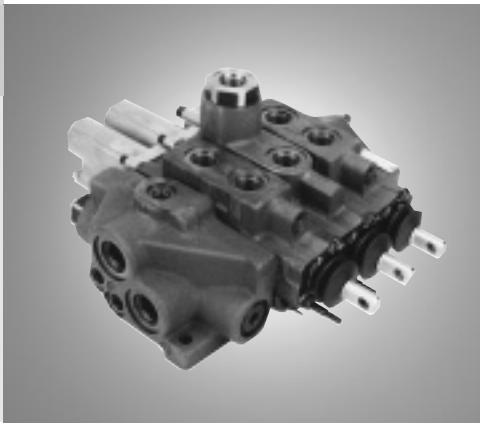
We Sustain. ™

Directional Control Valve Load Sense Pressure Compensated MP18

RA 64 960/01.05 1/20
Replaces: 10.96

Series 10



Nominal pressure 3000 psi (207 bar) pump side
Max. flow
– pump side:
  • 40 GPM (150 l/min) unloading and priority inlet element
  • 50 GPM (189 l/min) standard closed center inlet element
– actuator side:
  • 35 GPM (133 l/min) consult factory for higher flow rates

Functional Description

MP18, series 10 mobile stack type valves are load sensing pressure compensated valves. They control the volume, direction of oil flow and maintain a constant flow regardless of changing load pressures.

An advantage of the MP18 is that the starting point for movement of the function always remains the same, i.e., a specified control spool position always has the same metering characteristics. This is accomplished by a compensating spool in each section.

While the main spool is in neutral, the primary shuttle and secondary shuttle are vented to tank. When the main spool is operated, the load pressure is directed via the primary shuttle to the spring end of the pressure compensator spool. The section compensator now moves to the open position. Dependent on the pressure drop between the section compensator and the control spool opening, a specific volume now flows to the function. The load signal also simultaneously communicates to the secondary shuttle and on to the system compensating device. The system compensating device can be either an inlet compensator (open center unloading inlet) in the case of a fixed pump system or a pump compensator control in the case of a variable pump system.

Features

– Parallel type valve with wide range of section circuitry including 3-way, 4-way, float, motor control, 3 position and priority. Available with both flow and pressure control spools.
– May be combined with MP18 series 30 sections to provide series parallel circuitry.
– Section compensator allows each section to operate at a predetermined flow rate independent of pump discharge flow and pressure.
– Low spool operating forces possible by elimination of series by-pass circuits through the valve. This lends itself to remote operation of valve spools.
– Variety of main spool operators including manual, hydraulic, electro-hydraulic (proportional or on-off control), and mechanical detents. Electro-hydraulic and hydraulic remote also available with manual handle override.
– Section with pressure regulator or remote regulator port allows each section to operate at a predetermined maximum pressure level independent of pump discharge pressure.
– Low neutral pressure drop with open center inlet section, pressure drop remains constant regardless of number of sections. Pump discharge flow is directed back to the reservoir at low pressure through the unloading valve located within inlet section.
– Primary relief in open center unloading inlet section and priority port relief in priority inlet section which provides accurate pressure control over a wide flow range

Ordering Code

	MP 18–10	/		/

Fluid

Petroleum oil *(For operation with other fluids, consult a Rexroth Application Engineer)*

Number of Sections

Directional control sections (8 sections maximum)	

Directional Control Valve

Mobile stack valve, pressure compensated, Series 10	**MP 18**

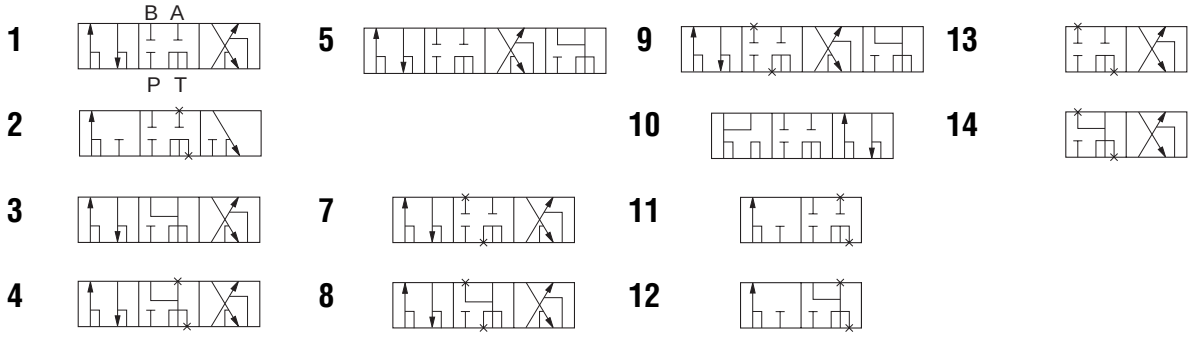
Inlet *(__) Indicate required pressure in bar.*

Standard closed center	**C**	Open center	**O(__)**
Closed center top ported	**CT**	Open center with back pressure check	**OB(__)**
Closed center priority	**P(__)**	Open center with power beyond	**OP(__)**

Directional Control Section

Low Boy Section	**LB**

Schematic Designation *(__) Indicate limited flow in liters/minute after spool schematic designation.*



All spool designations, except number 10, are available with flow limited main spools for improved metering characteristics. If flow limited spool is required, add in (__) the flow in liters/min. after the spool designation. Available flow limited main spools are; 7 gpm (26 lpm), 11 gpm (42 lpm), 15 gpm (57 lpm) and 24 gpm (91 lpm). Consult factory for special customer requirements in main spool design if quantities are justified.

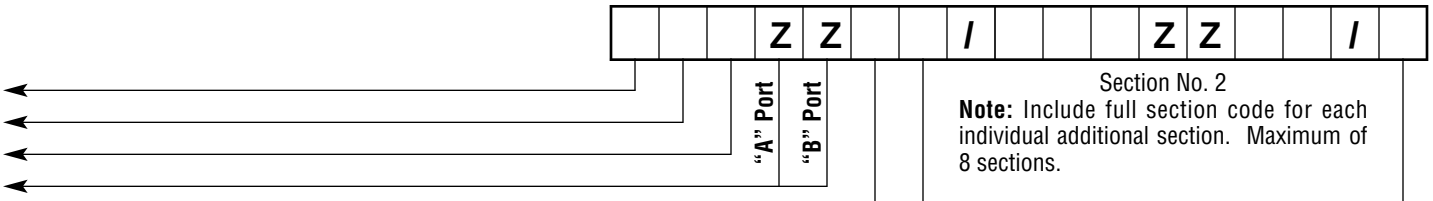
Spool Operation *(__) Indicate required DC voltage (12v or 24v) or pressure release detent setting in bar.*

Spring centered	**A**	Pressure release detent A; spring center B	**D2(__)**
Spring centered with stroke limiter on A & B	**A1**	Pressure release detent B; spring center A	**D3(__)**
Spring centered with stroke limiter on A	**A2**	Pres. release detent A; spring center B; mech. detent float	**D4(__)**
Mechanical detent A and B	**B**	Pres. release detent B; spring center A; mech. detent float	**D5(__)**
Spring centered from A mechanical detent B	**B1**	Hydraulic pilot operated	**H**
Spring centered from B mechanical detent A	**B2**	Hydraulic pilot operated with stroke limiters ❷	**H1(__)**
Spring centered from A & B mechanical detent float	**B3**	Hydraulic pilot operated with manual handle override	**H2**
Multi-position detent	**B4**	Electrical proportional control	**L(__)**
Mechanical detent A, B, and float	**B5**	Electrical proportional control with stroke limiters ❸	**L1(__)**
Mechanical detent A and float spring centered from B	**B6**	Electrical prop. control with manual handle override ❸	**L2(__)**
Pressure release detent A and B	**D(__)**	Electrical on/off control	**M(__)**
Pressure release detent A and B; detent float	**D1(__)**	Electrical on/off control with stroke limiters ❸	**M1(__)**
		Electrical on/off control with manual handle override ❸	**M2(__)**

Electrical Connector Type: Junior Timer (AMP)

Port Options

Port Option Machining not available in LB	**Z**



Compensator Option

Standard Compensator	**0**
Adjustable flow control LB, LBL, LBPL sections only	**1**

Section Compensator Pressure Control Option *(__) Indicate required settings in bar.*

No compensator pressure control (standard)	**A**
Compensator pressure regulator	**B(__)**
Port for remote compensator pressure regulation – Not available in Electrical Controled Sections	**C**

End Cover

Standard end cover	**L**
End cover with pressure reducing valve integral for electro-hydraulic controlled sections.	**Q**
End cover with external supply pressure port for electro-hydraulic controlled sections.	**R**
End cover with pressure regulator for pilot supply port.	**S**
To add P, T or LS ports to end cover, add P, T or L in (__) after end cover codes L, Q, R or S. *Example: L(PTL) would indicate a pressure, tank and load sense carry over ports in the end cover.*	**(__)**

❷ H1(__) designate which ports are to be stroke limited (A, B, or A & B).

❸ All electrical main spool operation codes (L, L1, L2, M, M1, M2) must be sold as complete valve assemblies.
Codes L1 or M1 designate stroke limiter. Specify which ports are to be stroke limited (A, B, or A & B).
All electrical sections must be assembled in line from end cover Q or R.

Technical Data

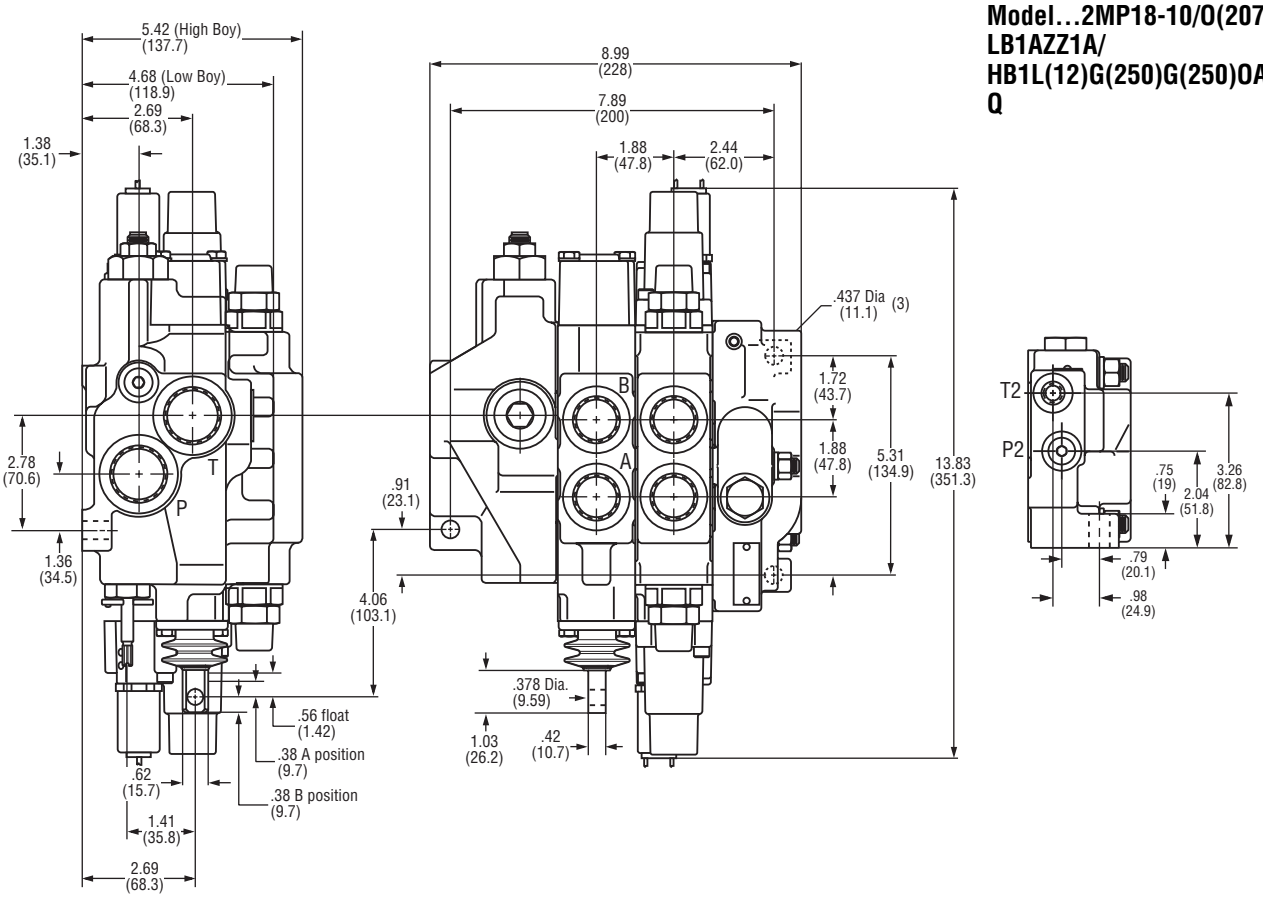
MP18 Specifications

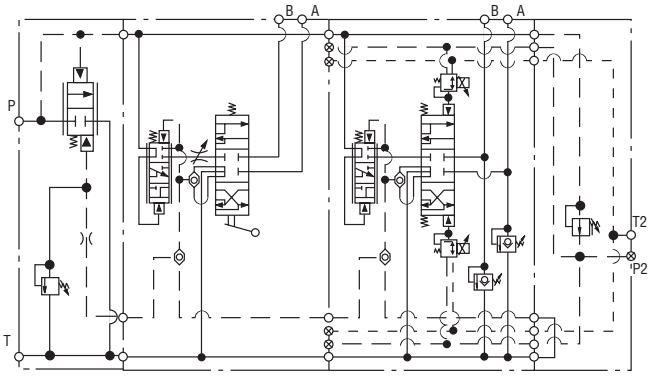
Flow range		GPM (L/min)	35 (133) ***Note…Consult factory for higher flow rates***
Primary operating pressure	Port T	PSI (bar)	290 (20)*
	Port P	PSI (bar)	3000 (207)*
Hydraulic fluid			Petroleum oils (HM, HL, HLP)
Fluid temperature range		° F (° C)	t_{min} = –4° F (–20) t_{max} = 158° F (70)
Viscosity range		SSU (mm^2/s)	35–1760 (10–380) (dependent upon fluid)
Cleanliness level			$^{18}/_{15}$ according to ISO 4406

*For applications outside these parameters, please consult Rexroth

Installation Dimensions

Model…2MP18-10/O(207)/ LB1AZZ1A/ HB1L(12)G(250)G(250)OA/ Q





Top Ported Closed Center Inlet with Standard End Cover

Number of Directional Control Spools	Overall Length A		Bolt Hole Centers B	
	inches	millimeters	inches	millimeters
1	6.60	167.6	5.79	147.0
2	8.48	215.3	7.67	194.7
3	10.36	263.0	9.55	242.5
4	12.24	310.77	11.43	290.2
5	14.11	358.5	13.30	337.9
6	15.99	406.2	15.18	385.7
7	17.87	454.0	17.06	433.4
8	19.75	501.7	18.94	481.1

Closed Center Inlet with Standard End Cover

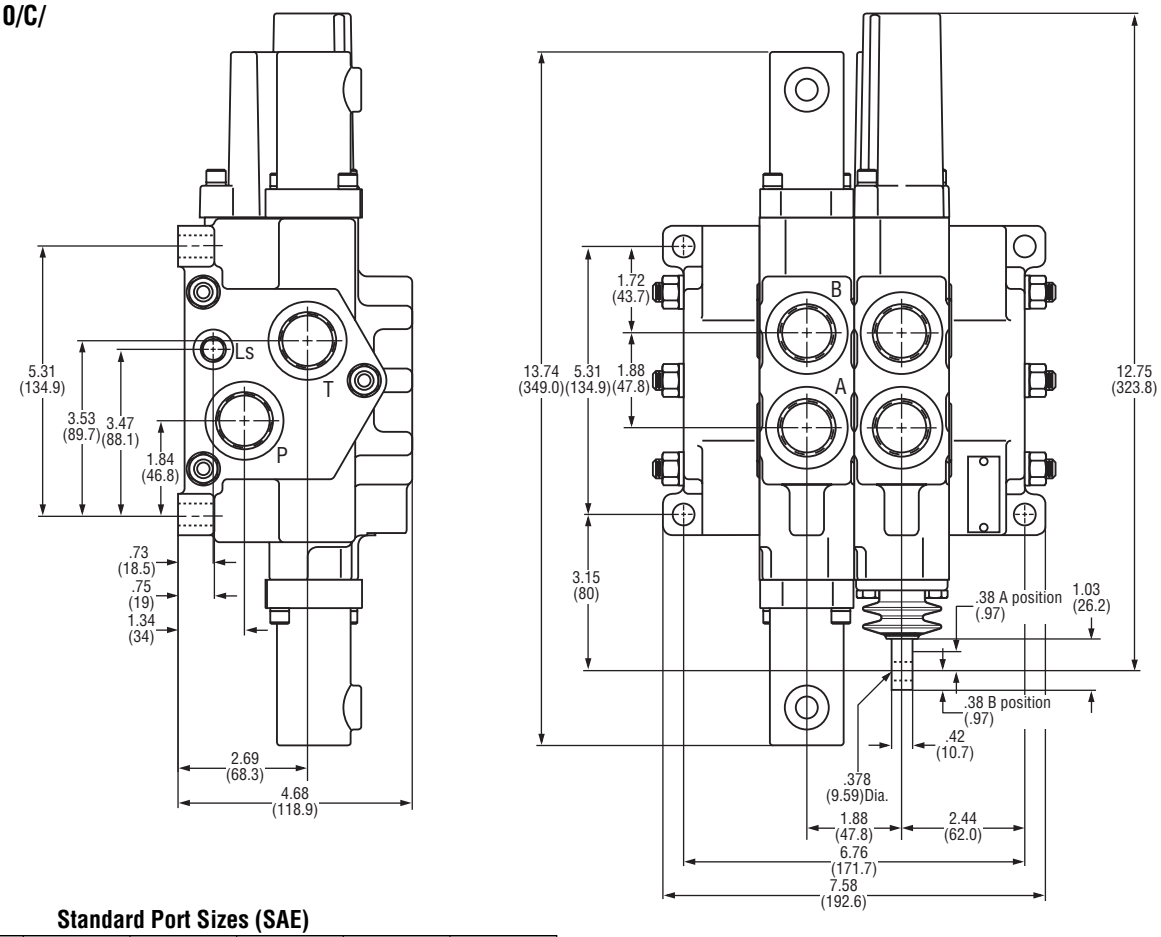
Number of Directional Control Spools	Overall Length A		Bolt Hole Centers B	
	inches	millimeters	inches	millimeters
1	5.70	144.8	4.88	124.0
2	7.58	192.6	6.76	171.7
3	9.46	240.3	8.64	219.5
4	11.34	288.0	10.52	267.2
5	13.22	335.7	12.40	314.9
6	15.10	383.5	14.28	362.6
7	16.98	431.2	16.16	410.4
8	18.86	478.9	18.04	458.0

Priority and all Open Center Inlets with Standard End Cover

Number of Directional Control Spools	Overall Length A		Bolt Hole Centers B	
	inches	millimeters	inches	millimeters
1	6.86	174.3	6.01	152.6
2	8.74	222.0	7.89	200.3
3	10.62	269.8	9.77	248.0
4	12.50	317.5	11.64	295.8
5	14.38	335.7	13.52	343.5
6	16.26	412.9	15.40	391.2
7	18.14	460.7	17.28	438.9
8	20.02	508.4	19.16	486.7

Installation Dimensions

Model…2MP18-10/C/
LB1HZZOA/
LB1BZZOA/
L

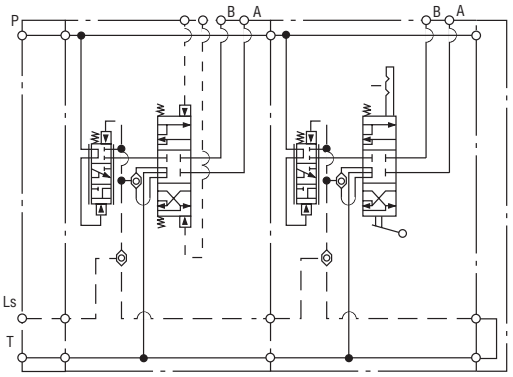


Standard Port Sizes (SAE)

Inlet	P…Inlet	T…Tank	PB	PR	LS	PRLS
C	#12	#12			#6	
C	#16	#16			#6	
CT	#16	#16			#4	
P	#16	#16		#12, 8, 6	#6	#6
O	#16	#16				
OB	#16		#12			
OP	#16	#16	#12			

Work Section	A Work Port	B Work Port
LB	#12	#12

End Covers	P…Inlet	T…Tank	LS…Load Sense	P2…Pilot Supply	T2…Pilot Drain	
L(PTL)	#12	#12	#4			
L(PTL)	#16	#16	#6			
Q(PTL)	#16	#16	#6		#4	
R(PTL)	#16	#16	#6	#4	#4	
S(PTL)	#16	#16	#6	#4	#4	
Hydraulic Housing #4 or #6						

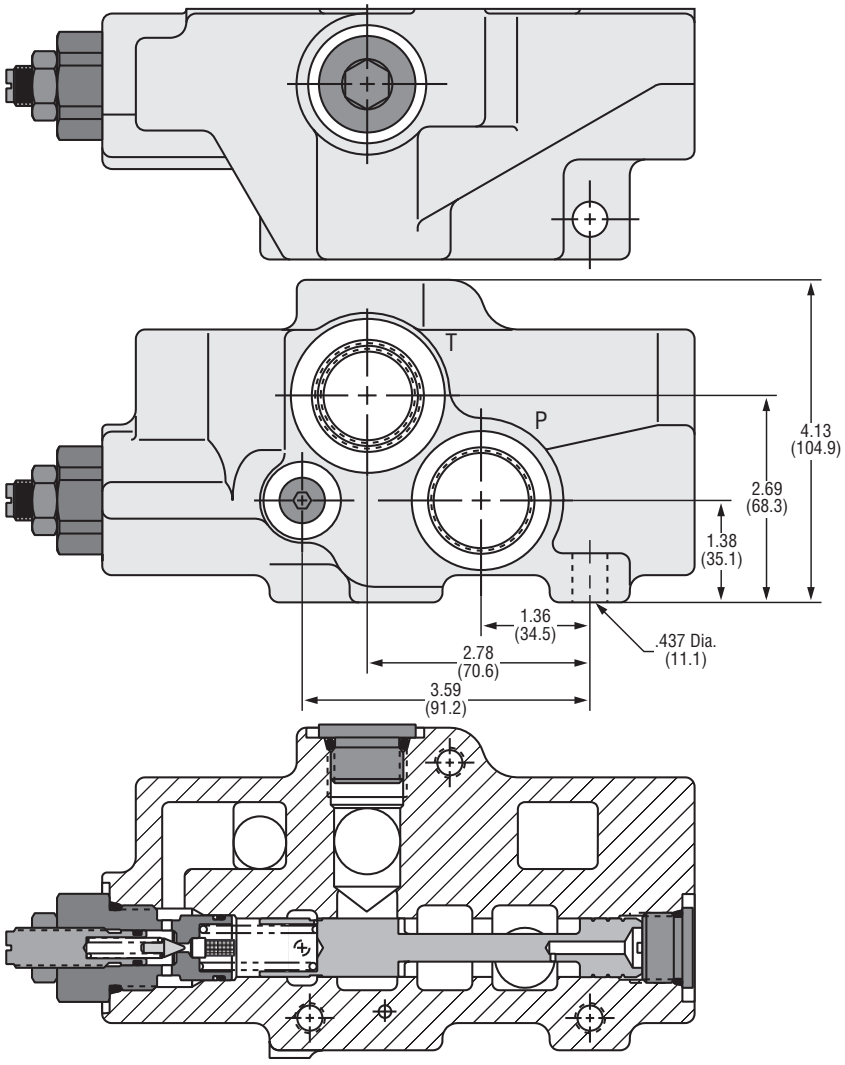


Note: If stack valve assembly has one of the optional end covers (Q, R, or S) the overall length is .250 inches (6.35 mm) longer than the matching valve assembly with standard end cover. Bolt hole mounting dimensions do not change.

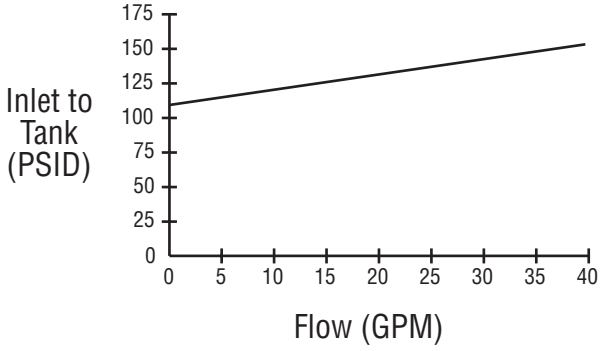
Inlets

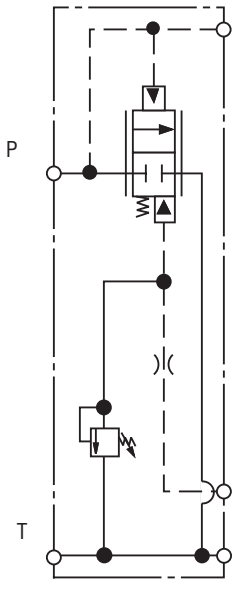
Open Center Unloading Inlet

Code…O



Neutral Pressure Drop
(Open Center Inlet)

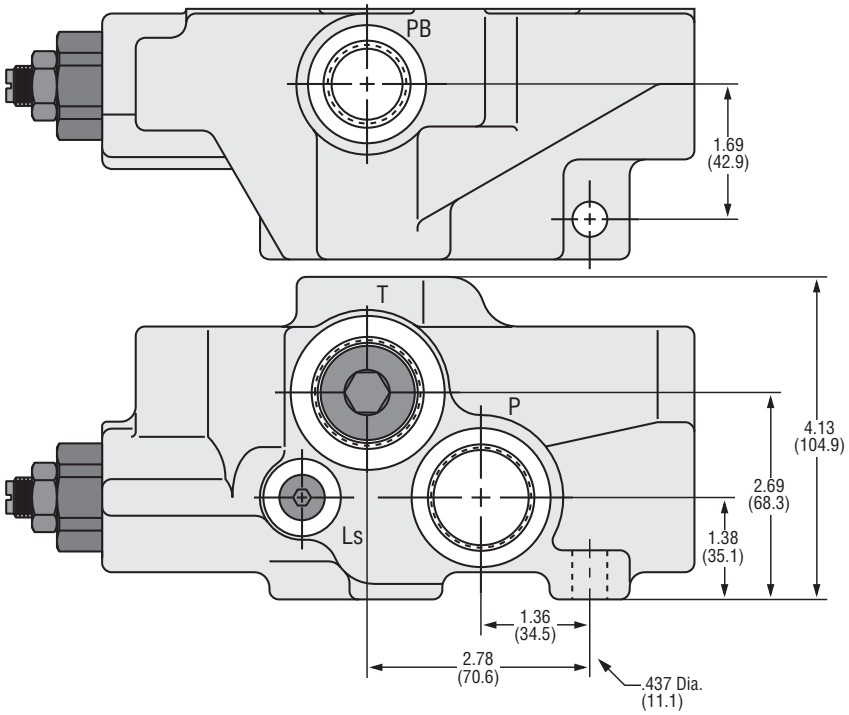


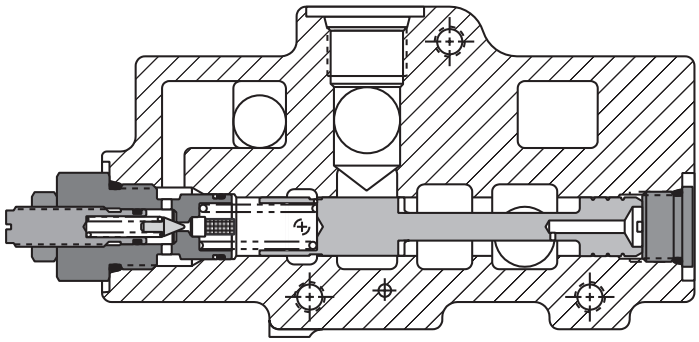


Inlets

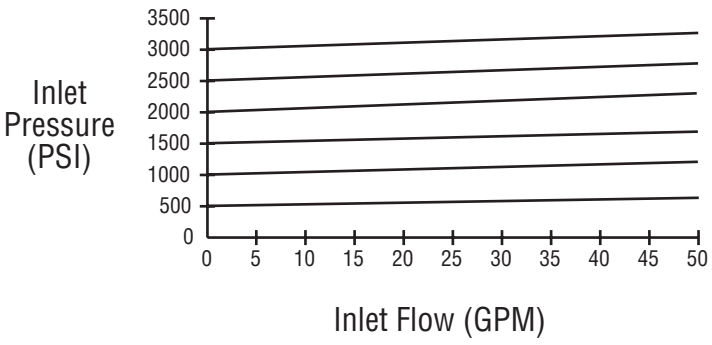
Open Center Unloading Inlet with Power Beyond

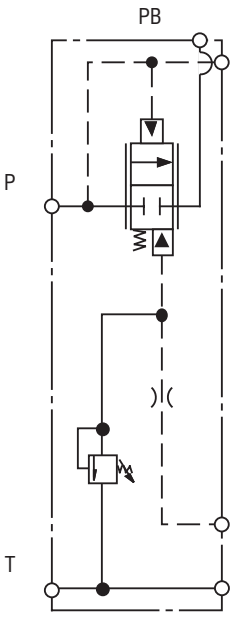
Code…OP





Main Relief Pressure Rise

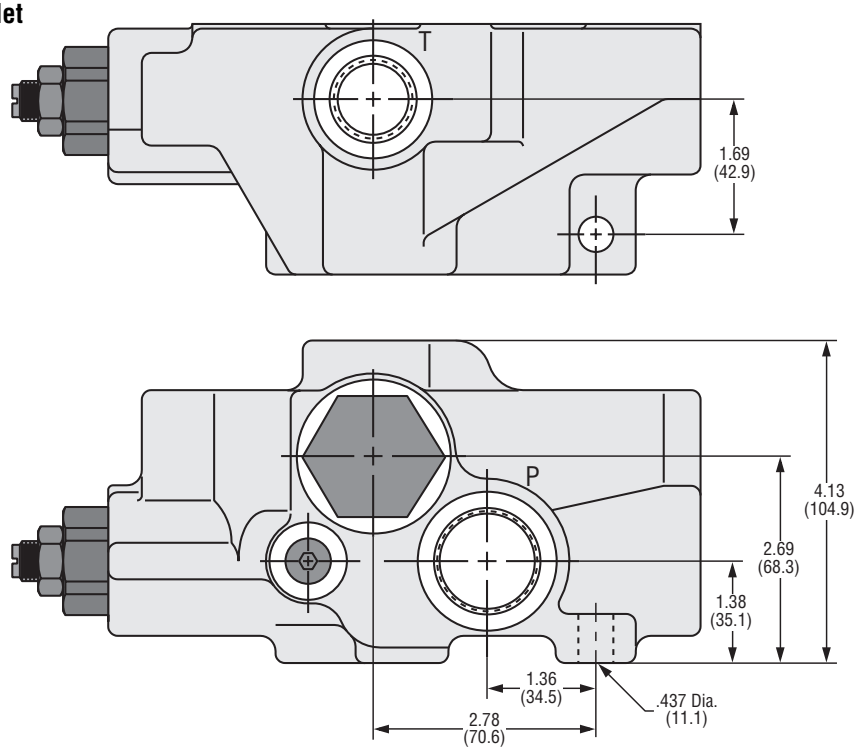


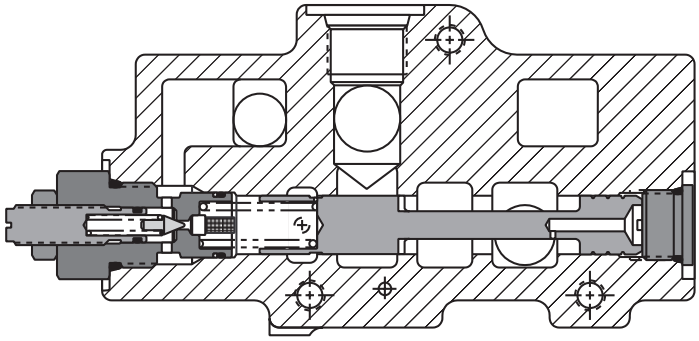


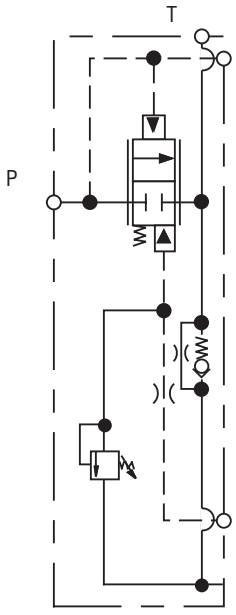
Inlets

Open Center Unloading Inlet with Back Pressure Check

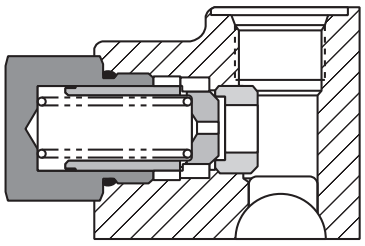
Code…OB







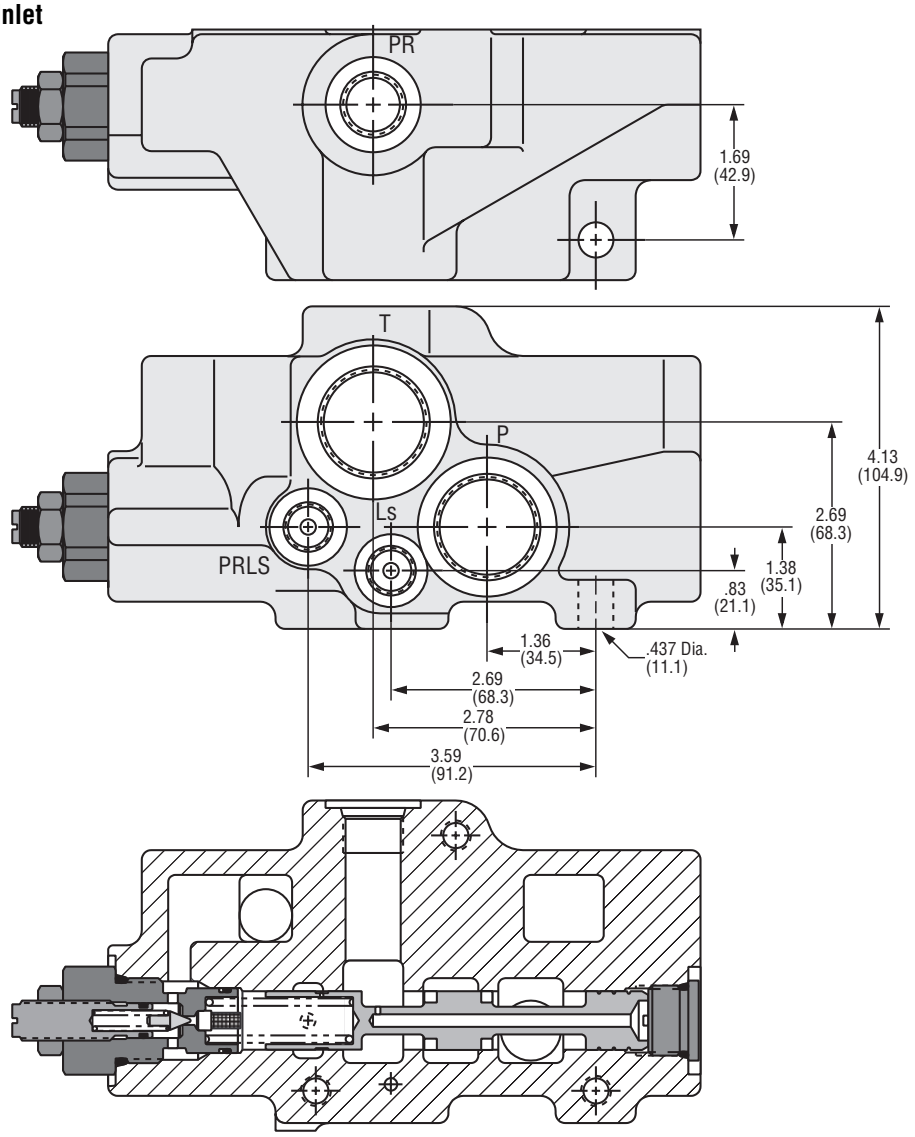
Back Pressure Check



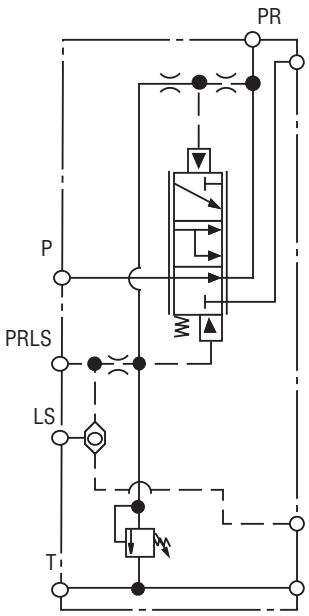
Inlet

Closed Center Priority Inlet

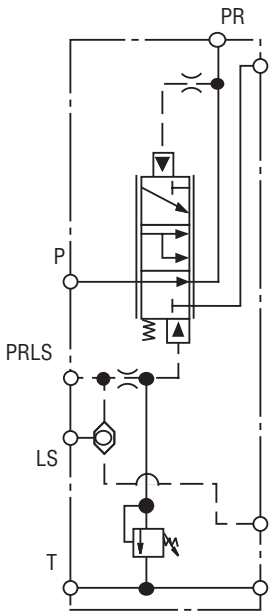
Code…P



Dynamic Bleed



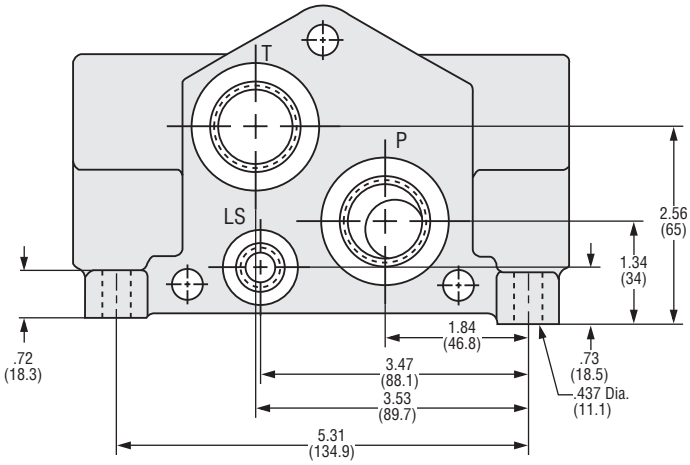
Standard Priority



Inlet Options

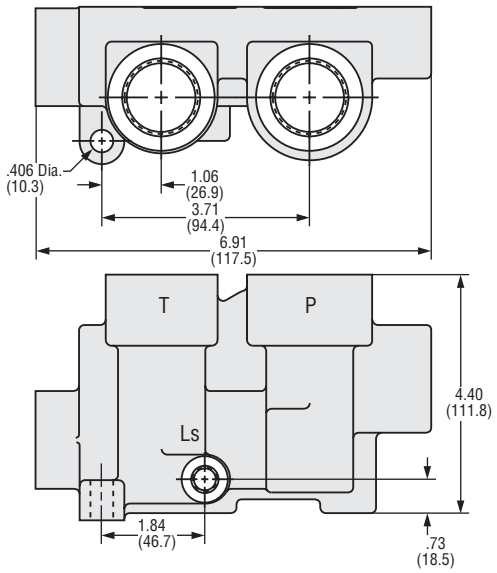
Closed Center Inlet

Code…C



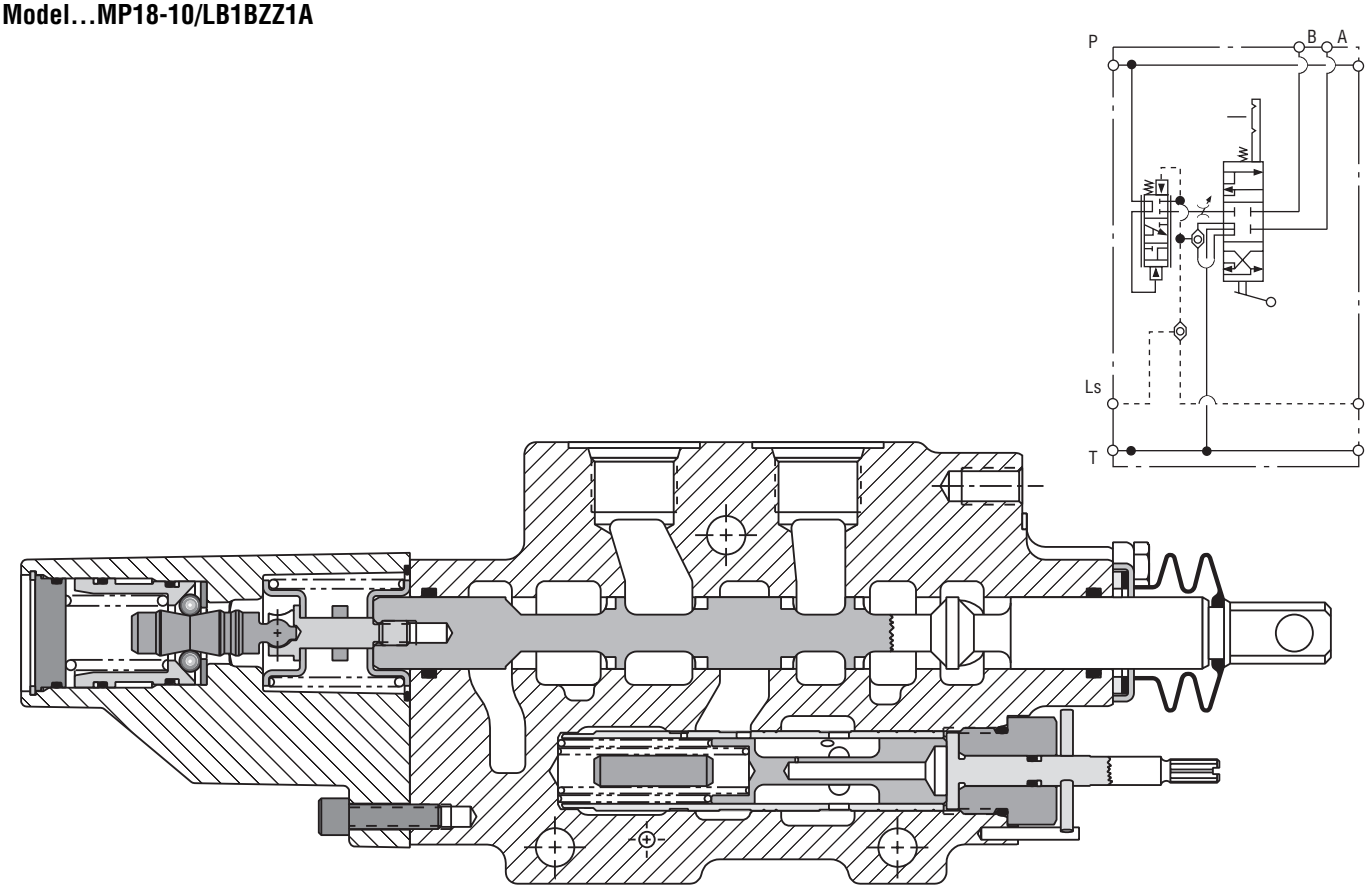
Closed Center Top Ported Inlet

Code…CT



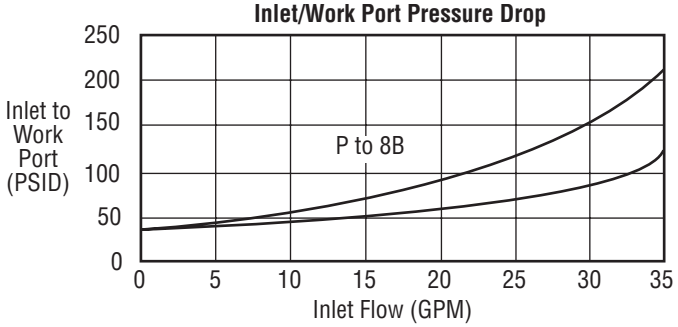
Sectional View

Model…MP18-10/LB1BZZ1A

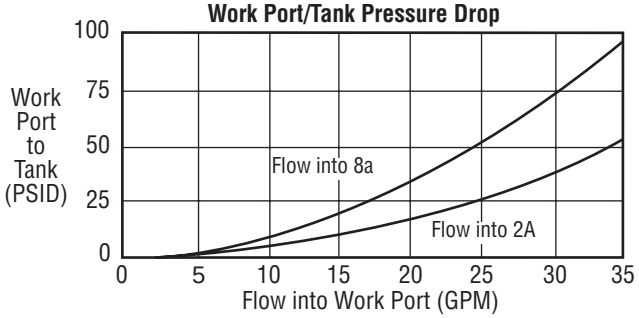


Operating Curves

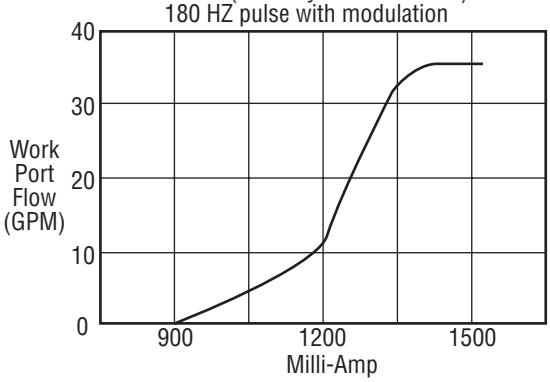
Inlet/Work Port Pressure Drop



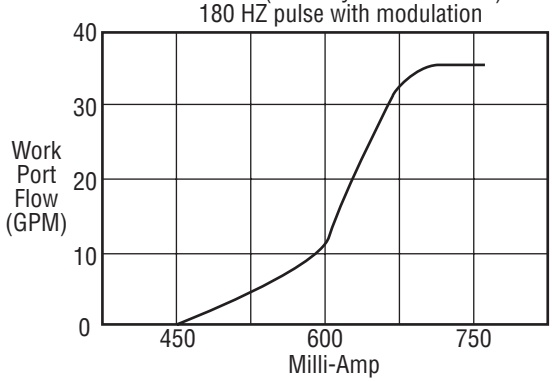
Work Port/Tank Pressure Drop



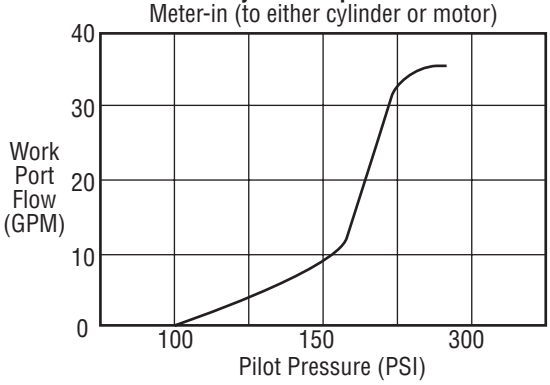
Proportional Solenoid (12V dc)
Meter-in (either cylinder or motor)
180 HZ pulse with modulation



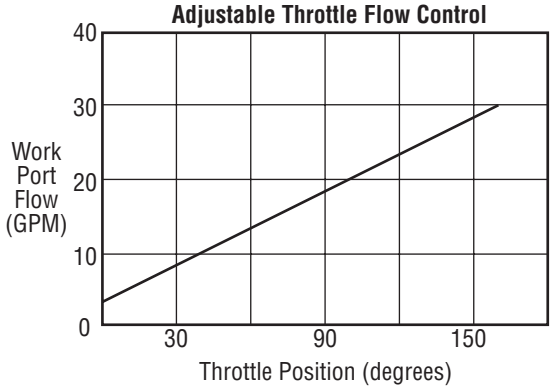
Proportional Solenoid (24V dc)
Meter-in (either cylinder or motor)
180 HZ pulse with modulation



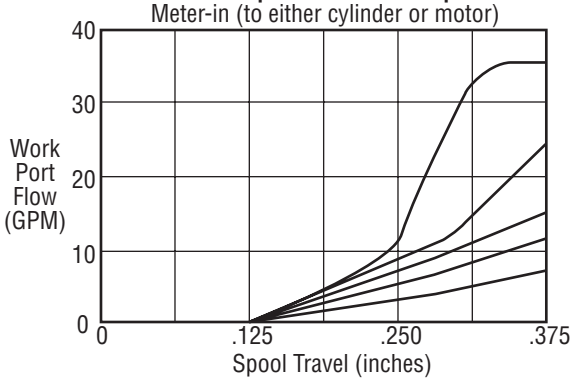
Hydraulic Operation
Meter-in (to either cylinder or motor)



Adjustable Throttle Flow Control



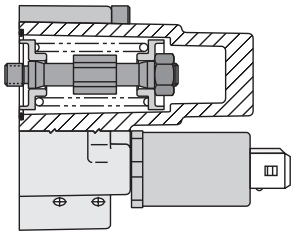
Flow vs Spool Stroke Main Spool
Meter-in (to either cylinder or motor)



Spool Operation

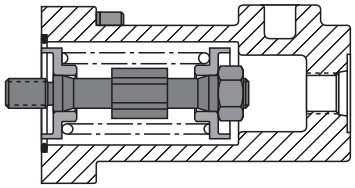
Electrical Proportional and On/Off Control
Main Spool Operator **Codes…L(12), L(24), M(12), M(24).**

3 Position Assembly
Internal assembly typical. Housings are not interchangeable. They must be assembled to their proper ends of the sections. Assembly for "A" port end of section

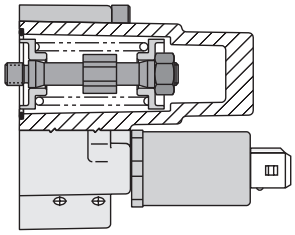


Hydraulic Operated Proportional Control
Main Spool Operator **Code…H**

3 Position Assembly
Housings are interchangeable from "A" to "B" end of section. Assembly for "A" port end of section.

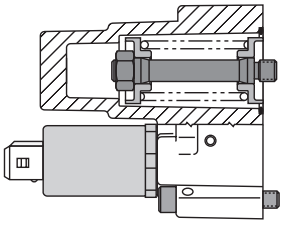


4 Position Assembly

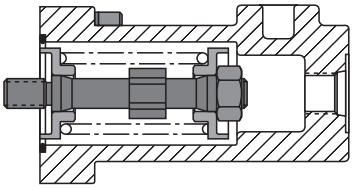


Assembly for "A" port end of section

Assembly for "B" port end of section

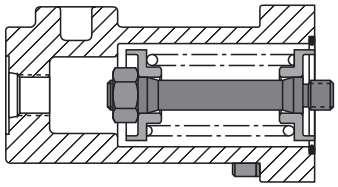


4 Position Assembly

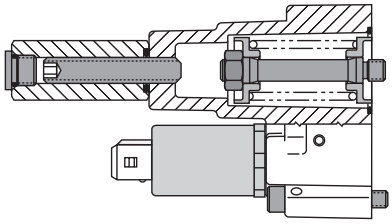


Assembly for "A" port end of section

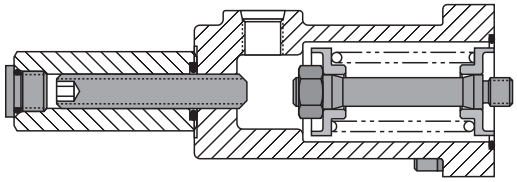
Assembly for "B" port end of section



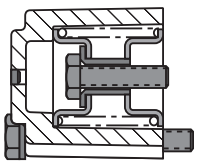
Electrical Proportional and On/Off Control with Stoke Limiter
Main Spool Operator **Codes…L1(12), L1(24), M1(12), M1(24).**



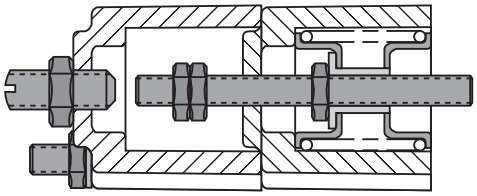
Hydraulic Proportional with Stoke Limiter
Main Spool Operator **Code…H1**



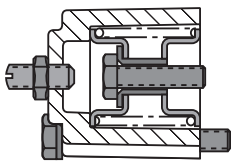
Manual Spring Centered
Main Spool Operator **Code…A**



Manual Spring Centered with Stroke Limiter
Main Spool Operator **Code…A1**

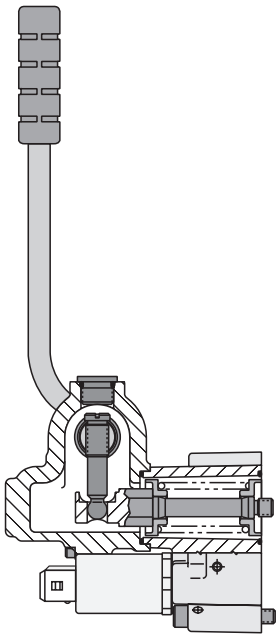


Manual Spring Centered with Stroke Limiter
Main Spool Operator **Code…A2**

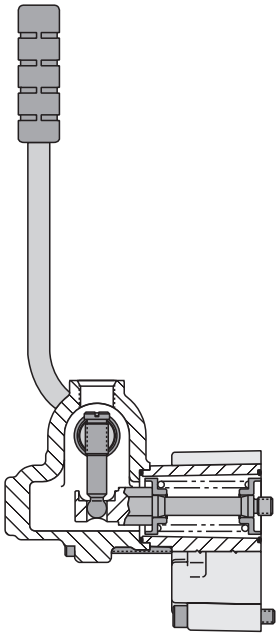


Spool Operation

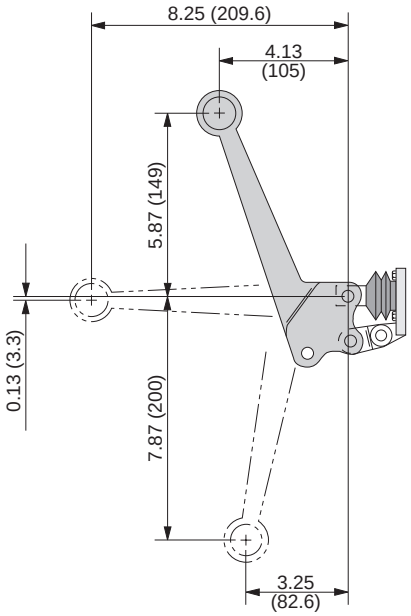
Electrical Proportional and On/Off Control with Manual Override
Main Spool Operator
Codes…L2(12), L2(24), M2(12), M2(24)
"B" port assembly
Kit P/N 1602-635-096



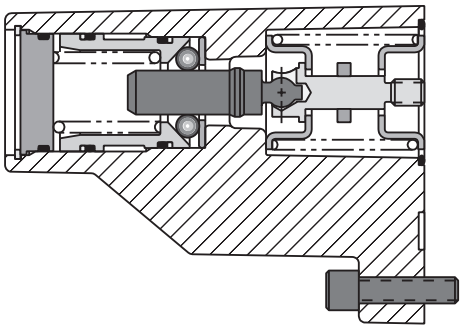
Hydraulic Control with Manual Override
Main Spool Operator **Code…H2**
"B" port assembly
Kit P/N 1602-635-097



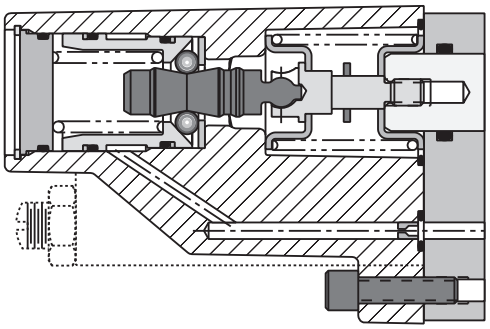
Lever and Dust Boot Assembly
Kit P/N 1601-635-040

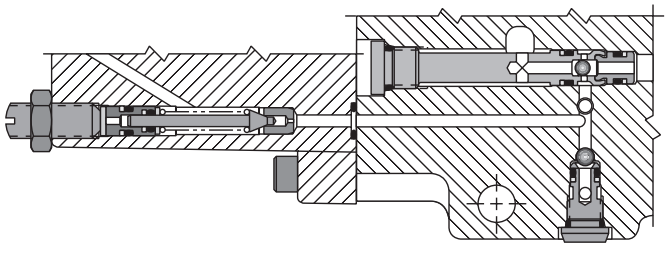


3 Position Detent Assembly
Code…B3



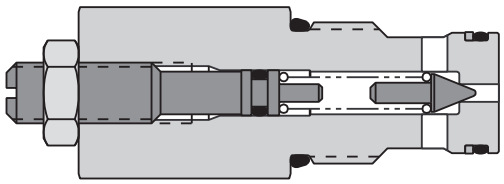
4 Position Pressure Release Detent Assembly
Code…D1



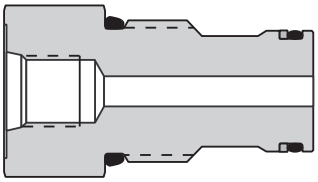


Pressure Compensator Control Options

Code…B(__)
1602-566-026

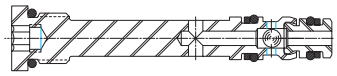


Code…C
1602-566-045

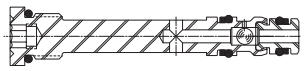


Shuttles

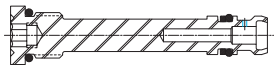
Double Acting Primary Shuttle
1604-566-002



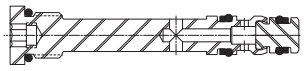
Orificed Primary Shuttle
1604-566-004



Single Acting "A" Only Shuttle
1604-566-009

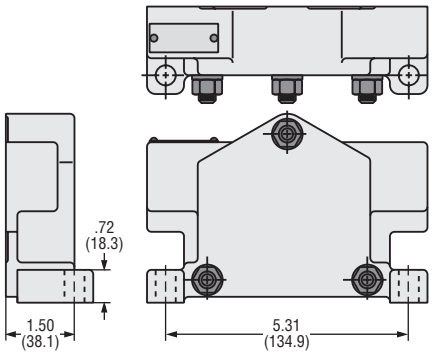


Single Acting "B" Only Shuttle
1604-566-006

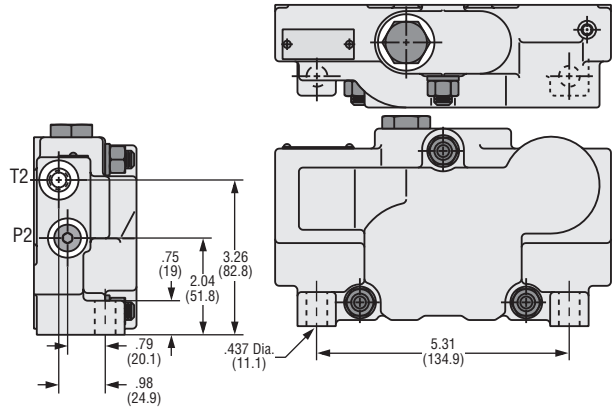


End Covers

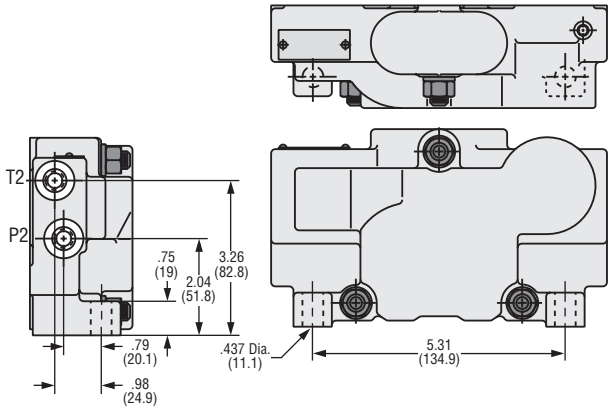
Code…L
Standard End Cover



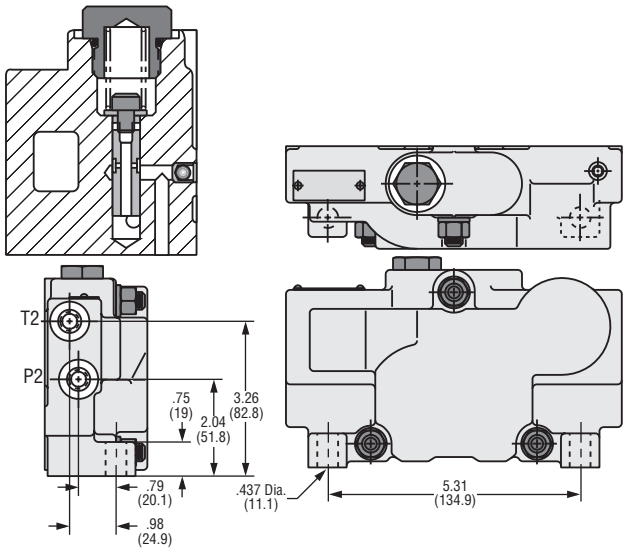
Code… Q
End cover with pressure reducing valve integral for Electro-Hydraulic controlled sections. (Includes drain port T2)



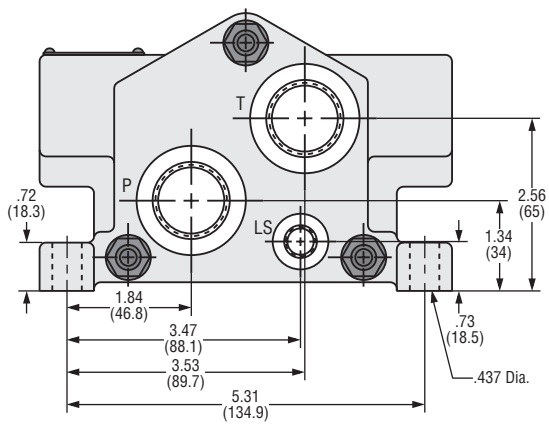
Code…R
End cover w/ external supply pressure port for Electro-Hydraulic controlled sections. (Includes pressure port P2 and drain port T2)

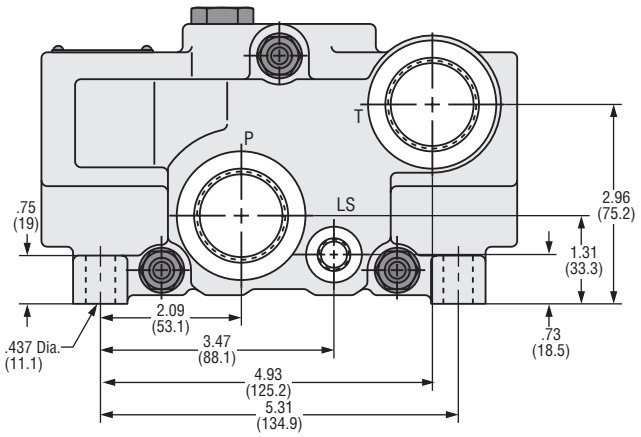


Code…S
End cover w/ pressure reducing valve integral for pilot controller supply. Not to be used with Electro-Hydraulic sections. (Includes pressure port P2 and drain port T2)



To Add Ports P, T, or LS to End Covers, Add Catalog Code (PTL) to End Cover Codes…L, Q, R, or S.





Kit Numbers

Closed Center Tie Bolt Kits

Including shims, o-rings, tie-bolts, nuts, and lockwashers.	
1602-635-023	1 section
1602-635-020	2 section
1602-635-021	3 section
1602-635-022	4 section
1602-635-033	5 section
1602-635-034	6 section
1602-635-035	7 section
1602-635-036	8 section

Open Center Tie Bolt Kits

Including shims, o-rings, tie-bolts, nuts, and lockwashers.	
1602-635-037	1 section
1602-635-038	2 section
1602-635-039	3 section
1602-635-040	4 section
1602-635-041	5 section
1602-635-042	6 section
1602-635-043	7 section
1602-635-044	8 section

Service Kits

1602-635-031	Face seal kit (seal between sections including shims)
1602-635-061	Seal kit standard section
1602-635-086	Seal kit electrical section pilot face seals
1602-635-078	Priority inlet seal kit
1602-635-001	Dust boot kit
1601-635-040	MP18 & 22 handle & dust boot kit
1604-566-002	Standard primary shuttle double acting
1604-566-004	Orificed primary shuttle double acting
1604-566-006	Single acting shuttle "B"
1604-566-008	Single acting orificed shuttle "B"
1604-566-009	Single acting shuttle "A"
1604-566-011	Single acting orificed shuttle "A"
1602-566-022	Relief cartridge unloading and priority inlet
1604-635-001	Secondary shuttle kit, with ball
1602-635-094	Open center inlet back pressure check kit
1602-635-116	Mating Solenoid connector Kit - Cannon Connector "C2"
1602-635-117	Mating Solenoid connector Kit - Junior Timer (AMP) "C4"

Operation Mechanical Detent Kits

1602-635-071	"B" detent kit - Mechanical detent A and B
1602-635-072	"B1" detent kit - Spring centered from A mechanical detent B
1602-635-073	"B2" detent kit - Spring centered from B mechanical detent A
1602-635-074	"B3" detent kit - Spring centered from A & B mechanical detent float
1602-635-075	"B4" detent kit - Multi-position detent
1602-635-068	"A" standard spring centered kit
1602-635-096	Manual override kit-option "L2" & "M2" without solenoid
1602-635-097	Manual override kit-option "H2"

QCC LLC
7301 W. Wilson Avenue,
Harwood Heights, IL 60706
708-887-5400
www.qccorp.com
www.qcc.parts