LPM (3.0 GPM)
Maximum Inlet Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Leakage	160 cc/min. (10 cu. in./min.) maximum at 210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C08-3

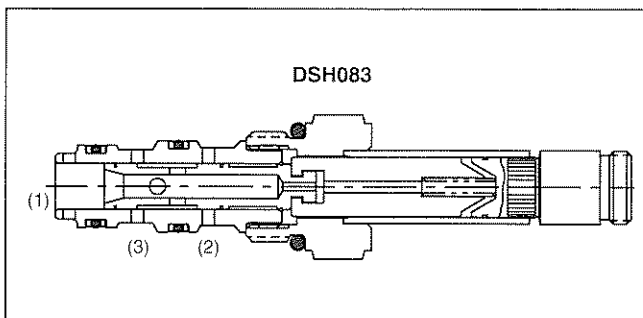
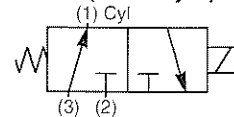
dsh083, pm6.5, bl, gn



DSH083 (Normally Closed)

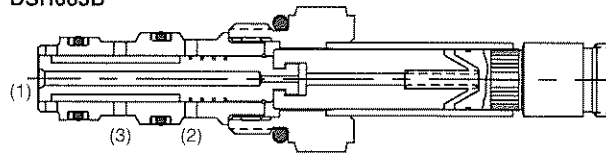


DSH083 (Normally Open)

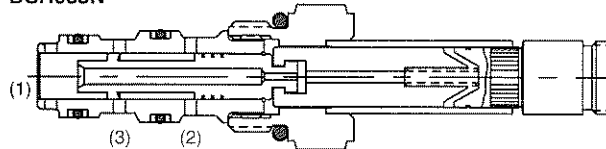


Construction

DSH083B



DSH083N



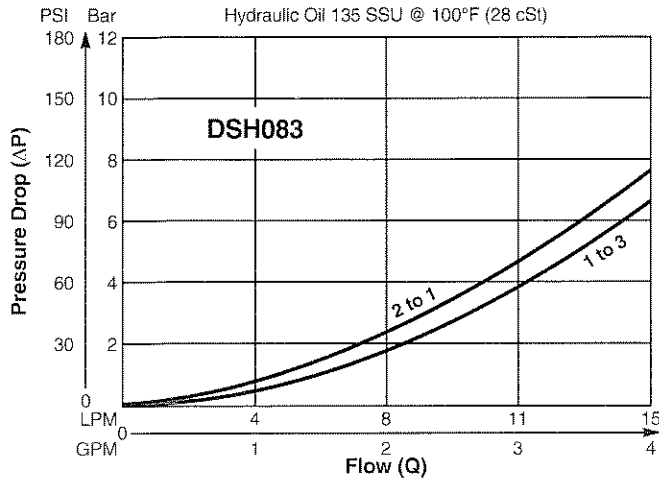
Solenoid Coil Specifications

Voltage	Watts	Amps
10 VDC	14	1.45
12 VDC	14	1.17
24 VDC	14	0.57
120 VAC	14	.144
240 VAC	14	.079

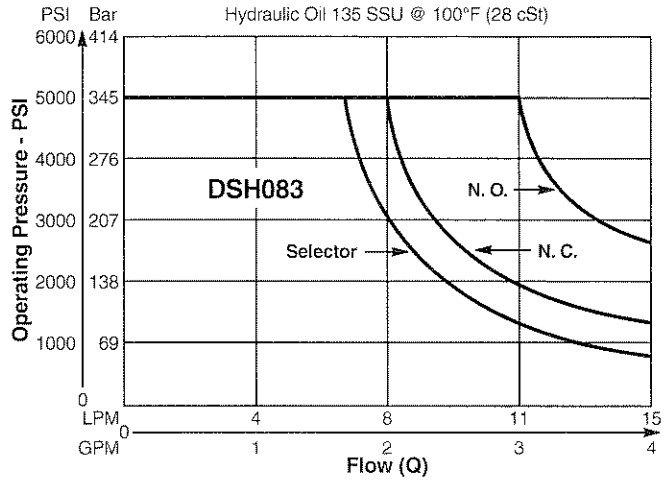
Response Time (Dependent on flow and pressure)	50 ms to 150 ms

Wire Class	"N" for all voltages
A.C. Rectifiers	Integral full wave bridge

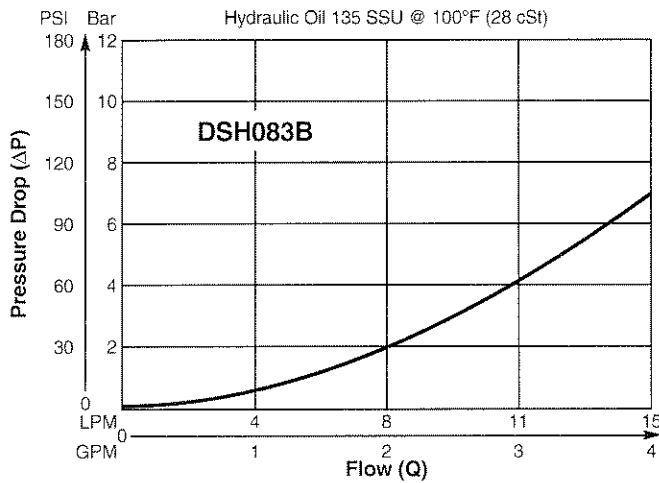
Pressure Drop vs. Flow (Through cartridge only)



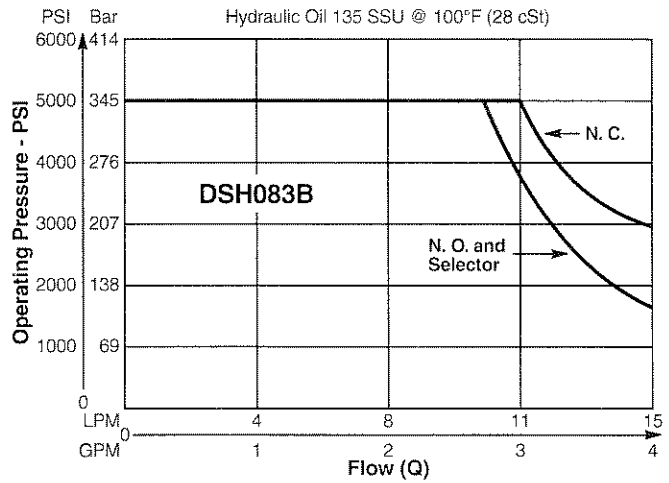
Shift Limit Characteristics (Through cartridge only)



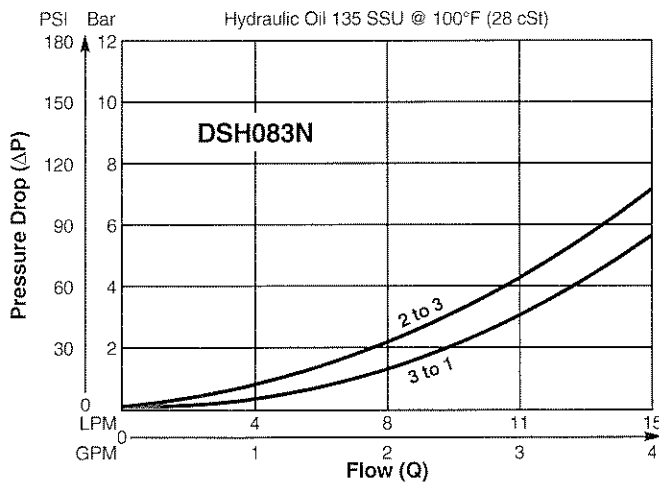
Pressure Drop vs. Flow (Through cartridge only)



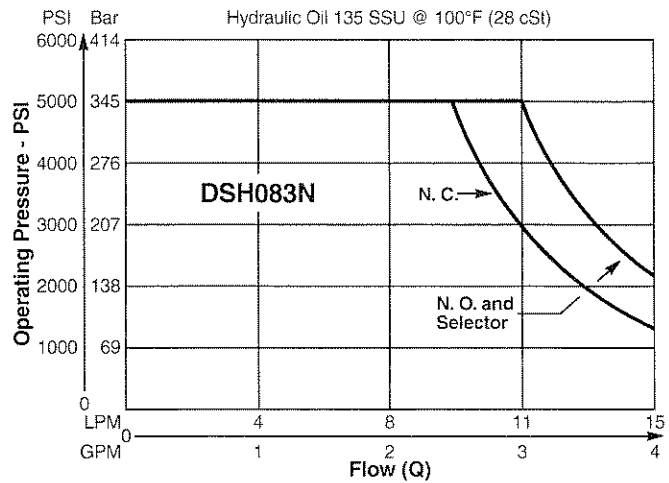
Shift Limit Characteristics (Through cartridge only)



Pressure Drop vs. Flow (Through cartridge only)

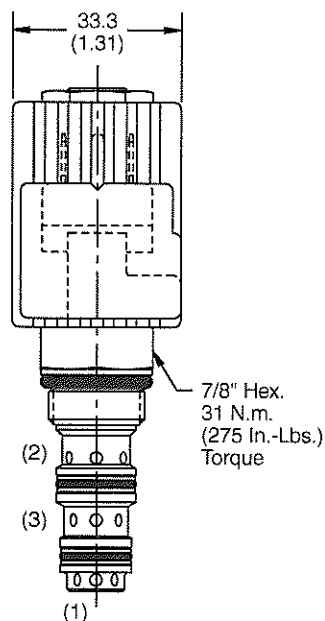
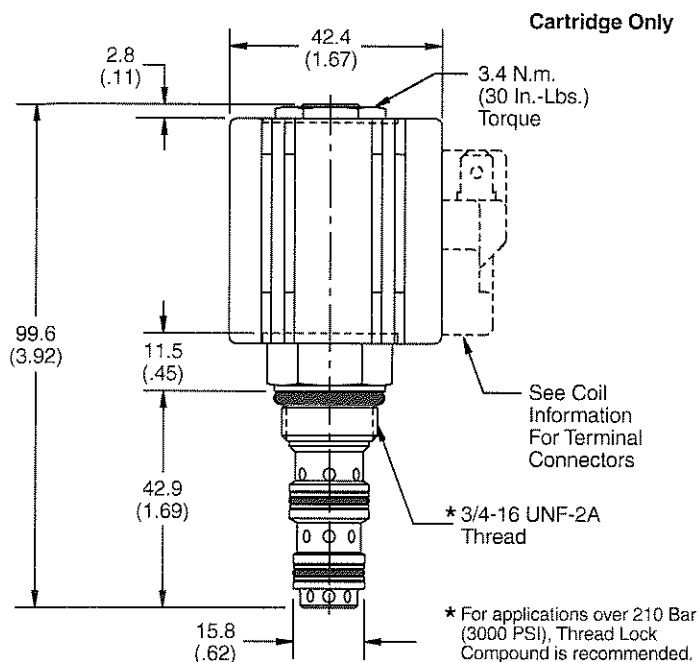
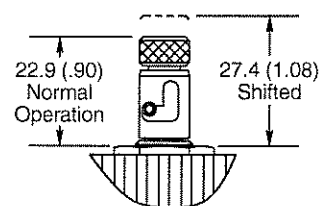


Shift Limit Characteristics (Through cartridge only)

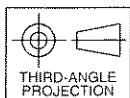
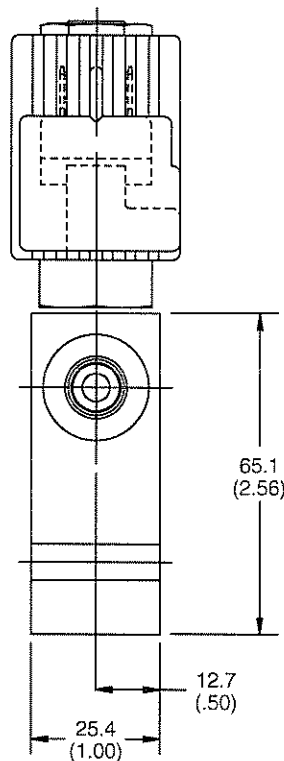
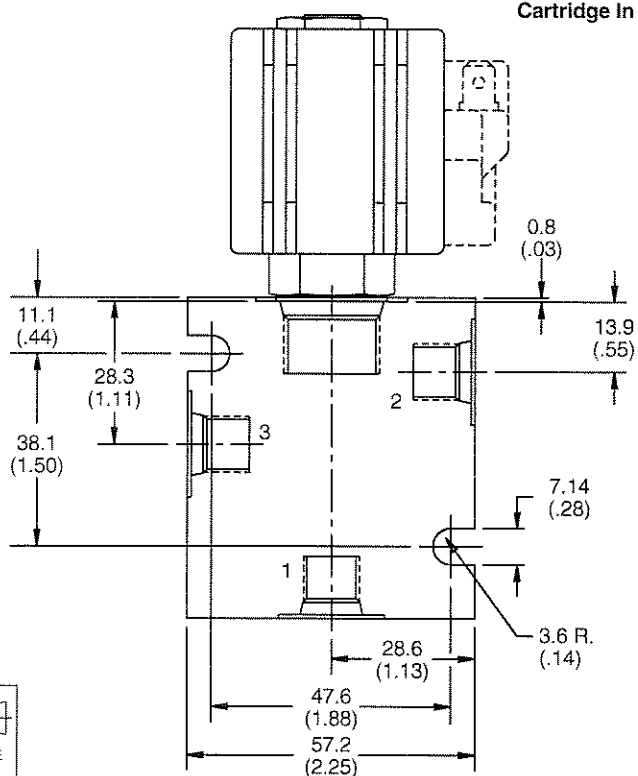


dsh083.pm6 5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)

Push and Twist
Manual Override

Cartridge In Body



dsh083.pm6.5, bl, gn

DSH	08	3							
Solenoid Valve	Size	Spool Type	Style	Override Option	Seals	Coil Voltage	Coil Wattage	Coil Termination	Body Option

Code	Style
08	3/4"-16 UNF-2B Threaded Cavity

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Type
Omit	Cartridge without Coil
L	14 Watt

Code	Description
Omit	(3) (2) (1)
B	(1) (2) (3)
N	(2) (1) (3)

Code	Type
Omit	Without Manual Override
T	Push & Twist Manual Override

Code	Description
Omit	Cartridge without Coil
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120/110 VAC, 60/50 Hz
A240	240/220 VAC, 60/50 Hz

Code	Description
Omit	Cartridge without Coil
C	1/2" NPTF Conduit Connector with 24" 18 AWG Wires
D	DIN 43650 (Hirschmann) Plug Face
P	SAE 1B-0.25 SAE Double Spade (DC Only)
W	Double Wire, 24" 18 AWG (DC Only)
WP	Waterproof Double Wire, 24" 16 AWG (DC Only)

CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

SOLENOID VALVES

SPECIALTY VALVES

COILS

BODIES

TECHNICAL DATA

SERVICE PARTS

Coil Size	Coil Wattage	Coil Termination	Coil Voltage
Code Size	Code Type		
S8 1/2" I.D.	L 14 Watts		
SW8 1/2" I.D.			

Code	Description
C	Conduit
D	DIN 43650
P	Double Spade
W	Double Wire
WP	Waterproof Double Wire

Code	Description
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120 VAC
A240	240 VAC

DIN Connector:
 PG9 Black — 710549-00
 PG11 Black — 692914
 PG11 Grey — 692915

Coil Nut:
 DSH083 — 118127-00

Nitrile Seal Kit:
 DSH083 — SK08-3

Fluorocarbon Seal Kit:
 DSH083 — SK08-3V

Notes: See 1/2" Unicolls Data Sheet for more options.
 For other coil voltages and terminations, consult factory.
 S8 Coil applies to all terminations except WP.
 SW8 Coil applies to WP termination only.

Code	Port Size & Material	
Omit	Cartridge Only	
4P	1/4" NPTF (B08-3-4P)	Steel
A4P	1/4" NPTF (B08-3-A4P)	Aluminum
6P	3/8" NPTF (B08-3-6P)	Steel
A6P	3/8" NPTF (B08-3-A6P)	Aluminum
4T	SAE-4 (B08-3-4T)	Steel
A4T	SAE-4 (B08-3-A4T)	Aluminum
6T	SAE-6 (B08-3-6T)	Steel
A6T	SAE-6 (B08-3-A6T)	Aluminum
4B	1/4" BSPG (B08-3-4B)	Steel
A4B	1/4" BSPG (B08-3-A4B)	Aluminum
6B	3/8" BSPG (B08-3-6B)	Steel
A6B	3/8" BSPG (B08-3-A6B)	Aluminum

NOTE:
 If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used.
 Higher pressures require steel bodies.

Shipping Weight
 Cartridge Only .13 kg (.28 lbs.)

dsh083.pm6.5, bl, gn

General Description

The DSL103, 3-way spool valves are used as low flow directional valves, pilot valves, or selector valves. They can be used in normally open or normally closed applications.

Operation

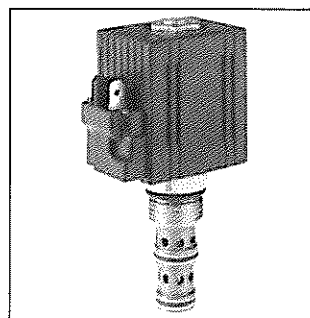
In the de-energized mode, the spool is positioned by spring force. The solenoid, when energized, directly shifts the spool against the spring, thus changing the flow path through the valve.

Features

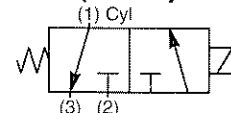
- High flow capacity with reduced space requirements
- Standard valve bodies and common cavities
- One-piece encapsulated coil with minimal amperage draw
- Manual overrides, seal variations and other options available
- No dynamic seals
- Variety of coil terminations

Specifications

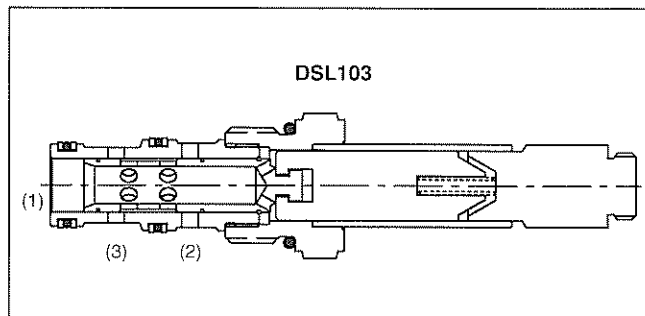
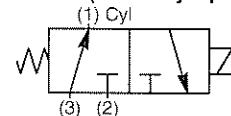
Rated Flow (At 70 PSI ΔP)	DSL103
	N.O. 22.5 LPM (6.0 GPM)
	N.C. 18.8 LPM (5.0 GPM)
	Selector 13.1 LPM (3.5 GPM)
	DSL103B
	N.C. 18.8 LPM (5.0 GPM)
Maximum Inlet Pressure	Selector 15.0 LPM (4.0 GPM)
	DSL103N
	N.O. 22.5 LPM (6.0 GPM)
	Selector 30.0 LPM (8.0 GPM)
Leakage	210 Bar (3000 PSI)
Minimum Operating Voltage	160 cc/min. (10 cu. in./min.) maximum at 210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	90% of rated voltage at 210 Bar (3000 PSI)
Cartridge Material	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Body Material	All parts steel. All operating parts hardened steel.
Filtration	Steel or Aluminum
Mounting	ISO Code 16/13, SAE Class 4 or better
Cavity	No restrictions
	Common Cavity No. C10-3



DSL103 (Normally Closed)

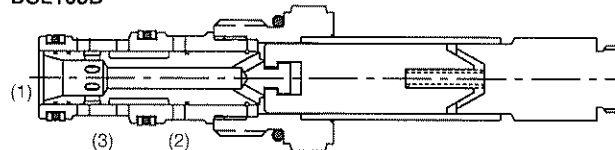


DSL103 (Normally Open)

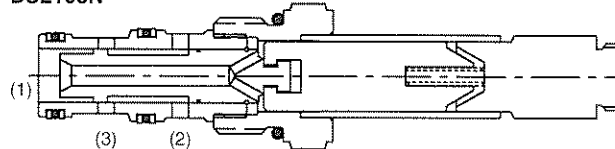


Construction

DSL103B



DSL103N



Solenoid Coil Specifications

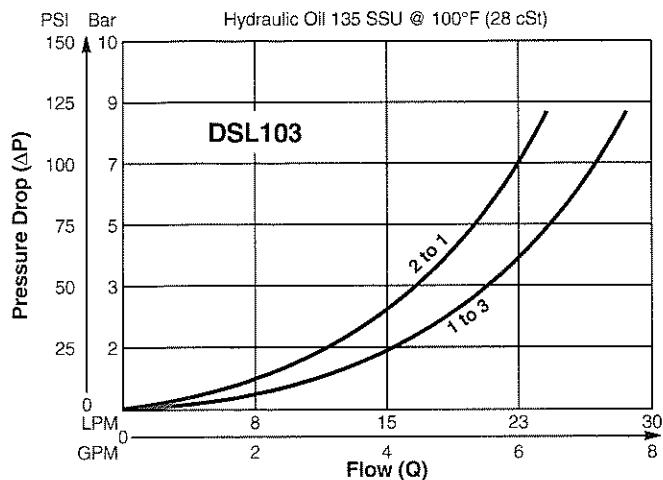
Voltage	Watts	Amps
10 VDC	21	2.1
12 VDC	20	1.67
24 VDC	21	.88
120 VAC	17.8	.17
240 VAC	18.6	.09

Response Time (Dependent on flow and pressure)	50 ms to 150 ms

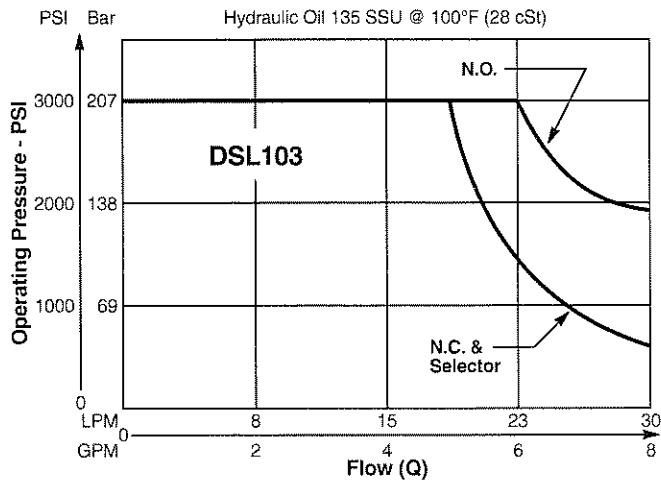
Wire Class	"N" for all voltages
A.C. Rectifiers	Integral full wave bridge

dsl103.pm8.5, bl, gn

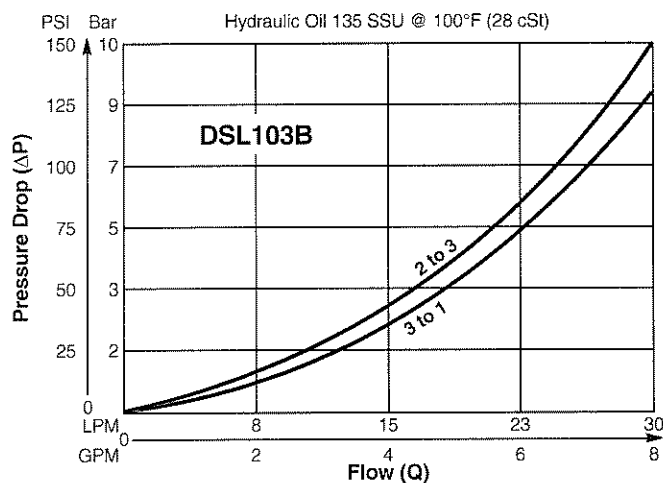
Pressure Drop vs. Flow (Through cartridge only)



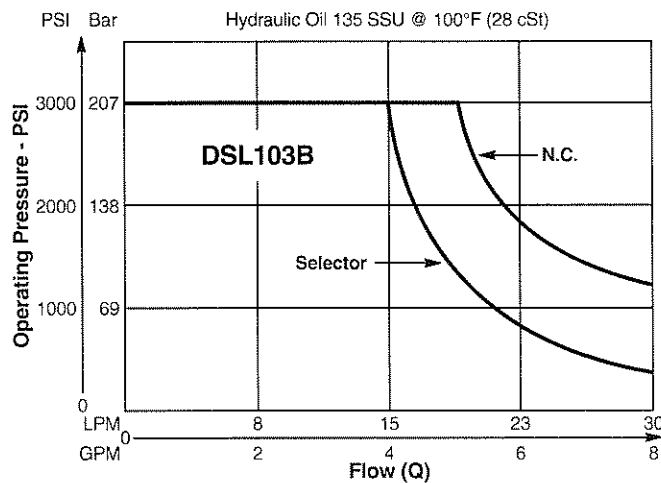
Shift Limit Characteristics (Through cartridge only)



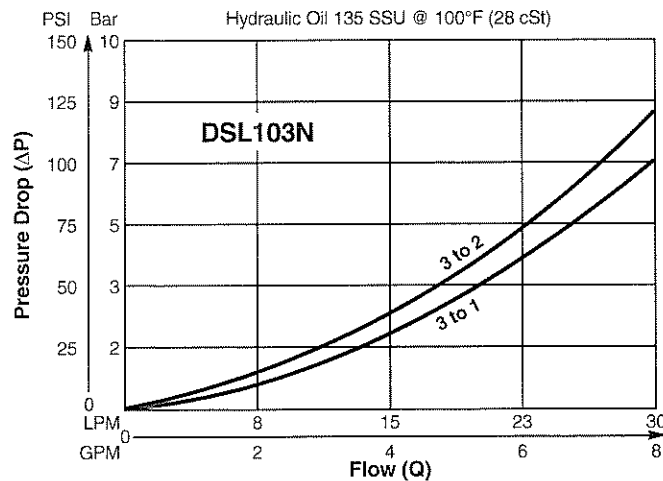
Pressure Drop vs. Flow (Through cartridge only)



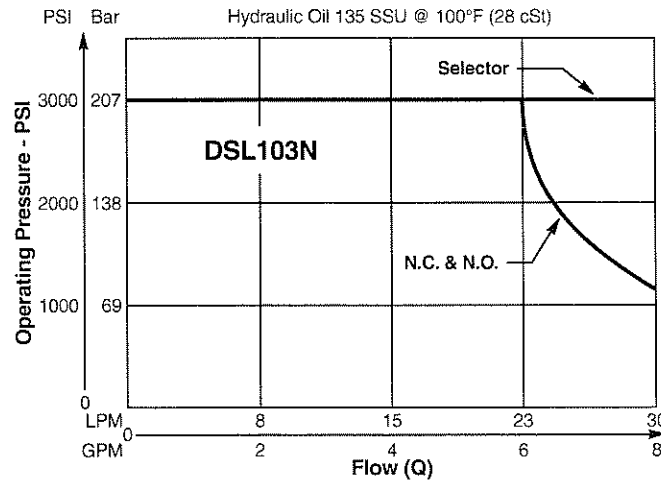
Shift Limit Characteristics (Through cartridge only)



Pressure Drop vs. Flow (Through cartridge only)

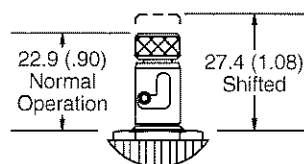


Shift Limit Characteristics (Through cartridge only)

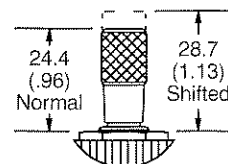


dsl103.pm6.5, bl, gn

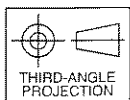
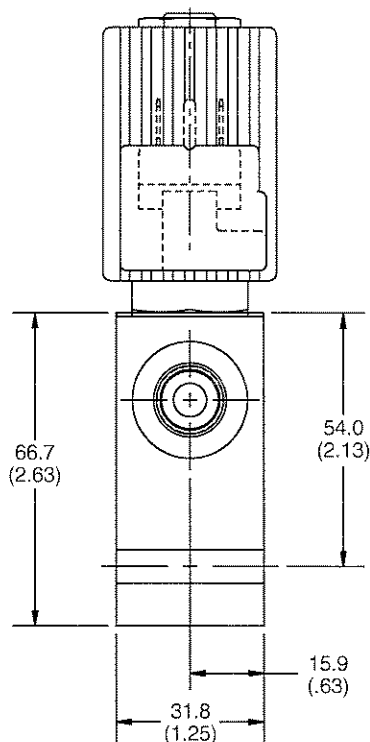
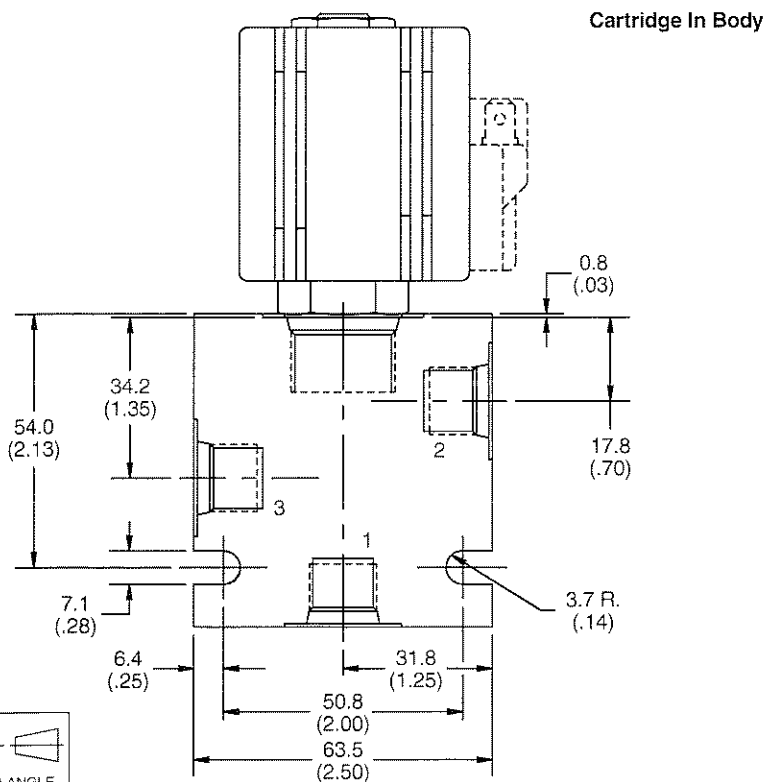
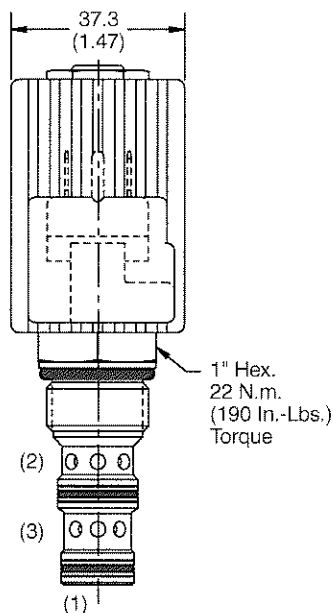
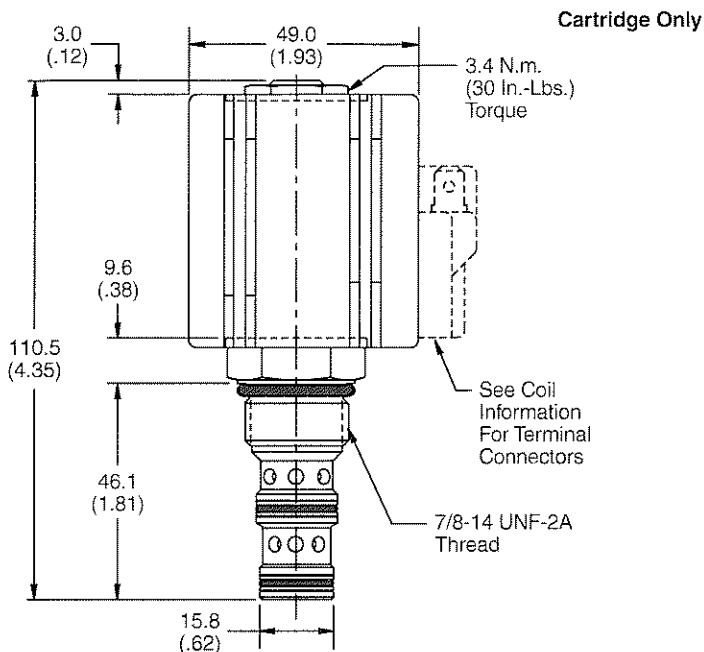
*Inch equivalents for millimeter dimensions are shown in (**)



**Push & Twist
Manual Override**



**Pull and Release
Manual Override**



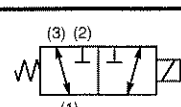
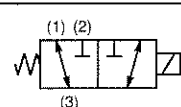
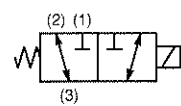
dsl103.pm6.5, bl, gn

DSL	10	3							
Solenoid Valve	Size	Spool Type	Style	Override Option	Seals	Coil Voltage	Coil Wattage	Coil Termination	Body Option

Code	Style
10	7/8"-14 UNF-2B Threaded Cavity

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Type
Omit	Cartridge without Coil
L	20 Watt

Code	Description
Omit	
B	
N	

Code	Type
Omit	Without Manual Override
P	Pull & Release Manual Override
T	Push & Twist Manual Override

Code	Description
Omit	Cartridge without Coil
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120/110 VAC, 60/50 Hz
A240	240/220 VAC, 60/50 Hz

Code	Description
Omit	Cartridge without Coil
C	1/2" NPTF Conduit Connector with 24" 18 AWG Wires
D	DIN 43650 (Hirschmann) Plug Face
P	SAE 1B-0.25 SAE Double Spade (DC Only)
W	Double Wire, 24" 18 AWG (DC Only)
WP	Waterproof Double Wire, 24" 16 AWG (DC Only)

Shipping Weight
 Cartridge Only .19 kg (.43 lbs.)

SERVICE PARTS

Coil Size	Coil Wattage	Coil Termination	Coil Voltage																																		
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%;">Code</th> <th style="width: 90%;">Size</th> </tr> <tr> <td style="text-align: center;">S10</td> <td>5/8" I.D.</td> </tr> <tr> <td style="text-align: center;">SW10</td> <td>5/8" I.D.</td> </tr> </table>	Code	Size	S10	5/8" I.D.	SW10	5/8" I.D.	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%;">Code</th> <th style="width: 90%;">Type</th> </tr> <tr> <td style="text-align: center;">L</td> <td>20 Watts</td> </tr> </table>	Code	Type	L	20 Watts	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%;">Code</th> <th style="width: 90%;">Description</th> </tr> <tr> <td style="text-align: center;">C</td> <td>Conduit</td> </tr> <tr> <td style="text-align: center;">D</td> <td>DIN 43650</td> </tr> <tr> <td style="text-align: center;">P</td> <td>Double Spade</td> </tr> <tr> <td style="text-align: center;">W</td> <td>Double Wire</td> </tr> <tr> <td style="text-align: center;">WP</td> <td>Waterproof Double Wire</td> </tr> </table>	Code	Description	C	Conduit	D	DIN 43650	P	Double Spade	W	Double Wire	WP	Waterproof Double Wire	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%;">Code</th> <th style="width: 90%;">Description</th> </tr> <tr> <td style="text-align: center;">D010</td> <td>10 VDC</td> </tr> <tr> <td style="text-align: center;">D012</td> <td>12 VDC</td> </tr> <tr> <td style="text-align: center;">D024</td> <td>24 VDC</td> </tr> <tr> <td style="text-align: center;">A120</td> <td>120 VAC</td> </tr> <tr> <td style="text-align: center;">A240</td> <td>240 VAC</td> </tr> </table>	Code	Description	D010	10 VDC	D012	12 VDC	D024	24 VDC	A120	120 VAC	A240	240 VAC
Code	Size																																				
S10	5/8" I.D.																																				
SW10	5/8" I.D.																																				
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D012	12 VDC																																				
D024	24 VDC																																				
A120	120 VAC																																				
A240	240 VAC																																				

DIN Connector:
 PG9 Black — 710549-00
 PG11 Black — 692914
 PG11 Grey — 692915

Coil Nut:
 DSL103 — 118127-00

Nitrile Seal Kit:
 DSL103 — SK10-3

Fluorocarbon Seal Kit:
 DSL103 — SK10-3V

Notes: See 5/8" Unicoids Data Sheet for more options.
 For other coil voltages and terminations, consult factory.
 S10 Coil applies to all terminations except WP.
 SW10 Coil applies to WP termination only.

Code	Port Size & Material
Omit	Cartridge Only
4P	1/4" NPTF (B10-3-4P) Steel
A4P	1/4" NPTF (B10-3-A4P) Aluminum
6P	3/8" NPTF (B10-3-6P) Steel
A6P	3/8" NPTF (B10-3-A6P) Aluminum
8P	1/2" NPTF (B10-3-8P) Steel
A8P	1/2" NPTF (B10-3-A8P) Aluminum
6T	SAE-6 (B10-3-6T) Steel
A6T	SAE-6 (B10-3-A6T) Aluminum
8T	SAE-8 (B10-3-8T) Steel
A8T	SAE-8 (B10-3-A8T) Aluminum
4B	1/4" BSPG (B10-3-4B) Steel
A4B	1/4" BSPG (B10-3-A4B) Aluminum
6B	3/8" BSPG (B10-3-6B) Steel
A6B	3/8" BSPG (B10-3-A6B) Aluminum
8B	1/2" BSPG (B10-3-8B) Steel
A8B	1/2" BSPG (B10-3-A8B) Aluminum

General Description

The DSH103, 3-way spool valves are used as low flow directional valves, pilot valves, or selector valves. They can be used in normally open or normally closed applications.

Operation

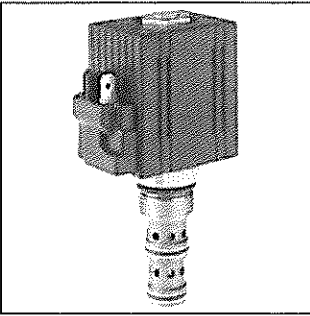
In the de-energized mode, the spool is positioned by spring force. The solenoid, when energized, directly shifts the spool against the spring, thus changing the flow path through the valve.

Features

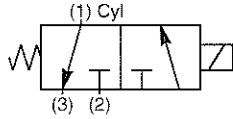
- High flow capacity with reduced space requirements
- Standard valve bodies and common cavities
- One-piece encapsulated coil with minimal amperage draw
- Manual overrides, seal variations and other options available
- No dynamic seals
- Variety of coil terminations

Specifications

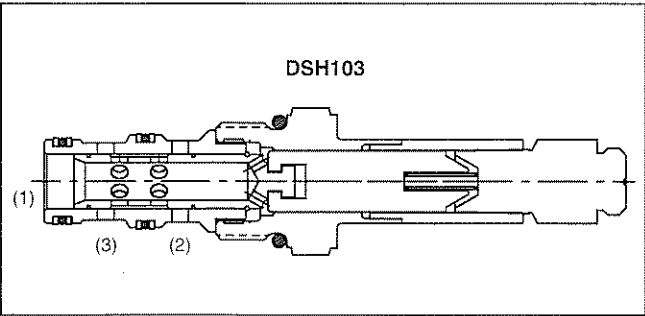
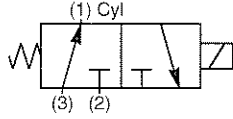
Rated Flow	DSH103
	N.O. 11.3 LPM (3.0 GPM) N.C. 18.8 LPM (5.0 GPM) Selector 13.1 LPM (3.5 GPM)
	DSH103B
	N.C. 18.8 LPM (5.0 GPM) Selector 15.0 LPM (4.0 GPM)
	DSH103N
	N.O. 22.5 LPM (6.0 GPM) Selector 22.5 LPM (6.0 GPM)
Maximum Inlet Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Leakage	160 cc/min. (10 cu. in./min.) maximum at 210 Bar (3000 PSI)
Minimum Operating Voltage	90% of rated voltage at 345 Bar (5000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C10-3



DSH103 (Normally Closed)

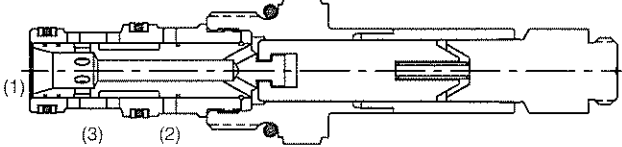


DSH103 (Normally Open)

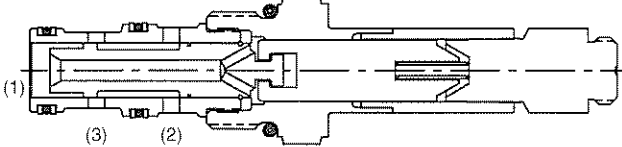


Construction

DSH103B



DSH103N



Solenoid Coil Specifications

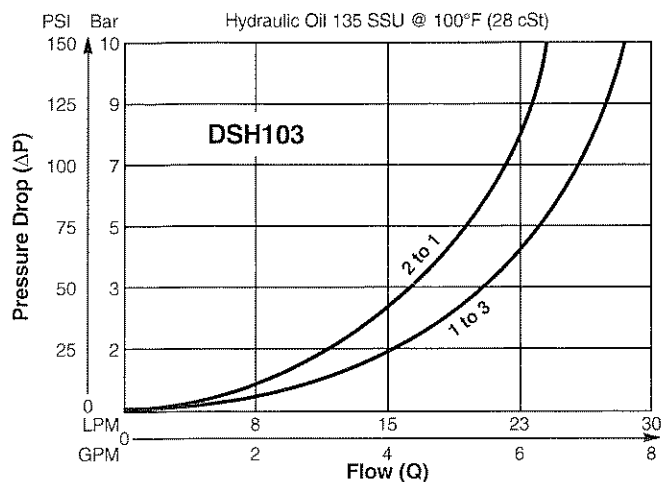
Voltage	Watts	Amps
10 VDC	21	2.1
12 VDC	20	1.67
24 VDC	21	.88
120 VAC	17.8	.17
240 VAC	18.6	.09

Response Time (Dependent on flow and pressure)	50 ms to 150 ms

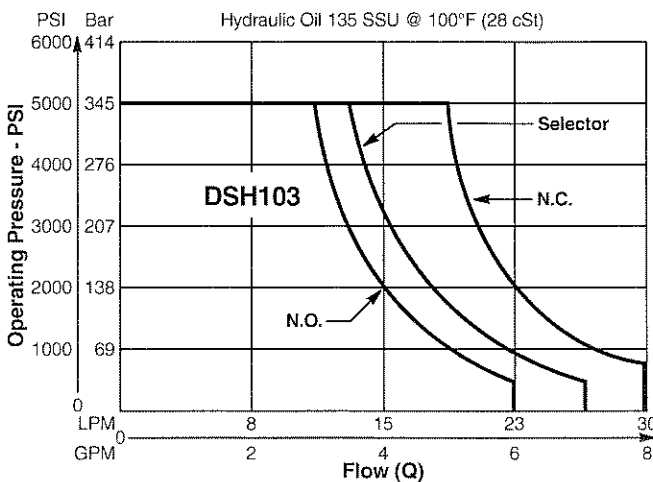
Wire Class	"N" for all voltages
A.C. Rectifiers	Integral full wave bridge

dsh103.pm6 5, bl, gn

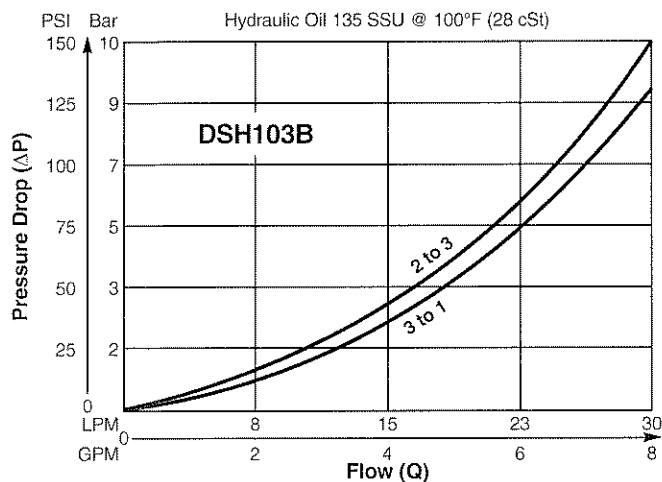
Pressure Drop vs. Flow (Through cartridge only)



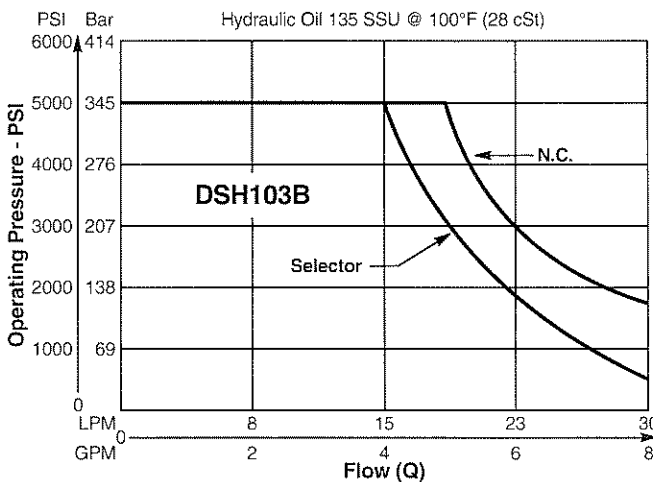
Shift Limit Characteristics (Through cartridge only)



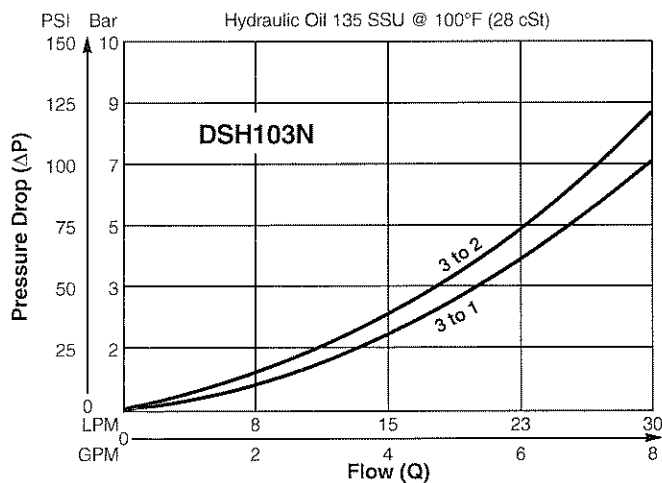
Pressure Drop vs. Flow (Through cartridge only)



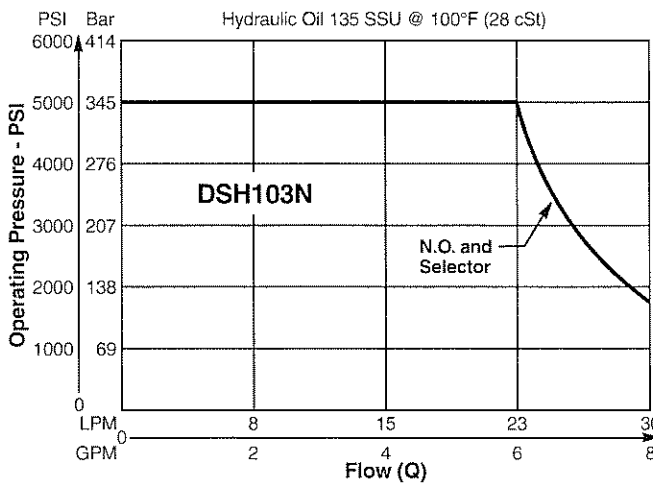
Shift Limit Characteristics (Through cartridge only)



Pressure Drop vs. Flow (Through cartridge only)

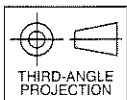
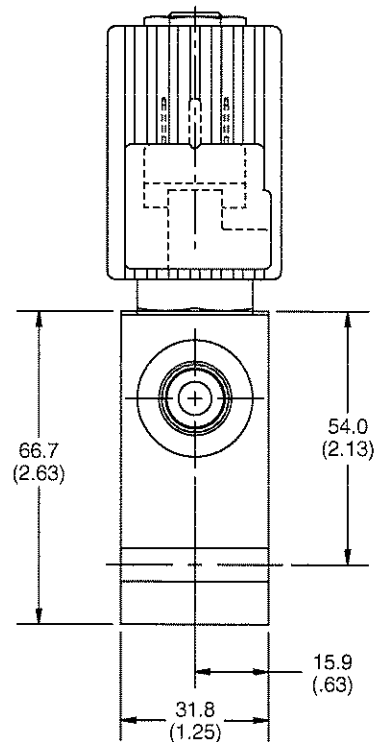
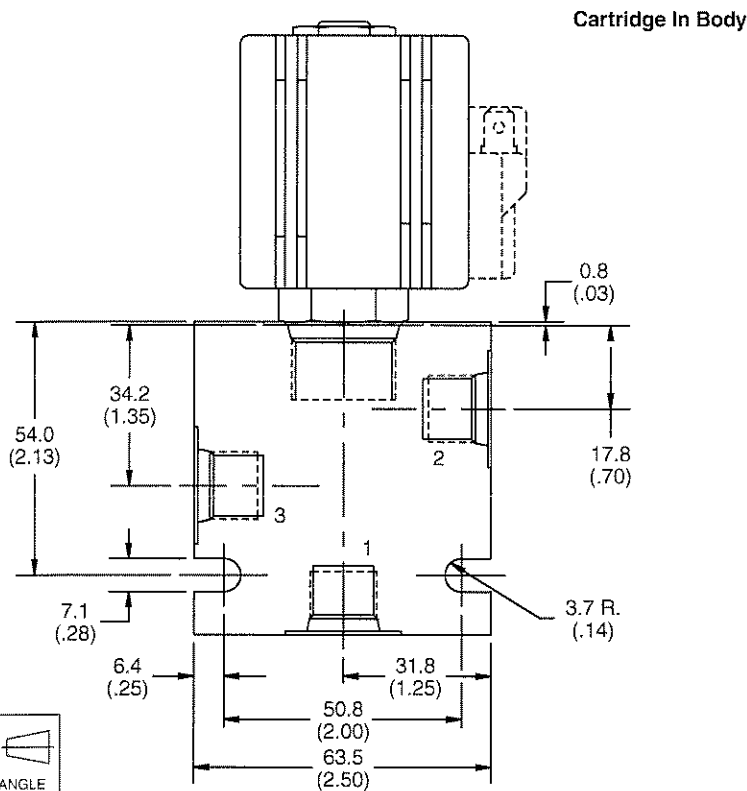
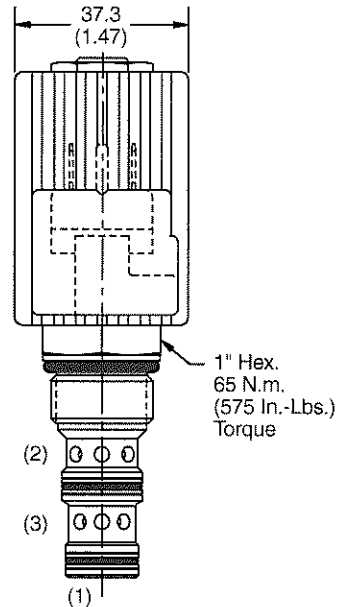
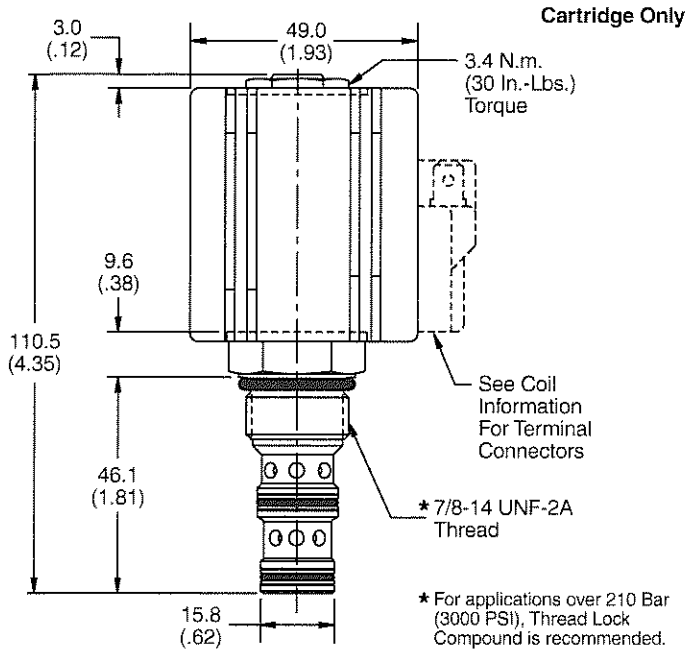
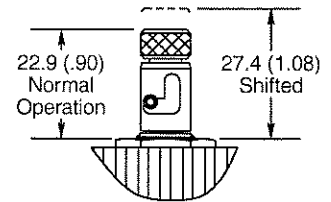


Shift Limit Characteristics (Through cartridge only)



dsh103,pm6.5,bl,gn

*Inch equivalents for millimeter dimensions are shown in (**)

Push and Twist
Manual Override

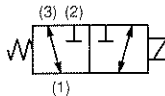
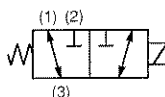
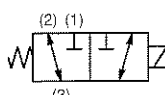
dsh103, pm6.5, bl, gn

DSH	10	3							
Solenoid Valve	Size	Spool Type	Style	Override Option	Seals	Coil Voltage	Coil Wattage	Coil Termination	Body Option

Code	Style
10	7/8"-14 UNF-2B Threaded Cavity

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Type
Omit	Cartridge without Coil
L	20 Watt

Code	Description
Omit	
B	
N	

Code	Type
Omit	Without Manual Override
T	Push & Twist Manual Override

Code	Description
Omit	Cartridge without Coil
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120/110 VAC, 60/50 Hz
A240	240/220 VAC, 60/50 Hz

Code	Description
Omit	Cartridge without Coil
C	1/2" NPTF Conduit Connector with 24" 18 AWG Wires
D	DIN 43650 (Hirschmann) Plug Face
P	SAE 1B-0.25 SAE Double Spade (DC Only)
W	Double Wire, 24" 18 AWG (DC Only)
WP	Waterproof Double Wire, 24" 16 AWG (DC Only)

CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

SOLENOID VALVES

SPECIALTY VALVES

COILS

BODIES

TECHNICAL DATA

SERVICE PARTS

Coil Size	Coil Wattage	Coil Termination	Coil Voltage																																		
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 15%;">Code</th> <th style="width: 85%;">Size</th> </tr> <tr> <td>S10</td> <td>5/8" I.D.</td> </tr> <tr> <td>SW10</td> <td>5/8" I.D.</td> </tr> </table>	Code	Size	S10	5/8" I.D.	SW10	5/8" I.D.	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 15%;">Code</th> <th style="width: 85%;">Type</th> </tr> <tr> <td>L</td> <td>20 Watts</td> </tr> </table>	Code	Type	L	20 Watts	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 15%;">Code</th> <th style="width: 85%;">Description</th> </tr> <tr> <td>C</td> <td>Conduit</td> </tr> <tr> <td>D</td> <td>DIN 43650</td> </tr> <tr> <td>P</td> <td>Double Spade</td> </tr> <tr> <td>W</td> <td>Double Wire</td> </tr> <tr> <td>WP</td> <td>Waterproof Double Wire</td> </tr> </table>	Code	Description	C	Conduit	D	DIN 43650	P	Double Spade	W	Double Wire	WP	Waterproof Double Wire	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 15%;">Code</th> <th style="width: 85%;">Description</th> </tr> <tr> <td>D010</td> <td>10 VDC</td> </tr> <tr> <td>D012</td> <td>12 VDC</td> </tr> <tr> <td>D024</td> <td>24 VDC</td> </tr> <tr> <td>A120</td> <td>120 VAC</td> </tr> <tr> <td>A240</td> <td>240 VAC</td> </tr> </table>	Code	Description	D010	10 VDC	D012	12 VDC	D024	24 VDC	A120	120 VAC	A240	240 VAC
Code	Size																																				
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D010	10 VDC																																				
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D024	24 VDC																																				
A120	120 VAC																																				
A240	240 VAC																																				

DIN Connector:
 PG9 Black — 710549-00
 PG11 Black — 692914
 PG11 Grey — 692915

Coil Nut:
 DSH103 — 118127-00

Nitrile Seal Kit:
 DSH103 — SK10-3

Fluorocarbon Seal Kit:
 DSH103 — SK10-3V

Notes: See 5/8" Unicoids Data Sheet for more options.
 For other coil voltages and terminations, consult factory.
 S10 Coil applies to all terminations except WP.
 SW10 Coil applies to WP termination only.

Code	Port Size & Material
Omit	Cartridge Only
4P	1/4" NPTF (B10-3-4P) Steel
A4P	1/4" NPTF (B10-3-A4P) Aluminum
6P	3/8" NPTF (B10-3-6P) Steel
A6P	3/8" NPTF (B10-3-A6P) Aluminum
8P	1/2" NPTF (B10-3-8P) Steel
A8P	1/2" NPTF (B10-3-A8P) Aluminum
6T	SAE-6 (B10-3-6T) Steel
A6T	SAE-6 (B10-3-A6T) Aluminum
8T	SAE-8 (B10-3-8T) Steel
A8T	SAE-8 (B10-3-A8T) Aluminum
4B	1/4" BSPG (B10-3-4B) Steel
A4B	1/4" BSPG (B10-3-A4B) Aluminum
6B	3/8" BSPG (B10-3-6B) Steel
A6B	3/8" BSPG (B10-3-A6B) Aluminum
8B	1/2" BSPG (B10-3-8B) Steel
A8B	1/2" BSPG (B10-3-A8B) Aluminum

Shipping Weight
 Cartridge Only .19 kg (.43 lbs.)

NOTE: If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

General Description

The DS123B, 3-way spool valves are used as low flow directional valves, pilot valves, or selector valves. They can be used in normally open or normally closed applications.

Operation

In the de-energized mode, the spool is positioned by spring force. The solenoid, when energized, directly shifts the spool against the spring, thus changing the flow path through the valve.

Features

- Hardened, precision ground parts for long life
- Cost effective - replaces two cartridges
- High flow capacity with reduced space requirements
- Low leakage design
- Fully guided poppet for smooth operation
- Standard valve body and common cavity

Specifications

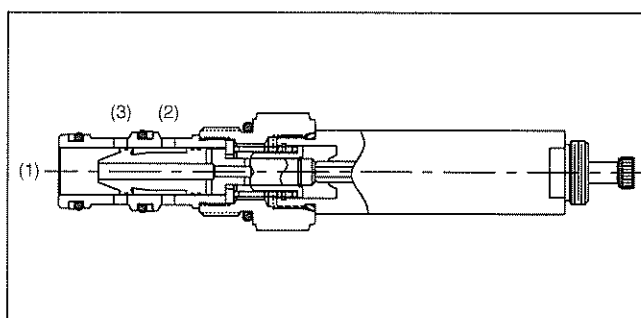
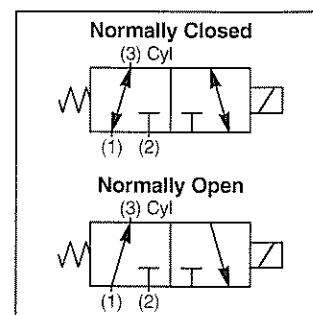
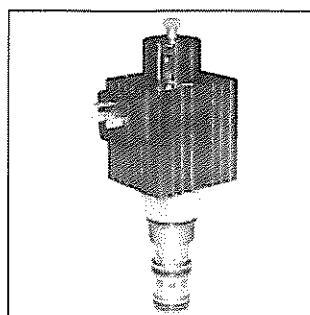
Rated Flow	45 LPM (12 GPM)
Max. Oper. Press.	210 Bar (3000 PSI)
Max. Leakage at Rated Pressure	82 cc/min. (5 cu. in./min.)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C12-3

Solenoid Coil Specifications

Voltage	12 VDC	24 VDC
Duty	STD.	STD.
Watts	30	30
Amps	2.5	1.3

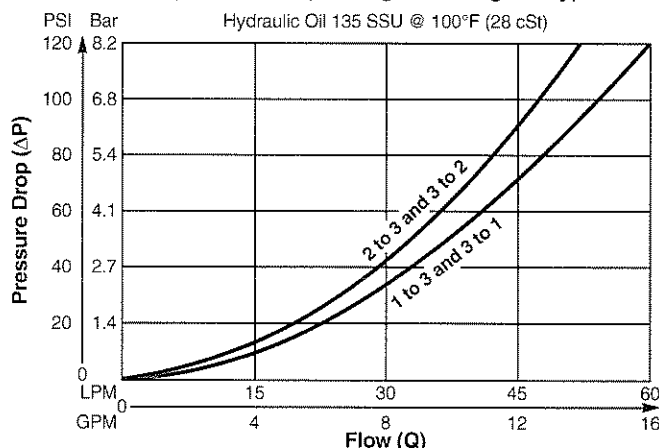
Response Time (at nominal flow and max. pressure)	
Normally Closed	Up to 90ms
Normally Open	Up to 100ms

Wire Class	"N" for all voltages
A.C. Rectifiers	Integral full wave bridge

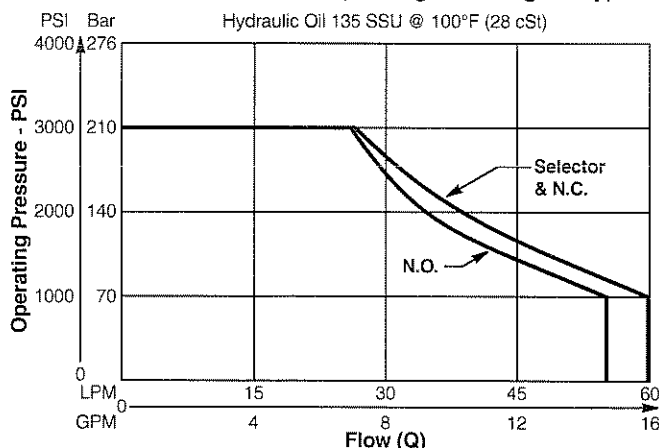


Performance Curves

Pressure Drop vs. Flow (Through cartridge only)

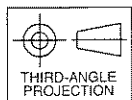
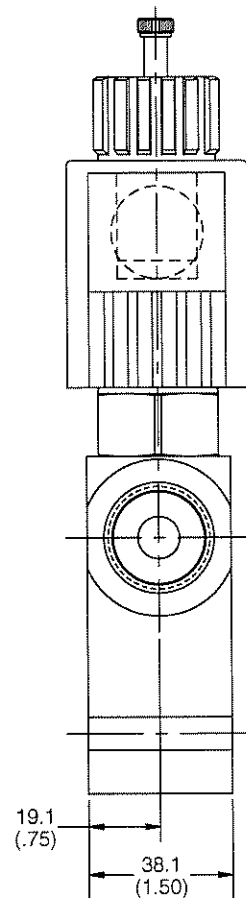
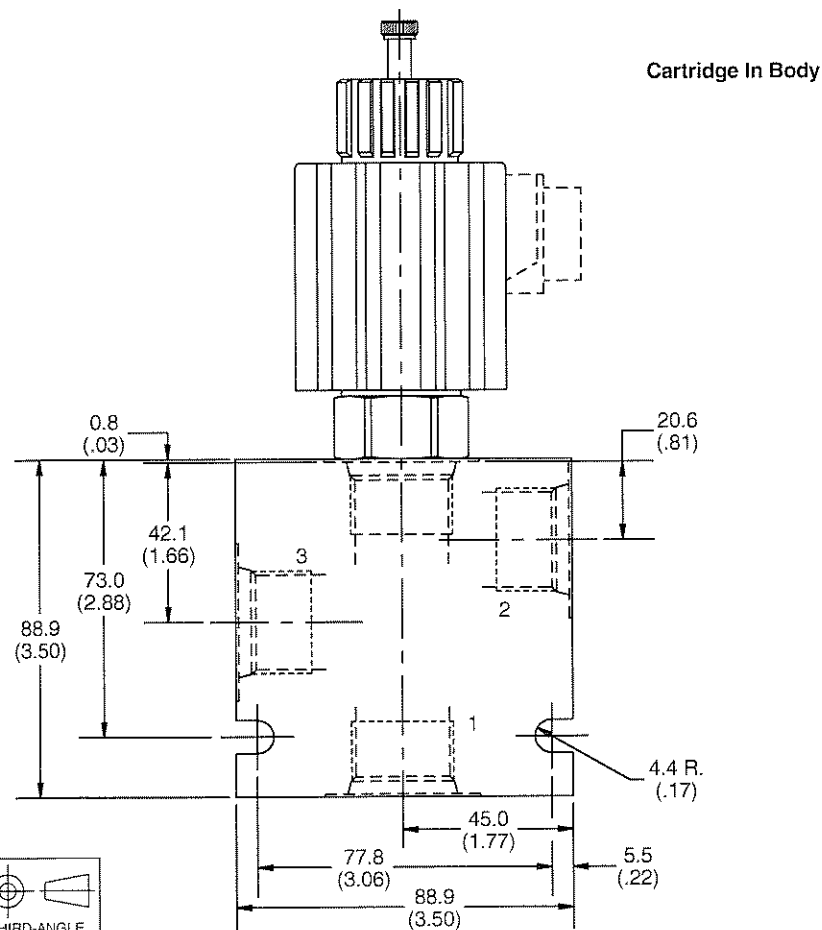
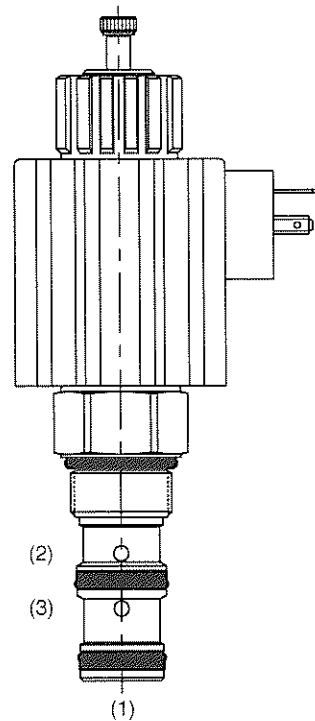
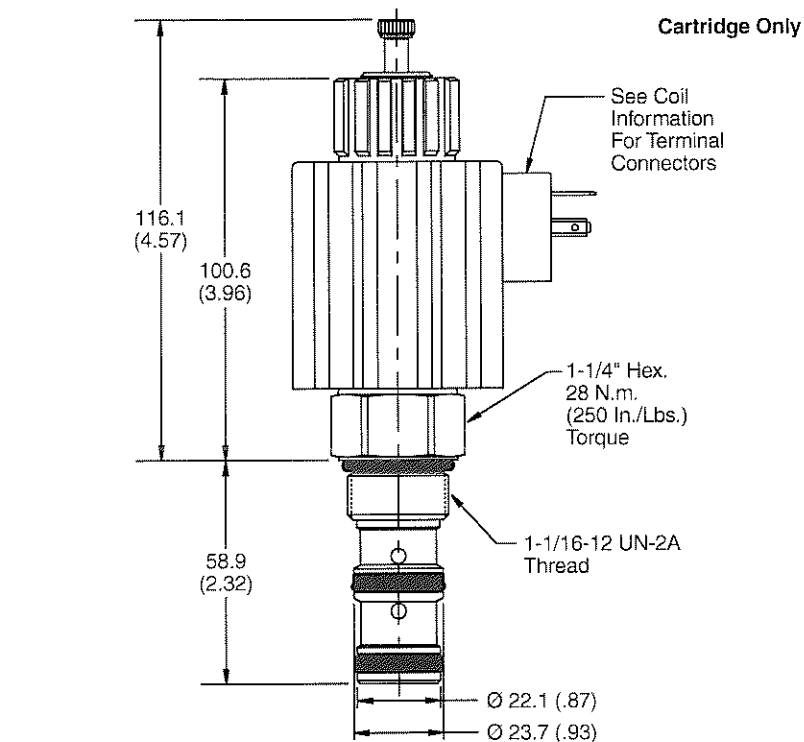


Shift Limit Characteristics (Through cartridge only)



ds123b.pm6.5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)



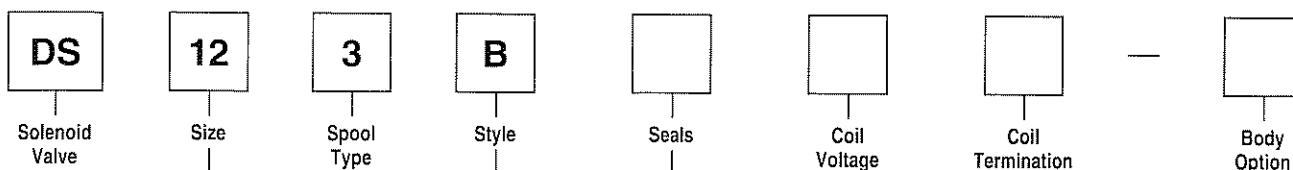
ds123b,pm6.5, bl, gn

Ordering Information

Spool-Type, Three-Way Valves
Series DS123BCHECKS &
SHUTTLESLOAD & MOTOR
CONTROLSVOLUME
CONTROLSPRESSURE
CONTROLSSOLENOID
VALVESSPECIALTY
VALVES

COILS

BODIES

TECHNICAL
DATA

Code	Style
12	1-1/16"-12 UN-2B Threaded Cavity

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Option
B	

Code	Description
D012	12 VDC
D024	24 VDC
A120	120/110 VAC, 60/50 Hz

Code	Description
Omit	Cartridge without Coil
C	1/2" NPTF Conduit Connector with 24" Class H Wires
D	DIN 43650 (Hirschmann) Plug Face
P	SAE 1B-0.25 SAE Double Spade, (DC Only)
S	8-32 Double Screw and Nut, (DC Only)
W	Double Wire, 24" Class H (DC Only)

Code	Port Size & Material
Omit	Cartridge Only
6P	3/8" NPTF (B12-3-6P) Steel
A6P	3/8" NPTF (B12-3-A6P) Aluminum
8P	1/2" NPTF (B12-3-8P) Steel
A8P	1/2" NPTF (B12-3-A8P) Aluminum
12P	3/4" NPTF (B12-3-12P) Steel
A12P	3/4" NPTF (B12-3-A12P) Aluminum
6T	SAE-6 (B12-3-6T) Steel
A6T	SAE-6 (B12-3-A6T) Aluminum
8T	SAE-8 (B12-3-8T) Steel
A8T	SAE-8 (B12-3-A8T) Aluminum
12T	SAE-12 (B12-3-12T) Steel
A12T	SAE-12 (B12-3-A12T) Aluminum
6B	3/8" BSPG (B12-3-6B) Steel
A6B	3/8" BSPG (B12-3-A6B) Aluminum
8B	1/2" BSPG (B12-3-8B) Steel
A8B	1/2" BSPG (B12-3-A8B) Aluminum
12B	3/4" BSPG (B12-3-12B) Steel
A12B	3/4" BSPG (B12-3-A12B) Aluminum

SERVICE PARTS

DIN Connector:
PG9 Black — 710549-00
PG11 Black — 692914
PG11 Grey — 692915

Coil Nut:
118378-00

Nitrile Seal Kit:
SK12-3

Fluorocarbon Seal Kit:
SK12-3V

Coil Assemblies

853494***** Conduit Coil
853495***** DIN (Hirschmann) Coil
853496***** Double Spade
Vertically-Oriented Coil
853497***** Double Wire Coil
853498***** Double Screw
Vertically-Oriented Coil

(*****Calls out voltage. For example: 853496-012VDC is a 12 volt, 30 watt Double Spade Coil.)

Shipping Weight

Cartridge Only .59 kg (1.3 lbs.)

ds123b.pm6.5, bl, gn

General Description

The DS163, 3-way spool valves are used as low flow directional valves, pilot valves, or selector valves. They can be used in normally open or normally closed applications.

Operation

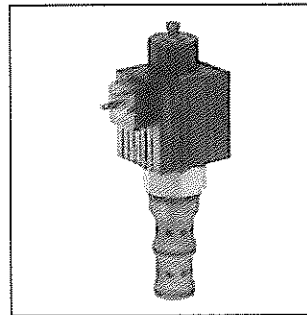
In the de-energized mode, the spool is positioned by spring force. The solenoid, when energized, directly shifts the spool against the spring, thus changing the flow path through the valve.

Features

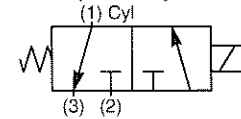
- High flow capacity with reduced space requirements
- Standard valve bodies and common cavities
- One-piece encapsulated coil with minimal amperage draw
- No dynamic seals
- Variety of coil terminations

Specifications

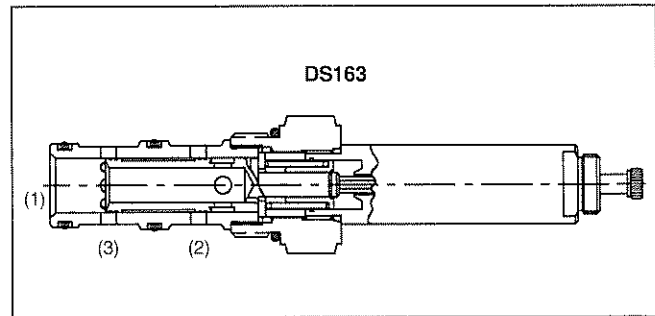
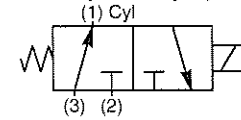
Rated Flow (At 70 PSI ΔP)	DS163	
	N.O.	56.3 LPM (15 GPM)
	N.C.	56.3 LPM (15 GPM)
	Selector	48.8 LPM (13 GPM)
	DS163B	
	N.O.	56.3 LPM (15 GPM)
Maximum Inlet Pressure	N.C.	56.3 LPM (15 GPM)
	Selector	63.8 LPM (17 GPM)
	DS163B	
	N.O.	56.3 LPM (15 GPM)
	N.C.	56.3 LPM (15 GPM)
	Selector	63.8 LPM (17 GPM)
Maximum Inlet Pressure	210 Bar (3000 PSI)	
Leakage	82 cc/min at 210 Bar (3000 PSI)	
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)	
Cartridge Material	All parts steel. All operating parts hardened steel.	
Body Material	Steel or Aluminum	
Filtration	ISO Code 16/13, SAE Class 4 or better	
Mounting	No restrictions	
Cavity	Common Cavity No. C16-3	



DS163 (Normally Closed)

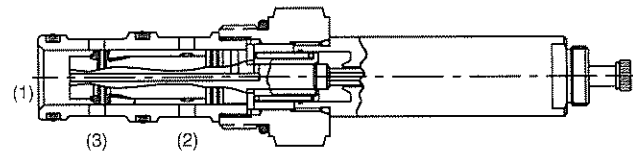


DS163 (Normally Open)



Construction

DS163B



Solenoid Coil Specifications

Voltage	12 VDC	24 VDC
Duty	HD.	HD.
Watts	42	42
Amps	3.5	1.75

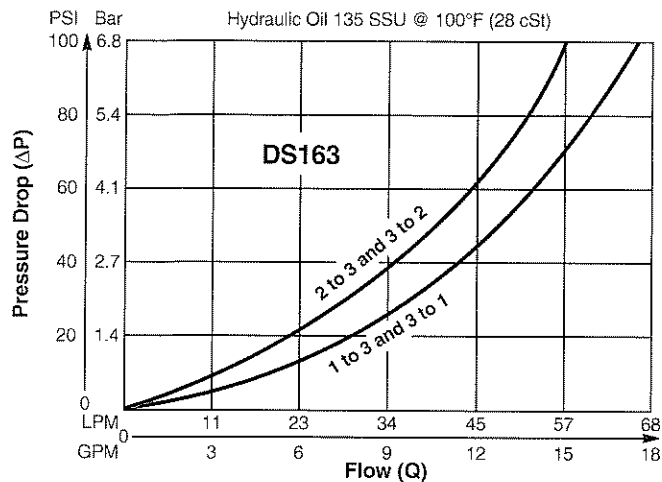
Response Time

(at nominal flow and maximum pressure)

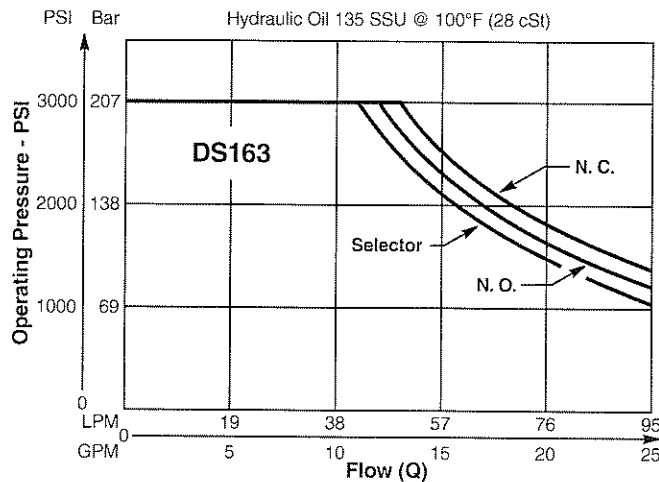
Normally Closed	Up to 90ms
Normally Open	Up to 100ms

Wire Class	"N" for all voltages
A.C. Rectifiers	Integral full wave bridge

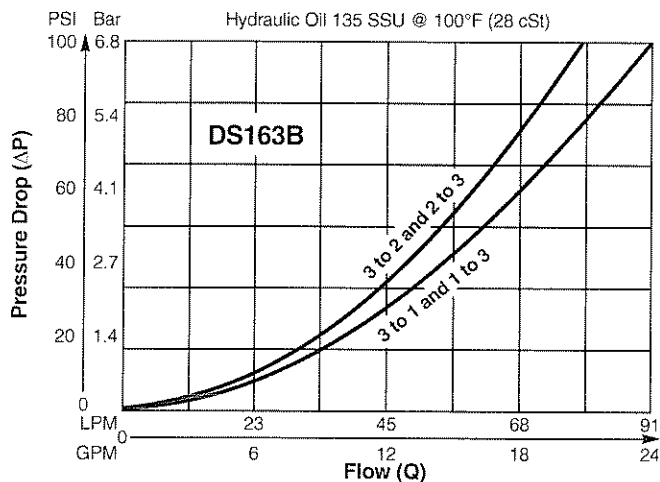
Pressure Drop vs. Flow (Through cartridge only)



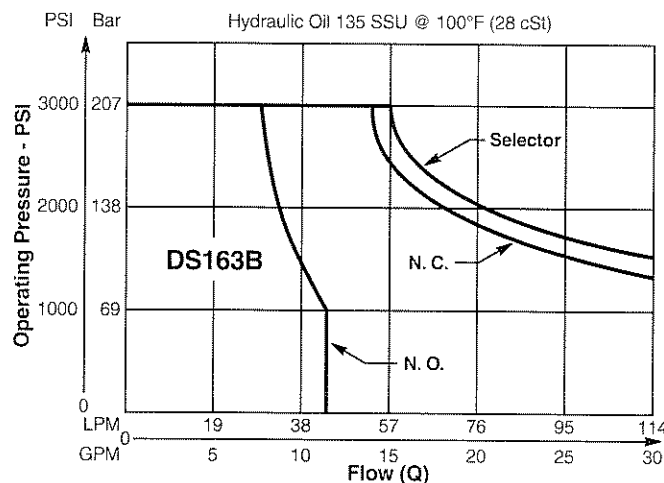
Shift Limit Characteristics (Through cartridge only)



Pressure Drop vs. Flow (Through cartridge only)



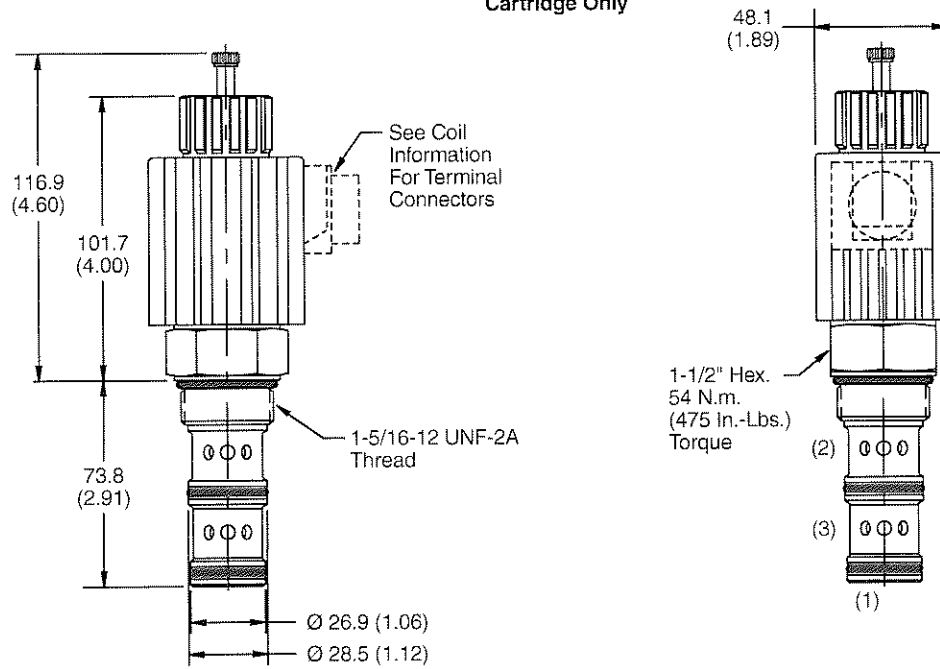
Shift Limit Characteristics (Through cartridge only)



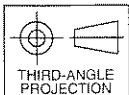
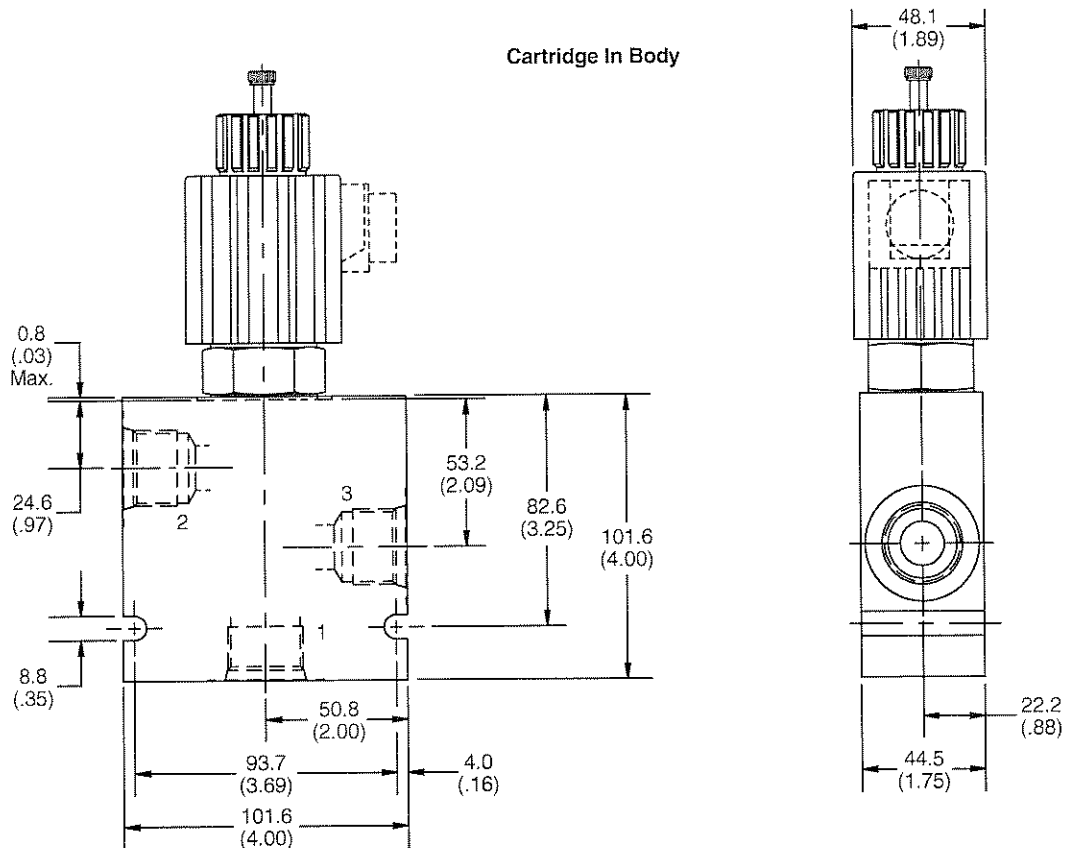
ds163 pm6.5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)

Cartridge Only



Cartridge In Body



ds163.pm6.5, bl, gn

CHECKS &
SHUTTLES

LOAD & MOTOR
CONTROLS

VOLUME
CONTROLS

PRESSURE
CONTROLS

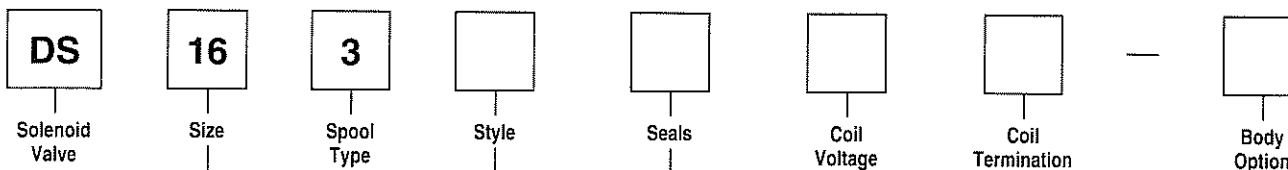
SOLENOID
VALVES

SPECIALTY
VALVES

COILS

BODIES

TECHNICAL
DATA



Code	Style
16	1-5/16"-12 UNF-2B Threaded Cavity

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Option
Omit	 (1) (2) (3)
B	 (1) (2) (3)

Code	Description
D012	12 VDC
D024	24 VDC
A120	120/110 VAC, 60/50 Hz

NOTE: All valves furnished with extended push type manual overrides.

Code	Description
Omit	Cartridge without Coil
C	1/2" NPTF Conduit Connector with 24" 18 AWG Wires
D	DIN 43650 (Hirschmann) Plug Face
PV	SAE 1B-0.25 SAE Double Spade, Vertically-Oriented (DC Only)
SV	Double 8-32 Screw and Nut, Internally Ground (DC Only)
S1V	Single 8-32 Screw and Nut, Internally Ground (DC Only)
W	Double Wire, 24" 18 AWG (DC Only)

Code	Port Size & Material
Omit	Cartridge Only
12P	3/4" NPTF (B16-3-12P) Steel
A12P	3/4" NPTF (B16-3-A12P) Aluminum
16P	1" NPTF (B16-3-16P) Steel
A16P	1" NPTF (B16-3-A16P) Aluminum
12T	SAE-12 (B16-3-12T) Steel
A12T	SAE-12 (B16-3-A12T) Aluminum
16T	SAE-16 (B16-3-16T) Steel
A16T	SAE-16 (B16-3-A16T) Aluminum
12B	3/4" BSPG (B16-3-12B) Steel
A12B	3/4" BSPG (B16-3-A12B) Aluminum
16B	1" BSPG (B16-3-16B) Steel
A16B	1" BSPG (B16-3-A16B) Aluminum

SERVICE PARTS

DIN Connector:

PG9 Black — 710549-00
 PG11 Black — 692914
 PG11 Grey — 692915

Coil Nut:

118378-00

Nitrile Seal Kit:

SK16-3

Fluorocarbon Seal Kit:

SK16-3V

Coil Assemblies

851057*****	Conduit Coil
851058*****	DIN (Hirschmann) Coil
851060*****	Double Spade Vertically-Oriented Coil
851062*****	Double Wire Coil
851064*****	Double Screw Vertically-Oriented Coil
851065*****	Single Screw Vertically-Oriented Coil

(*****Call out voltage. For example: 851060-012VDC is a 12 volt, 42 watt Double Spade Coil.)

Shipping Weight

Cartridge Only .59 kg (1.3 lbs.)

General Description

The DSL084, 4-way spool valves are used in applications with double acting cylinders, with hydraulic motors, to pilot two functions, or any other application that requires a two-position, four-way solenoid valve.

Operation

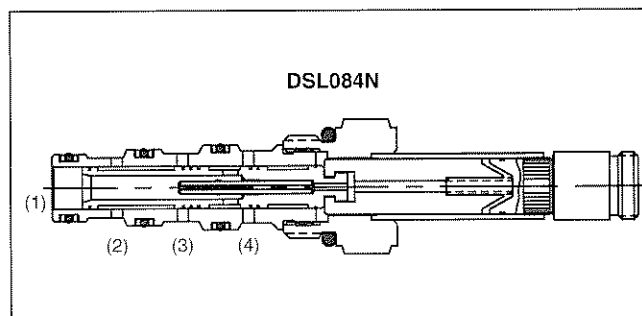
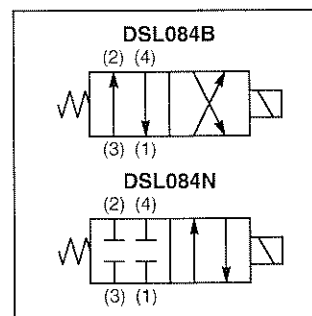
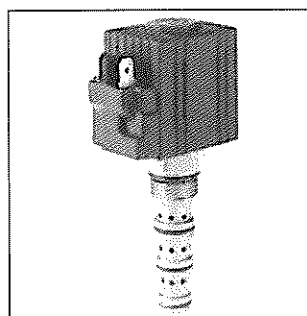
In the de-energized mode, the spool is positioned by spring force. The solenoid, when energized, directly shifts the spool against the spring, thus changing the flow path through the valve.

Features

- High flow capacity with reduced space requirements
- Standard valve bodies and common cavities
- One-piece encapsulated coil with minimal amperage draw
- Manual overrides, seal variations and other options available
- No dynamic seals
- Variety of coil terminations

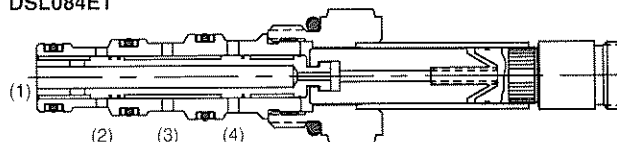
Specifications

Rated Flow (At 70 PSI ΔP)	11 LPM (3 GPM)
Maximum Inlet Pressure	210 Bar (3000 PSI)
Leakage	160 cc/min. (10 cu. in./min.) maximum at 210 Bar (3000 PSI)
Minimum Operating Voltage	90% of rated voltage at 210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C08-4

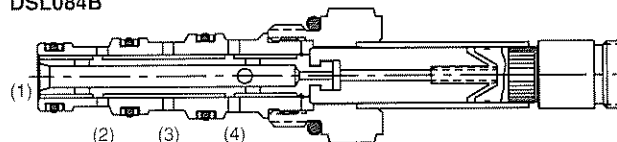


Construction

DSL084E1



DSL084B



Solenoid Coil Specifications

Voltage	Watts	Amps
10 VDC	14	1.45
12 VDC	14	1.17
24 VDC	14	0.57
120 VAC	14	.144
240 VAC	14	.079

Response Time (at nominal flow and maximum pressure)	
Normally Closed	Open - 60 ms Close - 40 ms
Normally Open	Open - 80 ms Close - 40 ms

Wire Class	"N" for all voltages
A.C. Rectifiers	Integral full wave bridge

dsl084.pm6.5, bl, gn

CHECKS &
SHUTTLES

LOAD & MOTOR
CONTROLS

VOLUME
CONTROLS

PRESSURE
CONTROLS

SOLENOID
VALVES

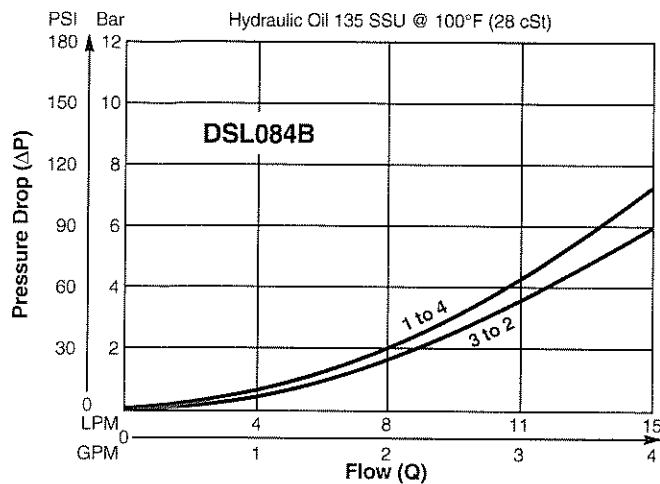
SPECIALTY
VALVES

COILS

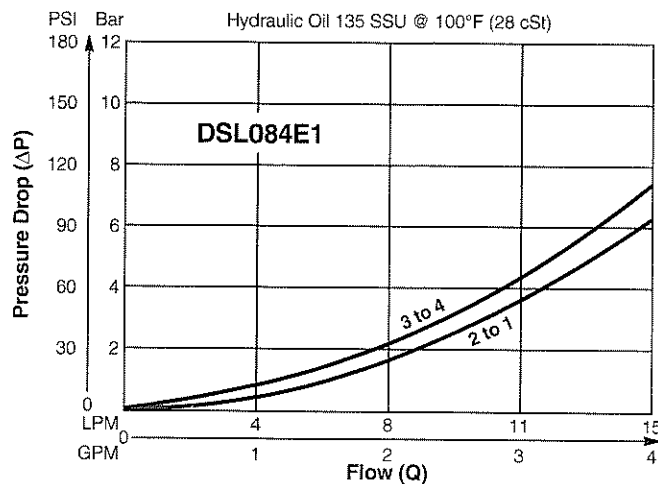
BODIES

TECHNICAL
DATA

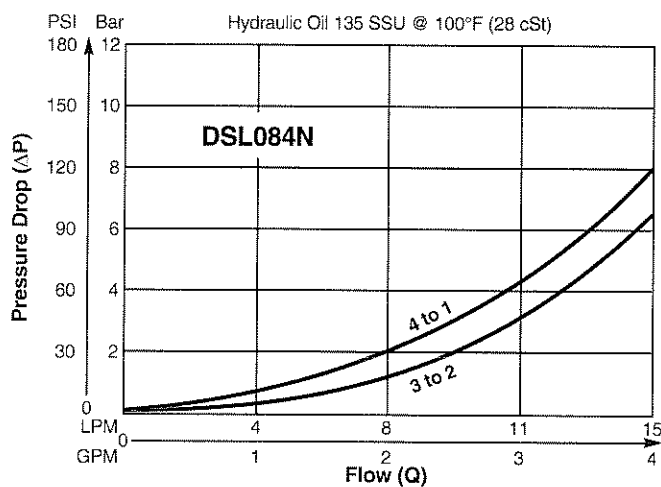
Pressure Drop vs. Flow (Through cartridge only)



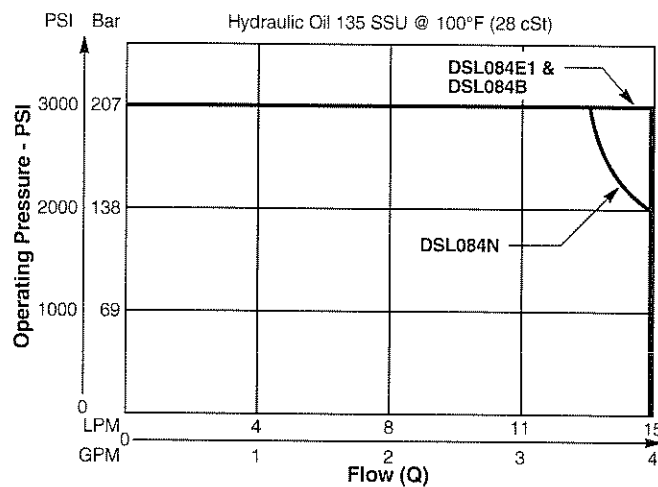
Pressure Drop vs. Flow (Through cartridge only)



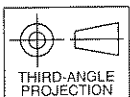
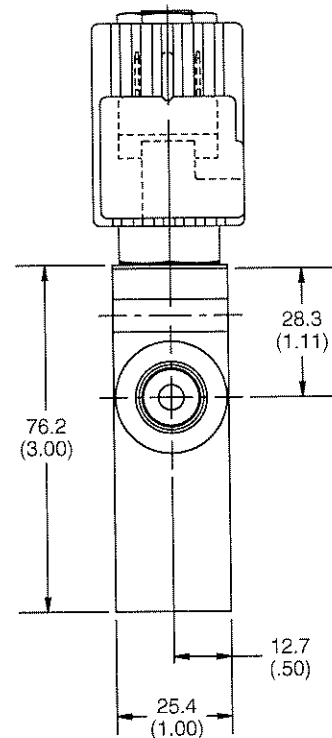
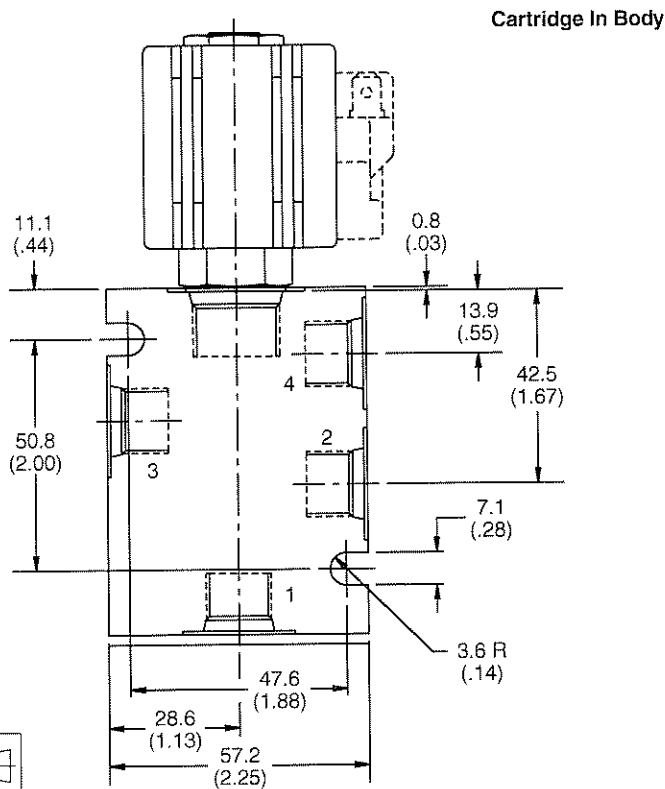
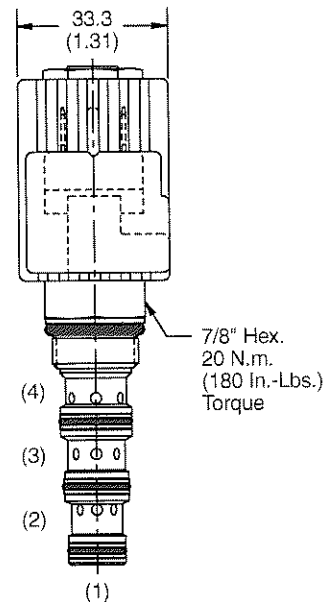
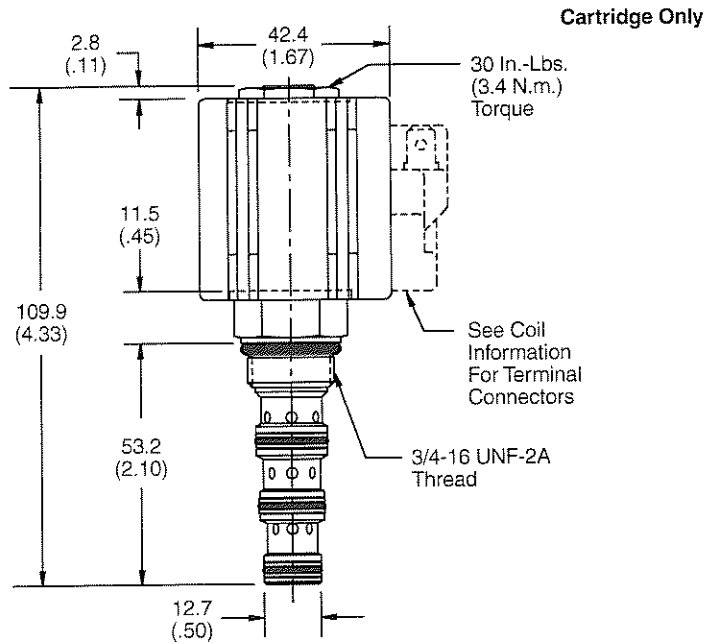
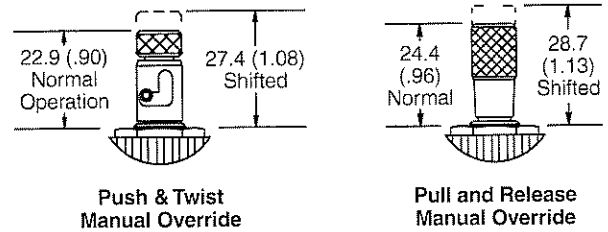
Pressure Drop vs. Flow (Through cartridge only)



Shift Limit Characteristics (Through cartridge only)



*Inch equivalents for millimeter dimensions are shown in (**)



dsl084.pm6.5, bl, gn

CHECKS &
SHUTTLES

LOAD & MOTOR
CONTROLS

VOLUME
CONTROLS

PRESSURE
CONTROLS

SOLENOID
VALVES

SPECIALTY
VALVES

COILS

BODIES

TECHNICAL
DATA

DSL

Solenoid
Valve

08

Size

4

Spool
Type

Style

Override
Option

Seals

Coil
Voltage

Coil
Wattage

Coil
Termination

Body
Option

Code	Style
08	3/4"-16 UNF-2B Threaded Cavity

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Type
Omit	Cartridge without Coil
L	14 Watt

Code	Description
B	
N	
E1	

Code	Type
Omit	Without Manual Override
P	Pull & Release Manual Override
T	Push & Twist Manual Override

Code	Description
Omit	Cartridge without Coil
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120/110 VAC, 60/50 Hz
A240	240/220 VAC, 60/50 Hz

Code	Description
Omit	Cartridge without Coil
C	1/2" NPTF Conduit Connector with 24" 18 AWG Wires
D	DIN 43650 (Hirschmann) Plug Face
P	SAE 1B-0.25 SAE Double Spade (DC Only)
W	Double Wire, 24" 18 AWG (DC Only)
WP	Waterproof Double Wire, 24" 16 AWG (DC Only)

Shipping Weight
 Cartridge Only .13 kg (.29 lbs.)

SERVICE PARTS

Code	Size
S8	1/2" I.D.
SW8	1/2" I.D.

DIN Connector:
 PG9 Black — 710549-00
 PG11 Black — 692914
 PG11 Grey — 692915

Coil Nut:
 DSL084 — 118127-00

Nitrile Seal Kit:
 DSL084 — SK08-4

Fluorocarbon Seal Kit:
 DSL084 — SK08-4V

Code	Type
L	14 Watts

Code	Description
C	Conduit
D	DIN 43650
P	Double Spade
W	Double Wire
WP	Waterproof Double Wire

Code	Description
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120 VAC
A240	240 VAC

Notes: See 1/2" Unicoids Data Sheet for more options.
 For other coil voltages and terminations, consult factory.
 S8 Coil applies to all terminations except WP.
 SW8 Coil applies to WP termination only.

Code	Port Size & Material
Omit	Cartridge Only
4P	1/4" NPTF (B08-4-4P) Steel
A4P	1/4" NPTF (B08-4-A4P) Aluminum
6P	3/8" NPTF (B08-4-6P) Steel
A6P	3/8" NPTF (B08-4-A6P) Aluminum
4T	SAE-4 (B08-4-4T) Steel
A4T	SAE-4 (B08-4-A4T) Aluminum
6T	SAE-6 (B08-4-6T) Steel
A6T	SAE-6 (B08-4-A6T) Aluminum
4B	1/4" BSPG (B08-4-4B) Steel
A4B	1/4" BSPG (B08-4-A4B) Aluminum
6B	3/8" BSPG (B08-4-6B) Steel
A6B	3/8" BSPG (B08-4-A6B) Aluminum

General Description

The DSH084, 4-way spool valves are used in applications with double acting cylinders, with hydraulic motors, to pilot two functions, or any other application that requires a two-position, four-way solenoid valve.

Operation

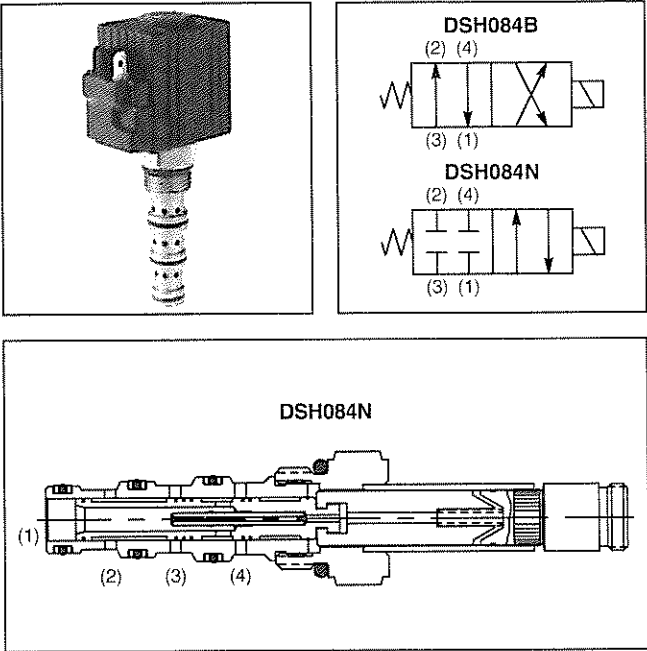
In the de-energized mode, the spool is positioned by spring force. The solenoid, when energized, directly shifts the spool against the spring, thus changing the flow path through the valve.

Features

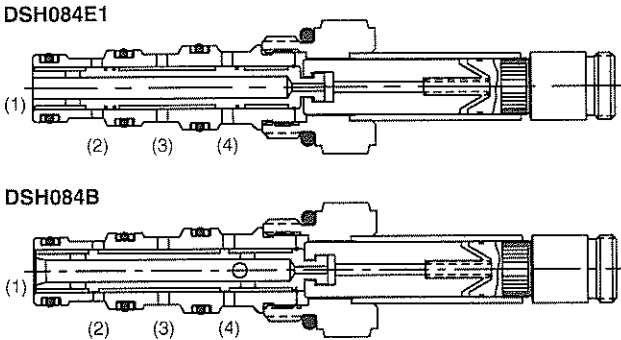
- High flow capacity with reduced space requirements
- Standard valve bodies and common cavities
- One-piece encapsulated coil with minimal amperage draw
- Manual overrides, seal variations and other options available
- No dynamic seals
- Variety of coil terminations

Specifications

Rated Flow	11 LPM (3 GPM)
Maximum Inlet Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Leakage	160 cc/min. (10 cu. in./min.) maximum at 210 Bar (3000 PSI)
Minimum Operating Voltage	90% of rated voltage at 345 Bar (5000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C08-4



Construction



Solenoid Coil Specifications

Voltage	Watts	Amps
10 VDC	14	1.45
12 VDC	14	1.17
24 VDC	14	0.57
120 VAC	14	.144
240 VAC	14	.079

Response Time (at nominal flow and maximum pressure)	
Normally Closed	Open - 60 ms Close - 20 ms
Normally Open	Open - 80 ms Close - 40 ms

Wire Class	"N" for all voltages
A.C. Rectifiers	Integral full wave bridge

CHECKS &
SHUTTLES

LOAD & MOTOR
CONTROLS

VOLUME
CONTROLS

PRESSURE
CONTROLS

SOLENOID
VALVES

SPECIALTY
VALVES

COILS

BODIES

TECHNICAL
DATA

CHECKS &
SHUTTLES

LOAD & MOTOR
CONTROLS

VOLUME
CONTROLS

PRESSURE
CONTROLS

SOLENOID
VALVES

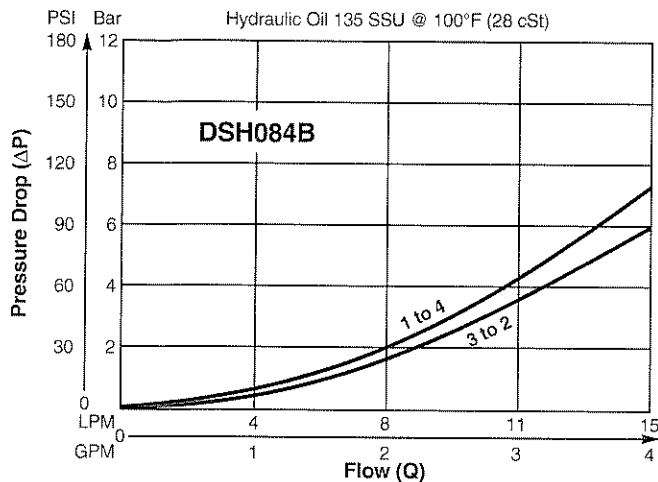
SPECIALTY
VALVES

COILS

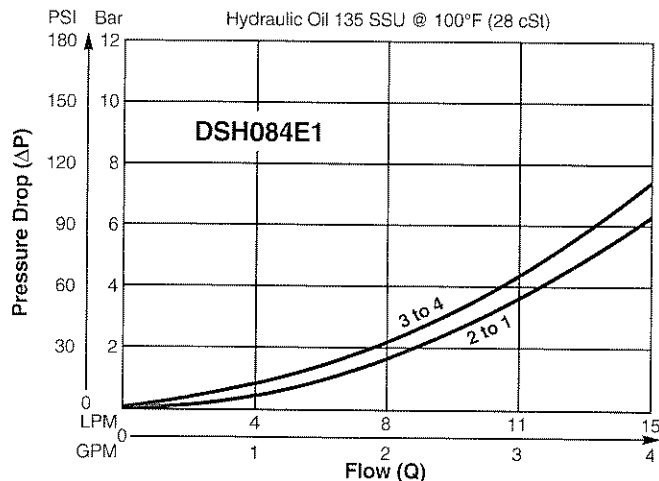
BODIES

TECHNICAL
DATA

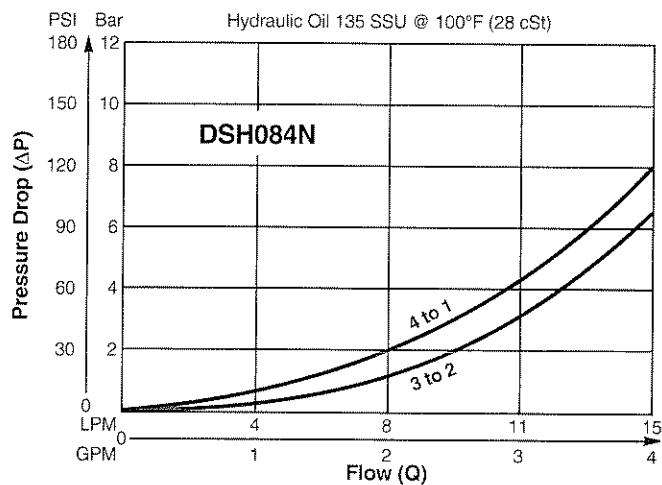
Pressure Drop vs. Flow (Through cartridge only)



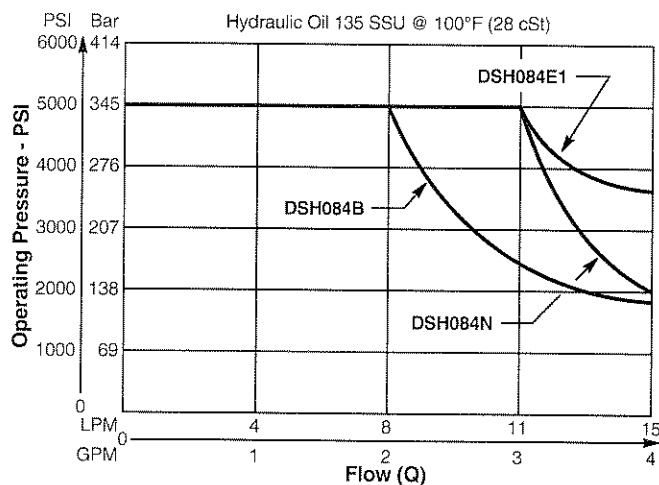
Pressure Drop vs. Flow (Through cartridge only)



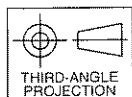
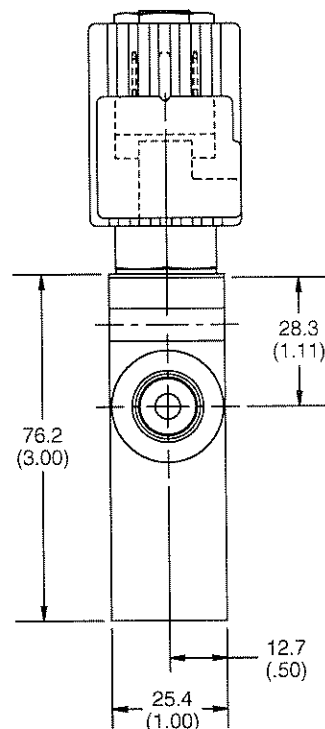
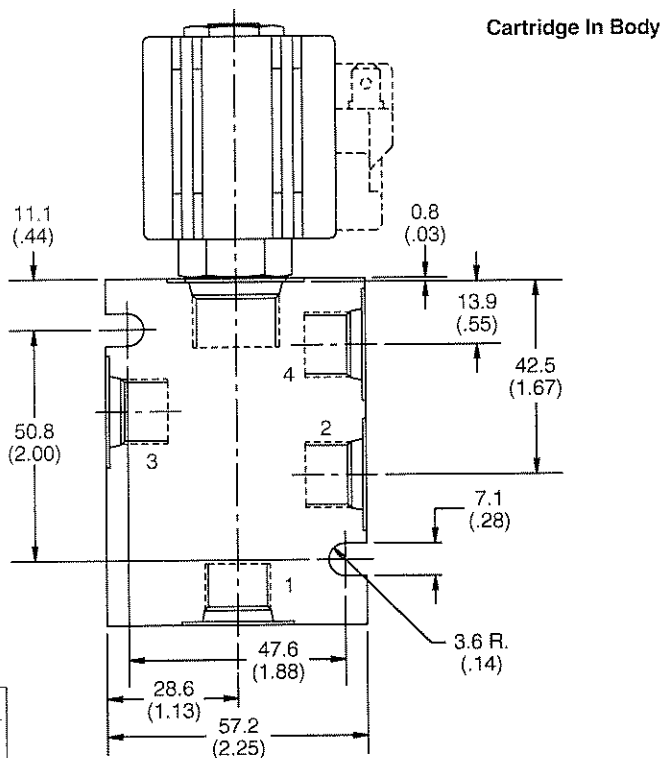
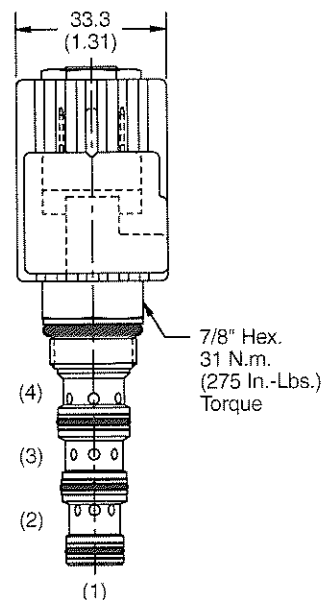
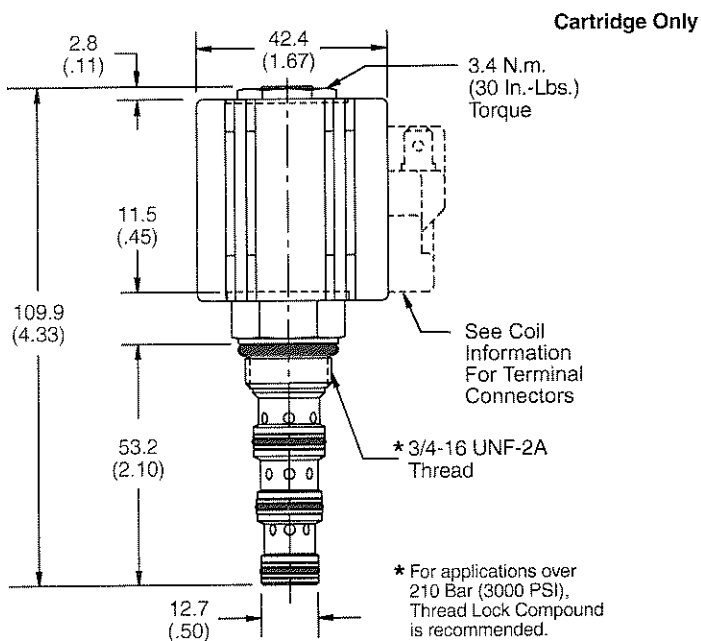
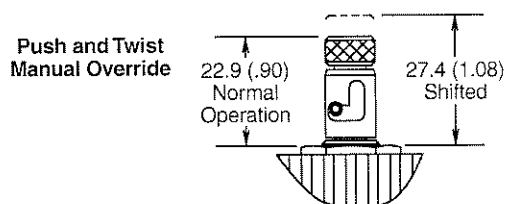
Pressure Drop vs. Flow (Through cartridge only)



Shift Limit Characteristics (Through cartridge only)



*Inch equivalents for millimeter dimensions are shown in (**)



dsh084.pm6.5, bl, gn

Ordering Information

Spool-Type, Four-Way Valves
Series DSH084CHECKS &
SHUTTLESLOAD & MOTOR
CONTROLSVOLUME
CONTROLSPRESSURE
CONTROLSSOLENOID
VALVESSPECIALTY
VALVES

COILS

BODIES

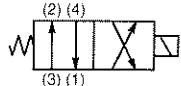
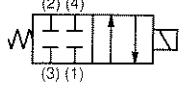
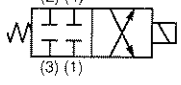
TECHNICAL
DATA

DSH	08	4							
Solenoid Valve	Size	Spool Type	Style	Override Option	Seals	Coil Voltage	Coil Wattage	Coil Termination	Body Option

Code	Style
08	3/4"-16 UNF-2B Threaded Cavity

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Type
Omit	Without Manual Override
T	Push & Twist Manual Override

Code	Description
B	
N	
E1	

Code	Description
Omit	Cartridge without Coil
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120/110 VAC, 60/50 Hz
A240	240/220 VAC, 60/50 Hz

Code	Type
Omit	Cartridge without Coil
L	14 Watt

Code	Description
Omit	Cartridge without Coil
C	1/2" NPTF Conduit Connector with 24" 18 AWG Wires
D	DIN 43650 (Hirschmann) Plug Face
P	SAE 1B-0.25 SAE Double Spade (DC Only)
W	Double Wire, 24" 18 AWG (DC Only)
WP	Waterproof Double Wire, 24" 16 AWG (DC Only)

SERVICE PARTS

Coil Size	Coil Wattage	Coil Termination	Coil Voltage										
<table border="1"> <thead> <tr> <th>Code</th> <th>Size</th> </tr> </thead> <tbody> <tr> <td>S8</td> <td>1/2" I.D.</td> </tr> <tr> <td>SW8</td> <td>1/2" I.D.</td> </tr> </tbody> </table>	Code	Size	S8	1/2" I.D.	SW8	1/2" I.D.	<table border="1"> <thead> <tr> <th>Code</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>L</td> <td>14 Watts</td> </tr> </tbody> </table>	Code	Type	L	14 Watts		
Code	Size												
S8	1/2" I.D.												
SW8	1/2" I.D.												
Code	Type												
L	14 Watts												

Code	Description
C	Conduit
D	DIN 43650
P	Double Spade
W	Double Wire
WP	Waterproof Double Wire

Code	Description
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120 VAC
A240	240 VAC

DIN Connector:
 PG9 Black — 710549-00
 PG11 Black — 692914
 PG11 Grey — 692915

Coil Nut:
 DSH084 — 118127-00

Nitrile Seal Kit:
 DSH084 — SK08-4

Fluorocarbon Seal Kit:
 DSH084 — SK08-4V

Notes: See 1/2" Unicolls Data Sheet for more options.
 For other coil voltages and terminations, consult factory.
 S8 Coil applies to all terminations except WP.
 SW8 Coil applies to WP termination only.

Code	Port Size & Material	
Omit	Cartridge Only	
4P	1/4" NPTF (B08-4-4P)	Steel
A4P	1/4" NPTF (B08-4-A4P)	Aluminum
6P	3/8" NPTF (B08-4-6P)	Steel
A6P	3/8" NPTF (B08-4-A6P)	Aluminum
4T	SAE-4 (B08-4-4T)	Steel
A4T	SAE-4 (B08-4-A4T)	Aluminum
6T	SAE-6 (B08-4-6T)	Steel
A6T	SAE-6 (B08-4-A6T)	Aluminum
4B	1/4" BSPG (B08-4-4B)	Steel
A4B	1/4" BSPG (B08-4-A4B)	Aluminum
6B	3/8" BSPG (B08-4-6B)	Steel
A6B	3/8" BSPG (B08-4-A6B)	Aluminum

NOTE:

If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

Shipping Weight

Cartridge Only .13 kg (.29 lbs.)

dsh084.pm6.5, bl, gn

General Description

The DSL104, 4-way, spool-type, solenoid valves are used in applications with double acting cylinders, with hydraulic motors, to pilot two functions, or any other application that requires a two-position, four-way solenoid valve.

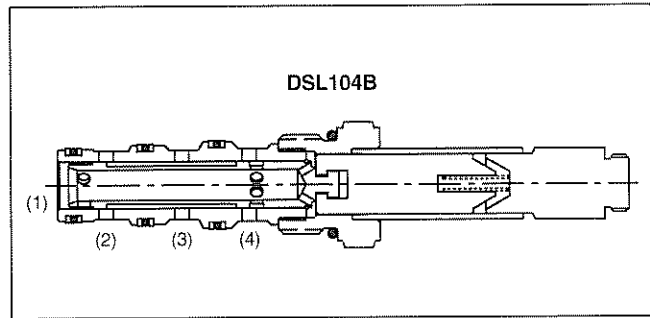
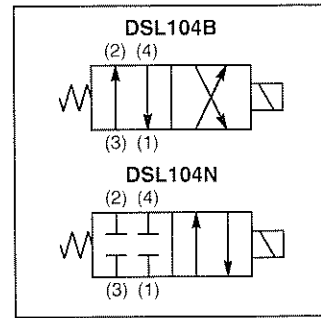
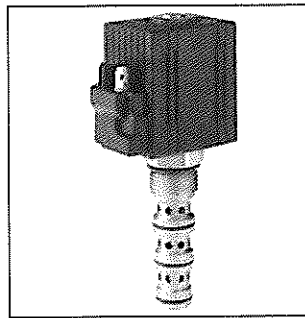
Operation

De-Energized

When the solenoid is de-energized, the spool connects the 3 Port with the 2 Port, and the 4 Port to the 1 Port. The position of the spool does not permit flow from the 3 Port to the 4 Port, or from the 2 Port to the 1 Port.

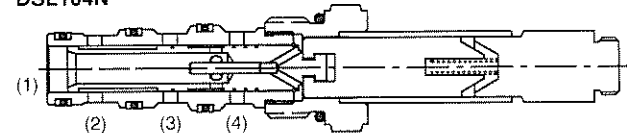
Energized

When the solenoid is energized, the spool shifts connecting the 3 Port to the 4 Port, and connecting the 2 Port to the 1 Port. Flow from the 3 Port to the 2 Port and from the 4 Port to the 1 Port is blocked by the spool.

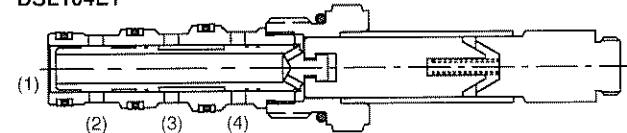


Construction

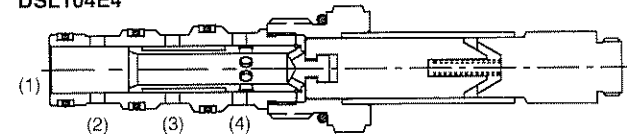
DSL104N



DSL104E1



DSL104E4



Specifications

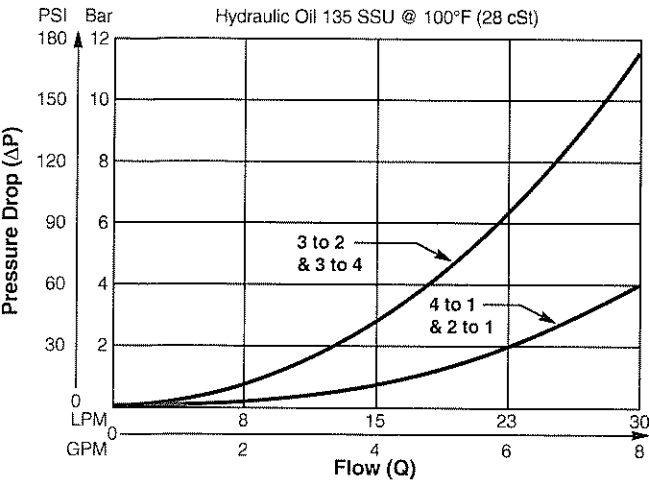
Rated Flow (At 70 PSI ΔP)	19 LPM (5 GPM)
Maximum Inlet Pressure	210 Bar (3000 PSI)
Leakage	160 cc/min. (10 cu. in./min.) maximum at 210 Bar (3000 PSI)
Minimum Operating Voltage	90% of rated voltage at 210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C10-4

Features

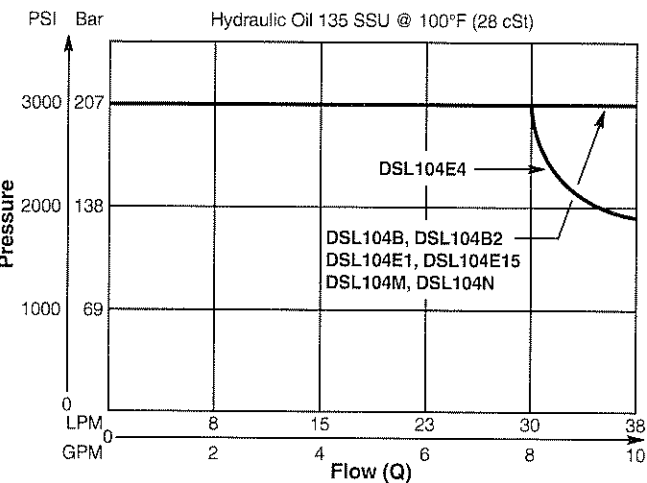
- High flow capacity with reduced space requirements
- Standard valve bodies and common cavities
- One-piece encapsulated coil with minimal amperage draw
- Manual overrides, seal variations and other options available
- No dynamic seals
- Variety of coil terminations

Performance Curves

Pressure Drop vs. Flow (Through cartridge only)



Shift Limit Characteristics (Through cartridge only)



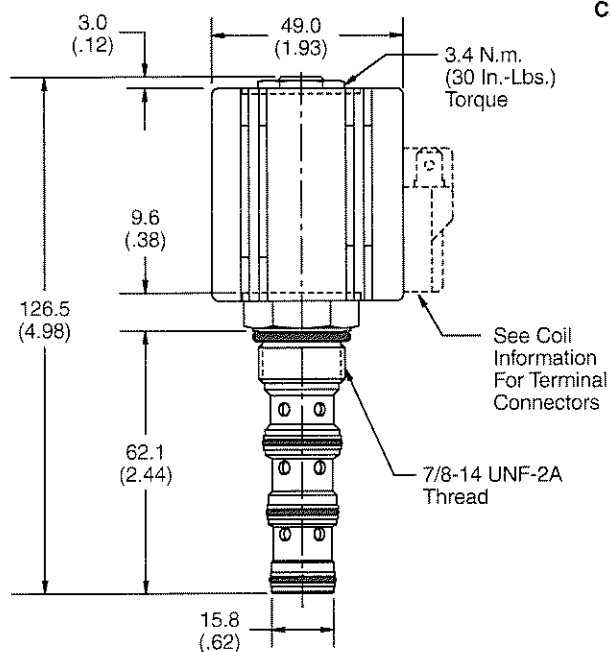
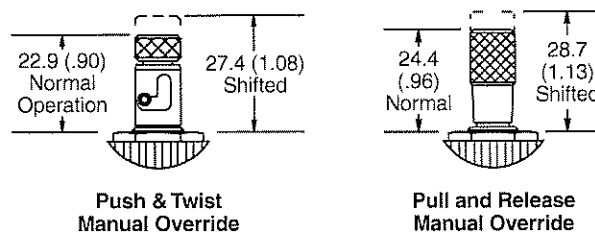
Solenoid Coil Specifications

Voltage	10 VDC	12 VDC	24 VDC	120 VAC	240 VAC
Watts	21	20	21	17.8	18.6
Amps	2.1	1.67	.88	.17	.09

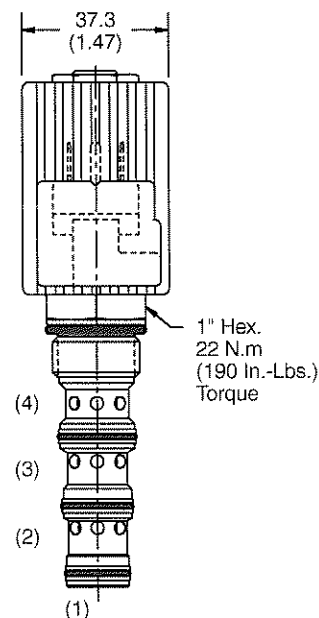
Response Time (at nominal flow and maximum pressure)	
Normally Closed	45 ms to 120 ms
Normally Open	50 ms to 150 ms

Wire Class	"N" for all voltages
A.C. Rectifiers	Integral full wave bridge

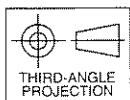
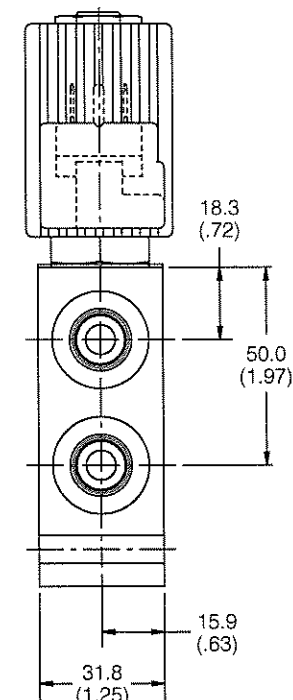
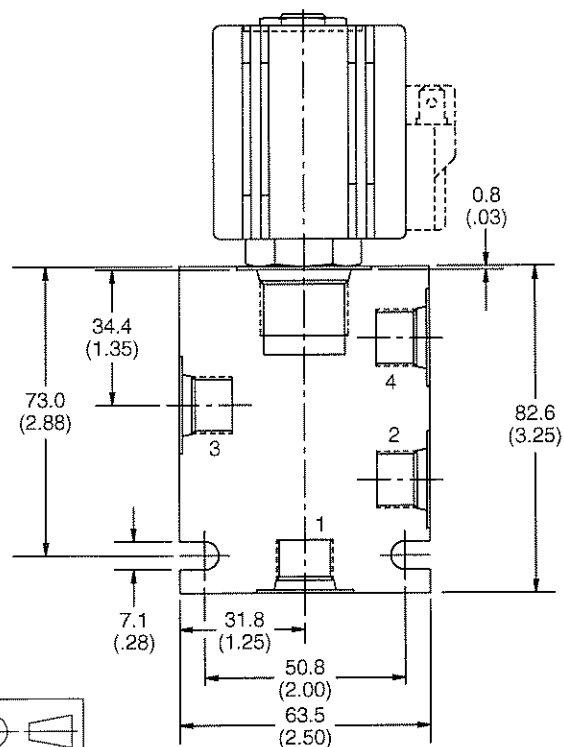
*Inch equivalents for millimeter dimensions are shown in (**)



Cartridge Only



Cartridge In Body



dsl104.pm6.5, bl, gn

CHECKS &
SHUTTLES

LOAD & MOTOR
CONTROLS

VOLUME
CONTROLS

PRESSURE
CONTROLS

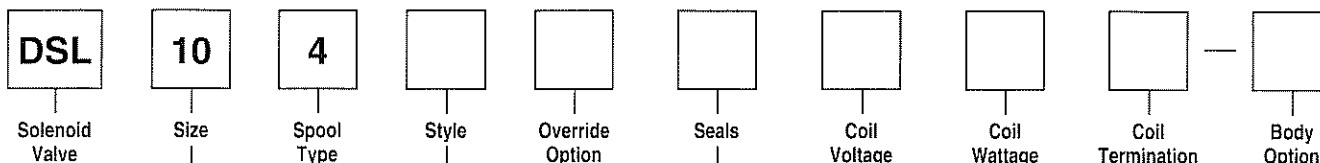
SOLENOID
VALVES

SPECIALTY
VALVES

COILS

BODIES

TECHNICAL
DATA



Code	Style
10	7/8"-14 UNF-2B Threaded Cavity

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Type
Omit	Cartridge without Coil
L	20 Watt

Code	Description
B	
B2	
E1	
E4	
E15	
M	
N	

Code	Type
Omit	Without Manual Override
P	Pull & Release Manual Override
T	Push & Twist Manual Override

Code	Description
Omit	Cartridge without Coil
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120/110 VAC, 60/50 Hz
A240	240/220 VAC, 60/50 Hz

Code	Description
Omit	Cartridge without Coil
C	1/2" NPTF Conduit Connector with 24" 18 AWG Wires
D	DIN 43650 (Hirschmann) Plug Face
P	SAE 1B-0.25 SAE Double Spade (DC Only)
W	Double Wire, 24" 18 AWG (DC Only)
WP	Waterproof Double Wire, 24" 16 AWG (DC Only)

Shipping Weight
 Cartridge Only .20 kg (.44 lbs.)

Code	Port Size & Material
Omit	Cartridge Only
4P	1/4" NPTF (B10-4-4P) Steel
A4P	1/4" NPTF (B10-4-A4P) Aluminum
6P	3/8" NPTF (B10-4-6P) Steel
A6P	3/8" NPTF (B10-4-A6P) Aluminum
8P	1/2" NPTF (B10-4-8P) Steel
A8P	1/2" NPTF (B10-4-A8P) Aluminum
6T	SAE-6 (B10-4-6T) Steel
A6T	SAE-6 (B10-4-A6T) Aluminum
8T	SAE-8 (B10-4-8T) Steel
A8T	SAE-8 (B10-4-A8T) Aluminum
4B	1/4" BSPG (B10-4-4B) Steel
A4B	1/4" BSPG (B10-4-A4B) Aluminum
6B	3/8" BSPG (B10-4-6B) Steel
A6B	3/8" BSPG (B10-4-A6B) Aluminum
8B	1/2" BSPG (B10-4-8B) Steel
A8B	1/2" BSPG (B10-4-A8B) Aluminum

SERVICE PARTS

Code	Size
S10	5/8" I.D.
SW10	5/8" I.D.

Code	Type
L	20 Watts

Code	Description
C	Conduit
D	DIN 43650
P	Double Spade
W	Double Wire
WP	Waterproof Double Wire

Code	Description
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120 VAC
A240	240 VAC

DIN Connector:
 PG9 Black — 710549-00
 PG11 Black — 692914
 PG11 Grey — 692915

Coil Nut:
 DSL104 — 118127-00

Nitrile Seal Kit:
 DSL104 — SK10-4

Fluorocarbon Seal Kit:
 DSL104 — SK10-4V

Notes: See 5/8" Unicoids Data Sheet for more options.
 For other coil voltages and terminations, consult factory.
 S10 Coil applies to all terminations except WP.
 SW10 Coil applies to WP termination only.

dsl104.pm6.5, bl, gn

General Description

The DSH104, 4-way, spool-type, solenoid valves are used in applications with double acting cylinders, with hydraulic motors, to pilot two functions, or any other application that requires a two-position, four-way solenoid valve.

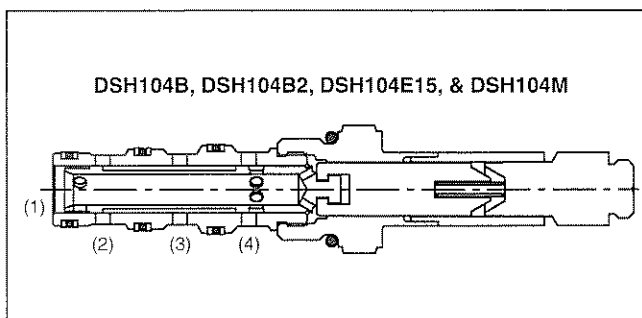
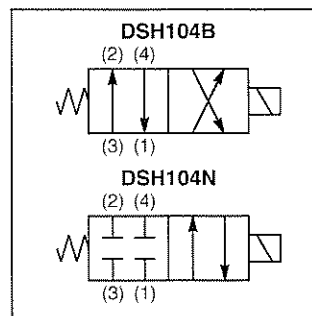
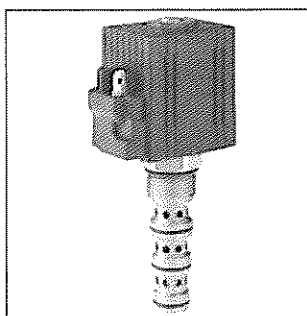
Operation

De-Energized

When the solenoid is de-energized, the spool connects the 3 Port with the 2 Port, and the 4 Port to the 1 Port. The position of the spool does not permit flow from the 3 Port to the 4 Port, or from the 2 Port to the 1 Port.

Energized

When the solenoid is energized, the spool shifts connecting the 3 Port to the 4 Port, and connecting the 2 Port to the 1 Port. Flow from the 3 Port to the 2 Port and from the 4 Port to the 1 Port is blocked by the spool.

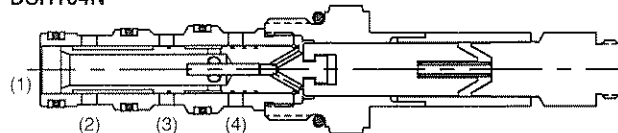


Specifications

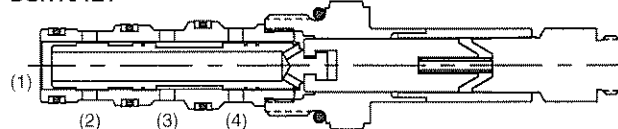
Rated Flow	19 LPM (5 GPM)
Maximum Inlet Pressure	345 Bar (5000 PSI) - Steel 210 Bar (3000 PSI) - Aluminum
Leakage	160 cc/min. (10 cu. in./min.) maximum at 210 Bar (3000 PSI)
Minimum Operating Voltage	90% of rated voltage at 345 Bar (5000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No restrictions
Cavity	Common Cavity No. C10-4

Construction

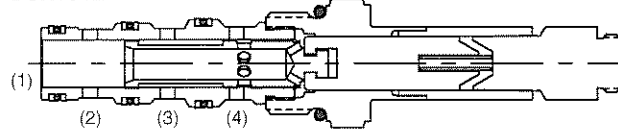
DSH104N



DSH104E1



DSH104E

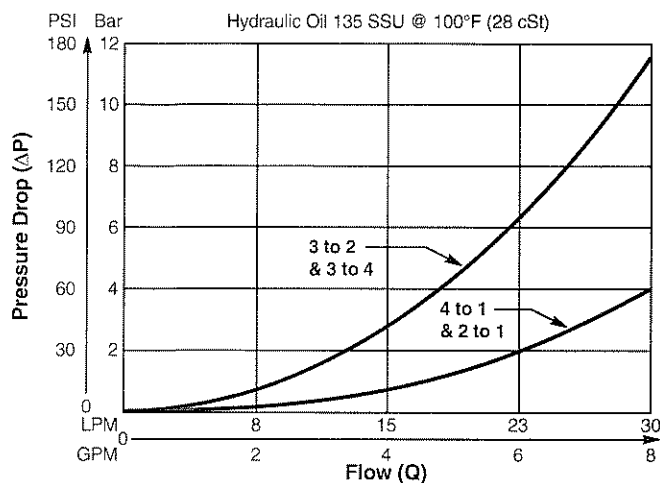


Features

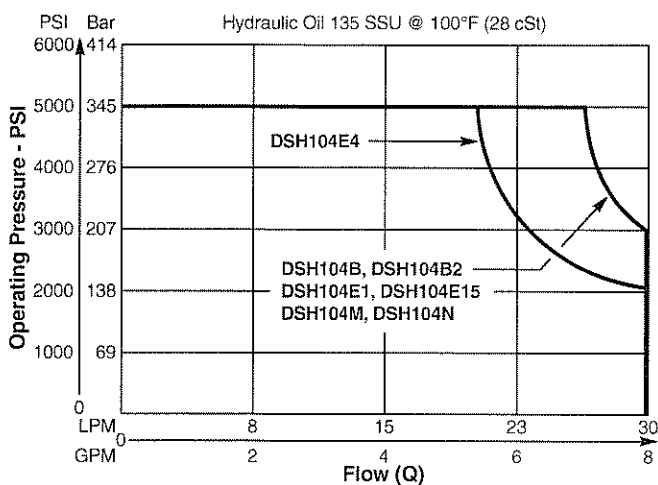
- High flow capacity with reduced space requirements
- Standard valve bodies and common cavities
- One-piece encapsulated coil with minimal amperage draw
- Manual overrides, seal variations and other options available
- No dynamic seals
- Variety of coil terminations

Performance Curves

Pressure Drop vs. Flow (Through cartridge only)



Shift Limit Characteristics (Through cartridge only)



Solenoid Coil Specifications

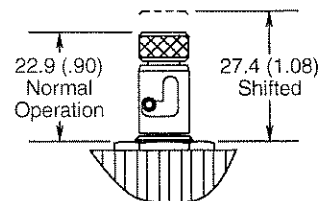
Voltage	10 VDC	12 VDC	24 VDC	120 VAC	240 VAC
Watts	21	20	21	17.8	18.6
Amps	2.1	1.67	.88	.17	.09

Response Time (at nominal flow and maximum pressure)	
Open	50 ms to 150 ms
Close	45 ms to 120 ms

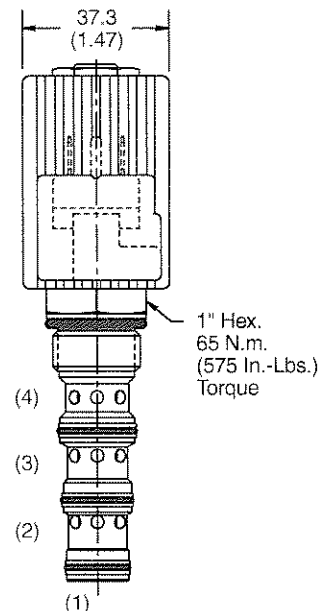
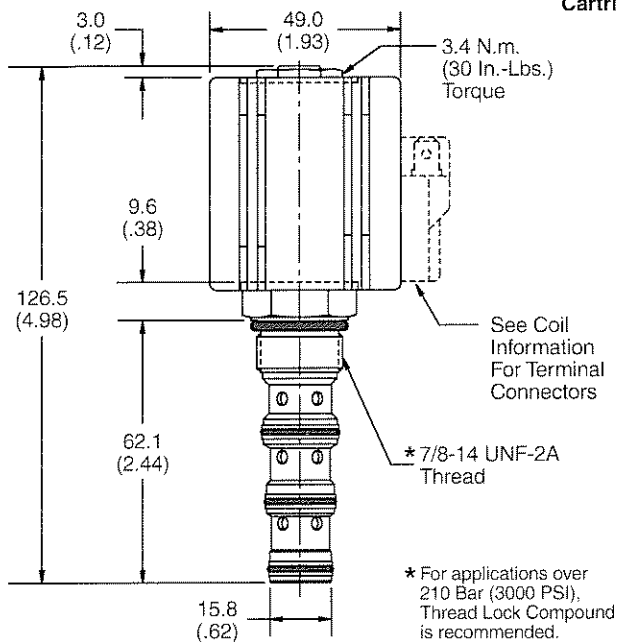
Wire Class	"N" for all voltages
A.C. Rectifiers	Integral full wave bridge

*Inch equivalents for millimeter dimensions are shown in (**)

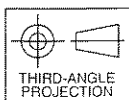
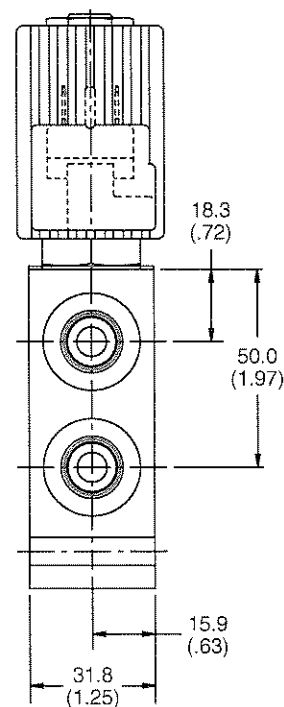
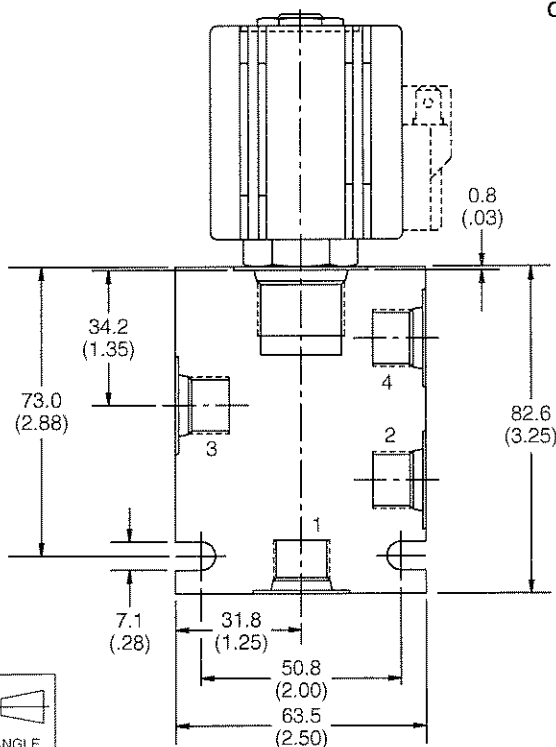
**Push and Twist
Manual Override**



Cartridge Only



Cartridge In Body



dsh104.pm6.5, bl, gn

CHECKS & SHUTTLES
 LOAD & MOTOR CONTROLS
 VOLUME CONTROLS
 PRESSURE CONTROLS
 SOLENOID VALVES
 SPECIALTY VALVES
 COILS
 BODIES
 TECHNICAL DATA

DSH	10	4							
Solenoid Valve	Size	Spool Type	Style	Override Option	Seals	Coil Voltage	Coil Wattage	Coil Termination	Body Option

Code	Style
10	7/8"-14 UNF-2B Threaded Cavity

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Type
Omit	Cartridge without Coil
L	20 Watt

Code	Description
B	
B2	
E1	
E4	
E15	
M	
N	

Code	Type
Omit	Without Manual Override
T	Push & Twist Manual Override

Code	Description
Omit	Cartridge without Coil
D010	10 VDC
D012	12 VDC
D024	24 VDC
A120	120/110 VAC, 60/50 Hz
A240	240/220 VAC, 60/50 Hz

Code	Description
Omit	Cartridge without Coil
C	1/2" NPTF Conduit Connector with 24" 18 AWG Wires
D	DIN 43650 (Hirschmann) Plug Face
P	SAE 1B-0.25 SAE Double Spade (DC Only)
W	Double Wire, 24" 18 AWG (DC Only)
WP	Waterproof Double Wire, 24" 16 AWG (DC Only)

Code	Port Size & Material
Omit	Cartridge Only
4P	1/4" NPTF (B10-4-4P) Steel
A4P	1/4" NPTF (B10-4-A4P) Aluminum
6P	3/8" NPTF (B10-4-6P) Steel
A6P	3/8" NPTF (B10-4-A6P) Aluminum
8P	1/2" NPTF (B10-4-8P) Steel
A8P	1/2" NPTF (B10-4-A8P) Aluminum
6T	SAE-6 (B10-4-6T) Steel
A6T	SAE-6 (B10-4-A6T) Aluminum
8T	SAE-8 (B10-4-8T) Steel
A8T	SAE-8 (B10-4-A8T) Aluminum
4B	1/4" BSPG (B10-4-4B) Steel
A4B	1/4" BSPG (B10-4-A4B) Aluminum
6B	3/8" BSPG (B10-4-6B) Steel
A6B	3/8" BSPG (B10-4-A6B) Aluminum
8B	1/2" BSPG (B10-4-8B) Steel
A8B	1/2" BSPG (B10-4-A8B) Aluminum

Shipping Weight
 Cartridge Only .20 kg (.44 lbs.)

SERVICE PARTS

Coil Size	Coil Wattage	Coil Termination	Coil Voltage																								
<table border="1"> <tr> <th>Code</th> <th>Size</th> </tr> <tr> <td>S10</td> <td>5/8" I.D.</td> </tr> <tr> <td>SW10</td> <td>5/8" I.D.</td> </tr> </table>	Code	Size	S10	5/8" I.D.	SW10	5/8" I.D.	<table border="1"> <tr> <th>Code</th> <th>Type</th> </tr> <tr> <td>L</td> <td>20 Watts</td> </tr> </table>	Code	Type	L	20 Watts																
Code	Size																										
S10	5/8" I.D.																										
SW10	5/8" I.D.																										
Code	Type																										
L	20 Watts																										
<table border="1"> <tr> <th>Code</th> <th>Description</th> </tr> <tr> <td>C</td> <td>Conduit</td> </tr> <tr> <td>D</td> <td>DIN 43650</td> </tr> <tr> <td>P</td> <td>Double Spade</td> </tr> <tr> <td>W</td> <td>Double Wire</td> </tr> <tr> <td>WP</td> <td>Waterproof Double Wire</td> </tr> </table>		Code	Description	C	Conduit	D	DIN 43650	P	Double Spade	W	Double Wire	WP	Waterproof Double Wire	<table border="1"> <tr> <th>Code</th> <th>Description</th> </tr> <tr> <td>D010</td> <td>10 VDC</td> </tr> <tr> <td>D012</td> <td>12 VDC</td> </tr> <tr> <td>D024</td> <td>24 VDC</td> </tr> <tr> <td>A120</td> <td>120 VAC</td> </tr> <tr> <td>A240</td> <td>240 VAC</td> </tr> </table>		Code	Description	D010	10 VDC	D012	12 VDC	D024	24 VDC	A120	120 VAC	A240	240 VAC
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D010	10 VDC																										
D012	12 VDC																										
D024	24 VDC																										
A120	120 VAC																										
A240	240 VAC																										

DIN Connector:
 PG9 Black — 710549-00
 PG11 Black — 692914
 PG11 Grey — 692915

Coil Nut:
 DSH104 — 118127-00

Nitrile Seal Kit:
 DSH104 — SK10-4

Fluorocarbon Seal Kit:
 DSH104 — SK10-4V

Notes: See 5/8" Unicoids Data Sheet for more options.
 For other coil voltages and terminations, consult factory.
 S10 Coil applies to all terminations except WP.
 SW10 Coil applies to WP termination only.

NOTE:
 If system pressure does not exceed 210 Bar (3000 PSI), aluminum bodies can be used. Higher pressures require steel bodies.

dsh104.pm6.5, bl, gn

General Description

The Series DS085 Solenoid Valves are used in applications with double acting cylinders, hydraulic motors, or any application that requires a 3-position, 4-way solenoid valve.

Operation

Solenoids 1 and 2 De-Energized

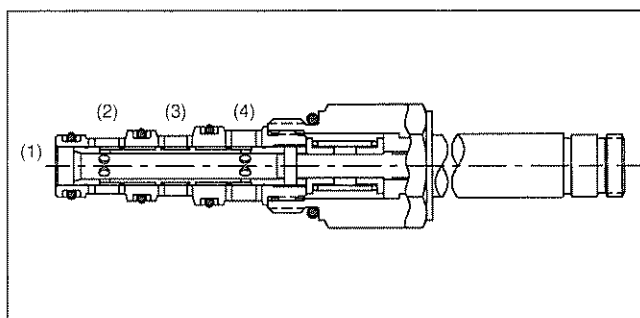
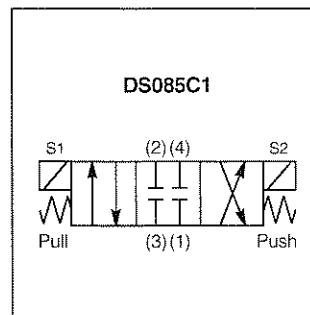
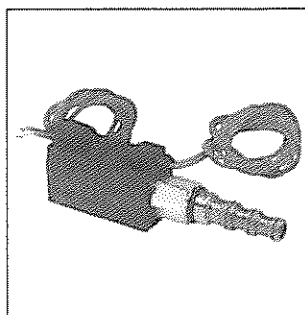
With both solenoids de-energized, the spool is held in a neutral position by spring force. On the C1 version, all ports are blocked. On the C2 version, all ports are connected. On the C4 version, the Inlet Port (3) is blocked while all other ports are connected. On the C7 version, Port (2) is blocked while all other ports are connected. On the C9 version, Port (3) and Port (1) are connected while the two other ports are blocked. On the C14 version, Port (4) is blocked while all other ports are connected.

Solenoid 1 Energized (Solenoid 2 De-Energized)

Solenoid 1 is the top most coil; furthest from the cartridge cavity. When solenoid 1 is energized on models C1, C2, C4, C7, and C14, the Inlet Port (3) is connected to Port (4) and Port (2) is connected to the Tank Port (1). When solenoid 1 is energized on model C9 it is just the opposite; the Inlet Port (3) is connected to Port (2) Port (4) is connected to the Tank Port (1). In addition; while the C9 spool is in transition from a de-energized position to an energized position, all ports are connected.

Features

- High flow capacity with reduced space requirements
- Standard valve bodies and common cavities
- Replaceable, one piece encapsulated, coils with minimal amperage draw
- Manual overrides, seal variations and other options available
- Oil immersed armature solenoid, no dynamic seals
- Variety of coil terminations and voltages

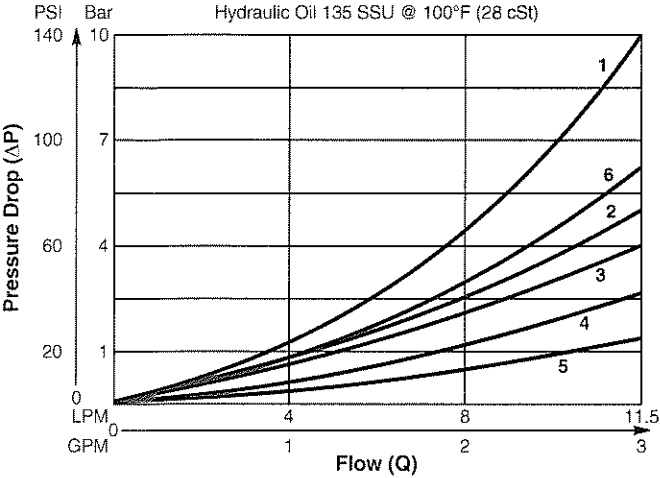


Specifications

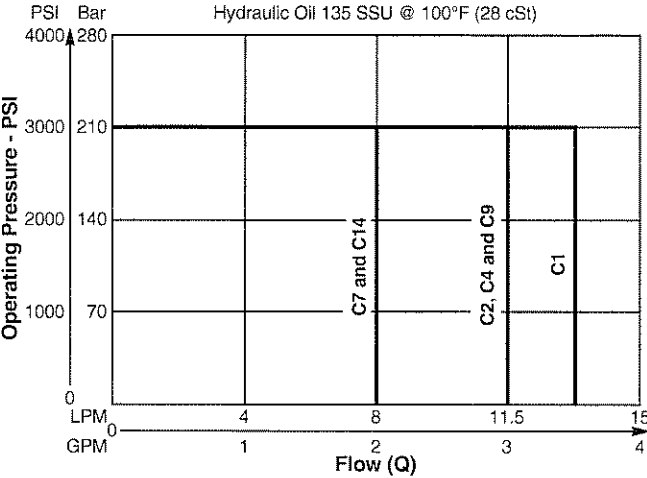
Rated Flow (At 70 PSI ΔP)	C2, C7, C14 11.4 LPM (3 GPM) C1, C4, C9 15.1 LPM (4 GPM)
Maximum Inlet Pressure	210 Bar (3000 PSI)
Leakage	160 cc/min. (10 cu. in./min.) maximum at 210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No Restrictions
Cavity	Common Cavity No. C08-4

Performance Curves

Pressure Drop vs. Flow (Through cartridge only)



Standard Duty Application (Through cartridge only)



Curve Selection Chart

SPOOL CODE	SPOOL SHIFTED				SPOOL CENTERED		
	3 to 2	3 to 4	2 to 1	4 to 1	3 to 1	2 to 1	4 to 1
C1	1	1	2	2	—	—	—
C2	1	1	2	3	5	3	2
C4	6	6	6	4	—	—	—
C14	1	1	2	2	5	4	—
C7	1	1	2	4	5	—	2
C9	1	1	3	2	5	—	—

Solenoid Coil Specifications

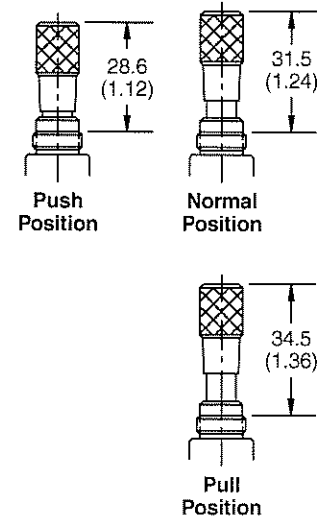
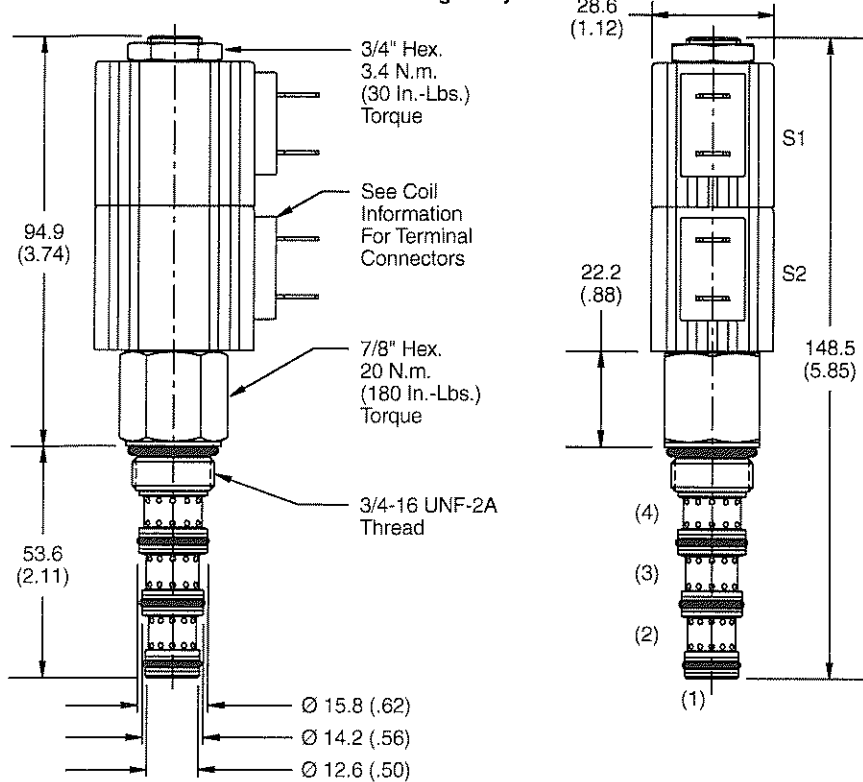
Voltage	6 VDC		10 VDC		12 VDC		18 VDC		24 VDC		36 VDC		48 VDC		120 VAC		240 VAC		480 VAC	
Duty	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.
Watts	12	25	12	25	12	25	12	25	12	25	12	25	12	25	12	25	12	25	12	25
Amps	2.22	3.90	1.43	2.48	1.05	1.94	0.75	1.42	0.52	1.17	0.38	0.73	0.26	0.59	.137	0.23	.076	0.12	.039	0.07

Response Time At nominal flow 210 Bar (3000 PSI)	50—150ms

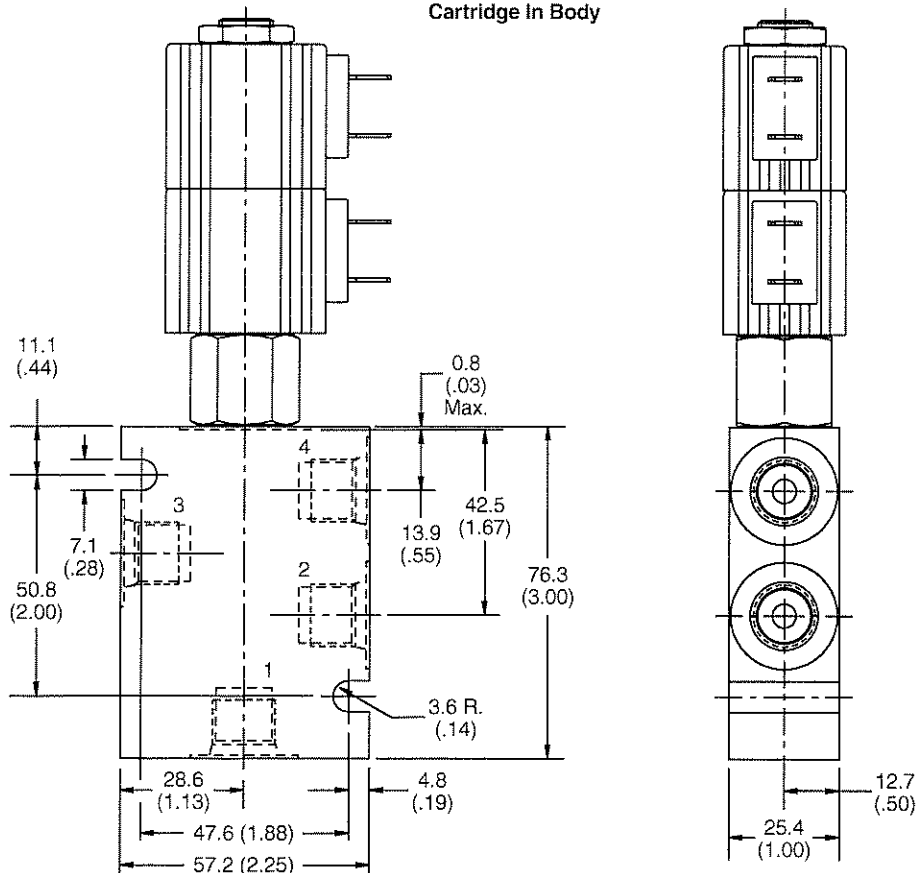
Wire Class	"N" for all voltages
A.C. Rectifiers	Integral full wave bridge

*Inch equivalents for millimeter dimensions are shown in (**)

Cartridge Only



Cartridge In Body



ds085.pm6.5, bl, gn

Shipping Weight
Cartridge Only .80 kg (1.70 lbs.)

Code	Port Size & Material	
Omit	Cartridge Only	
4P	1/4" NPTF (B08-4-4P)	Steel
A4P	1/4" NPTF (B08-4-A4P)	Aluminum
6P	3/8" NPTF (B08-4-6P)	Steel
A6P	3/8" NPTF (B08-4-A6P)	Aluminum
4T	SAE-4 (B08-4-4T)	Steel
A4T	SAE-4 (B08-4-A4T)	Aluminum
6T	SAE-6 (B08-4-6T)	Steel
A6T	SAE-6 (B08-4-A6T)	Aluminum
4B	1/4" BSPG (B08-4-4B)	Steel
A4B	1/4" BSPG (B08-4-A4B)	Aluminum
6B	3/8" BSPG (B08-4-6B)	Steel
A6B	3/8" BSPG (B08-4-A6B)	Aluminum

General Description

The Series DS105 Solenoid Valves are used in applications with double acting cylinders, hydraulic motors, or any application that requires a 3-position, 4-way solenoid valve.

Operation

Solenoids 1 and 2 De-Energized

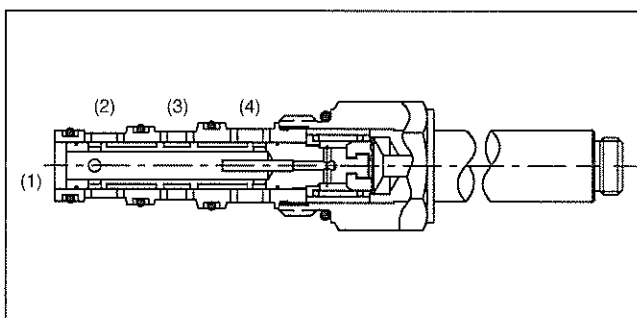
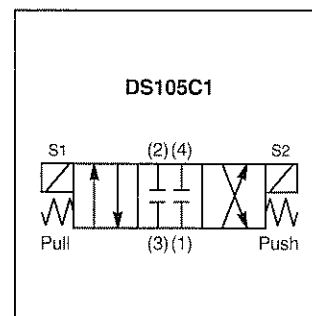
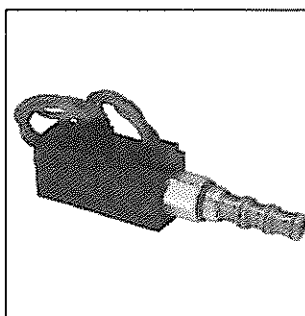
With both solenoids de-energized, the spool is held in a neutral position by spring force. On the C1 version, all ports are blocked. On the C2 version, all ports are connected. On the C4 version, the Inlet Port (3) is blocked while all other ports are connected. On the C7 version, Port (2) is blocked while all other ports are connected. On the C9 version, Port (3) and Port (1) are connected while the two other ports are blocked. On the C14 version, Port (4) is blocked while all other ports are connected.

Solenoid 1 Energized (Solenoid 2 De-Energized)

Solenoid 1 is the top most coil; furthest from the cartridge cavity. When solenoid 1 is energized on models C1, C2, C4, C7 and C14, the Pump Port (3) is connected to Port (4) and Port (2) is connected to the Tank Port (1). When solenoid 1 is energized on model C9 it is just the opposite; the Pump Port (3) is connected to Port (2) and Port (4) is connected to the Tank Port (1). In addition; while the C9 spool is in transition from a de-energized position to an energized position, all ports are connected.

Features

- High flow capacity with reduced space requirements
- Standard valve bodies and common cavities
- Replaceable, one piece encapsulated, coils with minimal amperage draw
- Manual overrides, seal variations and other options available
- Oil immersed armature solenoid, no dynamic seals
- Variety of coil terminations and voltages



Specifications

Rated Flow (At 70 PSI ΔP)	C1 - 18.9 LPM (5 GPM) C2 - 22.7 LPM (6 GPM) C4 - 30.3 LPM (8 GPM) C7 - 18.9 LPM (5 GPM) C9 - 26.5 LPM (7 GPM) C14 - 18.9 LPM (5 GPM)
Maximum Inlet Pressure	210 Bar (3000 PSI)
Leakage	160 cc/min. (10 cu. in./min.) maximum at 210 Bar (3000 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO Code 16/13, SAE Class 4 or better
Mounting	No Restrictions
Cavity	Common Cavity No. 10-4

CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

SOLENOID VALVES

SPECIALTY VALVES

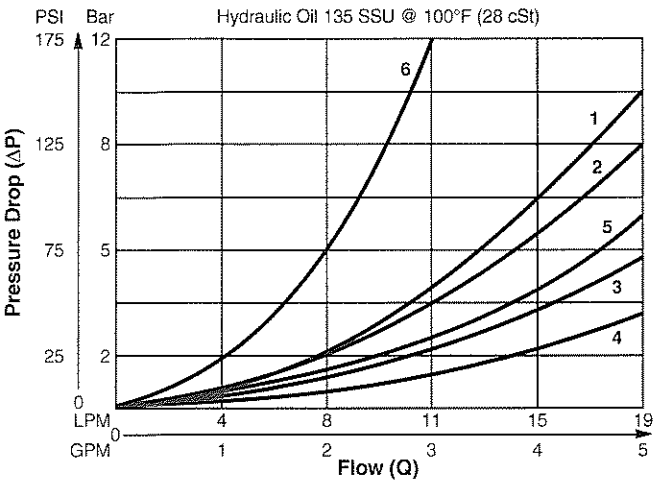
COILS

BODIES

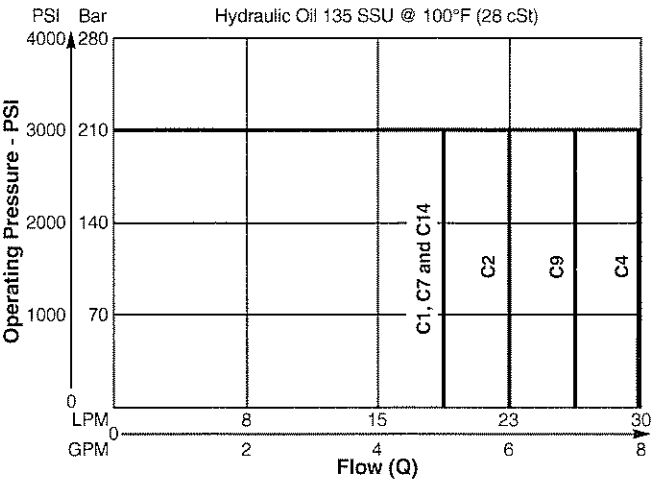
TECHNICAL DATA

Performance Curves

Pressure Drop vs. Flow (Through cartridge only)



Standard Duty Application (Through cartridge only)



Curve Selection Chart

SPOOL CODE	SPOOL SHIFTED				SPOOL CENTERED		
	3 to 2	3 to 4	2 to 1	4 to 1	3 to 1	2 to 1	4 to 1
C1	1	1	2	2	—	—	—
C2	1	1	3	3	4	6*	5
C4	1	1	3	3	—	6*	5
C14	1	1	3	2	4	6*	—
C7	1	1	2	3	4	—	6*
C9	1	1	2	2	4	—	—

*Velocity shift after 11.3 LPM (3 GPM).

Solenoid Coil Specifications

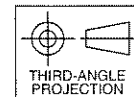
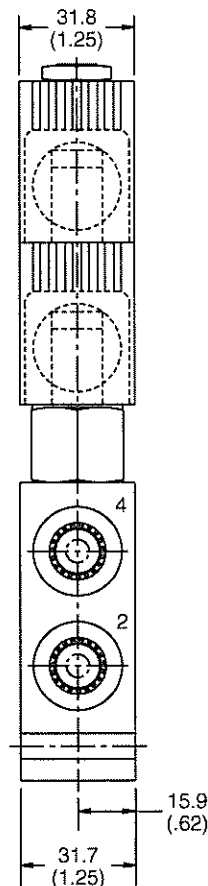
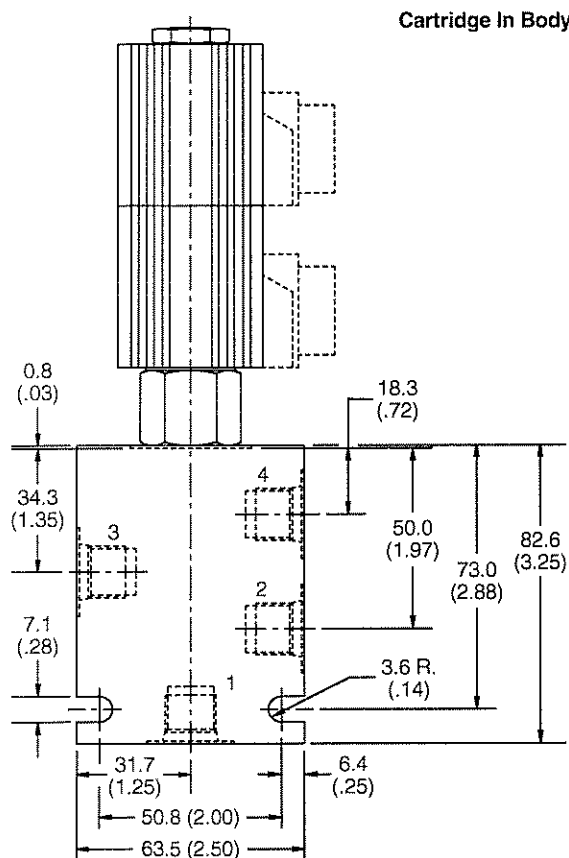
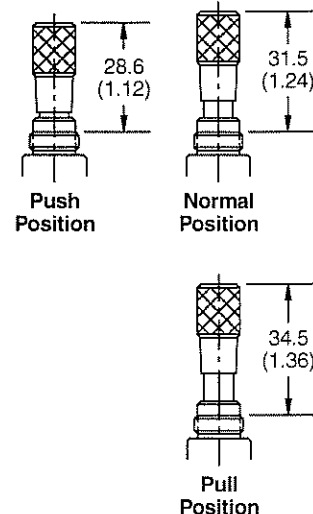
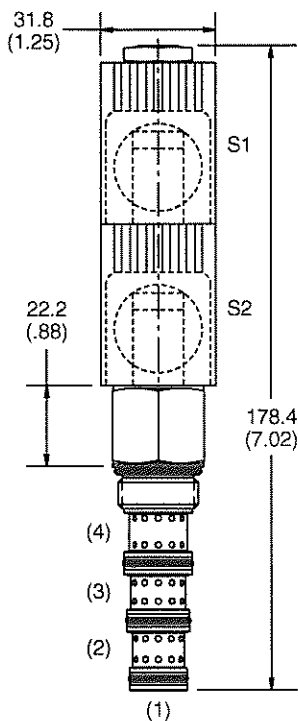
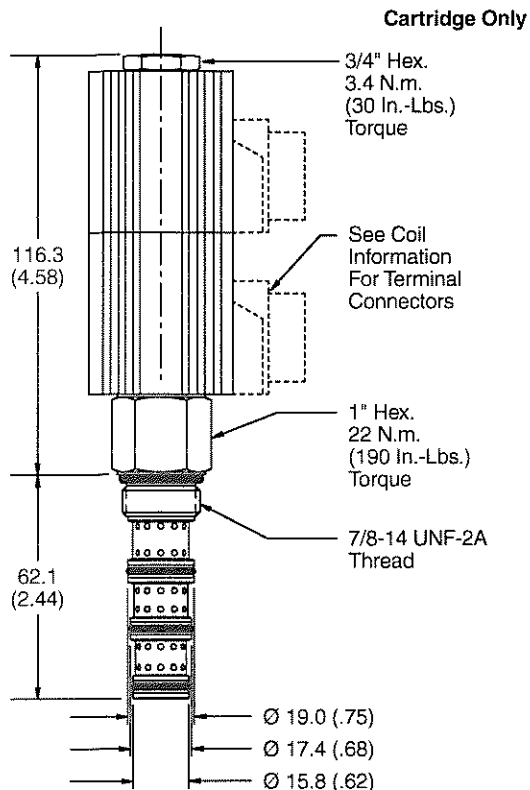
Voltage	6 VDC		10 VDC		12 VDC		18 VDC		24 VDC		36 VDC		48 VDC		120 VAC		240 VAC		480 VAC	
Duty	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.	STD.	HD.
Watts	17	30	17	30	17	30	17	30	17	30	17	30	17	30	17	30	17	30	17	N/A
Amps	2.43	4.84	1.58	3.20	1.44	2.30	0.94	1.86	0.72	1.20	0.43	0.88	0.30	0.58	0.15	0.26	.075	.125	.038	N/A

Response Time	
At nominal flow 210 Bar (3000 PSI)	
Normally Closed	40—120ms
Normally Open	50—150ms

Wire Class	"N" for all voltages
A.C. Rectifiers	Integral full wave bridge

ds105.pm6.5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)



CHECKS &
 SHUTTLES

LOAD & MOTOR
 CONTROLS

VOLUME
 CONTROLS

PRESSURE
 CONTROLS

**SOLENOID
 VALVES**

SPECIALTY
 VALVES

COILS

BODIES

TECHNICAL
 DATA

CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

SOLENOID VALVES

SPECIALTY VALVES

COILS

BODIES

TECHNICAL DATA

DS	10	5							
Solenoid Valve	Size	Spool Type	Style	Override Option	Seals	Coil Voltage	Coil Wattage	Coil Termination	Body Option

Code	Style
10	7/8"-14 UNF-2B Threaded Cavity

Code	Type
Omit	Nitrile
V	Fluorocarbon

Code	Type
Omit	Cartridge without Coil
L	17 Watt
H	30 Watt

Code	Type
Omit	Without Manual Override
M	Push/Pull Manual Override

Code	Description
C1	
C2	
C4	
C7	
C9	
C14	

Code	Description
Omit	Cartridge without Coil
D060	6 VDC
D010	10 VDC
D012	12 VDC
D018	18 VDC
D024	24 VDC
D036	36 VDC
D048	48 VDC
A120	120/110 VAC, 60/50 Hz
A240	240/220 VAC, 60/50 Hz
A480	480/440 VAC, 60/50 Hz

Code	Description
Omit	Cartridge without Coil
C	1/2" NPTF Conduit Connector with 24" 18 AWG Wires
D	DIN 43650 (Hirschmann) Plug Face
P	SAE 1B-0.25 SAE Double Spade (DC Only)
S1	8—32 Single Screw & Nut Internally Ground (DC Only)
W	Double Wire, 24" 18 AWG (DC Only)
W1	Single Wire, Internally Ground 24" 18 AWG (DC Only)

Shipping Weight
 Cartridge Only .80 kg (1.7 lbs.)

Code	Port Size & Material
Omit	Cartridge Only
4P	1/4" NPTF (B10-4-4P) Steel
A4P	1/4" NPTF (B10-4-A4P) Aluminum
6P	3/8" NPTF (B10-4-6P) Steel
A6P	3/8" NPTF (B10-4-A6P) Aluminum
8P	1/2" NPTF (B10-4-8P) Steel
A8P	1/2" NPTF (B10-4-A8P) Aluminum
6T	SAE-6 (B10-4-6T) Steel
A6T	SAE-6 (B10-4-A6T) Aluminum
8T	SAE-8 (B10-4-8T) Steel
A8T	SAE-8 (B10-4-A8T) Aluminum
4B	1/4" BSPG (B10-4-4B) Steel
A4B	1/4" BSPG (B10-4-A4B) Aluminum
6B	3/8" BSPG (B10-4-6B) Steel
A6B	3/8" BSPG (B10-4-A6B) Aluminum

SERVICE PARTS

DIN Connector:
 PG9 Black — 710549-00
 PG11 Black — 692914
 PG11 Grey — 692915

Coil Nut:
 118127-00

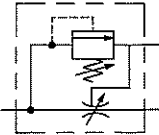
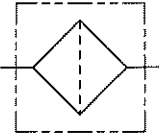
Nitrile Seal Kit:
 SK10-4

Fluorocarbon Seal Kit:
 SK10-4V

Coil Assemblies

851017*****	17 Watt Conduit Coil
851018*****	30 Watt Conduit Coil
851019*****	17 Watt DIN (Hirschmann) Coil
851020*****	30 Watt DIN (Hirschmann) Coil
851021*****	17 Watt Double Spade Coil
851022*****	30 Watt Double Spade Coil
851023*****	17 Watt Double Wire Coil
851024*****	30 Watt Double Wire Coil
851025*****	17 Watt Single Screw Coil
851026*****	30 Watt Single Screw Coil
851027*****	17 Watt Single Wire Coil
851028*****	30 Watt Single Wire Coil

(*****Calls out voltage. For example: 851021-012VDC is a 12 volt, 17 watt Double Spade Coil.)

SERIES	DESCRIPTION	FLOW	PRESSURE	PAGE NO.
	QA & QD Flow Control Valves	40 GPM	2500 PSI	SP1-SP5
	FL101 Filter Cartridge	15 GPM	3500 PSI	SP6-SP7

CHECKS & SHUTTLES
LOAD & MOTOR CONTROLS
VOLUME CONTROLS
PRESSURE CONTROLS
SOLENOID VALVES
SPECIALTY VALVES
COILS
BODIES
TECHNICAL DATA

General Description

The QA and QD Series, Flow Controls are designed for applications such as spreaders where precise control of one or two functions may be required without regard to variations in load pressure. These valves are used mainly on snow removal equipment, but can also be used for other applications such as sand and fertilizer.

Operation

The basic valve consists of at least one or two pressure compensated, priority type flow controls. This valve will provide a constant flow regardless of changes in load and regardless of changes in the pump output. Any excess flow from the pump or flow greater than the load requirement will be diverted to the tank port of the valve.

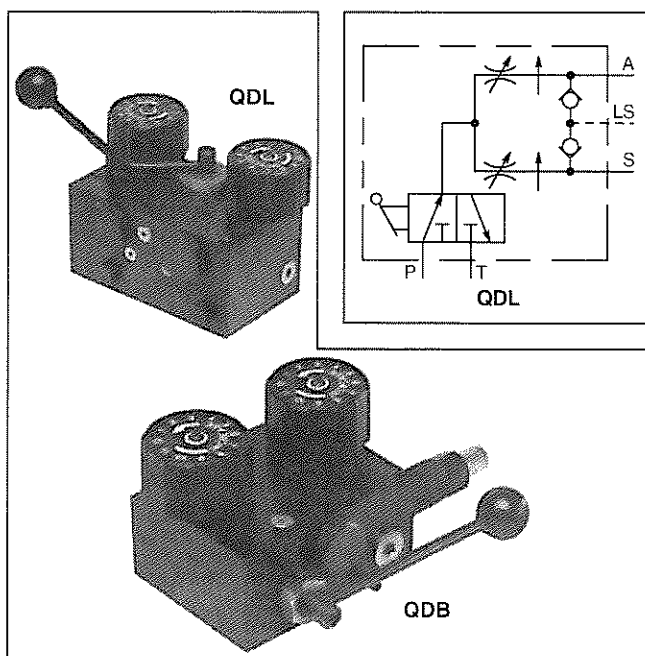
A second pressure compensated, priority type flow control can be added. This enables the control of two separate functions. Other options include a relief valve to regulate inlet pressure, a solenoid bypass valve, a manual bypass valve, and a load sensing option.

Features

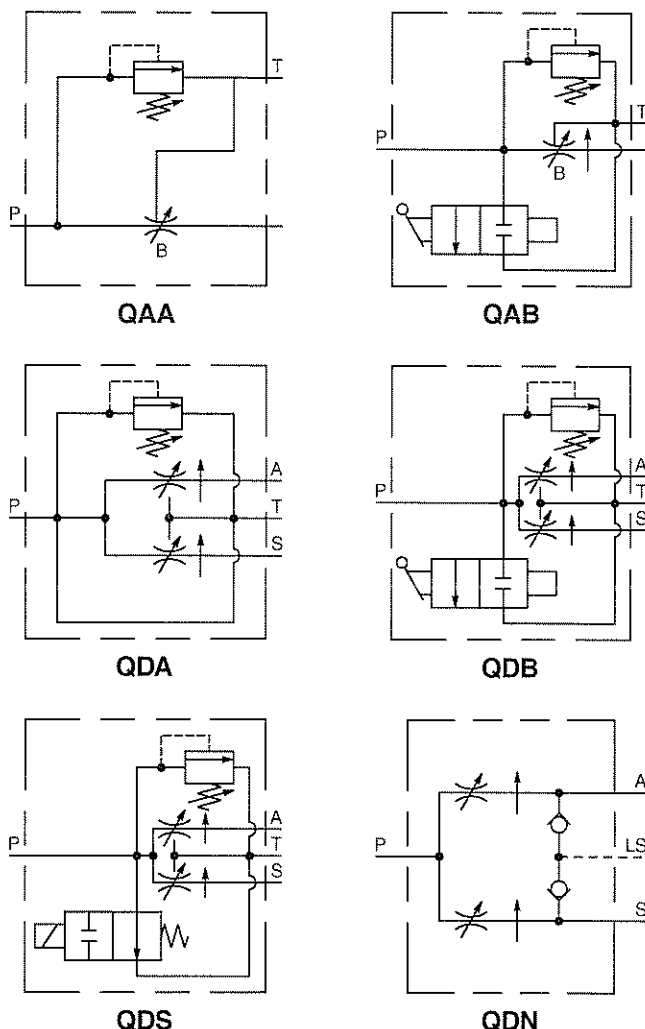
- Hardened and precision ground parts for durability
- Easy to adjust knobs
- Adjustable flow ranges for varying applications
- Load sense option
- Manual bypass option
- Solenoid bypass option
- Anodized aluminum body for long life

Specifications

Maximum Inlet Flow	150 LPM (40 GPM)
Flow 1 (Spinner) Flow 2 (Auger)	up to 37.5 LPM (10 GPM) up to 112.5 LPM (30 GPM)
Maximum Inlet Pressure	172.5 Bar (2500 PSI)
Flow Accuracy	±5%
Operating Temp. Range (Ambient)	-40°C to +93.3°C (-40°F to +200°F) (Nitrile Seals Only)
Internal Material	Steel
Body Material	Aluminum (anodized)
Mounting	In-line (no restrictions)



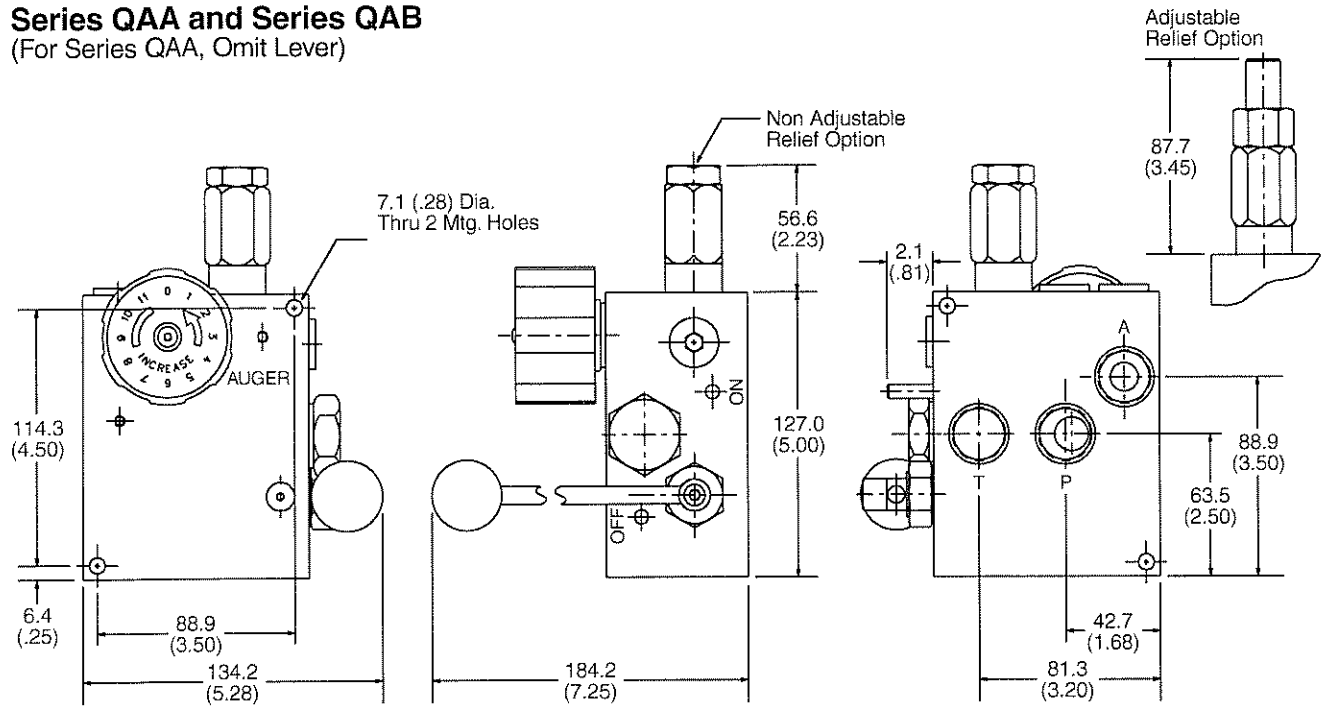
Symbols



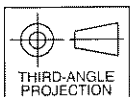
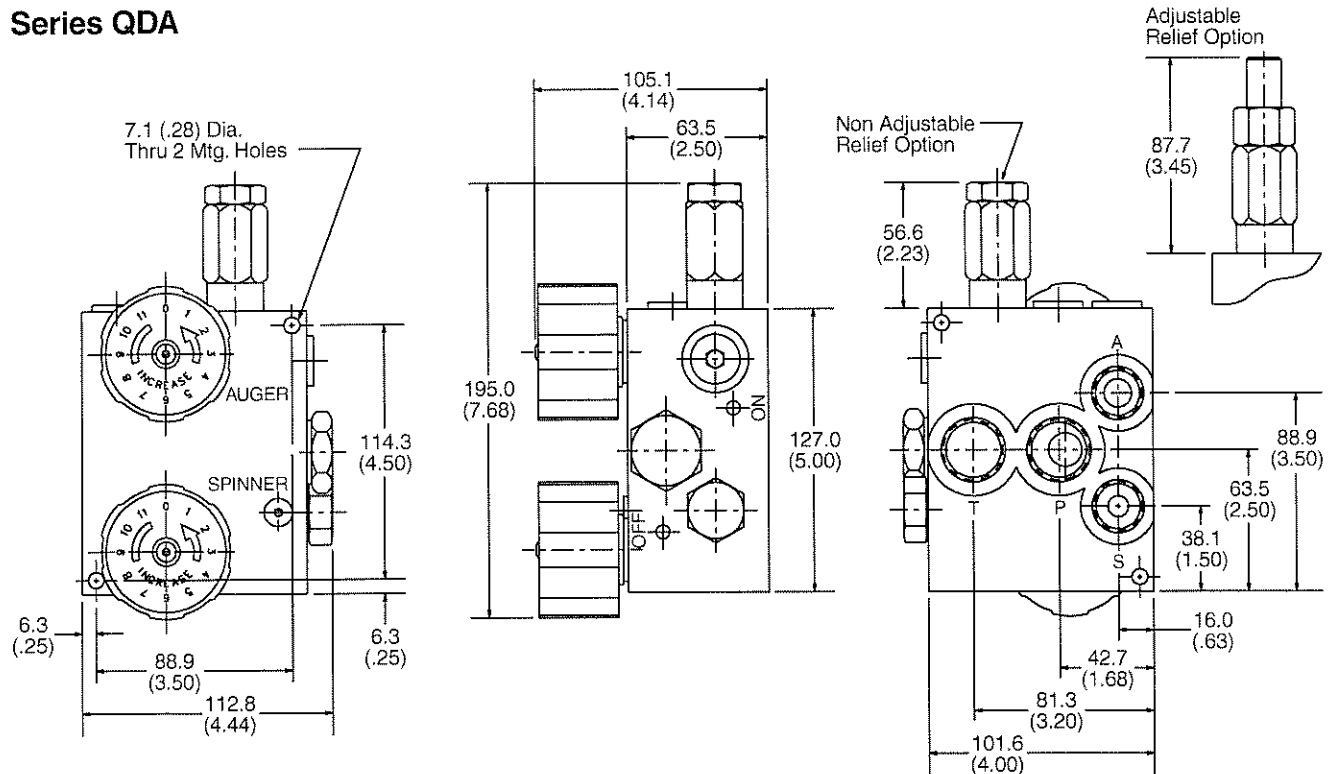
qa&qd.pm6.5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)

Series QAA and Series QAB
 (For Series QAA, Omit Lever)



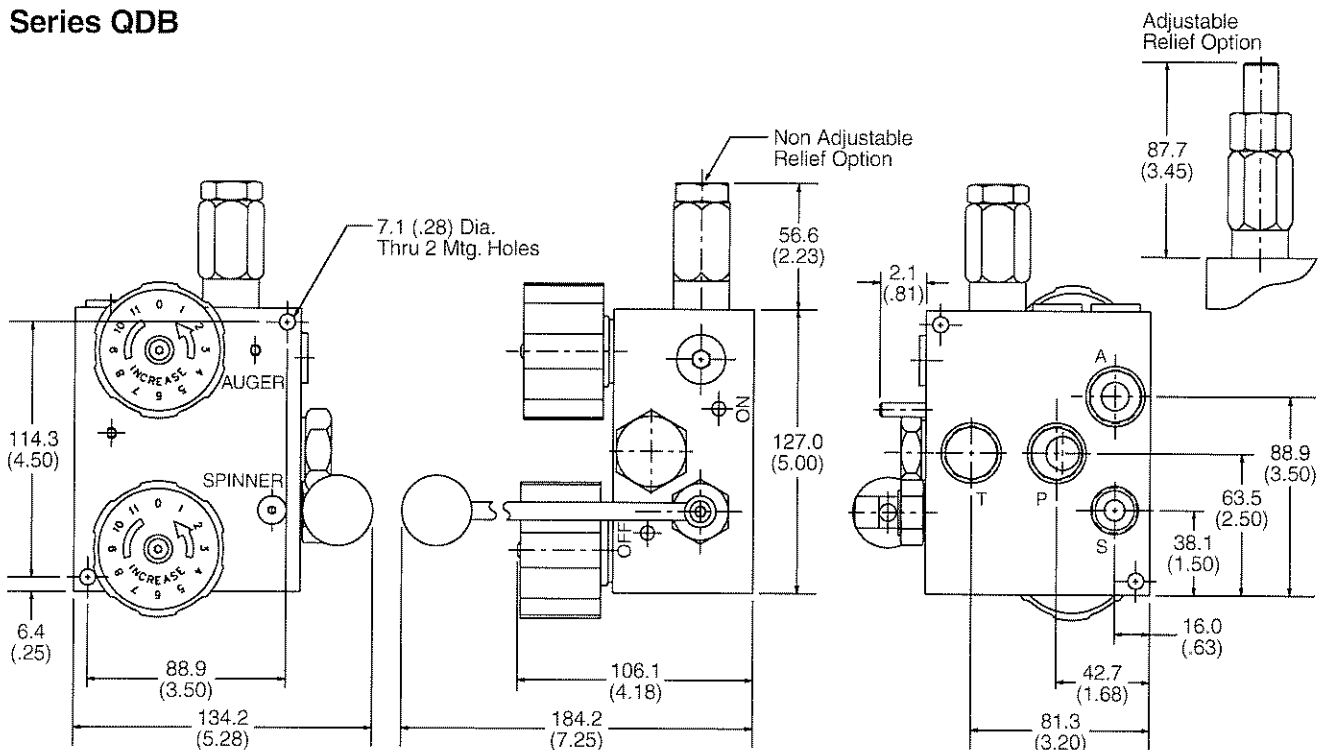
Series QDA



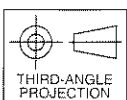
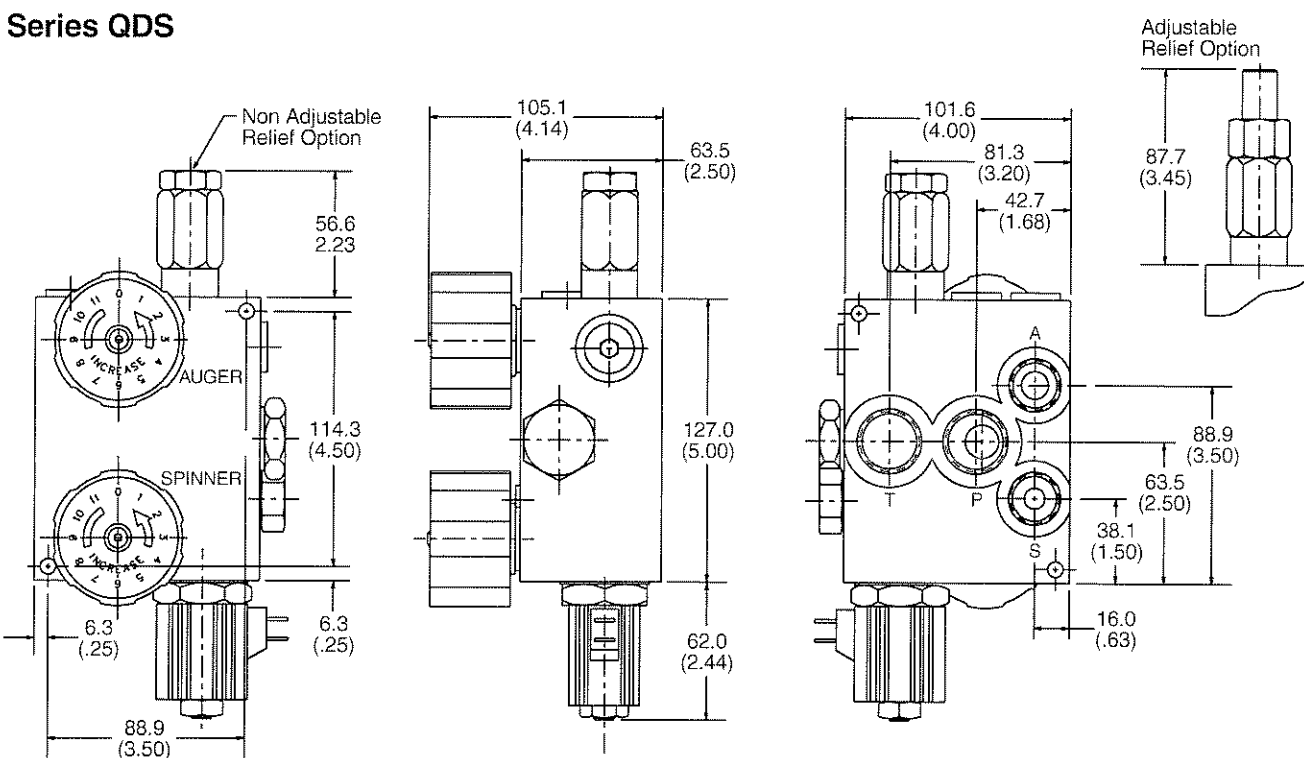
qa&qd.pm6.5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)

Series QDB



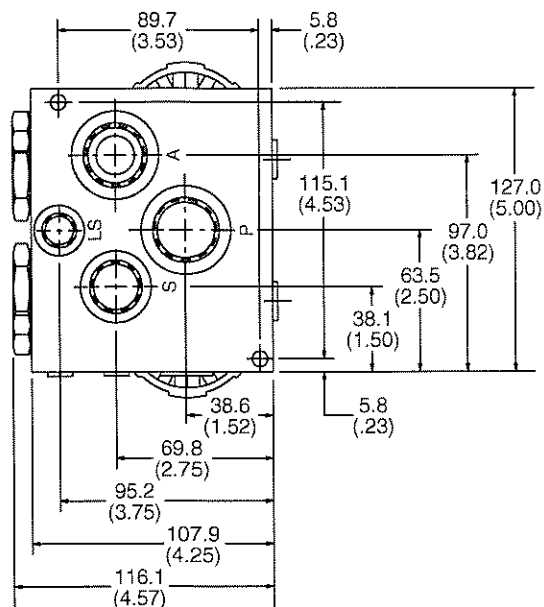
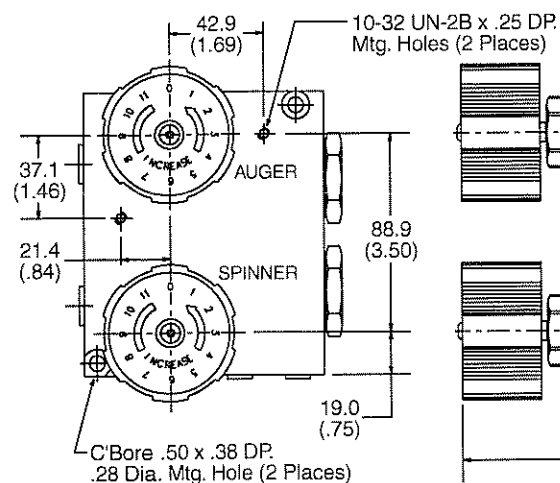
Series QDS



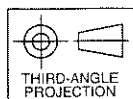
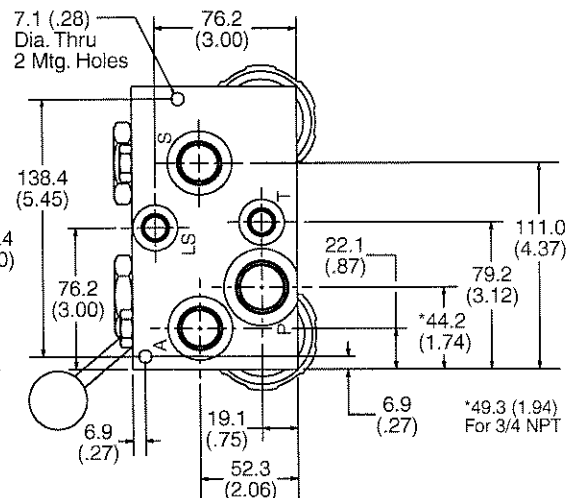
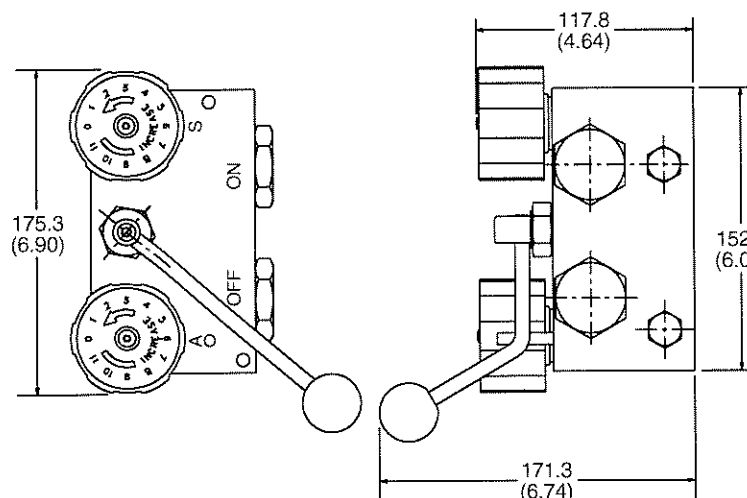
qa&qd pm6.5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)

Series QDN



Series QDL



qa&qd.pm6.5, bl, gn

CHECKS &
SHUTTLES

LOAD & MOTOR
CONTROLS

VOLUME
CONTROLS

PRESSURE
CONTROLS

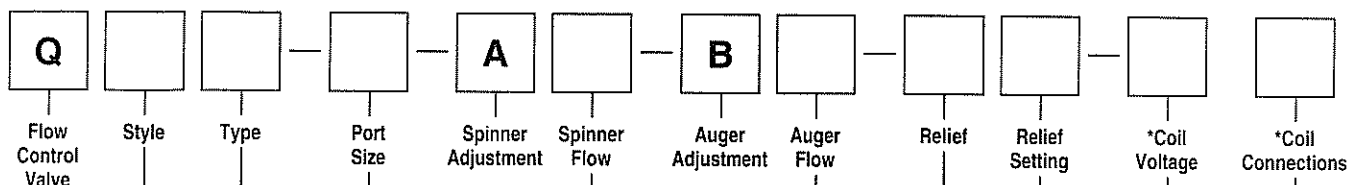
SOLENOID
VALVES

SPECIALTY
VALVES

COILS

BODIES

TECHNICAL
DATA



Code	Type
D	Dual Flow Control
A	Single Flow Control

Code	Description
05	0 thru 18.9 LPM (5 GPM)
07	0 thru 26.5 LPM (7 GPM)
10	0 thru 37.9 LPM (10 GPM)
00	No Flow (A style only)

Code	Voltage
Omit	No Coil
12	12 VDC
24	24 VDC

* QDS only.

Code	Type
A	Standard (No Shutoff)
B	Manual Shutoff
*L	Load Sensing with Manual Shutoff
*N	Load Sensing
*S	Solenoid Shutoff

* D style only.

Code	Description
10	0 thru 37.9 LPM (10 GPM)
16	0 thru 60.6 LPM (16 GPM)
20	0 thru 75.7 LPM (20 GPM)
*30	0 thru 113.6 LPM (30 GPM)

* Not available on L or N versions.

Code	Type
Omit	No Coil
B	Dual Spades
D	24" Dual Lead Wires

* QDS only.

Code	Description
12	Standard SAE-12 Inlet and Tank Ports SAE-10 Work Ports
75	Optional 3/4" NPTF Inlet, Tank and Auger Ports 1/2" NPTF Spinner Port

Code	Type
NR	No Relief (L and N only)
AR	Adjustable Relief
NA	Non-Adjustable Relief

Note: A relief option should be chosen on all types except L and N.

Code	Type
Omit	No Relief
150	103.5 Bar (1500 PSI)
175	120.8 Bar (1750 PSI)
200	138.0 Bar (2000 PSI)
225	155.3 Bar (2250 PSI)
250	172.5 Bar (2500 PSI)

SERVICE PARTS

Adjustable Relief Valve: 95018-01
 172.4 Bar (2500 PSI)

Solenoid Valve: DS161N

Shipping Weight 3.2 kg (7.2 lbs.)

General Description

Cartridge style FL101 screen filters can be used in any hydraulic system to prevent large particle contamination. This can be used as a substitute for customers that require screens on their valves. It can be used in conjunction with a filter, but never without a filter.

Operation

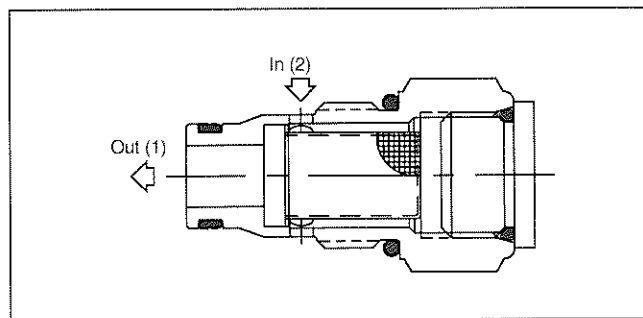
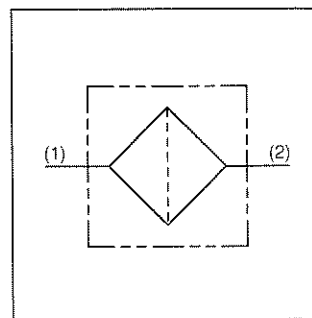
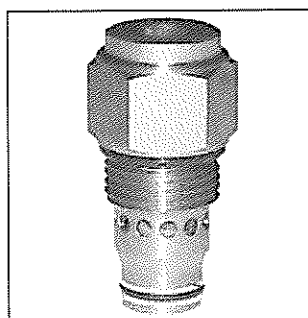
Flow enters the side of the cartridge passing through either a coarse screen (140 μ mesh) or a fine screen (30 μ mesh). The flow should never pass from the nose to the side; as any particles will then be trapped inside of the cartridge. Regardless of the level of filtration in the hydraulic system, this cartridge should be changed on a regular basis.

Features

- Low pressure drop through the cartridge valve
- Easy to service
- Common cavity readily adapts to a manifold

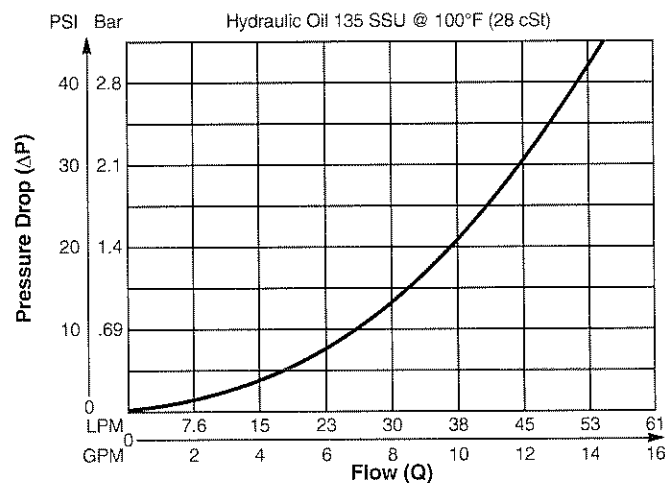
Specifications

Maximum Flow	56.3 LPM (15 GPM)
Maximum Inlet Pressure	245 Bar (3500 PSI)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Cartridge Material	All parts steel. All operating parts hardened steel.
Body Material	Steel or Aluminum
Filtration	ISO code 16/13, SAE Class 4 or better
Mounting	No Restrictions
Cavity	Common Cavity No. C10-2



Performance Curve

Pressure Drop vs. Flow
(Through cartridge only)



CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

SOLENOID VALVES

SPECIALTY VALVES

COILS

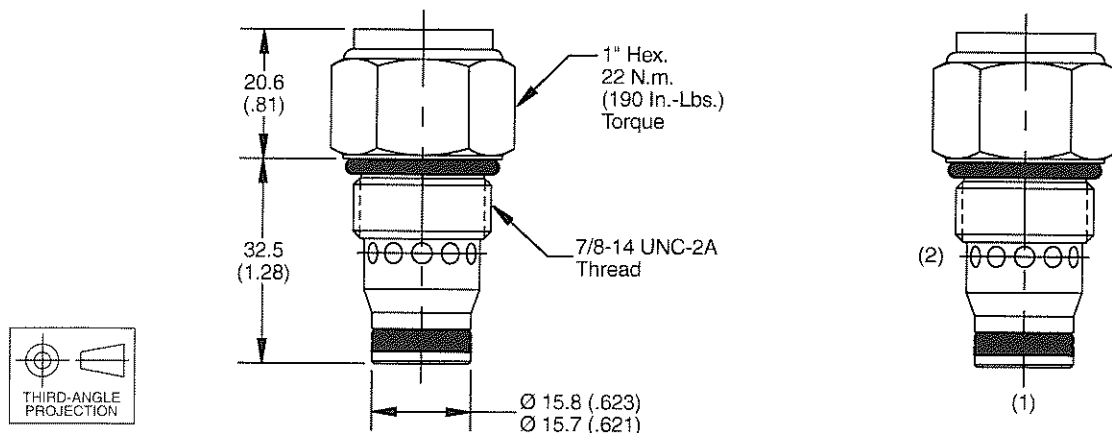
BODIES

TECHNICAL DATA

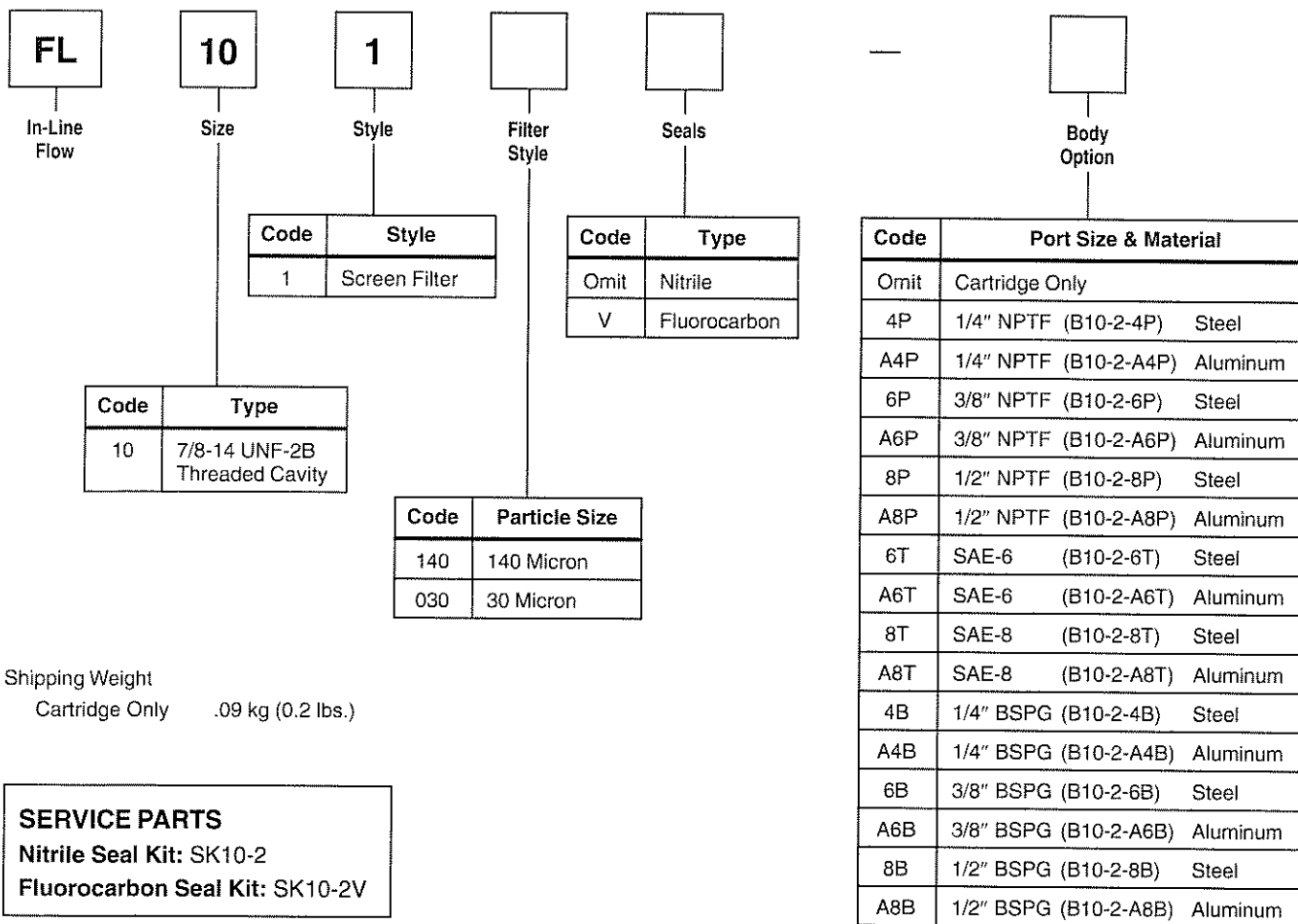
Dimensions

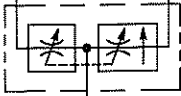
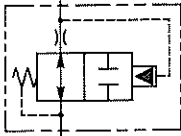
*Inch equivalents for millimeter dimensions are shown in (**)

Cartridge Only



Ordering Information



	SERIES	DESCRIPTION	FLOW	PRESSURE	PAGE NO.
	MFB-025	Priority By-Pass Flow Control	15 GPM	3000 PSI	VC1-VC4
	MFB-050	Priority By-Pass Flow Control	15 GPM	3000 PSI	VC1-VC4
	MFB-060	Priority By-Pass Flow Control	50 GPM	3000 PSI	VC1-VC4
	MFB-070	Priority By-Pass Flow Control	50 GPM	3000 PSI	VC1-VC4
	VLS	Velocity Fuses (Shutoff)	7-90 GPM	3000 PSI	VC5-VC7
	QLF	Velocity Fuses (Bleed)	7-90 GPM	3000 PSI	VC5-VC7

CHECKS &
SHUTTLESLOAD & MOTOR
CONTROLSVOLUME
CONTROLSPRESSURE
CONTROLSSOLENOID
VALVESSPECIALTY
VALVES

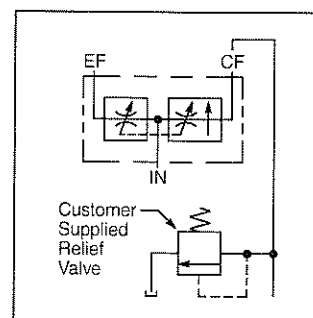
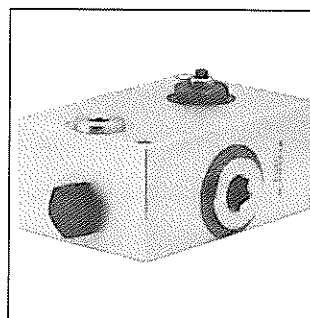
COILS

BODIES

TECHNICAL
DATA

General Description

MFB Series Flow Control Valves are designed for applications where it is necessary to supply flow from a single pump to two separate circuits (Snow plow attachment and a dump body). One of the two circuits will be the primary circuit and receive priority flow from the MFB series valve. Any excess flow above the priority requirement is available to a second circuit.



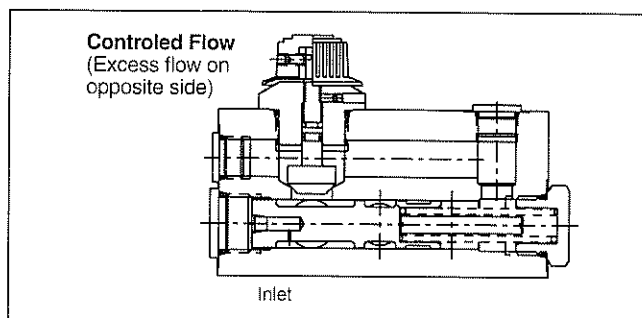
Operation

The MFB Series Flow Controls use a control orifice in a spring-biased, compensated spool to supply a priority flow requirement. Any flow over and above the priority flow will be directed to a bypass port. The priority flow is fully compensated, meaning that as load pressure at the priority port changes, the priority flow will change to meet that requirement.

If the pump supply is less than required for the priority circuit, all flow will go to the priority circuit, and none will be diverted to the excess flow port.

This valve can also be used as a restrictive type pressure compensated flow control by plugging the excess flow port.

Caution: If the priority flow port is totally blocked, the compensator spool shifts completely to block the bypass port thus closing the valve completely. If a fixed displacement pump is being used in this type of application, there must be a relief mounted between the pump and the MFB series flow control valve.



Specifications

Maximum Inlet Flow	MFB-025 – 93.75 LPM (25 GPM) MFB-050 – 187.5 LPM (50 GPM) MFB-060 – 225.0 LPM (60 GPM) MFB-070 – 262.5 LPM (70 GPM)
Maximum Control Flow	MFB-025 – 56.25 LPM (15 GPM) MFB-050 – 56.25 LPM (15 GPM) MFB-060 – 225.0 LPM (50 GPM) MFB-070 – 262.5 LPM (50 GPM)
Operating Press.	210 Bar (3000 PSI)
Flow Accuracy	±10%
Compensator Bias Spring	6.2 Bar (90 PSI) Differential
Operating Temp. Range (Ambient)	-31.7°C to +121.1°C (-25°F to +250°F) (Fluorocarbon Seals Only)
Internal Material	Steel
Body Material	Steel (chromate plated)
Filtration	ISO code 16/13 SAE Class 4 or better
Mounting	In-line (no restrictions)

Features

- Hardened parts provide long life
- In-line mounting
- When reverse flow is applied from the priority port, the valve acts as a fixed orifice
- Dial style knob provides an easy adjustable method for setting flow rate

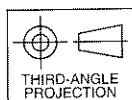
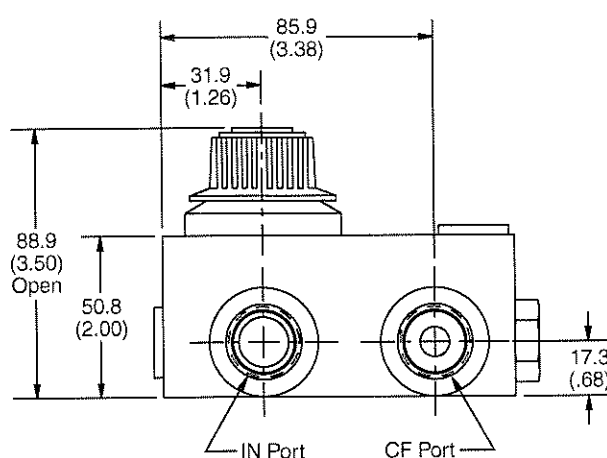
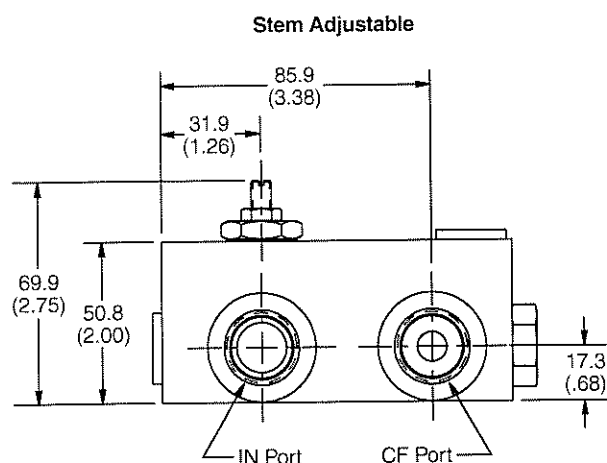
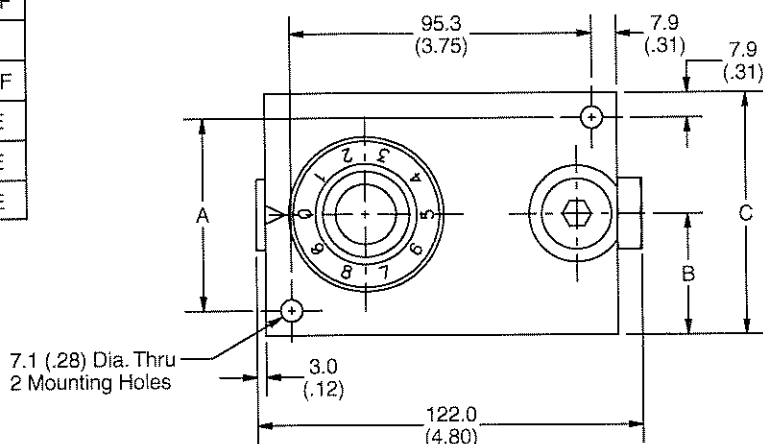
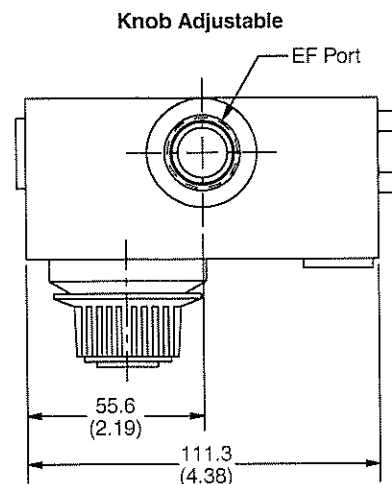
mfb-025 pm6.5, bl, gn

*Inch equivalents for millimeter dimensions are shown in (**)

Series MFB-025 and MFB-050

	A	B	C
MFB-025	34.9 (1.38)	25.4 (1.00)	50.8 (2.00)
MFB-050	60.5 (2.38)	38.1 (1.50)	76.2 (3.00)

	Code	"EF" Port	"IN" Port	"CF" Port
MFB-025	06	3/8" NPTF	3/8" NPTF	3/8" NPTF
	52	#8 SAE	#8 SAE	#8 SAE
MFB-050	12	3/4" NPTF	3/4" NPTF	3/4" NPTF
	53	#10 SAE	#10 SAE	#10 SAE
	54	#12 SAE	#12 SAE	#12 SAE
	56	#16 SAE	#16 SAE	#12 SAE

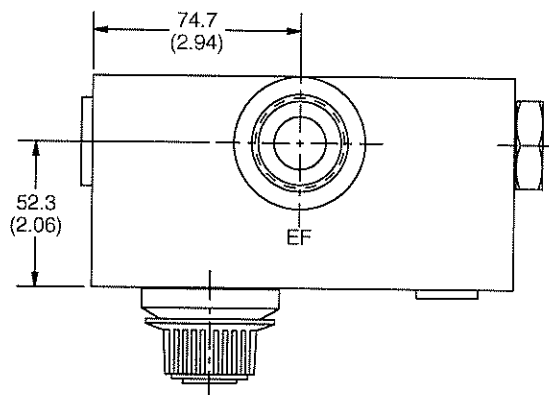


mfb-025.pm6.5. bl, gn

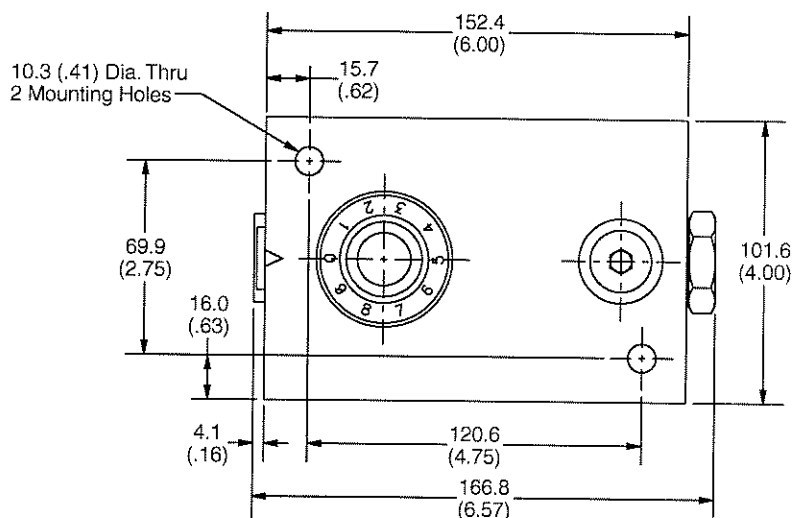
*Inch equivalents for millimeter dimensions are shown in (**)

Series MFB-060 and MFB-070

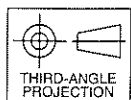
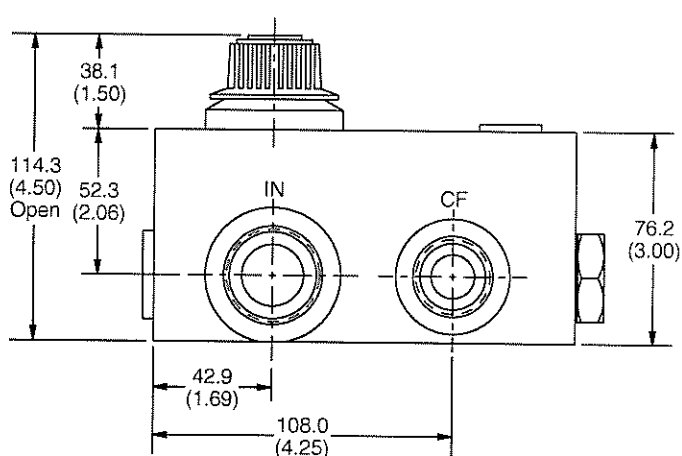
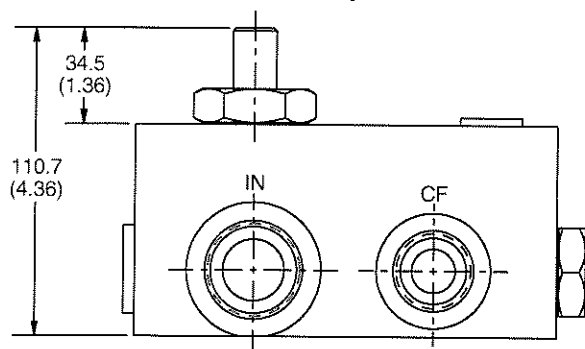
Knob Adjustable



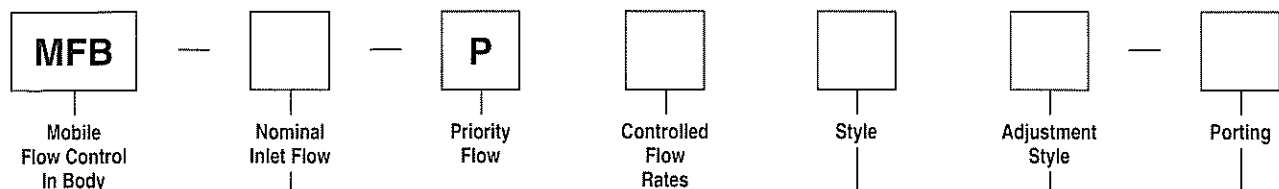
	Code	"EF" Port	"IN" Port	"CF" Port
MFB-060	56	#16 SAE	#16 SAE	#12 SAE
MFB-070	58	#20 SAE	#20 SAE	#12 SAE



Stem Adjustable



mfb-025, pm8.5, bl, gn



Code	Flow
025	56.25 LPM (15 GPM)
050	56.25 LPM (15 GPM)
060	225.0 LPM (50 GPM)
070	262.5 LPM (50 GPM)

Code	Description
Omit	Non-Adjustable
AP	Adjustable Priority

Code	Style
N	None (Preset)
S	Stem
K	Knob

Code	Description
Omit	Adjustable Flow
01 thru 15	MFB-025 and MFB-50 3.75-56.25 LPM (1-15 GPM) (in 3.75 LPM (1 GPM) increments)
01 thru 50	MFB-060 and MFB-070 3.75-187.5 LPM (1-50 GPM) (in 3.75 LPM (1 GPM) increments)

Code	Type
MFB-025	
06	3/8" NPTF
52	SAE - 8
MFB-050	
12	3/4" NPTF
53	SAE - 10
54	SAE - 12
56	SAE - 16
MFB-060	
56	SAE - 16
MFB-070	
58	SAE - 20

Shipping Weight

MFB-025, MFB-050	2.7 kg (6.0 lbs.)
MFB-060, MFB-070	3.4 kg (7.5 lbs.)

CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

SOLENOID VALVES

SPECIALTY VALVES

COILS

BODIES

TECHNICAL DATA

General Description

The VLS Velocity Fuse protects the hydraulic system from a line break. The valve returns to an open condition once the pressure is equalized.

The QLF Velocity Fuse operates the same way as the VLS Velocity Fuse. The difference is that the QLF Velocity Fuse allows minimal fluid to bleed through. Rather than holding a device in an upright position, it allows it to bleed down. Once the pressure has been equalized (the line break has been repaired), the valve returns to an open condition.

As a rule of thumb, it is always best to size the velocity fuse 25-30% over the rated flow of the system.

Operation

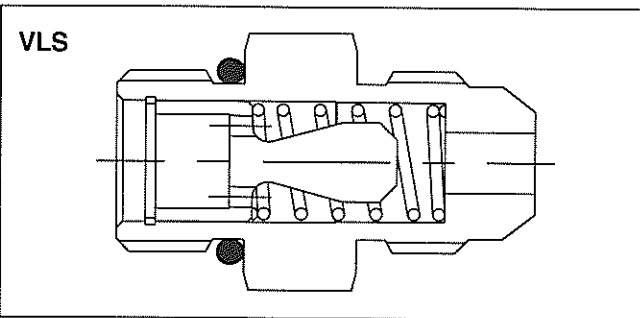
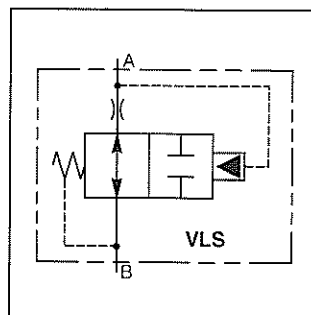
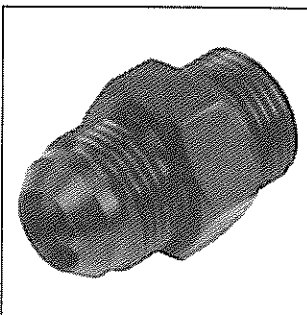
The valve's poppet is held open by the downstream pressure. Once the downstream pressure drops (line break), the spring force on the poppet pushes the poppet to its seat. This closes the valve. Once downstream pressure is available (the line break has been repaired), that resistance pushes the poppet off of its seat, opening the valve. The QLF version incorporates a bleed path across the poppet, allowing flow to bleed down.

Features

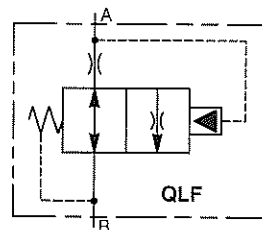
- In-line design
- Several porting configurations
- All steel parts for long life

Specifications

Maximum Flow	See Chart
Reverse Flow	Not to exceed 150% of the closing flow
Max. Operating Pressure	210 Bar (3000 PSI)
Max. Leakage at Rated Pressure	.67 cc/min. (10 drops/min.)
Operating Temp. Range (Ambient)	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Material	Steel
Filtration	ISO code 16/13, SAE class 4 or better
Mounting	In-line (no restrictions)



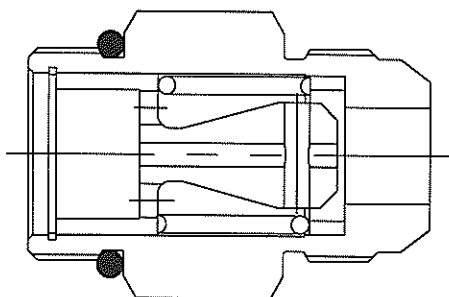
Symbol



Construction

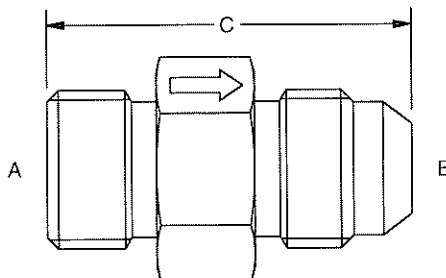
QLF

Cross section shown with optional restricted flow orifice in poppet.



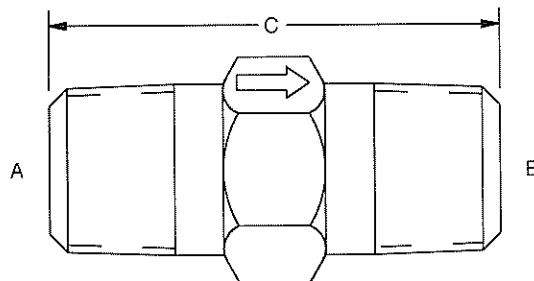
*Inch equivalents for millimeter dimensions are shown in (**)

SAE-JIC Male to Male

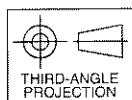


A	B	C	HEX	MODEL	TORQUE		MAX. FLOW
					ALUMINUM	STEEL	
9.5 (3/8")	9.5 (3/8")	33 (1.30)	17.5 11/16"	***-06M2-06M3-**	9.6-11.3 Nm (85-100 in. lbs.)	17.6-21.7 Nm (13-16 ft. lbs.)	26.5 LPM (7 GPM)
12.7 (1/2")	12.7 (1/2")	57.2 (2.25)	22.4 (.88)	***-08M2-08M3-**	20.3-27.1 Nm (15-20 ft. lbs.)	33.9-44.7 Nm (25-33 ft. lbs.)	37.5 LPM (10 GPM)
15.9 (5/8")	9.5 (3/8")	67.6 (2.66)	25.4 (1.00)	***-10M2-06M3-**	33.9-40.7 Nm (25-30 ft. lbs.)	56.9-67.8 Nm (42-50 ft. lbs.)	26.5 LPM (7 GPM)
15.9 (5/8")	12.7 (1/2")	58.7 (2.31)	25.4 (1.00)	***-10M2-08M3-**	33.9-40.7 Nm (25-30 ft. lbs.)	56.9-67.8 Nm (42-50 ft. lbs.)	37.5 LPM (10 GPM)
15.9 (5/8")	15.9 (5/8")	52.3 (2.06)	25.4 (1.00)	***-10M2-10M3-**	33.9-40.7 Nm (25-30 ft. lbs.)	56.9-67.8 Nm (42-50 ft. lbs.)	45.4 LPM (12 GPM)
15.9 (5/8")	19.1 (3/4")	55.4 (2.18)	31.8 (1.25)	***-10M2-12M3-**	33.9-40.7 Nm (25-30 ft. lbs.)	56.9-67.8 Nm (42-50 ft. lbs.)	75.7 LPM (20 GPM)
19.1 (3/4")	15.9 (5/8")	70 (2.75)	31.8 (1.25)	***-12M2-10M3-**	47.5-54.2 Nm (35-40 ft. lbs.)	74.6-81.1 Nm (55-65 ft. lbs.)	75.7 LPM (20 GPM)
19.1 (3/4")	19.1 (3/4")	50 (1.97)	31.8 (1.25)	***-12M2-12M3-**	47.5-54.2 Nm (35-40 ft. lbs.)	74.6-81.1 Nm (55-65 ft. lbs.)	90.8 LPM (24 GPM)
25.4 (1")	25.4 (1")	63.5 (2.50)	38.1 (1.50)	***-16M2-16M3-**	74.6-81.3 Nm (55-60 ft. lbs.)	122-135.6 Nm (90-100 ft. lbs.)	132.5 LPM (35 GPM)
38.1 (1.5")	38.1 (1.5")	92.7 (3.65)	53.9 (2.13)	***-24M2-24M3-**	108.5-115.2 Nm (80-85 ft. lbs.)	183-196.6 Nm (125-145 ft. lbs.)	340.7 LPM (90 GPM)

NPTF-NPTF Male to Male



A	B	C	HEX	MODEL	TORQUE		MAX. FLOW
					ALUMINUM	STEEL	
9.5 (3/8")	9.5 (3/8")	36.8 (1.45)	19.1 (.75)	***38M1-38M1-**	47.5-54.2 Nm (35-40 ft. lbs.)	74.6-81.1 Nm (55-65 ft. lbs.)	37.5 LPM (10 GPM)
12.7 (1/2")	9.5 (3/8")	58.7 (2.31)	22.4 (.88)	***-50M1-38M1-**	47.5-54.2 Nm (35-40 ft. lbs.)	74.6-81.1 Nm (55-65 ft. lbs.)	56.8 LPM (15 GPM)
12.7 (1/2")	12.7 (1/2")	48.3 (1.90)	22.4 (.88)	***-50M1-50M1-**	74.6-81.3 Nm (55-60 ft. lbs.)	122-135.6 Nm (90-100 ft. lbs.)	56.8 LPM (15 GPM)
19.1 (3/4")	19.1 (3/4")	49.8 (1.96)	28.7 (1.13)	***-75M1-75M1-**	115.2-122 Nm (85-90 ft. lbs.)	176.3-203.4 Nm (130-150 ft. lbs.)	75.7 LPM (20 GPM)
25.4 (1")	25.4 (1")	63.5 (2.50)	34.9 (1.38)	***-100M1-100M1-**	142.4-169.5 Nm (105-125 ft. lbs.)	257.6-284.7 Nm (190-210 ft. lbs.)	132.5 LPM (35 GPM)



vis&qlf.pm6.5, bl, gn

CHECKS & SHUTTLES

LOAD & MOTOR CONTROLS

VOLUME CONTROLS

PRESSURE CONTROLS

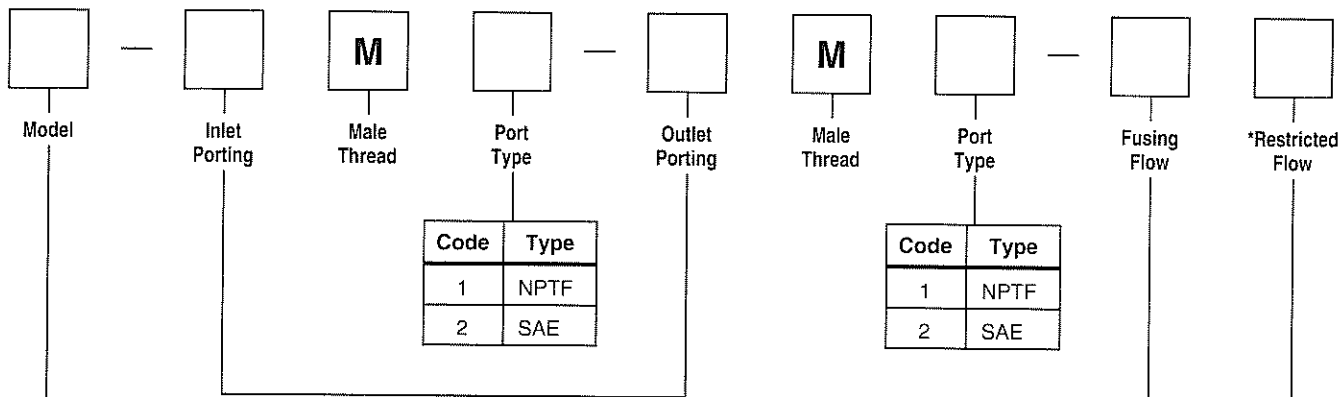
SOLENOID VALVES

SPECIALTY VALVES

COILS

BODIES

TECHNICAL DATA



Code	Model
VLS	Velocity Fuse
QLF	Velocity Fuse w/Bleed

Code	Size*
38	3/8" NPTF
50	1/2" NPTF
75	3/4" NPTF
100	1" NPTF
06	SAE -6
08	SAE -8
10	SAE -10
12	SAE -12
16	SAE -16
24	SAE -24

*Inlet and outlet porting must be the same.

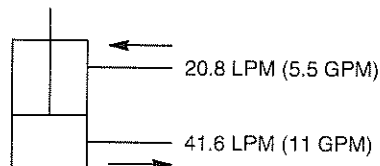
Code	Flow*
1.0	3.75 LPM (1.0 GPM)
2.0	7.6 LPM (2.0 GPM)
3.0	11.4 LPM (3.0 GPM)
4.0	15.1 LPM (4.0 GPM)
5.0	18.9 LPM (5.0 GPM)
6.0	22.7 LPM (6.0 GPM)
7.0	26.5 LPM (7.0 GPM)
8.0	30.3 LPM (8.0 GPM)
9.0	34.1 LPM (9.0 GPM)
10	37.9 LPM (10 GPM)
15	56.8 LPM (15 GPM)
20	75.7 LPM (20 GPM)
35	132.5 LPM (35 GPM)
50	187.5 LPM (50 GPM)
60	225.0 LPM (60 GPM)
72	270.0 LPM (72 GPM)
90	337.5 LPM (90 GPM)

Code	Bleed Flow* (Orifice Size)
15	0.4 mm (1/64")
30	0.8 mm (1/32")
60	1.6 mm (1/16")
90	2.4 mm (3/32")
120	3.2 mm (1/8")
180	4.8 mm (3/16")
250	6.4 mm (1/4")
380	9.5 mm (3/8")
500	12.7 mm (1/2")

*QLF only.

NOTE:
 Be sure to match flow to the proper port size. (See dimension page)

*Sizing a Velocity Fuse.
 Determine the maximum flow during normal operation in the fuse direction.
 Add 25%, and round to the nearest flow rating.



$41.6 \text{ LPM (11 GPM)} \times 1.25 = 52 \text{ LPM (13.75 GPM)}$
 Round to 56.8 LPM (15 GPM)

Result: Use VLS-12M2-12MS-15