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**GRH POWER**

## MonoBlock Valves

整体式多路阀

国瑞液压





# 公司简介

## Company Introduction

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ISO14000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。

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专业提供液压元件及液压技术的系统解决方案

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



## 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 ISO14000 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*



COMPANY INTRODUCTION



## Introduction of GRH's Monoblock Valves - 国瑞液压整体式多路阀简介

GRH Mono-block valves are open center valves. Mainly used in mobile machines such as, agricultural machinery, construction machines, mining equipment, material handling equipment as well as maintenance machines. All valve series adapted modular design. The system designer can choose different modules to design a complex system. Main valve spool is designed to satisfy with the customer's requirements, which provides excellent flow characteristics and very low flow force. It provides different inlet port and return port locations, as well as power beyond functions.

GRH mono-block valves have the following series:

- GDV25 Series, rated flow 25L/min.
- GDV45 Series, rated flow 45L/min.
- GDV70 Series, rated flow 70L/min.
- GDV80 Series, rated flow 80L/min.
- GDV120 Series, rated flow 120L/min.
- GDV160 Series, rated flow 160L/min.

Each series has different assemblies. Some series have one spool, two spool, three spool assemblies. Some series have up to six spool assemblies . For detail information please refer to each series' technical literature.

国瑞液压整体式多路阀是一种整体式开式多路阀。主要用于移动式机械，例如：农业机械、建筑机械、矿山机械、装卸机械、维修机械以及其他工程机械。本系列的整体式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。进油油口和回油油口形式可以根据用户的要求来选择以满足不同的运用场合。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。回油也可提供动力外接。

国瑞整体式多路阀主要有以下系列：

- GDV25系列，额定流量25L/min。
- GDV45系列，额定流量45L/min。
- GDV70系列，额定流量70L/min。
- GDV80系列，额定流量80L/min。
- GDV120系列，额定流量120L/min。
- GDV160系列，额定流量160L/min。

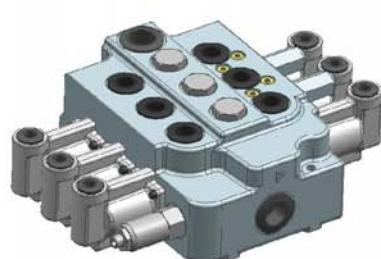
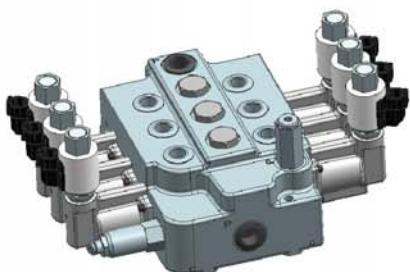
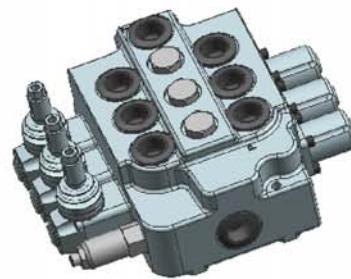
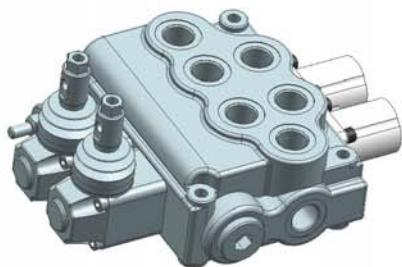
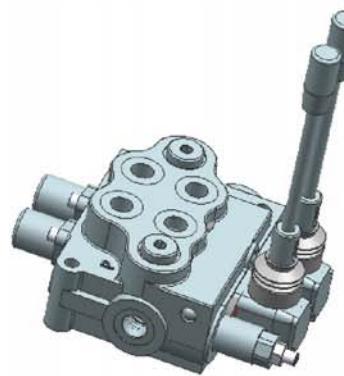
每个系列均分别有一联，二联，三联的整体式多路阀，某些系列最多可达六联，具体情况可参见样本。

## CONTENTS - 目 录



### GRH Mono-Block Valves Series - 国瑞液压整体式多路阀系列

GDV25 Series Mono-block Valves - GDV25 系列整体式多路阀	5-17
GDV45 Series Mono-block Valves - GDV45 系列整体式多路阀	18-31
GDV70 Series Mono-block Valves - GDV70 系列整体式多路阀	32-44
GDV80 Series Mono-block Valves - GDV80 系列整体式多路阀	45-59
GDV120 Series Mono-block Valves - GDV120 系列整体式多路阀	60-69
GDV160 Series Mono-block Valves - GDV160 系列整体式多路阀	70-80

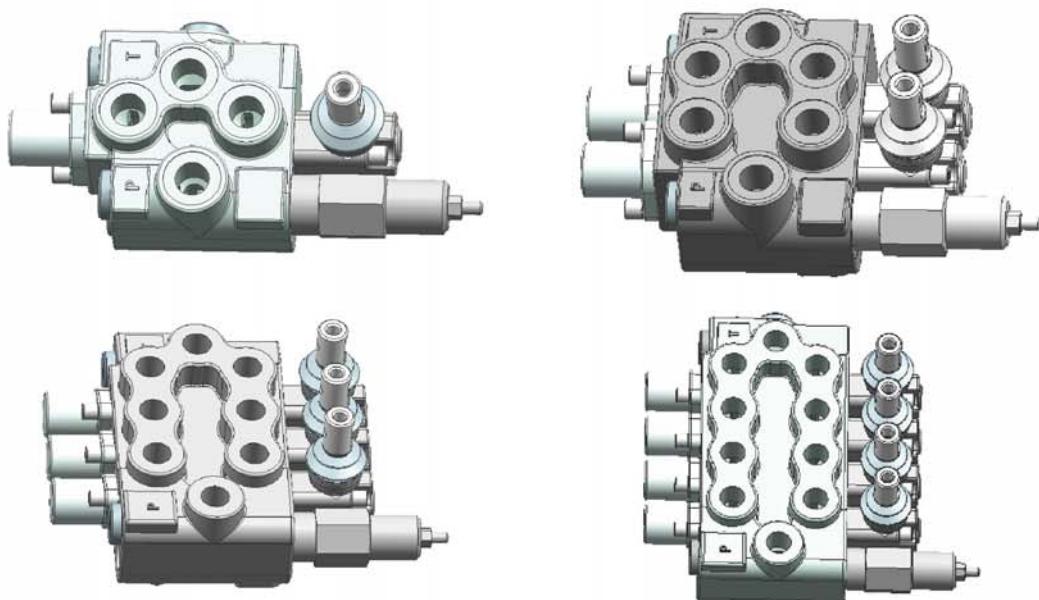




## GDV25 Series Inde - GDV25系列整体式多路阀目录

Main Features - 主要特点	6
Major Technical Data - 主要技术参数	6
Major Performance Data - 主要性能参数	7
Basic Operating Principle - 基本工作原理	8
Valve dimension - 阀体装配尺寸	9-10
Selection of the Inlet Port - 进油油口选择	11
Selection of Return Port - 出油油口选择	12
Power Beyond Port - 动力外接	13
Spool Functions - 阀芯功能	14
Drive Options - 驱动形式	15
Order Code - 订购编码	16
Order Example - 订购编码实例	17

## GDV25 Series Mono-block Valves - GDV25系列整体式多路阀





## GDV25 Series Mono-block Valve's Features - GDV25系列主要特点

GDV25 series Mono-block valve provides the following features:

- Cast iron body.
- Spring cap and mechanical detent cap are made in die cast aluminum.
- Parallel circuit. Inlet passage has a load check valve.
- Provides manual control and wire pulling control modules.
- Provides power beyond options.
- Provides mechanical detent.
- Provides different spool functions to satisfy with the needs for customers to control double and single cylinders, as well as to control hydraulic motors.
- Provide excellent flow characteristics and small operating force.
- Provides 6 different assemblies from one spool to 6 spools.

GDV25系列的整体式多路阀有以下主要特点:

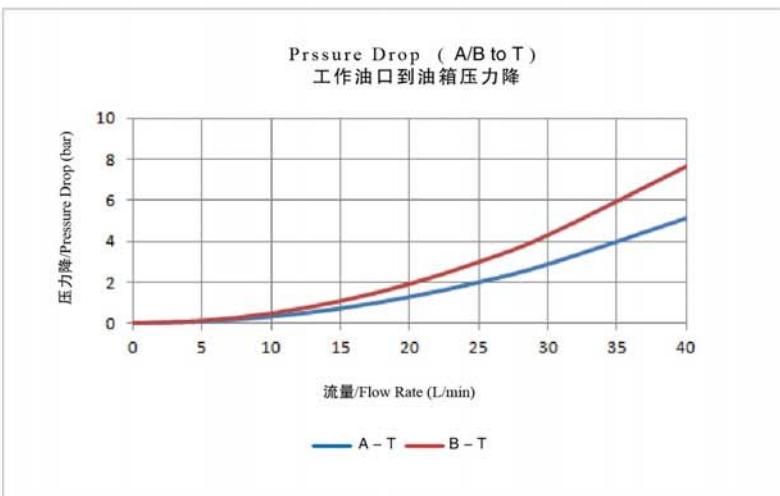
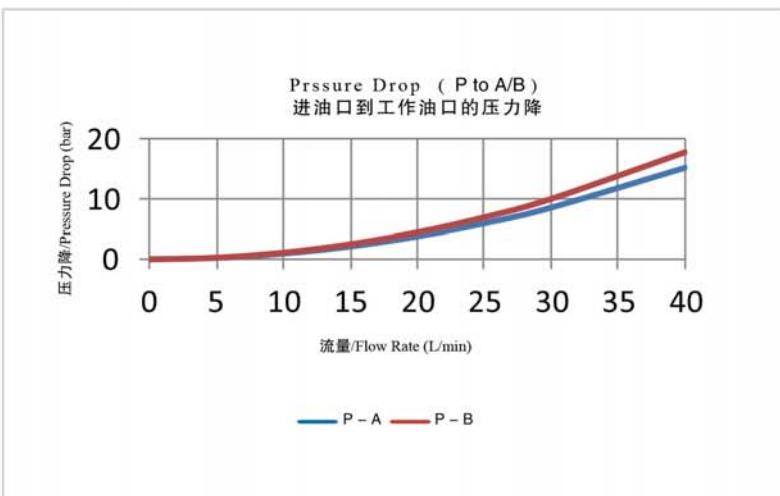
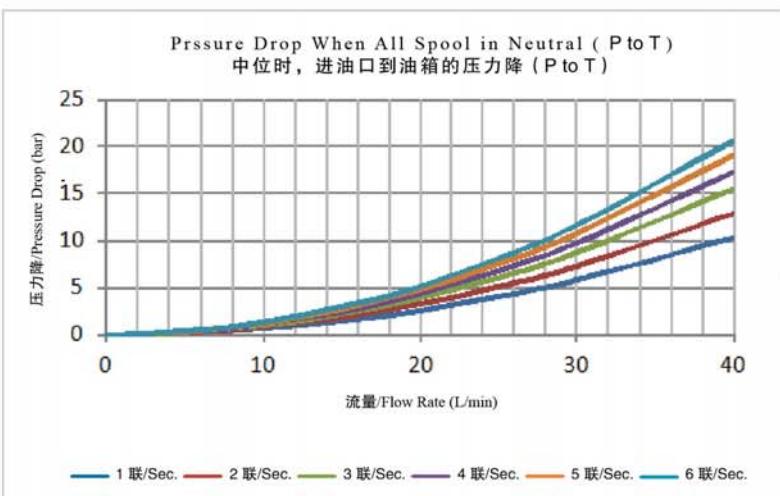
- 阀体为整体式灰口铸铁。
- 弹簧端盖，机械定位端盖，电和液控驱动模块为铸铝或压铸铝。
- 并联回路，进油回路带负载单向阀。
- 可提供手动和拉线控制。
- 可提供动力外接。
- 可提供机械定位。
- 供各种不同的阀芯功能：用于控制双作用油缸、单作用油缸、油马达的阀芯。
- 阀的操作力小，流量特性好。
- 该多路阀可组合成 1 到 6 个阀芯的整体阀。

## GDV25 Series Major Technical Data - GDV25系列主要技术参数

Rated flow rate:	25 L/min	额定流量:	25 L/min
Maximum flow rate:	30 L/min	最大流量:	30 L/min
Maximum pressure at P port:	250 bar	P 口最大压力:	250bar
Maximum pressure at A/B port:	250 bar	A/B 口最大压力:	250bar
Maximum pressure at T port:	25 bar	T 口最大压力:	25bar
Internal leakage (@ 70 bar) : A/B to T	30-35 CC/min	内泄漏 ( 70 bar ) : A/B to T	30-35 CC/min
Temperature range of the hydraulic oil:		液压油油温范围:	
With NBR (BUNA-N) seals	-20C° - 80C°	用油封丁晴橡胶密封	-20C° - 80C°
With FPM (VITON) seals	-20C° - 100C°	用氟橡胶密封	-20C° - 100C°
Spool stroke (1/2 position):	+5.5/-5.5mm	阀芯行程 (位置1/2):	+5.5/-5.5 mm
With floating function (1 / 2 and F position):	+5.5/-5.5, -8mm	带浮动的阀芯行程 (位置1/2 和 F 位):	+5.5/-5.5 -8 mm
Recommend hydraulic oil viscosity range:	15-75mm <sup>2</sup> /s	推荐液压油粘度范围:	15-75 mm <sup>2</sup> /s
Recommend temperature range:	-40C° - 60C°	推荐使用环境温度:	-40C°- 60C°

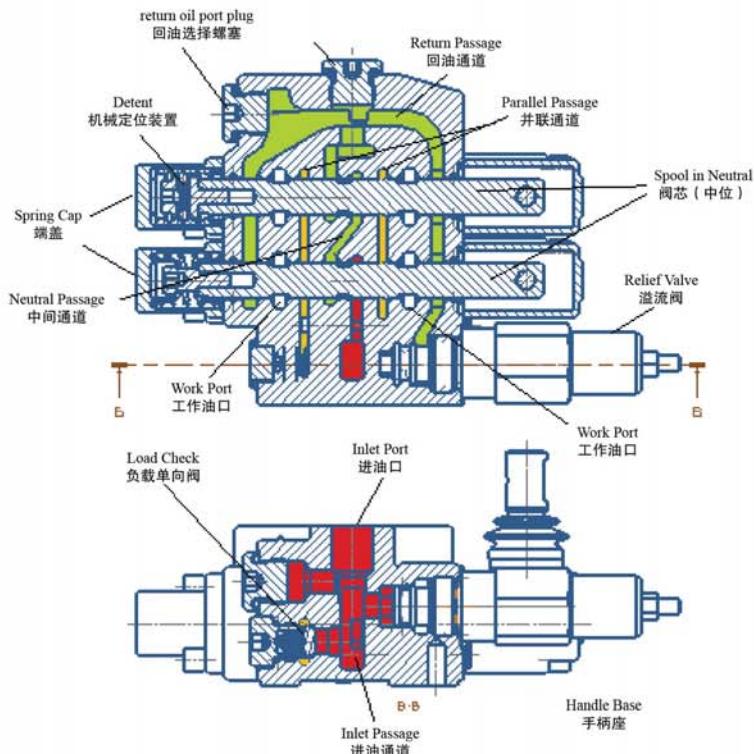


## GDV25 Series Performance Data - GDV25系列主要性能参数





## GDV25 Series Mono-block Valve Operating Principle - GDV25系列基本工作原理



GDV25 series mono-block valve is an open center, 3 position 4 way valve. Flow from pump passes through inlet port and enters to inlet passage. The inlet passage connects two passages: one is through the load check into the parallel passage to supply flow to metering spool ; Another is to neutral passage. When spool is in neutral position, spool metering with parallel passage is blocked. The oil from pump has to pass though neutral passage. When all spools are in neutral position, parallel passage for each spool is blocked, and neutral passage is wide open. Therefore, oil from pump is directly passing through the neutral passage to return passage to tank. It produces small pressure drop from "P" to "T". When one of the spools is moved to "1" or "2" position, the spool blocked the neutral passage. The flow from pump has to pass load check to parallel passage, then through valve opening between parallel passage and spool to work port "A" or "B".

For multi-spool mono-block valve, when one of its spools is in "1" or "2" position, its downstream of the neutral passage has no flow. The operator can operate more than one spools at a time, but the speed of the controlled device will be dependent on the magnitude of the load.

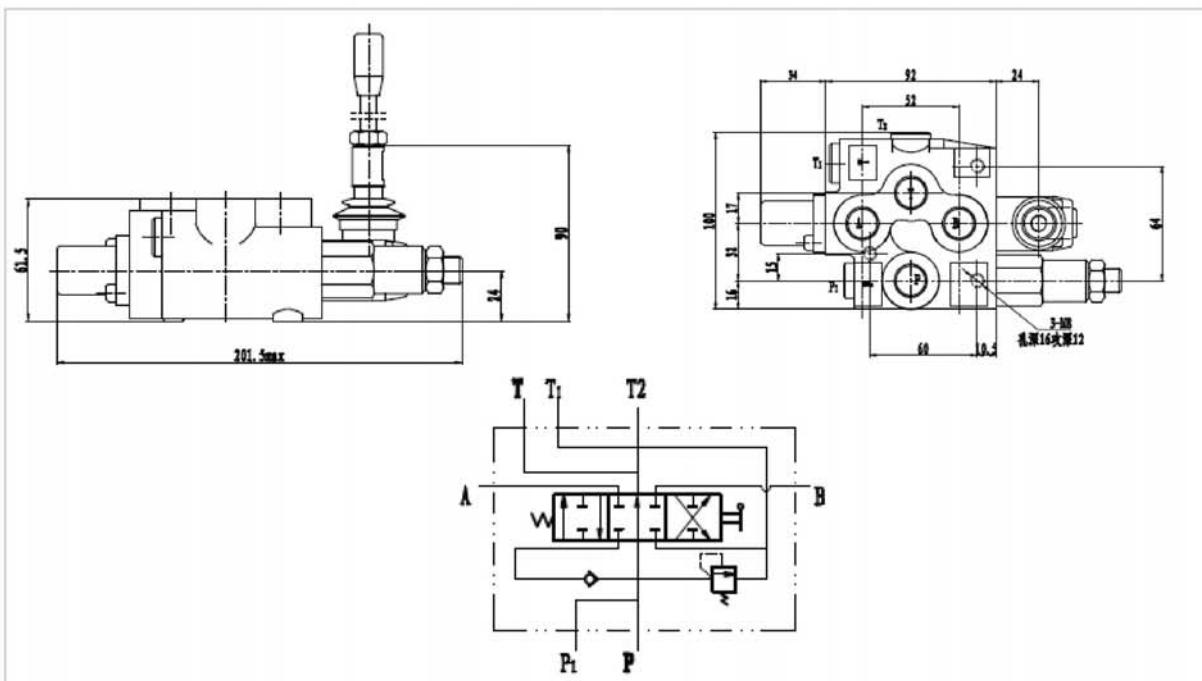
GDV25系列的多路阀是一种开式的3位4通阀。从油泵提供的油液经进油口进入进油通道，然后分为两路，一路经负载单向阀进入两个并联通道向阀芯供油，当阀芯都在中位时，阀芯的并联供油通道被堵死。另一路从进油通道经中间通道回油到回油通道。当阀芯都在中位时，中间通道畅通，从进油通道来的油液经中间通道直接回到回油口，产生很小的压力损失。当其中一个阀芯移动到“1”或“2”时，阀芯和阀体之间的中位通道被逐渐堵死，从油泵来的全部流量经负载单向阀进入并联油路，经阀口节流后进入该阀芯控制的“A”口或“B”口。

对于多联的整体式阀，如果其中一联的阀芯在“1”或“2”的位置时，它的后一联的中位通道就没有流量。油液的主要节流发生在并联通道和阀芯节流口。操作员可以同时控制几个阀芯，其控制元件的速度取决于负载的大小。

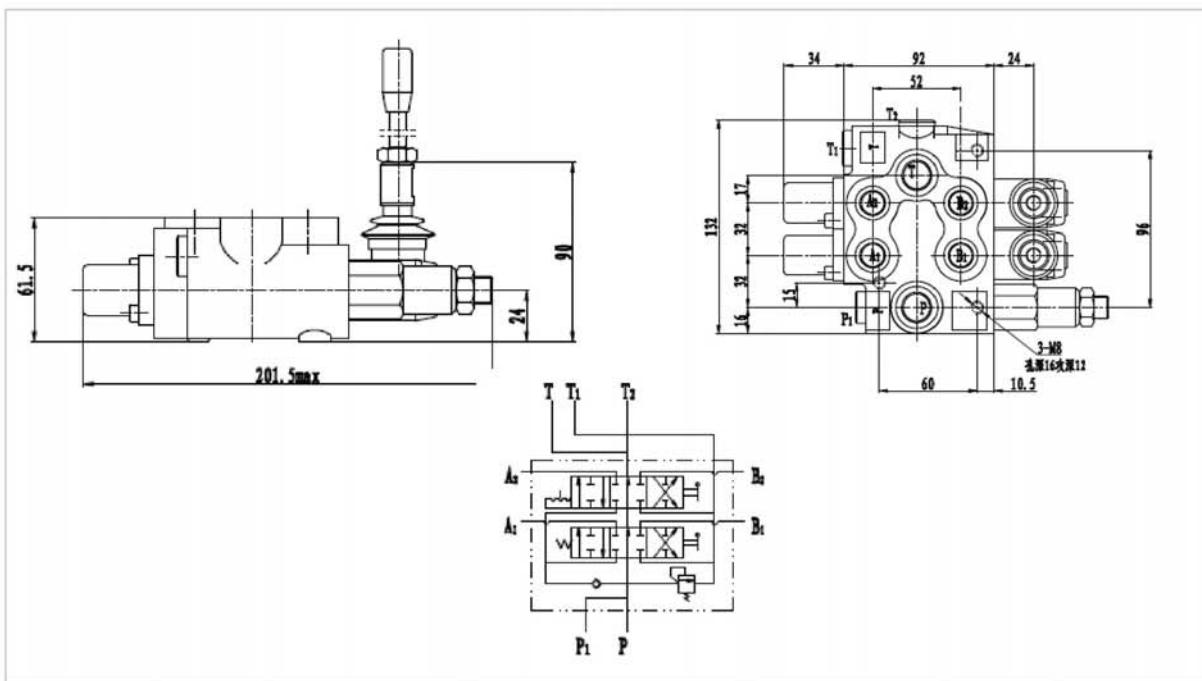


GDV25 Series Valve Dimeansion - GDV25系列阀体装配尺寸

GDV25-1:1 Spool Valve - 1 联整体阀



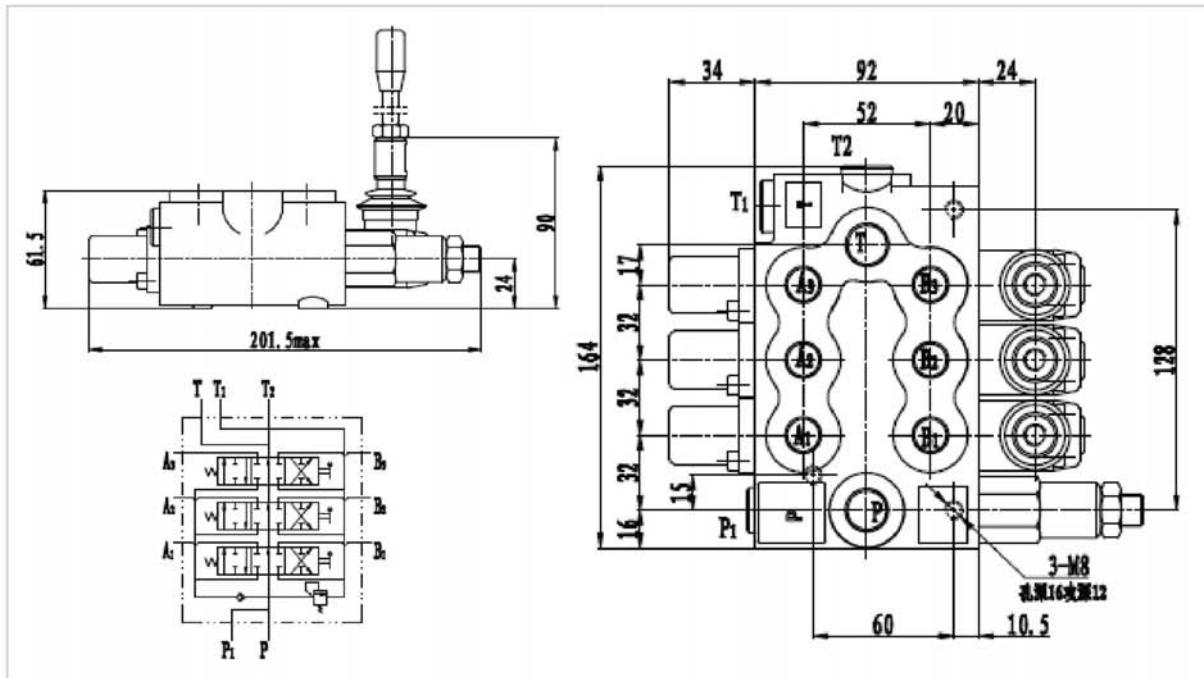
GDV25-2:2 Spool Mono-block Valve - 2 联整体多路阀



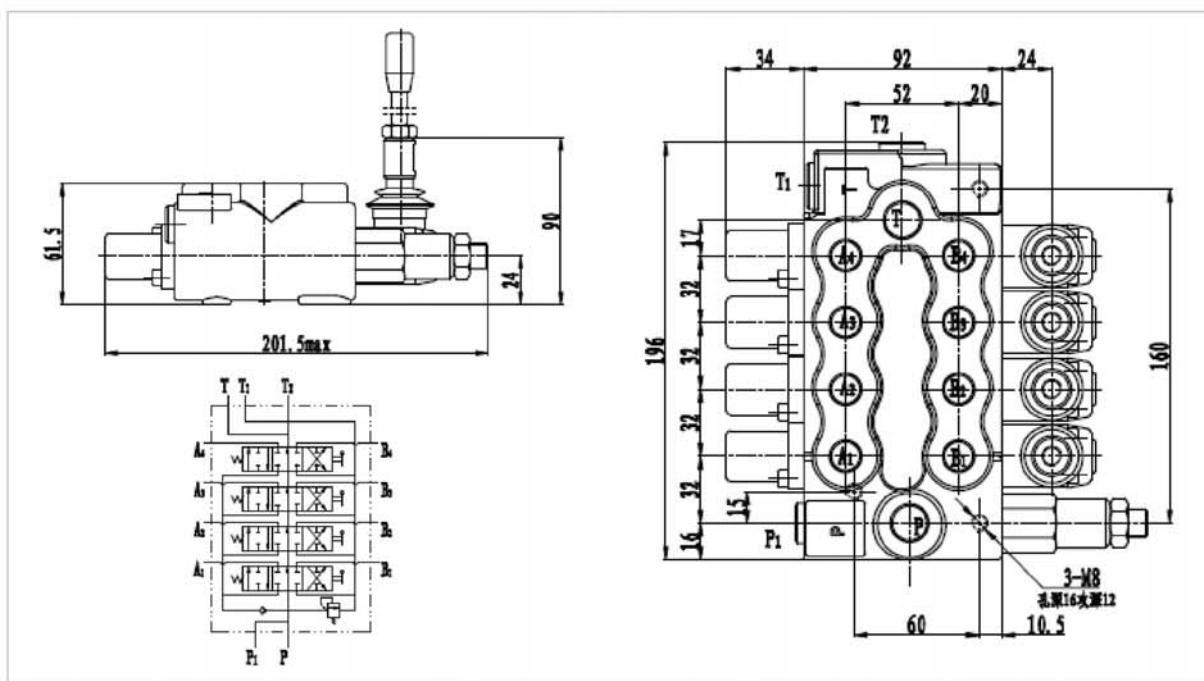


GDV25 Series Valve Dimension - GDV25系列几何尺寸

GDV25-3:3 Spool Mono-block Valve - 3 联整体多路阀

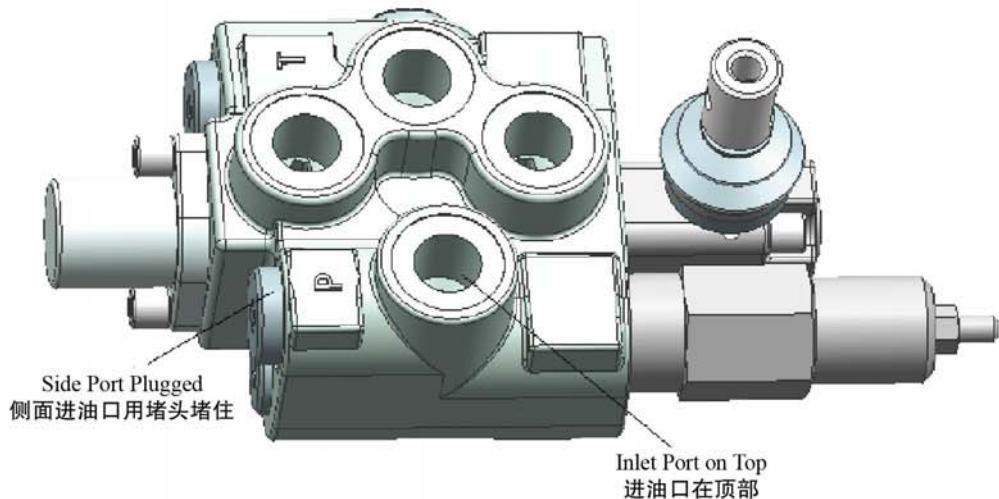


GDV25-4:4 Spool Mono-block Valve - 4 联整体多路阀

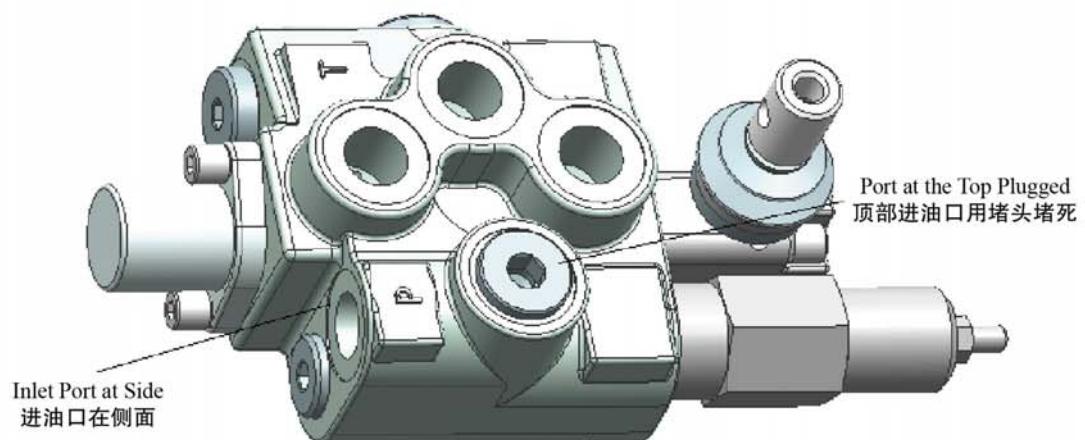


GDV25 Series Inlet Port Options - GDV25系列进油油口选择

Option Code: P1(Port on top) - 进油油口的选择代码：P1（油口在顶部）



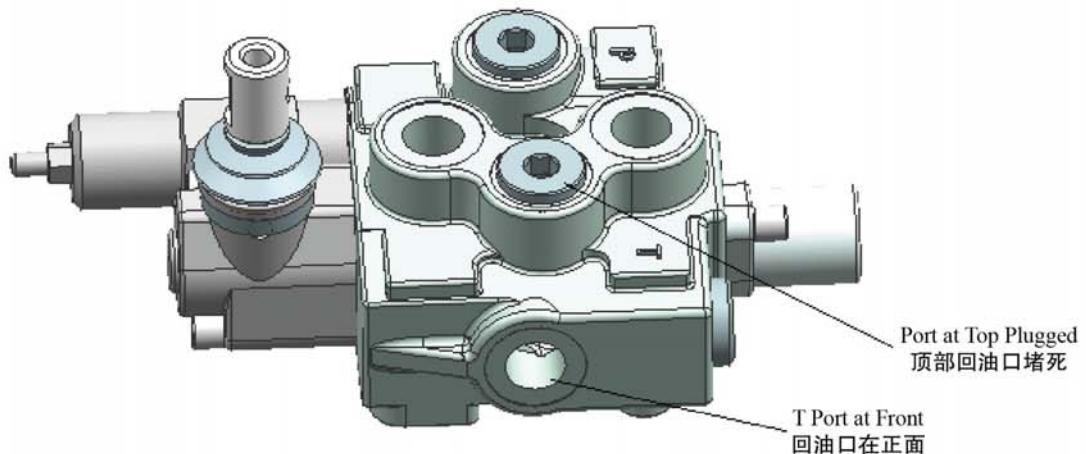
Option Code: P2(Port on side) - 进油油口的选择代码：P2（油口在侧面）



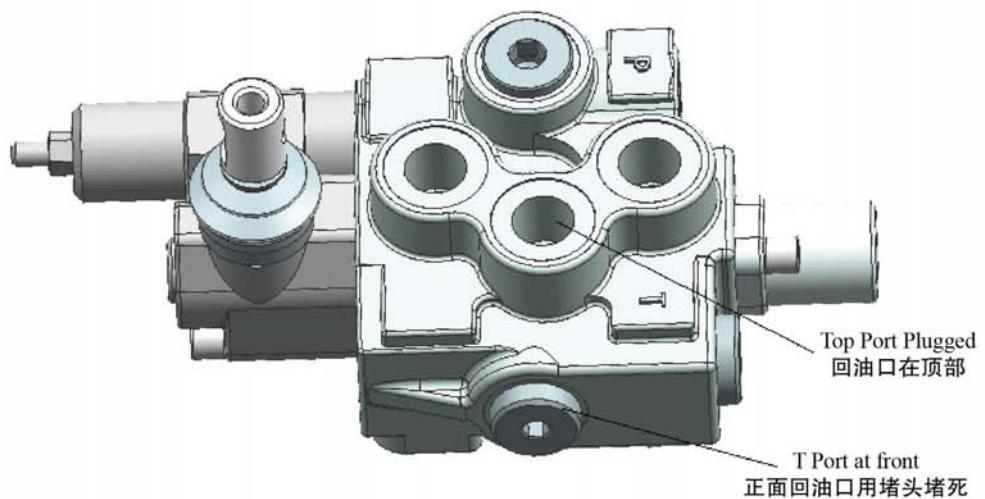


GDV25 Series Return Port - GDV25系列出油油口选择

Port T Option Code: T1(T at the Front) - 出油油口的选择代码：T1（回油口在正面）



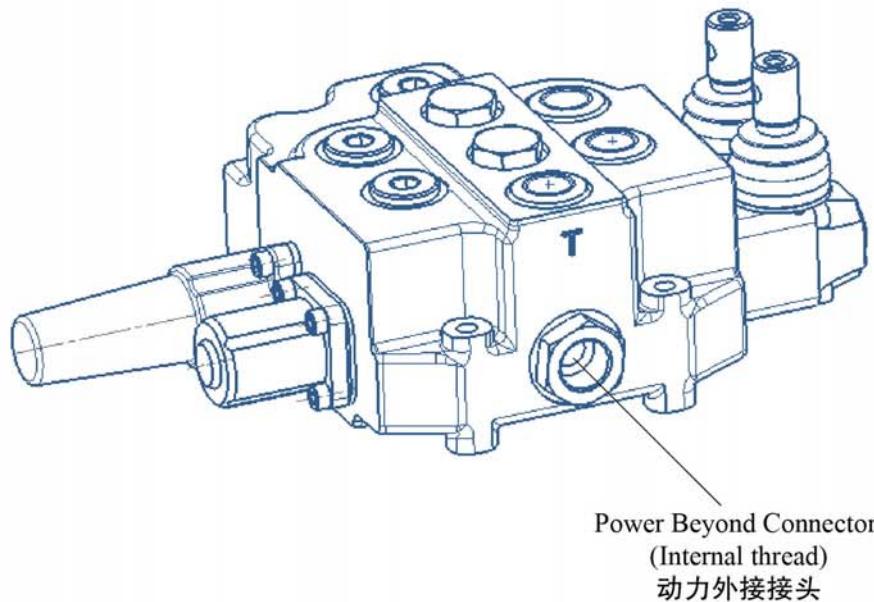
Port T Option Code: T2(T at the Top) - 出油油口的选择代码：T2（回油口在顶部）





GDV25 Series Power Beyond Options - GDV25系列动力外接选择

Power Beyond Option Code: D1(T port at the top, power beyond port connector at front)  
出油油口动力外接的选择代码: D1 (回油口在顶部, 压力油油口在正面通过一连接接头引出)



Return Port Option Cod:D0(Without Power Beyond)  
出油油口动力外接的选择代码: D0 (无动力外接)



## GDV25 Series Typical Spool Functions - GDV25系列典型滑阀机能

Spool Function 阀芯机能代码	Hydraulic Schematics 液压图形符号	Function 功能	Notes 备注
FG1		3 position 4 way At neutral: P,T,A,B are all blocked  3位4通 中位P, T, A, B各不通	Double acting cylinder applications  常用于控制双作用油缸
FG2		3 position 4 way At neutral: P blocked, T,A, B connected  3位4通 中位P不通, T, A, B相通	Hydraulic motor applications  常用于控制液压马达
FG3		3 position 4 way At neutral: P,A,B and T all connected  3位4通 中位P, A, B, 均与T相通	Hydraulic motor applications  常用于控制液压马达
FG4		3 position 3 way At neutral: P,T,A,B all blocked  3位3通 中位P, T, A, B各不通	Single acting cylinder applications  常用于控制单作用油缸
FG5		4 position 4 way At neutral: P,T,A, and B are all blocked 4th position floating  4位4通 中位P, T, A, B各不通 第4位浮动	Double acting cylinder applications  常用于控制双作用油缸
FG6		4 position 4 way At neutral: P blocked, T,A and B are connected 4th position floating  4位4通 中位P不通, T, A, B相通 第4位浮动	Double acting cylinder or hydraulic motor applications  常用于控制双作用油缸或液压马达

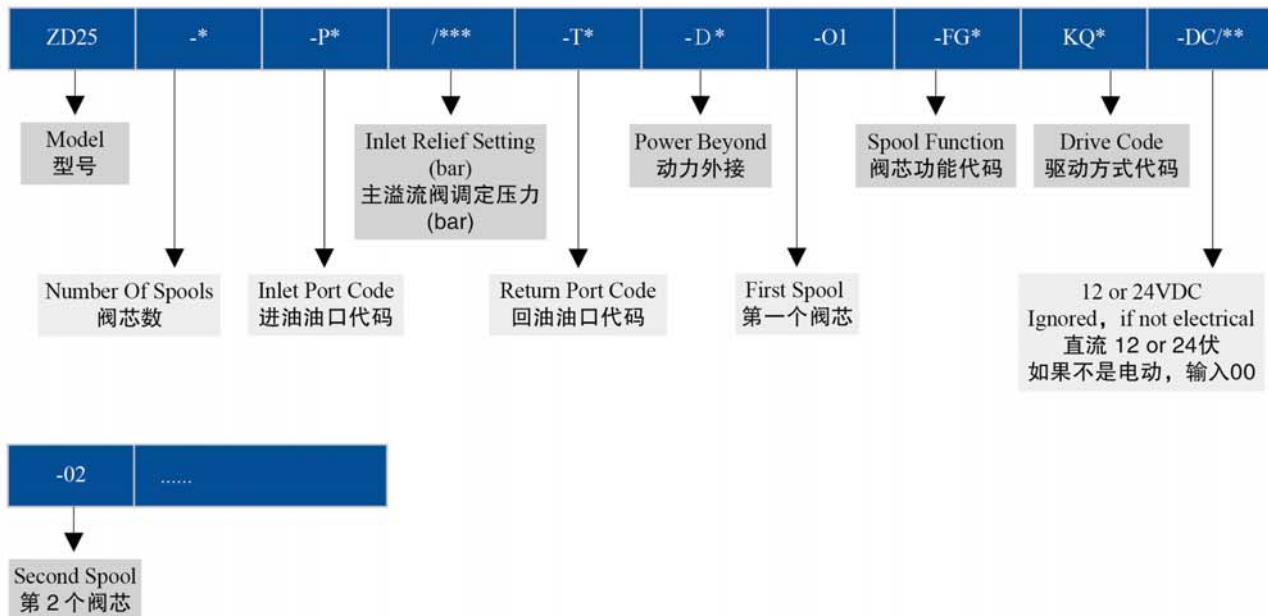


## GDV25 Series Drive Styles - GDV25系列驱动形式

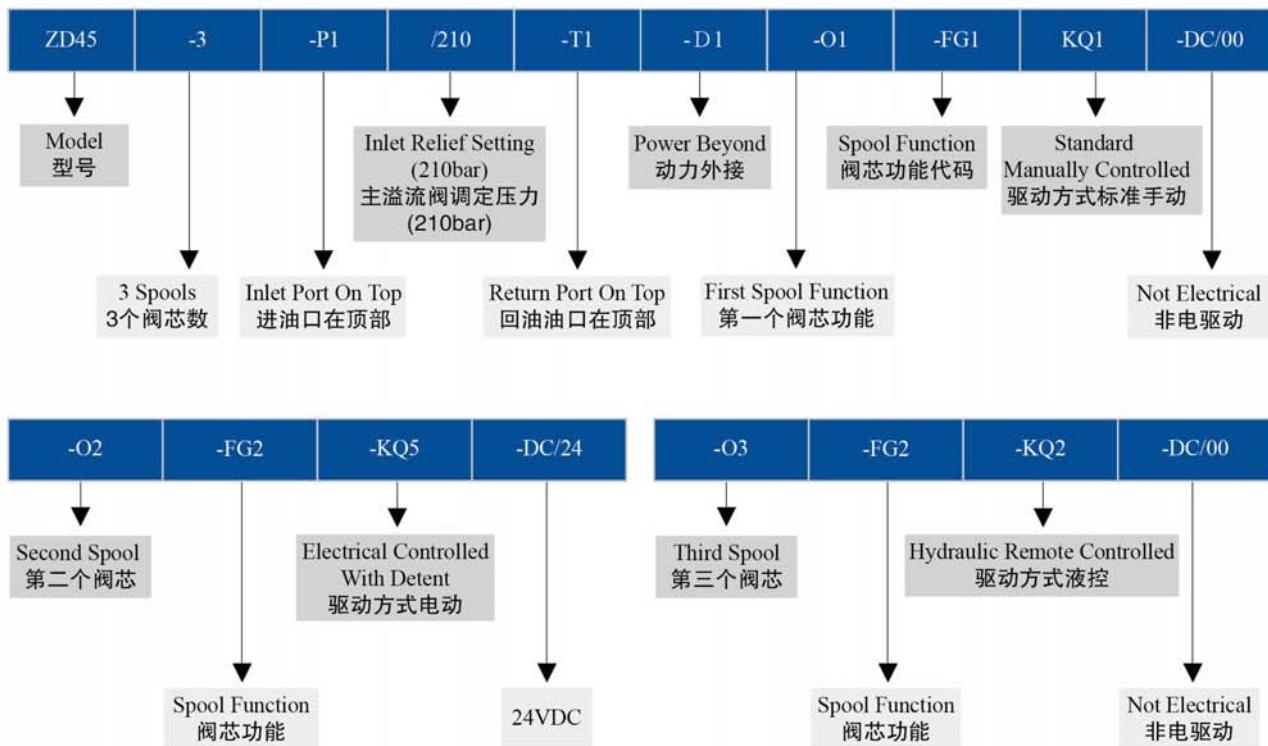
Drive Style Code 驱动方式代码	Hydraulic Schematics 液压图形符号	Function 功能
KQ1		Standard manually controlled 标准手动
KQ2		Hydraulic remote 液控
KQ3		Manually controlled with mechanical detent 手动带机械定位
KQ4 (not available) (暂无)		Manually controlled with 4th position floating and detent 手动, 第4位浮动带机械定位
KQ5 (not available) (暂无)		Electrical actuated (on/off) 电动(开/关控制)
KQ6 (not available) (暂无)		Electrical actuated with floating function 电动控制带浮动功能



## GDV25 Series Order Code - GDV25系列定购代码



## GDV25 Series Order Example - GDV25系列定购代码 (实例)

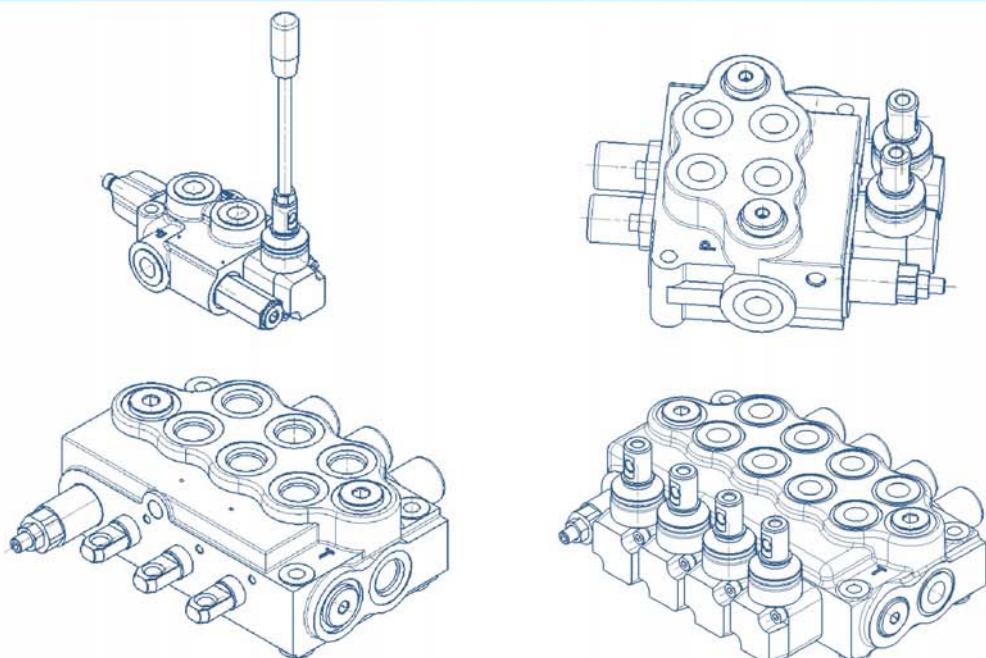




## GDV45 Series Index - GDV45系列整体式多路阀目录

Main Features - 主要特点	6
Major Technical Data - 主要技术参数	6
Major Performance Data - 主要性能参数	7
Basic Operating Principle - 基本工作原理	8
Valve dimension - 阀体装配尺寸	9-10
Selection of the Inlet Port - 进油油口选择	11
Selection of Return Port - 出油油口选择	12
Power Beyond Port - 动力外接	13
Spool Functions - 阀芯功能	14
Drive Options - 驱动形式	15
Order Code - 订购编码	16
Order Example - 订购编码实例	17

## GDV45 Series Mono-block Valves - GDV45系列整体式多路阀





## GDV45 Series Mono-block Valve's Features - GDV45系列主要特点

GDV45 series Mono-block valve provides the following features:

- Cast iron body
- Spring cap and mechanical detent cap are made in die cast aluminum.
- Parallel circuit. Inlet passage has a load check valve.
- Provides manual control and wire pulling control modules.
- Provides power beyond options.
- Provides mechanical detent.
- Provides different spool functions to satisfy with the needs for customers to control double and single cylinders, as well as to control hydraulic motors.
- Provide excellent flow characteristics and small operating force.
- Provides 6 different assemblies from one spool to 6 spools.

GDV45系列的整体式多路阀有以下主要特点:

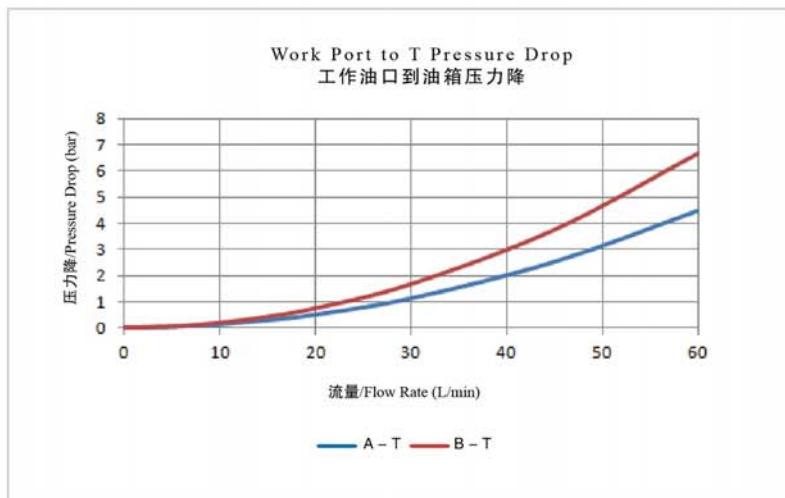
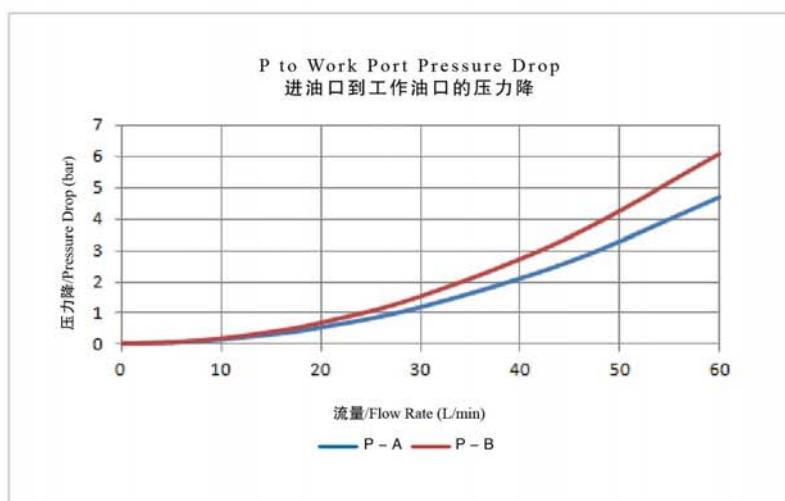
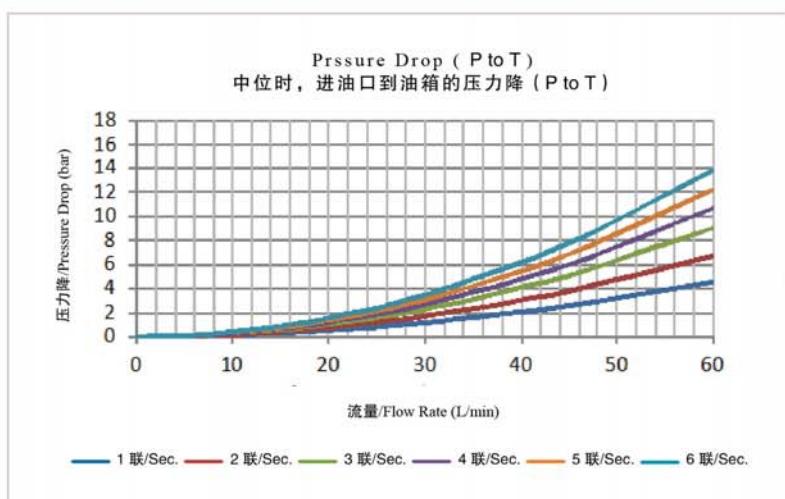
- 阀体为整体式灰口铸铁
- 弹簧端盖，机械定位端盖，为压铸铝。
- 并联回路，进油端带负载单向阀。
- 可提供手动和拉线控制。
- 可提供动力外接（一联整体阀除外）。
- 可以提供机械定位。
- 提供各种不同的阀芯功能：用于控制双作用油缸、单作用油缸、油马达的阀芯。
- 阀的操作力小，流量特性好
- 该多路阀可组合成1到6个阀芯的整体阀

## GDV45 Series Major Technical Data - GDV45系列主要技术参数

Rated flow rate:	45 L/min	额定流量:	45 L/min
Maximum flow rate:	55 L/min	最大流量:	55L/min
Maximum pressure at P port:	310 bar	P 口最大压力:	310 bar
Maximum pressure at A/B port:	310 bar	A/B 口最大压力:	310 bar
Maximum pressure at T port:	25 bar	T 口最大压力:	25 bar
Internal leakage (@ 70 bar) : A/B to T	30-35 CC/min	内泄漏 ( 70 bar ) : A/B to T	30-35 CC/min
Temperature range of the hydraulic oil:		液压油油温范围:	
With NBR (BUNA-N) seals	-20C° - 80C°	用油封丁晴橡胶密封	-20C° - 80C°
With FPM (VITON) seals	-20C° - 100C°	用氟橡胶密封	-20C° - 100C°
Spool stroke (1/2 position):	+7/-7 mm	阀芯行程 (位置1/2):	+7-7 mm
With floating function (1 / 2 and F position):	+7/-7, -9 mm	带浮动的阀芯行程 (位置1/2 和 F 位):	+7-7 -9 mm
Recommend hydraulic oil viscosity range:	15-75 mm^2/s	推荐液压油粘度范围:	15-75 mm^2/s
Recommend temperature range:	-40C° - 60C°	推荐使用环境温度:	-40C° - 60C°



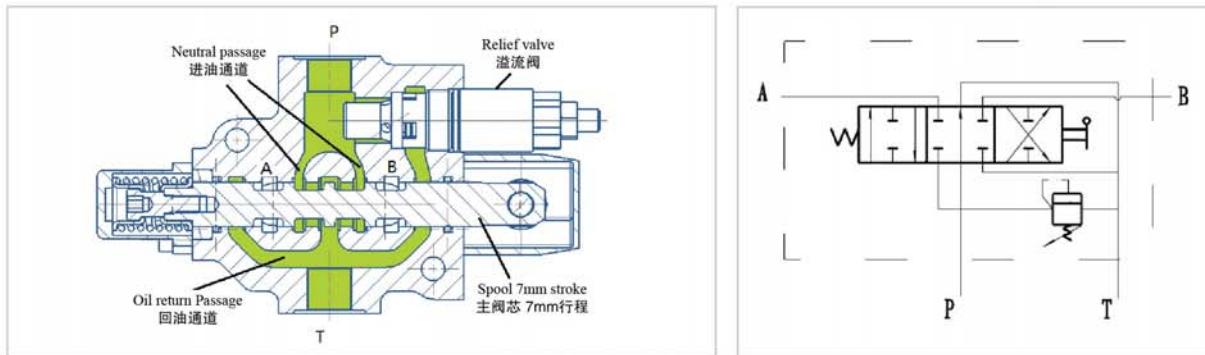
## GDV45 Series Performance Data - GDV45系列主要性能参数





## GDV45 Series Basic Operating Principle - GDV45系列基本工作原理

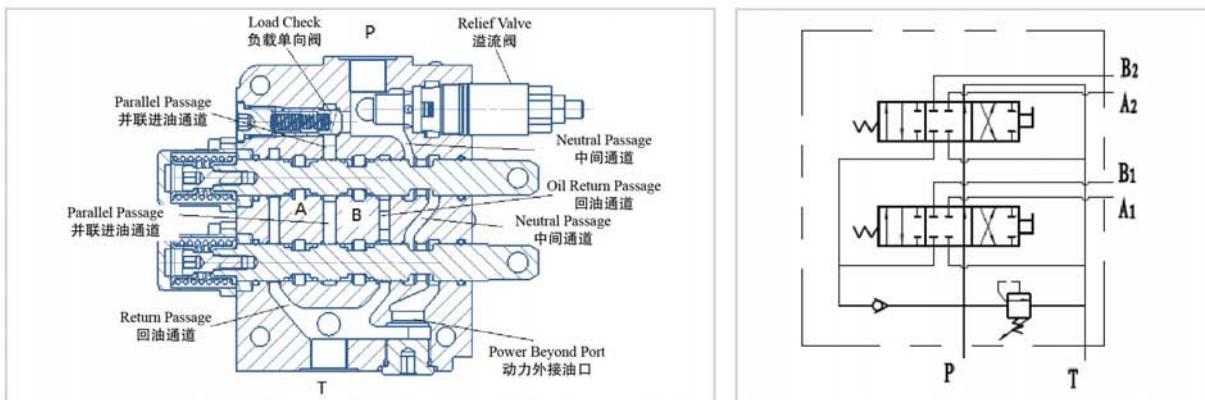
## GDV45-1 With One Spool - 一联整体阀



GDV45-1 is an one spool valve. It is also an open center, 3 position 4 way valve. When spool is in neutral, flow from pump passes through neutral passage to tank. Produces very little pressure drop. When spool is moved to "1" or "2" position, the neutral passage is blocked by spool. The flow from pump has to pass though the parallel passage to provide flow to spool's metering to work port. The spool stroke is 7 mm. For ZD45-1 mono-block valve, it cannot provide power beyond function.

GDV45系列的一联整体式阀是一种开式的3位4通阀。当阀芯在中位时，从油泵提供的油液直接经阀芯和阀体之间的中位通道流到油箱，产生很小的压力损失。当阀芯移动到“1”或“2”时，阀芯和阀体之间的中位通道被逐渐堵死，由于从油泵提供的油液经两个进油通道与阀芯的进油腔相连，其中一侧被开启，油液经阀芯节流后进入该阀芯控制的“A”口或“B”口。一联的整体阀不带动力外接功能。

## GDV45-2 With 2 Spools - 二联整体式多路阀



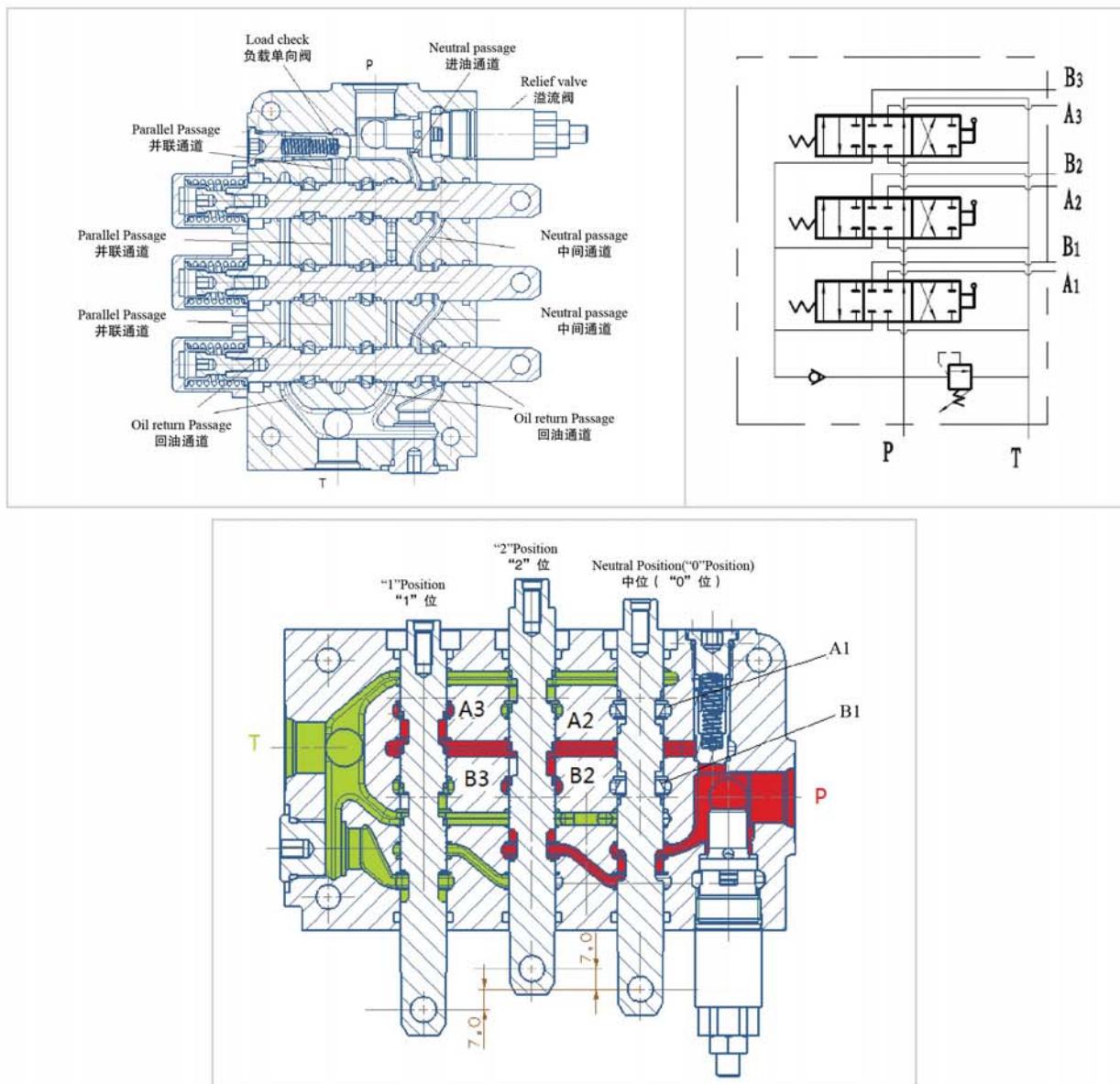
GDV45-2 Two spool mono-block valve is also an open center, 3 position 4 way valve. When spools are all in neutral, flow from pump passes through neutral passage to tank., and produces very little pressure drop. When one of the spools is moved to "1" or "2" position, the neutral passage is blocked by the spool. The flow from pump has to pass though the parallel passage to provide flow to spool's metering to work port. There are options to choose for location of the inlet port and return port. There is also an option to have power beyond port. If first spool is moved to "1" or "2" position, then, the second spool's neutral passage has no flow. The operator can operate two spools at the same time, but the speed of the controlled device is dependent on the load of the device.

GDV45系列的二联整体式多路阀，也是一种开式的3位4通阀。当阀芯都在中位时，从油泵提供的油液直接经阀芯和阀体之间的中间通道流到油箱，产生很小的压力损失。当其中一个阀芯移动到“1”或“2”时，阀芯和阀体之间的中位通道被逐渐堵死，从油泵提供的油液经单向阀进入并联进油通道经阀芯的节流口节流后进入该阀芯控制的“A”口或“B”口。进、出油口可以设在顶部或正面，出油可选动力外接。如果其中一联的阀芯在“1”或“2”的位置时，它的后一联的中间通道就没有流量。操作员可以同时控制两个阀芯，其控制元件的速度取决于负载的大小。



## GDV45 Series Mono-block Valve Operating Principle - GDV45系列基本工作原理

## GDV45-3 Three Spool Mono-block Valve - 三联整体阀



GDV45-3 is a three spool mono-block valve. It is also an open center, 3 position 4 way valve. Assuming the three spools were moved as shown in above picture. The first spool is in neutral ("O" position). The spool metering to "A 1" and "B 1" are all blocked. The second spool is moved to "2" position. Flow from parallel passage flows through spool opening to "B2" port, flow from "A2" port return passage through spool's another opening. The third spool is moved to "1" position, flow from parallel passage flows to "A 3" through spool opening. Flow in "B3" port flows to return passage through the spool's another opening.

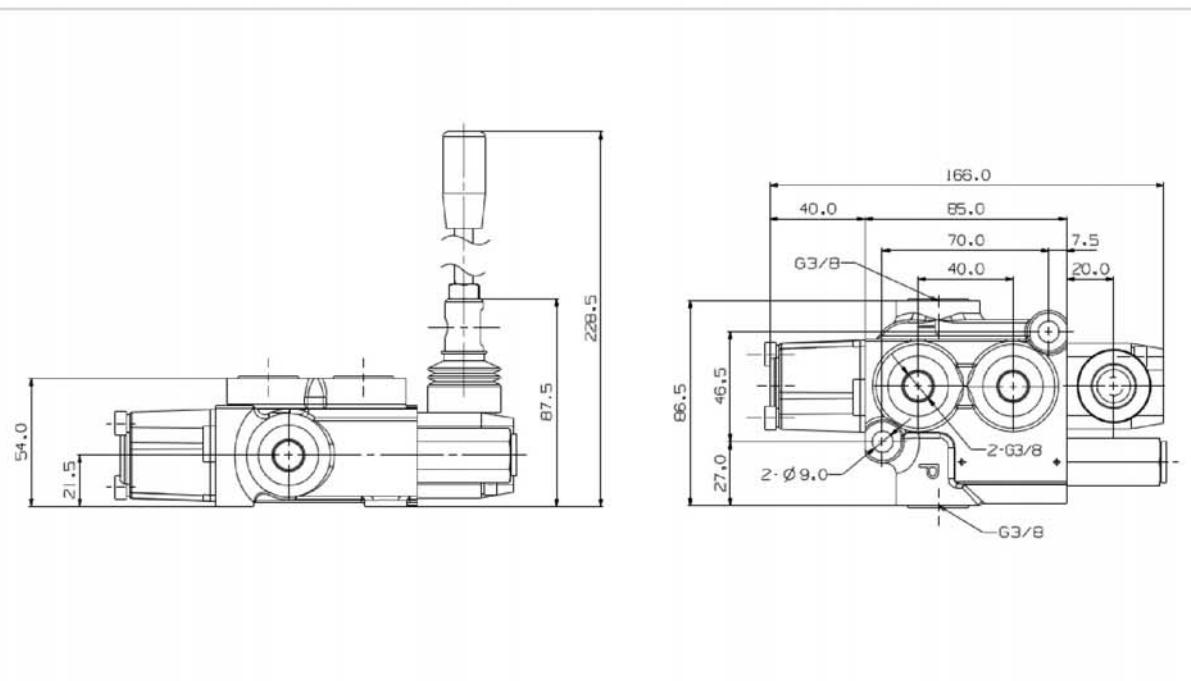
GDV45系列多联整体式多路阀均为开式的方向阀。上图位3联整体式多路阀，第一联阀芯在中位（“0”位），“A1”和“B1”油口均关闭。第二联阀芯在“2”位，并联油路的压力油到油口“B2”，“A2”回油。第三联阀芯在“1”位，并联油路的压力油到油口“A3”，油口“B3”回油。

四联和四联以上的整体式多路阀其原理和三联一样，选项也相同。

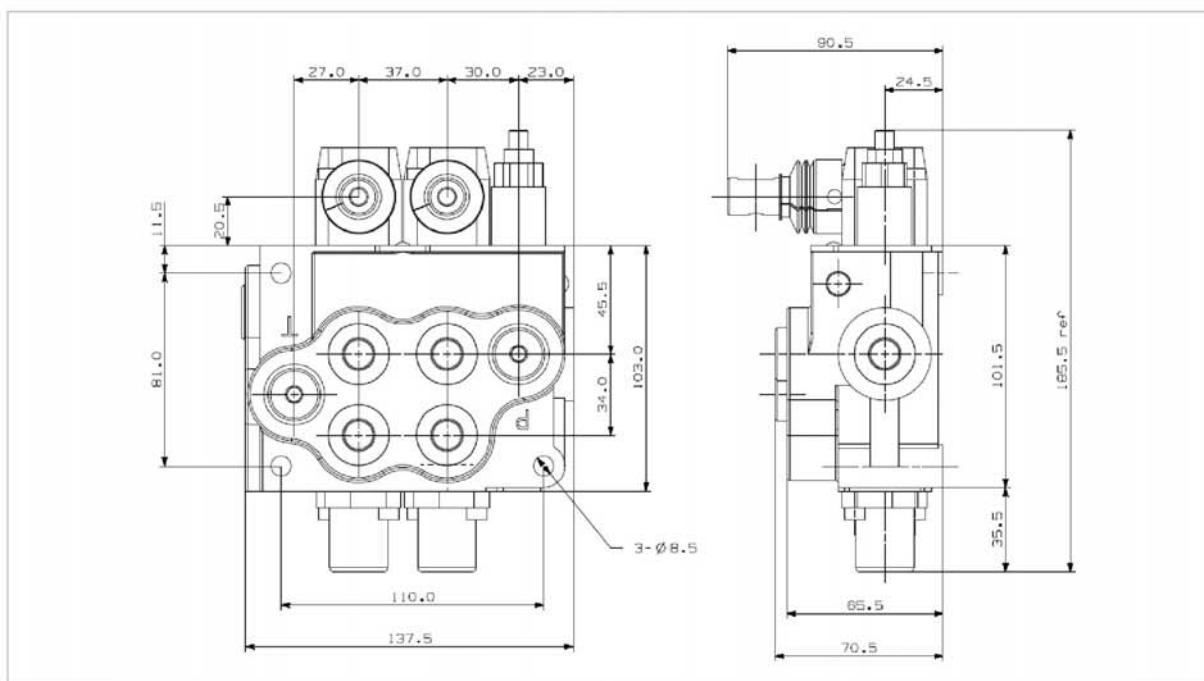


GDV45 Series Valve Dimension - GDV45系列阀体装配尺寸

GDV45-1:1 Spool Valve - 1 联整体阀

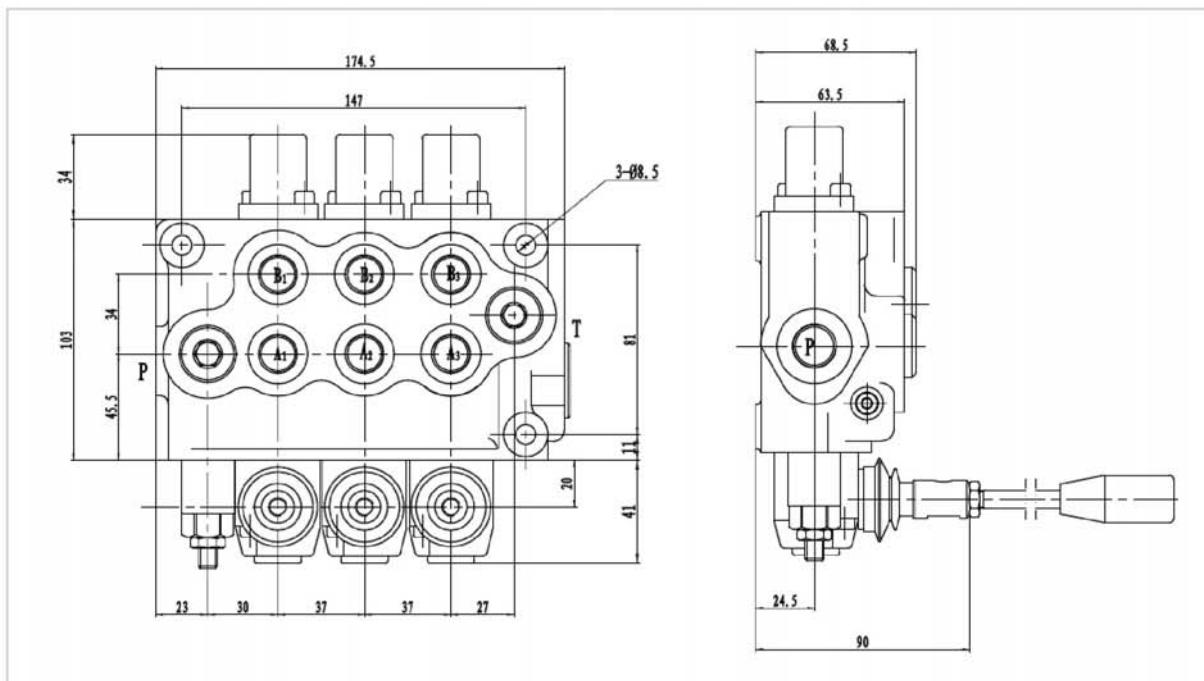


GDV45-2:2 Spool Mono-block Valve - 2 联整体多路阀

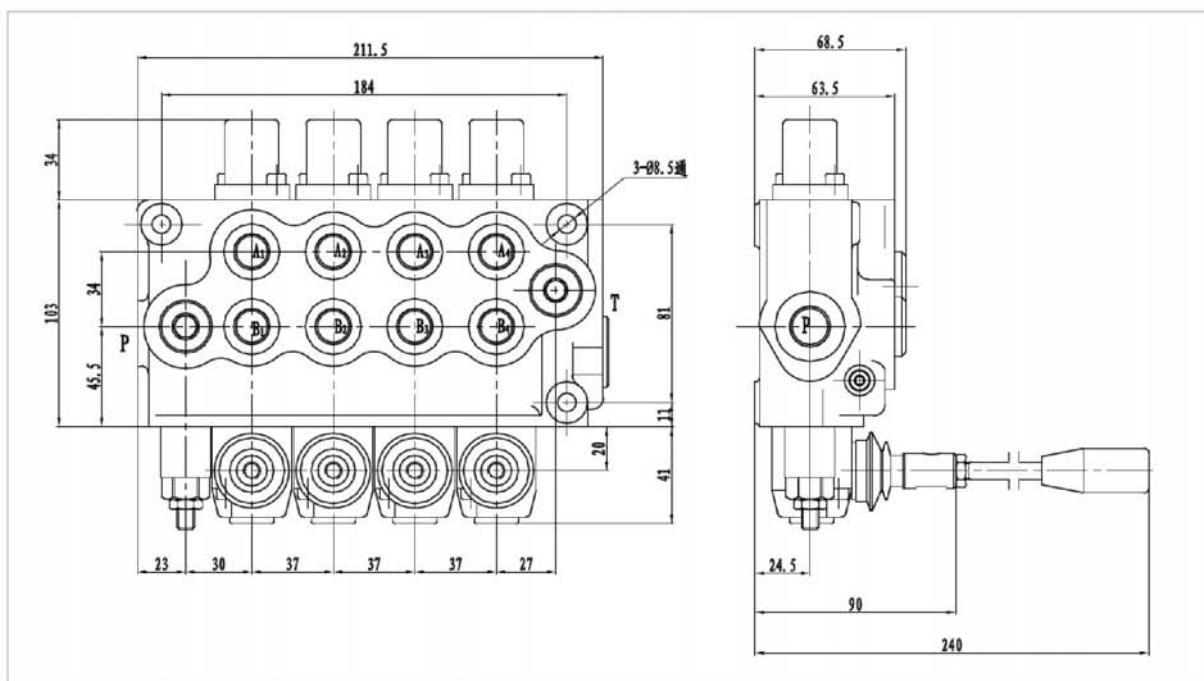


GDV45 Series Valve Dimension - GDV45系列阀体装配尺寸

GDV45-3:3 Spool Mono-block Valve - 3 联整体多路阀



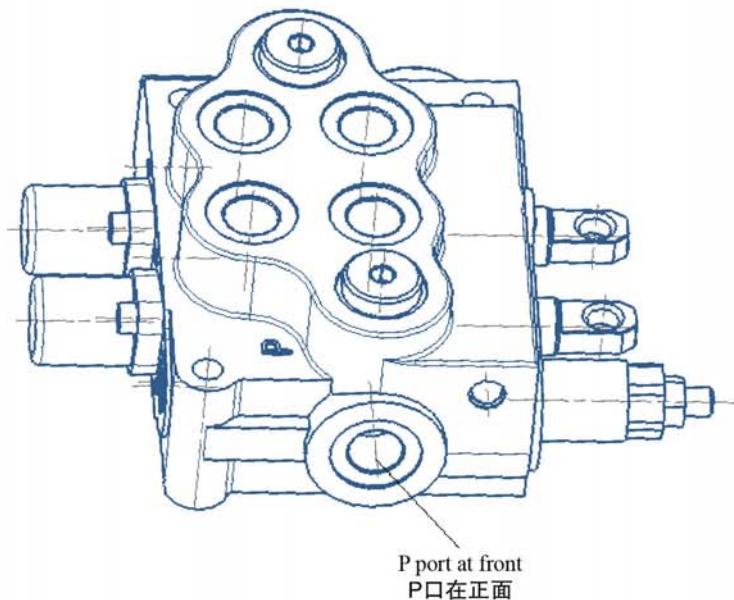
GDV45-4:4 Spool Mono-block Valve - 4 联整体多路阀



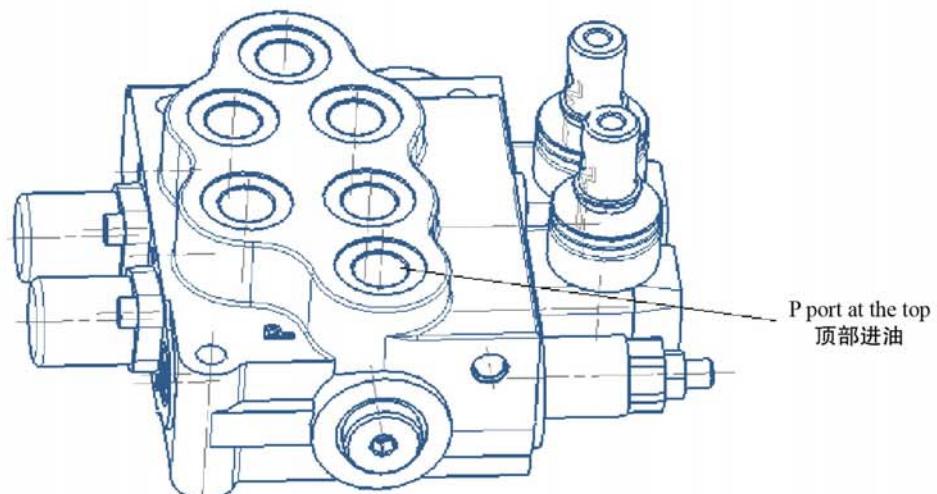


GDV45 Series Inlet Port Options - GDV45系列进油油口的选择的驱动方式

Inlet Option Code:P1(Inlet port at front) - 进油油口的选择代码：P1（进油油口在正面）



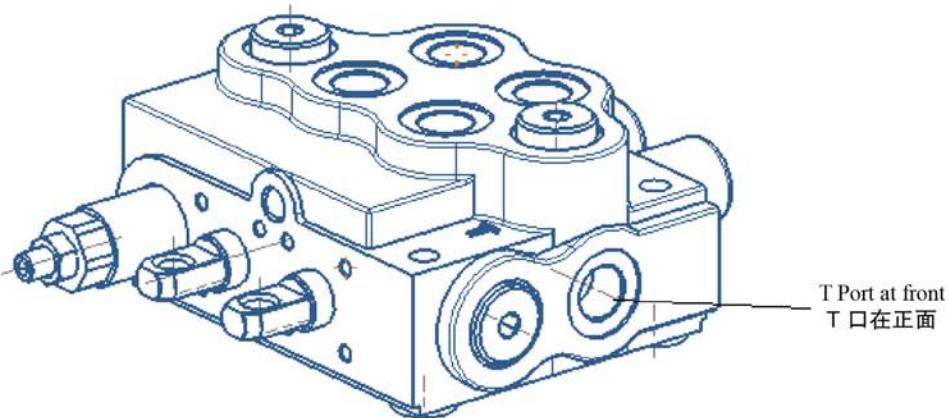
Inlet Port Option Code:P2(Inlet port at the top) - 进油油口的选择代码：P2（进油油口在顶部）



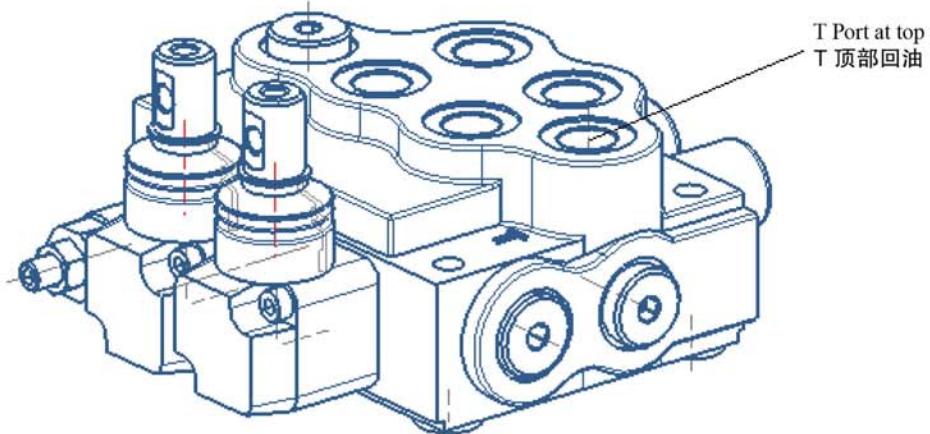


GDV45 Series Mono-block Valve Return Port Options - GDV45系列出油油口选择

Return Port Option Code: T1(Return port at front) - 出油油口的选择代码：T1（回油口在正面）



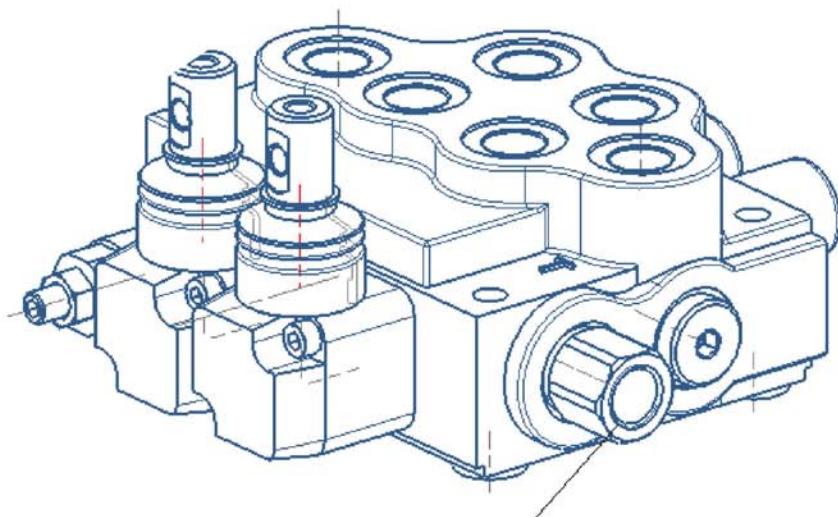
Return Port Option Code: T2(Return port at the top) - 出油油口的选择代码：T2（回油口在顶部）





GDV45 Series Power Beyond Options - GDV45系列出油口动力外接的选择

Power Beyond Option Code: D1(Pump flow output to a power beyond connector)  
出油油口动力外接的选择代码: D1 ( 压力油通过一连接接头引出 )



Power Beyond Connector  
动力外接接头

Return Port Option Cod:D0(Without Power Beyond)  
出油油口动力外接的选择代码: D0 ( 无动力外接 )



## GDV45 Series Valve Typical Spool Functions - GDV45系列典型滑阀机能

Spool Function 阀芯机能代码	Hydraulic Schematics 液压图形符号	Function 功能	Notes 备注
FG1		3 position 4 way At neutral: P,T,A,B are all blocked  3位4通 中位P,T,A,B各不通	Double acting cylinder applications  常用于控制双作用油缸
FG2		3 position 4 way At neutral: P blocked, T,A, B connected  3位4通 中位P不通, T, A, B相通	Hydraulic motor applications  常用于控制液压马达
FG3		3 position 4 way At neutral: P,A,B and T all connected  3位4通 中位P, A, B, 均与T相通	Hydraulic motor applications  常用于控制液压马达
FG4		3 position 3 way At neutral: P,T,A,B all blocked  3位3通 中位P, T, A, B各不通	Single acting cylinder applications  常用于控制单作用油缸
FG5 (not available) (暂无)		4 position 4 way At neutral: P,T,A, and B are all blocked 4th position floating  4位4通 中位P, T, A, B各不通 第4位浮动	Double acting cylinder applications  常用于控制双作用油缸
FG6 (not available) (暂无)		4 position 4 way At neutral: P blocked, T,A and B are connected 4th position floating  4位4通 中位P不通, T, A, B相通 第4位浮动	Double acting cylinder or hydraulic motor applications  常用于控制双作用油缸或液压马达

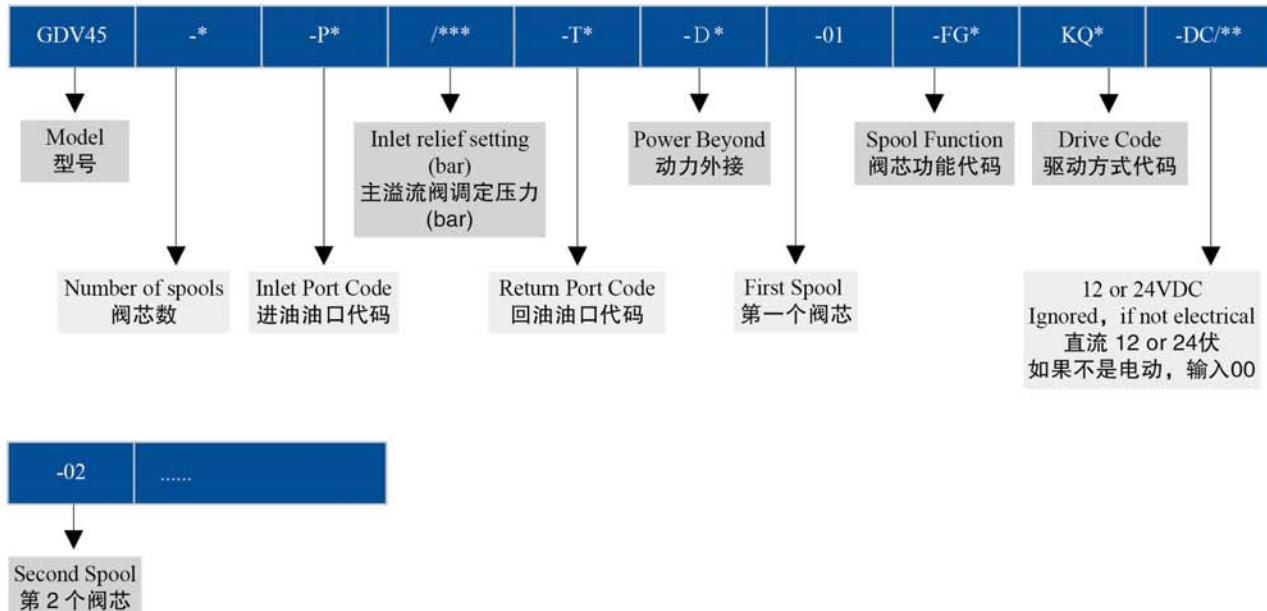


## GDV45 Series Drive Style - GDV45系列驱动方式

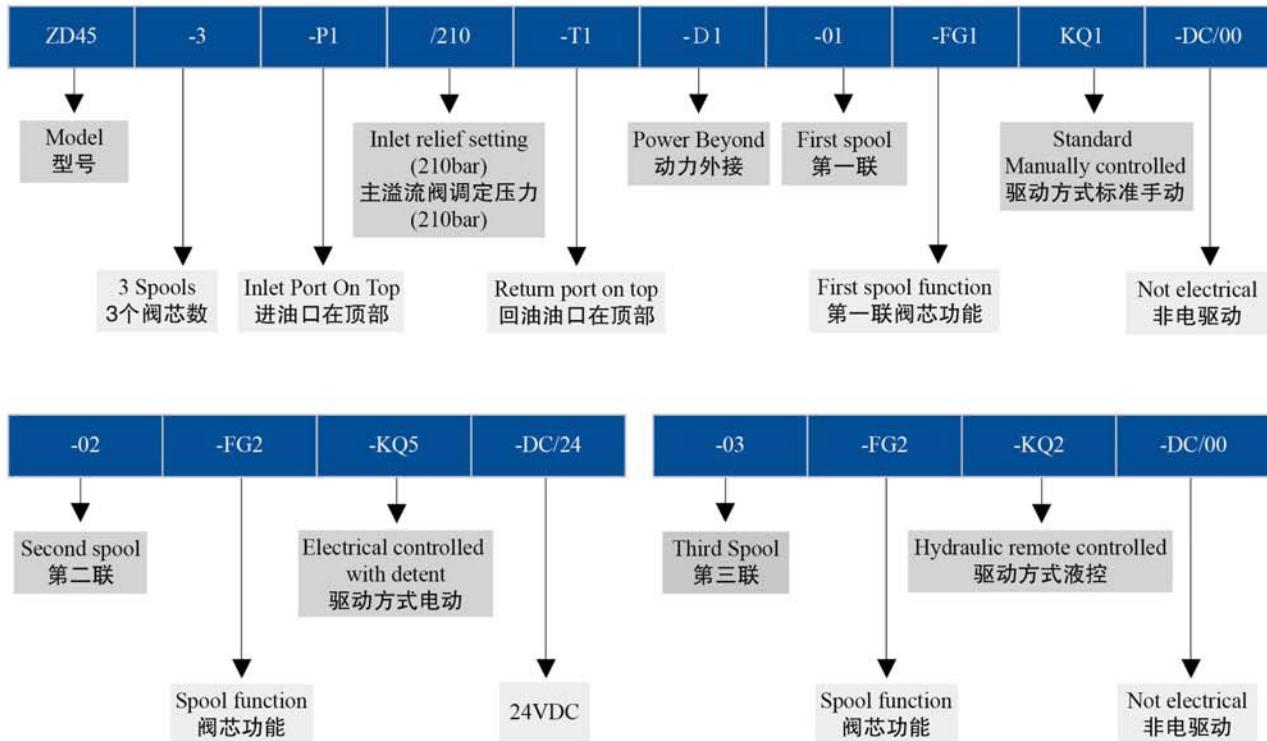
Drive Style Code 驱动方式代码	Hydraulic Schematics 液压图形符号	Function 功能
KQ1		Standard manually controlled 标准手动
KQ2 (not available) (暂无)		Hydraulic remote 液控
KQ3		Manually controlled with mechanical detent 手动带机械定位
KQ4 (not available) (暂无)		Manually controlled with 4th position floating and detent 手动, 第4位浮动带机械定位
KQ5 (not available) (暂无)		Electrical actuated (on/off) 电动(开/关控制)
KQ6 (not available) (暂无)		Electrical actuated with floating function 电动控制带浮动功能



## GDV45 Series Order Code - GDV45系列定购代码



## GDV45 Series Order Example - GDV45系列定购代码 (实例)

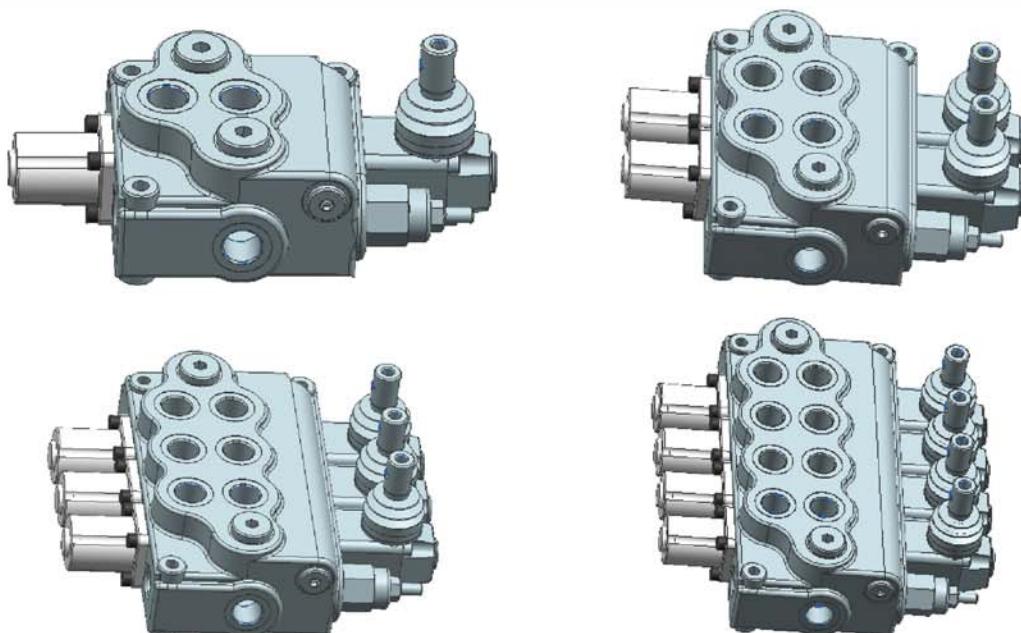


## GDV70 Series Mono-Block Valves Index - GDV70系列整体式多路阀目录

### GDV70 Mono-block Series Index - GDV70系列整体式多路阀目录

Main Features - 主要特点	6
Major Technical Data - 主要技术参数	6
Major Performance Data - 主要性能参数	7
Basic Operating Principle - 基本工作原理	8
Valve dimension - 阀体装配尺寸	9-10
Selection of the Inlet Port - 进油油口选择	11
Selection of Return Port - 出油油口选择	12
Power Beyond Port - 动力外接	13
Spool Functions - 阀芯功能	14
Drive Options - 驱动形式	15
Order Code - 订购编码	16
Order Example - 订购编码实例	17

### GDV70 Series Mono-block Valves - GDV70系列整体式多路阀



## GDV70 Series Mono-Block Valves Index - GDV70系列整体式多路阀目录



## GDV70 Series Mono-block Valve's Features - GDV70系列主要特点

GDV70 series mono-block valve provides the following features:

- Cast iron body
- Spring cap and mechanical detent cap are made in die cast aluminum.
- Parallel circuit. Inlet passage has a load check valve.
- Provides manual control and wire pulling control modules.
- Provides power beyond options.
- Provides mechanical detent.
- Provides different spool functions to satisfy with the needs for customers to control double and single cylinders, as well as to control hydraulic motors.
- Provide excellent flow characteristics and small operating force.
- Provides 6 different assemblies from one spool to 6 spools.

GDV70系列的整体式多路阀有以下主要特点:

- 阀体为整体式灰口铸铁
- 弹簧端盖，机械定位端盖，为压铸铝。
- 并联回路，进油端带负载单向阀。
- 可提供手动和拉线控制。
- 可提供动力外接（一联整体阀除外）。
- 可以提供机械定位。
- 提供各种不同的阀芯功能：用于控制双作用油缸、单作用油缸、油马达的阀芯。
- 阀的操作力小，流量特性好
- 该多路阀可组合成1到6个阀芯的整体阀

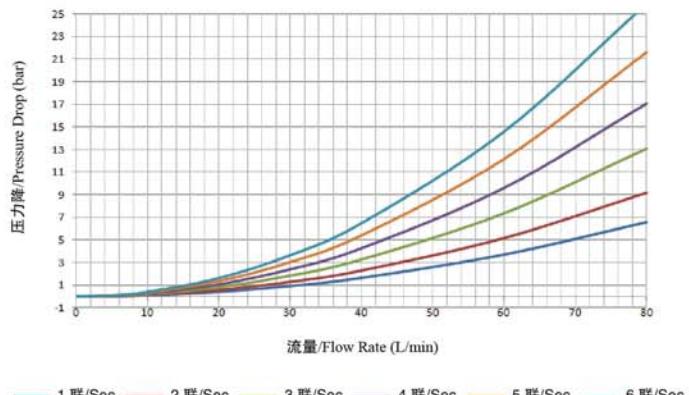
## GDV70 Series Major Technical Data - GDV70系列整体式多路阀的主要技术参数

Rated flow rate:	70 L/min	额定流量:	70 L/min
Maximum flow rate:	80 L/min	最大流量:	80 L/min
Maximum pressure at P port:	310 bar	P 口最大压力:	310 bar
Maximum pressure at A/B port:	310 bar	A/B 口最大压力:	310 bar
Maximum pressure at T port:	25 bar	T 口最大压力:	25 bar
Internal leakage (@ 70 bar) : A/B to T	30-35 CC/min	内泄漏 ( 70 bar ) : A/B to T	30-35 CC/min
Temperature range of the hydraulic oil:		液压油油温范围:	
With NBR (BUNA-N) seals	-20C° - 80C°	用油封丁晴橡胶密封	-20C° - 80C°
With FPM (VITON) seals	-20C° - 100C°	用氟橡胶密封	-20C° - 100C°
Spool stroke (1/2 position):	+7/-7 mm	阀芯行程 (位置1/2):	+7/-7 mm
With floating function (1 / 2 and F position):	+7/-7, -9 mm	带浮动的阀芯行程 (位置1/2 和 F 位):	+7/-7 -9 mm
Recommend hydraulic oil viscosity range:	15-75 mm <sup>2</sup> /s	推荐液压油粘度范围:	15-75 mm <sup>2</sup> /s
Recommend temperature range:	-40C° - 60C°	推荐使用环境温度:	-40C° - 60C°

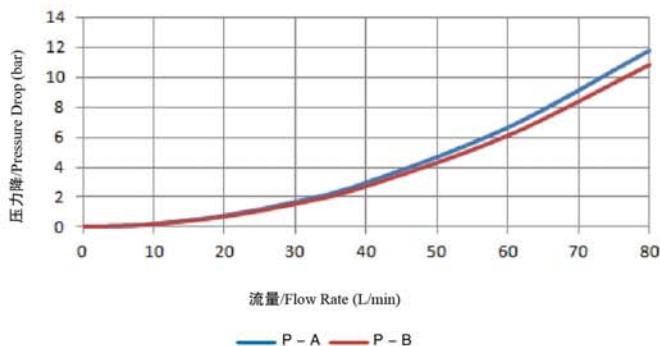


## GDV70 Series Performance Data - GDV70系列主要性能参数

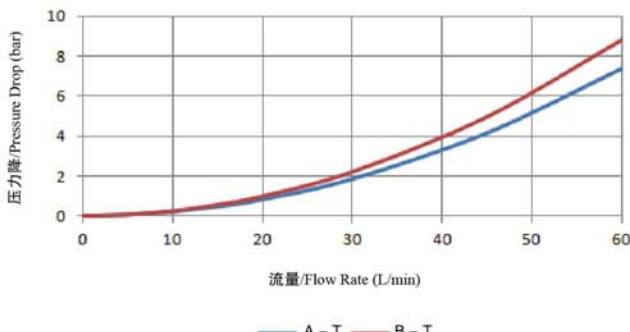
Prssure Drop ( P to T ) (All spools are in neutral position)  
中位时，进油口到油箱的压力降 ( P to T )



Prssure Drop ( P to A/B )  
进油口到工作油口的压力降

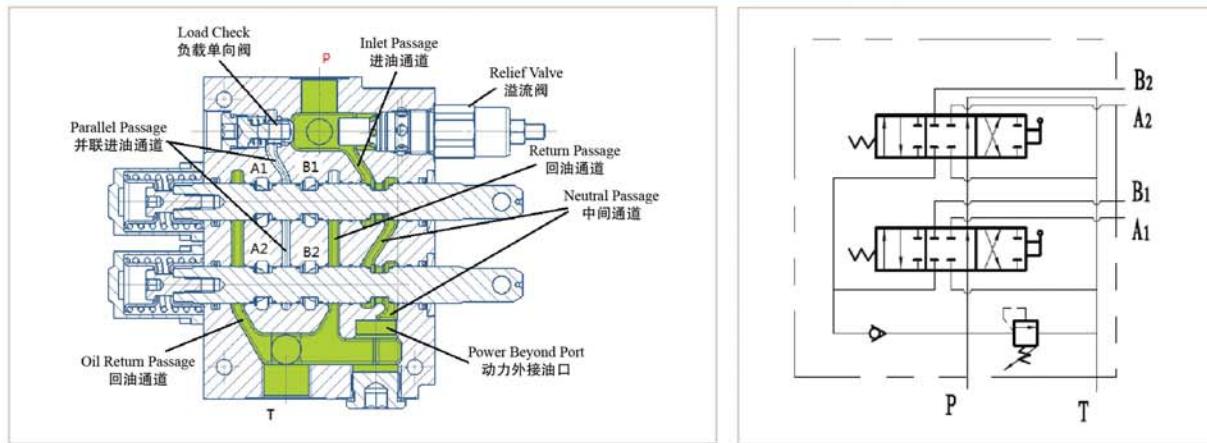


Prssure Drop ( A/B to T )  
工作油口到油箱压力降



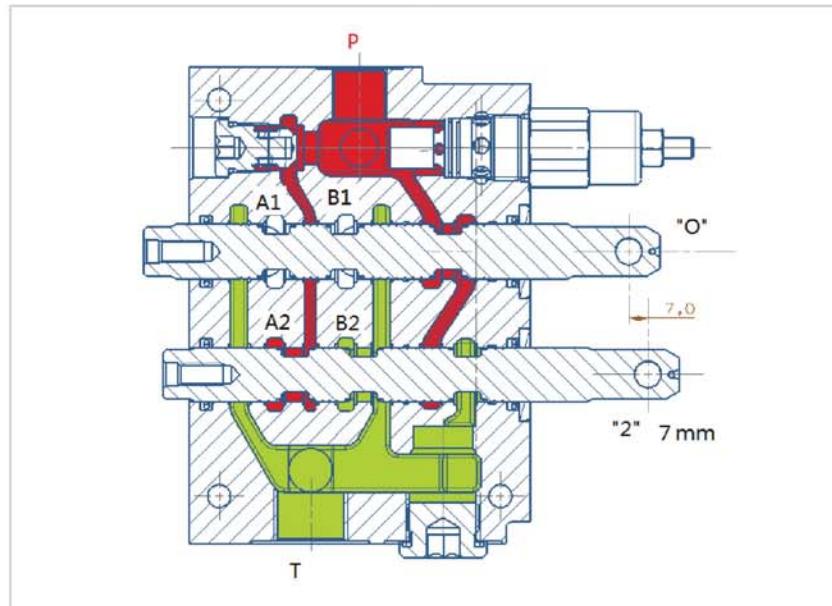


## GDV70 Series Mono-block Valve Basic Operating Principle - GDV70系列基本工作原理



GDV-70 series mono-block valve is an open centered, 3 position 4 way valve. When spool is in its neutral position, the flow from pump passes through the neutral passage to tank, with very low pressure drop. When one of the spool is moved to “1” or “2” position, the neutral passage is blocked. The flow from pump can only pass though load check to parallel passage, then, through the spool opening to work port “A” or “B”.

GDV-70 系列的多路阀是一种开式的 3 位 4 通阀。当阀芯都在中位时，从油泵提供的油液直接经阀芯和阀体之间的中位通道流到油箱，产生很小的压力损失。当其中一个阀芯移动到“1”或“2”时，阀芯和阀体之间的中位通道被逐渐堵死，从油泵来的全部流量经负载单向阀进入并联油路，经阀口节流后进入该阀芯控制的“A”口或“B”口。



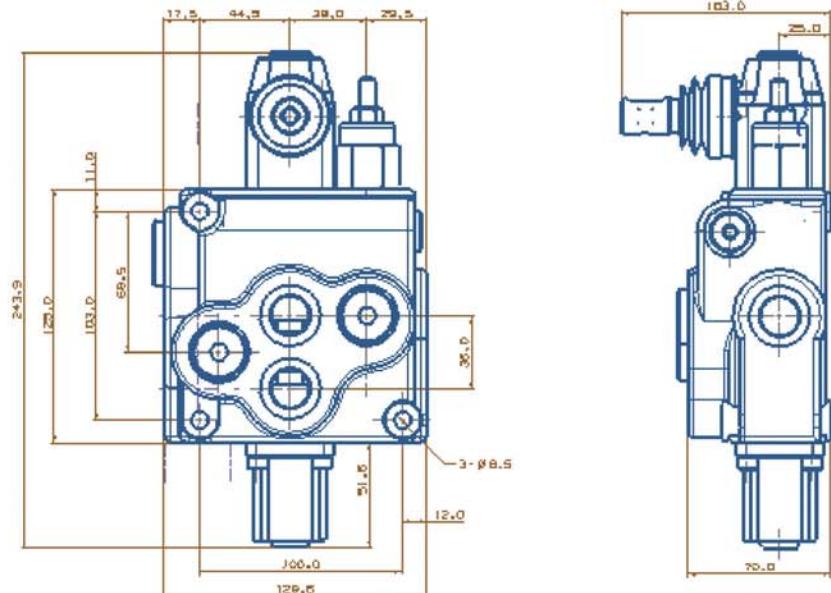
As shown in above picture, when first spool is in neutral, flow from pump passes through load check valve and enters the parallel passage to supply flow to both spools. Due to second spool is moved to “2” position, the flow from parallel passage flows to “A2” through the spool opening. The flow from “B2” flows to return passage though the spool’s another opening. Neutral passage is blocked by the second spool.

上图的第一联的阀芯在中位，从油泵供给的油液经负载单向阀经并联进油通道分别向两个阀芯供油。由于第二联开启，从并联进油通道的油液向“A2”口供油。“B2”口回油。中间通道被第二联阀芯切断。操作员可以同时控制两个阀芯，其控制元件的速度取决于负载的大小。

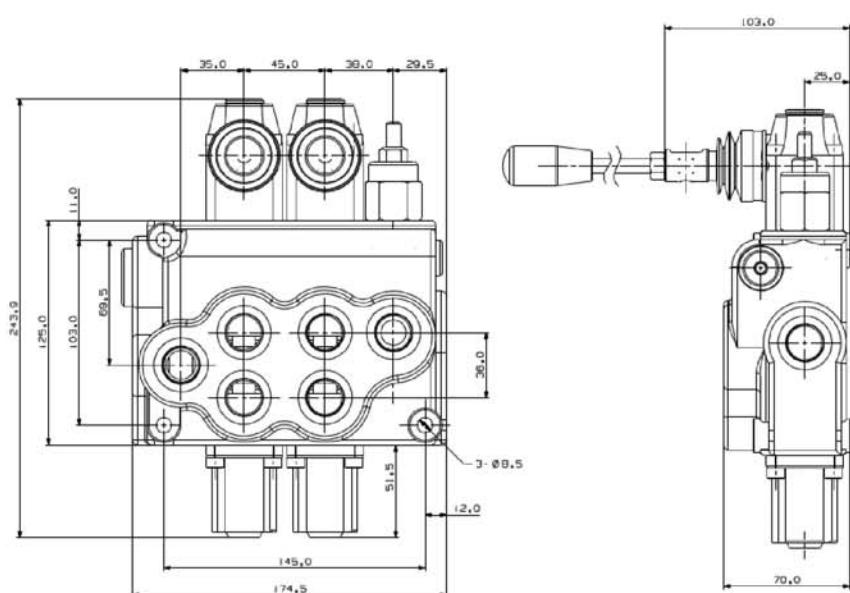


GDV70 Series Valve Dimension - GDV70系列阀体装配尺寸

GDV70-1:1 Spool Valve - 1 联整体阀

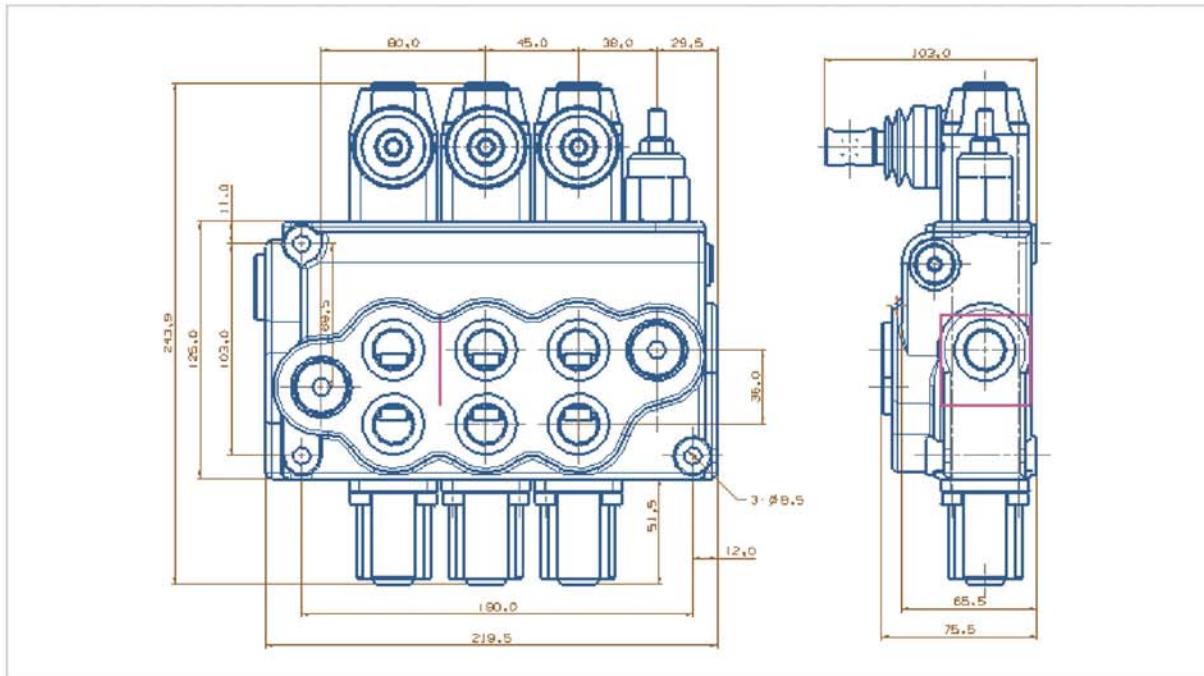


GDV70-2:2 Spool Mono-block Valve - 2 联整体多路阀

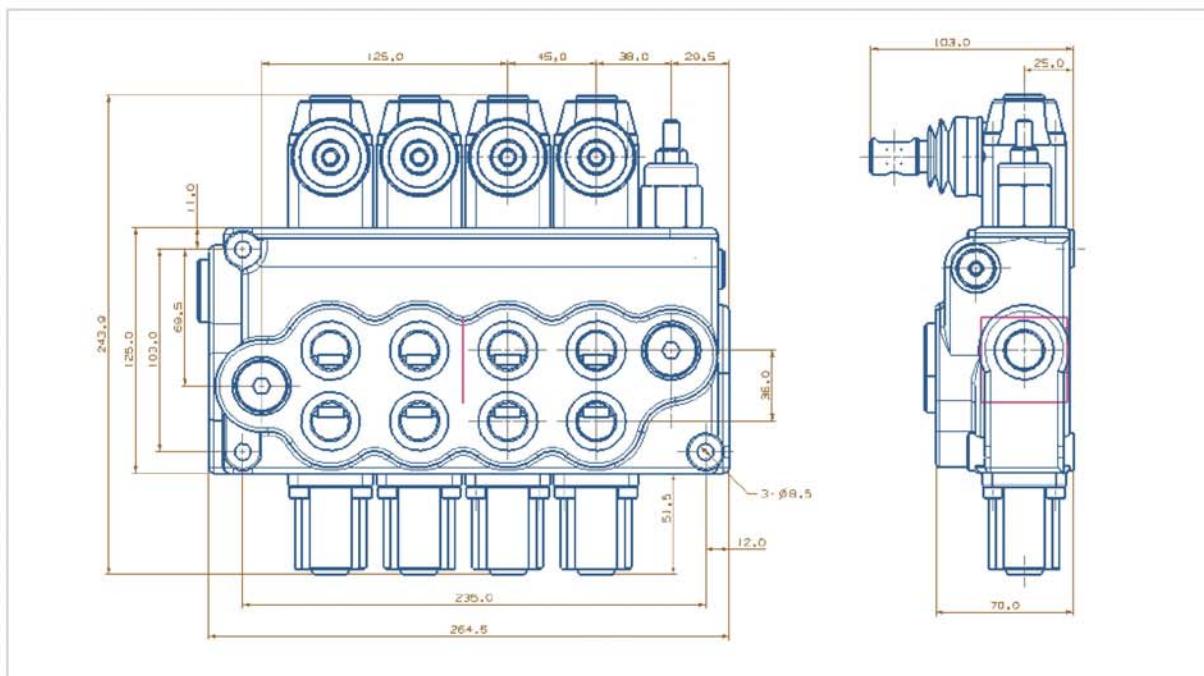


GDV70 Series Valve Dimension - GDV70系列阀体装配尺寸

GDV70-3:3 Spool Mono-block Valve - 3 联整体多路阀



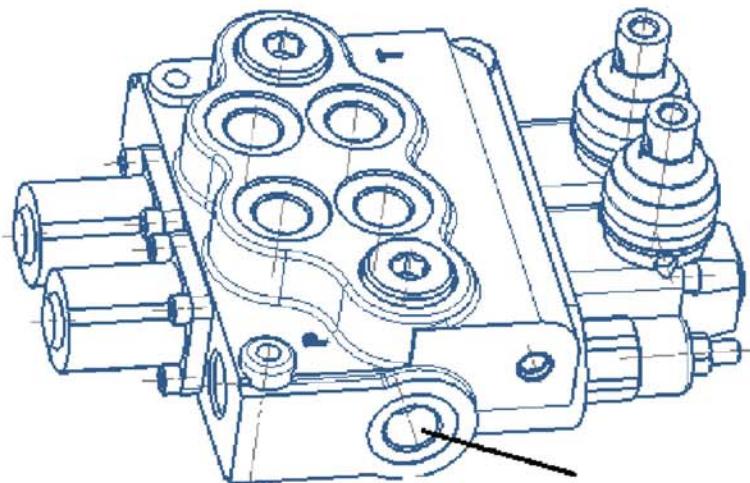
GDV70-4:4 Spool Mono-block Valve - 4 联整体多路阀





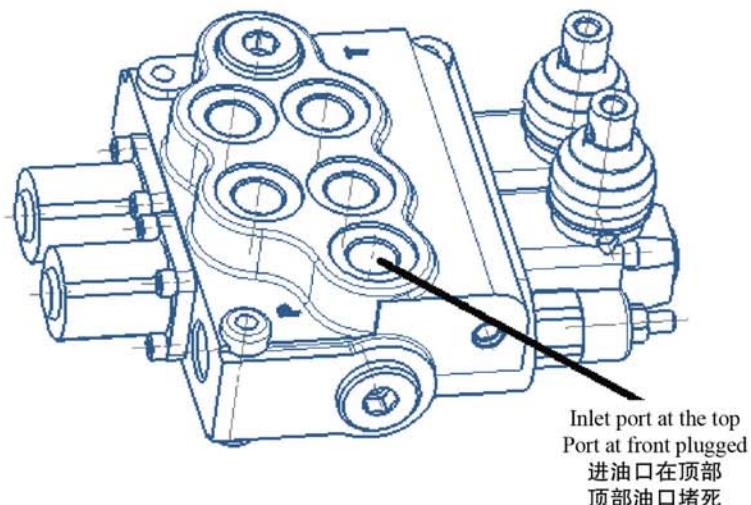
GDV70 Series Mono-block Valve Inlet Options - GDV70系列进油油口的选择

Inlet Option Code: P1(Port at front) - 进油油口的选择代码：P1（油口在正面）



Inlet Port at front  
Port at top plugged  
进油口在正面  
顶部油口堵死

Inlet Port Code: P2(Port at the top) - 进油油口的选择代码：P2（油口在顶部）

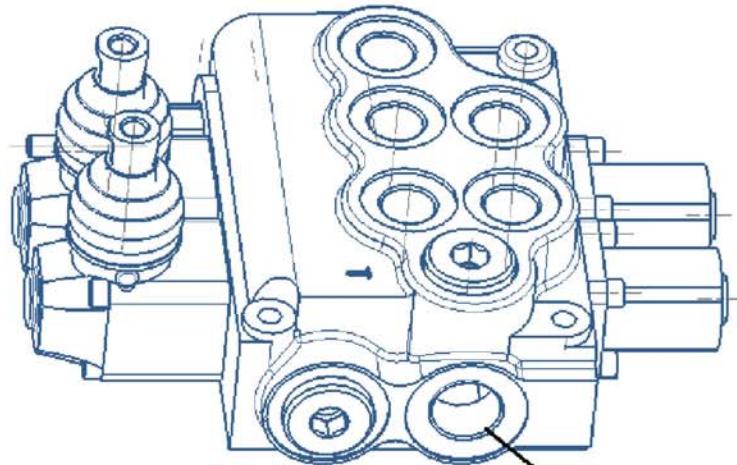


Inlet port at the top  
Port at front plugged  
进油口在顶部  
顶部油口堵死



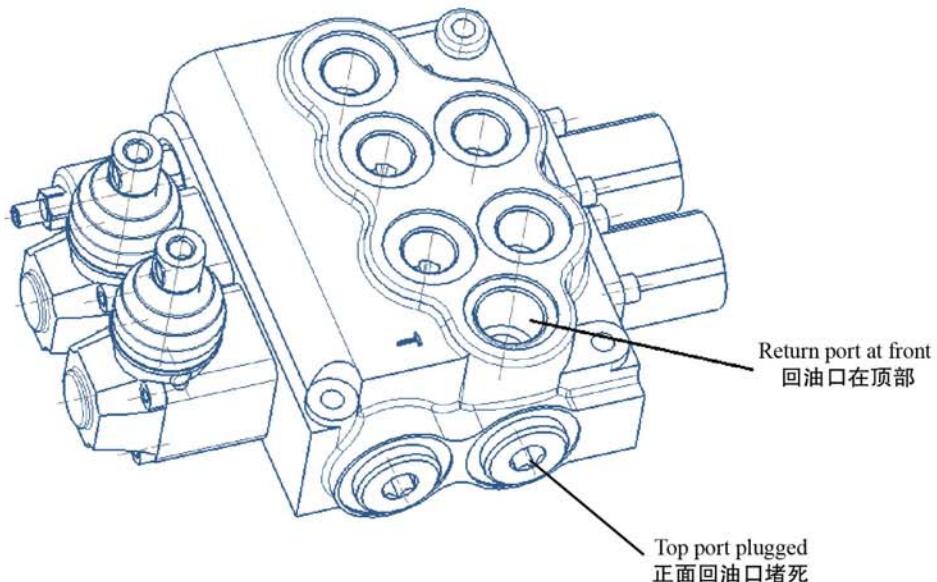
GDV70 Series Mono-block Valve Return Port Options - GDV70系列出油油口的选择的驱动方式

Return Port Option Code:T1(Return port at front) - 出油油口的选择代码：T1（回油口在正面）



Inlet Port at front  
Port at port plugged  
回油口在正面  
顶部油口堵死

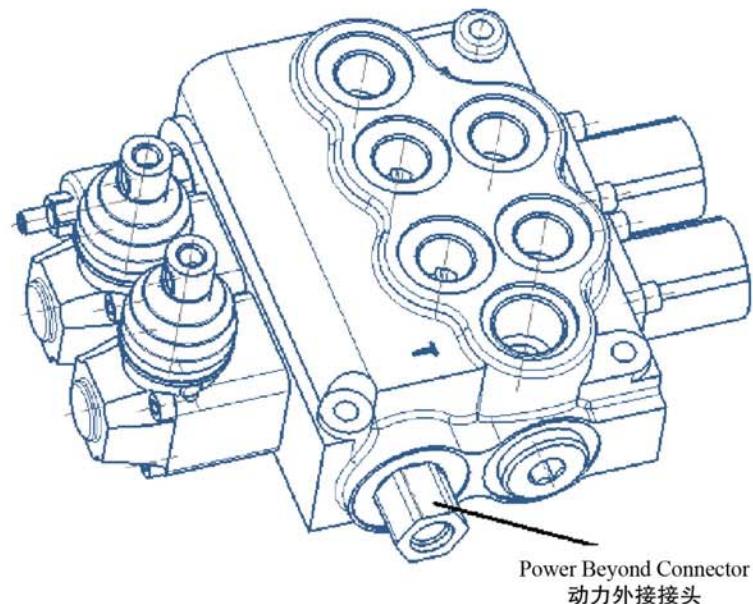
Return Port Option Code:T2(Return port at the top) - 出油油口的选择代码：T2（回油口在顶部）





GDV70 Series Power Beyond Options - GDV70系列出油口动力外接的选择

Power Beyond Option Code: D1(A power beyond connector to supply pump flow to other device)  
出油油口动力外接的选择代码: D1 ( 压力油油口通过一连接接头引出 )



Power Beyond Option Code:D0(Without power beyond port)  
出油油口动力外接的选择代码: D0 ( 无动力外接 )



## GDV70 Series Valve Typical Spool Functions - GDV70系列典型阀芯功能

Spool Function 阀芯机能代码	Hydraulic Schematics 液压图形符号	Function 功能	Notes 备注
FG1		3 position 4 way At neutral: P,T,A,B are all blocked  3位4通 中位P,T,A,B各不通	Double acting cylinder applications  常用于控制双作用油缸
FG2		3 position 4 way At neutral: P blocked, T,A, B connected  3位4通 中位P不通, T, A, B相通	Hydraulic motor applications  常用于控制液压马达
FG3		3 position 4 way At neutral: P,A,B and T all connected  3位4通 中位P, A, B, 均与T相通	Hydraulic motor applications  常用于控制液压马达
FG4		3 position 3 way At neutral: P,T,A,B all blocked  3位3通 中位P, T, A, B各不通	Single acting cylinder applications  常用于控制单作用油缸
FG5 (not available) (暂无)		4 position 4 way At neutral: P,T,A, and B are all blocked 4th position floating  4位4通 中位P, T, A, B各不通 第4位浮动	Double acting cylinder applications  常用于控制双作用油缸
FG6 (not available) (暂无)		4 position 4 way At neutral: P blocked, T,A and B are connected 4th position floating  4位4通 中位P不通, T, A, B相通 第4位浮动	Double acting cylinder or hydraulic motor applications  常用于控制双作用油缸或液压马达

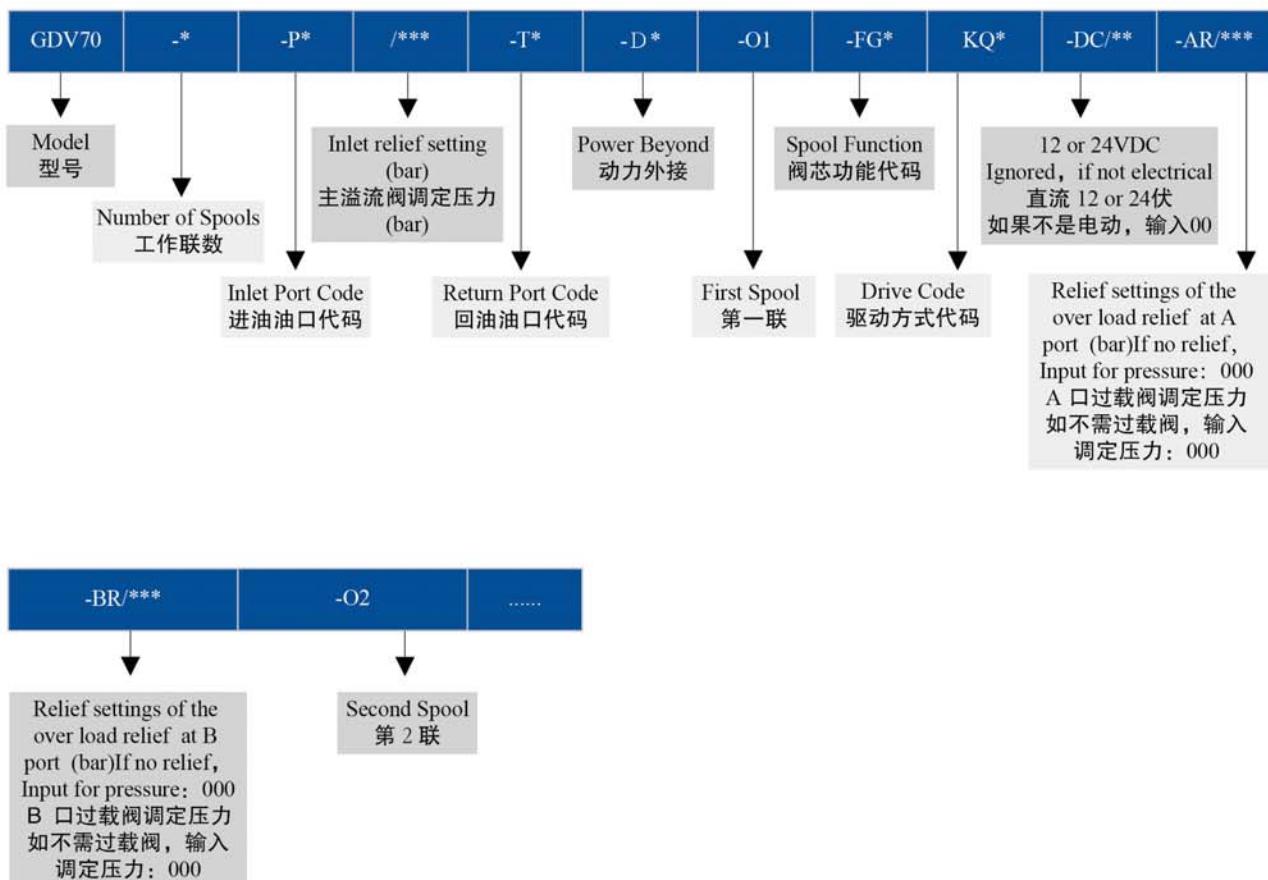


## GDV70 Series Drive Style - GDV70系列驱动方式

Drive Style Code 驱动方式代码	Hydraulic Schematics 液压图形符号	Function 功能
KQ1		Standard manually controlled 标准手动
KQ2 (not available) (暂无)		Hydraulic remote 液控
KQ3		Manually controlled with mechanical detent 手动带机械定位
KQ4		Manually controlled with 4th position floating and detent 手动, 第4位浮动带机械定位
KQ5 (not available) (暂无)		Electrical actuated (on/off) 电动(开/关控制)
KQ6 (not available) (暂无)		Electrical actuated with floating function 电动控制带浮动功能

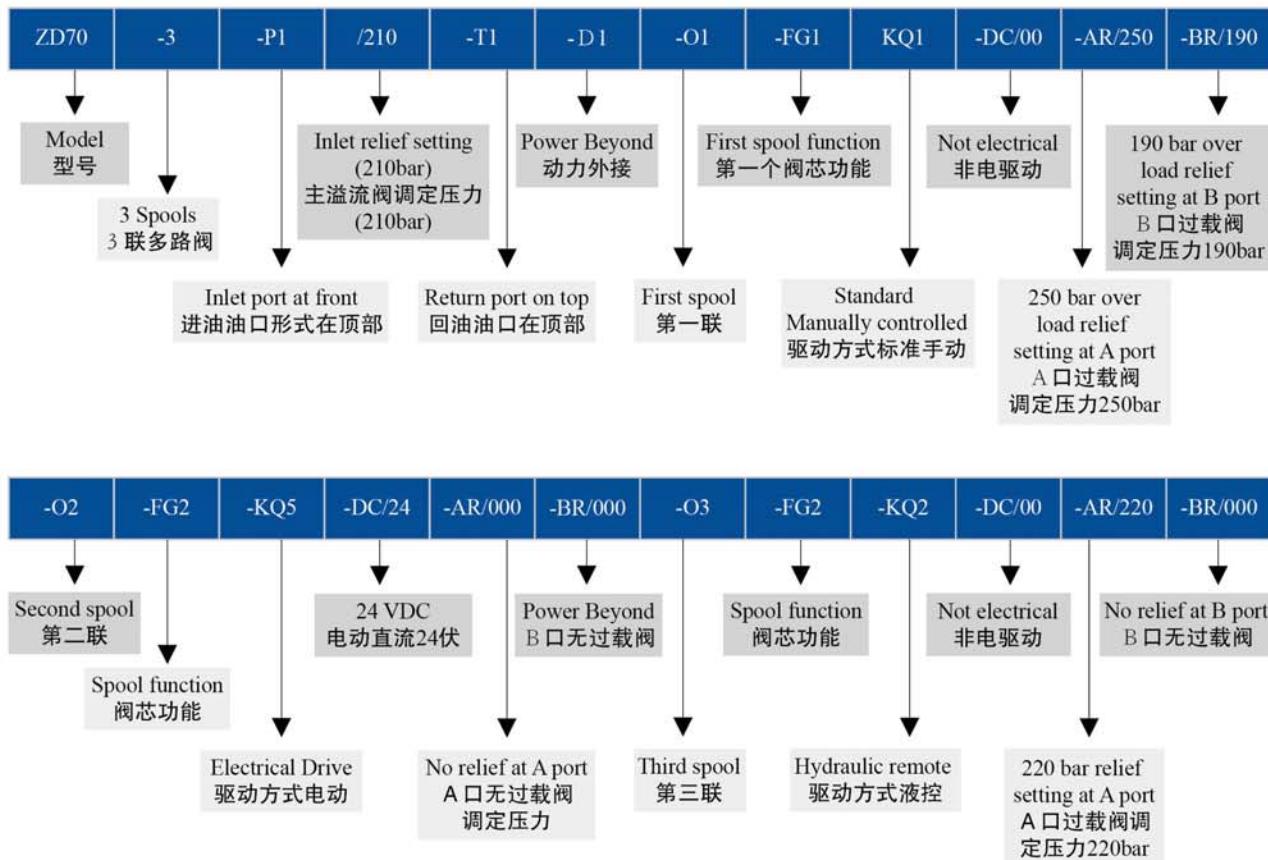


## GDV70 Series Order Code - GDV70系列定购代码





## GDV70 Series Order Example - GDV70系列定购代码 (实例)

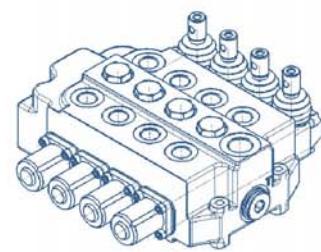
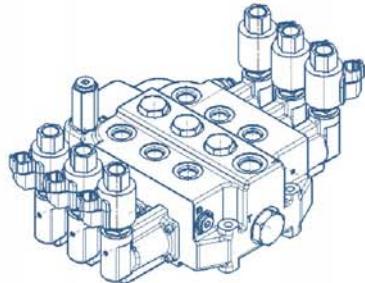
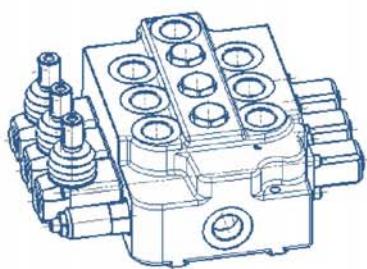
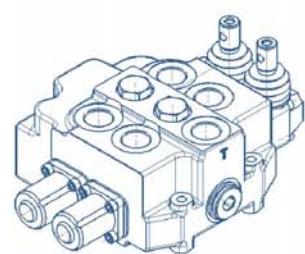
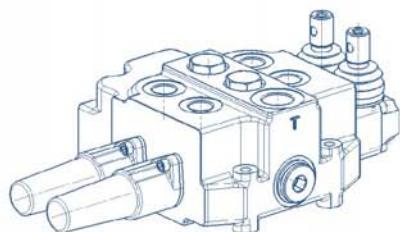
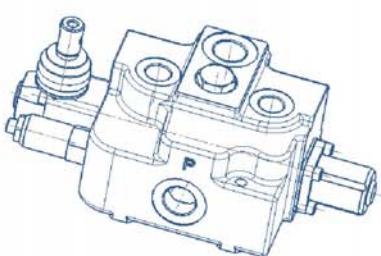




## GDV80 Series Mono-block Valves Index - GDV80系列整体式多路阀目录

Main Features - 主要特点	6
Major Technical Data - 主要技术参数	6
Major Performance Data - 主要性能参数	7
Basic Operating Principle - 基本工作原理	8
Basic Hydraulic Schematics - 基本液压系统原理图	9-10
Valve dimension - 阀体装配尺寸	11
Selection of the Inlet Port - 进油油口选择	12
Selection of Return Port - 出油油口选择	13
Power Beyond Port - 动力外接	14
Spool Functions - 阀芯功能	15
Drive Options - 驱动形式	16
Order Code - 订购编码	17
Order Example - 订购编码实例	17

## GDV80 Series Mono-block Valves - GDV80系列整体式多路阀





## GDV80 Series Mono-block Valve's Features - GDV80系列整体式多路阀的主要特点

## GDV80Series Valve Has the Following Features:

- Cast iron mono-block body.
- Spring cap, mechanical detent cap, as well as electoral or hydraulic pilot controlled module body are made by cast aluminum or die cast aluminum.
- Parallel circuit. Each spool has its own load check valve.
- Provides dump valve options for each work port.
- Provides different drive modules (electrical, hydraulic remote, manually control, wire driving).
- Provides power beyond port.
- Provides different spool functions to be used for controlling double acting cylinder , single acting cylinders, hydraulic motors.
- Provides floating functions for spools.
- Provides mechanical detent.
- Provides port relief options.
- Provides excellent flow characteristics and small operating force.
- Can be made with 6 spools.

## GDV80系列的整体式多路阀有以下主要特点:

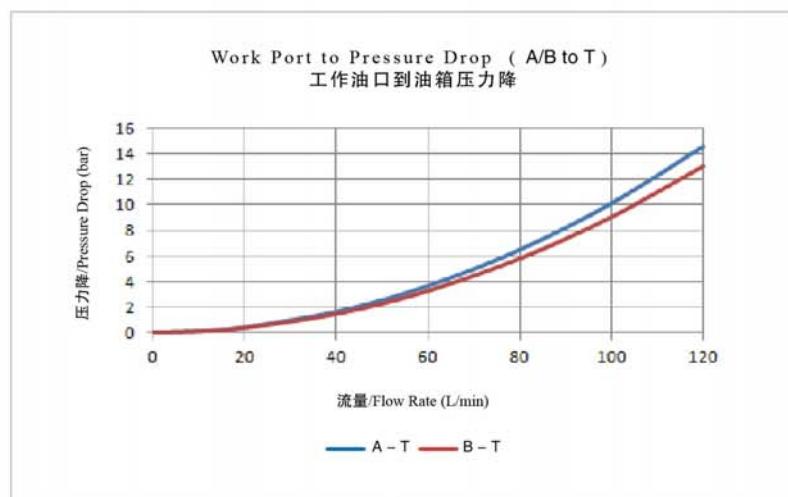
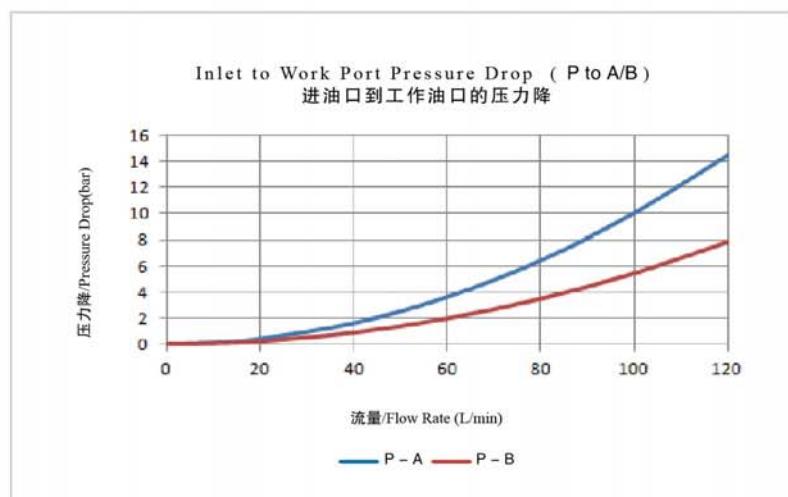
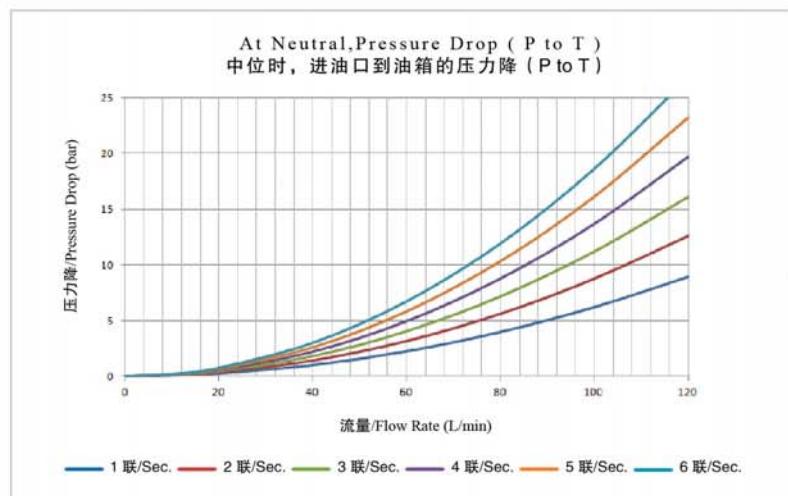
- 阀体为整体式灰口铸铁。
- 弹簧端盖，机械定位端盖，电和液控驱动模块为铸铝或压铸铝。
- 并联回路，每个工作联都带负载单向阀，可选择工作油口带过载保护阀。
- 可提供电、液压遥控、手动和拉线控制模块。
- 可提供动力外接。
- 可以修改为闭式系统。
- 可提供机械定位且定位力可调。
- 提供各种不同的阀芯功能：用于控制双作用油缸、单作用油缸、油马达的阀芯，以及带浮动功能的阀芯。
- 阀的操作力小，流量特性好。
- 可实现比例控制(无压力补偿)。
- 该多路阀可组合成1到6个阀芯的整体阀。

## GDV80 Series Major Technical Data - GDV80系列主要技术参数

Rated flow rate:	80 L/min	额定流量:	80 L/min
Maximum flow rate:	100 L/min	最大流量:	100 L/min
Maximum pressure at P port:	310 bar	P 口最大压力:	310 bar
Maximum pressure at A/B port:	310 bar	A/B 口最大压力:	310 bar
Maximum pressure at T port:	25 bar	T 口最大压力:	25 bar
Internal leakage (@ 70 bar) : A/B to T	30-35 CC/min	内泄漏 ( 70 bar ) : A/B to T	30-35 CC/min
Temperature range of the hydraulic oil:		液压油油温范围:	
With NBR (BUNA-N) seals	-20C° - 80C°	用油封丁晴橡胶密封	-20C° - 80C°
With FPM (VITON) seals	-20C° - 100C°	用氟橡胶密封	-20C° - 100C°
Spool stroke (1/2 position) :	+7/-7mm	阀芯行程 (位置1/2) :	+7/-7 mm
With floating function (1 / 2 and F position) :	+7/-7, -9mm	带浮动的阀芯行程 (位置1/2 和 F 位) :	+7/-7 -9 mm
Recommend hydraulic oil viscosity range:	15-75mm <sup>2</sup> /s	推荐液压油粘度范围:	15-75 mm <sup>2</sup> /s
Recommend temperature range:	-40C° - 60C°	推荐使用环境温度:	-40C° - 60C° 电
Solenoid can be either 12 VDC or 24 VDC, corresponding current is 0- 1.5 or 0 - 0.75 Amp.		驱动的电磁线圈电压是12VDC 或24VDC，与之相应的电流时 0- 1.5 或0 - 0.75 Amp.	

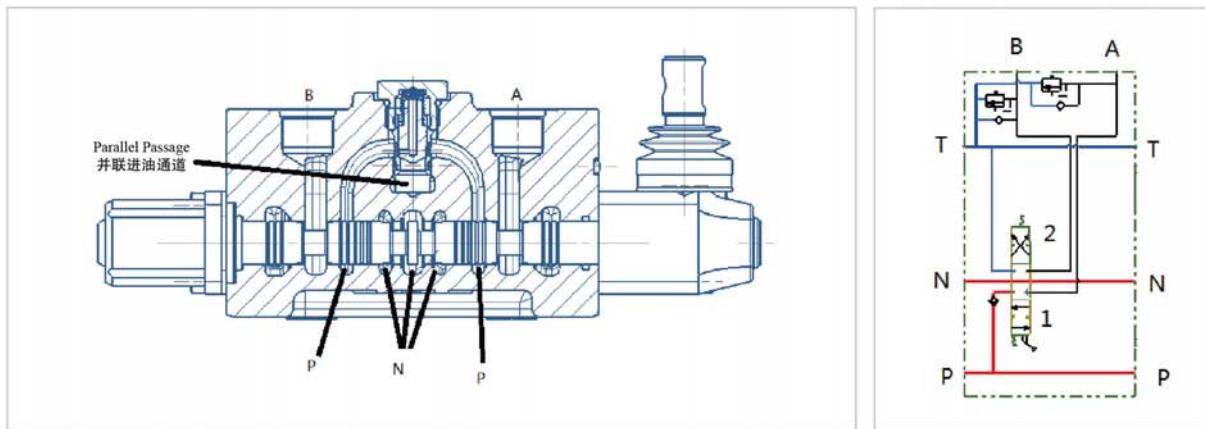


## GDV80 Series Performance Data - GDV80系列主要性能参数



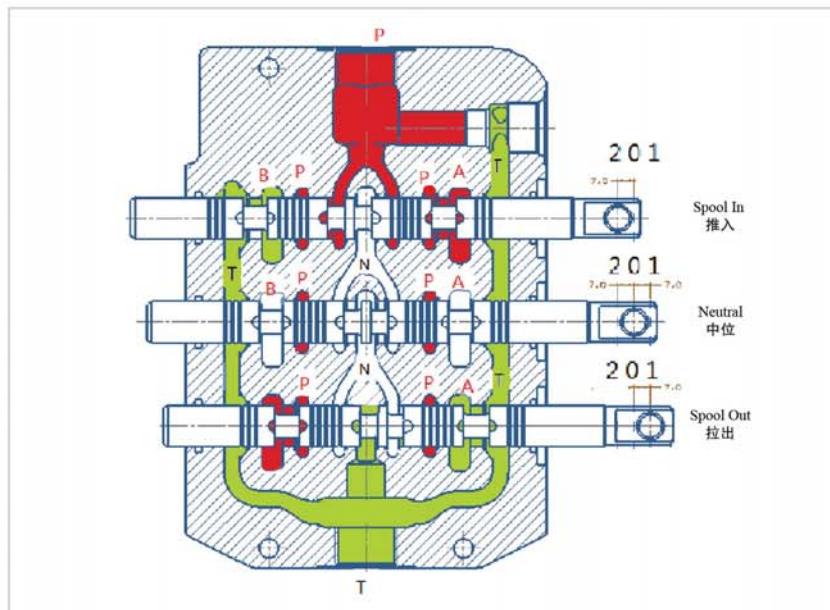


## GDV80 Series Basic Operating Principle - GDV80系列基本工作原理



GDV80 series mono-block valve is an open centered 3 position 4 way valve. When spool is in its neutral position, the flow from pump passes through the neutral passage to tank, with very low pressure drop. When one of the spool is moved to “1” or “2” position, the neutral passage is blocked. The flow from pump can only pass through parallel passage to load check valve, then, through the bridge and spool opening to work port “A” or “B”.

一般说来，GDV80系列的多路阀是一种开式的3位4通阀。当阀芯都在中位时，从油泵提供的油液直接经阀芯和阀体之间的中位通道流到油箱，产生很小的压力损失。当其中一个阀芯移动到“1”或“2”时，阀芯和阀体之间的中位通道被逐渐堵死，从油泵来的全部流量经并联油路进入负载单向阀，经阀口节流后进入该阀芯控制的“A”口或“B”口。



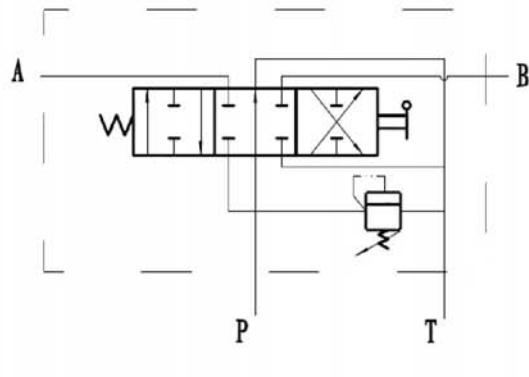
For multi-spool mono-block valves, if one of the spools is in “1” or “2” position, then there is no flow in its down stream spool’s neutral passage. The main throttle occurs on the valve opening between bridge passage and spool. The operator can control more than one spools, but the magnitude of the flow rate for each controlled spool is dependent on the load.

对于多联的整体式阀，如果其中一联的阀芯在“1”或“2”的位置时，它的后一联的中位通道就没有流量。油液的主要节流发生在桥路通道和阀芯节流口。操作员可以同时控制几个阀芯，其控制元件的速度取决于负载的大小。

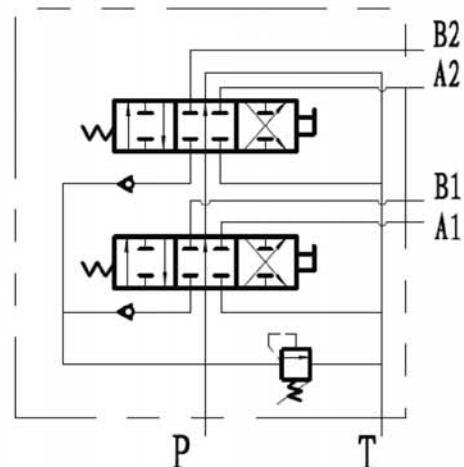


GDV80 Series Mono-block Valve Basic Hydraulic Schematics - GDV80系列最基本的液压系统图工作原理

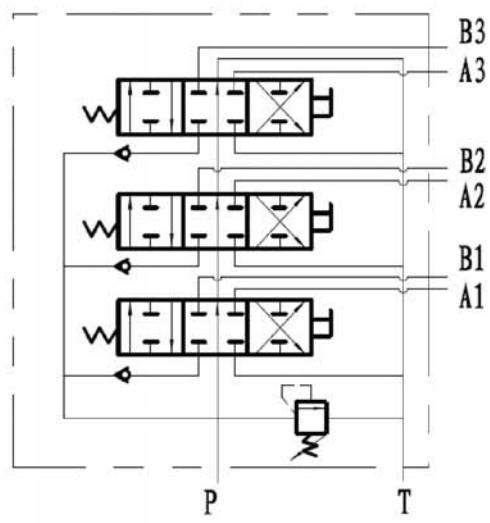
GDV80-1



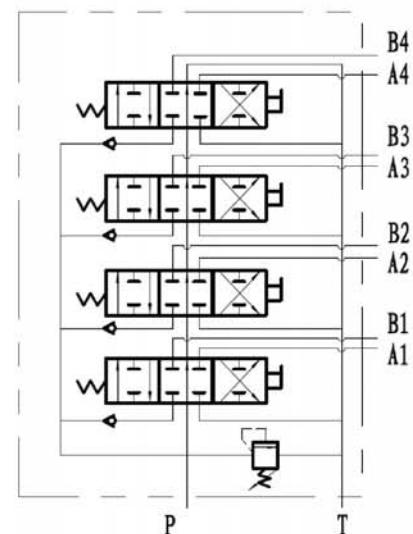
GDV80-2



GDV80-3



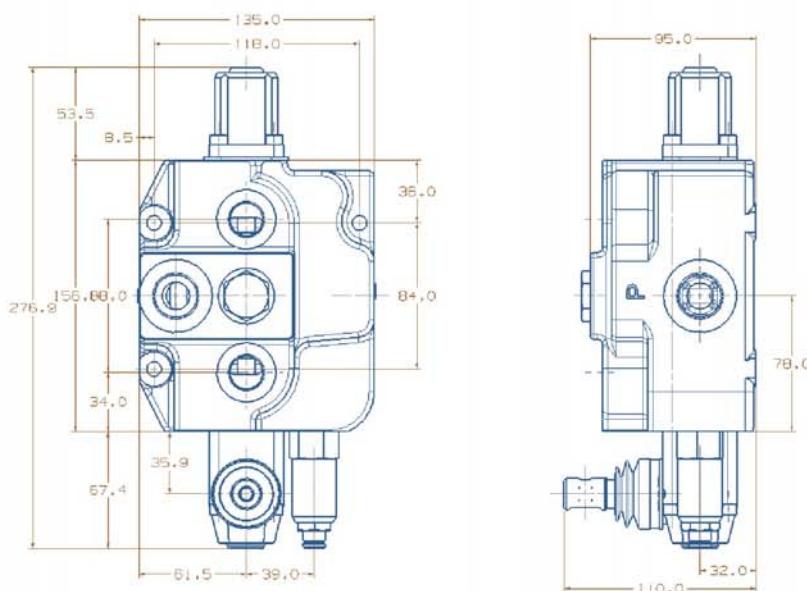
GDV80-4



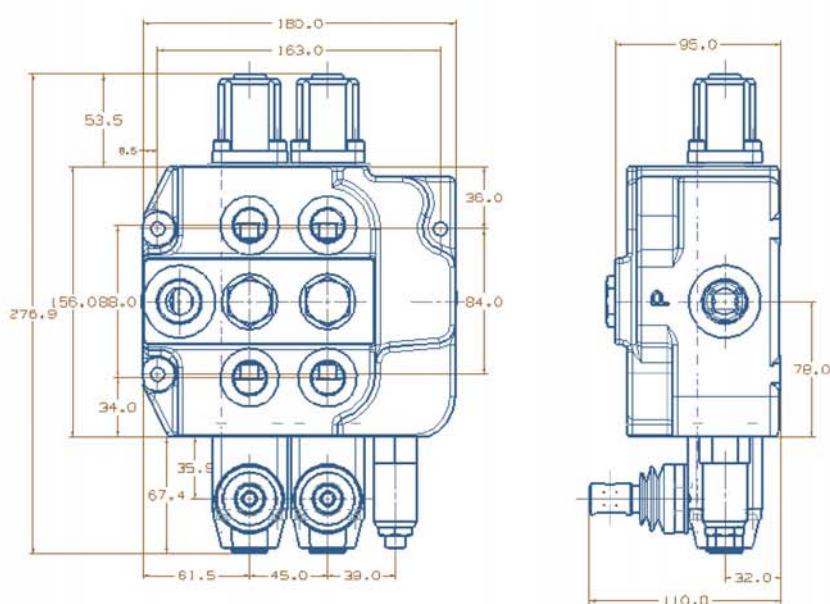


GDV80 Series Valve Dimension - GDV80系列阀体转配尺寸

GDV80-1:1 Spool Valve - 1 联整体阀

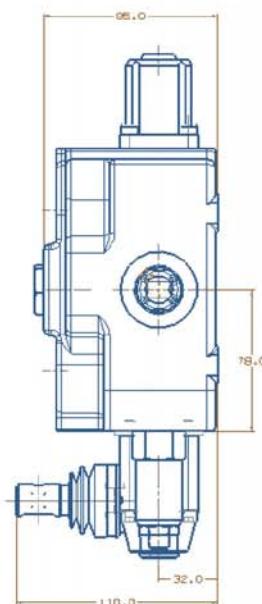
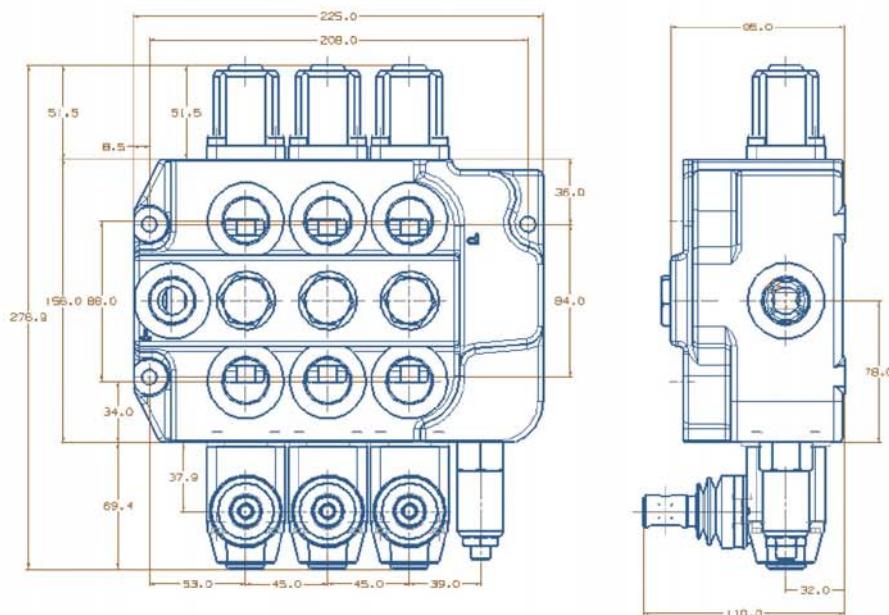


GDV80-2:2 Spool Valve - 2 联整体多路阀

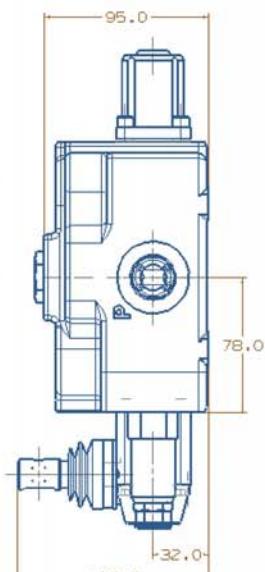
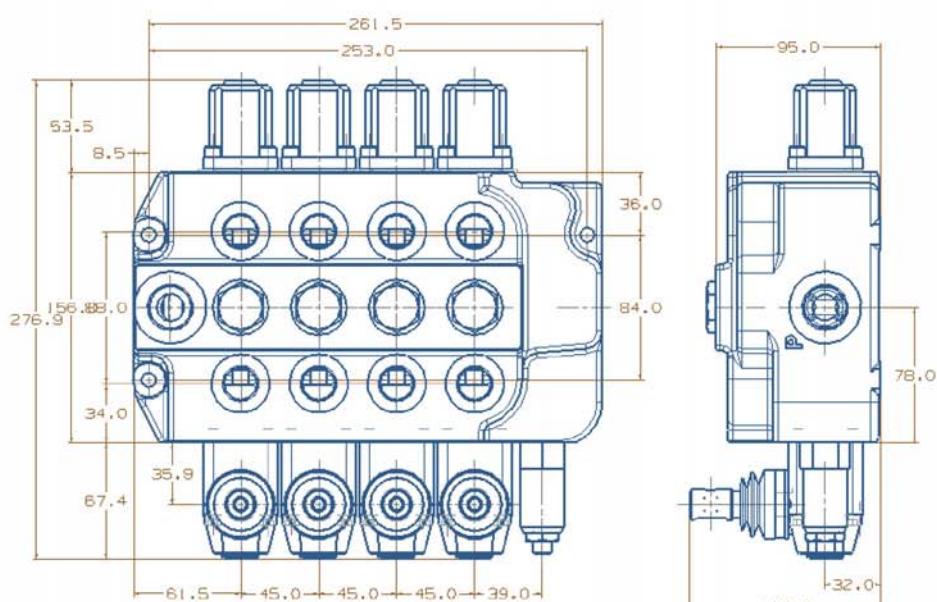


GDV80 Series Valve Dimension - GDV80系列阀体转配尺寸

GDV80-3:3 Spool Valve - 3 联整体多路阀

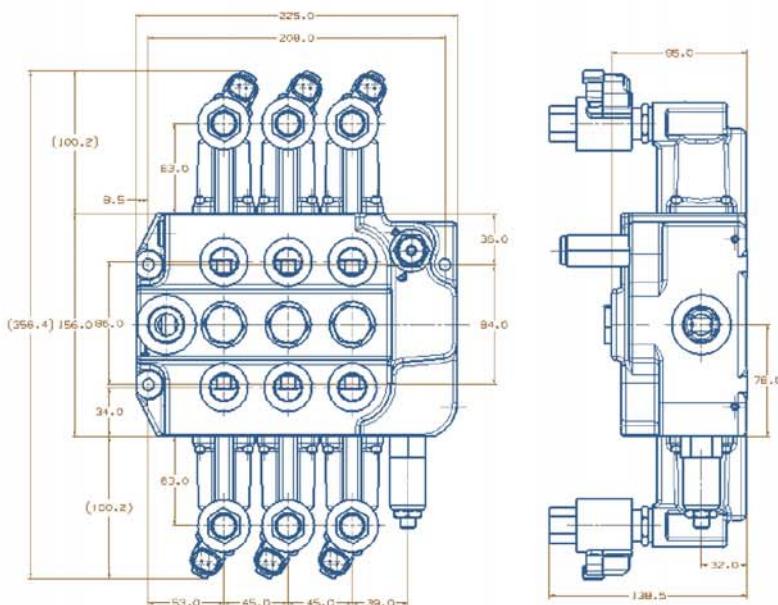


GDV80-4:4 Spool Valve - 4 联整体多路阀

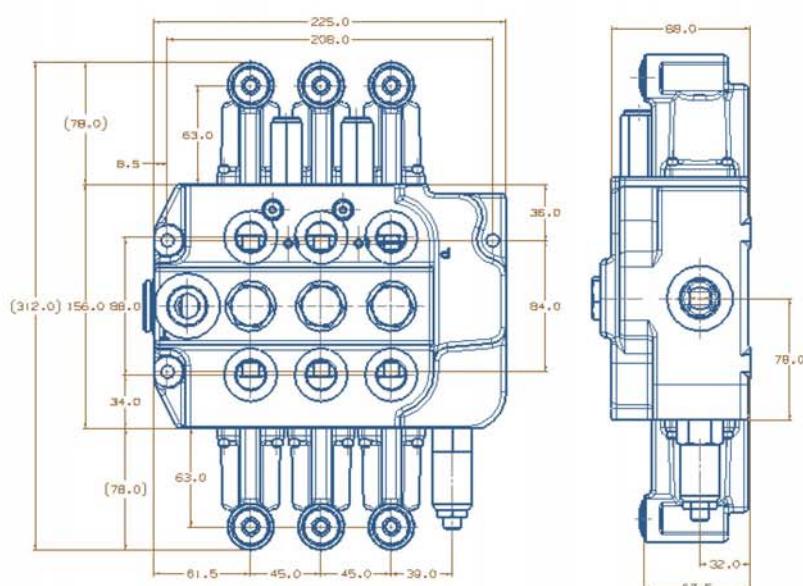


GDV80 Series Valve Dimension - GDV80系列阀体转配尺寸

GDV80-3:Spools, Electrical Drive - 电控



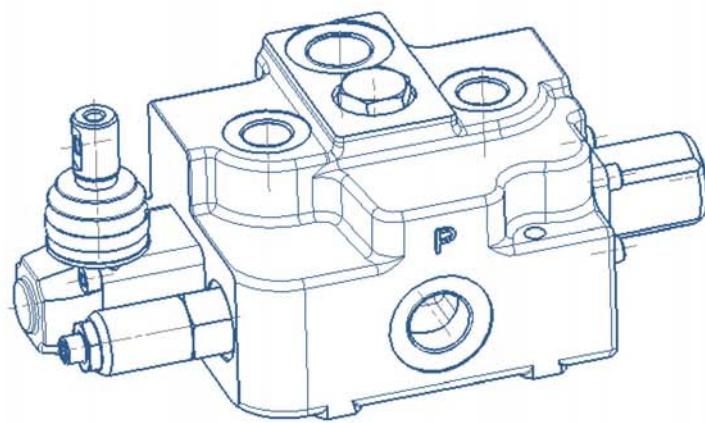
GDV80-3:Spools, Hydraulic Remote - 液控



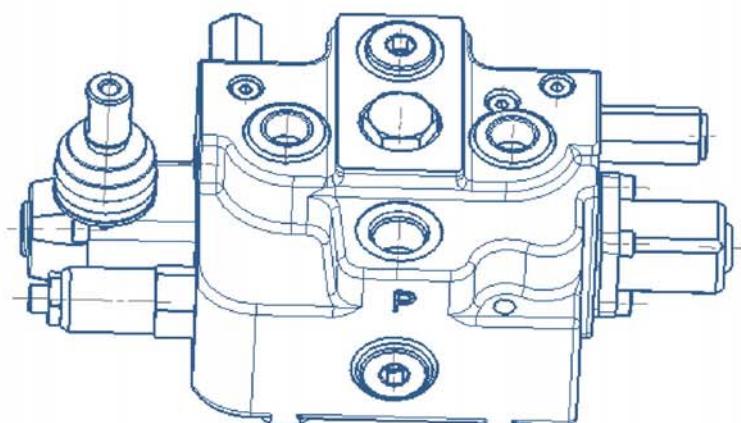


GDV80 Series Inlet Port Options - GDV80系列进油油口的选择

Inlet Port Option Code:P1(Port at the front) - 进油油口的选择代码：P1（油口在正面）



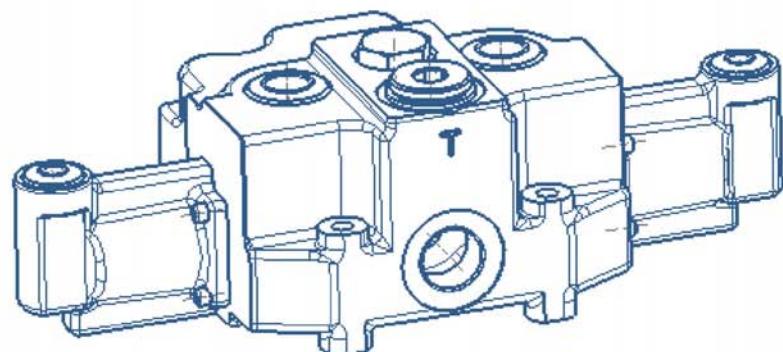
Inlet Port Option Code:P2(Port at the top) - 进油油口的选择代码：P2（油口在顶部）



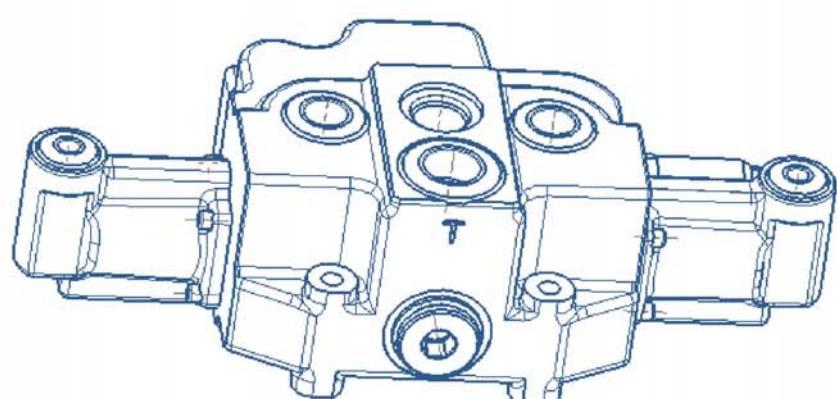


GDV80 Series Valve Return Port Options - GDV80系列出油油口的选择

Return Port Option Code:T1(Port at the front) - 出油油口的选择代码：T1（回油口在正面）



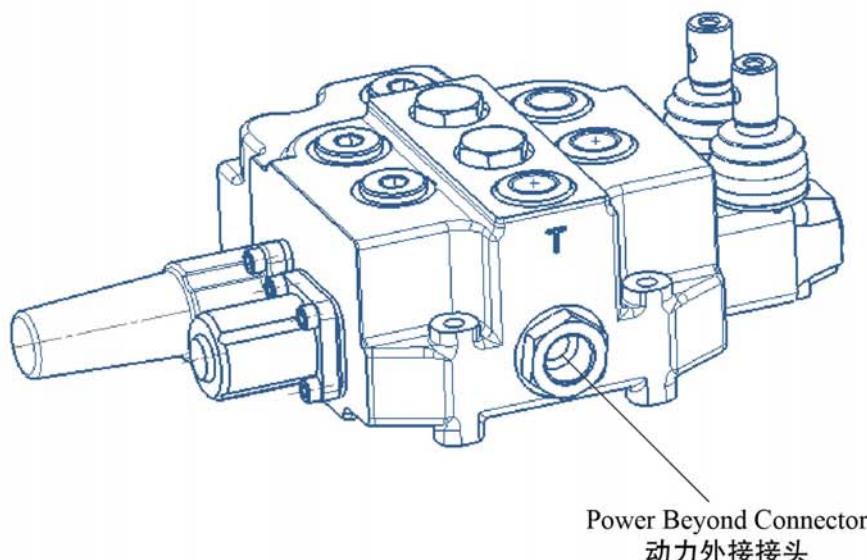
Return Port Option Code:T2(Port at the top) - 出油油口的选择代码：T2（回油口在顶部）





GDV80 Series Power Beyond Options - GDV80系列出油口动力外接的选择

Power Beyond Port Option Code:D1(With power beyond)  
出油油口动力外接的选择代码：D1（压力油油口通过一连接接头引出）



Power Beyond Port Option Code:D0(No power beyond port)  
出油油口动力外接的选择代码：D0（无动力外接）



## GDV80 Series Typical Spool Functions - GDV80系列典型阀芯功能

Spool Function 阀芯机能代码	Hydraulic Schematics 液压图形符号	Function 功能	Notes 备注
FG1		3 position 4 way At neutral: P,T,A,B are all blocked  3位4通 中位P, T, A, B各不通	Double acting cylinder applications  常用于控制双作用油缸
FG2		3 position 4 way At neutral: P blocked, T,A, B connected  3位4通 中位P不通, T, A, B相通	Hydraulic motor applications  常用于控制液压马达
FG3		3 position 4 way At neutral: P,A,B and T all connected  3位4通 中位P, A, B, 均与T相通	Hydraulic motor applications  常用于控制液压马达
FG4		3 position 3 way At neutral: P,T,A,B all blocked  3位3通 中位P, T, A, B各不通	Single acting cylinder applications  常用于控制单作用油缸
FG5		4 position 4 way At neutral: P,T,A, and B are all blocked 4th position floating  4位4通 中位P, T, A, B各不通 第4位浮动	Double acting cylinder applications  常用于控制双作用油缸
FG6		4 position 4 way At neutral: P blocked, T,A and B are connected 4th position floating  4位4通 中位P不通, T, A, B相通 第4位浮动	Double acting cylinder or hydraulic motor applications  常用于控制双作用油缸或液压马达

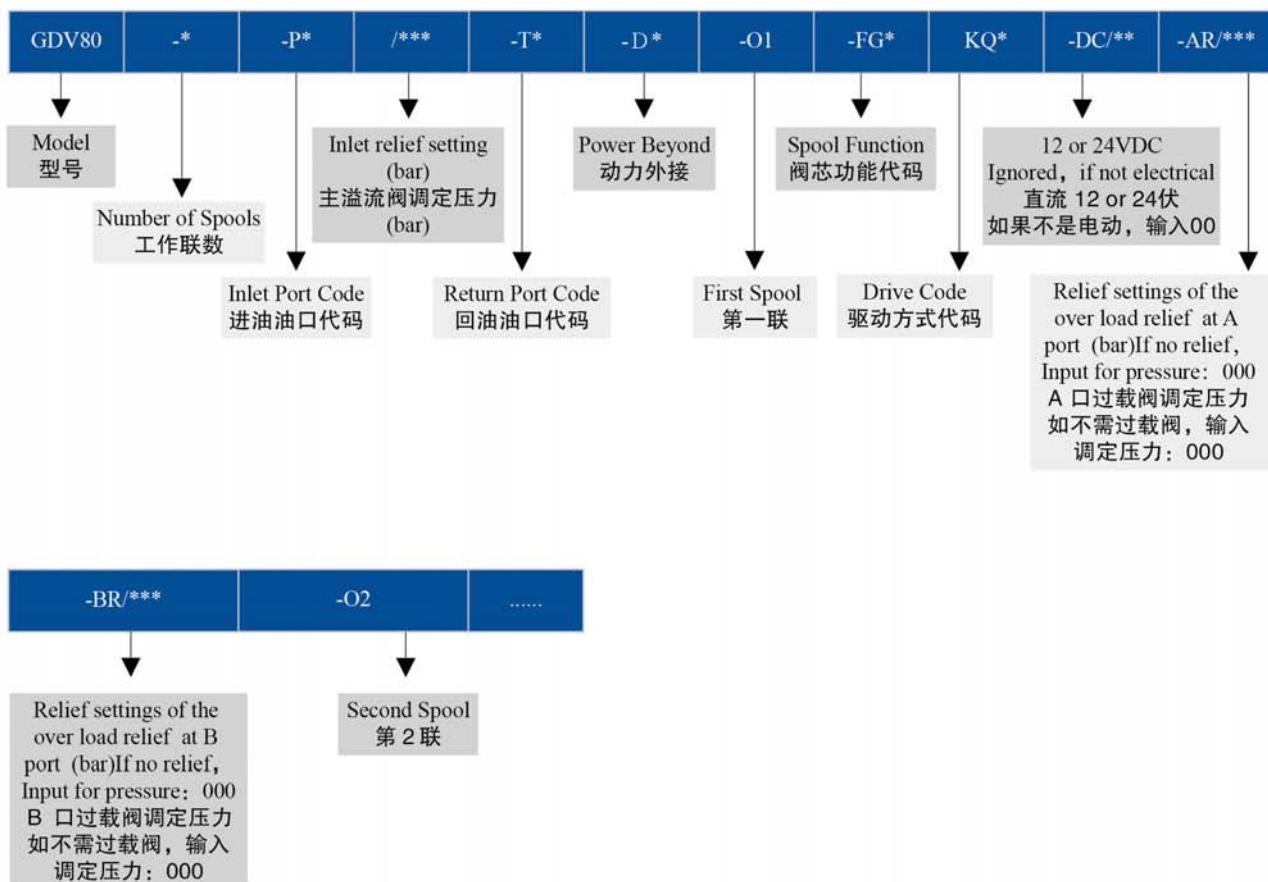


## GDV80 Series Drive Styles - GDV80系列驱动方式

Drive Style Code 驱动方式代码	Hydraulic Schematics 液压图形符号	Function 功能
KQ1		Standard manually controlled 标准手动
KQ2		Hydraulic remote 液控
KQ3		Manually controlled with mechanical detent 手动带机械定位
KQ4		Manually controlled with 4th position floating and detent 手动，第4位浮动带机械定位
KQ5		Electrical actuated (on/off) 电动(开/关控制)
KQ6		Electrical actuated with floating function 电动控制带浮动功能



## GDV80 Series Order Code - GDV80系列定购代码





## GDV80 Series Order Example - GDV80系列定购代码（实例）

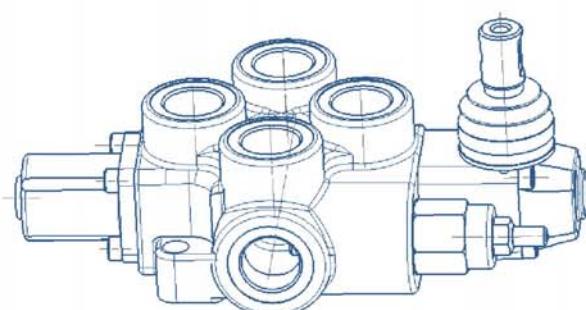
GDV80	-3	-P1	/210	-T1	-D1	-O1	-FG1	KQ1	-DC/00	-AR/250	-BR/190
Model 型号			Inlet relief setting (210bar) 主溢流阀调定压力 (210bar)		Power Beyond 动力外接		First spool function 第一个阀芯功能			Not electrical 非电驱动	
3 Spools 3 联多路阀											190 bar over load relief setting at B port B 口过载阀 调定压力190bar
			Inlet port at front 进油口形式在顶部	Return port on top 回油口在顶部		First spool 第一联			Standard Manually controlled 驱动方式标准手动		
										250 bar over load relief setting at A port A 口过载阀 调定压力250bar	
-O2	-FG2	-KQ5	-DC/24	-AR/000	-BR/000	-O3	-FG2	-KQ2	-DC/00	-AR/220	-BR/000
Second spool 第二联			24 VDC 电动直流24伏		Power Beyond B 口无过载阀		Spool function 阀芯功能			No relief at B port B 口无过载阀	
			Spool function 阀芯功能								
			Electrical Drive 驱动方式电动		No relief at A port A 口无过载阀 调定压力		Third spool 第三联		Hydraulic remote 驱动方式液控		
										220 bar relief setting at A port A 口过载阀调 定压力220bar	



## GDV120 Series Index - GDV120系列整体式多路阀目录

Main Features - 主要特点	6
Major Technical Data - 主要技术参数	6
Major Performance Data - 主要性能参数	7
Basic Operating Principle - 基本工作原理	8
Valve dimension - 阀体装配尺寸	9-10
Selection of the Inlet Port - 进油油口选择	11
Selection of Return Port - 出油油口选择	12
Spool Functions - 阀芯功能	13
Drive Options - 驱动形式	14
Order Code - 订购编码	15
Order Example - 订购编码实例	16

## GDV120 Series Mono-block Valves - GDV120系列整体式多路阀





## GDV120 Series Mono-block Valve's Features - GDV120系列整体式多路阀的主要特点

GDV120 Series mono-block valve has the following main features:

- Cast iron mono-block body.
- Spring cap, mechanical detent cap, as well as electoral or hydraulic pilot controlled module body are made by cast aluminum or die cast aluminum.
- Provides different drive modules (electrical, hydraulic remote, manually control, wire driving).
- Provides power beyond port.
- Provides different spool functions to be used for controlling double acting cylinder , single acting cylinders, hydraulic motors.
- Provides floating functions for spools.
- Provides mechanical detent.
- Provides excellent flow characteristics and small operating force.
- Can be made with 2 spools.

GDV120系列的整体式多路阀有以下主要特点:

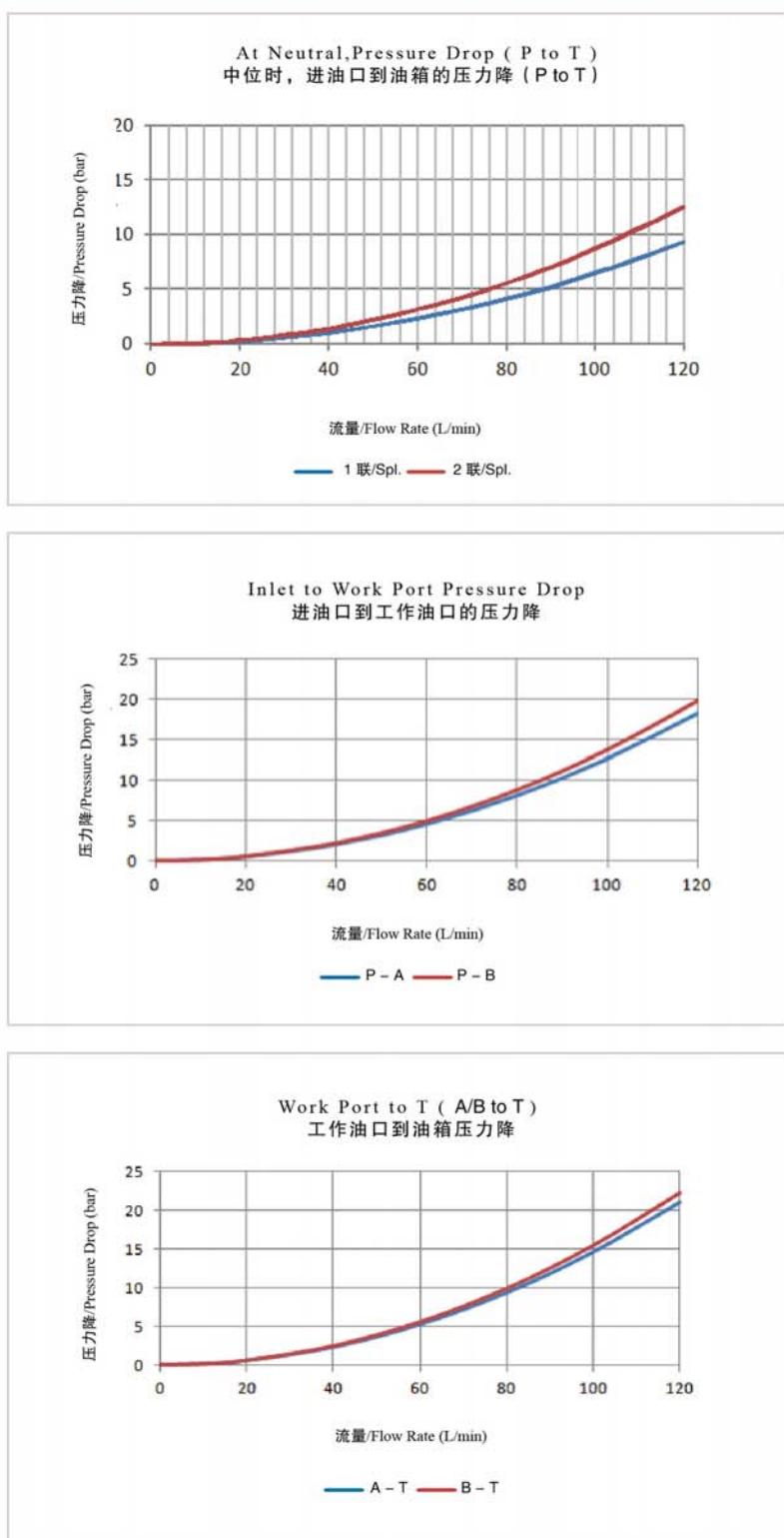
- 阀体为整体式灰口铸铁。
- 弹簧端盖，机械定位端盖，电和液控驱动模块为铸铝或压铸铝。
- 可提供机械定位。
- 提供各种不同的阀芯功能：用于控制双作用油缸、单作用油缸、油马达的阀芯，以及带浮动功能的阀芯。
- 阀的操作力小，流量特性好。
- 该多路阀可组合成 1 到 4 个阀芯的整体阀（目前仅提供一联整体式阀）。

## GDV120 Series Major Technical Data - GDV120系列主要技术参数

Rated flow rate:	120 L/min	额定流量:	120L/min
Maximum flow rate:	130 L/min	最大流量:	130 L/min
Maximum pressure at P port:	310 bar	P 口最大压力:	310 bar
Maximum pressure at A/B port:	310 bar	A/B 口最大压力:	310 bar
Maximum pressure at T port:	25 bar	T 口最大压力:	25 bar
Internal leakage (@ 70 bar) : A/B to T	30-35 CC/min	内泄漏 ( 70 bar ) : A/B to T	30-35 CC/min
Temperature range of the hydraulic oil:		液压油油温范围:	
With NBR (BUNA--N) seals	-20C° - 80C°	用油封丁晴橡胶密封	-20C° - 80C°
With FPM (VITON) seals	-20C° - 100C°	用氟橡胶密封	-20C° - 100C°
Spool stroke (1/2 position) :	+7/-7mm	阀芯行程 (位置1/2) :	+7/-7 mm
With floating function (1 / 2 and F position) :	+7/-7, -9mm	带浮动的阀芯行程 (位置1/2 和 F 位) :	+7/-7 -9 mm
Recommend hydraulic oil viscosity range:	15-75mm^2/s	推荐液压油粘度范围:	15-75 mm^2/s
Recommend temperature range:	-40C° - 60C°	推荐使用环境温度:	-40C° - 60C°
Solenoid can be either 12 VDC or 24 VDC, corresponding current is 0- 1.5 or 0 - 0.75 Amp.		电驱动的电磁线圈电压是12 VDC 或 24 VDC, 与之相应的电流时 0- 1.5 或0 - 0.75 Amp.	

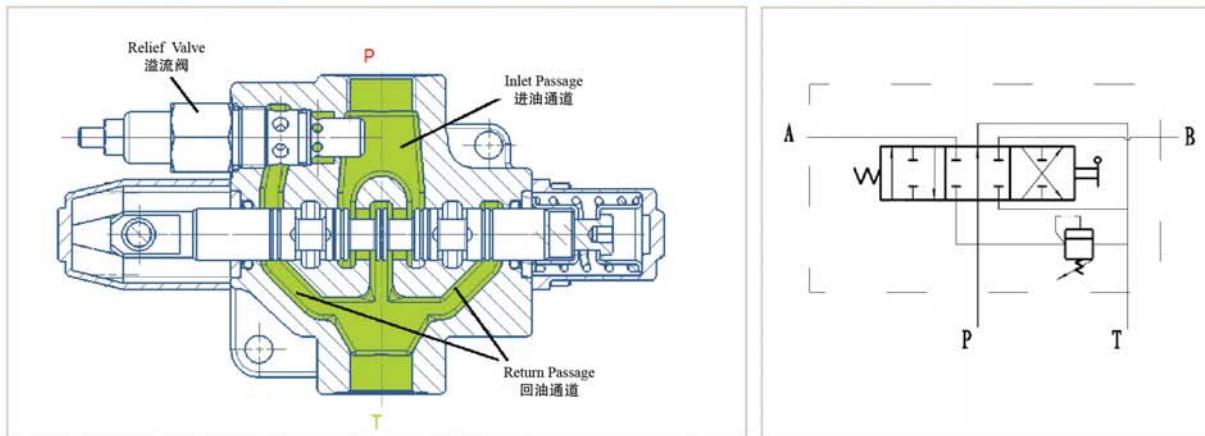


## GDV120 Series Performance Data - GDV120系列主要性能参数



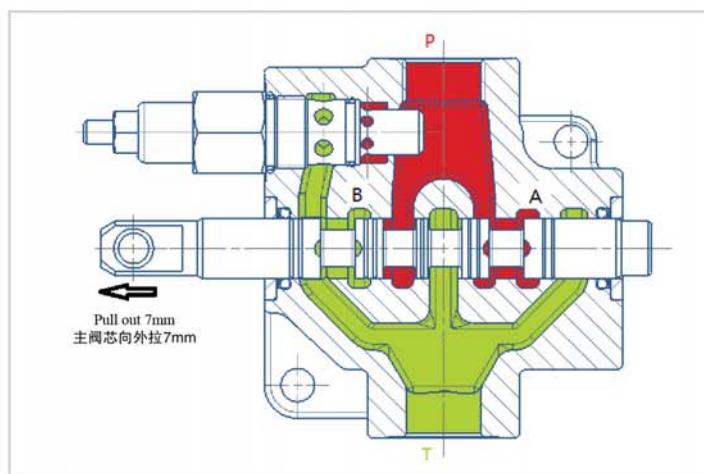


## GDV120 Series Mono-block Valve Operating Principle - GDV120系列基本工作原理



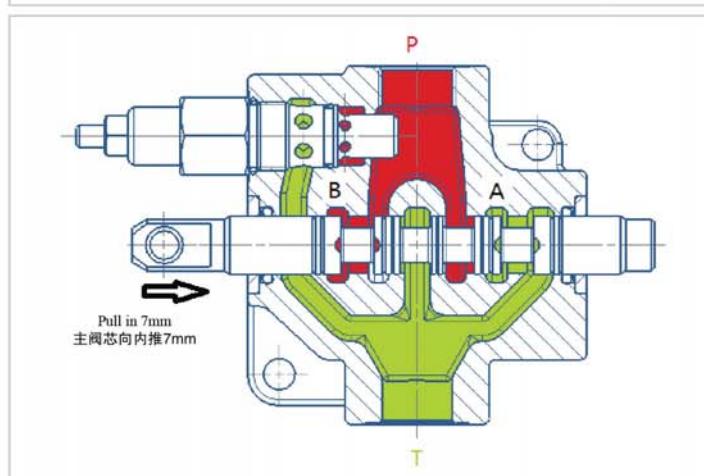
GDV120 series mono-block valve is an open centered 3 position 4 way valve. When spool is in its neutral position, the flow from pump passes through the neutral passage to tank, with very low pressure drop.

GDV120 系列的多路阀是一种开式的 3 位 4 通阀。当阀芯在中位时，从油泵提供的油液直接经阀芯和阀体之间的中位通道流到油箱，产生很小的压力损失。



When spool is pulled out 7 mm, the neutral passage is blocked. Flow from pump passes through the spool opening on the right side to work port A. At the same time, the flow from port B passes to return passage, then to tank, through the spool opening on the left side of the spool.

当阀芯向外拉动 7 mm 时，阀的中间通道被阀芯堵死，从油泵来的油通过阀芯与阀体的右方开口进入工作油口 A，同时，B 口的油液经阀芯与阀体的另一个开口回到回油路。



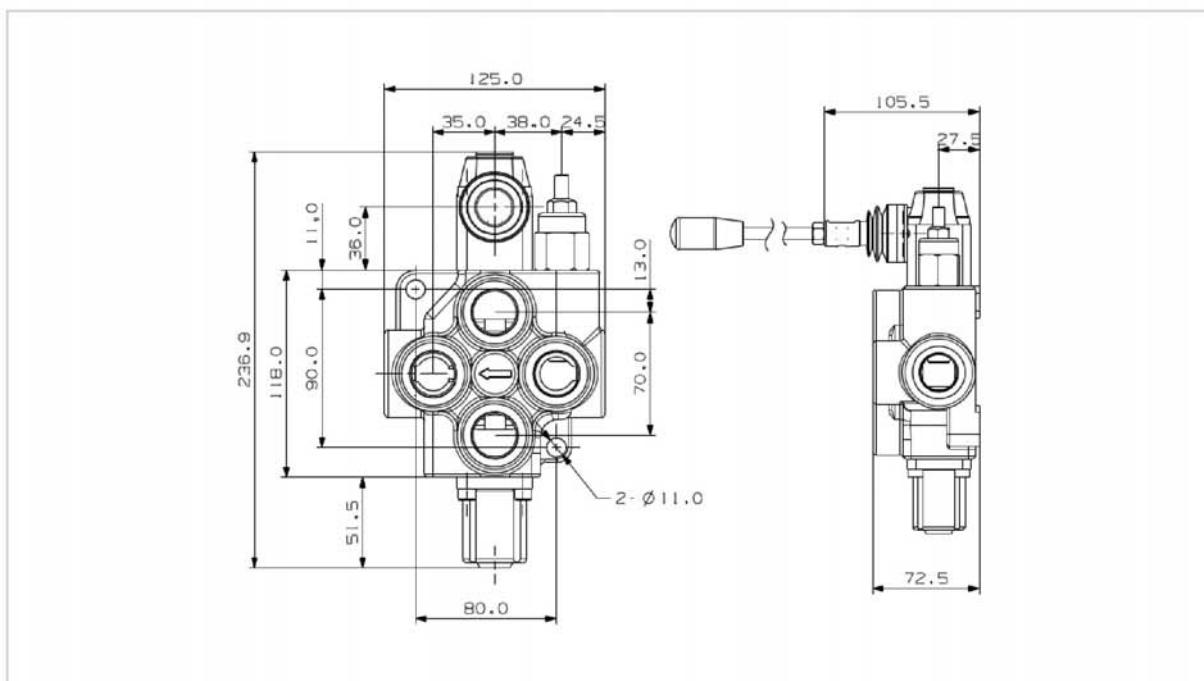
When spool is pushed in 7 mm, the neutral passage is blocked. Flow from pump passes through the spool opening on the left side to work port B. At the same time, the flow from port A passes to return passage, then to tank, through the spool opening on the right side of the spool.

当阀芯向内推动 7 mm 时，阀的中间通道被阀芯堵死，从油泵来的油通过阀芯与阀体的左方开口进入工作油口 B，同时，A 口的油液经阀芯与阀体的右边开口回到回油路。



GDV120 Series Valve Dimension - GDV120系列阀体装配尺寸

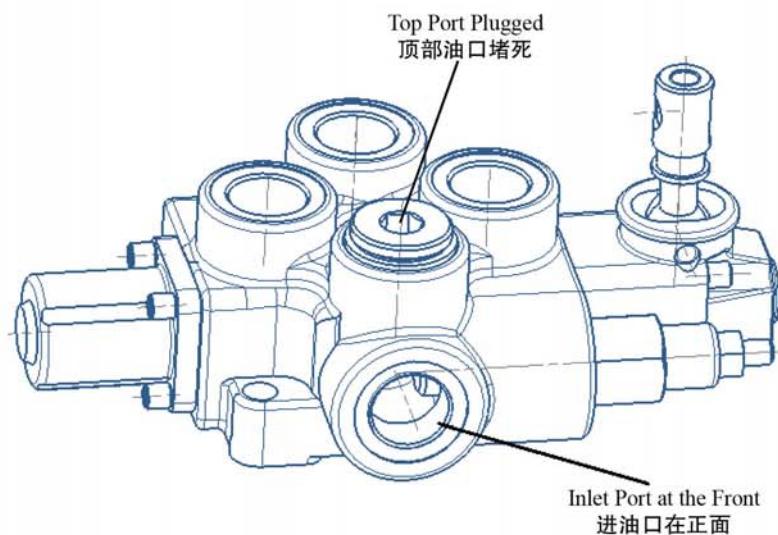
GDV120-1:1 Spool Valve - 1 联整体阀



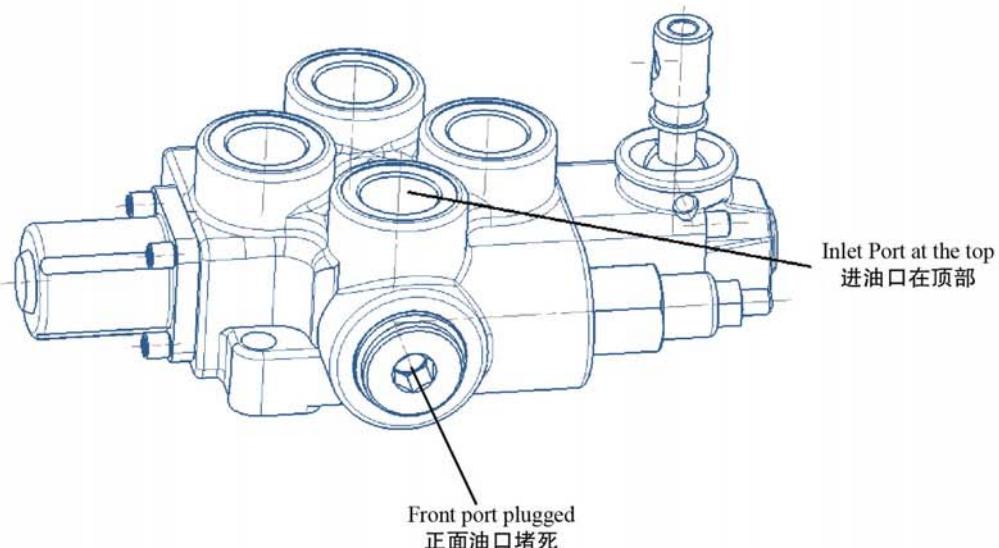


GDV120 Series Inlet Port Options - GDV120系列进油油口的选择

Inlet Port Option Code: P1(Port at the front) - 进油油口的选择代码：P1（油口在正面）



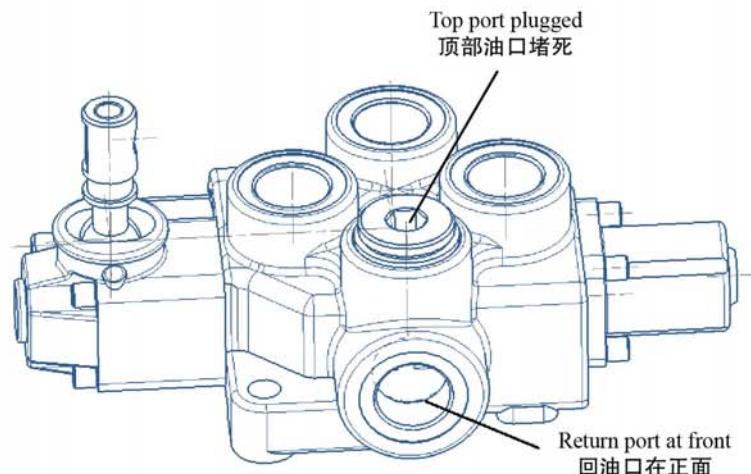
Inlet Port Option Code: P2(Port at the top) - 进油油口的选择代码：P2（油口在顶部）



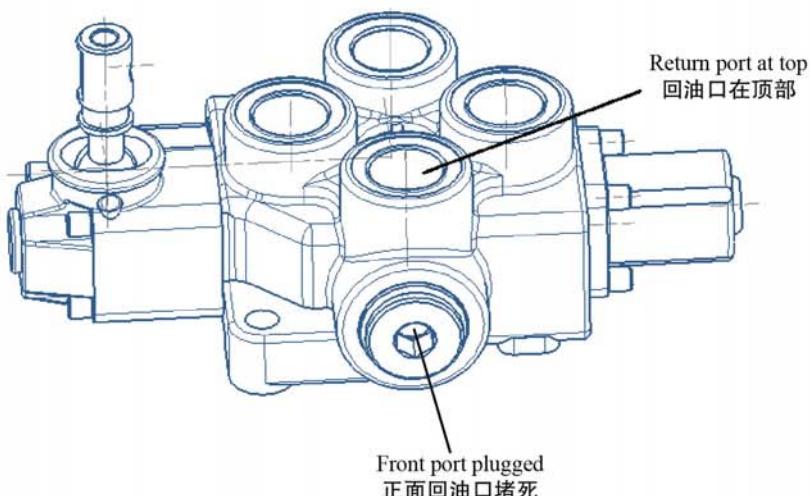


GDV120 Series Valve Return Port Options - GDV120系列出油油口的选择

Return Port Option Code:T1(Return port at front) - 出油油口的选择代码：T1（回油口在正面）



Return Port Option Code:T2(Return port at the top) - 出油油口的选择代码：T2（回油口在顶部）





## GDV120 Series Typical Spool Functions - GDV120系列典型阀芯功能

Spool Function 阀芯机能代码	Hydraulic Schematics 液压图形符号	Function 功能	Notes 备注
FG1		3 position 4 way At neutral: P,T,A,B are all blocked  3位4通 中位P, T, A, B各不通	Double acting cylinder applications  常用于控制双作用油缸
FG2		3 position 4 way At neutral: P blocked, T,A, B connected  3位4通 中位P不通, T, A, B相通	Hydraulic motor applications  常用于控制液压马达
FG3		3 position 4 way At neutral: P,A,B and T all connected  3位4通 中位P, A, B, 均与T相通	Hydraulic motor applications  常用于控制液压马达
FG4		3 position 3 way At neutral: P,T,A,B all blocked  3位3通 中位P, T, A, B各不通	Single acting cylinder applications  常用于控制单作用油缸
FG5 (not available) (暂无)		4 position 4 way At neutral: P,T,A, and B are all blocked 4th position floating  4位4通 中位P, T, A, B各不通 第4位浮动	Double acting cylinder applications  常用于控制双作用油缸
FG6 (not available) (暂无)		4 position 4 way At neutral: P blocked, T,A and B are connected 4th position floating  4位4通 中位P不通, T, A, B相通 第4位浮动	Double acting cylinder or hydraulic motor applications  常用于控制双作用油缸或液压马达

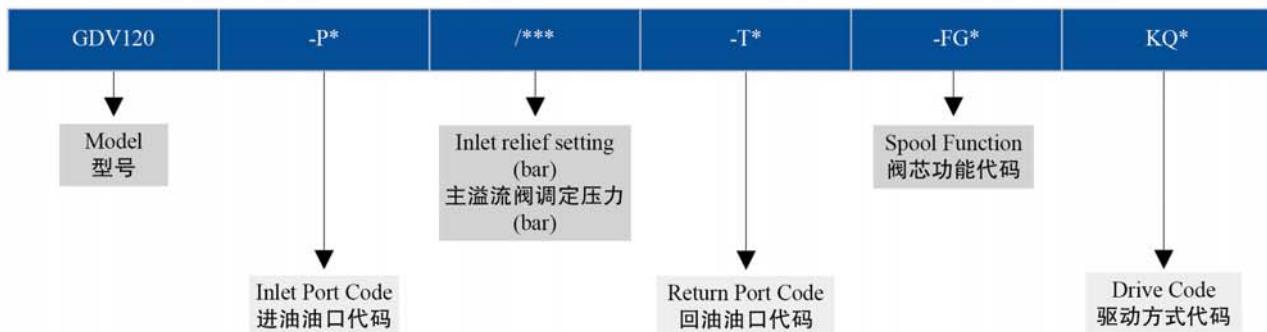


## GDV120 Series Drive Styles - GDV120系列驱动方式

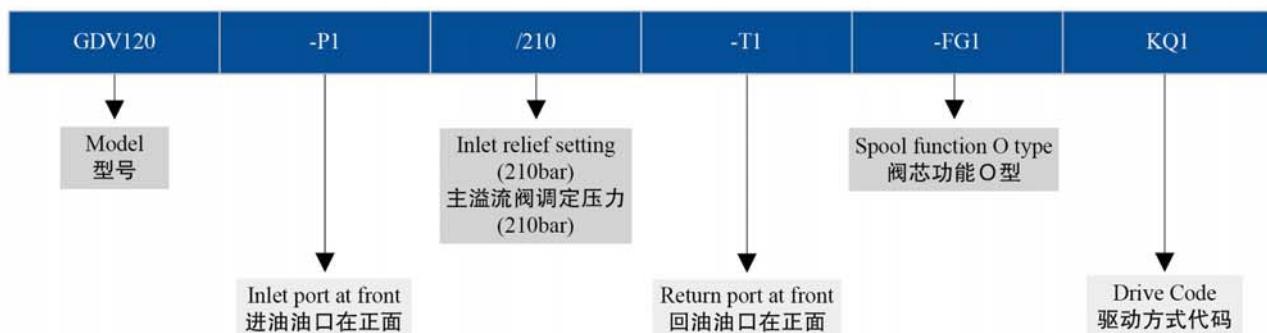
Drive Style Code 驱动方式代码	Hydraulic Schematics 液压图形符号	Function 功能
KQ1		Standard manually controlled 标准手动
KQ2 (not available) (暂无)		Hydraulic remote 液控
KQ3		Manually controlled with mechanical detent 手动带机械定位
KQ4		Manually controlled with 4th position floating and detent 手动，第4位浮动带机械定位
KQ5 (not available) (暂无)		Electrical actuated (on/off) 电动(开/关控制)
KQ6 (not available) (暂无)		Electrical actuated with floating function 电动控制带浮动功能



## GDV120 Series Order Code - GDV120系列定购代码



## Order Example - 定购实例

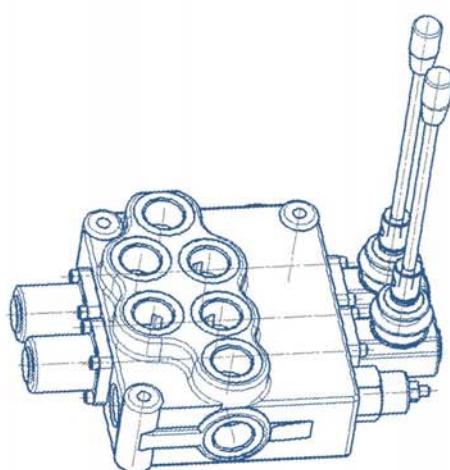




## GDV160 Series Index - GDV160系列整体式多路阀目录

Main Features - 主要特点	6
Major Technical Data - 主要技术参数	6
Major Performance Data - 主要性能参数	7
Basic Operating Principle - 基本工作原理	8
Valve dimension - 阀体装配尺寸	9-10
Selection of the Inlet Port - 进油油口选择	11
Selection of Return Port - 出油油口选择	12
Power Beyond Port - 动力外接	13
Spool Functions - 阀芯功能	14
Drive Options - 驱动形式	15
Order Code - 订购编码	16
Order Example - 订购编码实例	17

## GDV160 Series Mono-block Valves - GDV160系列整体式多路阀





## GDV160 Series Mono-block Valve's Features - GDV160系列主要特点

GDV160 Series mono-block valve has the following main features:

- Cast iron mono-block body.
- Spring cap, mechanical detent cap, as well as electoral or hydraulic pilot controlled module body are made by cast aluminum or die cast aluminum.
- Parallel circuit. Each spool has its own load check valve.
- Provides dump valve options for each work port.
- Provides different drive modules (electrical, hydraulic remote, manually control, wire driving).
- Provides power beyond port.
- Provides different spool functions to be used for controlling double acting cylinder , single acting cylinders, hydraulic motors.
- Provides floating functions for spools.
- Provides mechanical detent.
- Provides port relief options.
- Provides excellent flow characteristics and small operating force.
- Can be made with 6 spools.

GDV160系列的整体式多路阀有以下主要特点:

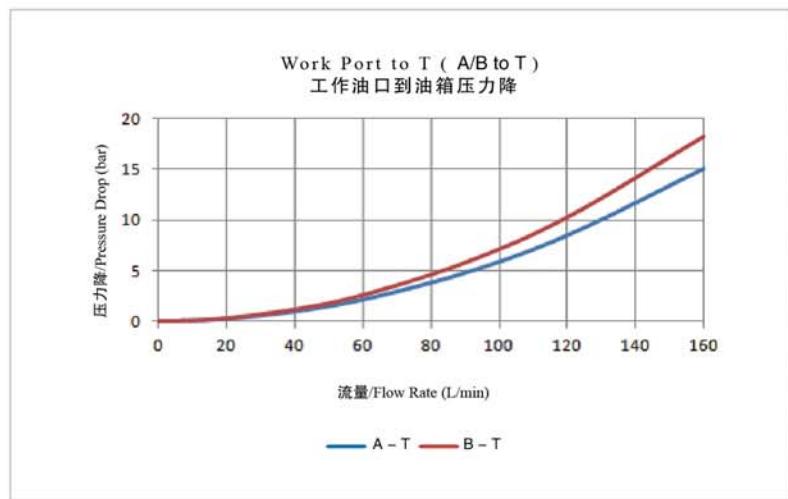
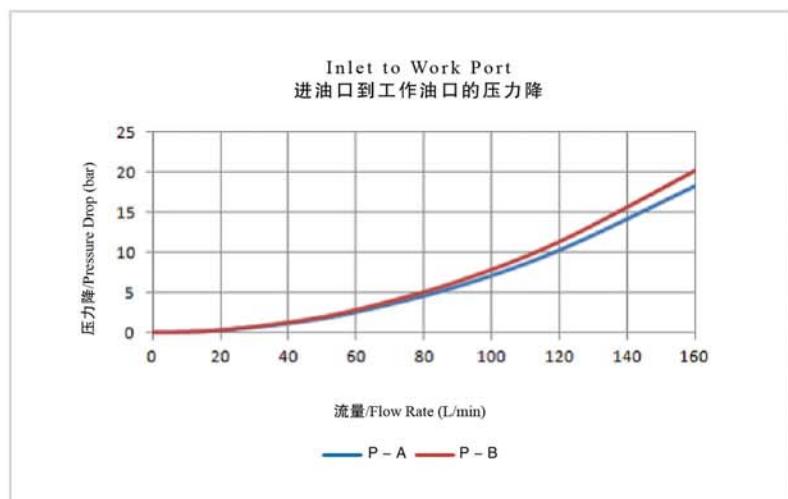
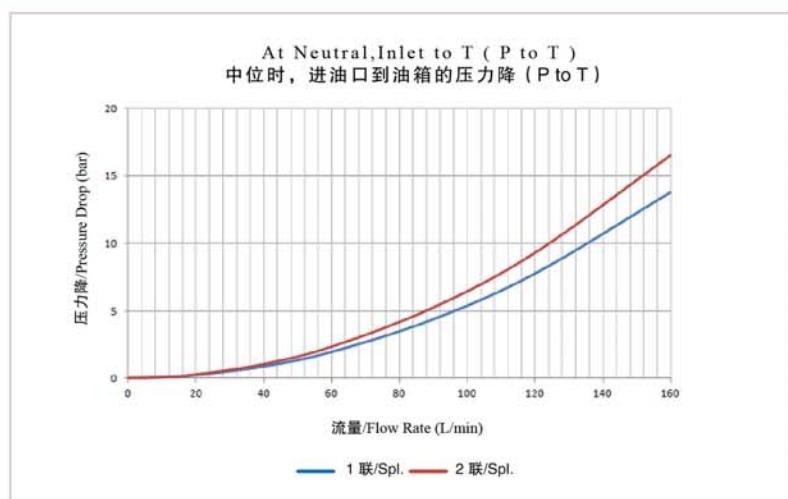
- 阀体为整体式灰口铸铁。
- 弹簧端盖，机械定位端盖，为压铸铝。
- 并联回路，进油端带负载单向阀。
- 可提供手动和拉线控制。
- 可提供动力外接（一联整体阀除外）。
- 可以提供机械定位。
- 提供各种不同的阀芯功能：用于控制双作用油缸、单作用油缸、油马达的阀芯。
- 阀的操作力小，流量特性好。
- 该多路阀可组合成 1 到4个阀芯的整体阀（现有产品，2 联整体阀）。

## GDV160 Series Major Technical Data - GDV160系列主要技术参数

Rated flow rate:	160 L/min	额定流量:	160 L/min
Maximum flow rate:	170 L/min	最大流量:	170 L/min
Maximum pressure at P port:	310 bar	P 口最大压力:	310 bar
Maximum pressure at A/B port:	310 bar	A/B 口最大压力:	310 bar
Maximum pressure at T port:	25 bar	T 口最大压力:	25 bar
Internal leakage (@ 70 bar) : A/B to T	30-35 CC/min	内泄漏 ( 70 bar ) : A/B to T	40-55 CC/min
Temperature range of the hydraulic oil:		液压油油温范围:	
With NBR (BUNA-N) seals	-20C° - 80C°	用油封丁晴橡胶密封	-20C° - 80C°
With FPM (VITON) seals	-20C° - 100C°	用氟橡胶密封	-20C° - 100C°
Spool stroke (1/2 position):	+7/-7 mm	阀芯行程 (位置1/2):	+7/-7 mm
With floating function (1 / 2 and F position):	+7/-7, -9 mm	带浮动的阀芯行程 (位置1/2 和 F 位):	+7/-7 -9 mm
Recommend hydraulic oil viscosity range:	15-75 mm^2/s	推荐液压油粘度范围:	15-75 mm^2/s
Recommend temperature range:	-40C° - 60C°	推荐使用环境温度:	-40C° - 60C°

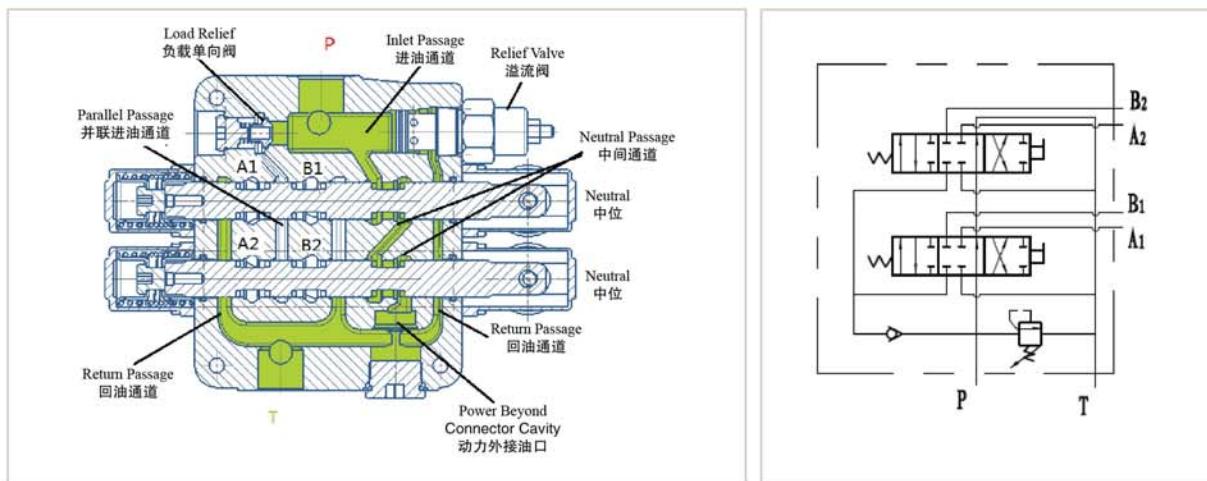


## GDV160 Series Performance Data - GDV160系列主要性能参数



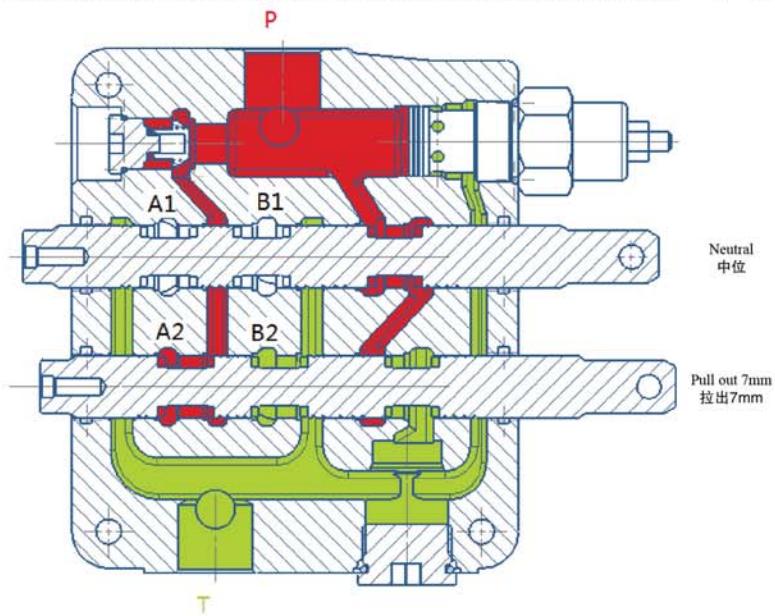


## GDV160 Series Mono-block Valve Operating Principle - GDV160系列基本工作原理



GDV160 series mono-block valve is an open centered 3 position 4 way valve. When spool is in its neutral position, the flow from pump passes through the neutral passage to tank, with very low pressure drop. When one of the spool is moved to “1” or “2” position, the neutral passage is blocked. The flow from pump can only pass through load check valve to parallel passage , then, through spool opening to work port “A” or “B”.

GDV160 系列的多路阀是一种开式的 3 位 4 通阀。当阀芯都在中位时，从油泵提供的油液直接经阀芯和阀体之间的中位通道和中间通道流到油箱，产生很小的压力损失。当其中一个阀芯移动到“1”或“2”时，阀芯和阀体之间的中位通道被逐渐堵死，从油泵来的全部流量经负载单向阀进入并联油路，经阀口节流后进入该阀芯控制的“A”口或“B”口。

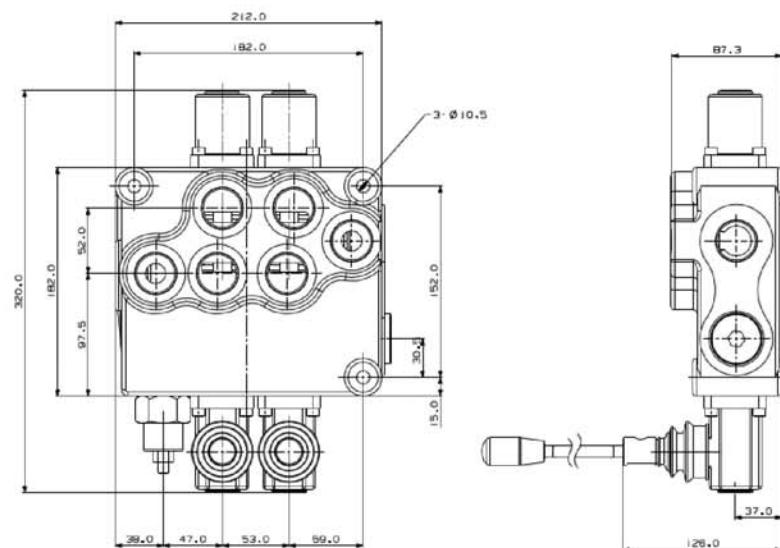


As shown in above picture, the first spool is in neutral position, flow from pump flows to parallel passage through the load check valve to supply flow to two spools. Because the second spool is pulled out 7mm, the second spool opening between parallel passage to A2 port allows flow to enter the A2 port. B2 port connected to return passage. Neutral passage is blocked by second spool.

上图的第一联的阀芯在中位，从油泵供给的油液经负载单向阀经并联进油通道分别向两个阀芯供油。由于第二联开启，从并联进油通道的油液向“A2”口供油。“B2”口回油。中间通道被第二联阀芯切断。

GDV160 Series Valve Dimension - GDV160系列阀体装配尺寸

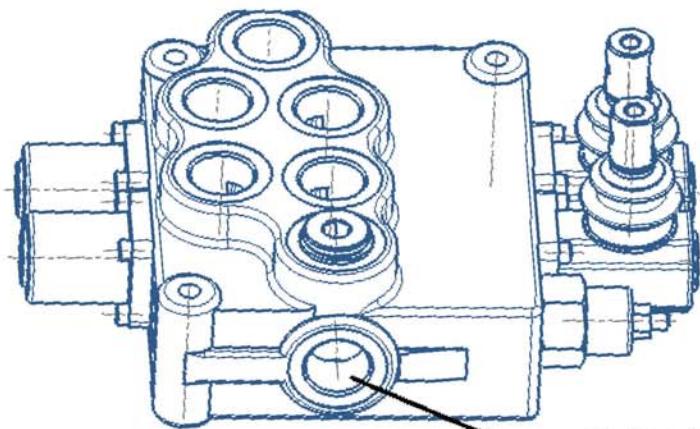
GDV160-2:2 Spool Valve - 2 联整体多路阀





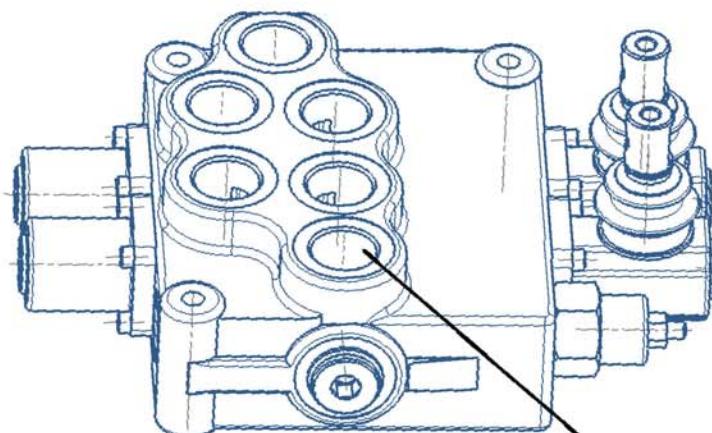
GDV160 Series Inlet Port Options - GDV160系列进油油口的选择

Inlet Port Option Code: P1(Port at the front) - 进油油口的选择代码：P1（油口在正面）



Inlet Port at the Front  
Top Port Plugged  
进油口在正面  
顶部进油口堵死

Inlet Port Option Code: P2(Port at the top) - 进油油口的选择代码：P2（油口在顶部）

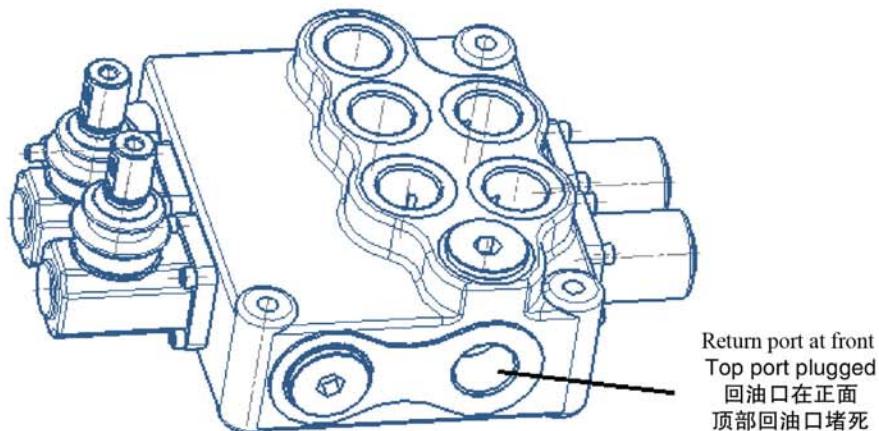


Inlet Port at the top  
Front port plugged  
进油口在顶部  
正面进油口堵死

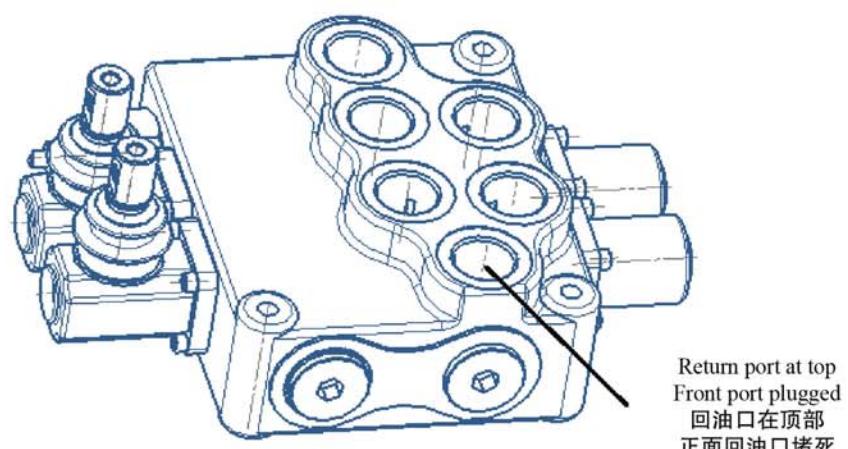


GDV160 Series Valve Return Port Options - GDV160系列出油油口的选择

Return Port Option Code: T1(Return port at front) - 出油油口的选择代码：T1（回油口在正面）



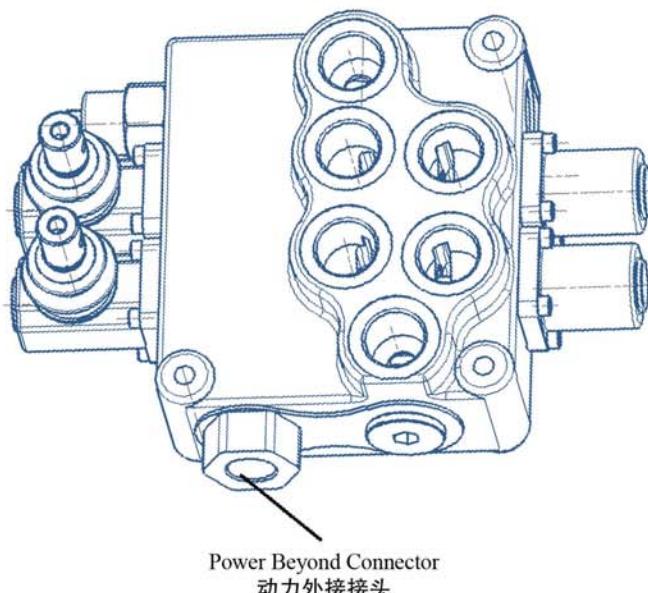
Return Port Option Code: T2(Return port at the top) - 出油油口的选择代码：T2（回油口在顶部）





GDV160 Series Power Beyond Options - GDV160系列出油口动力外接的选择

Power Beyond Option Code:D1(Pump flow output through a power beyond connector)  
出油油口动力外接的选择代码：D1（压力油油口通过一连接接头引出）



Return Port Option Code:D0(Without Power Beyond)  
出油油口动力外接的选择代码：D0（无动力外接）



## GDV160 Series Typical Spool Functions - GDV160系列典型阀芯功能

Spool Function 阀芯机能代码	Hydraulic Schematics 液压图形符号	Function 功能	Notes 备注
FG1		3 position 4 way At neutral: P,T,A,B are all blocked  3位4通 中位P,T,A,B各不通	Double acting cylinder applications  常用于控制双作用油缸
FG2		3 position 4 way At neutral: P blocked, T,A, B connected  3位4通 中位P不通, T, A, B相通	Hydraulic motor applications  常用于控制液压马达
FG3		3 position 4 way At neutral: P,A,B and T all connected  3位4通 中位P, A, B, 均与T相通	Hydraulic motor applications  常用于控制液压马达
FG4		3 position 3 way At neutral: P,T,A,B all blocked  3位3通 中位P, T, A, B各不通	Single acting cylinder applications  常用于控制单作用油缸
FG5 (not available) (暂无)		4 position 4 way At neutral: P,T,A, and B are all blocked 4th position floating  4位4通 中位P, T, A, B各不通 第4位浮动	Double acting cylinder applications  常用于控制双作用油缸
FG6 (not available) (暂无)		4 position 4 way At neutral: P blocked, T,A and B are connected 4th position floating  4位4通 中位P不通, T, A, B相通 第4位浮动	Double acting cylinder or hydraulic motor applications  常用于控制双作用油缸或液压马达

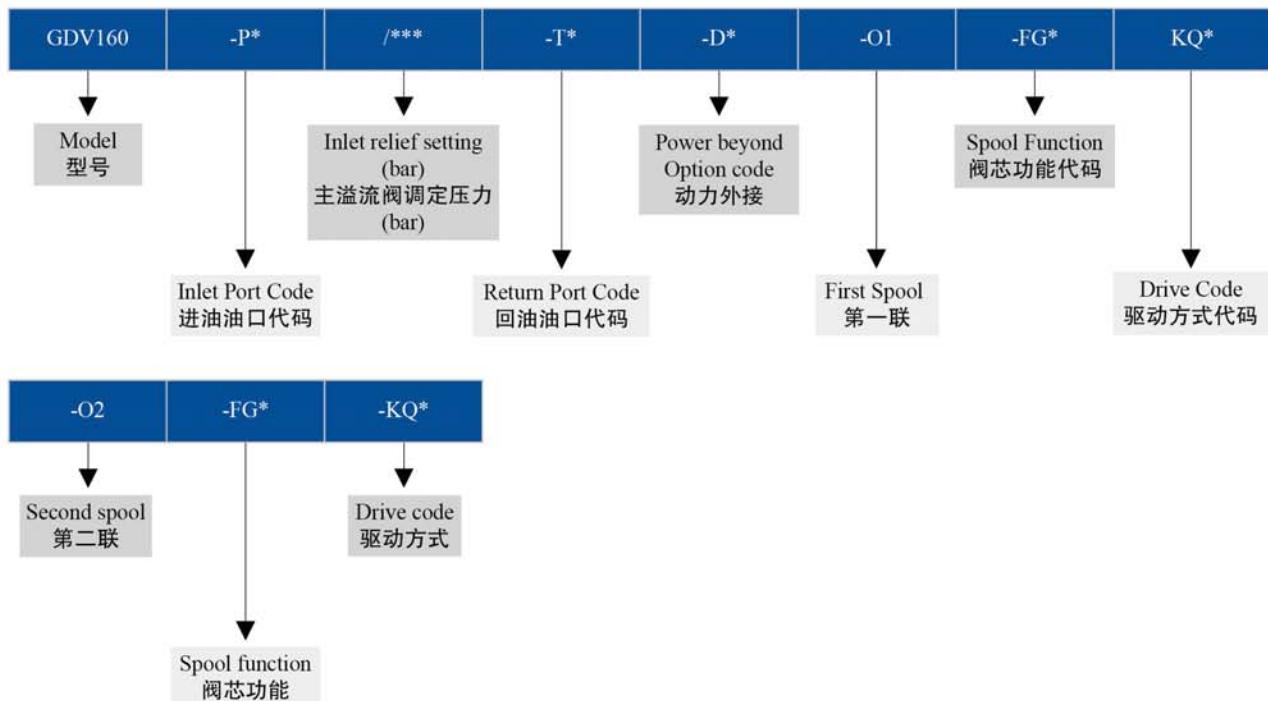


## GDV160 Series Drive Styles - GDV160系列驱动方式

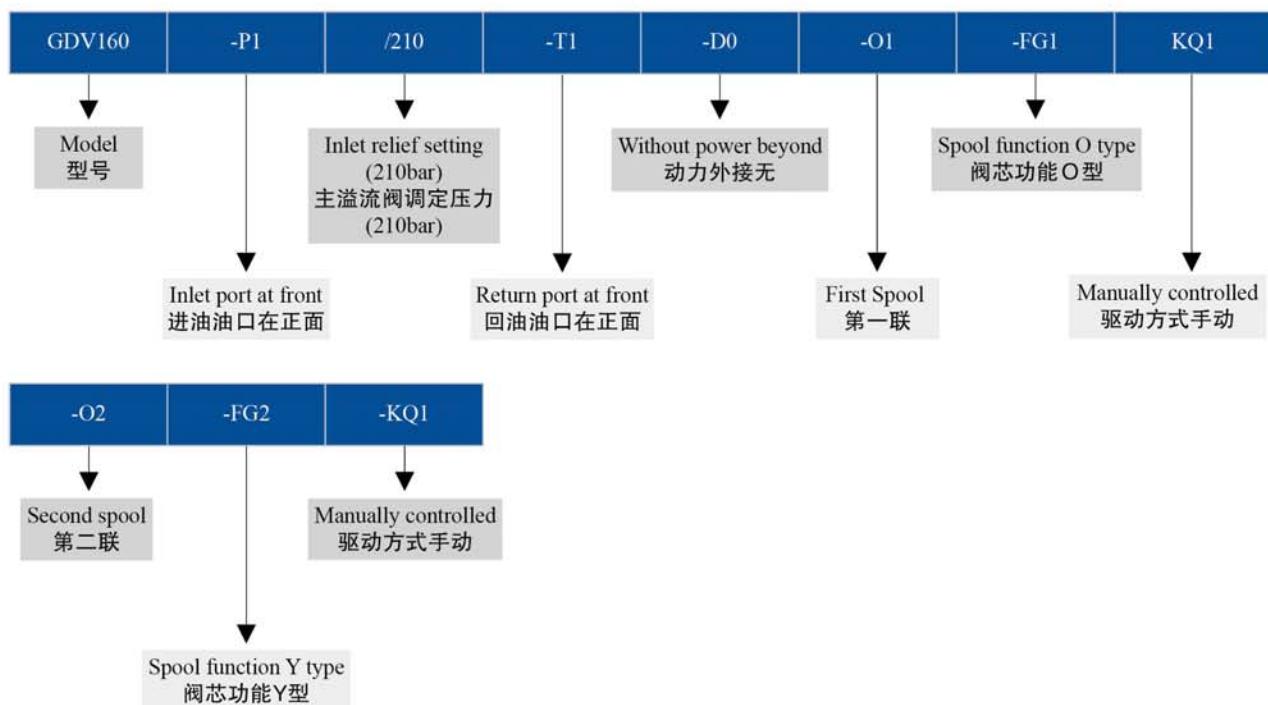
Drive Style Code 驱动方式代码	Hydraulic Schematics 液压图形符号	Function 功能
KQ1		Standard manually controlled 标准手动
KQ2		Hydraulic remote 液控
KQ3		Manually controlled with mechanical detent 手动带机械定位
KQ4		Manually controlled with 4th position floating and detent 手动, 第4位浮动带机械定位
KQ5 (not available) (暂无)		Electrical actuated (on/off) 电动(开/关控制)
KQ6 (not available) (暂无)		Electrical actuated with floating function 电动控制带浮动功能



## GDV160 Series Order Code - GDV160系列整体式多路阀的定购代码



## Order Example - 定购实例





上海国瑞液压科技有限公司

SHANGHAI GUORUI HYDRAULIC TECHNOLOGY CO.,LTD

上海市虹口区四川北路1717号嘉杰国际广场2201-2202室

RM2201 JiaJie Building No1717 North Sichuan Road Shanghai China

电话/Tel:86-21-6218 3268 传真/Fax:86-21-6218 3018 邮编/P.C.:200080

[Http://www.grhfluid.com](http://www.grhfluid.com) E-mail:grh@grhc.com

江苏国瑞液压机械有限公司

JIANGSU GUORUI HYDRAULIC MACHINERY CO.,LTD

江苏省建湖县高新区双湖西路666号

No. 666 West Shuanghu Road Hi-tech Zone Jianhu Jiangsu China

电话/Tel:86-515-8631 6688 传真/Fax:86-515-8631 7168 邮编/P.C.:224700

[Http://www.grhpower.com](http://www.grhpower.com) E-mail:sales@grhc.com