

Proportional Monoblock Sectional Valves



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GRH POWER

比例阀 片式多路阀 整体多路阀

国瑞液压

COMPANY INTRODUCTION



GRH is specialized in providing hydraulic components and solutions for hydraulic systems.

With continuous improvement and enthusiasm over the past 30 years, GRH has developed into an emerging power in the fluid power industry since it was established in 1986.

Research and development are the driving force that facilitates GRH's ability to create new products. Standards of TS16949 and SO14000 are our guiding principles. Employees' capabilities and creativity are major factors that differentiate GRH from our competitors.

GRH designs and produces Hydraulic Gear Pumps & Motors, Monoblock Valves, Sectional Stack Valves, Proportional Valves and Flow Dividers. These products are used on industrial machinery, construction equipment, agricultural equipment and material handling applications. GRH is also willing to work with our customers to develop specialized products for their special needs. Our customers can count on GRH's extensive system design and application experience when they are designing their hydraulic systems.

GRH has designed and developed a series of load sensing proportional stackable valves which provides an improvement in valve operating performance and system efficiency.

GRH (Shanghai) - International Sales Office

GRH (Jiangsu) - Manufacturing Facility

Domestic Sales Office

GRH will work together with the customers to create a better future.

Over 30 years in the design and manufacture of hydraulic equipment



公司简介



GRH专业提供液压元件及液压技术的系统解决方案。

持续的改进和对液压领域的专注，超过三十年的设计及制造经验，GRH从1986年至今取得了引人注目的成功。

产品的研发和技术创新是GRH前进的动力

TS16949和S014000的标准是GRH遵守的程序化准则

员工的能力和创造性是GRH不同于竞争对手的主要因素

GRH设计并生产：液压齿轮泵/片式多路阀/整体多路阀 /比例多路阀（带负载敏感及压力补偿）/液压齿轮马达/液压分流马达；这些零部件主要应用于工业机械、物料搬运、工程机械、农业和工业领域。

GRH充分意识到客户在设计阶段作出的贡献及其产品设计输入的重要性。除了供应GRH目录上的产品，GRH还与客户密切协作提供液压技术的系统解决方案。客户可以依靠GRH在液压元件及系统设计方面的经验及GRH 技术专家去实现他们的设想。

GRH已关注到电子控制与液压系统集成的重要性，为了优化设计及节约能源，GRH在系统的电子控制及集成化方面正在做出自己的努力。

GRH：国瑞液压（上海）—GRH的海外营销中心

国瑞液压（江苏）—GRH的生产制造基地和国内营销中心

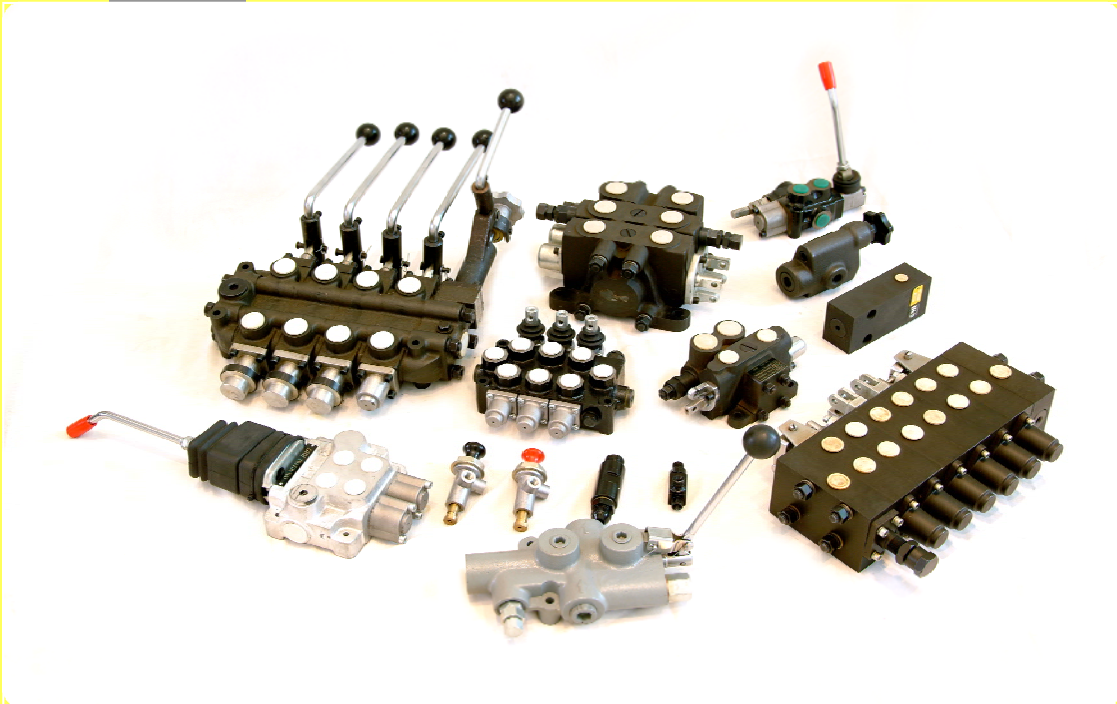
GRH愿意与合作伙伴一起，为液压技术的创新提供动力。

在液压领域，超过三十年的设计及制造经验



比例阀
片式多路阀
整体多路阀

Proportional valves
Monoblock valves
Sectional valves



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Introduction of GBV200 Proportional Stack Valves

GBV200 proportional valve is a load sensed stackable valve with interchangeable pressure compensation styles. In the same main section body, inserting different spring and compensator, the valve can be either pre-compensated or post compensated. As we know, post compensated valve system has flow sharing capability. Due to using pressure compensation in each section, system flow is independent with load. All proportional valves in this series have load-sensing capabilities. We can also choose different cartridges for the main section assembly to accomplish different functions. This valve series adapted modular design. The system designer can choose different modules to design different complex systems. Main valve spool is designed to satisfy the customer's requirements, which provides excellent flow characteristics and very low flow force.

This series can provide following functions :

- Inlet module with priority valve
- Inlet module match with fixed displacement pump
- Inlet module match with variable displacement pump
- With load holding P. O. checks
- With single directional flow throttle valve
- Double control operations
(Electrical control with manual over ride)
- Overload protection
- Manual proportional valve with mechanical detent
- Manual proportional valve with floating function



This series include the following valve:

- Manual controlled proportional valve or manual controlled proportional flow sharing valve
- Hydraulic remote controlled proportional valve or proportional hydraulic remote controlled flow sharing valve.
- Electric proportional valve or electric proportional flow sharing valve
- Electro-hydraulic proportional valve or electro-hydraulic proportional flow sharing valve
- Mixed controlled proportional valve (with both pre-compensated and post compensated valve sections)

Max flow of this series is 220 L/min. Rated pressure is 310 Bar.

Electro-Hydraulic pilot valves can be either 12 VDC or 24 VDC, corresponding current is 0 - 1.5 or 0 - 0.75 Amp.



GBV200 万用比例阀说明

GBV200 万用比例阀是一种可变换压力补偿方式的比例阀。在同一主阀体内插装不同的补偿器阀芯和弹簧，既可以实现前置式压力补偿也可以实现后置式压力补偿。后置式压力补偿的多路阀可实现比例分流。由于采用了压力补偿，系统的流量与负载无关。该系列的比例多路阀均提供负载感应。主阀体可以根据用户的要求选用不同的插装件以完成不同的功能。

本系列的比例多路阀采用模块化设计，系统设计者可选取不同功能的模块来满足各种复杂系统的设计。主阀芯可根据用户的要求提供极佳的流量特性和低液动力。

该系列的比例多路阀 可提供如下功能：

- 选自带优先阀的进油联。
- 可选与定量泵匹配的进油联。
- 可选与变量泵匹配的进油联。
- 可选自带液压锁功能。
- 可选自带单向节流阀功能。
- 可选双控操作。
- 可提供过载保护。
- 手动比例阀可提供机械定位。
- 手动比例阀可提供浮动功能。

该系列包括以下的多路阀：

- 手动比例阀或手动比例分流阀
- 液动比例阀或液动比例分流阀
- 电动比例阀或电动比例分流阀
- 电液比例阀或电液比例分流阀
- 混合比例阀（既有比例分流也有前置式压力补偿的比例阀体）

该系列比例阀的最大流量为220 升/分。额定压力310 Bar。

电液比例控制可用两种直流电压： 12 伏和24 伏 ， 相应电流0-1.5 安培和0-0.75 安培



1: GBV200 Series Universal Proportional Valve Dimensions - 系列万用比例阀几何尺寸

5 Sections Stack - 5联多路阀

GKV100 Open Center
Sectional Valves
开式多路阀

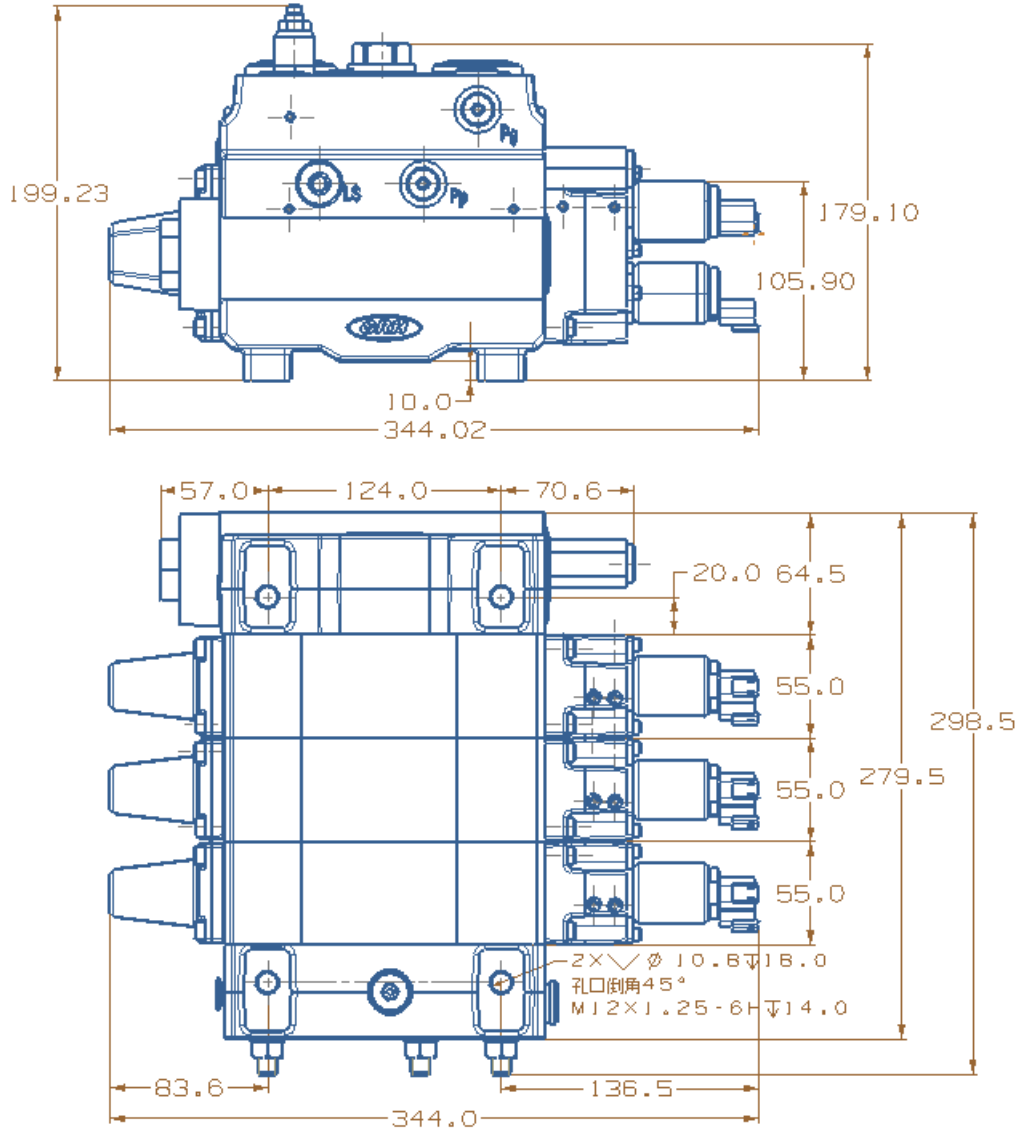
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阀使用指南

Monoblock Valves
整体多路阀

Sectional Valves
片式多路阀

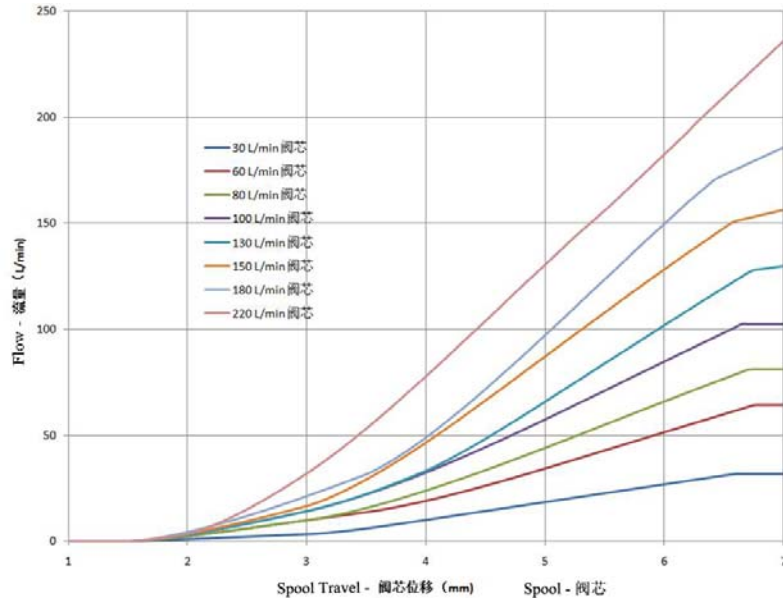
Log Splitter Valves
劈柴机用换向阀

Flow Control Valves
流量控制阀

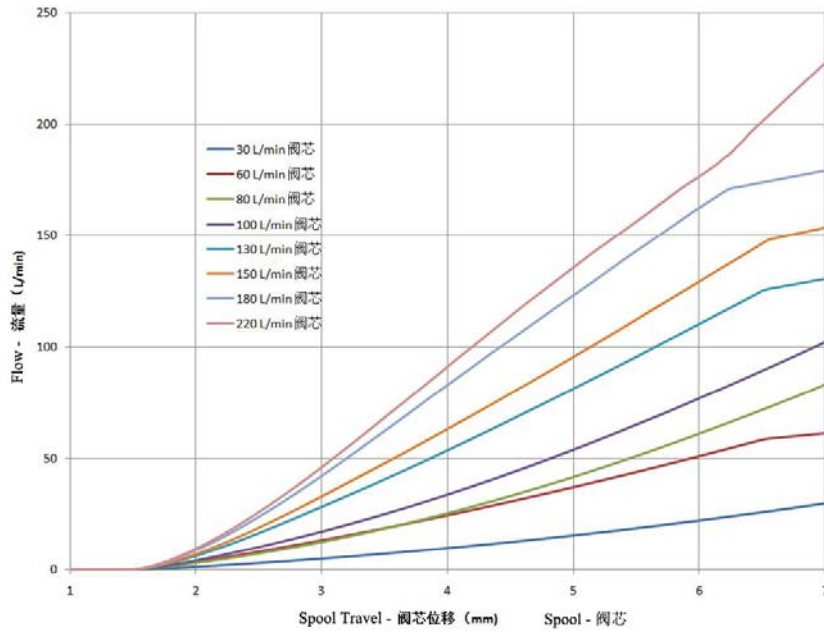


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2.2 Flow Characteristics of the Spools Using Linear Notches - 用线性节流槽的阀芯的流量特性



GBV200 PROPORTIONAL STACK VALVES TECHNICAL INFORMATION -
GBV200 比例多路阀技术文件



3: Inlet Section or Pump Side Module - 进油联阀块或油泵侧阀块

Code 代码	Schematics 阀块系统图	Main Function 主要功能	Notes 备注
J01		<p>Used in closed loop fixed displacement pump system, with pilot supply</p> <p>用于定量泵闭式回路带先导油源</p>	<p>Port Size - 油口尺寸: L S: M12×1.5 T O: M12×1.5 T: M27×2 P p: M12×1.5 P b: M12×1.5 P: M27×2</p>
J02		<p>Used in closed loop fixed displacement pump system, without pilot supply</p> <p>用于定量泵闭式回路不带先导油源</p>	<p>Port Size - 油口尺寸: L S: M12×1.5 T O: M12×1.5 T: M27×2 P b: M12×1.5 P: M27×2</p>
J03		<p>Used in closed loop variable displacement pump system, with pilot supply</p> <p>用于变量泵闭式回路带先导油源</p>	<p>Port Size - 油口尺寸: L S: M12×1.5 T O: M12×1.5 T: M27×2 P p: M12×1.5 P b: M12×1.5 P: M27×2</p>



3: Inlet Section or Pump Side Module - 进油联阀块或油泵侧阀块

Code 代码	Schematics 阀块系统图	Main Function 主要功能	Notes 备注
J04		<p>Used in closed loop fixed displacement pump system, without pilot supply</p> <p>用于定量泵闭式回路不带先导油源</p>	<p>Port Size - 油口尺寸: L S: M12×1.5 T O: M12×1.5 T: M27×2 P b: M12×1.5 P: M27×2</p>
J05		<p>Used in closed loop variable displacement pump system, low flow system, with pilot supply</p> <p>用于变量泵闭式系统小流量系统带先导油源</p>	<p>Port Size - 油口尺寸: L S: M12×1.5 T O: M12×1.5 P p: M12×1.5</p>
J06		<p>Used in closed loop variable displacement pump system, with priority valve and pilot supply</p> <p>用于变量泵闭式回路带优先阀带先导油源</p>	<p>Port Size - 油口尺寸: L S: M12×1.5 T O: M12×1.5 T: M27×2 P p: M12×1.5 P b: M12×1.5 P: M27×2</p>

GBV200 PROPORTIONAL STACK VALVES TECHNICAL INFORMATION -
GBV200 比例多路阀技术文件

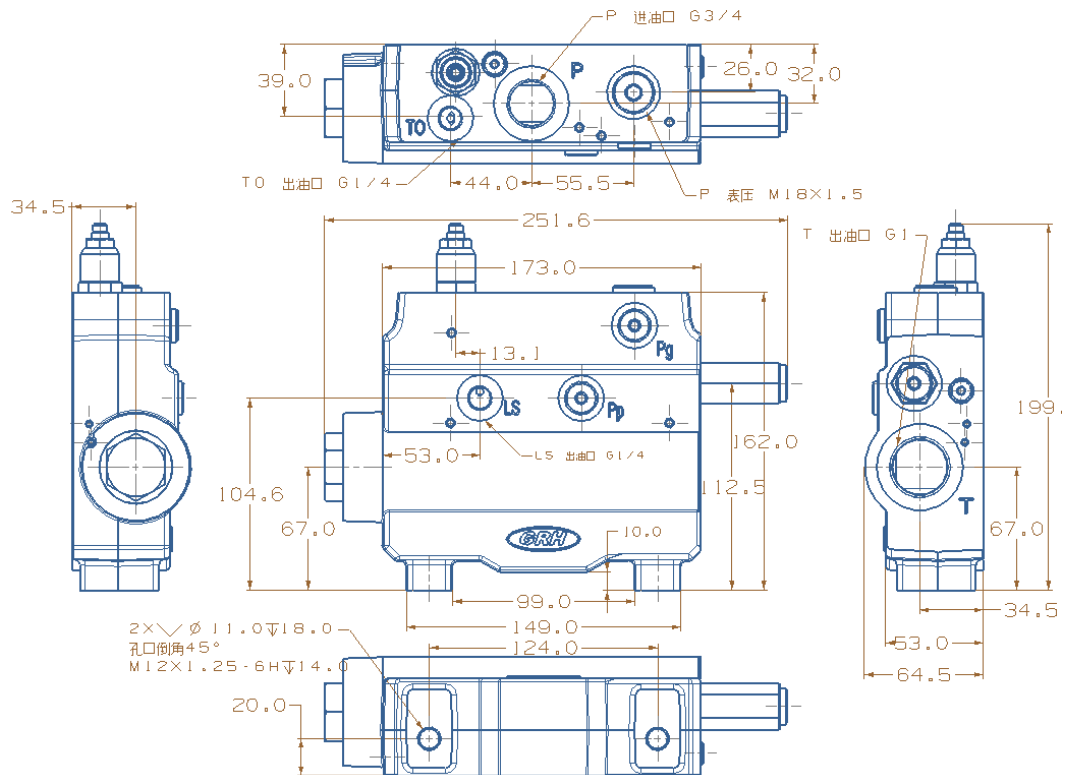


3: Inlet Section or Pump Side Module - 进油联阀块或油泵侧阀块

Code 代码	Schematics 阀块系统图	Main Function 主要功能	Notes 备注
J07		<p>Used in closed loop variable displacement pump system, with priority valve, without pilot supply</p> <p>用于变量泵闭式回路, 带优先阀, 不带先导油源</p>	<p>Port Size - 油口尺寸: L S: M12×1.5 T O: M12×1.5 T: M27×2 P b: M12×1.5 P: M27×2</p>

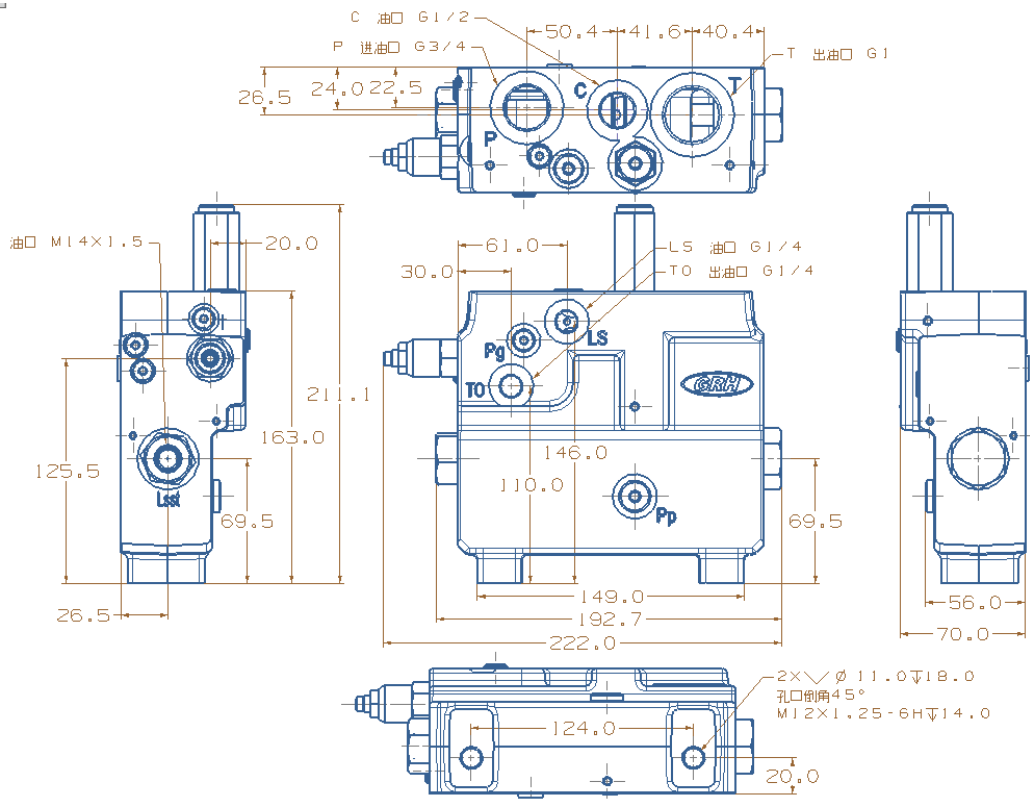
3.1 Dimensions of the Inlet Section - 进油联几何尺寸

3.1.1 Common Inlet Section - 普通进油联



3.1 Dimensions of the Inlet Section - 进油联几何尺寸

3.1.2 Dimensions of the Inlet Section With Priority Valve - 带优先阀的进油联几何尺寸



GBV200 PROPORTIONAL STACK VALVES TECHNICAL INFORMATION -
GBV200 比例多路阀技术文件



4: Main Sections - 主阀块

Code 代码	Schematics 阀块系统图	Main Function 主要功能	Notes 备注
Z01		<p>Post pressure compensation (proportional flow sharing) Basic valve section</p> <p>后置式压力补偿 (比例分流) 基本阀块</p>	
Z02		<p>Post pressure compensation (proportional flow sharing) Anti cavitation valve on work ports to prevent cavitations</p> <p>后置式压力补偿 (比例分流) 工作口有吸油阀防止系统产生吸空</p>	<p>Commonly used in hydraulic motor applications 多用于液压马达</p>
Z03		<p>Post pressure compensation (proportional flow sharing) Provides work ports overload protections and anti cavitation valve to prevent cavitations</p> <p>后置式压力补偿 (比例分流) 工作口有溢流阀防止系统过载, 吸油阀防止系统产生吸空</p>	



4: Main Sections - 主阀块

Code 代码	Schematics 阀块系统图	Main Function 主要功能	Notes 备注
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>后置式压力补偿 (比例分流) 工作口有溢流阀防止系统过载, 吸油阀防止系统产生吸空 工作口有液控单向阀防止重物下滑</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> <p>多用于油缸升举重物和下降 下降一端用液压锁 也可用于回转油缸或马达</p>
Z05		<p>Post pressure compensation (proportional flow sharing) Provides work ports overload protections and anti cavitation valve to prevent cavitations</p> <p>后置式压力补偿 (比例分流) 工作口有溢流阀防止系统过载, 吸油阀防止系统产生吸空</p>	<p>Most commonly used in cylinder load holding applications The P.O. check is used to control load lowering</p> <p>多用于油缸升举重物和下降 下降一端用液压锁</p>
Z06		<p>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</p> <p>后置式压力补偿 (比例分流) 工作口有溢流阀防止系统过载, 吸油阀防止系统产生吸空 B工作口有液控单向阀防止重物下滑</p>	<p>Most commonly used in cylinder load holding applications The P.O. check is used to control load lowering</p> <p>多用于油缸升举重物和下降 下降一端用液压锁</p>

GBV200 PROPORTIONAL STACK VALVES TECHNICAL INFORMATION -
GBV200 比例多路阀技术文件



4: Main Sections - 主阀块

Code 代码	Schematics 阀块系统图	Main Function 主要功能	Notes 备注
Z07		<p>Post pressure compensation (proportional flow sharing) Basic valve section Manually operated</p> <p>后置式压力补偿 (比例分流) 基本阀块 手动操作</p>	<p>Commonly used in manually controlled proportional valves</p> <p>常用的手动比例</p>
Z08		<p>Post pressure compensation (proportional flow sharing) Provides work ports overload protections and anti cavitation valve to prevent cavitations Manually operated</p> <p>后置式压力补偿 (比例分流) 工作口有溢流阀防止系统过 载, 吸油阀防止系统产生吸空 手动操作</p>	
Z09		<p>Pre-pressure compensation (proportional flow) Basic valve section</p> <p>前置式压力补偿 (比例流量) 基本阀块</p>	



4: Main Sections - 主阀块

Code 代码	Schematics 阀块系统图	Main Function 主要功能	Notes 备注
Z10		<p>Pre-pressure compensation (proportional flow) Anti cavitation valve on work ports to prevent cavitations</p> <p>前置式压力补偿（比例流量） 工作口有吸油阀防止系统产生吸空</p>	
Z11		<p>Pre-pressure compensation (proportional flow) Provides work ports overload protections and anti cavitation valve to prevent cavitations</p> <p>前置式压力补偿（比例流量） 工作口有溢流阀防止系统过载，吸油阀防止系统产生吸空</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>前置式压力补偿（比例流量） 工作口有溢流阀防止系统过载，吸油阀防止系统产生吸空 A工作口有液控单向阀防止重物下滑</p>	<p>Most commonly used in cylinder load holding applications The P.O. check is used to control load lowering</p> <p>多用于油缸升举重物 and 下降 下降一端用液压锁</p>

GBV200 PROPORTIONAL STACK VALVES TECHNICAL INFORMATION -
GBV200 比例多路阀技术文件



4: Main Sections - 主阀块

Code 代码	Schematics 阀块系统图	Main Function 主要功能	Notes 备注
Z13		<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 "B" port</p> <p>前置式压力补偿 (比例流量) 工作口有溢流阀防止系统过载, 吸油阀防止系统产生吸空 B工作口有液控单向阀防止重物下滑</p>	<p>Commonly used in cylinder load holding applications The P.O. check is used to control load lowering</p> <p>多用于油缸升举重物和下降下降一端用液压锁</p>
Z14		<p>Pre-pressure compensation (proportional flow) Provides work ports overload protections and anti cavitation valve to prevent cavitations Provides P.O. checks to hold loads</p> <p>前置式压力补偿 (比例流量) 工作口有溢流阀防止系统过载, 吸油阀防止系统产生吸空 工作口有液控单向阀防止重物下滑</p>	<p>Most commonly used in cylinder load holding applications. It is also used for swing cylinder and motor applications</p> <p>多用于油缸升举重物和下降下降一端用液压锁 也可用于回转油缸或马达</p>
Z15		<p>Pre-pressure compensation (proportional flow) Basic valve section Manually operated</p> <p>前置式压力补偿 (比例流量) 基本阀块 手动操作</p>	<p>Commonly used manually controlled proportional valve.</p> <p>常用的手动比例</p>



4: Main Sections - 主阀块

Code 代码	Schematics 阀块系统图	Main Function 主要功能	Notes 备注
Z16		<p>Pre-pressure compensation (proportional flow) Provides work ports overload protections and anti cavitation valve to prevent cavitations Manually operated</p> <p>前置式压力补偿（比例流量） 工作口有溢流阀防止系统过载，吸油阀防止系统产生吸空 手动操作</p>	<p>Commonly used manually controlled proportional valve with system protections</p> <p>常用的手动比例带系统保护</p>

GRH
GKV200 Proportional Valves
比例多路阀

GKV100 Open Center
Sectional Valves
开式多路阀

Valves User Guide
阀使用指南

Monoblock Valves
整体多路阀

5: End Caps - 后端盖

Code 代码	Schematics 阀块系统图	Main Function 主要功能	Notes 备注
D1		<p>Usually used in closed loop of variable displacement pump system 多用于变量泵闭式回路</p>	<p>Port Size/油口尺寸: TO: M12×1.5 T: M27×2 P: M27×2</p>

Sectional Valves
片式多路阀

Log Splitter Valves
劈柴机用换向阀

Flow Control Valves
流量控制阀

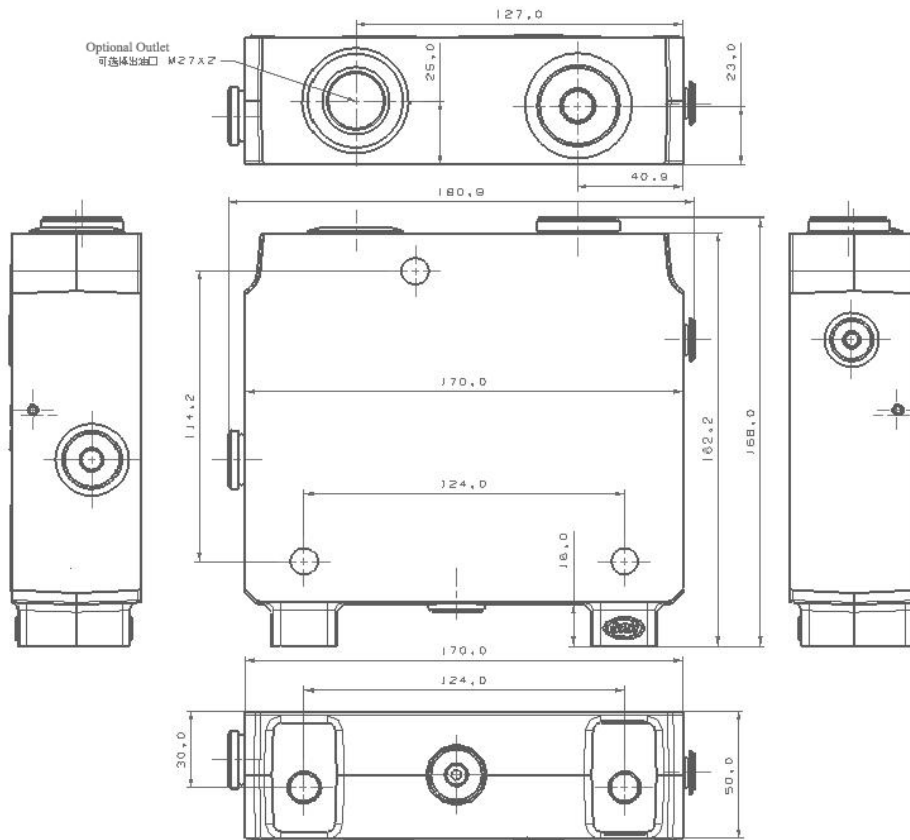
GBV200 PROPORTIONAL STACK VALVES TECHNICAL INFORMATION -
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5: End Caps - 后端盖

Code 代码	Schematics 阀块系统图	Main Function 主要功能	Notes 备注
D2		<p>Usually used in fixed displacement pump system</p> <p>多用于定量泵</p>	<p>Port Size - 油口尺寸: TO: M12×1.5 T: M27×2 P: M27×2</p>

End Section Dimensions - 后端盖几何尺寸





6: Drive Styles for Main Valve Section - 主阀块的驱动形式

Spool code 阀芯代码	Symbol 符号	Function 功能
Q1		Standard Manually Operated 标准手动比例
Q2		Hydraulic Control 液控比例
Q3		Manually operated with detent 手动比例带摩擦定位
Q4		Manually operated with floating function 手动比例带浮动
Q5		Electric on/off control 电动（开/关）
Q6		Standard Electro-hydraulic proportional control 标准电液比例
Q7		Standard Electro-hydraulic proportional control with manual override 标准电液比例带手动选项
Q8		Standard Electro-hydraulic proportional control with floating function 电液比例带浮动

GBV200 PROPORTIONAL STACK VALVES TECHNICAL INFORMATION -
GBV200 比例多路阀技术文件



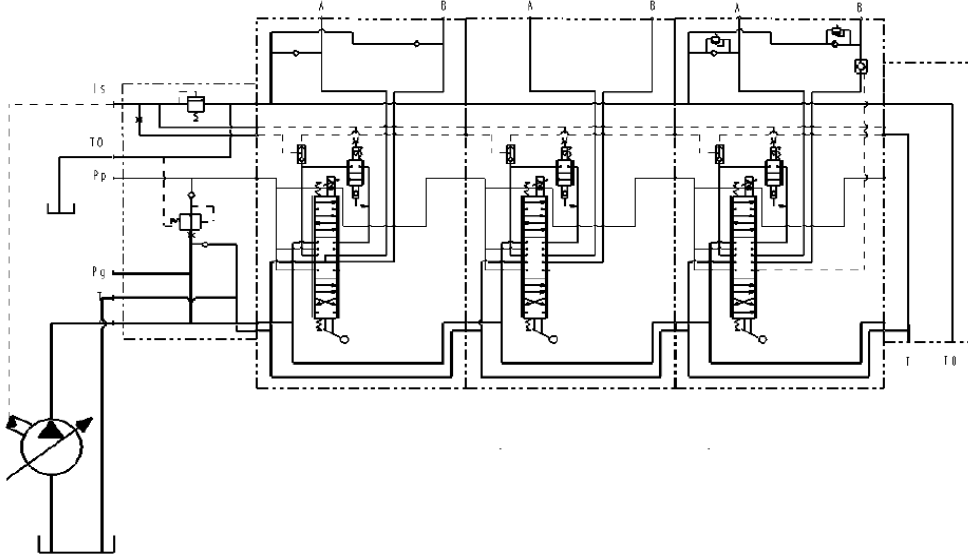
7: Main Spool Function - 主阀芯的工作机能

Spool code 代码	Symbol 符号	Function 功能	Notes 备注
FG1		Standard three position four way function Post pressure compensation 标准三位四通式机能 后置式压力补偿	Commonly used in hydraulic cylinder applications 常用于控制油缸
FG2		Three position three way Function Post pressure compensation 三位三通机能 后置式压力补偿	Commonly used in hydraulic motor applications 常用于控制马达
FG3		Standard three position four way function, with fourth position floating Post pressure compensation 标准三位四通机能第四位浮动 后置式压力补偿	Commonly used in hydraulic cylinder applications 常用于控制油缸
FG4		Standard three position four way function Pre-pressure compensation 标准三位四通式机能 前置式压力补偿	Commonly used in hydraulic cylinder applications 常用于控制油缸
FG5		Three position three way function Pre-pressure compensation 三位三通机能 前置式压力补偿	Commonly used in hydraulic motor applications 常用于控制马达
FG6		Standard three position four way function, with fourth position floating Pre-pressure compensation 标准三位四通机能第四位浮动 前置式压力补偿	Commonly used in hydraulic cylinder applications 常用于控制油缸

8: Control Circuit Example - 控制回路示例

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

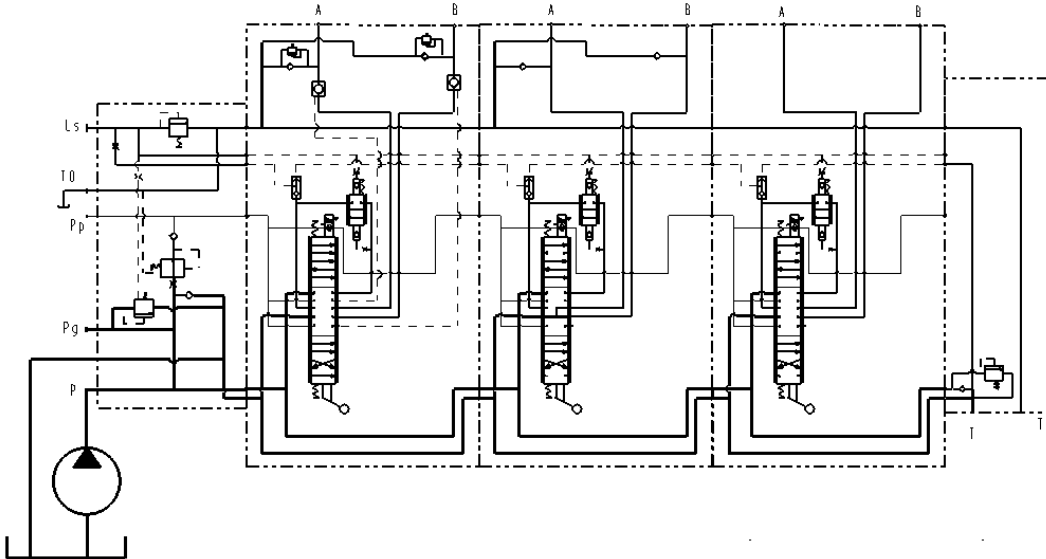
8.1 用于变量泵的电液比例控制回路（后置式压力补偿）



YS08R Specifications - YS08R 性能参数

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

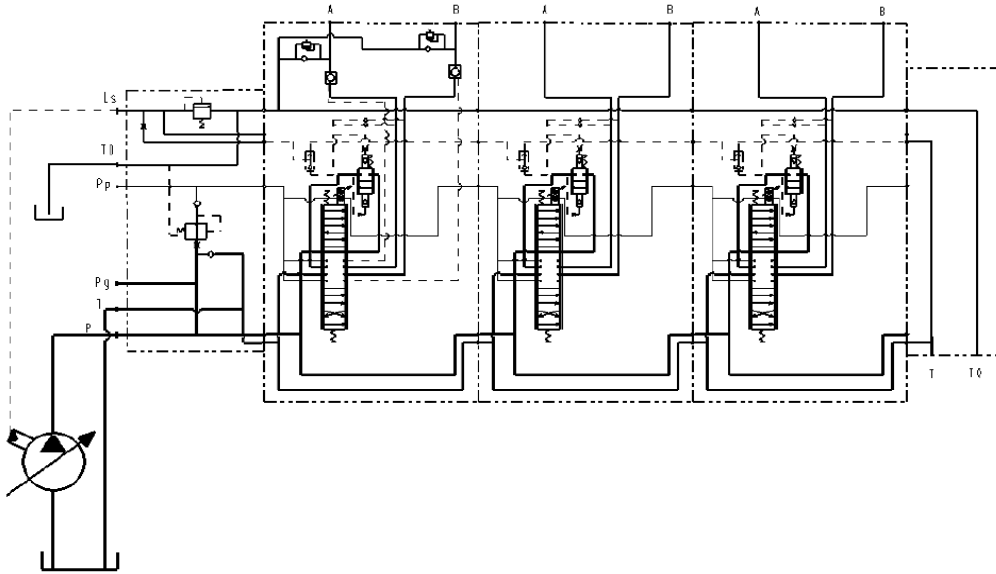
8.2 用于定量泵的电液比例控制回路（后置式压力补偿）



8: Control Circuit Example - 控制回路示例

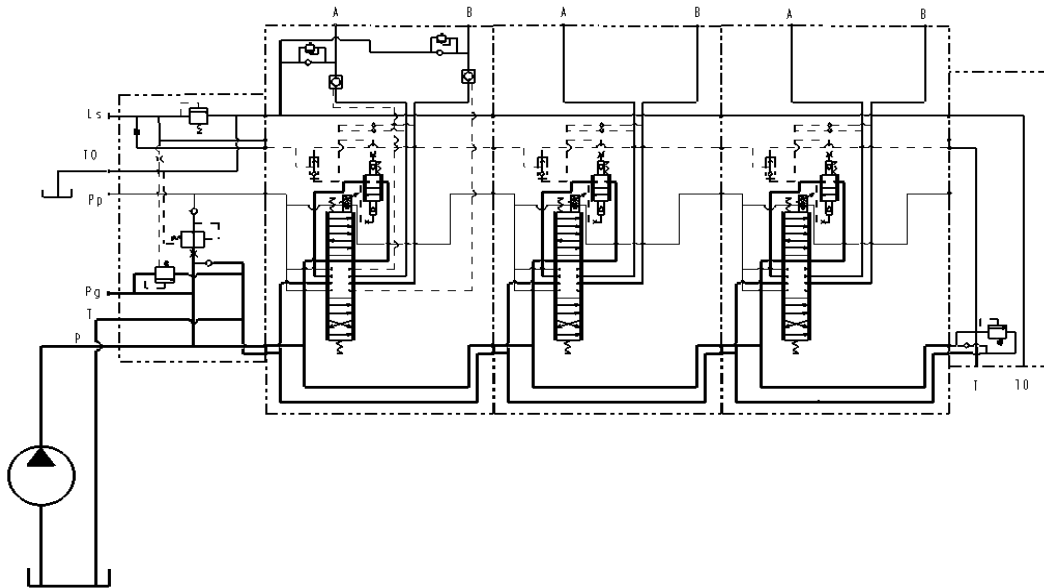
8.3 Electro-hydraulic proportional control circuit with variable displacement pump
(Pre-pressure compensation)

8.3 用于变量泵的电液比例控制回路（前置式压力补偿）



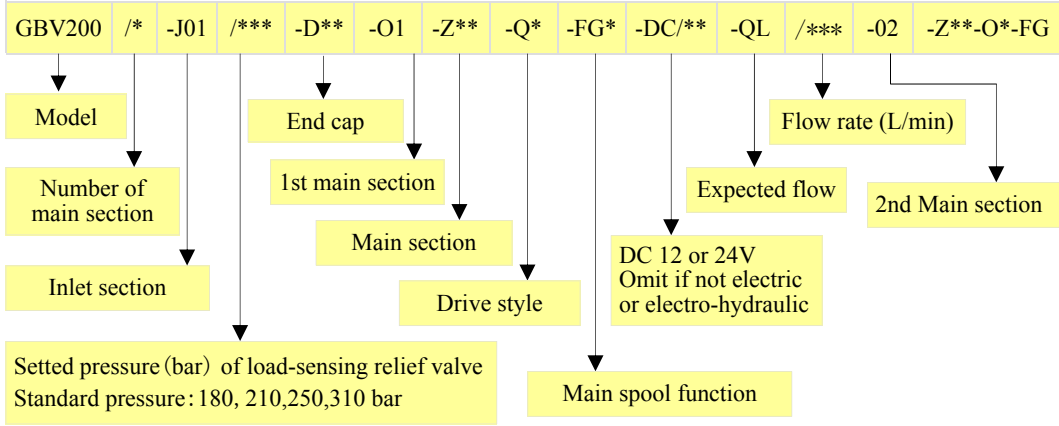
8.4 Electro-hydraulic proportional control circuit with fixed displacement pump
(Pre-pressure compensation)

8.4 用于定量泵的电液比例控制回路（前置式压力补偿）

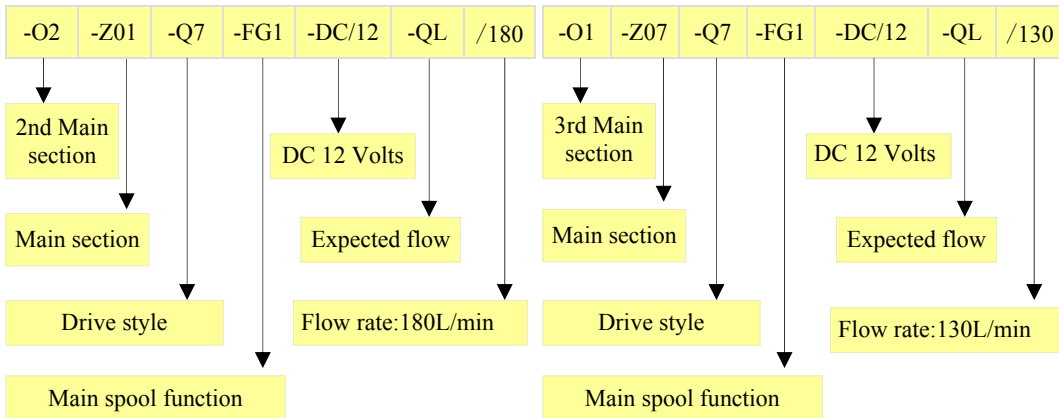
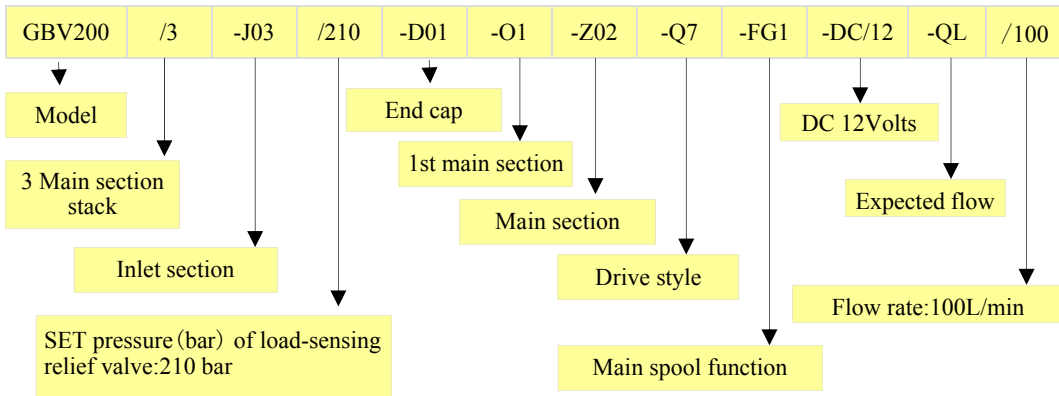




9: Ordering Code



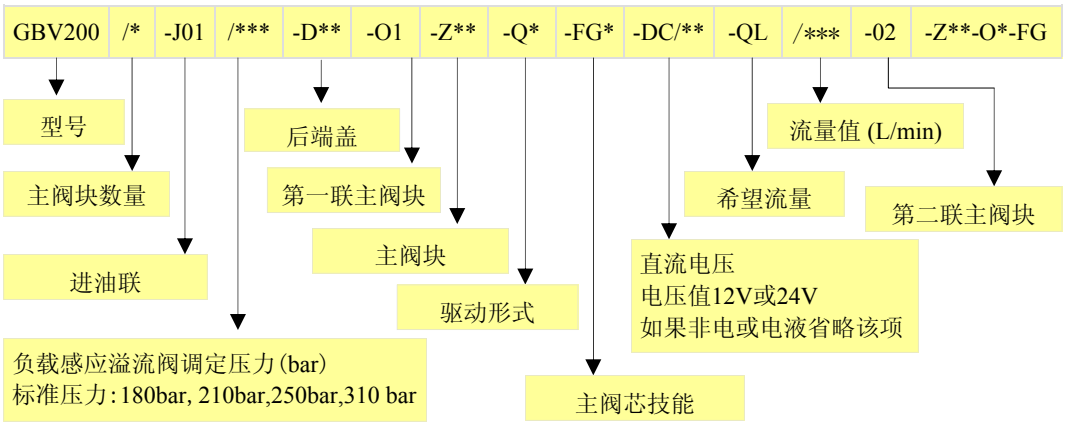
Example 1:



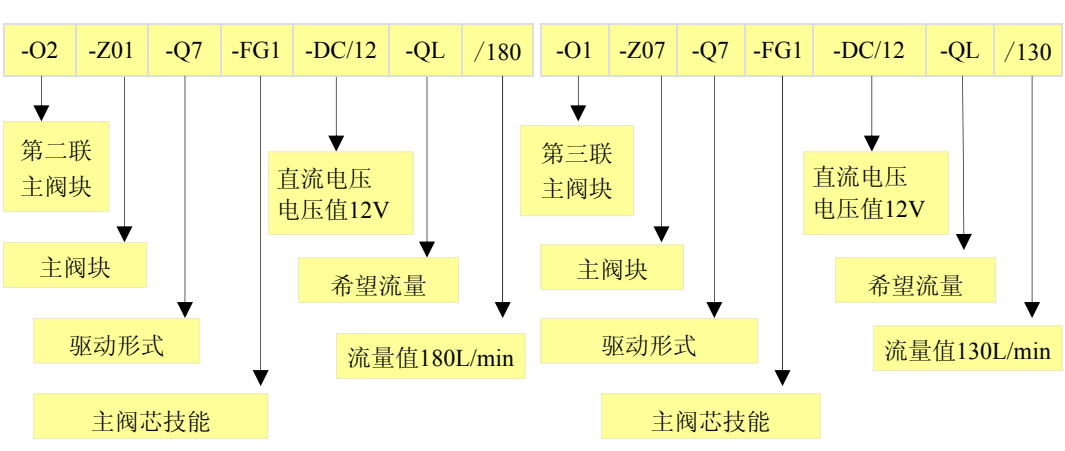
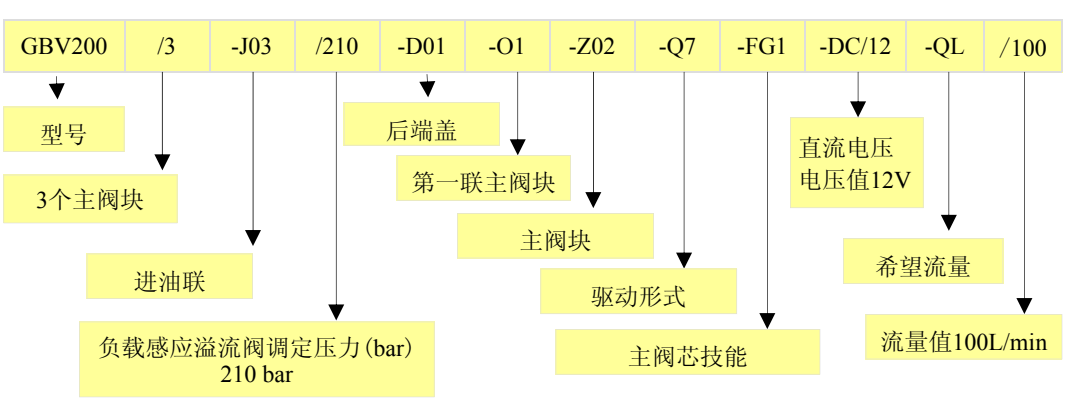
GBV200 PROPORTIONAL STACK VALVES TECHNICAL INFORMATION -
GBV200 比例多路阀技术文件



9: 选型和订货号码



例 1:



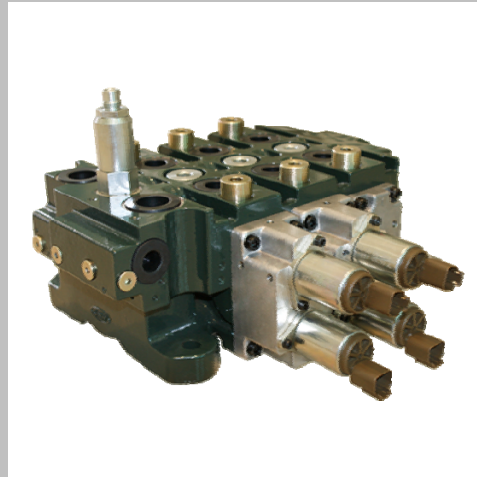


Introduction of GBV100 Open Center Sectional Valves

GKV100 proportional valve is a stackable valve with interchangeable control styles. We can also choose different cartridges for the main section assembly to accomplish different functions. This valve series adapted modular design. The system designer can choose different modules to design different complex systems. Main valve spool is designed to satisfy with the customer's requirements, which provides excellent flow characteristics and very low flow force.

This series can provide following functions:

- Inlet module with pilot supply.
- Inlet module without pilot supply.
- A/B Port with overload valve on main section
- A Port with overload valve on main section
- B Port with overload valve on main section
- A/B Port with P.O. check
- A Port with P.O. check
- B Port with P.O. check
- End Cap with oil return function
- End Cap without oil return function
- We can also choose other cartridges according to your requirement.



Max flow of this series is 100 L/min. Rated pressure is 310 Bar.

Electro-Hydraulic pilot valves can be either 12 VDC or 24 VDC, corresponding current is 0 - 1.5 or 0 - 0.75 Amp.

GBV100 开式多路阀说明

GKV100是一种模块式可变换控制方式的多路阀。主阀体可以根据用户的要求选用不同的插装件以完成不同的功能。本系列的多路阀采用模块化设计，系统设计者可选取不同功能的模块来满足各种复杂系统的设计。主阀芯可以根据用户的要求提供极佳的流量特性和低液动力。

该系列的多路阀 可提供如下功能：

- 可自带先导油源的进油联。
- 无先导油源的进油联。
- A/B口有过载阀的主阀块。
- A口有过载阀的主阀块。
- B口有过载阀的主阀块。
- A/B口有 液压锁。
- A口有 液压锁。
- B口有 液压锁。
- 可回油的后端盖。
- 不可回油的后端盖。
- 也可根据客户要求插装其它阀块。



该系列多路阀的最大流量为100 升/分。额定压力310 Bar。

电液控制可用两种直流电压： 12 伏或24 伏 ， 相应电流0-1.5 安培和0-0.75 安培。



1: Inlet Section - 进油联阀块

Code 代码	Schematics 阀块系统图	Main Function 主要功能	Notes 备注
JK01		<p>Inlet section with pilot supply 自带先导油源的进油联</p>	
JK02		<p>General inlet section 普通进油联</p>	

GKV200 Proportional Valves
比例多路阀

GKV100 Open Center
Sectional Valves
开式多路阀

Valves User Guide
阀使用指南

Monoblock Valves
整体多路阀

Sectional Valves
片式多路阀

Log Splitter Valves
劈柴机用换向阀

Flow Control Valves
流量控制阀

GKV100 OPEN CENTER SECTIONAL VALVES TECHNICAL INFORMATION -
GKV100 开式多路阀技术文件

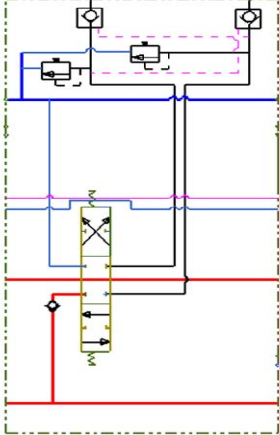
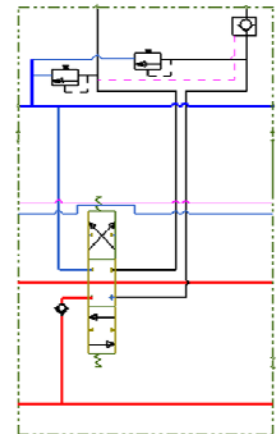
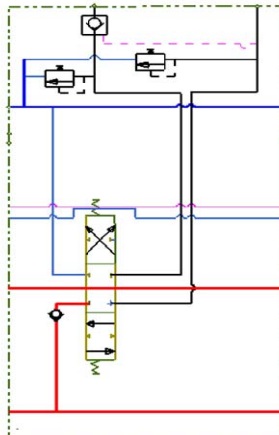


2: Main Sections - 主阀块

Code 代码	Schematics 阀块系统图	Main Function 主要功能	Notes 备注
ZK01		<p>With overload valve in both A and B ports A、B口均有过载阀</p>	
ZK02		<p>With overload valve in A port A口有过载阀</p>	
ZK03		<p>With overload valve in B port B口有过载阀</p>	



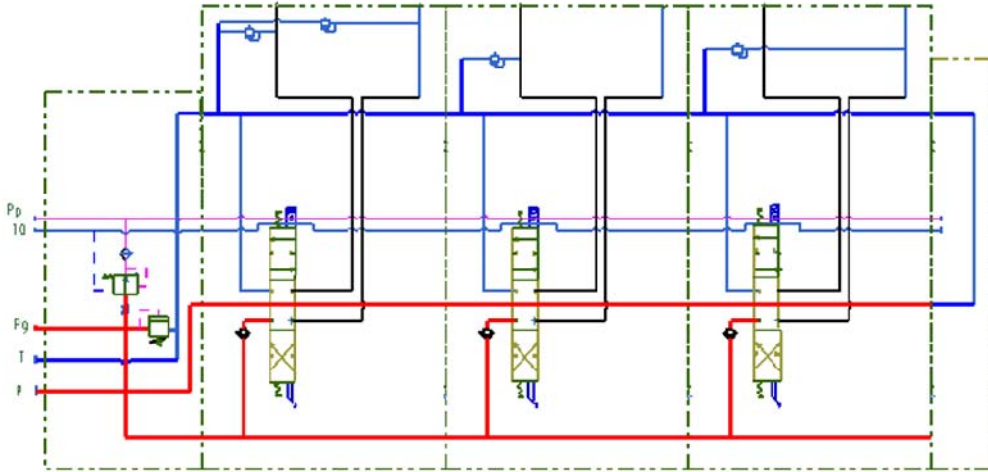
2: Main Sections - 主阀块

Code 代码	Schematics 阀块系统图	Main Function 主要功能	Notes 备注
ZK04		PO check at A/B ports A/B口各一个液压锁	
ZK05		PO check at A ports A口有液压锁	
ZK06		PO check at B ports B口有液压锁	

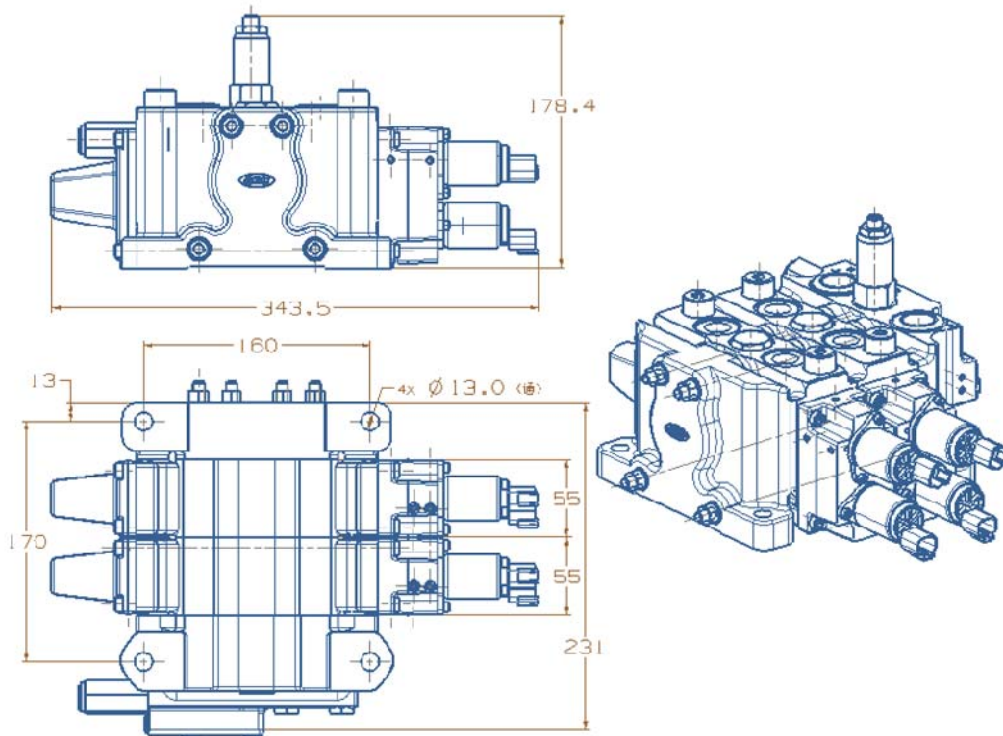
GKV100 OPEN CENTER SECTIONAL VALVES TECHNICAL INFORMATION - GKV100 开式多路阀技术文件			
3: End Caps - 后端盖			
Code 代码	Schematics 阀块系统图	Main Function 主要功能	Notes 备注
DK01		Oil return from T port of inlet section 回油从进油联T口	
DK02		Oil return separately from inlet section and end cap 回油分别从进油联和后端盖	

4: Example of Schematics - 系统图示例

Electro-hydraulic control with manual override - 电液控制加手动选项



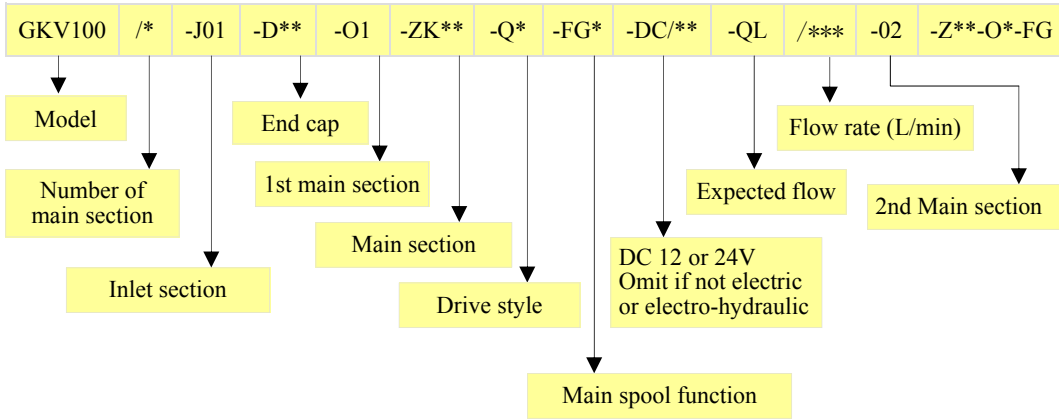
Drawings of two section stack valve - 两联装多路阀图



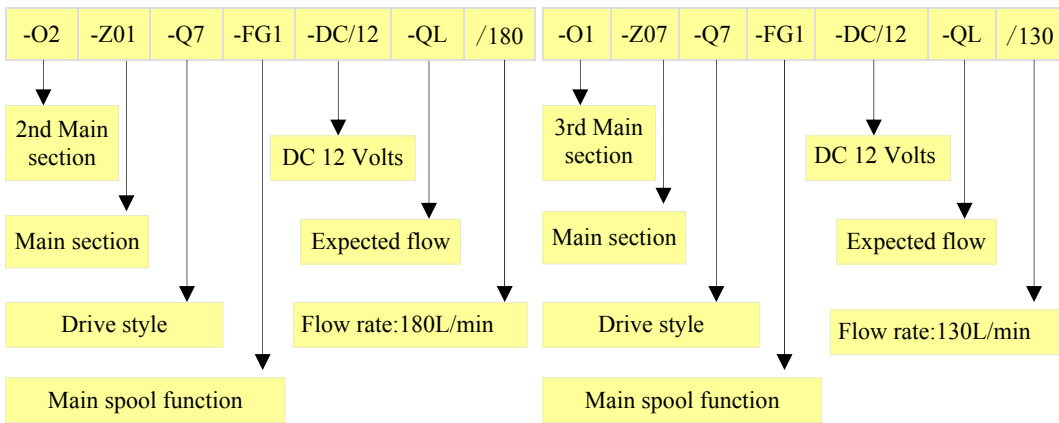
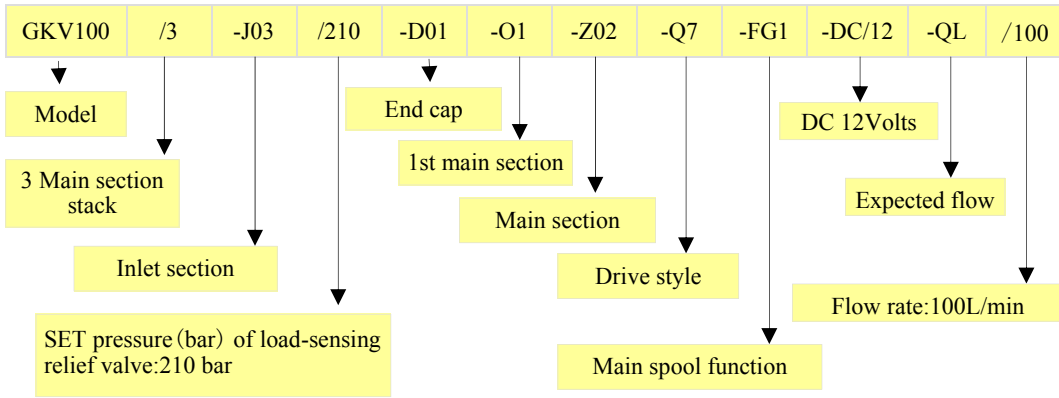
GKV100 OPEN CENTER SECTIONAL VALVES TECHNICAL INFORMATION -
GKV100 开式多路阀技术文件



5: Ordering Code

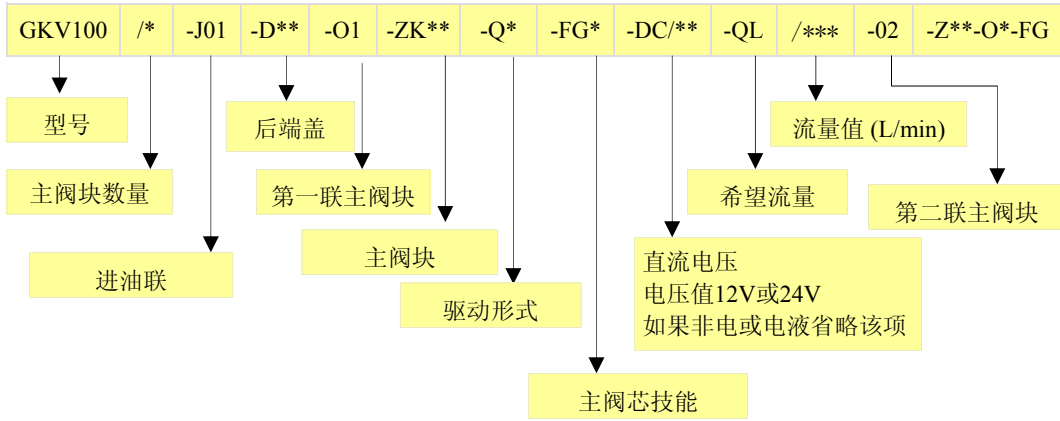


Example 1:

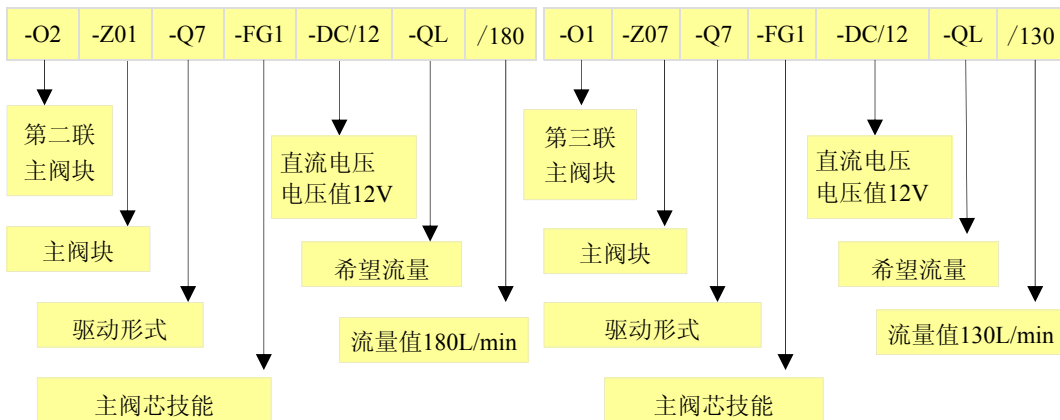
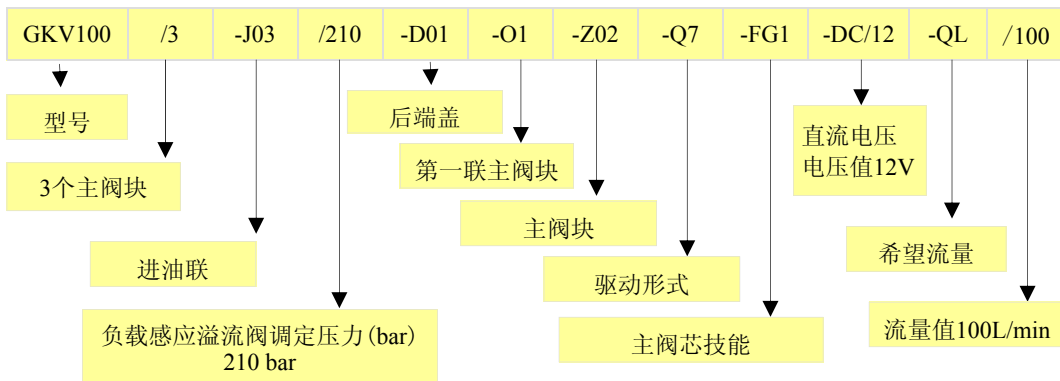




5: 选型和订货号码



例 1:





1: Introduction of GRH Sectional and Monoblock Valves

GRH can produce monoblock and sectional valves.

Flow range: 25L/min to 160L/min

Maximum working pressure as below

Sectional valve can reach 250 bar

Monoblock can reach 300 bar.

To prevent against overload of hydraulic system, main valve is set at the oil inlet of the multiple directional valve to be the overall safety valve of the entire hydraulic system.

According to different structures of valve body, check valve that is assembled in oil inlet or slide valve, is used to avoid oil return to oil tank while the slide valve is changing direction, and thus to overcome the nodding phenomenon that may occurred during the working process.

If the executive unit (cylinder and motor) is not working, the slide valve is at the neutral position. Both working oil ports are closed. At this moment because of the interconnection of the executive parts and other working parts in hydraulic system, the pressure of the executive part (cylinder and motor) might be raised. As to prevent against the overload of executive parts (cylinder and motor) or oil tube, overload valve should be set at the oil port.

In some hydraulic machinery, when the inertia of the working load is quite large and overload decline speed exceeds the flow rates of oil supply, oil feed valve is necessary to be set in the multiple directional valve to avoid cavitation.

Sometimes, two hydraulic systems share one hydraulic pump. When one of the hydraulic system uses only part of the flow of the pump, flow divider must be installed on the multiple directional valve.

GRH's monoblock and sectional multiple valve can be combined with main safety valve, check valve, overload valve, oil supply valve, flow divider, brake valve and proportional valve. In the load-sensing system, in order to make the displacements of pump change with the actual flow of system, overload sensitive valve must be installed in the system. GRH's monoblock can integrate load sensitive valve in line with customers' requirements.

片式及整体多路阀简介

GRH 可以提供整体多路阀及片式多路阀。

流量范围从: 25L/min 到160L/min.

最大工作压力如下:

片式阀最大可达: 250bar;

整体阀最大可达: 300bar.

为防止液压系统过载, 在多路换向阀进油腔设置主安全阀, 作为整个液压系统的总安全阀。

根据不同的阀体结构, 在阀体进油腔或滑阀内装设单向阀, 其作用是当滑阀换向时, 避免压力油向油箱倒流, 从而克服工作过程中的“点头”现象。

当某一机构的执行机构(油缸或马达)不工作时, 相应的滑阀处于中立位置, 两工作油口被封闭, 此时由于其它机构的工作及执行机构液压系统的互联, 可能会使这个执行机构(油缸或马达)的压力升高, 为防止该执行机构(油缸或马达)或油管超载, 此油口应装设过载阀。

在某些液压机械中, 当工作机构动作惯性较大, 或者负载下降速度超过供油流量的流速时, 应在多路换向阀内设置必要的补油阀以避免造成吸空现象。

有时二个工作液压系统共用一液压泵, 而其中一液压系统只需要泵的部份流量时, 应在多路换向阀装设分流阀。

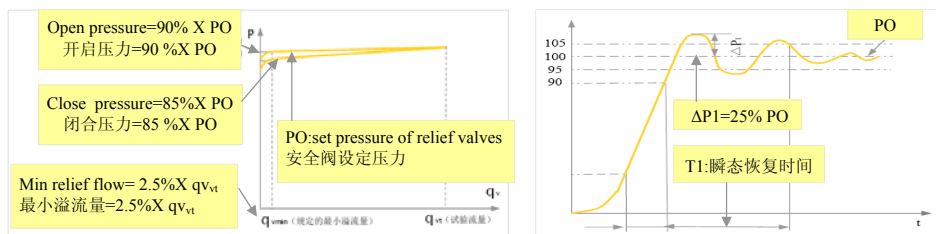
GRH 的整体多路阀及片式多路阀, 根据以上不同液压系统的要求, 可以将主安全阀、单向阀、过载阀、补油阀、分流阀、制动阀, 比例阀集成在内。在负载敏感系统中, 为使变量泵的排量根据系统的实际流量要求而变化, 常需要在系统中设置负载敏感阀。GRH的整体多路阀可以根据客户的要求将负载敏感阀集成在内。



Specifications - 性能参数

Model 型号	Flow 流量 (L/min)	Pressure 压力 (bar)	Number of Spools 联数	Internal Leakage 内泄漏量	Configuration 结构
		Rated 额定	Max 最多	50°C/160bar (ml/min)	
Monoblock Valves - 整体多路阀					
ZD25	25	250	1~6	10~25	Monoblock
ZD3	40	250	3	15~30	
ZD45-1	45	250	1	15~30	
ZD45-*	45	300	1~6	15~30	
ZD60	63	250	2	15~30	
ZD70	70	250	1~6	25~35	
ZD80	80	300	1~6	25~35	
ZD120	120	300	1	30~35	
ZD160	160	300	1~6	30~35	
FP75/SXF	25	200	1	10~25	
Sectional Valves - 片式多路阀					
KWZS	40	200	1~6	15~30	Sectional
34DLS	40	200	1~6	15~30	
ZS-L10	40	200	1~6	15~30	
ZS-L15	63	200	1~8	15~30	
ZS-L20	100	200	1~8	30~35	
ZS-L25	160	200	1~8	30~35	
ZFS-L10	40	200	1~6	15~30	
ZFS-L15	63	200	1~8	15~30	
ZFS-L20	100	200	1~8	30~35	
ZFS-L25	160	200	1~8	30~35	
DLS-15	63	200	1~6	15~30	

Specification of Integrated Relief Valves - 内置安全阀特性

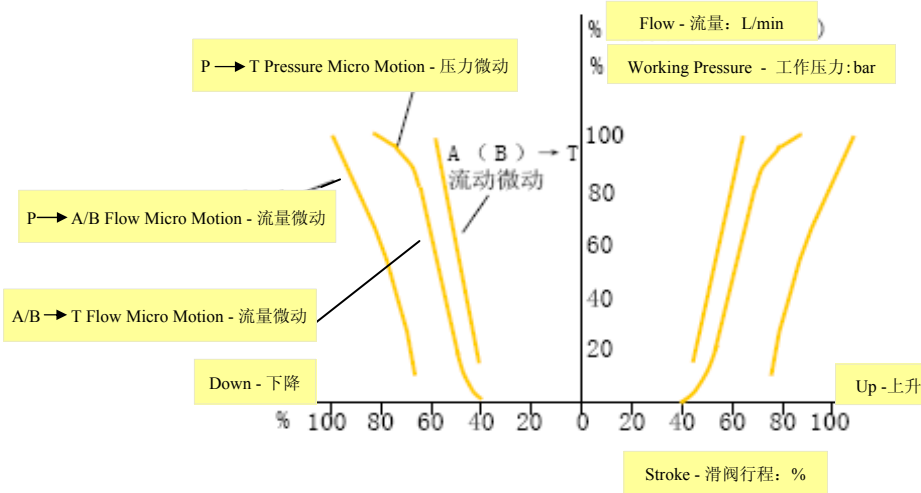


T1	PO (bar)	160	200	250	300
The time of transient response (sec) 瞬态恢复时间		0.20	0.22	0.24	0.25

SECTIONAL AND MONOBLOCK VALVES USE - 片式多路阀及整体多路阀使用指南

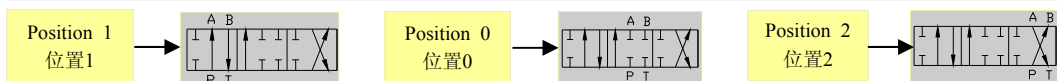


Performance Data - 阀芯压力微动及流量微动特性曲线



Flow 流量 (L/min)	Stroke 滑阀行程 (mm)	Flow 流量 (L/min)	Stroke 滑阀行程 (mm)	Flow 流量 (L/min)	Stroke 滑阀行程 (mm)
25	± 5.6	63	± 6.9	100	± 9.5
40	± 5.6	70	± 7.1	120	± 9.5
45	± 5.6	80	± 7.1	160	± 10

Function of Spool - 阀芯功能



Spool Code 阀芯代码	Symbol 符号	Function 功能
S1		Double acting spool (P-A-B-T closed in position 0) 双作用阀芯 (P-A-B-T 中位截止)
S2		Double acting motor spool (P closed, A-B → T in position 0) 双作用马达阀芯 (中位: P截止, A-B → T)
S3		Double acting motor spool (P-B closed, A → T in position 0) 双作用马达阀芯 (中位: P-B截止, A → T)
S4		Double acting motor spool (P-A closed, B → T in position 0) 双作用马达阀芯 (中位: P-A截止, B → T)
S5		Single acting motor spool (P-A-B-T closed in position 0) 单作用阀芯 (P-A-B-T 中位截止, B口工作)
S6		Single acting motor spool (P-A-B-T closed in position 0) 单作用阀芯 (P-A-B-T 中位截止, A口工作)
S7		Double acting motor spool (P closed, A, B partially open to T in position 0) 双作用马达阀芯 (中位, P口截止, A, B 口节流到T)



Option of Auxiliary - 附加阀选项

Code 代码	Function 功能
V1	Auxiliary relief valves, the function to limit the pressure of system Of downstream 分溢流阀主要限制下一截面压力
V2	Check valves in A or B port 单向阀（出油口A或B）
V3	Anti-shock check 防冲击阀
V4	Anti-cavitations 补油阀V1
V5	Flow control valve 流量控制阀
V6	Proportion solenoid control valve 比例流量控制阀

Option of P/T/A/B Ports - P/T/A/B - 油口螺纹选项

Code 代码	Dimensions 尺寸
L1	P/T/A/B =G3/4
L2	P/T/A/B =NPT3/4
L3	P/T/A/B=PT3/4
L4	P/T/A/B=M27X2
L5	P=G3/4 T=G1 A/B=G3/4
L6	P=G3/4 T=G3/4 A/B=G1/2
L7	P=G1/2 T=G3/4 A/B=G1/2
L8	P/T/A/B =G3/8
L9	P=G3/8 T=G3/8 A/B=G1/4
L10	P=M22X1.5 T=M22X1.5 A/B=M18X1.5
L11	P/T/ A/B=M18X1.5
L12	P=NPT3/4 T=NPT3/4 A/B=NPT1/2
L13	P/T/A/B=M22X1.5
L14	P=M22X1.5 T=M22X1.5 A/B=M18X1.5

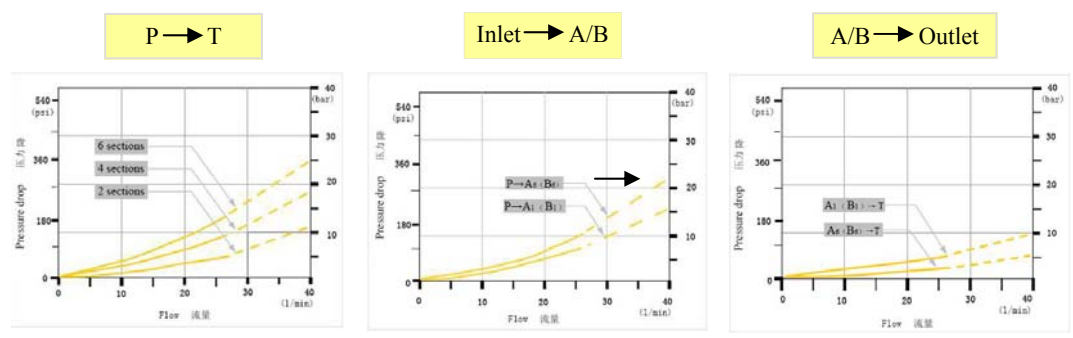
Spool Control - 定复位方式

Code 代码	Function 功能	Description 描述	Code 代码	Function 功能	Description 描述
D	1 0 2	With detent 1, 2, 3 1, 2, 3 位定位	D3	1 2	With detent 1, 2 1位, 2位定位
D2	1 0 2	With detent in 2 2位定位	D4	1 0	With detent in 1, 0 1位, 0位定位
D1	1 0 2	With detent in 1 1位定位	D5	0 2	With detent in 0, 2 0位, 2位定位
T	1 0 2	With spring return in 0 弹簧复位到0位			
T1	1 0 2	With spring return in 1 弹簧复位到1位			
T2	1 0 2	With spring return in 2 弹簧复位到2位			

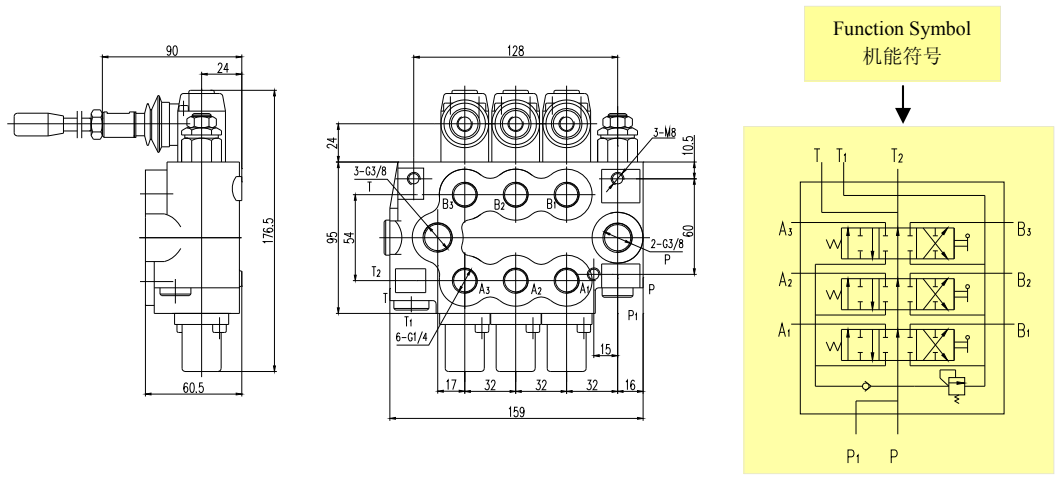
ZD25 MONOBLOCK VALVES - 整体多路阀



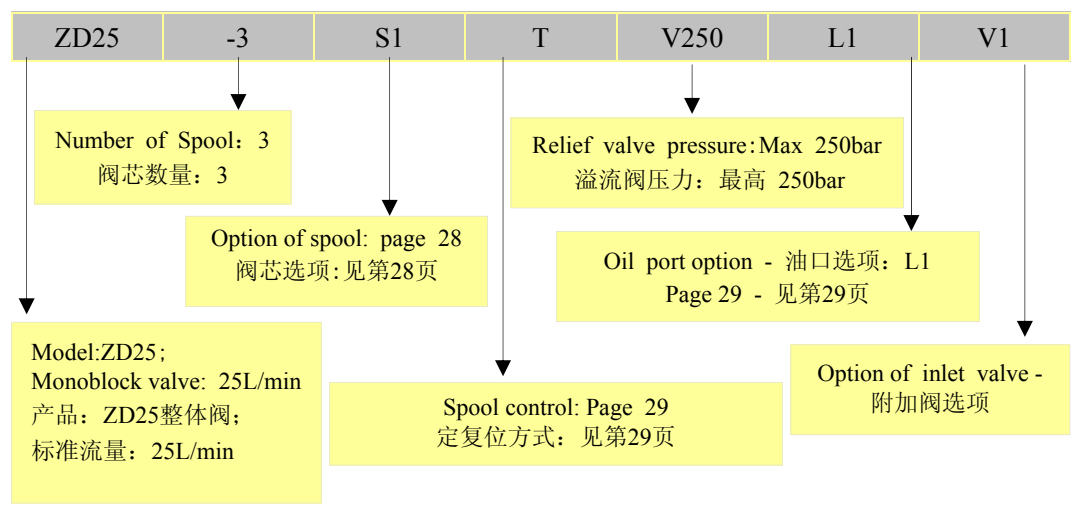
Pressure Drop - 压力降



Installation Dimensions and Function Symbol - 外形尺寸及机能符号



Ordering Code - 型号说明



ZD45-1*V250 MONOBLOCK VALVES - 整体多路阀

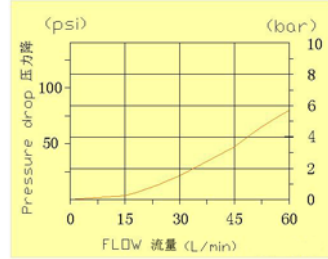
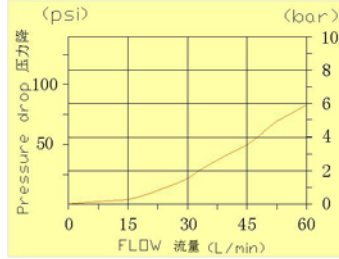
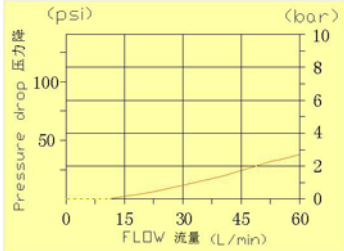


Pressure Drop - 压力降

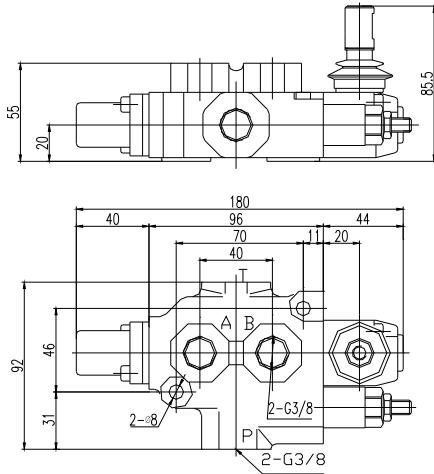
P → T

Inlet → A/B

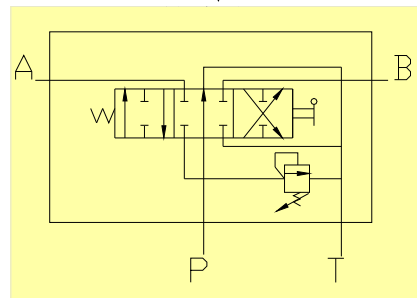
A/B → Outlet



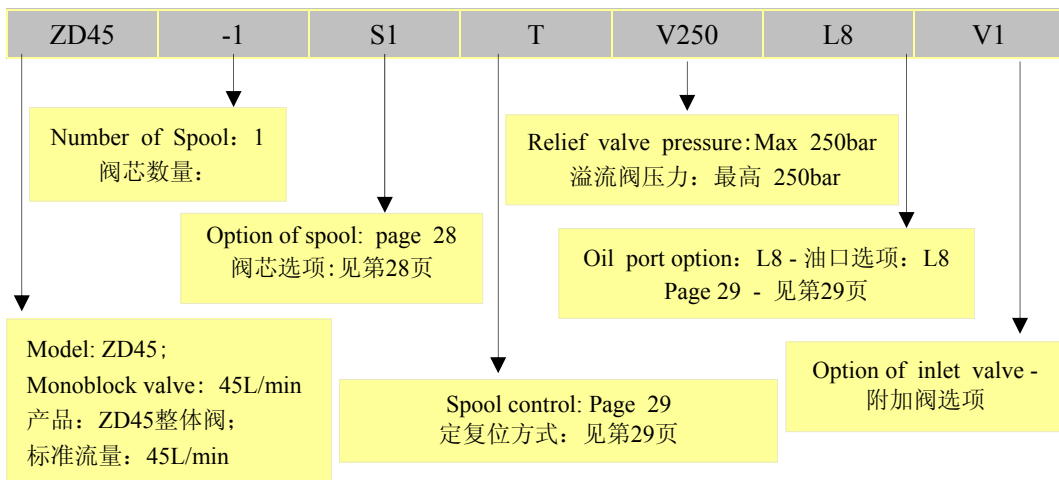
Installation Dimensions and Function Symbol - 外形尺寸及机能符号



Function Symbol
机能符号



Ordering Code - 型号说明



ZD45-V300 MONOBLOCK VALVES - 整体多路阀

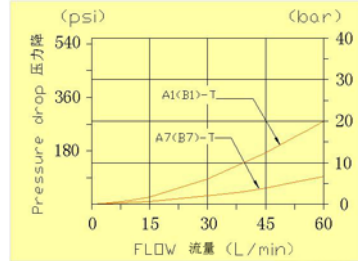
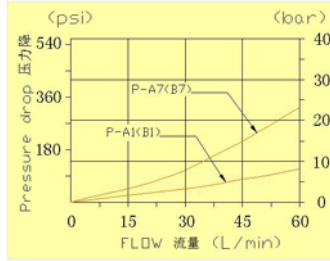
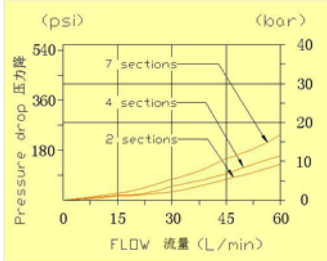


Pressure Drop - 压力降

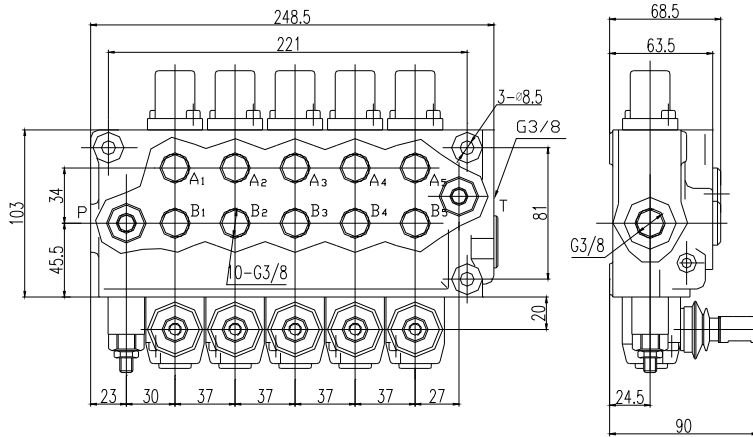
P → T

Inlet → A/B

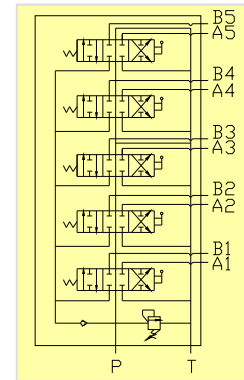
A/B → Outlet



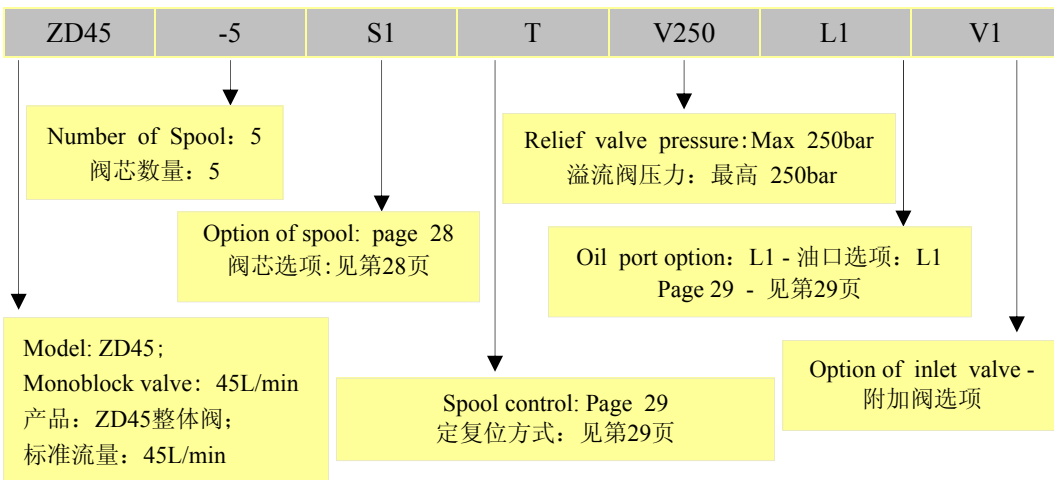
Installation Dimensions and Function Symbol - 外形尺寸及机能符号



Function Symbol
机能符号



Ordering Code - 型号说明



ZD60-2 MONOBLOCK VALVES - 整体多路阀

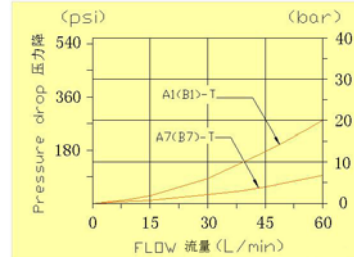
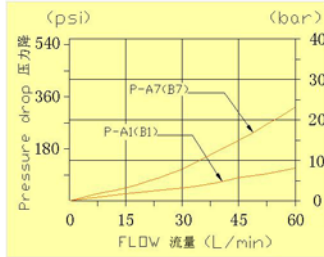
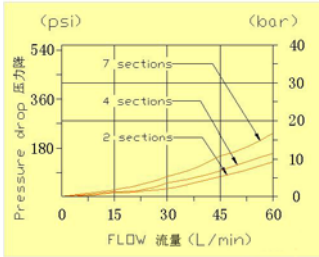


Pressure Drop - 压力降

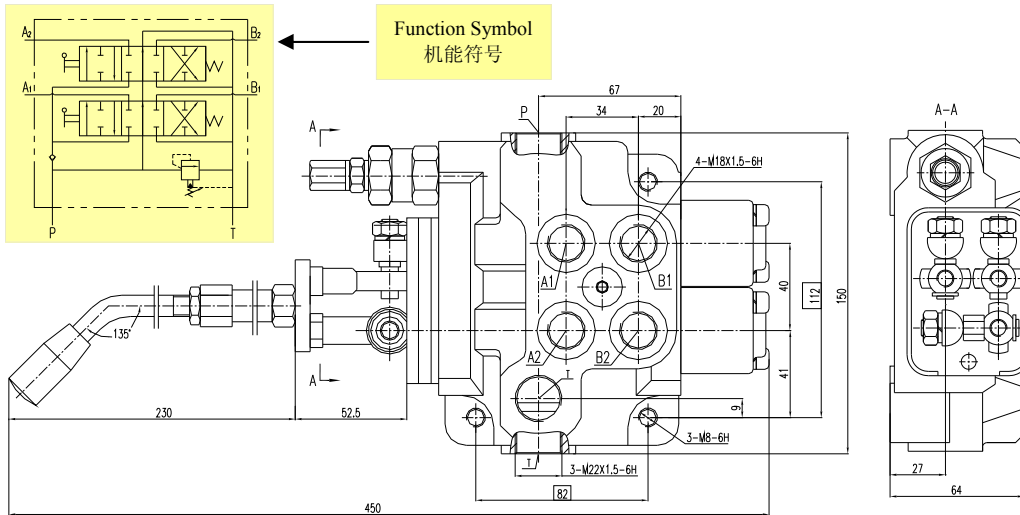
P → T

Inlet → A/B

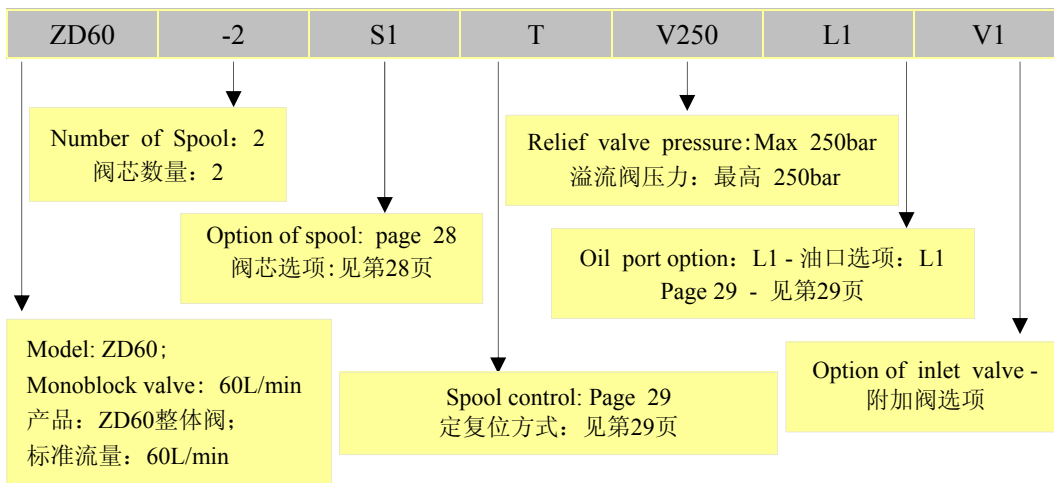
A/B → Outlet



Installation Dimensions and Function Symbol - 外形尺寸及机能符号

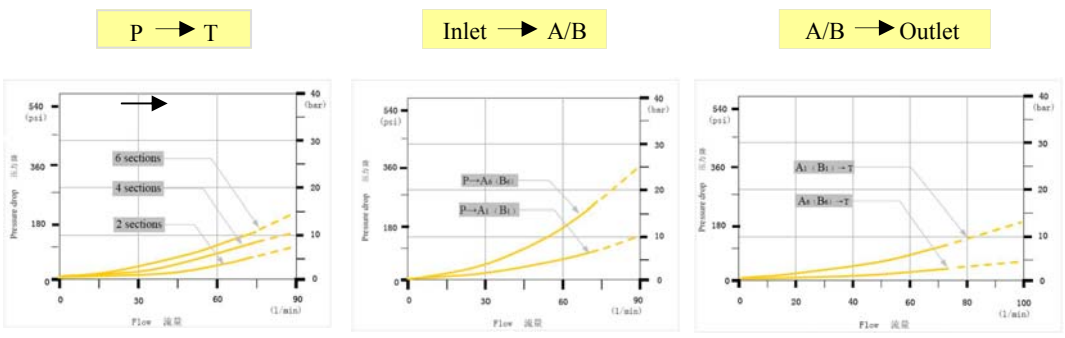


Ordering Code - 型号说明

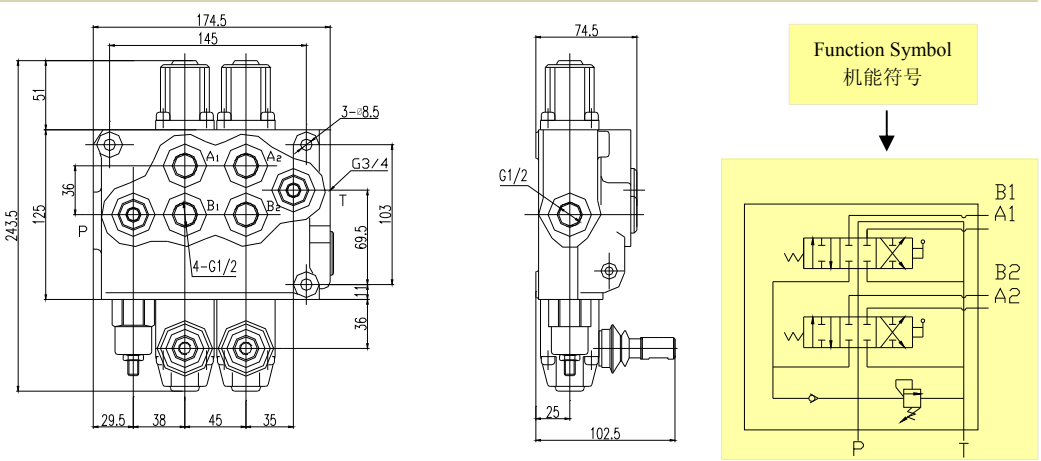


ZD70 MONOBLOCK VALVES - 整体多路阀

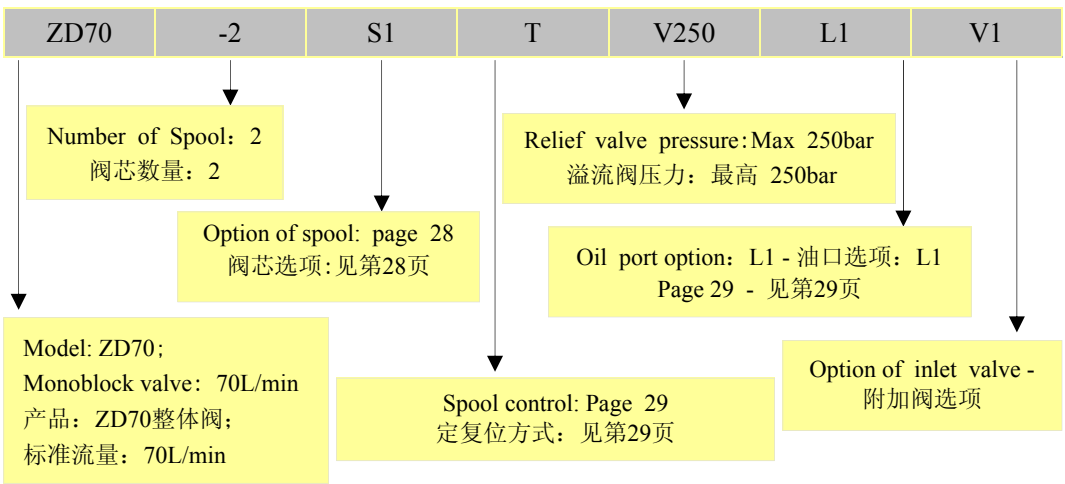
Pressure Drop - 压力降



Installation Dimensions and Function Symbol - 外形尺寸及机能符号



Ordering Code - 型号说明



ZD80 MONOBLOCK VALVES - 整体多路阀

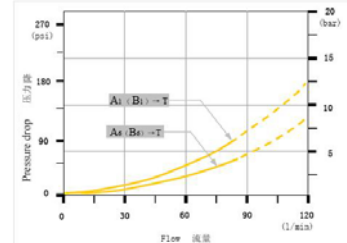
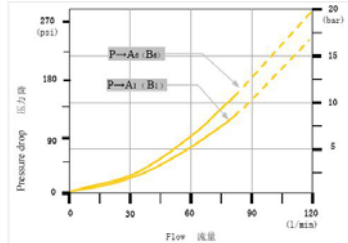
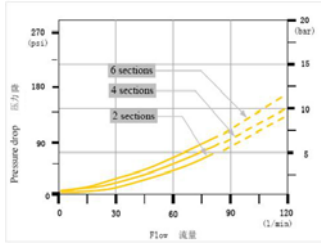


Pressure Drop - 压力降

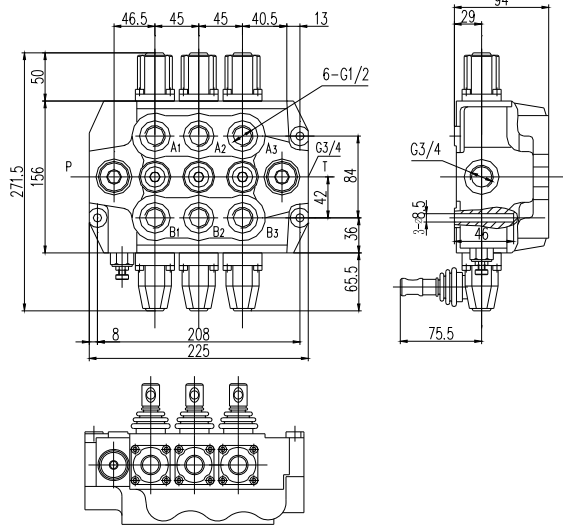
P → T

Inlet → A/B

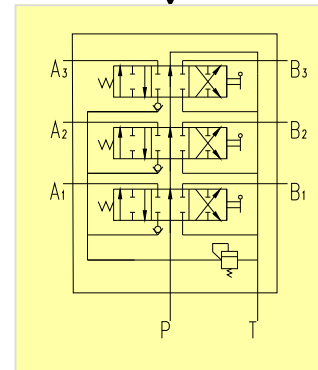
A/B → Outlet



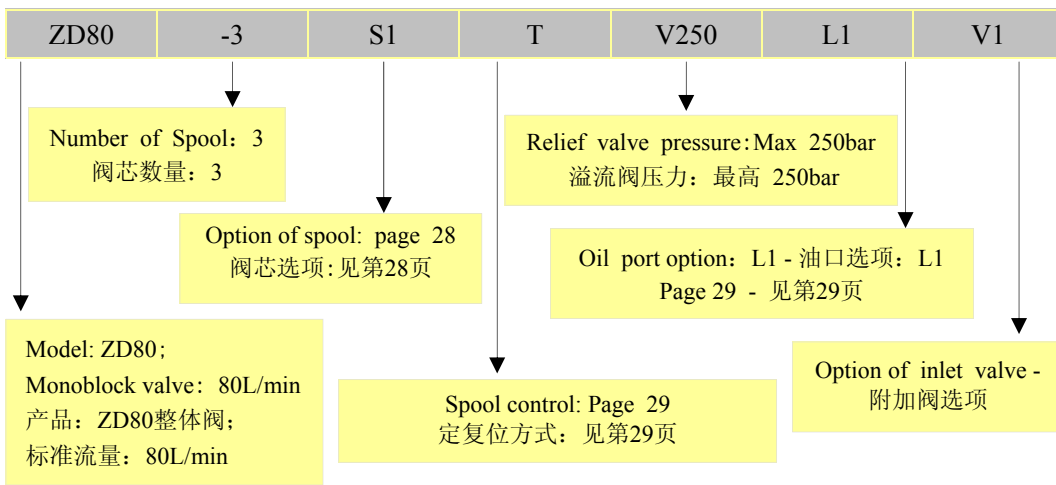
Installation Dimensions and Function Symbol - 外形尺寸及机能符号



Function Symbol
机能符号



Ordering Code - 型号说明



ZD120 MONOBLOCK VALVES - 整体多路阀

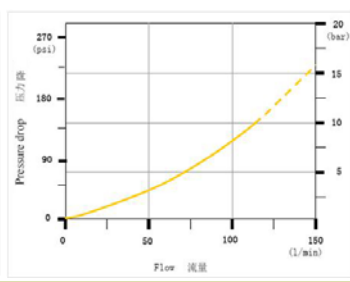
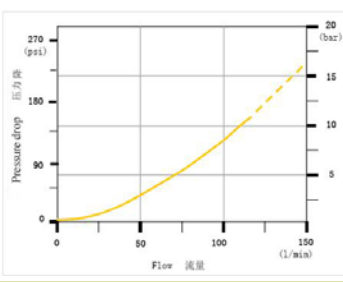
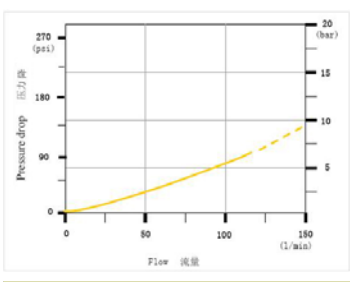


Pressure Drop - 压力降

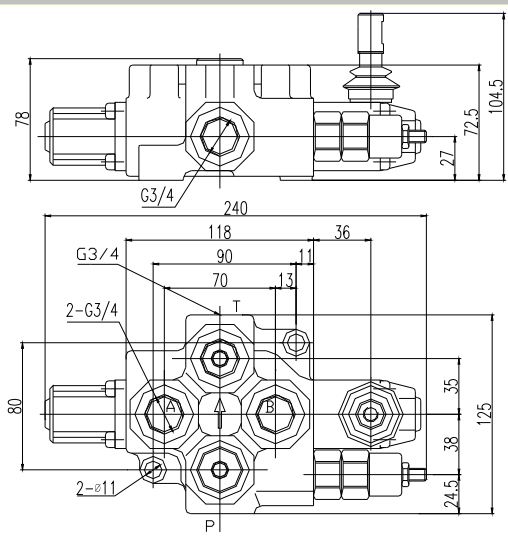
P → T

Inlet → A/B

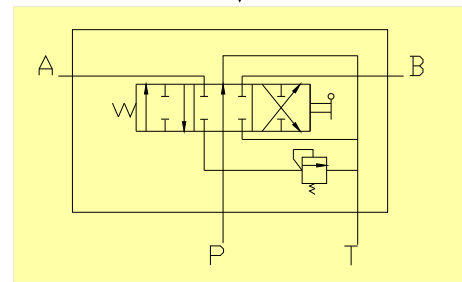
A/B → Outlet



Installation Dimensions and Function Symbol - 外形尺寸及机能符号



Function Symbol
机能符号



Ordering Code - 型号说明

ZD120	-1	S1	T	V250	L1	V1
	Number of Spool: 1 阀芯数量: 1	Option of spool: page 28 阀芯选项: 见第28页	Spool control: Page 29 定复位方式: 见第29页	Relief valve pressure: Max 250bar 溢流阀压力: 最高 250bar	Oil port option: L1 - 油口选项: L1 Page 29 - 见第29页	Option of inlet valve - 附加阀选项
	Model: ZD120; Monoblock valve: 120L/min 产品: ZD120整体阀; 标准流量: 120L/min					

ZD160 MONOBLOCK VALVES - 整体多路阀

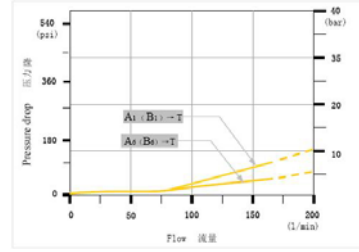
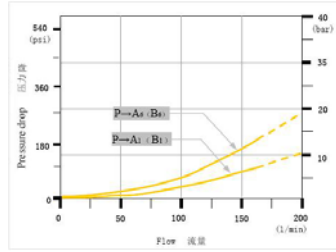
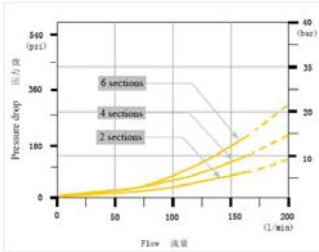


Pressure Drop - 压力降

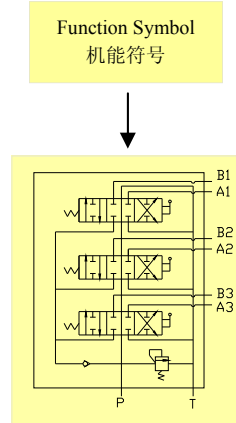
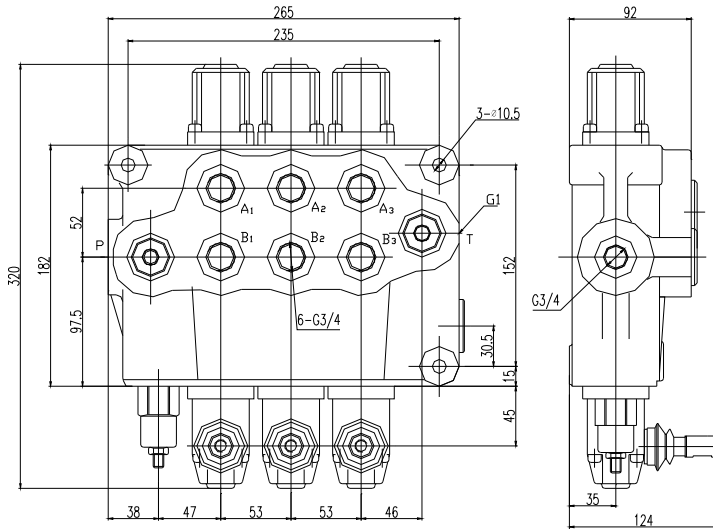
P → T

Inlet → A/B

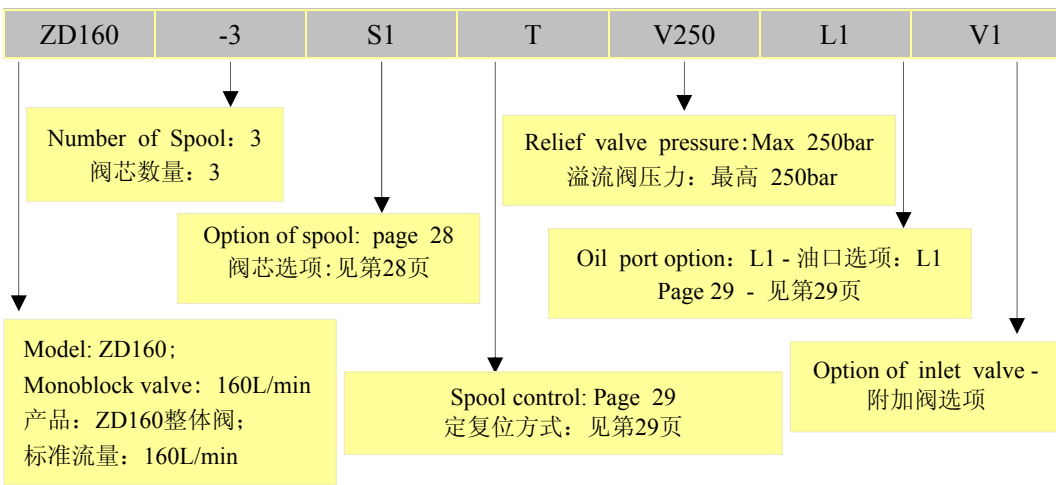
A/B → Outlet



Installation Dimensions and Function Symbol - 外形尺寸及机能符号



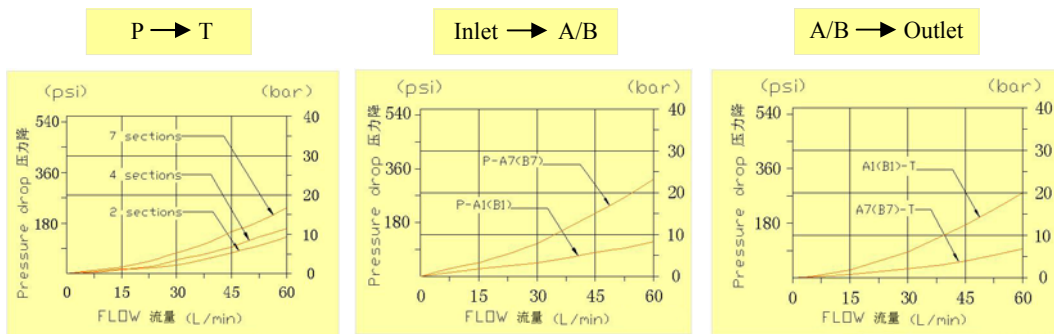
Ordering Code - 型号说明



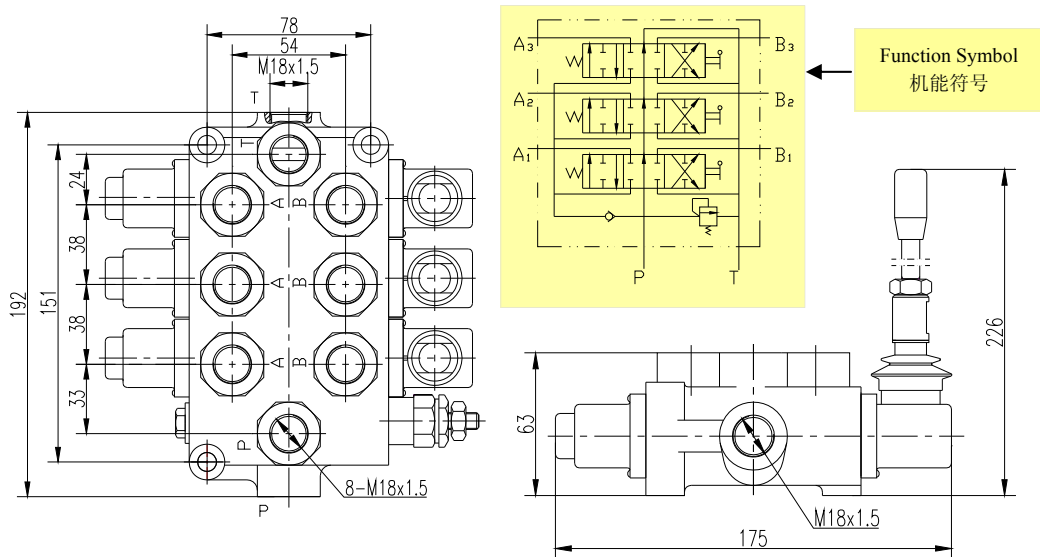
ZD3-L10-YT MONOBLOCK VALVES - 整体多路阀



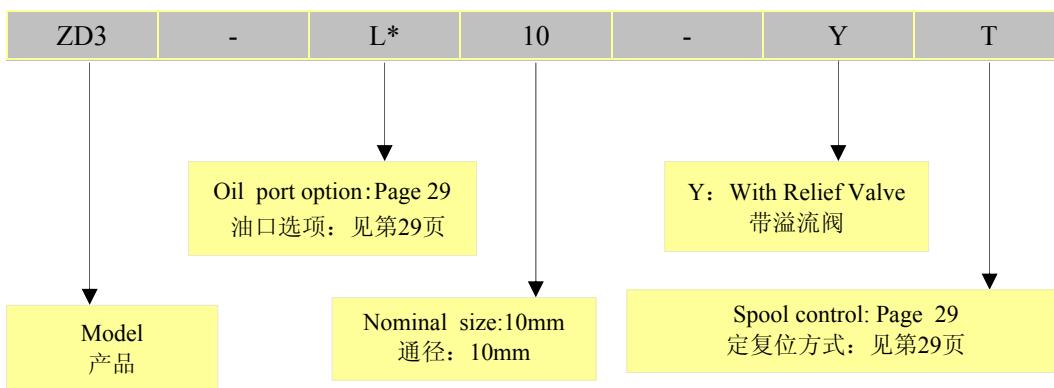
Pressure Drop - 压力降



Installation Dimensions and Function Symbol - 外形尺寸及机能符号



Ordering Code - 型号说明



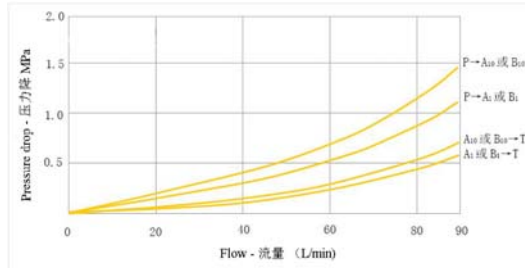
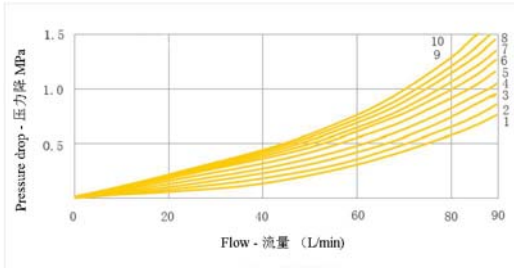
ZS/ MULTIPLE VALVES - 多路阀



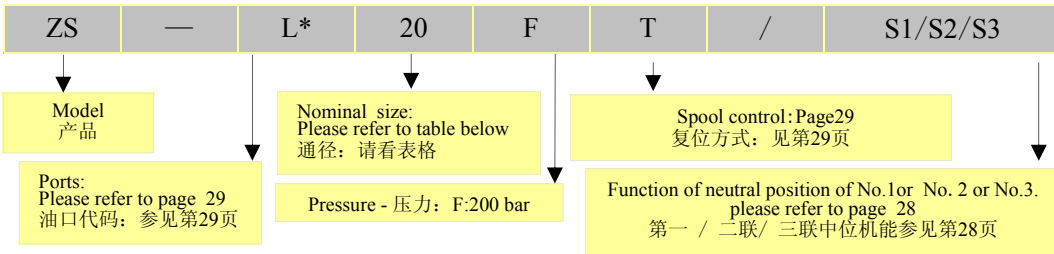
Pressure Drop - 压力降

P → T

Inlet → A/B → Outlet



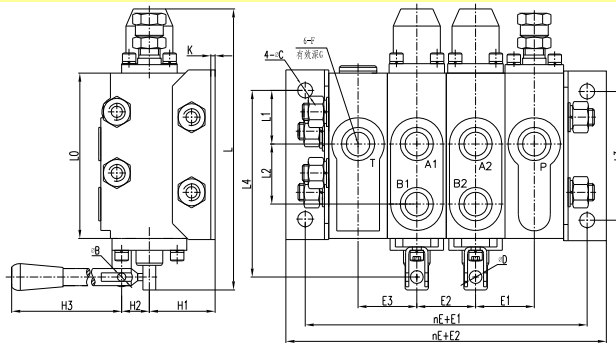
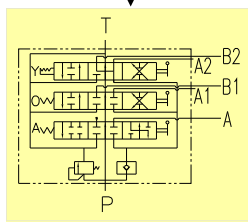
Ordering Code - 型号说明



Installation Dimensions and Function Symbol - 外形尺寸及机能符号

Code 型号	L	L0	L1	L2	L3	L4	H	H1	H2	H3	E	E1	E2	B	C	D	G	K	F
ZS-L10F-**-*/**	214	126	67	44	146	168	84	47	27	205	40	40	120	6	12	8	16	4	M18X1.5
ZS-L15F-**-*/**	214	126	59	48	146	168	88	48	27	205	45	45	130	6	12	8	16	4	M22X1.5
ZS-L20F-**-*/**	260	154	84	56	190	208	106	61	26	216	55	52.5	145	8	14	12	20	5	M27X2
ZS-L25F-**-*/**	323	195	70	70	220	240	132	72	40	286	60	60	170	8	18	14	20	5	M33X2

Function Symbol 机能符号



Code 型号	Dimension 口径	Flow 流量(L/min)	Weigh 重量(Kg)	Relief Pressure 安全阀压力(MPa)
ZS-L10F-**-*/**	10	40	7+3.5n	12-16
ZS-L15F-**-*/**	15	63	7.8+3.9n	12-16
ZS-L20F-**-*/**	20	100	10+6n	12-16
ZS-L25F-**-*/**	25	160	17+9n	12-16

ZS/ MULTIPLE VALVES - 多路阀

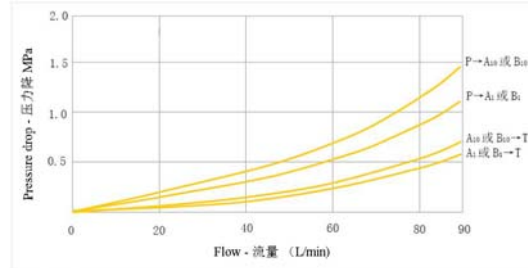
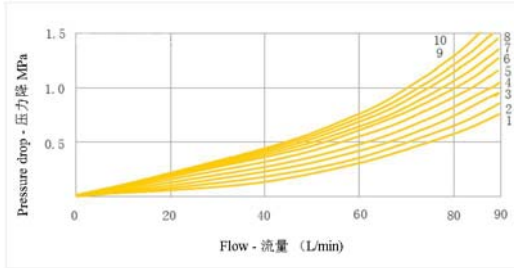
ZFS/ MULTIPLE VALVES - 多路阀



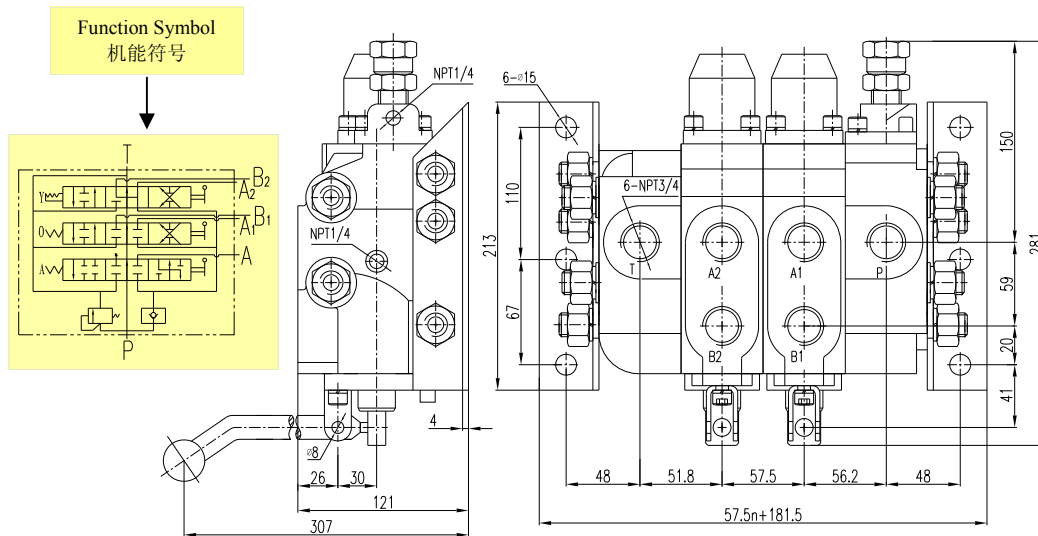
Pressure Drop - 压力降

P → T

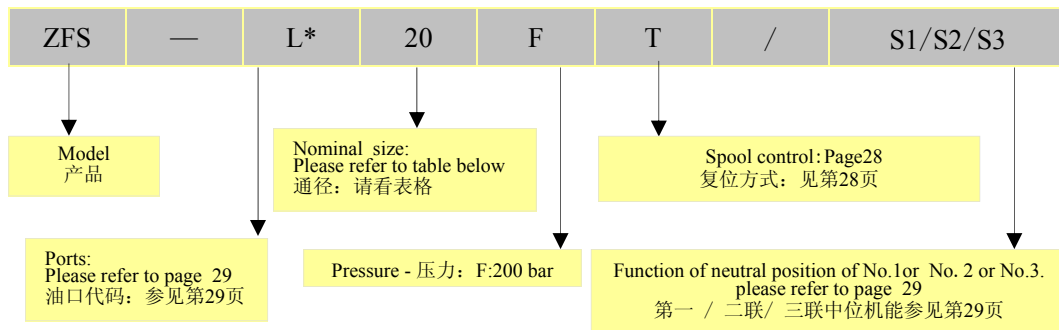
Inlet → A/B → Outlet



Installation Dimensions and Function Symbol - 外形尺寸及机能符号



Ordering Code - 型号说明

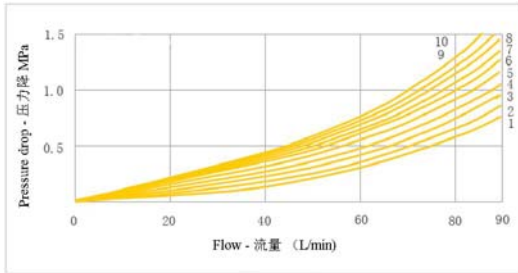


DL-F15L-*/*/*/MULTIPLE VALVES - 多路阀

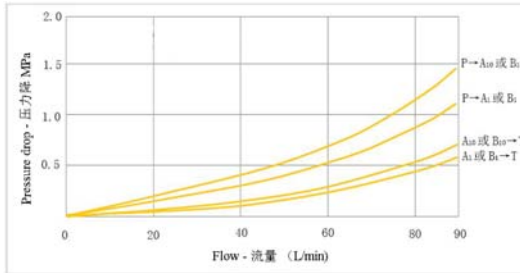


Pressure Drop - 压力降

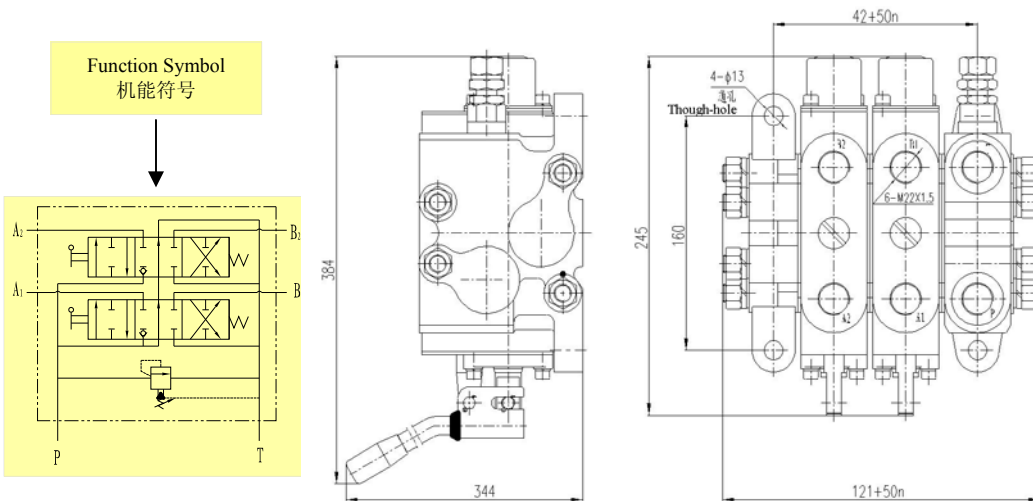
P → T



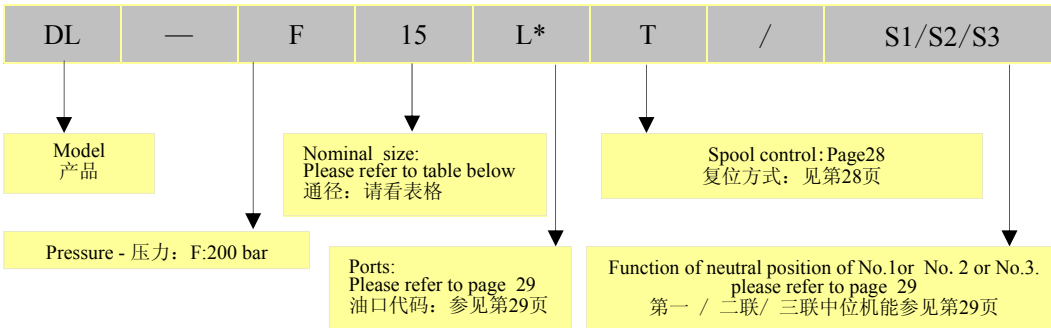
Inlet → A/B → Outlet



Installation Dimensions and Function Symbol - 外形尺寸及机能符号

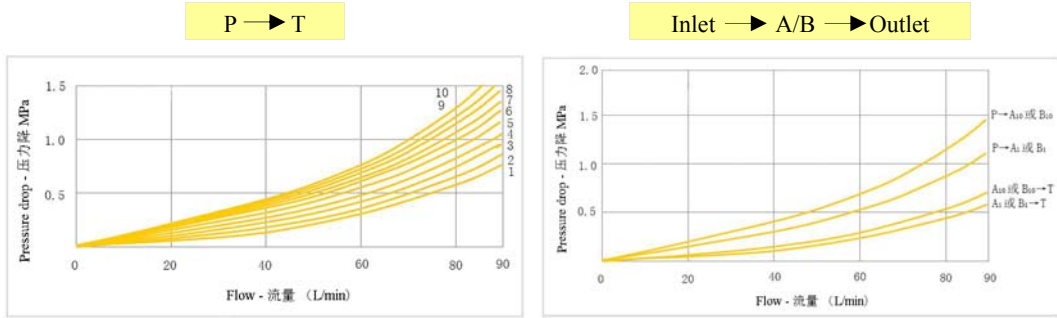


Ordering Code - 型号说明

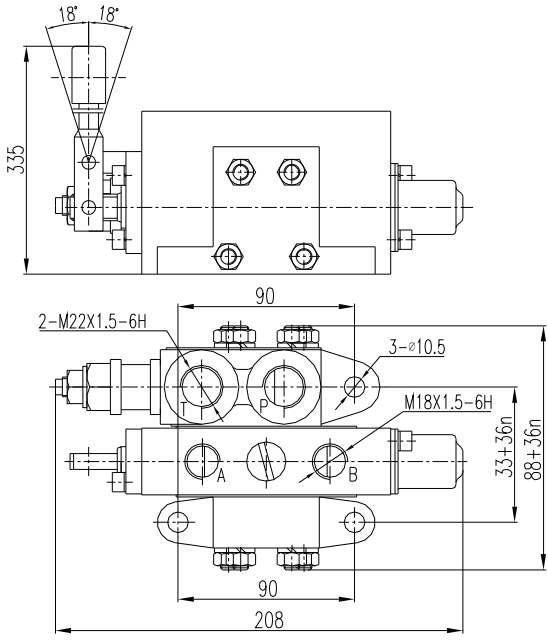
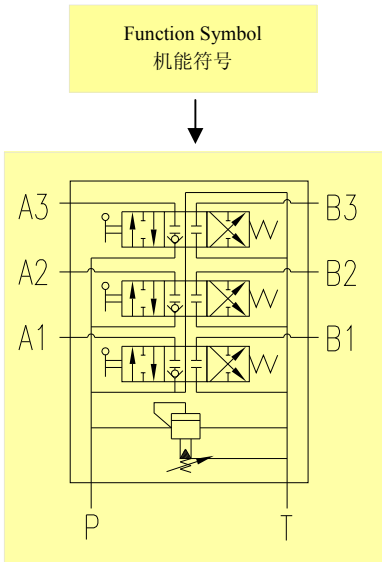


DLS-L15F-T MULTIPLE VALVES - 多路阀

Pressure Drop - 压力降



Installation Dimensions and Function Symbol - 外形尺寸及机能符号

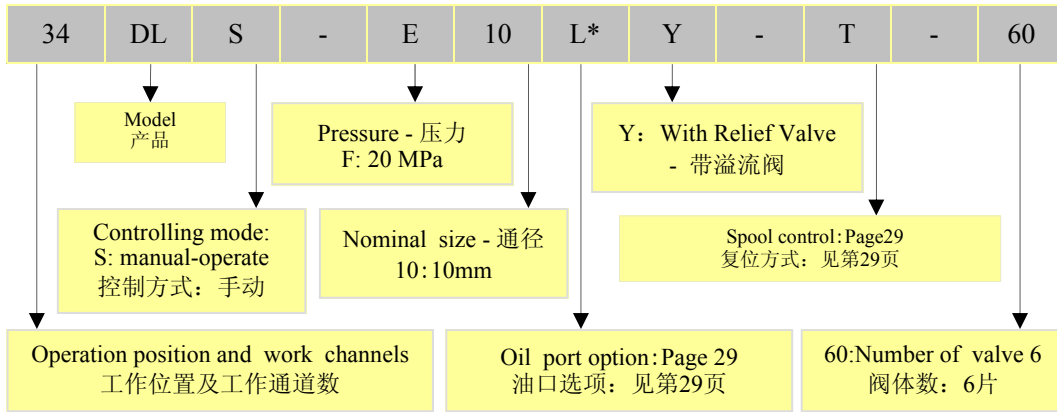


ZFS	—	F	15	L*	T	/	S1/S2/S3
↓		↓	↓	↓	↓		↓
Model 产品		Nominal size: Please refer to table below 口径: 请看表格			Spool control: Page28 复位方式: 见第28页		
	Pressure - 压力: F:200 bar			Ports: Please refer to page 29 油口代码: 参见第29页		Function of neutral position of No.1 or No. 2 or No.3. please refer to page 29 第一 / 二联 / 三联中位机能参见第29页	

34DLS-E10LY-T-60 MULTIPLE VALVES - 多路阀

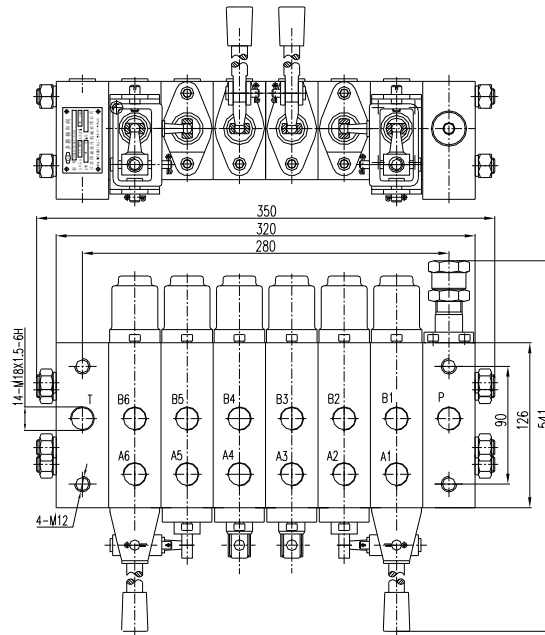
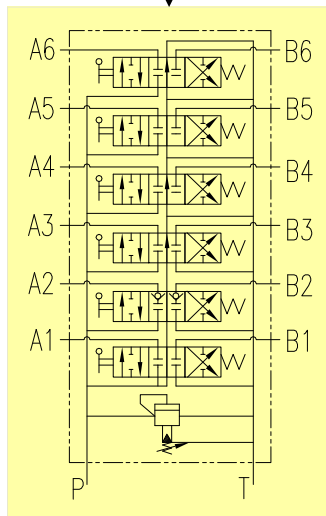


Ordering Code - 型号说明



Installation Dimensions and Function Symbol - 外形尺寸及机能符号

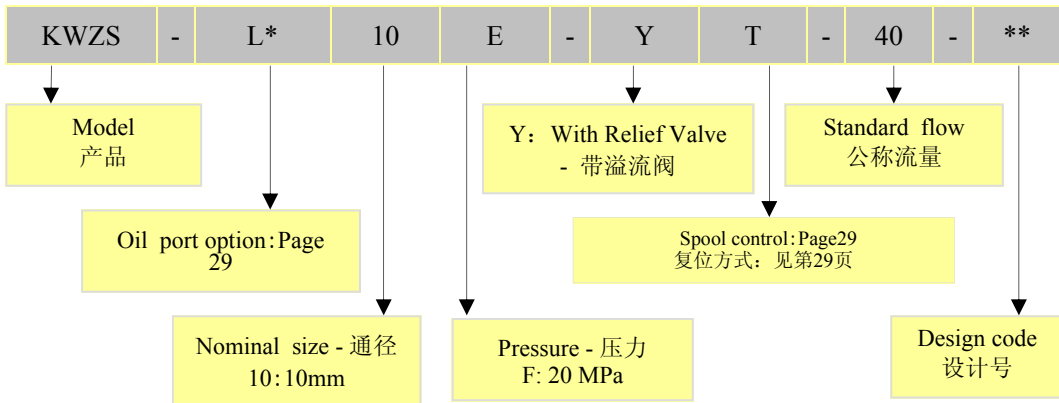
Function Symbol
机能符号



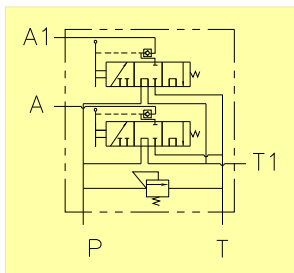
34DLS series multiple valves are combined by several reversing valves, safety valves and various additional valves. It is mainly used on loader, multi-function loading machinery, construction machinery, mining machinery, hoisting-transportation machinery and agriculture machinery. It can comprise the parallel, string, or parallel/string mixed circuit and has manifold spool function, mode of replacement and orientation or control, it can centralized control many executed organ with built-in check, it can also install over-load valve or oil return valve between its operating chamber and oil return chamber to meet various requirements.

34DLS系列多路换向阀是由多个换向阀和安全阀及各种附加阀组合而成。主要用于装载机及多功能装载机，起重运输机械、矿山机械、农业机械等液压系统中，可组成并联、串联、或串并联复合油路并有多种滑阀机能和定位复位方式及控制方式，可实现多个执行机构的集中控制。该系列多路换向阀每连都带有单向阀，同时可根据用户需要，可在任一工作腔和回油腔之间安装过载阀或补油阀，广泛地满足不同主机的需要。

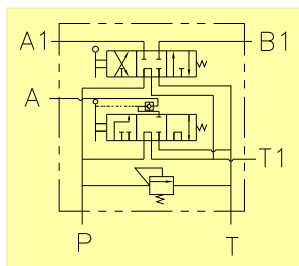
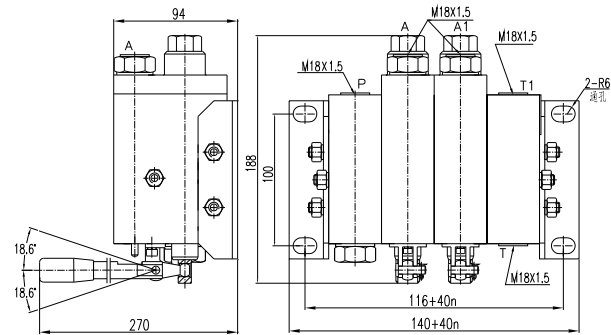
KWZS MULTIPLE VALVES - 多路阀



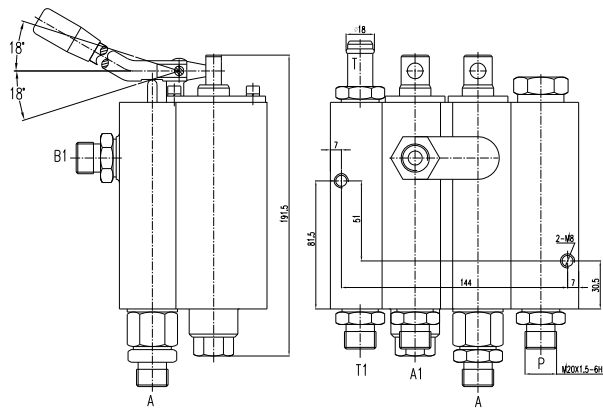
Installation Dimensions and Function Symbol - 外形尺寸及机能符号



Resist contaminated
divided multiple valve
分体式抗污染多路阀



Resist contaminated
integrated multiple valve
整体式抗污染多路阀



KWZS series multiple valves are mainly used in hydraulic system of knapsack or self-propelled combine harvester. The P.O. check can be functioned by manual operation to avoid unlock failure caused by oil contamination.

KWZS 系列抗污染多路换向阀主要应用于背负式及自走式联合收割机。它可用手动开启液压锁，避免了油液污染造成的开锁故障。

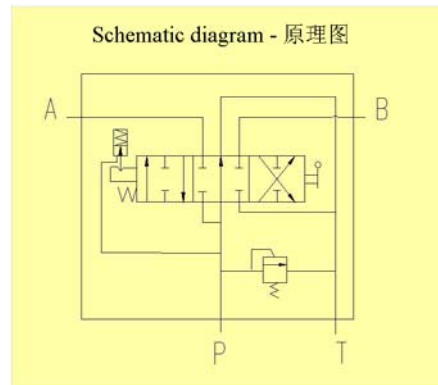
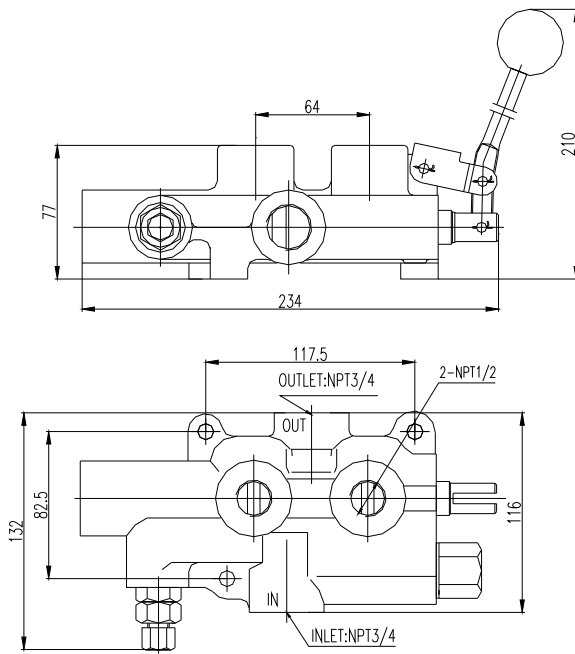
LS-TW-20F LOG SPLITTER VALVES - 劈柴机用换向阀



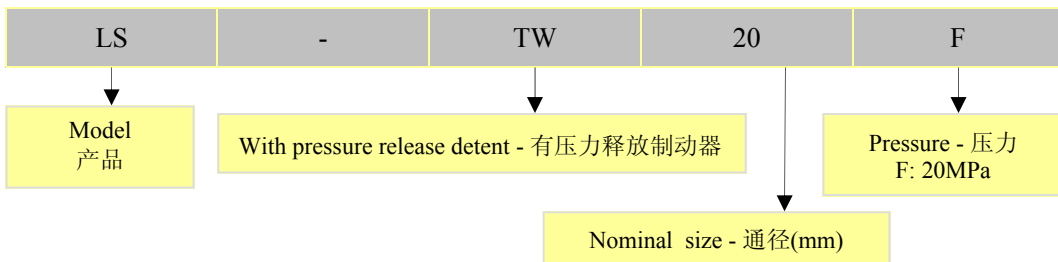
Specifications - 性能参数

Flow - 流量	95 (L/min)
Relief Pressure - 安全阀压力	200 (bar)
Detent Release Pressure - 压力释放制动器压力	70 to 140 (bar)
Pressure Drop (P to A or B) - 压力降(P到A或B)	3bar (at 75L/min)
Pressure Drop (P to T) - 压力降(P到T)	0.8bar (at 75L/min)

Installation Dimensions and Function Symbol - 外形尺寸及机能符号



Ordering Code - 型号说明



LS-TW-20F LOG SPLITTER VALVES - 劈柴机用换向阀

50

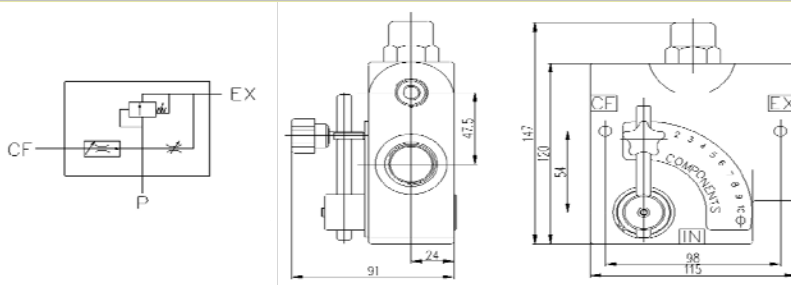
**PRESSURE COMPENSATING VARIABLE FLOW VALVES -
可变流量压力补偿流量控制阀**



Specification - 性能参数

Model 型号	Oil Port 油口尺寸	Flow 流量(gpm)	Standard Pressure 公称压力(bar)
LKF-40-3/8NPT	3/8"-NPT	0-30 L/min (0-8gpm)	210
LKF-60-1/2NPT	1/2"-NPT	0-60L/min (0-16gpm)	
LKF-114--3/4NPT	3/4"-NPT	0-114L/min (0-30gpm)	

Installation Dimensions and Function Symbol - 外形尺寸及机能符号

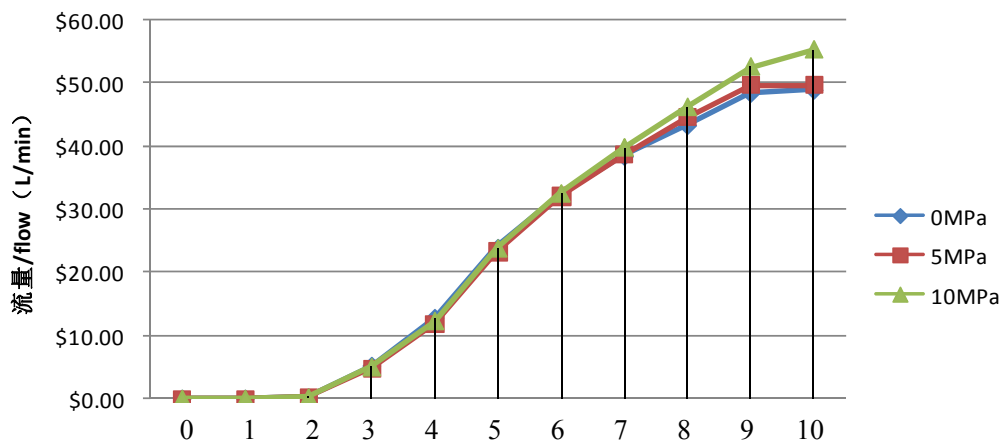


Features - 特性

LKF model is a full range pressure compensating variable flow control. It is designed so that the orifice area varies as the lever is rotated. The outlet flow is smooth and constant regardless of the pressure on the control flow or excess flow ports. An adjustable ball spring relief allows for pressure compensated flow up to the pressure setting on the relief. Relief valves are preset at 1500 psi and field adjustable from 750 to 3000 psi.

LKF是全范围压力补偿可变流量控制阀。经过精心设计，它的节流孔口面积会随着阀杆的旋转而变化。不论CF油口EX油口的压力如何变化，控制油口的流量始终是平稳恒定的。它拥有一个可调节的弹簧安全球阀使压力可以上升到设置的安全压力。安全阀的压力出厂设置是1500 psi，可调节范围是750-3000 psi。

LKF60 Curve of Flow - LKF60流量曲线



Dial plate number - 表盘数值



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