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GRH POWER

Monoblock Valves

GRH

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





Introduction of GRH's Monoblock Valves

GRH Mono-block valves are open center valves. Mainly used in mobile machinery such as, agricultural machinery, construction machinery, mining equipment, material handling equipment as well as maintenance machines. All valve series are adapted to 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.

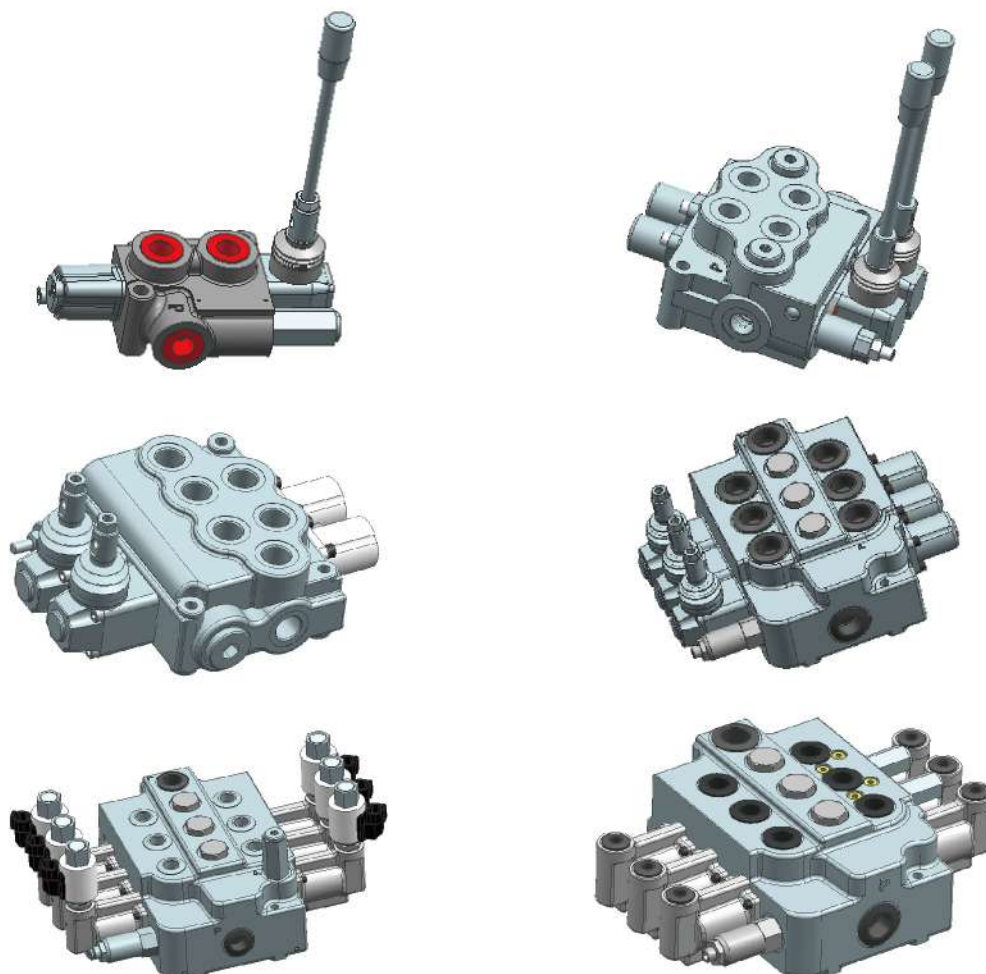
GRH mono-block valves have the following series :

- 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.

GRH Mono-Block Valves Series

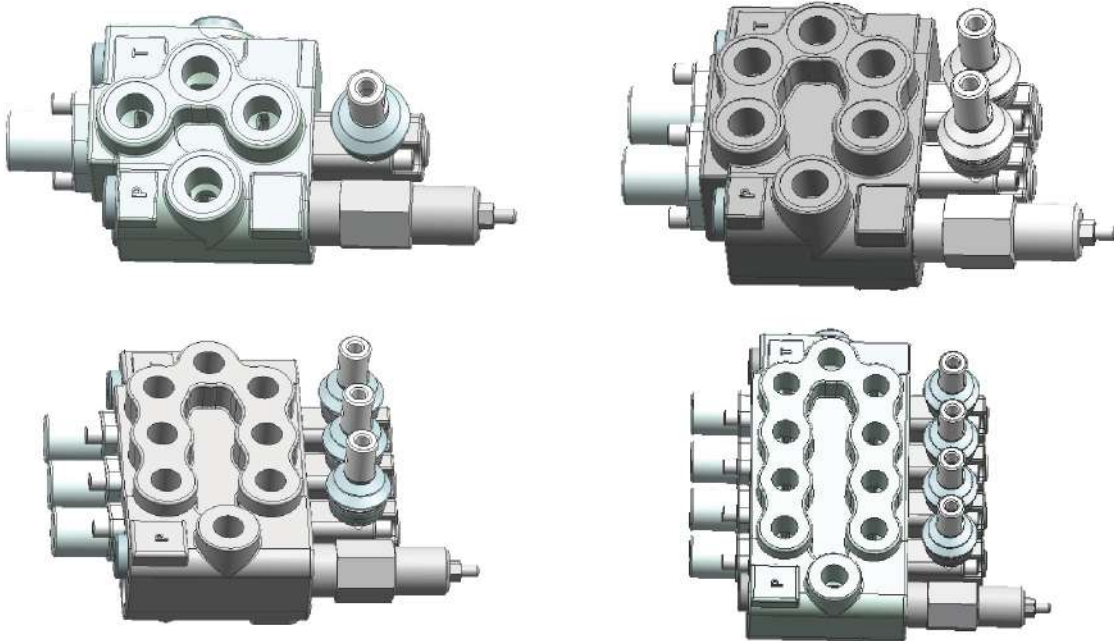
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GDV25 Series Mono-block Valves





GDV25 Series Mono-block Valve's Features

GDV25 series Mono-block valve provides the following features:

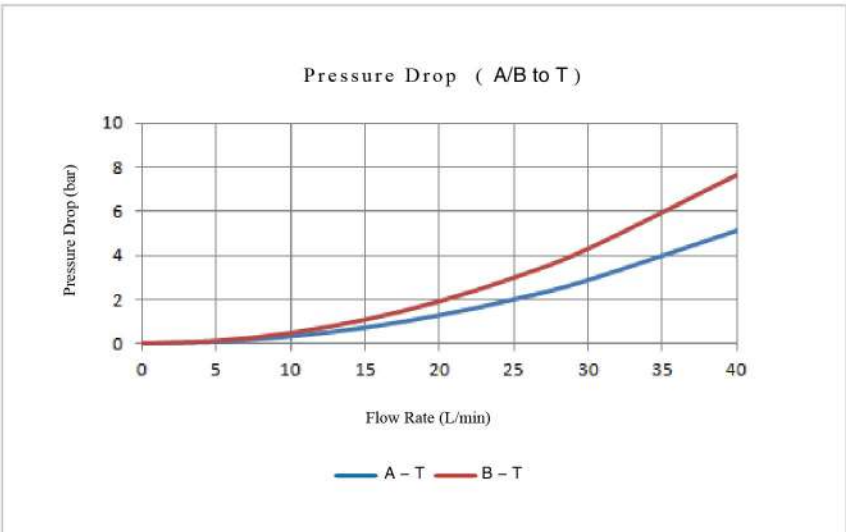
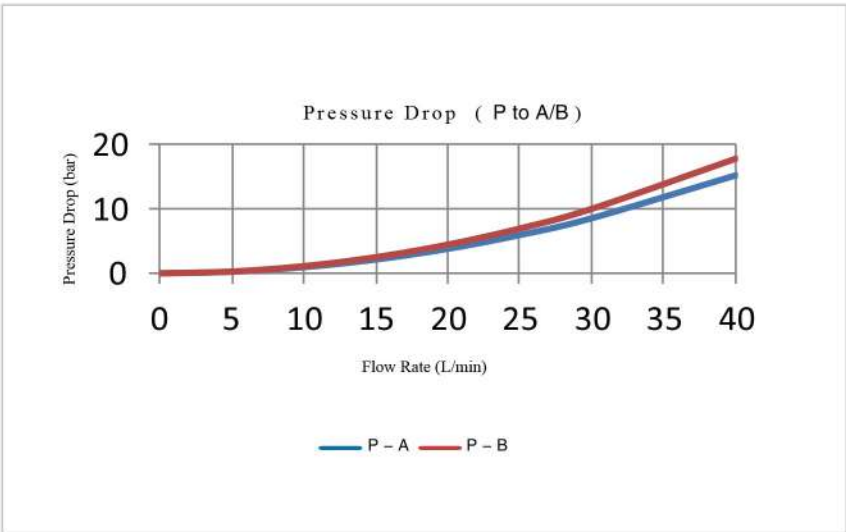
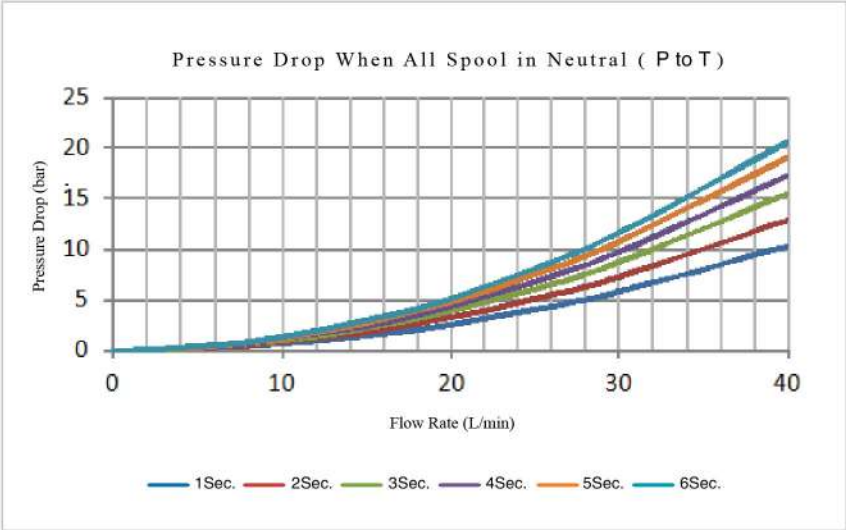
- Cast iron body.
- Spring cap and mechanical detent cap are made in die cast aluminum.
- Parallel circuit. Inlet passage has a load check valve.
- Provides manual control and wire pulling control modules.
- Provides power beyond options.
- Provides mechanical detent.
- Provides different spool functions 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 1 spool to 6 spools.

GDV25 Series Major Technical Data

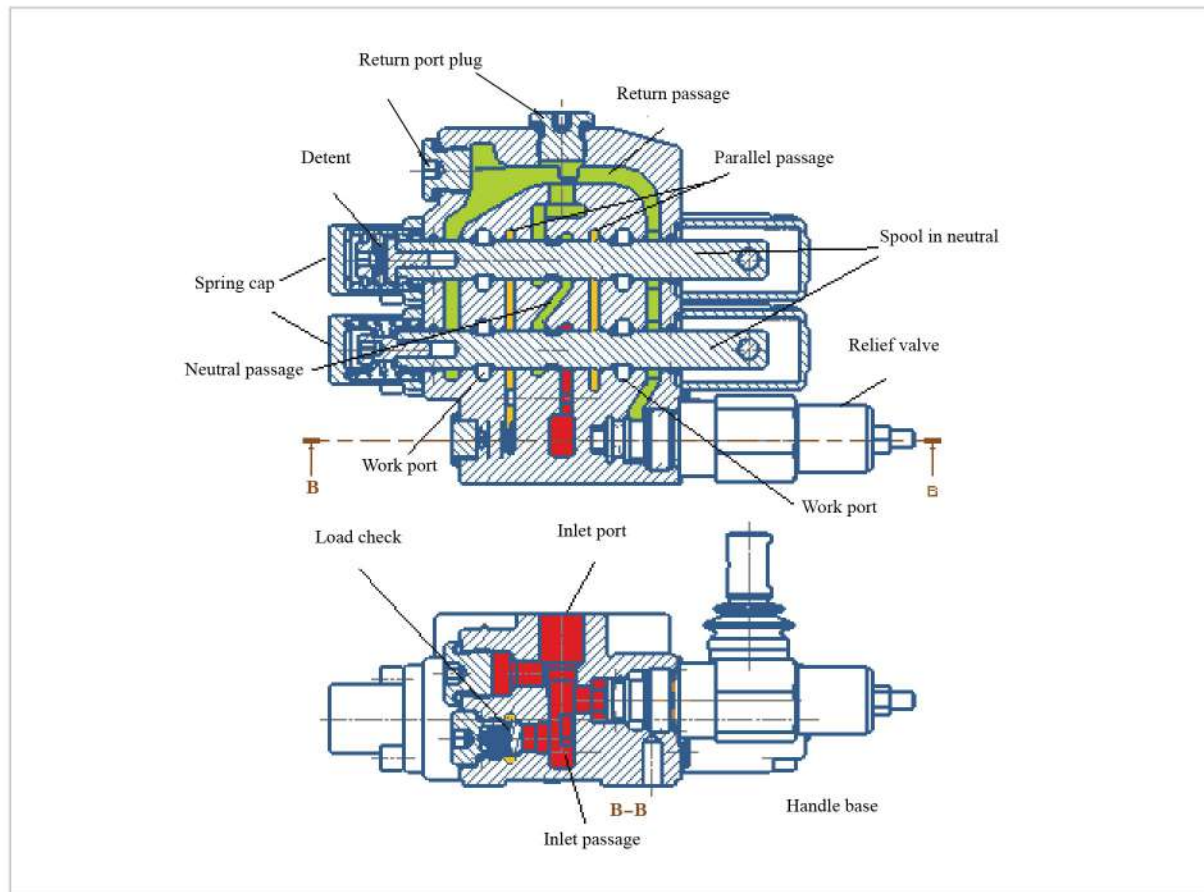
Rated flow rate:	25 L/min
Maximum flow rate:	30 L/min
Maximum pressure at P port:	250 bar
Maximum pressure at A/B port:	250 bar
Maximum pressure at T port:	25 bar
Internal leakage (at 70 bar) : A/B to T	30-35 CC/min
Temperature range of the hydraulic oil:	
With NBR (BUNA--N) seals	-20C° - 80C°
With FPM (VITON) seals	-20C° - 100C°
Spool stroke (1/2 position) :	+5.5/-5.5mm
With floating function (1 / 2 and F position) :	+5.5/-5.5 -8mm
Recommend hydraulic oil viscosity range:	15-75mm ² /s
Recommend temperature range:	-40C° - 60C°



GDV25 Series Performance Data



GDV25 Series Mono-block Valve Operating Principle

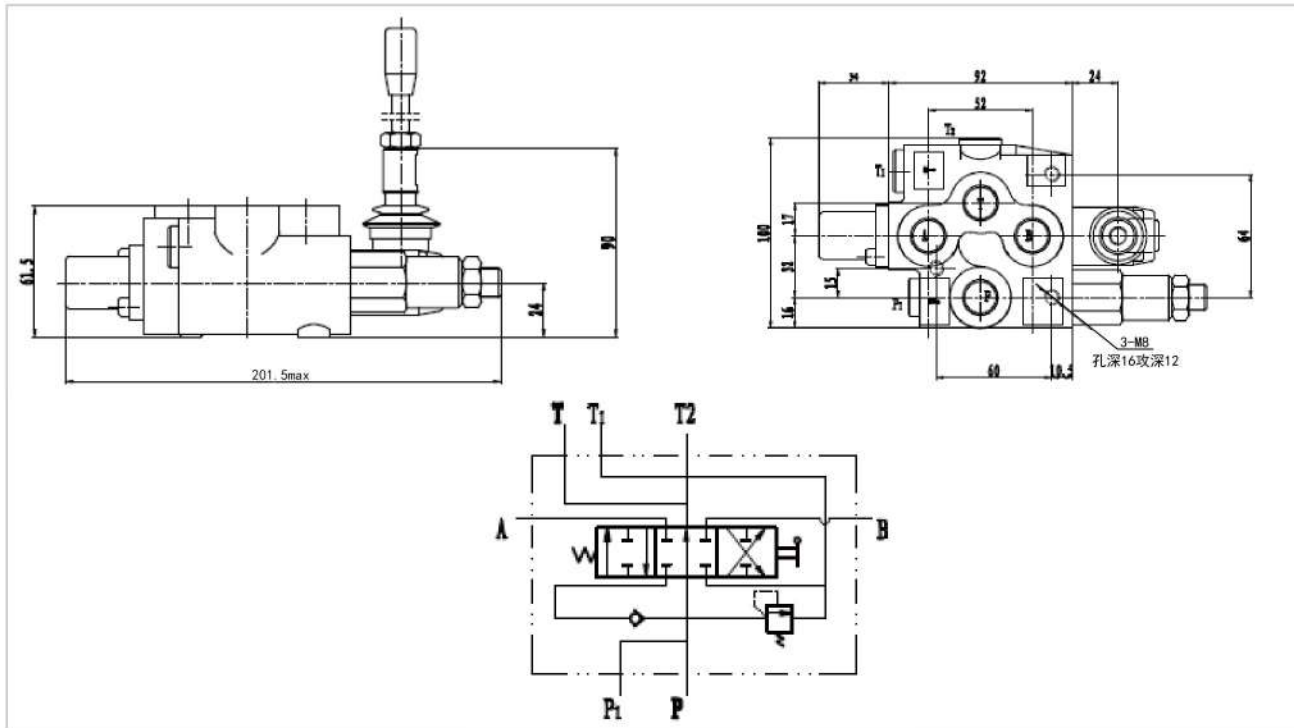


GDV25 series mono-block valve is an open center, 3 position 4 way valve. Flow from pump passes through inlet port and enters to inlet passage. The inlet passage connects two passages: one is through the load check into the parallel passage to supply flow to metering spool ; Another is to neutral passage. When spool is in neutral position, spool metering with parallel passage is blocked. The oil from pump has to pass through 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 blocks 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".

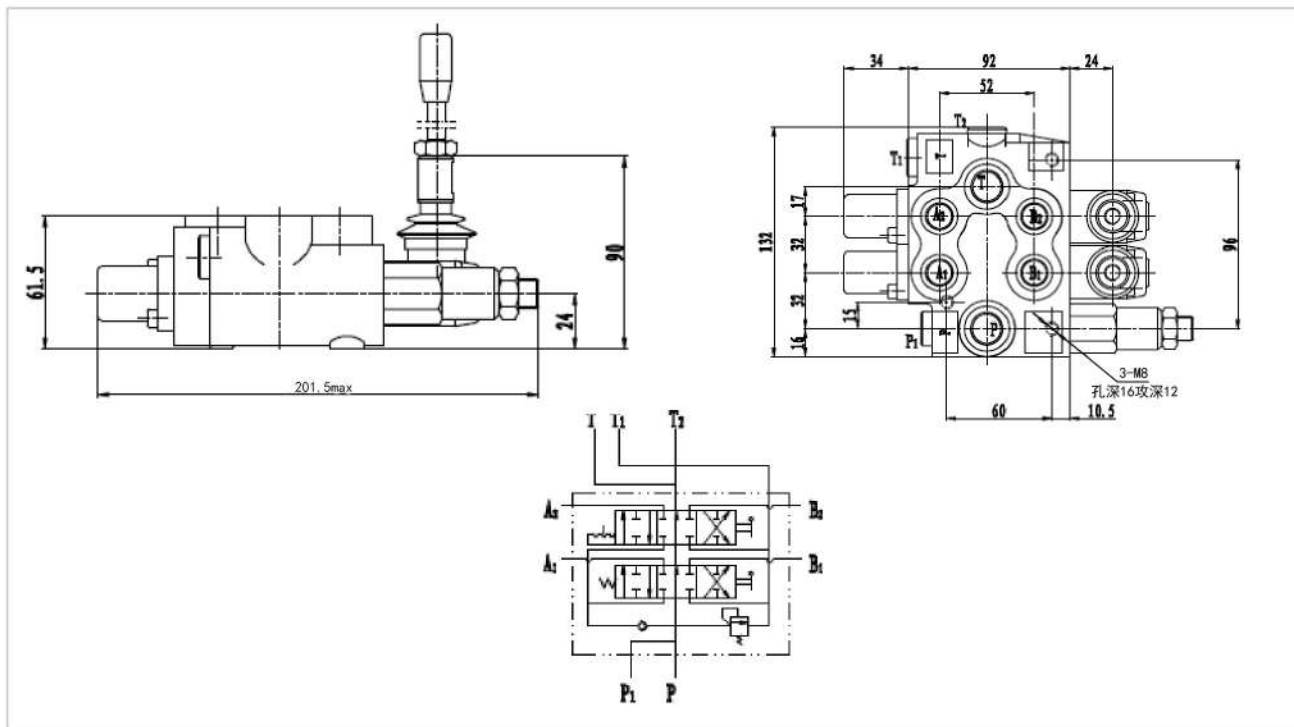
For multi-spool mono-block valve, when one of its spools is in "1" or "2" position, its downstream of the neutral passage has no flow. The operator can operate more than one spools at a time, but the speed of the controlled device will be dependent on the magnitude of the load.

GDV25 Series Valve Dimension

GDV25-1:1 Spool Valve

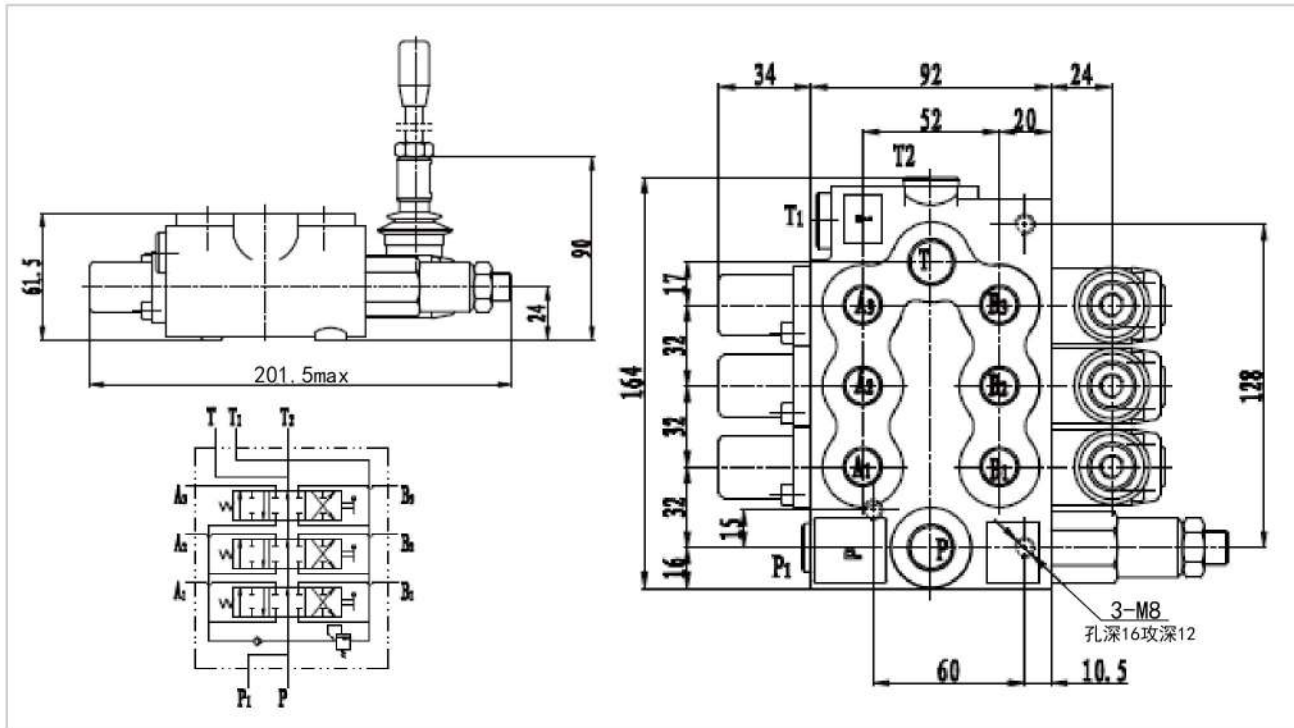


GDV25-2:2 Spool Mono-block Valve

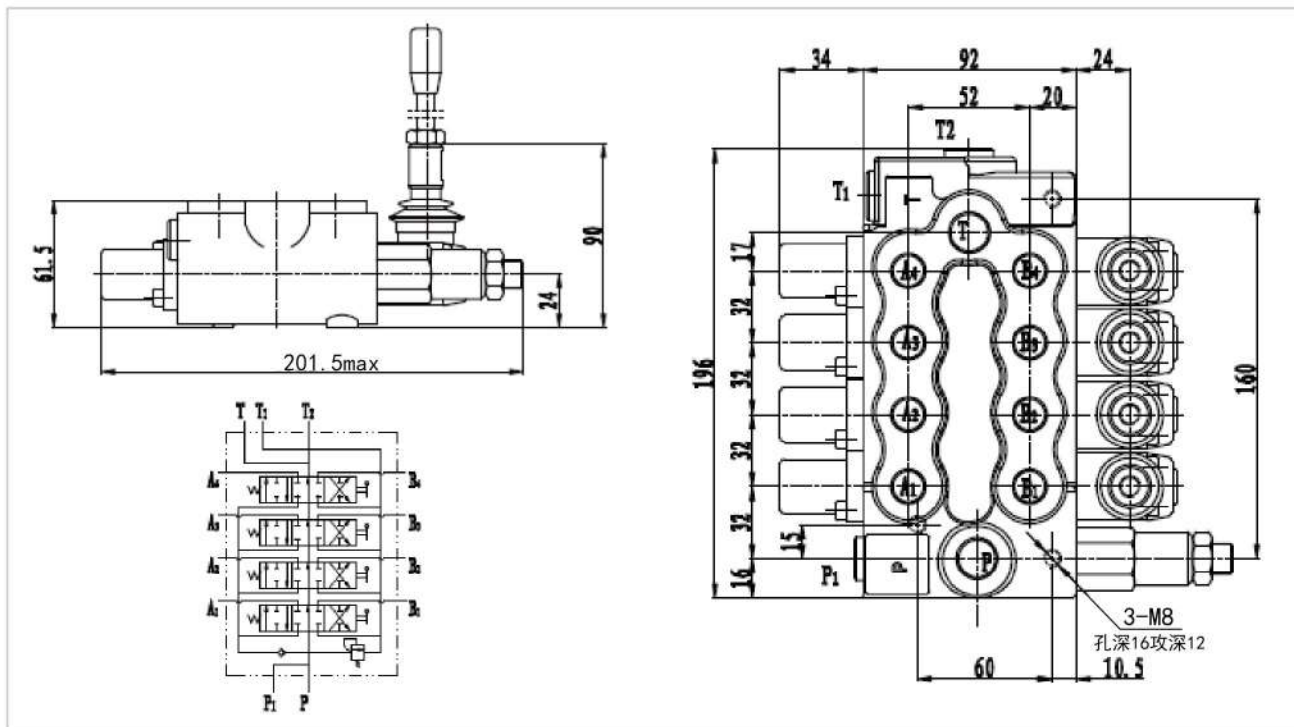


GDV25 Series Valve Dimension

GDV25-3:3 Spool Mono-block Valve

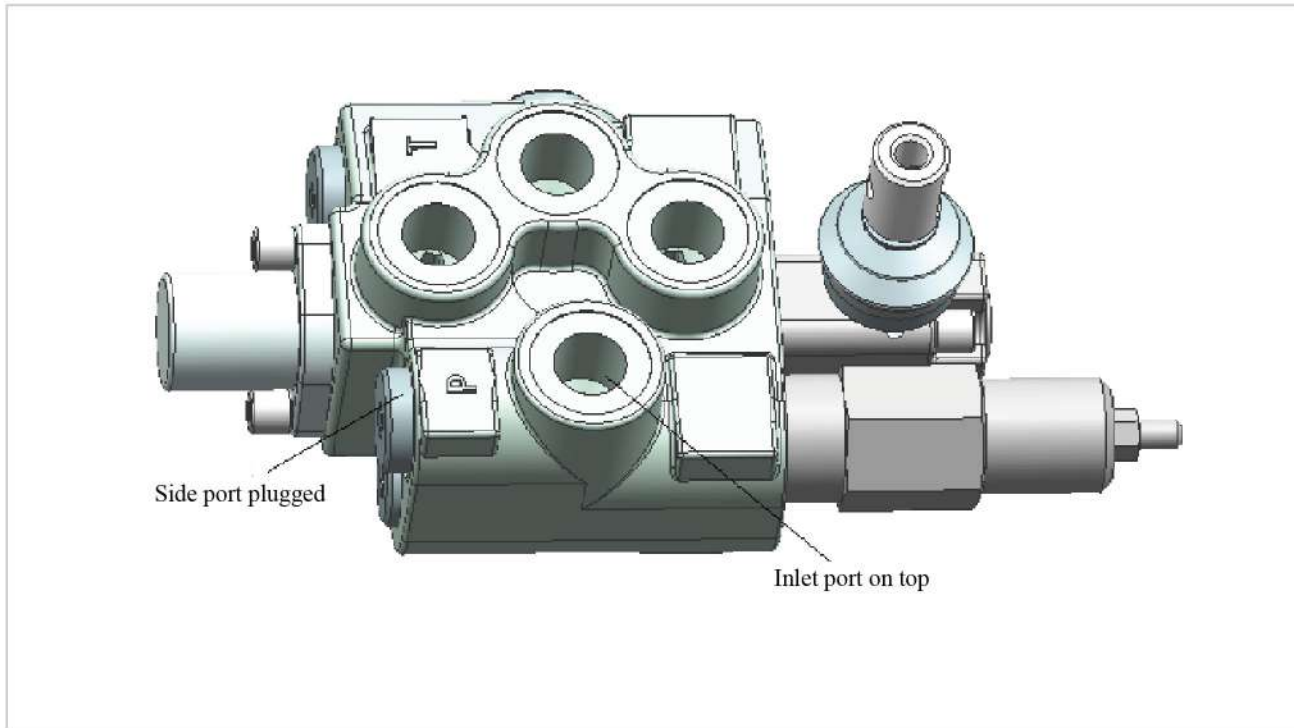


GDV25-4:4 Spool Mono-block Valve

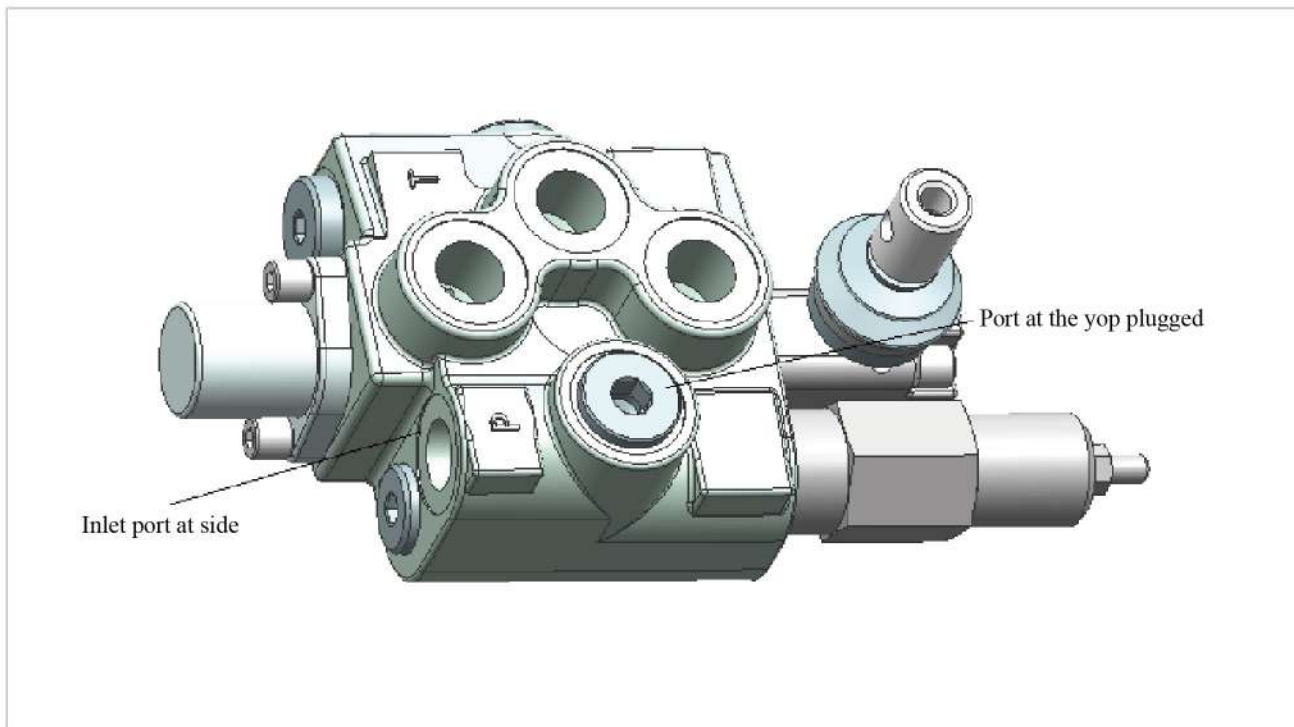


GDV25 Series Inlet Port Options

Option Code: P1(Port on top)

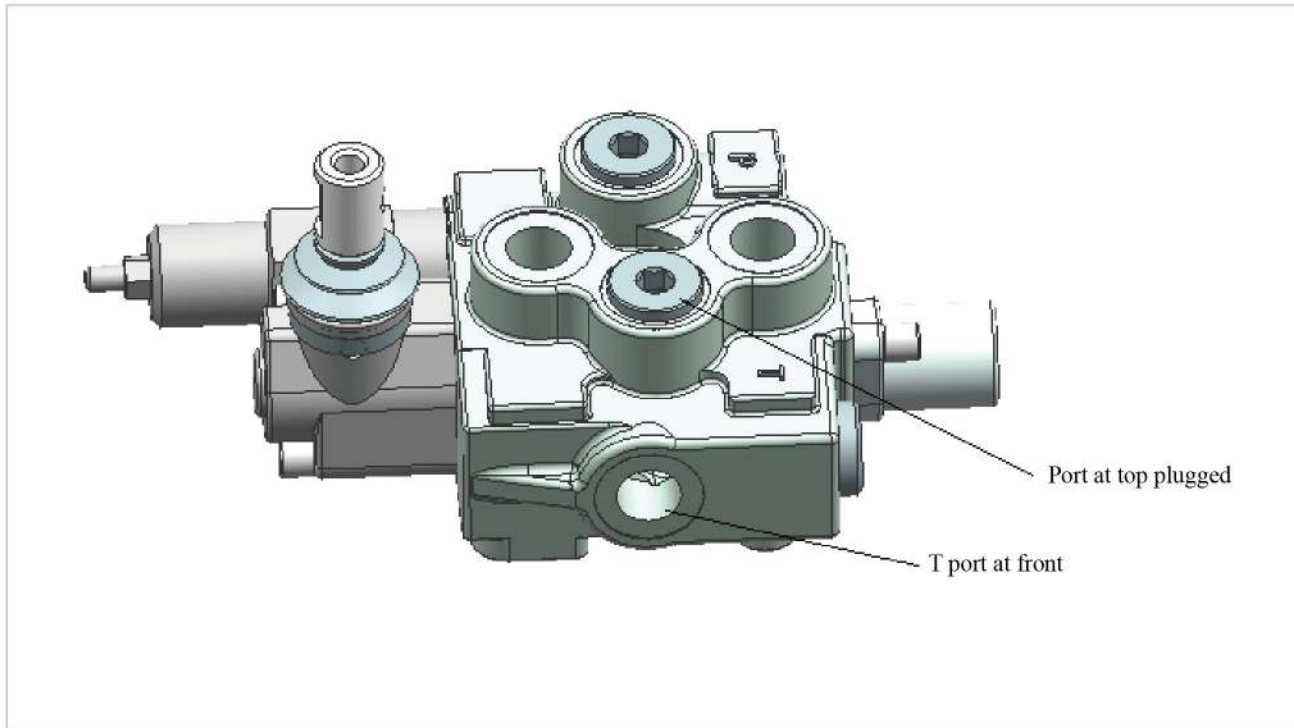


Option Code: P2(Port on side)

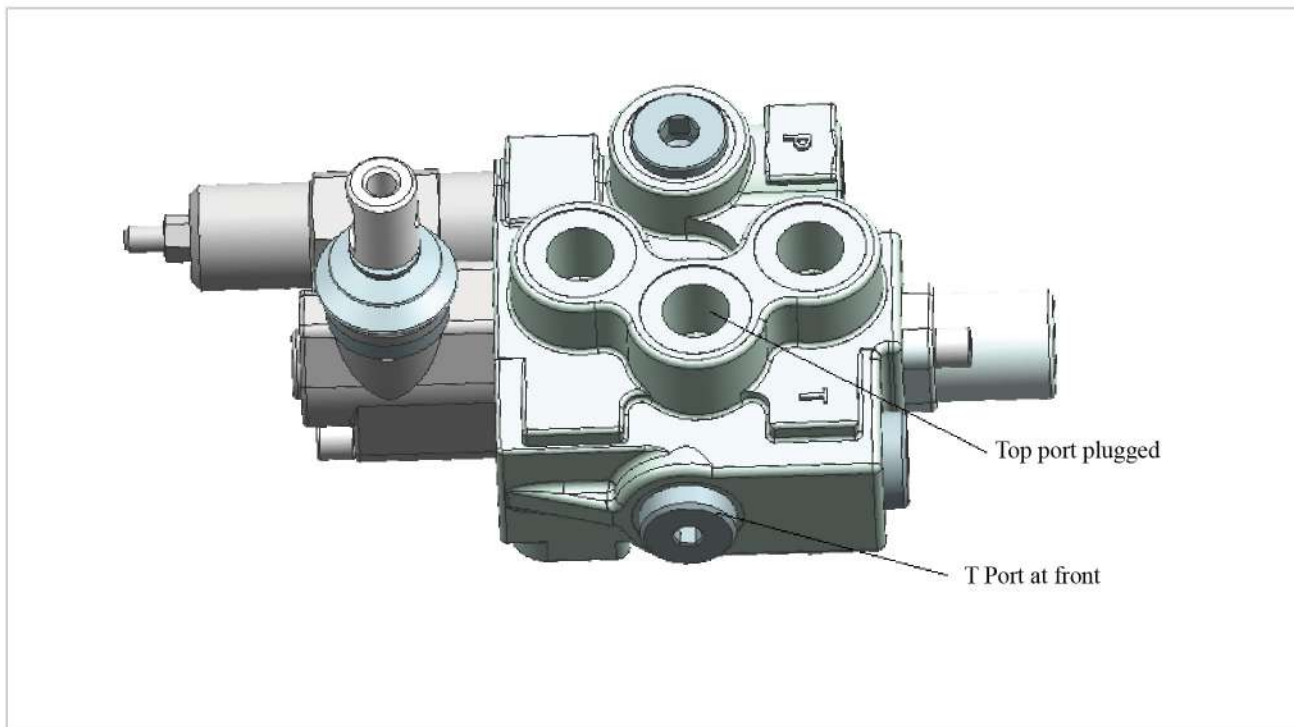


GDV25 Series Return Port

Port T Option Code: T1(T at the Front)

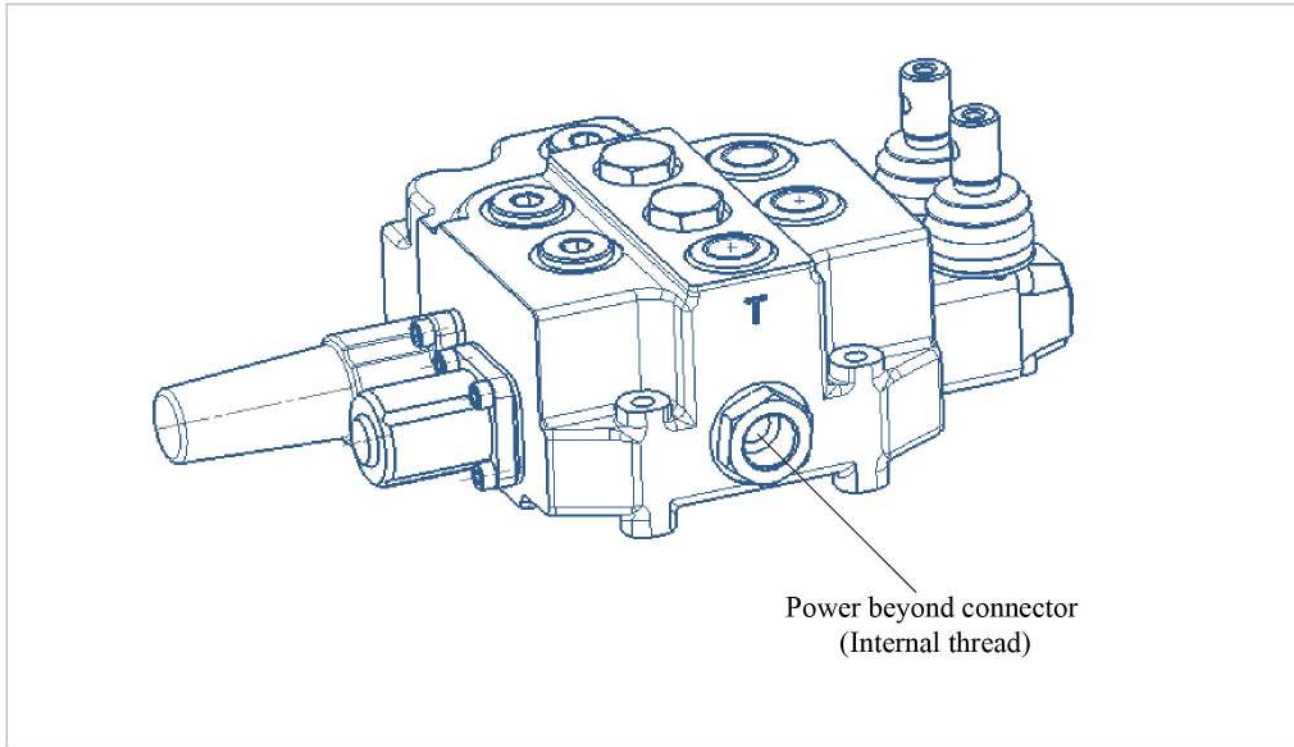


Port T Option Code: T2(T at the Top)



GDV25 Series Power Beyond Options

Power Beyond Option Code: D1 (T port at the top, power beyond port connector at front)

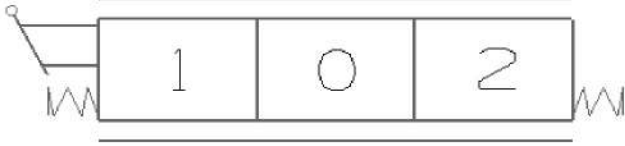
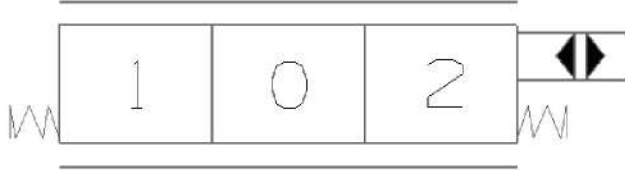
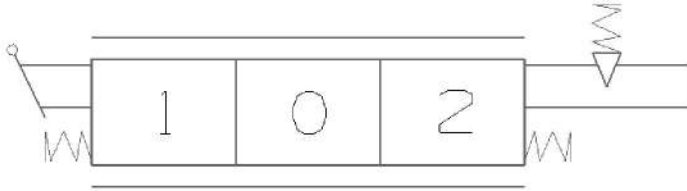

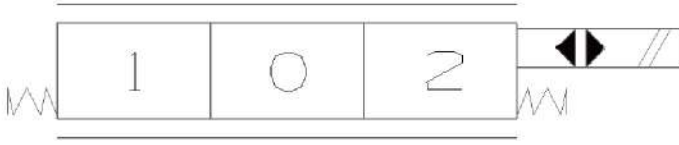
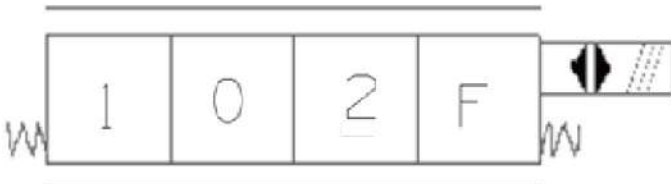


Return Port Option Cod: D0 (Without Power Beyond)

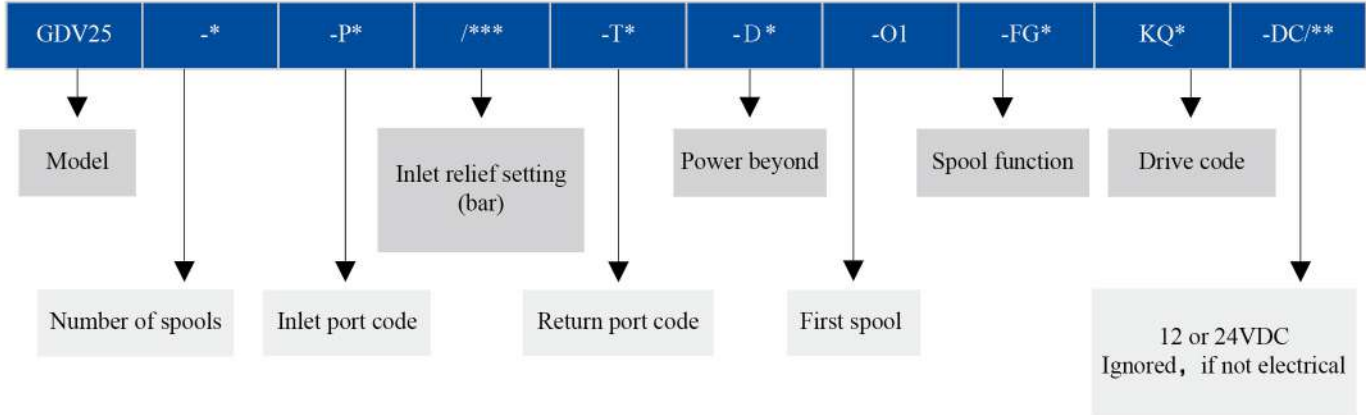
GDV25 Series Typical Spool Functions

Spool Function	Hydraulic Schematics	Function	Notes
FG1		3 position 4 way At neutral: P,T,A,B are all blocked	Double acting cylinder applications
FG2		3 position 4 way At neutral: P blocked, T,A, B connected	Hydraulic motor applications
FG3		3 position 4 way At neutral: P,A,B and T all connected	Hydraulic motor applications
FG4		3 position 3 way At neutral: P,T,A,B all blocked	Single acting cylinder applications
FG5		4 position 4 way At neutral: P,T,A, and B are all blocked 4th position floating	Double acting cylinder applications
FG6		4 position 4 way At neutral: P blocked, T,A and B are connected 4th position floating	Double acting cylinder or hydraulic motor applications

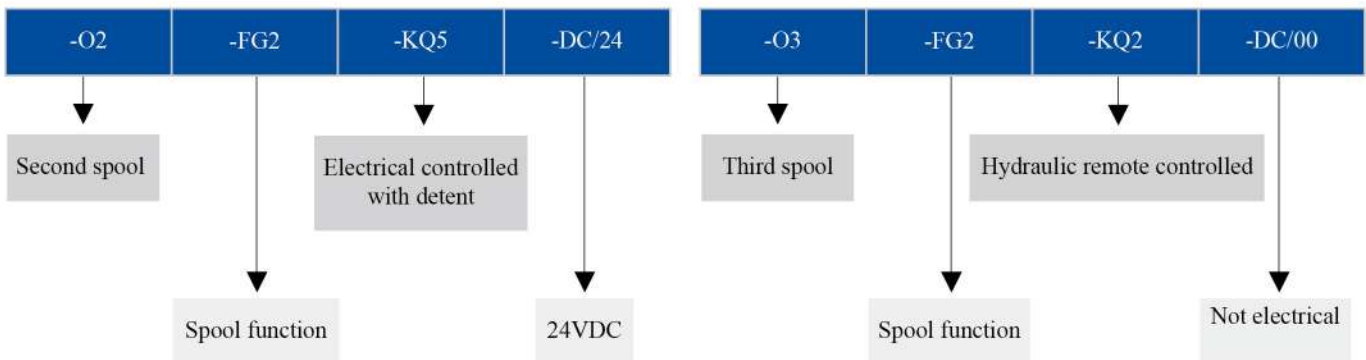
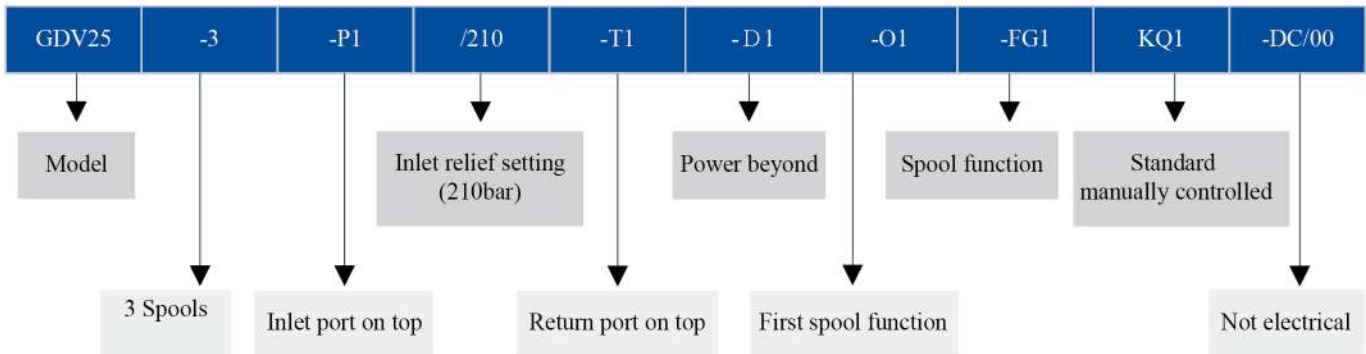
GDV25 Series Drive Options

Drive Style Code	Hydraulic Schematics	Function
KQ1		Standard manually controlled
KQ2		Hydraulic remote
KQ3		Manually controlled with mechanical detent
KQ4 (not available)		Manually controlled with 4th position floating and detent
KQ5 (not available)		Electrical actuated (on/off)
KQ6 (not available)		Electrical actuated with floating function

GDV25 Series Order Code



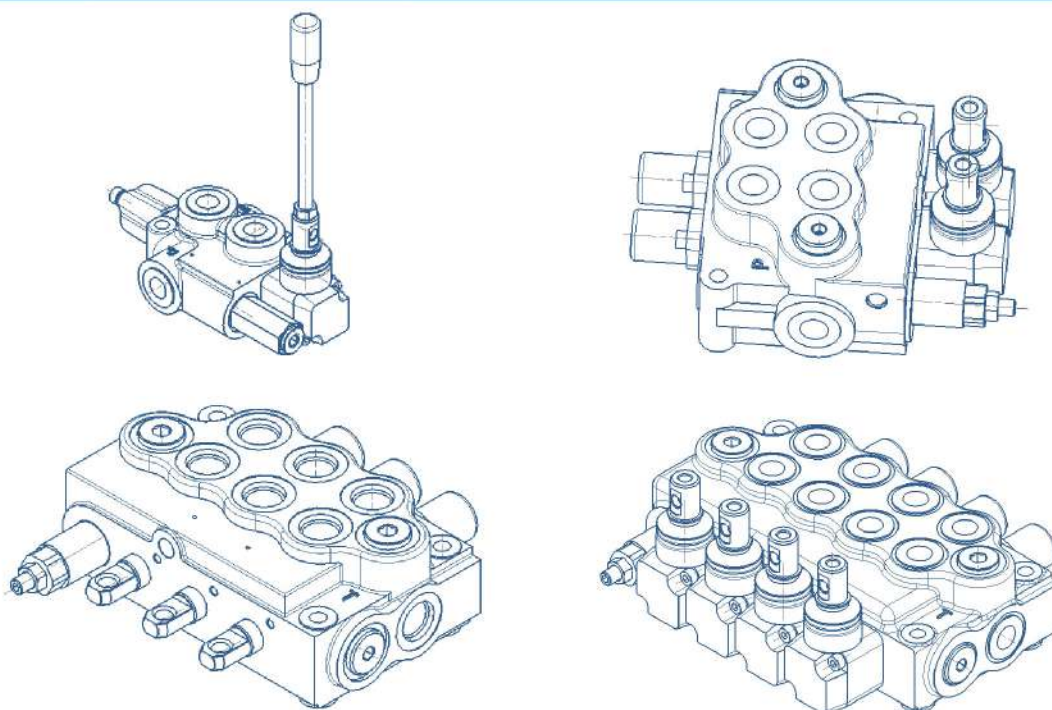
GDV25 Series Order Example



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GDV45 Series Mono-block Valves





GDV45 Series Mono-block Valve's Features

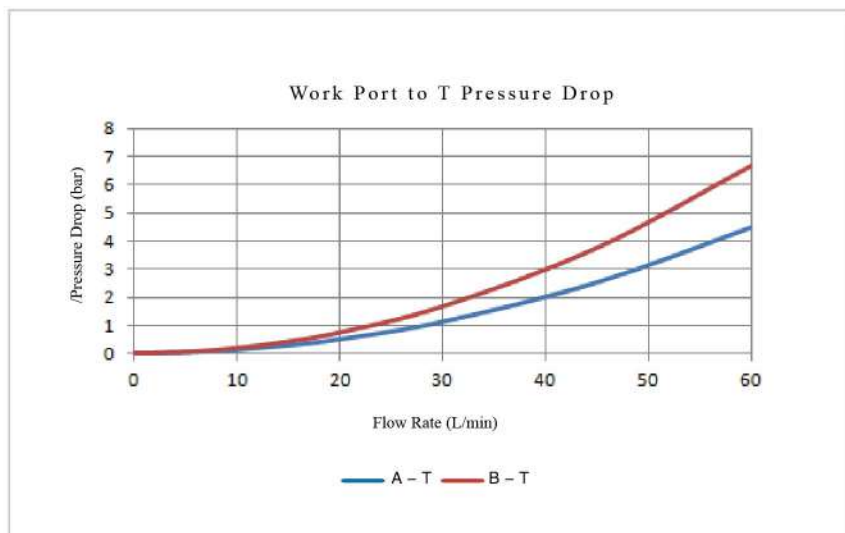
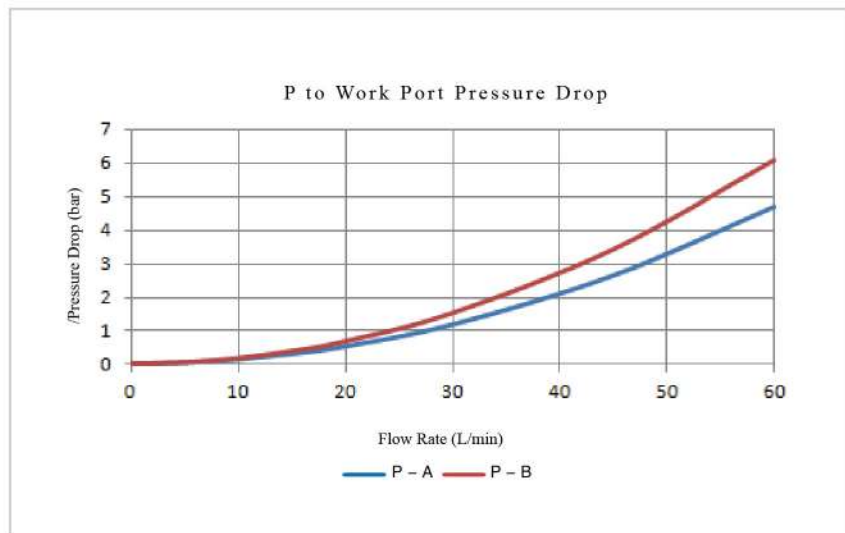
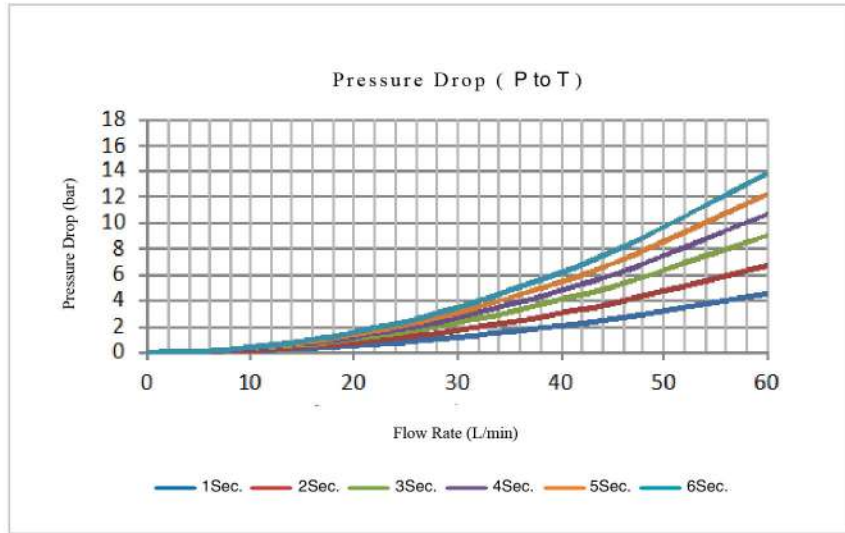
GDV45 series Mono-block valve provides the following features:

- 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 1 spool to 6 spools.

GDV45 Series Major Technical Data

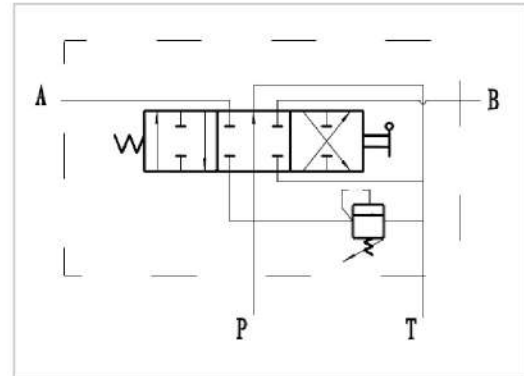
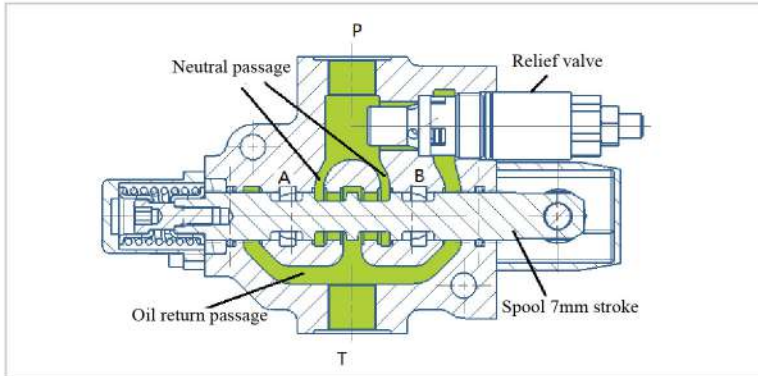
Rated flow rate:	45 L/min
Maximum flow rate:	55 L/min
Maximum pressure at P port:	310 bar
Maximum pressure at A/B port:	310 bar
Maximum pressure at T port:	25 bar
Internal leakage (at 70 bar) : A/B to T	30-35 CC/min
Temperature range of the hydraulic oil:	
With NBR (BUNA--N) seals	-20C° - 80C°
With FPM (VITON) seals	-20C° - 100C°
Spool stroke (1/2 position) :	+7/-7 mm
With floating function (1 / 2 and F position) :	+7/-7 -9 mm
Recommend hydraulic oil viscosity range:	15-75 mm ² /s
Recommend temperature range:	-40C° - 60C°

GDV45 Series Performance Data



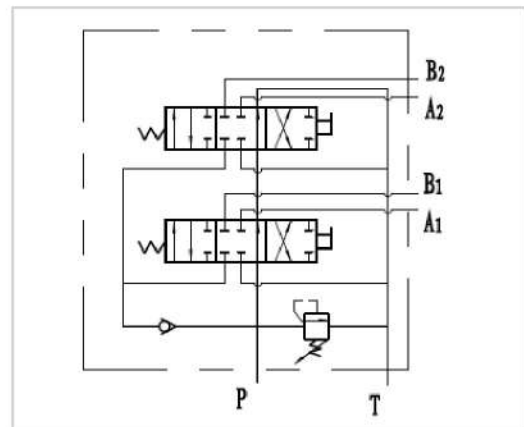
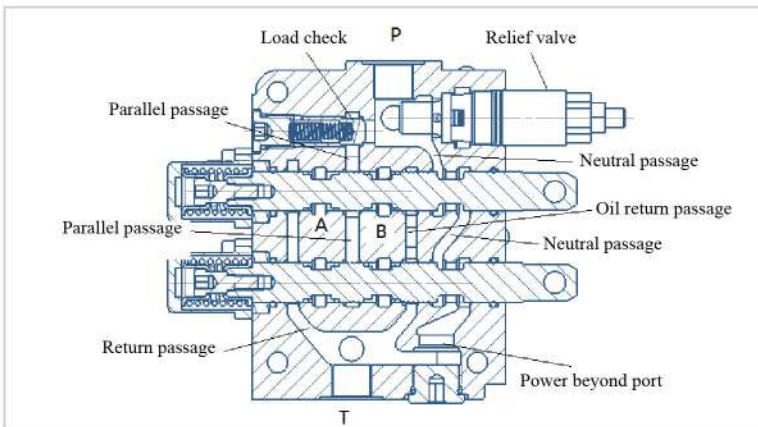
GDV45 Series Basic Operating Principle

GDV45-1:1 Spool Valve



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 thogh 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.

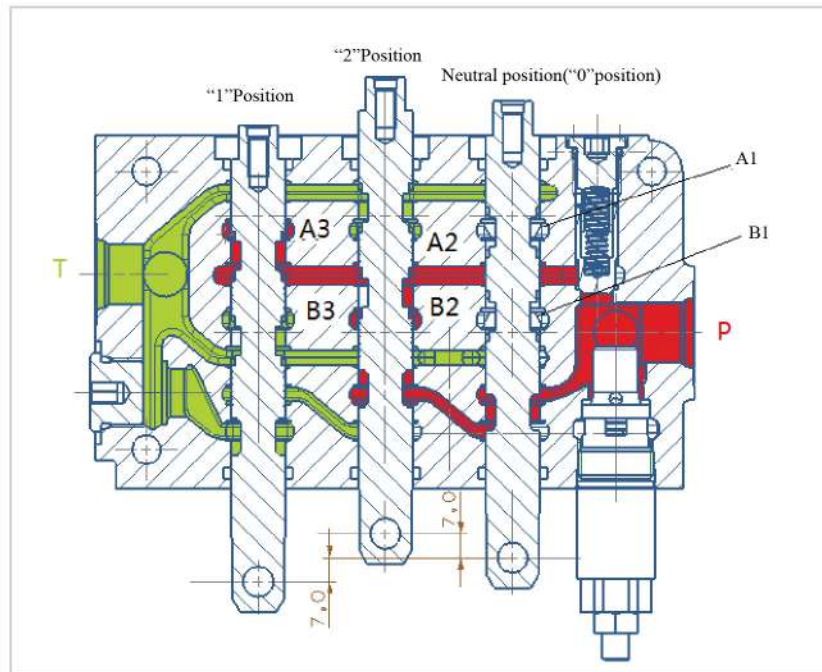
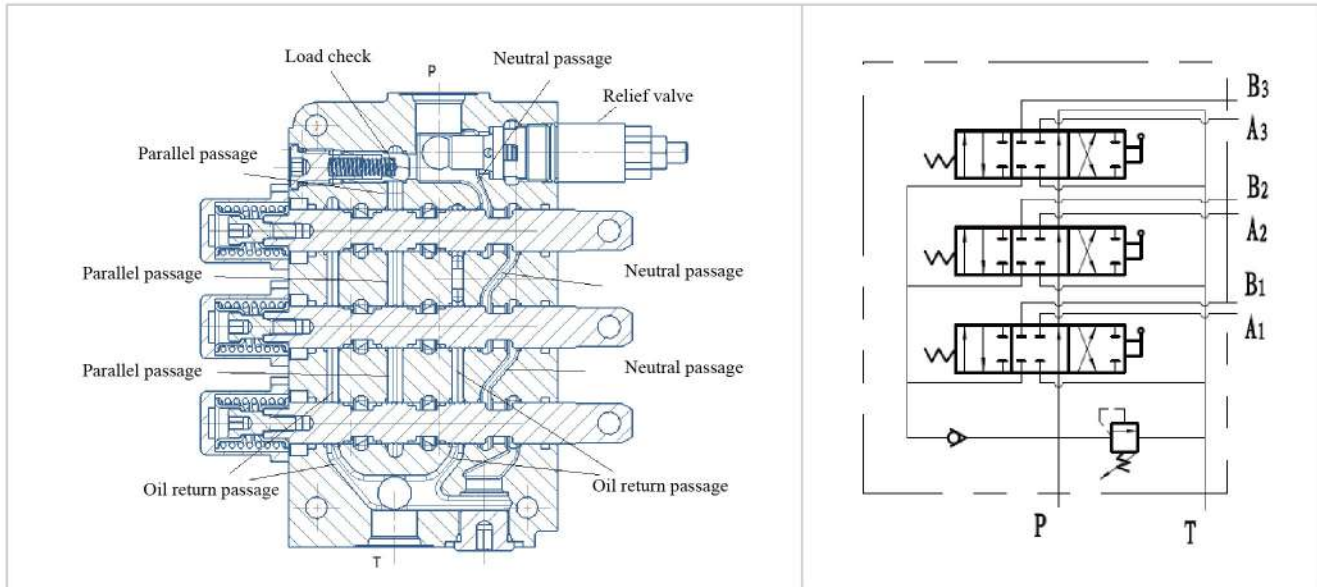
GDV45-2:2 Spool Mono-block Valve



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 thogh 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 Series Mono-block Valve Operating Principle

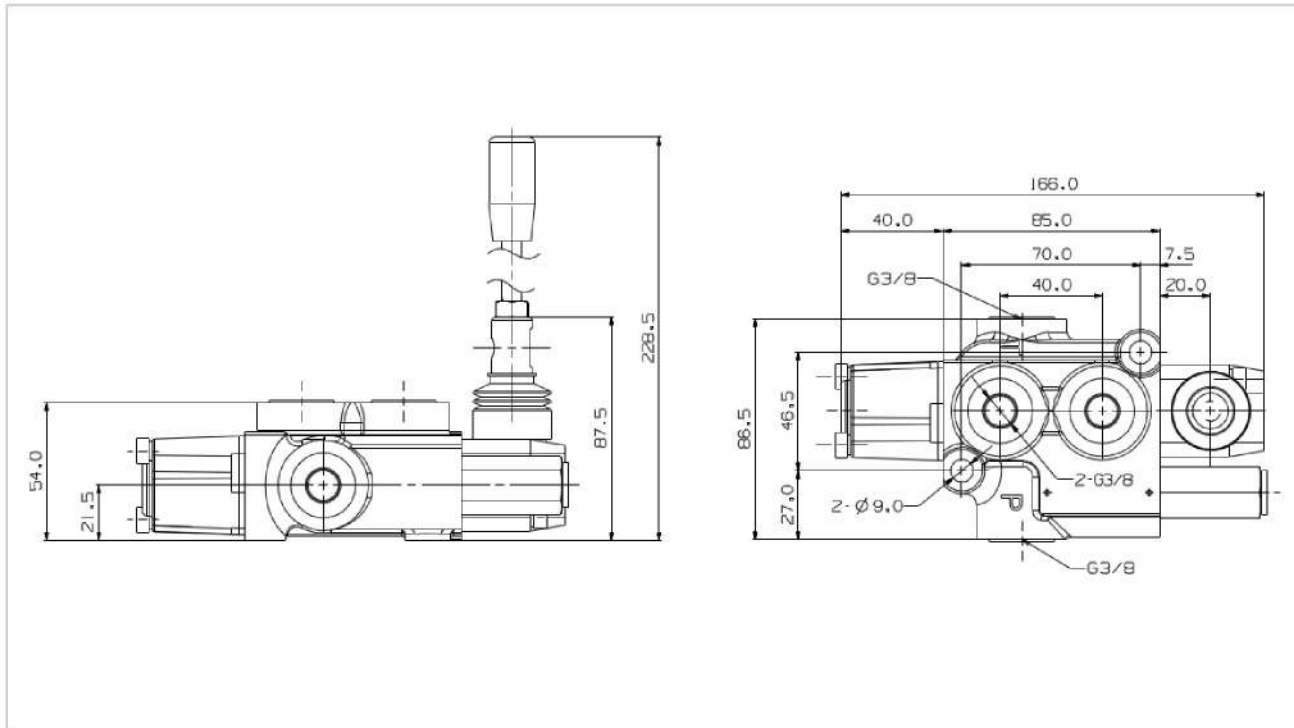
GDV45-3:3 Spool Valve



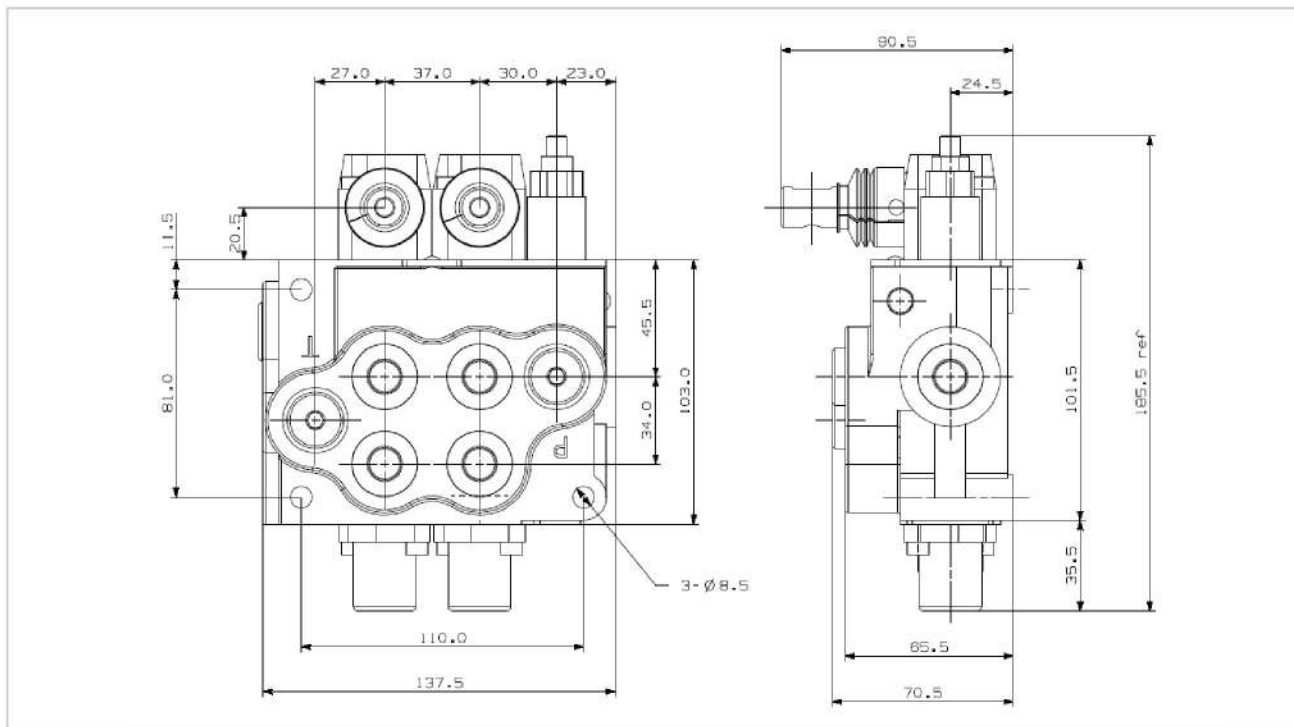
GDV45-3 is a three spool mono-block valve. It is also an open center, 3 position 4 way valve. Assuming the three spools were moved as shown in above picture. The first spool is in neutral ("O" position). The spool metering to "A1" and "B1" are all blocked. The second spool is moved to "2" position, Flow 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 "A3" through spool opening. Flow in "B3" port flows to return passage through the spool's another opening

GDV45 Series Valve Dimension

GDV45-1:1 Spool Valve

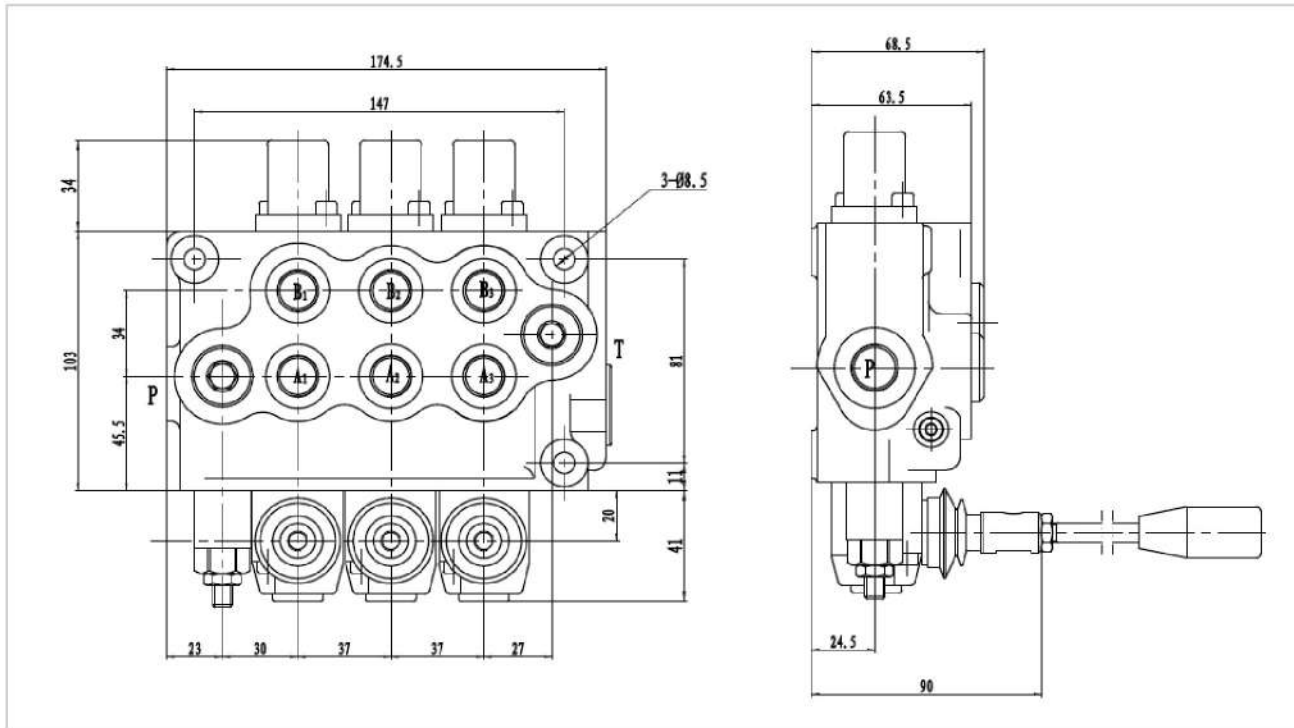


GDV45-2:2 Spool Mono-block Valve

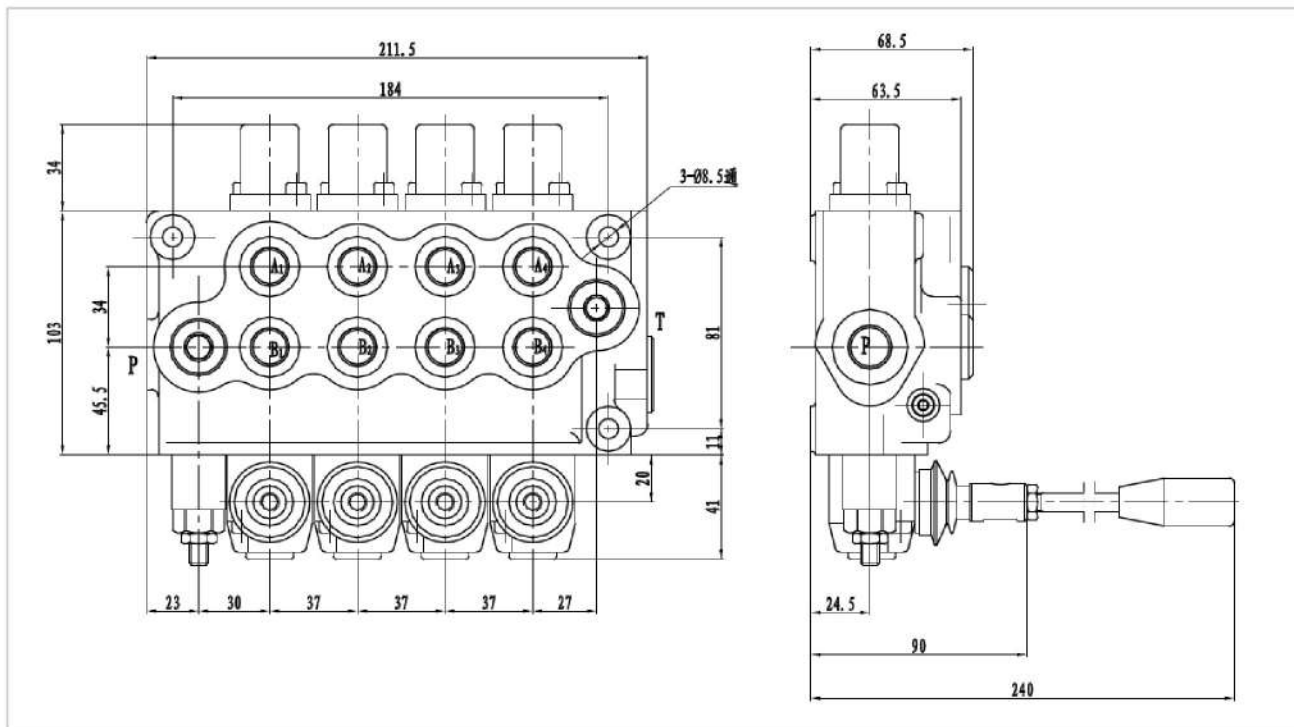


GDV45 Series Valve Dimension

GDV45-3:3 Spool Mono-block Valve

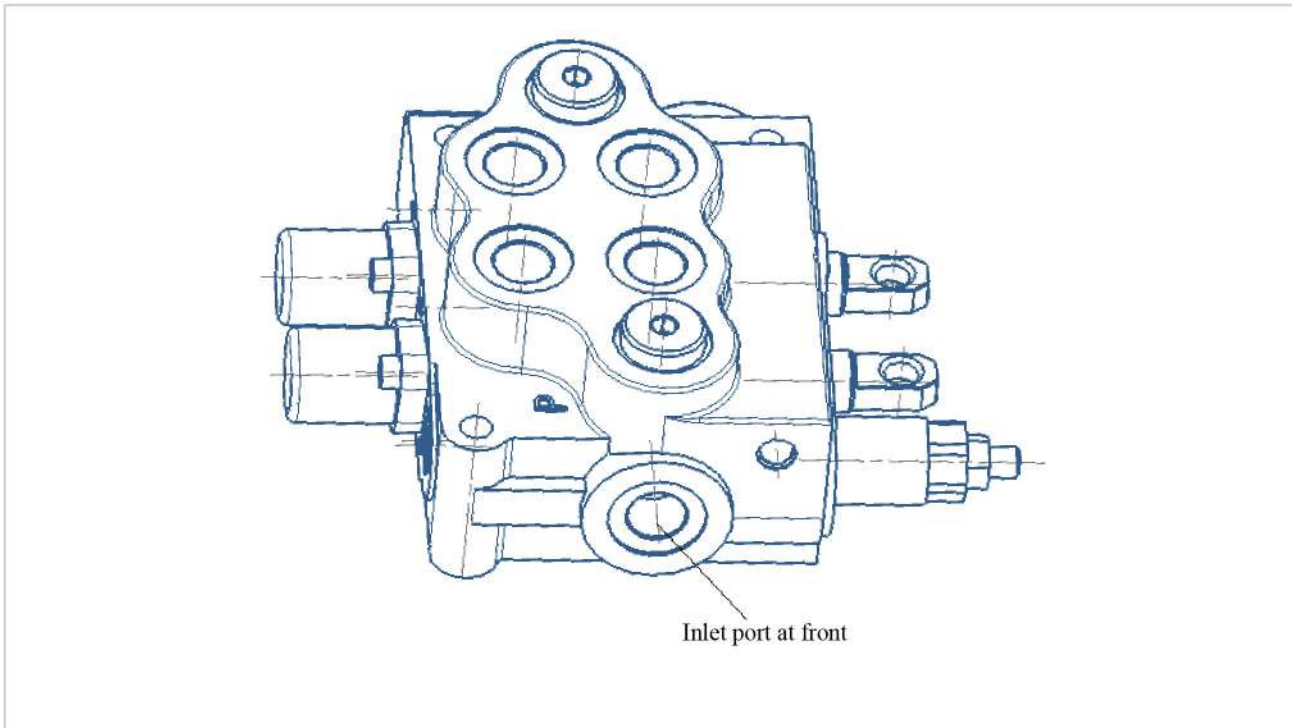


GDV45-4:4 Spool Mono-block Valve

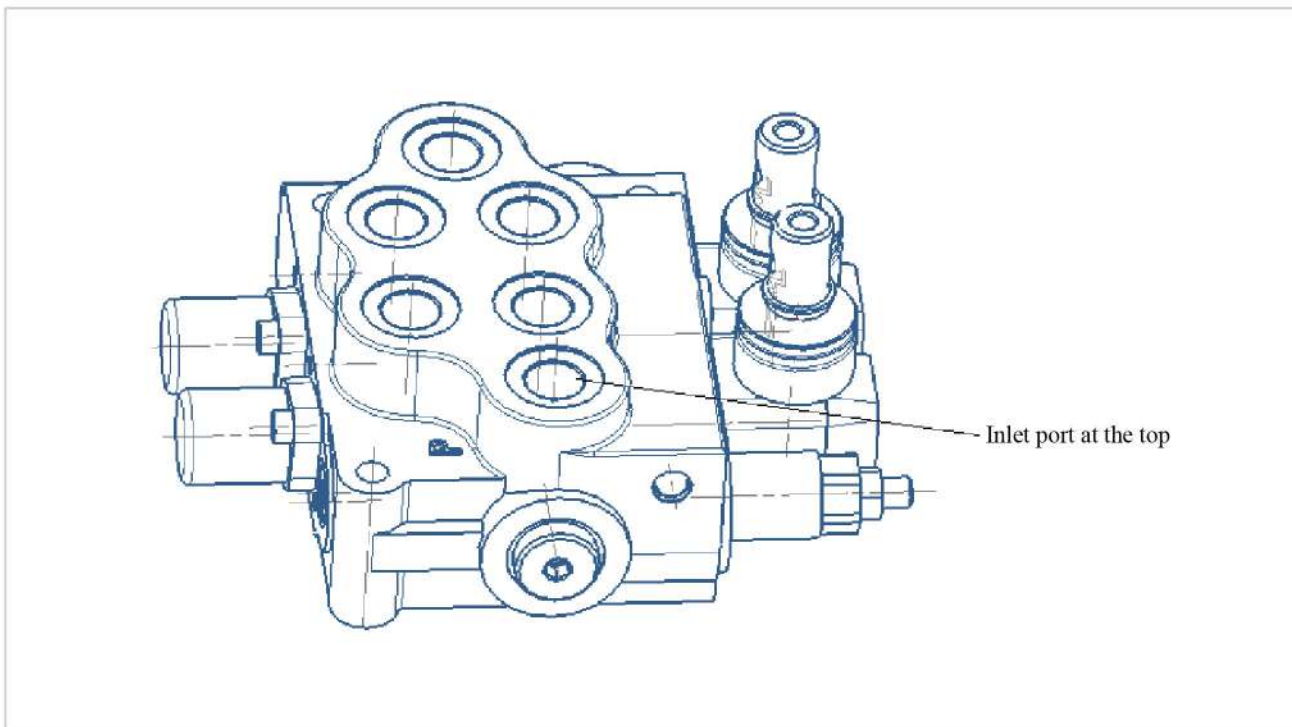


GDV45 Series Inlet Port Options

Inlet Option Code: P1(Inlet port at front)

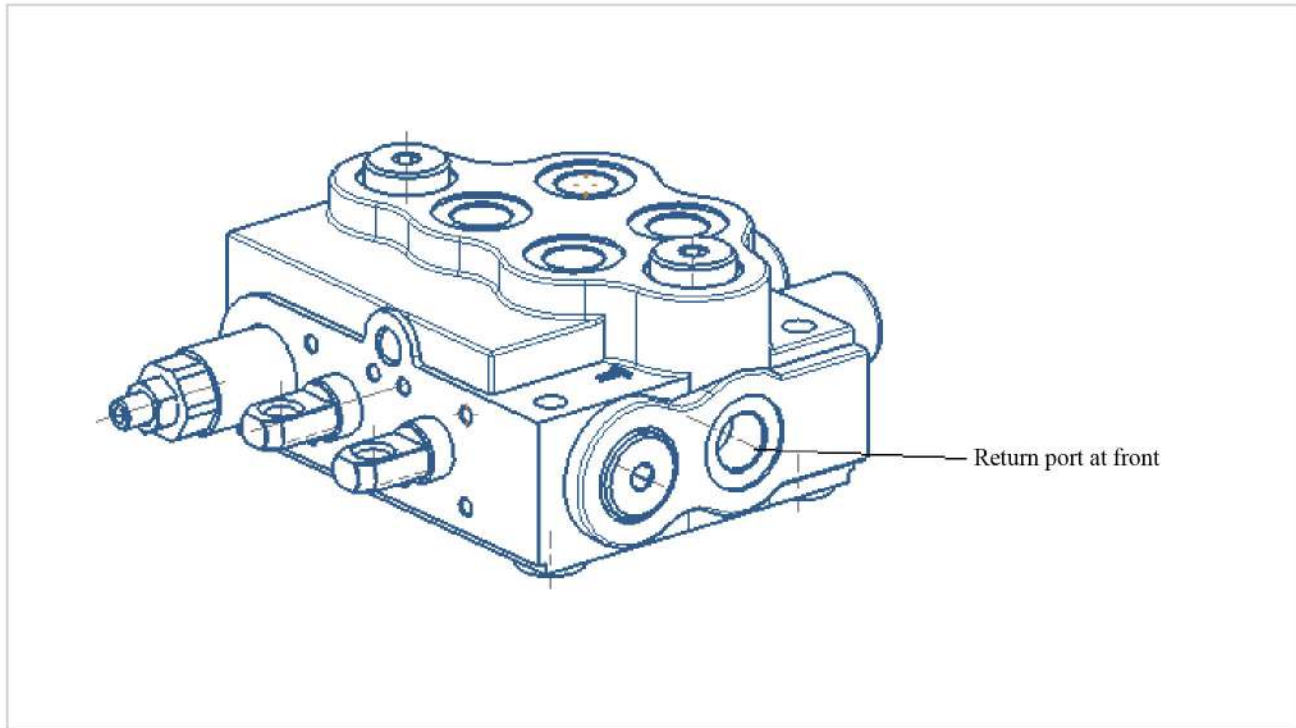


Inlet Port Option Code: P2(Inlet port at the top)

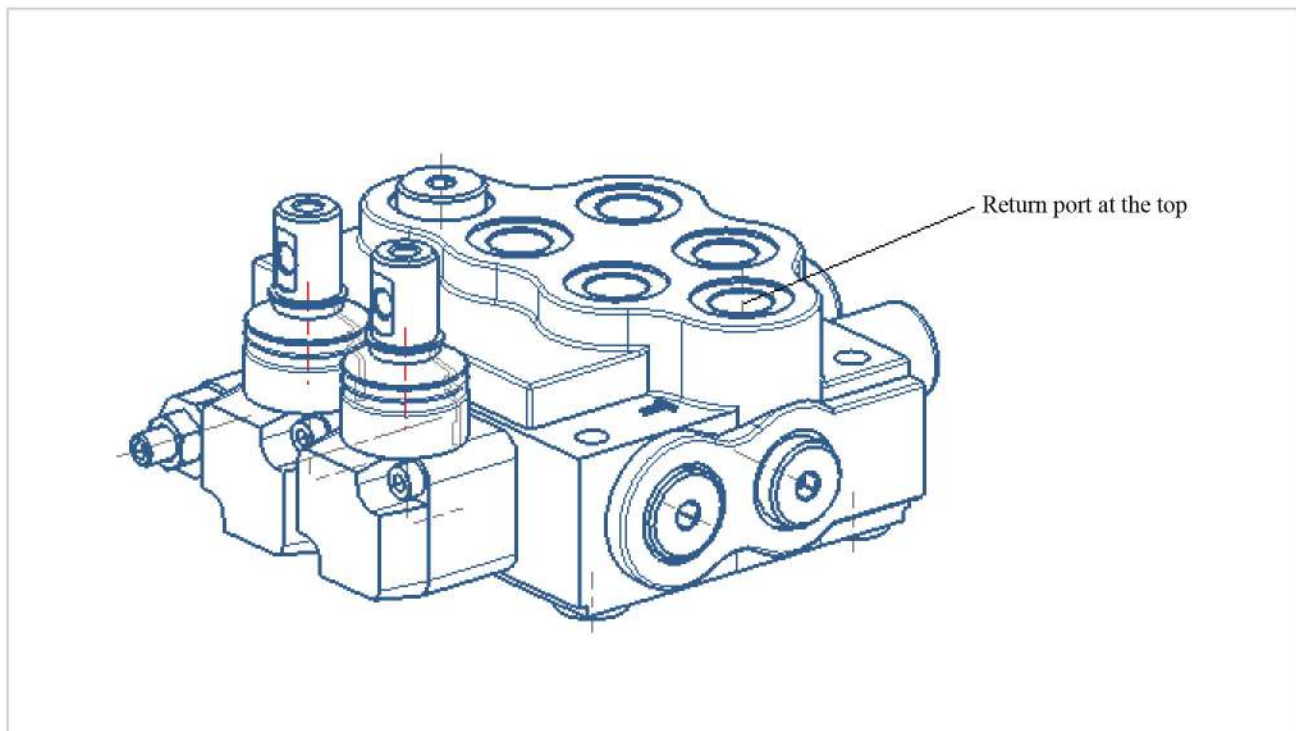


GDV45 Series Mono-block Valve Return Port Options

Return Port Option Code: T1(Return port at front)

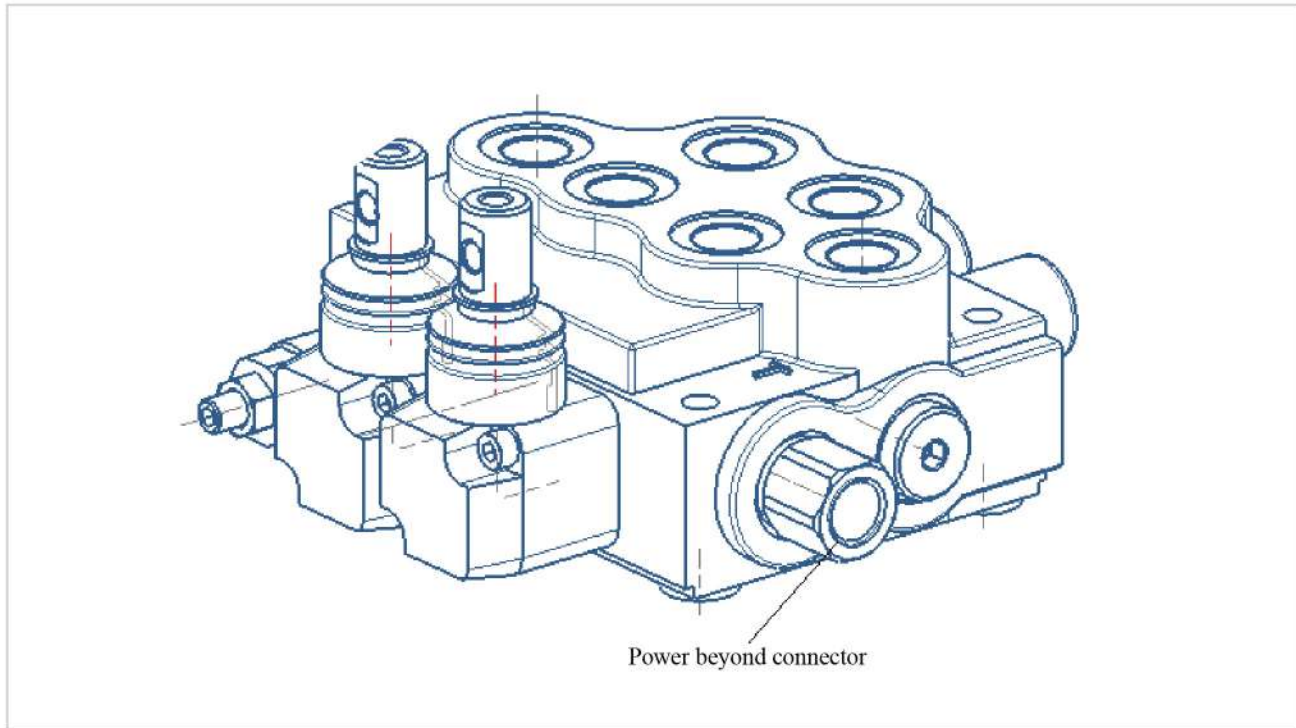


Return Port Option Code: T2(Return port at the top)



GDV45 Series Power Beyond Options

Power Beyond Option Code: D1(Pump flow output to a power beyond connector)



Return Port Option Cod:D0(Without Power Beyond)

GDV45 Series Valve Typical Spool Functions

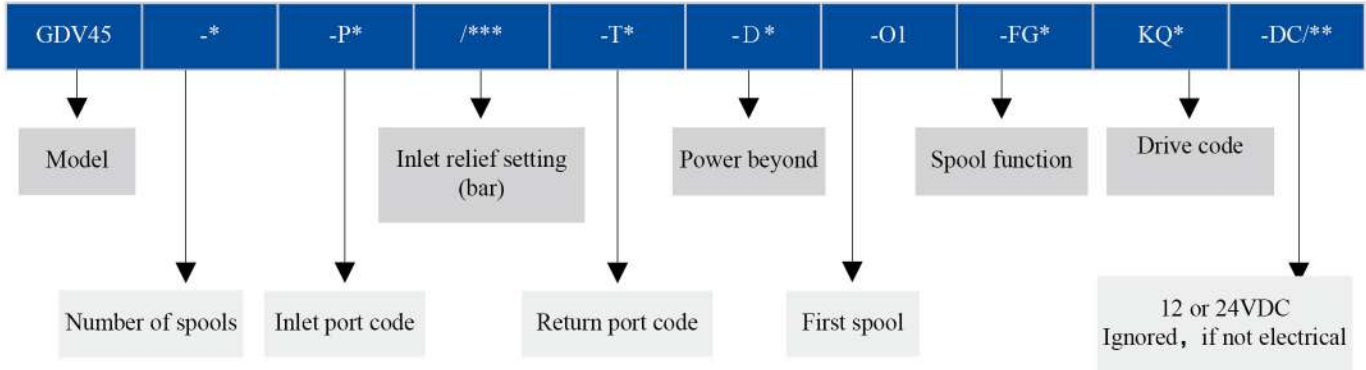
Spool Function	Hydraulic Schematics	Function	Notes
FG1		3 position 4 way At neutral: P,T,A,B are all blocked	Double acting cylinder applications
FG2		3 position 4 way At neutral: P blocked, T,A, B connected	Hydraulic motor applications
FG3		3 position 4 way At neutral: P,A,B and T all connected	Hydraulic motor applications
FG4		3 position 3 way At neutral: P,T,A,B all blocked	Single acting cylinder applications
FG5 (not available)		4 position 4 way At neutral: P,T,A, and B are all blocked 4th position floating	Double acting cylinder applications
FG6 (not available)		4 position 4 way At neutral: P blocked, T,A and B are connected 4th position floating	Double acting cylinder or hydraulic motor applications

GDV45 Series Drive Options

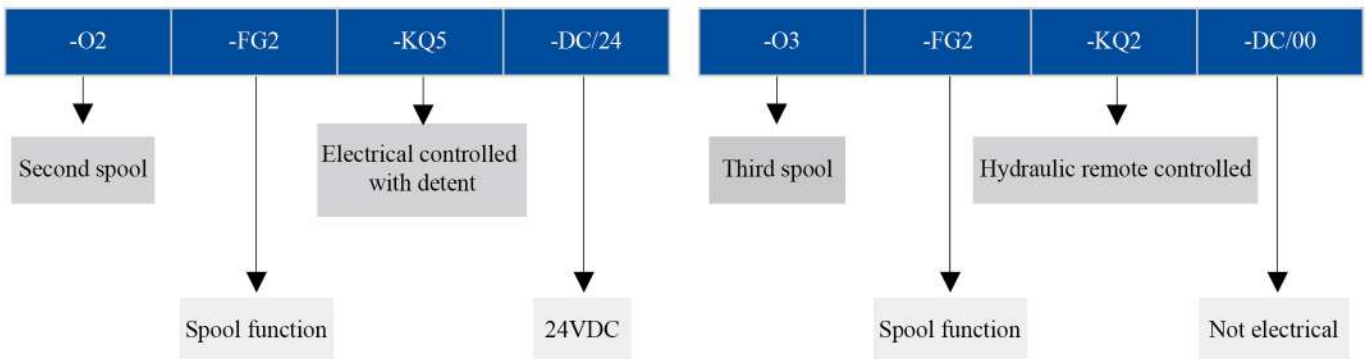
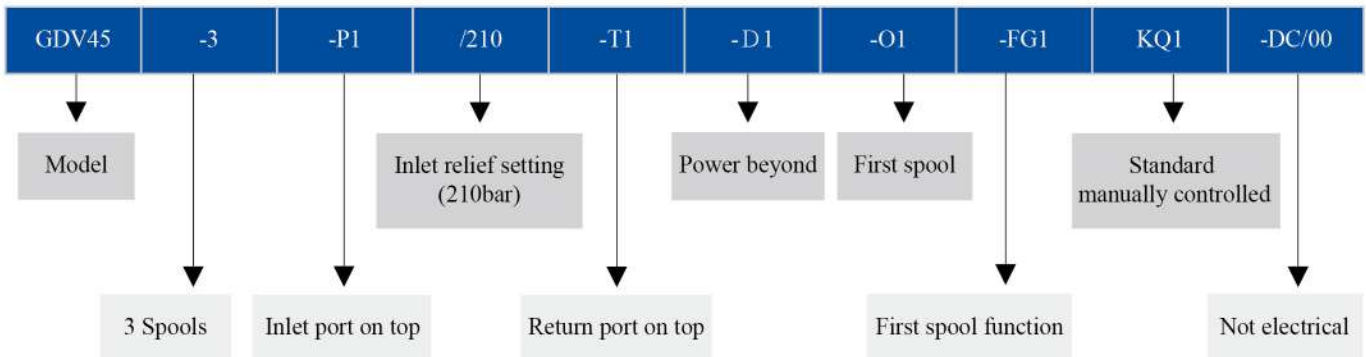
Drive Style Code	Hydraulic Schematics	Function
KQ1		Standard manually controlled
KQ2 (not available)		Hydraulic remote
KQ3		Manually controlled with mechanical detent
KQ4 (not available)		Manually controlled with 4th position floating and detent
KQ5 (not available)		Electrical actuated (on/off)
KQ6 (not available)		Electrical actuated with floating function



GDV45 Series Order Code



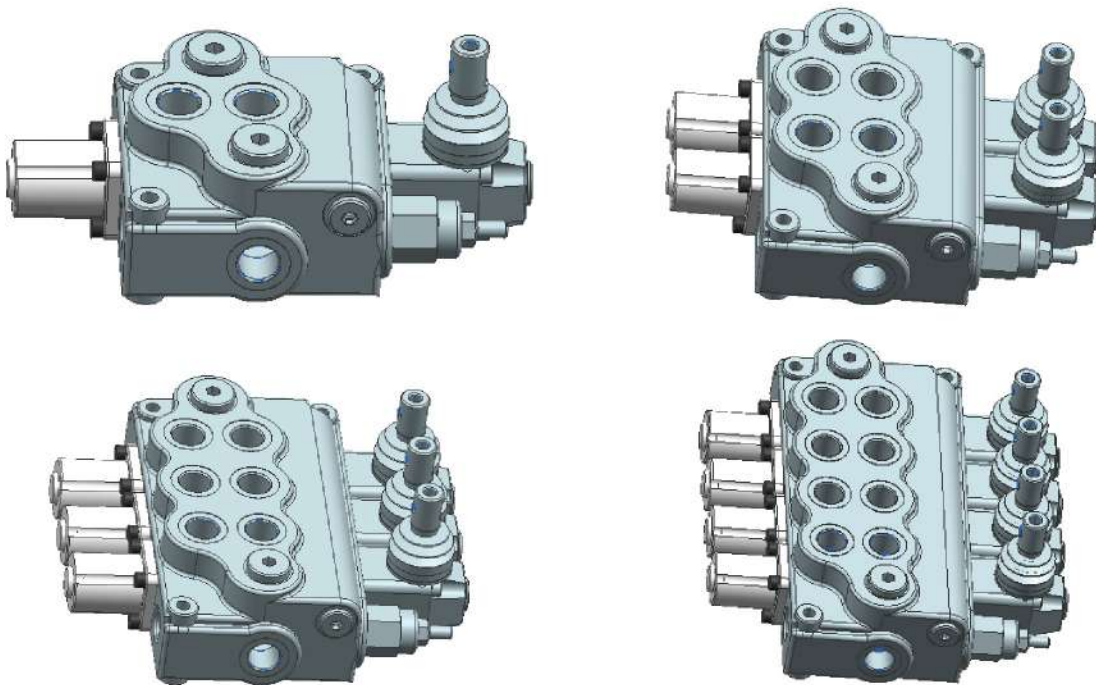
GDV45 Series Order Example



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GDV70 Series Mono-block Valves





GDV70 Series Mono-block Valve's Features

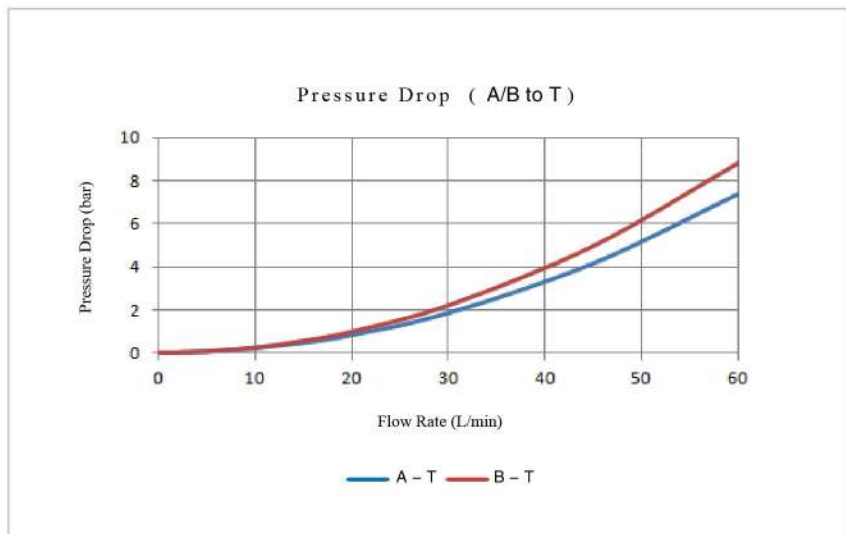
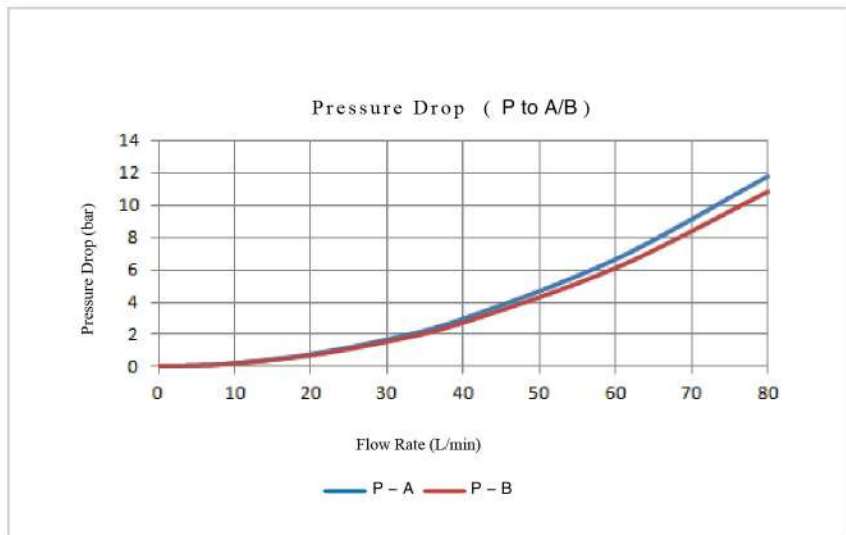
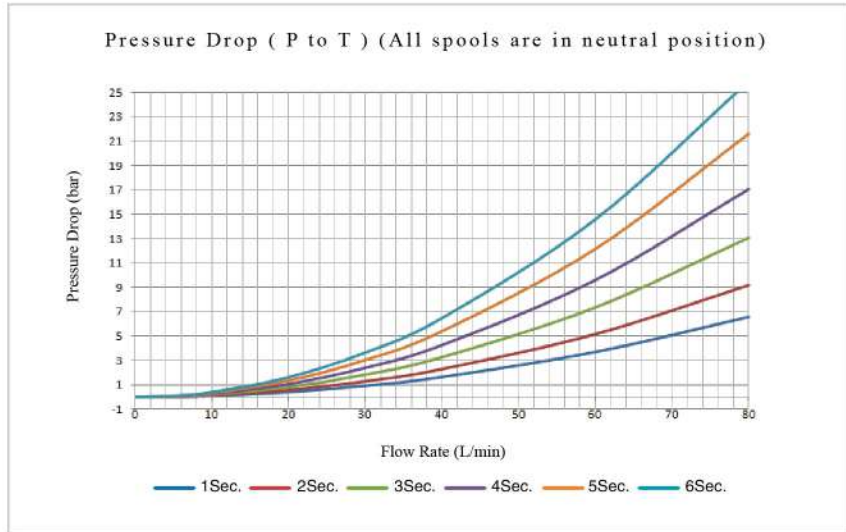
GDV70 series mono-block valve provides the following features:

- 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 1 spool to 6 spools.

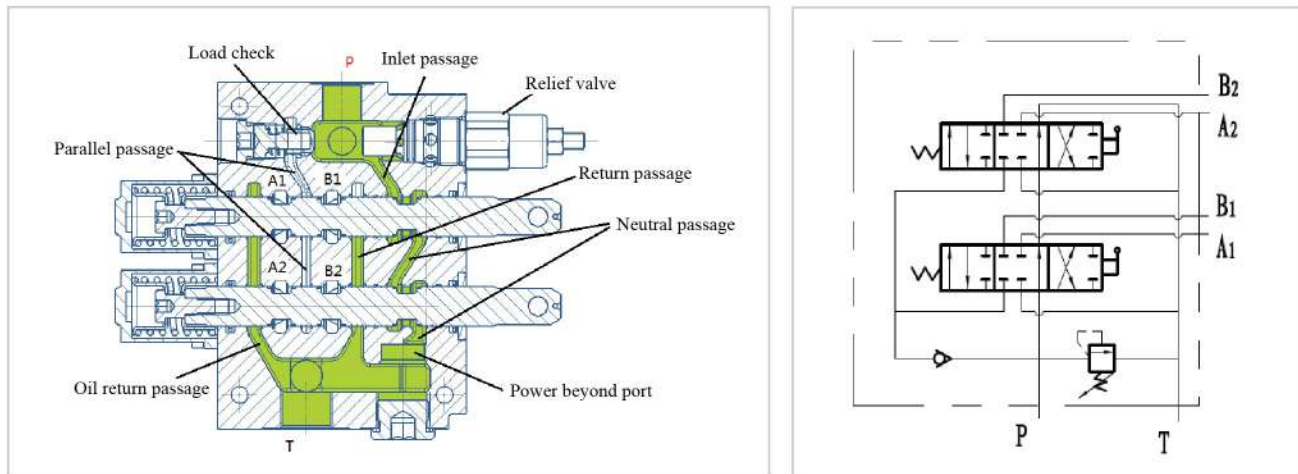
GDV70 Series Major Technical Data

Rated flow rate:	70 L/min
Maximum flow rate:	80 L/min
Maximum pressure at P port:	310 bar
Maximum pressure at A/B port:	310 bar
Maximum pressure at T port:	25 bar
Internal leakage (at 70 bar) : A/B to T	30-35 CC/min
Temperature range of the hydraulic oil:	
With NBR (BUNA--N) seals	-20C° - 80C°
With FPM (VITON) seals	-20C° - 100C°
Spool stroke (1/2 position) :	+7/-7mm
With floating function (1 / 2 and F position) :	+7/-7 -9mm
Recommend hydraulic oil viscosity range:	15-75 mm ² /s
Recommend temperature range:	-40C° - 60C°

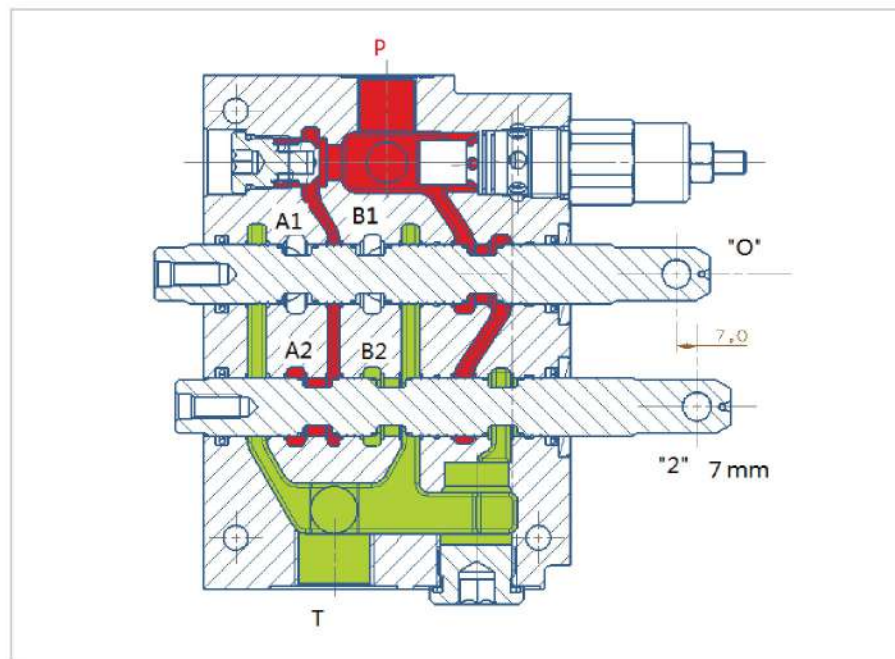
GDV70 Series Performance Data



GDV70 Series Mono-block Valve Basic Operating Principle



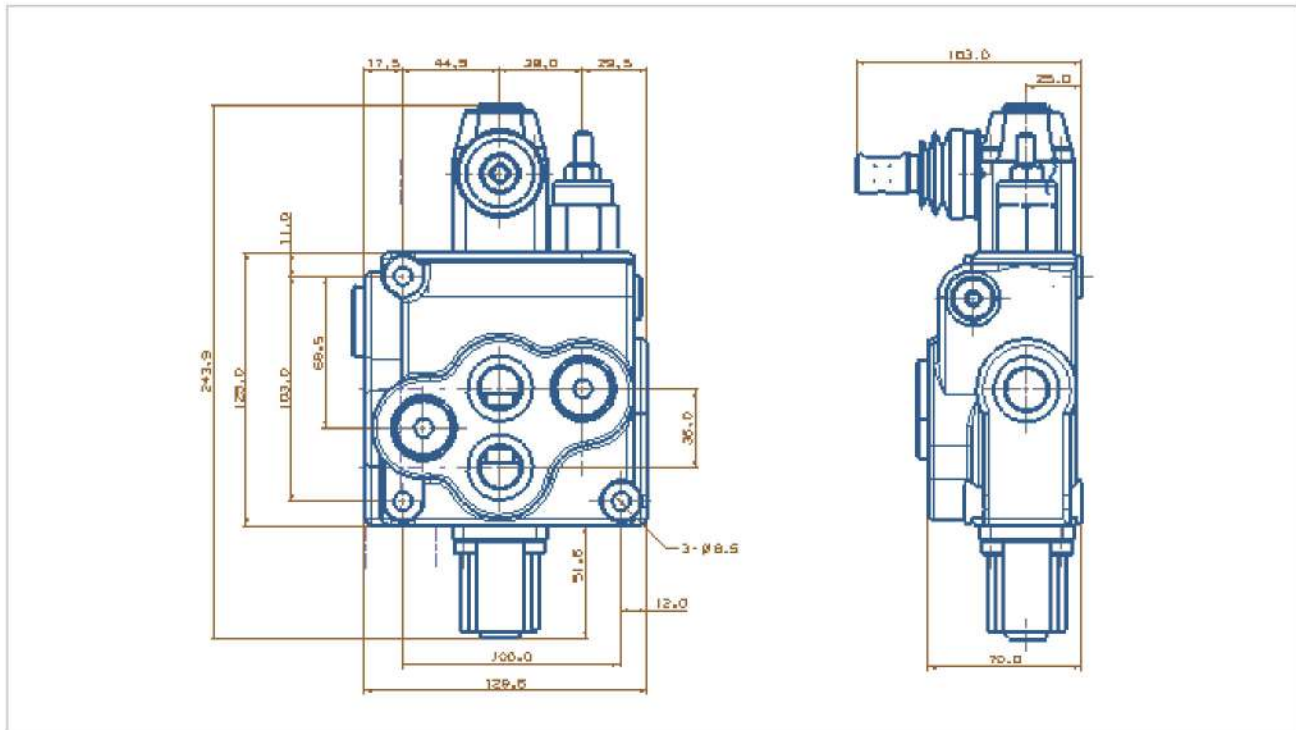
GDV-70 series mono-block valve is an open centered, 3 position 4 way valve. When spool is in its neutral position, the flow from pump passes through the neutral passage to tank, with very low pressure drop. When one of the spool is moved to “ 1 ”or“ 2 ”position, the neutral passage is blocked. The flow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



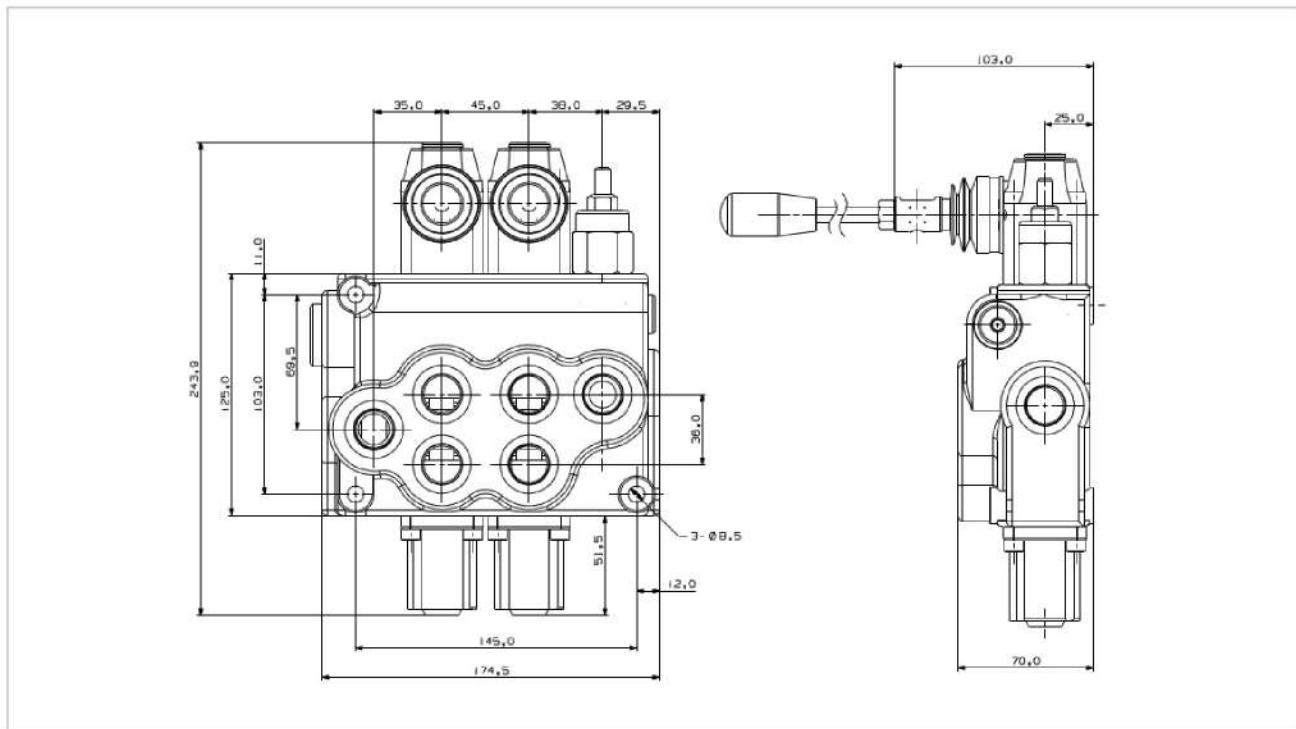
As shown in above picture, when first spool is in neutral, flow from pump passes through load check valve and enters the parallel passage to supply flow to both spools. Due to second spool is moved to “2” position, the flow from parallel passage flows to “A2” through the spool opening. The flow from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

GDV70 Series Valve Dimension

GDV70-1:1 Spool Valve

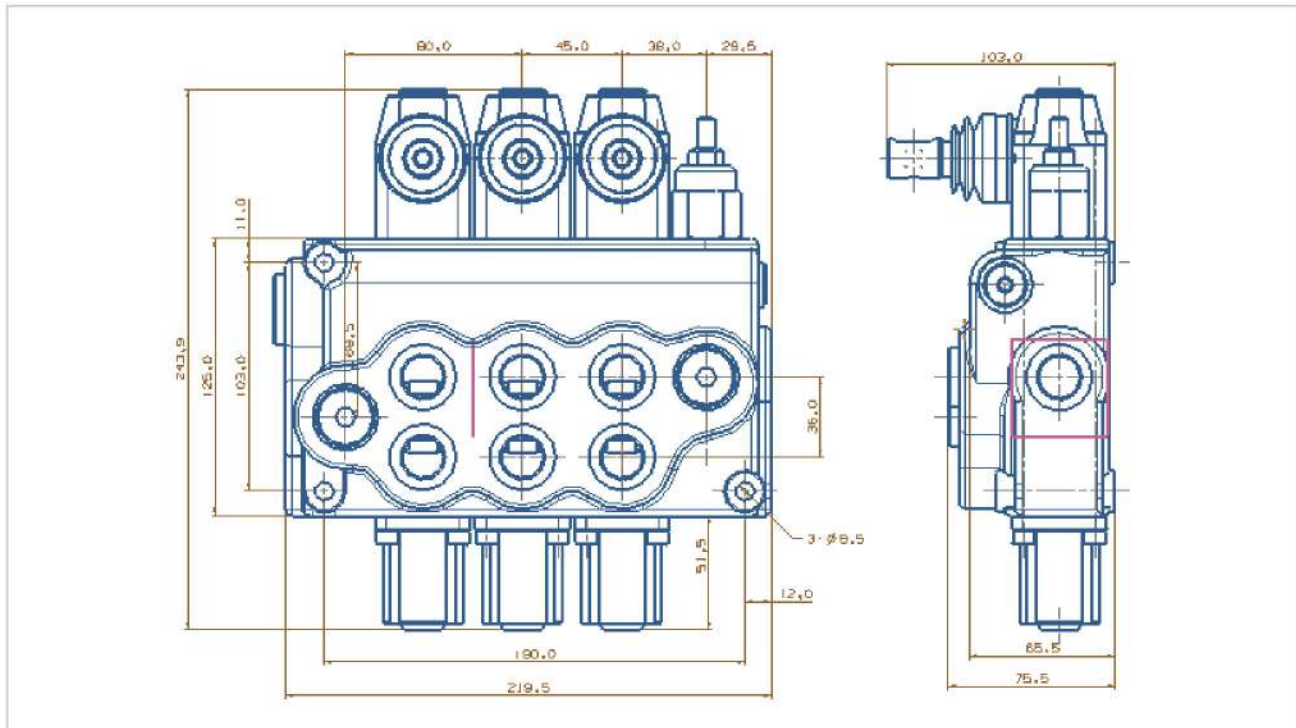


GDV70-2:2 Spool Mono-block Valve

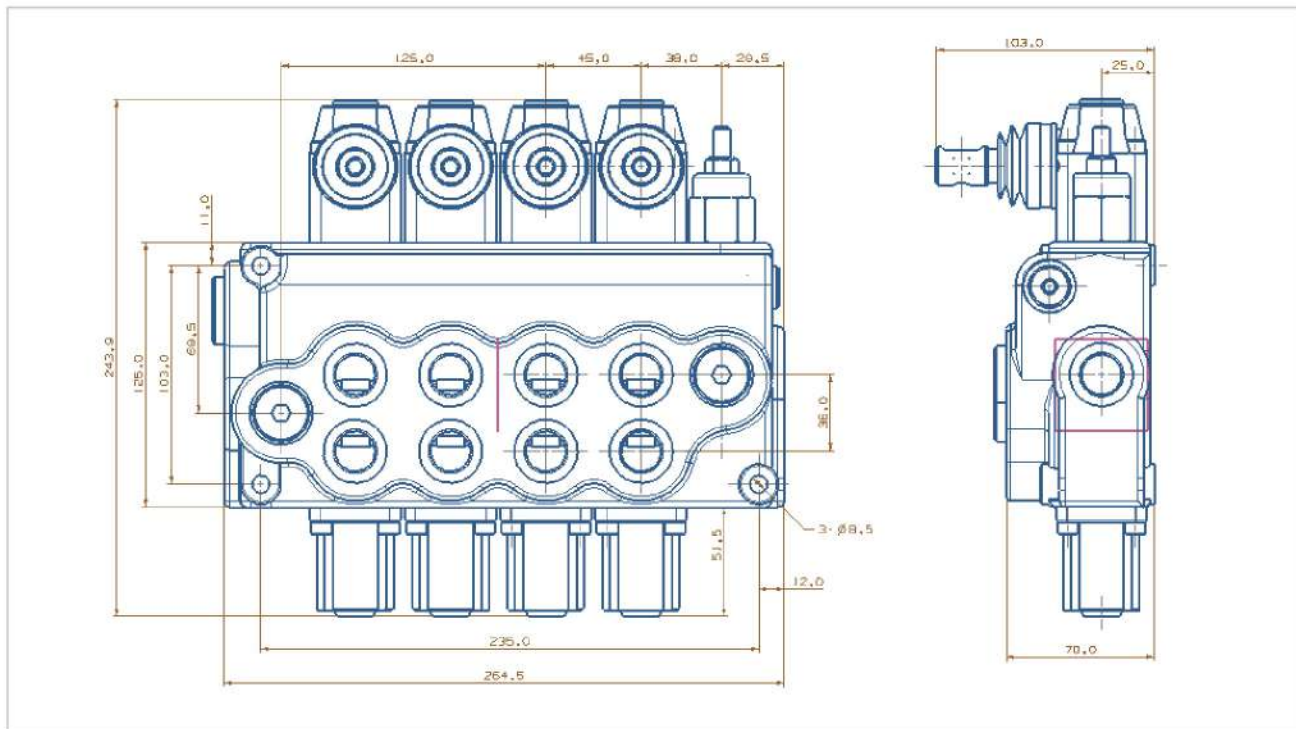


GDV70 Series Valve Dimension

GDV70-3:3 Spool Mono-block Valve

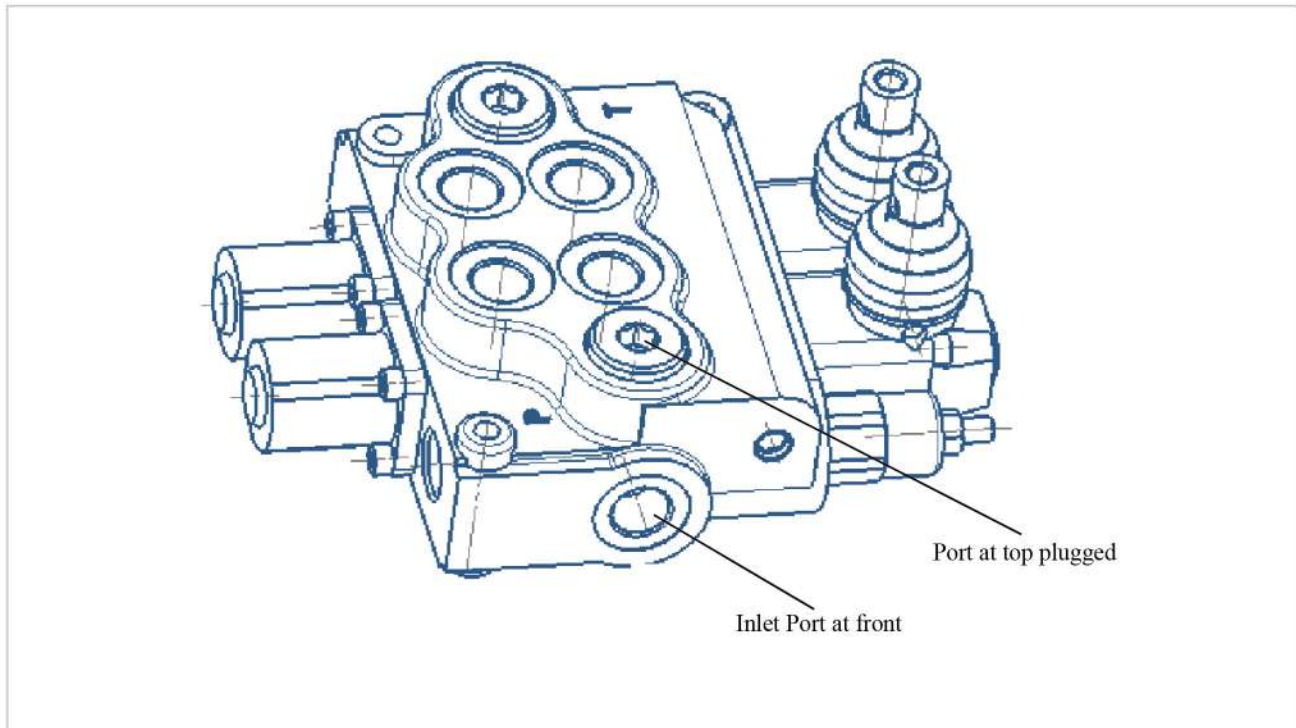


GDV70-4:4 Spool Mono-block Valve

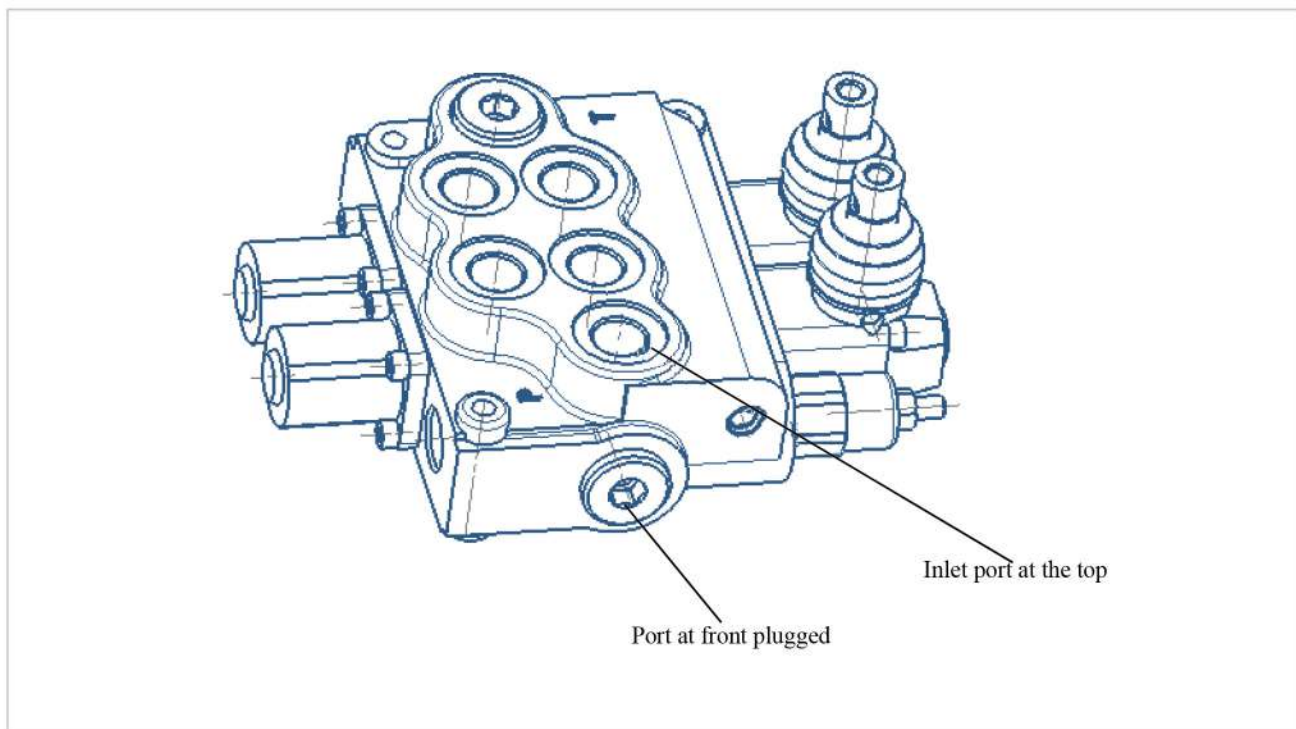


GDV70 Series Mono-block Valve Inlet Options

Inlet Option Code: P1 (Port at front)

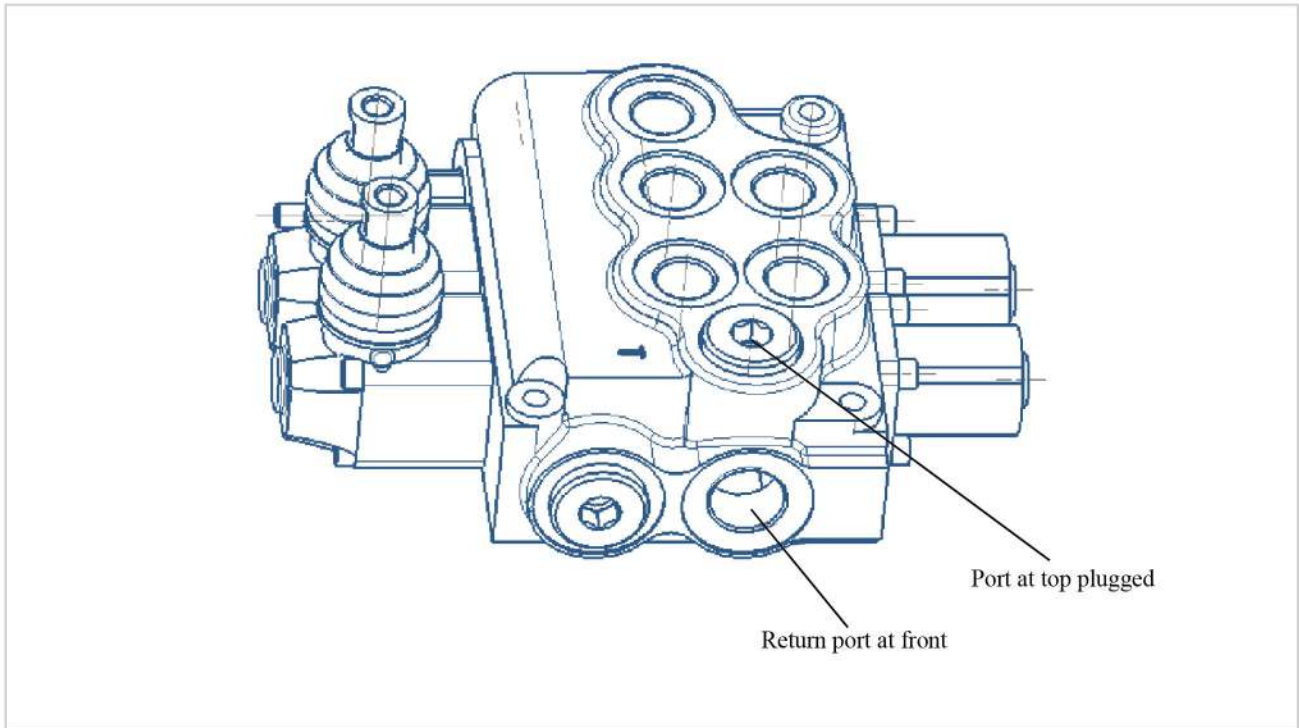


Inlet Port Code: P2 (Port at the top)

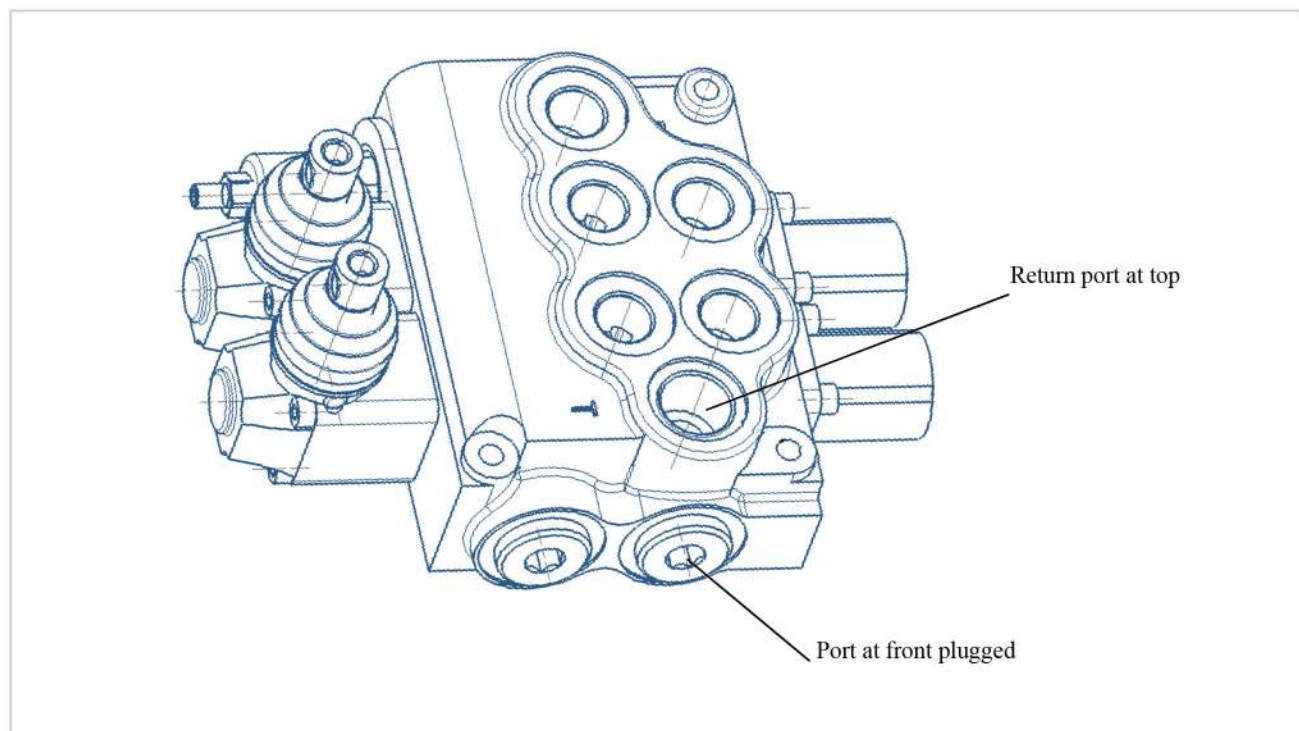


GDV70 Series Mono-block Valve Return Port Options

Return Port Option Code: T1(Return port at front)

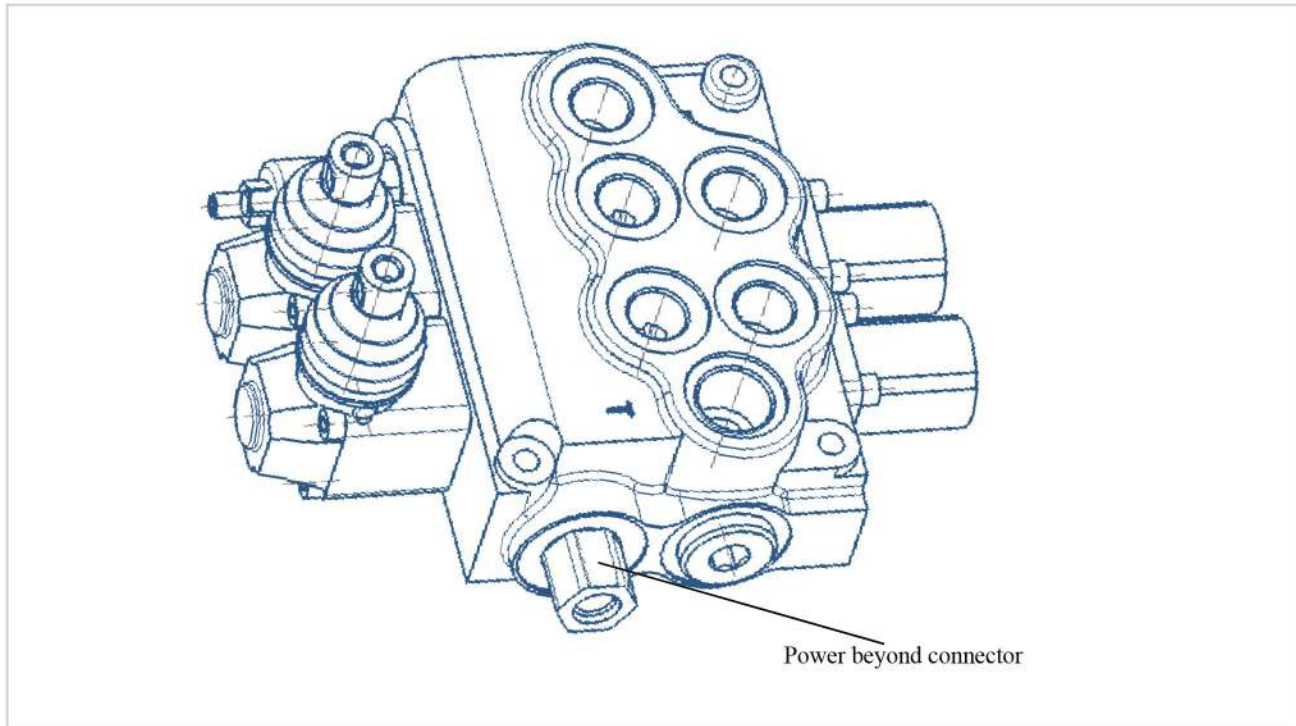


Return Port Option Code: T2(Return port at the top)



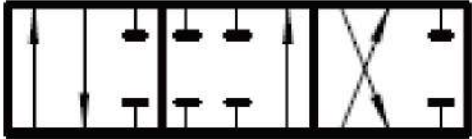


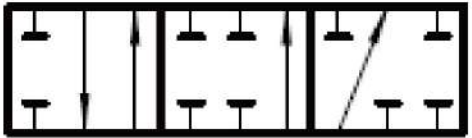


GDV70 Series Power Beyond Options

Power Beyond Option Code: D1(A power beyond connector to supply pump flow to other device)

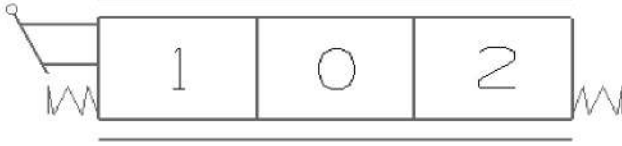
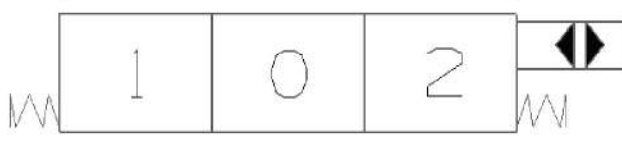
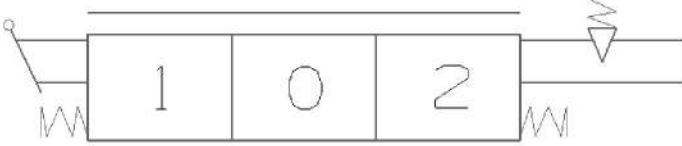
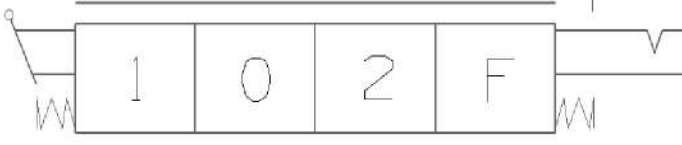
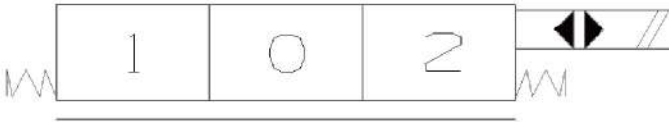



Power Beyond Option Code:D0(Without power beyond port)

GDV70 Series Valve Typical Spool Functions

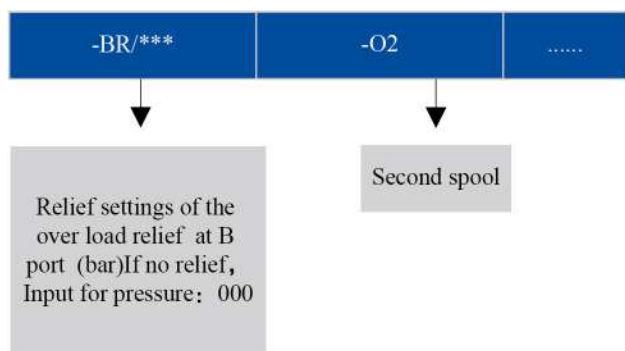
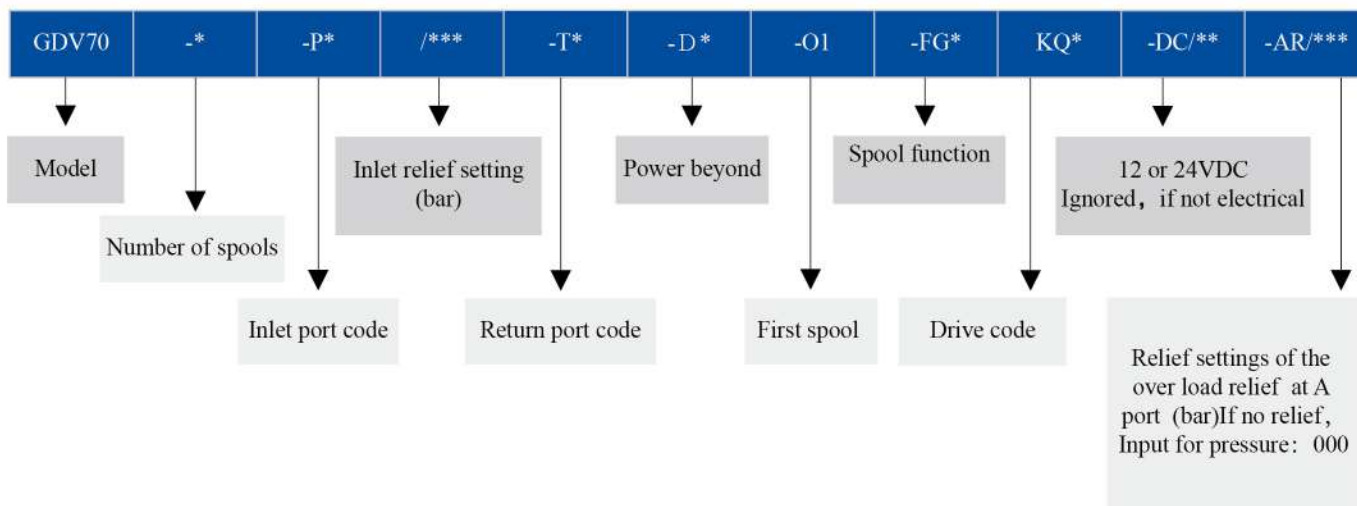
Spool Function	Hydraulic Schematics	Function	Notes
FG1		3 position 4 way At neutral: P,T,A,B are all blocked	Double acting cylinder applications
FG2		3 position 4 way At neutral: P blocked, T,A, B connected	Hydraulic motor applications
FG3		3 position 4 way At neutral: P,A,B and T all connected	Hydraulic motor applications
FG4		3 position 3 way At neutral: P,T,A,B all blocked	Single acting cylinder applications
FG5 (not available)		4 position 4 way At neutral: P,T,A, and B are all blocked 4th position floating	Double acting cylinder applications
FG6 (not available)		4 position 4 way At neutral: P blocked, T,A and B are connected 4th position floating	Double acting cylinder or hydraulic motor applications

GDV70 Series Drive Style

Drive Style Code	Hydraulic Schematics	Function
KQ1		Standard manually controlled
KQ2 (not available)		Hydraulic remote
KQ3		Manually controlled with mechanical detent
KQ4		Manually controlled with 4th position floating and detent
KQ5 (not available)		Electrical actuated (on/off)
KQ6 (not available)		Electrical actuated with floating function

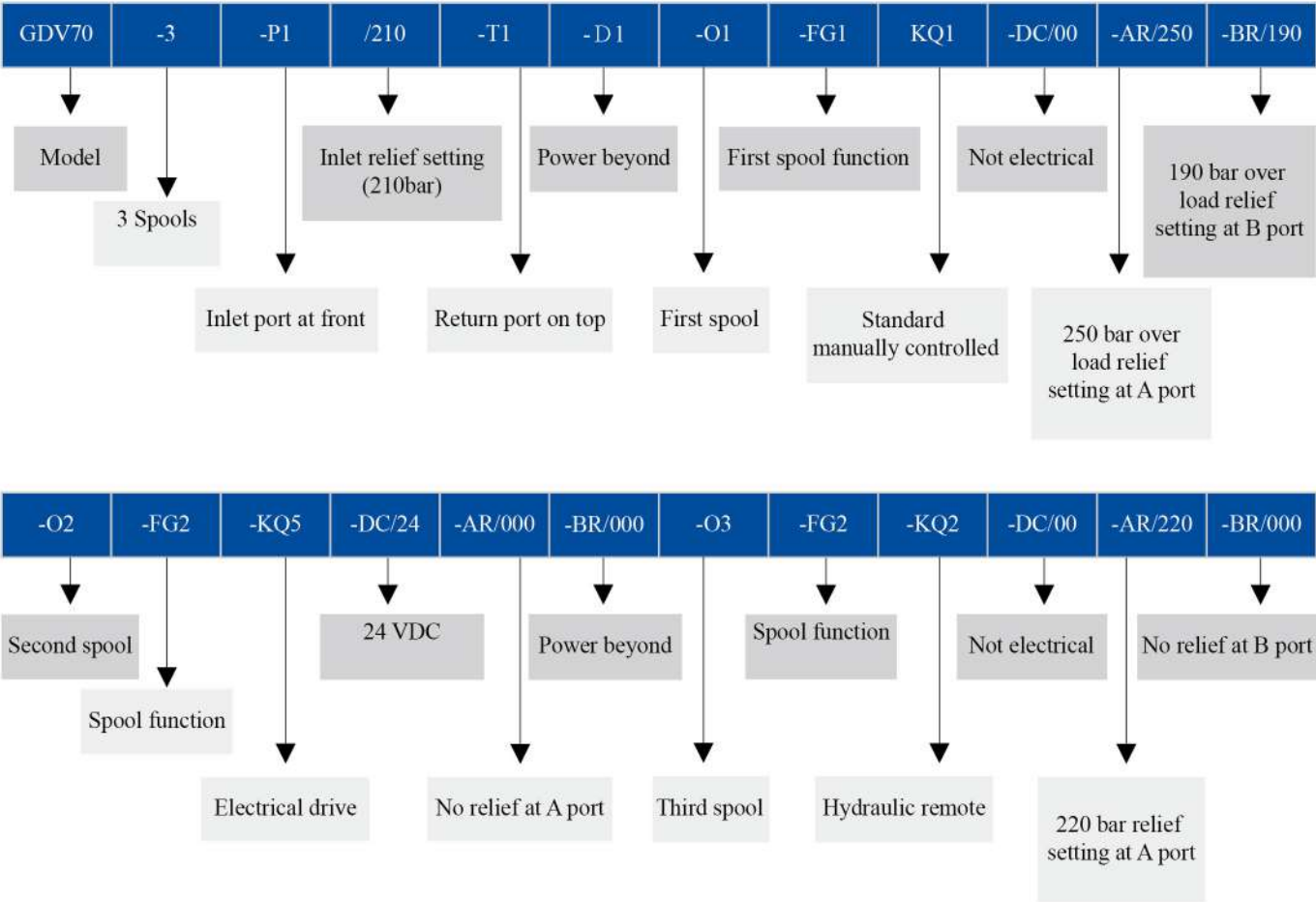


GDV70 Series Order Code





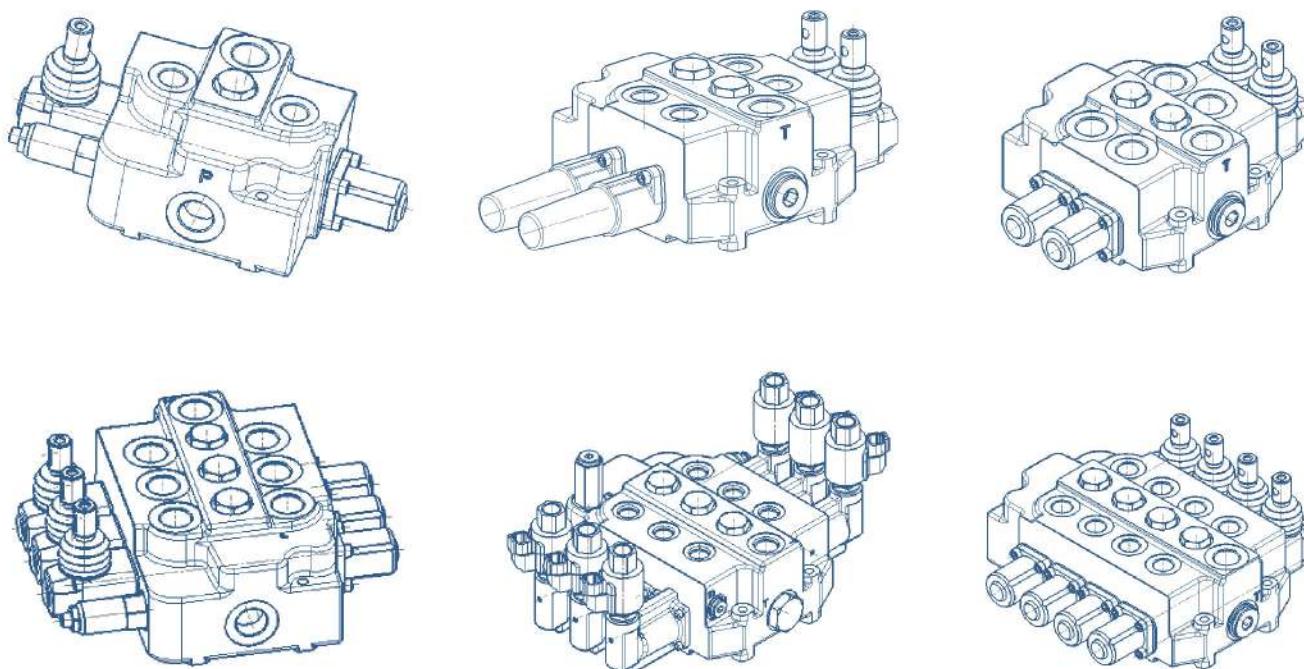
GDV70 Series Order Example



GDV80 Series Mono-block Valves Index

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GDV80 Series Mono-block Valves





GDV80 Series Mono-block Valve's Features

GDV80Series Valve Has the Following Features:

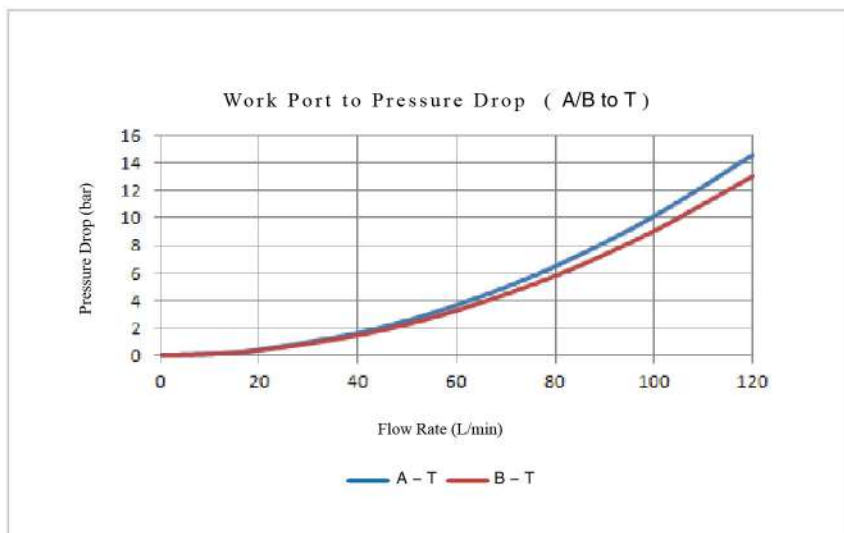
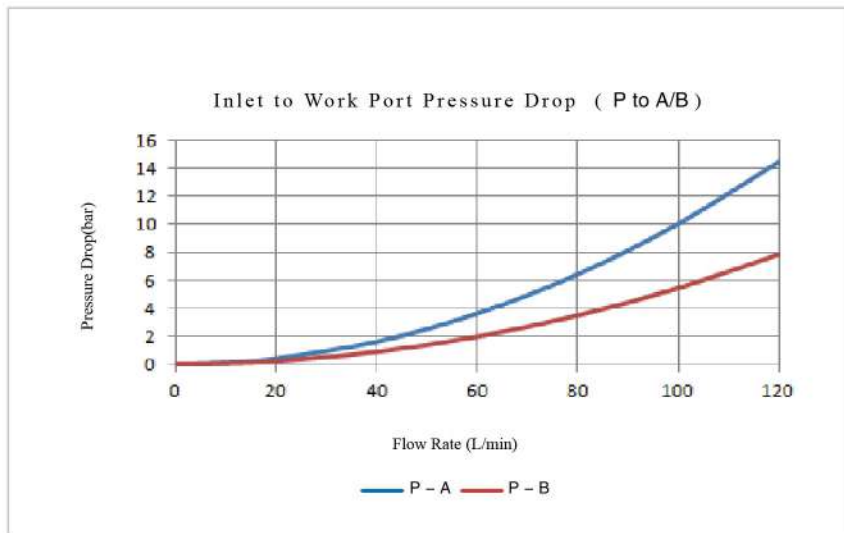
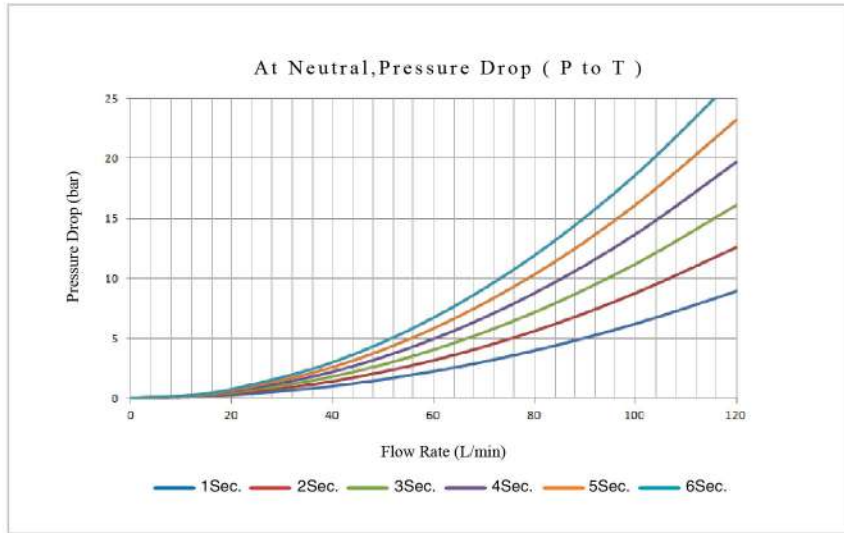
- Cast iron mono-block body.
- Spring cap, mechanical detent cap, as well as electrol or hydraulic pilot controlled module body are made by cast aluminum or die cast aluminum.
- Parallel circuit. Each spool has its own load check valve.
- Provides dump valve options for each work port.
- Provides different 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 1-6 spools.

— 1Sec. — 2Sec. — 3Sec. — 4Sec. — 5Sec. — 6Sec.

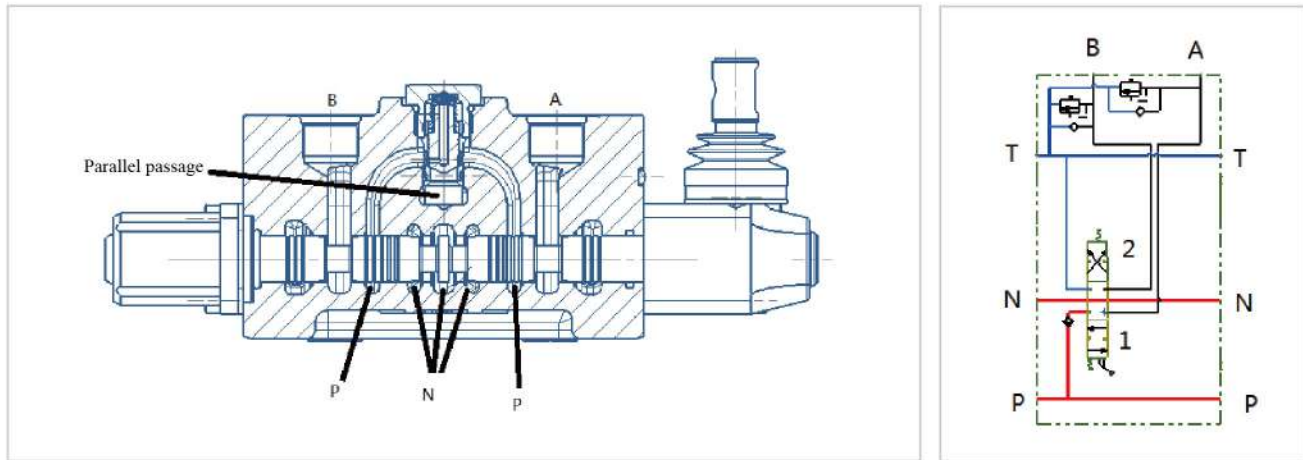
GDV80 Series Major Technical Data

Rated flow rate:	80 L/min
Maximum flow rate:	100 L/min
Maximum pressure at P port:	310 bar
Maximum pressure at A/B port:	310 bar
Maximum pressure at T port:	25 bar
Internal leakage (at 70 bar) : A/B to T	30-35 CC/min
Temperature range of the hydraulic oil :	
With NBR (BUNA--N) seals	-20C° - 80C°
With FPM (VITON) seals	-20C° - 100C°
Spool stroke (1/2 position) :	+7/-7mm
With floating function (1 / 2 and F position) :	+7/-7 -9mm
Recommend hydraulic oil viscosity range:	15-75mm ² /s
Recommend temperature range :	-40C° - 60C°
Solenoid can be either 12 VDC or 24 VDC, corresponding current is 0 - 1.5 or 0 - 0.75 Amp.	

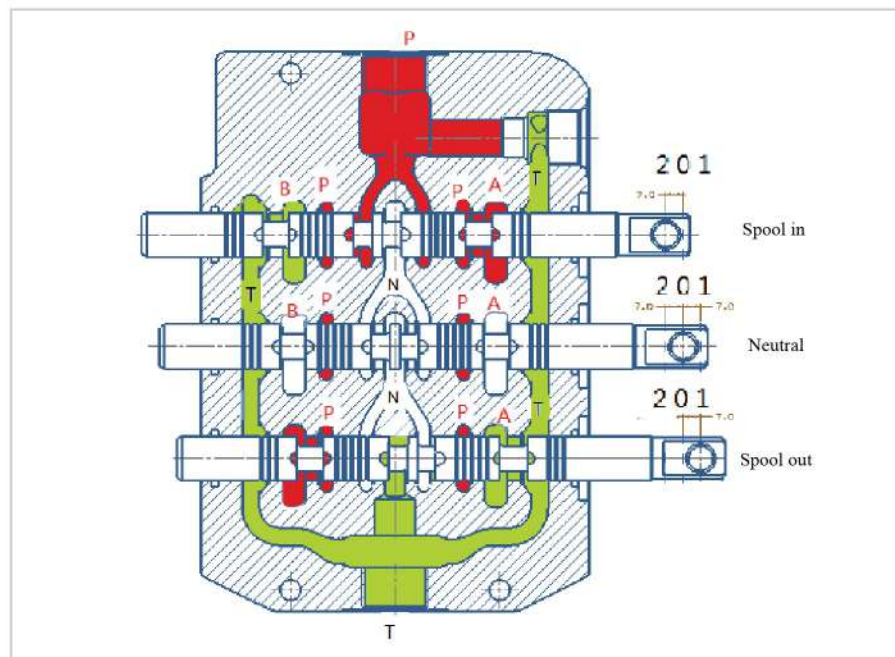
GDV80 Series Performance Data



GDV80 Series Basic Operating Principle



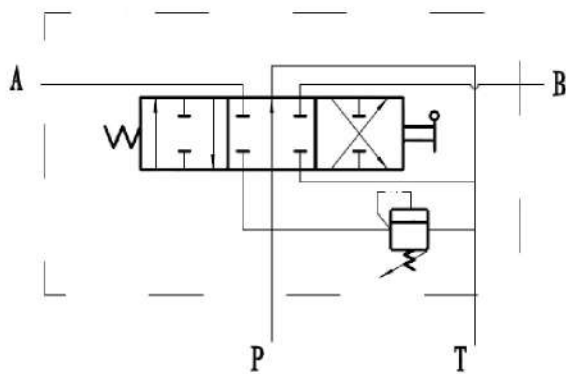
GDV80 series mono-block valve is an open centered 3 position 4 way valve. When spool is in its neutral position, the flow from pump passes through the neutral passage to tank, with very low pressure drop. When one of the spool is moved to “1” or “2” position, the neutral passage is blocked. The flow 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”.



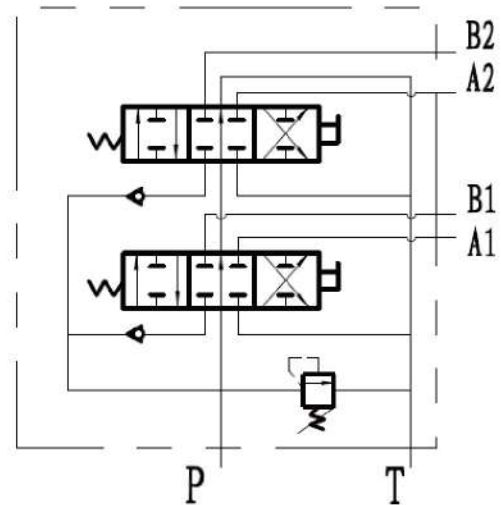
For multi-spool mono-block valves, if one of the spools is in “1” or “2” position, then, there is no flow in its downstream spool’s neutral passage. The main throttle occurs on the valve opening between bridge passage and spool. The operator can control more than one spools, but the magnitude of the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

GDV80 Series Mono-block Valve Basic Hydraulic Schematics

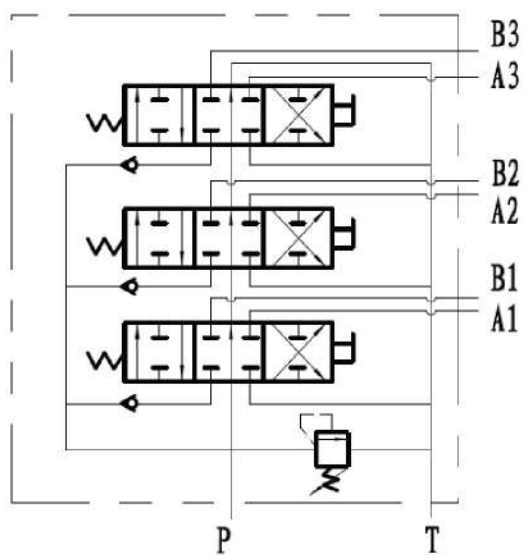
GDV80-1



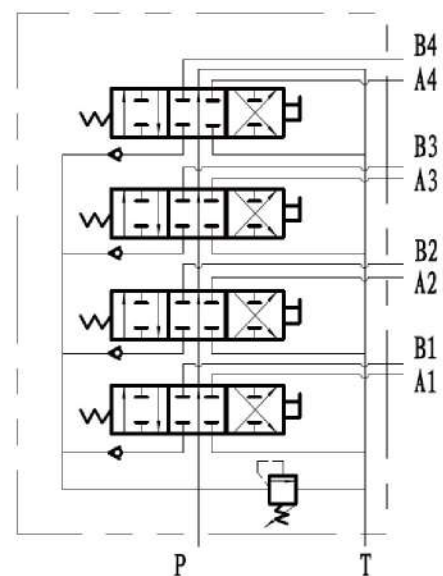
GDV80-2



GDV80-3

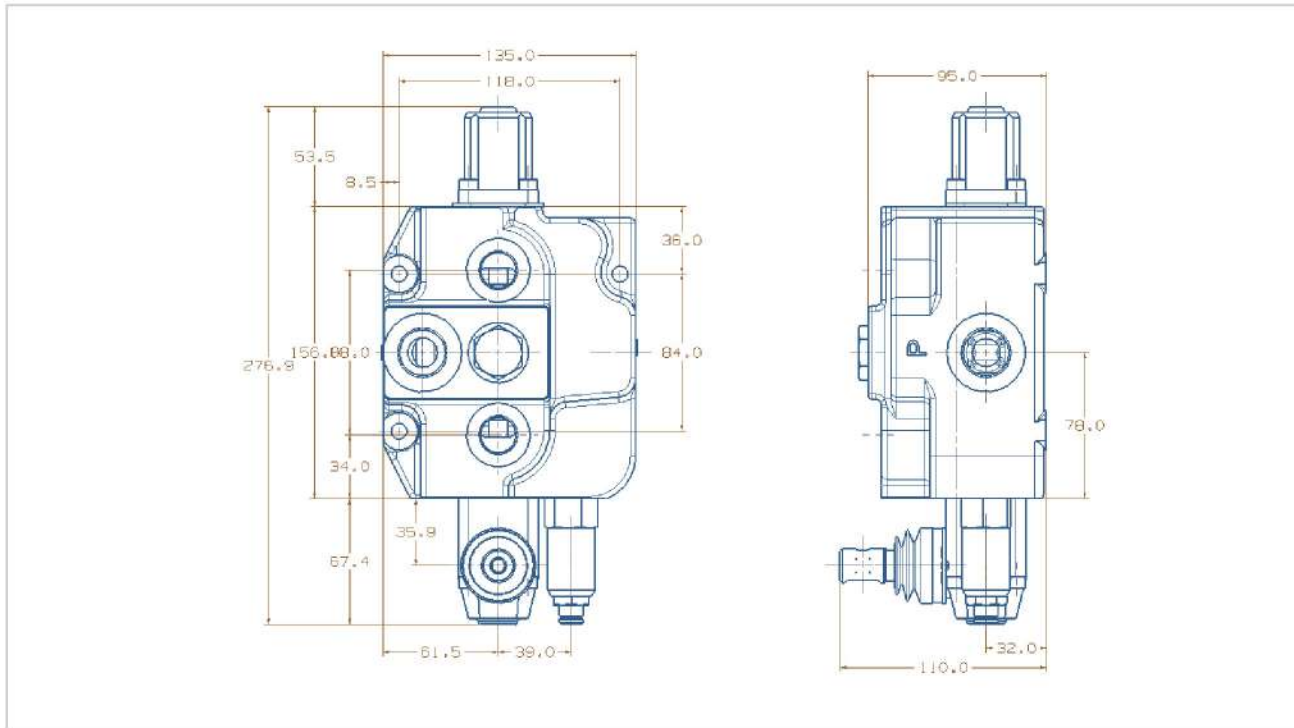


GDV80-4

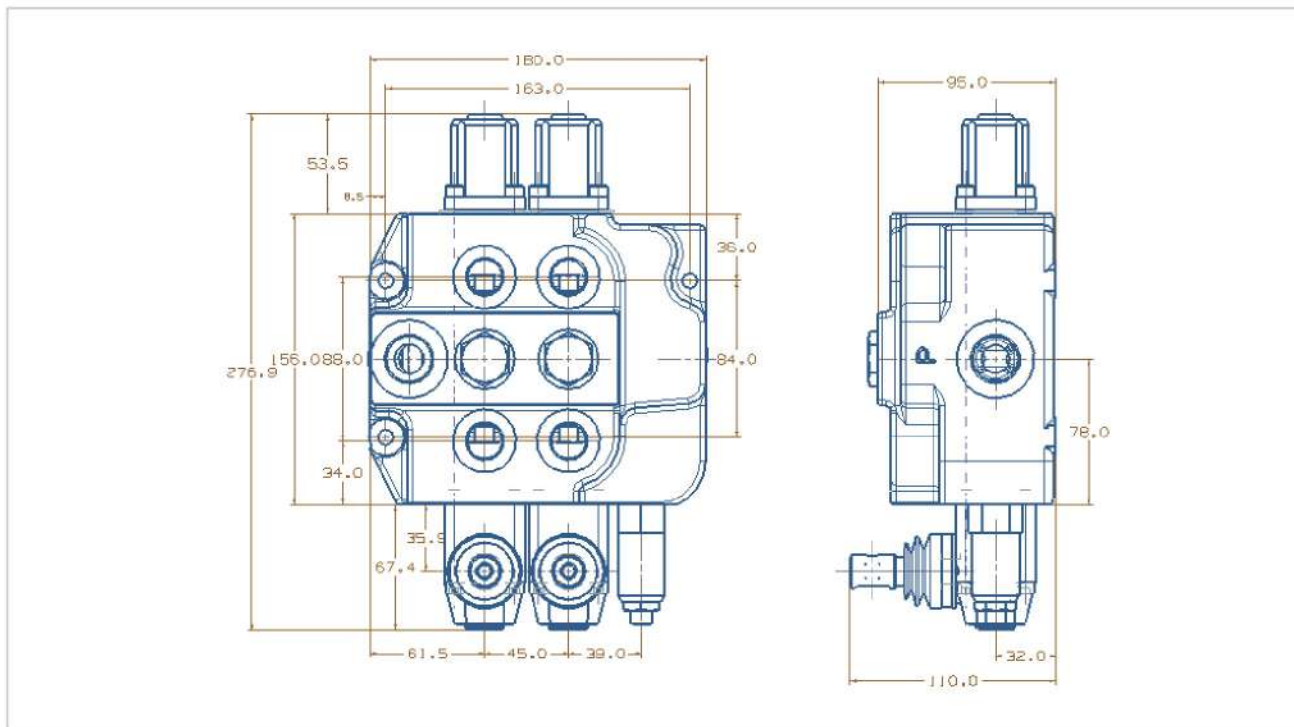


GDV80 Series Valve Dimension

GDV80-1:1 Spool Valve

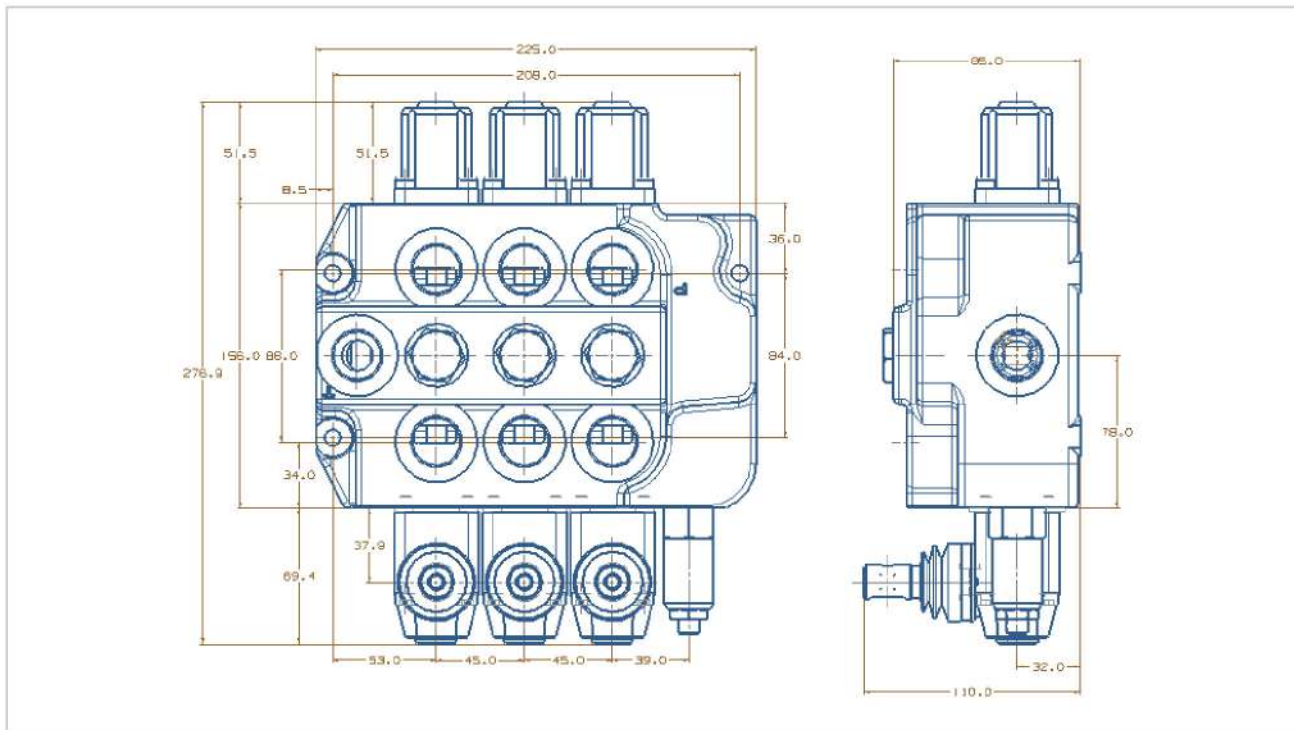


GDV80-2:2 Spool Valve

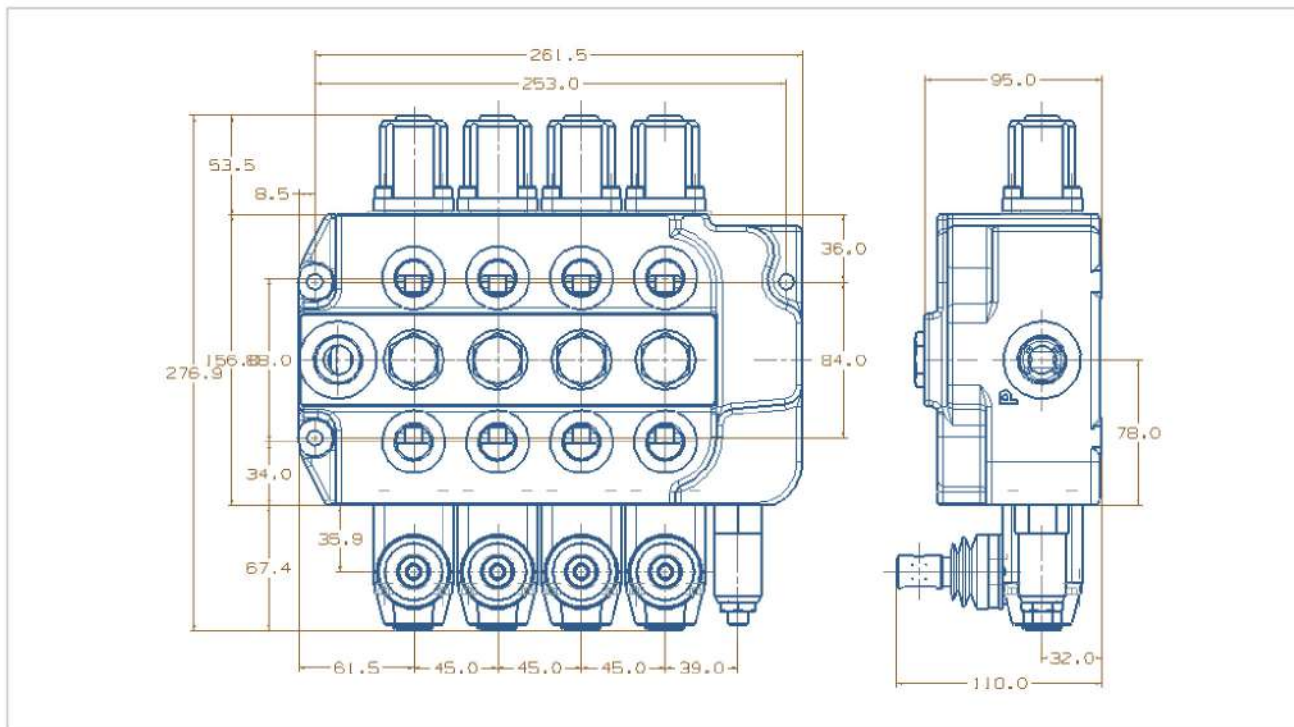


GDV80 Series Valve Dimension

GDV80-3:3 Spool Valve

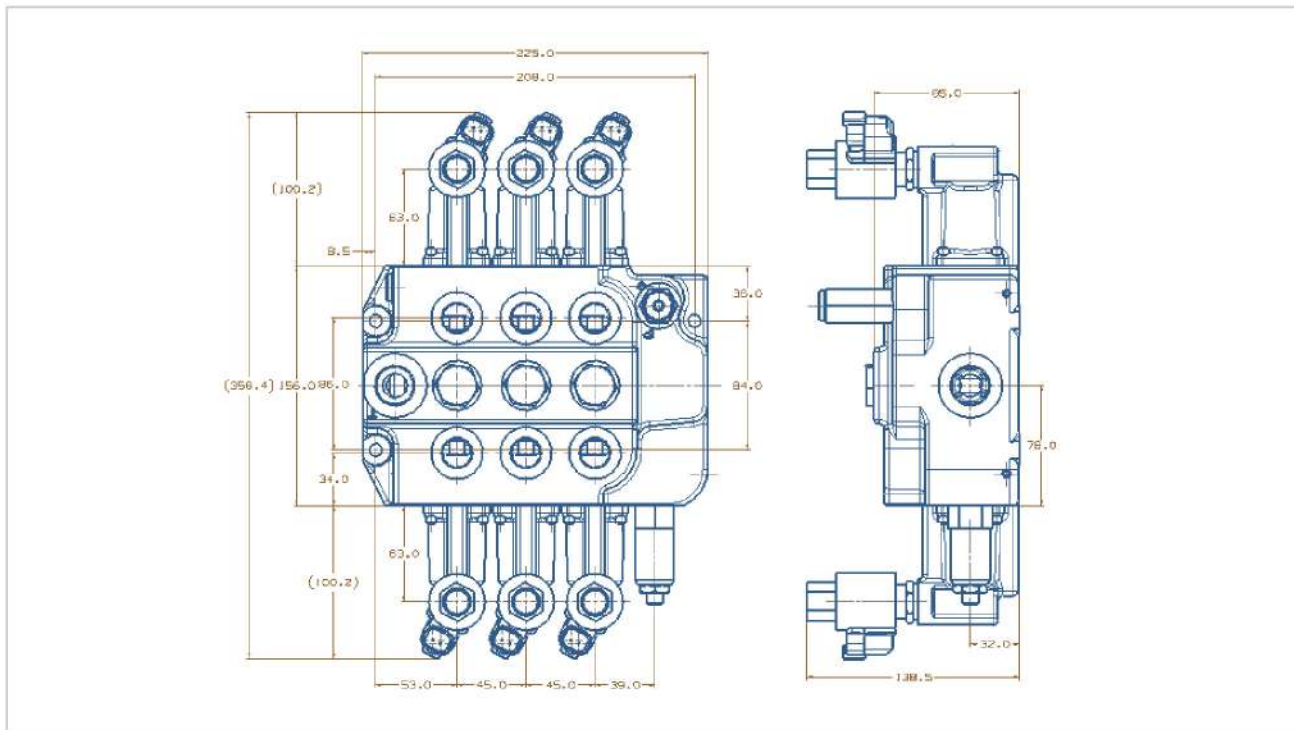


GDV80-4:4 Spool Valve

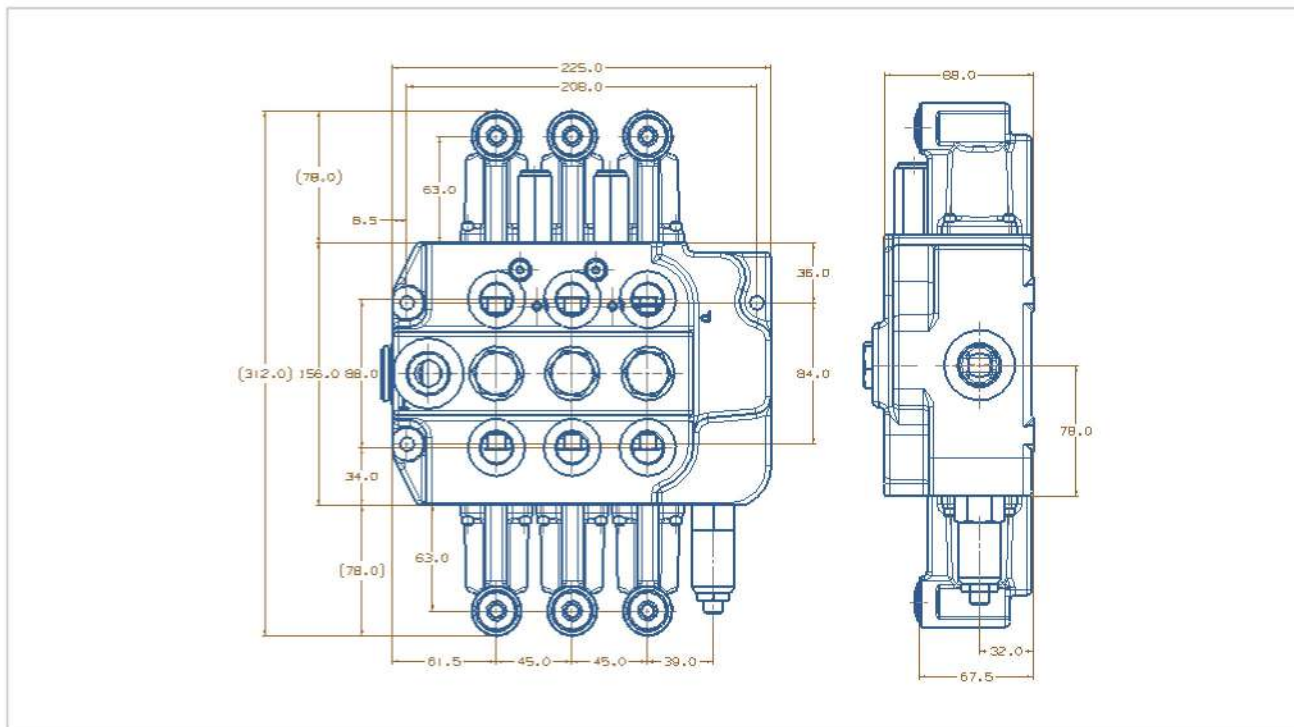


GDV80 Series Valve Dimension

GDV80-3:Spools, Electrical Drive

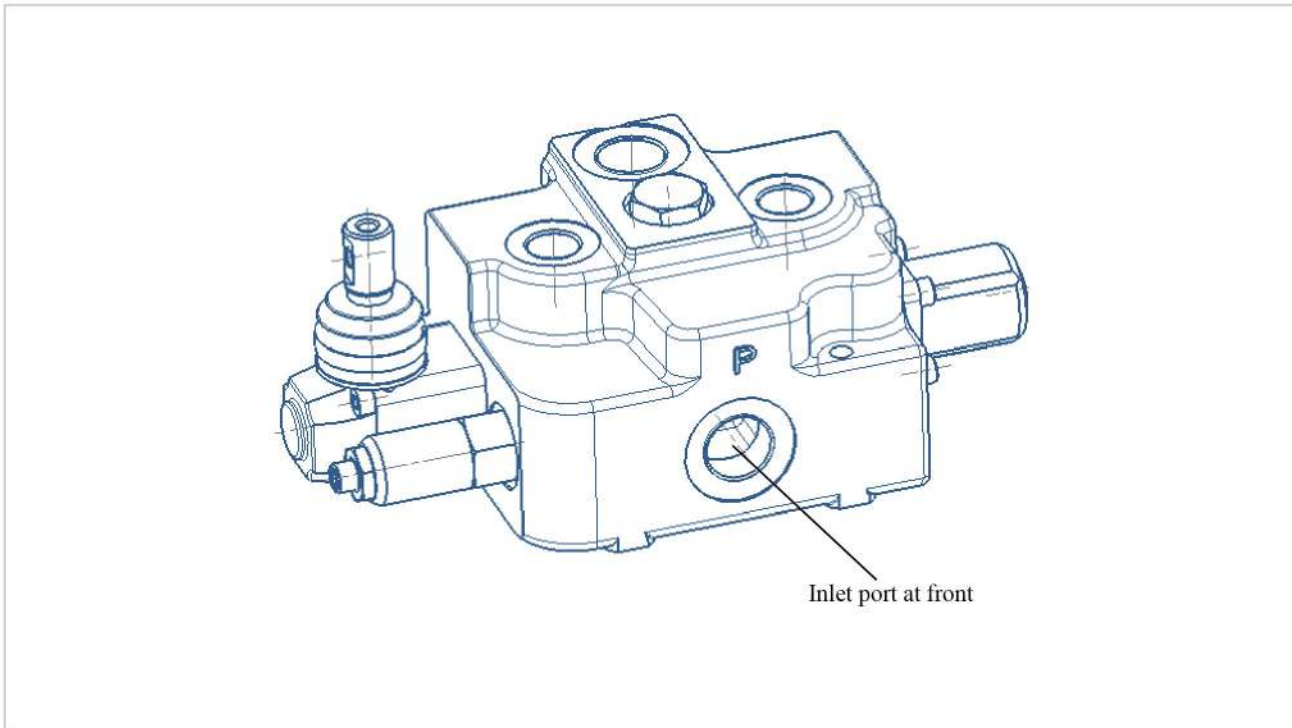


GDV80-3:Spools, Hydraulic Remote

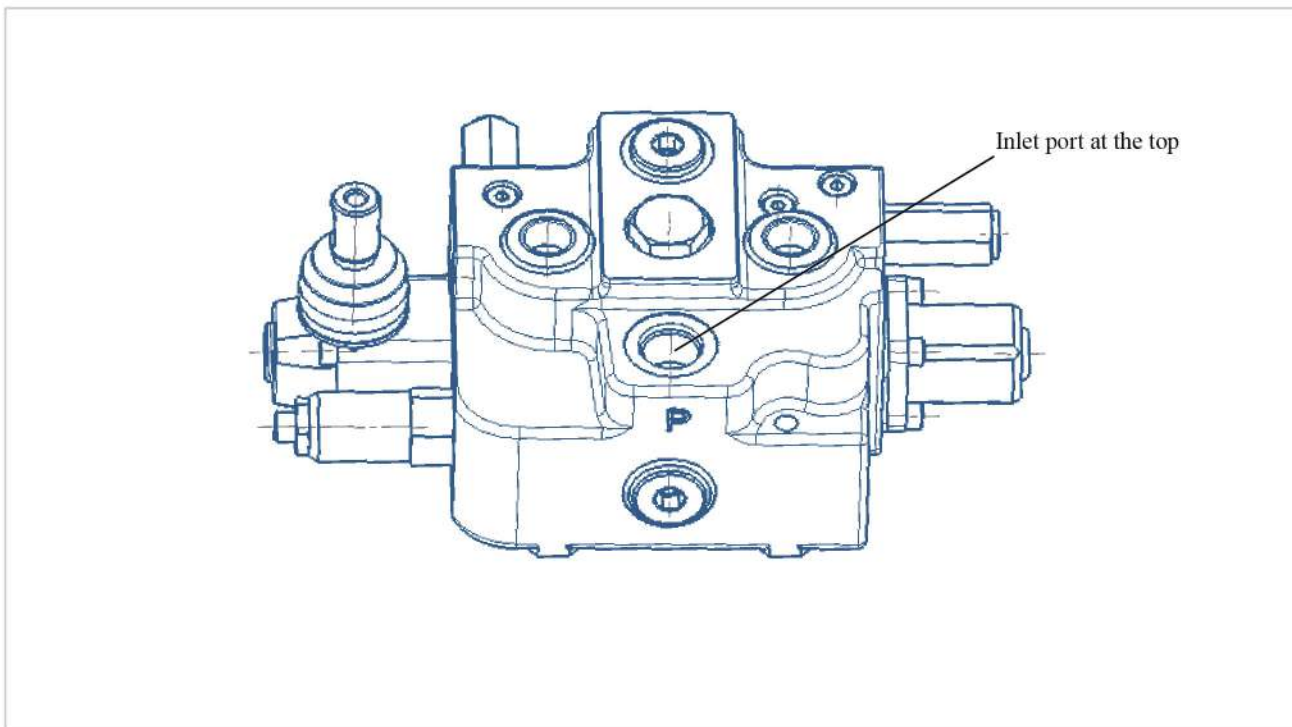


GDV80 Series Inlet Port Options

Inlet Option Code: P1(Inlet port at front)

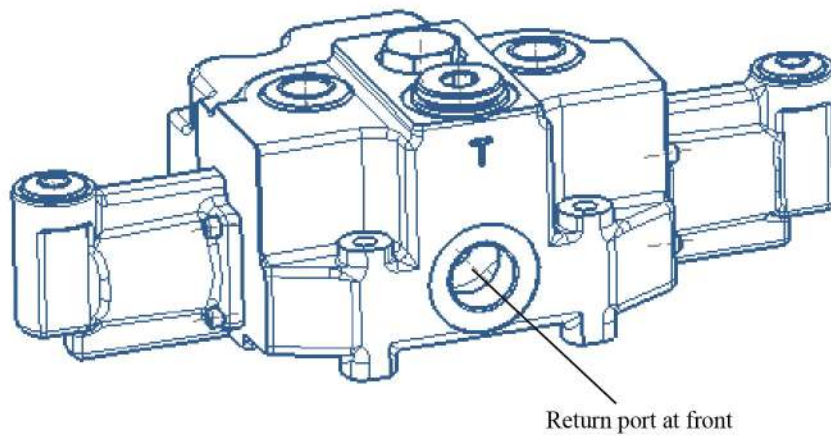


Inlet Port Option Code: P2(Inlet port at the top)

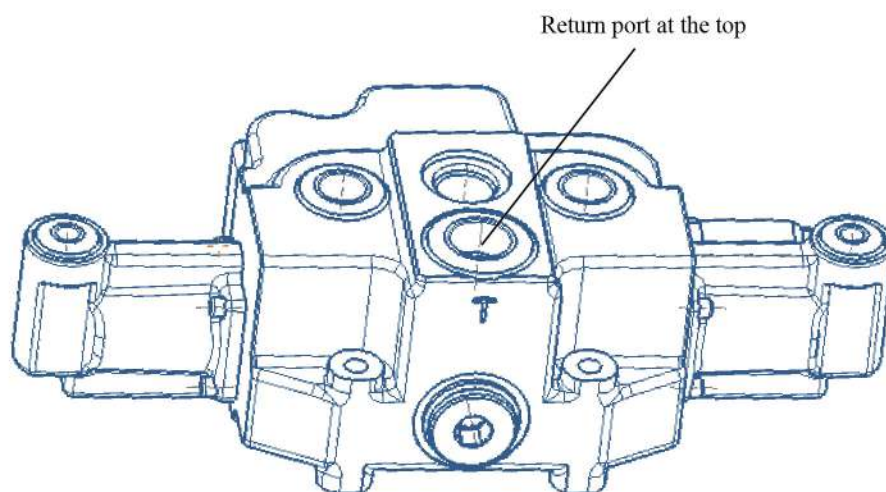


GDV80 Series Valve Return Port Options

Return Port Option Code: T1(Return port at front)

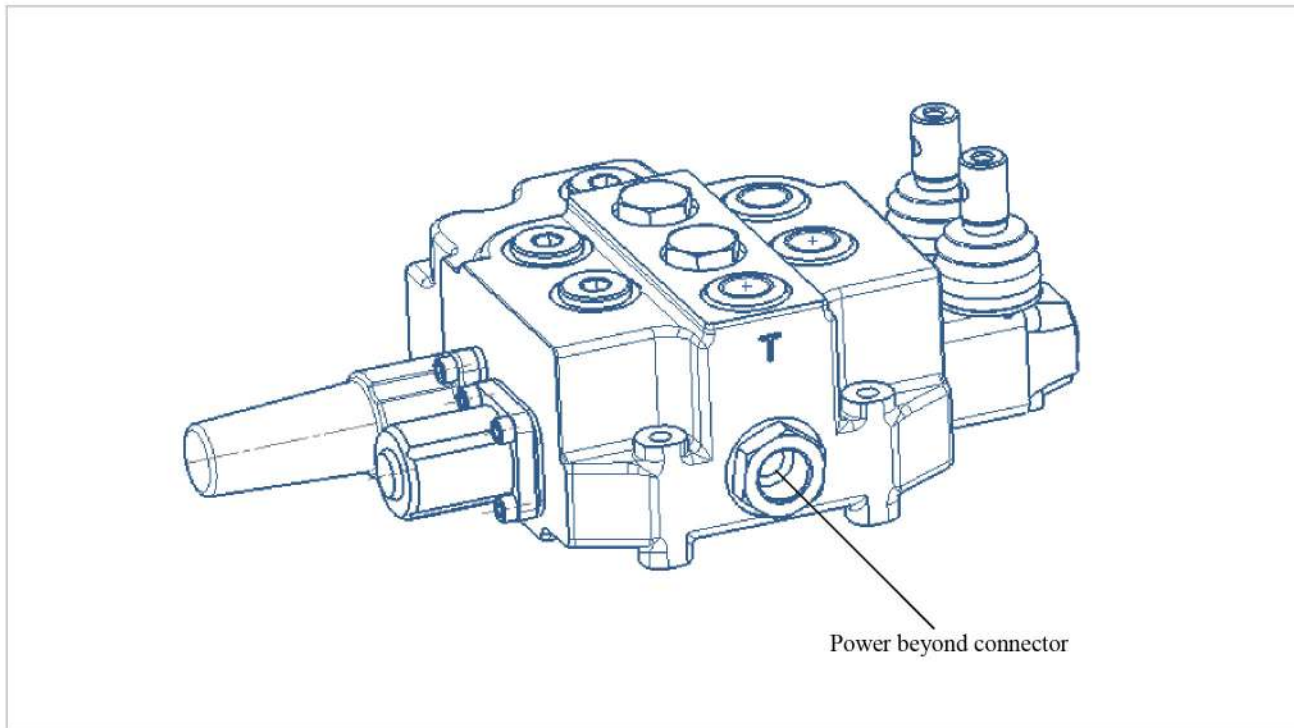


Return Port Option Ode: T2(C)



GDV80 Series Power Beyond Options

Power Beyond Port Option Code:D1(With power beyond)



Power Beyond Port Option Code:D0(No power beyond port)

GDV80 Series Typical Spool Functions

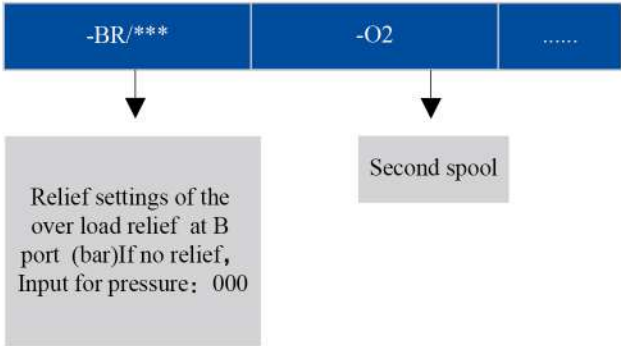
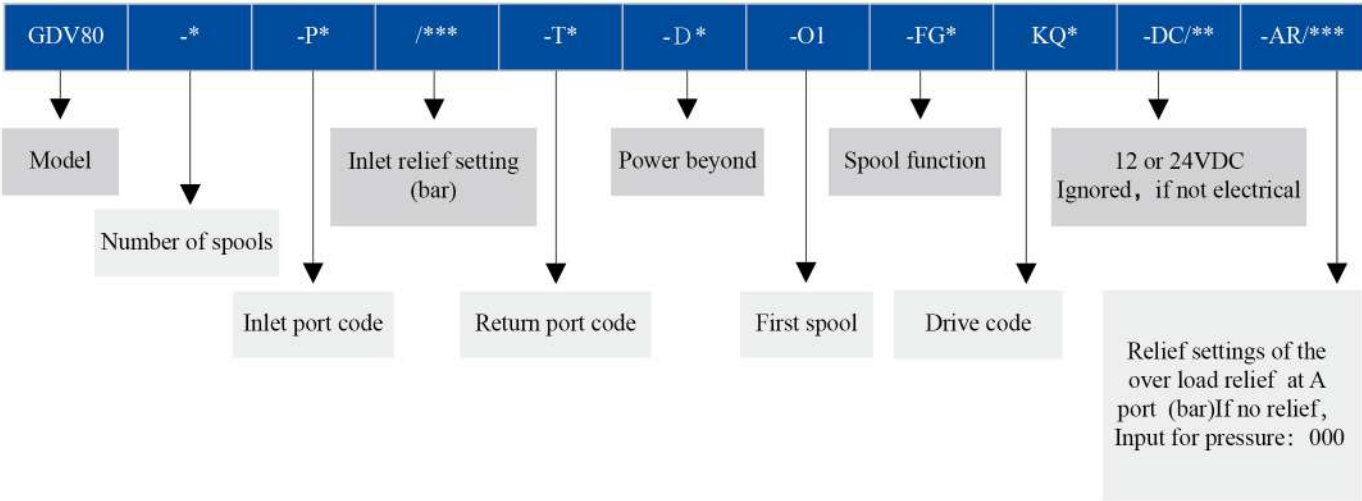
Spool Function	Hydraulic Schematics	Function	Notes
FG1		3 position 4 way At neutral: P,T,A,B are all blocked	Double acting cylinder applications
FG2		3 position 4 way At neutral: P blocked, T,A, B connected	Hydraulic motor applications
FG3		3 position 4 way At neutral: P,A,B and T all connected	Hydraulic motor applications
FG4		3 position 3 way At neutral: P,T,A,B all blocked	Single acting cylinder applications
FG5		4 position 4 way At neutral: P,T,A, and B are all blocked 4th position floating	Double acting cylinder applications
FG6		4 position 4 way At neutral: P blocked, T,A and B are connected 4th position floating	Double acting cylinder or hydraulic motor applications

GDV80 Series Drive Styles

Drive Style Code	Hydraulic Schematics	Function
KQ1		Standard manually controlled
KQ2		Hydraulic remote
KQ3		Manually controlled with mechanical detent
KQ4		Manually controlled with 4th position floating and detent
KQ5		Electrical actuated (on/off)
KQ6		Electrical actuated with floating function

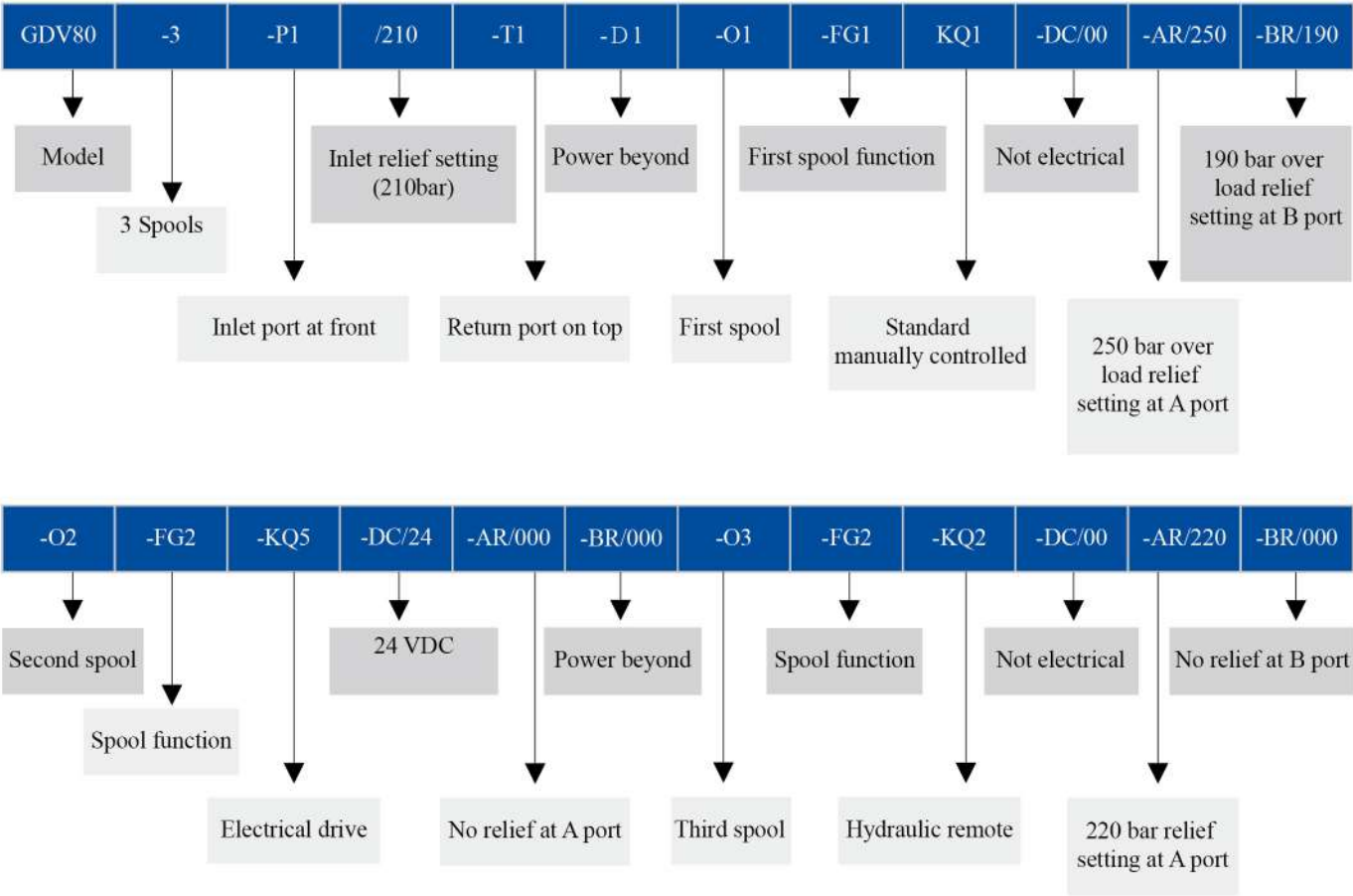


GDV80 Series Order Code





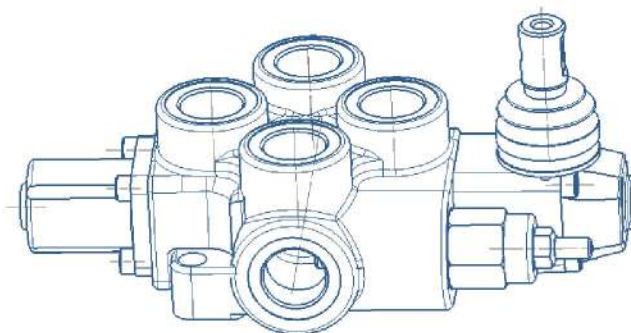
GDV80 Series Order Example



GDV120 Series Index

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GDV120 Series Mono-block Valves



GDV120 Series Mono-block Valve's Features

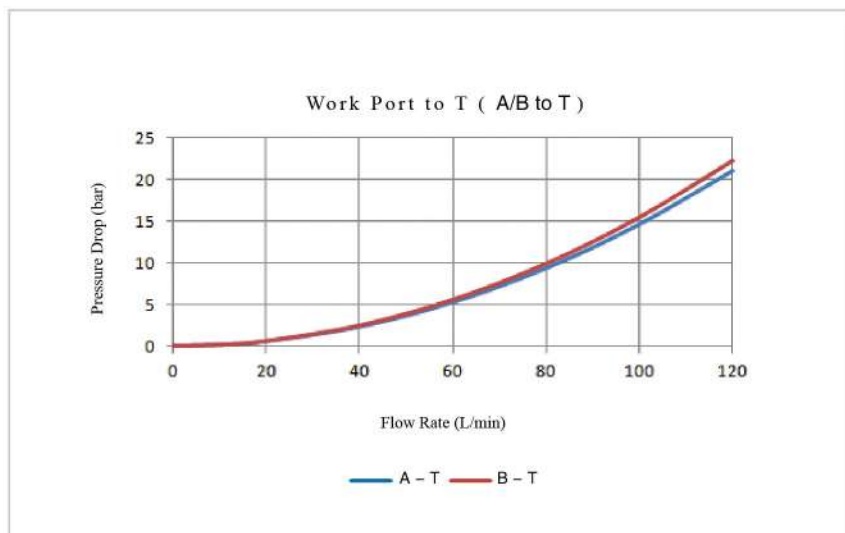
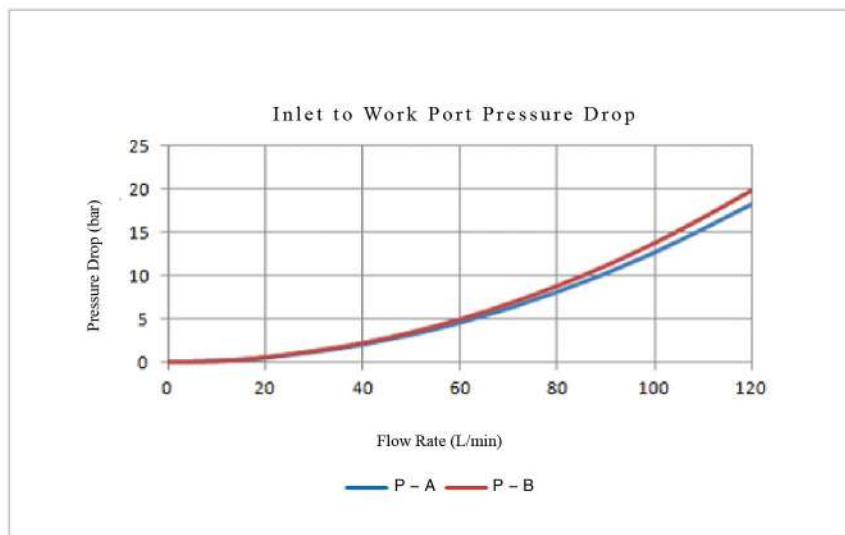
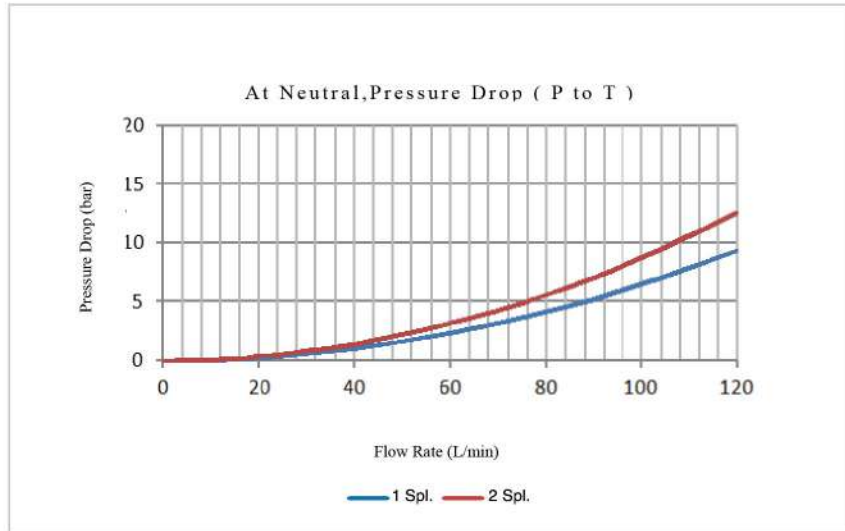
GDV120 Series mono-block valve has the following main features:

- Cast iron mono-block body.
- Spring cap, mechanical detent cap, as well as electrol 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 1-4 spools (now we can offer 1 spool).

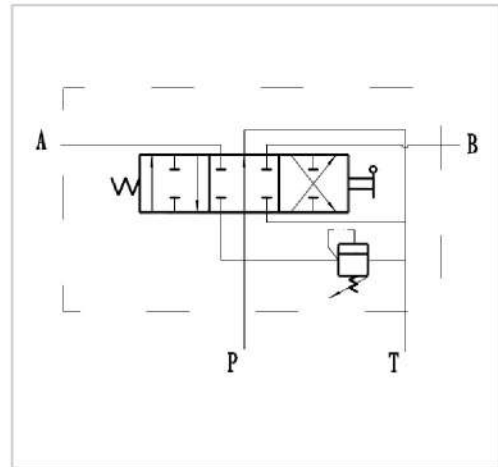
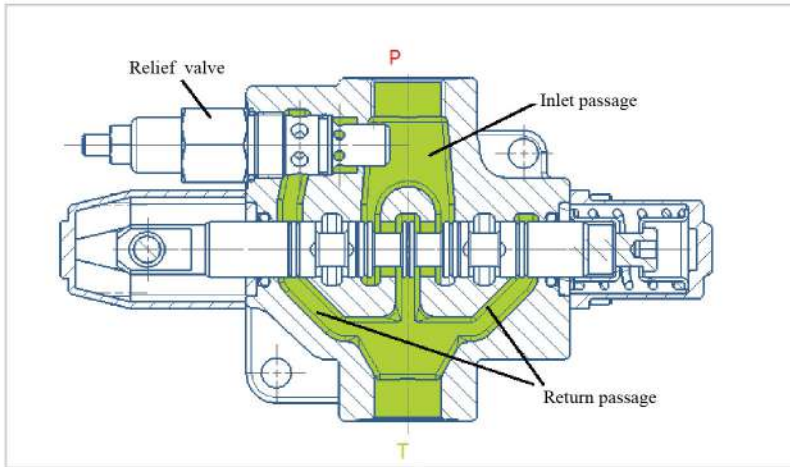
GDV120 Series Major Technical Data - GDV120系列主要技术参数

Rated flow rate:	120 L/min
Maximum flow rate:	130 L/min
Maximum pressure at P port:	310 bar
Maximum pressure at A/B port:	310 bar
Maximum pressure at T port:	25 bar
Internal leakage (at 70 bar) : A/B to T	30-35 CC/min
Temperature range of the hydraulic oil:	
With NBR (BUNA--N) seals	-20C° - 80C°
With FPM (VITON) seals	-20C° - 100C°
Spool stroke (1/2 position) :	+7/-7mm
With floating function (1 / 2 and F position) :	+7/-7 -9mm
Recommend hydraulic oil viscosity range:	15-75mm ² /s
Recommend temperature range:	-40C° - 60C°
Solenoid can be either 12 VDC or 24 VDC, corresponding current is 0 - 1.5 or 0 - 0.75 Amp.	

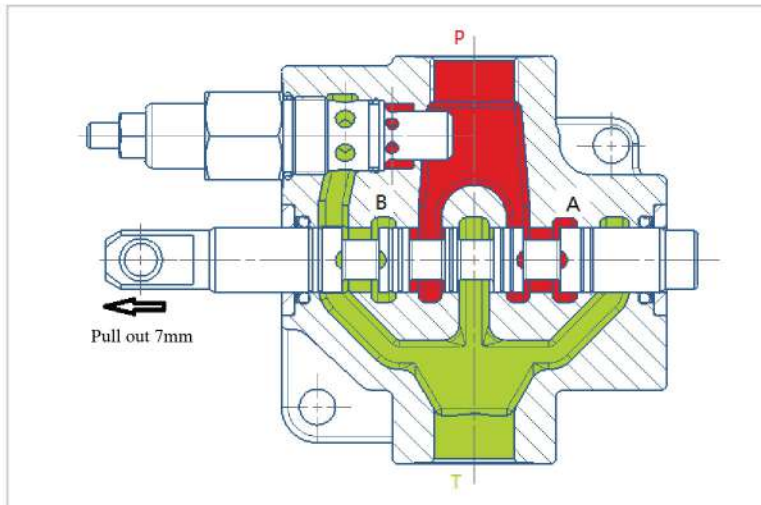
GDV120 Series Performance Data



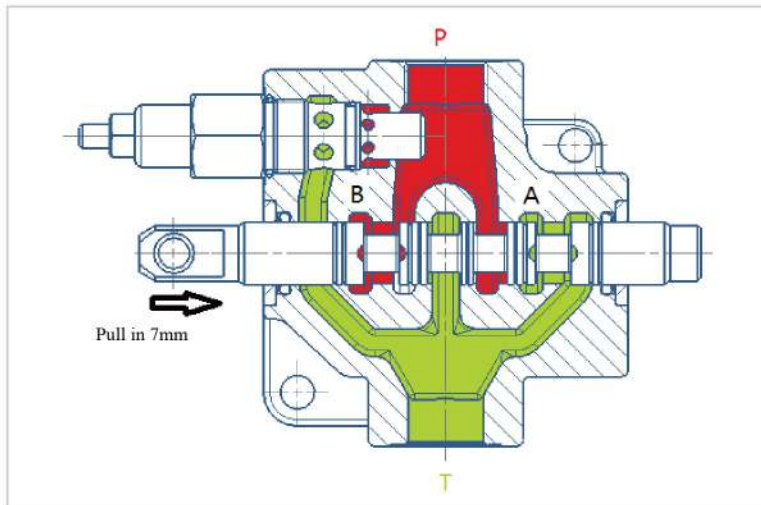
GDV120 Series Mono-block Valve Operating Principle



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.



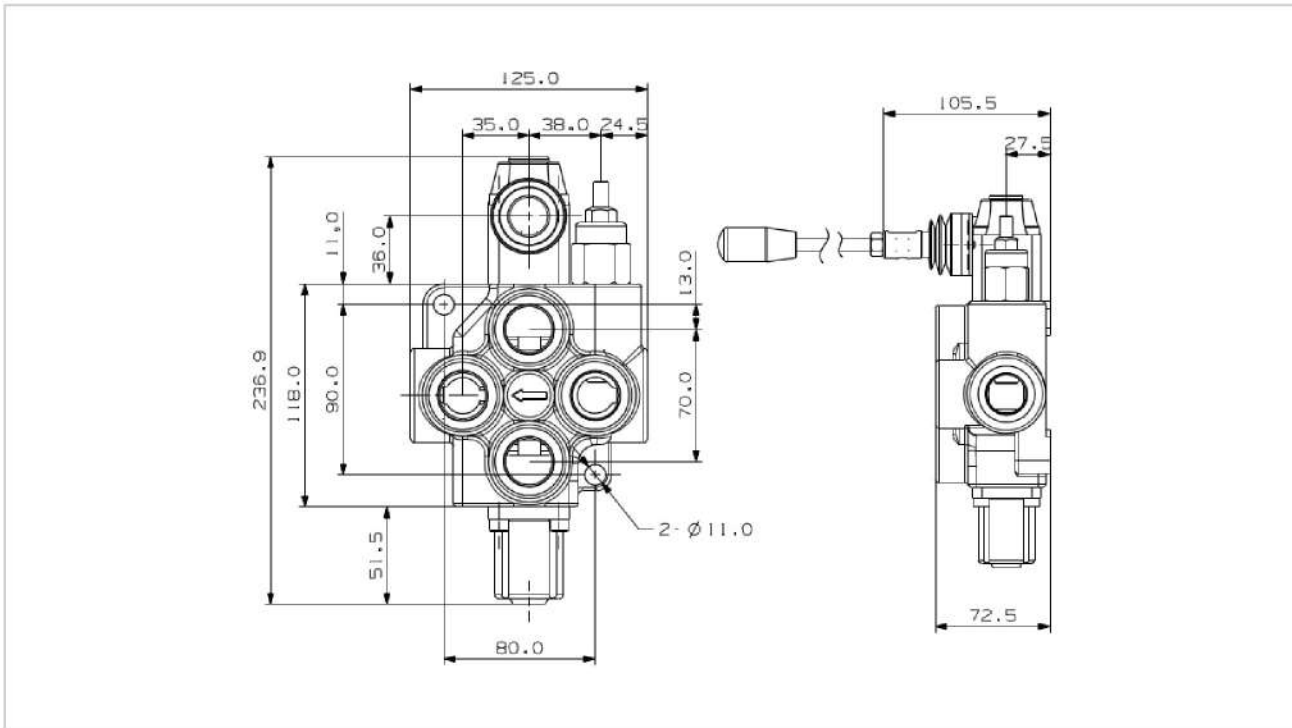
When spool is pulled out 7 mm, the neutral passage is blocked. Flow from pump passes through the spool opening on the right side to work port A. At the same time, the flow from port B passes to return passage, then to tank, through the spool opening on the left side of the spool.



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.

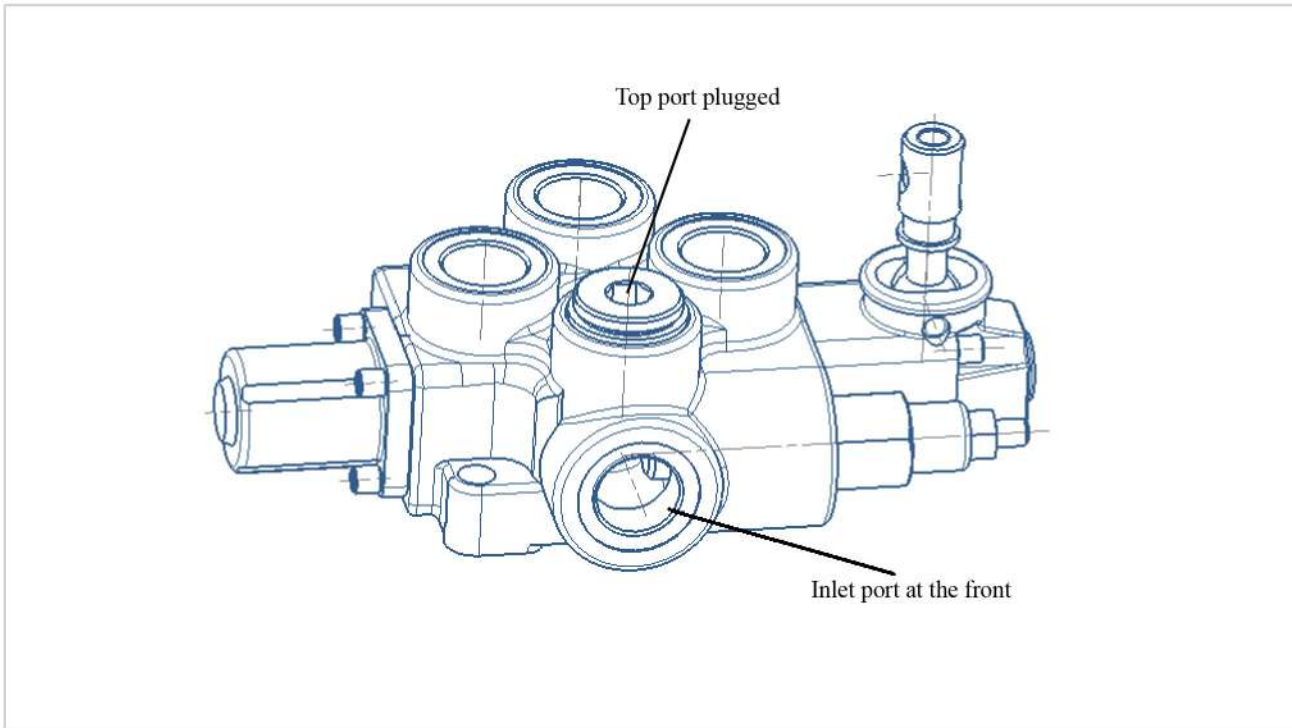
GDV120 Series Valve Dimension

GDV120-1:1 Spool Valve

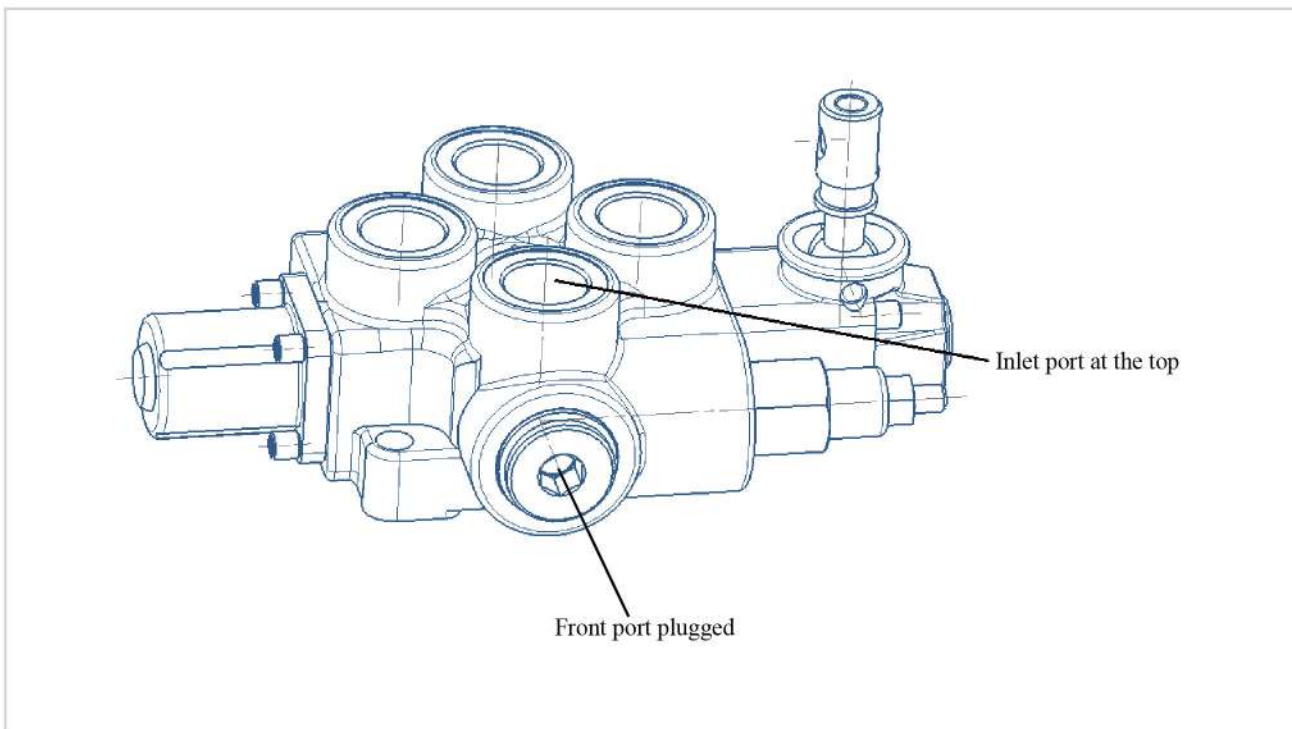


GDV120 Series Inlet Port Options

Inlet Option Code: P1(Inlet port at front)

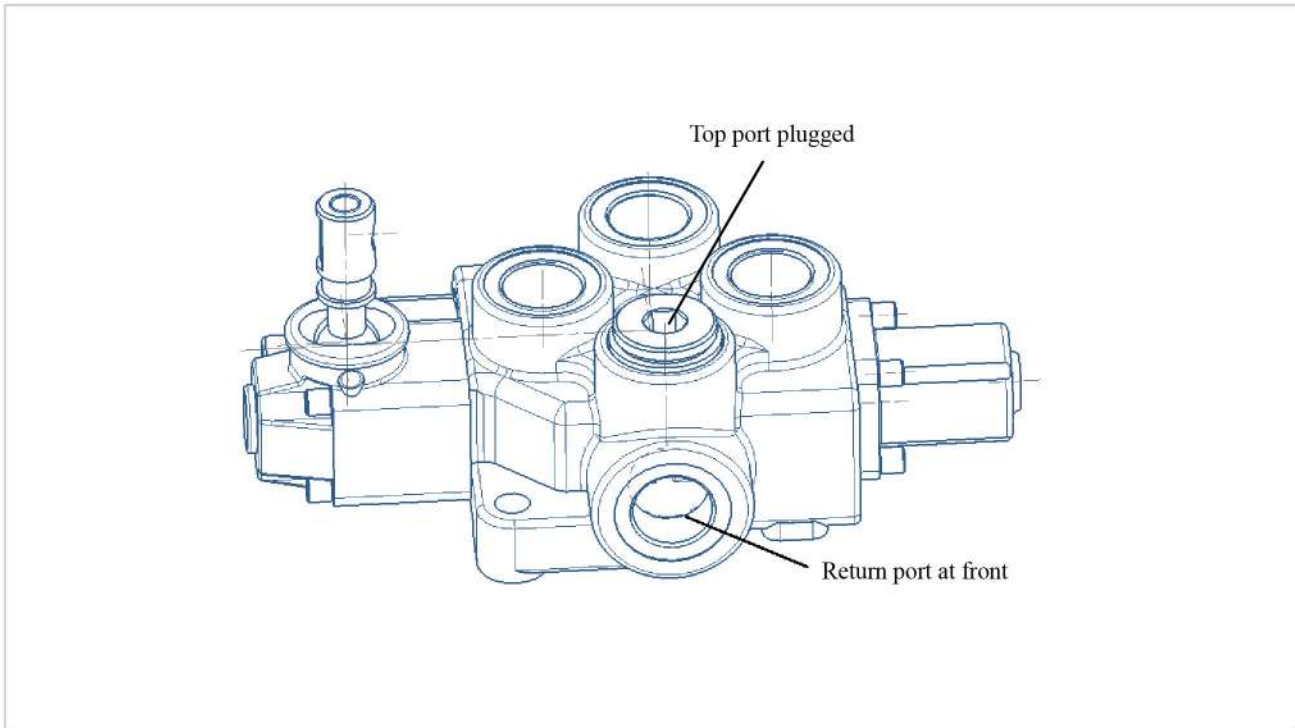


Inlet Port Option Code: P2(Inlet port at the top)

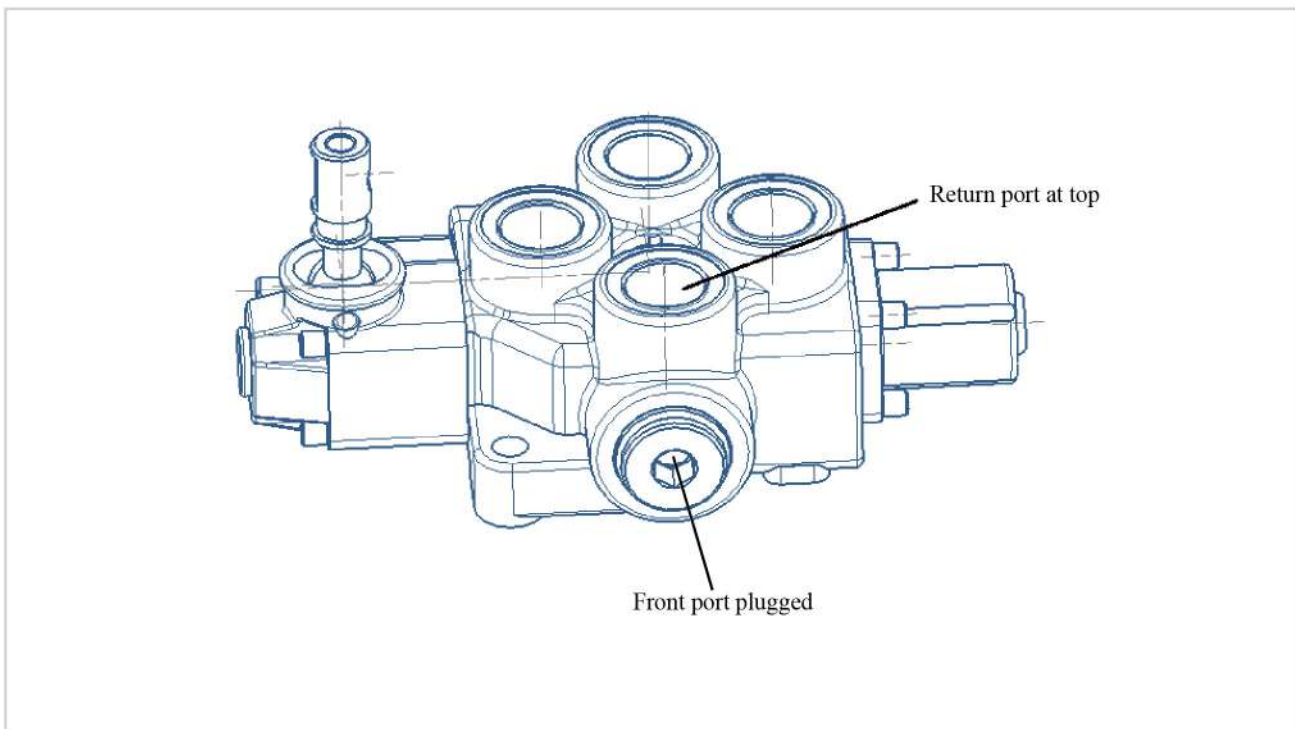


GDV120 Series Valve Return Port Options

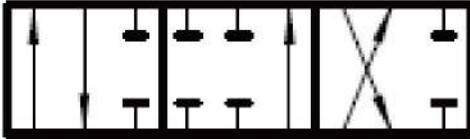
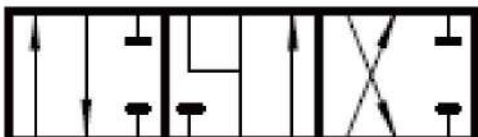
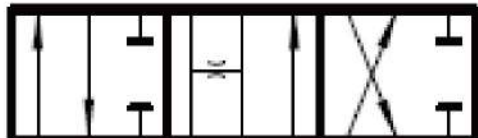
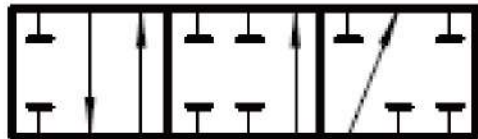


Return Port Option Code: T1(Return port at front)



Return Port Option Code: T2(Return port at the top)



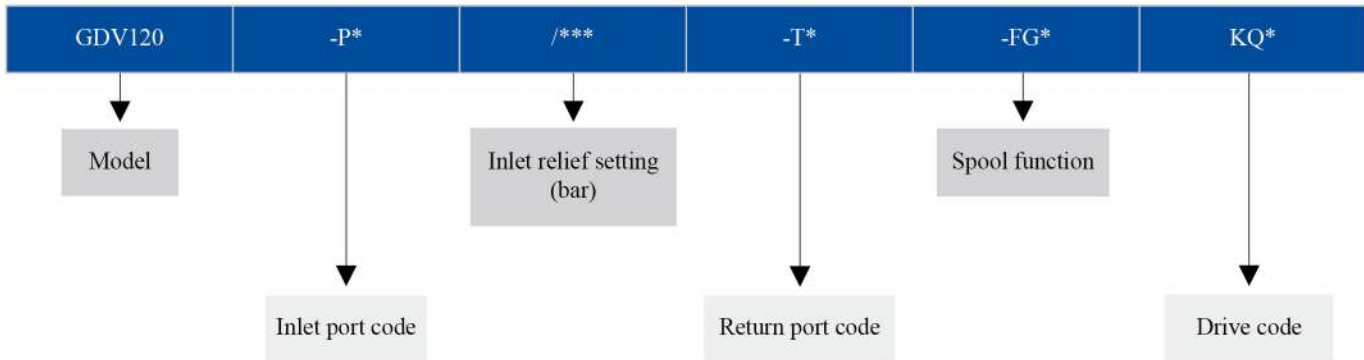
GDV120 Series Typical Spool Functions

Spool Function	Hydraulic Schematics	Function	Notes
FG1		3 position 4 way At neutral: P,T,A,B are all blocked	Double acting cylinder applications
FG2		3 position 4 way At neutral: P blocked, T,A, B connected	Hydraulic motor applications
FG3		3 position 4 way At neutral: P,A,B and T all connected	Hydraulic motor applications
FG4		3 position 3 way At neutral: P,T,A,B all blocked	Single acting cylinder applications
FG5 (not available)		4 position 4 way At neutral: P,T,A, and B are all blocked 4th position floating	Double acting cylinder applications
FG6 (not available)		4 position 4 way At neutral: P blocked, T,A and B are connected 4th position floating	Double acting cylinder or hydraulic motor applications

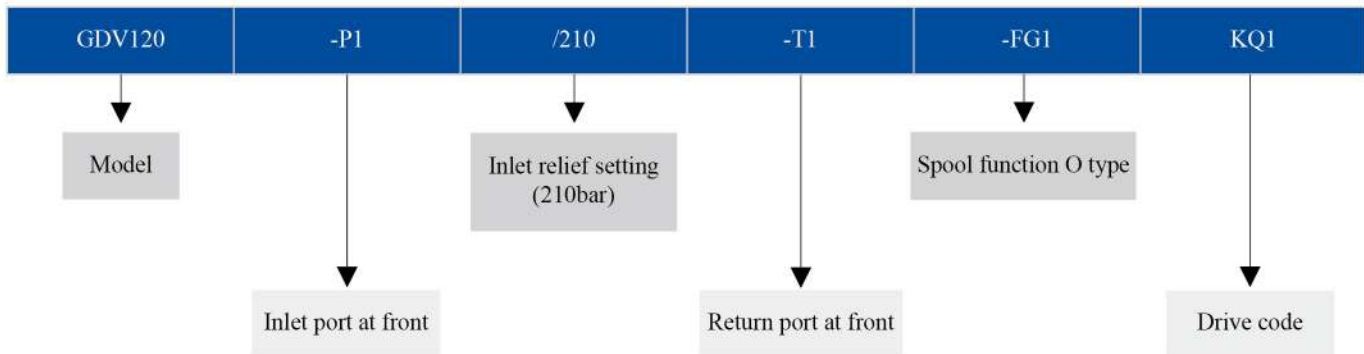
GDV120 Series Drive Styles

Drive Style Code	Hydraulic Schematics	Function
KQ1		Standard manually controlled
KQ2 (not available)		Hydraulic remote
KQ3		Manually controlled with mechanical detent
KQ4		Manually controlled with 4th position floating and detent
KQ5 (not available)		Electrical actuated (on/off)
KQ6 (not available)		Electrical actuated with floating function

GDV120 Series Order Code



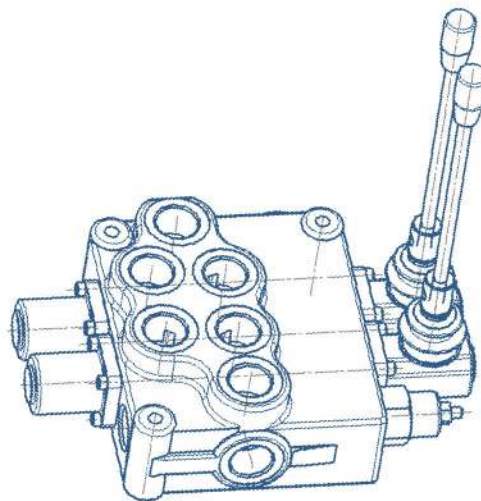
Order Example



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GDV160 Series Mono-block Valves



GDV160 Series Mono-block Valve's Features

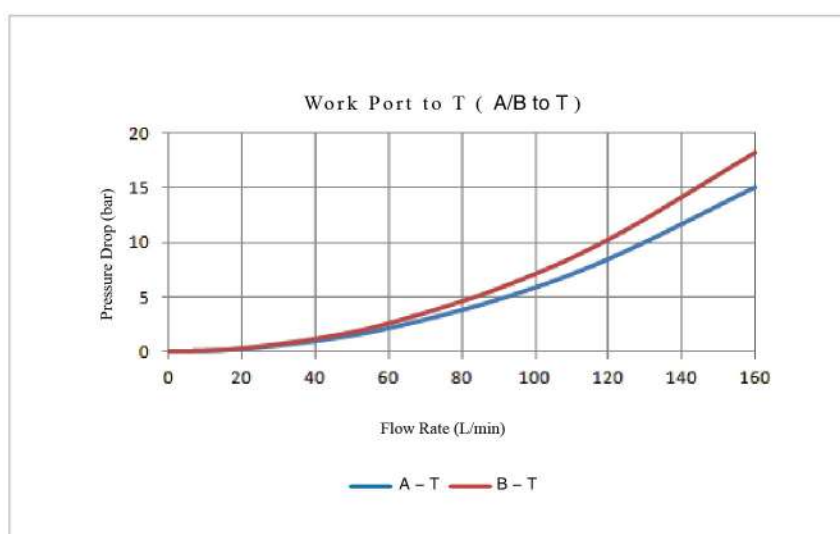
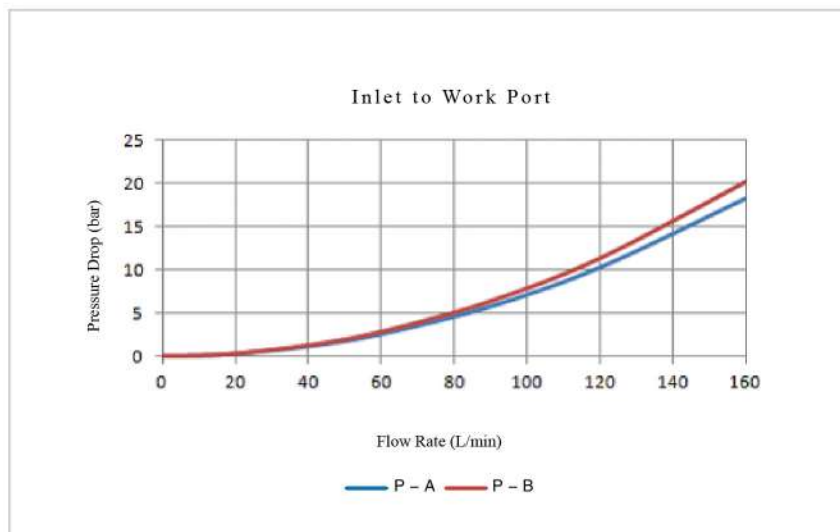
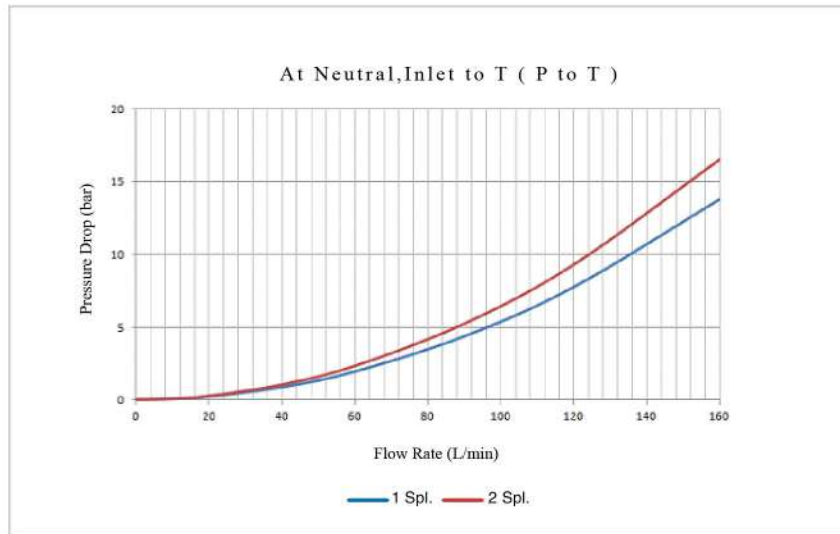
GDV160 Series mono-block valve has the following main features:

- Cast iron mono-block body.
- Spring cap and mechanical detent cap are made in 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 1-4 spools (now we can offer 2 spools).

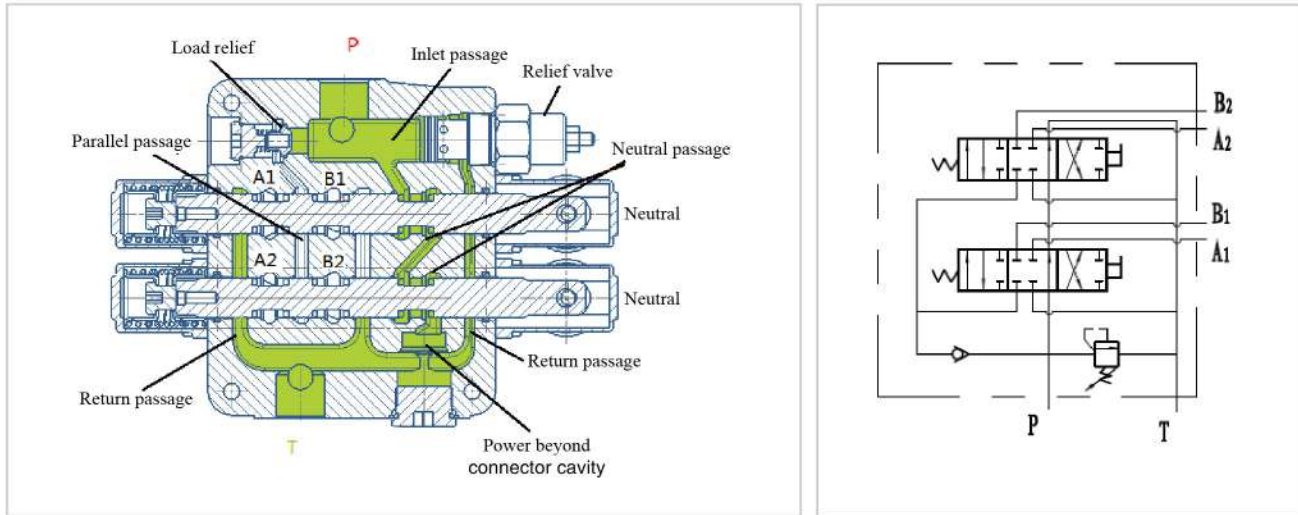
GDV160 Series Major Technical Data - GDV160系列主要技术参数

Rated flow rate:	160 L/min
Maximum flow rate:	170 L/min
Maximum pressure at P port:	310 bar
Maximum pressure at A/B port:	310 bar
Maximum pressure at T port:	25 bar
Internal leakage (at 70 bar) : A/B to T	30-35 CC/min
Temperature range of the hydraulic oil :	
With NBR (BUNA--N) seals	-20C° - 80C°
With FPM (VITON) seals	-20C° - 100C°
Spool stroke (1/2 position) :	+7/-7mm
With floating function (1 / 2 and F position) :	+7/-7 -9mm
Recommend hydraulic oil viscosity range:	15-75 mm ² /s
Recommend temperature range :	-40C° - 60C°

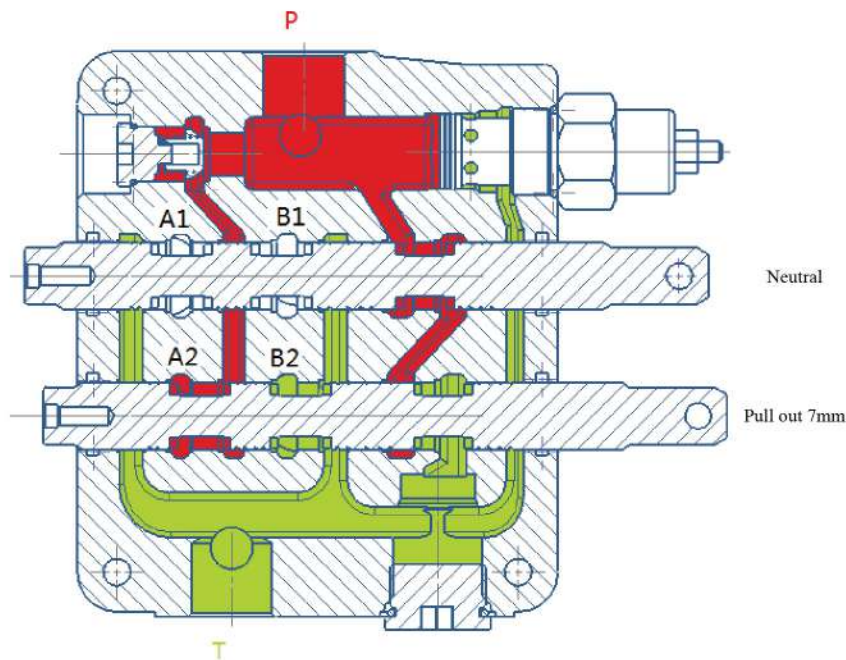
GDV160 Series Performance Data



GDV160 Series Mono-block Valve Operating Principle



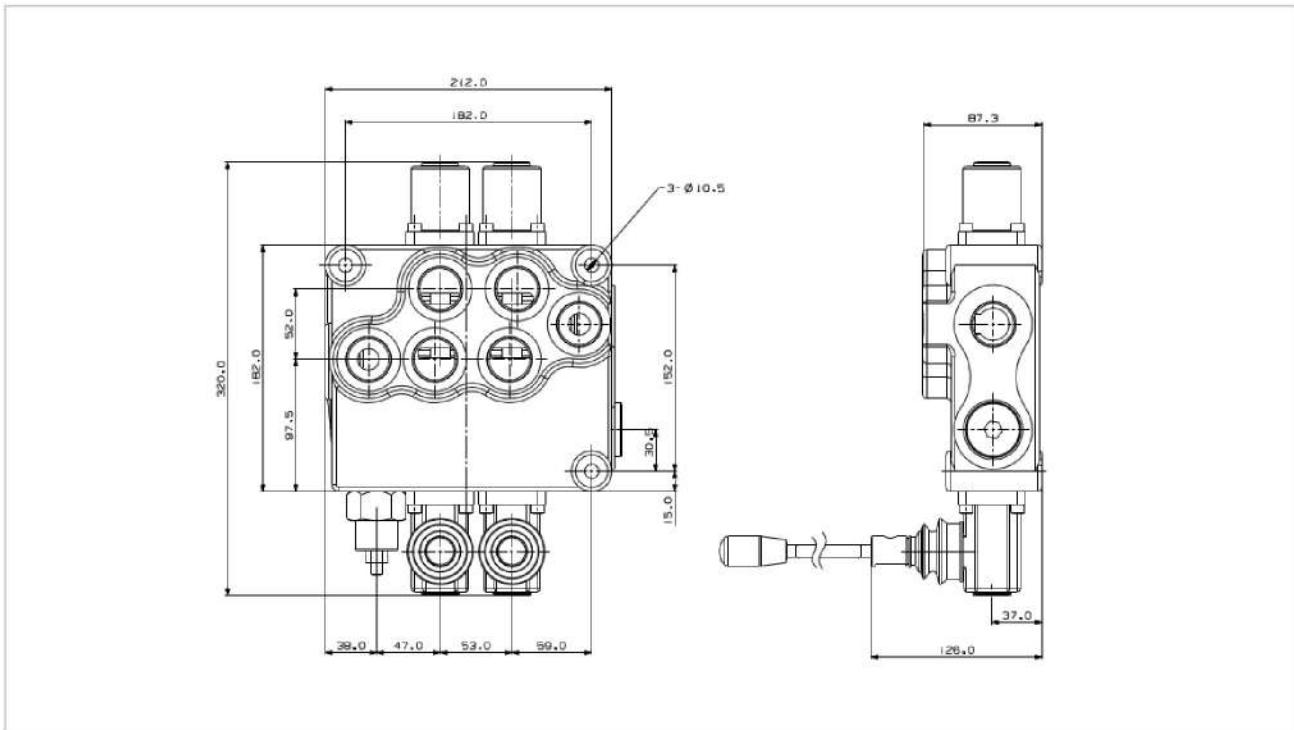
GDV160 series mono-block valve is an open centered 3 position 4 way valve. When spool is in its neutral position, the flow from pump passes through the neutral passage to tank, with very low pressure drop. When one of the spool is moved to “ 1 ” or “ 2 ” position, the neutral passage is blocked. The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



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.

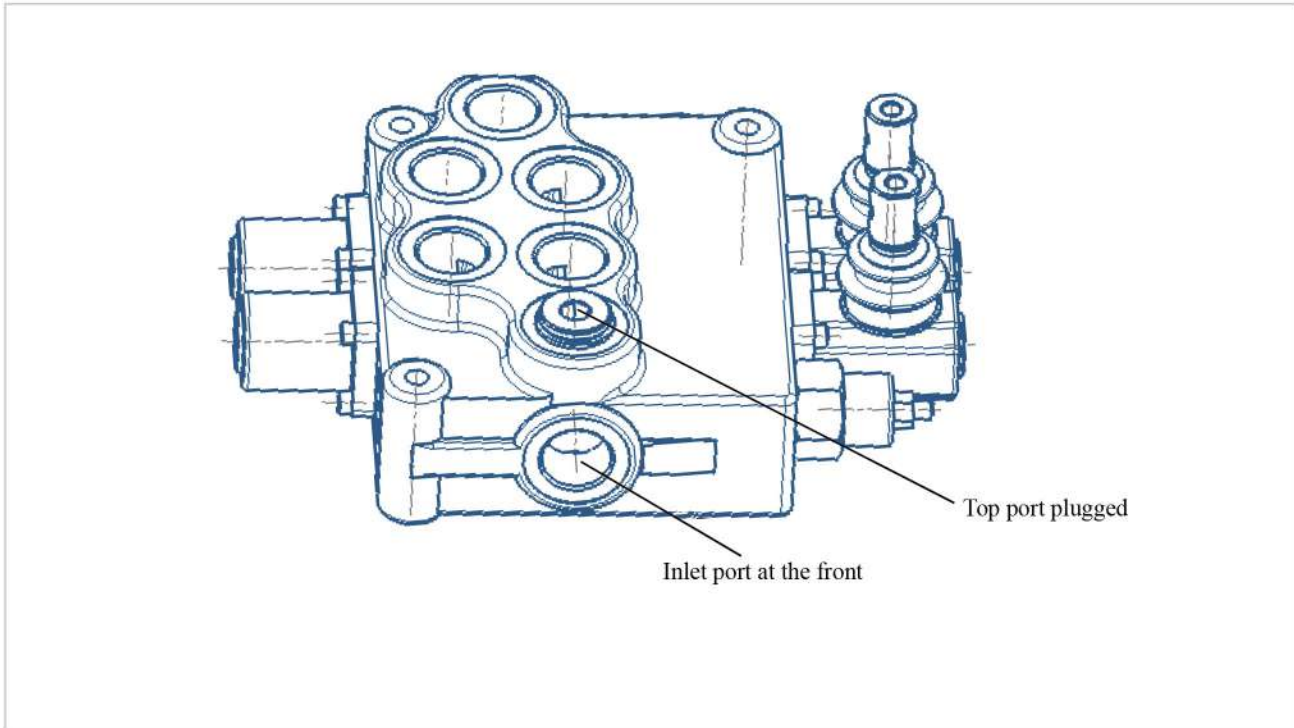
GDV160 Series Valve Dimension

GDV160-2:2 Spool Valve

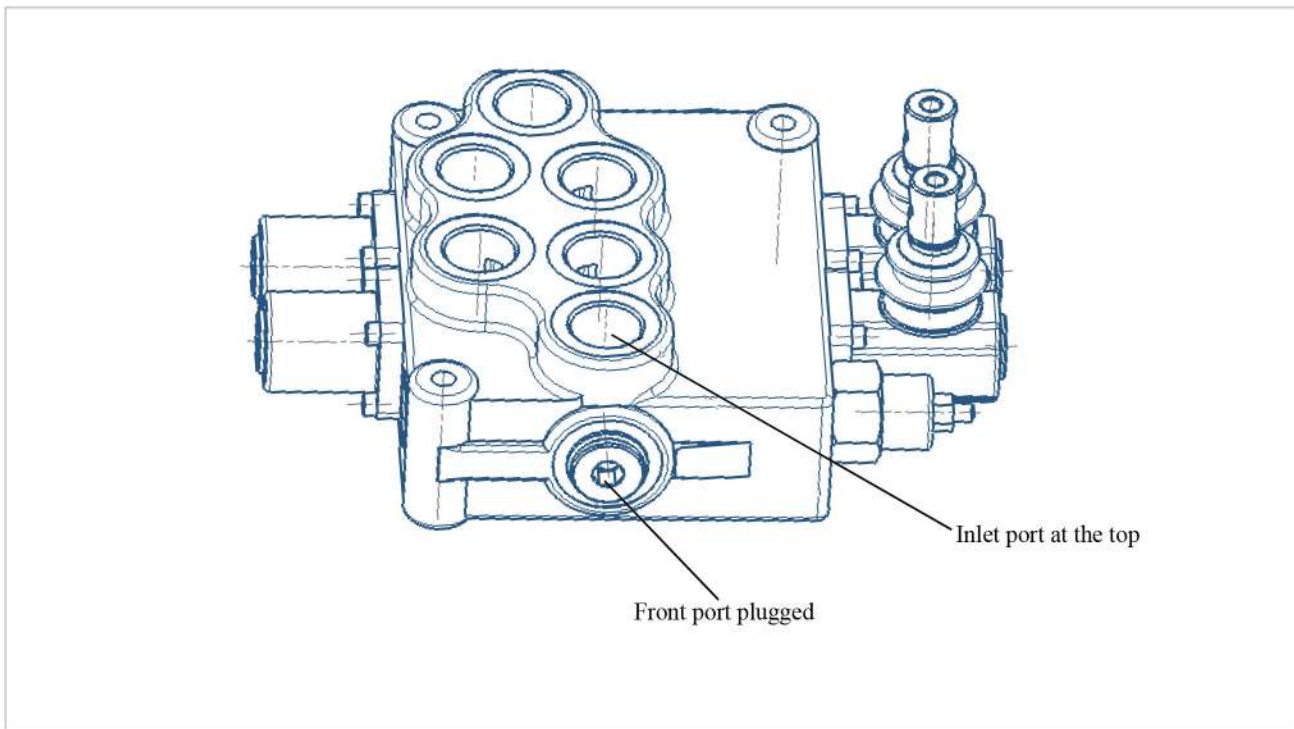


GDV160 Series Inlet Port Options

Inlet Option Code: P1(Inlet port at front)

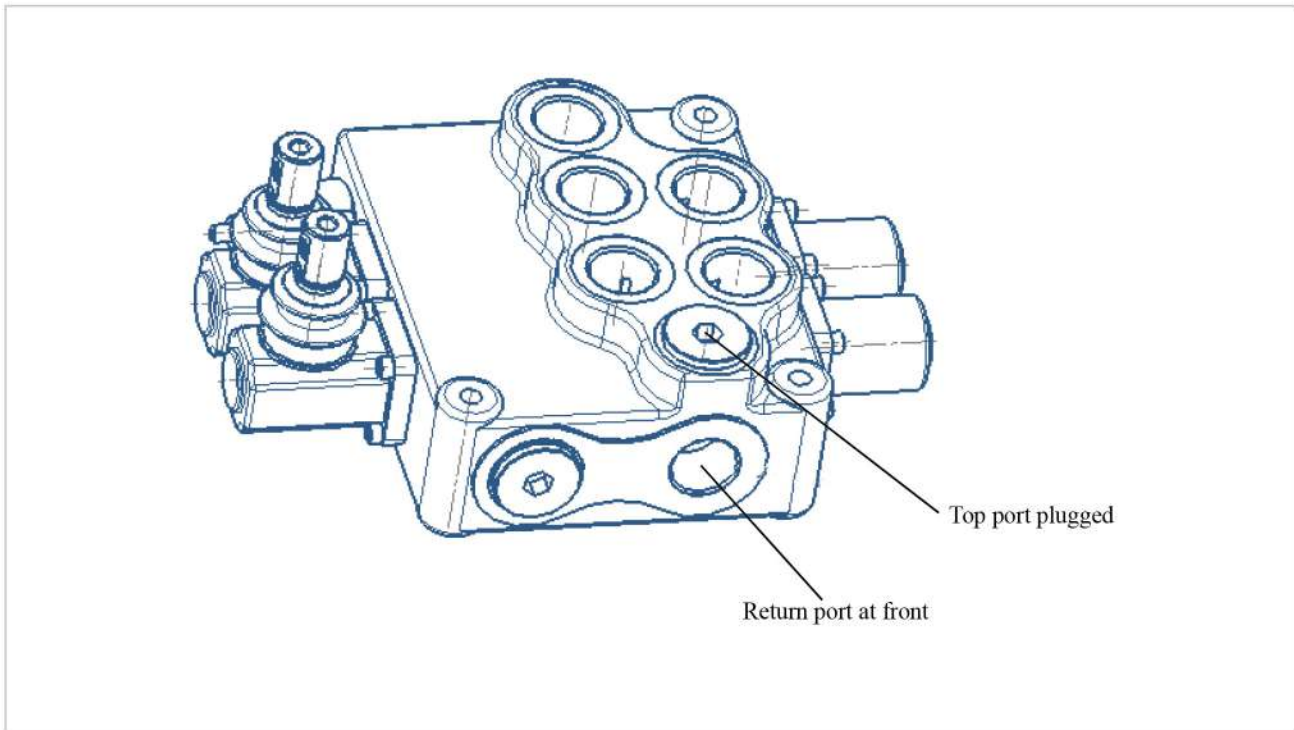


Inlet Port Option Code: P2(Inlet port at the top)

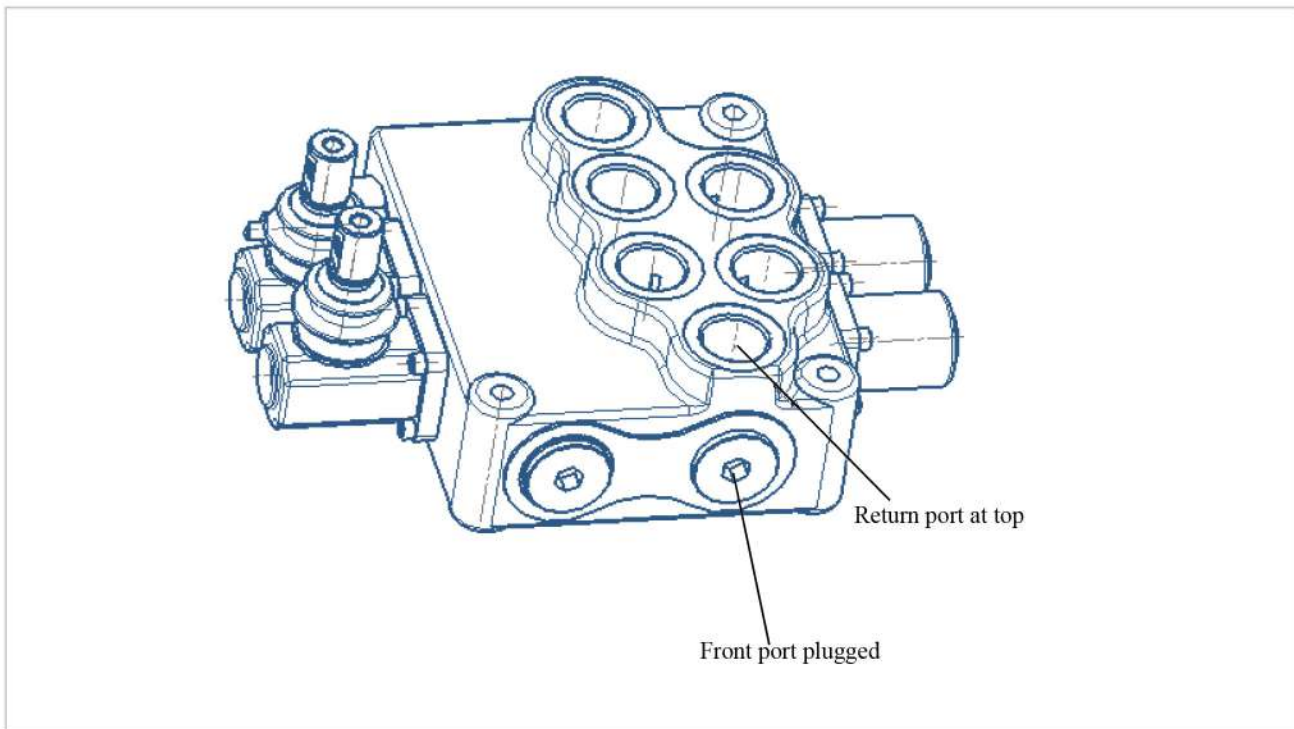


GDV160 Series Valve Return Port Options

Return Port Option Code: T1(Return port at front)

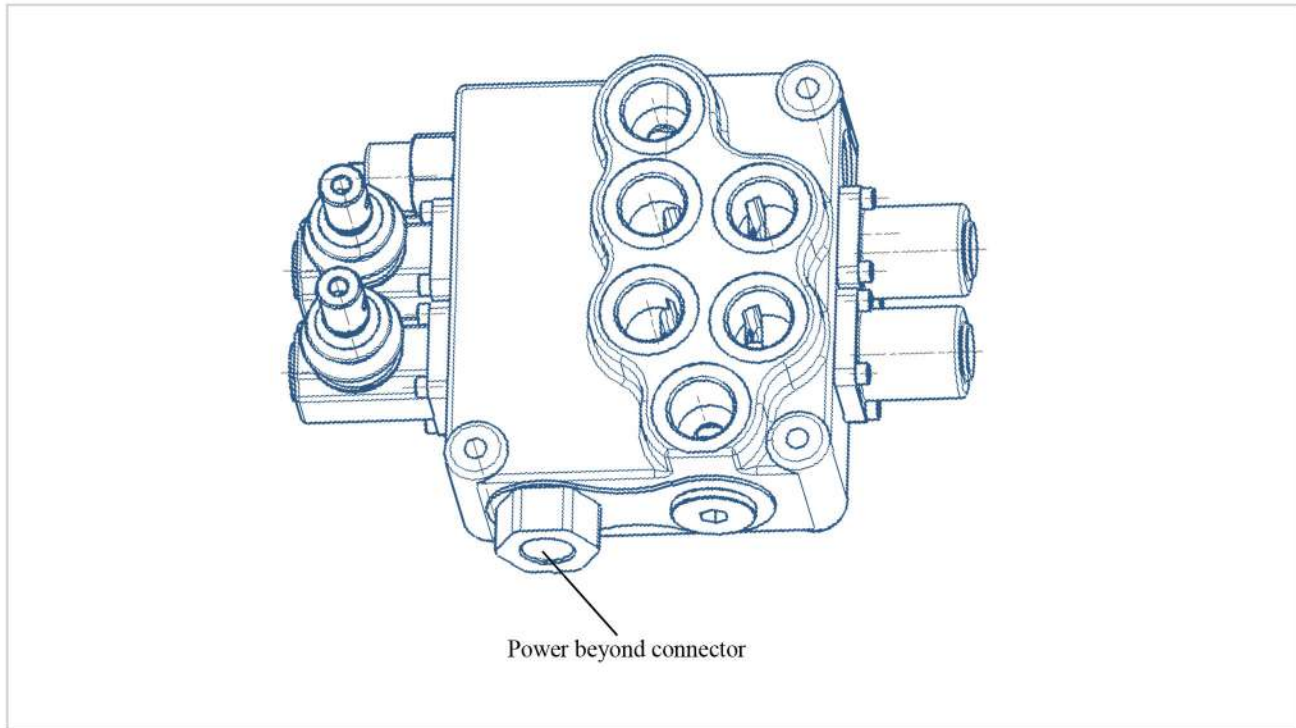


Return Port Option Code: T2(Return port at the top)



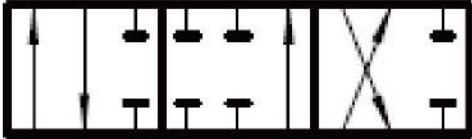

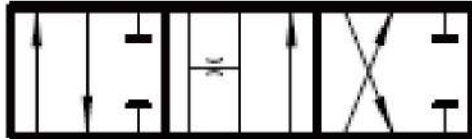
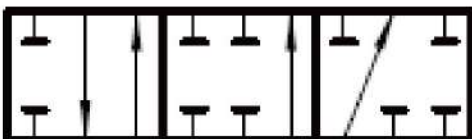


GDV160 Series Power Beyond Options

Power Beyond Option Code:D1(Pump flow output through a power beyond connector)



Return Port Option Code:D0(Without Power Beyond)

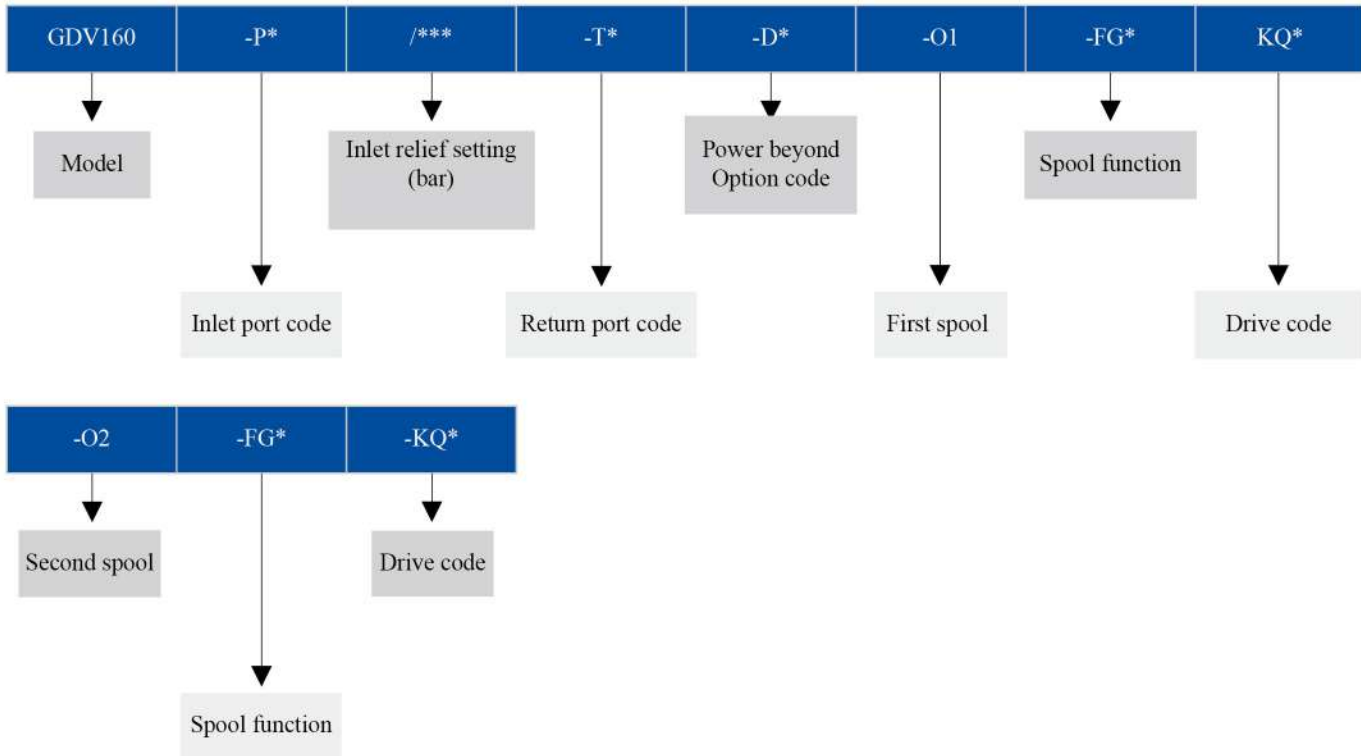
GDV160 Series Typical Spool Functions

Spool Function	Hydraulic Schematics	Function	Notes
FG1		3 position 4 way At neutral: P,T,A,B are all blocked	Double acting cylinder applications
FG2		3 position 4 way At neutral: P blocked,T,A, Bconnected	Hydraulic motor applications
FG3		3 position 4 way At neutral: P,A,B and T all connected	Hydraulic motor applications
FG4		3 position 3 way At neutral: P,T,A,B all blocked	Single acting cylinder applications
FG5 (not available)		4 position 4 way At neutral: P,T,A, and B are all blocked 4th position floating	Double acting cylinder applications
FG6 (not available)		4 position 4 way At neutral: P blocked,T,A and B are connected 4th position floating	Double acting cylinder or hydraulic motor applications

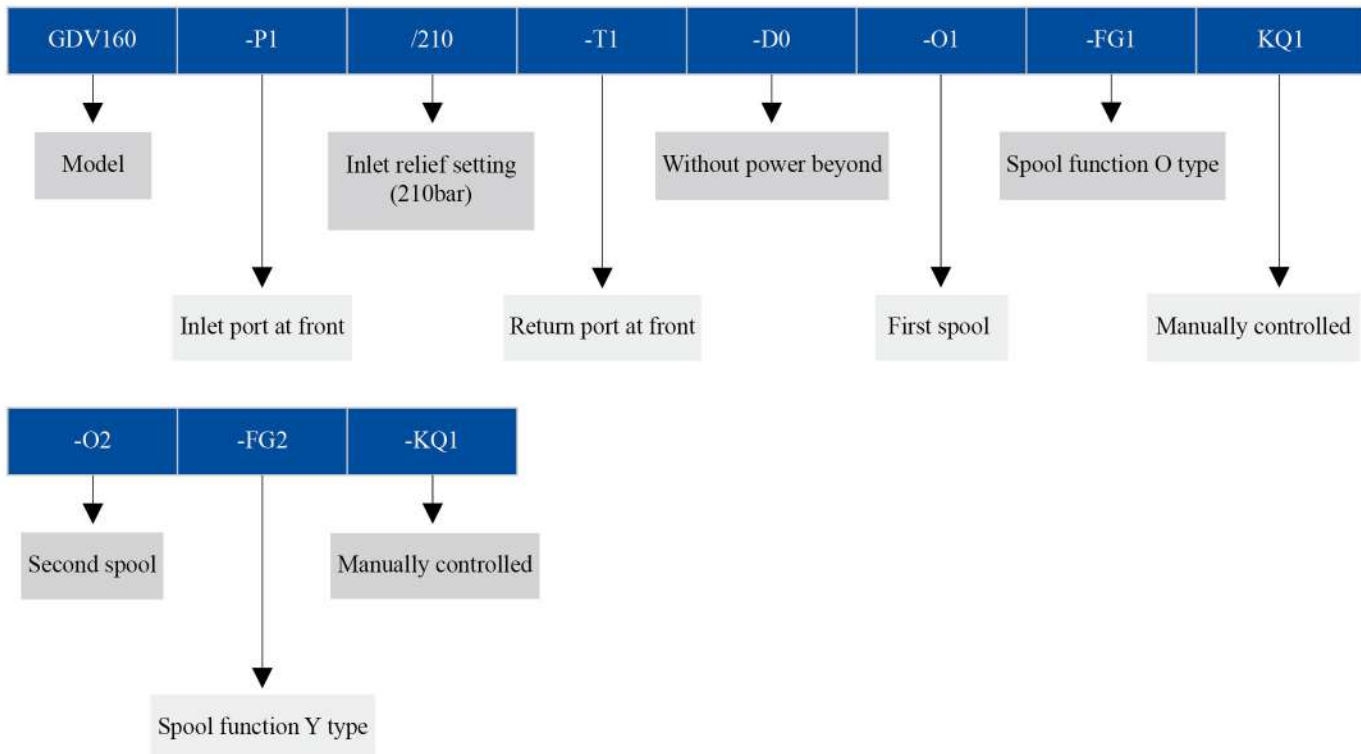
GDV160 Series Drive Styles

Drive Style Code	Hydraulic Schematics	Function
KQ1		Standard manually controlled
KQ2		Hydraulic remote
KQ3		Manually controlled with mechanical detent
KQ4		Manually controlled with 4th position floating and detent
KQ5 (not available)		Electrical actuated (on/off)
KQ6 (not available)		Electrical actuated with floating function

GDV160 Series Order Code



Order Example



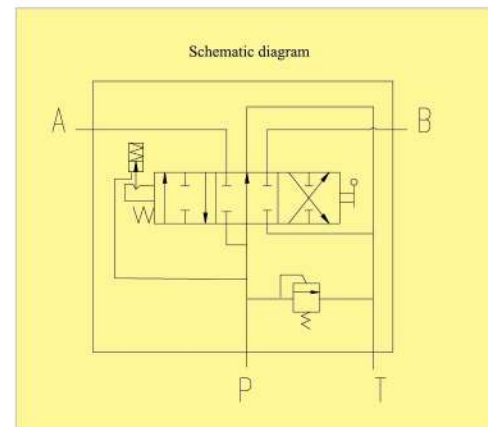
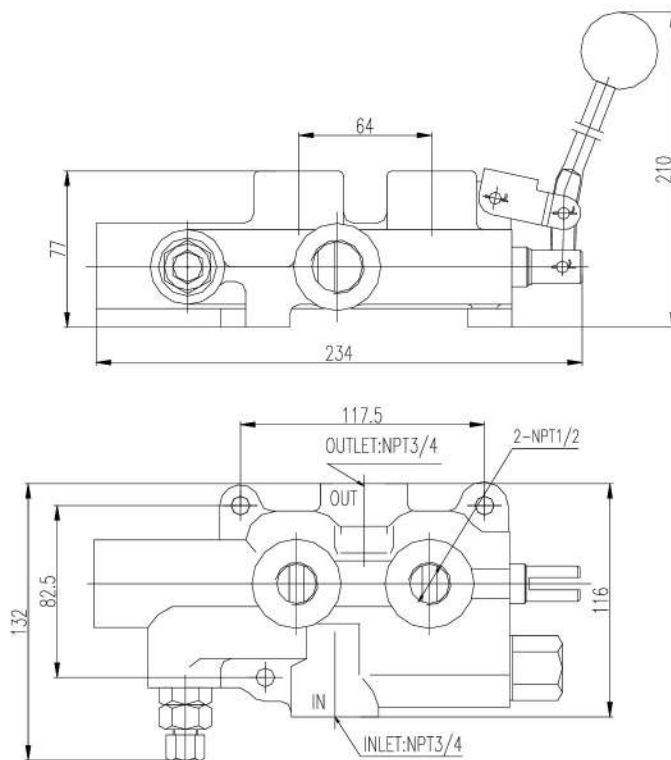
LS-TW-20F LOG SPLITTER VALVES



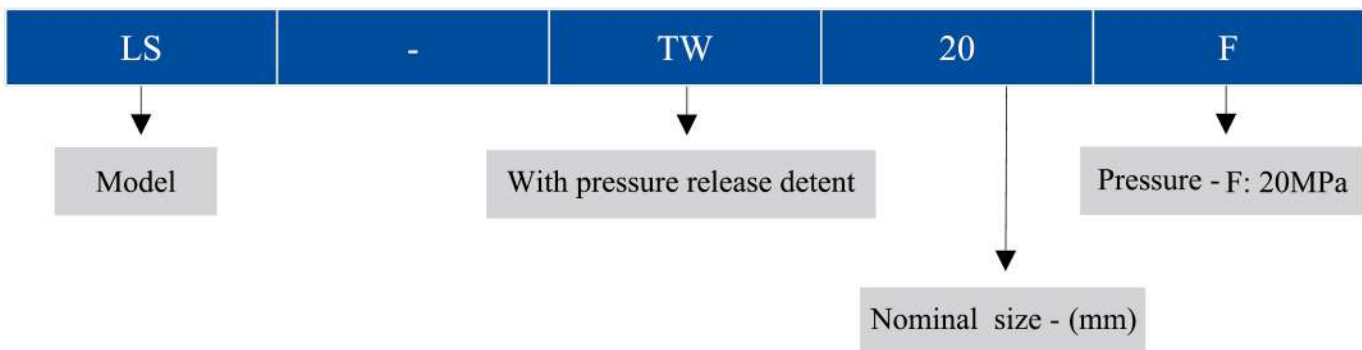
Parameter

Flow	95 (L/min)
Relief Pressure	200 (bar)
Detent Release Pressure	70 to 140 (bar)
Pressure Drop (P to A or B)	3bar (at 75L/min)
Pressure Drop (P to T)	0. 8bar (at 75L/min)

Installation Dimensions and Function Symbol



Ordering Code

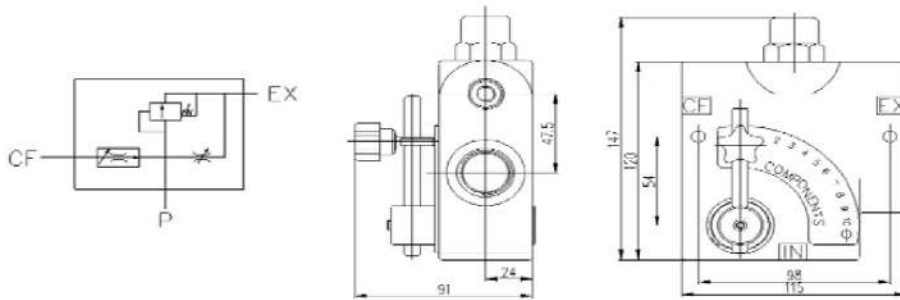




Pressure Drop

Model	Oil Port	Flow (gpm)	Standard Pressure (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)	

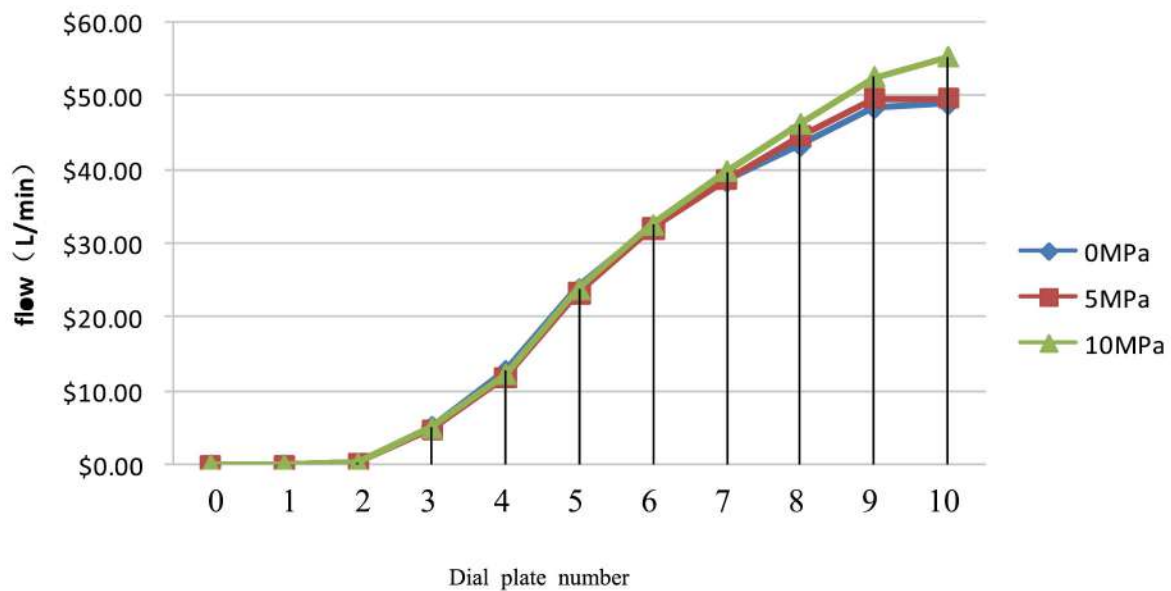
Installation Dimensions and Function Symbol



Features

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.

LKF60 Curve of Flow



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