

Introduction of GBV200

GBV200 Proportional valve is a load sensitive and post-pressure compensated proportional valve. For post-pressure compensation valve, it can distribute flow proportionally. Because of the pressure compensation, working flow is independent of load. All the proportional valves in this series have been load sensing and spring return. We can choose different cartridge unit for the main valve body to accomplish different function.

This series valve is building with modular design concept, system designer can choose different module to accomplish various complicated system design. Valve spool can provide excellent flow characteristics and low flow force.

Functions

- Inlet section with priority valves
- Inlet section matches with fixed displacement pump
- Inlet section matches with variable displacement pump
- P. O. Check Valve
- One-way throttle valve
- Multiple control operations
- Overload protections
- Manual proportional valve can provide mechanical positioning, friction positioning
- Manual proportional valve can provide floating function
- Overload protections
- Manual proportional valve can provide mechanical and friction function
- Manual proportional valve can provide main valve with float function

Valve Options

- Manually controlled proportional valve or mechanically controlled flow sharing proportional valve
- Hydraulic pilot controlled proportional valve or hydraulic pilot controlled flow sharing proportional valve
- Electrically controlled on/off valve or electrically controlled flow sharing proportional valve
- Electro-hydraulic proportional valve or electro-hydraulic flow sharing proportional valve
- Mixture proportional valve (sections with proportional flow sharing and pre-pressure compensation)

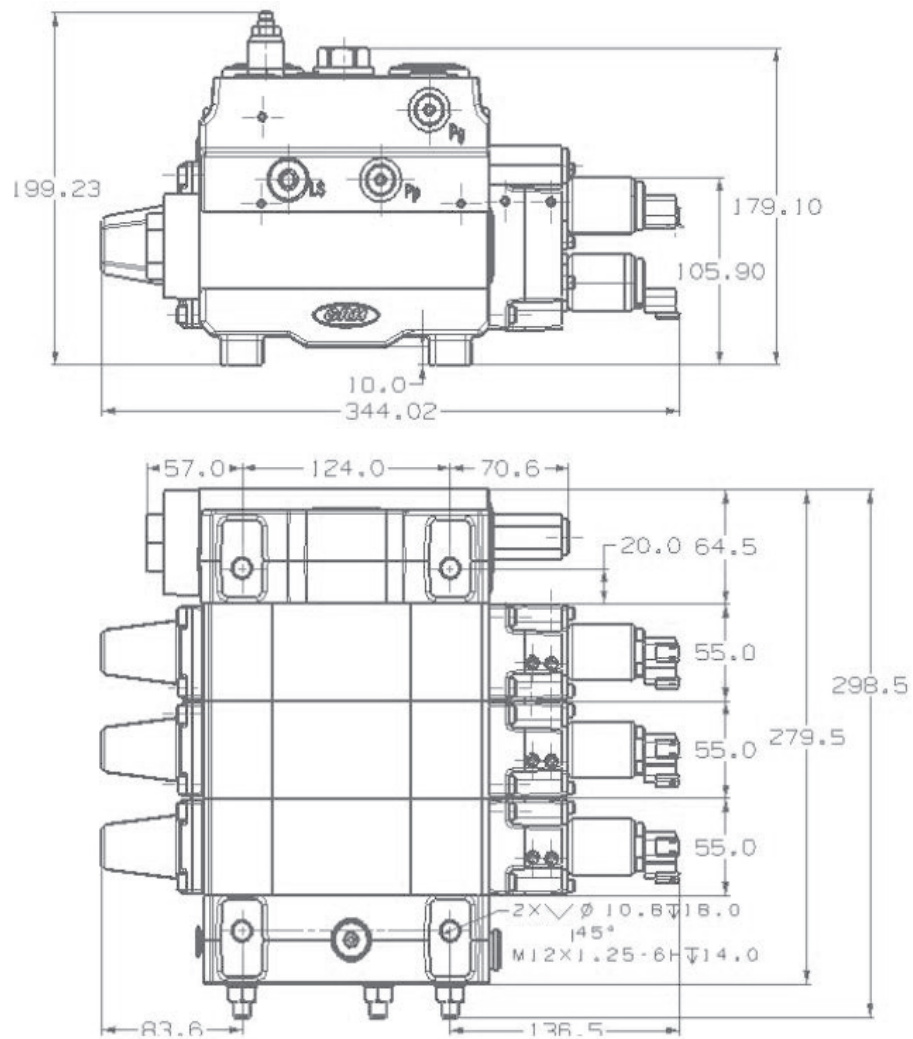
Max flow of this series is 220L/min. Rated pressure is 31MPa. Intermittent pressure is 35 MPa.

Electro-Hydraulic proportional valve can use two direct current coils: 12VDC and 24VDC, relevant current is 0 ~ 1.5 Amp and 0 ~ 0.75 Amp.

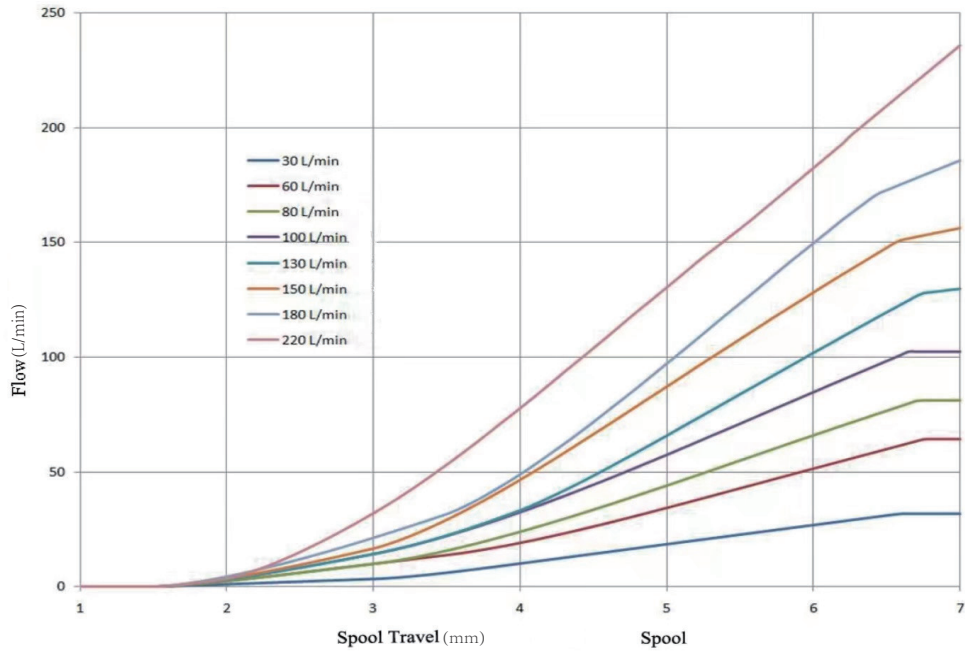
Dimensions

Three Sections Electro-hydraulic Proportional Valve

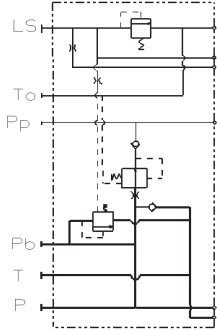
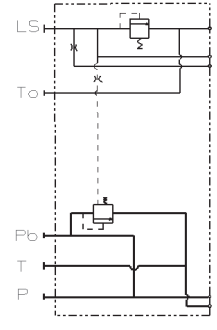
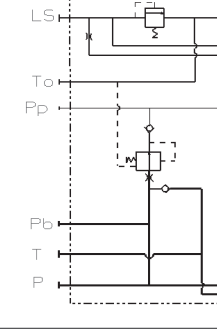
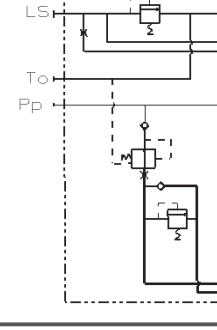
3 Sections



Flow Characteristic for Standard Spool



Inlet Section Valve Functions and Schematics

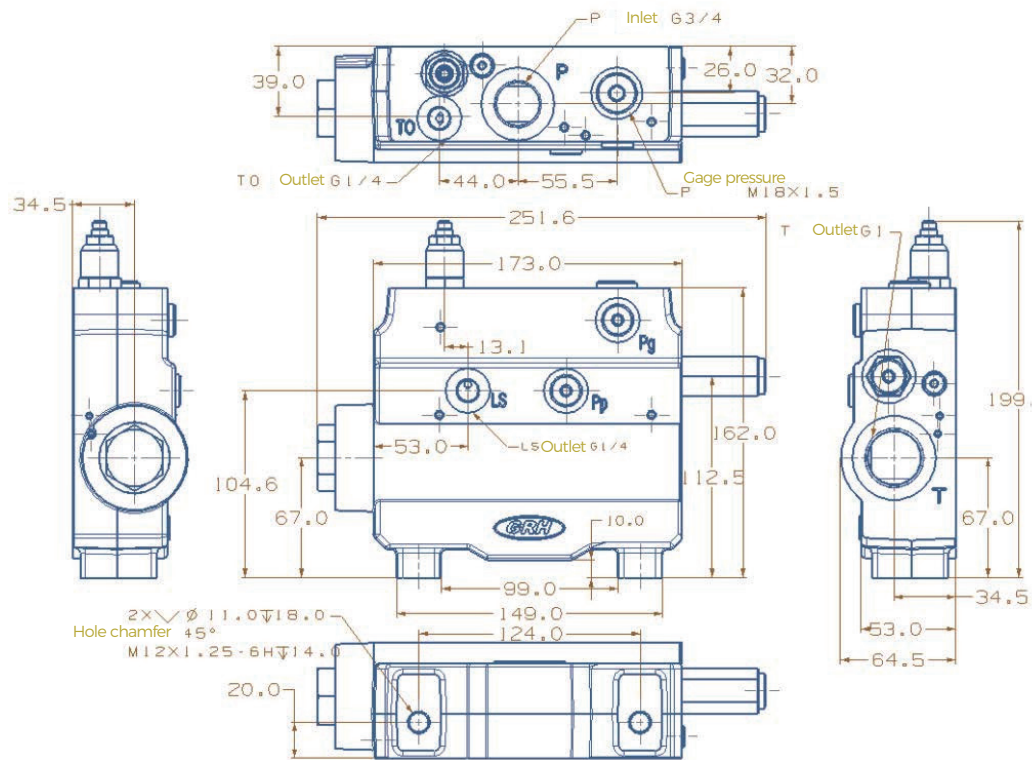
Code	Schematics	Main Functions	Standard Port Sizes
J01		Used in closed circuit fixed displacement pump system, with pilot oil source	LS:M14×1.5, G1/4 TO:M14×1.5, G1/4 T:M27×2, G1 Pp:M14×1.5, G1/4 Pb:M14×1.5, G1/4 P:M27×2, G3/4
J02		Used in closed circuit fixed displacement pump system, manual control, without pilot oil source	LS:M14×1.5, G1/4 TO:M14×1.5, G1/4 T:M27×2, G1 Pb:M14×1.5, G1/4 P:M27×2, G3/4
J03		Used in closed circuit variable displacement pump system, with pilot oil source	LS:M14×1.5, G1/4 TO:M14×1.5, G1/4 T:M27×2, G1 Pp:M14×1.5, G1/4 Pb:M14×1.5, G1/4 P:M27×2, G3/4
J04		Used in closed circuit fixed displacement pump system, without pilot oil source	LS:M14×1.5, G1/4 TO:M14×1.5, G1/4 T:M27×2, G1 Pp:M14×1.5, G1/4 Pb:M14×1.5, G1/4 P:M27×2, G3/4

Inlet Section Valve Functions and Schematics

Code	Schematics	Main Functions	Standard Port Sizes
J05		Used in closed circuit variable displacement pump system with low flow, with pilot oil source	LS:M14×1.5, G1/4 TO:M14×1.5, G1/4 T:M27×2, G1 Pb:M14×1.5, G1/4 P:M27×2, G3/4
J06		Used in closed circuit variable displacement pump system, with priority valve and pilot oil source	LS:M14×1.5, G1/4 TO:M14×1.5, G1/4 T:M27×2, G1 Pp:M14×1.5, G1/4 Pb:M14×1.5, G1/4 P:M27×2, G3/4 Cf:G1/2 LSst:M14×1.5, G1/4
J07		Used in closed circuit variable displacement pump system, with priority valve, without pilot oil source	LS:M12×1.5 TO:M12×1.5 T:M27×2 Pb:M12×1.5 P:M27×2

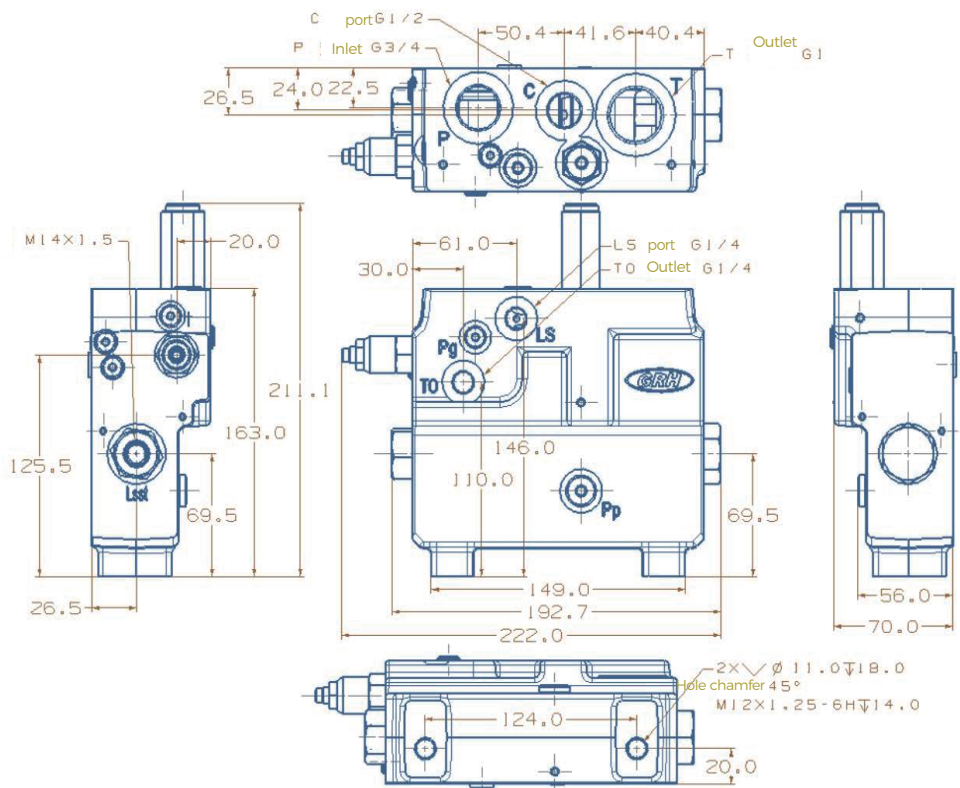
Inlet Section Dimensions

Common Inlet Section

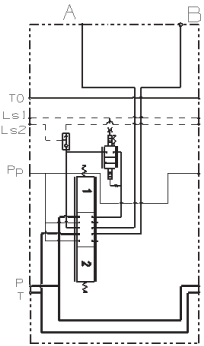
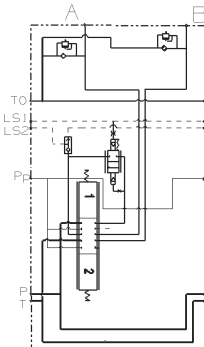
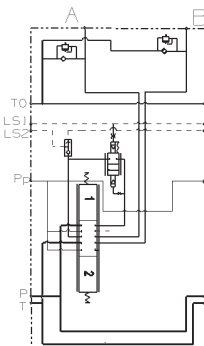
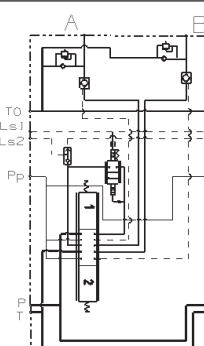


Inlet Section Dimensions

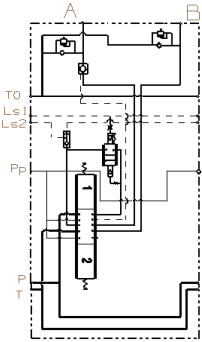
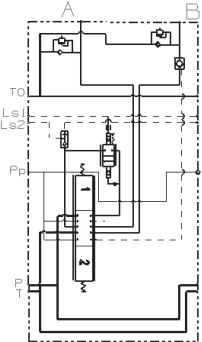
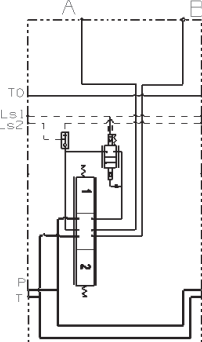
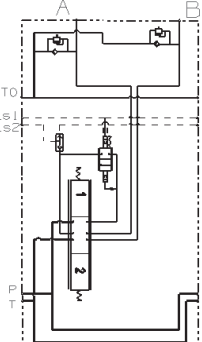
Inlet Section With Priority Valve



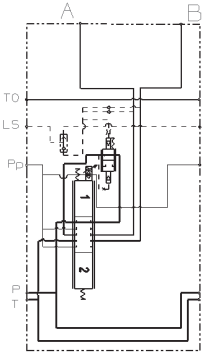
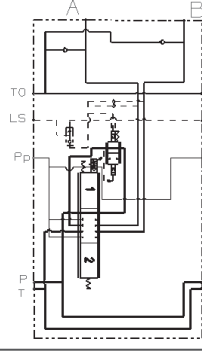
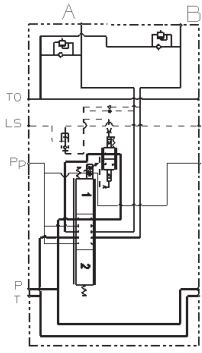
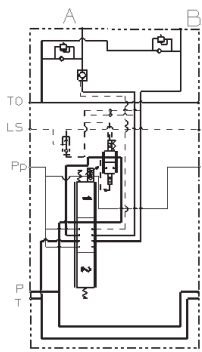
Main Valve Functions and Schematics

Code	Schematics	Main Functions	Notes
Z01		<p>Post-pressure compensation (proportional flow sharing) Basic valve section</p>	
Z02		<p>Post-pressure compensation (proportional flow sharing) Anti-cavitation valve on work ports to prevent cavitations</p>	Commonly used in hydraulic motor applications
Z03		<p>Post-pressure compensation (proportional flow sharing) Provides work ports overload protections and anti-cavitation valve to prevent cavitations</p>	
Z04		<p>Post-pressure compensation (proportional flow sharing) Provides work ports overload protections Provides P.O. checks to hold loads and anti-cavitation valve to prevent cavitations</p>	<p>Most commonly used in cylinder load and holding The P.O. check is used to control load lowering It is also used for swing cylinder and motor</p>

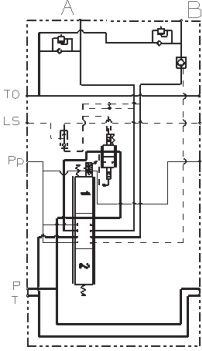
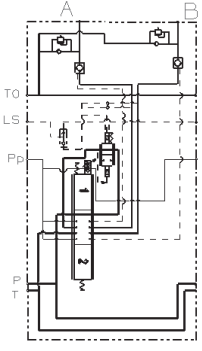
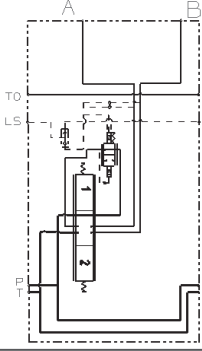
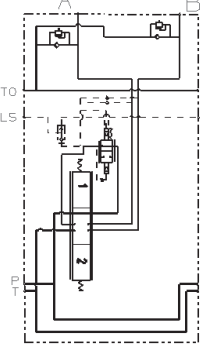
Main Valve Functions and Schematics

Code	Schematics	Main Functions	Notes
Z05		Post-pressure compensation (proportional flow sharing) Provides work ports overload protections and anti-cavitation valve to prevent cavitations	Most commonly used in cylinder load holding applications The P.O. check is used to control load lowering
Z06		Post-pressure compensation (proportional flow sharing) Provides work ports overload protections and anti-cavitation valve to prevent cavitations Provides P.O. check to hold load on B port	Most commonly used in cylinder load holding applications The P.O. check is used to control load lowering
Z07		Post-pressure compensation (proportional flow sharing) Basic valve section Manually operated	Commonly used in manually controlled proportional valves
Z08		Post-pressure compensation (proportional flow sharing) Provides work ports overload protections and anti-cavitation valve to prevent cavitations Manually operated	

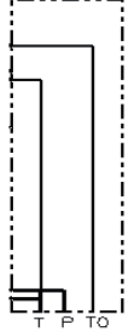
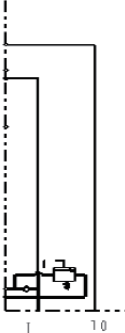
Main Valve Functions and Schematics

Code	Schematics	Main Functions	Notes
Z09		<p>Pre-pressure compensation (proportional flow) Basic valve section</p>	
Z10		<p>Pre-pressure compensation (proportional flow) Anti-cavitation valve on work ports to prevent cavitations</p>	
Z11		<p>Pre-pressure compensation (proportional flow) Provides work ports overload protections and anti-cavitation valve to prevent cavitations</p>	
Z12		<p>Pre-pressure compensation (proportional flow) Provides work ports overload protections and anti-cavitation valve to prevent cavitations Provides P.O. check to hold load on A port</p>	<p>Most commonly used in cylinder load holding applications The P.O. check is used to control load lowering</p>

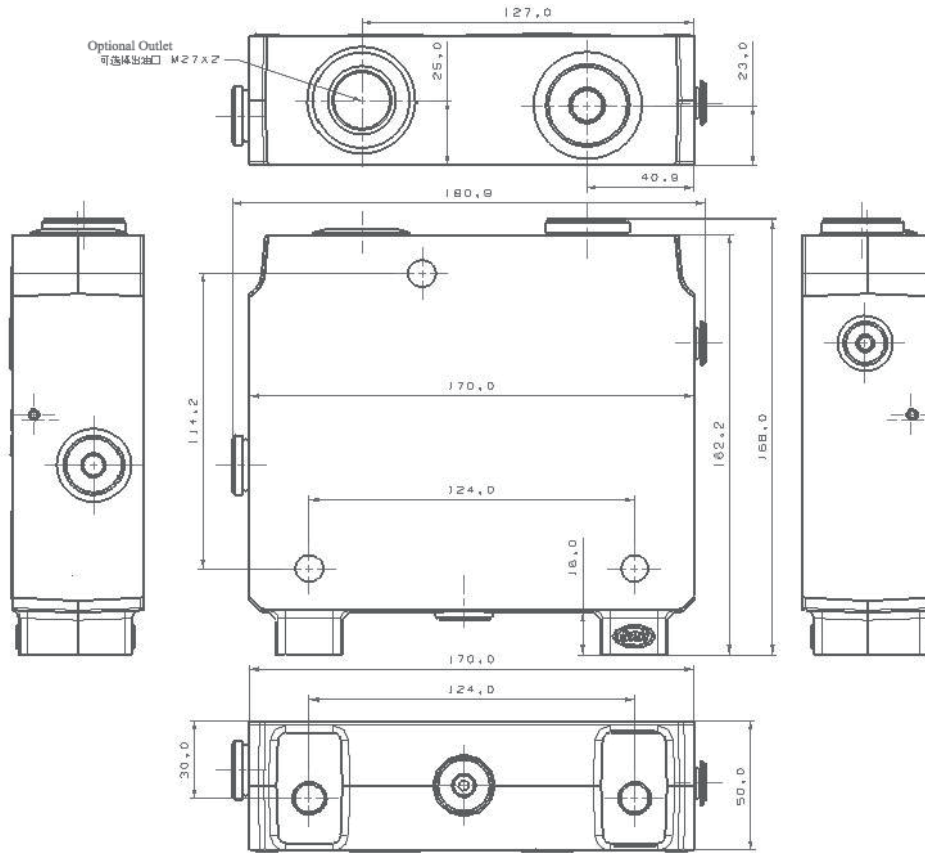
Main Valve Functions and Schematics

Code	Schematics	Main Functions	Notes
Z13		<p>Pre-pressure compensation (proportional flow)</p> <p>Provides work ports overload protections and anti-cavitation valve to prevent cavitation</p> <p>Provides P.O. check to hold load on B port</p>	<p>Commonly used in cylinder load holding applications</p> <p>The P.O. check is used to control load lowering</p>
Z14		<p>Pre-pressure compensation (proportional flow)</p> <p>Provides work ports overload protections and anti-cavitation valve to prevent cavitation</p> <p>Provides P.O. checks to hold loads</p>	<p>Most commonly used in cylinder load holding applications.</p> <p>It is also used for swing cylinder and motor applications</p>
Z15		<p>Pre-pressure compensation (proportional flow)</p> <p>Basic valve section</p> <p>Manually operated</p>	<p>Commonly used manually controlled proportional valve.</p>
Z16		<p>Pre-pressure compensation (proportional flow)</p> <p>Provides work ports overload protections and anti-cavitation valve to prevent cavitation</p> <p>Manually operated</p>	<p>Commonly used manually controlled proportional valve with system protections</p>


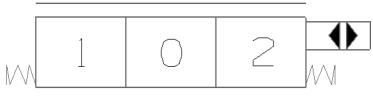
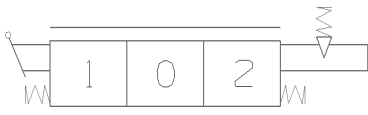
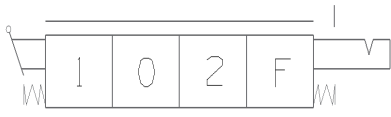
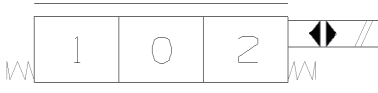
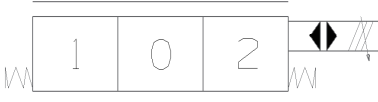
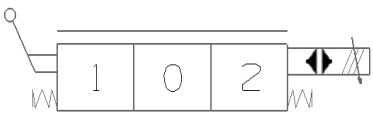
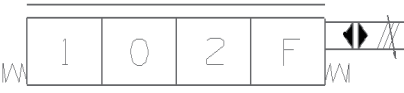
End Cap Functions and Schematics

Code	Schematics	Main Functions	Standard Port Sizes
D01		Usually used in closed circuit with variable displacement pump system	T0:M14×1.5, G1/4 T:M33×2, G1 P:M27×2, G3/4
D02		Usually used in fixed displacement pump system	T0:M14×1.5, G1/4 T:M33×2, G1

End Cap Dimensions



Drive Types for Main Valve Section

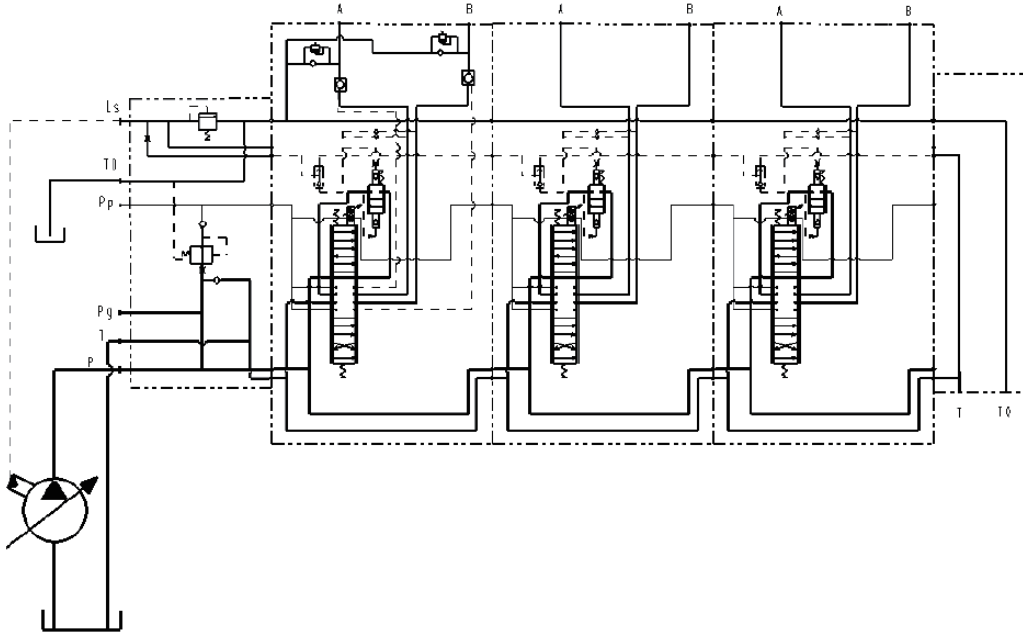
Code	Symbol	Functions
Q1		Standard manually operated
Q2		Hydraulic control
Q3		Manually operated with detent
Q4		Manually operated with floating function
Q5		Electric on/off control
Q6		Standard electro-hydraulic proportional control
Q7		Standard electro-hydraulic proportional control with manual override
Q8		Standard electro-hydraulic proportional control with floating function

Main Spool Functions

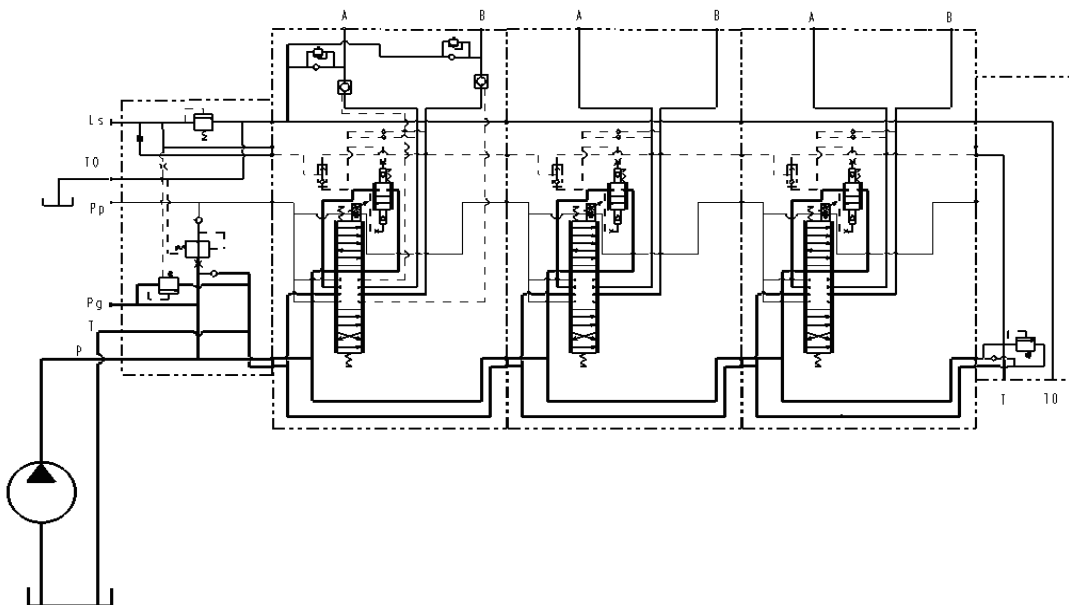
Code	Symbol	Functions	Notes
FG1		Standard 3 position-4 way O type middle function Post-pressure compensa- tion	Commonly used in hydraulic cylinder applications
FG2		3 position-4 way Y type middle function Post-pressure compensation	Commonly used in hydraulic motor applications
FG3		Standard 4 position-4 way O type middle function, with fourth position floating Post-pressure compensation	Commonly used in hydraulic cylinder applications
FG4		Standard 3 position-4 way O type middle function Pre-pressure compensation	Commonly used in hydraulic cylinder applications
FG5		3 position-4 way Y type middle function Pre-pressure compensation	Commonly used in hydraulic motor applications
FG6		Standard 4 position-4 way O type middle function with fourth position floating Pre-pressure compensation	Commonly used in hydraulic cylinder applications

Hydraulic System Examples

Electro-hydraulic proportional control circuit with variable displacement pump
(Post-pressure compensation)



Electro-hydraulic proportional control circuit with fixed displacement pump
(Post-pressure compensation)



Ordering Code

GBV200	/*	-J**	/**	-D**	-O1	-Z**	Q*	-FG*	-DC/**	-QL/**	-O2	...
a	b	c	d	e	f	g	h	i	j	k	l	m

- | | |
|------------------------------|----------------------------------|
| Ⓐ Model | Ⓗ Drive style code |
| Ⓑ Number of main section | Ⓘ Spool function code |
| Ⓒ Inlet section code | ⓵ Electrical option |
| Ⓓ Relief setting (bar) | 12VDC, 24VDC, 00=none electrical |
| Ⓔ End section code (End cap) | Ⓚ Expected flow rate |
| Ⓛ First main section | Ⓛ Second section |
| Ⓜ Main section code | Ⓜ |

**Port Size: If user do not want our standard size, you have to not only provide ordering code, but also you have to specify all the port sizes.

Ordering Example

GBV200	/3	-J03	/210	-D00	-O1	-Z02	-Q6	-FG1	-DC/24	-QL/100
a	b	c	d	e	f	g	h	i	j	k

- | | |
|-------------------------|---------------------|
| Ⓐ Model | Ⓜ Main section code |
| Ⓑ Three main sections | Ⓗ Drive style |
| Ⓒ Inlet code | Ⓘ Spool function |
| Ⓓ Relief setting 210bar | ⓵ 24VDC |
| Ⓔ No end cap | Ⓚ Flow 100L/min |
| Ⓛ First section | |

-O2	-Z01	-Q6	-FG1	-DC/24	-QL/180
l	m	n	o	p	q

-O3	-Z01	-Q6	-FG1	-DC/24	-QL/130
r	s	t	u	v	w

- Ⓛ Second section
- Ⓜ Main section code
- Ⓝ Drive style code
- Ⓞ Spool function code
- Ⓟ 24VDC
- Ⓠ Flow 180L/min

- Ⓡ Third section
- Ⓢ Main section code
- Ⓣ Drive style code
- Ⓤ Spool function code
- Ⓡ 24VDC
- Ⓢ Flow 130L/min

Order example notes: From system example, the valve selected is GBV200 series, we know that the valve has three cap. (Return is from inlet section.) Inlet relief valve setting pressure is 210 bar. There is no end section. The first section has no load relief valve. The section is driven by 24VDC coils. The spool middle function is a O type. The required flow is 100L/min. The second section is also driven by 24VDC coils. There is no overload relief on neither A or B port. The spool middle function is O type, The required flow for the 180L/min. The third section is driven by 24VDC coils. No overload relief on neither A or B port. Spool middle function is O type, the required flow is