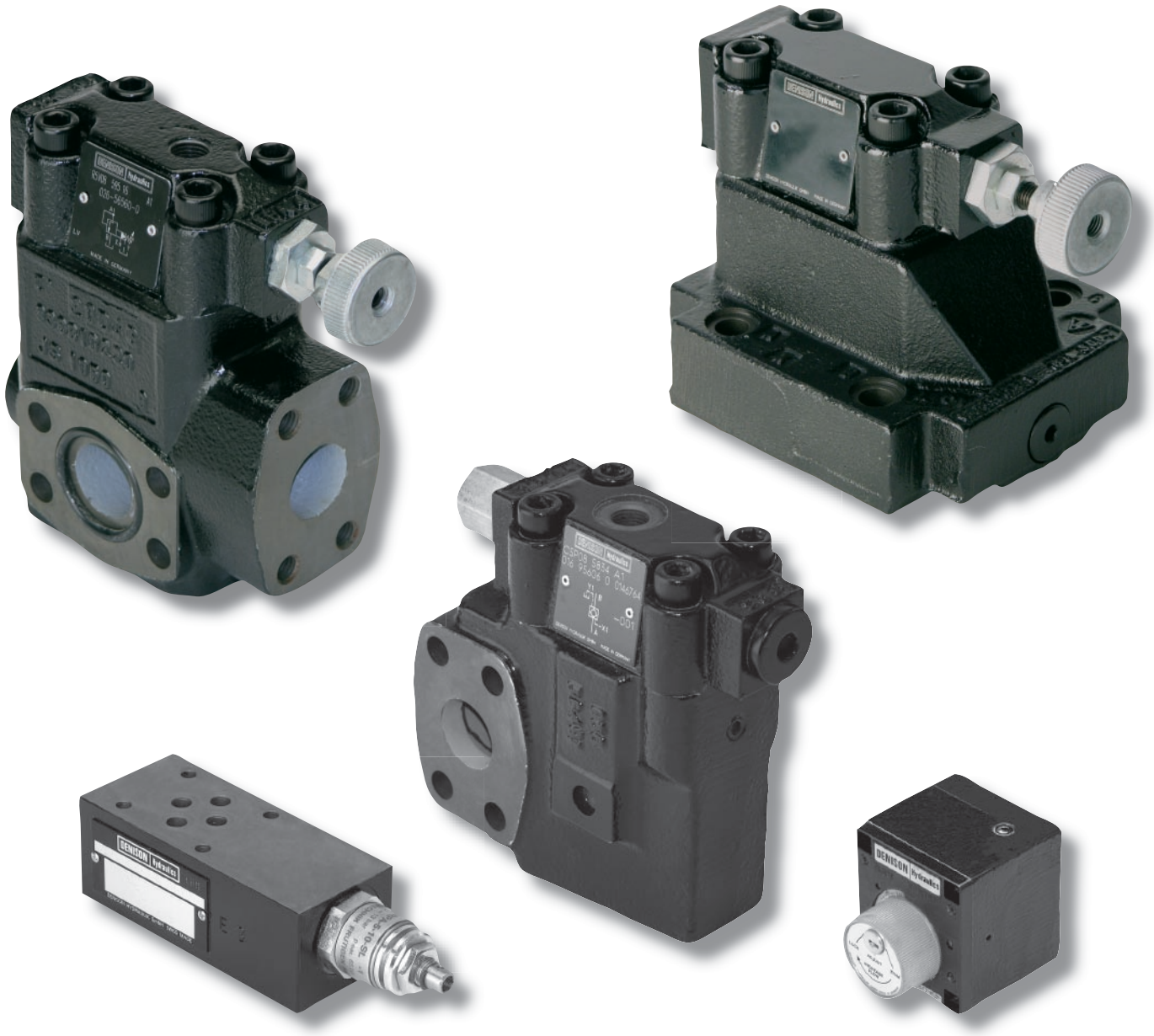

Flow, Check, Pressure Control, and Sandwich Valves

Industrial Hydraulic Valves

Catalog HY14-2533/US

Supplement to Catalog HY14-2502/US

aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding

Parker

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SAFETY GUIDE

For safety information, see Safety Guide SG HY14-1000 at www.parker.com/safety or call 1-800-CParker.

Cat HY14-2533-infrtbckcvr.indd, dd

Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

Flow Control Valves

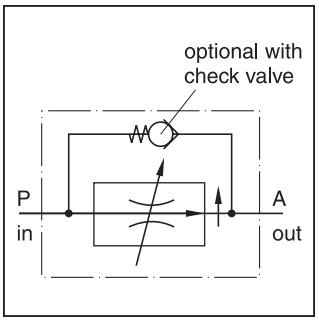
Check Valves

Pressure Control Valves

Continued on next page

General Description

Series 2F1C 2-way flow control valves provide pressure and viscosity compensated flow from port A to port B. The counter direction is blocked (standard) or can be open via an integral reverse flow check valve (optional).



Operation

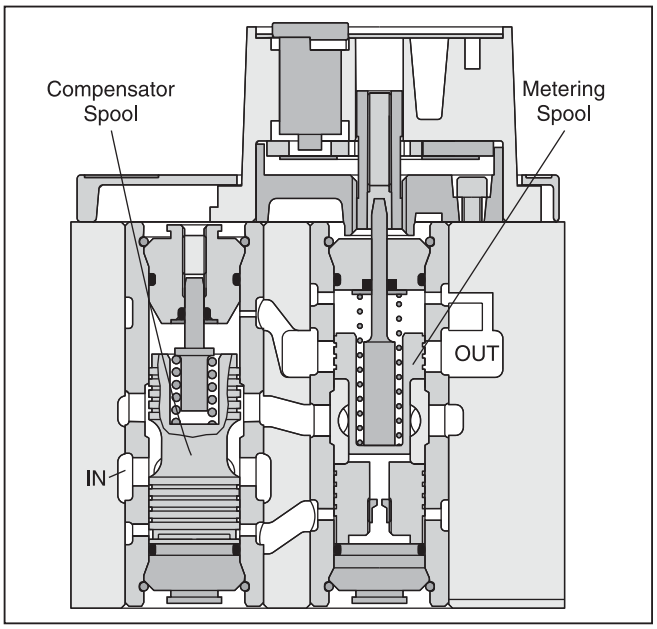
The compensator spool is located in front of the metering spool. The metering spool is closed in the neutral position to avoid undesired initial actuator motion. The oil flow to open the metering spool has to pass a needle valve (not shown in the sectional drawing). The needle valve can be adjusted from the front panel to set the response time of the 2F1C.

The metering spool is adjusted by the main control knob. The key lock has three positions:

Lock: Adjustment is locked.

Adjust: Full adjustment is permitted.

Trim: Fine adjustment of ±5% is possible.



Features

- 2 way flow control valve.
- Subplate mounting according to ISO 6263.
- Excellent fine adjustment.
- Adjustable response time.
- Closed in neutral position.
- Optional reverse flow check valve.
- 2 sizes: NG10 (3/8"), NG16 (3/4").

Specifications

Size		NG10	NG16
Actuator		Manual flow rate adjustment	
Mounting Type		ISO 6263	
Mounting Position		Unrestricted	
Fluid Temperature		+70°C (+158°F) Maximum	
Ambient Temprature		-25°C to +50°C (-13°F to +122°F)	
Viscosity Range		2.8 to 400 cSt (mm^2/s)	
Filtration		15 µm	
Maximum Pressure Difference		See Diagram	
Maximum Operating Pressure	**Port A**	**2F1C02** 14 - 280 Bar (203 - 4060 PSI)	**2F1C03** 14 - 350 Bar (203 - 5075 PSI)
	Port B	0 - 270 Bar (0 - 3915 PSI)	0 - 340 Bar (0 - 4930 PSI)
Flow Direction	**A–B**	Flow control function	
	B–A	Blocked or free flow through check valve	

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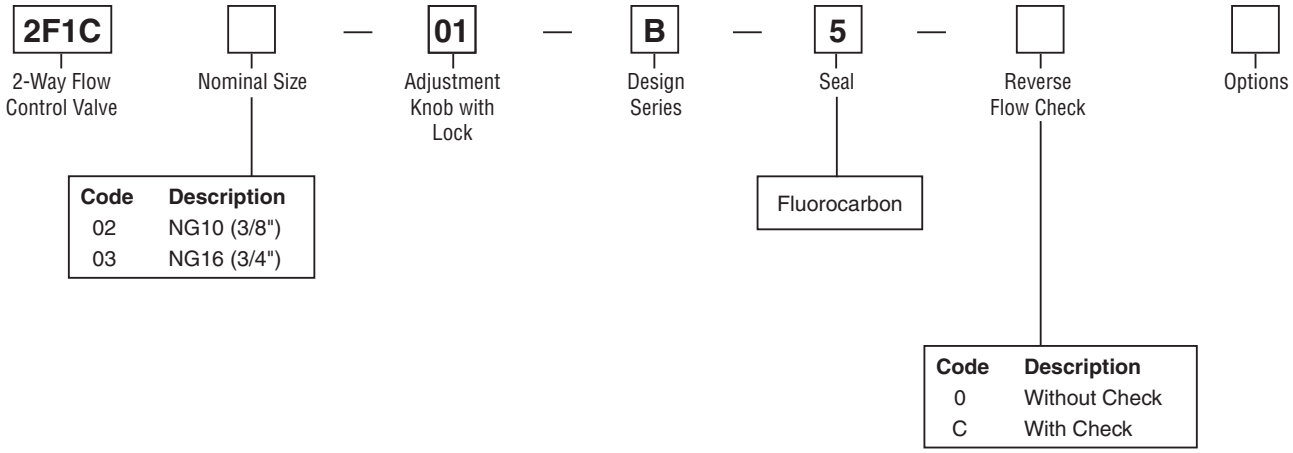
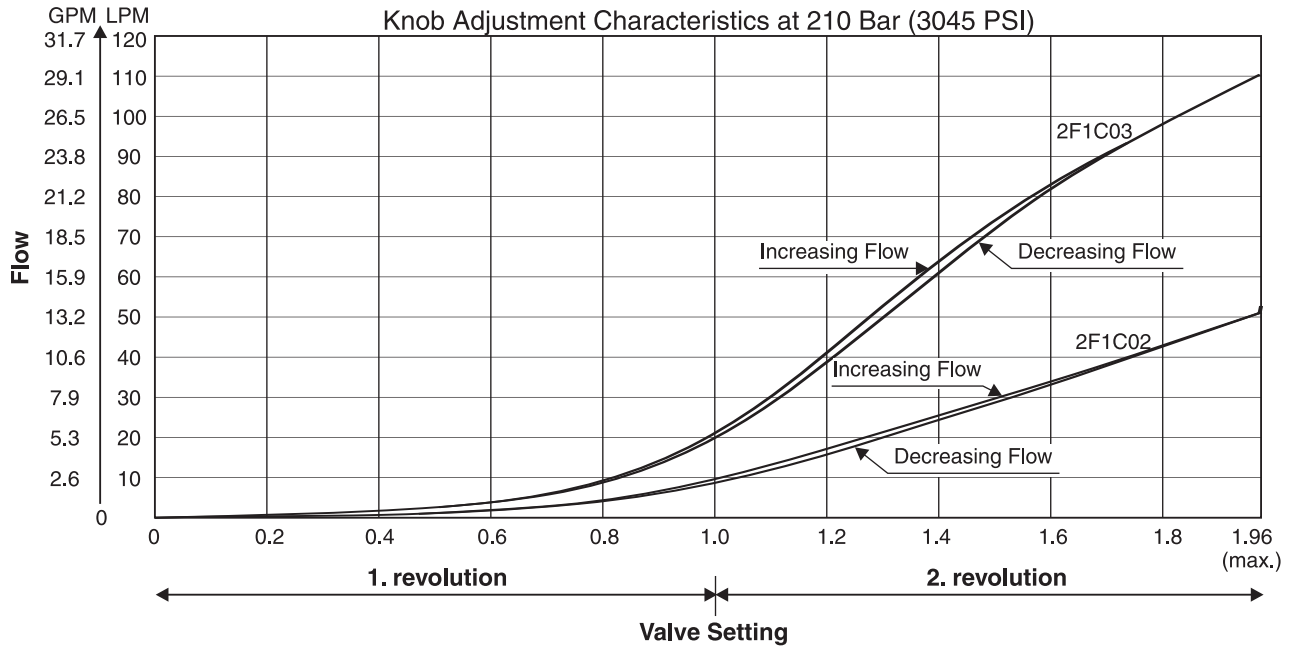


Weight:

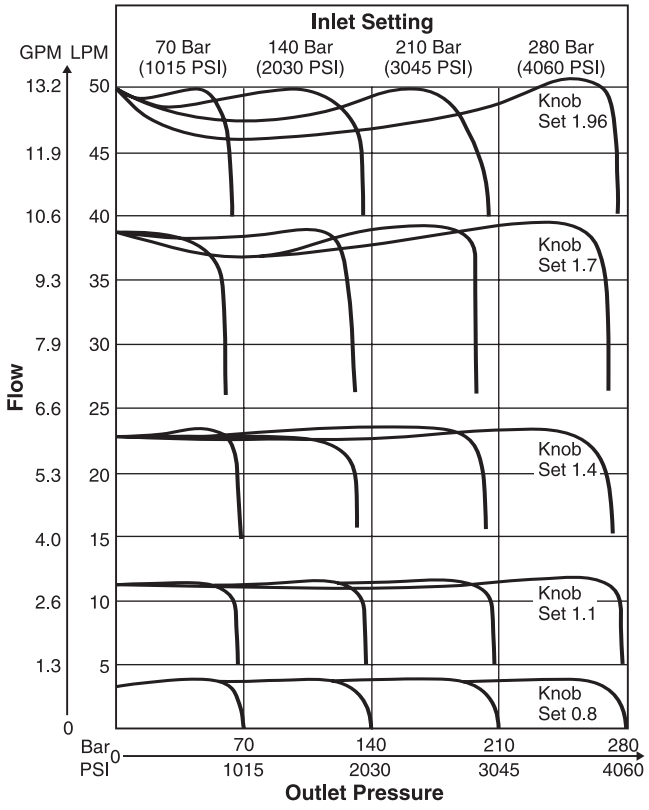
2F1C02 6.0 kg (13.2 lbs.)
2F1C03 9.0 kg (19.8 lbs.)

Flow
Knob Adjustment Characteristics at 210 Bar (3045 PSI)



2F1C02

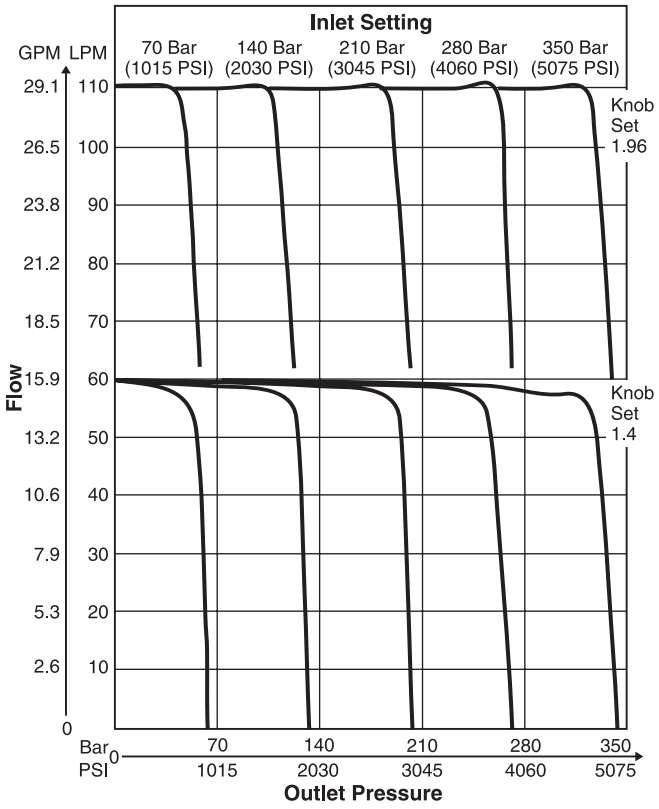
Flow / Pressure Drop
Constant Inlet Pressure – Variable Outlet Pressure



Fluid viscosity 40 cSt at 50°C (122°F)

2F1C03

Flow / Pressure Drop
Constant Inlet Pressure – Variable Outlet Pressure



2F1C.indd, dd

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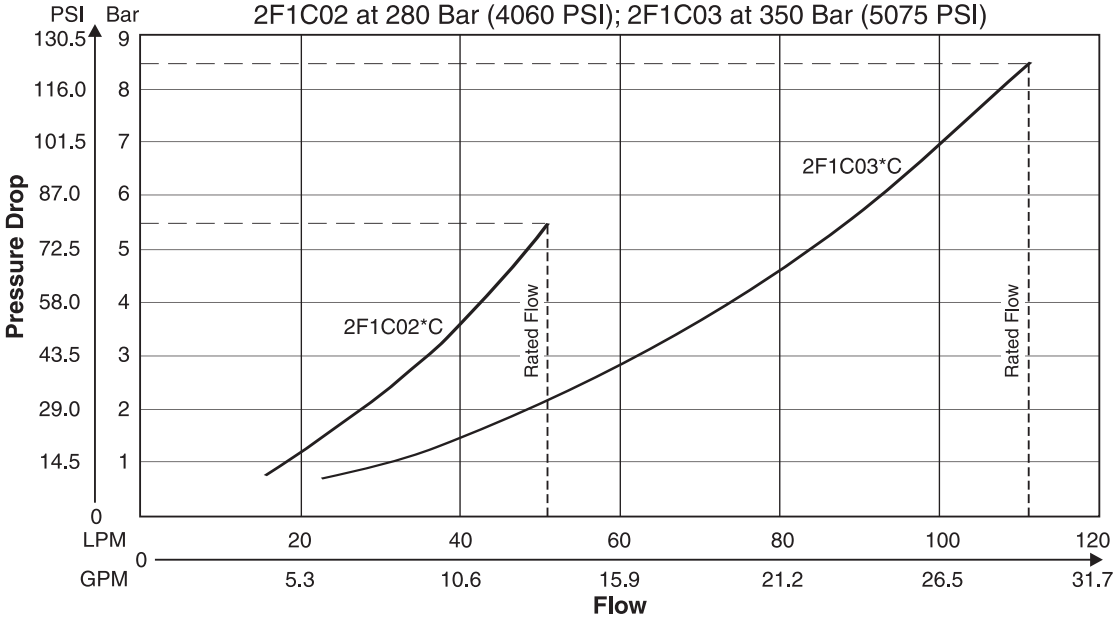
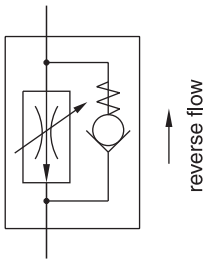
Elyria, Ohio, USA

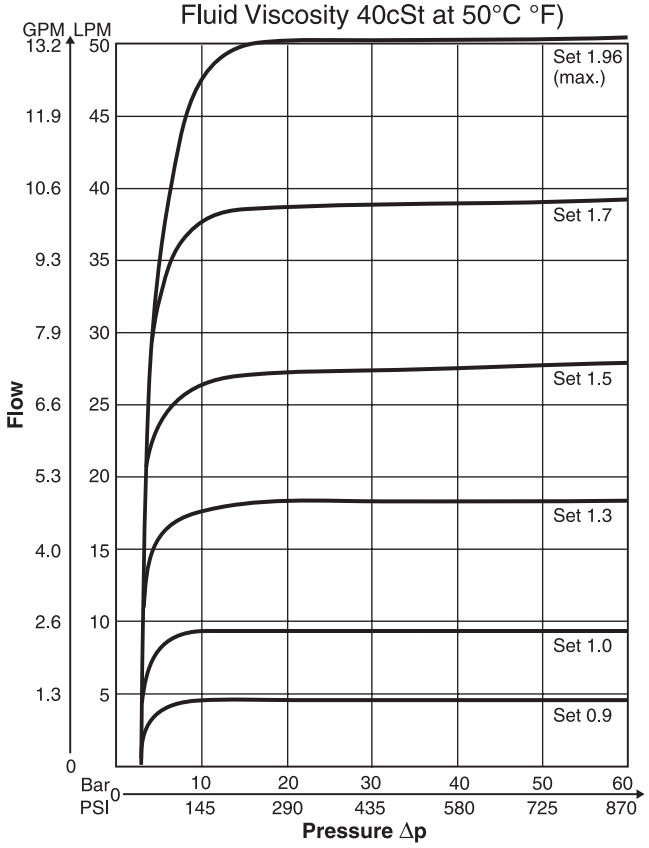
Pressure Δp/Q
For Reverse Flow Direction
2F1C02 at 280 Bar (4060 PSI); 2F1C03 at 350 Bar (5075 PSI)





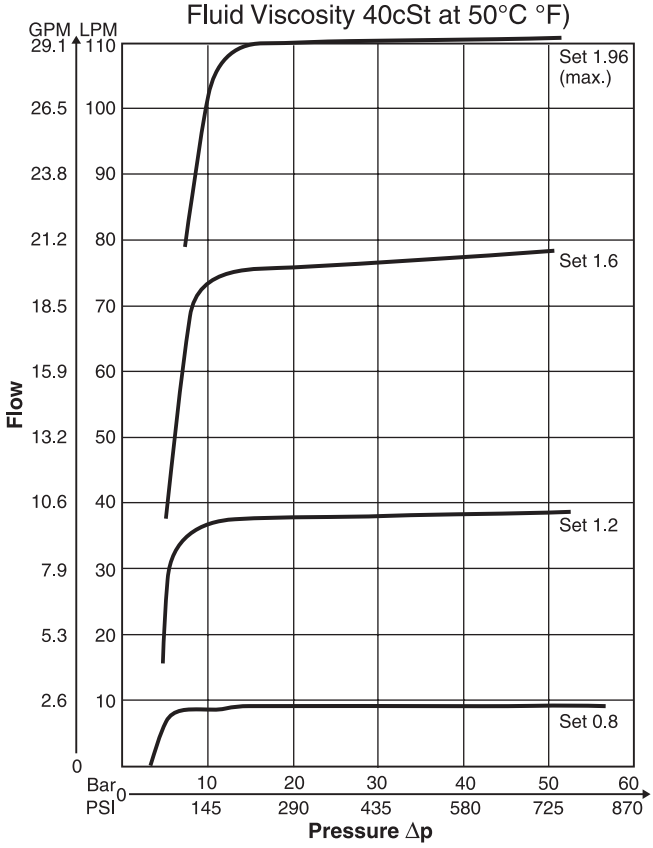
2F1C02

Minimum Pressure Difference Curves
Fluid Viscosity 40cSt at 50°C °F)



2F1C03

Minimum Pressure Difference Curves
Fluid Viscosity 40cSt at 50°C °F)



Fluid viscosity 40 cSt at 50°C (122°F)

2F1C.indd, dd

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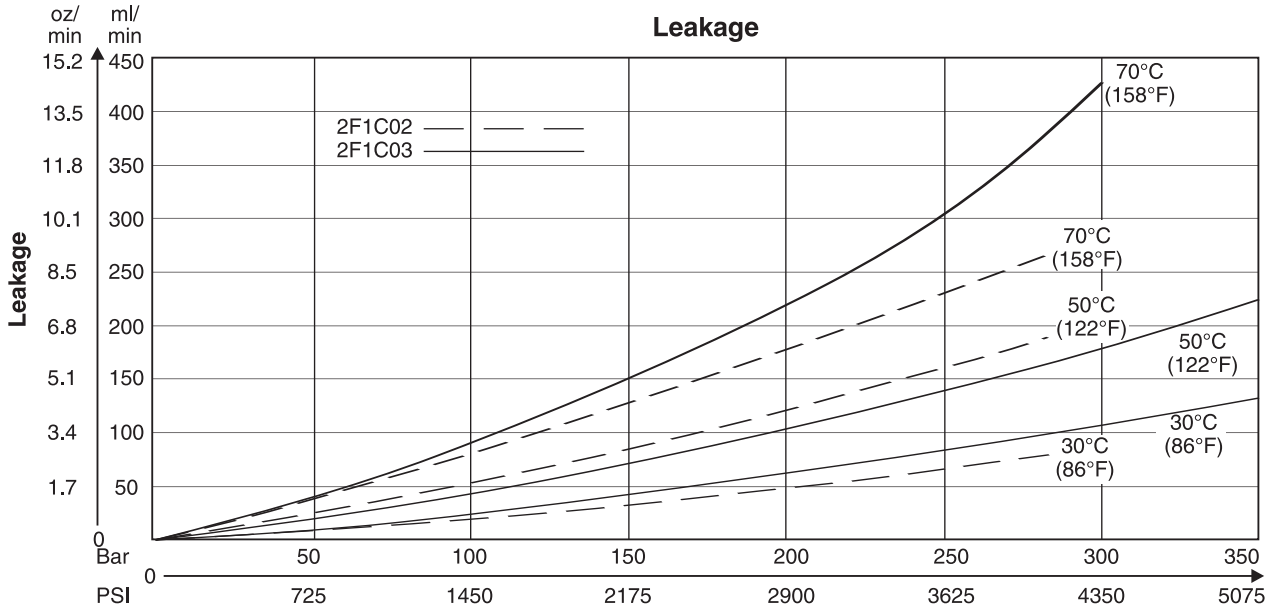
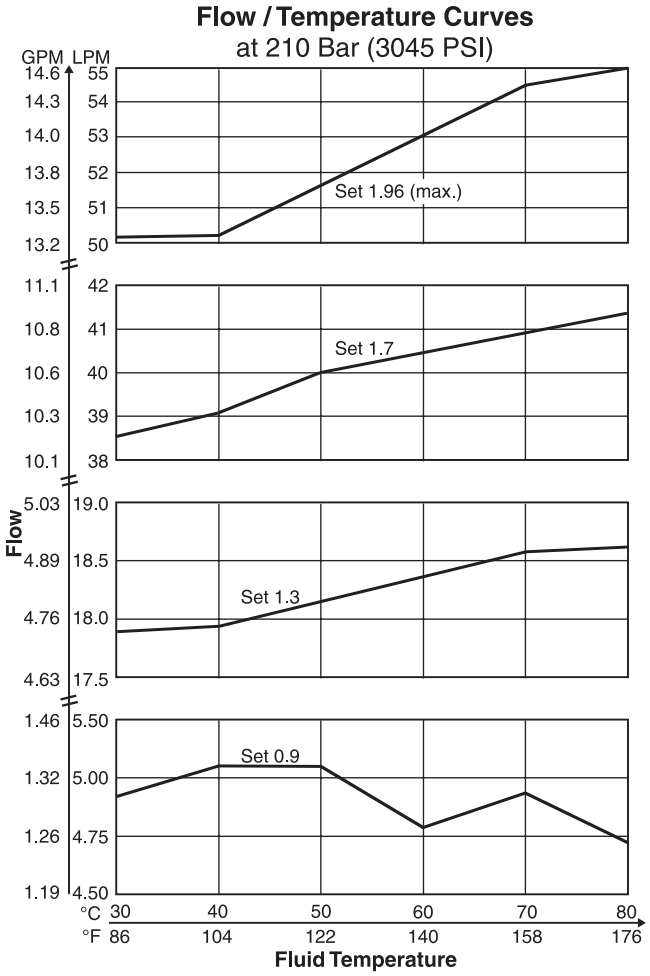
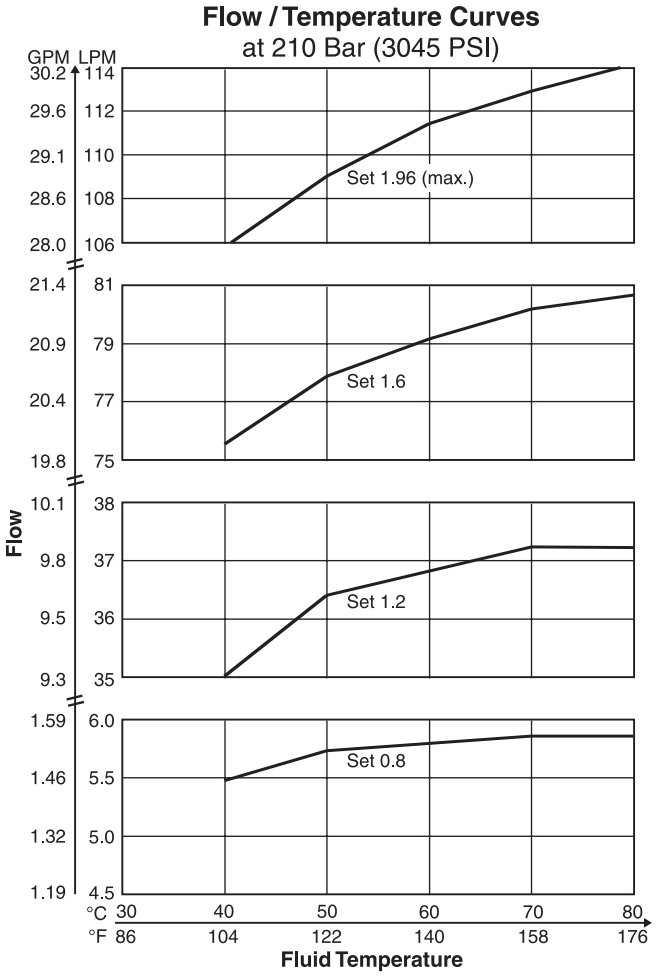
Elyria, Ohio, USA



2F1C02



2F1C03

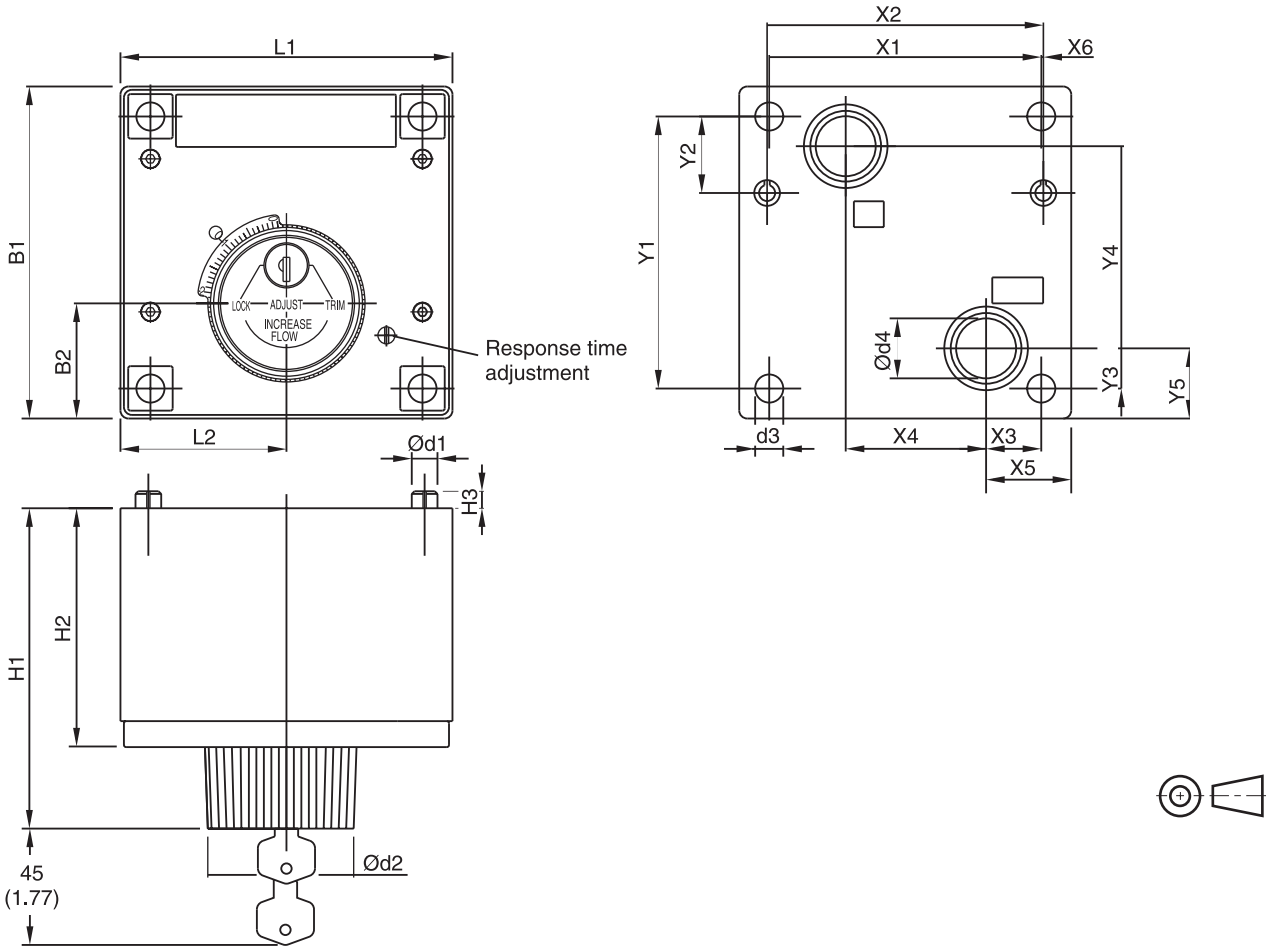


Fluid viscosity 40 cSt at 50°C (122°F)

2F1C.indd, dd

Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

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



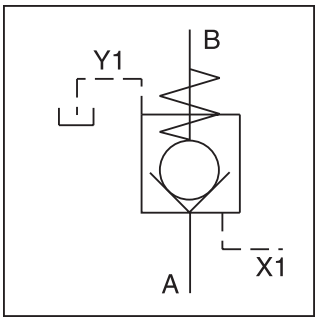
Size	ISO-code	x1	x2	x3	x4	x5	x6	y1	y2	y3	y4	y5
02	6263-AM-07-2-A	76.2 (3.00)	79.4 (3.13)	9.5 (0.37)	44.5 (1.75)	19.0 (0.75)	–	82.5 (3.25)	23.8 (0.94)	30.2 (1.19)	41.3 (1.63)	39.7 (1.56)
03	6263-AK-06-2-A	101.6 (4.00)	103.2 (4.06)	20.6 (0.81)	52.4 (2.06)	31.8 (1.25)	0.8 (0.03)	101.6 (4.00)	28.6 (1.13)	15.1 (0.59)	75.4 (2.97)	26.2 (1.03)

Size	ISO-code	B1	B2	H1	H2	H3	L1	L2	d1	d2	d3	d4
02	6263-AM-07-2-A	101.6 (4.00)	38.1 (1.50)	119.6 (4.71)	87.4 (3.44)	6.4 (0.25)	95.2 (3.75)	47.6 (1.87)	6.4 (0.25)	57.2 (2.25)	8.7 (0.34)	14.2 (0.56)
03	6263-AK-06-2-A	123.8 (4.87)	42.9 (1.69)	121.4 (4.78)	89.2 (3.51)	6.4 (0.25)	123.8 (4.87)	61.9 (2.44)	9.5 (0.37)	57.2 (2.25)	10.5 (0.41)	22.4 (0.88)

Size	ISO-Code	Bolt kit - DIN912 12.9		Kit	Surface Finish
02	6263-AM-07-2-A	BK-700-70842-8 4xM8x100	31.8 Nm (23.5 lb.-ft.) ±15%	on request	R_{max}6.3 ▱ 0.01/100
03	6263-AK-06-2-A	BK395 4xM10x100	63 Nm (46.5 lb.-ft.) ±15%		

General Description

Series C5P pilot operated check valves have a similar design to the subplate mounted SVL series. The SAE flanges allow to mount directly on the flanges of actuators to achieve a very compact design.

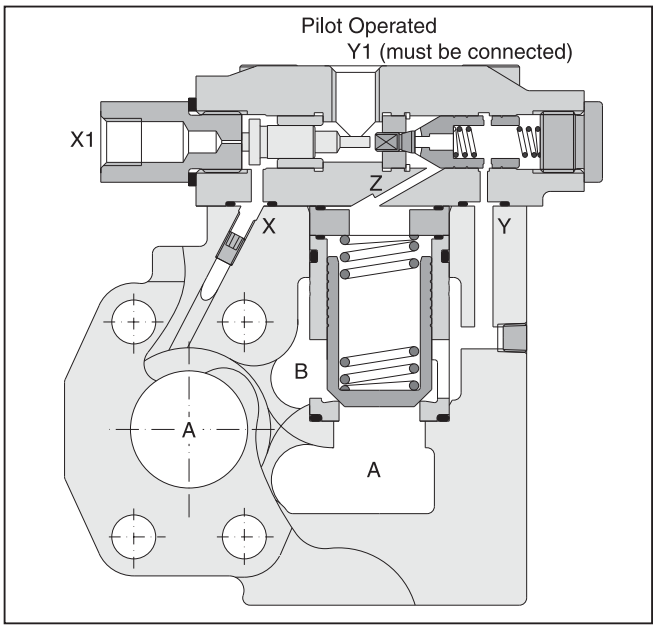


Operation

When no pressure is applied to the X-port, the flow from B to A is blocked, because the pressure in B is also in effect on top of the poppet.

Pressurizing the X port relieves the area on top of the poppet to the drain port and allows flow from B to A.

The seat design of the C5P valve series provides leak-free separation of port A and B in the closed position.

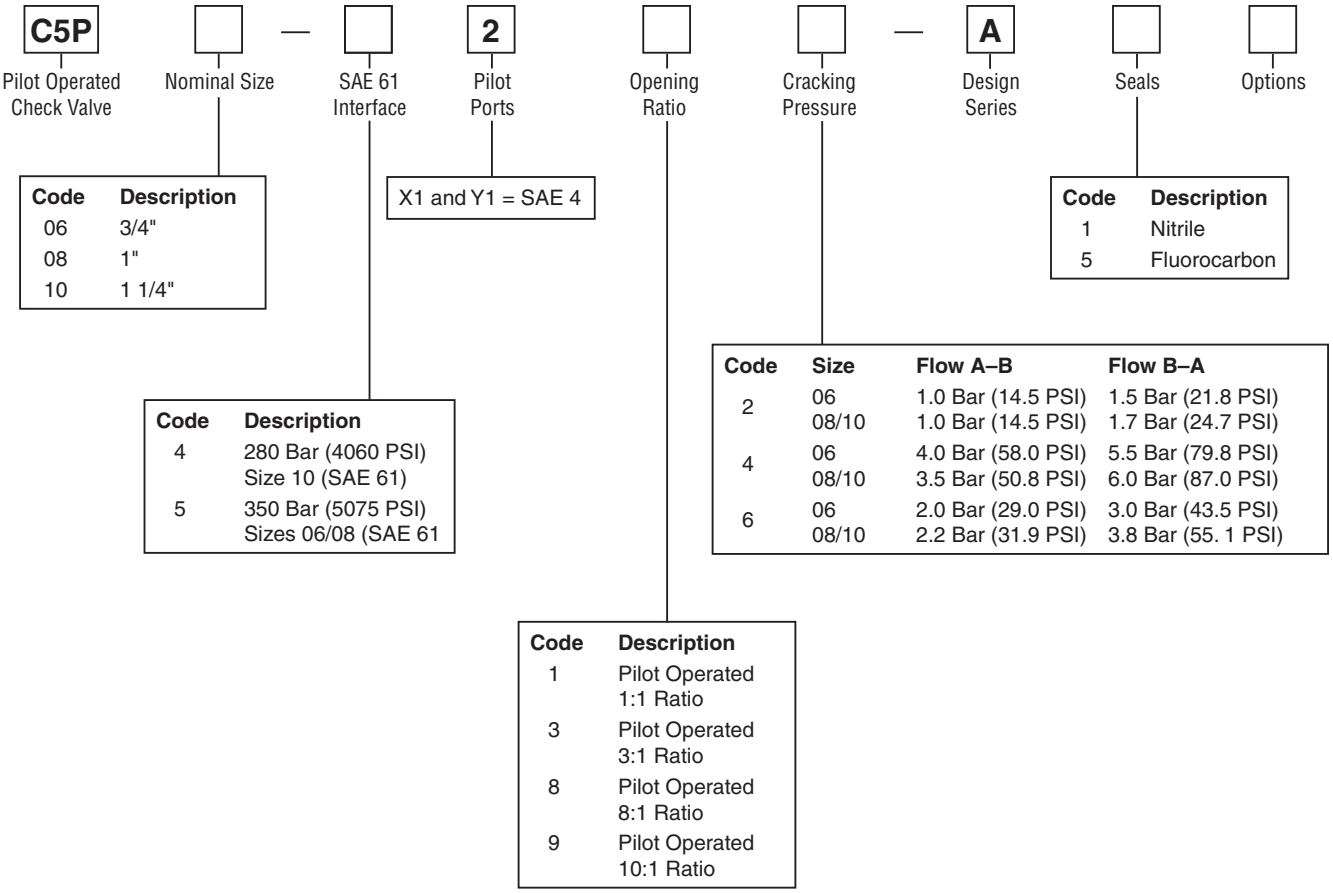


Features

- Pilot operated check valve.
- 2-port body with SAE 61 flange.
- 3 sizes (SAE 3/4", 1", 1 1/4").
- 4 opening ratios.

Specifications

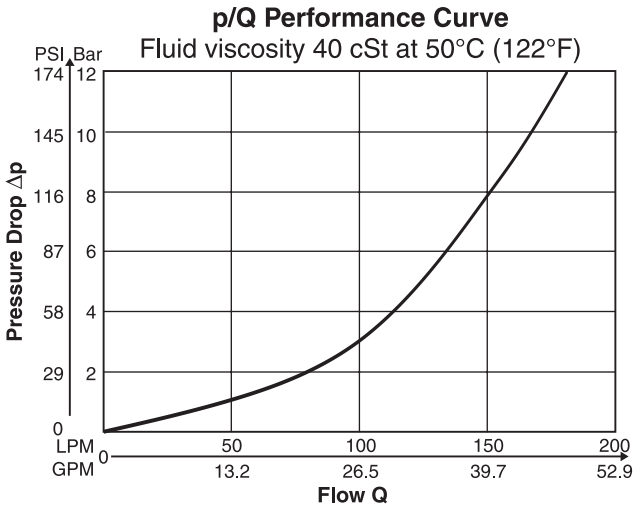
General			
Size	**06**	**08**	**10**
Mounting	2-port in-line flange SAE 61		
Mounting Position	Unrestricted		
Ambient Temprature	-20°C to +50°C (-4°F to +122°F)		
Hydraulic			
Maximum Operating Pressure **Ports A, B** / **Port Y1**	350 Bar (5075 PSI) 30 Bar (435 PSI)	350 Bar (5075 PSI) 30 Bar (435 PSI)	280 Bar (4060 PSI) 30 Bar (435 PSI)
Nominal Flow	180 LPM (47.6 GPM)	360 LPM (95.2 GPM)	600 LPM (158.7 GPM)
Fluid	Hydraulic oil in accordance with DIN 51524...51525		
Fluid Temperature	-20°C to +80°C (-4°F to +176°F)		
Viscosity Permitted	10 to 650 cSt (mm^2/s)		
Viscosity Recommended	30 cSt (mm^2/s)		
Filtration	ISO 4406 (1999) 18/16/13 (acc. NAS 1638: 7)		



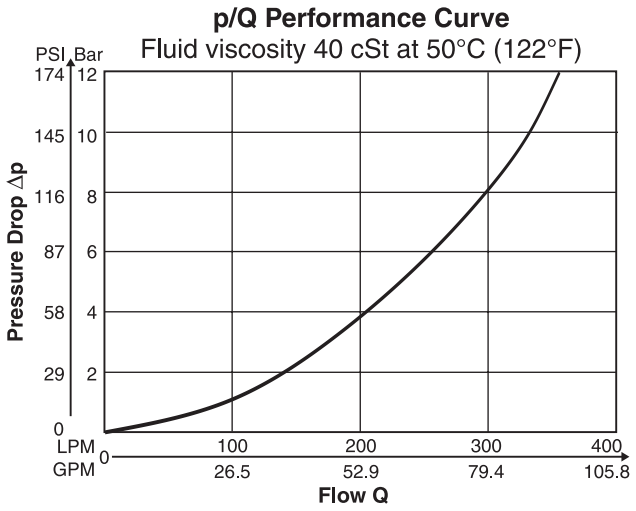
Weight:

C5P06 3.9 kg (8.6 lbs.)
C5P08 4.4 kg (9.7 lbs.)
C5P10 5.7 kg (12.6 lbs.)

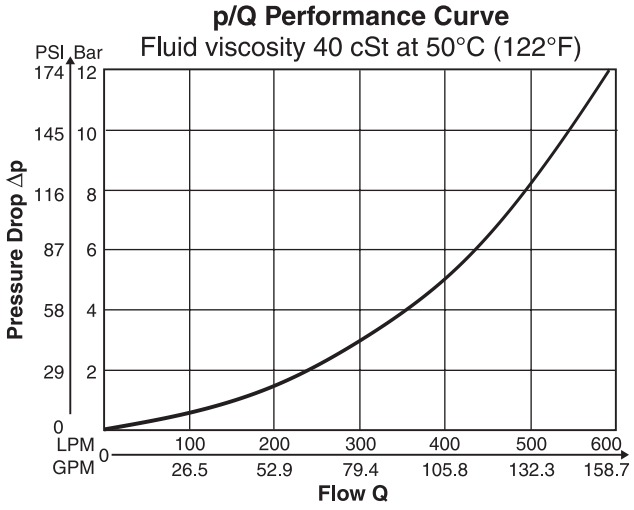
C5P06



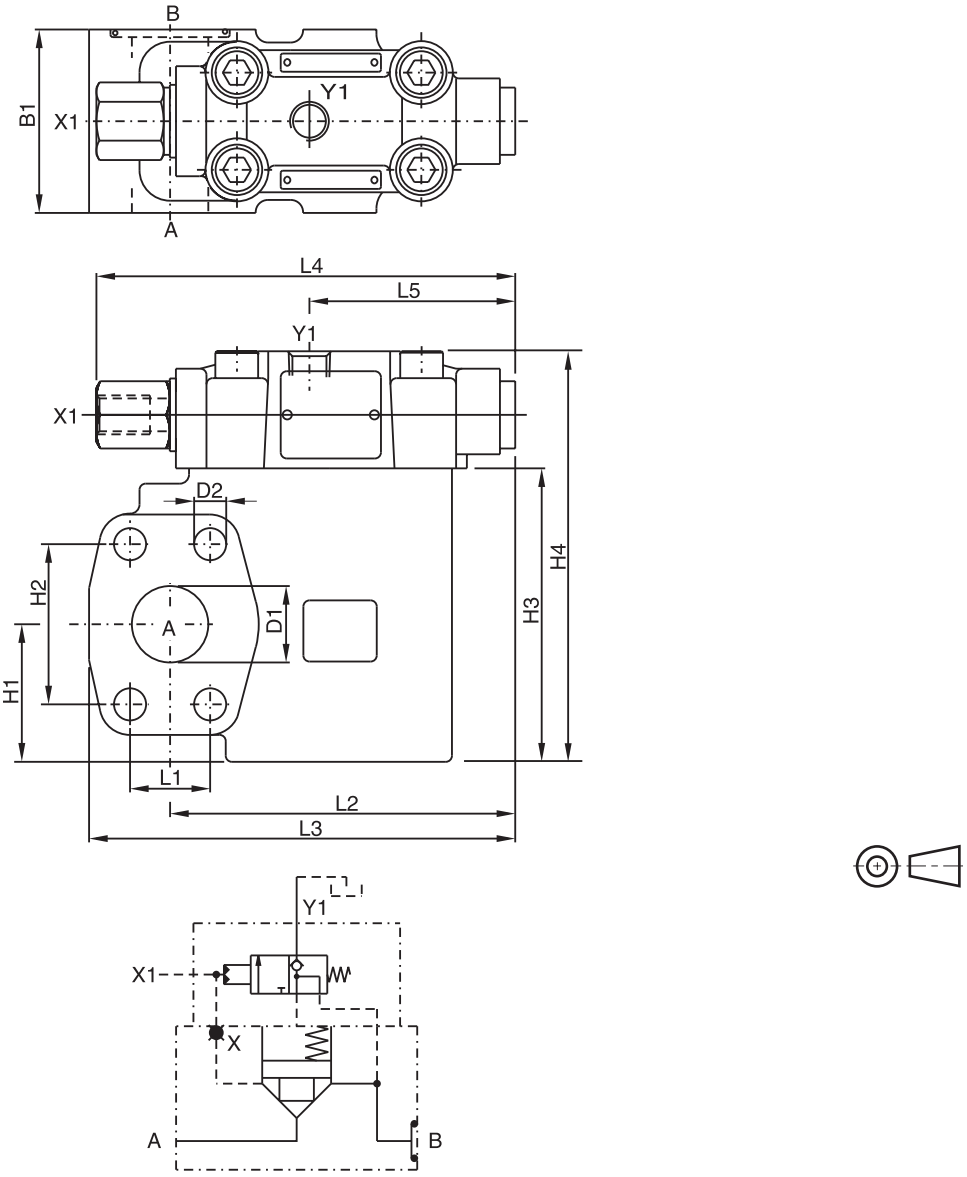
C5P08



C5P10



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



Dimensions

Series	L1	L2	L3	L4	L5	B1	H1	H2	H3	H4	D1	D2
C5P06	22.2 (0.87)	95.8 (3.77)	119.8 4.72)	137.0 (5.39)	67.3 (2.65)	60.0 (2.36)	37.0 (1.46)	47.6 (1.87)	90.0 (3.54)	128.0 (5.04)	19.0 (0.75)	10.5 (0.41)
C5P08	26.2 (1.03)	112.9 (4.44)	139.4 (5.49)	137.0 (5.39)	67.3 (2.65)	60.0 (2.36)	45.0 (1.77)	52.4 (2.06)	96.0 (3.78)	134.0 (5.28)	25.0 (0.93)	10.5 (0.41)
C5P10	30.2 (1.19)	112.9 (4.44)	146.9 (5.78)	137.0 (5.39)	67.3 (2.65)	75.0 (2.95)	48.0 (1.39)	58.7 (2.31)	109.0 (4.29)	147.0 (5.79)	32.0 (1.26)	12.5 (0.49)

Ports

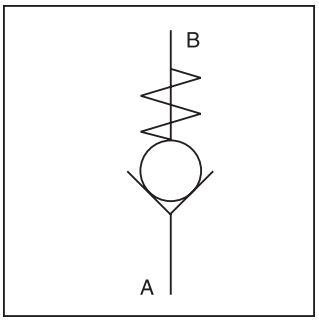
Port	Function	Port Size		
		C5P06	C5P08	C5P10
A	Inlet or Outlet	3/4" SAE 61	1" SAE 61	1 1/4" SAE 61
B	Outlet or Inlet	3/4" SAE 61	1" SAE 61	1 1/4" SAE 61
X1	External Pilot Port	SAE 4		
Y1	External Pilot Drain	SAE 4		

C5P.indd, dd

General Description

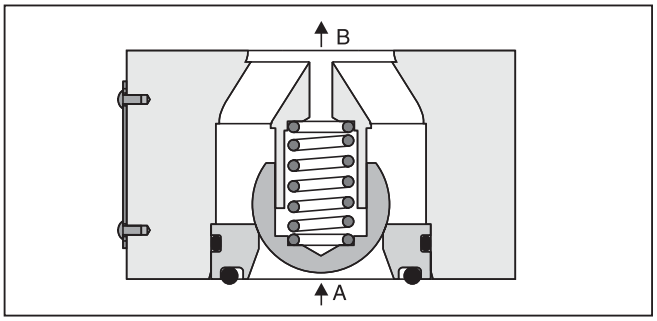
Series C5V direct operated check valves provide free flow in one direction and block the flow in the counter direction.

The SAE flanges allow to mount the C5V directly on the pressure port of pumps for protection against pressure shocks from the system.



Operation

The ball is held on its seat by a spring under zero pressure condition. When flow is increased to the cracking pressure, free flow is allowed from port A to port B. Blocked flow is created when operating pressure and spring on Port B exceed pressure on port A.

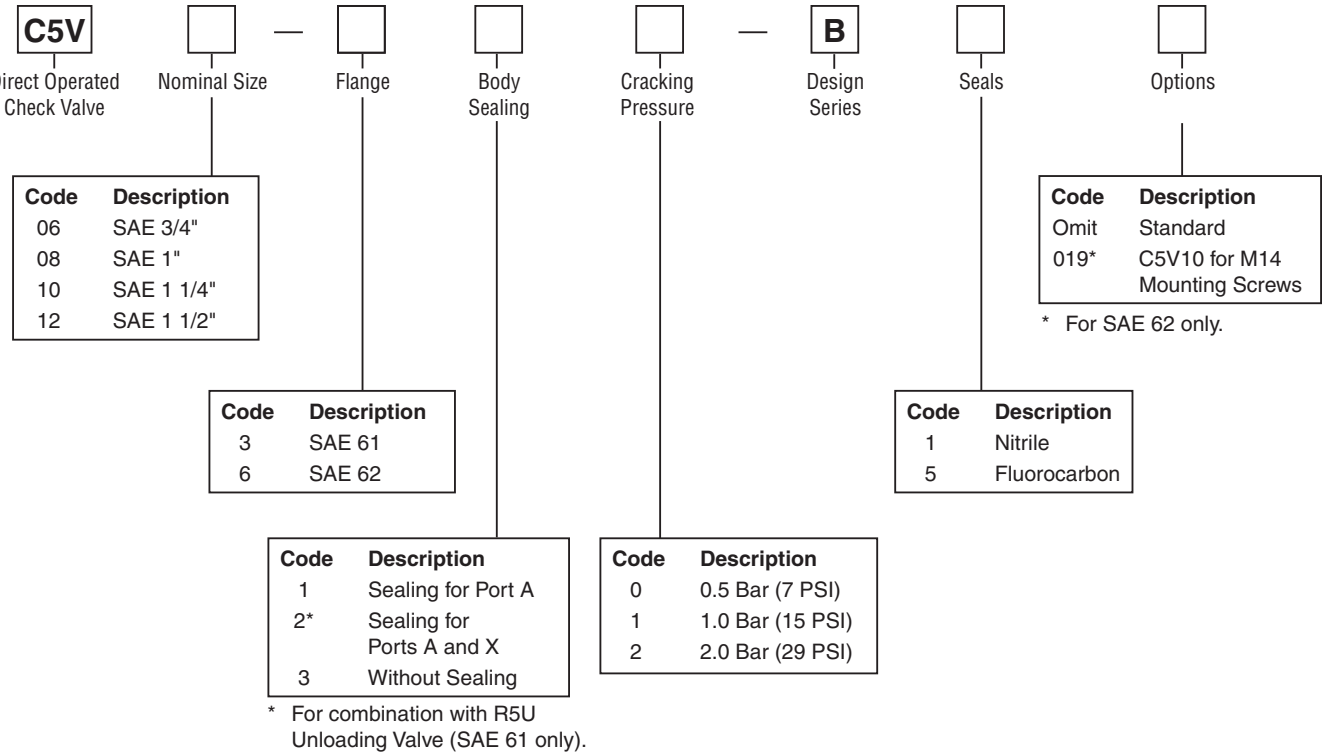


Features

- Direct operated check valve.
- SAE 61 and SAE 62 flanges.
- 4 sizes (SAE 3/4", 1", 1 1/4", 1 1/2").
- 3 springs.
- 2 different seal configurations.

Specifications

General				
Size	**06**	**08**	**10**	**12**
Mounting	2-port in-line flange SAE 61 and SAE 62			
Mounting Position	Unrestricted			
Ambient Temprature	-20°C to +50°C (-4°F to +122°F)			
Hydraulic				
Maximum Operating Pressure				
SAE 61	350 Bar (5075 PSI)	350 Bar (5075 PSI)	280 Bar (4060 PSI)	210 Bar (3045 PSI)
SAE 62	420 Bar (6090 PSI)	420 Bar (6090 PSI)	420 Bar (6090 PSI)	—
Nominal Flow	100 LPM (26.5 GPM)	200 LPM (52.9 GPM)	400 LPM (105.8 GPM)	750 LPM (198.4 GPM)
Fluid	Hydraulic oil in accordance with DIN 51524...51525			
Fluid Temperature	-20°C to +80°C (-4°F to +176°F)			
Viscosity Permitted	10 to 650 cSt (mm^2/s)			
Viscosity Recommended	30 cSt (mm^2/s)			
Filtration	ISO 4406 (1999) 18/16/13 (acc. NAS 1638: 7)			



Code	Description
06	SAE 3/4"
08	SAE 1"
10	SAE 1 1/4"
12	SAE 1 1/2"

Code	Description
3	SAE 61
6	SAE 62

Code	Description
1	Sealing for Port A
2*	Sealing for Ports A and X
3	Without Sealing

* For combination with R5U Unloading Valve (SAE 61 only).

Code	Description
0	0.5 Bar (7 PSI)
1	1.0 Bar (15 PSI)
2	2.0 Bar (29 PSI)

Code	Description
1	Nitrile
5	Fluorocarbon

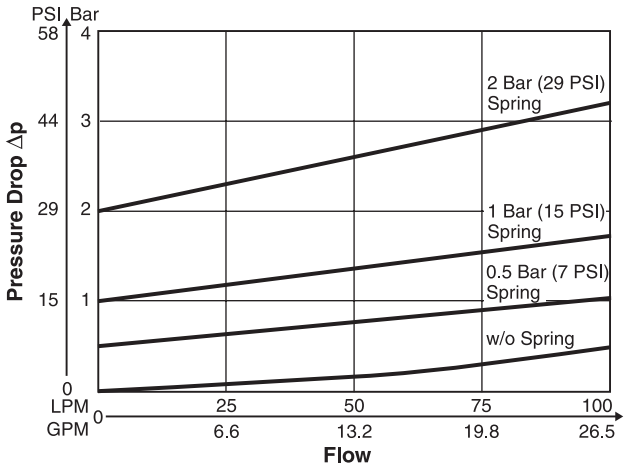
Code	Description
Omit	Standard
019*	C5V10 for M14 Mounting Screws

* For SAE 62 only.

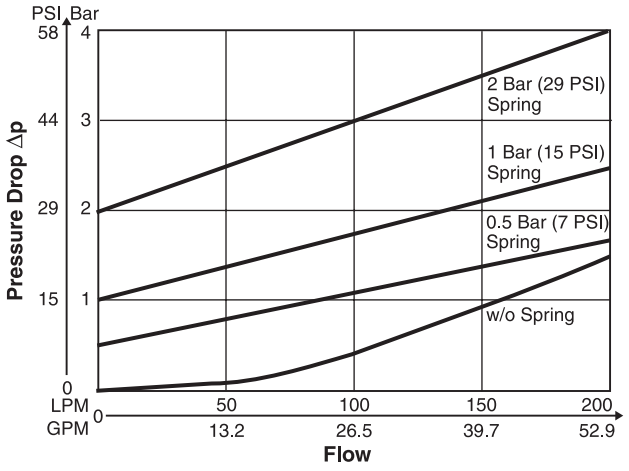
Weight:

C5V06	0.6 kg (1.3 lbs.)
C5V08	0.9 kg (2.0 lbs.)
C5V10	1.3 kg (2.9 lbs.)
C5V12	1.8 kg (4.0 lbs.)

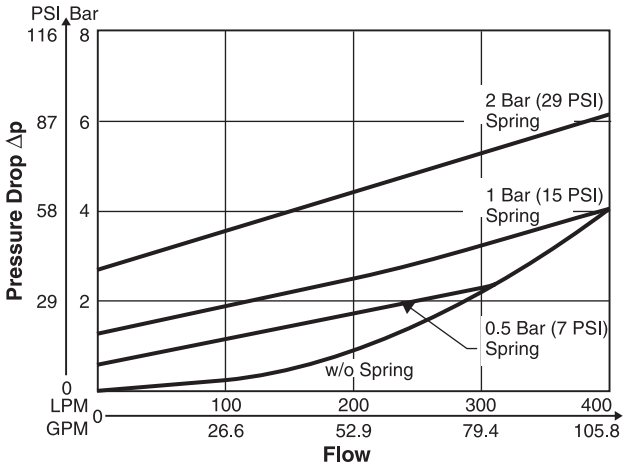
C5V06



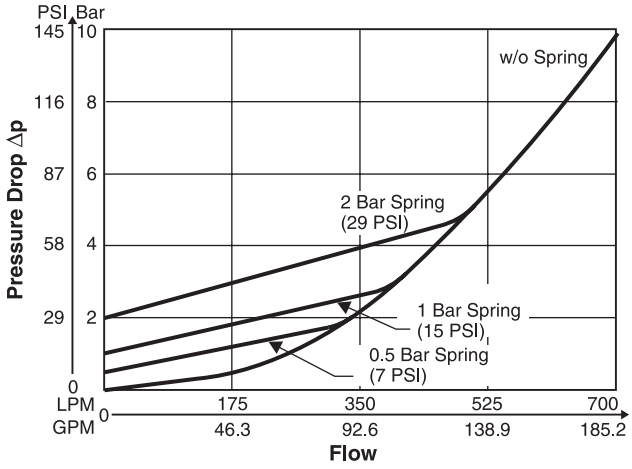
C5V08



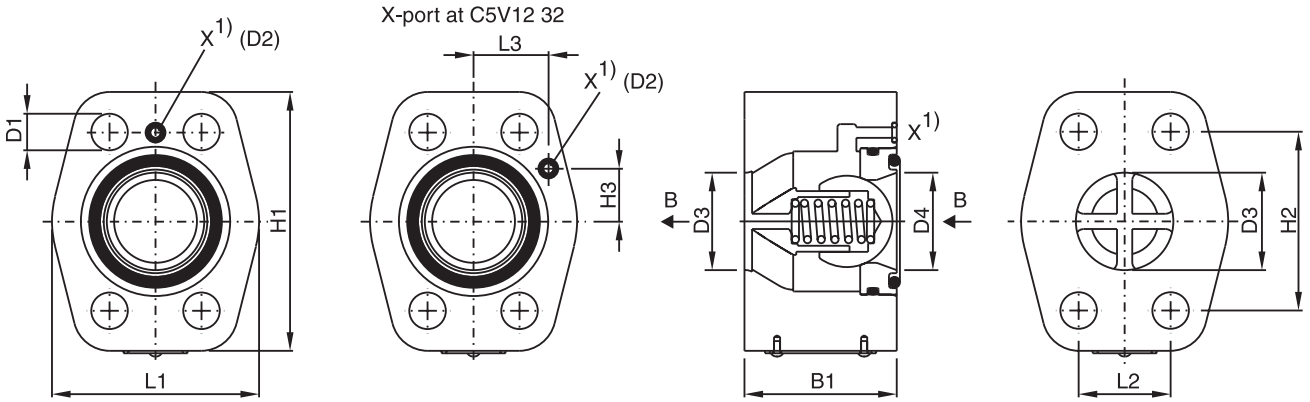
C5V10



C5V12



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



1) X1 port for C5V*32* (for use with Unloading Valve R5U)

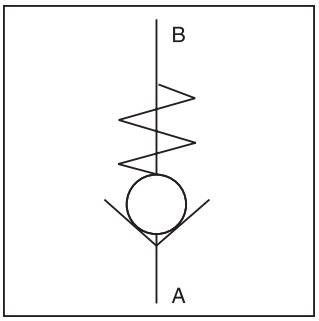
Series	Nominal Size		L1	L2	L3	H1	H2	H3	B1	D1	D2	D3 + 0.8	D4
C5V06	3/4"	SAE 61	48.0 (1.89)	22.2 (0.87)	27.2 (1.07)	64.0 (2.52)	47.6 (1.87)	22.4 (0.88)	45.0 (1.77)	10.5 (0.41)	Ø3.0 (0.12)	19.0 (0.75)	19.0 (0.75)
		SAE 62	48.0 (1.89)	23.8 (0.94)	27.2 (1.07)	64.0 (2.52	50.8 (2.00)	22.4 (0.88)	45.0 (1.77)	10.5 (0.41)	–	19.0 (0.75)	19.0 (0.75)
C5V08	1"	SAE 61	60.0 (2.36)	26.2 (1.03	27.2 (1.07)	74.0 (2.91)	52.4 (2.06)	22.4 (0.88)	45.0 (1.77)	10.5 (0.41)	Ø3.0 (0.12)	25.0 (0.98)	25.0 (0.98)
		SAE 62	60.0 (2.36)	27.8 (1.09)	27.2 (1.07)	74.0 (2.91)	57.2 (2.25)	22.4 (0.88)	45.0 (1.77)	12.5 (0.49)	–	25.0 (0.98)	25.0 (0.98)
C5V10	1 1/4"	SAE 61	68.0 (2.68)	30.2 (1.19)	27.2 (1.07)	85.0 (3.35)	58.7 (2.31)	22.4 (0.88)	50.0 (1.97)	12.5 (0.49)	Ø3.0 (0.12)	32.0 (1.26)	32.0 (1.26)
		SAE 62	68.0 (2.68)	31.8 (1.25)	27.2 (1.07)	85.0 (3.35)	66.7 (2.63)	22.4 (0.88)	50.0 (1.97)	13.5* (0.53)	–	32.0 (1.26)	32.0 (1.26)
C5V12	1 1/2"	SAE 61	80.0 (3.15)	35.7 (1.41)	27.2 (1.07)	104.0 (4.09)	69.8 (2.75)	22.4 (0.88)	50.0 (1.97)	13.5 (0.53)	Ø3.0 (0.12)	42.0 (1.65)	38.0 (1.50)
		SAE 62	80.0 (3.15)	36.5 (1.44)	27.2 (1.07)	104.0 (4.09)	79.4 (3.13	22.4 (0.88)	50.0 (1.97)	17.0 (0.67)	–	42.0 (1.65)	38.0 (1.50)

* D1 = 15 (0.59) at option code 019 for M14 mounting screws.

General Description

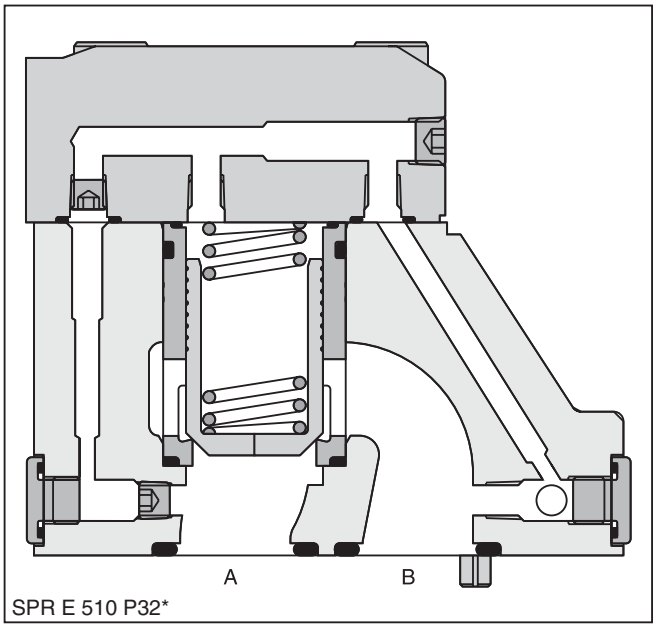
Series SPR direct operated check valves valves allow free flow from A to B. The counter direction is blocked. Series SPR valves are equipped with a leak-free seat type cartridge.

SPR E 510 P20*



Operation

The pressure arising in port A lifts the poppet from the valve seat and releases the flow to B. In the counter direction, the spring and the pressure on top of the cartridge hold the poppet onto the seat and block the flow.



SPR E 510 P32*

Features

- High flow, low pressure drop design.
- Minimal internal leakage.

Specifications

General				
Size		**NG10**	**NG25**	**NG32**
Suplate Mounting		ISO 5781		
Mounting Position		Unrestricted		
Ambient Temperature Range		-20°C to +80°C (-4°F to +176°F)		
Hydraulic				
Maximum Operating Pressure		350 Bar (5075 PSI)		
Pressure Stages		105 Bar (1523 PSI), 210 Bar (3045 PSI), 350 Bar (5075 PSI)		
Nominal Flow		150 LPM (39.7 GPM)	270 LPM (71.4 GPM)	450 LPM (119.0 GPM)
Fluid		Hydraulic oil to DIN 51524		
Viscosity	**Recommended**	30 to 50 cSt (mm^2/s)		
	Permitted	20 to 380 cSt (mm^2/s)		
Fluid Temperature	**Recommended**	+30°C to +50°C (86°F to +122°F)		
	Permitted	-20°C to +70°C (-4°F to +158°F)		
Filtration		ISO Class 4406 (1999) 18/16/13		

Ordering Information

[ ]	SPR	E	510	[ ]	[ ]	[ ]
Seals	Check Valve	Design Series	Series	Valve Size	Opening Pressure	Design Series

NOTE: Not required when ordering

Code	Description
Omit	Nitrile
V	Fluorocarbon

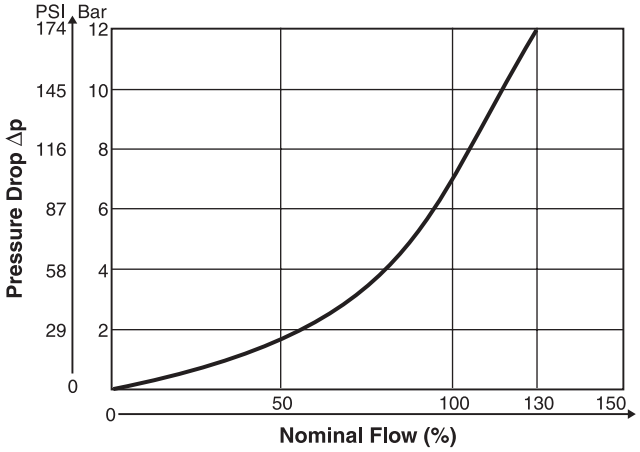
Code	Description
P15	NG10
P20	NG25
P32	NG32

Code	Description
N	0.5 Bar (7.3 PSI)
R	1.0 Bar (14.5 PSI)
T	2.0 Bar (29 PSI)
U	4.0 Bar (58 PSI)

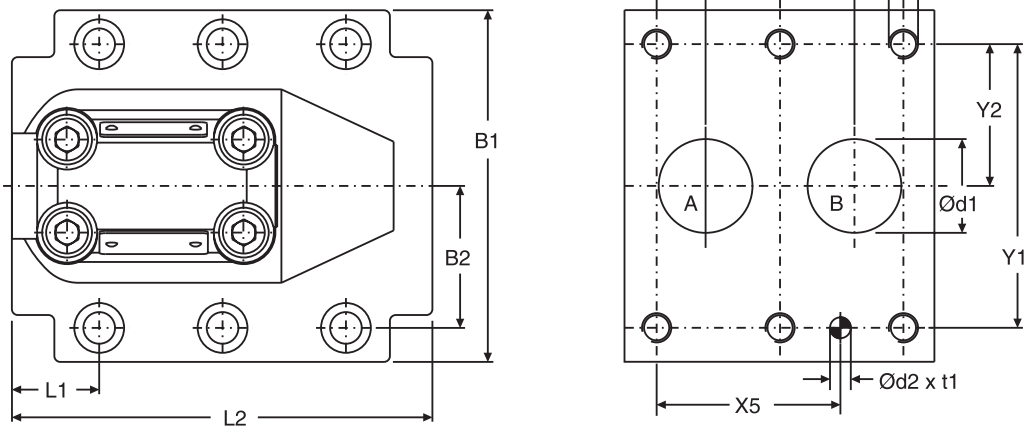
Weight:

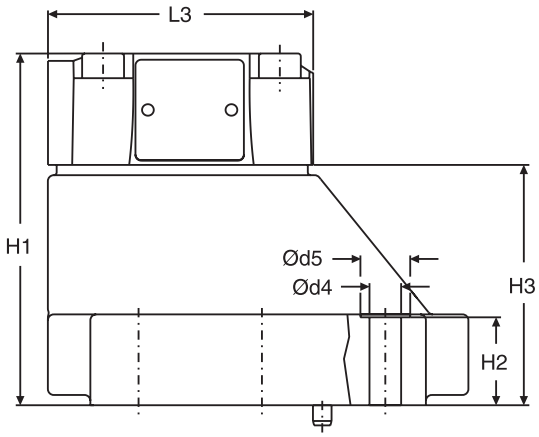
*SPR*P15 2.8 kg (6.2 lbs)
*SPR*P20 4.6 kg (10.1 lbs.)
*SPR*P32 6.1 kg (13.5 lbs.)

Performance Curve



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





NG	ISO-code	x1	x2	x3	x4	x5	y1	y2	B1	B2	H1	H2	H3	L1	L2
10	5781-06-07-0-00	42.9 (1.69)	35.8 (1.41)	–	7.2 (0.28)	31.8 (1.25)	66.7 (2.63)	33.4 (1.31)	87.3 (3.44)	33.4 (1.31)	83.0 (3.27)	21.0 (0.83)	45.0 (1.77)	29.0 1.14)	94.8 (3.73)
25	5781-08-10-0-00	60.3 (2.37)	49.2 (1.94)	–	11.1 (0.44)	44.5 (1.75)	79.4 (3.13)	39.7 (1.56)	105.0 (4.13)	39.7 (1.56)	109.5 (4.31)	29.0 (1.14)	71.5 (2.81)	34.7 (1.37)	126.8 (4.99)
32	5781-10-13-0-00	84.2 (3.31)	67.5 (2.66)	42.1 (1.66)	16.7 (0.66)	62.7 (2.47)	96.8 (3.81)	48.4 (1.91)	120.0 (4.72)	48.4 (1.91)	120.0 (4.72)	29.0 (1.14)	82.0 (3.23)	30.6 (1.20)	144.3 (5.68)

Tolerance for all dimensions ±0.2 mm (0.01 inches)

NG	ISO-code	d1max	d2	t1	d3	t2	d4	d5
10	5781-06-07-0-00	15.0 (0.59)	7.1 (0.28)	8.0 (0.31)	M10	16.0 (0.63)	10.8 (0.43)	17.0 (0.67)
25	5781-08-10-0-00	23.4 (0.92)	7.1 (0.28)	8.0 (0.31)	M10	18.0 (0.71)	10.8 (0.43)	17.0 (0.67)
32	5781-10-13-0-00	32.0 (1.26)	7.1 (0.28)	8.0 (0.31)	M10	20.0 (0.79)	10.8 (0.43)	17.0 (0.67)

NG	ISO-code	Kit		Kit		Surface finish
				NBR	FPM	
10	5781-06-07-0-00	BK-M10 x 35-4pcs	68 Nm (50.2 lb-ft)	SK-SVLE5P10	SK-SVLE5P10V	R_{max}6.3 ⏥ 0.01/100
25	5781-08-10-0-00	BK-M10 x 45-4pcs	68 Nm (50.2 lb-ft)	SK-SVLE5P25	SK-SVLE5P25V	
32	5781-10-13-0-00	BK-M10 x 45-6pcs	68 Nm (50.2 lb-ft)	SK-SVLE5P32	SK-SVLE5P32V	

SPR.indd, dd

Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

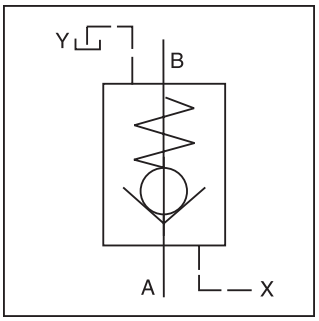
General Description

Series SVLE hydraulically pilot operated check valves allow free flow from A to B. The counter-flow direction is blocked.

When pressure is applied to control port X, the ring chamber flow from B to A is released.

Up to four different pilot control ratios are available (see Ordering Information).

Check valves allow free flow from A to B. The counter direction is blocked. The SPR series are equipped with a leak-free seat type cartridge.

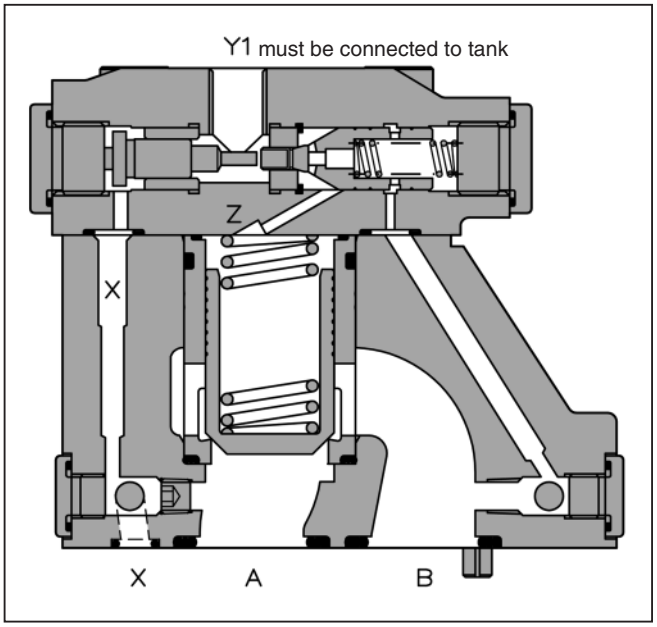


Operation

When no pressure is applied to the X-port, the flow from B to A is blocked, because the pressure in B is also in effect on top of the poppet.

Pressurizing the X port relieves the area on top of the poppet to the drain port and allows flow from B to A.

The seat design of the SVL valve series provides leak-free separation of port A and B in the closed position.



Features

- High flow, low pressure drop design.
- Minimal internal leakage.

Specifications

General				
Size		**NG10**	**NG25**	**NG32**
Suplate Mounting		ISO 5781		
Mounting Position		Unrestricted		
Ambient Temperature Range		-20°C to +80°C (-4°F to +176°F)		
Hydraulic				
Maximum Operating Pressure		350 Bar (5075 PSI)		
Nominal Flow		150 LPM (39.7 GPM)	270 LPM (71.4 GPM)	450 LPM (119.0 GPM)
Fluid		Hydraulic oil to DIN 51524		
Viscosity	**Recommended**	30 to 50 cSt (mm^2/s)		
	Permitted	20 to 380 cSt (mm^2/s)		
Fluid Temperature	**Recommended**	+30C° to +50°C (86°F to +122°F)		
	Permitted	-20°C to +70°C (-4°F to +158°F)		
Filtration		ISO Class 4406 (1999) 18/16/13		

Ordering Information

	SVL	E	LR	5	4				
Seals	Hydr. Pilot Operated Check Valve	Subplate Mounting	External Drain Port Y1 (G1/4")	Design Style to ISO 5781	Poppet Type 04	Pilot Control Ratio	Nominal Size	Closing Spring	Design Series

NOTE: Not required when ordering

Code	Description
Omit	Nitrile
V	Flurocarbon

Code	Description
P10	NG10
P25	NG25
P32	NG32

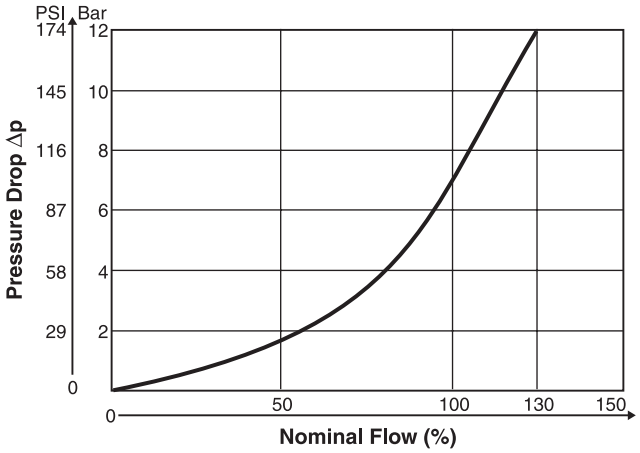
Code	Description
1	1:1
3	3:1
8	8:1
9	10:1

Code	Description
N	0.5 Bar (7.25 PSI)
R	1.0 Bar (14.5 PSI)
T	2.0 Bar (29 PSI)
U	4.0 Bar (58 PSI)

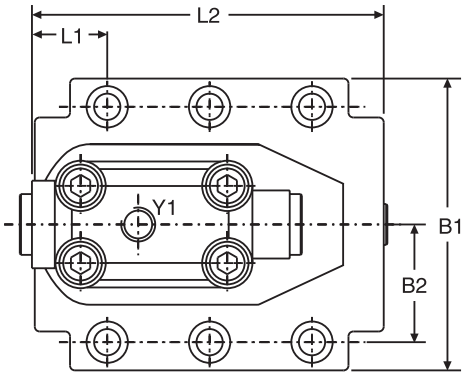
Weight:

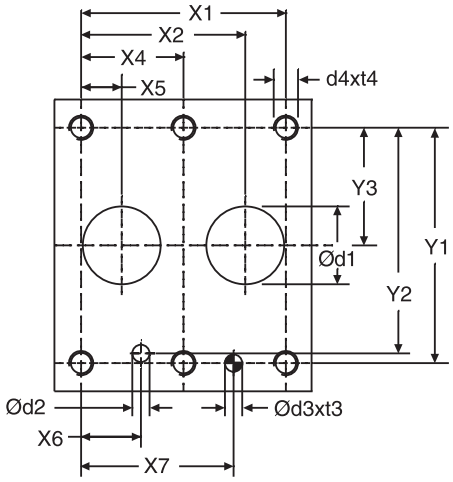
SVLE*P10 2.8 kg (6.2 lbs.)
SVLE*P25 4.6 kg (10.1 lbs.)
SVLE*P32 6.1 kg (13.5 lbs.)

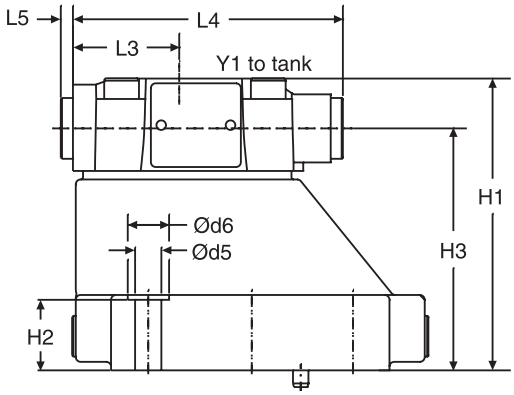
Performance Curve



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





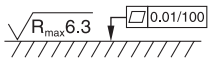


NG	ISO-code	x1	x2	x3	x4	x5	x6	x7	y1	y2	y3	y4	y5	y6
10	5781-06-07-0-00	42.9 (1.69)	35.8 (1.41)	–	–	7.2 (0.28)	21.5 (0.85)	31.8 (1.25)	66.7 (2.63)	58.8 (2.31)	33.4 (1.31)	–	–	–
25	5781-08-10-0-00	60.3 (2.37)	49.2 (1.94)	–	–	11.1 (0.44)	20.6 (0.81)	44.5 (1.75)	79.4 (3.13)	73.0 (2.87)	39.7 (1.56)	–	–	–
32	5781-10-13-0-00	84.2 (3.31)	67.5 (2.66)	–	42.1 (1.66)	16.7 (0.66)	24.6 (0.97)	62.7 (2.47)	96.8 (3.81)	92.8 (3.65)	48.4 (1.91)	–	–	–

Tolerance for all dimensions ±0.2 mm (0.01 inches)

NG	ISO-code	B1	B2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6
10	5781-06-07-0-00	87.3 (3.44)	33.4 (1.31)	83.0 (3.27)	21.0 (0.83)	62.5 (2.46)	–	–	–	29.4 (1.16)	95.2 (3.75)	43.7 (1.72)	111.0 (4.37)	5.0 (0.20)	–
25	5781-08-10-0-00	105 (4.13)	39.7 (1.56)	109.5 (4.31)	29.0 (1.14)	89.0 (3.50)	–	–	–	35.1 (1.38)	127.2 (5.01)	43.7 (1.72)	111.0 (4.37)	5.0 (0.20)	–
32	5781-10-13-0-00	120 (4.72)	48.4 (1.91)	120.0 (4.72)	29.0 (1.14)	99.5 (3.92)	–	–	–	31.0 (1.22)	144.7 (5.70)	43.7 (1.72)	111.0 (4.37)	5.0 (0.20)	–

NG	ISO-code	d1max	d2max	d3	t3	d4	t4	d5	d6
10	5781-06-07-0-00	15.0 (0.59)	7.0 (0.28)	7.1 (0.28)	8.0 (0.31)	M10	16.0 (0.63)	10.8 (0.43)	17.0 (0.67)
25	5781-08-10-0-00	23.4 (0.92)	7.1 (0.28)	7.1 (0.28)	8.0 (0.31)	M10	18.0 (0.71)	10.8 (0.43)	17.0 (0.67)
32	5781-10-13-0-00	32.0 (1.26)	7.1 (0.28)	7.1 (0.28)	8.0 (0.31)	M10	20.0 (0.79)	10.8 (0.43)	17.0 (0.67)

		Kit		Kit		
NG	ISO-code			NBR	FPM	Surface finish
10	5781-06-07-0-00	BK-M10 x 35-4pcs	68 Nm (50.2 lb-ft)	SK-SVLE5P10	SK-SVLE5P10V	
25	5781-08-10-0-00	BK-M10 x 45-4pcs	68 Nm (50.2 lb-ft)	SK-SVLE5P25	SK-SVLE5P25V	
32	5781-10-13-0-00	BK-M10 x 45-6pcs	68 Nm (50.2 lb-ft)	SK-SVLE5P32	SK-SVLE5P32V	

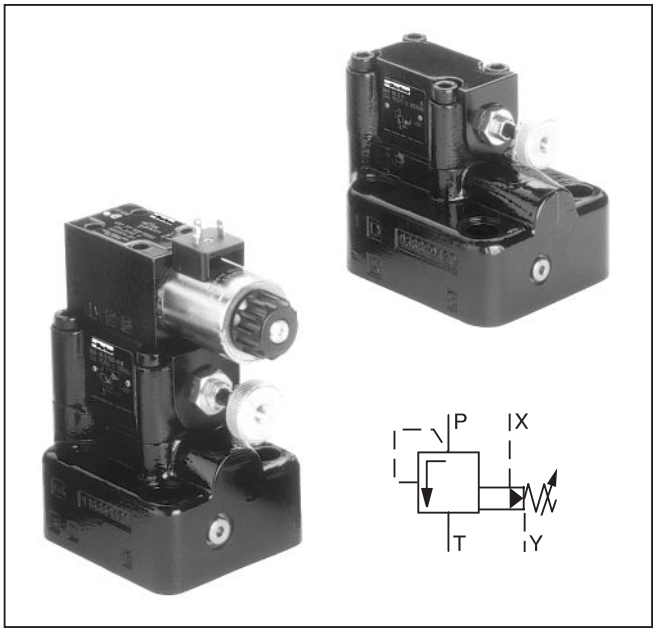
SVLE.indd, dd

Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

General Description

Series R pressure relief valves consist of a manual adjustment pilot stage and a cartridge main stage.

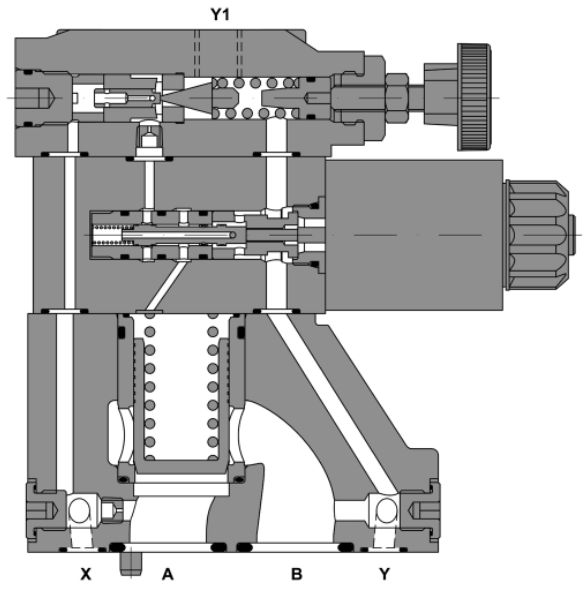
Series RS pressure relief valves consist of a manual adjusted pilot stage with a directional valve for an electrically controlled vent function and a cartridge main part.



Features

- Pilot operated with manual adjustment.
- 3 interfaces
  - – Subplate, ISO 6264 (DIN 24340 Form D + Form E)
  - – Slip-in, ISO 7368
- 4 pressure ranges.
- 2 switching types (series RS).
- 3 adjustment modes
  - – Screw with lock nut
  - – Hand knob
  - – DIN lock
- Remote control via port X.

RS25M



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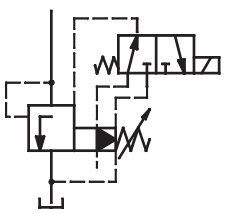

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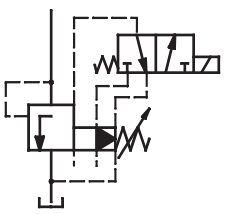
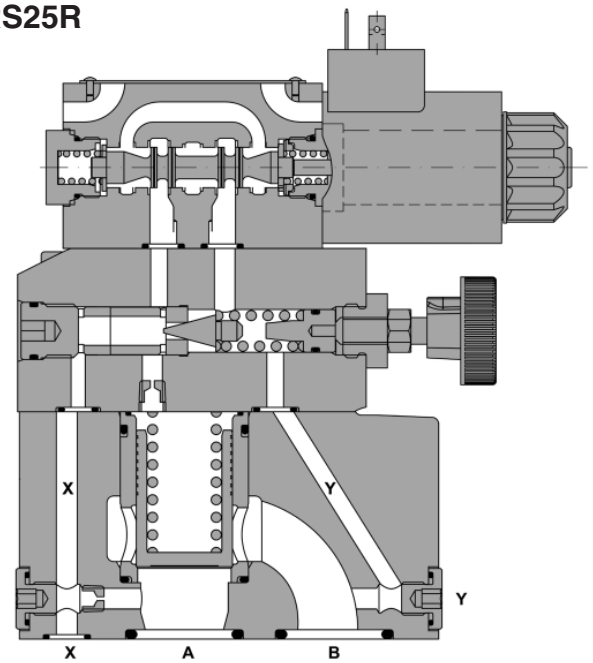


RS25R



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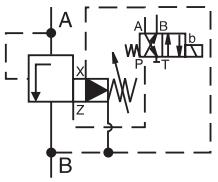

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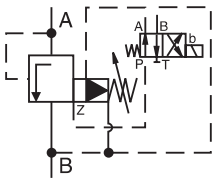


RS_R RS_M.indd, dd

R*R and R*M

General			
Size	**NG10**	**NG25**	**NG32**
Interface	Subplate mounting acc. ISO 6264		
Mounting Position	As desired, horizontal mounting preferred		
Ambient Temperature	-20°C to +80°C (-4°F to +176°F)		
Hydraulic			
Operating Pressure	Ports P or A and X up to 350 Bar (5075 PSI), connection T or B and Y depressurized		
Pressure Range	75, 175, 250, 350 Bar (1088, 2538, 3625, 5075 PSI)		
Nominal Flow **Series R*R LPM (GPM)**	250 (66.1)	500 (132.3)	650 (172.0)
Series R*M LPM (GPM)	150 (39.7)	350 (92.6)	650 (172.0)
Pressure Fluid	Hydraulic oil according to DIN 51524 ... 525		
Viscosity Recommended	30 to 50 cSt (mm²/s)		
Maximum	20 to 380 cSt (mm²/s)		
Pressure Fluid Temperature Recommended	+30°C to +50°C (+86°F to +122°F)		
Maximum	-20°C to +70° (-4°F to +158°F)		
Filtration	ISO 4406 (1999), 18/16/13		

RS*R and RS*M

General			
Size	**NG10**	**NG25**	**NG32**
Interface	Subplate mounting acc. ISO 6264		
Mounting Position	As desired, horizontal mounting preferred		
Ambient Temperature	-20°C to +80°C (-4°F to +176°F)		
Hydraulic			
Operating Pressure	Ports P or A and X up to 350 Bar (5075 PSI), connection T or B and Y depressurized		
Pressure Range	75, 175, 250, 350 Bar (1088, 2538, 3625, 5075 PSI)		
Nominal Flow **Series RS*R LPM (GPM)**	250 (66.1)	500 (132.3)	650 (172.0)
Series RS*M LPM (GPM)	150 (39.7)	350 (92.6)	650 (172.0)
Pressure Fluid	Hydraulic oil according to DIN 51524 ... 525		
Viscosity Recommended	30 to 50 cSt (mm²/s)		
Maximum	20 to 380 cSt (mm²/s)		
Pressure Fluid Temperature Recommended Maximum	+30°C to +50°C (+86°F to +122°F) -20°C to +70° (-4°F to +158°F)		
Filtration	ISO 4406 (1999), 18/16/13		
Electrical (solenoid)			
Duty Cycle	100% ED		
Plug Connectors	2pole + PE / connector acc. to EN 175301-803		
Protection Class	IP54 at DIN 40050 (plugged and mounted)		
Supply Voltage **Volt** **Code**	**Power (W)**	**Current (A)**	
12 K	31	2.5	
24 J		1.25	
98 U		0.31	
198 G		0.15	
Response Time	Energized / de-energized 32/40 ms		
Switching Frequency	Max. 15,000 switchings/hour		

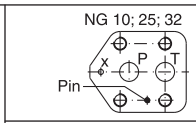
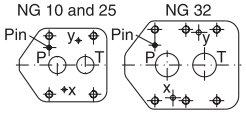
RS_R RS_M.indd, dd

R Pressure Relief Valve | Size | Interface | Pressure Range | Adjustment | Pilot Oil | **S** Poppet Spring | Seals | Design Series

NOTE: Not required when ordering.

Code	Description
07	70 Bar (1015 PSI)
17	175 Bar (2538 PSI)
25	250 Bar (3625 PSI)
35	350 Bar (5075 PSI)

Code	Description
N	Nitrile
V	Fluorocarbon

Code	Interface	
R[1)]	Subplate mounting ISO 6264	
M		

[1)] external drain with pipe only

Code	Pilot	Drain
1	Internal	External
4	Internal	Internal

Code	Size	Mounting
10	NG10	Subplate mounting
25	NG25	
32	NG32	

Code	Description
L	DIN lock
S	Hand knob

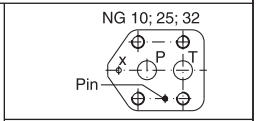
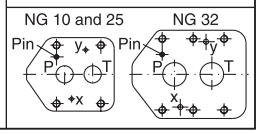
Weight:

R10R	4.5 kg	(9.9 lbs.)
R25R	5.8 kg	(12.8 lbs.)
R32R	7.8 kg	(17.2 lbs.)
R10M	2.7 kg	(6.0 lbs.)
R25M	4.5 kg	(9.9 lbs.)
R32M	6.0 kg	(13.2 lbs.)

RS | ☐ | ☐ | ☐ | ☐ | ☐ | S | ☐ | ☐ | ☐ | W | ☐

Pressure Relief Valve with Unloading | Size | Interface | Pressure Range | Adjustment | Pilot Oil | Poppet Spring | Seals | Switching Type | Solenoid | Without Plug | Options

Code	Description
07	70 Bar (1015 PSI)
17	175 Bar (2538 PSI)
25	250 Bar (3625 PSI)
35	350 Bar (5075 PSI)

Code	Interface	
R[1)]	Subplate mounting ISO 6264	
M	Subplate mounting ISO 6264	

[1)] external drain with pipe only

Code	Description
N	Nitrile
V	Fluorocarbon

Code	Description *
K	12V
J	24V
U	102V
G	105V

* Use plug with rectifier at AC

Code	Description
1 *	Solenoid not activated unpress. circulation
9 *	Solenoid activated unpress. circulation

* Detailed symbols see page 21

Code	Size	Mounting
10	NG10	Subplate mounting
25	NG25	
32	NG32	

Code	Pilot	Drain
1	Internal	External
4	Internal	Internal

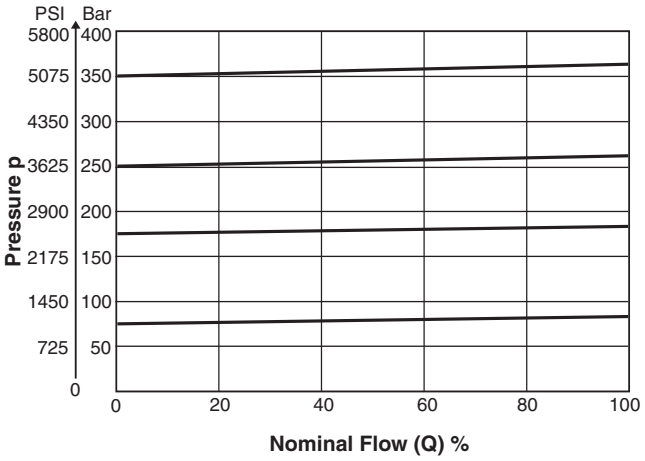
Code	Description
L	DIN lock
S	Hand knob

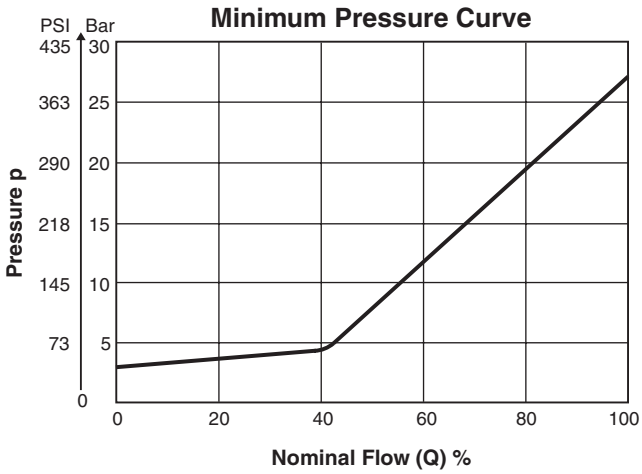
Code	Description
Omit	Standard
S	With slow unloading

Weight:

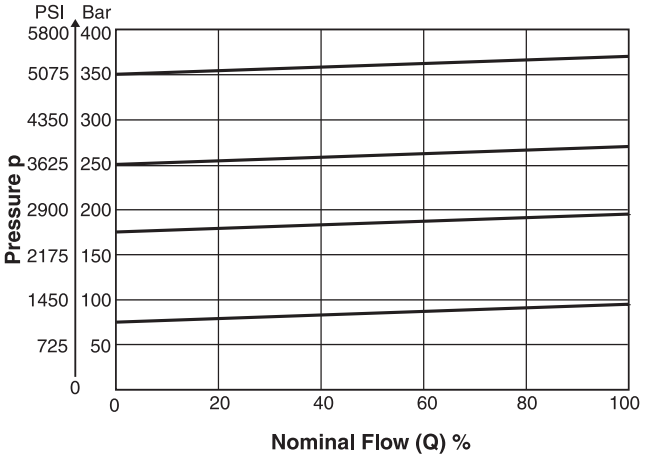
RS10R	5.9 kg	(13.0 lbs.)
RS25R	7.2 kg	(15.9 lbs.)
RS32R	9.2 kg	(20.3 lbs.)
RS10M	4.4 kg	(9.7 lbs.)
RS25M	6.2 kg	(13.7 lbs.)
RS32M	7.7 kg	(17.0 lbs.)

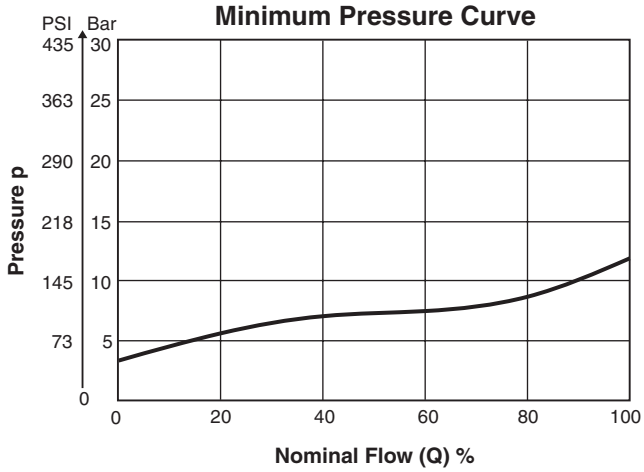
R*R and RS*R [1)]



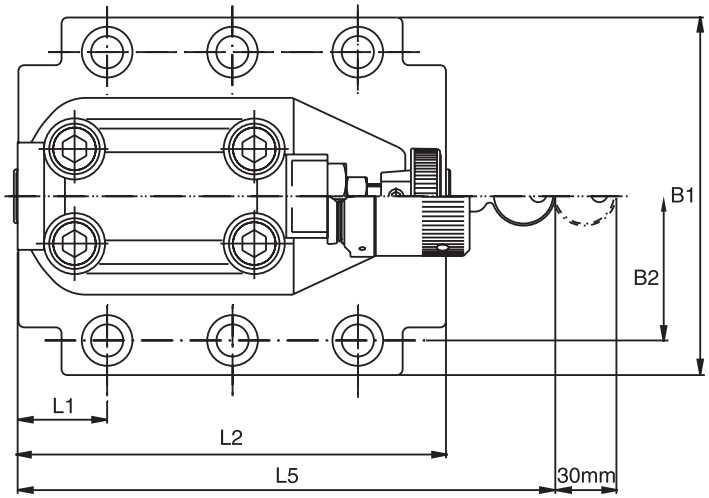


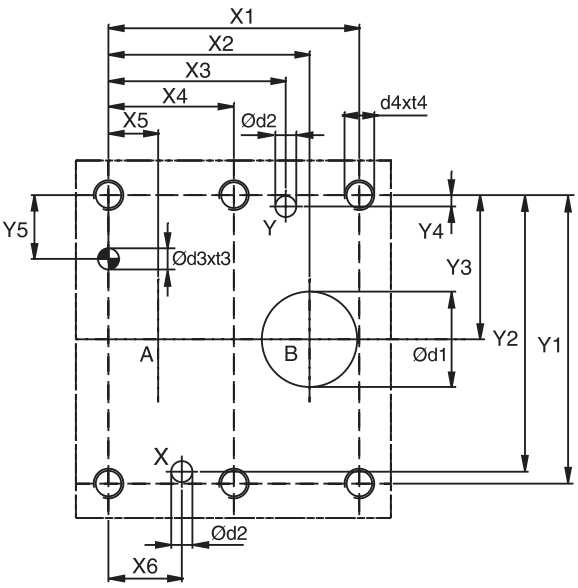
R*M and RS*M [1)]

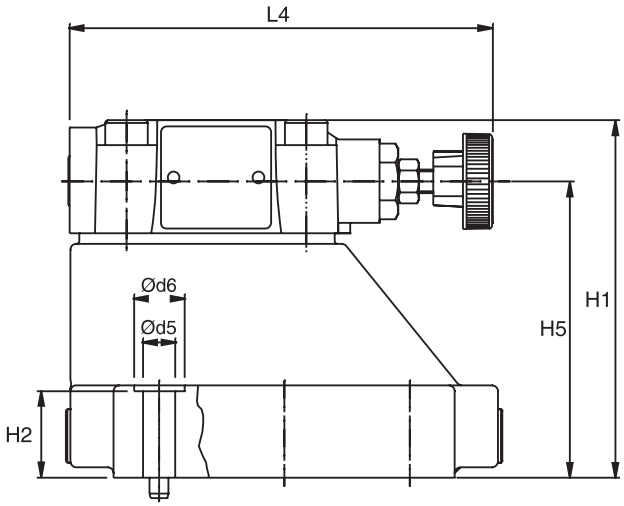




[1)] The performance curves are measured with external drain.
For internal drain the tank pressure has to be added to curve.


B1
B2
L1
L2
L5
30mm


X1
X2
X3
X4
X5
Ød2
d4xt4
Y5
Ød3xt3
Y
Y4
Y3
Y2
Y1
A
B
Ød1
X
Ød2
X6


L4
Ød6
Ød5
H1
H5
H2

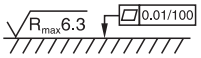
Inch equivalents for millimeter dimensions are shown in (**)

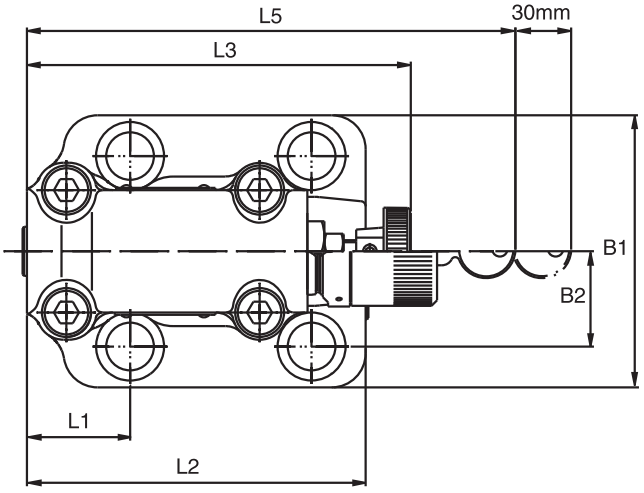
NG	ISO-code	x1	x2	x3	x4	x5	x6	x7	y1	y2	y3	y4	y5	y6
10	6264-06-09-*-97	42.9 (1.69)	35.8 (1.41)	21.5 (0.85)	– –	7.2 (0.28)	21.5 (0.85)	0.0 (0.00)	66.7 (2.63)	58.8 (2.31)	33.4 (1.31)	7.9 (0.31)	14.3 (0.56)	– –
25	6264-08-13-*-97	60.3 (2.37)	49.2 (1.94)	39.7 (1.56)	– –	11.1 (0.44)	20.6 (0.81)	0.0 (0.00)	79.4 (3.13)	73.0 (2.87)	39.7 (1.56)	6.4 (0.25)	15.9 (0.63)	– –
32	6264-10-17-*-97	84.2 (3.31)	67.5 (2.66)	59.5 (2.34)	42.1 (1.66)	16.7 (0.66)	24.6 (0.97)	0.0 (0.00)	96.8 (3.81)	92.8 (3.65)	48.4 (1.91)	3.8 (0.15)	21.4 (0.84)	– –

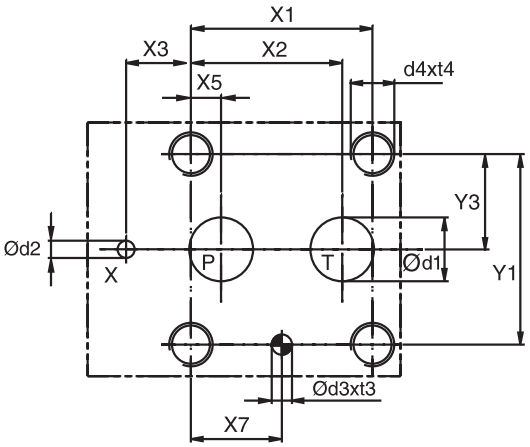
Tolerance at X and Y pin holes and screw holes ±0.1, at port holes ±0.2.

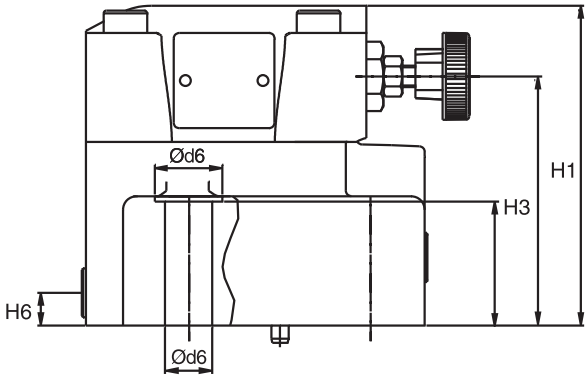
NG	ISO-code	B1	B2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6
10	6264-06-09-*-97	87.3 (3.44)	33.4 (1.31)	83.0 (3.27)	21.0 (0.83)	– –	– –	62.5 (2.46)	– –	29.0 (1.14)	94.8 (3.73)	– –	141.0 (5.55)	181.0 (7.13)	– –
25	6264-08-13-*-97	105.0 (4.13)	39.7 (1.56)	109.5 (4.31)	29.0 (1.14)	– –	– –	89.0 (3.50)	– –	34.7 (1.37)	126.8 (4.99)	– –	141.0 (5.55)	181.0 (7.13)	– –
32	6264-10-17-*-97	120.0 (4.72)	48.4 (1.91)	120.0 (4.72)	29.0 (1.14)	– –	– –	99.5 (3.92)	– –	30.6 (1.20)	144.3 (5.68)	– –	141.0 (5.55)	181.0 (7.13)	– –

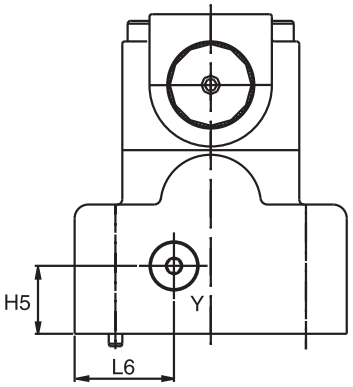
NG	ISO-code	d1max	d2max	d3	t3	d4	t4	d5	d6
10	6264-06-09-*-97	15.0 (0.59)	7.0 (0.28)	7.1 (0.28)	8.0 (0.31)	M10	16.0 (0.63)	10.8 (0.43)	17.0 (0.67)
25	6264-08-13-*-97	23.4 (0.92)	7.1 (0.28)	7.1 (0.28)	8.0 (0.31)	M10	18.0 (0.71)	10.8 (0.43)	17.0 (0.67)
32	6264-10-17-*-97	32.0 (1.26)	7.1 (0.28)	7.1 (0.28)	8.0 (0.31)	M10	20.0 (0.79)	10.8 (0.43)	17.0 (0.67)

NG	ISO-code	Bolt kit -  DIN912 12.9		NBR Kit FPM		Surface finish
10	6264-06-09-*-97	BK-M10 x 35-4pcs	63 Nm (46.5 lb.-ft.)	SK-R10MN50	SK-R10MV50	
25	6264-08-13-*-97	BK-M10 x 45-4pcs	63 Nm (46.5 lb.-ft.)	SK-R25MN50	SK-R25MV50	
32	6264-10-17-*-97	BK-M10 x 45-6pcs	63 Nm (46.5 lb.-ft.)	SK-R32MN50	SK-R32MV50	









Y: external drain port
G 1/8"

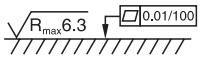
Inch equivalents for millimeter dimensions are shown in (**)

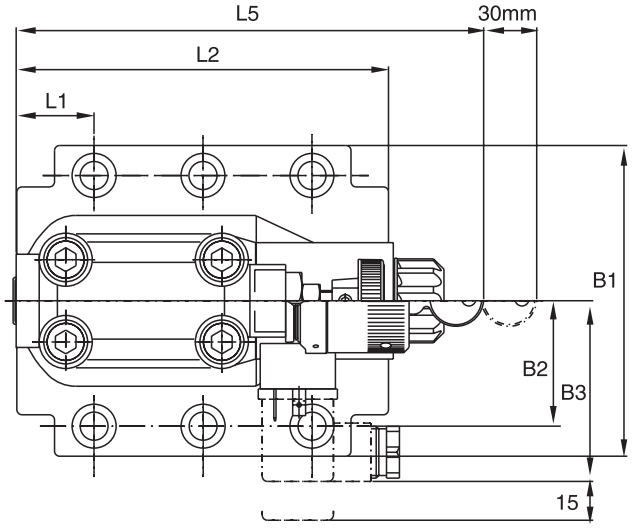
NG	ISO-code	x1	x2	x3	x4	x5	x6	x7	y1	y2	y3	y4	y5	y6
10	6264-06-09-*-97	53.8 (2.12)	47.5 (1.87)	0.0 (0.00)	– –	22.1 (0.87)	– –	22.1 (0.87)	53.8 (2.12)	– –	26.9 (1.06)	– –	– –	– –
25	6264-08-13-*-97	66.7 (2.63)	55.6 (2.19)	23.8 (0.94)	– –	11.1 (0.44)	– –	33.4 (1.31)	70.0 (2.76)	– –	35.0 (1.38)	– –	– –	– –
32	6264-10-17-*-97	88.9 (3.50)	76.2 (3.00)	31.8 (1.25)	– –	12.7 (0.50)	– –	44.5 (1.75)	82.6 (3.25)	– –	41.3 (1.63)	– –	– –	– –

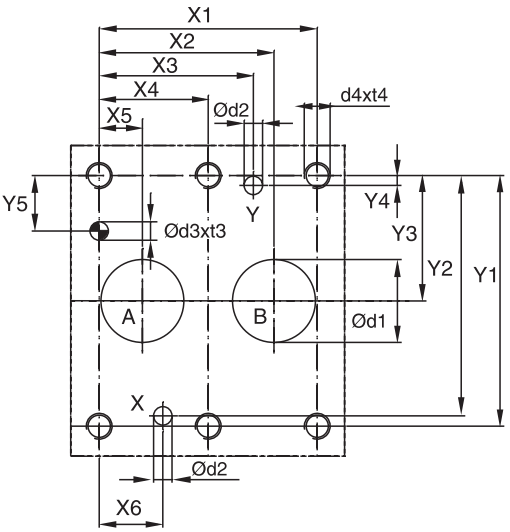
Tolerance at X and Y pin holes and screw holes ±0.1, at port holes ±0.2.

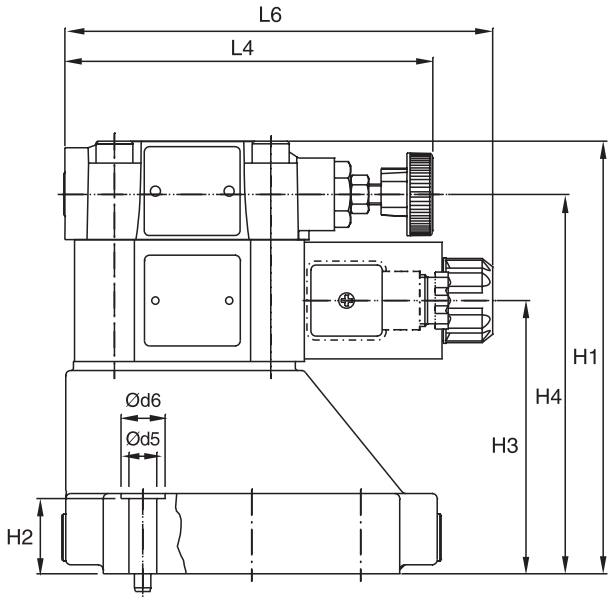
NG	ISO-code	B1	B2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6
10	6264-06-09-*-97	80.0 (3.15)	26.9 (1.06)	114.0 (4.49)	27.0 (1.06)	88.0 (3.46)		25.0 (0.98)	12.0 (0.47)	52.5 (2.07)	118.5 (4.67)	141.0 (5.55)		180.0 (7.09)	36.5 (1.44)
25	6264-08-13-*-97	100.0 (3.94)	35.0 (1.38)	117.5 (4.63)	45.5 (1.79)	91.5 (3.60)	– –	25.0 (0.98)	12.0 (0.47)	37.9 (1.49)	124.5 (4.90)	141.0 (5.55)	– –	180.0 (7.09)	36.5 (1.44)
32	6264-10-17-*-97	120.0 (4.72)	41.3 (1.63)	123.0 (4.83)	52.0 (2.05)	97.0 (3.82)		25.0 (0.98)	12.0 (0.47)	45.0 (1.77)	153.0 (6.02)	141.0 (5.55)		180.0 (7.09)	36.5 (1.44)

NG	ISO-code	d1max	d2max	d3	t3	d4	t4	d5	d6
10	6264-06-09-*-97	14.7 (0.58)	4.8 (0.19)	7.5 (0.30)	10.0 (0.39)	M12	20.0 (0.79)	13.5 (0.53)	20.0 (0.79)
25	6264-08-13-*-97	23.4 (0.92)	6.3 (0.25)	7.5 (0.30)	10.0 (0.39)	M16	27.0 (1.06)	17.5 (0.69)	25.0 (0.98)
32	6264-10-17-*-97	32.0 (1.26)	6.3 (0.25)	7.5 (0.30)	10.0 (0.39)	M18	28.0 (1.10)	20.0 (0.79)	30.0 (1.18)

NG	ISO-code	Bolt kit -  DIN912 12.9		NBR Kit	FPM	Surface finish
10	6264-06-09-*-97	BK-M12 x 45-4pcs	108 Nm ±15% (79.6 lb.-ft.)	SK-R10RN50	SK-R10RV50	
25	6264-08-13-*-97	BK-M16 x 70-4pcs	264 Nm ±15% (194.7 lb.-ft.)	SK-R25RN50	SK-R25RV50	
32	6264-10-17-*-97	BK-M18 x 75-4pcs	398 Nm ±15% (293.5 lb.-ft.)	SK-R32RN50	SK-R32RV50	


L5
30mm
L2
L1
B1
B2
B3
15


X1
X2
X3
X4
X5
Ød2
d4xt4
Y5
Ød3xt3
Y
Y4
Y3
Y2
Y1
A
B
Ød1
X
Ød2
X6


L6
L4
H1
H4
H3
Ød6
Ød5
H2

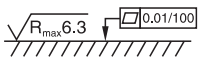
Inch equivalents for millimeter dimensions are shown in (**)

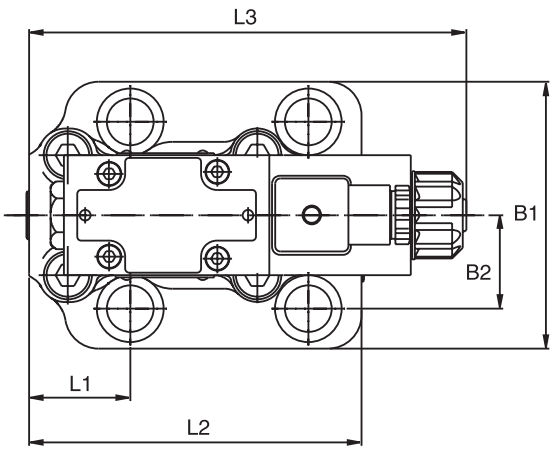
NG	ISO-code	x1	x2	x3	x4	x5	x6	x7	y1	y2	y3	y4	y5	y6
10	6264-06-09-*-97	42.9 (1.69)	35.8 (1.41)	21.5 (0.85)	– –	7.2 (0.28)	21.5 (0.85)	0.0 (0.00)	66.7 (2.63)	58.8 (2.31)	33.4 (1.31)	7.9 (0.31)	14.3 (0.56)	– –
25	6264-08-13-*-97	60.3 (2.37)	49.2 (1.94)	39.7 (1.56)	– –	11.1 (0.44)	20.6 (0.81)	0.0 (0.00)	79.4 (3.13)	73.0 (2.87)	39.7 (1.56)	6.4 (0.25)	15.9 (0.63)	– –
32	6264-10-17-*-97	84.2 (3.31)	67.5 (2.66)	59.5 (2.34)	42.1 (1.66)	16.7 (0.66)	24.6 (0.97)	0.0 (0.00)	96.8 (3.81)	92.8 (3.65)	48.4 (1.91)	3.8 (0.15)	21.4 (0.84)	– –

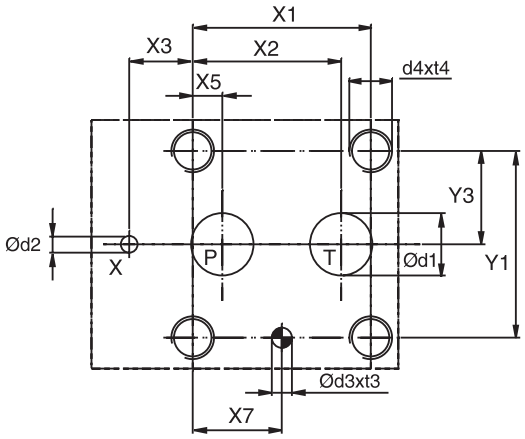
Tolerance at X and Y pin holes and screw holes ±0.1, at port holes ±0.2.

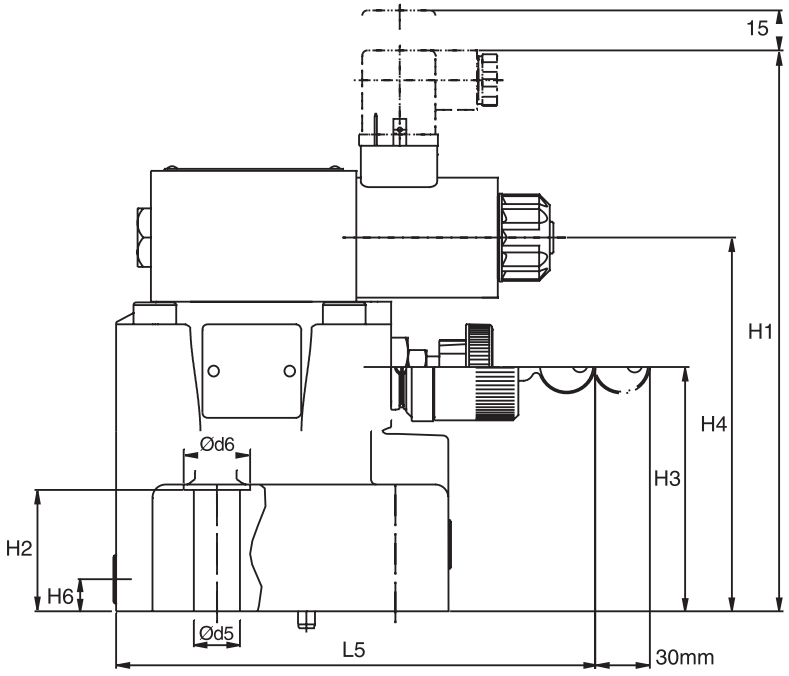
NG	ISO-code	B1	B2	B3	H1	H2	H3	H4	H6	L1	L2	L3	L4	L5	L6
10	6264-06-09-*-97	87.3 (3.44)	33.4 (1.31)	70.0 (2.76)	130.0 (5.12)	21.0 (0.83)	68.5 (2.70)	109.5 (4.31)	– –	29.0 (1.14)	94.8 (3.73)	– –	141.0 (5.55)	181.0 (7.13)	165.6 (6.52)
25	6264-08-13-*-97	105.0 (4.13)	39.7 (1.59)	70.0 (2.76)	156.5 (6.16)	29.0 (1.14)	95.0 (3.74)	136.0 (5.35)	– –	34.7 (1.37)	126.8 (4.99)	– –	141.0 (5.55)	181.0 (7.13)	165.6 (6.52)
32	6264-10-17-*-97	120.0 (4.72)	48.4 (1.91)	70.0 (2.76)	167.0 (6.57)	29.0 (1.14)	105.5 (4.15)	146.5 (5.77)	– –	30.6 (1.20)	144.3 (5.68)	– –	141.0 (5.55)	181.0 (7.13)	165.6 (6.52)

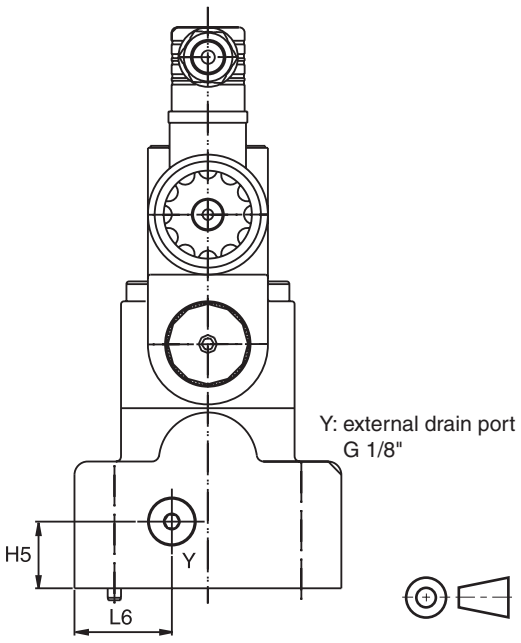
NG	ISO-code	d1max	d2max	d3	t3	d4	t4	d5	d6
10	6264-06-09-*-97	15.0 (0.59)	7.0 (0.28)	7.1 (0.28)	8.0 (0.31)	M10	16.0 (0.63)	10.8 (0.43)	17.0 (0.67)
25	6264-08-13-*-97	23.4 (0.92)	7.1 (0.28)	7.1 (0.28)	8.0 (0.31)	M10	18.0 (0.71)	10.8 (0.43)	17.0 (0.67)
32	6264-10-17-*-97	32.0 (1.26)	7.1 (0.28)	7.1 (0.28)	8.0 (0.31)	M10	20.0 (0.79)	10.8 (0.43)	17.0 (0.67)

NG	ISO-code	Bolt kit -  DIN912 12.9		NBR Kit	FPM	Surface finish
10	6264-06-09-*-97	BK-M10 x 35-4pcs	63 Nm (46.5 lb.-ft.)	SK-RS10MN50	SK-RS10MV50	
25	6264-08-13-*-97	BK-M10 x 45-4pcs	63 Nm (46.5 lb.-ft.)	SK-RS25MN50	SK-RS25MV50	
32	6264-10-17-*-97	BK-M10 x 45-6pcs	63 Nm (46.5 lb.-ft.)	SK-RS32MN50	SK-RS32MV50	


L3
B1
B2
L1
L2


X1
X3
X2
X5
d4xt4
Y3
Ød2
X
P
T
Ød1
Y1
Ød3xt3
X7


15
H1
H4
H3
Ød6
H2
H6
Ød5
L5
30mm


Y: external drain port
G 1/8"
H5
Y
L6

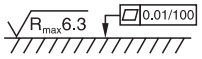
Inch equivalents for millimeter dimensions are shown in (**)

NG	ISO-code	x1	x2	x3	x4	x5	x6	x7	y1	y2	y3	y4	y5	y6
10	6264-06-09-*-97	53.8 (2.12)	47.5 (1.87)	0.0 (0.00)	– –	22.1 (0.87)	– –	22.1 (0.87)	53.8 (2.12)	– –	26.9 (1.06)	– –	– –	– –
25	6264-08-13-*-97	66.7 (2.63)	55.6 (2.19)	23.8 (0.91)	– –	11.1 (0.44)	– –	33.4 (1.31)	70.0 (2.76)	– –	35.0 (1.38)	– –	– –	– –
32	6264-10-17-*-97	88.9 (3.50)	76.2 (3.00)	31.8 (1.25)	– –	12.7 (0.50)	– –	44.5 (1.75)	82.6 (3.25)	– –	41.3 (1.63)	– –	– –	– –

Tolerance at X and Y pin holes and screw holes ±0.1, at port holes ±0.2.

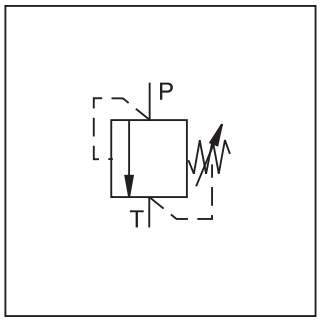
NG	ISO-code	B1	B2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6
10	6264-06-09-*-97	80.0 (3.15)	26.9 (1.06)	206.0 (8.11)	27.0 (1.06)	88.0 (3.46)	136.5 (5.37)	25.0 (0.98)	12.0 (0.47)	52.5 (2.07)	118.5 (4.67)	163.8 (6.45)		180.0 (7.09)	36.5 (1.44)
25	6264-08-13-*-97	100.0 (3.94)	35.0 (1.38)	210.0 (8.27)	45.5 (1.79)	91.5 (3.60)	140.0 (5.51)	25.0 (0.98)	12.0 (0.47)	37.9 (1.49)	124.5 (4.90)	163.8 (6.45)	–	180.0 (7.09)	36.5 (1.44)
32	6264-10-17-*-97	120.0 (4.72)	41.3 (1.63)	215.5 (8.48)	52.0 (2.05)	97.0 (3.82)	145.5 (5.73)	25.0 (0.98)	12.0 (0.47)	45.0 (1.77)	153 (6.02)	163.8 (6.45)		180.0 (7.09)	36.5 (1.44)

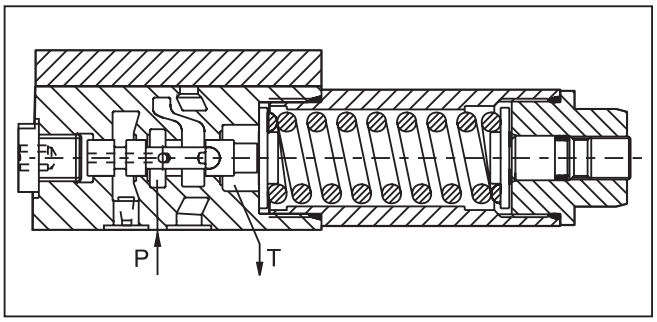
NG	ISO-code	d1max	d2max	d3	t3	d4	t4	d5	d6
10	6264-06-09-*-97	14.7 (0.58)	4.8 (0.19)	7.5 (0.30)	10.0 (0.39)	M12	20.0 (0.79)	13.5 (0.53)	20.0 (0.79)
25	6264-08-13-*-97	23.4 (0.92)	6.3 (0.25)	7.5 (0.30)	10.0 (0.39)	M16	27.0 (1.06)	17.5 (0.69)	25.0 (0.98)
32	6264-10-17-*-97	32.0 (1.26)	6.3 (0.25)	7.5 (0.30)	10.0 (0.39)	M18	28.0 (1.10)	20.0 (0.79)	30.0 (1.18)

NG	ISO-code	Bolt kit - DIN912 12.9		Kit NBR	Kit FPM	Surface finish
10	6264-06-09-*-97	BK-M12 x 45-4pcs	108 Nm ±15% (79.6 lb.-ft.)	SK-RS10RN50	SK-RS10RV50	
25	6264-08-13-*-97	BK-M16 x 70-4pcs	264 Nm ±15% (194.7 lb.-ft.)	SK-RS25RN50	SK-RS25RV50	
32	6264-10-17-*-97	BK-M18 x 75-4pcs	398 Nm ±15% (293.5 lb.-ft.)	SK-RS32RN50	SK-RS32RV50	

General Description

Series VS*06 pressure relief valve is a direct operated spool valve for subplate mounting with internal drain to port T. The connection and function is according to ISO 6264.





Specifiactions

Size	NG6
Mounting Interface	ISO 6264
Mounting Position	Unrestricted
Ambient Temperature Range	-20°C to +70°C (-4°F to +158°F)
Working Pressure	Port P: 350 Bar (5075 PSI) Port T: depressurized
Pressure Range	25 Bar (363 PSI) 64 Bar (928 PSI) 160 Bar (2320 PSI) 210 Bar (3045 PSI) 350 Bar (5075 PSI)
Nominal Flow	25 LPM (6.6 GPM)
Pressure Fluid	Hydraulic oil as per DIN 51524 ... 525
Fluid Temperature **Recommended** **Permitted**	 +30°C to +50°C (+86°F to +122°F) -20°C to +70°C (-4°F to +158°F)
Viscosity **Recommended** **Permitted**	 30 to 50 cSt (mm^2/s) 20 to 380 cSt (mm^2/s **)**
Filtration	ISO 4406 (1999), 18/16/13

Features

- Spool type valve.
- Manifold mounting.
- 5 pressure ranges.
- 2 adjustment modes.

Ordering Information

VS	☐	A	06	V	☐	☐
Pressure Relief Valve	Pressure Range	Adjustment Screw with Hexagon Socket	Valve Size	Seal	Gage Port	Lock

Code	Description
025	25 Bar (363 PSI)
064	64 Bar (928 PSI)
160	160 Bar (2320 PSI)
210	210 Bar (3045 PSI)
350	350 Bar (5075 PSI)

Code	Description
06	NG6

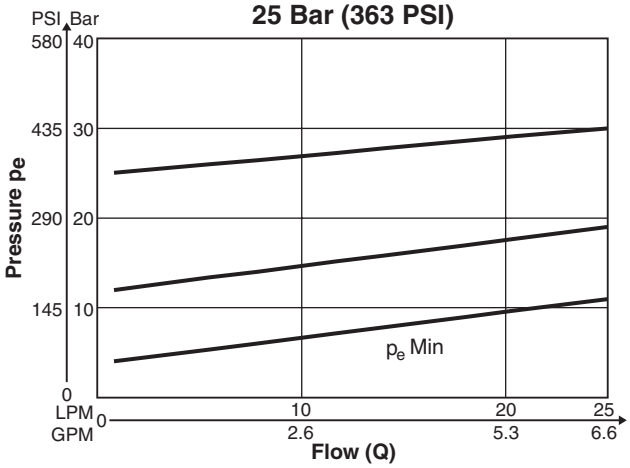
Code	Description
V	Fluorocarbon

Code	Description
G	G 1/4"
M	M 12x1.5
C	Coupling M16

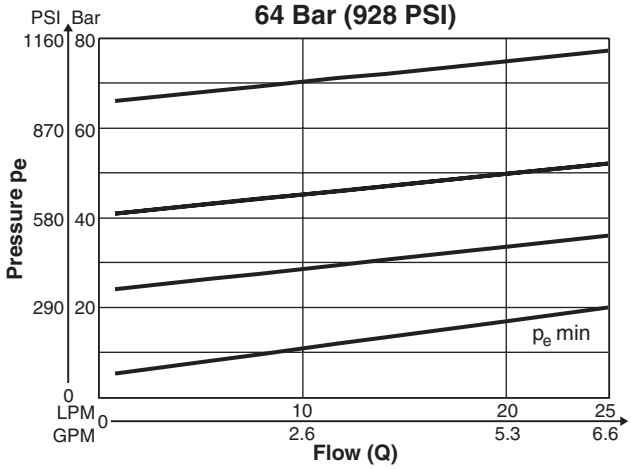
Code	Description
Omit	Normal
Z	Cylinder Lock

Weight:
1.3 kg (2.9 lbs.)

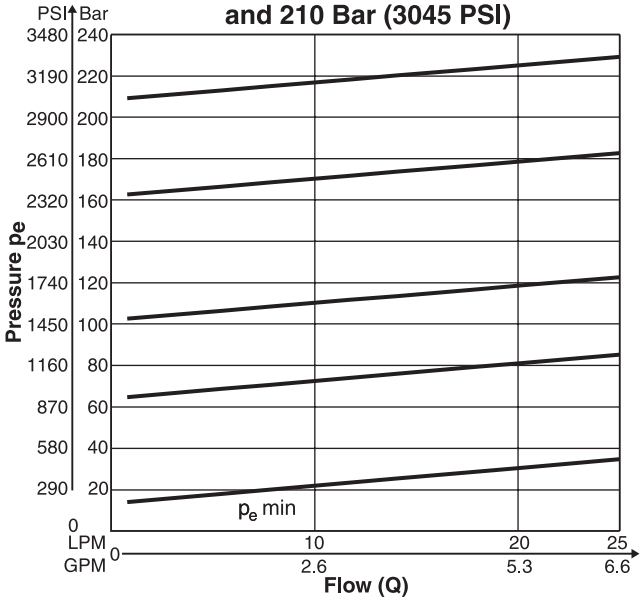
Maximum Setting Pressure
25 Bar (363 PSI)



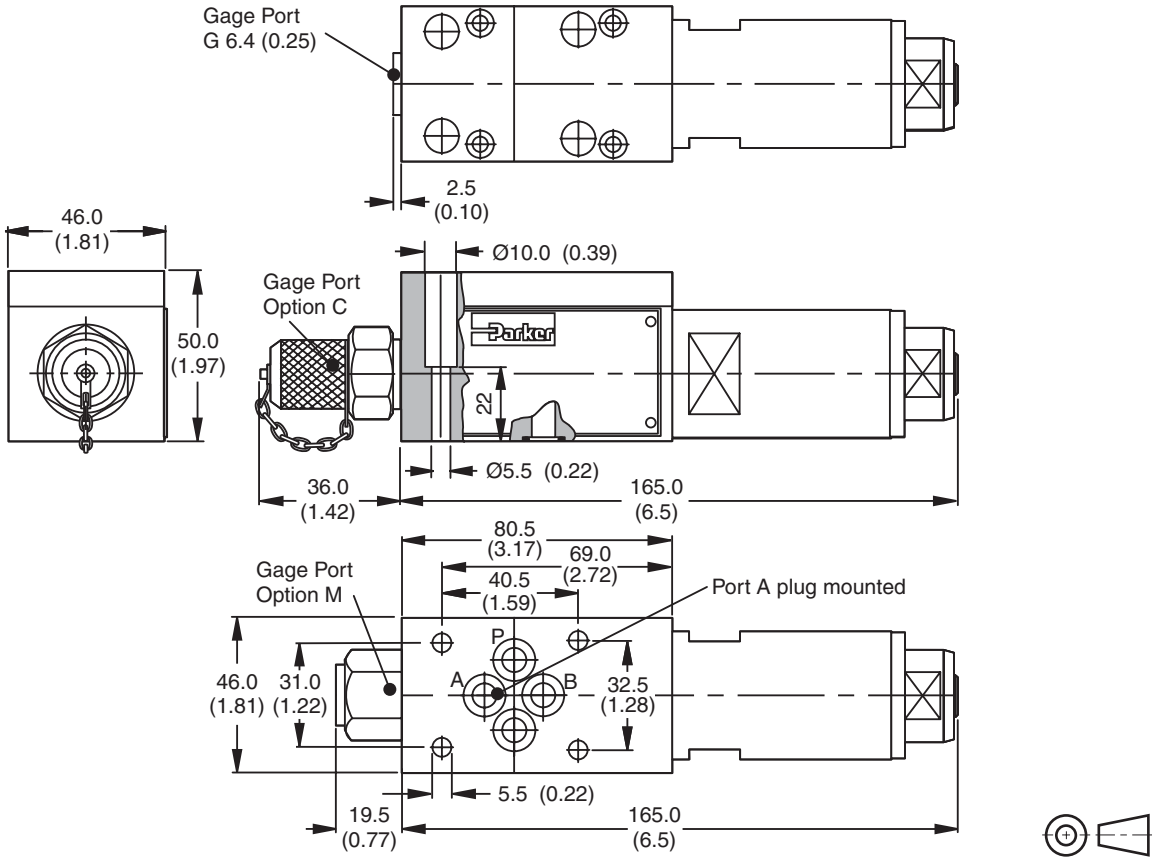
Maximum Setting Pressure
64 Bar (928 PSI)



Maximum Setting Pressures
160 Bar (2320 PSI)
and 210 Bar (3045 PSI)

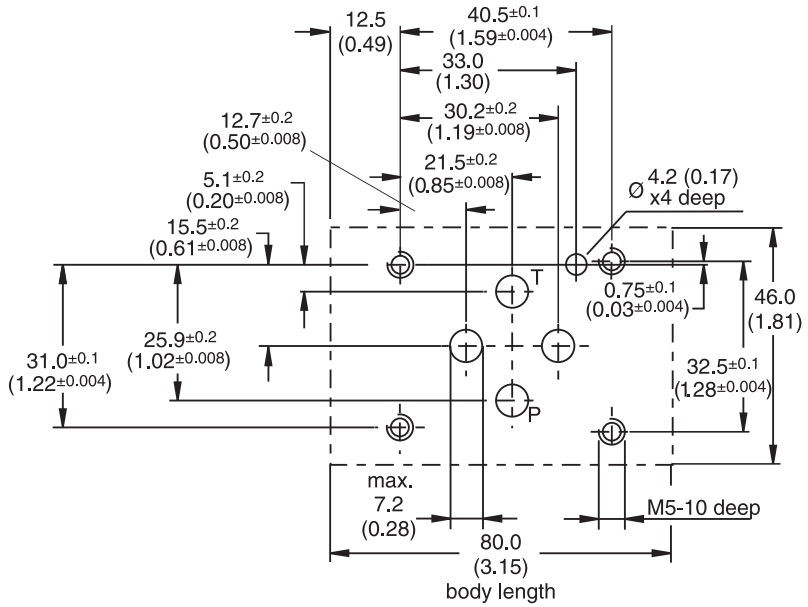


Inch equivalents for millimeter dimensions are shown in (**)



Surface finish	Bolt kit DIN912 12.9		Kit FPM
R_{max}6.3 0.01/100	SK-M5x30-4pcs	8.1Nm (6.0 lb.-ft.)	SK-VB/VM/VS-A06V

Mounting Pattern ISO 6264-03-04-*-97



VS.indd, dd

Notes

VS.indd, dd

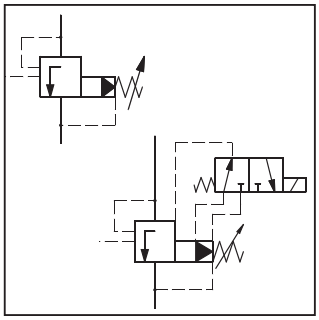
Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

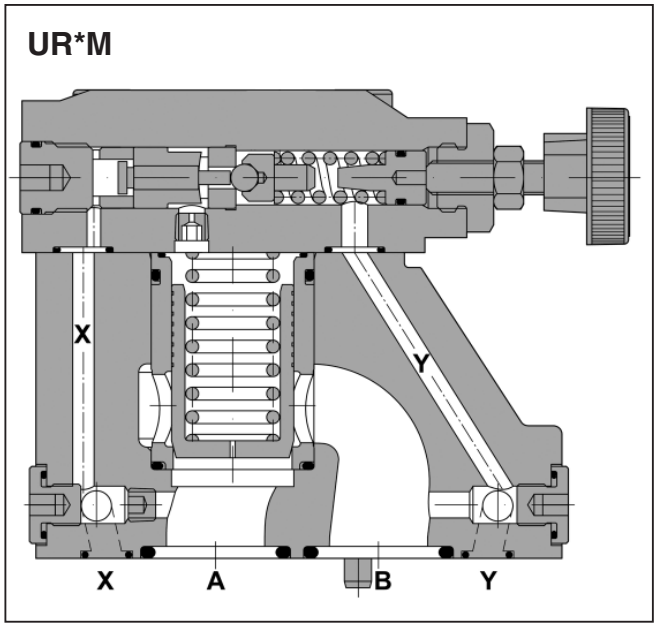
General Description

Series UR*M and US*M are used to unload a circuit at low pressure. The mechanically adjustable pressure signal to unload the main stage has to be applied to port X. The pressure differential between opening and closing is nominal 15 or 28% of the setting pressure: 15% for pressure ranges 70 Bar (1015 PSI) and 175 Bar (2538 PSI), 28% for 250 Bar (3625 PSI) and 350 Bar (5075 PSI).

Typical applications are to unload the pumps in an accumulator circuit and to unload the low pressure stage of a double pump.

In addition, the US*M series is vented by electrical operation.

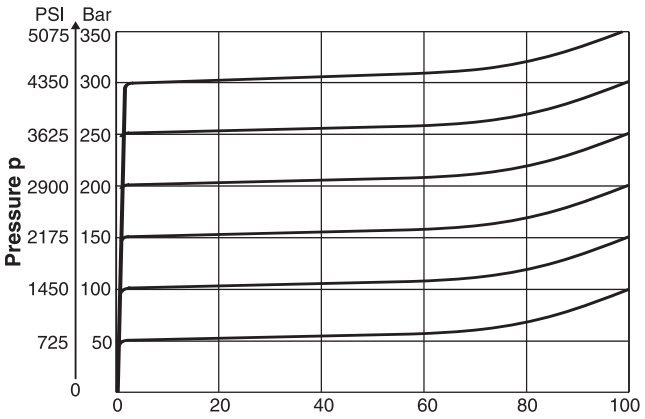


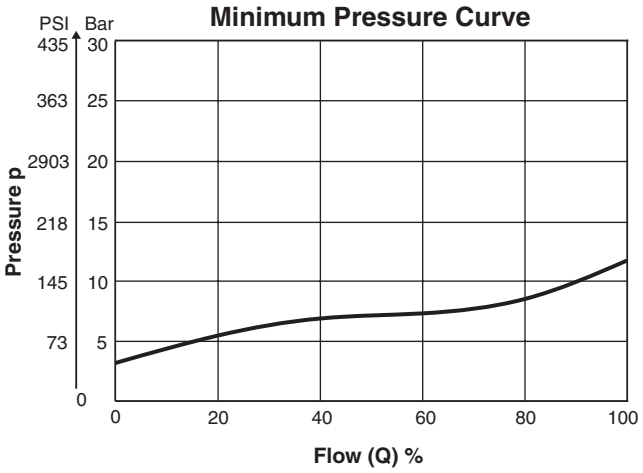


Features

- Pilot operated unloading valve.
- 2 interfaces
  - – Subplate interfaces to ISO 5781
  - – Slip-in mounting according to ISO 7368
- 4 pressure ranges.
- 2 switching types (series US*M).
- 3 adjustment modes
  - – Hand knob
  - – Screw with locknut
  - – DIN lock

Performance Curves





The performance curves are measured with external drain.
For internal drain the tank pressure has to be added to curve.

UR*M

General			
Size	**NG10**	**NG25**	**NG32**
Interface	Subplate mounting acc. ISO 5781		
Mounting Position	As desired, horizontal mounting preferred		
Ambient Temperature	-20°C to +80°C (-4°F to +176°F)		
Hydraulic			
Operating Pressure	Ports A and X up to 350 Bar (5075 PSI), connection B and Y depressurized		
Pressure Range	75, 175, 250, 350 Bar (1088, 2538, 3625, 5075 PSI)		
Pressure Differential	15% for pressure ranges 75 Bar (1088 PSI) and 175 Bar (2538 PSI) 28% for pressure ranges 250 Bar (3625 PSI and 350 Bar (5075 PSI)		
Nominal Flow	150 LPM (39.7 GPM)	350 LPM (92.6 GPM)	650 LPM (172.0 GPM)
Pressure Fluid	Hydraulic oil according to DIN 51524 ... 525		
Viscosity Recommended **Maximum**	30 to 50 cSt (mm²/s) 20 to 380 cSt (mm²/s)		
Pressure Fluid Temperature **Recommended** **Maximum**	 +30°C to +50°C (+86°F to +122°F) -20°C to +70°C (-4°F to +158°F)		
Filtration	ISO 4406 (1999), 18/16/13		

US*M with Vent Function

General			
Size	**NG10**	**NG25**	**NG32**
Interface	Subplate mounting acc. ISO 5781		
Mounting Position	As desired, horizontal mounting preferred		
Ambient Temperature	-20°C to +80°C (-4°F to +176°F)		
Hydraulic			
Operating Pressure	Ports A and X up to 350 Bar (5075 PSI), connection B and Y depressurized		
Pressure Range	75, 175, 250, 350 Bar (1088, 2538, 3625, 5075 PSI)		
Pressure Differential	15% for pressure ranges 75 Bar (1088 PSI) and 175 Bar (2538 PSI) 28% for pressure ranges 250 Bar (3625 PSI and 350 Bar (5075 PSI)		
Nominal Flow	150 LPM (39.7 GPM)	350 LPM (92.6 GPM)	650 LPM (172.0 GPM)
Pressure Fluid	Hydraulic oil according to DIN 51524 ... 525		
Viscosity Recommended **Maximum**	30 to 50 cSt (mm²/s) 20 to 380 cSt (mm²/s)		
Pressure Fluid Temperature **Recommended** **Maximum**	 +30°C to +50°C (+86°F to +122°F) -20°C to +70°C (-4°F to +158°F)		
Filtration	ISO 4406 (1999), 18/16/13		
Electrical (solenoid)			
Duty Cycle	100% ED		
Plug Connectors	2 pole + PE / connector acc. to EN 175301-803		
Protection Class	IP54 at DIN 40050 (plugged and mounted)		

Supply Voltage	**Volt**	**Code**	**Power (W)**	**Current (A)**
	12	**K**		2.5
	24	**J**	31	1.25
	98	**U**		0.31
	198	**G**		0.15

Response Time	Energized / de-energized 32/40 ms
Switching Frequency	Max. 15,000 switchings/hour

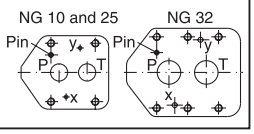
UR — Unloading Valve

□ Size

Code	Size	Mounting
10	NG10	Subplate
25	NG25	mounting
32	NG32	

M — Interface

Code	Interface
M	Subplate mounting ISO 5781



□ Pressure Range

Code	Description	
07	70 Bar	(1015 PSI)
17	175 Bar	(2538 PSI)
25	250 Bar	(3625 PSI)
35	350 Bar	(5075 PSI)

□ Adjustment

Code	Description
L	DIN lock
S	Hand knob

□ Pilot Oil

Code	Pilot	Drain
1	Internal	External
4	Internal	Internal

S — Poppet Spring

□ Seals

Code	Description
N	Nitrile
V	Fluorocarbon

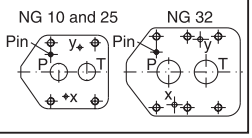
Weight:

UR10M	2.7 kg	(6.0 lbs.)
UR25M	4.5 kg	(9.9 lbs.)
UR32M	6.0 kg	(13.2 lbs.)

US		M					S				W	
Unloading Valve w/ Vent Function	Size	Interface	Pressure Range	Adjustment	Pilot Oil	Poppet Spring	Seals	Switching Type	Solenoid	Without Plug	Options

Code	Description	
07	70 Bar	(1015 PSI)
17	175 Bar	(2538 PSI)
25	250 Bar	(3625 PSI)
35	350 Bar	(5075 PSI)

Code	Interface
M	Subplate mounting ISO 5781



Code	Description
Omit	Standard
S	With slow unloading

Code	Description
N	Nitrile
V	Fluorocarbon

Code	Description [4]
K	12V
J	24V
U	102V
G	102V

[4] Use plug with rectifier at AC

Code	Description
1	Solenoid not activ. unpress. circulation
9	Solenoid activated unpress. circulation

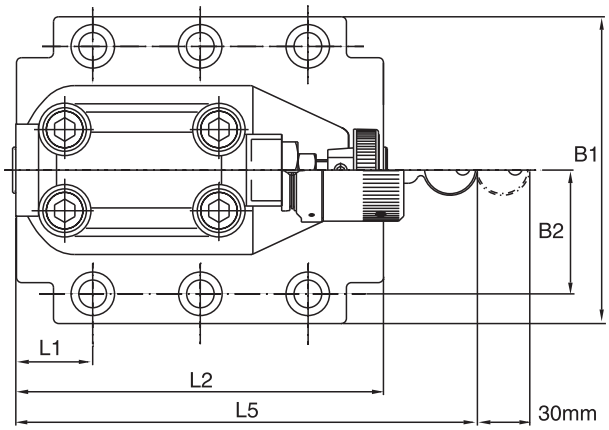
Code	Size	Mounting
10	NG10	Subplate mounting
25	NG25	
32	NG32	

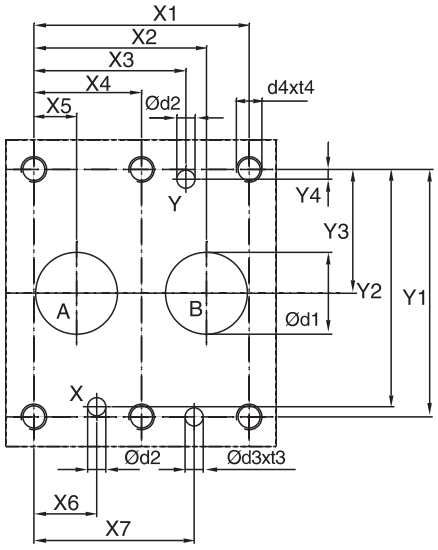
Code	Pilot	Drain
1	Internal	External
4	Internal	Internal

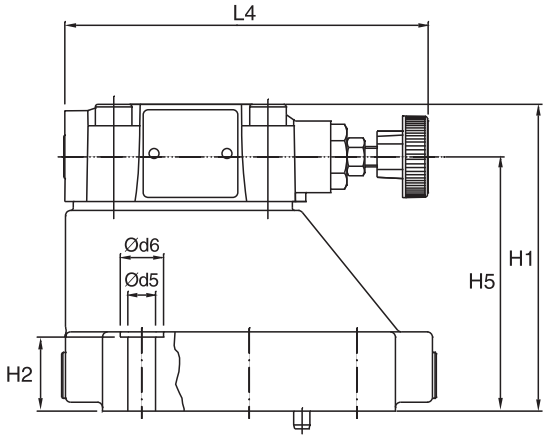
Code	Description
L	DIN lock
S	Hand knob

Weight:

US10M	4.4 kg	(9.7 lbs.)
US25M	6.2 kg	(13.7 lbs.)
US32M	7.7 kg	(17.0 lbs.)


B1
B2
L1
L2
L5
30mm


X1
X2
X3
X4
X5
Ød2
d4xt4
Y
Y4
Y3
Y2
Y1
A
B
Ød1
X
Ød2
Ød3xt3
X6
X7


L4
Ød6
Ød5
H1
H5
H2

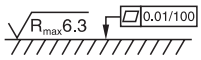
Inch equivalents for millimeter dimensions are shown in (**)

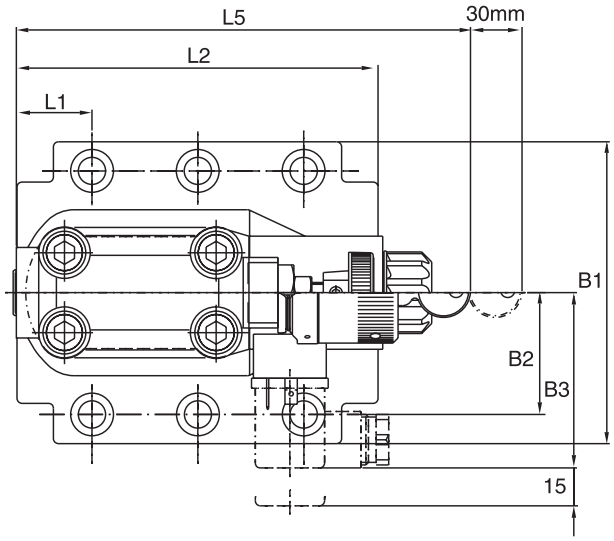
NG	ISO-code	x1	x2	x3	x4	x5	x6	x7	y1	y2	y3	y4	y5	y6
10	5781-06-07-0-00	42.9 (1.69)	35.8 (1.41)	21.5 0.85)	–	7.2 (0.28)	21.5 (0.85)	31.8 (1.25)	66.7 (2.63)	58.8 (2.31)	33.4 (1.31)	7.9 (0.31)	–	–
25	5781-08-10-0-00	60.3 (2.37)	49.2 (1.94)	39.7 (1.56)	–	11.1 (0.44)	20.6 (0.81)	44.5 (1.75)	79.4 (3.13)	73.0 (2.87)	39.7 (1.56)	6.4 (0.25)	–	–
32	5781-10-13-0-00	84.2 (3.31)	67.5 (2.66)	59.5 (2.34)	42.1 (1.66)	16.7 (0.66)	24.6 (0.97)	62.7 (2.47)	96.8 (3.81)	92.8 (3.65)	48.4 (1.91)	3.8 (0.15)	–	–

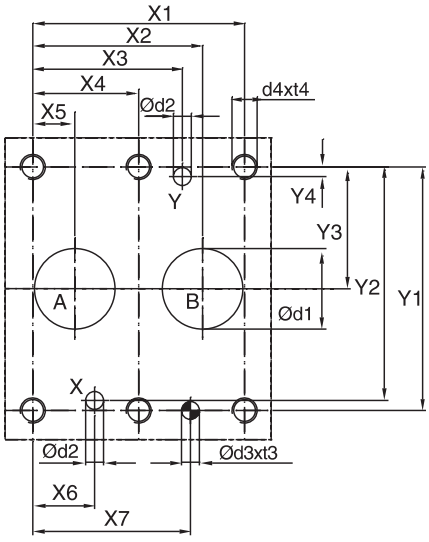
Tolerance at X and Y pin holes and screw holes ±0.1, at port holes ±0.2.

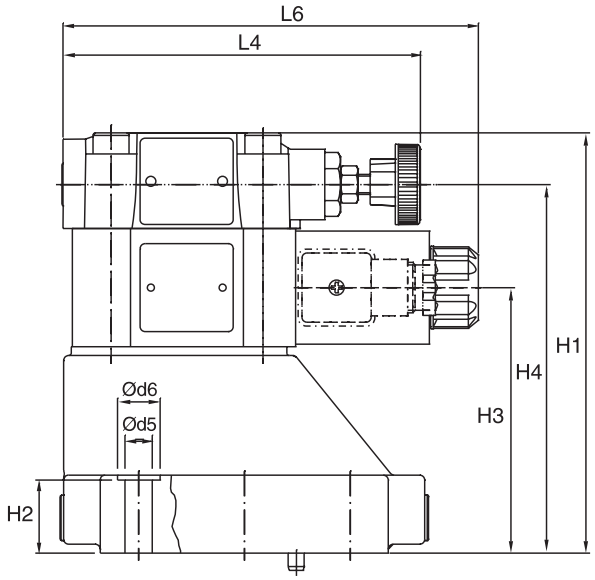
NG	ISO-code	B1	B2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6
10	5781-06-07-0-00	87.3 (3.44)	33.4 (1.31)	83.0 (3.27)	21.0 (0.83)	62.5 (2.46)	–	–	–	29.0 (1.14)	94.8 (3.73)	–	141.0 (5.55)	181.0 (7.13)	–
25	5781-08-10-0-00	105.0 (4.13)	39.7 (1.56)	109.5 (4.31)	29.0 (1.14)	89.0 (3.50)	–	–	–	34.7 (1.37)	126.8 (4.99)	–	141.0 (5.55)	181.0 (7.13)	–
32	5781-10-13-0-00	120.0 (4.72)	48.4 (1.91)	120.0 (4.72)	29.0 (1.14)	99.5 (3.92)	–	–	–	30.6 (1.20)	144.3 (5.68)	–	141.0 (5.55)	181.0 (7.13)	–

NG	ISO-code	d1max	d2max	d3	t3	d4	t4	d5	d6
10	5781-06-07-0-00	15.0 (0.59)	7.0 (0.28)	7.1 (0.28)	8.0 (0.31)	M10	16.0 (0.63)	10.8 (0.43)	17.0 (0.67)
25	5781-08-10-0-00	23.4 (0.92)	7.1 (0.28)	7.1 (0.28)	8.0 (0.31)	M10	18.0 (0.71)	10.8 (0.43)	17.0 (0.67)
32	5781-10-13-0-00	32.0 (1.26)	7.1 (0.28)	7.1 (0.28)	8.0 (0.31)	M10	20.0 (0.79)	10.8 (0.43)	17.0 (0.67)

NG	ISO-code	Bolt kit  DIN912 12.9		NBR Kit FPM		Surface finish
10	5781-06-07-0-00	BK-M10 x 35-4pcs	63 Nm (46.5 lb.-ft.)	SK-UR10MN50	SK-UR10MV50	
25	5781-08-10-0-00	BK-M10 x 45-4pcs	63 Nm (46.5 lb.-ft.)	SK-UR25MN50	SK-UR25MV50	
32	5781-10-13-0-00	BK-M10 x 45-6pcs	63 Nm (46.5 lb.-ft.)	SK-UR32MN50	SK-UR32MV50	


L5
30mm
L2
L1
B1
B2
B3
15


X1
X2
X3
X4
X5
Ød2
d4xt4
Y
Y4
Y3
Y2
Y1
A
B
Ød1
X
Ød2
Ød3xt3
X6
X7


L6
L4
H1
H4
H3
Ød6
Ød5
H2

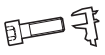
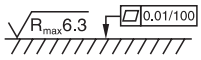
Inch equivalents for millimeter dimensions are shown in (**)

NG	ISO-code	x1	x2	x3	x4	x5	x6	x7	y1	y2	y3	y4	y5	y6
10	5781-06-07-0-00	42.9 1.69)	35.8 (1.41)	21.5 (0.85)	–	7.2 (0.28)	21.5 (0.85)	31.8 (1.25)	66.7 (2.63)	58.8 (2.31)	33.4 (1.31)	7.9 (0.31)	–	–
25	5781-08-10-0-00	60.3 2.37)	49.2 (1.94)	39.7 (1.56)	–	11.1 (0.44)	20.6 (0.81)	44.5 (1.75)	79.4 (3.13)	73.0 (2.87)	39.7 (1.56)	6.4 (0.25)	–	–
32	5781-10-13-0-00	84.2 (3.31)	67.5 (2.66)	59.5 (2.34)	42.1 (1.66)	16.7 (0.66)	24.6 (0.97)	62.7 (2.47)	96.8 (3.81)	92.8 (3.65)	48.4 (1.91)	3.8 (0.15)	–	–

Tolerance at X and Y pin holes and screw holes ±0.1, at port holes ±0.2.

NG	ISO-code	B1	B2	B3	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6
10	5781-06-07-0-00	87.3 (3.44)	33.4 (1.31)	70.0 (2.76)	130.0 (5.12)	21.0 (0.83)	68.5 (2.70)	109.5 (4.13)	–	–	29.0 (1.14)	94.8 (3.73)	–	141.0 (5.55)	181.0 (7.13)	165.6 (6.52)
25	5781-08-10-0-00	105.0 (4.13)	39.7 (1.56)	70.0 (2.76)	156.5 (6.16)	29.0 (1.14)	95.0 (3.74)	136.0 (5.35)	–	–	34.7 (1.37)	126.8 (4.99)	–	141.0 (5.55)	181.0 (7.13)	165.6 (6.52)
32	5781-10-13-0-00	120.0 (4.72)	48.4 (1.91)	70.0 (2.76)	167.0 (6.57)	29.0 (1.14)	105.5 (4.15)	146.5 (5.77)	–	–	30.6 (1.20)	144.3 (5.68)	–	141.0 (5.55)	181.0 (7.13)	165.6 (6.52)

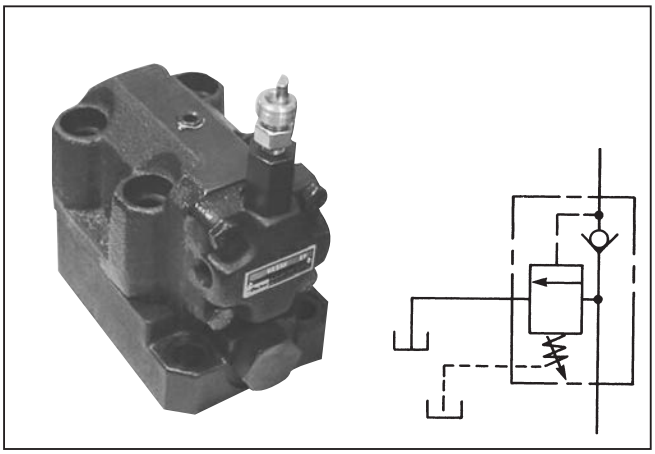
NG	ISO-code	d1max	d2max	d3	t3	d4	t4	d5	d6
10	5781-06-07-0-00	15.0 0.59)	7.0 (0.28)	7.1 (0.28)	8.0 (0.31)	M10	16.0 (0.63)	10.8 (0.43)	17.0 (0.67)
25	5781-08-10-0-00	23.4 (0.92)	7.1 (0.28)	7.1 (0.28)	8.0 (0.31)	M10	18.0 (0.71)	10.8 (0.43)	17.0 (0.67)
32	5781-10-13-0-00	32.0 (1.26)	7.1 (0.28)	7.1 (0.28)	8.0 (0.31)	M10	20.0 (0.79)	10.8 (0.43)	17.0 (0.67)

NG	ISO-code	Bolt kit  DIN912 12.9		Kit NBR	Kit FPM	Surface finish
10	5781-06-07-0-00	BK-M10 x 35-4pcs	63 Nm (46.5 lb.-ft.)	SK-RS10RN50	SK-RS10RV50	
25	5781-08-10-0-00	BK-M10 x 45-4pcs	63 Nm (46.5 lb.-ft.)	SK-RS25RN50	SK-RS25RV50	
32	5781-10-13-0-00	BK-M10 x 45-6pcs	63 Nm (46.5 lb.-ft.)	SK-RS32RN50	SK-RS32RV50	

General Description

Series UR6M unloading relief valves act to limit maximum system pressure and to unload the pump at maximum pressure allowing the accumulator to maintain system pressure until pressure drops to 85 percent of maximum.

Under minimum pressure setting conditions (see Specifications), Series UR unloading relief valves function as indicated (see Performance Curves, below).

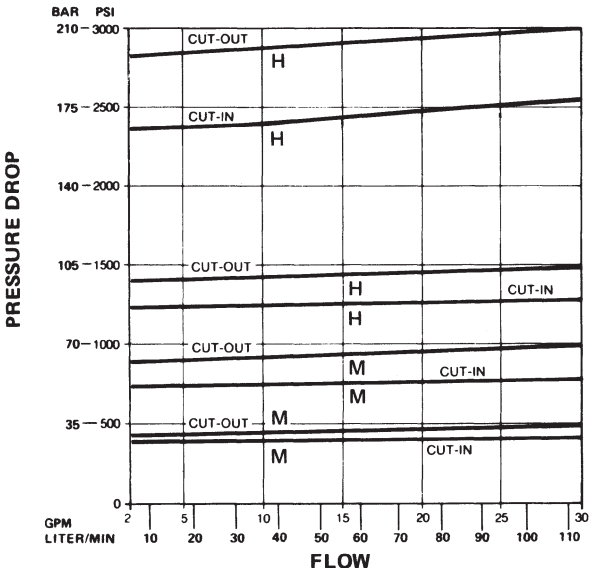


Specifications

Pressure Adjustment Range*	Code H: 55 - 205 Bar (1300 - 3000 PSI) Load/Unload PSI - 85% Code M: 10.2 - 34 Bar (150 - 500 PSI) Load/Unload PSI - 70%
Maximum Operating Pressure	205 Bar (3000 PSI)
Cracking Pressure	0.2 Bar (3 PSI) Accumulator Check Valve
Minimum Pressure Setting	113.6 LPM (30 GPM) minimum 32 cSt (150 SSU) oil and fluid temperature of 38°C (100°F) Note: Change in flow, temperature or fluid [cSt. (SSU)] rating will affect valve minimum pressure.
Flow Rate	7.6 LPM (2 GPM) Minimum
Drain Conditions	0.7 Bar (10 PSI) Maximum Pressure 1 LPM (0.3 GPM) Typical Flow
Drain Line	Must be run directly back to tank terminating below the oil level.

* See Ordering Information

Performance Curves



Cut-in / Cut-out Curves

Flow Data

Valve Model	Maximum Flow GPM (L/M)	Mounting Style	Port Size
UR6M	30 GPM (114 L/M)	Subplate	3/4 NPTF*

*Refers to subplate port size.

Ordering Information

UR — Unloading Relief Valve

6M — Nominal Size

Code	Description
6M	3/4" Subplate

☐ — Cut-out Pressure Range

Code	Description
H	89.7 to 207 Bar (1300 to 3000 PSI)
M	27.6 to 100.1 Bar (400 to 1500 PSI)

☐ — Seals

Code	Description
Omit	Nitrile
V	Fluorocarbon

☐ — Design Series

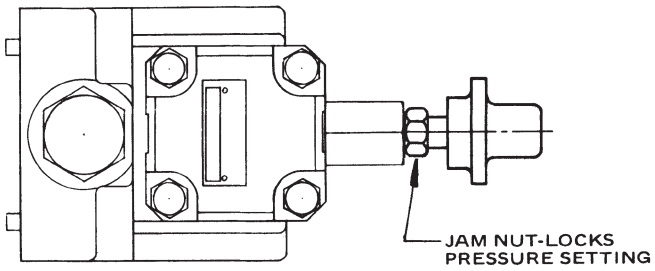
This section covers Design Series 10 thru 19.

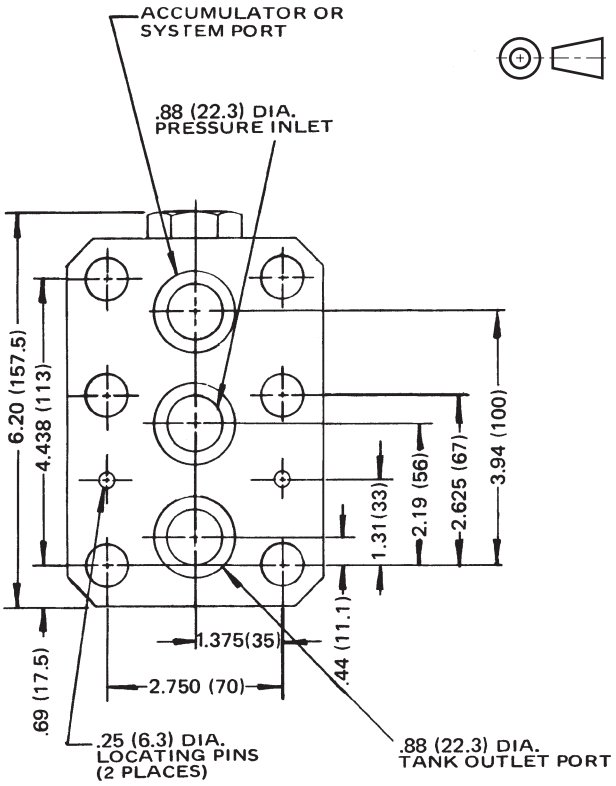
Note: Not required when ordering.

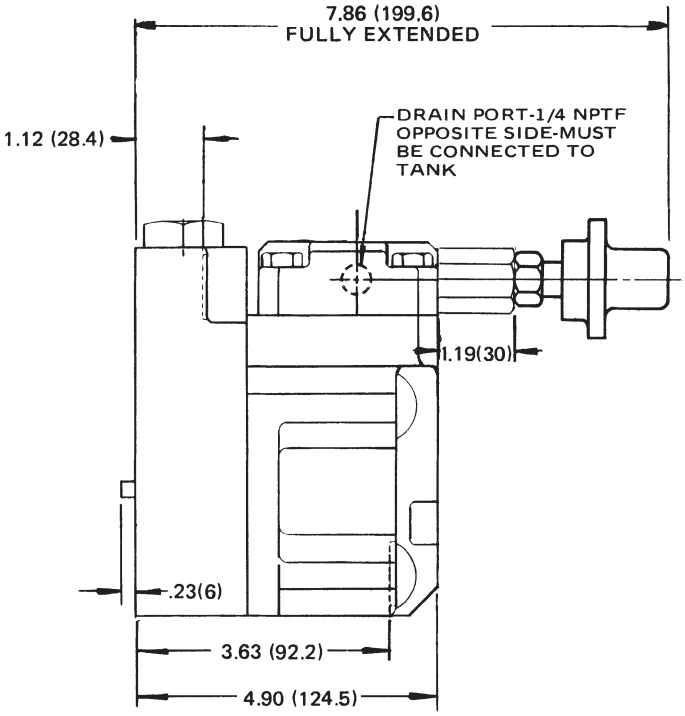
Weight:
UR6M 11.3 kg (25 lbs.)

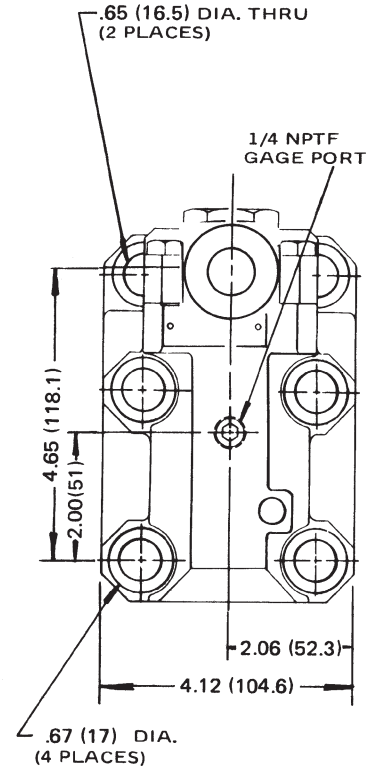
Millimeter equivalents for inch dimensions are shown in (**)

Manifold mounted Unloading Valve









General Description

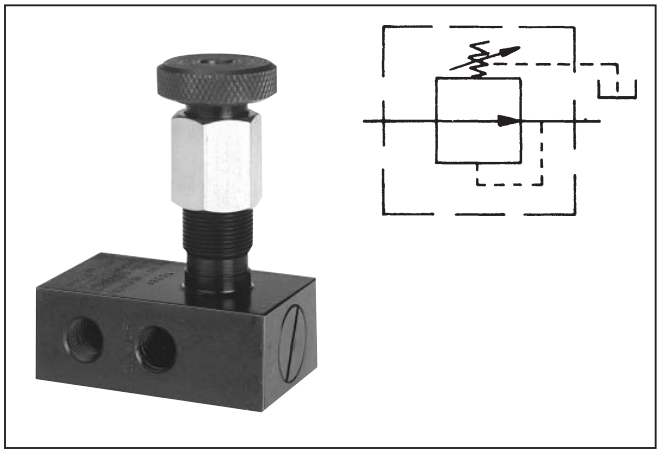
Series PR*S pressure reducing valves maintain an independently controlled constant outlet pressure on one leg of the hydraulic system, regardless of pressure at the valve inlet or on the main relief valve. Inlet pressure on a Series PR valve must be higher than the pressure setting on the valve.

Made from alloy steel bar stock, Series PR valves are compact and require minium space. They can be installed in any position. They are used on installations that do not require service of equal reliability.

The one-hand adjusting knob is self-locking at desired pressure. Pull the knob and turn to adjust; release knob to lock positively.

Drain lines of Series PR valves should be connected directly to tank below fluid level. Pressure in any drain line is in addition to the valve pressure chosen.

For certain unusual installations, the drain line can be pressurized or restricted to improve valve pressure reducing performance. For example, if full pressure is applied to the drain, the Series PR valve will open, preventing pressure reduction. Pressurizing or retricting the drain will avoid this. However, be careful in using Series PR valves in other than normal applications; consult your Parker representative or the Factory.



Specifications

Pressure Adjustment Ranges	3.5 - 70 Bar (50 - 1000 PSI) 10.5 - 140 Bar (500 - 2000 PSI) 10.5 - 210 Bar (150 - 3000 PSI)
Maximum Operating Pressure	210 Bar (3000 PSI)
Pressure Setting	3.5 Bar (50 PSI) minimum, at rated flow Note: Changes in flow, viscosity or temperature will affect valve minimum pressure.

Flow Data

Valve Model	Port Size	Flow (Max)
PR400S	1/4 NPTF	6 GPM (25 L/M)
PR600S	3/8 NPTF	10 GPM (40 L/M)
PR800S	1/2 NPTF	15 GPM (60 L/M)

Ordering Information

Example: “PR400SVF” means Series PR relief valve, 1/4” size, steel, 150-2000 PSI pressure range, optional Fluorocarbon seal.

PR — Pressure Reducing Valve

Size

Code	Description
400	1/4" NPTF (In-line)
600	3/8" NPTF (in-line)
800	1/2" NPTF (In-line)

S — Material

Code	Description
S	Steel

Pressure Range

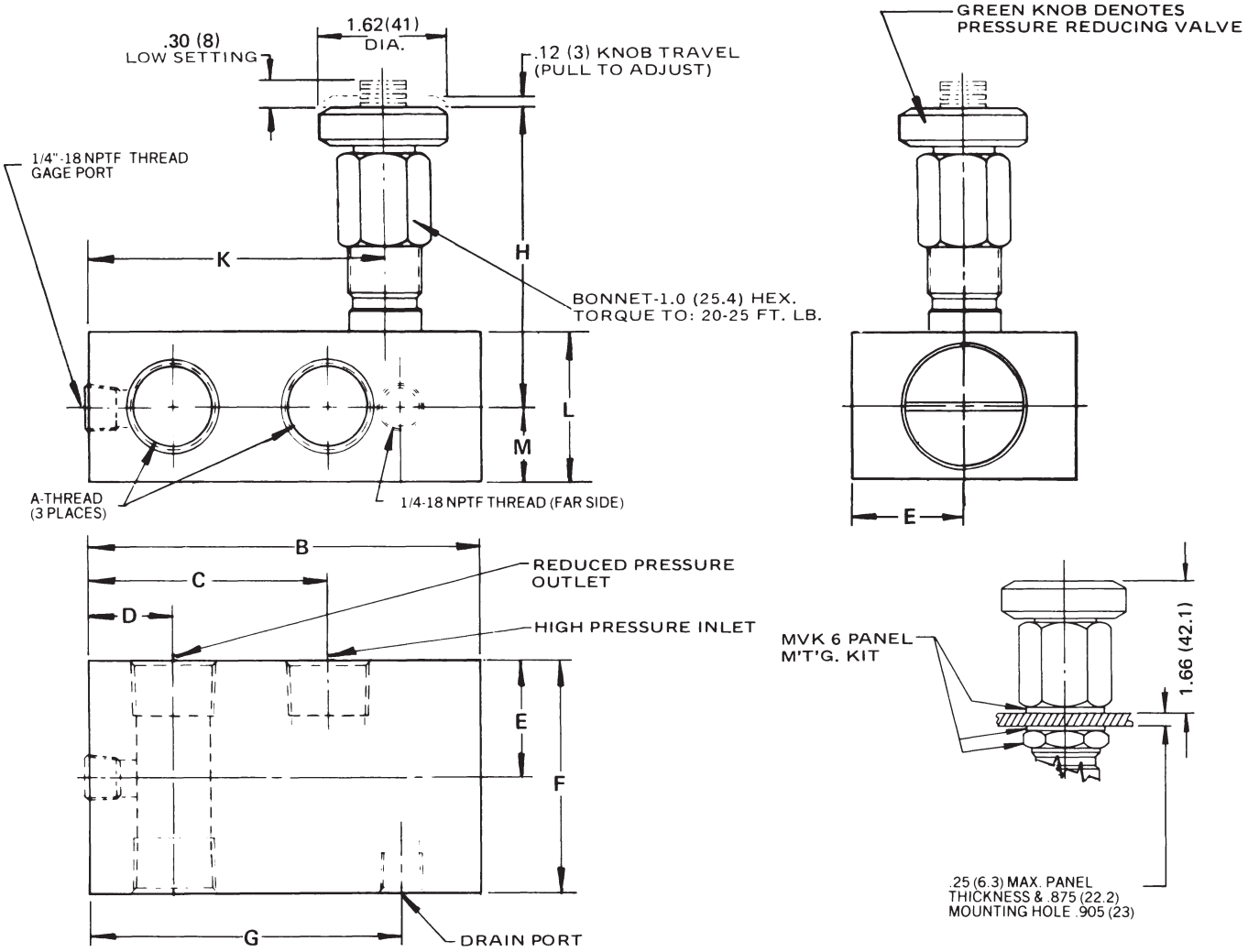
Code	Description
M	50-1000 PSI
F	150-2000 PSI
H	150-3000 PSI

Seals

Code	Description
Omit	Nitrile
V	Fluorocarbon

Millimeter equivalents for inch dimensions are shown in (**)

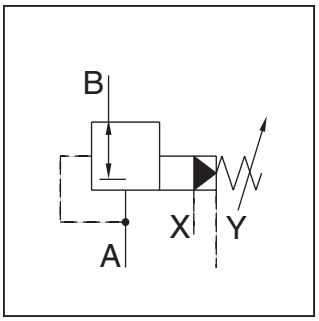
In-line mounted, pilot operated
Pressure Reducing Valves

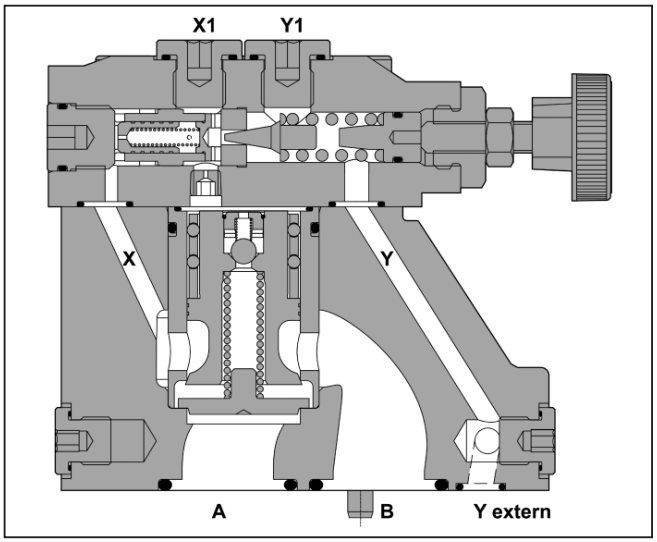


Valve Model	A-Thread	B	C	D	E	F	G	H	K	L	M	Weight Lb. (Kg.)
PR400S	1/4-18 NPTF	3.00 (76.2)	1.60 (41)	.67 (17)	.88 (22.3)	1.75 (44.4)	2.25 (57.1)	3.16 (80.2)	2.04 (52)	1.12 (28.4)	.56 (14.2)	1.9 (0.9)
PR600S	3/8-18 NPTF	3.53 (90)	2.00 (51)	.75 (19)	1.00 (25.4)	2.00 (51)	2.77 (70.3)	3.22 (82)	2.62 (66.5)	1.25 (32)	.62 (16)	2.6 (1.2)
PR800S	1/2-14 NPTF	4.10 (104.1)	2.40 (61)	.91 (23.1)	1.12 (28.4)	2.25 (57.1)	3.17 (81)	3.34 (85)	3.03 (77)	1.50 (38.1)	.75 (19)	3.7 (1.7)

General Description

Series PR pressure reducing valves are used to control the pressure in the secondary part of the hydraulic system. Independent of the primary pressure the secondary pressure is reduced to the pressure setting. In order to avoid undesired motion the valves are normally closed.





Specifications

Size	NG10, NG25, NG32
Interface	Subplate mounting acc. ISO 5781
Mounting Pos.	As desired, horizontal mounting preferred
Ambient Temp.	-20°C to +80°C (-4°F to +176°F)
Max. Oper. Pressure	Ports A, B and X 350 Bar (5075 PSI), connection Y depressurized
Pressure Range	105, 175, 250, 350 Bar (1523, 2538, 3625, 5075 PSI)
Nominal Flow	**Size 10:** 150 LPM (39.7 GPM) **Size 25:** 350 LPM (92.6 GPM) **Size 32:** 650 LPM (172.0 GPM)
Pressure Fluid	Hydraulic oil according to DIN 51524... 525
Pressure Fluid Temperature	**Recommended:** +30C to +50°C (86°F to +122°F) **Maximum:** -20°C to +70°C (-4°F to +158°F)
Viscosity	**Recommended:** 30 to 50 mm²/s **Maximum:** 20 to 380 mm²/s
Filtration	ISO 4406 (1999), 18/16/13

Features

- Subplate mounting acc. to ISO 5781.
- Normally closed.
- Four pressure ranges.
- Two adjustment modes: hand knob and DIN lock.

Ordering Information

PR	☐	M	☐	☐	1	P	☐	9
Pressure Reducing Valve	Nominal Size	Interface	Pressure Ranges	Adjustment	Pilot Oil: External Drain	Poppet Spring	Seals	Normally Closed

Code	Description
10	NG10
25	NG25
32	NG32

Mounting: Subplate mounting

Code	Description
10	105 Bar (1523 PSI)
17	175 Bar (2538 PSI)
25	250 Bar (3625 PSI)
35	350 Bar (5075 PSI)

Code	Description
L	DIN Lock
S	Hand knob

Code	Description
N	Nitrile
V	Fluorocarbon

Code	Interface	
M	Subplate Mounting ISO 5781	NG 10 and 25: Y, A, B, X, Pin NG 32: Y, A, B, X, Pin

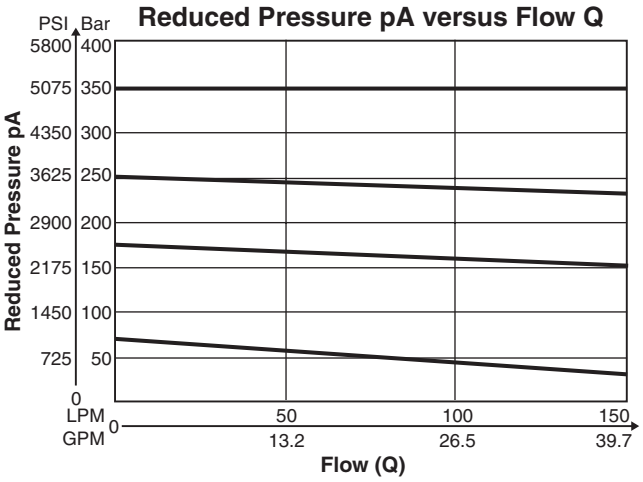
Weight:

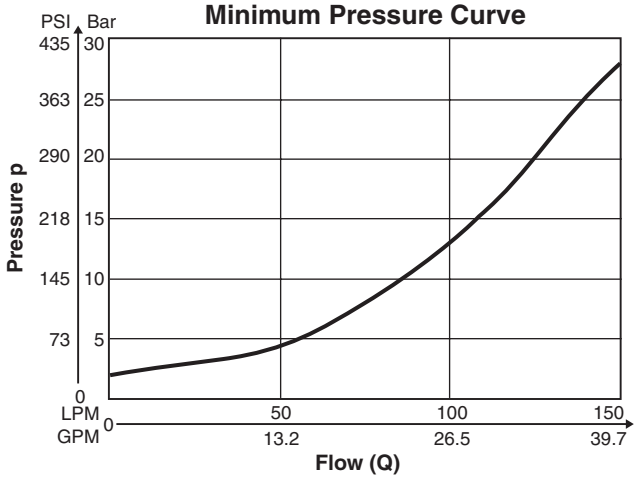
NG10:	4.8 kg	(10.6 lbs.)
NG25:	7.2 kg	(15.9 lbs.)
NG32:	13.5 kg	(29.8 lbs.)

PR_M.indd, dd

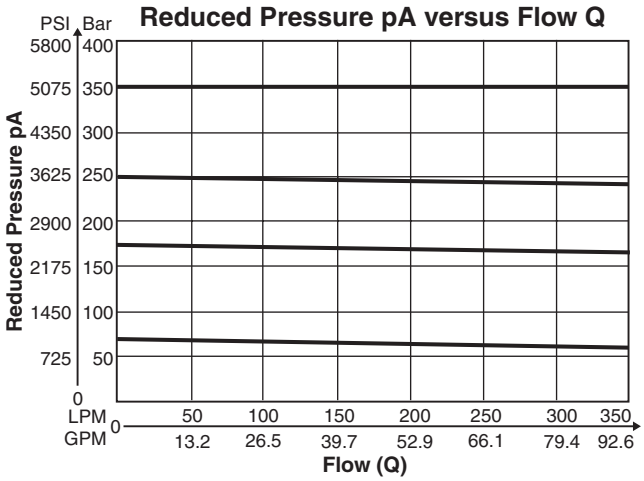
Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

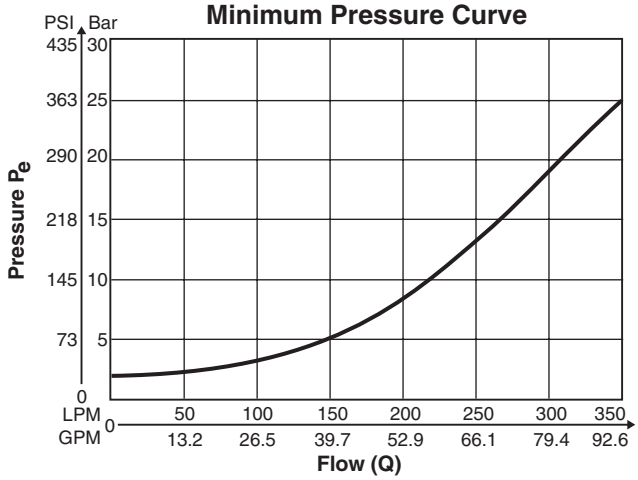
PR10M*W [1)]



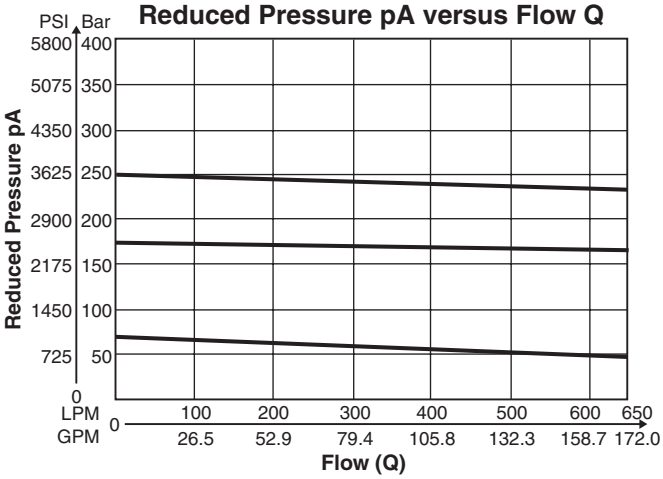


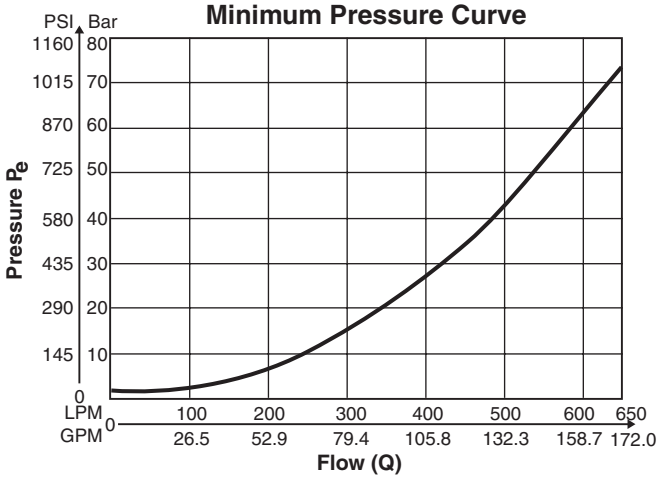
PR25M*W [1)]





PR32M*W [1)]

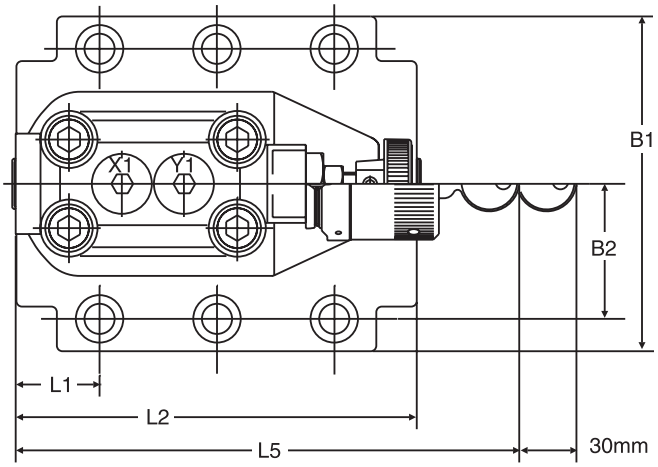


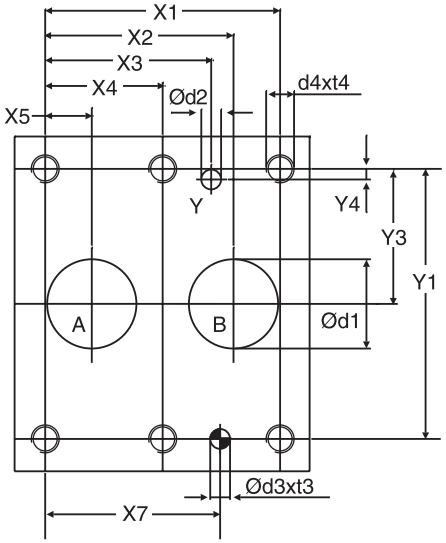


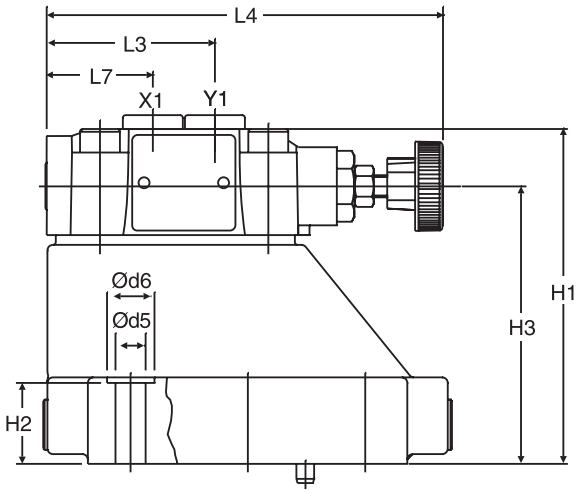
[1)] Measured at 350 Bar (5075 PSI) primary pressure pB.

PR_M.indd, dd

Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA


B1
B2
X1
Y1
L1
L2
L5
30mm


X1
X2
X3
X4
X5
Ød2
d4xt4
Y
Y4
Y3
Y1
A
B
Ød1
Ød3xt3
X7


L4
L3
L7
X1
Y1
Ød6
Ød5
H1
H3
H2

X1: G 1/4"
Y1: G 1/4"

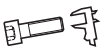
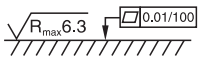
Inch equivalents for millimeter dimensions are shown in (**)

NG	ISO-code	x1	x2	x3	x4	x5	x6	x7	y1	y2	y3	y4	y5	y6
10	5781-06-07-0-00	42.9 (1.69)	35.8 (1.41)	21.5 (0.85)	– –	7.2 (0.28)	– –	31.8 (1.25)	66.7 (2.63)	– –	33.4 (1.31)	7.9 (0.31)	– –	– –
25	5781-08-10-0-00	60.3 (2.37)	49.2 (1.94)	39.7 (1.56)	– –	11.1 (0.44)	– –	44.5 (1.75)	79.4 (3.13)	– –	39.7 (1.56)	6.4 (0.25)	– –	– –
32	5781-10-13-0-00	84.2 (3.31)	67.5 (2.66)	59.5 (2.34)	42.1 (1.66)	16.7 (0.66)	– –	62.7 (2.47)	96.8 (3.81)	– –	48.4 (1.92)	3.8 (0.15)	– –	– –

Tolerance for all dimensions ±0.2

NG	ISO-code	B1	B2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L7
10	5781-06-07-0-00	87.3 (3.44)	33.4 (1.31)	83.0 (3.27)	21.0 (0.83)	62.5 (2.46)	– –	– –	– –	29.0 (1.14)	94.8 (3.73)	60.8 (2.39)	141.0 (5.55)	181.0 (7.13)	38.6 (1.52)
25	5781-08-10-0-00	105.0 (4.13)	39.7 (1.56)	109.5 (4.31)	29.0 (1.14)	89.0 (3.50)	– –	– –	– –	34.7 (1.37)	126.8 (4.99)	60.8 (2.39)	141.0 (5.55)	181.0 (7.13)	38.6 (1.52)
32	5781-10-13-0-00	120.0 (4.72)	48.4 (1.91)	120.0 (4.72)	29.0 (1.14)	99.5 (3.92)	– –	– –	– –	30.6 (1.20)	144.3 (5.68)	60.8 (2.39)	141.0 (5.55)	181.0 (7.13)	38.6 (1.52)

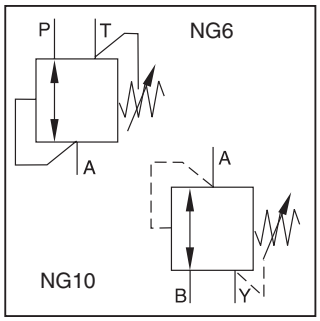
NG	ISO-code	d1max	d2max	d3	t3	d4	t4	d5	d6
10	5781-06-07-0-00	15.0 (0.59)	7.0 (0.28)	7.1 (0.28)	8.0 (0.31)	M10	16.0 (0.63)	10.8 (0.43)	17.0 (0.67)
25	5781-08-10-0-00	23.4 (0.92)	7.1 (0.28)	7.1 (0.28)	8.0 (0.31)	M10	18.0 (0.71)	10.8 (0.43)	17.0 (0.67)
32	5781-10-13-0-00	32.0 (1.26)	7.1 (0.28)	7.1 (0.28)	8.0 (0.31)	M10	20.0 (0.79)	10.8 (0.43)	17.0 (0.67)

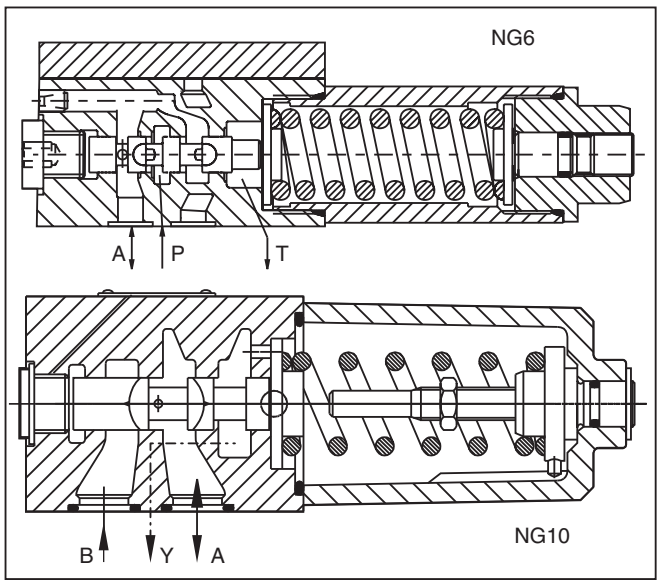
NG	ISO-code	Bolt kit  DIN912 12.9		Kit NBR	Kit FPM	Surface Finish
10	5781-06-07-0-00	BK-M10 x 35-4pcs	63 Nm (46.5 lb.-ft.)	SK-PR10MN50	SK-PR10MV50	
25	5781-08-10-0-00	BK-M10 x 45-4pcs	63 Nm (46.5 lb.-ft.)	SK-PR25MN50	SK-PR25MV50	
32	5781-10-13-0-00	BK-M10 x 45-6pcs	63 Nm (46.5 lb.-ft.)	SK-PR32MN50	SK-PR32MV50	

General Description

Series VM direct operated, pressure reducing valve with manual adjustment. Series VM is a direct-controlled, spring loaded 3-way pressure reducing valve, that is open in neutral position. The valve closes the connection from P to A (NG6) or B to A (NG10) when the pre-set pressure is exceeded.

If the pressure increases due to an external influence in connection A, the spool moves and opens the connection from A to T (NG6) or A to Y (NG10) until the pre-set pressure is reached.



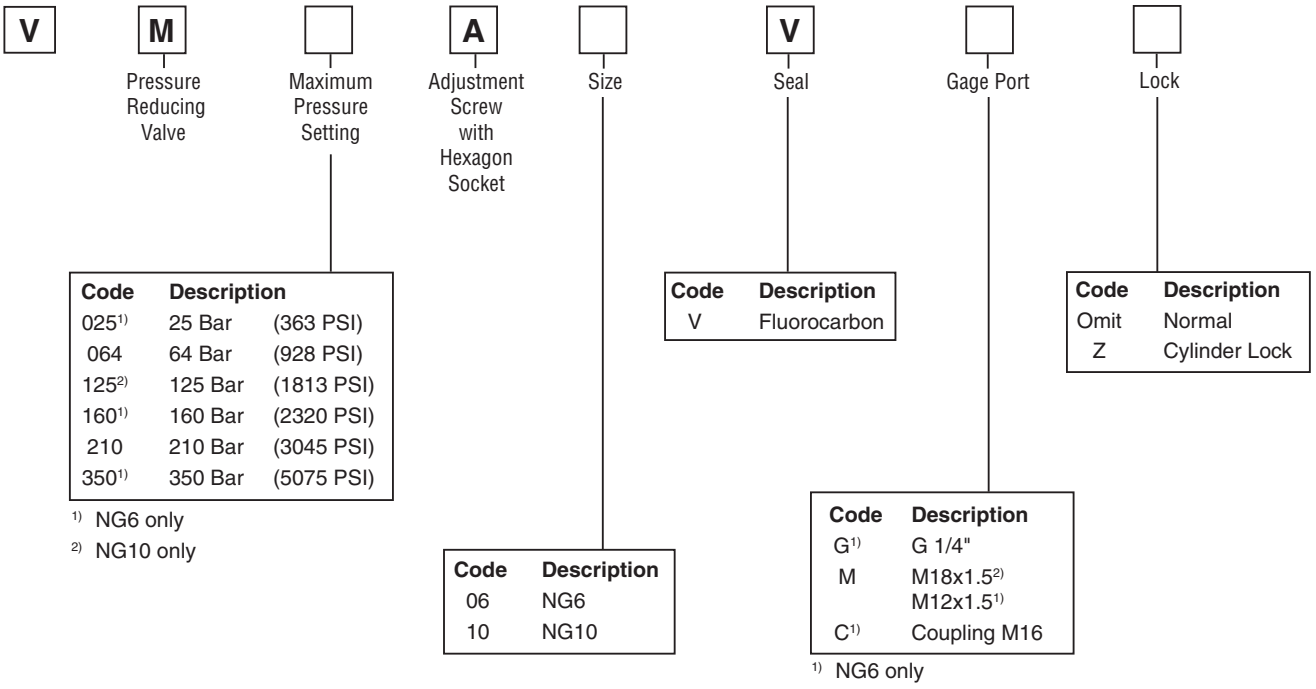


Features

- Spool type valve.
- Manifold mounting acc. to ISO 5871.
- 4 pressure ranges at NG6.
- 3 pressure ranges at NG10.
- 2 adjustment modes.

Specifications

General		
Size	**NG6**	**NG10**
Interface	Subplate mounting acc. ISO 5781	
Mounting Position	Unrestricted	
Ambient Temperature	-20°C to +70° (-4°F to +158°F)	
Hydraulic		
Working Pressure	Ports P and A 210 Bar (3045 PSI) Port T depressurized	Ports A and B 210 Bar (3045 PSI) Port Y depressurized
Pressure Range	25, 64, 160, 210, 350 Bar (363, 928, 2320, 3045, 5075 PSI)	64, 125, 210 Bar (928, 1813, 3045 PSI)
Nominal Flow	25 LPM (6.6 GPM)	60 LPM (15.9 GPM)
Pressure Fluid	Hydraulic oil according to DIN 51524 ... 525	
Viscosity Recommended **Permitted**	30 to 50 cSt (mm²/s) 20 to 380 cSt (mm²/s)	
Pressure Fluid Temperature **Recommended** **Permitted**	 +30°C to +50°C (+86°F to +122°F) -20°C to +70° (-4°F to +158°F)	
Filtration	ISO 4406 (1999), 18/16/13	



Code	Description	
025[1]	25 Bar	(363 PSI)
064	64 Bar	(928 PSI)
125[2]	125 Bar	(1813 PSI)
160[1]	160 Bar	(2320 PSI)
210	210 Bar	(3045 PSI)
350[1]	350 Bar	(5075 PSI)

[1] NG6 only
[2] NG10 only

Code	Description
06	NG6
10	NG10

Code	Description
V	Fluorocarbon

Code	Description
G[1]	G 1/4"
M	M18x1.5[2] M12x1.5[1]
C[1]	Coupling M16

[1] NG6 only

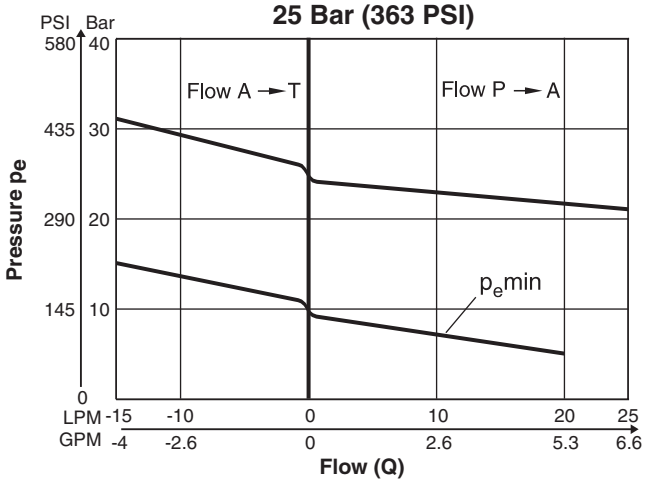
Code	Description
Omit	Normal
Z	Cylinder Lock

Weight:

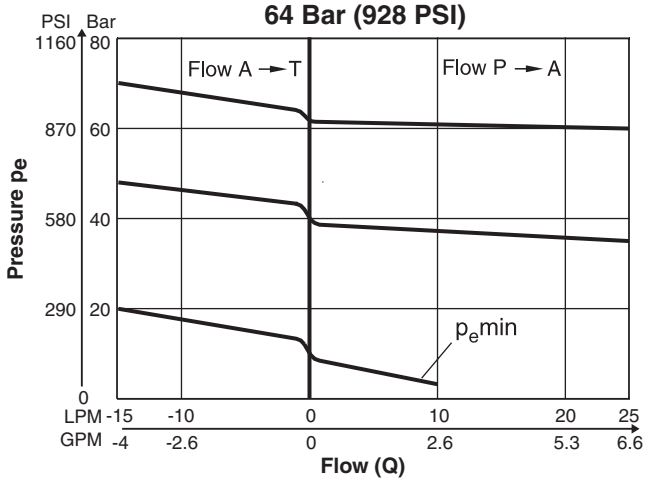
VM*A06	1.3 kg (2.9 lbs.)
VM*A10	3.7 kg (8.2 lbs.)

NG6

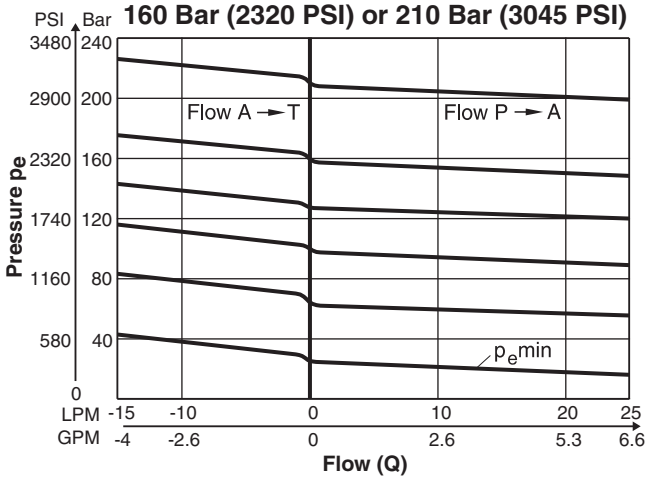
Maximum Pressure Setting
25 Bar (363 PSI)



Maximum Pressure Setting
64 Bar (928 PSI)

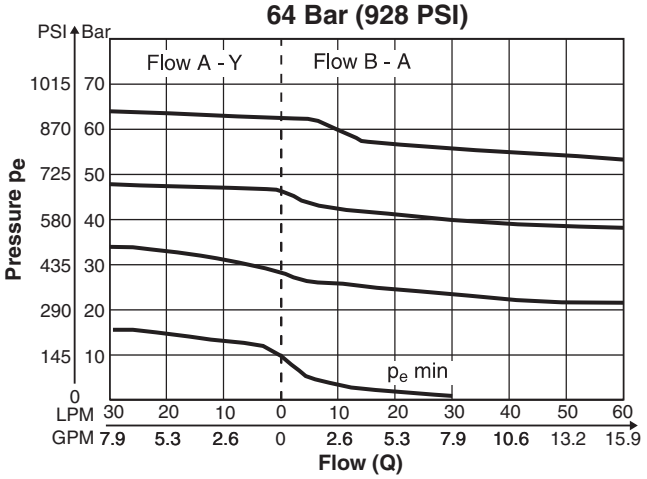


Maximum Pressure Setting
160 Bar (2320 PSI) or 210 Bar (3045 PSI)

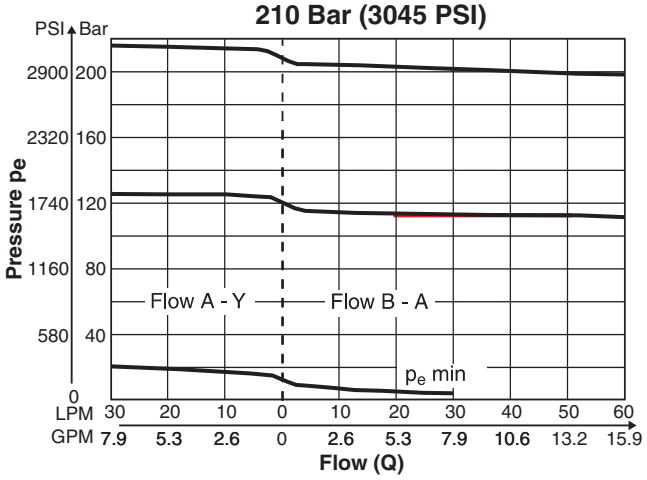


NG10

Maximum Pressure Setting
64 Bar (928 PSI)



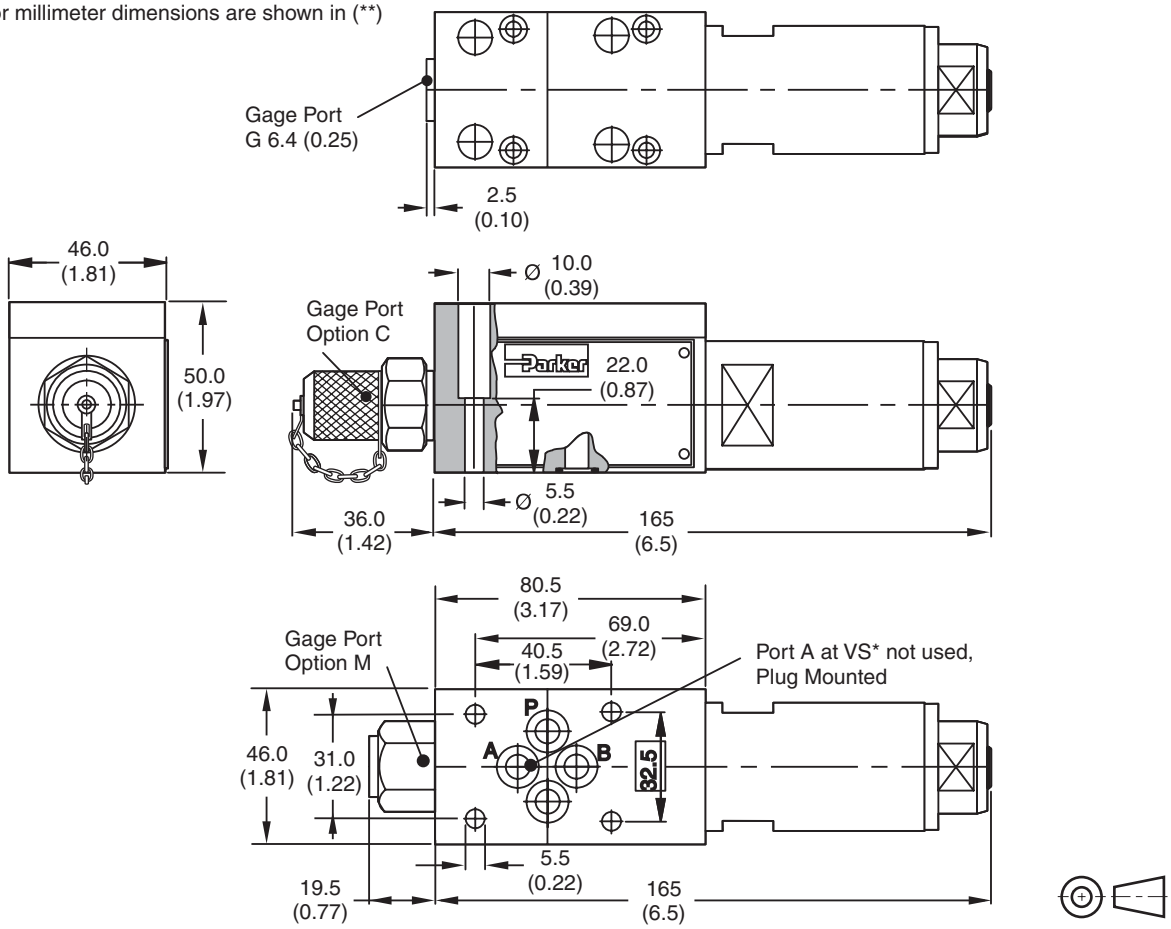
Maximum Pressure Setting
210 Bar (3045 PSI)



VM.indd, dd

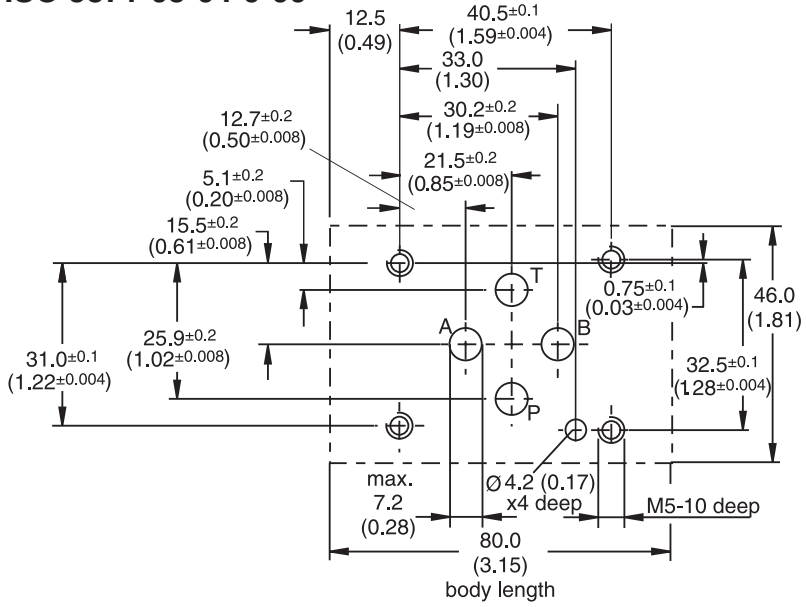
NG6

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



Surface finish	Bolt kit DIN912 12.9		Kit FPM
$\sqrt{R_{max}6.3}$ 0.01/100	BK-M5x30-4pcs	8.1 Nm (6.0 lb.-ft.)	SK-VB/VM/VS-A06V

Mounting Pattern ISO 5871-03-04-0-00



VM.indd, dd

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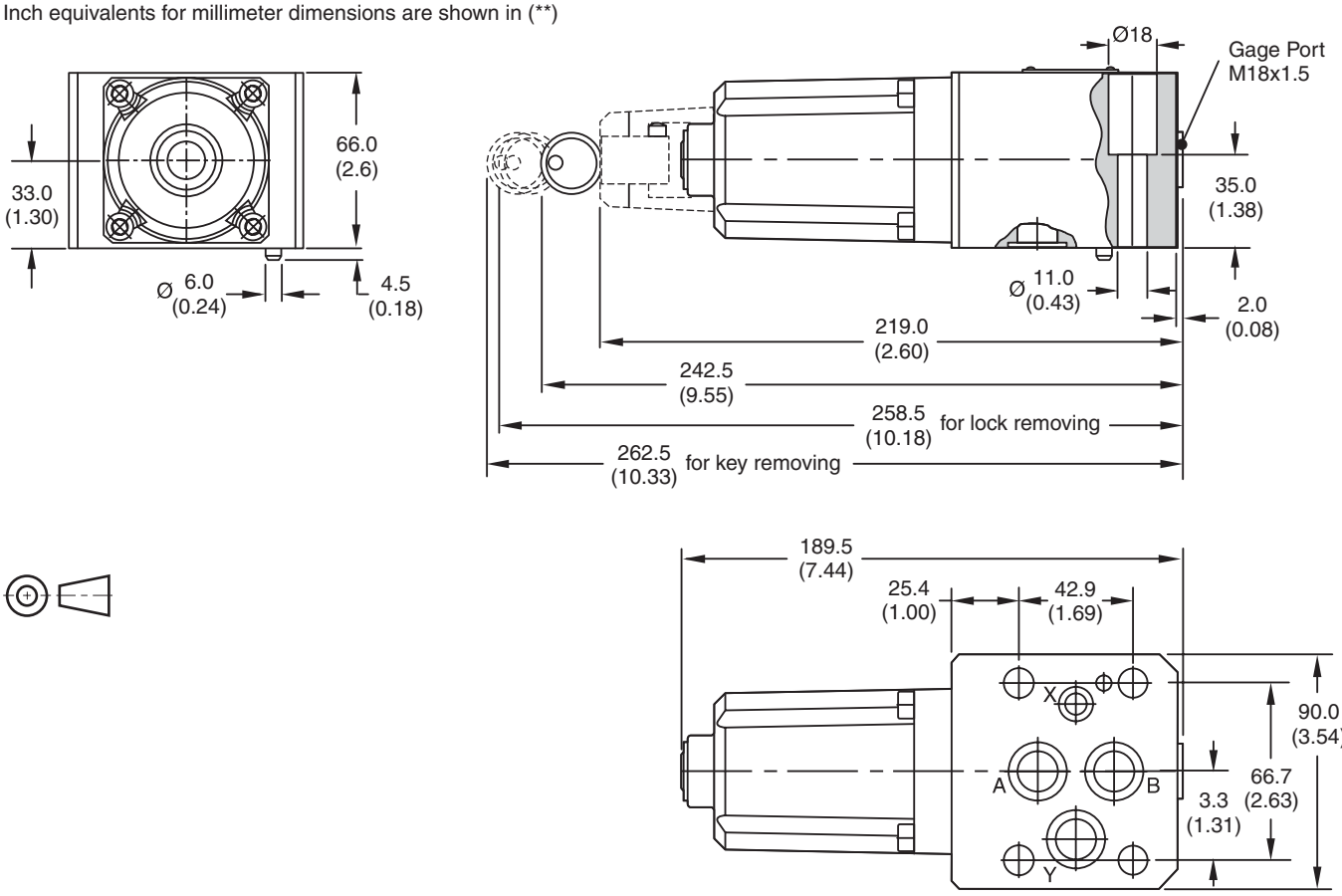
Hydraulic Valve Division
Elyria, Ohio, USA

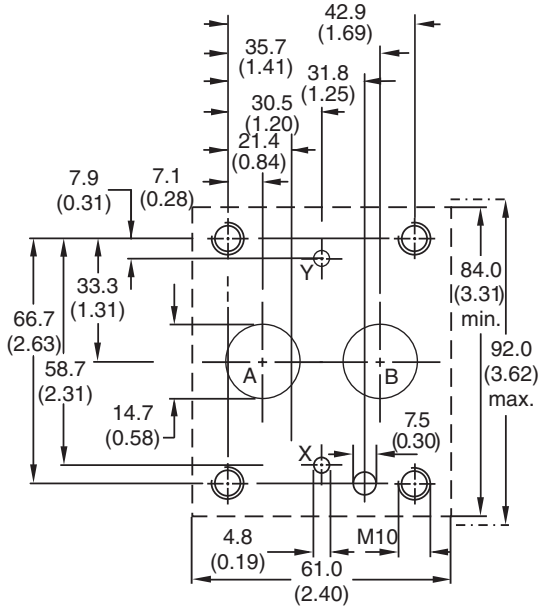
NG10

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



Surface finish	Bolt kit DIN912 12.9		Kit FPM
R_{max}6.3 ▱ 0.01/100	BK-M10x50-4pcs	65 Nm (47.9 lb.-ft.)	SK-VB/VM-A10V

Mounting Pattern ISO 5871-06-07-0-00

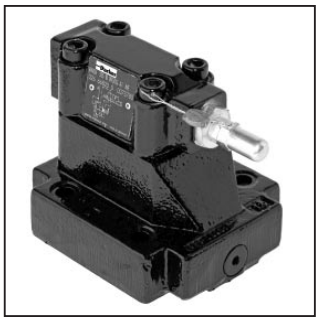


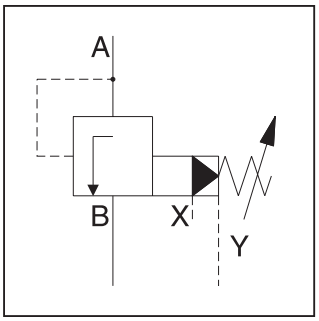
VM.indd, dd

Notes

General Description

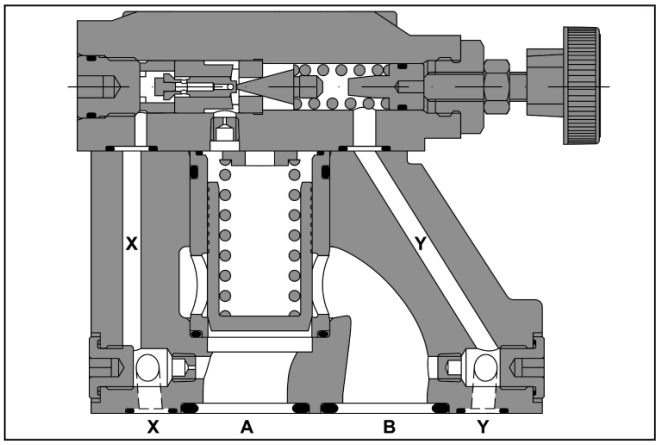
Series S*M pilot operated sequence valves enable a hydraulic system to operate in a pressure sequence. When the system pressure reaches the setting pressure the valve opens and permits flow to the secondary sub-system.





Features

- Pilot-operated sequence valve.
- 2 interfaces
  - – Subplate mounting acc. to ISO 5781
  - – Slip-in mounting acc. to ISO 7368
- 4 pressure ranges.
- 3 adjustment modes.
  - – Hand knob
  - – Screw with hexagon socket
  - – DIN knob



Specifications

General			
Size	**NG10**	**NG25**	**NG32**
Interface	Subplate mounting acc. ISO 5781		
Mounting Position	As desired, horizontal mounting preferred		
Ambient Temperature	-20°C to +80°C (-4°F to +176°F)		
Hydraulic			
Operating Pressure	Ports A and X up to 350 Bar (5075 PSI), connection B and Y depressurized		
Pressure Range	75, 175, 250, 350 Bar (1088, 2538, 3625, 5075 PSI)		
Nominal Flow	150 LPM (39.7 GPM)	350 LPM (92.6 GPM)	650 LPM (172.0 GPM)
Pressure Fluid	Hydraulic oil according to DIN 51524 ... 525		
Viscosity **Recommended**	30 to 50 cSt (mm²/s)		
Maximum	20 to 380 cSt (mm²/s)		
Pressure Fluid Temperature			
Recommended	+30°C to +50°C (+86°F to +122°F)		
Maximum	-20°C to +70° (-4°F to +158°F)		
Filtration	ISO 4406 (1999), 18/16/13		

Ordering Information

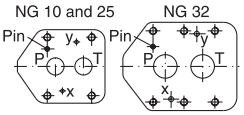
S	□	M	□	□	□	U	□
Sequence Valve	Size	Interface	Pressure Range	Adjustment	Pilot Oil	Poppet Spring	Seals

Code	Description
07	70 Bar (1015 PSI)
17	175 Bar (2538 PSI)
25	250 Bar (3625 PSI)
35	350 Bar (5075 PSI)

Code	Description
N	Nitrile
V	Fluorocarbon

Code	Pilot	Drain
1	Internal	External
2	External	External

Code	Interface
M	Subplate mounting ISO 5781



Code	Size	Mounting
10	NG10	Subplate mounting
25	NG25	
32	NG32	

Code	Description
L	DIN lock
S	Hand knob

Weight:

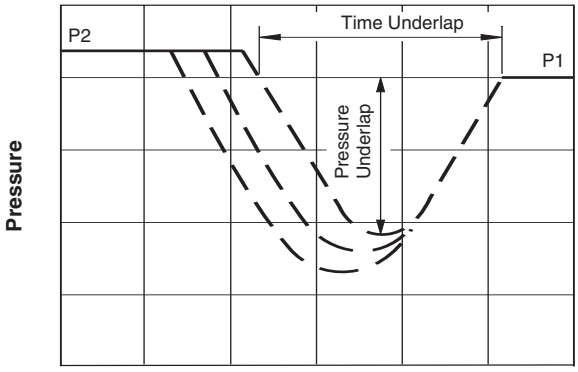
S10M	2.7 kg (6.0 lbs.)
S25M	4.5 kg (9.9 lbs.)
S32M	6.0 kg (13.2 lbs.)

Performance Curves

Typical pressure curves at closing point

P1 = setting pressure

P2 = operating pressure



Note:
Time and pressure underlap depend on the characteristics of a specific system.

S_M.indd, dd

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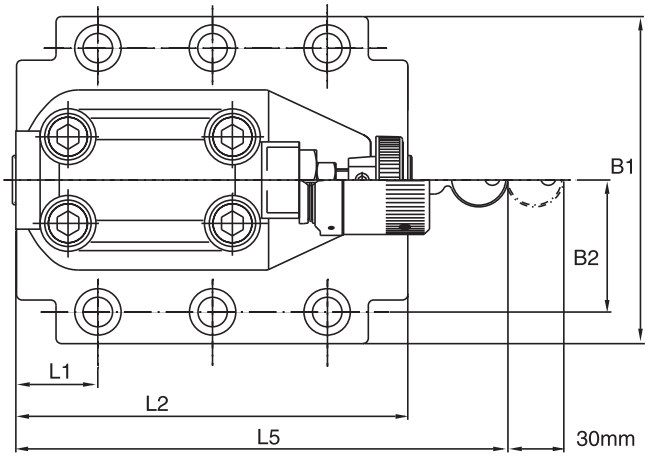
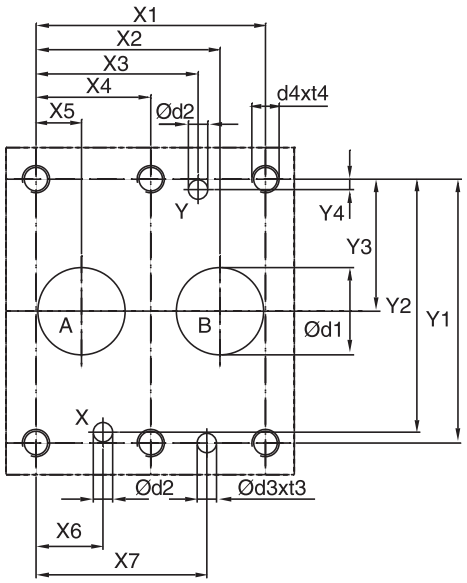
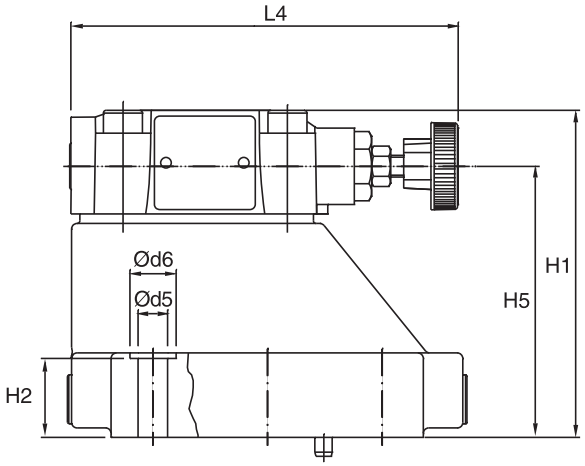

B1
B2
L1
L2
L5
30mm


X1
X2
X3
X4
X5
Ød2
d4xt4
Y
Y4
Y3
Y2
Y1
A
B
Ød1
X
Ød2
Ød3xt3
X6
X7


L4
Ød6
Ød5
H1
H5
H2

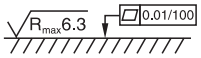
Inch equivalents for millimeter dimensions are shown in (**)

NG	ISO-code	x1	x2	x3	x4	x5	x6	x7	y1	y2	y3	y4	y5	y6
10	5781-06-07-0-00	42.9 (1.69)	35.8 (1.41)	21.5 (0.85)	–	7.2 (0.28)	21.5 (0.85)	31.8 (1.25)	66.7 (2.63)	58.8 (2.31)	33.4 (1.31)	7.9 (0.31)	–	–
25	5781-08-10-0-00	60.3 (2.37)	49.2 (1.94)	39.7 (1.56)	–	11.1 (0.44)	20.6 (0.81)	44.5 (1.75)	79.4 (3.13)	73.0 (2.87)	39.7 (1.56)	6.4 (0.25)	–	–
32	5781-10-13-0-00	84.2 (3.31)	67.5 (2.66)	59.5 (2.34)	42.1 (1.66)	16.7 (0.66)	24.6 (0.97)	62.7 (2.47)	96.8 (3.81)	92.8 (3.65)	48.4 (1.91)	3.8 (0.15)	–	–

Tolerance at X and Y pin holes and screw holes ±0.1, at port holes ±0.2.

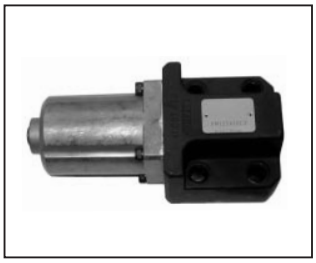
NG	ISO-code	B1	B2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6
10	5781-06-07-0-00	87.3 (3.44)	33.4 (1.31)	83.0 (3.27)	21.0 (0.83)	62.5 (2.46)	–	–	–	29.0 (1.14)	94.8 (3.73)	–	141.0 (5.55)	181.0 (7.13)	–
25	5781-08-10-0-00	105.0 (4.13)	39.7 (1.56)	109.5 (4.31)	29.0 (1.14)	89.0 (3.50)	–	–	–	34.7 (1.37)	126.8 (4.99)	–	141.0 (5.55)	181.0 (7.13)	–
32	5781-10-13-0-00	120.0 (4.72)	48.4 (1.91)	120.0 (4.72)	29.0 (1.14)	99.5 (3.92)	–	–	–	30.6 (1.20)	144.3 (5.68)	–	141.0 (5.55)	181.0 (7.13)	–

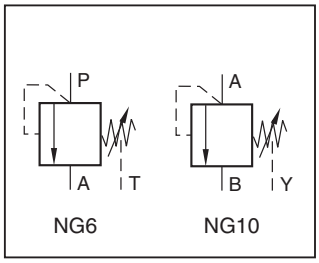
NG	ISO-code	d1max	d2max	d3	t3	d4	t4	d5	d6
10	5781-06-07-0-00	15.0 (0.59)	7.0 (0.28)	7.1 (0.28)	8.0 (0.31)	M10	16.0 (0.63)	10.8 (0.43)	17.0 (0.67)
25	5781-08-10-0-00	23.4 (0.92)	7.1 (0.28)	7.1 (0.28)	8.0 (0.31)	M10	18.0 (0.71)	10.8 (0.43)	17.0 (0.67)
32	5781-10-13-0-00	32.0 (1.26)	7.1 (0.28)	7.1 (0.28)	8.0 (0.31)	M10	20.0 (0.79)	10.8 (0.43)	17.0 (0.67)

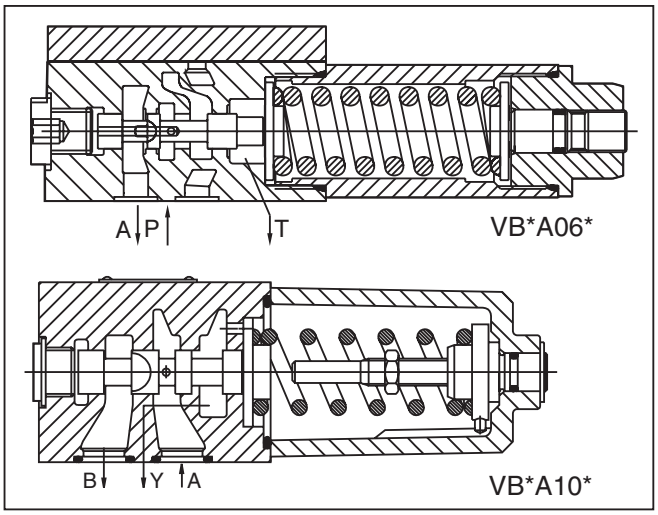
NG	ISO-code	Bolt kit  DIN912 12.9		NBR  Kit FPM		Surface finish
10	5781-06-07-0-00	BK-M10 x 35-4pcs	63 Nm (46.5 lb.-ft.)	SK-UR10MN50	SK-UR10MV50	
25	5781-08-10-0-00	BK-M10 x 45-4pcs	63 Nm (46.5 lb.-ft.)	SK-UR25MN50	SK-UR25MV50	
32	5781-10-13-0-00	BK-M10 x 45-6pcs	63 Nm (46.5 lb.-ft.)	SK-UR32MN50	SK-UR32MV50	

General Description

Series VB are direct operated pressure relief valves with manual adjustment. Series VB valves can also be used as pressure sequence valves because of the high pressure capability in the outlet port and the external drain port.







Specifications

Size	NG6, NG10
Interface	ISO 5791
Mounting Pos.	Unrestricted
Ambient Temp.	-20°C to +70°C (-4°F to +158°F)
Max. Operating Pressure	Size 6: Ports P and A 210 Bar (3045 PSI), Port T depressurized Size 10: Ports A and B 210 Bar (3045 PSI), Port Y depressurized
Pressure Range	Size 6: 25, 64, 160, 210, 350 Bar (363, 928, 2320, 3045, 5075 PSI) Size 10: 64, 125, 210 Bar (928, 1813, 3045 PSI)
Nominal Flow	Size 6: 25 LPM (6.6 GPM) Size 10: 60 LPM (15.9 GPM)
Pressure Fluid	Hydraulic oil according to DIN 51524 ... 525
Pressure Fluid Temperature	Recommended: +30C to +50°C (+86°F to +122°F) Permitted: -20°C to +70°C (-4°F to +158°F)
Viscosity	Recommended: 30 to 50 cSt (mm²/s) Permitted: 20 to 380 cSt (mm²/s)
Filtration	ISO 4406 (1999), 18/16/13

Features

- Spool valve.
- Manifold mounting.
- Five pressure ranges at NG06.
- Three pressure ranges at NG10.
- Two adjustment modes.

Ordering Information

VB	☐	A	☐	V	☐	☐
Sequence Valve	Maximum Setting Pressure	Adjustment Screw with Hexagon Socket	Nominal Size	Seal	Gauge Port	Lock

Code	Description	
025[1]	25 Bar	(363 PSI)
064	64 Bar	(938 PSI)
125[2]	125 Bar	(1813 PSI)
160[1]	160 Bar	(2320 PSI)
210[1]	210 Bar	(3045 PSI)
350[1]	350 Bar	(5075 PSI)

[1] only NG06
[2] only NG10

Code	Description
06	NG6
10	NG 10

Code	Description
V	Fluorocarbon

Code	Description
G[1]	G 1/4"
M	M12x1.5
C[1]	Coupling M16

[1] only NG06

Code	Description
Omit	Normal
Z	Cylinder Lock

Weight:
VB*A06 1.3 kg (2.9 lbs.)
VB*A10 3.7 kg (8.2 lbs.)

VB.indd, dd

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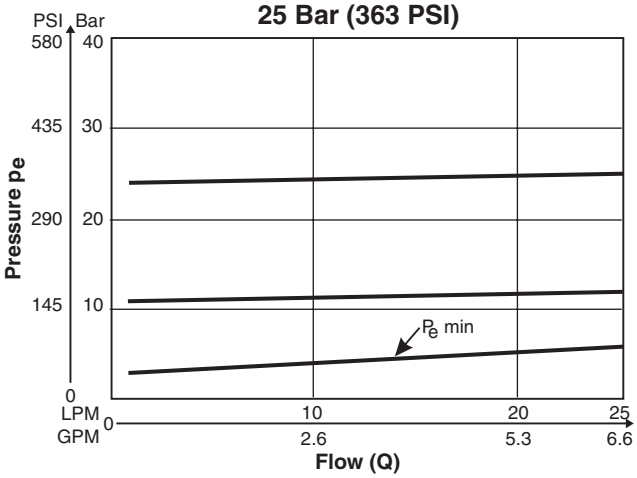
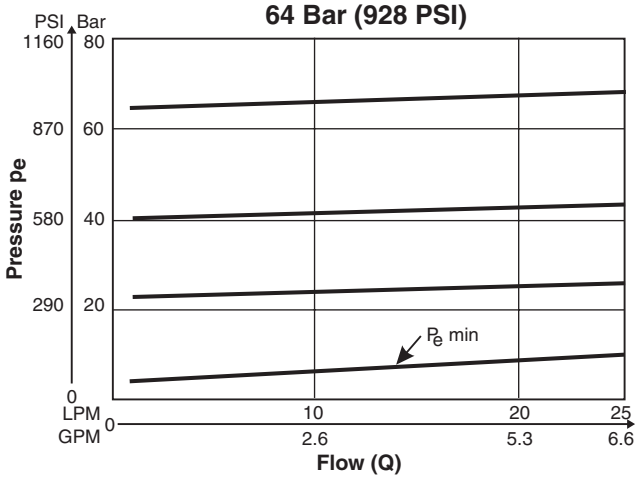
Elyria, Ohio, USA

VB*6

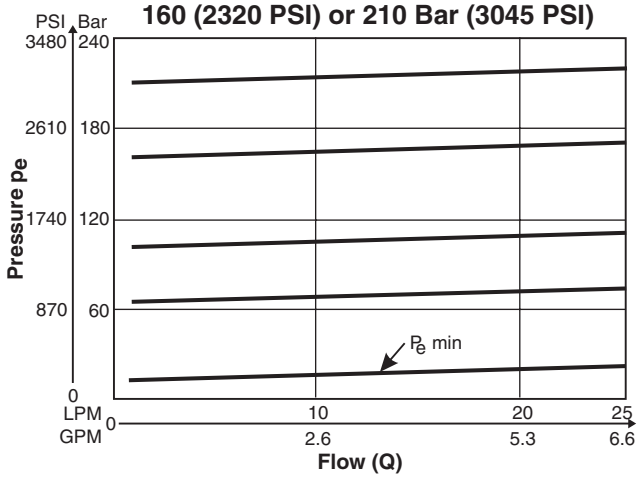
Maximum Setting Pressure
25 Bar (363 PSI)



Maximum. Setting Pressure
64 Bar (928 PSI)

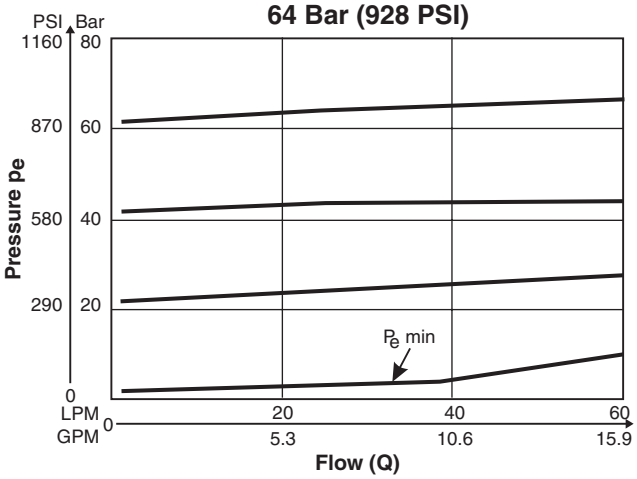


Maximum Setting Pressure
160 (2320 PSI) or 210 Bar (3045 PSI)

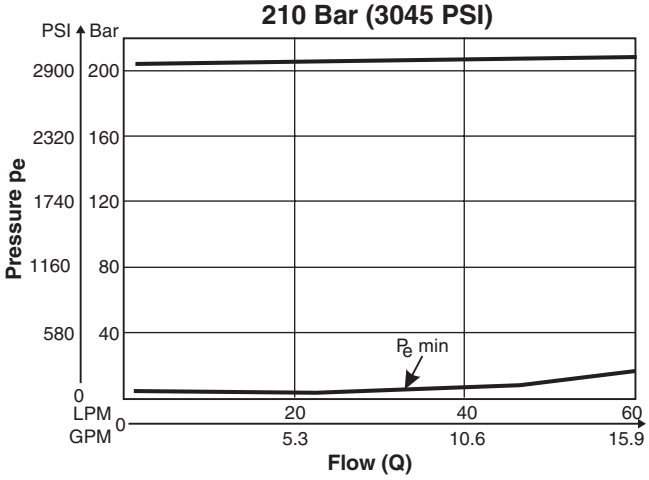


VB*10

Maximum Setting Pressure
64 Bar (928 PSI)



Maximum Setting Pressure
210 Bar (3045 PSI)

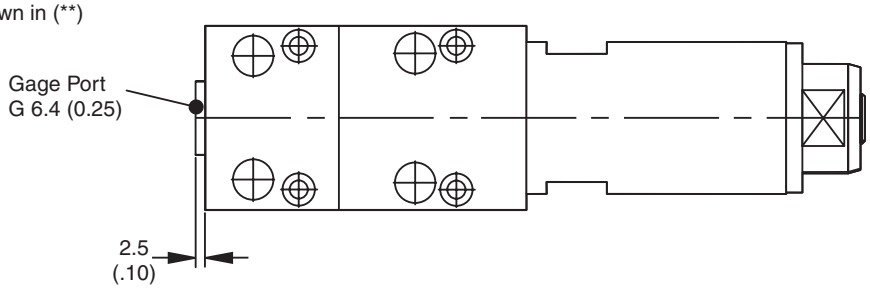


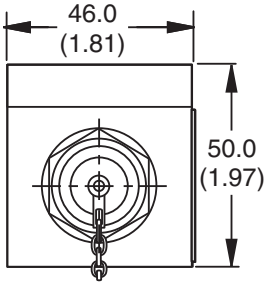
VB.indd, dd

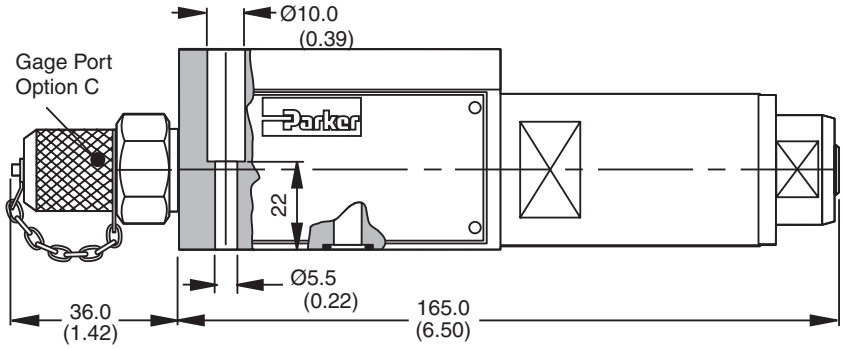
Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

NG6

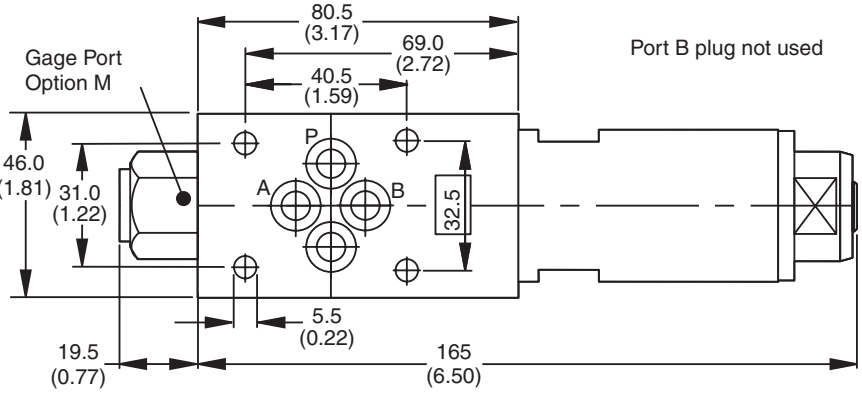
Inch equivalents for millimeter dimensions are shown in (**)



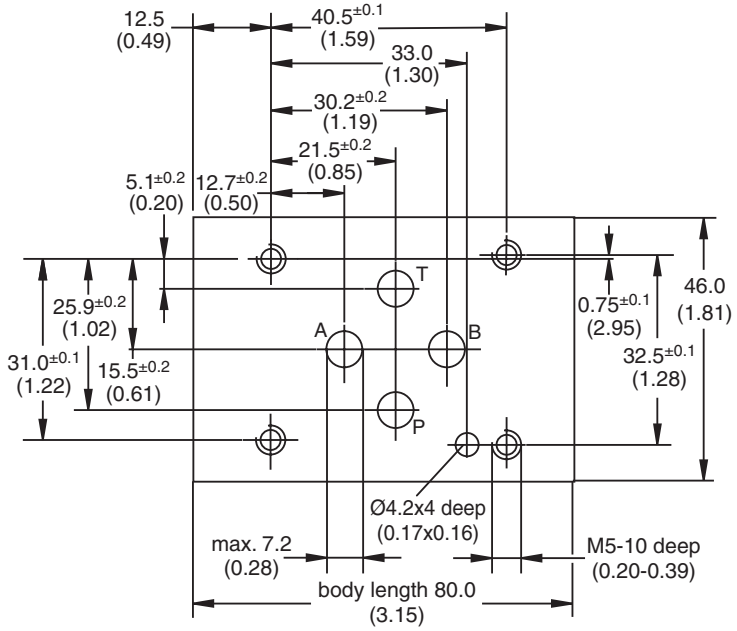




Surface Finish	R_{max}6.3 ▱ 0.01/100
Bolt Kit DIN912 12.9	SK-M5x30-4pcs
	8.1 Nm
Kit FPM	SK-VB/VM/VS-A06V



Mounting Pattern ISO 5781-03-04-0-00

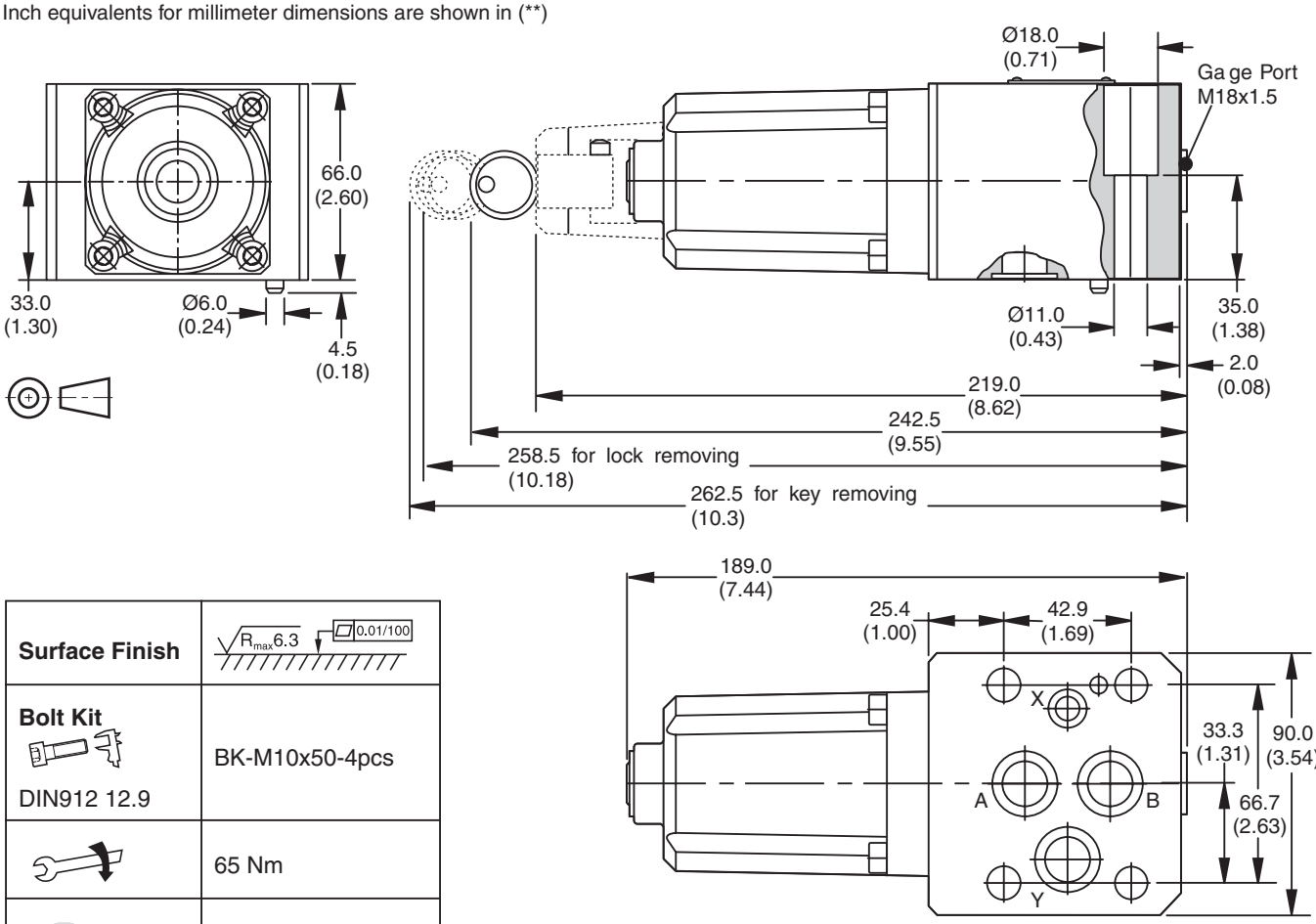


VB.indd, dd

Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

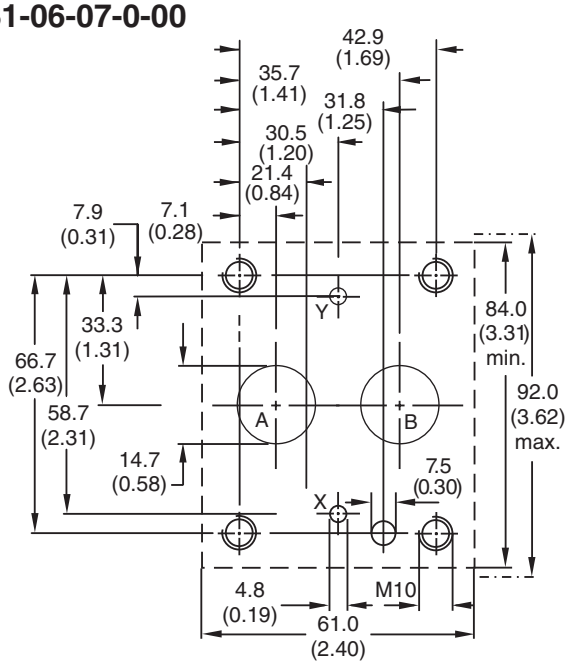
NG10

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



Surface Finish	R_{max}6.3 ▱ 0.01/100
Bolt Kit DIN912 12.9	BK-M10x50-4pcs
	65 Nm
Kit **FPM**	SK-VB/VM-A10V

Mounting Pattern ISO 5781-06-07-0-00

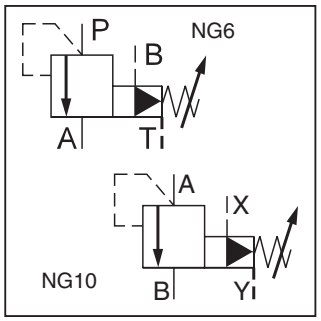


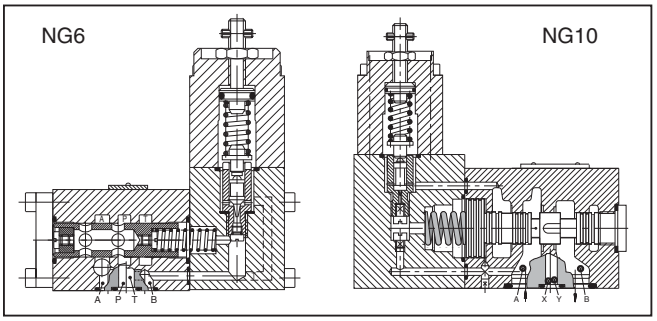
VB.indd, dd

General Description

Series VBY pilot operated sequence valves consist of a pilot with manual adjustment and a main part with spool execution. The valve has an external drain.

This valve can also be used as a pressure relief valve. Please observe hydraulic connection.





Features

- Manifold mounting acc. to ISO 5781.
- Type VBY with external drain.
- Main stage spool type valve.
- Pilot stage seated type valve.
- 4 pressure ranges.
- 2 adjustment modes
  - – Screw with hexagon socket
  - – DIN knob

Specifications

Size	NG6	NG10
Mounting Pattern	ISO 5781	
Mounting Position	As desired	
Ambient Temperature	+50°C (+122°F) Maximum	
Operating Pressure, Ports External Drain Port Pressure	P, A, B up to 315 Bar (4568 PSI) T up to 100 Bar (1450 PSI)	A, B, X up to 315 Bar (4568 PSI) Y up to 100 Bar (1450 PSI)
Pressure Range	64, 160, 210, 315 Bar (928, 2320, 3045, 4568 PSI)	
Pressure Fluid Temperature	+70°C (158°F) Maximum	
Viscosity Range	30 to 230 cSt (mm²/s)	
Filtration	ISO 4406 (1999), 18/16/13	
Pilot Oil Flow	approx. 500 cm³/min	approx. 1000 cm³/min

Ordering Information

VBY — Pressure Relief Valve

Pressure Range

Code	Description
064	64 Bar (928 PSI)
160	160 Bar (2320 PSI)
210	210 Bar (3045 PSI)
315	315 Bar (4568 PSI)

Operation

Code	Description
A	Adjustment Screw with Hexagon Socket
H	Turning Knob with Cylinder Lock

Valve Size

Code	Description
06	NG6
10	NG10

Seal

Code	Description
N	Nitrile
V	Fluorocarbon

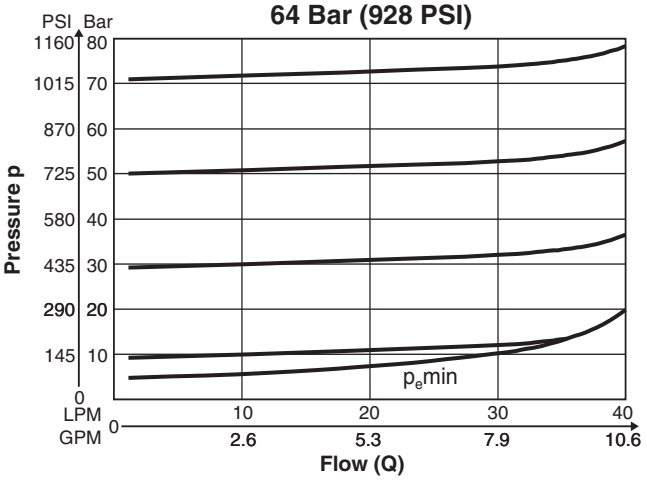
Weight:

VBY*06 2.4 kg (5.29 lbs.)
VBY*10 4.5 kg (9.92 lbs.)

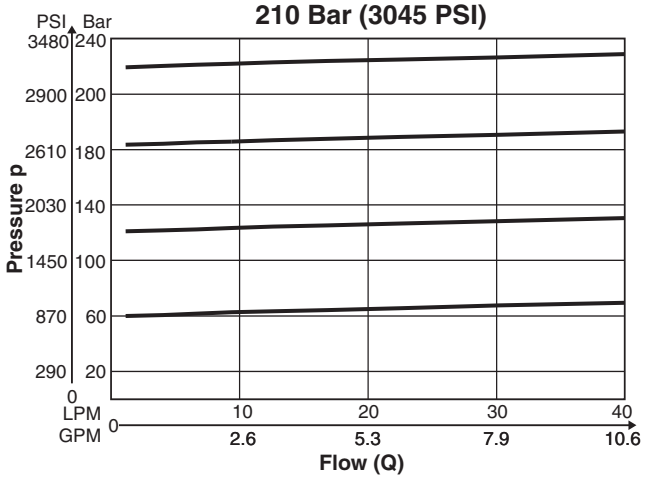
NG6

p/Q measured at t = 50°C (122°F) and v = 36mm²/s

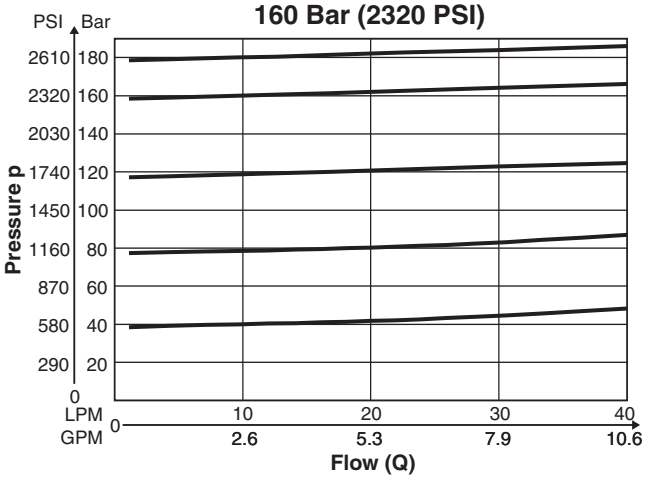
Maximum Setting Range
64 Bar (928 PSI)



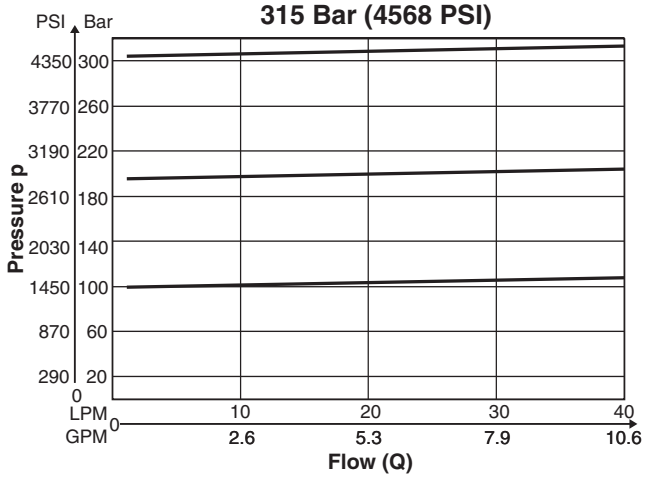
Maximum Setting Range
210 Bar (3045 PSI)



Maximum Setting Range
160 Bar (2320 PSI)



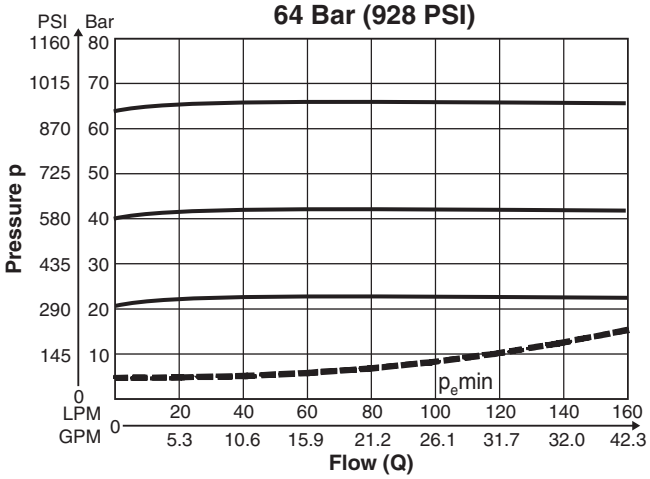
Maximum Setting Range
315 Bar (4568 PSI)



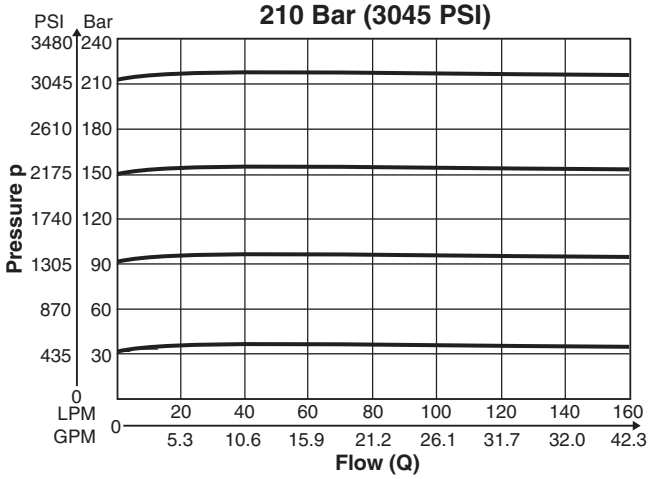
NG10

p/Q measured at t = 50°C (122°F) and v = 36mm²/s

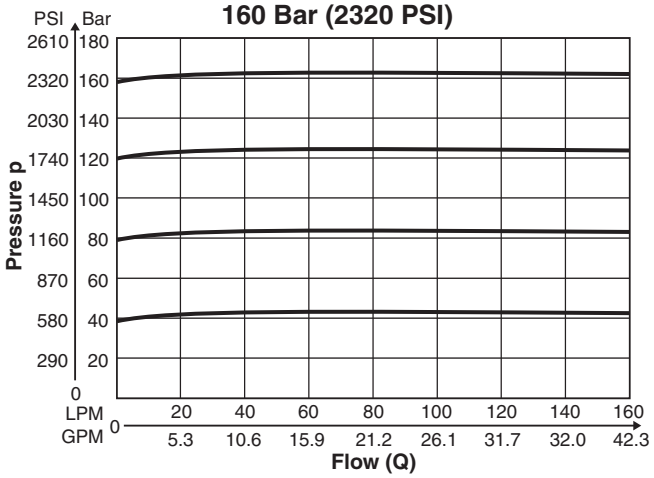
Maximum Setting Range
64 Bar (928 PSI)



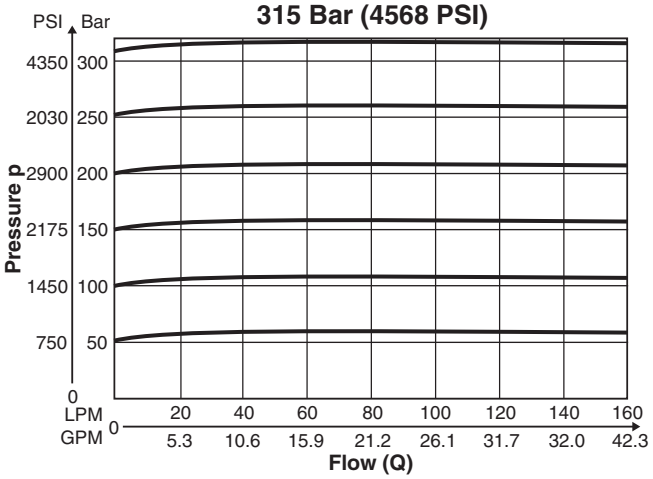
Maximum Setting Range
210 Bar (3045 PSI)



Maximum Setting Range
160 Bar (2320 PSI)

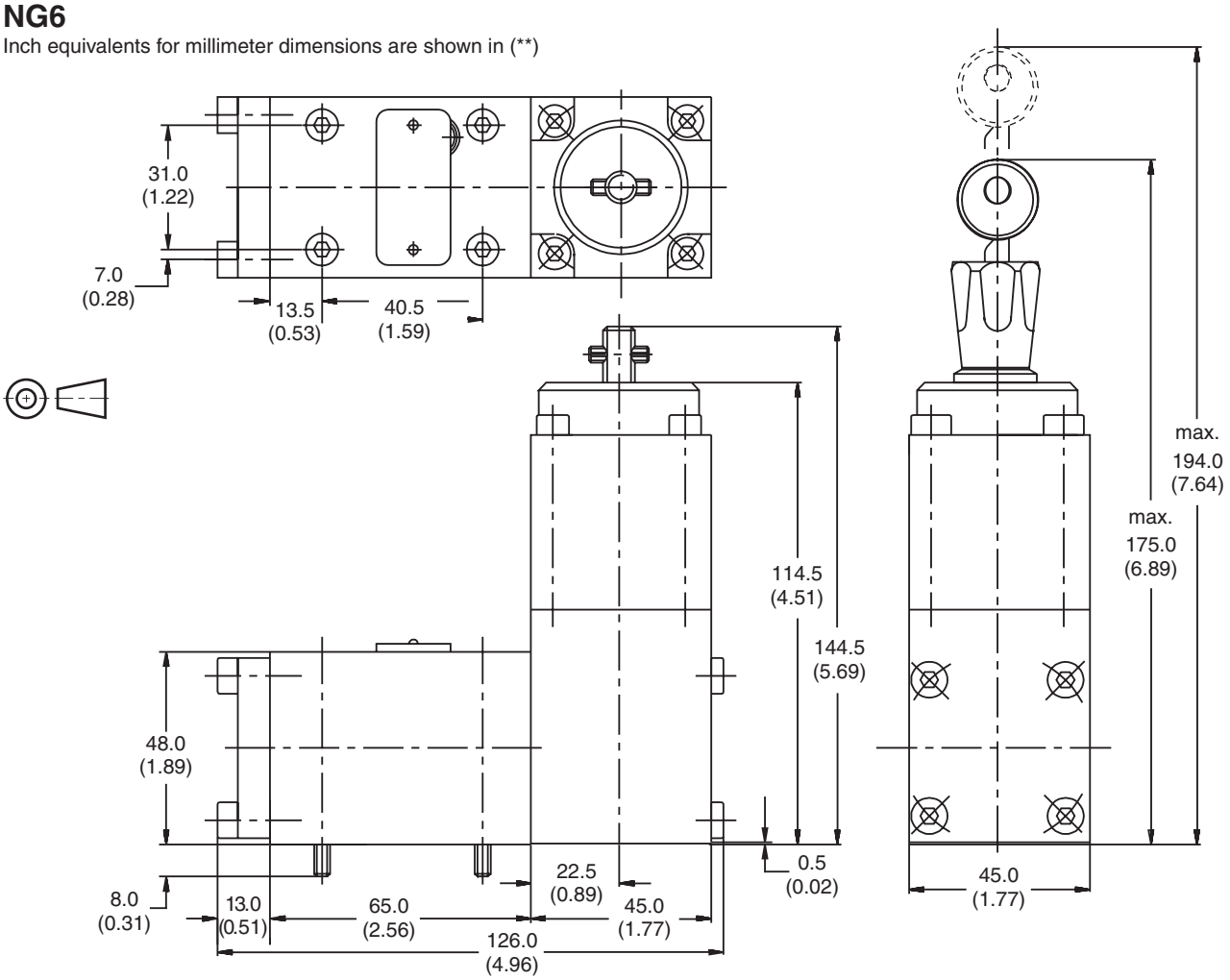


Maximum Setting Range
315 Bar (4568 PSI)



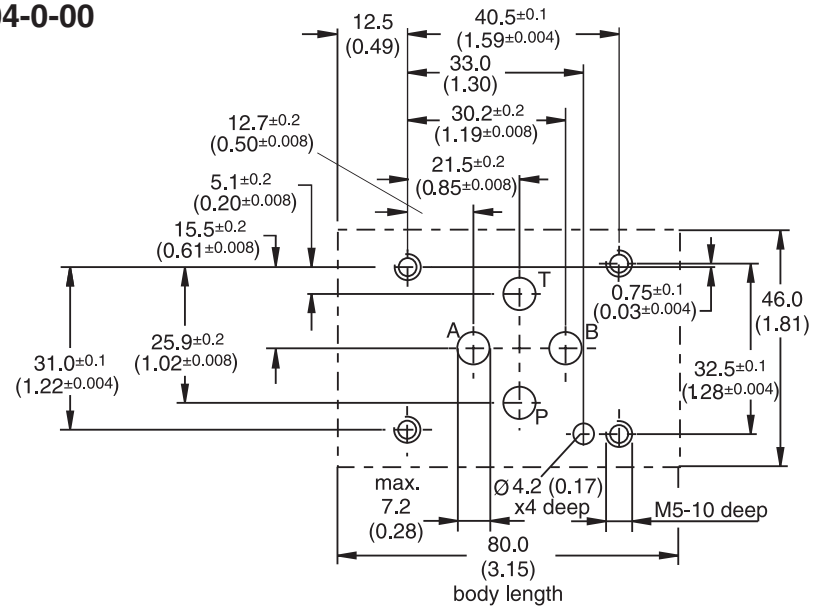
NG6

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



Surface finish	Bolt kit DIN912 12.9		Kit FPM
$\sqrt{R_{max}6.3}$ 0.01/100	BK-M5x30-4pcs	7.5 Nm (5.5 lb.-ft.)	SK-VBY-A06V

Mounting Pattern ISO 5781-03-04-0-00



VBY_A.indd, dd

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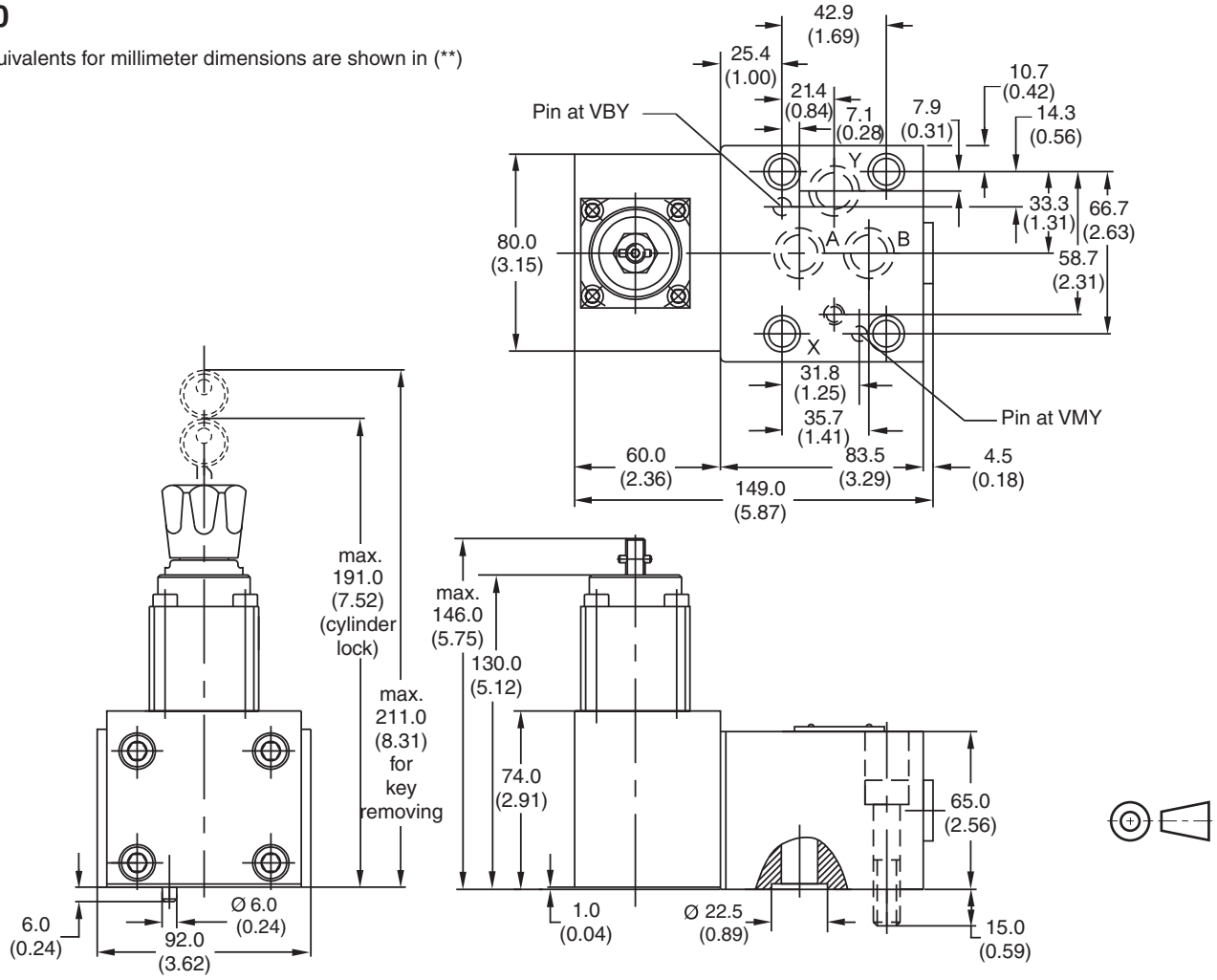
Hydraulic Valve Division
Elyria, Ohio, USA

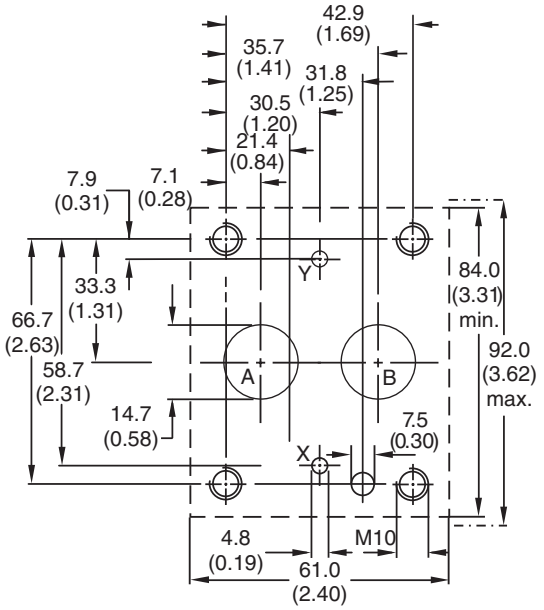
NG10

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



Surface finish	Bolt kit DIN912 12.9		Kit FPM
$\sqrt{R_{max}6.3}$ 0.01/100	BK-M10x50-4pcs	65 Nm (47.9 lb.-ft.)	SK-VB/VM106V

Mounting Pattern ISO 5781-06-07-0-00



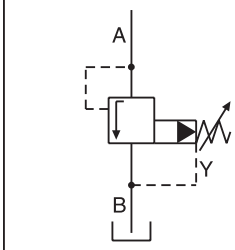
VBY_A.indd, dd

General Description

Series R5V pilot operated pressure relief valves have a similar design to the subplate mounted R4V series. The SAE flanges allow to mount the valves directly on the outlet flanges of pumps or inlet flanges of actuators to achieve a very compact design.

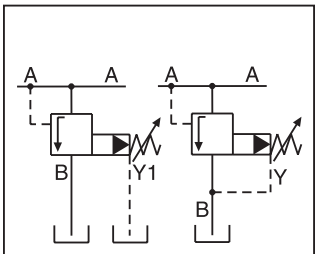
Valves with SAE flanges can also be bolted together to combine functions without the need of a manifold block.


R5V 2-Port



R5V 2-Port


R5V 3-Port



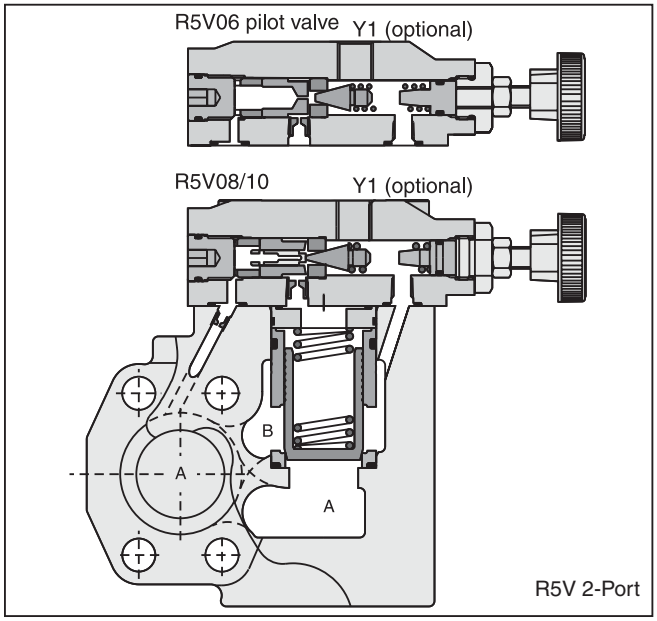
R5V 3-Port

Operation

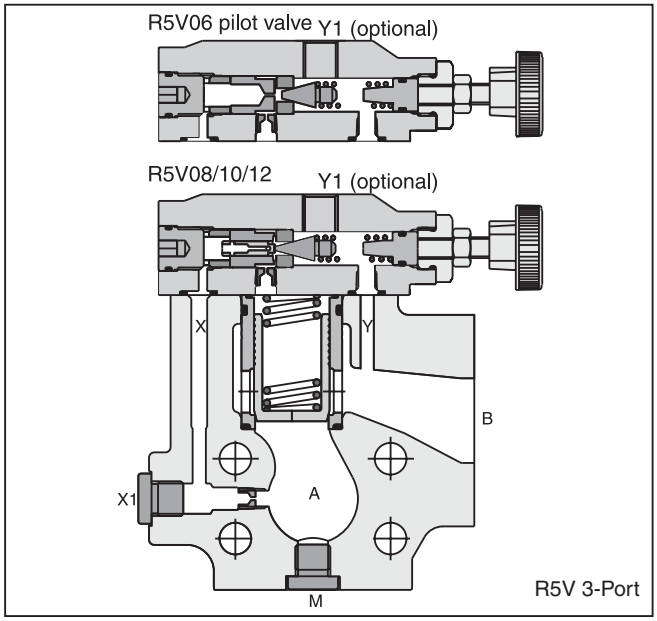
The system pressure in Port A is applied to the pilot valve and to the top surface of the main poppet via an orifice in X. The hydraulically balanced main poppet is held against the seat by the main spring. In this state there is no flow through the valve. The adjusted spring force acting on the pilot cone determines the relief pressure. If the pressure in Port A exceeds the set point, the pilot cone is lifted from its seat, releasing a small pilot flow to tank. The flow through the control orifice in X creates a pressure drop which limits the pressure at the top of the main poppet to the set point. The higher system pressure in Port A now lifts the main poppet off its seat and allows flow to Port B. In the resulting float position only enough flow is passed from Port A to Port B to maintain the inlet pressure in Port A at the set point. When the pressure in Port A falls below the set point, the hydraulic balance on the main poppet is restored. The main spring then forces the main poppet to close.

Features

- Pilot operated with manual adjustment.
- R5V with 2-port body
  - 3 sizes (SAE 3/4", 1", 1-1/4")
  - SAE 61 flange
- R5V with 3-port body
  - 4 sizes (SAE 3/4", 1", 1-1/4", 1-1/2")
  - SAE 61 and SAE 62 flange
- 3 pressure stages.
- 3 adjustment modes
  - Hand knob
  - Acorn nut with lead seal
  - DIN lock
- With optional vent function.



R5V 2-Port



R5V 3-Port

R5V.indd, dd

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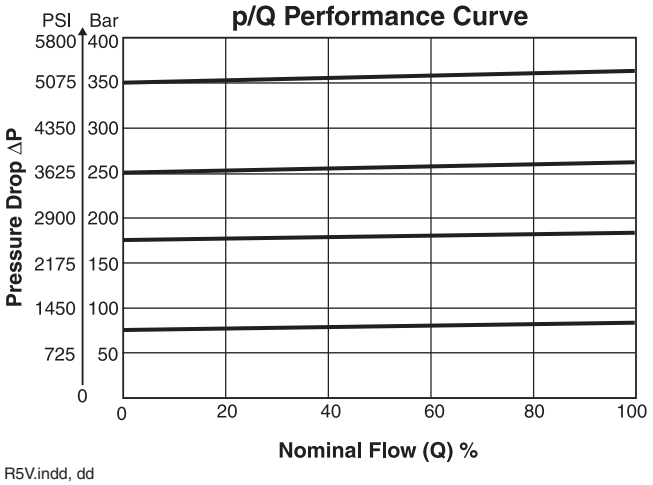
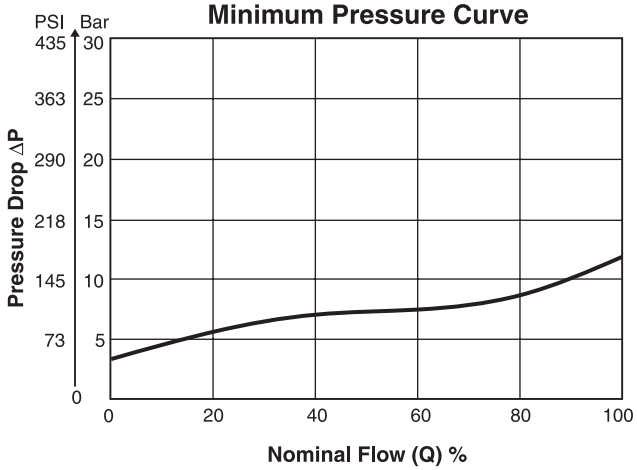
Elyria, Ohio, USA

Specifications

General							
Size		**06**	**08**	**10**	**12**		
Mounting		Flanged according to SAE 61					
Mounting Position		Unrestricted					
Ambient Temperature Range		-20°C to +50°C (-4°F to +122°F)					
Hydraulic							
Maximum Operating Pressure	**SAE 61 Ports A, B**	350 Bar (5075 PSI)	350 Bar (5075 PSI)	280 Bar (4060 PSI)	210 Bar (3045 PSI)		
	SAE 61 Port Y1	30 Bar (435 PSI)	30 Bar (435 PSI)	30 Bar (435 PSI)	30 Bar (435 PSI)		
	SAE 62 Ports A, B	350 Bar (5075 PSI)	350 Bar (5075 PSI)	280 Bar (4060 PSI)	210 Bar (3045 PSI)		
	SAE 62 Port Y1	30 Bar (435 PSI)	30 Bar (435 PSI)	30 Bar (435 PSI)	30 Bar (435 PSI)		
Pressure Stages		105 Bar (1523 PSI), 210 Bar (3045 PSI), 350 Bar (5075 PSI)					
Nominal Flow		90 LPM (23.8 GPM)	300 LPM (79.4 GPM)	600 LPM (158.7 GPM)	600 LPM (158.7 GPM)		
Fluid		Hydraulic oil as per DIN 51524 to 51525					
Fluid Temperature		-20°C to +80°C (-4°F to +176°F)					
Viscosity Permitted		10 to 650 cSt (mm^2/s)					
Viscosity Recommended		30 cSt (mm^2/s)					
Filtration		ISO Class 4406 (1999) 18/16/13 (acc. NAS 1638: 7)					
Electrical (Solenoid)							
Duty Ratio		100%					
Solenoid Connection		Connector as per EN175301-803					
Protection Class		IP65 in accordance with EN60529 (plugged and mounted)					
	Code	**G0R**	**G0Q**	**GAR**	**GAG**	**W30**	**W31**
Supply Voltage		12V =	24V =	98V =	205V =	110V at 50Hz/ 120V at 60Hz	220V at 50Hz/ 240V at 60Hz
Tolerance Supply Voltage		+5 to -10	+5 to -10	+5 to -10	+5 to -10	±5	±5
Power Consumption	**Hold**	31	31	31	31	64/59 [VA]	68/62 [VA]
	In Rush	31	31	31	31	231/240 [VA]	231/240 [VA]
Response Time		Energized / De-energized AC: 20/18ms, DC: 46/27 ms					
Maximum Switching Frequency		AC: up to 7200 switchings/hour; DC: up to 16,000 switchings/hour					
Coil Insulation Class		H (180°C) (356°F)					

Performance Curves





R5V.indd, dd

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Hydraulic Valve Division
Elyria, Ohio, USA

R5V □ — □ □ □ — □ □ — □ □ — **A** □ — □

Pressure Relief Valve | Nominal Size | SAE Interface | Pilot Ports | Pressure Stages | Adjustment | Pilot Oil | Switching Type | Solenoid Voltage | Design Series | Seals | Options

Code	Description
06	SAE 3/4"
08	SAE 1"
10	SAE 1-1/4"
12*	SAE 1-1/2"

* R5V 3-Port only

SAE 61

Code	Size	Maximum Pressure
3	12	210 Bar (3045 PSI)
4	10	280 Bar (4060 PSI)
5	06/08	350 Bar (5075 PSI)

SAE 62

Code	Size	Maximum Pressure
6*	06/08/ 10/12	350 Bar (5075 PSI)

* R5V 3-Port only

2-Port Body

Code	Description
4	No Ports* X1 = 1/4" NPT
5	Y1 = SAE 4*

3-Port Body

Code	Description
1	No Ports X1 = 1/4" NPT
3	Y1**, X1, M = SAE 4

* 2-port for internal drain (pilot oil code 2)

** 3-Port: Y1 only available at external drain (pilot oil code 6)

Code	Description
1	up to 105 Bar (1523 PSI)
3	up to 210 Bar (3045 PSI)
5	up to 350 Bar (5075 Bar)

Code	Description
1	Hand Knob
3	Acorn Nut with Lead Seal
4	DIN Lock

Code	Drain Line
2	Internal
6	External from Y1-Port

Code	Description
Omit	Standard w/o vent function
09*	Solenoid not activ. unpress. circulation
11**	Solenoid activated unpress. circulation

* Sol. de-energized: open to tank
Sol. energized: vent line blocked

** Sol. de-energized: vent line blocked
Sol energized: open to tank

Code	Description
Omit	Standard w/o vent function
G0R	12V=
G0Q	24V=
GAR	98V=
GAG	205V=
W30	110V 50Hz/ 120V 60Hz
W31	220V 50Hz/ 240V 60Hz

Code	Description
1	Nitrile
5	Fluorocarbon

Code	Description
008	Vent function with slow unloading
070*	Through-hole dia. 15mm (0.59") (for M14), and tank port flange thread M12
152	3-port body with metric threads

* Only R5V10 SAE 62.

Weight:	2-Port	3-Port
R5V06	4.0 kg (8.8 lbs.)	3.6 kg (7.9 lbs.)
R5V08	4.6 kg (10.1 lbs.)	4.6 kg (10.1 lbs.)
R4V10	5.9 kg (13.0 lbs.)	5.2 kg (11.5 lbs.)
R5V12	–	8.0 kg (17.6 lbs.)

R5V.indd, dd

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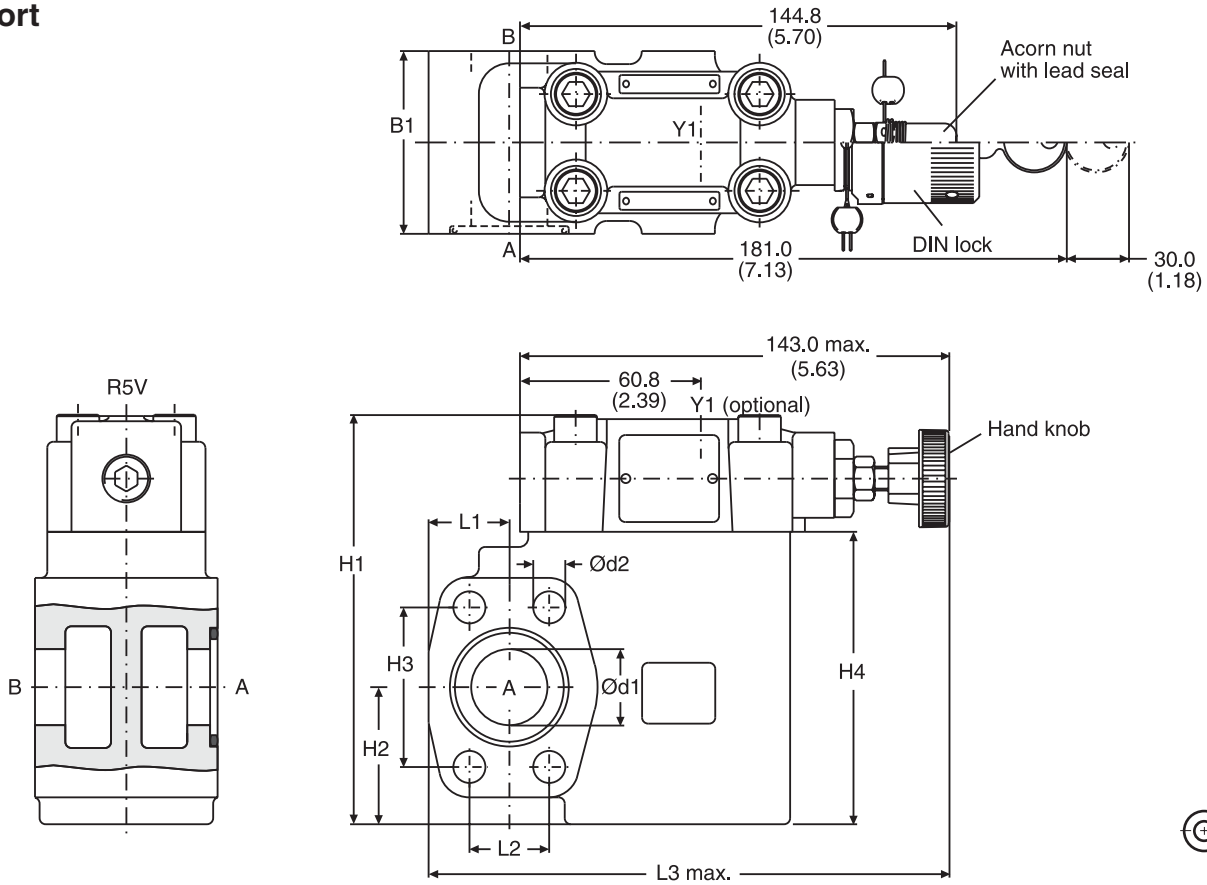
Hydraulic Valve Division
Elyria, Ohio, USA

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

2-Port



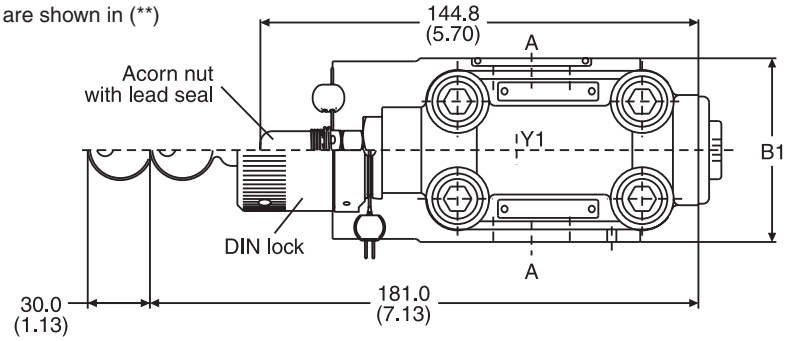
SAE 61

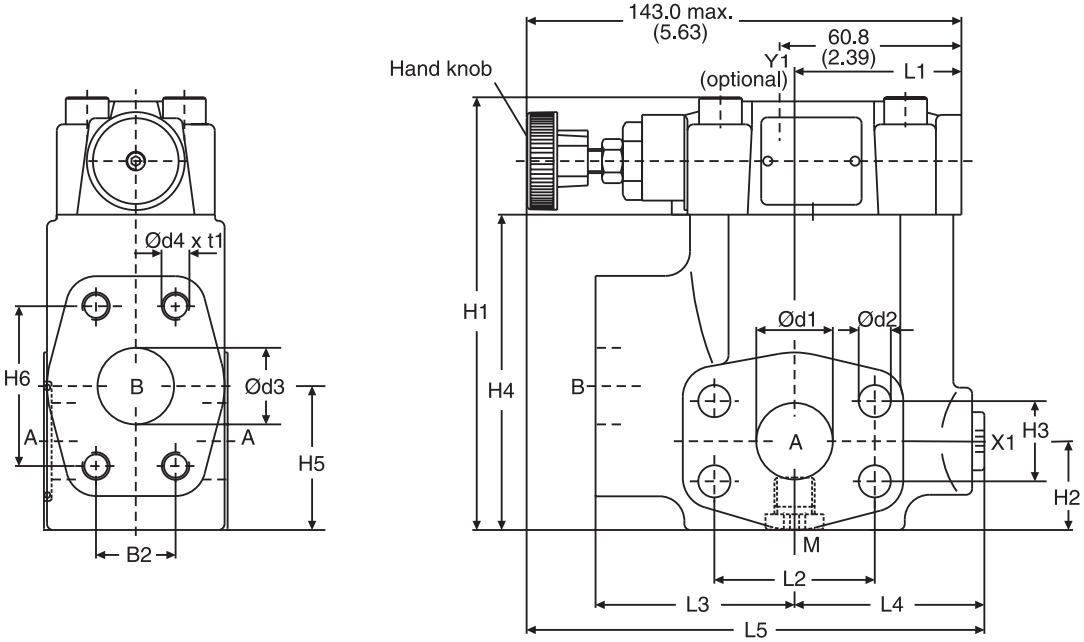
Size	B1	H1	H2	H3	H4	L1	L2	L3	d1	d2
06	60.0 (2.36)	131.6 (5.18)	37.0 (1.46)	47.6 (1.87)	90.0 (3.54)	24.6 (0.97)	22.2 (0.89)	152.0 (5.98)	19.0 (0.75)	10.5 (0.41)
08	60.0 (2.36)	137.6 (5.42)	45.0 (1.77)	52.4 (2.06)	96.0 (3.78)	26.5 (1.04)	26.2 (1.03)	171.0 (6.73)	25.0 (0.98)	10.5 (0.41)
10	75.0 (2.95)	150.6 (5.93)	48.0 (1.89)	58.7 (2.31)	109.0 (4.29)	34.0 (1.34)	30.2 (1.19)	179.0 (7.05)	32.0 (1.26)	12.5 (0.49)

Port	Function	Port Size		
		R5V06	R5V08	R5V10
A	Pressure	3/4" SAE 61	1" SAE 61	1-1/4" SAE 61
B	Tank	3/4" SAE 61	1" SAE 61	1-1/4" SAE 61
Y1	External Drain	SAE 4		

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

3-Port





SAE 61

Size	B1	B2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	d1	d2	d3	d4 (option 152)	t1
06	60.0 (2.36)	22.2 (0.87)	119.0 (4.69)	28.0 (1.10)	22.2 (0.87)	81.0 (3.19)	41.6 (1.64)	47.6 (1.87)	50.3 (1.98)	47.6 (1.87)	63.0 (2.48)	56.0 (2.20)	152.0 (5.98)	19.0 (0.75)	10.5 (0.41)	19.0 (0.75)	3/8"-16 UNC (M10)	20.0 (0.79)
08	60.0 (2.36)	26.2 (1.03)	141.0 (5.55)	29.0 (1.14)	26.2 (1.03)	103.0 (4.06)	47.0 (1.85)	52.4 (2.06)	55.8 (2.20)	52.4 (2.06)	65.0 (2.56)	58.0 (2.28)	149.0 (5.87)	25.0 (0.98)	10.5 (0.41)	25.0 (0.98)	3/8"-16 UNC (M10)	23.0 (0.91)
10	75.0 (2.95)	30.2 (1.19)	151.0 (5.94)	34.5 (1.36)	30.2 (1.19)	113.0 (4.45)	64.0 (2.52)	58.7 (2.31)	57.8 (2.28)	58.7 (2.31)	61.0 (2.40)	62.0 (2.44)	150.5 (5.93)	32.0 (1.26)	12.5 (0.49)	32.0 (1.26)	7/16"-14 UNC (M12)	22.0 (0.87)
12	80.0 (3.15)	35.7 (1.41)	178.0 (7.01)	34.0 (1.34)	35.7 (1.41)	140.0 (5.51)	73.0 (2.87)	69.8 (2.75)	37.3 (1.47)	69.8 (2.75)	92.5 (3.64)	55.2 (2.17)	171.2 (6.74)	38.0 (1.50)	13.5 (0.53)	38.0 (1.50)	1/2"-13 UNC (M12)	27.0 (1.06)

SAE 62

Size	B1	B2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	d1	d2	d3	d4 (option 152)	t1
06	60.0 (2.36)	23.8 (0.94)	119.0 (4.69)	28.0 (1.10)	23.8 (0.94)	81.0 (3.19)	41.6 (1.64)	50.8 (2.00)	50.3 (1.98)	50.8 (2.00)	63.0 (2.48)	56.0 (2.20)	152.0 (5.98)	19.0 (0.75)	10.5 (0.41)	19.0 (0.75)	3/8"-16 UNF (M10)	20.0 (0.79)
08	60.0 (2.36)	27.8 (1.09)	141.0 (5.55)	29.0 (1.14)	27.8 (1.09)	103.0 (4.06)	47.0 (1.85)	57.2 (2.25)	55.8 (2.20)	57.2 (2.25)	65.0 (2.56)	58.0 (2.28)	149.0 (5.87)	25.0 (0.98)	12.5 (0.49)	25.0 (0.98)	7/16"-14 UNC (M12)	22.0 (0.87)
10	75.0 (2.95)	31.8 (1.25)	151.0 (5.94)	34.5 (1.36)	31.8 (1.25)	113.0 (4.45)	64.0 (2.52)	66.7 (2.63)	57.8 (2.28)	66.7 (2.63)	61.0 (2.40)	62.0 (2.44)	150.5 (5.93)	32.0 (1.26)	13.5 (0.53)	32.0 (1.26)	1/2"-13 UNC (M12)	24.0 (0.94)
12	80.0 (3.15)	36.5 (1.44)	178.0 (7.01)	34.0 (1.34)	36.5 (1.44)	140.0 (5.51)	73.0 (2.87)	79.4 (3.13)	37.3 (1.47)	79.4 (3.13)	92.5 (3.64)	55.2 (2.17)	171.2 (6.74)	38.0 (1.50)	17.0 (0.67)	38.0 (1.50)	5/8"-11 UNC (M16)	33.0 (1.30)

Port	Function	Port size			
		R5V06	R5V08	R5V10	R5V12
A (2)	Pressure	3/4" SAE 61/62	1" SAE 61/62	1-1/4" SAE 61/62	1-1/2" SAE 61/62
B	Tank	3/4" SAE 61/62	1" SAE 61/62	1-1/4" SAE 61/62	1-1/2" SAE 61/62
X1	External pilot port *	SAE 4			
Y1	External drain	SAE 4			
M	Pressure gauge	SAE 4			

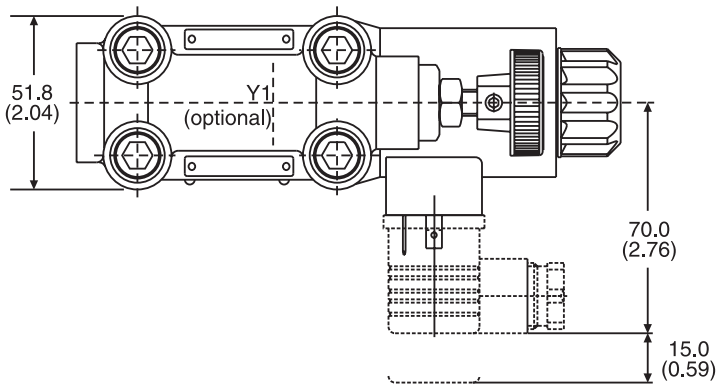
* closed when supplied.

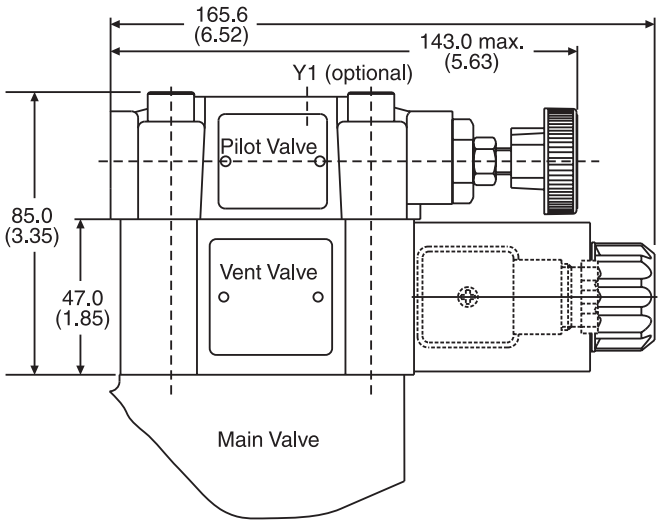
R5V.indd, dd

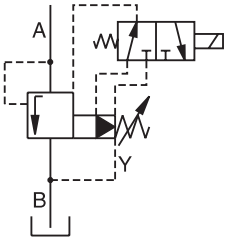
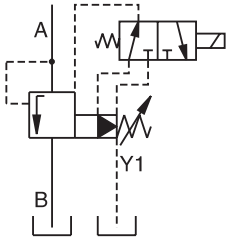
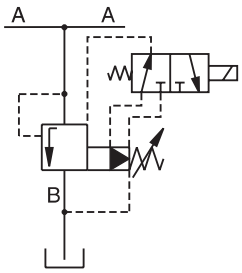
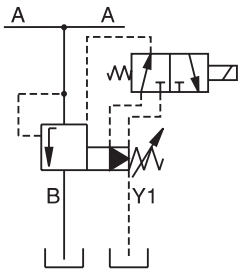
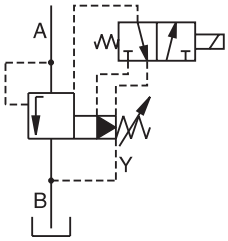
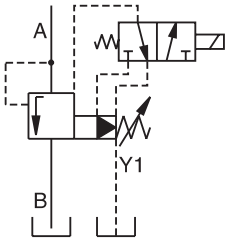
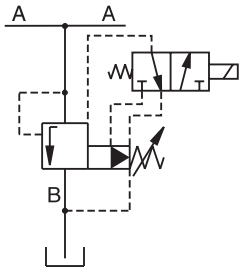
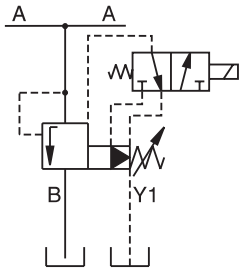
Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

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

with Vent Function

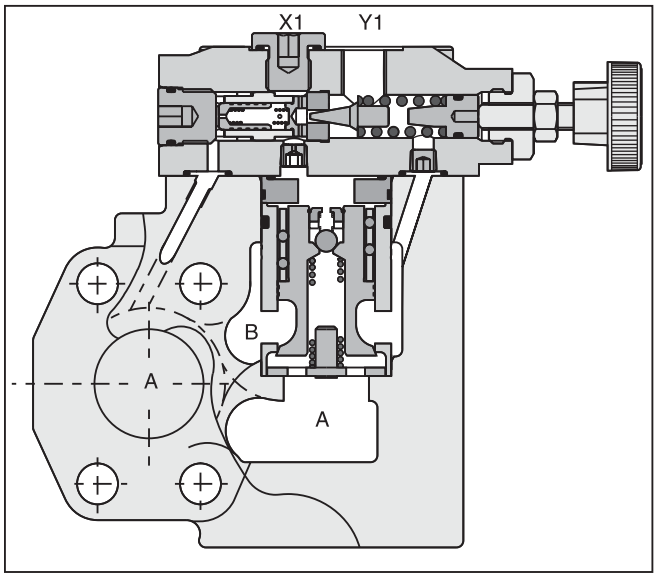


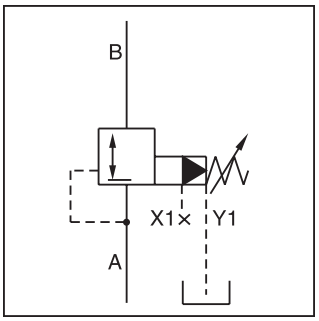


Code	R5V 2-Port		R5V 3-Port	
	Internal Drain	External Drain	Internal Drain	External Drain
11				
09				

General Description

Series R5R pilot operated pressure reducing valves have a similar design as the subplate mounted R4R series. The SAE flanges allow to mount the valves directly on the inlet flanges of actuators to achieve a very compact design.





Features

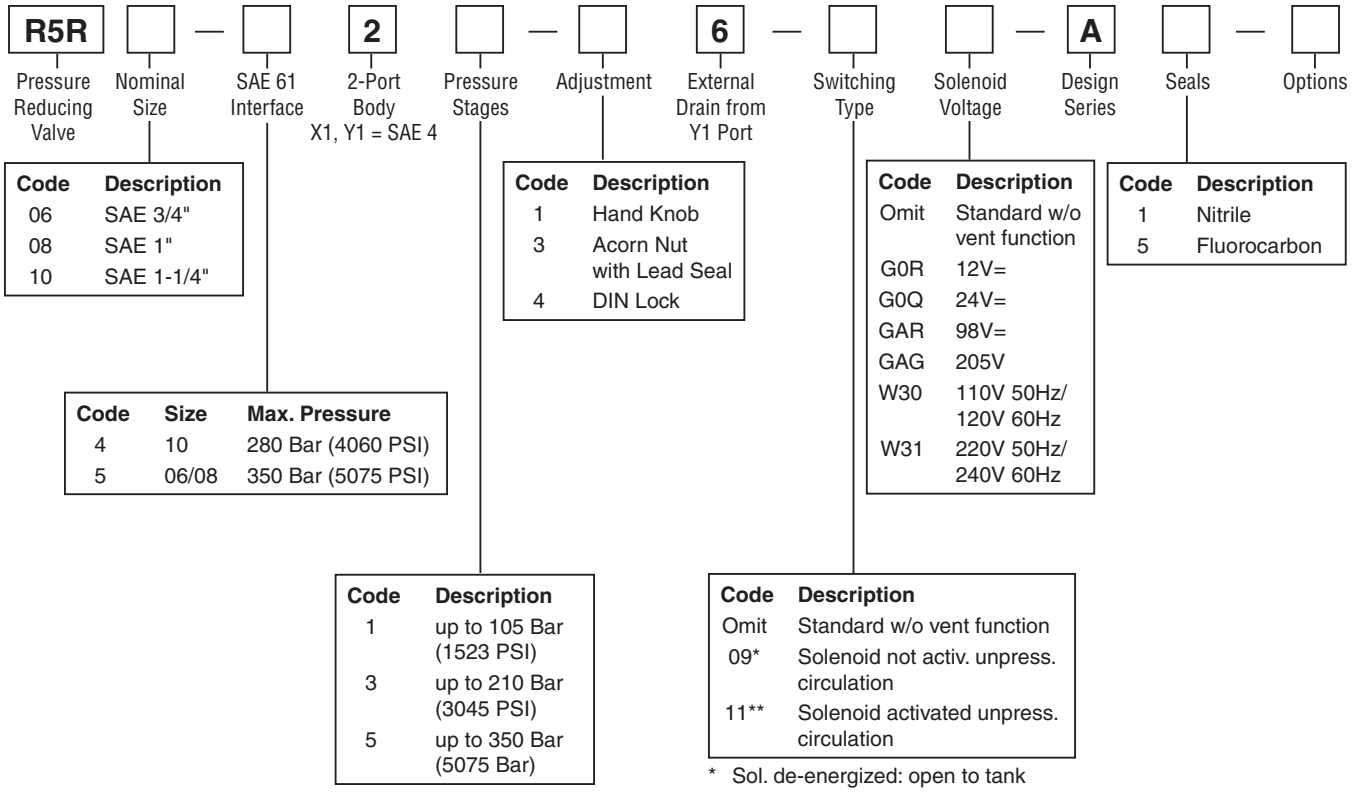
- Pilot operated with manual adjustment.
- Normally closed to avoid unintended motion.
- 2-port body with SAE61 flange.
- 3 sizes (SAE 3/4", 1", 1-1/4").
- 3 pressure stages.
- 3 adjustment modes
  – Hand knob
  – Acorn nut with lead seal
  – DIN lock
- With optional vent function.

Specifications

General						
Size		**06**	**08**	**10**		
Mounting		Flanged according to SAE 61				
Mounting Position		Unrestricted				
Ambient Temperature Range		-20°C to +50°C (-4°F to +122°F)				
Hydraulic						
Max. Operating Pressure	**Ports A,B, X1**	350 Bar (5075 PSI)	350 Bar (5075 PSI)	280 Bar (4060 PSI)		
	Port Y1	30 Bar (435 PSI)	30 Bar (435 PSI)	30 Bar (435 PSI)		
Pressure Stages		105 Bar (1523 PSI), 210 Bar (3045 PSI), 350 Bar (5075 PSI)				
Nominal Flow		90 LPM (23.8 GPM)	300 LPM (79.4 GPM)	600 LPM (158.7 GPM)		
Fluid		Hydraulic oil as per DIN 51524 ... 51525				
Fluid Temperature		-20°C to +80°C (-4°F to +176°F)				
Viscosity Permitted		10 to 650 cSt (mm^2/s)				
Viscosity Recommended		30 cSt (mm^2/s)				
Filtration		ISO Class 4406 (1999) 18/16/13 (acc. NAS 1638: 7)				
Electrical (Solenoid)						
Duty Ratio		100%				
Solenoid Connection		Connector as per EN175301-803				
Protection Class		IP65 in accordance with EN60529 (plugged and mounted)				
Supply Voltage		**G0R**	**G0Q**	**GAR**	**GAG**	**W30**	**W31**
		12V = +5 to -10 31 31	24V = +5 to -10 31 31	98V = +5 to -10 31 31	205V = +5 to -10 31 31	110V at 50Hz 120V at 60Hz ±5 64/59 [VA] 231/240 [VA]	220V at 50Hz 240V at 60Hz ±5 68/62 [VA] 231/240 [VA]
Response Time		Energized / De-energized AC: 20/18ms, DC: 46/27 ms					
Max. Switching Frequency		AC: up to 7200, DC: 70 to 16,000 switchings/hour					
Coil Insulation Class		H (180°C) (356°F)					

R5R.indd, dd

Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA



Code	Description
06	SAE 3/4"
08	SAE 1"
10	SAE 1-1/4"

Code	Size	Max. Pressure
4	10	280 Bar (4060 PSI)
5	06/08	350 Bar (5075 PSI)

Code	Description
1	up to 105 Bar (1523 PSI)
3	up to 210 Bar (3045 PSI)
5	up to 350 Bar (5075 Bar)

Code	Description
1	Hand Knob
3	Acorn Nut with Lead Seal
4	DIN Lock

Code	Description
Omit	Standard w/o vent function
G0R	12V=
G0Q	24V=
GAR	98V=
GAG	205V
W30	110V 50Hz/ 120V 60Hz
W31	220V 50Hz/ 240V 60Hz

Code	Description
Omit	Standard w/o vent function
09*	Solenoid not activ. unpress. circulation
11**	Solenoid activated unpress. circulation

* Sol. de-energized: open to tank
Sol. energized: vent line blocked

** Sol. de-energized: vent line blocked
Sol energized: open to tank

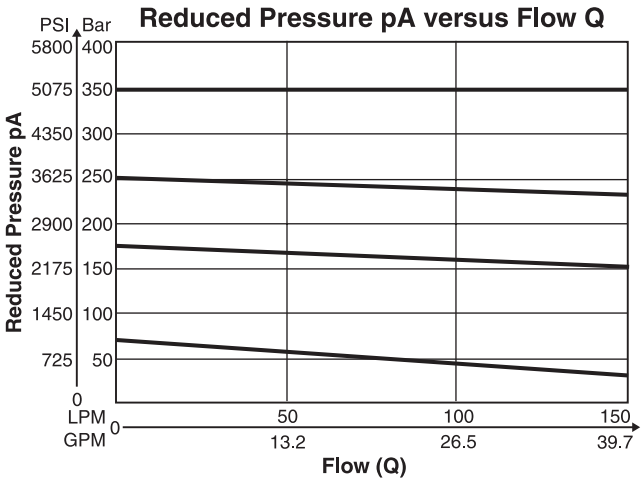
Code	Description
1	Nitrile
5	Fluorocarbon

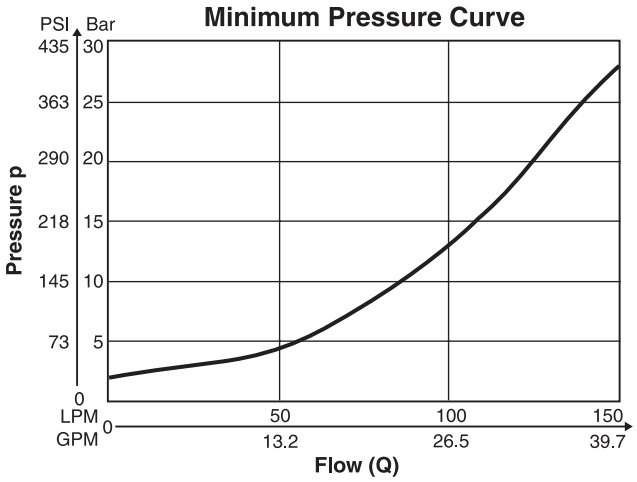
Further options on request.

Weight:

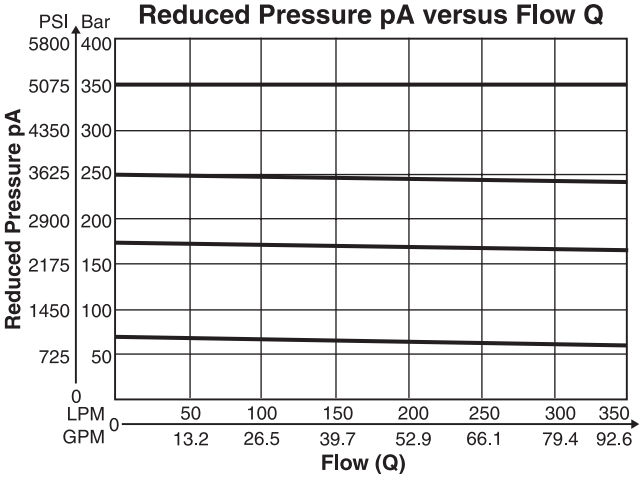
R5R06 4.0 kg (8.8 lbs.)
R5R08 4.6 kg (10.1 lbs.)
R5R10 5.9 kg (13.0 lbs.)

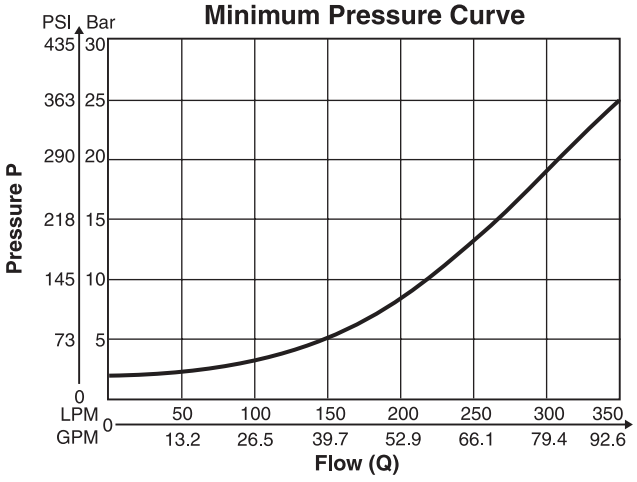
R5R06*



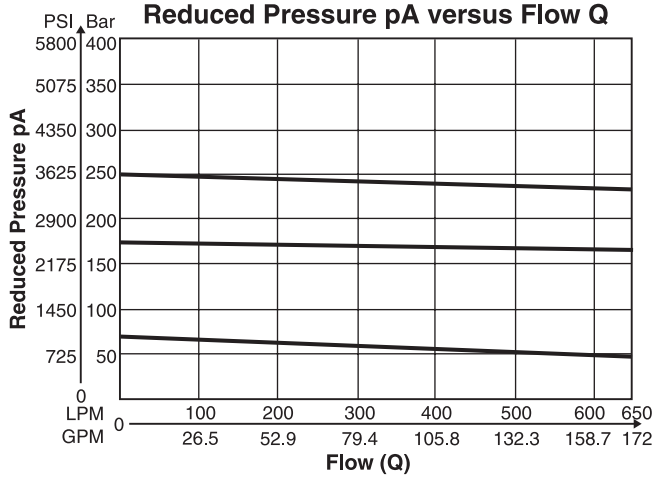


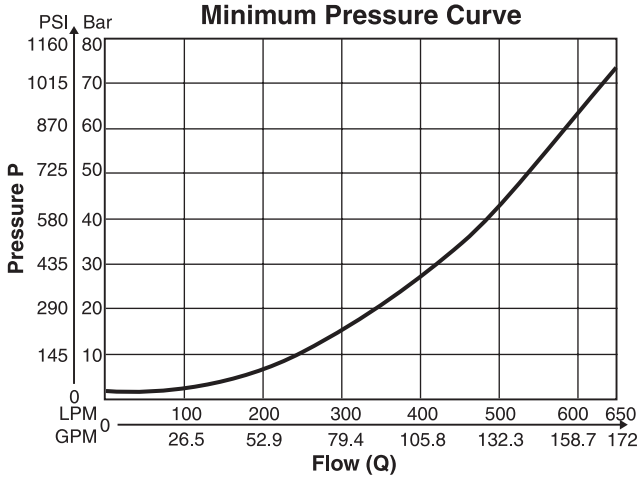
R5R08*





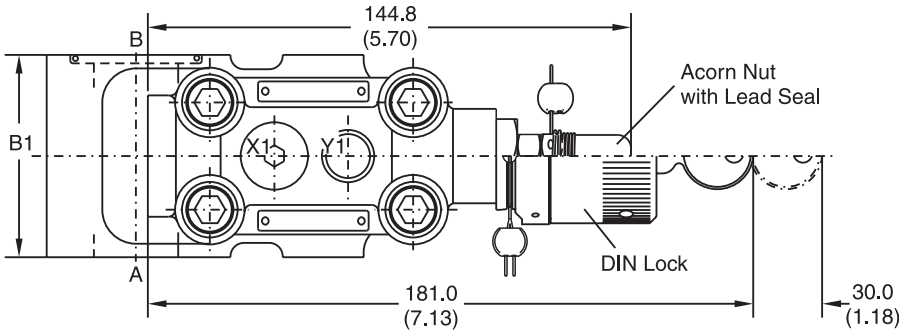
R5R10*

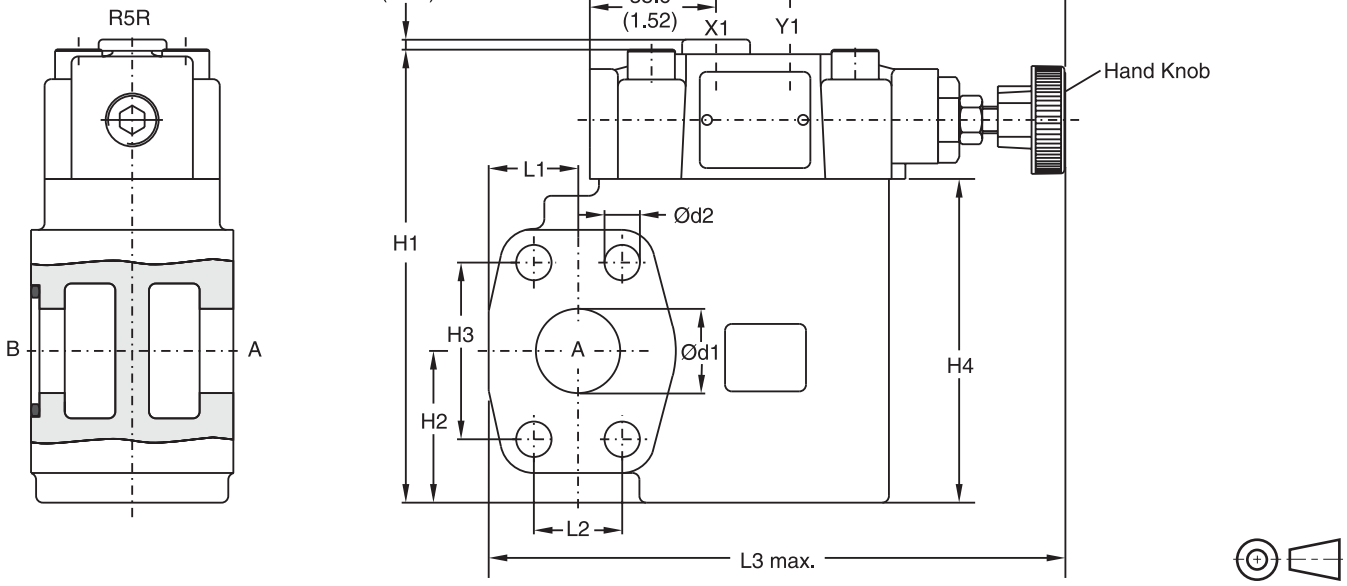




*Measured at 350 Bar (5075 PSI) primary pressure pB.

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



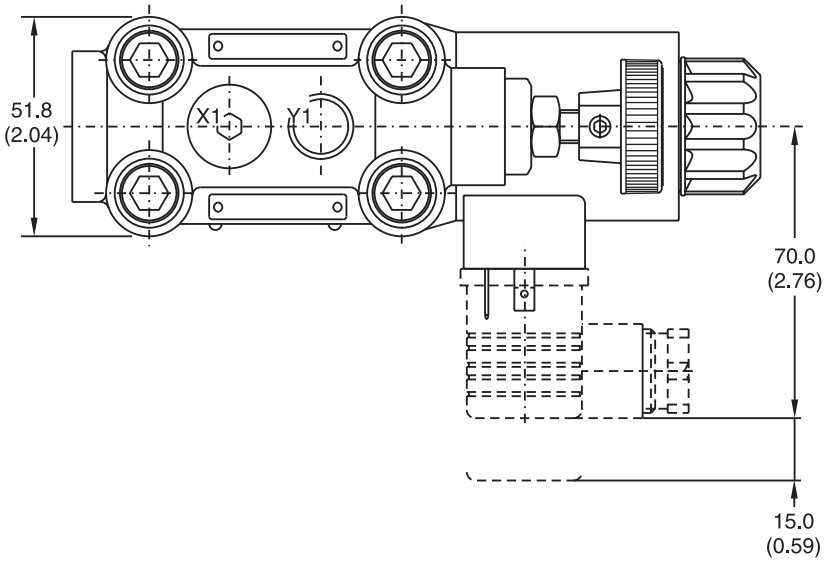


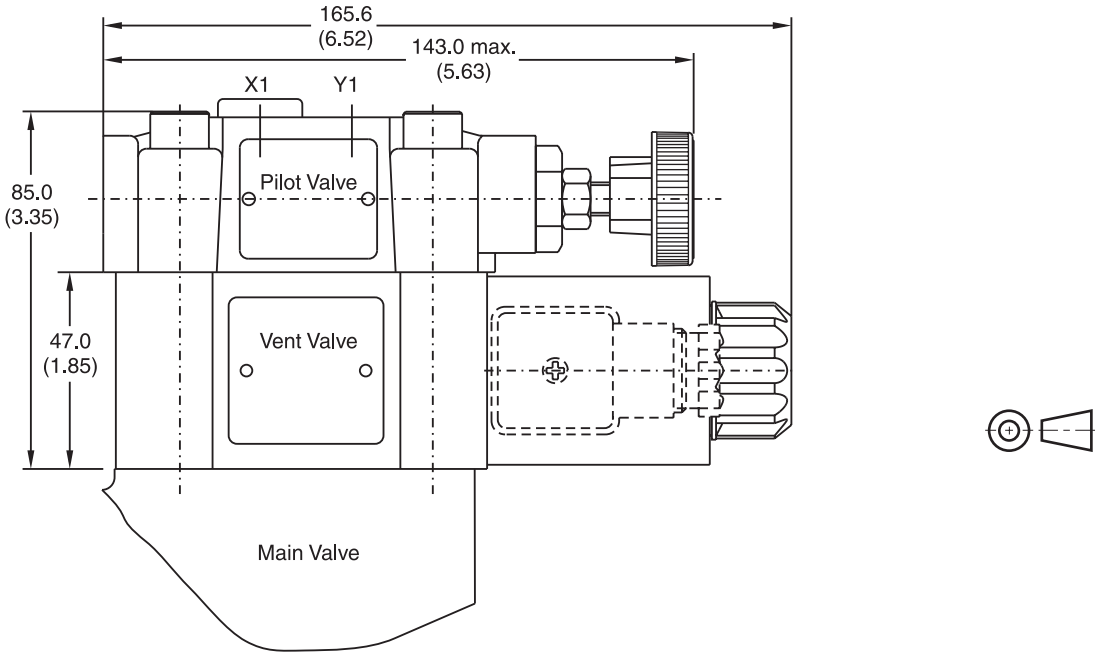
Size	B1	H1	H2	H3	H4	L1	L2	L3	d1	d2
06	60.0 (2.36)	131.6 (5.18)	37.0 (1.46)	47.6 (1.87)	90.0 (3.54)	24.6 (0.97)	22.2 (0.87)	152.0 (5.98)	19.0 (0.75)	10.5 (0.41)
08	60.0 (2.36)	137.6 (5.42)	45.0 (1.77)	52.4 (2.06)	96.0 (3.78)	26.5 (1.04)	26.2 (1.03)	171.0 (6.73)	25.0 (0.98)	10.5 (0.41)
10	75.0 (2.95)	150.6 (5.93)	48.0 (1.89)	58.7 (2.31)	109.0 (4.29)	34.0 (1.34)	30.2 (1.19)	179.0 (7.05)	32.0 (1.26)	12.5 (0.49)

Port	Function	Port Size		
		R5R06	R5R08	R5R10
B	Inlet Pressure	3/4" SAE 61	1" SAE 61	1-1/4" SAE 61
A	Reduced Outlet Pressure	3/4" SAE 61	1" SAE 61	1-1/4" SAE 61
Y1	External Drain	SAE 4		
X1	Pressure Gauge	SAE 4		

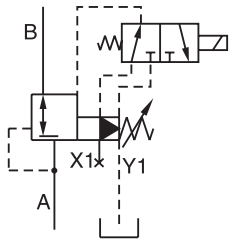
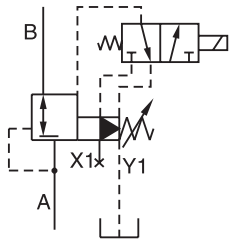
R5R with Vent Function

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





External Drain

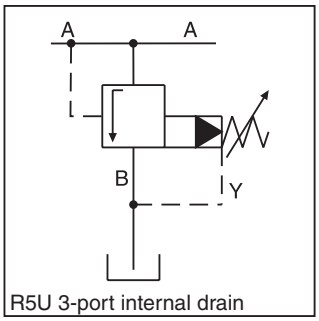
Code 11	Code 09
	

R5R.indd, dd

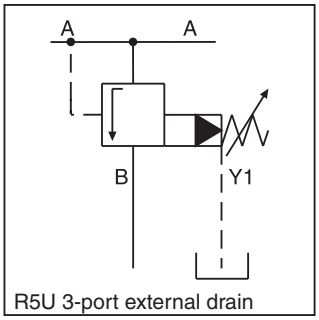
General Description

Series R5U pilot operated pressure unloading valves have a similar design to the subplate mounted R4U series. The SAE flanges allow to mount the valve directly on the outlet flanges of pumps.

A typical application is the unloading of a pump in an accumulator circuit. The combination of an R5U, C5V and R5V on a double pump generates a high pressure / low pressure pump system without the need of a manifold block or piping between the valves.



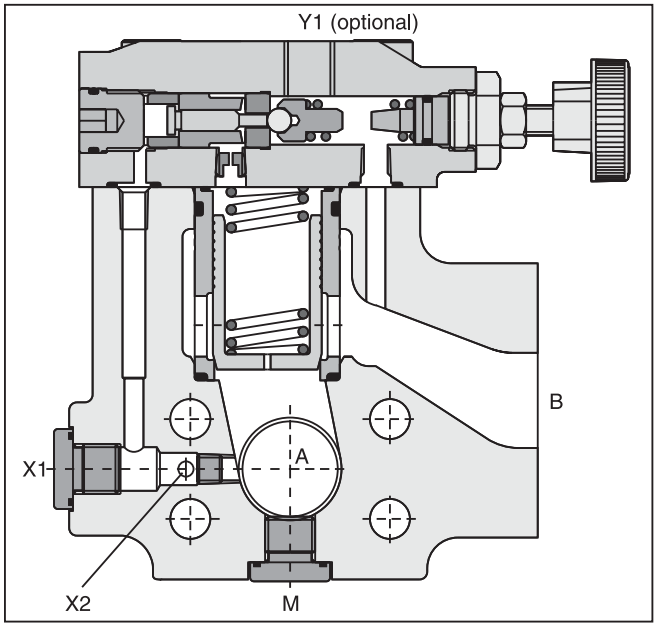
R5U 3-port internal drain



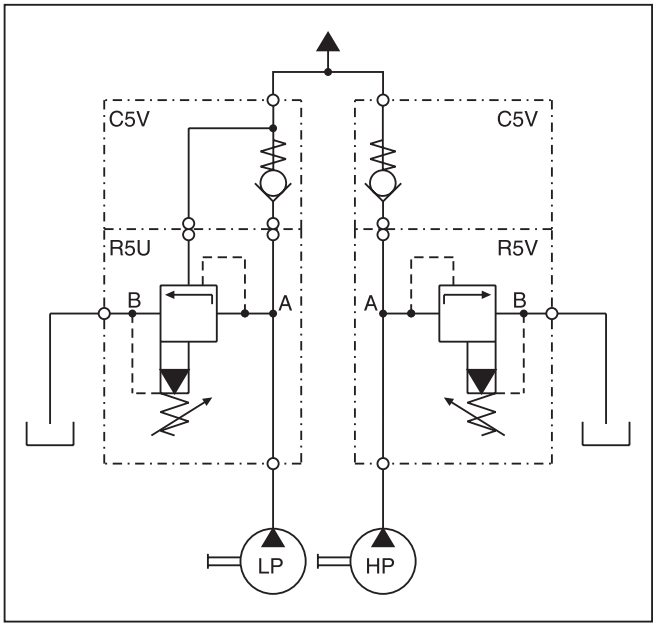
R5U 3-port external drain

Features

- Pilot operated unloading valve.
- 3-port body with SAE 61 flange.
- 4 sizes (SAE 3/4", 1", 1 1/4", 1 1/2").
- 3 pressure stages.
- 3 adjustment modes
  – Hand knob
  – Acorn nut with lead seal
  – DIN lock
- With optional vent function.



High Pressure / Low Pressure System



Specifications

General						
Size	**06**	**08**	**10**	**12**		
Mounting	Flanged according to SAE 61					
Mounting Position	Unrestricted					
Ambient Temperature	-20°C to +50°C (-4°F to +122°F)					
Hydraulic						
Maximum Operating Pressure **Ports A,B, X**	350 Bar (5075 PSI)	350 Bar (5075 PSI)	280 Bar (4060 PSI)	210 Bar (3045 PSI)		
Ports Y, Y1	30 Bar (435 PSI)	30 Bar (435 PSI)	30 Bar (435 PSI)	30 Bar (435 PSI)		
Pressure Stages	105 Bar (1523 PSI), 210 Bar (3045 PSI), 350 Bar (5075 PSI)					
Nominal Flow	90 LPM (23.8 GPM)	300 LPM (79.4 GPM)	600 LPM (158.7 GPM)	600 LPM (158.7 GPM)		
Fluid	Hydraulic oil as per DIN 51524 ... 51525					
Fluid Temperature	-20°C to +80°C (-4°F to +176°F)					
Viscosity Permitted	10 to 650 cSt (mm^2/s)					
Viscosity Recommended	30 cSt (mm^2/s)					
Filtration	ISO Class 4406 (1999) 18/16/13 (acc. NAS 1638: 7)					
Electrical						
Duty Ratio	100%					
Solenoid Connection	Connector as per EN175301-803					
Protection Class	IP65 in accordance with EN60529 (plugged and mounted)					
Supply Voltage	**G0R**	**G0Q**	**GAR**	**GAG**	**W30**	**W31**
	12V = +5 to -10 31 31	24V = +5 to -10 31 31	98V = +5 to -10 31 31	205V = +5 to -10 31 31	110V at 50Hz 120V at 60Hz ±5 64/59 [VA] 231/240 [VA]	220V at 50Hz 240V at 60Hz ±5 68/62 [VA] 231/240 [VA]
Response Time	Energized / De-energized AC: 20/18ms, DC: 46/27 ms					
Maximum Switching Frequency	AC: up to 7200 switchings/hour DC: 70 to 16,000 switchings/hour					
Coil Insulation Class	H (180°C) (356°F)					

Ordering Information

R5U □ — □ **3** □ — □ □ — □ □ — **A** □ — □

Pressure Unloading Valve | Nominal Size | SAE61 Interface | 3-Port Body | Pressure Stages | Adjustment | Pilot Oil | Switching Type | Solenoid Voltage | Design Series | Seals | Options

Code	Description
06	SAE 3/4"
08	SAE 1"
10	SAE 1-1/4"
12	SAE 1-1/2"

M, Y1, X = SAE 4

Code	Size	Max. Pressure
3	12	210 Bar (3045 PSI)
4	10	280 Bar (4060 PSI)
5	06/08	350 Bar (5075 PSI)

Code	Description
1	Hand Knob
3	Acorn Nut with Lead Seal
4	DIN Lock

Code	Pilot	Drain
4	External via port X1 or X2	External
5	External via port X1 or X2	Internal

Code	Description
Omit	Standard w/o vent function
G0R	12V=
G0Q	24V=
GAR	98V=
GAG	205V=
W30	110V 50Hz/ 120V 60Hz
W31	220V 50Hz/ 240V 60Hz

Code	Description
1	Nitrile
5	Fluorocarbon

Code	Pressure Stage	Pressure Differential
1	up to 105 Bar (1523 PSI)	28%
3	up to 210 Bar (3045 PSI)	28%
5	up to 350 Bar (5075 Bar)	15%

Code	Description
Omit	Standard w/o vent function
09*	Solenoid not activ. unpress. circulation
11**	Solenoid activated unpress. circulation

* Sol. de-energized: open to tank
Sol. energized: vent line blocked

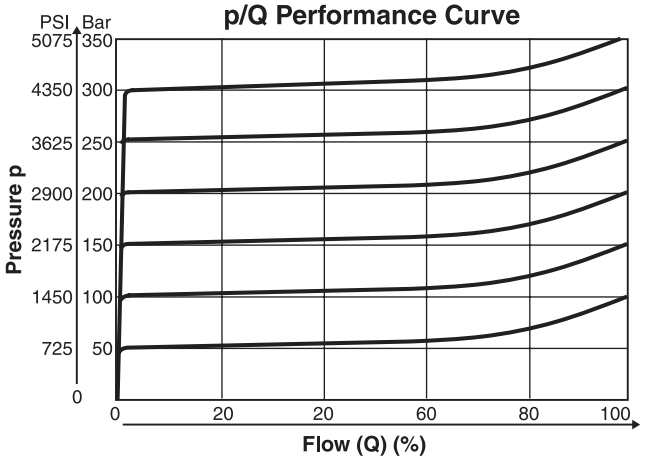
** Sol. de-energized: vent line blocked
Sol energized: open to tank

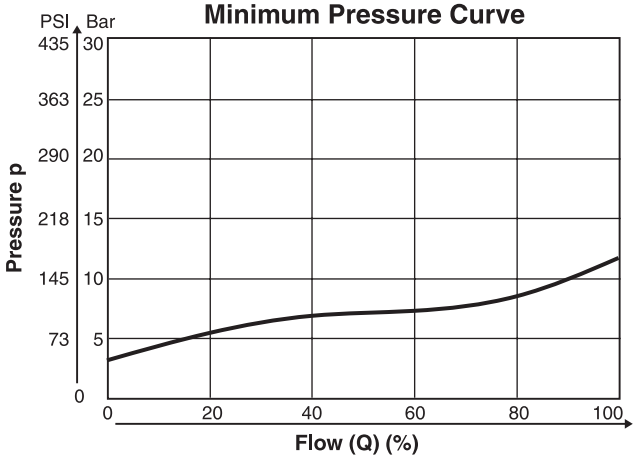
Weight:

R5U06	3.6 kg (7.9 lbs)
R5U08	4.6 kg (10.1 lbs.)
R5U10	5.2 kg (11.5 lbs.)
R5U12	8.0 kg (17.6 lbs.)

Further options on request.

Performance Curves



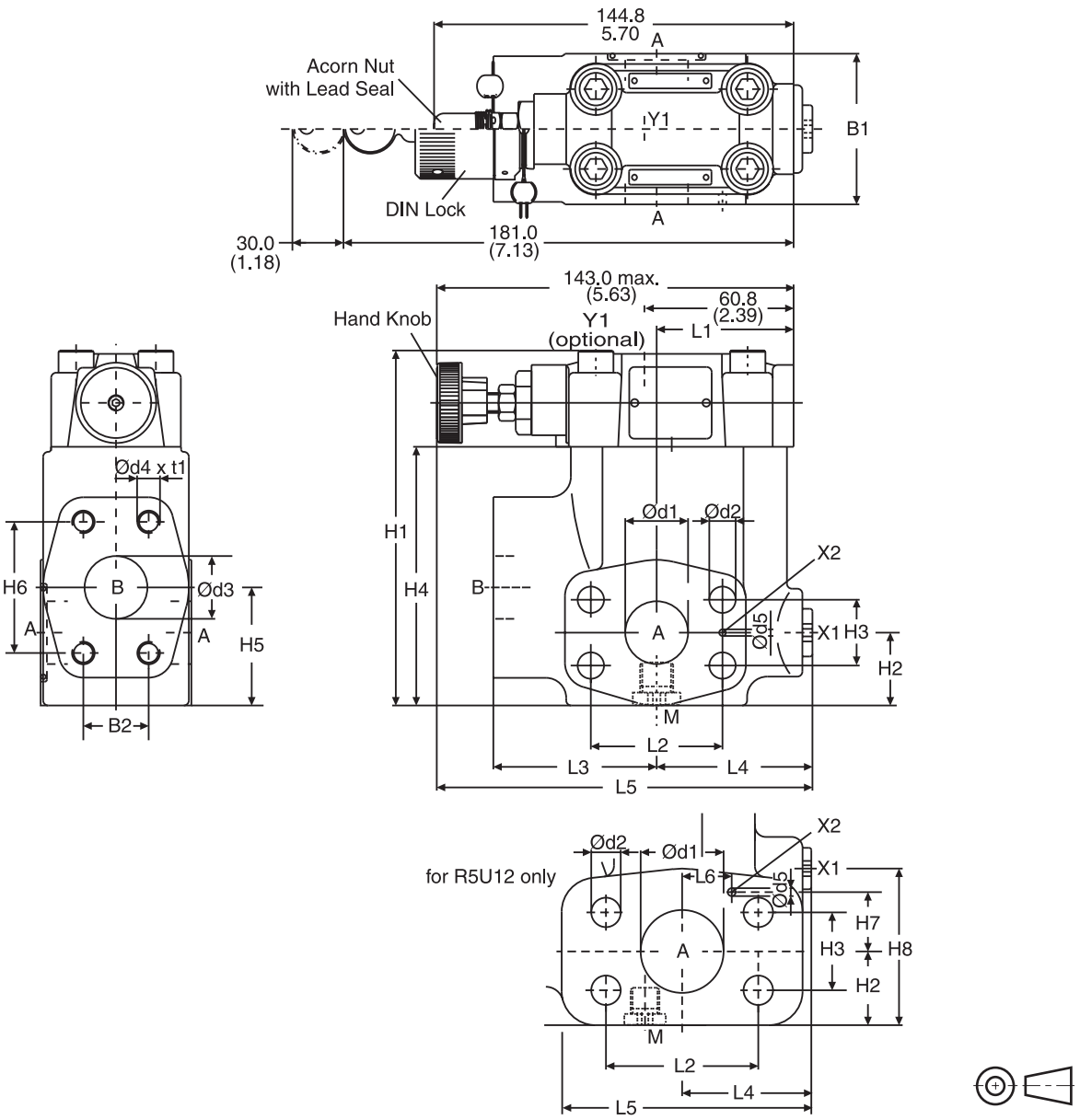


The performance curves are measured with external drain.
For internal drain the tank pressure has to be added to curve.

R5U.indd, dd

Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

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



Size	B1	B2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	d1	d2	d3	d4	t1	d5	L6	H7	H8
06	60.0 (2.36)	22.2 (0.87)	119.0 (4.69)	28.0 (1.10)	22.2 (0.87)	81.0 (3.19)	41.6 (1.64)	47.6 (1.87)	50.0 (1.98)	47.6 (1.87)	63.0 (2.48)	56.0 (2.20)	152.0 (5.98)	19.0 (0.75)	10.5 (0.41)	19.0 (0.75)	3/8"-16 UNC	20.0 (0.79)	3.0 (0.12)	–	–	–
08	60.0 (2.36)	26.2 (1.03)	141.0 (5.55)	29.0 (1.14)	26.2 (1.03)	103.0 (4.06)	47.0 (1.85)	52.4 (2.06)	55.8 (2.20)	52.4 (2.06)	65.0 (2.56)	58.0 (2.28)	149.0 (5.87)	25.0 (0.98)	10.5 (0.41)	25.0 (0.98)	3/8"-16 UNC	23.0 (0.91)	3.0 (0.12)	–	–	–
10	75.0 (2.95)	30.2 (1.19)	151.0 (5.94)	34.5 (1.36)	30.2 (1.19)	113.0 (4.45)	64.0 (2.52)	58.7 (2.31)	57.8 (2.28)	58.7 (2.31)	61.0 (2.40)	62.0 (2.44)	150.5 (5.93)	32.0 (1.26)	12.5 (0.49)	32.0 (1.26)	7/16"-14 UNC	22.0 (0.87)	3.0 (0.12)	–	–	–
12	80.0 (3.15)	35.7 (1.41)	178.0 (7.01)	34.0 (1.34)	35.7 (1.41)	140.0 (5.51)	73.0 (2.87)	69.8 (2.75)	37.3 (1.47)	69.8 (2.75)	92.5 (3.64)	55.2 (2.17)	171.2 (6.74)	38.0 (1.50)	13.5 (0.53)	38.0 (1.50)	1/2"-13 UNC	27.0 (1.06)	3.0 (0.12)	34.9 (1.37)	27.2 (1.07)	73.0 (2.87)

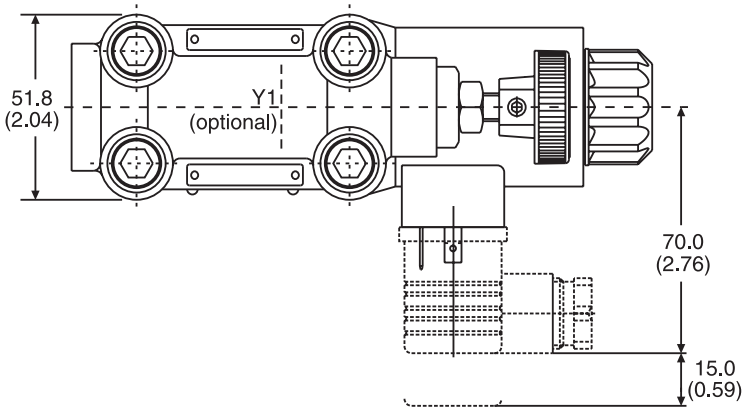
Port	Function	Port Size			
		R5U06	R5U08	R5U10	R5U12
A (2)	Pressure	3/4" SAE 61	1" SAE 61	1-1/4" SAE 61	1-1/2" SAE 61
B	Tank	3/4" SAE 61	1" SAE 61	1-1/4" SAE 61	1-1/2" SAE 61
X1	External Pilot Port*	SAE 4			
Y1	External Drain	SAE 4			
M	Pressure Gauge	SAE 4			

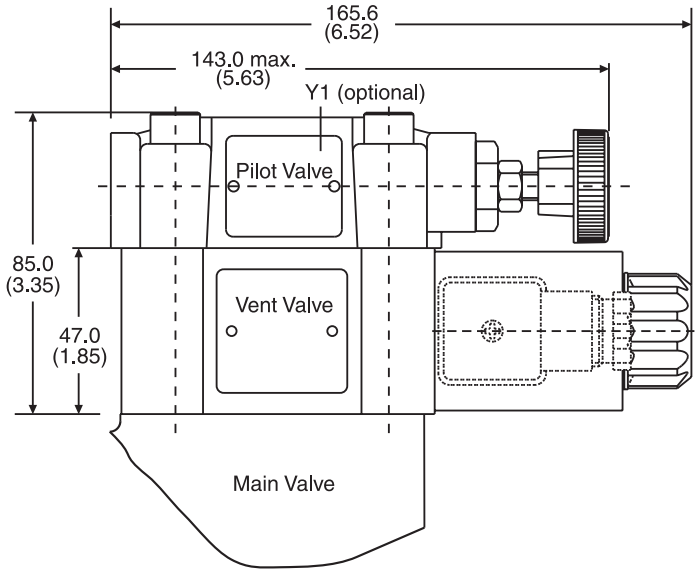
* closed when supplied.

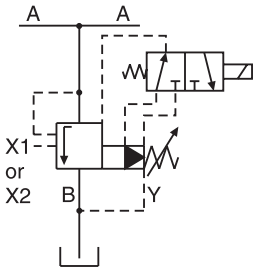
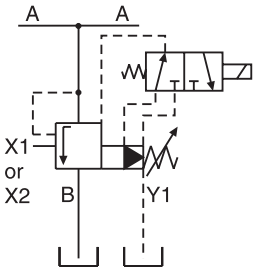
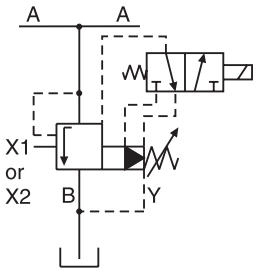
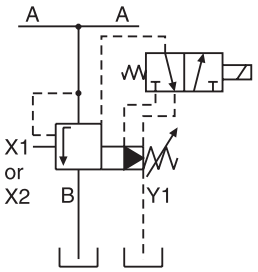
R5U.indd, dd

R5U with Vent Function

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





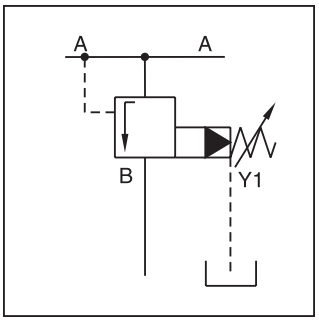
Code	Internal Drain	External Drain
11		
09		

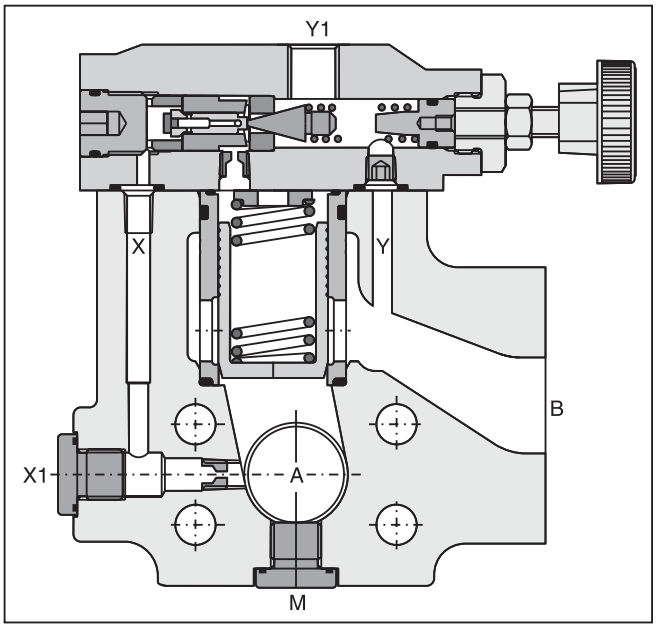
R5U.indd, dd

Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

General Description

Series R5S pilot operated sequence valves have a similar design to the subplate mounted R4S series. The SAE flanges allow to mount the valve directly on the inlet flanges of actuators or outlet flanges of pumps to achieve a very compact design.





Features

- Pilot operated with manual adjustment.
- 3-port body with SAE61 flange.
- 3 sizes (SAE 3/4", 1", 1-1/4").
- 3 pressure stages.
- 2 adjustment modes
  – Hand knob
  – Acorn nut with lead seal

Specifications

General				
Size		**06**	**08**	**10**
Mounting		Flanged according to SAE 61		
Mounting Position		Unrestricted		
Ambient Temperature Range		-20°C to +50°C (-4°F to +122°F)		
Hydraulic				
Max. Operating Pressure	**Ports A,B**	350 Bar (5075 PSI)	350 Bar (5075 PSI)	280 Bar (4060 PSI)
	Ports Y, Y1	30 Bar (435 PSI)	30 Bar (435 PSI)	30 Bar (435 PSI)
Pressure Stages		105 Bar (1523 PSI), 210 Bar (3045 PSI), 350 Bar (5075 PSI)		
Nominal Flow		90 LPM (23.3 GPM)	300 LPM (79.4 GPM)	600 LPM (158.7 GPM)
Fluid		Hydraulic oil as per DIN 51524 ... 51525		
Fluid Temperature		-20°C to 80°C (-4°F to 176°F)		
Viscosity Permitted		10 to 650 cSt (mm^2/s)		
Viscosity Recommended		30 cSt (mm^2/s)		
Filtration		ISO Class 4406 (1999) 18/16/13 (acc. NAS 1638: 7)		

Ordering Information

R5S	□	—	□	3	□	—	□	6	—	A	□	—	□
Pressure Sequence Valve	Nominal Size		SAE 61 Interface	3-Port Body Y1, M = SAE 4	Pressure Stages		Adjustment	External Drain from Y1 Port		Design Series	Seals		Options

Code	Description
06	SAE 3/4"
08	SAE 1"
10	SAE 1-1/4"

Code	Description
1	up to 105 Bar (1523 PSI)
3	up to 210 Bar (3045 PSI)
5	up to 350 Bar (5075 Bar)

Code	Size	Max. Pressure
4	10	280 Bar (4060 PSI)
5	06/08	350 Bar (5075 PSI)

Code	Description
1	Hand Knob
3	Acorn Nut with Lead Seal

Code	Description
1	Nitrile
5	Fluorocarbon

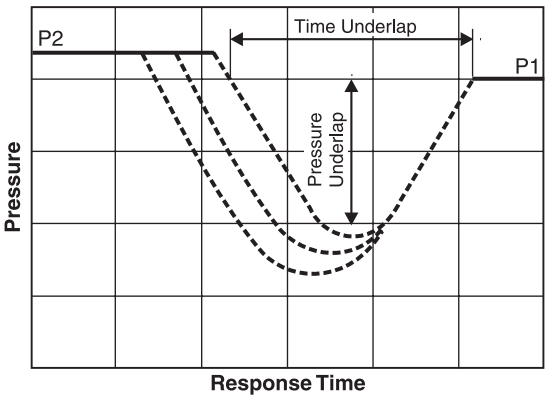
Further options on request.

Weight:

R5S06	3.6 kg (7.9 lbs.)
R5S08	4.6 kg (10.1 lbs.)
R5S10	5.2 kg (11.5 lbs.)

Performance Curve

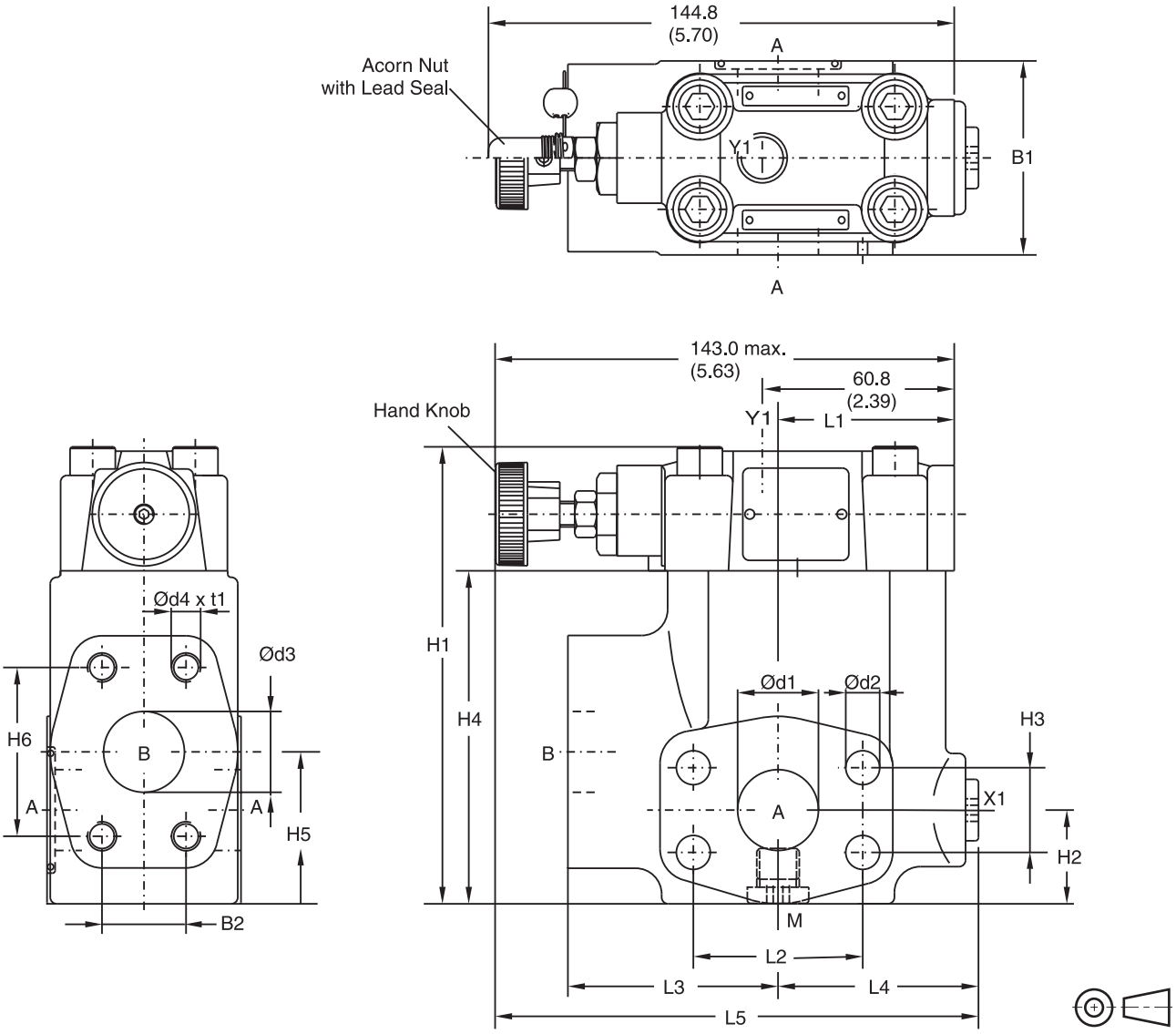
Typical Pressure Characteristics at Closing Point



P1 = Setting Pressure
P2 = Operating Pressure

Time and pressure underlap depend on the characteristics of the specific system.

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



SAE 61

Size	B1	B2	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	d1	d2	d3	d4 (option 152)	t1
06	60.0 (2.36)	22.2 (0.87)	119.0 (4.69)	28.0 (1.10)	22.2 (0.87)	81.0 (3.19)	41.6 (1.64)	47.6 (1.87)	50.3 (1.98)	47.6 (1.87)	63.0 (2.48)	56.0 (2.20)	152.0 (5.98)	19.0 (0.75)	10.5 (0.41)	19.0 (0.75)	3/8"-16 UNC (M10)	20.0 (0.79)
08	60.0 (2.36)	26.2 (1.03)	141.0 (5.55)	29.0 (1.14)	26.2 (1.03)	103.0 (4.06)	47.0 (1.85)	52.4 (2.06)	55.8 (2.20)	52.4 (2.06)	65.0 (2.56)	58.0 (2.28)	149.0 (5.87)	25.0 (0.93)	10.5 (0.41)	25.0 (0.98)	3/8"-16 UNC (M10)	23.0 (0.91)
10	75.0 (2.95)	30.2 (1.19)	151.0 (5.94)	34.5 (1.36)	30.2 (1.19)	113.0 (4.45)	64.0 (1.52)	58.7 (2.31)	57.8 (2.28)	58.7 (2.31)	61.0 (2.40)	62.0 (2.44)	150.5 (5.93)	32.0 (1.26)	12.5 (0.49)	32.0 (1.26)	7/16"-14 UNC (M12)	22.0 (0.87)

Port	Function	Port Size		
		R5S06	R5S08	R5S10
A (2)	Pressure	3/4" SAE 61	1" SAE 61	1-1/4" SAE 61
B	Secondary Port	3/4" SAE 61	1" SAE 61	1-1/4" SAE 61
X1	External Pilot Port*	SAE 4		
Y1	External Drain	SAE 4		
M	Pressure Gauge	SAE 4		

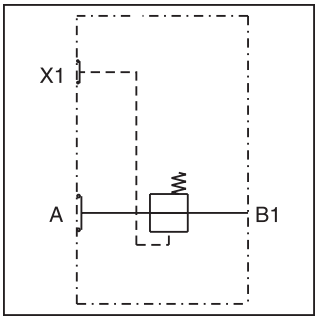
* closed when supplied.

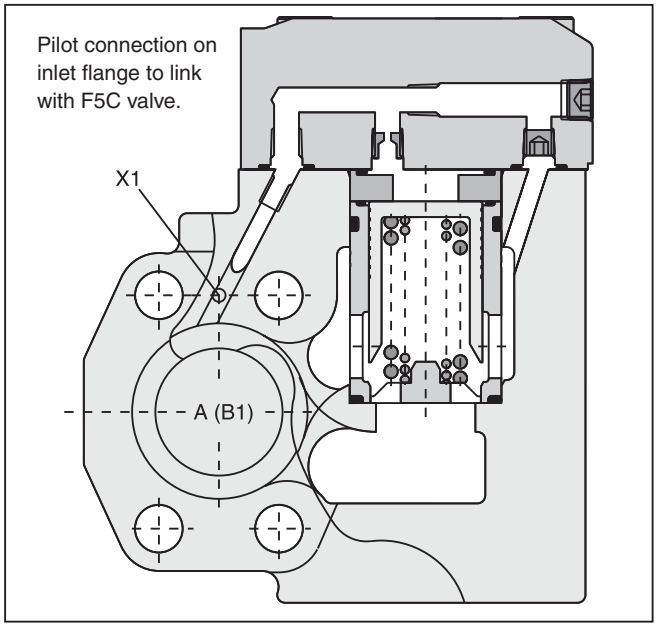
R5S.indd, dd

Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

General Description

Series R5A direct operated 2-way pressure compensators can be combined with any type of fixed or adjustable flow resistor (throttle) to provide a load compensated flow. The combination with the proportional throttle valve F5C serves as a compact 2-way flow control unit in SAE flange design. The R5A is typically used as meter-out compensator behind the flow resistor.





Features

- Seated type 2 way pressure compensator.
- SAE 61 flange.
- 8.4 bar (121.8 PSI) control pressure.
- 3 sizes, SAE 3/4", 1", 1 1/4".
- Load compensated flow in combination with F5C.

Specifications

General			
Size	**06**	**08**	**10**
Suplate Mounting	Flanged according to SAE 61		
Mounting Position	Unrestricted		
Ambient Temperature Range	-20°C to +50°C (-4°F to +122°F)		
Hydraulic			
Maximum Operating Pressure	350 Bar (5075 PSI)	350 Bar (5075 PSI)	280 Bar (4060 PSI)
Control Pressure	8.4 Bar (121 PSI)		
Nominal Flow	90 LPM (23.8 GPM)	300 LPM (79.4 GPM)	600 LPM (158.7 GPM)
Fluid	Hydraulic oil as per DIN 51524 ... 51525		
Fluid Temperature	-20°C to +80°C (-4°F to +176°F)		
Viscosity **Recommended**	10 to 650 cSt (mm^2/s)		
Permitted	20 to 30 cSt (mm^2/s)		
Filtration	ISO Class 4406 (1999) 18/16/13 (acc. NAS 1638: 7)		

Ordering Information

R5A	☐	—	☐	4	1	—	01	☐	☐	—	☐
2-Port Compensator	Nominal Size		SAE 61 Interface	2-Port Body	Plain Cap		Pilot Connection thru Port X1	Design Series	Seals		Options

Code	Description
06	SAE 3/4"
08	SAE 1"
10	SAE 1-1/4"

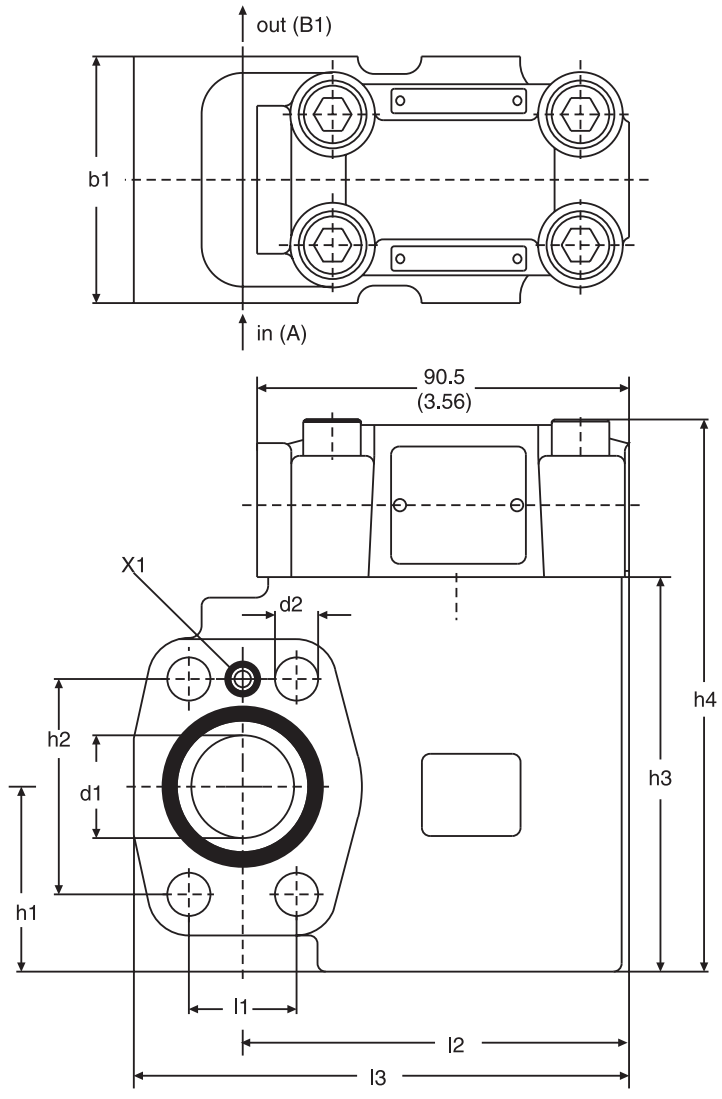
Code	Size	Max. Pressure
4	10	280 Bar (4060 PSI)
5	06/08	350 Bar (5075 PSI)

Code	Description
1	Nitrile
5	Fluorocarbon

Weight

R5A06	23.6 kg (7.9 lbs.)
R5A08	4.3 kg (9.5 lbs.)
R5A10	5.6 kg (12.3 lbs.)

Dimensions



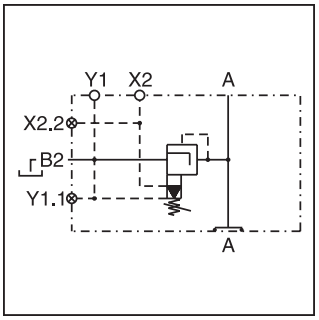
Size	l1	l2	l3	b1	h1	h2	h3	h4	d1	d2
R5A06	22.2 (0.87)	84.0 (3.31)	108.0 (4.25)	60.0 (2.36)	37.0 (1.46)	47.6 (1.87)	90.0 (3.54)	128.0 (5.04)	19.0 (0.75)	10.5 (0.41)
R5A08	26.2 (1.03)	101.0 (3.98)	128.0 (5.04)	60.0 (2.36)	45.0 (1.77)	52.4 (2.06)	96.0 (3.78)	134.0 (5.28)	25.0 (0.98)	10.5 (0.41)
R5A10	30.2 (0.44)	101.0 (3.98)	135.0 (5.31)	75.0 (2.95)	48.0 (1.89)	58.7 (2.31)	109.0 (4.29)	147.0 (5.79)	32.0 (1.26)	12.5 (0.49)

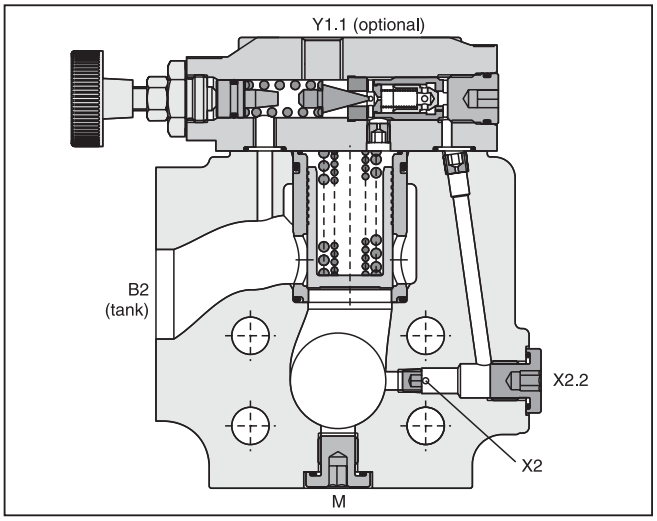
R5A.indd, dd

General Description

Series R5P direct operated, 3-way pressure compensators can be combined with any type of fixed or adjustable flow resistor (throttle) to provide a load compensated flow. The combination with the proportional throttle valve F5C serves as a compact 3-way flow control unit in SAE flange design. The R5P is typically used as meter-in compensator in front of the flow resistor.

The R5P is additionally equipped with a pressure relief pilot that controls the compensator cartridge and operates a system pressure relief valve. The R5P*P2 provides a proportional relief function.





Features

- Seated type 3-way pressure compensator.
- SAE 61 flange.
- 8.4 bar (121.8 PSI) control pressure.
- Pressure relief function (optionally proportional).
- With optional vent function.
- 3 sizes (SAE 3/4", 1", 1-1/4").
- Load compensated flow in combination with F5C.

Specifications

General							
Size		**06**		**08**		**10**	
Mounting		Flanged according to SAE 61					
Mounting Position		Unrestricted					
Ambient Temperature Range		-20°C to +50°C (-4°F to +122°F)					
Hydraulic							
Max. Operating Pressure	**Ports A, B**	350 Bar (5075 PSI)		350 Bar (5075 PSI)		280 Bar (4060 PSI)	
Pressure Stages		105 Bar (1523 PSI), 210 Bar (3045 PSI), 350 Bar (5075 PSI)					
Nominal Flow		90 LPM (23.8 GPM)		300 LPM (79.4 GPM)		600 LPM (158.7 GPM)	
Fluid		Hydraulic oil as per DIN 51524 ... 51525					
Fluid Temperature		-20°C to +80°C (-4°F to +176°F)					
Viscosity Permitted		10 to 650 cSt (mm^2/s)					
Viscosity Recommended		30 cSt (mm^2/s)					
Filtration		ISO Class 4406 (1999) 18/16/13 (acc. NAS 1638: 7)					
Electrical (Solenoid) R5P with VV01							
Duty Ratio		100%					
Solenoid Connection		Connector as per EN175301-803					
Protection Class		IP65 in accordance with EN60529 (plugged and mounted)					
	Code	**G0R**	**G0Q**	**GAR**	**GAG**	**W30**	**W31**
Supply Voltage		12V =	24V =	98V =	205V =	110V at 50Hz 120V at 60Hz	220V at 50Hz 240V at 60Hz
Tolerance Supply Voltage		+5 to -10	+5 to -10	+5 to -10	+5 to -10	±5	±5
Power Consumption	**Hold**	31	31	31	31	64/59 [VA]	68/62 [VA]
	In Rush	31	31	31	31	231/240 [VA]	231/240 [VA]
Response Time		Energized / De-energized AC: 20/18ms, DC: 46/27 ms					
Maximum Switching Frequency		AC: up to 7200, DC: 70 to 16,000 switchings/hour					
Coil Insulation Class		H (180°C) (356°F)					

R5P.indd, dd

Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

R5P □ — □ □ □ — □ □ — □ □ □ **A** □ — □

3-Port Compensator | Nominal Size | SAE 61 Interface | Pilot Ports | Pressure Stages | Adjustment | Pilot Connection | Switching Type | Solenoid Voltage | Design Series | Seals | Options

Code	Description
06	SAE 3/4"
08	SAE 1"
10	SAE 1-1/4"

Code	Size	Max. Pressure
4	10	280 Bar (4060 PSI)
5	06/08	350 Bar (5075 PSI)

Code	Pilot Port	Port Y1*
3	SAE 4	Plugged
S	SAE 4	Open

* Y1 port is used in combination with F5C, when the F5C should be drained through the R5P (internal or external drain).

Code	Description
1	7 to 105 Bar (102 to 1523 PSI)
3	7 to 210 Bar (102 to 3045 PSI)
5	7 to 350 Bar (102 to 5075 Bar)

Code	Description
1	Hand Knob
3	Acorn Nut with Lead Seal

Code	Description
2	Internal PD Internal PP*
6	External PD** External PP*

* PP through port X1 in outlet flange.

** Through port Y1.1.

Code	Description
Omit	Standard w/o vent function
09*	Solenoid not activated unpress. circulation
11**	Solenoid activated unpress. circulation

* Solenoid de-energized: open to tank solenoid energized: vent line blocked.

** Solenoid de-energized: vent line blocked solenoid energized: open to tank.

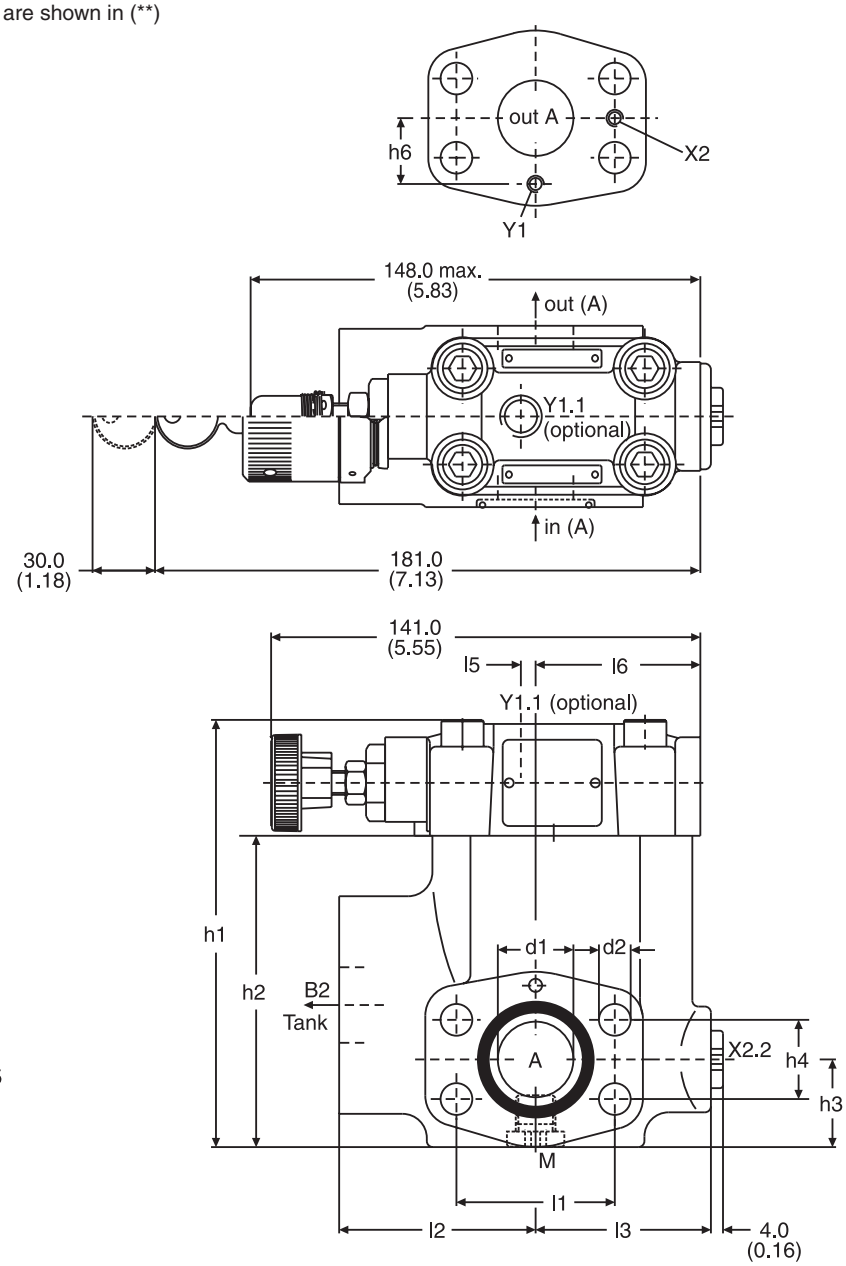
Code	Description
Omit	Standard w/o vent function
G0R	12V =
G0Q	24V =
G0H	48V =
W30	110V 50Hz/ 120V 60Hz
W31	220V 50Hz/ 240V 60Hz

Code	Descripton*
1	Nitrile
5	Fluorocarbon

* Further seals on request .

Weight:	R5P	R5P with VV01
NG6	3.7 kg (8.2 lbs.)	5.4 kg (11.9 lbs.)
NG10	4.4 kg (9.7 lbs.)	6.1 kg (13.5 lbs.)
NG16	5.3 kg (1.7 lbs.)	7.0 kg (15.4 lbs.)

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



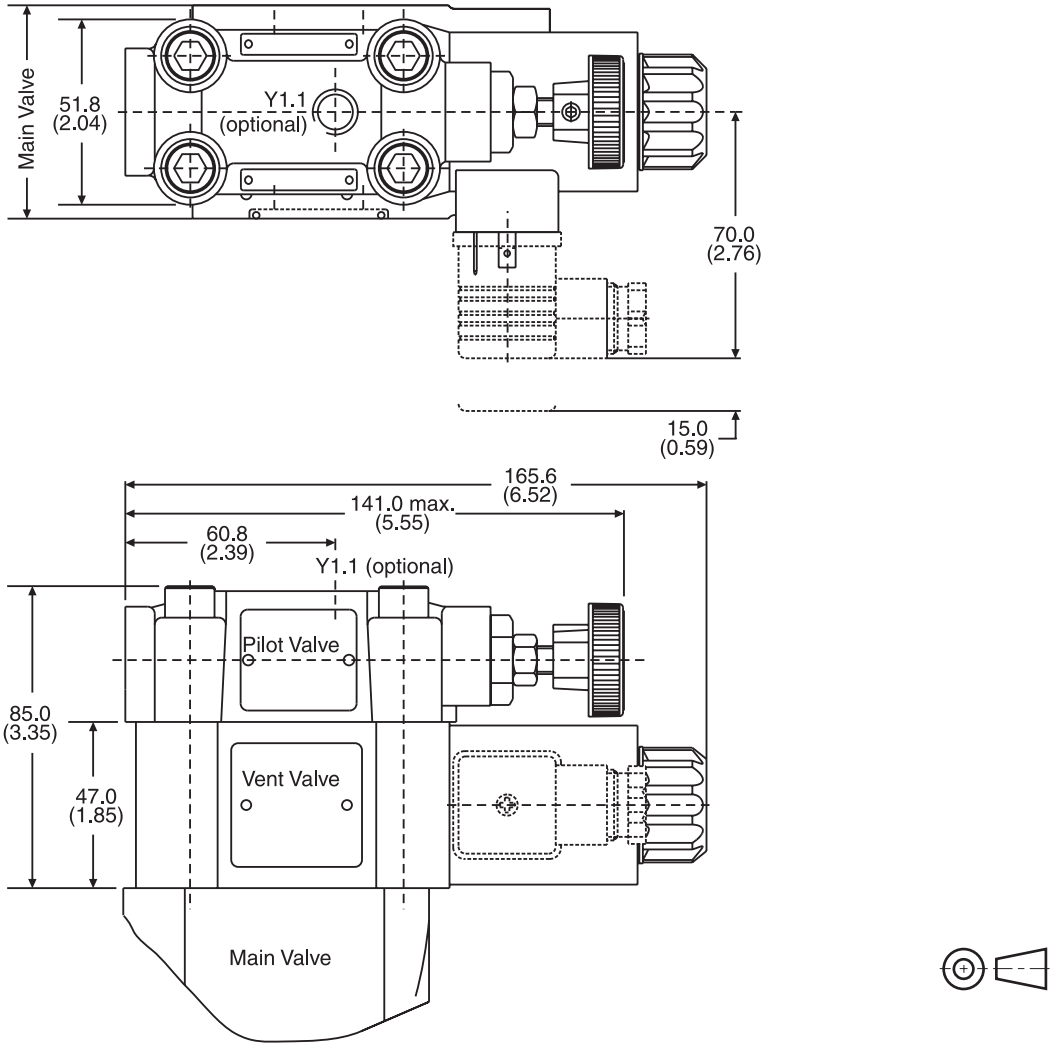
Size	l1	l2	l3	l4	l5	l6	b1	b2	h1	h2	h3	h4	h5	h6	d1	d2	d3
R5P06	47.6 (1.87)	63.0 (2.48)	56.0 (2.20)	148.0 (5.83)	1.0 (0.04)	49.0 (1.93)	60.0 (2.36)	20.0 (0.79)	119.0 (4.69)	81.6 (3.21)	28.6 (1.13)	22.2 (0.87)	41.6 (1.64)	20.8 (0.82)	19.0 (0.75)	10.5 (0.41)	3/8" UNC
R5P08	52.4 (2.06)	65.0 (2.56)	58.0 (2.28)	144.6 (5.69)	5.0 (0.20)	54.5 (2.15)	60.0 (2.36)	23.0 (0.91)	142.0 (5.59)	103.0 (4.06)	30.6 (1.20)	26.2 (1.03)	48.6 (1.91)	24.3 (0.96)	25.0 (0.98)	10.5 (0.41)	3/8" UNC
R5P10	58.7 (2.31)	61.0 (2.40)	62.0 (2.44)	146.6 (5.77)	3.0 (0.12)	56.5 (2.22)	75.0 (2.95)	22.0 (0.87)	149.0 (5.87)	111.5 (4.39)	34.6 (0.41)	30.2 (1.19)	64.1 (2.52)	29.3 (1.15)	32.0 (1.26)	12.5 (0.49)	7/16" UNC

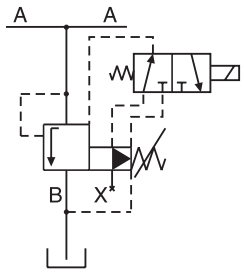
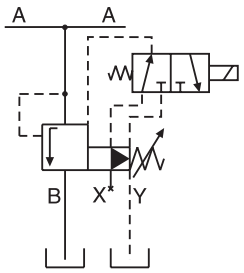
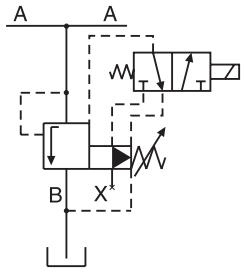
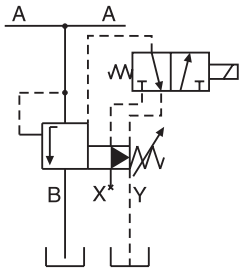
Port	Function	Port size		
		R5P06	R5P08	R5P10
A	Inlet/Outlet	3/4"	1"	1-1/4"
B2	Tank	3/4"	1"	1-1/4"
X2	Internal Pilot Pressure	M3		
X2.2	External Pilot Pressure	SAE 4		
Y1	Internal Pilot Drain	M3		
Y1.1	External Pilot Drain	SAE 4		
M	Pressure Gauge	SAE 4		

\R5P.indd, dd

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

R5P with Vent Function



Code	Internal drain	External drain
11		
09		

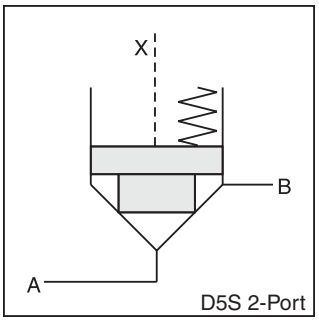
R5P.indd, dd

Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

General Description

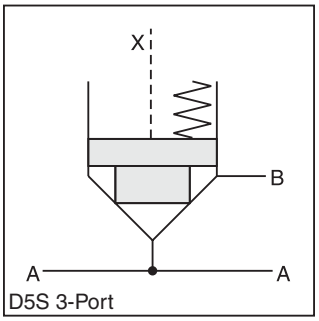
Series D5S seat valves are designed for directional control functions. They enable individual hydraulic solutions for nominal flow up to 800 LPM (211.6 GPM) due to a large variety of poppets, springs and covers, including shuttle valves, stroke limiters, solenoid valves (VV01) and position control.


D5S 2-Port



D5S 2-Port

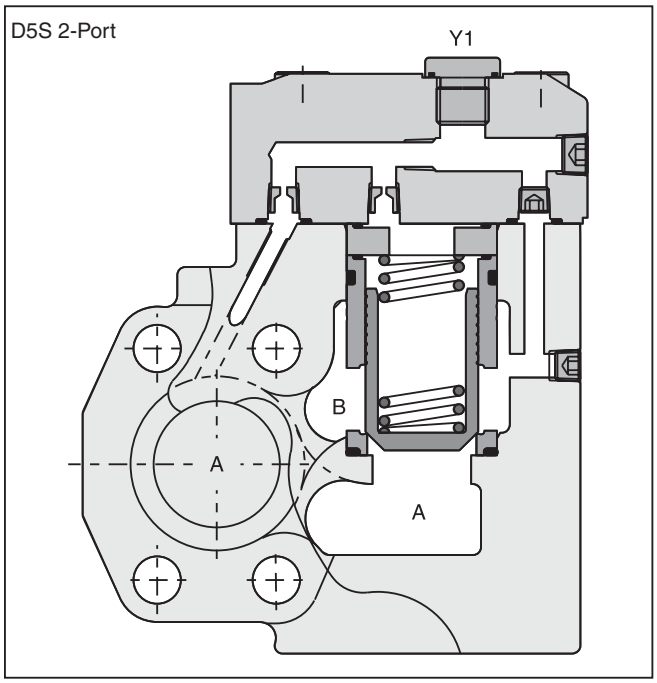

D5S 3-Port

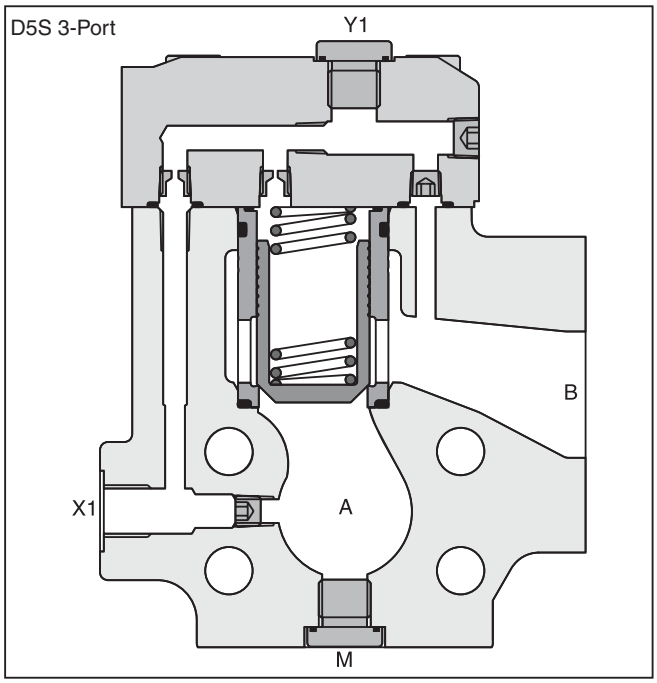


D5S 3-Port

Features

- Leak-free seat valve design.
- 2- and 3-port bodies.
- SAE61 flange.
- Numerous pilot options.
- 6 poppet types.
- 4 sizes (SAE 3/4", 1", 1 1/4", 1 1/2").

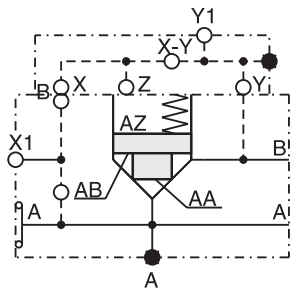
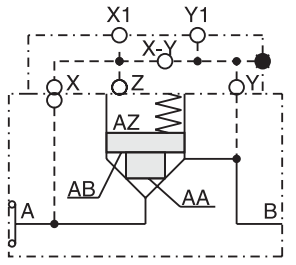
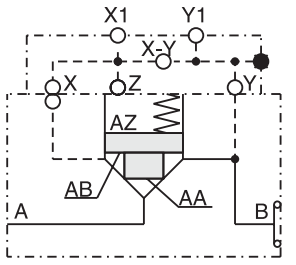




Specifications

General						
Size		**06**	**08**	**10**	**12**	
Mounting		Flanged according to SAE 61				
Mounting Position		Unrestricted				
Ambient Temperature Range		-20°C to +50°C (-4°F to +122°F)				
Hydraulic						
Maximum Operating Pressure	**SAE 61 Ports A, B**	350 Bar (5075 PSI)	350 Bar (5075 PSI)	280 Bar (4060 PSI)	210 Bar (3045 PSI)	
	Port Y1	30 Bar (435 PSI)	30 Bar (435 PSI)	30 Bar (435 PSI)	30 Bar (435 PSI)	
Nominal Flow		180 LPM (47.6 GPM)	360 LPM (95.2 GPM)	600 LPM (158.7 GPM)	800 LPM (211.6 GPM)	
Fluid		Hydraulic oil as per DIN 51524 ... 51525				
Fluid Temperature		-20°C to +80°C (-4°F to +176°F)				
Viscosity Permitted		10 to 650 cSt (mm^2/s)				
Viscosity Recommended		30 cSt (mm^2/s)				
Filtration		ISO Class 4406 (1999) 18/16/13 (acc. NAS 1638: 7)				
Electrical (Solenoid)						
Duty Ratio		100%				
Response Time		Energized / De-energized AC: 20/18ms, DC: 46/27 ms				
Protection Class		IP65 in accordance with EN60529 (plugged and mounted)				
	Code	**G0R**	**G0Q**	**GAR**	**GAG**	**W30**	**W31**
Supply Voltage		12V =	24V =	98V =	205V =	110V at 50Hz 120V at 60 Hz	220V at 50Hz 240V at 60Hz
Tolerance Supply Voltage		+5 to -10	+5 to -10	+5 to -10	+5 to -10	±5	±5
Power Consumption	**Hold**	31	31	31	31	64/59 [VA]	68/62 [VA]
	In Rush	31	31	31	31	231/240 [VA]	231/240 [VA]
Maximum Switching Frequency		AC: up to 7200; DC: up to 16,000 switchings/hour				
Solenoid Connection		Connector as per EN175301-803				
Protection Class		IP65 in accordance with EN 60529 (plugged and mounted)				
Coil Insulation Class		H (180°C) (356°F)				

D5S Pilot Configuration

3-Port	2-Port: Seat Entry	2-Port: Annular Entry
		

D5S — □ □ □ □ — □ □

Seat Valve | Nominal Size | Body | Pilot Body Configuration | Pilot Cap | Sleeve | Spool Type

Code	Description
06	SAE 3/4"
08	SAE 1"
10	SAE 1-1/4"
12*	SAE 1-1/2"

* D5S 3-Port only

Code	Body	Ports
9	3-Port	Seat entry, A; X1, Y1, M = SAE 4
1	2-Port	Seat entry, A; X1, Y1, M = SAE 4
2	2-Port	Annular entry, B; X1, Y1, M = SAE 4

Code	Pilot Oil Line in Body
1	Internal from A
2	Internal from B
3	Internal from A and B
4	External from X1
5	Internal from B, External from X1

Code	Body	Ports	X	Y	Z	X-Y	X1	Y1	VV01
Standard									
1	2 and 3-Port	Pilot Oil = Pilot Drain	⊖	●	⊖	○	–	●	–
2	2 and 3-Port	Pilot Oil = Pilot Drain	●	⊖	⊖	○	–	●	–
3	2-Port	Pilot Oil = Pilot Drain	●	●	⊖	○	○	●	–
With Solenoid Valve (VV01)									
4	2 and 3-Port	Internal to B	⊖	○	⊖	●	–	●	○
5	2-Port	Internal to B	●	○	⊖	●	○	●	○
6	2 and 3-Port	External Out of Cap	⊖	○	⊖	●	–	○	●
7	2-Port	External Out of Cap	●	○	⊖	●	○	○	●
With Stroke Limiter (not for D5S06)									
A	2 and 3-Port	Pilot Oil = Pilot Drain	⊖	●	⊖	–	●	–	–
B	2 and 3-Port	Pilot Oil = Pilot Drain	●	⊖	–	–	●	–	–
C	2-Port	Pilot Oil = Pilot Drain	●	●	⊖	–	○	–	–

Key: ○ Open Bore ● Closed Bore ⊖ Orifice ∅ 1.2
Note: Combination examples provided on pages 26-30.

Code	Size	Poppet Type	Sleeve
1	06, 08, 10, 12	With closed bottom and 15° chamfer (pZ max. = pA +20 Bar (290 PSI)	1
2	06	With 0.8 dia. orifice at the bottom and 15° chamfer	1
	08, 10	With 1.2 dia. orifice at the bottom and 15° chamfer	1
4	06, 08, 10, 12	With closed bottom and 45° chamfer	1, 3
A*	08, 10, 12	Safety spool (for end position control only)	3
B*	08, 10, 12	Throttle spool, 10° chamfer	3
C*	08, 10, 12	Throttle spool, 3° chamfer	3

* Springs 2, 3, 4, and 6 only

Code	Sleeve	Description
1		AA=95%, AB=5%
3		AA=60%, AB=40%

D5S.indd, dd

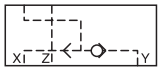
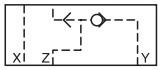
Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

□ Spring — □ Switching Type □ Solenoid Voltage — **A** Design Series □ Seals □ Options

Code	Description
omit	Standard w/o vent function
G0R	12V =
G0Q	24V =
G0H	98V =
GAG	205V=
W30	110V 50Hz / 120V 60Hz
W31	220V 50Hz / 240V 60Hz

Code	Description
1	Nitrile
5	Fluorocarbon

Code	Description
Omit	Standard
013	Position Control with Protection

Code	Description	
omit	Standard without Vent Function	
09	VV01 with Manual Override	De-energized; power comp. open
10	VV01 without Manual Override	
11	VV01 with Manual Override	De-energized; power comp. closed
12	VV01 without Manual Override	
CA	Shuttle Valve	
DA	Shuttle Valve	
CB	VV01 Code 09 and Shuttle Valve Code CA	
CD	VV01 Code 11 and Shuttle Valve Code CA	
DB	VV01 Code 09 and Shuttle Valve Code DA	
DD	VV01 Code 11 and Shuttle Valve Code DA	
BH	VV01 Code 10 and Shuttle Valve Code CA and Position Control* with Amplifier	
BK	VV01 Code 12 and Shuttle Valve Code CA and Position Control* with Amplifier	
BN	VV01 Code 10 and Shuttle Valve Code DA and Position Control* with Amplifier	
BQ	VV01 Code 12 and Shuttle Valve Code DA and Position Control* with Amplifier	
BC	VV01 Code 10 and Position Control* with Amplifier	
BE	VV01 Code 12 and Position Control* with Amplifier	
BA	Position Control* with Amplifier	
BF	Position Control* with Amplifier and Shuttle Valve Code CA	
BL	Position Control* with Amplifier and Shuttle Valve Code DA	

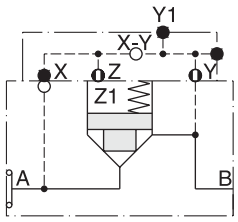
* Position control for D5S08/10 only.
Spring 2 or 4. Spool A and sleeve 3.

Weight:	D5S 2-Port	D5S 3-Port
D5S06	3.6 kg (7.9 lbs	3.4 kg (7.5 lbs)
D5S08	4.1 kg (9.0 lbs)	4.4 kg (9.7 lbs)
D5S10	5.4 kg (11.9 lbs)	5.0 kg (11.0 lbs)
D5S12	–	7.8 kg (17.2 lbs)

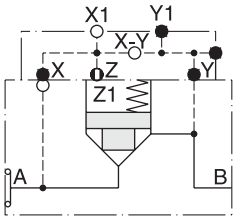
Code	Spring — Approx. Cracking Pressure in Bar (PSI)					
	Sleeve Code 1		Sleeve Code 3			
	A -> B		A -> B		B -> A	
	D5S06	D5S08/12	D5S06	D5S08/12	D5S06	D5S08/12
1	2.8 (40.6)	3.5 (50.8)	6.5 (94.3)	6.5 (94.3)	9.5 (137.8)	11.0 (159.5)
2	0.5 (7.3)	0.5 (7.3)	1.0 (14.5)	1.0 (14.5)	1.5 (21.8)	1.7 (24.7)
3	0.3 (4.4)	0.3 (4.4)	0.6 (8.7)	0.6 (8.7)	0.9 (13.1)	1.0 (14.5)
4	2.2 (31.9)	2.2 (31.9)	4.0 (58.0)	3.5 (50.8)	5.5 (79.8)	6.0 (87.0)
5	–	9.0 (130.5)	–	16.0 (232.0)	–	28.0 (406.0)
6	1.2 (17.4)	1.2 (17.4)	2.0 (29.0)	2.2 (31.9)	3.0 (43.5)	3.8 (55.1)
7	3.0 (43.5)	–	8.0 (116.0)	–	12.0 (174.0	–

D5S 2-Port Examples

Seat Entry

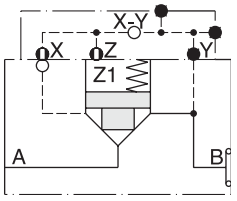


D5S..-122-
7
Pilot oil: internal from B

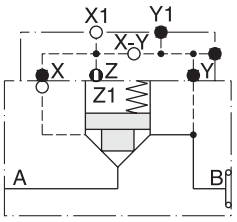


D5S..-143-
7
Pilot oil: external from X1

Annular Entry



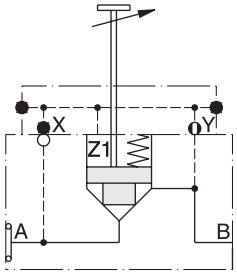
D5S..-221-
8
Pilot oil: internal from B



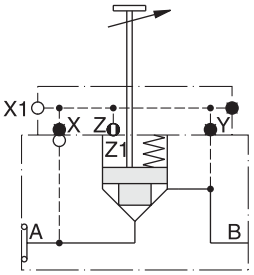
D5S..-243-
8
Pilot oil: external from X1

Stroke Limiter D5S 2-Port Examples

Seat Entry

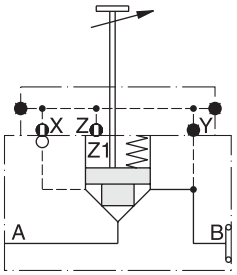


D5S08-12B-
10 7
Pilot oil: internal from B

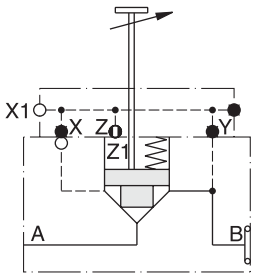


D5S08-14C-
107
Pilot oil: external from X1

Annular Entry

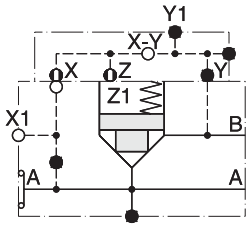


D5S08-22A-
10 8
Pilot oil: internal from B

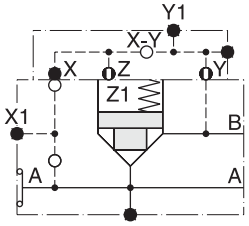


D5S08-24C-
108
Pilot oil: external from X1

D5S 3-Port Examples

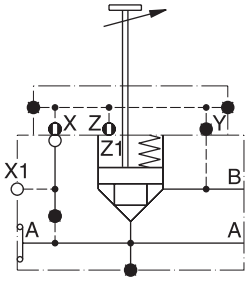


D5S .. -541-
9
Pilot oil: external from X1

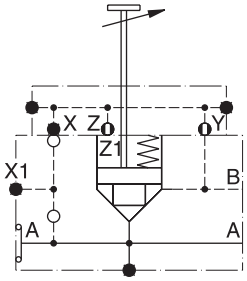


D5S .. -522-
9
Pilot oil: internal from B

Stroke Limiter D5S 3-Port Examples



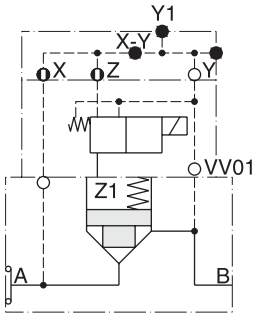
D5S 08 -54A-
10 9
12
Pilot oil: external from X1



D5S 08 -52B-
10 9
12
Pilot oil: internal from B

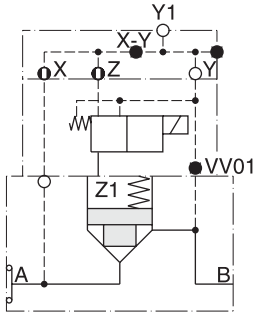
D5S 2-Port with Solenoid Valve VV01 Examples

Seat Entry



D5S .. -114-09-
7 10
11
12

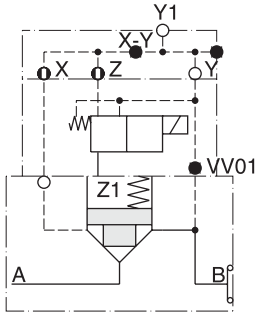
Pilot oil: internal from A
Pilot drain: internal to B



D5S .. -116-09-
7 10
11
12

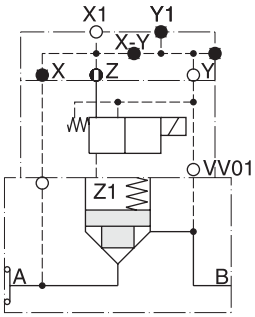
Pilot oil: internal from A
Pilot drain: external out of Y1

Annular Entry



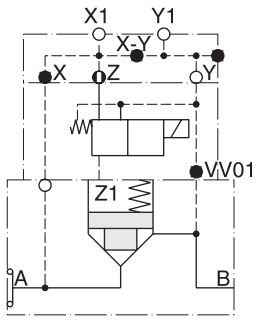
D5S .. -226-09-
8 10
11
12

Pilot oil: internal from B
Pilot drain: external out of Y1



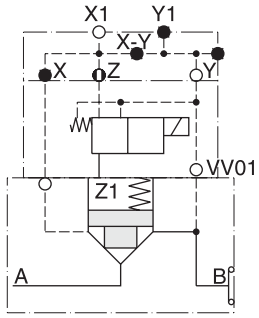
D5S .. -145-09-
7 10
11
12

Pilot oil: internal from X1
Pilot drain: internal to B



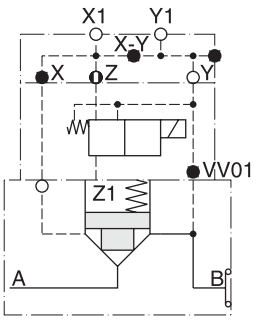
D5S .. -147-09-
7 10
11
12

Pilot oil: internal from X1
Pilot drain: external out of Y1



D5S .. -245-09-
8 10
11
12

Pilot oil: internal from X1
Pilot drain: internal to B

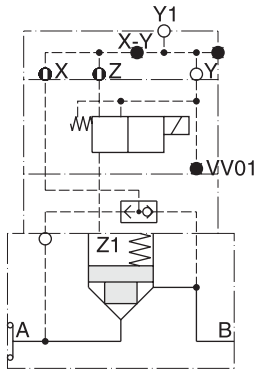


D5S .. -247-09-
8 10
11
12

Pilot oil: internal from X1
Pilot drain: external out of Y1

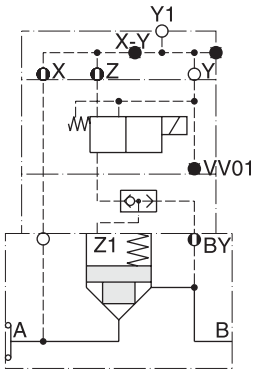
D5S 2-Port with Solenoid Valve VV01 and Shuttle Valve Examples

Seat Entry



D5S .. -136-...-CB-
7 CD

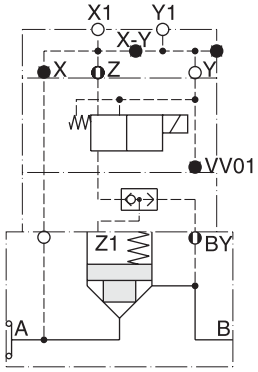
Pilot oil: internal from A +
internal from B
Pilot drain: external out of Y1



D5S .. -136-...-DB-
7 DD

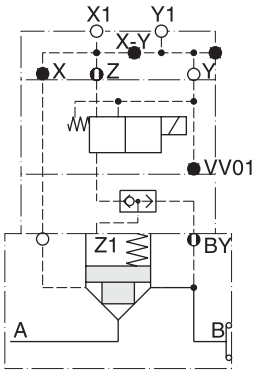
Pilot oil: internal from A +
internal from B
Pilot drain: external out of Y1

Annular Entry



D5S .. -157-...-DB-
7 DD

Pilot oil: external from X1 +
internal from B
Pilot drain: external out of Y1



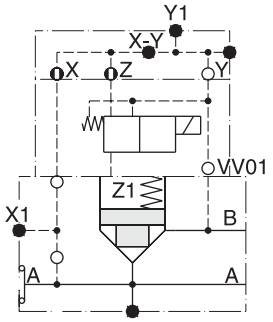
D5S .. -857-...-DB-
2 DD

Pilot oil: external from X1 +
internal from B
Pilot drain: external out of Y1

D5S.indd, dd

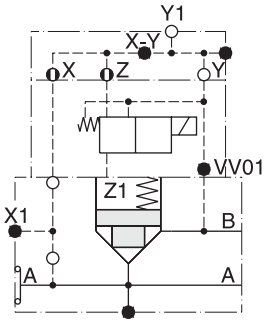
Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

D5S 3-Port with Solenoid Valve VV01 Examples



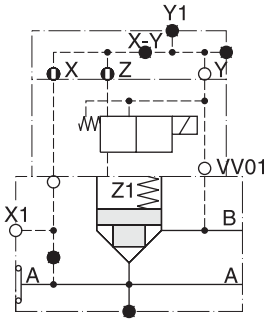
D5S .. -514-09-
9 10
11
12

Pilot oil: internal from A
Pilot drain: internal to B



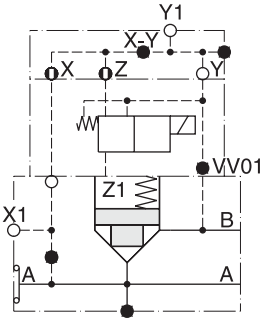
D5S .. -516-09-
9 10
11
12

Pilot oil: internal from A
Pilot drain: external out of Y1



D5S .. -544-09-
9 10
11
12

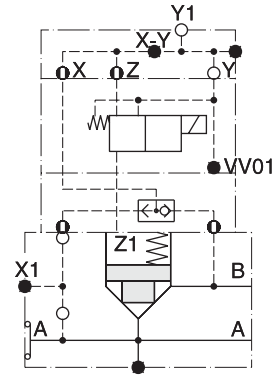
Pilot oil: external from X1
Pilot drain: internal to B



D5S .. -546-09-
9 10
11
12

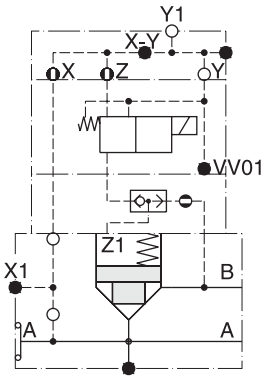
Pilot oil: external from X1
Pilot drain: external out of Y1

D5S 3-Port with Solenoid Valve VV01 and Shuttle Valve Examples



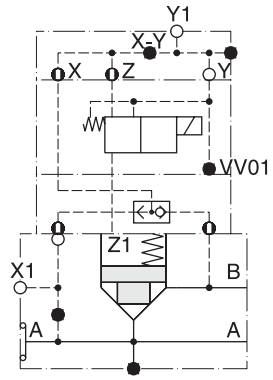
D5S .. -536-...-CB-
9 CD

Pilot oil: internal from A +
internal from B
Pilot drain: external out of Y1



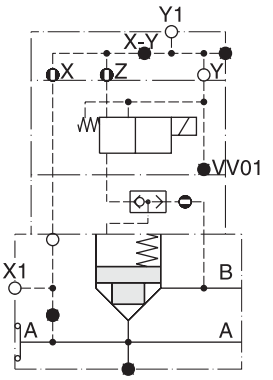
D5S .. -536-...-DB-
9 DD

Pilot oil: internal from A +
internal from B
Pilot drain: external out of Y1



D5S .. -556-...-CB-
9 CD

Pilot oil: internal from X1 +
internal from B
Pilot drain: external out of Y1

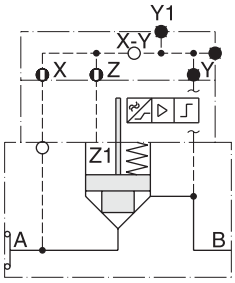


D5S .. -556-...-DB-
9 DD

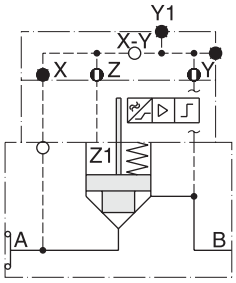
Pilot oil: external from X1 +
internal from B
Pilot drain: external out of Y1

D5S 2-Port Position Control Examples

Seat Entry

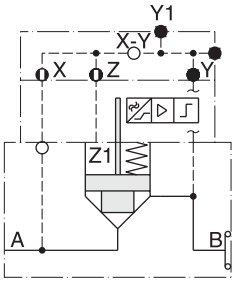


D5S 08 -111-3A.-BA-
D5S 10 7
Pilot oil: internal from A

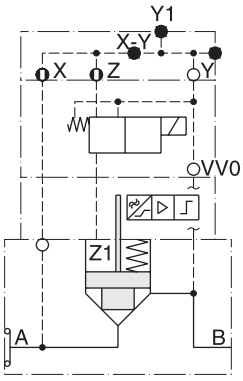


D5S 08 -122-3A.-BA-
D5S 10 7
Pilot oil: internal from B

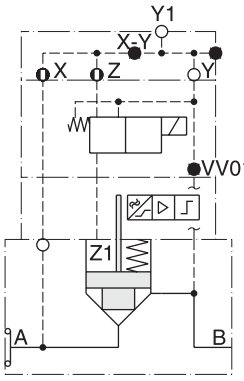
Annular Entry



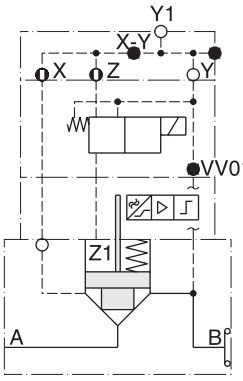
D5S 08 -221-3A.-BA-
D5S 10 8
Pilot oil: internal from B



D5S 08 -114-3A.-BC-
D5S 10 7 BE
Pilot oil: internal from A
Pilot drain: internal to B

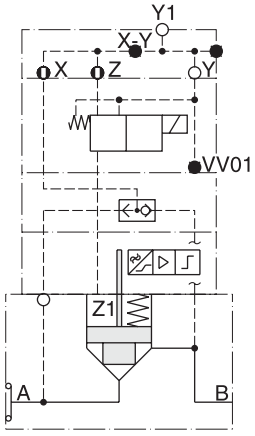


D5S 08 -116-3A.-BC-
D5S 10 7 BE
Pilot oil: internal from A
Pilot drain: external out of Y1

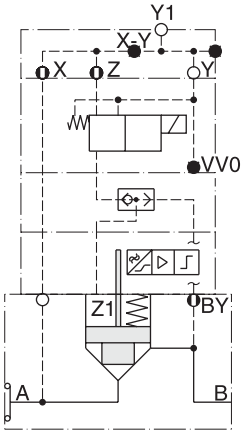


D5S 08 -226-3A.-BC-
D5S 10 8 BE
Pilot oil: internal from B
Pilot drain: external out of Y1

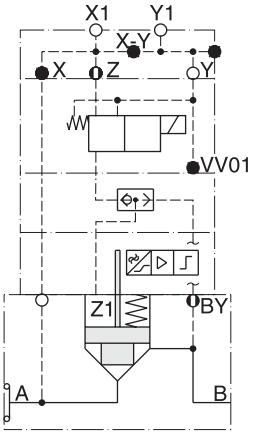
Seat Entry



D5S .. -136-...-BH-
7 BK
Pilot oil: internal from A +
internal from B
Pilot drain: external out of Y1

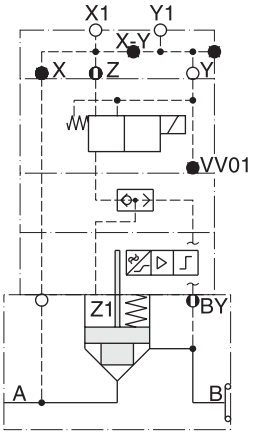


D5S .. -136-...-BN-
7 BQ
Pilot oil: internal from A +
internal from B
Pilot drain: external out of Y1



D5S .. -157-...-BN-
7 BQ
Pilot oil: external from X1 +
internal from B
Pilot drain: external out of Y1

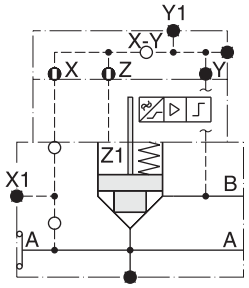
Annular Entry



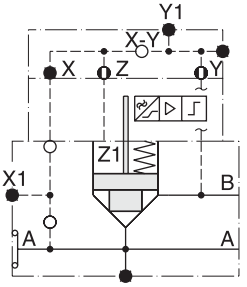
D5S .. -857-...-BN-
2 BQ
Pilot oil: external from X1 +
internal from B
Pilot drain: external out of Y1

D5S 3-Port Position Control Examples

Seat Entry

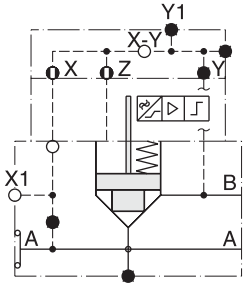


D5S 08 -511-3A.-BA-
10 9
12
Pilot oil: internal from A

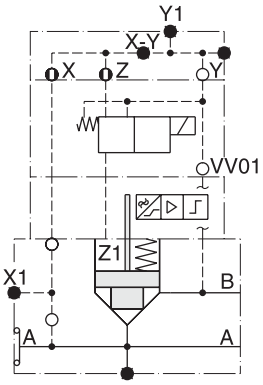


D5S 08 -522-3A.-BA-
10 9
12
Pilot oil: internal from B

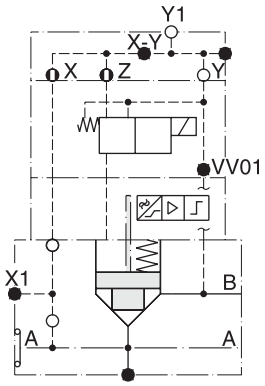
Annular Entry



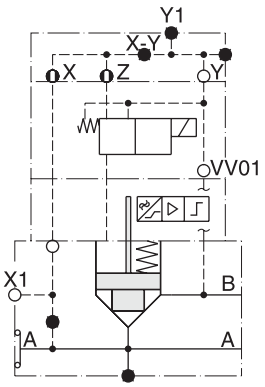
D5S 08 -521-3A.-BA-
10 9
12
Pilot oil: external from X1



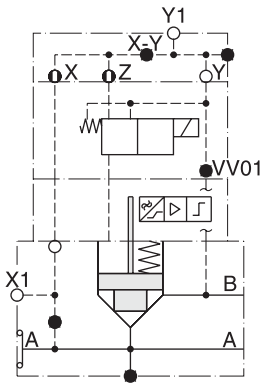
D5S 08 -514-3A.-BC-
10 9 BE
12
Pilot oil: internal from A
Pilot drain: internal to B



D5S 08 -516-3A.-BC
10 9 BE
12
Pilot oil: internal from A
Pilot drain: external out of Y1

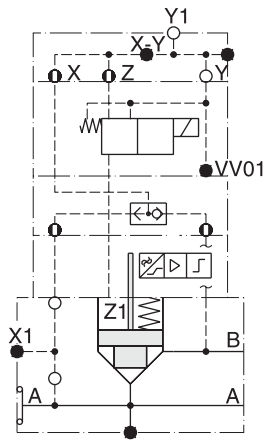


D5S 08 -544-3A.-BC-
10 9 BE
12
Pilot oil: external from X1
Pilot drain: internal to B

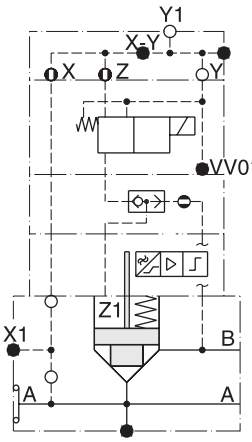


D5S 08 -546-3A.-BC-
10 9 BE
12
Pilot oil: external from X1
Pilot drain: external out of Y1

Seat Entry

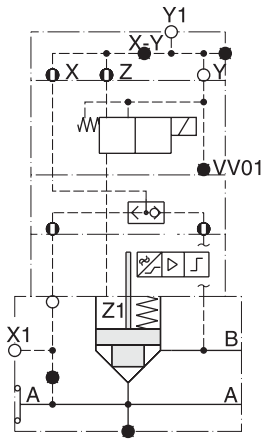


D5S 08 -536-3A.-BH-
10 9 BE
12
Pilot oil: internal from A +
internal from B
Pilot drain: external out of Y1

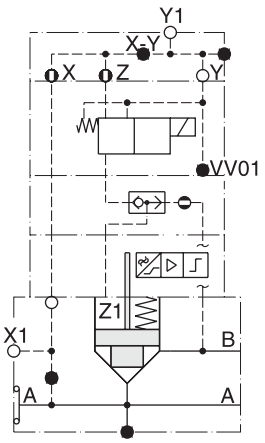


D5S 08 -536-3A.-BN-
10 9 BQ
12
Pilot oil: internal from A +
internal from B
Pilot drain: external out of Y1

Annular Entry



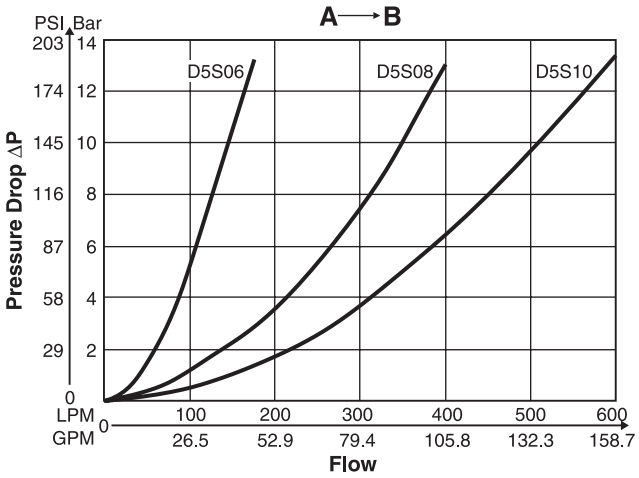
D5S 08 -556-3A.-BH-
10 9 BK
12
Pilot oil: external from X1 +
internal from B
Pilot drain: external out of Y1

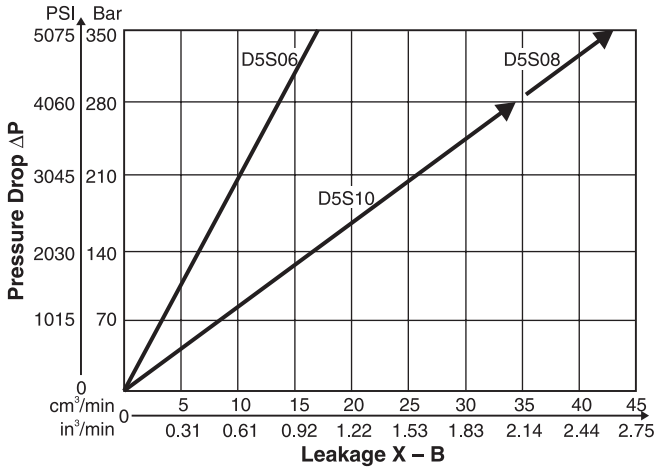


D5S 08 -556-3A.-BN-
10 9 BQ
12
Pilot oil: external from X1 +
internal from B
Pilot drain: external out of Y1

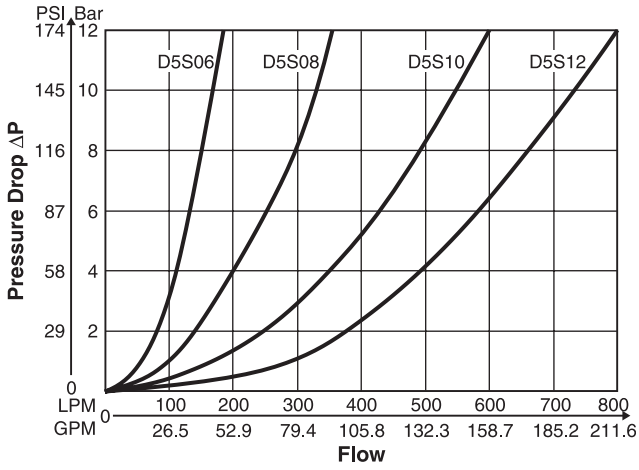
Performance Curves

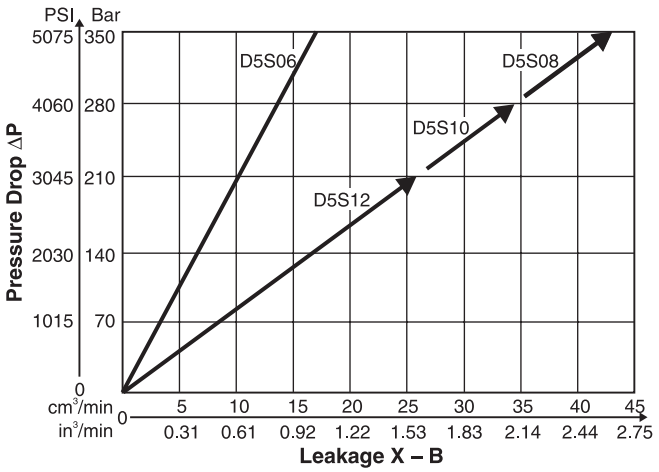
D5S 2-Port*





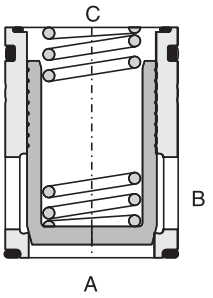
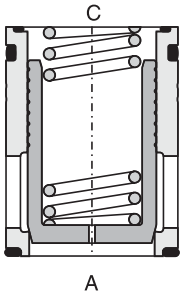
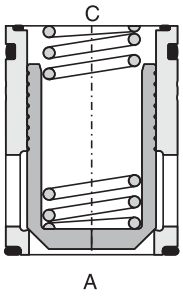
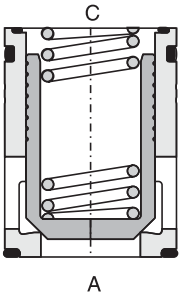
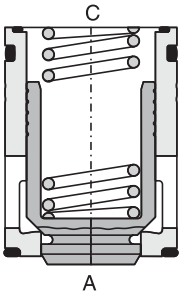
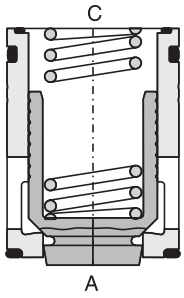
D5S 3-Port*





*Fluid viscosity 38cSt at 50°C (122°F)

Selection of Cartridges

Sleeve 1, Poppet 1	Sleeve 1, Poppet 2	Sleeve 1, Poppet 4	Sleeve 3, Poppet 4	Sleeve 3, Poppet A	Sleeve 3, Poppet B/C
					
1 : 1.05 $A_A = 0.95\ A_C$ $A_B = 0.95\ A_C$ 15° chamfer	1 : 1.05 $A_A = 0.95\ A_C$ $A_B = 0.95\ A_C$ 15° chamfer orifice	1 : 1.05 $A_A = 0.95\ A_C$ $A_B = 0.95\ A_C$ 45° chamfer	1 : 1.67 $A_A = 0.6\ A_C$ $A_B = 0.4\ A_C$ 45° chamfer	1 : 1.67 $A_A = 0.6\ A_C$ $A_B = 0.4\ A_C$ 45° chamfer safety spool	1 : 1.67 $A_A = 0.6\ A_C$ $A_B = 0.4\ A_C$ 45° chamfer throttle spool

D5S.indd, dd

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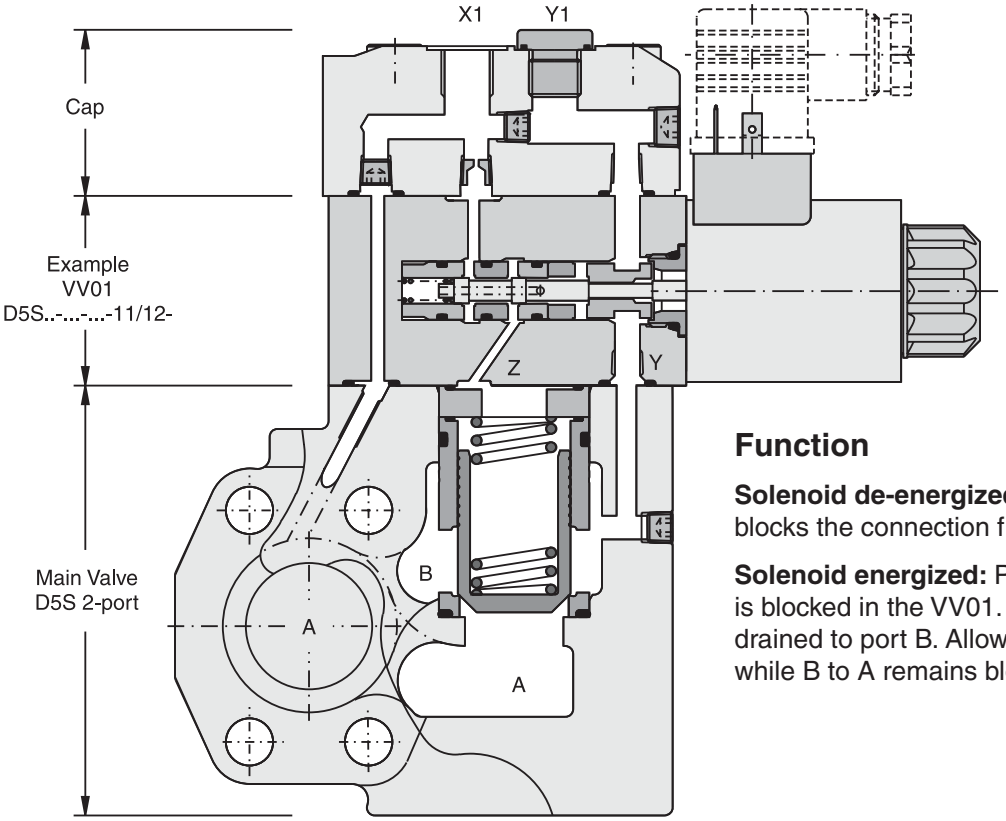
Hydraulic Valve Division
Elyria, Ohio, USA

Example PIlot Oil External from X1, Pilot Drain Internal Out of B with Vent Valve



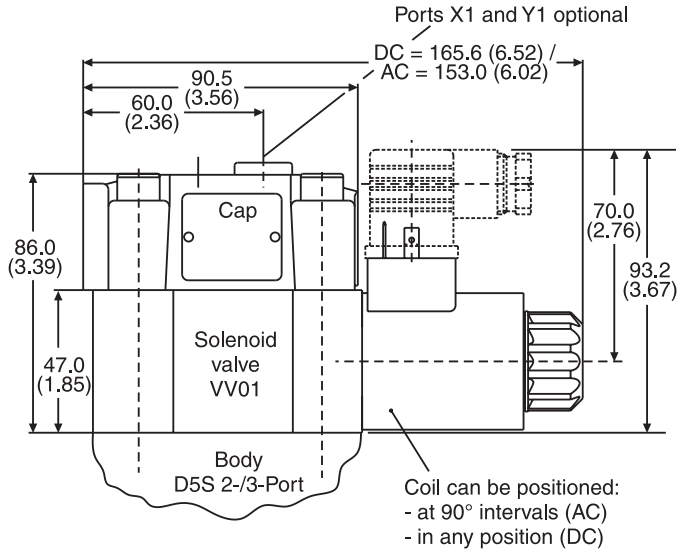
Function

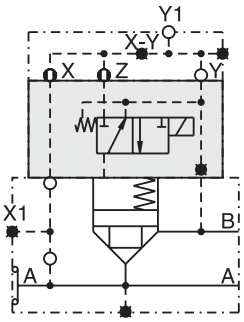
Solenoid de-energized: Pilot oil from X1 to Z blocks the connection from A to B or B to A.

Solenoid energized: Pilot pressure from X1 is blocked in the VV01. The oil in Z is internally drained to port B. Allowing flow from A to B, while B to A remains blocked.

Dimensions — D5S with VV01

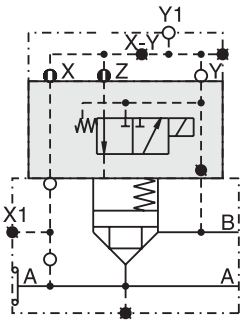
Inch equivalents for millimeter dimensions are shown in (**)





with manual override | without manual override

D5S..-...-...-09/10-
Solenoid energized:
Blocked flow from A to B or B to A.
Solenoid de-energized:
Free flow from A to B or B to A.

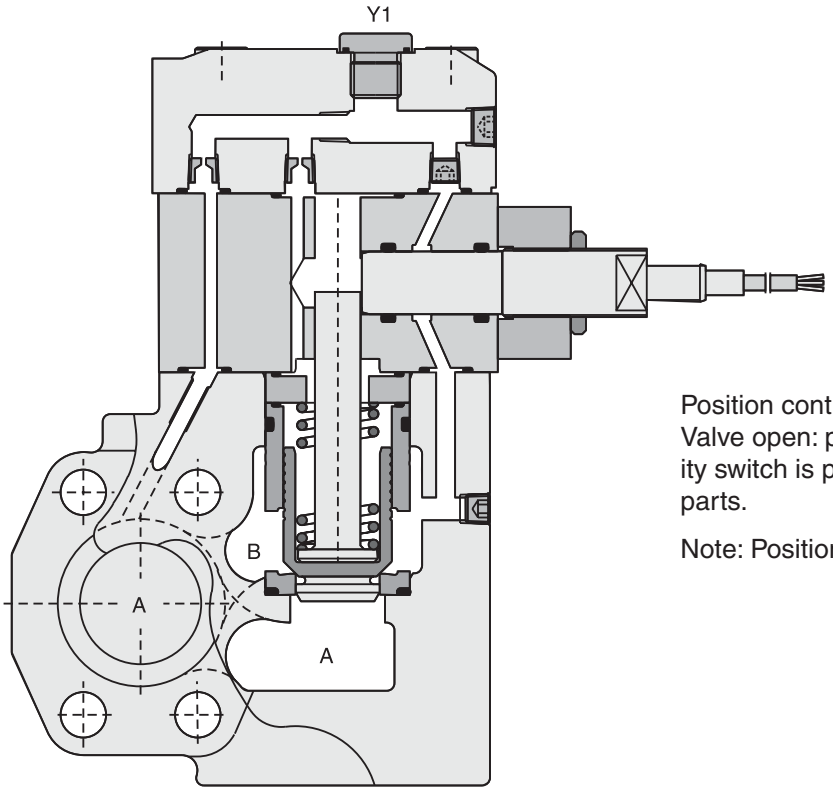


with manual override | without manual override

D5S..-...-...-11/12-
Solenoid energized:
Free flow from A to B or B to A.
Solenoid de-energized:
Blocked flow from A to B or B to A.

D5S.indd, dd

Example PIlot Oil External from X1, Pilot Drain Internal Out of B with Position Control

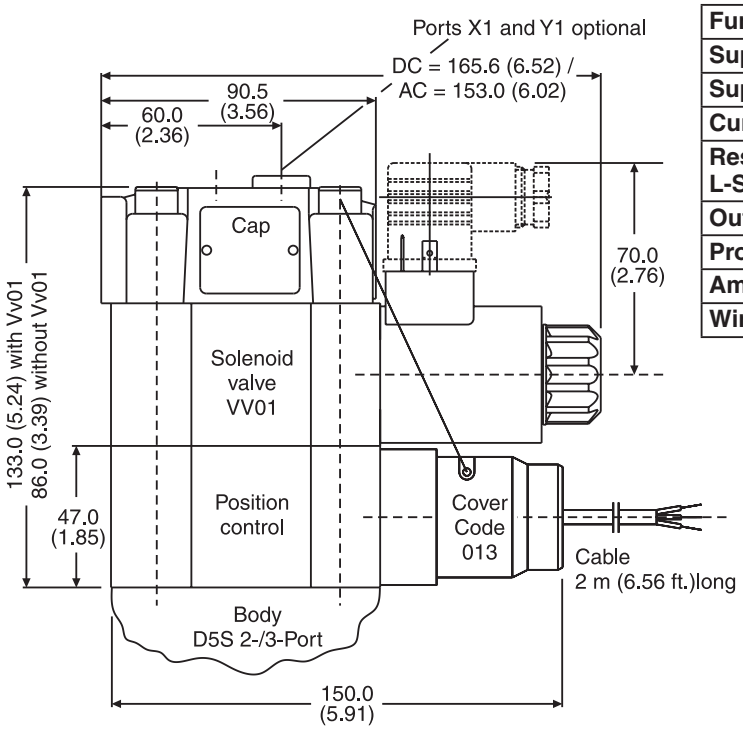


Position control by proximity switch (incl. amplifier). Valve open: proximity switch activited. This proximity switch is pressure proof and has no wearing parts.

Note: Position control for D5S08 and D5S10 only.

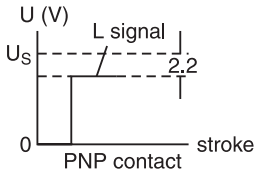
Dimensions — D5S with Position Control

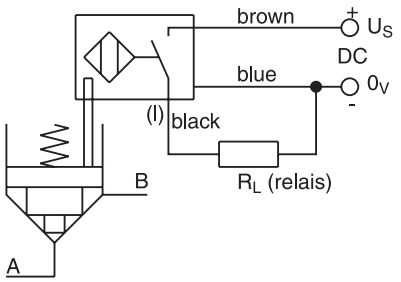
Inch equivalents for millimeter dimensions are shown in (**)



Technical Data (Proximity Switch)

Function	PNP, contact
Supply Voltage	10 - 30VDC
Supply Voltage Ripple	≤10%
Current Consumption	8mA Maximum
Residual Voltage L-Signal	Us – 2.2V at I_{max}
Output Current	≤200 mA
Protection Class	IP67
Ambient Temperature	-25°C to +70°C (-13°F to +159°F)
Wire Cross Section	3 x 0.5 mm²





D5S.indd, dd

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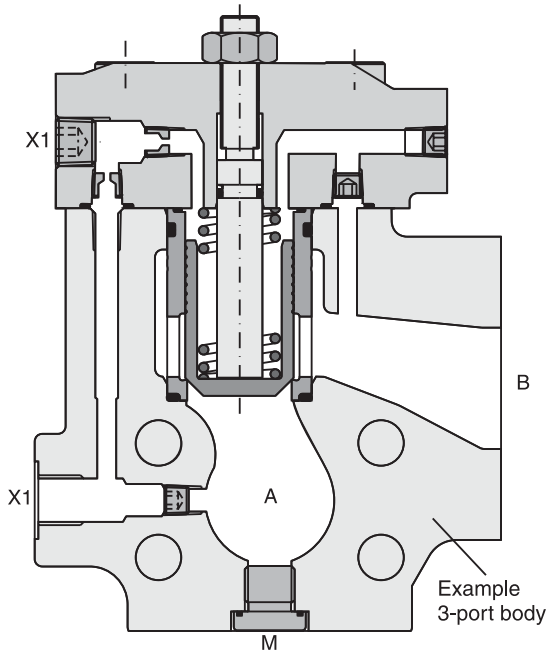
Elyria, Ohio, USA

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

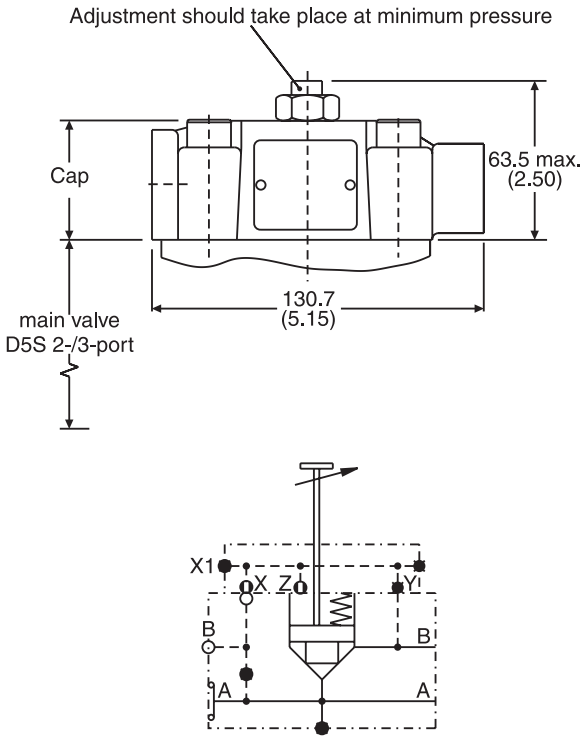
D5S Stroke Limiter



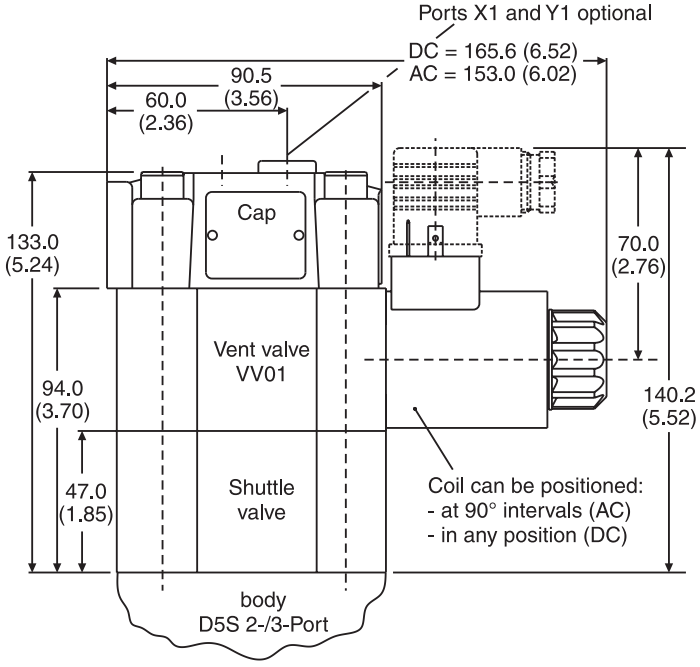
X1 = external pilot-oil (optional)

Note: Stroke limiter not for use with D5S06, solenoid valve VV01, shuttle valve and position control.

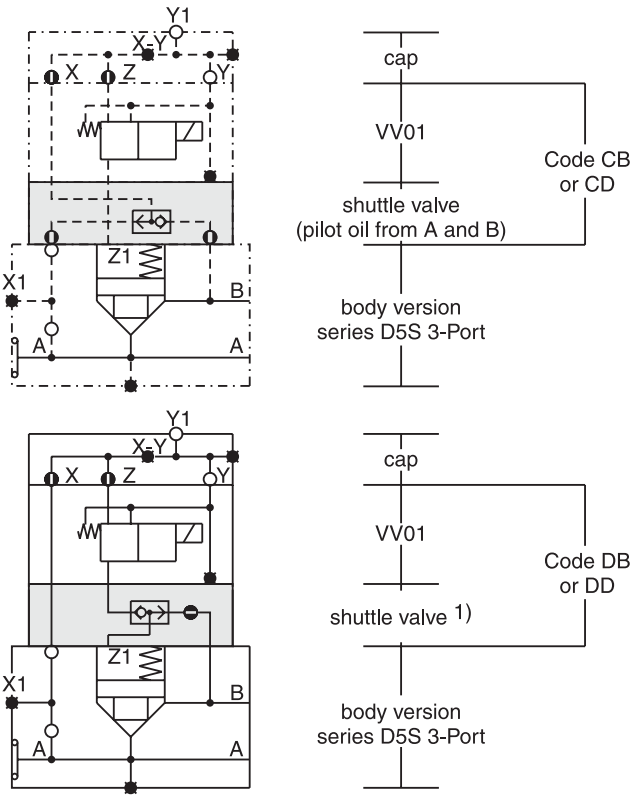
D5S Stroke Limiter Dimensions



D5S with Shuttle Valve Dimensions



Shuttle valve only in connection with vent valve VV01.



1) pilot oil from A and B, from B to A check valve function

D5S.indd, dd

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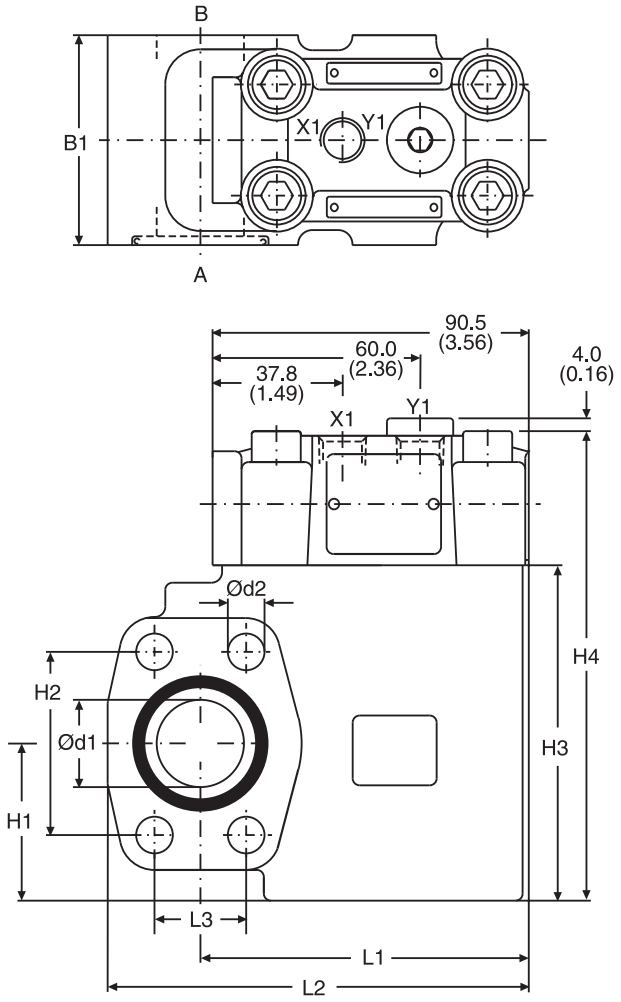
Elyria, Ohio, USA

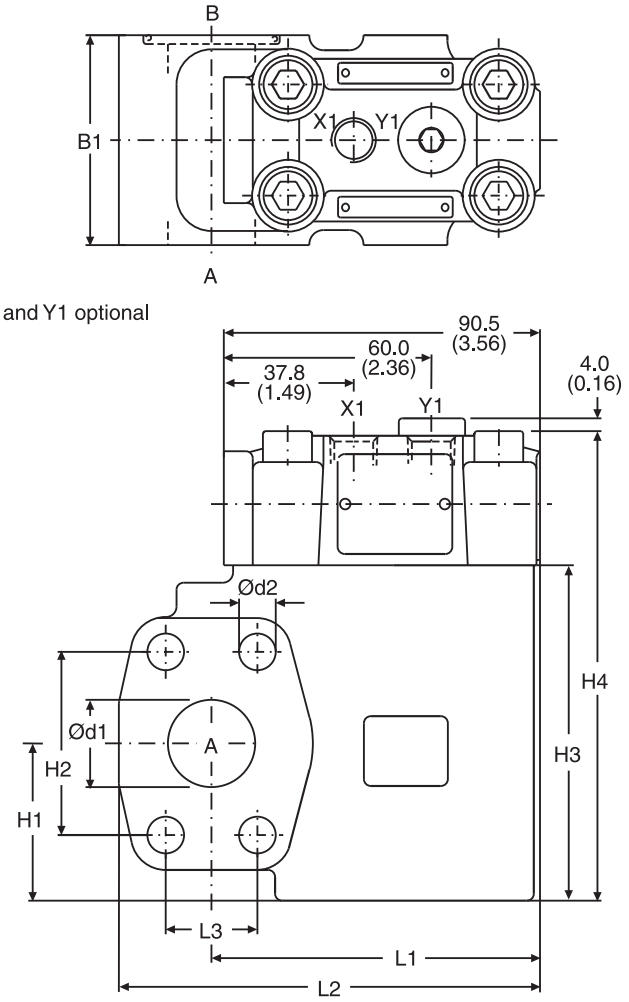
Inch equivalents for millimeter dimensions are shown in (**)

2-Port

Seat Entry



Annular Entry



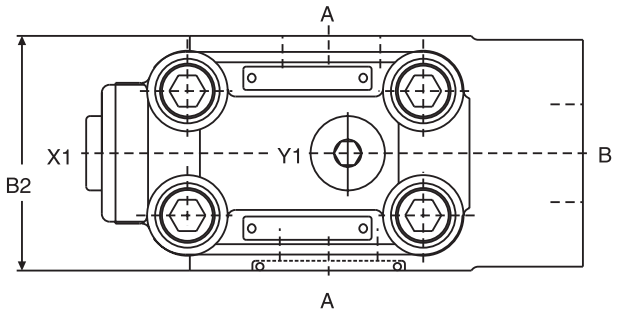
Ports X1 and Y1 optional

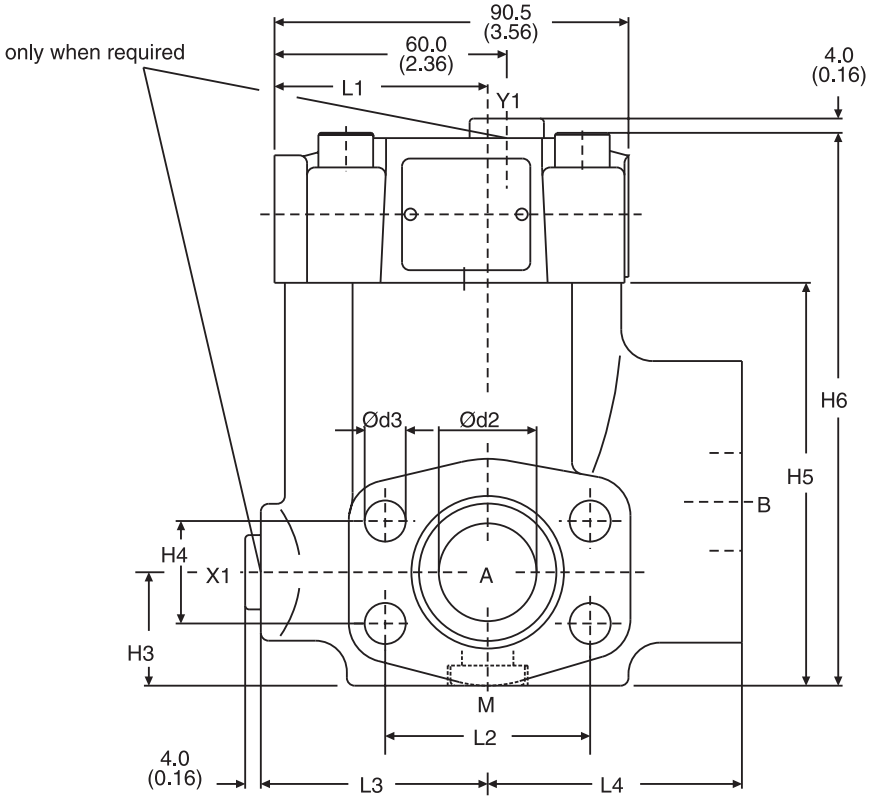
Size	l1	l2	l3	b1	h1	h2	h3	h4	d1	d2
06	77.0 (3.03)	101.0 (3.98)	22.2 (0.87)	60.0 (2.36)	37.0 (1.46)	47.6 (1.87)	90.0 (3.54)	127.6 (5.02)	19.0 (0.75)	10.5 (0.41)
08	94.0 (3.70)	120.5 (4.74)	26.2 (1.03)	60.0 (2.36)	45.0 (1.77)	52.4 (2.06)	96.0 (3.78)	133.6 (5.26)	25.0 (0.98)	10.5 (0.41)
10	94.0 (3.70)	128.0 (5.04)	30.2 (1.19)	75.0 (2.95)	48.0 (1.89)	58.7 (2.31)	109.0 (4.29)	146.6 (5.77)	32.0 (1.26)	12.5 (0.49)

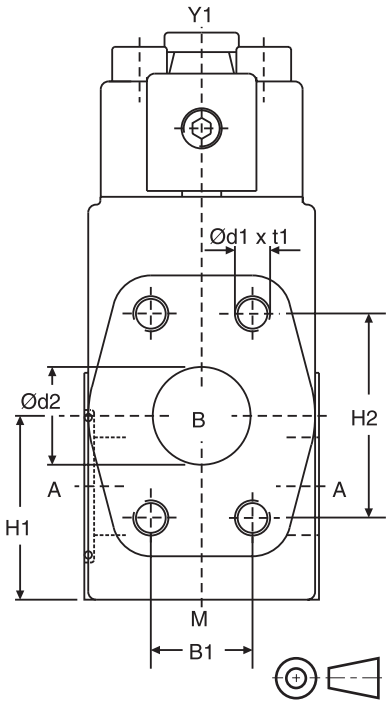
Ports	Function	Port size		
		D5S06	D5S08	D5S10
A	Inlet or outlet	3/4" SAE 61	1" SAE 61	1-1/4" SAE 61
B	Outlet or inlet	3/4" SAE 61	1" SAE 61	1-1/4" SAE 61
X1	External pilot port	SAE 4		
Y1	External pilot drain			

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

3-Port







Size	l1	l2	l3	l4	b1	b2	h1	h2	h3	h4	h5	h6	d1	t1	d2	d3
06	49.0 (1.93)	47.6 (1.87)	56.0 (2.20)	63.0 (2.48)	22.2 (0.87)	60.0 (2.36)	41.0 (1.61)	47.6 (1.87)	28.0 (1.10)	22.2 (0.87)	82.0 (3.23)	119.0 (4.69)	3/8" UNC	20.0 (0.79)	19.0 (0.75)	10.5 (0.41)
08	55.0 (2.17)	52.4 (2.06)	58.0 (2.28)	65.0 (2.56)	26.2 (1.03)	60.0 (2.36)	47.0 (1.85)	52.4 (2.06)	29.0 (1.14)	26.2 (1.03)	103.0 (4.06)	141.0 (5.55)	3/8" UNC	23.0 (0.91)	25.0 (0.98)	10.5 (0.41)
10	57.0 (2.24)	58.7 (2.31)	64.0 (2.52)	61.0 (2.40)	30.2 (1.19)	75.0 (2.95)	65.0 (2.56)	58.7 (2.31)	36.0 (1.42)	30.2 (1.19)	113.0 (4.45)	150.0 (5.91)	7/16" UNC	22.0 (0.87)	32.0 (1.26)	12.5 (0.49)
12	37.0 (1.46)	69.8 (2.75)	55.0 (2.17)	93.0 (3.66)	35.7 (1.41)	80.0 (3.15)	73.0 (2.87)	69.8 (2.75)	72.0 (2.83)	35.7 (1.41)	140.0 (5.51)	178.0 (7.01	1/2" UNC	27.0 (1.06)	38.0 (1.50)	13.5 (0.53)

Ports	Function	Port size			
		D5S06	D5S08	D5S10	D5S12
A (2x)	Inlet or outlet	¾" SAE 61	1" SAE 61	1¼" SAE 61	1½" SAE 61
B	Outlet or inlet	¾" SAE 61	1" SAE 61	1¼" SAE 61	1½" SAE 61
X1*	External pilot port	SAE 4			
Y1	External pilot drain				
M	Pressure gauge				

* closed when supplied.

D5S.indd, dd

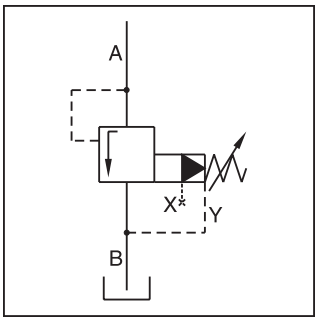
Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

General Description

Series R4V pilot operated pressure relief valves for in-line mounting have a similar design to the subplate mounted R4V series. For single functions where no manifold blocks are used the valves can be directly placed in the pipework.

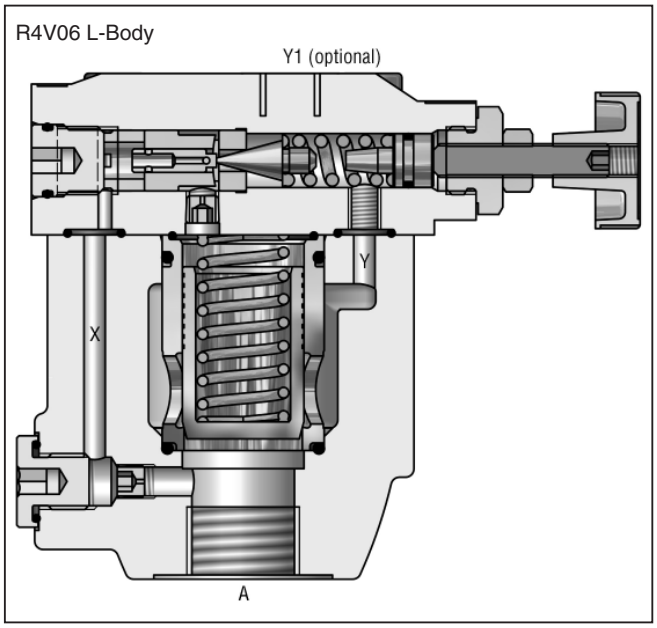
The R4V valves are available with 2 ports (L-body) for in-line relief function or with 3 ports (T-body) for relief functions in the bypass.


R4V10 L-Body



Operation

The system pressure in Port A is applied to the pilot valve and to the top surface of the main poppet via an orifice in X. The hydraulically balanced main poppet is held against the seat by the main spring. In this state there is no flow through the valve. The adjusted spring force acting on the pilot cone determines the relief pressure. If the pressure in Port A exceeds the set point, the pilot cone is lifted from its seat, releasing a small pilot flow to tank. The flow through the control orifice in X creates a pressure drop which limits the pressure at the top of the main poppet to the set point. The higher system pressure in Port A now lifts the main poppet off its seat and allows flow to Port B. In the resulting float position only enough flow is passed from Port A to Port B to maintain the inlet pressure in Port A at the set point. When the pressure in Port A falls below the set point, the hydraulic balance on the main poppet is restored. The main spring then forces the main poppet to close.



Features

- Pilot operated with manual adjustment.
- 2 interfaces
  - L-body (R4V06-SAE 12, R4V10-SAE 20)
  - T-body (R4V03-SAE 8, R4V06-SAE 16)
- 3 pressure stages.
- 3 adjustment modes
  - Hand knob
  - Acorn nut with lead seal
  - DIN lock
- With optional vent function.

R4V

General				
	T-Body		L-Body	
Size	**03 (SAE 8)**	**06 (SAE 16)**	**06 (SAE 12)**	**10 (SAE 20)**
Mounting	Threaded Body			
Mounting Position	Unrestricted			
Ambient Temp. Range	-20°C to +50°C (-4°F to +122°F)			
Hydraulic				
Max. Operating Pressure	Ports A and X up to 350 Bar (5075 PSI); Ports B and Y 30 Bar (435 PSI)			
Pressure Stages	105 Bar (1523 PSI), 210 Bar (3045 PSI), 350 Bar (5075 PSI)			
Nominal Flow	60 LPM (15.9 GPM)	200 LPM (52.9 GPM)	200 LPM (52.9 GPM)	450 LPM (119.0 GPM)
Fluid	Hydraulic oil as per DIN 51524 ... 51525			
Fluid Temperature	-20°C to +80°C (-4°F to +176°F)			
Viscosity Permitted	10 to 650 cSt (mm^2/s)			
Viscosity Recommended	30 cSt (mm^2/s)			
Filtration	ISO Class 4406 (1999) 18/16/13 (acc. NAS 1638: 7)			

R4V with Vent Function

General				
	T-Body		L-Body	
Size	**03 (SAE 8)**	**06 (SAE 16)**	**06 (SAE 12)**	**10 (SAE 20)**
Mounting	Threaded Body			
Mounting Position	Unrestricted			
Ambient Temp. Range	-20°C to +50°C (-4°F to +122°F)			
Weight	4.9 kg (10.8 lbs)	8.3 kg (18.3 lbs)	5.0 kg (11.0 lbs)	7.3 kg (16.1 lbs)
Hydraulic				
Max. Operating Pressure	Ports A and X up to 350 Bar (5075 PSI); Ports B and Y 30 Bar (435 PSI)			
Pressure Stages	105 Bar (1523 PSI), 210 Bar (3045 PSI), 350 Bar (5075 PSI)			
Nominal Flow	60 LPM (15.9 GPM)	200 LPM (52.9 GPM)	200 LPM (52.9 GPM)	450 LPM (119.0 GPM)
Fluid	Hydraulic oil as per DIN 51524 ... 51525			
Fluid Temperature	-20°C to +80°C (-4°F to +176°F)			
Viscosity Permitted	10 to 650 cSt (mm^2/s)			
Viscosity Recommended	30 cSt (mm^2/s)			
Filtration	ISO Class 4406 (1999) 18/16/13 (acc. NAS 1638: 7)			
Power Amplifier	PCD00A-400			

Electrical (Solenoid)						
Duty Ratio	100%					
Response Time	Energized / De-energized AC: 20/18ms, DC: 46/27 ms					
Code	**G0R**	**G0Q**	**GAR**	**GAG**	**W30**	**W31**
Supply Voltage	12V =	24V =	98V =	205V =	110V at 50Hz 120V at 60Hz	220V at 50Hz 240V at 60Hz
Tolerance Supply Voltage	+5 to -10	+5 to -10	+5 to -10	+5 to -10	±5	±5
Power Consumption Hold	31	31	31	31	64/59 [VA]	68/62 [VA]
In Rush	31	31	31	31	231/240 [VA]	231/240 [VA]
Solenoid Connection	Connector as per EN175301-803					
Protection Class	IP65 in accordance with EN60529 (plugged and mounted)					
Coil Insulation Class	H (180°C) (356°F)					

Ordering Information

R4V □ — **5** □ □ — □ □ — □ □ — **A** □ — □

Pressure Relief Valve	Size	Max Pressure 350 Bar (5075 PSI)	Body	Pressure Stages	Adjustment	Drain Line	Switching Type	Solenoid Voltage (Optional)	Design Series	Seals	Options

Code	Description
03	NG10 (SAE 8)
06	NG25 (SAE 16 – T-Body SAE 12 – L-Body)
10	NG32 (SAE 20)

Code	Description
4	R4V03 T-Body R4V06 T-Body
B	R4V06 L-Body R4V10 L-Body

Code	Description
1	up to 105 Bar (1523 PSI)
3	up to 210 Bar (3045 PSI)
5	up to 350 Bar (5075 Bar)

Code	Description
1	Hand Knob
3	Acorn Nut with Lead Seal
4	DIN Lock

Code	Description
0	Internal
2	External from Pilot Head (Y1)

Code	Description
Omit	Standard w/o vent function
09*	Solenoid not activ. unpress. circulation
11**	Solenoid activated unpress. circulation

* Sol. de-energized: open to tank
Sol. energized: vent line blocked

** Sol. de-energized: vent line blocked
Sol energized: open to tank

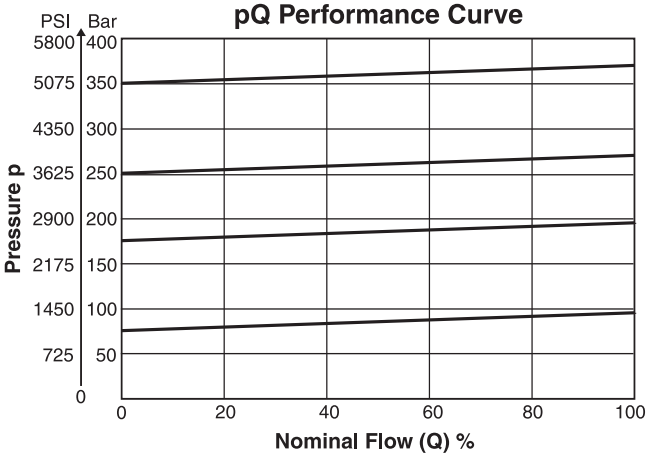
Code	Description
Omit	Standard w/o vent function
G0R	12V=
G0Q	24V=
GAR	98V=
GAG	205V
W30	110V 50Hz/ 120V 60Hz
W31	220V 50Hz/ 240V 60Hz

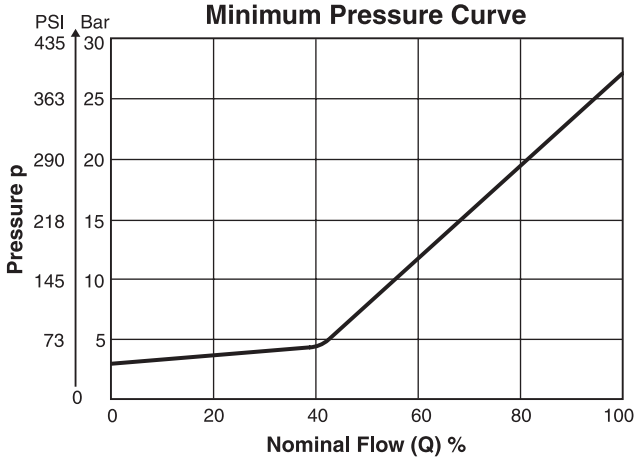
Code	Description
1	Nitrile
5	Fluorocarbon

Weight:

R4V03	3.2 kg (7.1 lbs.)
R4V06*4	6.6 kg (14.6 lbs.)
R4V06*B	3.3 kg (8.2 lbs.)
R4V10	5.6 kg (12.3 lbs.)

Performance Curves*

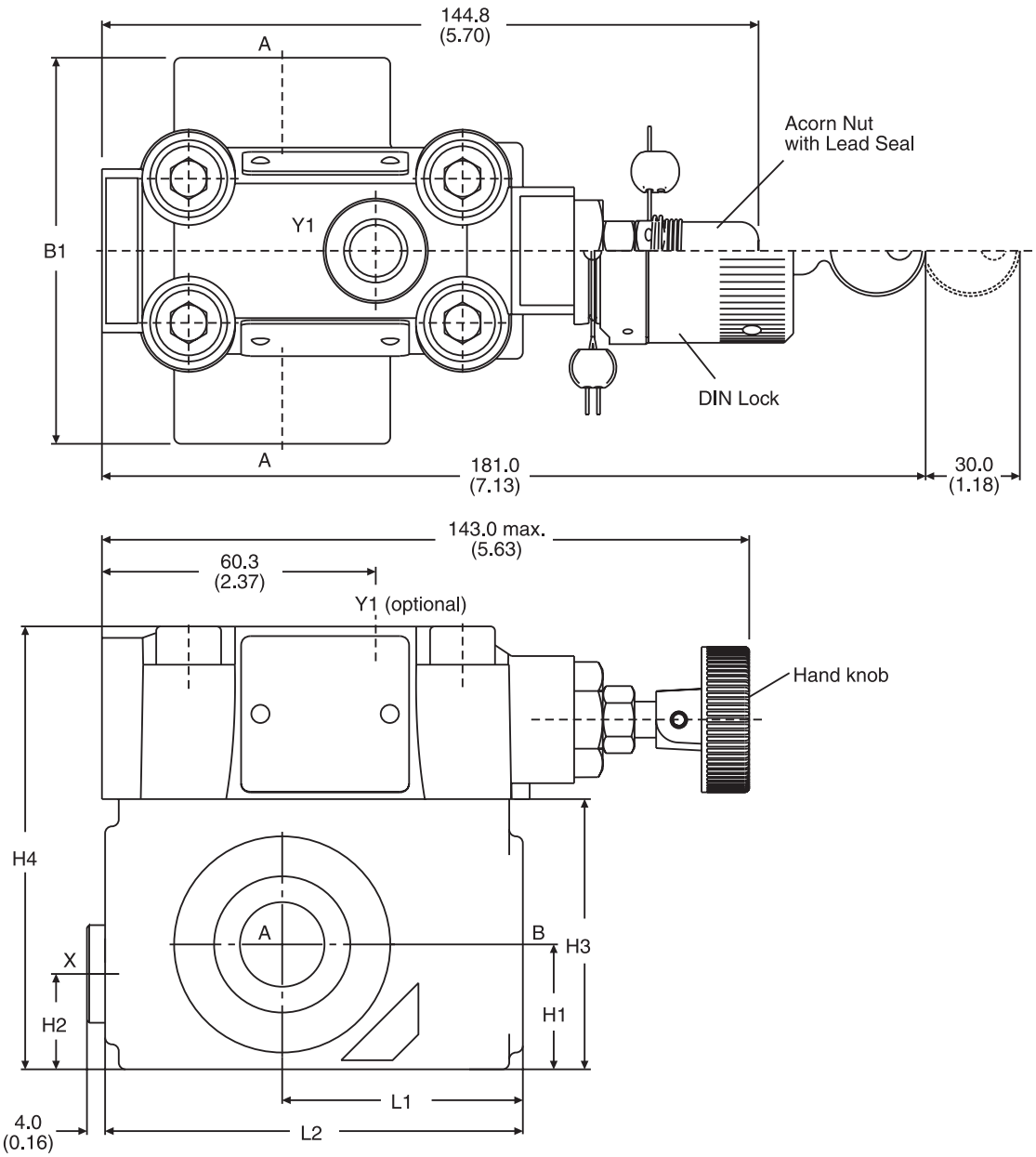




* The performance curves are measured with external drain. For internal drain, the tank pressure has to be added to the curve.

T-Body

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



Size	Body	B1	B2	B3	B4	H1	H2	H3	H4	H5	H6	H7	H8	L1	L2	L3
03	T-body	85.0 (3.35)	–	–	–	27.5 (1.08)	21.0 (0.83)	59.5 (2.34)	97.5 (3.84)	–	–	–	–	53.0 (2.09)	92.0 (3.62)	–
06	T-body	136.0 (5.35)	–	–	–	38.0 (1.50)	28.0 (1.10)	93.0 (3.66)	131.0 (5.16)	–	–	–	–	66.5 (2.62)	117.5 (4.63)	–

Ports	Function	Port size	
		R4V03 T-body	R4V06 T-body
A	Pressure (inlet)	SAE 8	SAE 16
B	Tank (outlet)	SAE 8	SAE 16
X[1)]	Ext. Remote Control or Vent Connection	SAE 4	
Y1[2)]	External Drain		

[1)] closed when supplied

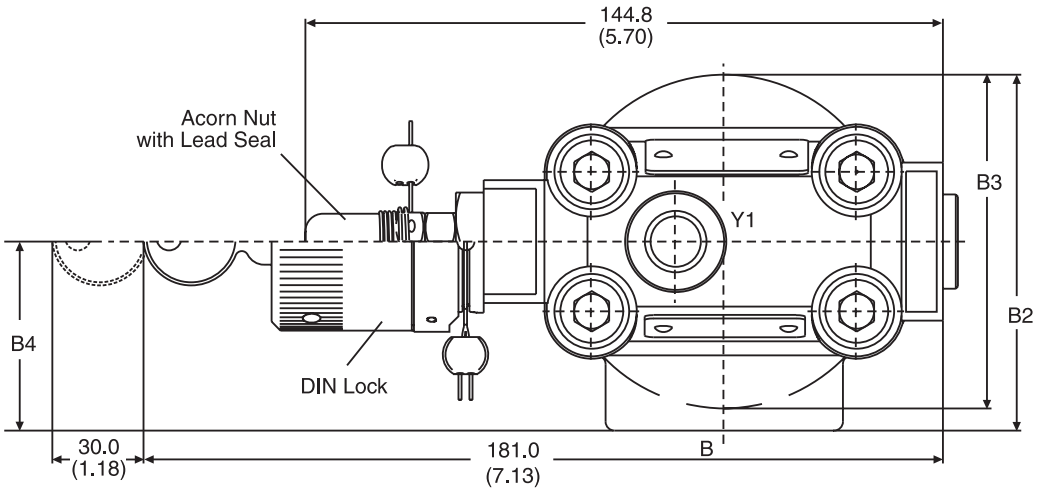
[2)] port Y1 is only available at drain line (code 2) external from the pilot head

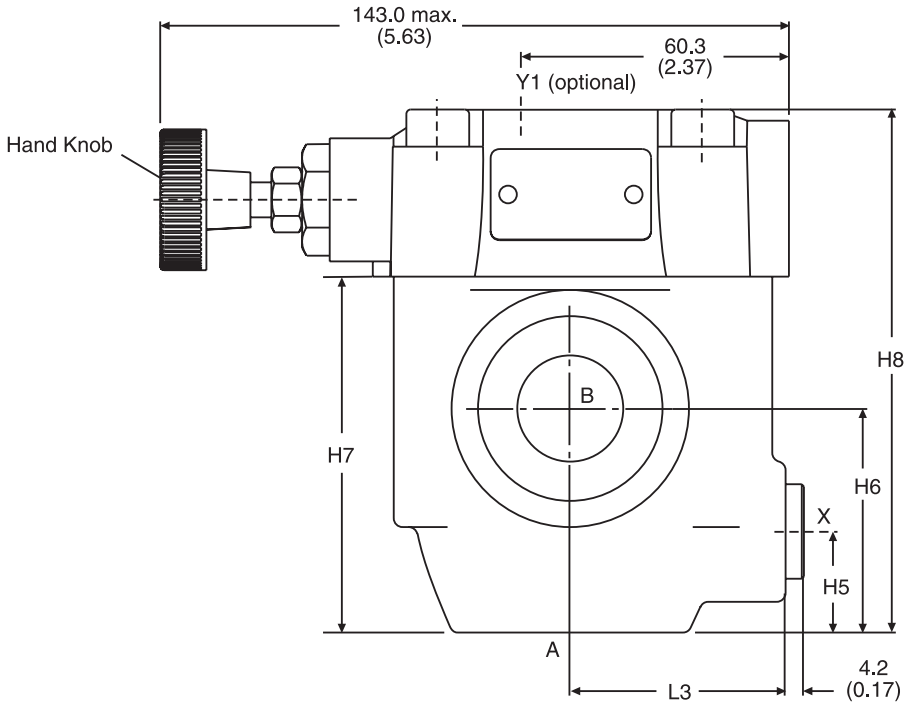
R4V.indd, dd

Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

L-Body

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





Size	Body	B1	B2	B3	B4	H1	H2	H3	H4	H5	H6	H7	H8	L1	L2	L3
06	L-body	–	81.0 (3.19)	76.0 (2.99)	43.0 (1.69)	–	–	–	–	23.0 (0.91)	51.0 (2.01)	81.0 (3.19)	119.0 (4.69)	–	–	49.0 (1.93)
10	L-body	–	120.7 (4.75)	85.8 (3.38)	77.8 (3.06)	–	–	–	–	31.8 (1.25)	50.8 (2.00)	96.0 (3.78)	134.0 (5.78)	–	–	49.8 (1.96)

Ports	Function	Port size	
		R4V06 L-body	R4V10 L-body
A	Pressure (inlet)	SAE 12	SAE 20
B	Tank (outlet)	SAE 12	SAE 20
X[1)]	Ext. Remote Control or Vent Connection	SAE 4	
Y1[2)]	External Drain		

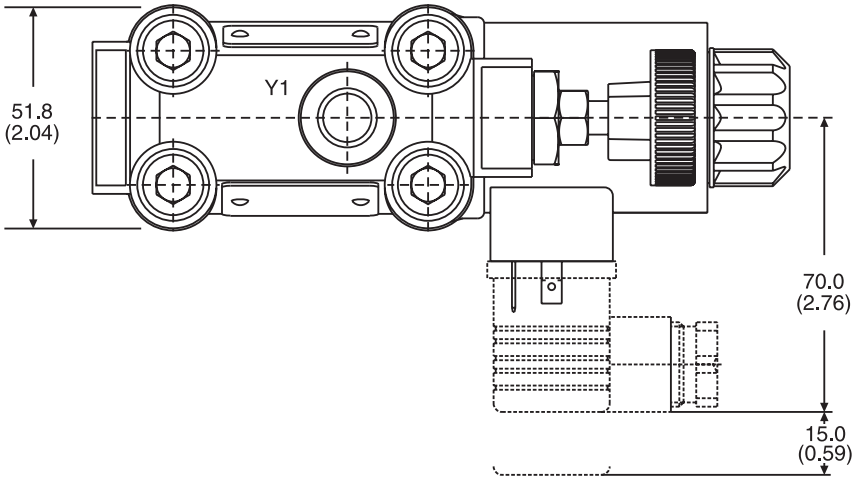
[1)] closed when supplied

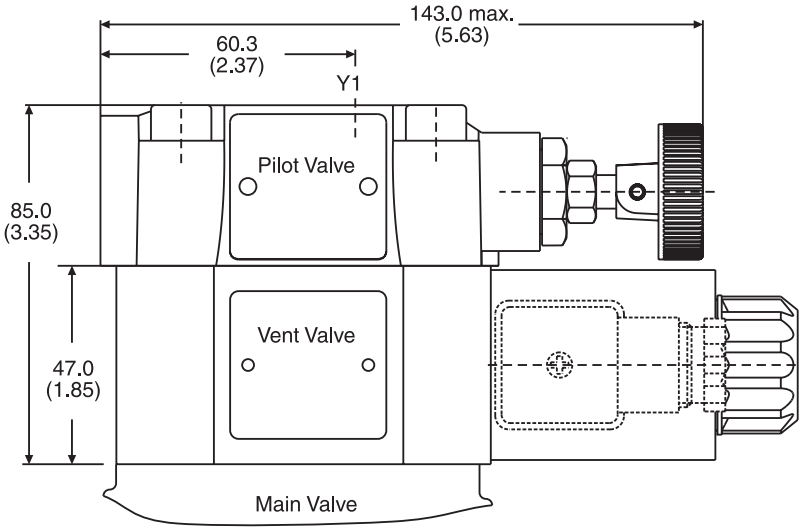
[2)] port Y1 is only available at drain line (code 2) external from the pilot head

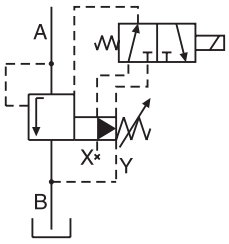
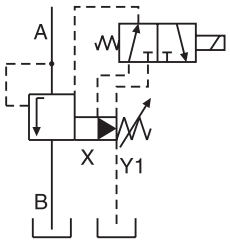
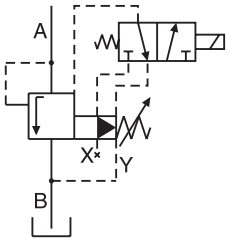
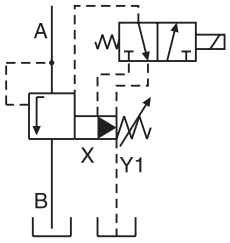
R4V.indd, dd

R4V with Vent Function

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





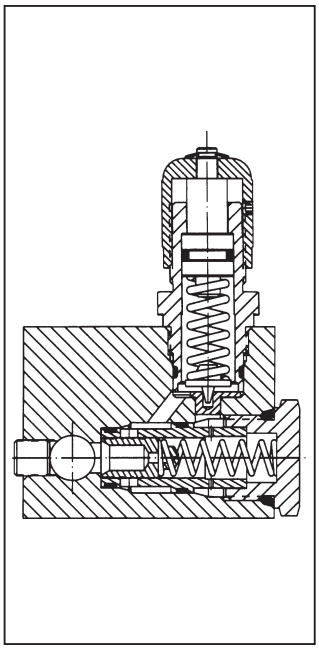
Code	Internal Drain	External Drain
11		
09		

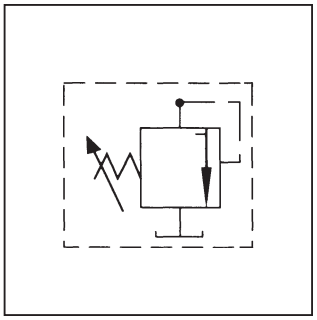
R4V.indd, dd

Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

General Description

Series R6701 relief valves are pilot operated relief valves. When system pressure reaches the selected adjustable setting on this valve, the valve opens the system to tank.





Features

- Accurate, quick response due to pressure balanced spool design.
- Available in 1/4" through 3/4" sizes.
- Can be equipped with Tel-lok cap for tamper-proof design (1/4" - 3/4" sizes only).
- High volume pilot operated relief 340.7 LPM (90 GPM) 1 1/4" and 1 1/2" poppet design available.

Specifications

Service Applications	Hydraulic Oil
Pressure Adjustment Ranges	Range 1: Sizes 1/4" - 3/4" 13.8 - 82.8 Bar (200 - 1200 PSI) Sizes 1 1/4" - 1 1/2" 17.3 - 82.8 Bar (200 - 1200 PSI) Range 2: Sizes 1/4" - 3/4" 69 - 207 Bar (1000 - 3000 PSI) Sizes 1 1/4" - 1 1/2" 69 - 207 Bar (1000 - 3000 PSI) Range 3: Sizes 1/4" - 3/4" 207 - 414 Bar (3000 - 6000 PSI) Sizes 1 1/4" - 1 1/2" 207 - 414 Bar (3000 - 6000 PSI)
Sizes	NPT 1/4", 1/2", 3/4"
Ports	NPT Pipe threads
Mounting	In-line or panel
Material	Body, Cap, Piston Sleeve, Pilot Cap: Barstock steel Pilot Knob: Aluminum Piston, Adjustable Stem, Pilot Piston, Pilot Seat: 400 Stainless Steel O-rings: Synthetic rubber Back-up Rings: PTFE Body Finish: Paint
Operating Temperature	-40°C to +121°C (-40°F to +250°F)

Flow Data

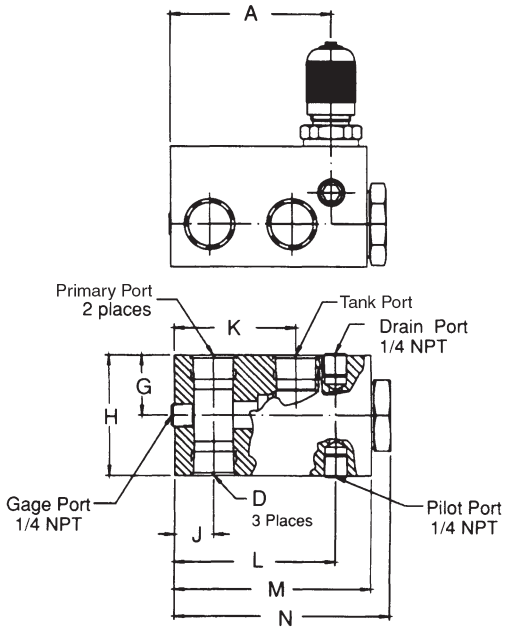
Valve Size	Cv Factor Inlet to Inlet	Flow Rate GPM Max.	Vent Pressure at Max. Flow	Weight
1/4	1.5	6	65 PSI	4 Lbs. 12 Oz.
1/2	9.0	15	30 PSI	7 Lbs.
3/4	12.5	25	50 PSI	9 Lbs. 10 Oz.

R6701.indd, dd

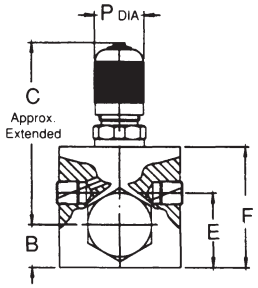
Ordering Information

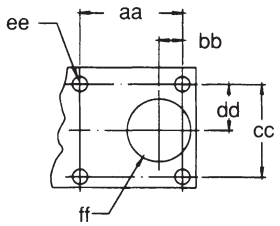
X	R	670	1	-1	-1/4	S	2
Option	**Type Valve**	**Catalog Number**	**Port Position**	**Pressure Range**	**Size**	**Materials**	**O-Ring Code**
X External Drain	R Relief	670 Tel-Trol Pilot-Operated Relief Valve	1 Inline	1 (Sizes $\frac{1}{4}$ – $\frac{3}{4}$) 200 to 1200 PSI 2 (Sizes $\frac{1}{4}$ – $\frac{3}{4}$) 1000 to 3000 PSI 3 (Sizes $\frac{1}{4}$ – $\frac{3}{4}$) 3000 to 6000 PSI	1/4 NPT 1/2 NPT 3/4 NPT	S Steel	2 Nitrile Others Available

Dimensions — Shown in inches



R6701 Sizes 1/4 – 3/4





Panel Machining for Panel Mounted Valves

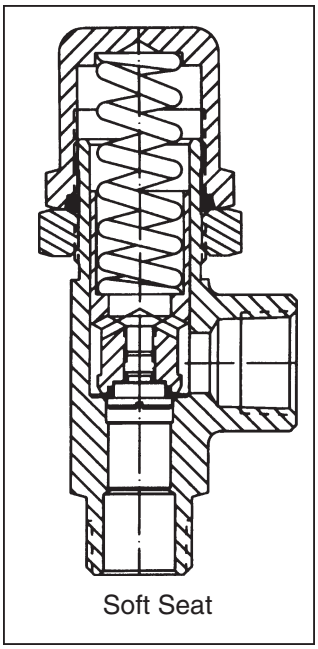
Panel Mounting Dimensions

Valve Size	aa	bb	cc	dd	ee	ff	Mounting Threads
$\frac{1}{4}$	1.750	0.531	1.750	0.875	0.281	1.4375	$\frac{1}{4}$ - 20NC-2
$\frac{1}{2}$							
$\frac{3}{4}$	2.312	0.531	2.125	1.062	0.343	1.4375	$\frac{5}{16}$ -18NC-2

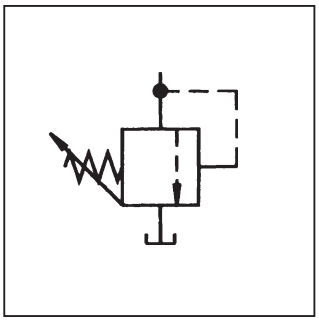
Valve Size	A	B	C	Port Type D	E	F	G	H	J	K	L	M	N	P
$\frac{1}{4}$	2.313	.750	4.000	$\frac{1}{4}$ NPT	1.313	2.375	1.187	2.375	.625	1.563	2.313	3.125	3.437	1.125
$\frac{1}{2}$	3.188	.968	4.156	$\frac{1}{2}$ NPT	1.688	2.750	1.125	2.250	.750	2.250	3.188	4.000	4.437	1.125
$\frac{3}{4}$	3.688	.968	4.156	$\frac{3}{4}$ NPT	1.688	2.750	1.375	2.750	.891	2.781	3.688	4.500	4.937	1.125

General Description

Series 620 - 649 in-line pressure control valves open the system to tank when the system pressure reaches the pressure setting of the control valve. The pressure setting is externally adjustable so that it can be tuned accordingly within its range. However, the valve can be factory set to a specified pressure setting.



Soft Seat



Hard Seat
available only in
Brass and Stainless Steel

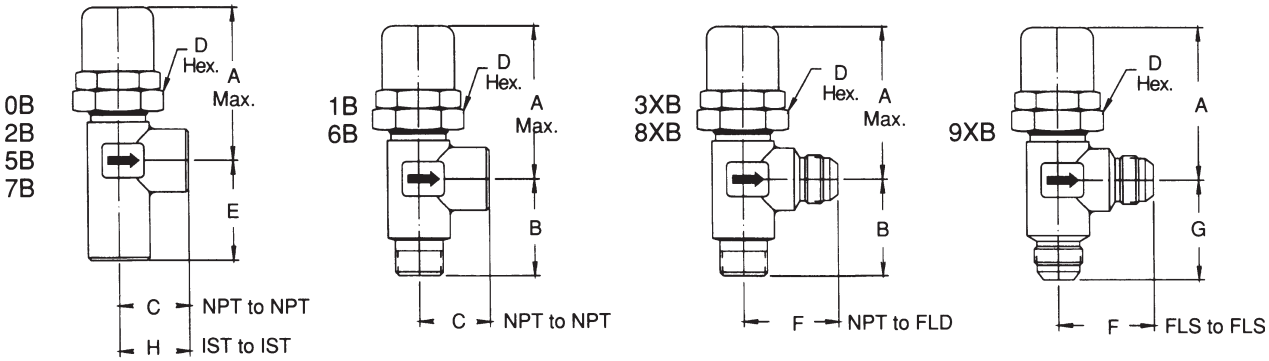
Specifications

Service App.	Hydraulic and Pneumatic
Maximum Operating Pressure	Working: 0.3 to 248.4 Bar (4 to 3600 PSI) in 13 ranges Reseat: Range 1: 80% of cracking press. Ranges 2 - 13: 90% of cracking pressure
Sizes	NPT 1/4", 1/2", 3/4" IST SAE 6, SAE 10, SAE 12 FLD SAE 6, SAE 10, SAE 12
Ports	NPT Pipe threads IST Internal straight threads FLD Flared Tube Connection SAE 37°
Material	Body, Cap Brass, aluminum alloy, stainless steel Finish Aluminum alloy, anodized; stainless steel Poppet 416 Stainless Steel (Hard seat) 303 Stainless Steel (Soft seat) Seat (soft) Ranges 1 -3: Synthetic rubber - Code 2 Ranges 4 - 13: PTFE Spring Stainless steel Cap O-ring Synthetic rubber
Operating Temperature	-40°C to +121°C (-40°F to +250°F) Higher on special order

Features

- Externally adjustable.
- Available for hydraulic or pneumatic service.
- Quick response for venting applications.

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



Valve Size		Dimensions								Maximum Rated Flow LPM (GPM)	Weights (Approx.)		
Pipe	Tube	A	B	C	D	E	F	G	H		Allum. Alloy	Brass	Stainless Steel
1/4	6	60.3 (2.38)	34.9 (1.38)	27.0 (1.06)	31.8 (1.25)	32.5 (1.28)	36.5 (1.44)	38.1 (1.50)	27.0 (1.06)	15.1 (4.0)	4 oz.	10 oz.	12 oz.
1/2	10	94.5 (3.72)	54.0 (2.13)	38.1 (1.50)	44.5 (1.75)	54.8 (2.16)	52.4 (2.06)	55.6 (2.19)	38.1 (1.50)	37.9 (10.0)	14 oz.	2 lbs. 2 oz.	2 lbs. 4 oz.
3/4	12	94.5 (3.72)	54.0 (2.13)	39.7 (1.56)	44.5 (1.75)	55.6 (2.19)	53.2 (2.09)	55.6 (2.19)	39.7 (1.56)	56.8 (15.0)	14 oz.	2 lbs. 2 oz.	2 lbs. 4 oz.

620-649.indd, dd

Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

□ Materials — □ Type Ports & Type Seals — □ Pressure Range — □ Size — □ O-Ring Code

Code	Description
62	Aluminum (Soft Seat Only)
63	Brass
64	Stainless Steel Type 303

Code	Description
1/4	1/4" NPT
1/2	1/2" NPT
3/4	3/4" NPT
6	(IST or FLD)
10	(IST or FLD)
12	(IST or FLD)

Code	Description
2	Nitrile
28	Fluorocarbon

Code	Inlet	Outlet
Hard Seat		
0B	IST	IST
1B	NPT	NPT
2B	NPT	NPT
3XB	NPT	FLD

Code	Inlet	Outlet
Soft Seat		
5B	IST	IST
6B	NPT	NPT
7B	NPT	NPT
8XB	NPT	FLD
629XB only	FLD	FLD

Hard Seat available in Brass and Stainless Steel only.

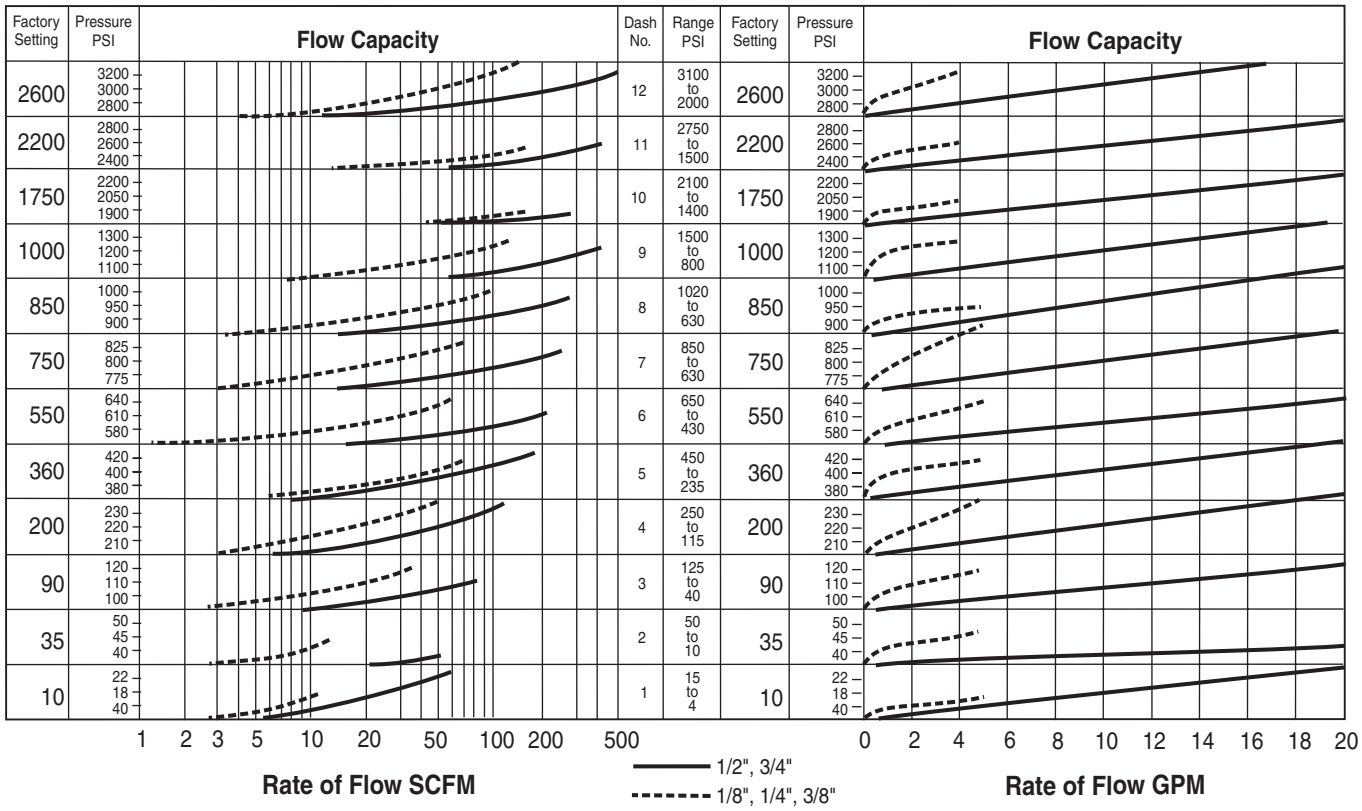
Code	Description
1	0.3 - 1.0 Bar (4-15 PSI)
2	0.7 - 3.5 Bar (10-50 PSI)
3	2.8 - 8.6 Bar (40-125 PSI)
4	7.9 - 17.3 Bar (115-250 PSI)
5	16.2 - 31.1 Bar (235-450 PSI)
6	29.7 - 44.9 Bar (430-650 PSI)
7	43.5 - 58.7 Bar (630-850 PSI)
8*	43.5 - 70.4 Bar (630-1020 PSI)
9*	55.2 - 103.5 Bar (800-1500 PSI)
10*	96.6 - 144.9 Bar (1400-2100 PSI)
11*	103.5 - 189.8 Bar (1500-2750 PSI)
12*	138.0 - 213.9 Bar (2000-3100 PSI)
13*	207.0 - 248.4 Bar (3000-3600 PSI)

* Hard Seat only.
PTFE seats for Ranges 4, 5, 6 and 7 only.

Pressure Range

Range Bar (PSI)	Pre-Set Cracking Pressure	Soft Seat Material (when used)	Range Dash Number
0.3 - 1.0 Bar (4-15 PSI)	0.7 Bar (10 PSI)	Synthetic Rubber	-1
0.7 - 3.5 Bar (10-50 PSI)	2.4 Bar (35 PSI)	Synthetic Rubber	-2
2.8 - 3.5 Bar (40-125 PSI)	6.2 Bar (90 PSI)	Synthetic Rubber	-3
7.9 - 17.3 Bar (115-250 PSI)	13.8 Bar (200 PSI)	PTFE	-4
16.2 - 31.1 Bar (235-450 PSI)	24.8 Bar (360 PSI)	PTFE	-5
29.7 - 44.9 Bar (430-650 PSI)	38.0 Bar (550 PSI)	PTFE	-6
43.5 - 58.7 Bar (630-850 PSI)	51.8 Bar 750 PSI)	PTFE	-7
43.5 - 70.4 Bar (630-1020 PSI)	58.7 Bar (850 PSI)	PTFE	-8
55.2 - 103.5 Bar (800-1500 PSI)	69.0 Bar (1000 PSI)	PTFE	-9
96.6 - 144.9 Bar (1400-2100 PSI)	120.8 Bar (1750 PSI)	PTFE	-10
103.5 - 189.8 Bar (1500-2750 PSI)	151.8 Bar (2200 PSI)	PTFE	-11
138.0 - 213.9 Bar (2000-3100 PSI)	179.4 Bar (2600 PSI)	PTFE	-12
207.0 - 248.4 Bar (3000-3600 PSI)	220.8 Bar (3200 PSI)	PTFE	-13

Definitions:
Cracking pressure – Liquid: 15 tp 20 DPM
Air: steady stream of bubbles
Reseat leakage – Less than 1 DPM or 1 BPM



Examples

Pneumatic:

Establish cracking pressure setting of 1/2" valve for flow of 70 SCFM at 27.6 Bar (400 PSI) pressure:

1. Project 70 SCFM on vertical scale.
2. Project 27.6 Bar (400 PSI) scale horizontally intersectiong 1.
3. Project line parallel to curves back to vertical line 1.
4. Read cracking pressure setting: 24.8 Bar (360 PSI).

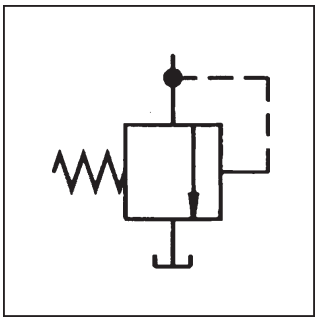
Hydraulic:

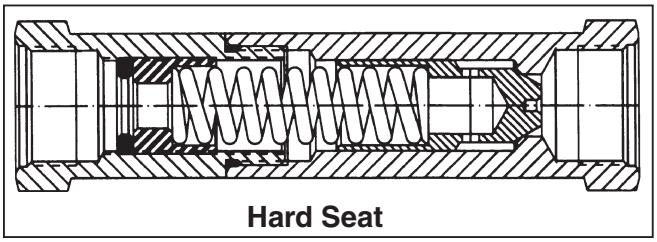
Find amount of pressure increase above 24.8 Bar (360 PSI) cracking pressure when flow through 3/4" valve is increased to 54 LPM (14 GPM):

1. From 360 on vertical pressure scale, follow 3/4" curve until it intersects with the vertical line representing 54 LPM (14 GPM).
2. Project intersecting point horizontally and read pressure, i.e., 29 Bar (420 PSI).
3. Accumulated Pressure:
   420 minus 360 = 4.1 Bar (60 PSI).

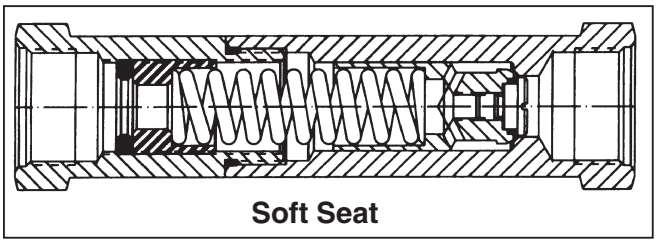
General Description

Series 665 relief valves are adjustable, in-line direct-acting relief valves. The valve opens when the system pressure exceeds the pressure at which the valve is set.





Hard Seat



Soft Seat

Specifications

Service App.	Hard seat: Hydraulic Soft seat: Hydraulic and air
Maximum Operating Pressure	Working: 0.3 to 248.4 Bar (4 to 3600 PSI) in 13 ranges Reseat: Range 1: 80% of cracking press. Ranges 2 - 13: 90% of cracking pressure Proof: 310.5 Bar (4500 PSI)
Sizes	NPT 1/4", 1/2", 3/4", 1"
Ports	NPT Pipe threads IST Internal straight threads
Material	Body, Cap: Aluminum alloy, anodized Stainless steel Poppet, Adj. Screw: 416 Stainless Steel (Hard seat) 303 Stainless Steel (Soft seat) Locknut: 303 Stainless steel Spring: Stainless steel AMS5688 and 17-7PH O-ring: Synthetic rubber Seat (soft): Ranges 1-3: Synthetic rubber Ranges 4-13: PTFE
Operating Temperature	-40°C to +121°C (-40°F to +250°F) Higher on special order

Features

- Internal adjustment ideal for tamper-proof applications.
- Available for hydraulic or pneumatic service.
- In-line design saves space in power unit application.

Ordering Information

S	665	-1	-1/8	D	2
Options	Catalog Number	Pressure Range	Size	Materials	O-Ring Code
S Soft Seat	665 Inline Direct-Acting Relief	1 4 - 15 PSI 2 10 - 50 PSI 3 40 - 125 PSI 4 115 - 250 PSI 5 235 - 450 PSI 6 430 - 650 PSI 7 630 - 850 PSI † 8 630 - 1020 PSI † 9 800 - 1500 PSI † 10 1400 - 2100 PSI † 11 1500 - 2750 PSI † 12 2000 - 3100 PSI † 13 3000 - 3600 PSI ML* MH**	1/8 NPT 1/4 NPT 3/8 NPT 1/2 NPT 3/4 NPT 1 NPT 4 IST 6 IST 8 IST 12 IST 16 IST	D Aluminum Alloy SS Stainless Steel	2 Nitrile Others Available

Pressure Range

Range PSI	Pre-Set Cracking Pressure	Soft Seat Material (when used)	Range Dash Number
4-15	10	Synthetic Rubber	-1
10-50	35		-2
40-125	90		-3
115-250	200	PTFE	-4
235-450	360		-5
430-650	550		-6
630-850	750		-7
630-1020	850		-8
800-1500	1000		-9
1400-2100	1750		-10
1500-2750	2200		-11
2000-3100	2600		-12
3000 - 3600	3200		-13

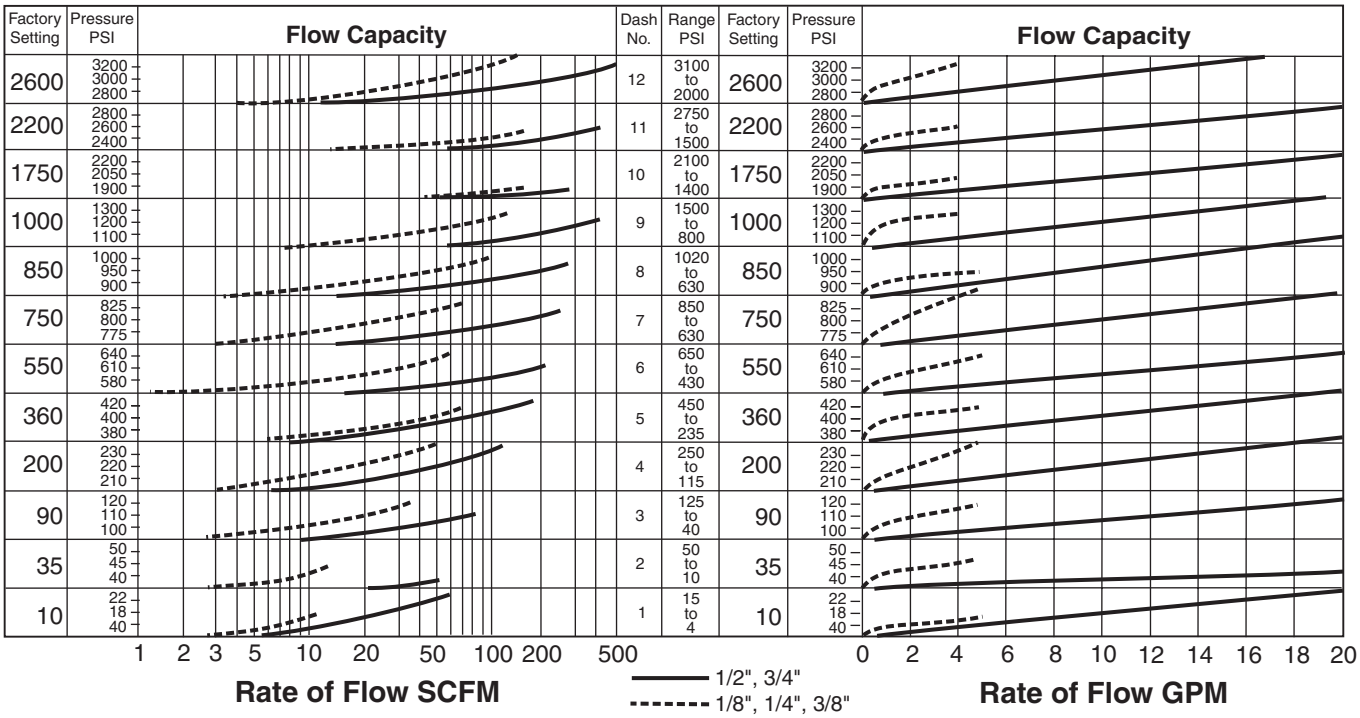
† NOTE: Ranges 8 and above – Hard Seat only
Teflon seats for Ranges 4, 5, 6 and 7 only

Definitions:
Cracking pressure – Liquid: 15 to 20 DPM
Air: steady stream of bubbles
Reseat leakage – Less than 1 DPM or 1 BPM

665.indd, dd

Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

Performance Curves



Examples

Pneumatic:

Establish cracking pressure setting of 1/2" valve for flow of 70 SCFM at 27.6 Bar (400 PSI) pressure:

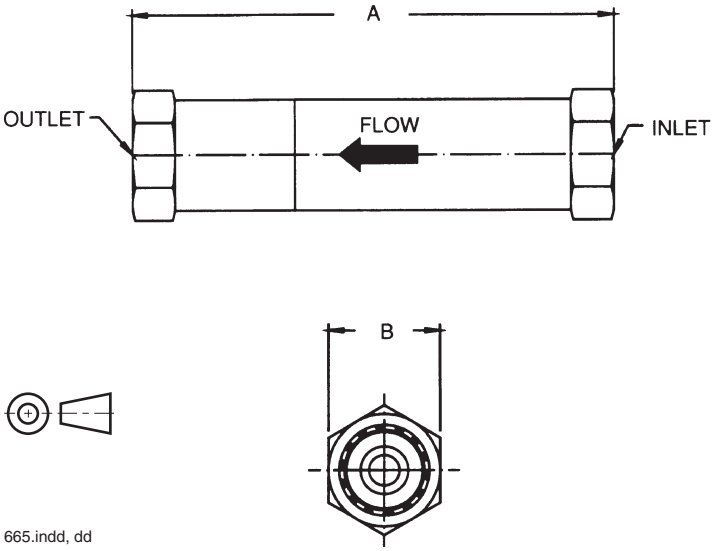
1. Project 70 SCFM on vertical scale.
2. Project 27.6 Bar (400 PSI) scale horizontally intersectiong 1.
3. Project line parallel to curves back to vertical line 1.
4. Read cracking pressure setting: 24.8 Bar (360 PSI).

Hydraulic:

Find amount of pressure increase above 24.8 Bar (360 PSI) cracking pressure when flow through 3/4" valve is increased to 54 LPM (14 GPM):

1. From 360 on vertical pressure scale, follow 3/4" curve until it intersects with the vertical line representing 54 LPM (14 GPM).
2. Project intersecting point horizontally and read pressure, i.e., 29 Bar (420 PSI).
3. Accumulated Pressure:
   420 minus 360 = 4.1 Bar (60 PSI).

Dimensions – Shown in inches



Valve Size NPT	A	B	Maximum Rated Flow G.P.M.	Weights (Approx.) Aluminum Alloy	Weights (Approx.) Stainless Steel
1/4	5	1 3/16	4	0.6 Lbs.	1.3 Lbs.
1/2	5	1 3/16	10		
3/4	7	1 5/8	15	1.7 Lbs.	3.2 Lbs.
1	7	1 5/8	15		

665.indd, dd

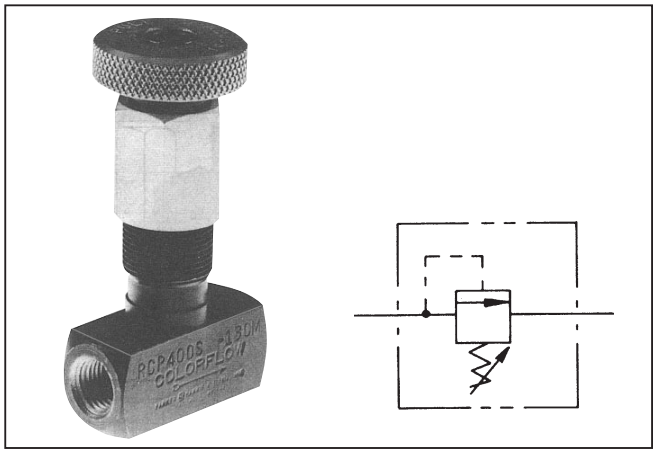
Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

General Description

Series RCP in-line pressure control valves are chiefly used as remote control valves. They limit system pressure by opening to tank when pressure reaches the selected relief pressure.

When used as remote coantrol valves, Series RCP valves are piped to the vent port of a pilot operated relief valve, such as Series RP and RM valves.

Pressure relief settings are made with a self-locking knob that is pulled and turned to the proper setting. Pushing the knob in locks it positively at this setting.



Specifications

Pressure Adjustment Ranges	3 - 70 Bar (50 - 100 PSI) 10 - 140 Bar (150 - 2000 PSI) 10 - 210 Bar (150 - 3000 PSI)
Maximum Operating Pressure	210 Bar (3000 PSI)
Flow	4 LPM (1 GPM) Maximum 492 cc./min.(30 Cu. In/min.) Minimum
Pressure Setting	3.4 Bar (50 PSI) Minimum, at maximum flow Changes in flow, viscosity or temperature will affect minimum pressure
Size	1/4"
Port	NPTF
Mounting	Any position, panel mounting kit available

Ordering Information

Example: ''RCP400SF'' means Series RCP, 1/4″, steel, 150—2000 PSI pressure adjustment range, standard nitrile seal.

RCP — Relief Valve

400 — SIZE

400	1/4″ NPTF

S — MATERIAL

S	Steel

PRESSURE RANGE

M	50-1000 PSI
F	150-2000 PSI
H	150-3000 PSI

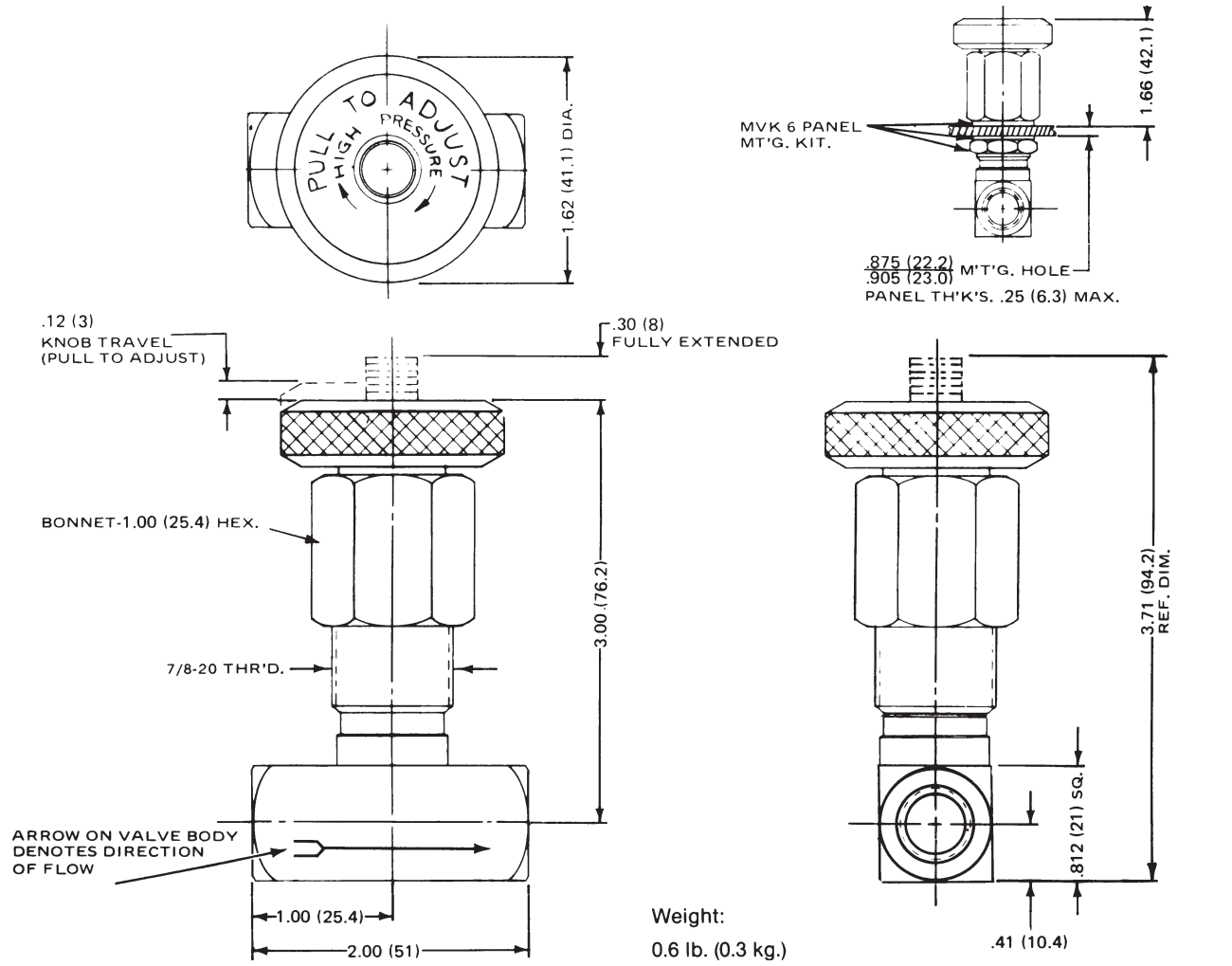
SEALS

Omit	Nitrile
V	Fluorocarbon

RCP.indd, dd

Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

Millimeter equivalents for inch dimensions are shown in (**)



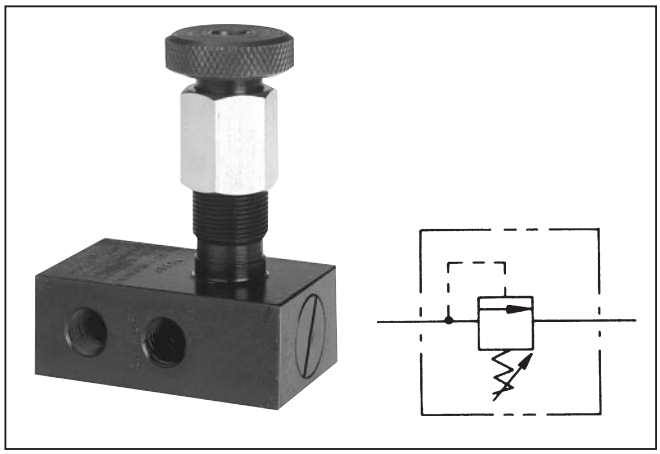
Weight:
0.6 lb. (0.3 kg.)

General Description

Series RP pressure control valves open the system to tank when the system pressure reaches the pressure setting of the control valve (see pressure adjustment ranges, below).

By adding a remote pilot valve to the vent port of a main pilot relief valve, pressure can be controlled by remote control. With this arrangement, the main relief valve setting should be 10 Bar (150 PSI) higher thatn the remote pilot setting.

For venting flow at minimum pressure, the vent port of the main relief valve can be connected directly to the tank.



Specifications

Pressure Adjustment Ranges	3 - 70 Bar (50 - 100 PSI) 10 - 140 Bar (150 - 2000 PSI) 10 - 210 Bar (150 - 3000 PSI)
Maximum Operating Pressure	210 Bar (3000 PSI)
Override	Any relief valve is subject to override, or a change in relief pressure when a change in flow occurs. For override characteristics, see chart on next page.

Flow Data

Valve Model	Port Size	Flow, max. GPM (L/M)	Vent Pressure PSI (Bar)
RP400	1/4 NPTF	6 (25)	60 (4)
RP600	3/8 NPTF	10 (40)	80 (5)
RP800	1/2 NPTF	15 (60)	50 (3)

Ordering Information

Example: “RP400SFV” means Series RP relief valve, 1/4" size, steel, 150-2000 PSI pressure range, optional Fluorocarbon seal.

RP — RELIEF VALVE

[ ] — SIZE

400	1/4″ NPTF
600	3/8″ NPTF
800	1/2″ NPTF

S — MATERIAL

S	Steel

[ ] — PRESSURE RANGE

M	50-1000 PSI
F	150-2000 PSI
H	150-3000 PSI

[ ] — SEAL

Omit	Nitrile
V	Fluorocarbon

RP.indd, dd

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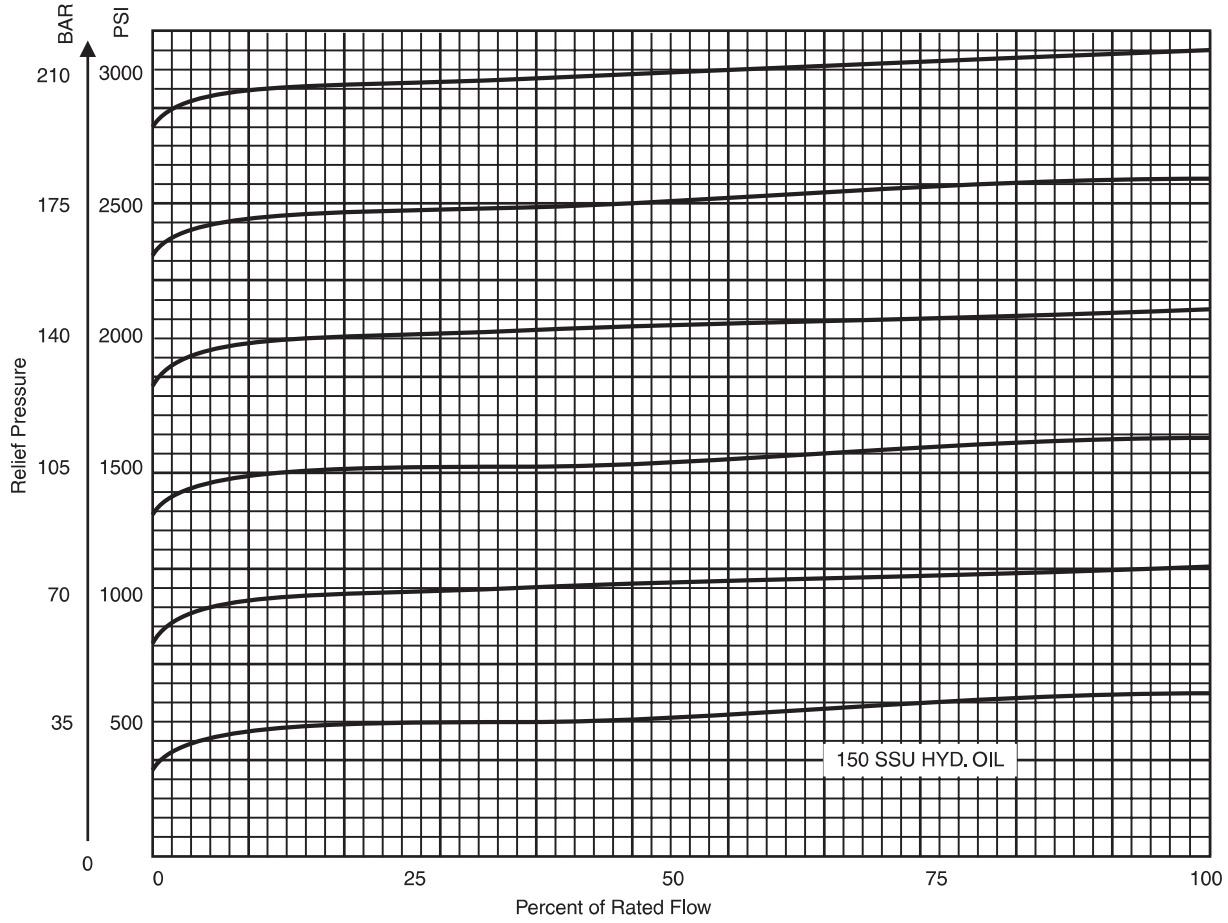
Hydraulic Valve Division
Elyria, Ohio, USA

Override Specifications

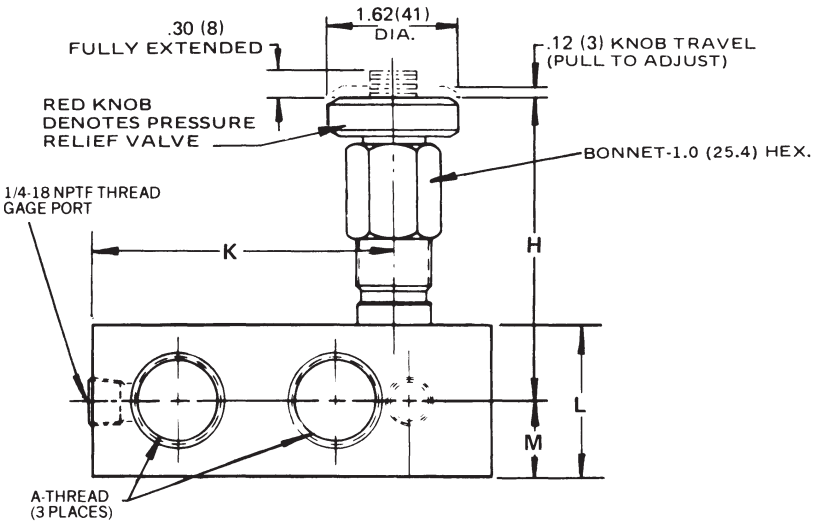
All relief valves are subject to override. For a given valve setting and flow, any changes in flow will cause a change in relief pressure. For example, a valve set at 140 Bar (2000 PSI) at 25% flow will read 145 Bar (2100 PSI) at 100% flow.

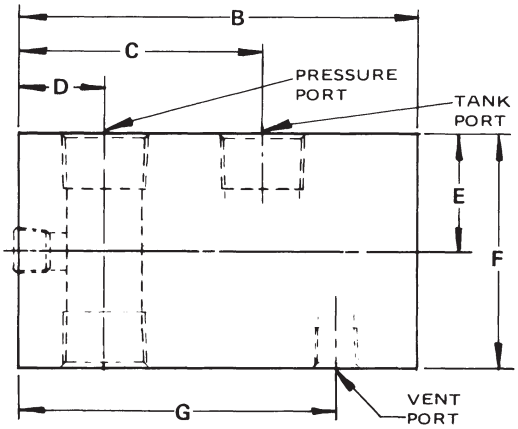


Relief Pressure vs. Flow

Millimeter equivalents for inch dimensions are shown in (**)

In-line mounted, pilot operated Pressure Relief Valves

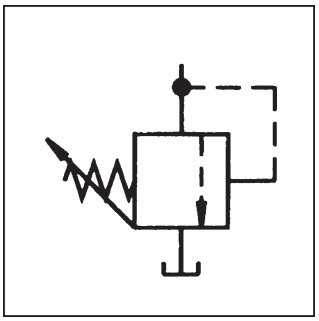




Valve Size	A-Thread	B	C	D	E	F	G	H	J	K	L	M	Weight Lb. (Kg)
RP400S	1/4-18 NPTF	3.00 (76.2)	1.60 (41.0)	0.67 (17.0)	0.88 (22.3)	1.75 (44.4)	2.25 (57.1)	3.16 (80.2)	4.02 (102.1)	2.04 (52.0)	1.12 (28.4)	0.56 (14.2)	1.9 (0.8)
RP600S	3/8-18 NPTF	3.53 (90.0)	2.00 (51.0)	0.75 (19.0)	1.00 (25.4)	2.00 (51.0)	2.77 (70.3)	3.22 (82.0)	4.14 (105.1)	2.62 (66.5)	1.25 (32.0)	0.62 (16.0)	2.6 (1.2)
RP800S	1/2-14 NPTF	4.10 (104.1)	2.40 (61.0)	0.91 (23.1)	1.12 (28.4)	2.25 (57.1)	3.17 (81.0)	3.34 (85.0)	4.39 (115.0)	3.03 (77.0)	1.50 (38.1)	0.75 (19.0)	3.7 (1.7)

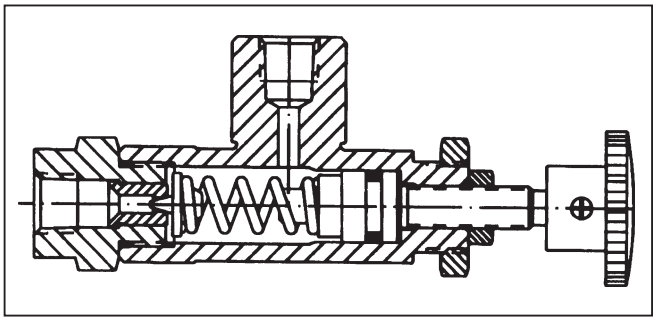
General Description

Series P6701 valves serve as a remote pilot for a pilot operated parent valve. Adjustable in three pressure ranges: 6.9 to 82.8 Bar (100 to 1200 PSI), 69 to 207 Bar (1000 to 3000 PSI) and 207 to 345 Bar (3000 to 6000 PSI).



Features

- Remote pilot for R6701, R6703, S6701, S6703, PR6701 and PR6703.
- Ideal for adjustable vent valve.



Specifications

Service App.	Hydraulic Oil	**Internal Leakage**	Less than 1 DPM at 90% of cracking pressure
Pressure Adjustment Range	Range 1: 6.9 - 82.8 Bar (100 - 1200 PSI Range 2: 69 - 207 Bar (1000 - 3000 PSI) Range 3: 207 - 414 Bar (3000 - 6000 PSI)	**Mounting**	Panel hole 27/32" diameter
Maximum Operating Pressure	Proof: 517.5 Bar (7500 PSI) Burst: 828 Bar (12,000 PSI)	**Material**	Body: Forged aluminum alloy Trim: Steel and Stainless steel O-rings: Synthetic rubber
Sizes	NPT 1/4"	**Operating Temperature**	-40°C to +121°C (-40°F to +250°F)
Orifice Dia.	1/8"		
Ports	NPT Pipe threads		

Ordering Information

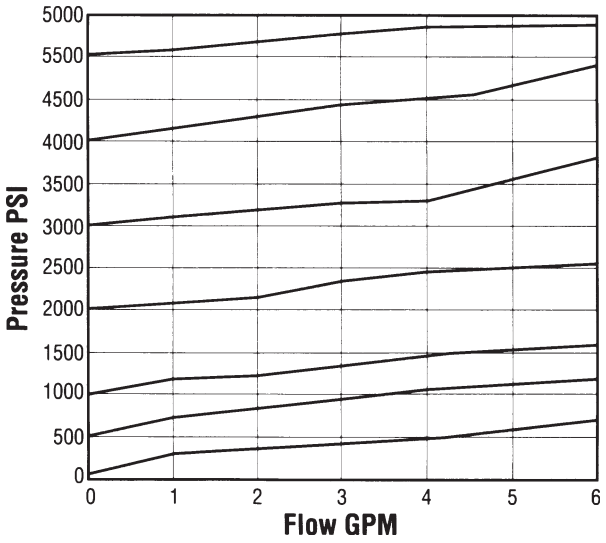
P	6701	-1	-1/4	D	2	P
Type Valve	Catalog Number	Pressure Range	Size & Type Ports	Materials	O-Ring Code	Panel Mounting
P Pressure	6701 Direct-Acting Relief or Remote Pilot	1 100 to 1200 PSI 2 1000 to 3000 PSI 3 3000 to 6000 PSI	1/4 NPT	D Aluminum Alloy	2 Nitrile Others Available	

Weight: 0.3 kg (0.63 lbs.)

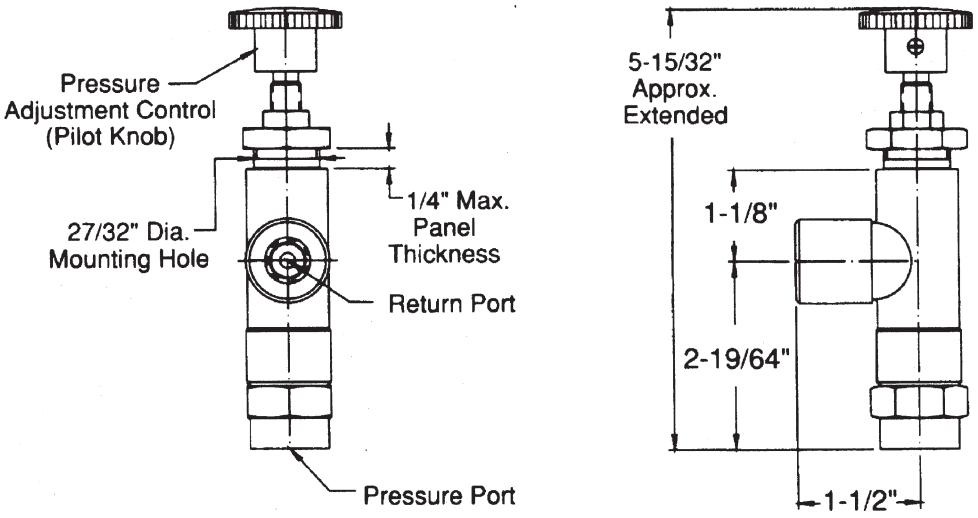
P6701.indd, dd

Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

Performance Curves



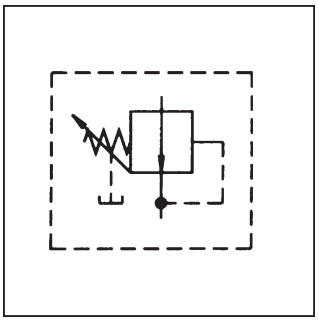
Dimensions — Shown in inches



P6701.indd, dd

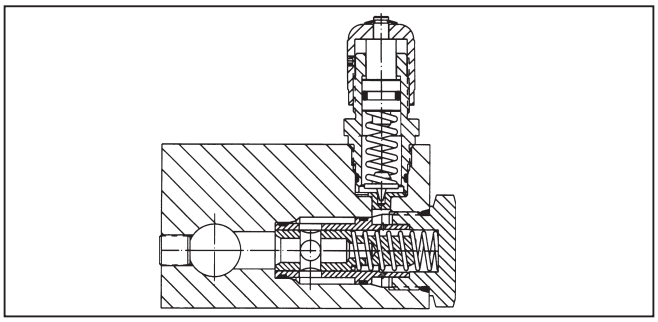
General Description

Series PR6701 pressure reducing pressure control valves maintain an independently controlled constant outlet pressure on one leg of the hydraulic system, regardless of pressure at the valve inlet or on the main relief valve. Inlet pressure on the valve must be higher than the pressure setting on the valve.



Features

- Recommended where limited reduced hydraulic pressure is required without using additional low pressure pump.
- Designed for up to 414 Bar (6000 PSI) primary pressure.
- Maintains regulated pressure within ±5% under flow conditions.



Specifications

Service App.	Hydraulic Oil		
Pressure Adjustment Range	Range 1: Maximum Primary Pressure 138 Bar (2000 PSI) Regulated Secondary Pressure 13.8 - 82.8 Bar (200 - 1200 PSI) Range 2: Maximum Primary Pressure 207 Bar (3000 PSI) Regulated Secondary Pressure 69 - 207 Bar (1000 - 3000 PSI) Range 3: Maximum Primary Pressure 414 Bar (6000 PSI) Regulated Secondary Pressure 207 - 414 Bar (3000 - 6000 PSI)		
Maximum Operating Pressure	Proof: Ranges 1 & 2 310.5 Bar (4500 PSI) Range 3 621 Bar (9000 PSI) Burst: Ranges 1 & 2 517.5 Bar (7500 PSI) Range 3 1035 Bar (15000 PSI)		
Sizes	NPT 1/4", 1/2", 3/4"		
Ports	NPT Pipe threads		
Mounting	In-line or panel		
Material	Body, Cap, Piston Sleeve, Pilot Cap	Steel	
	Pilot Knob	Aluminum	
	Piston, Adjustable Stem, Pilot Piston, Piot Seat	400 Stainless Steel	
	O-rings	Synthetic rubber	
	Back-up Rings	PTFE	
	Body Finish	Paint	
Operating Temperature	-40°C to +121°C (-40°F to +250°F)		

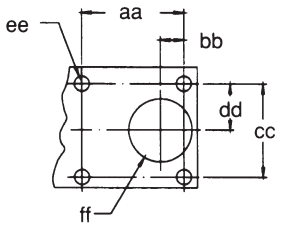
Flow Data

Valve Size	CV Factor Inlet to Inlet	Flow, Max LPM (GPM)	Max. Pilot Flow to Tank	Weight kg (lbs.)
1/4	1.1	22.7 (6)	0.7 LPM (.18 GPM)	2.2 (4.75)
1/2	3.5	56.8 (15)	0.8 LPM (.21 GPM)	3.2 (7.0)
3/4	4.5	94.6 (25)	0.8 LPM (.22 GPM)	4.4 (9.6)

Ordering Information

PR	670	1	-1	-1/4	S	2
Type Valve	**Catalog Number**	**Type Ports**	**Secondary Pressure Range**	**Size**	**Materials**	**O-Ring Code**
PR Pressure-Reducing Valve	Tel-Trol Pilot Operated Valve	**1** Inline	**1** 200 to 1200 PSI **2** 1000 to 3000 PSI **3** 3000 to 6000 PSI	1/4 NPT 1/2 NPT 3/4 NPT	**S** Steel	**2** Nitrile Others Available

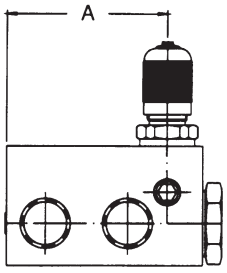
Dimensions — Shown in inches

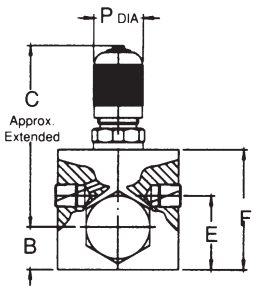


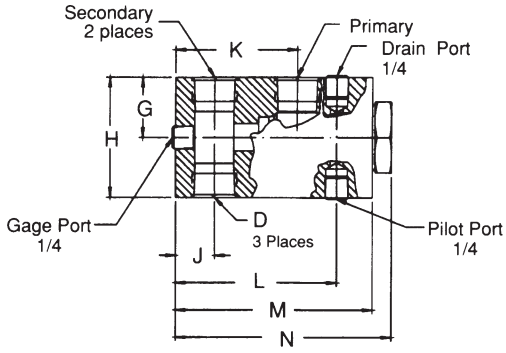
Panel Machining for Panel Mounted Valves

Panel Mounting Dimensions

Valve Size	aa	bb	cc	dd	ee	ff	Mounting Threads
1/4	1.750	0.531	1.750	0.875	0.281	1.4375	1/4 - 20NC-2
1/2							
3/4	2.312	0.531	2.125	1.062	0.343	1.4375	5/16 -18NC-2



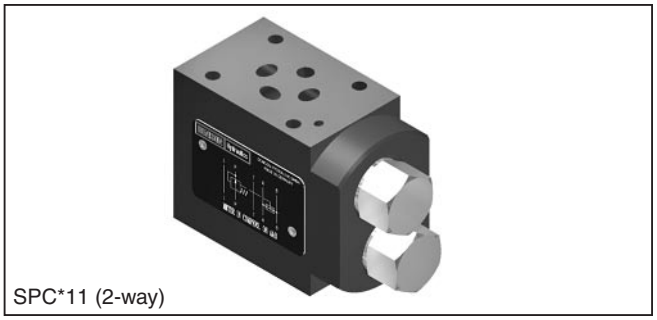




Valve Size	A	B	C	Port Type D	E	F	G	H	J	K	L	M	N	P
1/4	2.313	.750	4.000	1/4 NPT	1.313	2.375	1.187	2.375	.625	1.563	2.313	3.125	3.437	1.125
1/2	3.188	.968	4.156	1/2 NPT	1.688	2.750	1.125	2.250	.750	2.250	3.188	4.000	4.437	1.125
3/4	3.688	.968	4.156	3/4 NPT	1.688	2.750	1.375	2.750	.891	2.781	3.688	4.500	4.937	1.125

General Description

Series SPC sandwich type pressure compensators are typically used in combination with proportional directional control valves. The compensator keeps the pressure drop over the directional valve constant and thus provides load-independent flow to the actuator.

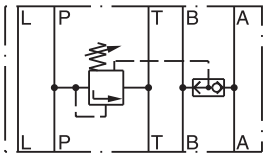


SPC*11 (2-way)

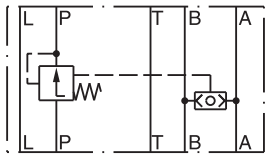
Features

- 2-way or 3-way pressure compensators.
- Standard pressure differential 5 Bar (73 PSI).
- Adjustable differential (2 to 5 Bar) (29 to 73 PSI) and 10 Bar (145 PSI) selectable by model code.
- Sizes

NG06 / CETOP 3	SPC01
NG10 / CETOP 5	SPC02
NG16 / CETOP 7	upon request
NG25 / CETOP 8	upon request



SPC*01 (3-way)



SPC*11 (2-way)

Specifications

General		
Size	**NG6**	**NG10**
Mounting Interface	DIN 24340 A10 ISO 4401 NFPA D05 CETOP 03	DIN 24340 A16 ISO 4401 NFPA D07 CETOP 05
Mounting Position	Unrestricted	
Ambient Temprature	-20°C to +50°C (-4°F to +122°F)	
Hydraulic		
Maximum Operating Pressure		
Drain Port L Connected:	P, A, B: 350 Bar (5075 PSI),; T: 210 Bar (3045 PSI), L: 10 Bar (145 PSI)	P, A, B: 315 Bar (4568 PSI), T: 210 Bar (3045 PSI), L: 10 Bar (145 PSI)
Without Drain Port:	P, A, B: 350 Bar (5075 PSI), T: 160 Bar (2320 PSI), L: 160 Bar (2320 PSI)	P, A, B: 315 Bar (4568 PSI), T: 210 Bar (3045 PSI), L: 210 Bar (3045 PSI)
Nominal Flow	30 LPM (10.6 GPM)	80 LPM (26.5 GPM)
Fluid	Hydraulic oil as per DIN 51524 ... 51525	
Fluid Temperature	-20°C to +80°C (-4°F to +176°F)	
Viscosity Permitted	10 to 650 cSt (mm^2/s)	
Viscosity Recommended	30 cSt (mm^2/s)	
Filtration	ISO 4406 (1999) 18/16/13 (acc. NAS 1638: 7)	

Ordering Information

SPC				1	C	5	A	
Direct Operated Pressure Compensater	Nominal Size	Function	Pressure Differential	Circuit Type	Load Sensing Port	Steel Body	Design Series	Seals

Code	Description*
01	NG6
02	NG10

* Sizes NG16 and NG25 on request.

Code	Description
01	3-Way Pressure Compensation
11	2-Way Pressure Compensation

Code	Description
04*	2 to 5 Bar (29 to 73 PSI) Adjustable
05	5 Bar (73 PSI)
10*	10 Bar (145 PSI)

* For 3-way compensator only.

Code	Description
1	Nitrile
5	Fluorocarbon

Weight:	2-Way Compensator	3-Way Compensator
SPC01	1.5 kg (3.3 lbs)	1.6 kg (3.5 lbs)
SPC02	3.1 kg (6.8 lbs.)	3.5 kg (7.7 lbs.)

SPC01

Type	Model No.	Order No.
3-Way Compensators with Shuttle Valve P-A/B	SPC 01 01 041C5A	026-42583-0
	SPC 01 01 051C5A	026-42584-0
	SPC 01 01 101C5A	026-42585-0
2-Way Compensators with Shuttle Valve P-A/B	SPC 01 11 051C5A	026-42560-0

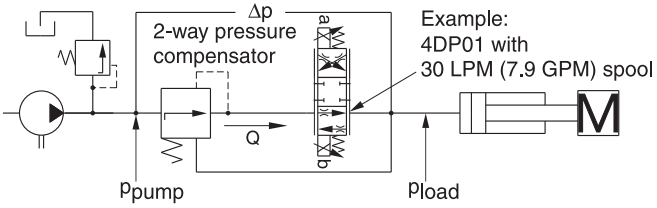
SPC02

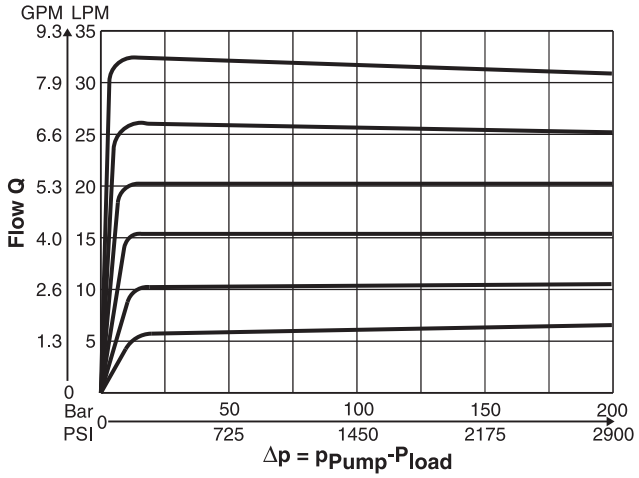
Type	Model No.	Order No.
3-Way Compensators with Shuttle Valve P-A/B	SPC 02 01 041C5A	026-42589-0
	SPC 02 01 051C5A	026-42590-0
	SPC 02 01 101C5A	026-42591-0
2-Way Compensators with Shuttle Valve P-A/B	SPC 02 11 051C5A	026-42566-0

Performance Curves

SPC01

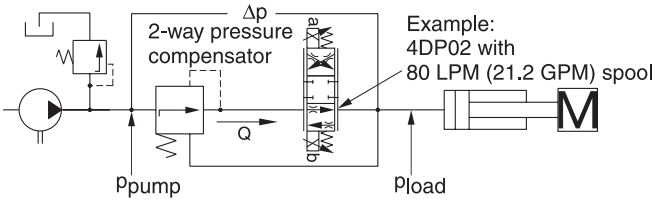
Flow Regulation Example:
2-Way Pressure Compensator

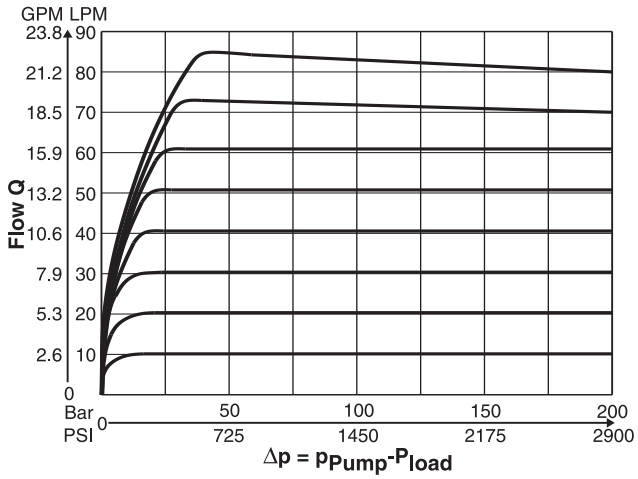




SPC02

Flow regulation Example:
2-Way Pressure Compensator

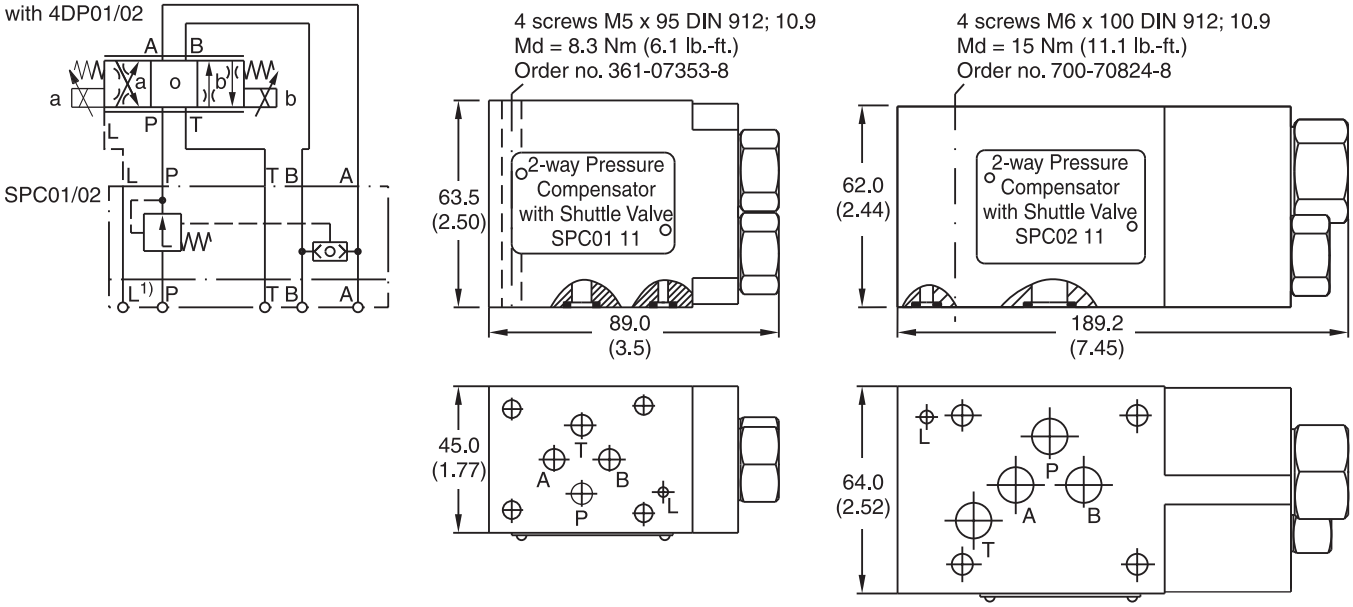




SPC.indd, dd

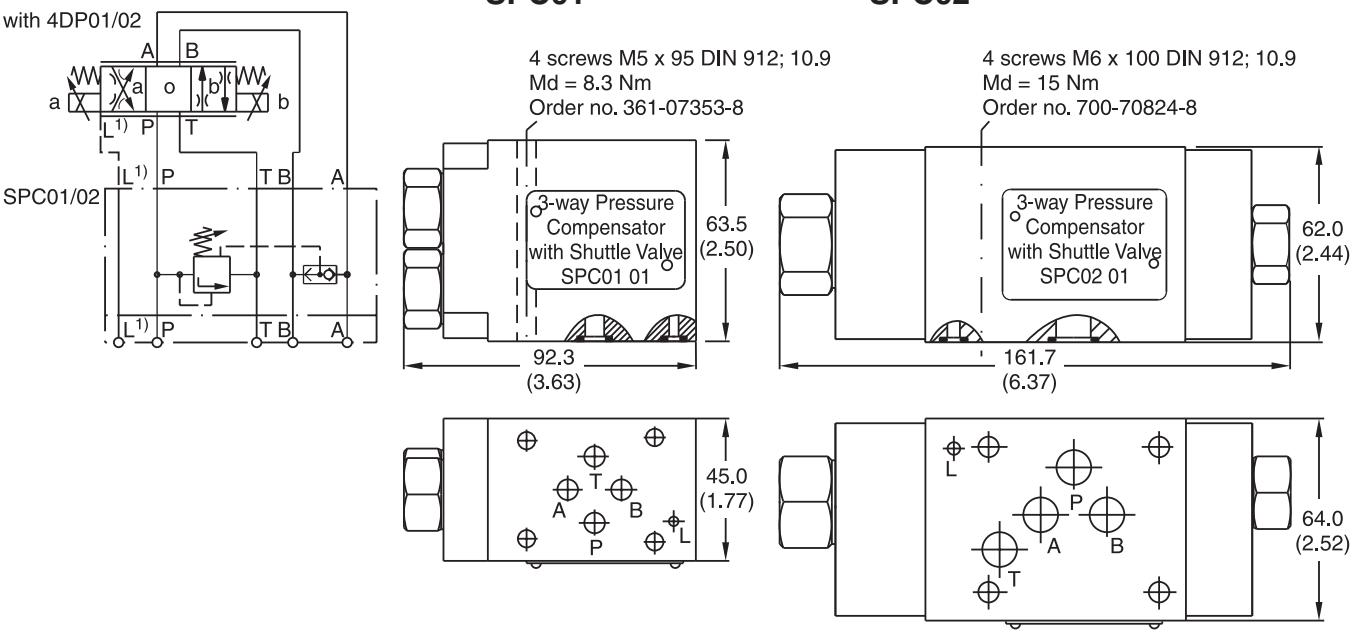
Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

2-Way Pressure Compensator



1) Always connect L to tank when
SPC01 T > 160 Bar (2320 PSI)
SPC02 T > 210 Bar (3045 PSI)

3-Way Pressure Compensator



1) Always connect L to tank when
SPC01 T > 160 Bar (2320 PSI)
SPC02 T > 210 Bar (3045 PSI)

SPC.indd, dd

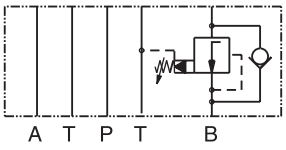
Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

General Description

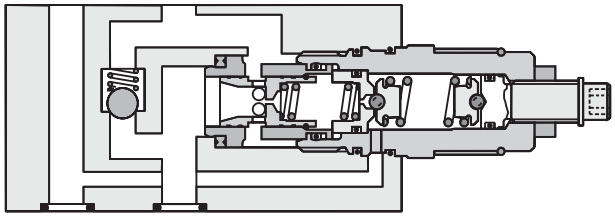
Series ZDR pilot operated pressure reducing valves are designed for maximum flow rates.

The reducing function can be located in the ports P, A or B. The sizes NG06 and NG10 are equipped with an integral return flow check valve (reducing function in A or B).

ZDR-P01



ZDR-B01



ZDR-B02

Features

- High flow capacity.
- Sizes
  - ZDR01 – NG06 / CETOP3
  - ZDR02 – NG10 / CETOP5
  - ZDR03 – NG16 / CETOP7
- With integral return flow check valve.

Specifications

General			
Size	**NG6**	**NG10**	**NG16**
Mounting Interface	DIN 24340 A6 ISO 4401 NFPA D03 CETOP RP 121	DIN 24340 A10 ISO 4401 NFPA D05 CETOP RP 121	DIN 24340 A16 ISO 4401 NFPA D08 CETOP RP 121
Mounting Position	Unrestricted		
Ambient Temperature Range	-20°C to +50°C (-4°F to +122°F)		
Hydraulic			
Maximum Operating Pressure	up to 350 Bar (5075 PSI); ZDR-AR / BR up to 315 Bar (4568 PSI)		
Nominal Flow	80 LPM (21.2 GPM)	120 LPM (31.7 GPM)	250 LPM (66.1 GPM)
Pilot Oil	0.2 LPM (0.1 GPM)	0.3 LPM (0.1 GPM)	0.7 LPM (0.2 GPM)
Fluid	Hydraulic oil as per DIN 51524 ... 51525		
Fluid Temperature	-20°C to +80°C (-4°F to +176°F)		
Viscosity Permitted	10 to 650 cSt (mm^2/s)		
Viscosity Recommended	30 cSt (mm^2/s)		
Filtration	ISO Class 4406 (1999) 18/16/13 (acc. NAS 1638: 7)		

ZDR — □ □ — □ **S0** — □ □

- **ZDR** — Pressure Reducing Valve
- □ — Pressure Control

Code	Size	Description
P	06/10/16	Pressure reducing in P with pressure gauge port M
AR	06/10	Pressure reducing in A with check valve
BR	06/10	Pressure reducing in B with check valve
A	16	Pressure reducing in A
B	16	Pressure reducing in B

- □ — Nominal Size

Code	Description
01	NG6
02	NG10
03	NG16

- □ — Pressure Stages

Code	Description
1	up to 100 Bar (1450 PSI)
5	up to 350 Bar (5075 Bar)

- **S0** — Hexagon Screw with Lock Nut
- □ — Design Series

Code	Description
C	16
D	06/10

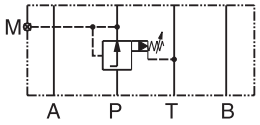
- □ — Seals

Code	Description
1	Nitrile
5	Fluorocarbon

Weight:	ZDR-P	ZDR-AR/BR
NG6	1.6 kg (3.5 lbs.)	1.8 kg (4.0 lbs.)
NG10	2.9 kg (6.4 lbs.)	3.0 kg (6.6 lbs.)
NG16	8.65 kg (19.1 lbs.)	8.65 kg (19.1 lbs.)

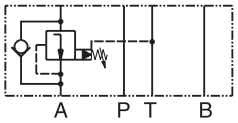
ZDR01

Pressure reducing in P
with pressure gauge port M



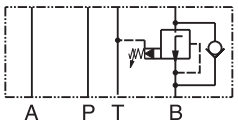
Series	Order No.
ZDR-P01-1-S0-D1	098-91179-0
ZDR-P01-5-S0-D1	098-91211-0

Pressure reducing in A
with check valve



Series	Order No.
ZDR-AR01-1-S0-D1	098-91212-0
ZDR-AR01-5-S0-D1	098-91213-0

Pressure reducing in B
with check valve

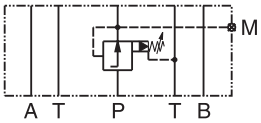


Series	Order No.
ZDR-BR01-1-S0-D1	098-91214-0
ZDR-BR01-5-S0-D1	098-91215-0

1 = 7 … 70 bar
5 = 7 … 350 bar

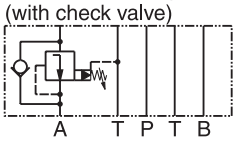
ZDR02

Pressure reducing at P
(with pressure guge port M)



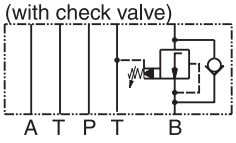
Series	Order No.
ZDR-P02-1-S0-D1	098-91050-0
ZDR-P02-5-S0-D1	098-91051-0

Pressure reducing at A
(with check valve)



Series	Order No.
ZDR-AR02-1-S0-D1	098-91052-0
ZDR-AR02-5-S0-D1	098-91053-0

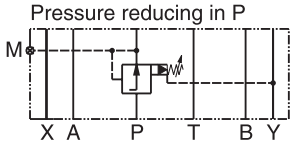
Pressure reducing at B
(with check valve)



Series	Order No.
ZDR-BR02-1-S0-D1	098-91054-0
ZDR-BR02-5-S0-D1	098-91055-0

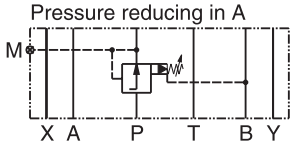
ZDR03

Pressure reducing in P



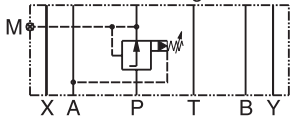
Series	Order No.
ZDR-P03-1-S0-C1	098-91409-0
ZDR-P03-5-S0-C1	098-91410-0

Pressure reducing in A



Series	Order No.
ZDR-A03-1-S0-C1	098-91412-0
ZDR-A03-5-S0-C1	098-91429-0

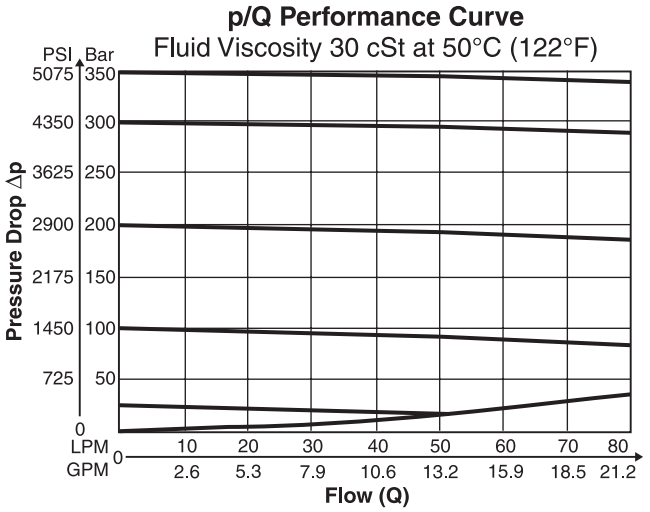
Pressure reducing in B



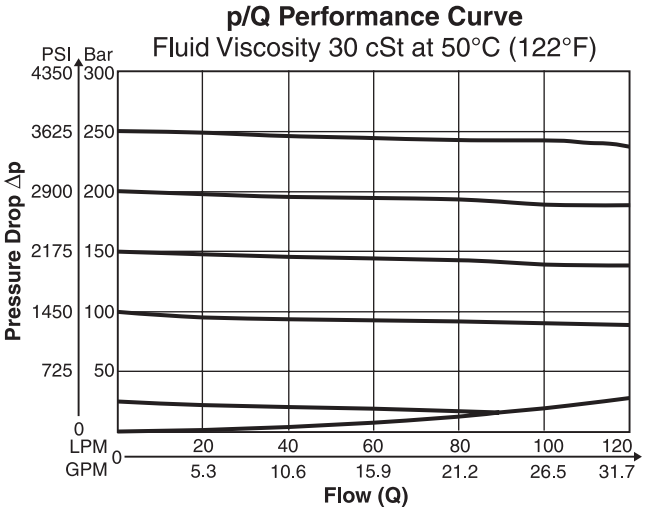
Series	Order No.
ZDR-B03-1-S0-C1	098-91430-0
ZDR-B03-5-S0-C1	098-91414-0

ZDR.indd, dd

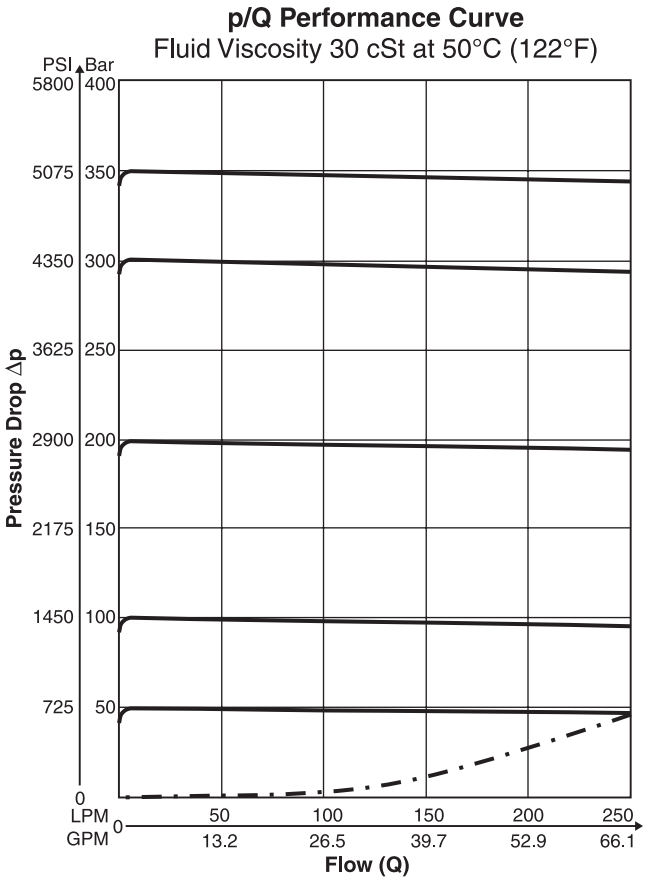
ZDR-P/AR/BR01



ZDR-P/AR/BR02

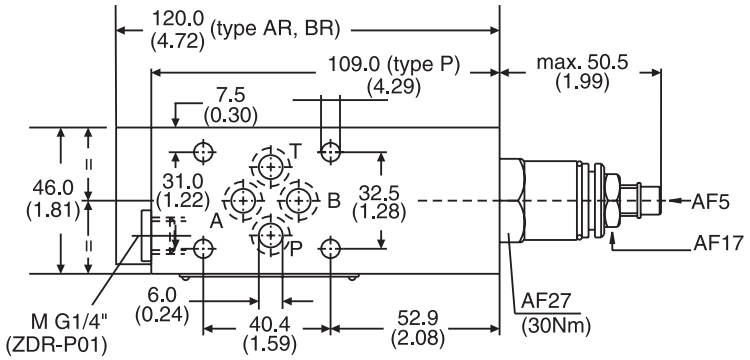


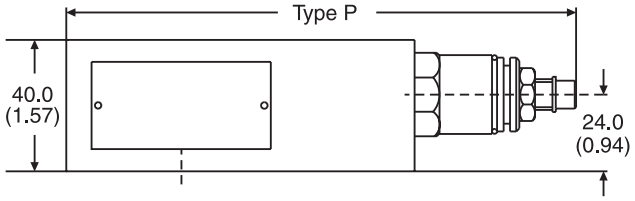
ZDR-P03-5 (at p = 0 Bar (0 PSI) in Y)

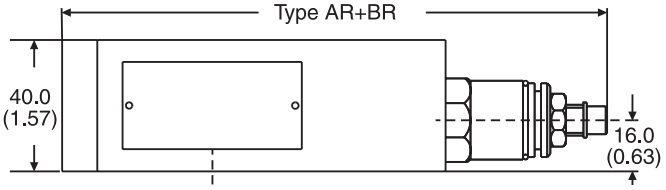


Inch equivalents for millimeter dimensions are shown in (**)

ZDR01

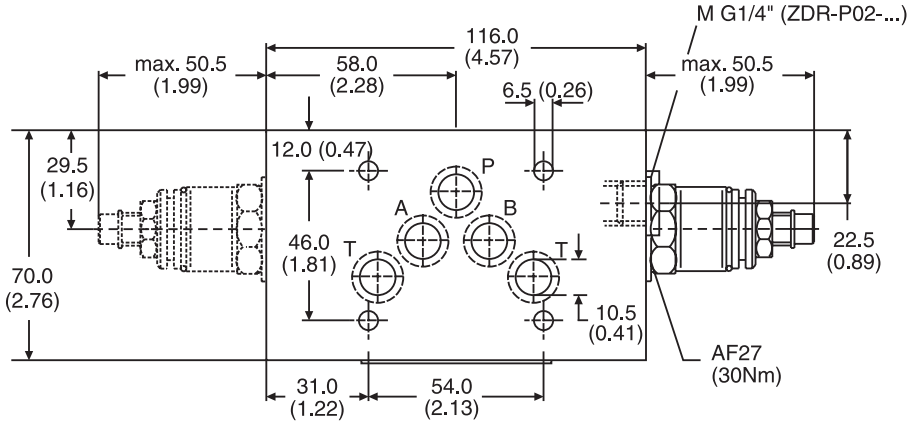


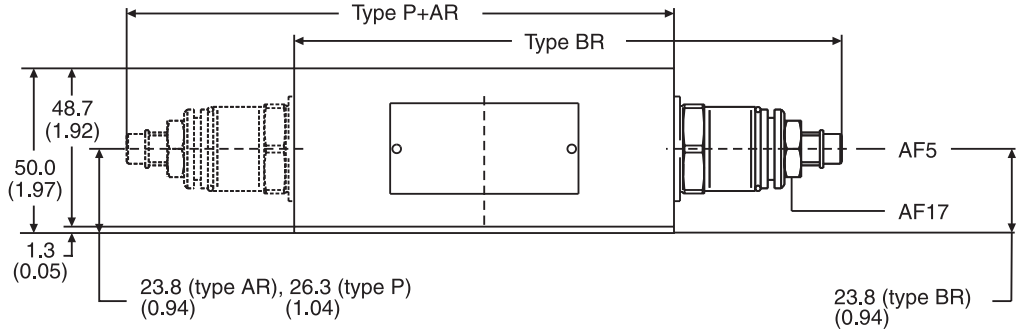




Seal Kit	
Seal	**Order Code**
1	098-91184-0
5	098-91185-0
Complete Cartridge	
Seal	**Order Code**
1	098-91102-0
5	098-91103-0

ZDR02

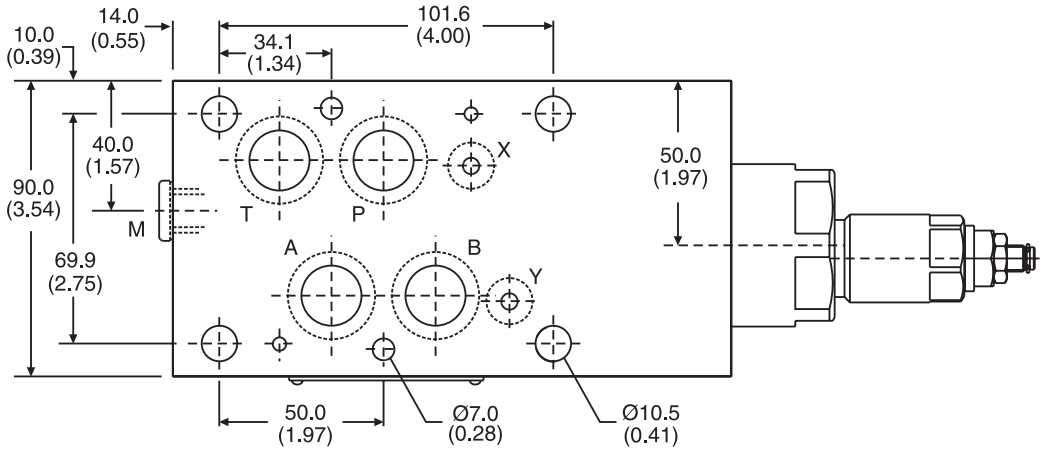


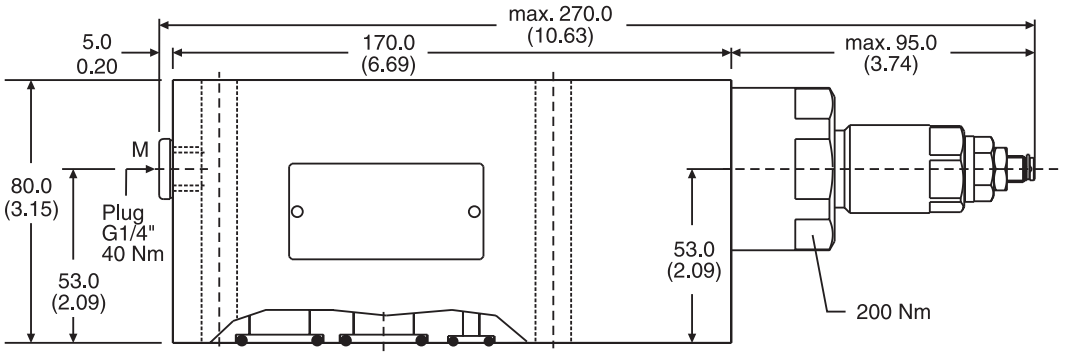


Seal Kit	
Seal	**Order Code**
1	098-91182-0
5	098-91183-0
Complete Cartridge	
Seal	**Order Code**
1	098-91102-0
5	098-91103-0

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

ZDR03





Seal Kit	
Seal	**Order Code**
1	098-91439-0
5	098-91440-0
Complete Cartridge	
Seal	**Order Code**
1	098-91437-0
5	098-91438-0

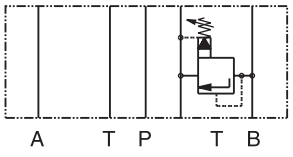
General Description

Series ZDV pilot operated pressure relief valves are designed for maximum flow rates.

The relief function can be located between P and T, A and T, B and T or A and T + B and T for typical pressure relief functions.

For a pre-charge function the ZDV can be ordered with pressure function between A and B + B and A.

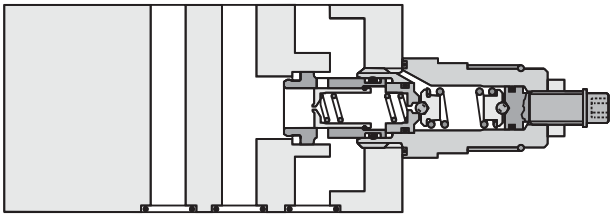
ZDV-P01



ZDV-B01

Features

- High flow capacity.
- Pressure function in P, A, B or A + B.
- Sizes
  - – ZDV01 – NG06 / CETOP3
  - – ZDV02 – NG10 / CETOP5
  - – ZDV03 – NG16 / CETOP7



ZDV-B02

Specifications

General			
Size	**NG6**	**NG10**	**NG16**
Mounting	DIN 24340 A6 ISO 4401 NFPA D03 CETOP RP 121	DIN 24340 A10 ISO 4401 NFPA D05 CETOP RP 121	DIN 24340 A16 ISO 4401 NFPA D08 CETOP RP 121
Mounting Position	Unrestricted		
Ambient Temperature Range	-20° to +50°C (-4°F to +122°F)		
Hydraulic			
Maximum Operating Pressure	up to 350 Bar (5075 PSI); ZDV*ABS up to 315 Bar (4568 PSI)		
Nominal Flow	80 LPM (21.2 GPM)	140 LPM (37.0 GPM)	300 LPM (79.4 GPM)
Fluid	Hydraulic oil as per DIN 51524 ... 51525		
Fluid Temperature	-20° to +80°C (-4°F to +176°F)		
Viscosity Permitted	10 to 650 cSt (mm^2/s)		
Viscosity Recommended	30 cSt (mm^2/s)		
Filtration	ISO Class 4406 (1999) 18/16/13 (acc. NAS 1638: 7)		

ZDV — □ □ — □ **S0** — □ □

Pressure Relief Valve	Pressure Control	Nominal Size	Pressure Stages	Hexagon Screw with Lock Nut	Design Series	Seals

Code	Size	Description
P	06/10/16	P – T
A	06/10/16	A – T
B	06/10/16	B – T
AB	06/10	A – T & B – T
ABS	06/10	A – B & B – A

Code	Description
01	NG6
02	NG10
03	NG16

Code	Description
1	up to 70 Bar (1015 PSI)
5	up to 350 Bar (5075 Bar)

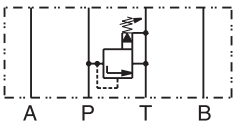
Code	Description
C	01
D	02, 03

Code	Description
1	Nitrile
5	Fluorocarbon

Weight:	One Cartridge	Two Cartridges
NG6	1.6 kg (3.5 lbs.)	2.5 kg (5.5 lbs.)
NG10	3.0 kg (6.6 lbs.)	3.7 kg (8.2 lbs.)
NG16	8.45 kg (18.6 lbs.)	5.7 kg (12.6 lbs.)

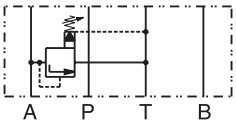
ZDV01

Pressure control P-T



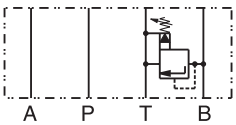
Series	Order No.
ZDV-P01-1-S0-D1	098-91201-0
ZDV-P01-5-S0-D1	098-91202-0

Pressure control A-T



Series	Order No.
ZDV-A01-1-S0-D1	098-91203-0
ZDV-A01-5-S0-D1	098-91204-0

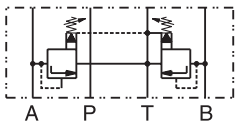
Pressure control B-T



Series	Order No.
ZDV-B01-1-S0-D1	098-91205-0
ZDV-B01-5-S0-D1	098-91206-0

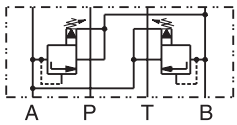
1 = 7 … 70 bar
5 = 7 … 350 bar

Pressure control A-T & B-T



Series	Order No.
ZDV-AB01-1-S0-D1	098-91207-0
ZDV-AB01-5-S0-D1	098-91208-0

Pressure control A-B & B-A

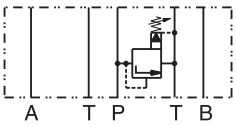


Series	Order No.
ZDV-ABS01-1-S0-D1	098-91209-0
ZDV-ABS01-5-S0-D1	098-91210-0

1 = 7 … 70 bar
5 = 7 … 350 bar

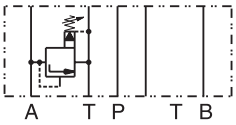
ZDV02

Pressure control P-T



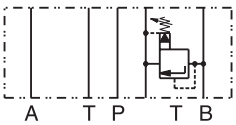
Series	Order No.
ZDV-P02-1-S0-D1	098-91034-0
ZDV-P02-5-S0-D1	098-91035-0

Pressure control A-T



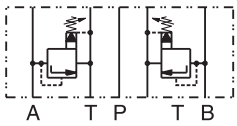
Series	Order No.
ZDV-A02-1-S0-D1	098-91036-0
ZDV-A02-5-S0-D1	098-91037-0

Pressure control B-T



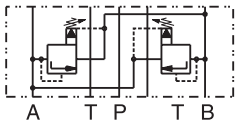
Series	Order No.
ZDV-B02-1-S0-D1	098-91038-0
ZDV-B02-5-S0-D1	098-91039-0

Pressure control A-T & B-T



Series	Order No.
ZDV-AB02-1-S0-D1	098-91040-0
ZDV-AB02-5-S0-D1	098-91041-0

Pressure control A-B & B-A



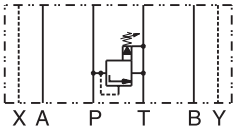
Series	Order No.
ZDV-ABS02-1-S0-D1	098-91042-0
ZDV-ABS02-5-S0-D1	098-91043-0

ZDV03 (Continued on Next Page)

ZDV.indd, dd

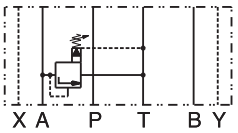
ZDV03

Pressure control P-T



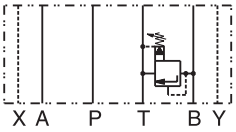
Series	Order No.
ZDV-P03-1-S0-C1	098-91432-0
ZDV-P03-5-S0-C1	098-91418-0

Pressure control A-T



Series	Order No.
ZDV-A03-1-S0-C1	098-91415-0
ZDV-A03-5-S0-C1	098-91416-0

Pressure control B-T

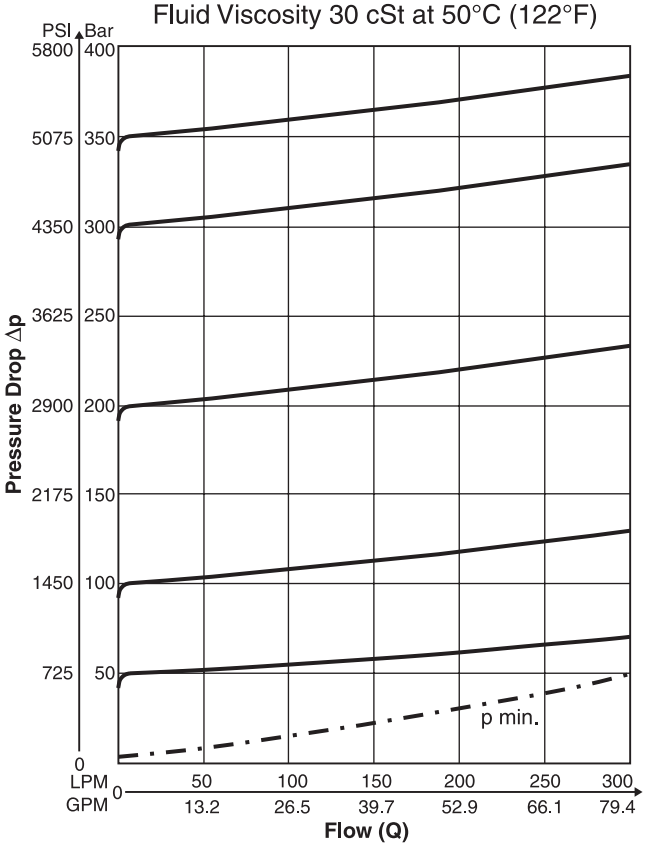


Series	Order No.
ZDV-B03-1-S0-C1	098-91431-0
ZDV-B03-5-S0-C1	098-91417-0

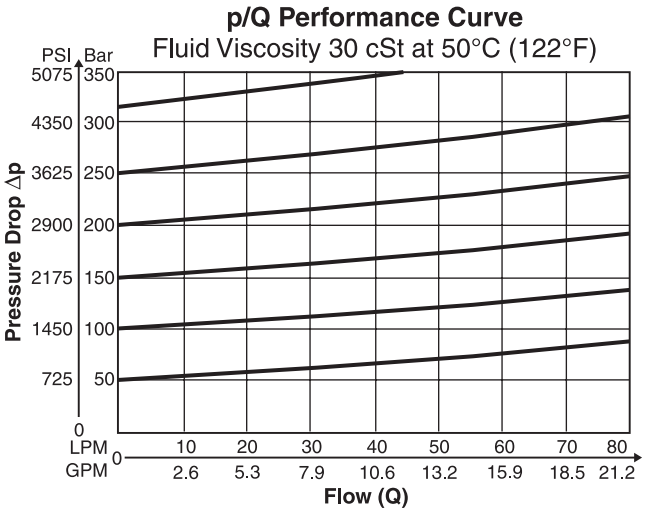
Performance Curves

ZDV-P03-5

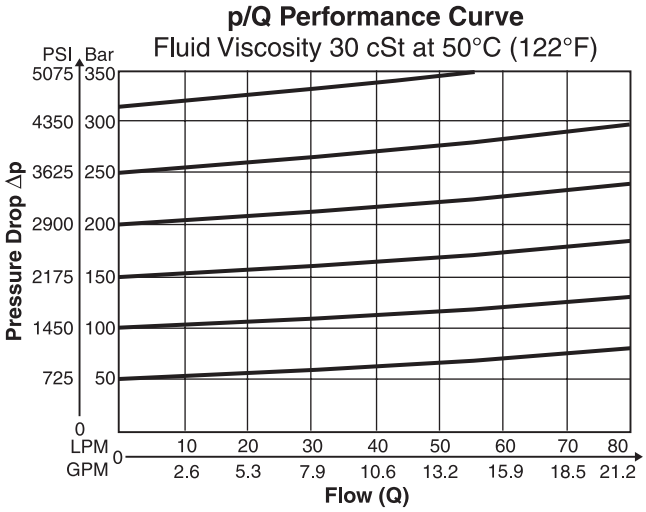
p/Q Performance Curve
Fluid Viscosity 30 cSt at 50°C (122°F)



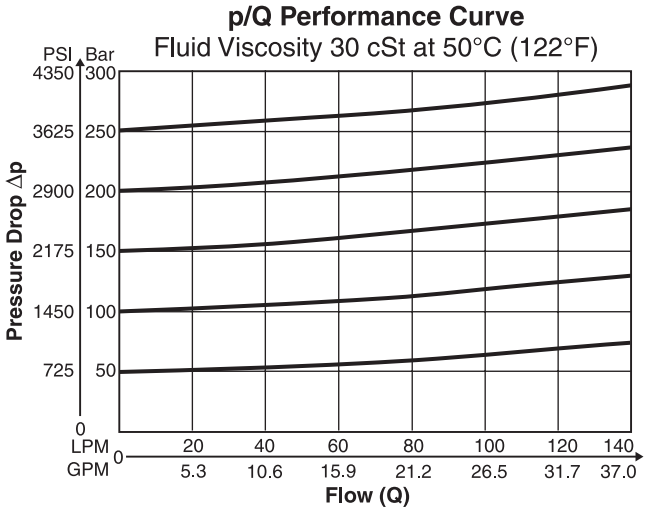
ZDV-P/A/B/ABS01



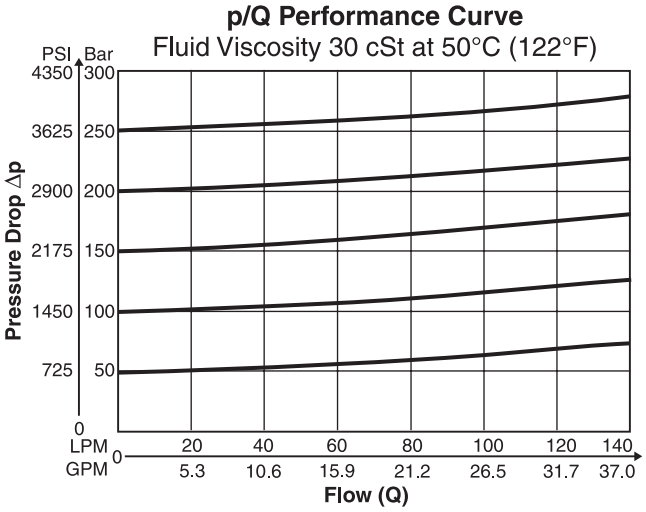
ZDV-AB01



ZDV-P/A/B/AB02

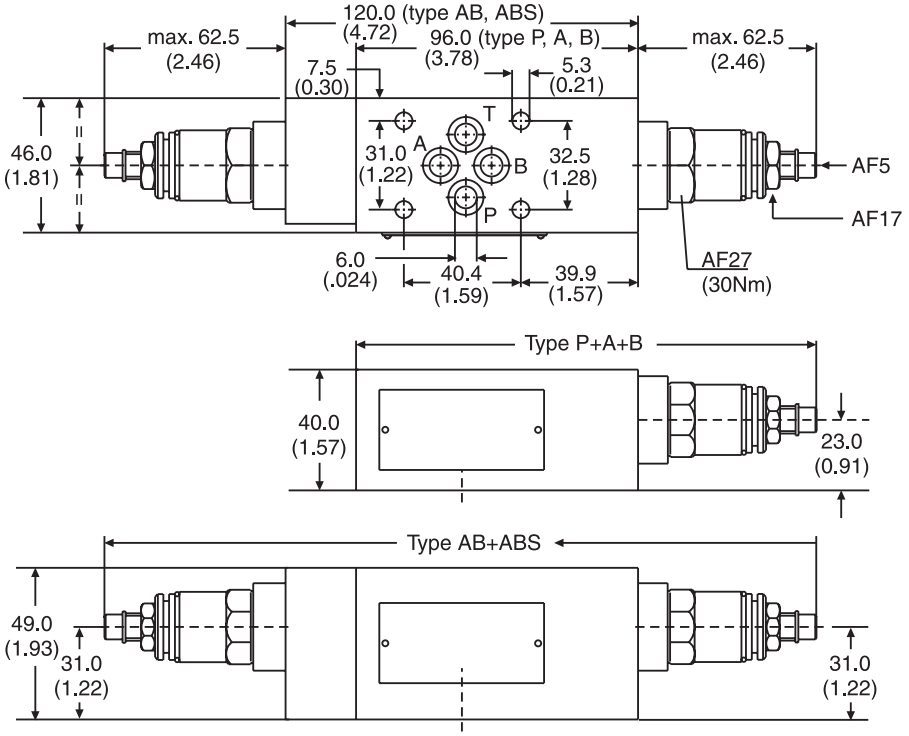


ZDV-ASB02



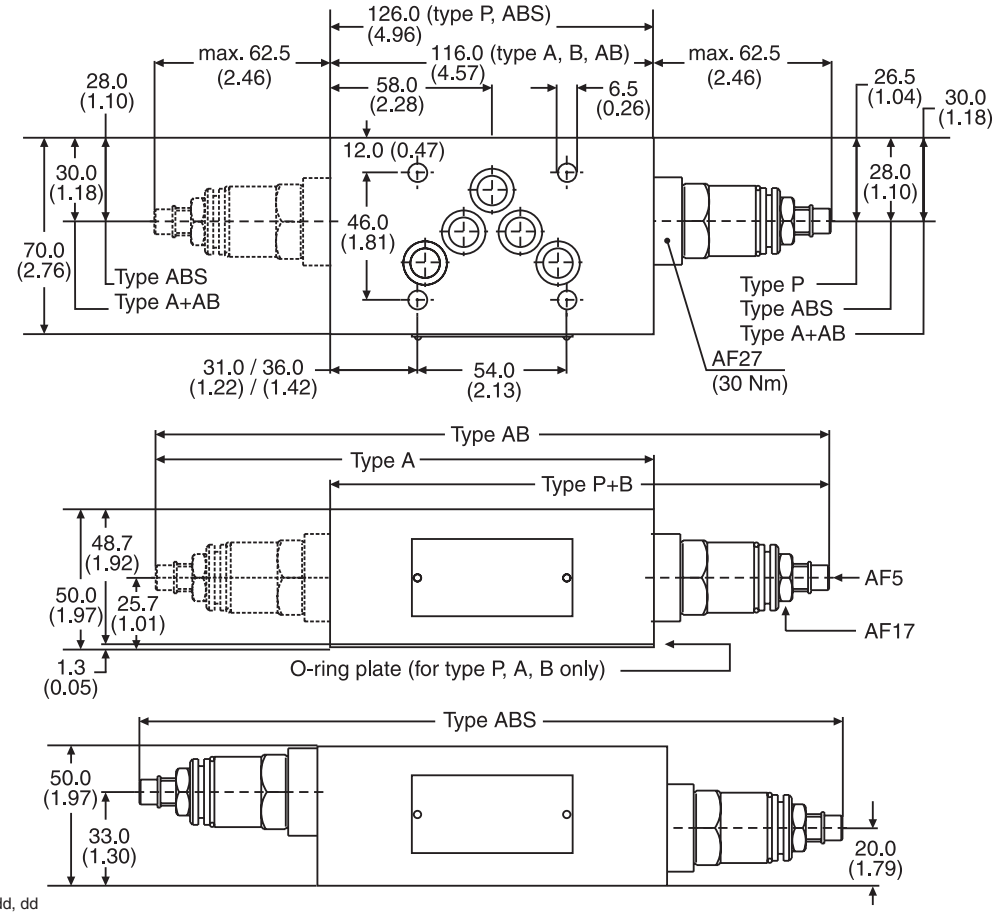
Inch equivalents for millimeter dimensions are shown in (**)

ZDV01



Seal Kit	
Seal	**Order Code**
1	098-91182-0
5	098-91183-0
Complete Cartridge	
Seal	**Order Code**
1	098-91116-0
5	098-91117-0

ZDV02

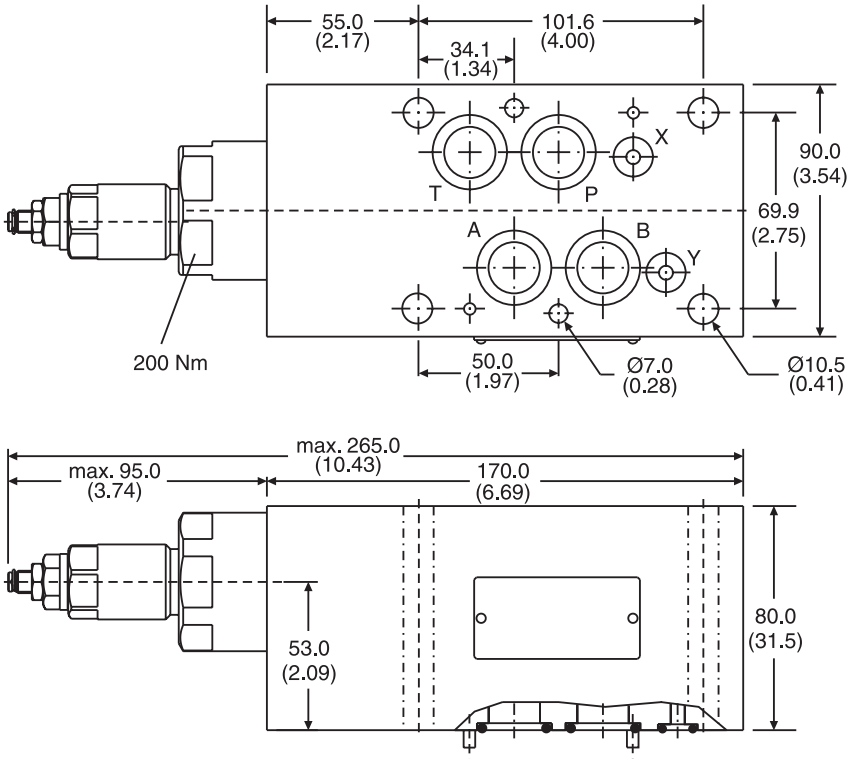


Seal Kit	
Seal	**Order Code**
1	098-91076-0
5	098-91077-0
Complete Cartridge	
Seal	**Order Code**
1	098-91116-0
5	098-91117-0

ZDV.indd, dd

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

ZDV03



Seal Kit	
Seal	**Order Code**
1	098-91435-0
5	098-91436-0
Complete Cartridge	
Seal	**Order Code**
1	098-91433-0
5	098-91434-0

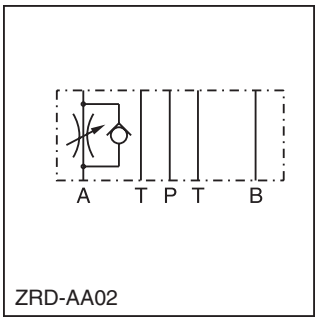
General Description

Series ZRD throttle check valves are designed for maximum flow rates.

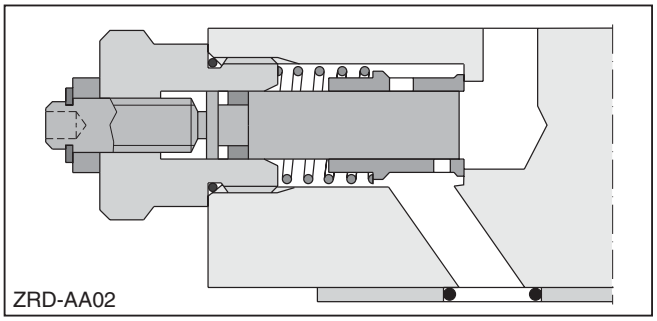
The throttle check function can be located in port A or B as well as in A + B. Meter-in or meter-out functionality can be selected by model code.

A low flow / high resolution version in NG06 for sensitive shifting time adjustment of pilot operated directional control valves is available on request.


ZRD-ABZ01



ZRD-AA02


ZRD-AA02

Features

- High flow capacity.
- Various functional arrangements.
- Sizes
  - ZRD01 – NG06 / CETOP3
  - ZRD02 – NG10 / CETOP5
  - ZRD03 – NG16 / CETOP7

Specifications

General			
Size	**NG6**	**NG10**	**NG16**
Mounting	DIN 24340 A6 ISO 4401 NFPA D03 CETOP RP 121	DIN 24340 A10 ISO 4401 NFPA D05 CETOP RP 121 5	DIN 24340 A16 ISO 4401 NFPA D08 CETOP RP 121
Mounting Position	Unrestricted		
Ambient Temprature	-20°C to +50°C (-4°F to +122°F)		
Hydraulic			
Max. Operating Pressure	350 Bar (5075 PSI)		
Nominal Flow	80 LPM (21.2 GPM)	160 LPM (42.3 GPM)	260 LPM (68.8 GPM)
Leakage	—	—	0.3 ... 0.5 cSt (at closed throttle)
Cracking Pressure	—	—	0.8 Bar (11.6 PSI)
Fluid	Hydraulic oil as per DIN 51524 ... 51525		
Fluid Temperature	-20°C to +80°C (-4°F to +176°F)		
Viscosity Permitted	10 to 650 cSt (mm^2/s)		
Viscosity Recommended	30 cSt (mm^2/s)		
Filtration	ISO 4406 (1999) 18/16/13 (acc. NAS 1638: 7)		

ZRD — □ — □ — **S0** — □ — □

Throttle Valve with Check	Pressure Control	Nominal Size	Hexagon Screw with Lock Nut	Design Series	Seals

Code	Description
AA	Meter-out Control in A
AZ	Meter-in Control in A
BA	Meter-out Control in B
BB	Meter-in Control in B
ABA	Meter-out Control in A and B
ABZ	Meter-in Control in A and B

Code	Description
01	NG6
02	NG10
03	NG16

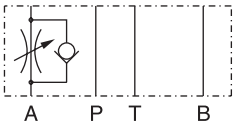
Code	Description
C	16
D	06/10

Code	Description
1	Nitrile
5	Fluorocarbon

Weight:	1 Cartridge	2 Cartridges
ZRD*01	1.2 kg (2.6 lbs)	1.3 kg (2.9 lbs)
ZRD*02	2.8 kg (6.2 lbs.)	2.9 kg (6.4 lbs.)
ZDR*03	7.4 kg (16.3 lbs.)	7.7 kg (17.0 lbs.)

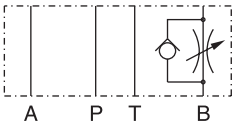
ZRD*01

Meter-in control in A



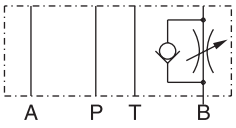
Series ZRD-AZ01-S0-D1 — Order No. 098-91056-0

Meter-out control in B



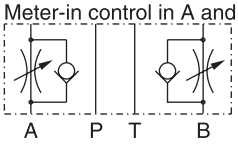
Series ZRD-BA01-S0-D1 — Order No. 098-91013-0

Meter-in control in B



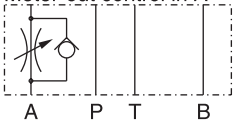
Series ZRD-BZ01-S0-D1 — Order No. 098-91057-0

Meter-in control in A and B



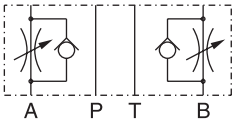
Series ZRD-ABZ01-S0-D1 — Order No. 098-91058-0

Meter-out control in A



Series ZRD-AA01-S0-D1 — Order No. 098-91012-0

Meter-out control in A and B



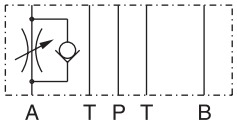
Series ZRD-ABA01-S0-D1 — Order No. 098-91014-0

ZRD*02 and ZRD*03

(Continued on Next Page)

ZRD*02

Meter-in control in A



Series ZRD-AZ02-S0-D1 — Order No. 098-91059-0

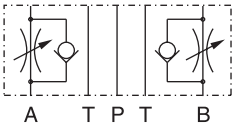
Meter-out control in B

Series ZRD-BA02-S0-D1 — Order no. 098-91016-0

Meter-in control in B

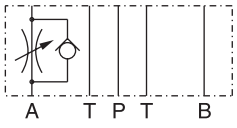
Series ZRD-BZ02-S0-D1 — Order No. 098-91060-0

Meter-in control in A and B



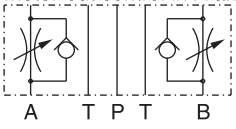
Series ZRD-BAZ02-S0-D1 — Order no. 098-91061-0

Meter-out control in A



Series ZRD-AA02-S0-D1 — Order no. 098-91015-0

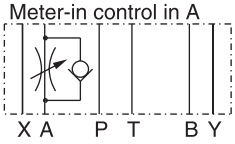
Meter-out control in A and B



Series ZRD-ABA02-S0-D1 — Order no. 098-91017-0

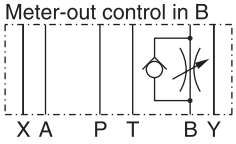
ZRD*03

Meter-in control in A



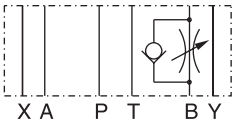
Series ZRD-AZ03-S0-C1 — Order no. 098-91422-0

Meter-out control in B



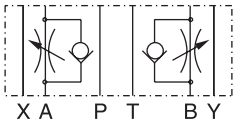
Series ZRD-BA03-S0-C1 — Order no. 098-91423-0

Meter-in control in B



Series ZRD-BZ03-S0-C1 — Order no. 098-91424-0

Meter-in control in A and B

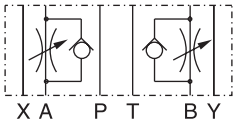


Series ZRD-ABZ03-S0-C1 — Order no. 098-91421-0

Meter-out control in A

Series ZRD-AA03-S0-C1 — Order no. 098-91419-0

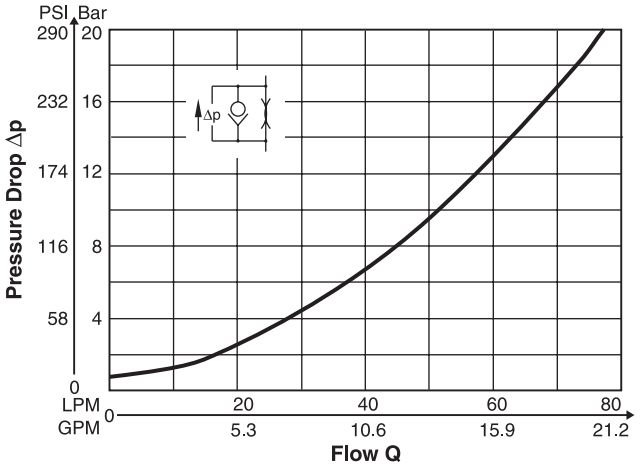
Meter-out control in A and B

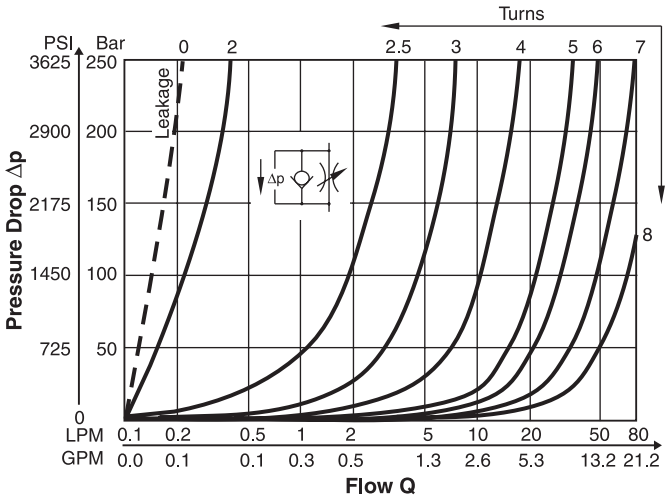


Series ZRD-ABA03-S0-C1 — Order no. 098-91420-0

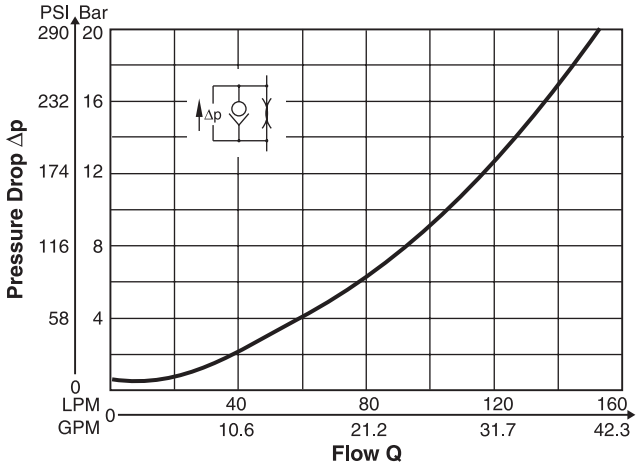
p/Q Performance Curves

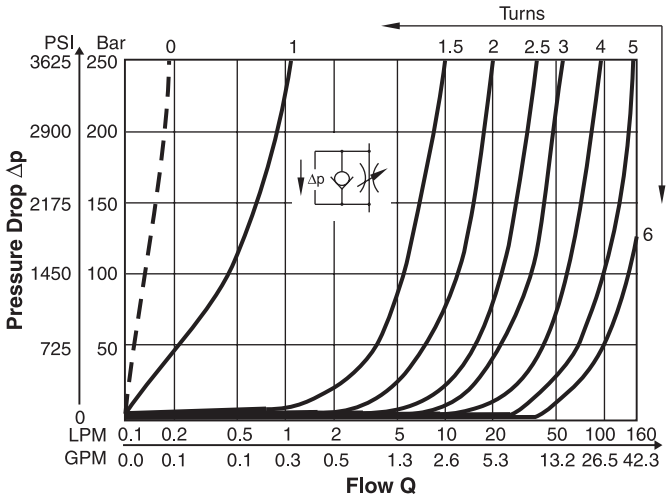
ZRD*01



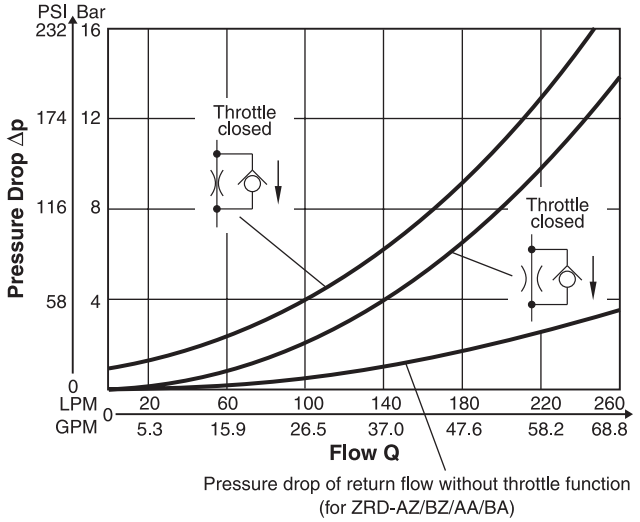


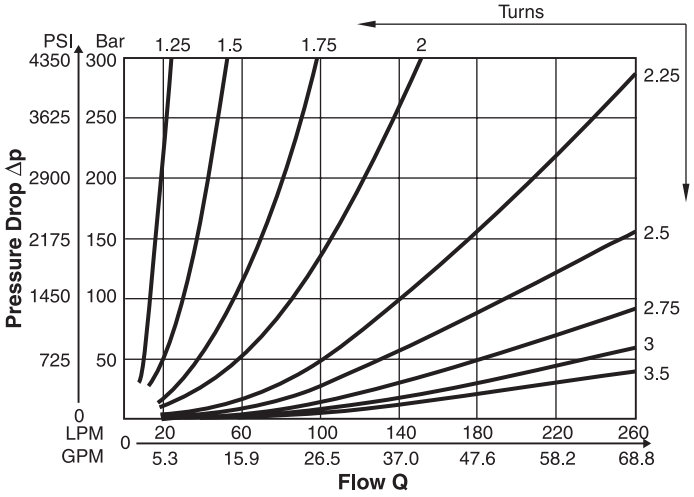
ZRD*02





ZRD*03



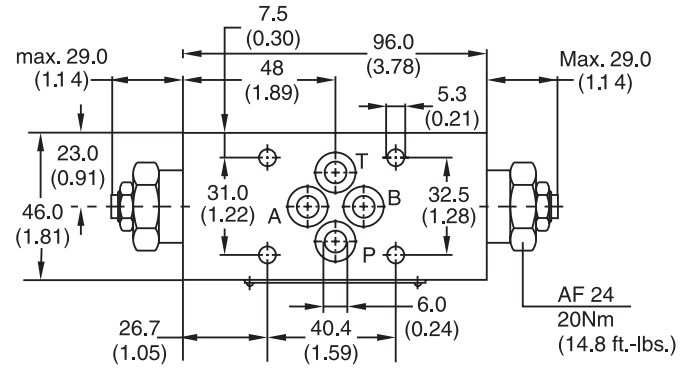


Fluid Viscosity 30 cSt @ 50°C (122°F)

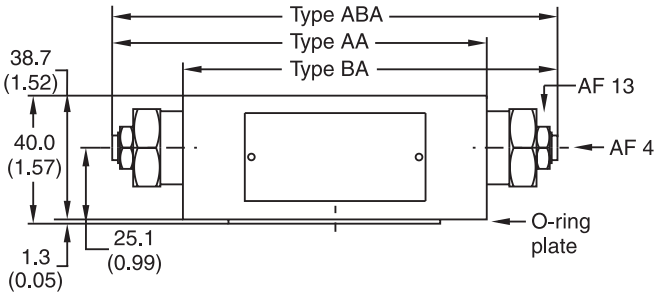
ZRD.indd, dd

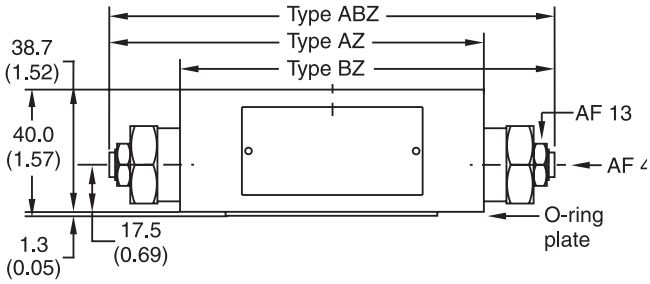
Inch equivalents for millimeter dimensions are shown in (**)

ZRD*01

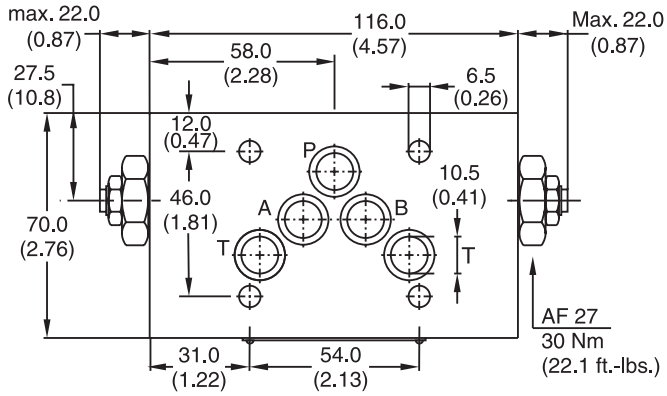


Seal Kit	
Seal	**Order Code**
1	098-91096-0
5	098-91097-0
Complete Cartridge	
Order Code	
098-91119-0	
O-ring Plate	
Order Code	
S26-27553-0	

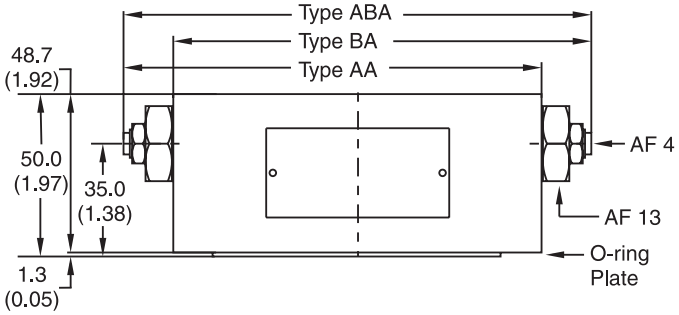


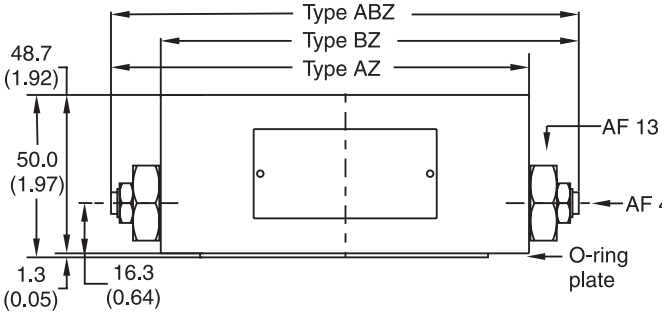


ZRD*02



Seal Kit	
Seal	**Order Code**
1	098-91098-0
5	098-91099-0
Complete Cartridge	
Order Code	
098-91120-0	
O-ring Plate	
Order Code	
S16-85742-0	

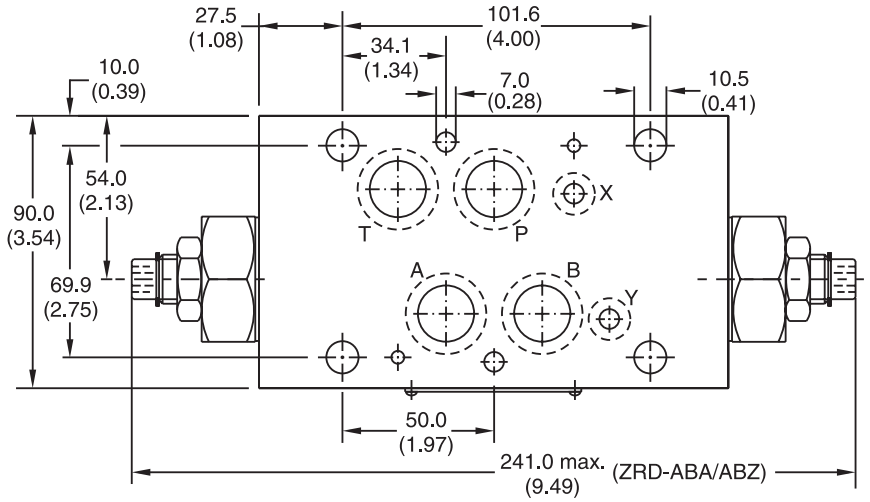




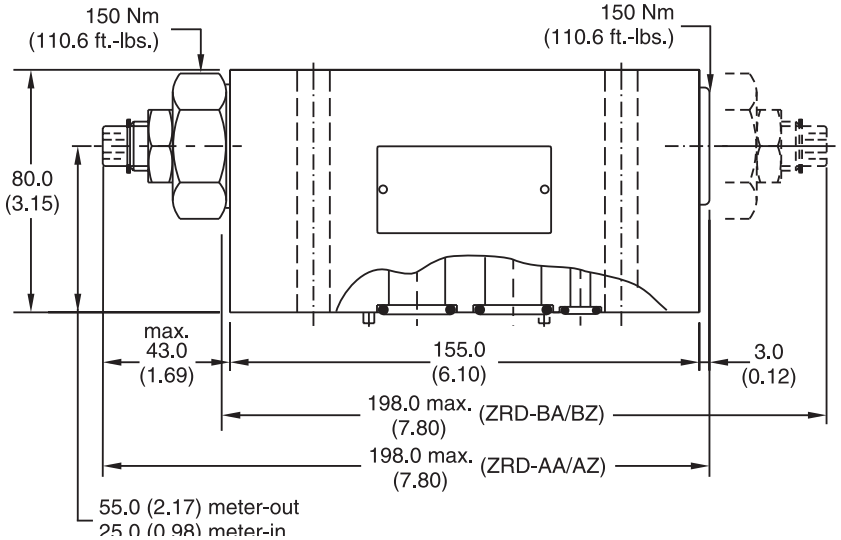
ZRD.indd, dd

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

ZRD*03



Seal Kit	
Seal	**Order Code**
1	098-91442-0
5	098-91443-0
Complete Cartridge	
Order Code	
098-91441-0	



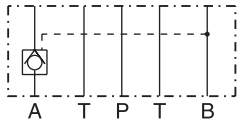
General Description.

Series ZRE pilot operated check valves are designed for maximum flow rates and long life time.

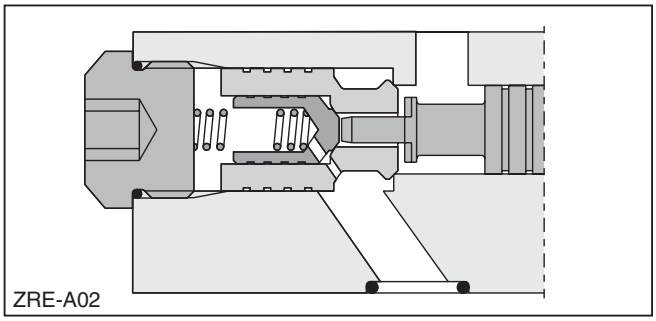
The valves are typically used in combination with spool type directional control valves to ensure leak free positioning of the actuator.

The inlet flow is free while the outlet flow is blocked. Pressure in the inlet line opens the check valve and allows free outlet flow.


ZRE-B01



ZRE-A02


ZRE-A02

Features

- High life time.
- Check function in A, B or A + B.
- Sizes
  - ZRE01 – NG06 / CETOP3
  - ZRE02 – NG10 / CETOP5
  - ZRE03 – NG16 / CETOP7

Specifications

General			
Size	**NG6**	**NG10**	**NG16**
Mounting Interface	DIN 24340 A6 ISO 4401 NFPA D03 CETOP RP 121	DIN 24340 A10 ISO 4401 NFPA D05 CETOP RP 121 5	DIN 24340 A16 ISO 4401 NFPA D08 CETOP RP 121
Mounting Position	Unrestricted		
Ambient Temprature	-20°C to +50°C (-4°F to +122°F)		
Hydraulic			
Max. Operating Pressure	350 Bar (5075 PSI)		
Nominal Flow	60 LPM (15.9 GPM)	120 LPM (31.7 GPM)	260 LPM (68.8 GPM)
Opening Ratio (Pilot Cone/Main Cone)	1:6	1:6	1:13
Cracking Pressure	1.2 Bar (17.4 PSI)	2.0 Bar (29.0 PSI)	2.0 Bar (29.0 PSI)
Fluid	Hydraulic oil in accordance with DIN 51524 ... 51525		
Fluid Temperature	-20°C to +80°C (-4°F to +176°F)		
Viscosity Permitted	10 to 650 cSt (mm^2/s)		
Viscosity Recommended	30 cSt (mm^2/s)		
Filtration	ISO 4406 (1999) 18/16/13 (acc. NAS 1638: 7)		

ZRE — ☐ — ☐ — ☐ — ☐

ZRE	Pressure Control	Nominal Size	Design Series	Seals
Pilot Operated Check Valve				

Code	Description
A	Blocked in A
B	Blocked in B
AB	Blocked in A and B

Code	Description
01	NG6
02	NG10
03	NG16

Code	Description
C	16
D	06
E	10

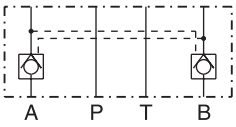
Code	Description
1	Nitrile
5	Fluorocarbon

Weight:

ZRE*01 1.2 kg (2.6 lbs)
ZRE*02 3.1 kg (6.8 lbs.)
ZRE*03 7.2/7.3 kg (15.9/16.1 lbs.)

ZRE*01

blocked in A and B

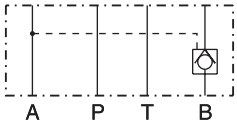


Series ZRE-AB01-D1 — Order No. 098-91020-0

blocked in A

Series ZRE-A01-D1 — Order No. 098-91018-0

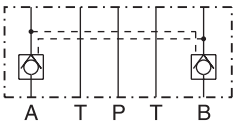
blocked in B



Series ZRE-B01-D1 — Order No. 098-91019-0

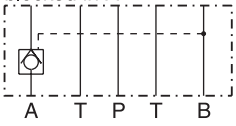
ZRE*02

blocked in A and B



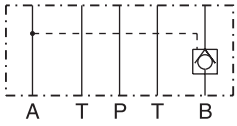
Series ZRE-AB02-E1 — Order No. 098-91300-0

blocked in A



Series ZRE-A02-E1 — Order No. 098-91298-0

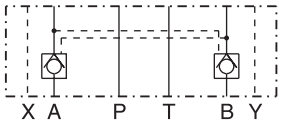
blocked in B



Series ZRE-B02-E1 — Order No. 098-91304-0

ZRE*03

blocked in A and B



Series ZRE-AB03-C1 — Order No. 098-91426-0

blocked in A

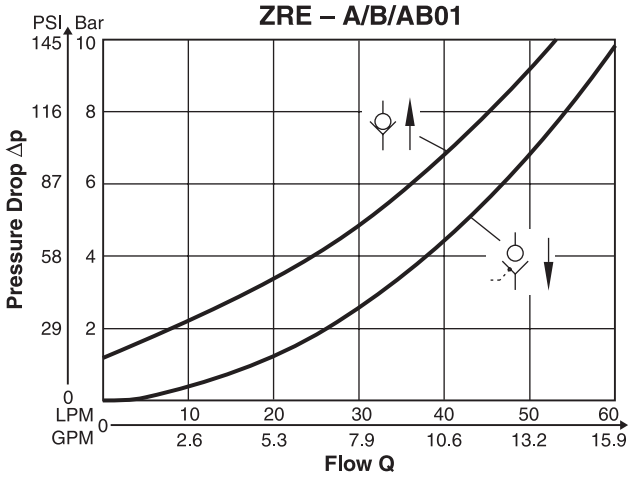
Series ZRE-A03-C1 — Order No. 098-91425-0

blocked in B

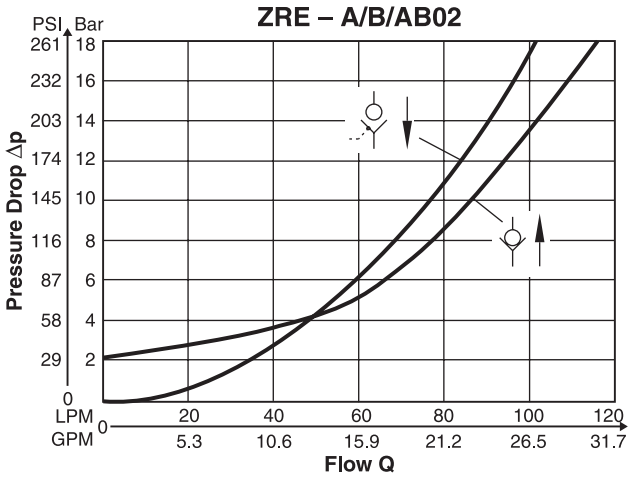
Series ZRE-B03-C1 — Order No. 098-91428-0

p/Q Performance Curves

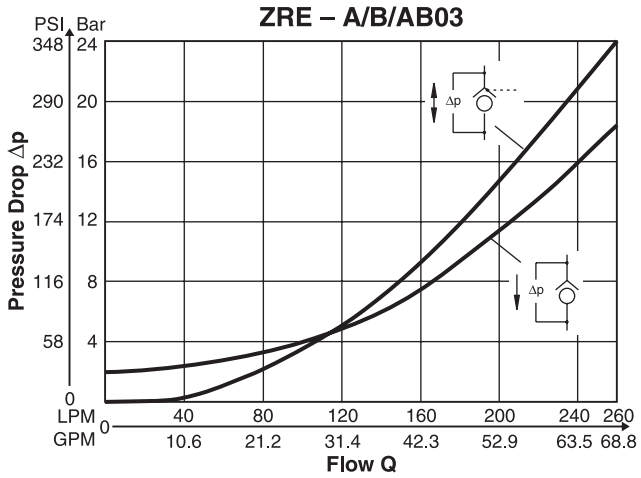
ZRE*01



ZRE*02



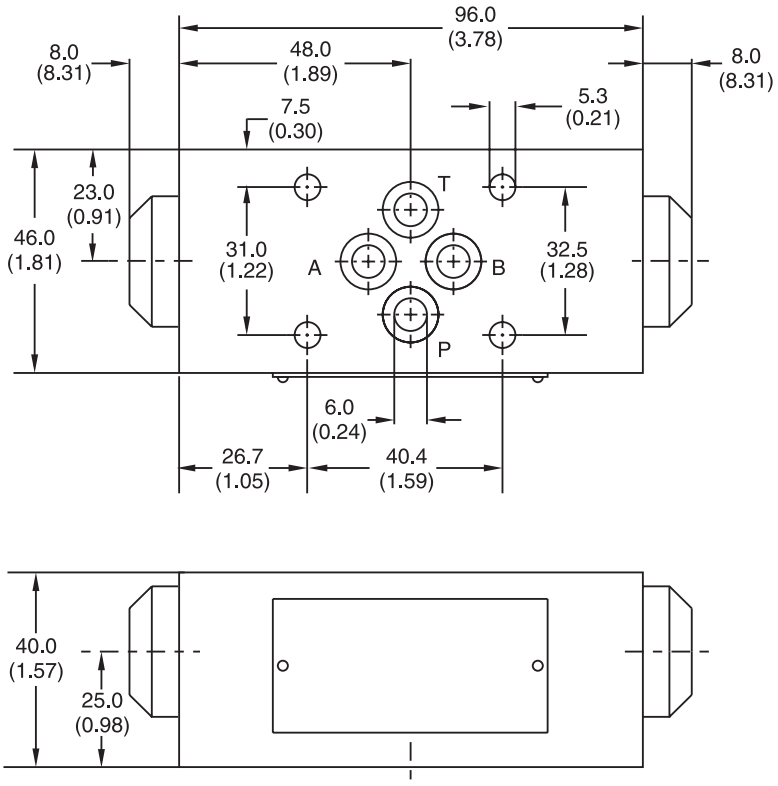
ZRE*03



Fluid Viscosity 30 cSt at 50°C (122°F).

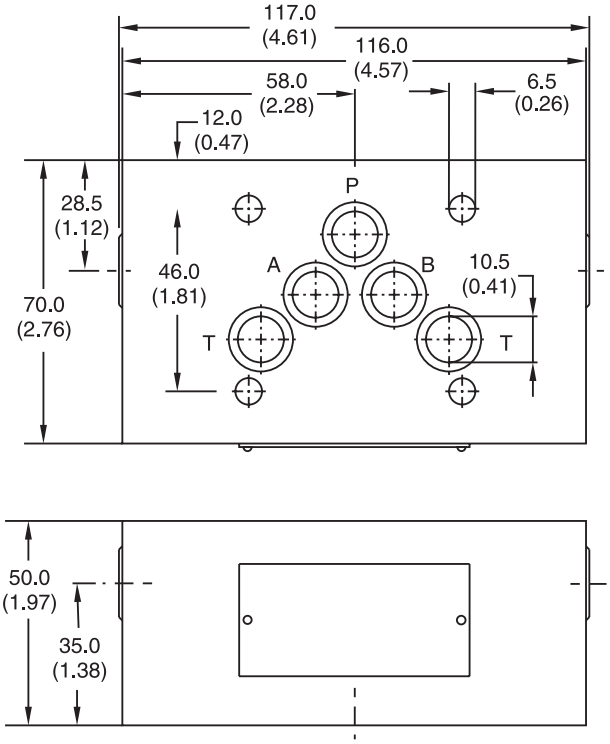
Inch equivalents for millimeter dimensions are shown in (**)

ZRE*01



Seal Kit	
Seal	**Order Code**
1	098-91088-0
5	098-91089-0

ZRE*02

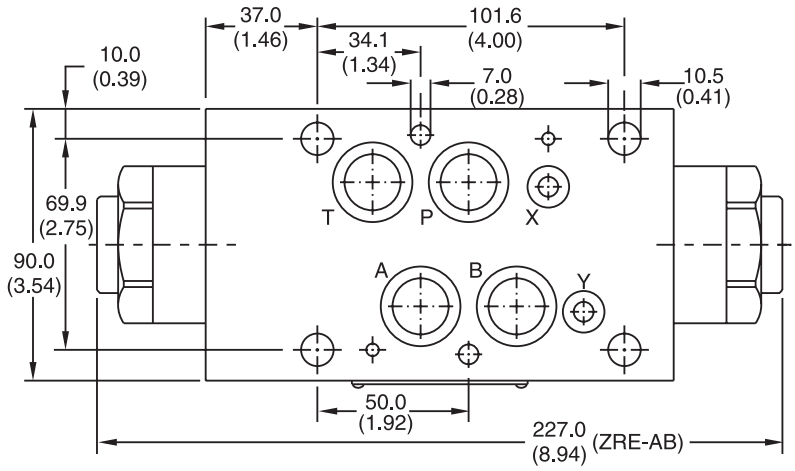


Seal Kit	
Seal	**Order Code**
1	098-91090-0
5	098-91091-0

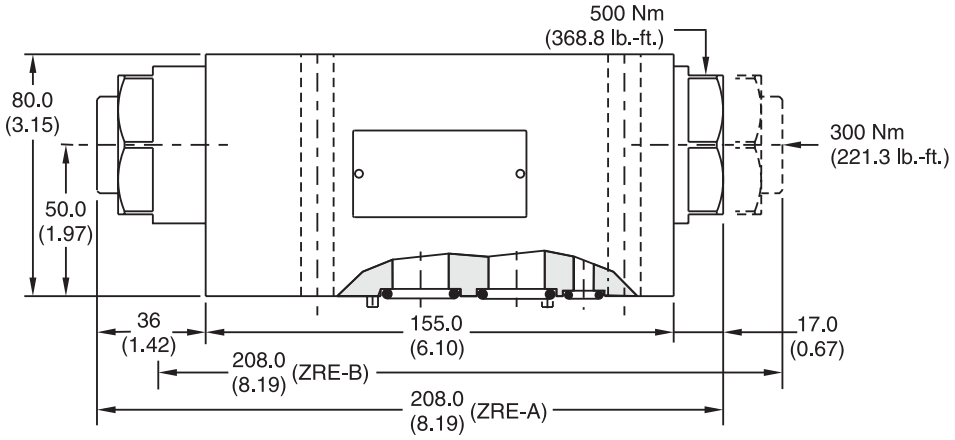
ZRE.indd, dd

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

ZRE*03



Seal Kit	
Seal	**Order Code**
1	098-91444-0
5	098-91445-0

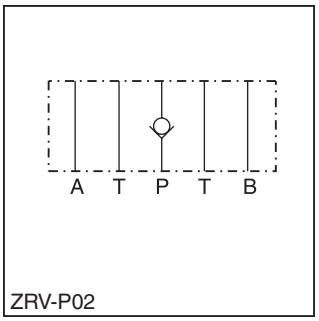


General Description

Series ZRV direct operated check valves have a cartridge type insert to provide zero leakage and high life time.

The check function can be located in the P- port or in the T-port.

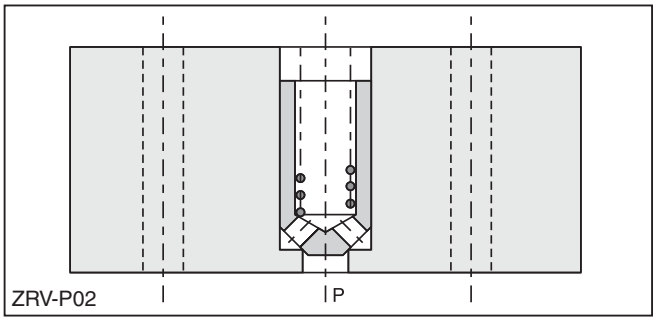

ZRV-P02



ZRV-P02

Features

- Leakage-free seat.
- High life time.
- Cracking pressure 0.5 Bar (7.25 PSI).
- Sizes
  - ZRV01 – NG06 / CETOP3
  - ZRV02 – NG10 / CETOP5



ZRV-P02

Specifications

General		
Size	**NG6**	**NG10**
Mounting Interface	DIN 24340 A6 ISO 4401 NFPA D03 CETOP RP 121	DIN 24340 A10 ISO 4401 NFPA D05 CETOP RP 121 5
Mounting Position	Unrestricted	
Ambient Temprature	-20°C to +50°C (-4°F to +122°F)	
Hydraulic		
Max. Operating Pressure	350 Bar (5075 PSI)	
Nominal Flow	40 LPM (10.6 GPM)	100 LPM (26.5 GPM)
Cracking Pressure	0.5 Bar (7.25 PSI)	0.5 Bar (7.25 PSI)
Fluid	Hydraulic oil as per DIN 51524 ... 51525	
Fluid Temperature	-20°C to +80°C (-4°F to +176°F)	
Viscosity Permitted	10 to 650 cSt (mm^2/s)	
Viscosity Recommended	30 cSt (mm^2/s)	
Filtration	ISO 4406 (1999) 18/16/13 (acc. NAS 1638: 7)	

Ordering Information

ZRV — ☐ ☐

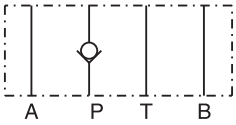
ZRV	Direct Operated Check Valve	
—		
☐	Pressure Control	
	Code	**Description**
	P	Blocked in P
	T	Blocked in T
☐	Nominal Size	
	Code	**Description**
	01	NG06
	02	NG10

Weight:

ZRV*01 0.7 kg (1.5 lbs)
ZRV*02 2.0 kg (4.4 lbs.)

ZRV*01

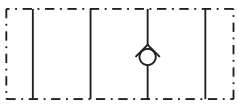
blocked in P



Series ZRV-P01

Order No. 098-90025-0

blocked in T

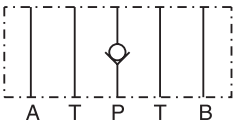


Series ZRV-T01

Order No. 098-90026-0

ZRV*02

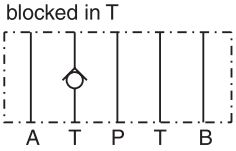
blocked in P



Series ZRV-P02

Order No. 098-90043-0

blocked in T



Series ZRV-T02

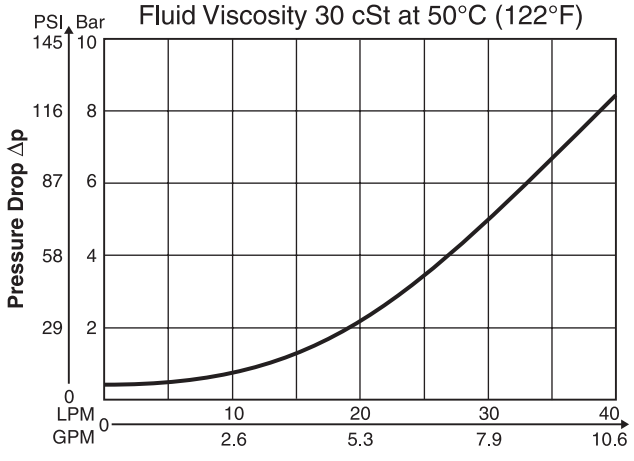
Order No. 098-90044-0

p/Q Performance Curves

ZRV*01

ZRV – P/T01

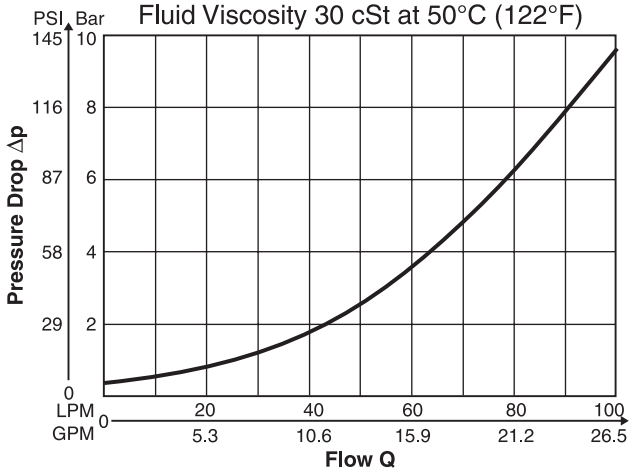
Fluid Viscosity 30 cSt at 50°C (122°F)



ZRV*02

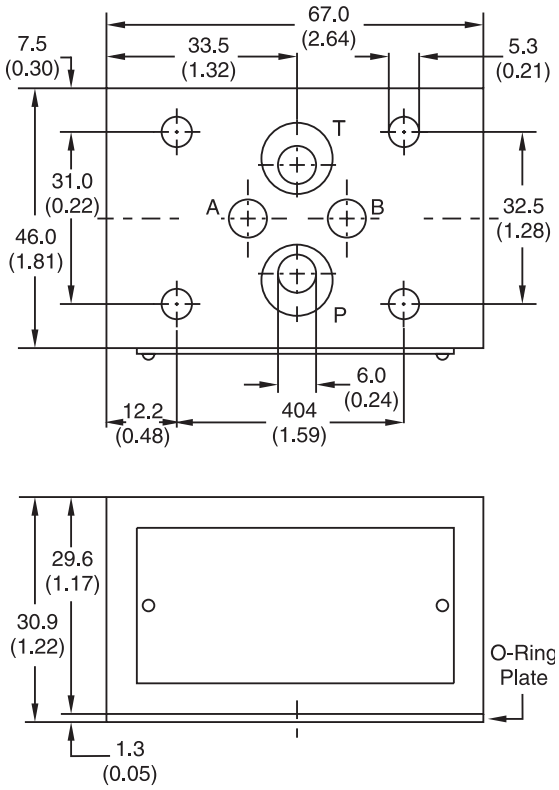
ZRV – P/T02

Fluid Viscosity 30 cSt at 50°C (122°F)

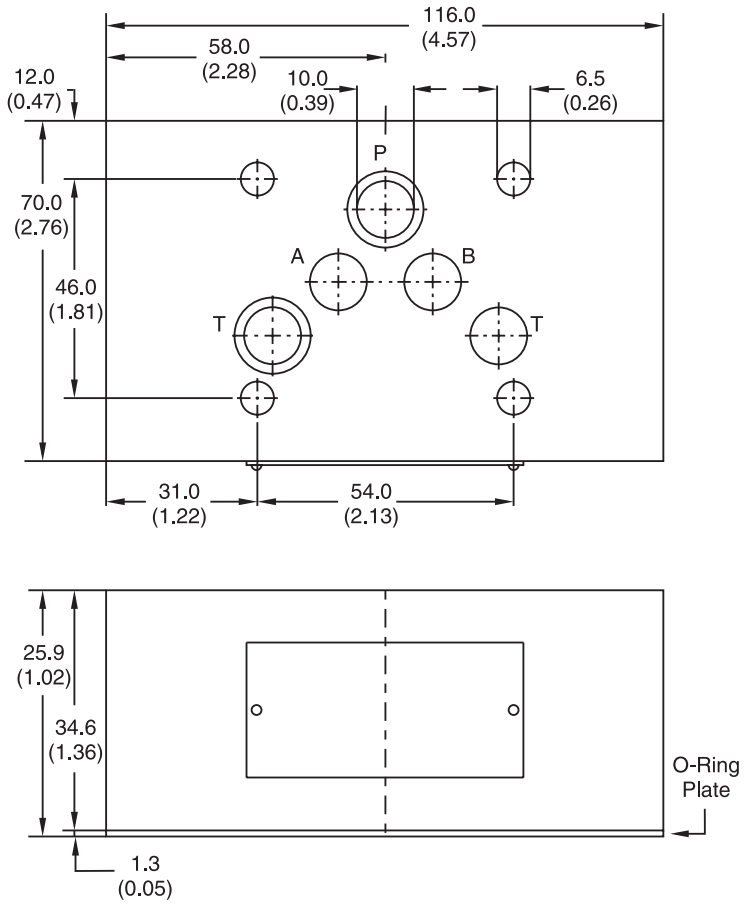


Inch equivalents for millimeter dimensions are shown in (**)

ZRV*01



ZRV*02



ZRV.indd, dd

*W**elcome*** to Parker's Involvement Training Program

The Training Department at Parker Hannifin was established in the early 1970's and is recognized today as the industry leader in the development and presentation of training materials and programs.

The Department's charter states that the primary focus of activity shall include all phases of technical training for hydraulic and pneumatic industries. The charter also states that this would be non-commercial and involve state-of-the-art methodology.

The Parker approach is one of involvement training. In its full scope, involvement training is one of active participation. This participation results in excellent student retention as well as providing a comfortable way of learning.

Parker Catalog 0200 details the Training Department's current offerings. This catalog is presented in two parts: Training Materials and Training Programs.

Training Materials

The training materials section contains the following mixed media components:

- Textbooks/Course Components
- Reference Books
- Computer Software
- Video Tapes
- Trainer Stands
- CD-ROMs

Parker offers seven textbook and course combinations designed for both industrial and educational applications. Topics range from Basic Fluid Power to the specifics of Hydraulic and Pneumatic Technology.

All materials needed for a complete classroom curriculum are available. Textbooks can be purchased separately or in combination with any number of additional course components including workbooks, instructor guide, multiple choice exams, answer book, course certificates and, where appropriate, digital transparencies and relevant reference books.

Parker currently has six reference books available. Led by the *Design Engineer's Handbook, Vol. 1 - Hydraulics*, all of the books are valuable tools for any Design Reference Library, whether for individual use or as an accompaniment to the courses.

Additionally, course subject matter can be further enhanced with related computer software, video tapes and trainer stands.

Parker's computer-aided software represents a strong commitment to advanced training technology. The *Industrial Hydraulic Training CD*, featuring animation and video, is the leading hydraulic computer based training program in the industrial market place.

The video tape library contains 14 complete modules for self-paced one-on-one or group learning activities. Both hydraulic and pneumatic training programs are available.

Parker's portable hydraulic, pneumatic trainer stands provide students with valuable hands-on experience. All training stands feature industrial grade components and provide "Real World" applications of principles and circuitry.

Training Programs

In addition to training materials, Parker offers an ongoing schedule of classroom educational programs. The current list of classes includes ten 3-5 day programs. Each class is led by a Parker certified instructor(s). Students are provided all necessary materials to attain course certification.

Classes are held in strategic locations across North America and Europe. Download current training schedule for a complete list of scheduled class locations.

Course fees cover all class room expenses. Meals, transportation and lodging are not included. However, Parker will be glad to assist you with lodging arrangements.

For the latest information on training materials or programs, please contact:

Parker Hannifin Corporation
Training Department
6035 Parkland Blvd.
Cleveland, OH 44124-4141
Tel: (216) 896-2495
Fax: (216) 514-6738
E-mail: mctrain@parker.com

or visit our website at:
www.parker.com/training

The following section gives a brief overview of the training materials and classes with a hydraulic or electrohydraulic emphasis.

INDUSTRIAL HYDRAULIC

Industrial Hydraulic Technology

2nd Edition, Bulletin 0232-B1
ISBN 1-55769-025-1

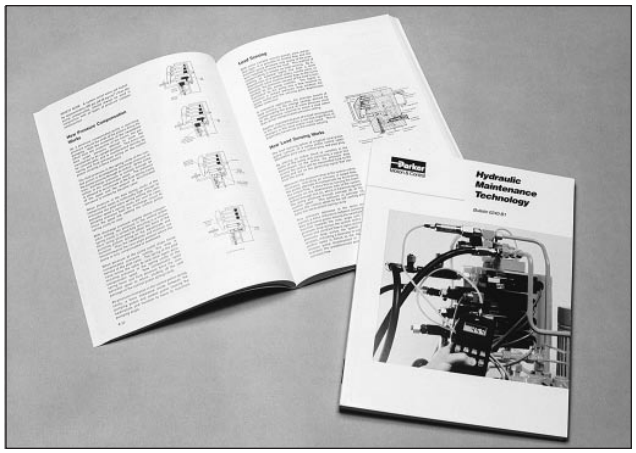
The *Industrial Hydraulic Technology* textbook is designed to introduce a student to hydraulics as it relates to industrial machinery. The 330-page text is organized into fifteen chapters which include:

The Physical World of a Machine
Hydraulic Transmission of Force and Energy
Petroleum Base Hydraulic Fluid
Fire Resistant Hydraulic Fluid
Operation at the Suction Side of a Pump
Hydraulic Actuators
Control of Hydraulic Energy
Check Valves, Accumulators and Cylinders
Flow Control Valves
Directional Control Valves
Pressure Control Valves
Pilot Operated Pressure Control Valves
Hydraulic Pumps
Hydraulic Motors
Reservoirs, Coolers and Filters

• Circuit illustrations are in six-color to aid the student in visualizing what is happening in a circuit.

• Each chapter incorporates an exercise reviewing the lesson's main points.

HYDRAULIC MAINTENANCE TECHNOLOGY



Hydraulic Maintenance Technology

Bulletin 0240-B1
ISBN 1-55769-019-7

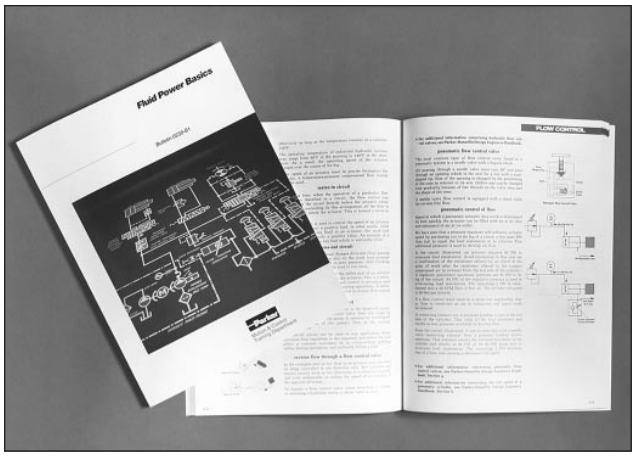
The *Hydraulic Maintenance Technology* textbook provides detailed maintenance and troubleshooting information for the user of industrial hydraulic equipment. The 148-page text contains ten chapters which include:

Hydraulic Maintenance Introduction
Hydraulic Graphic Symbology
Power Unit Maintenance
Pump Maintenance
Pressure Control Valve Maintenance
Directional Control Valve Maintenance
Flow Control Valve and Check Valve Maintenance
Cylinders, Motors and Accumulator Maintenance
Leakage Elimination in Hydraulic Systems
Fluids and Filter Maintenance

• Contains troubleshooting charts with lists of common problems, causes and possible remedies.

• This text is also a valuable reference for designers of industrial hydraulic equipment

FLUID POWER BASICS



Fluid Power Basics

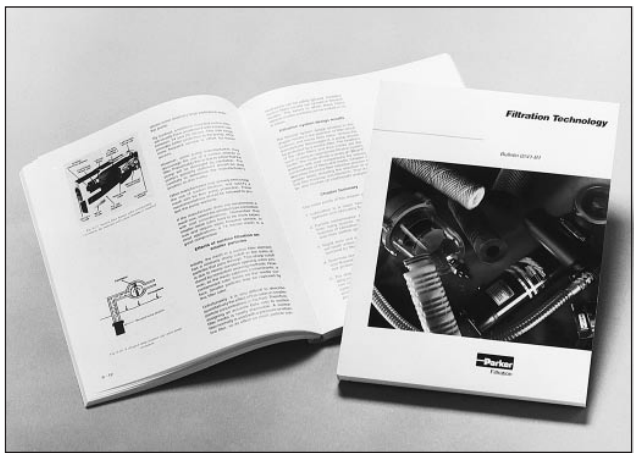
Bulletin 0239-B1
ISBN 1-55769-029-4

The *Fluid Power Basics* textbook is designed to introduce students to hydraulics and pneumatics as it relates to industrial machinery. The 174-page text is organized into fifteen chapters which include:

The Physical World of a Machine
Force Transmission Through a Fluid
Energy Transmission Using a Hydraulic System
Control of Hydraulic Energy
Energy Transmission Using a Pneumatic System
Control of Pneumatic Energy
Hydraulic Pumps and Compressors
Check Valves, Cylinders and Motors
Flow Control Valves
Directional Control Valves
Simple Pressure Control Valves
Pilot Operated Pressure Control Valves
Hydraulic Fluid Conditioning
Air Preparation
Fluid Conductors and Connectors

• Each chapter incorporates an exercise reviewing the lesson's main points.

FILTRATION TECHNOLOGY



Filtration Technology, 2nd Edition

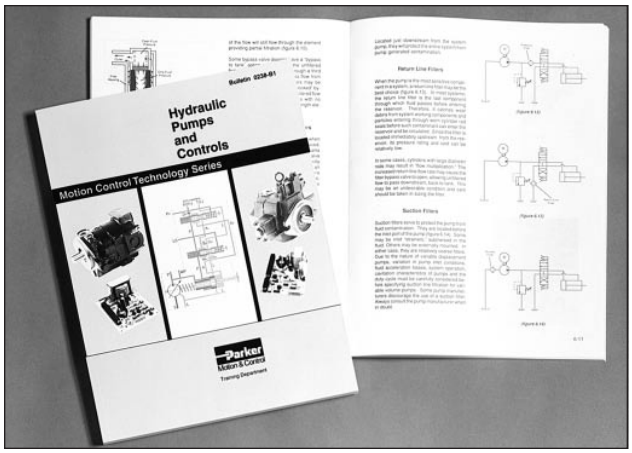
Bulletin 0247-B1 **(Softcover)**
ISBN 1-55769-030-8

Bulletin 0250-B1 **(Hardcover, Not Shown)**
ISBN 1-55769-033-2

Filtration Technology is a must as a fundamental introduction to industrial filtration. The text covers topics such as fluids, contaminants, media selection and more. It is helpful to all personnel concerned with OSHA, safety and quality issues. This 250-page text is organized into twelve chapters which include:

Introduction to Industrial Filtration Technology
Fluids and Contaminants
Contamination Dynamics
Fluid and Filter Analysis
Hydraulic Fluid Filter Selection
Water Absorption in Hydraulic and Lubricating Oils
Filter and Media Selection for Single-pass Systems
Fuel Filtraion
Process Filtration Systems
Compressed Air and Gas Filtration
Coolant Filtration

HYDRAULIC PUMPS & CONTROLS



Hydraulic Pumps & Controls

Bulletin 0238-B1
ISBN 1-55769-031-6

Hydraulic Pumps and Controls is a comprehensive text covering relevant pump topics from basic pump construction and operation to multiple controls, horsepower control and electronic pump controls. The book also contains sections on filtration and troubleshooting. This 185-page, multi-colored text is organized into nine chapters which include:

Pressure Compensation
Load Sensing Theory of Operation
Input Power and Inlet Conditions
Electrohydraulic Pump Control
Troubleshooting
Remote Compensation
Horsepower (Torque) Limiting Control
Hydraulic Filtration
Energy Conservation

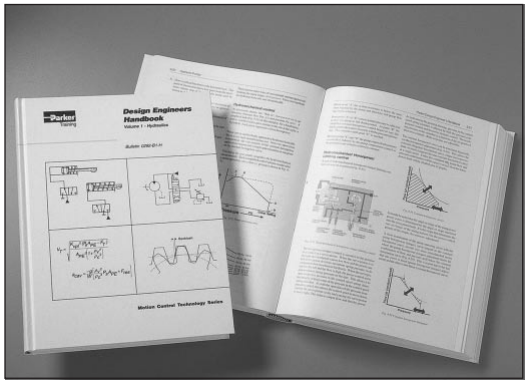
For information on Course Components, refer to Catalog 0200.

Reference Books

Design Engineers Handbook

Bulletin 0292-B1 Volume 1 - Hydraulics
ISBN 1-55769-018-9

To satisfy the demand for a simple and practical treatment of hydraulics and pneumatics, including components and system connectors, Parker Hannifin Corporation has published a one volume, 520-page text entitled *Design Engineers Handbook, Vol 1. - Hydraulics*. The information contained in this text is organized to assist the machine designer and manufacturer, as well as service and maintenance personnel. It should prove to be equally valuable to the college and vocational school student preparing to enter any of these fields.

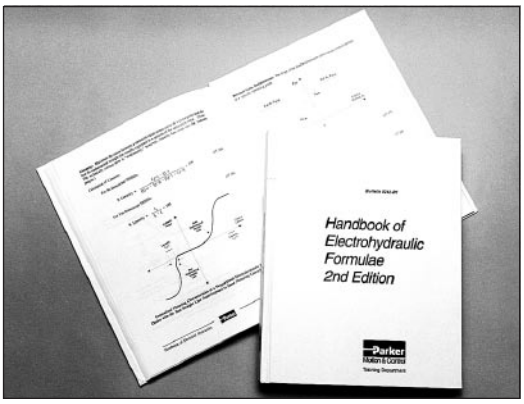


- Each section includes design data, reference material, charts and diagrams.

Handbook of Electrohydraulic Formulae, *2nd Edition*

Bulletin 0242-B1
ISBN 1-55769-034-0

This handbook, written for technicians, engineers and designers, contains 25 chapters of commonly used formulas for the design of electrohydraulic motion control systems. All of the necessary information is centralized, making the design of electrohydraulic motion control systems easier. There is no other text available that offers this accessibility or breadth and depth of information.



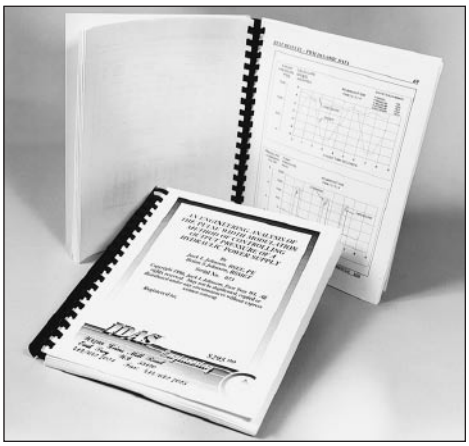
An Engineering Analysis of the Pulse Width Modulation

Bulletin 0244

This research report contains over 100 pages of detailed engineering information and data regarding the design and evaluation of the pulse width modulation (PWM) method of controlling hydraulic pump outlet pressure. PWM offers a very efficient way for making regulated pressure power units using fixed displacement pumps instead of the more expensive, conventional pressure compensated pumps.

The report contains scores of graphical responses, representing hundreds of hours of labs and data analysis time. Concise Conclusions sections help the reader to quickly summarize the results and apply them immediately. A complete section is dedicated to Design Methodology so that users can learn the details needed to properly design and construct the power units.

Also included is a background on motion control and constant pressure. In addition, authors discuss equipment and principles of operation as well as the method of investigation used.



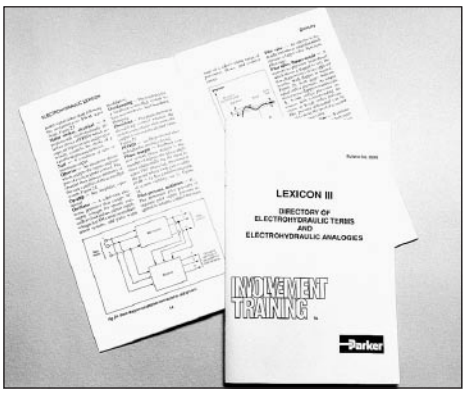
An Engineering Analysis of the Pulse Width Modulation is a must for anyone who uses, specifies, designs or builds hydraulic power units!

Lexicon III

Bulletin 0245

The Lexicon III is a detailed bulletin of electrohydraulic terms and analogies. The book is laid out into two easy-to-use sections – a glossary of terms and a section on understanding electrohydraulic analogies. Many of the areas are represented by graphs and diagrams to further identify in detail the terms and analogies of electrohydraulics.

The author conveniently includes a chart of the SI prefixes, the Handy Conversions Factors Table and a listing of the Greek Letters. This bulletin is a must-have for engineers, students and anyone interested in electrohydraulics.



Video Tapes

Industrial Hydraulic Technology

Bulletin 0299-T1

The *Industrial Hydraulic Technology* course material is available utilizing an audiovisual tape training method. With all the training information stored on cassette tapes, the training sessions can be repeated as often as necessary, allowing each student to acquire the technical knowledge at his or her own pace.

The various tapes focus on enabling the user to interpret and read schematics, obtain a working knowledge of components that make up hydraulic systems and advance to trouble shooting techniques. (Refer to page 4 to see specific chapters covered).

- Video tapes are available in Beta, VHS or PAL.
- Individual chapters are also available.

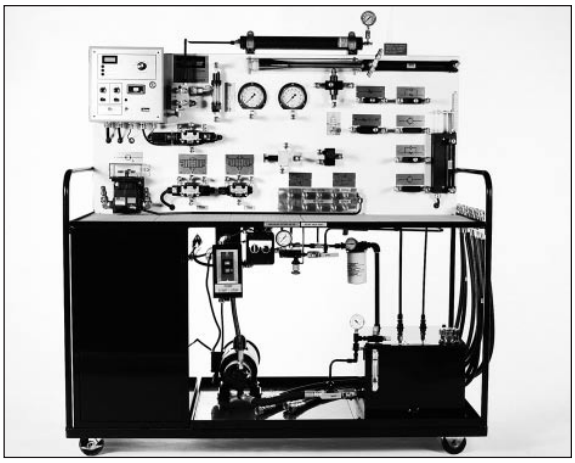
Includes:
14 Video Tapes
1 Textbook
1 Instructor's Guide

Portable Hydraulic Trainer

Based on Parker's long term experience in designing, manufacturing and servicing fluidpower components worldwide, the Portable Hydraulic Trainer is designed to be a tool for learning hydraulic technology principles and circuitry. It has been engineered for ruggedness, portability and ease of operation. The unit is completely self-contained and operates on standard 115 Volt AC single phase outlet electrical power.

The components on the trainer are all industrial grade components used in industry every day. This "real world" approach allows the student to learn what those components look like as well as how they operate.

All necessary connections are made with hoses and quick disconnects. No tools are required to arrange circuits. Simply plug in the components needed to arrange a circuit. In addition, all the hoses are stored in a rack to avoid misplacing "loose" components.



For detailed information, see Bulletin 0203 online at www.parker.com/training - click on Download Files

Also available with the following options:

• **Electrohydraulic option** provides an introduction to both open loop and closed loop electrohydraulic systems.

• **Pneumatic option** transforms the hydraulic trainer into a complete fluidpower training stand.

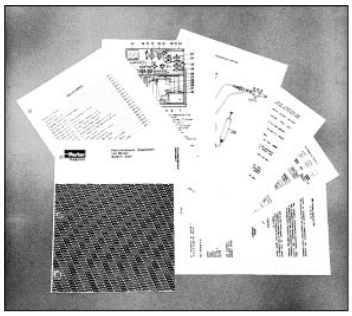
Bulletin 0249

In order to aid the student in understanding hydraulic components and systems operation, Parker has developed this comprehensive lab manual for the Model HTU-00 Portable Hydraulic Trainer Stand. This manual contains circuit problems and demonstrations designed for use with the Parker trainer. These exercises are intended to supplement text material covered in the classroom. References are made in this manual to Parker textbook, Industrial Hydraulic Technology (page L3).

Also available in Spanish!
Bulletin 0229-B9

EHD Supplement
Bulletin 0231

Contains exercises using the Electrohydraulic Option Kit (P/N 875279) on the Parker Portable Hydraulic Trainer Stand.



Industrial Hydraulic Technology 1 & 2

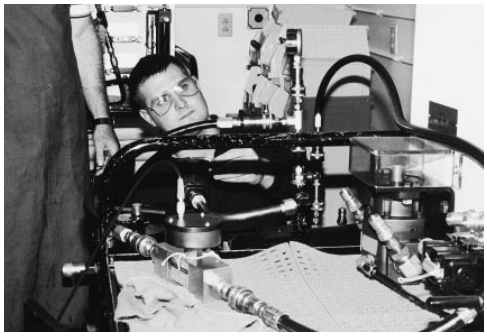
Parker Hannifin's **INDUSTRIAL HYDRAULIC TECHNOLOGY** 1 & 2 (I.H.T. 1 & 2) are completely integrated three-day programs during which you discuss and work with fundamental fluid power principles and formulas, and actually experience the functional characteristics of the complete spectrum of hydraulic components.

You will be studying and using pumps, flow valves, pressure valves, directional valves, hydraulic motors, filters, cylinders and accumulators. And, because its divisions actually manufacture and market all of these products, Parker Hannifin is uniquely qualified to give you an in-depth practical knowledge of how to best use them in your field. You will receive the broadest and deepest exposure possible during a three-day period.

At least a fourth of the time you will be working at the Parker Hannifin hydraulic systems simulators. These units were designed and built by Parker Hannifin expressly for this program. They supply you with all the necessary components – valves, pumps, motors, cylinders, filters, power units, hoses and gauges – to hook up to working hydraulic circuits and then check flows, pressures and velocity. Unlike most other training apparatus, the Parker Hannifin simulators operate at pressures up to 500 psi so that you can closely simulate real system conditions.

The balance of your time will be devoted to classroom sessions. But, these too, are designed for maximum interest and involvement. There is plenty of lively discussion, questions, answers and practical problem solving.

Hydraulic Maintenance Technology



HYDRAULIC MAINTENANCE TECHNOLOGY (H.M.T.) is ideally suited for maintenance personnel, engineers, first line supervisors and anyone desiring an in-depth understanding and appreciation of hydraulic system component operation and troubleshooting techniques. Participants should have completed the **INDUSTRIAL HYDRAULIC TECHNOLOGY** course or equivalent.

The topics covered in this four-day program are graphic symbols of hydraulic components in which we utilize the International Standards Organization (ISO) System; troubleshooting common hydraulic components such as pumps, cylinders, valves, rotary actuators, hydraulic motors; hose and tube fittings maintenance and assembly; and maintenance of fluid power systems.

There is plenty of "hands on" in this particular course. Everyone will get a chance to take apart and reassemble various pumps and valves as well as other typical hydraulic components.

Mobile Hydraulic Technology

MOBILE HYDRAULIC TECHNOLOGY (M.H.T.) is a 4-day course on hydraulic principles as they apply to mobile equipment (loggers, waste hauling trucks, cranes, etc.).

Such topics as basic mobile circuitry, hydrostatic transmissions and power beyond are discussed throughout the course. Components – directional control valves, pumps and steering systems – are also covered. Labs include a demo on a wheel motor driving a rubber tire.

MOBILE HYDRAULIC TECHNOLOGY is recommended for maintenance technicians and engineering. Sales and non-technical personnel wishing to increase their understanding of mobile hydraulics would find this class helpful.

Introduction to Electrohydraulics

The **INTRODUCTION TO ELECTROHYDRAULICS** (E.H.D.) course is designed for the individual who requires an increased understanding of the rapidly emerging field of electrohydraulic proportional control valves and the electronics used to operate these valves. The individual must have completed the **INDUSTRIAL HYDRAULIC TECHNOLOGY** and **HYDRAULIC COMPONENT SIZING** courses or equivalent. Basic DC theory knowledge is helpful but not necessary as the topic is covered in the course.

In this five-day course we present fundamental electronic theory applicable to electrohydraulic proportional valve; help participants understand how electrohydraulic proportional valves operate; examine in detail a typical circuit board used with a typical electrohydraulic proportional valve.

Approximately 30% of the class time is spent in the lab where the individual is familiarized with lab instrumentation, and various circuits on the printed circuit board are examined in detail.

Hydraulic Component Sizing

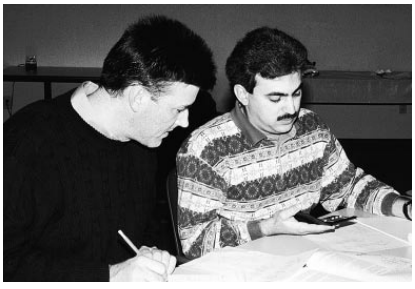
HYDRAULIC COMPONENT SIZING (H.C.S.) is ideally suited for the new designer and the maintenance and service individual who needs that important step beyond fundamental circuit design; the step that provides a more comprehensive understanding of efficient power transmission.

This program, using standard formulas and catalog data creates a benchmark that allows the student to objectively analyze the quality of the circuit in terms of efficiency and energy conservation. You will learn how to overcome problem areas and also become aware of the proper conditions for selecting components such as pressure compensated valves and fixed versus compensated pumps.

Parker Hannifin has written a special textbook for this course, which you will use during the program as the basis for your discussions and practical problem solving.

Since **HYDRAULIC COMPONENT SIZING** is an analytical course, we want to insure that all participants have a solid relatively equal background in basic fluid power technology. Completion of Parker Hannifin's **INDUSTRIAL HYDRAULIC TECHNOLOGY** course is an ideal foundation for understanding and further pursuing the maximum energy savings approach that is key to the **HYDRAULIC COMPONENT SIZING** subject matter.

Electrohydraulic Feedback Systems



Parker's **ELECTROHYDRAULIC FEEDBACK SYSTEMS** (E.F.S.) course is designed for engineering oriented individuals requiring an in-depth understanding of electrohydraulic feedback control systems. Attendees should have completed the Parker **INTRODUCTION TO ELECTROHYDRAULICS** prior to attending this advanced course.

The following topics are covered in this course: servo valve sizing, basic positional servo valve systems, position transducers, speed transducers, frequency response curves, transfer functions and speed control loops.

Approximately 20% of the class time spent is in the lab working with various feedback control systems to gain a better understanding of their operating characteristics.

Offer of Sale

The items described in this document and other documents or descriptions provided by Parker Hannifin Corporation, its subsidiaries and its authorized distributors are hereby offered for sale at prices to be established by Parker Hannifin Corporation, its subsidiaries and its authorized distributors. This offer and its acceptance by any customer ("Buyer") shall be governed by all of the following Terms and Conditions. Buyer's order for any such items, when communicated to Parker Hannifin Corporation, its subsidiary or an authorized distributor ("Seller") verbally or in writing, shall constitute acceptance of this offer.

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9. Taxes: Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

10. Indemnity For Infringement of Intellectual Property Rights: Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. Patents, U.S. Trademarks, copyrights, trade dress and trade secrets (hereinafter 'Intellectual Property Rights'). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

11. Force Majeure: Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter 'Events of Force Majeure'). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

12. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of the sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.

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Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA

Parker Safety Guide for Selecting and Using Hydraulic Valves and Related Accessories

WARNING: Failure or improper selection or improper use of Parker Hydraulic Valve Division (HVD) Valves or related accessories ("Products") can cause death, personal injury and property damage. Possible consequences of failure or improper use of these Products include but are not limited to:

- Valves or parts thereof thrown off at high speed
- High velocity fluid discharge
- Explosion or burning of the conveyed fluid
- Contact with suddenly moving or falling objects controlled by the Valve
- Injections by high-pressure fluid discharge
- Contact with fluid that may be hot, cold, toxic or otherwise injurious
- Injuries resulting from injection, inhalation or exposure to fluids
- Injury from handling a heavy item (dropped, awkward lift)
- Electric shock from improper handling of solenoid connections
- Injury from slip or fall on spilled or leaked fluid

Before selecting or using any of these Products, it is important that you read and follow the instructions below. In general, the Products are not approved for in-flight aerospace applications. Consult the factory for the few that are FAA approved.

1.0 GENERAL INSTRUCTIONS

1.1 **Scope**: This safety guide provides instructions for selecting and using (including assembling, installing and maintaining) these Products. For convenience all items in this guide are called "Valves". This safety guide is a supplement to and is to be used in conjunction with the specific Parker catalogs for the specific Valves and/or accessories being considered for use. See item 1.6 below for obtaining those catalogs.

1.2 **Fail-Safe:** Valves can and do fail without warning for many reasons. Design all systems and equipment in a fail-safe mode, so that failure of the Valve or Valve Assembly will not endanger persons or property.

1.3 **Safety Devices:** Never disconnect, override, circumvent or otherwise disable any safety lockout on any system whether powered by HVD Valves or any motion control system of any manufacturer. (e.g. Automatic shut-off on a riding lawn mower should the operator get out of the seat).

1.4 **Distribution:** Provide a copy of this safety guide to each person that is responsible for selecting or using HVD Valve Products. Do not select HVD Valves without thoroughly reading and understanding this safety guide as well as the specific Parker catalogs for the Products considered or selected.

1.5 **User Responsibility:** Due the wide variety of operating conditions and applications for Valves, HVD and its distributors do not represent or warrant that any particular Valve is suitable for any specific system. This safety guide does not analyze all technical parameters that must be considered in selecting a product. The user, through its own analysis and testing is solely responsible for:

- Making the final selection of the Valve
- Assuring that the user's requirements are met and that the application presents no health or safety hazards.
- Providing all appropriate health and safety warnings on the equipment on which the Valves are used.
- Assuring compliance with all applicable government and industry standards.

1.6 **Additional Questions:** Call the appropriate Parker technical service department if you have any questions or require any additional information. See the Parker publication for the product being considered or used, or call 1-800-CPARKER, or go to www.parker.com , for the telephone numbers of the appropriate technical service department. For additional copies of this or any other Parker Safety Guide go to www.parker.com and click on the safety button on the opening page. Catalogs and/or catalog numbers for the various HVD Valve Products can be obtained by calling HVD at 440-366-5100. Phone numbers and catalog information is also available on the Parker website, www.parker.com .

2.0 VALVE SELECTION INSTRUCTIONS

2.1 **Pressure:** Valve selection must be made so that the maximum working pressure of the Valve is equal to or greater than the maximum system pressure. Surge, impulse or peak transient pressures in the system must be below the maximum working pressure of the Valve. Surge, impulse and peak pressures can usually be determined by sensitive electrical instrumentation that measures and indicates pressures at millisecond intervals. Mechanical pressure gauges indicate only average pressure and cannot be used to determine surge, impulse or peak transient pressures. Burst pressure ratings if given or known are for manufacturing purposes only and are not an indication that the Product can be used in applications at the burst pressure or otherwise above the maximum working pressure.

2.2 **Temperature:** The fluid temperature must be regulated or controlled so that the operating viscosity of the fluid is maintained at a level specified for the particular Valve product. Such ranges are given in the product catalogs or can be obtained from the appropriate customer service department for the particular Valve product.

2.3 **Fluid Compatibility:** The fluid conveyed in Valves has direct implications on the Valve selection. The fluid must be chemically compatible with the Valve component materials. Elastomer seals, brass, cast iron, aluminum for example all are potentially affected by certain fluids. Additionally, fluid selection affects the performance of various Valves. Considerations relative to fluid selection are outlined in the specific HVD Valve product catalog. Of particular importance is that the fluid be for hydraulic use, contain the proper additives and wear inhibitors. See 1.6 "Additional Questions" above for information to obtain such HVD catalogs.

2.4 **Changing Fluids:** If a system requires a different fluid, it should be done with the guidance in number 2.3 above. Additionally, it may be necessary to flush the system (including the Valves) to remove any of the previous fluid. Consult the Parker Valve Division for guidance.

2.5 **Size:** Transmission of power by means of pressurized fluid varies with pressure and rate of flow. The size of the components must be adequate to keep pressure losses to a minimum and avoid damage due to heat generation or excessive fluid velocity.

2.6 **Placement:** Installation of Valves must take into account the orientation of the Valve and the proximity of the Valve to other parts of the system. This includes but is not limited to closeness to hot and cold areas, access for servicing and operation as well as orientation for proper connectors.

2.7 **Ports:** Connection of Valves in systems can be by threaded ports, sub-base surfaces, flanges and manifolds. In all cases, the proper fitting, surface or mounting hardware must be selected to properly seal and contain the system fluid so as to avoid the adverse conditions listed in the initial warning box above. Specifically, if using threaded ports, the designer must make sure that the mating fitting is of the compatible thread. Also, the instructions provided by the connector hardware supplier must be read and understood so as to properly assemble the connector. The Parker Safety Guide for using Hose, Tubing and Fittings and Related Accessories is but one reference to this end.

2.8 **Environment:** Care must be taken to insure that the Valve and Valve Assemblies are either compatible with or protected from the environment (that is, surrounding conditions) to which they are exposed. Environmental conditions including but not limited to ultraviolet radiation, sunlight, heat, ozone, moisture, water, salt water, chemicals and air pollutants can cause degradation and premature failure.

2.9 **Electric Power:** For Valves requiring electric power for control, it is imperative that the electricity be delivered at the proper voltage, current and wattage requirements. To obtain the proper control requirements please refer to the respective Parker product catalog for the specific Valve that is intended for use. If further guidance is required, call the appropriate technical service department identified in the respective Parker product catalog.

2.10 **Specifications and Standards:** When selecting Valves, government, industry and Parker specifications and recommendations must be reviewed and followed as applicable.

2.11 **Accessories:** All accessories used in conjunction with any Parker Valve product must be rated to the same requirements of the Valve including but not limited to pressure, flow, material compatibility, power requirements. All of these items must be examined as stated in the "VALVE INSTALLATION INSTRUCTIONS" paragraph 3.0.

(continued on next page)

3.0 VALVE INSTALLATION INSTRUCTIONS

3.1 **Component Inspection:** Prior to use, a careful examination of the Valve(s) must be performed. The Valve intended for use must be checked for correct style, size, catalog number and external condition. The Valve must be examined for cleanliness, absence of external defects or gouges, cracked or otherwise deformed parts or missing items. The mounting surface or port connections must be protected and free of burrs, scratches, corrosion or other imperfections. Do NOT use any item that displays any signs of nonconformance. In addition, any accessory including but not limited to fittings, bolt kits, hoses, sub bases, manifolds, and electrical connectors must be subjected to the same examination.

3.2 **Handling Valves:** Many Valves whether HVD Valves or of another manufacturer can be large, bulky or otherwise difficult to handle. Care must be taken to use proper lifting techniques, tools, braces, lifting belts or other aids so as not to cause injury to the user, any other person or to property.

3.3 **Filtration:** Fluid cleanliness is a necessity in any hydraulic system. Fluid filters must be installed and maintained in the system to provide the required level of fluid cleanliness. Filters can be placed in the inlets, pressure lines and return lines. The level of cleanliness required is specified in the HVD product catalog for the specific Valve(s) selected or intended for use. For additional information on Filter selection contact Parker Filter Division at 800-253-1258 or 419-644-4311.

3.4 **Servo Valves:** Application of Servo Valves in general requires knowledge and awareness of "closed loop control theory" and the use of electronic controls for successful and safe operation. Individuals who do not have such experience or knowledge must gain training before use of such Products. Parker offers both classroom training as well as manuals to assist in gaining this knowledge. These aids can be obtained by contacting Hydraulic Valve Division at 440-366-5100, calling the general Parker help line 800-CPARKER or going to the Parker web site at www.parker.com.

3.5 **Accessory Ratings:** All accessories used in combination with the selected or intended Valve product must be rated and compatible with the selected Valve. Specifically, the items must be of equal or greater rating including but not limited to pressure, flow, power, size, port style, thread connectors and material.

3.6 **Connection Styles:** It is the responsibility of the user of the Parker product to properly select connectors and accessories that match the connections on the sub plate, Valve, flange or threaded connection or manifold. It is also the responsibility of the installer to possess adequate skill and knowledge including but not limited to thread preparation, torque technique, hose assembly and inspection, tube preparation and assembly, and fitting installation. Parker Tube Fitting Division (www.parker.com/tfd) catalog 4300 and Parker Hose Products (www.parkerhose.com) catalog 4400 describe some basic technical information relative to proper fitting assembly.

3.7 **Electrical Connections:** All electrical connections must be made to the applicable codes and local safety requirements.

3.8 **Gauges and Sensors:** The user must install sufficient gauges and sensors in the system so as to be able to determine the condition of the system. This includes but is not limited to pressure gauges, flow meters, temperature sensors and site gauges. These are of utmost importance should removal or disassembly of a Valve, portion of a Valve or portion of the system become necessary. Refer to "VALVE MAINTENANCE AND REPLACEMENT INSTRUCTIONS" for details and especially item 4.8.

3.9 **System Checkout:** Once installed, the Valve installation must be tested to insure proper operation and that no external leakage exists. All safety equipment must be in place including but not limited to safety glasses, helmets, ear protection, splash guards, gloves, coveralls and any shields on the equipment. All air entrapment must be eliminated and the system pressurized to the maximum system pressure (at or below the Valve maximum working pressure) and checked for proper function and freedom from leaks. Personnel must stay out of potentially hazardous areas while testing and using.

4.0 VALVE MAINTENANCE AND REPLACEMENT INSTRUCTIONS

4.1 **Maintenance Program:** Even with proper installation, Valves and Valve System life may be significantly reduced without a continuing maintenance program. The severity of the application and risk potential must determine the frequency of the inspection and the replacement of the Products so that Products are replaced before any failure occurs. A maintenance program must be established and followed by the user and, at a minimum, must include instructions 4.2 through 4.10. An FMEA (Failure Mode and Effects Analysis) is recommended in determining maintenance requirements.

4.2 **Visual Inspection-Valves:** Any of the following conditions require immediate shut down and replacement of the Valve.

- Evidence that the Valve is in partial dis-assembly.
- Visible crack or suspicion of a crack in the Valve housing or bent, cracked or otherwise damaged solenoid.
- Missing or partially extending drive pin on a flow control knob.
- Missing, loose components, obstructions or other condition impeding the motion or function of the manual knob, lever, foot pedal or other mechanical operator of a hydraulic Valve.
- Any evidence of burning or heat induced discoloration.
- Blistered, soft, degraded or loose cover of any kind.
- Loose wire or electrical connector.

4.3 **Visual Inspection-Other:** The following conditions must be tightened, repaired, corrected or replaced as required.

1. Fluid on the ground must be cleaned immediately. Also, the source of the fluid must be determined prior to running the equipment again.
2. Leaking port or excessive external dirt build-up.
3. System fluid level is too low or air is entrapped or visible in the reservoir.
4. Equipment controlled by the Valve or Valve assembly has been losing power, speed, efficiency

4.4 **Filter Maintenance:** System filters must be maintained and kept in proper working order. The main service requirement is periodic replacement of the filter element or screen. Contact Parker Filter Division at 800-253-1258 or 419-644-4311 for further filter maintenance details.

4.5 **Functional Test:** See "System Checkout" number 3.9 above in "VALVE INSTALLATION INSTRUCTIONS".

4.6 **Replacement Intervals:** Valves and Valve Systems will eventually age and require replacement. Seals especially should be inspected and replaced at specific replacement intervals based on previous experience, government or industry recommendations, or when failures could result in unacceptable downtime, damage or injury risk. At a minimum seals must be replaced whenever service is rendered to a Valve product.

4.7 **Adjustments, Control Knobs, and Other Manual Controls:** System Pressure and Flow are typically adjusted by knobs and/or handles. A set-screw or lock-nut secures the adjustment device so as to maintain the desired setting. This set-screw or lock-nut must first be loosened prior to making any adjustments and re-tightened after adjustment on the HVD Valve. All adjustments must be made in conjunction with pressure gauges and/or flow meters (or by watching the speed of the actuator in the case of setting flow only). See paragraph "Gauges and Sensors" above in the section "VALVE INSTALLATION INSTRUCTIONS'. Under no circumstances should any control knob, adjustment stem, handle, foot pedal or other actuating device be forced beyond the mechanical stop(s) on the Valve. For example, the Parker Safety Notice Bulletin **HY14-3310-B1/US** for HVD Colorflow Valves specifically restricts the adjustment torque to "hand adjust" or "less than 10 ft/lbs" if it cannot be adjusted by hand. Failure to adhere to this may force the knob beyond the stop point allowing it to be ejected at high speed resulting in death, personal injury and property damage. For complete safety instructions on HVD Colorflow Valves, copies of Safety Notice **Bulletin HY14-3310-B1/US** can be obtained directly from the Hydraulic Valve Division at 440-366-5100 or from the Parker web site at www.parker.com by selecting the "Safety" button. Parker help line 800-CPARKER is on call 24/7 as well should there be any question about the use of a HVD Valve. Additionally, when making adjustments, always adjust the Valve with all parts of your body to the side of the Valve (that is, the knob is not pointing toward you or anyone else).

4.8 **High pressure Warning:** Hydraulic power is transmitted by high-pressure fluids through hoses, fittings and valves, pumps and actuators. This condition can be dangerous and potentially lethal and, therefore, extreme caution must be exercised when working with fluids under pressure. From time to time, hoses, Valves, tubes or fittings fail if they are not replaced at proper time intervals. Typically these failures are the result of some form of misapplication, abuse, wear, or failure to perform proper maintenance. When such failure occurs, generally the high pressure fluid inside escapes in a stream which may or may not be visible to the user. Under no circumstances should the user attempt to locate the leak by "feeling" with their hands or any other part of their body. High-pressure fluids can and will penetrate the skin and cause severe tissue damage and possible loss of limb or life. Even seemingly minor hydraulic fluid injection injuries must be treated immediately by a physician with knowledge of the tissue damaging properties of hydraulic fluid.

If a hose, tube, fitting or Valve failure occurs, immediately shut down the equipment and leave the area until pressure has been completely released from the system. Simply shutting down the pump may or may not eliminate the pressure in the system. It may take several minutes or even hours for the pressure to be relieved so that the leak area can be examined safely. Once the pressure has been reduced to zero, the suspected leaking item can be taken off the equipment and examined. It must always be replaced if a failure has occurred. Never attempt to patch or repair a connector (especially a hose) or Valve that has failed. Consult the nearest Parker distributor or the appropriate Parker division for component replacement information. Never touch or examine a failed hydraulic component unless it is obvious that the item no longer contains fluid under pressure.

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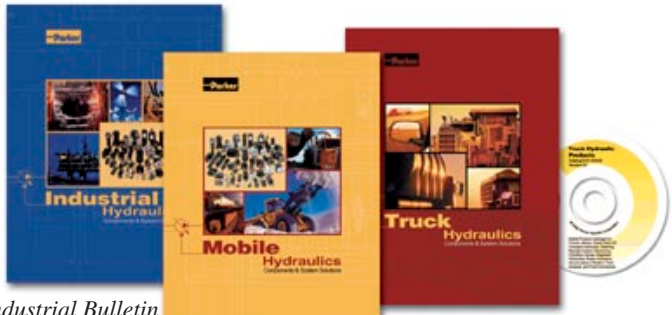

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