Introduction of GKV50

GKV50 series sectional valves are open circuit 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. The spool in work section is designed to satisfy with the customer requirements, which provides excellent flow characteristics and very low flow force. With different inlet modules, it gives user the freedom for choosing different relief valve and different port locations. There are numbers of different work section modules to choose to satisfy the customer needs. Different end sections also provide the customer needs for return ports or power beyond functions.

Functions

- Inlet section with pilot relief valve
- Inlet section with direct acting relief valve
- A/B port with overload valve on main section
- A port with overload valve on work section
- B port with overload valve on work section
- A port with check valve
- B port with check valve
- A/B port with a mechanical P. O. check
- A port with a mechanical P. O. check
- B port with a mechanical P. O. check
- End section with oil return port
- End section with power beyond

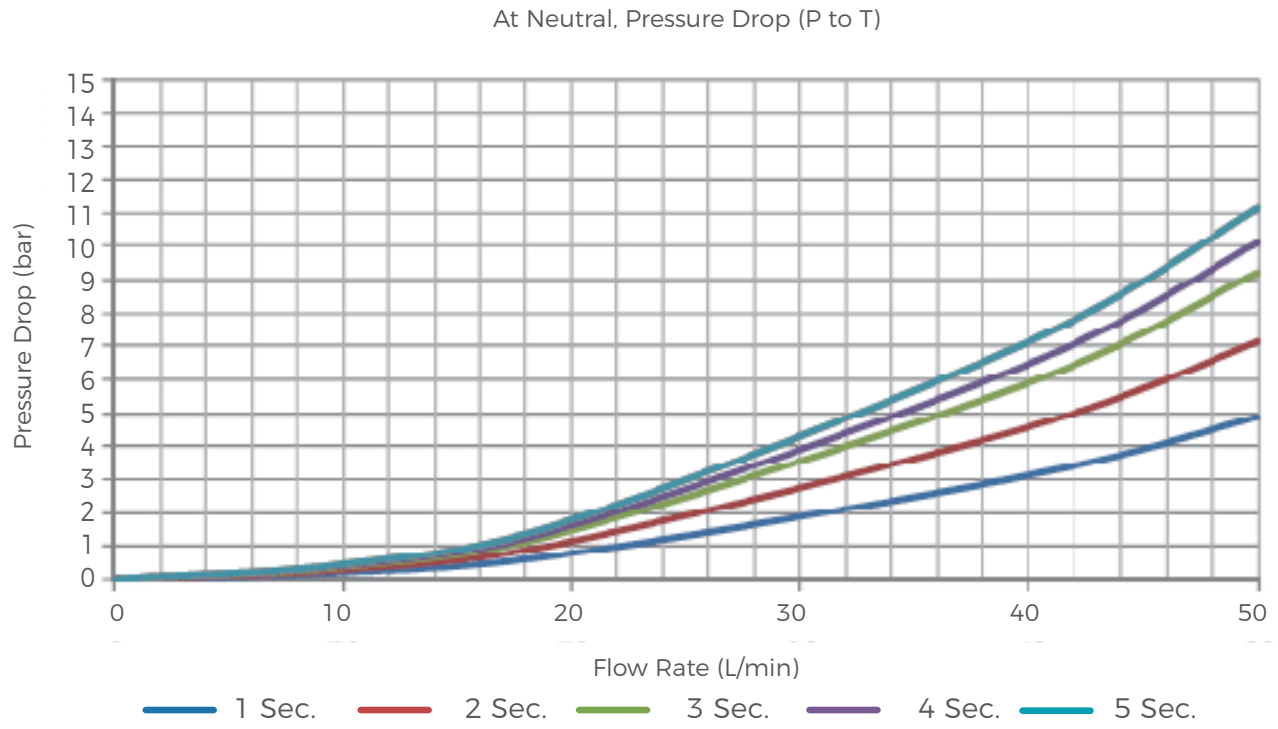
Features

- Cast iron body (inlet section, main section and end section).
- Spring cap, mechanical detent cap, as well as electrical or electro-hydraulic pilot controlled module body are made by cast aluminum or die cast aluminum.
- Parallel circuit. Each section has its own load check valve, each section has load relief option and relief style options.
- Can be changed to series circuit.
- Provides dump valve options for each work port.
- Provides different drive modules (electrical, hydraulic remote, manually control, wire driving).
- Provides power beyond.
- Can be modified to be a closed circuit valve.
- Provides mechanical detent.
- Provides options for different type of relief valves and different relief valve locations in the inlet.
- Provides options for mechanically actuated pilot operated check valves to satisfied with the needs for tractors and mobile cranes.
- Provides different spool functions to be used for controlling double acting cylinder , single acting cylinders, hydraulic motors.
- Provides floating functions for spools.
- Provides excellent flow characteristics and small operating force.
- Can be assembled with 1-8 main sections.

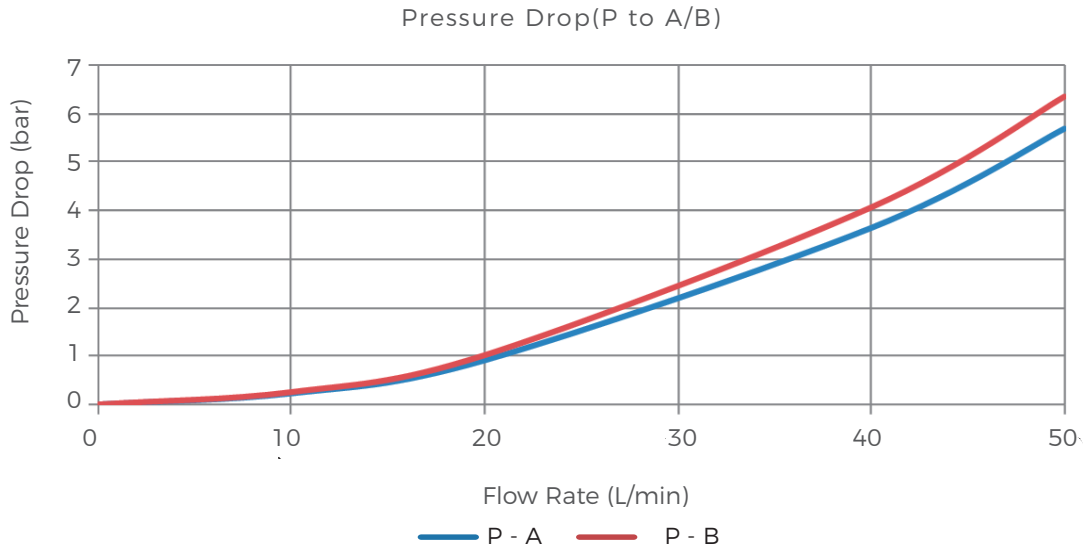
Technical Data

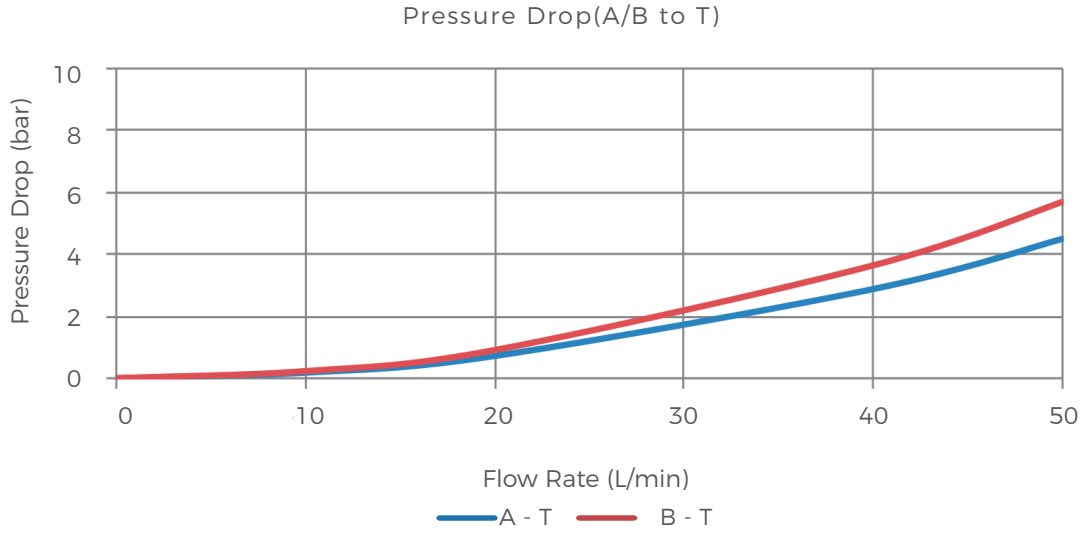
Rated flow rate	50L/min	Max. pressure at T port	25bar
Max. flow rate	60L/min	Internal leakage (@70 bar)A, B to T	25-35cc/min
Min. flow rate	20L/min	With P. O. check	2-5cc/min
Max. pressure at P port	350bar	Spool stroke (1, 2 position)	+7/-7mm
Max. pressure at A, B ports	350bar	With floating function (1, 2 and F position)	+7/-7-10mm
Solenoid can be either 12 or 24VDC, corresponding current is 0-1.5 or 0-0.75 Amp.			

Performance Data



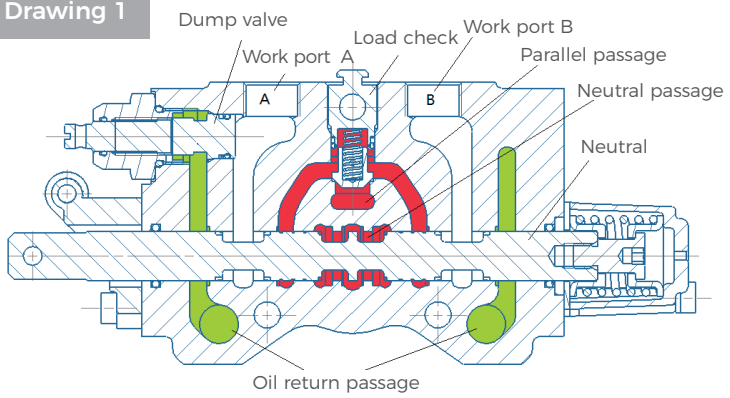
Performance Data



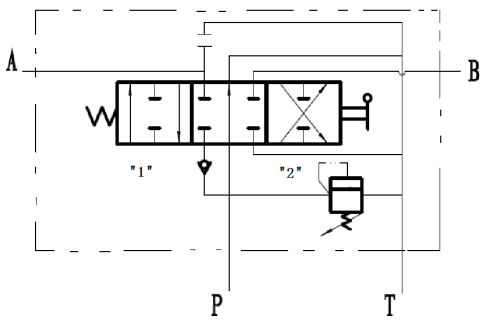


Operation Principle

Drawing 1



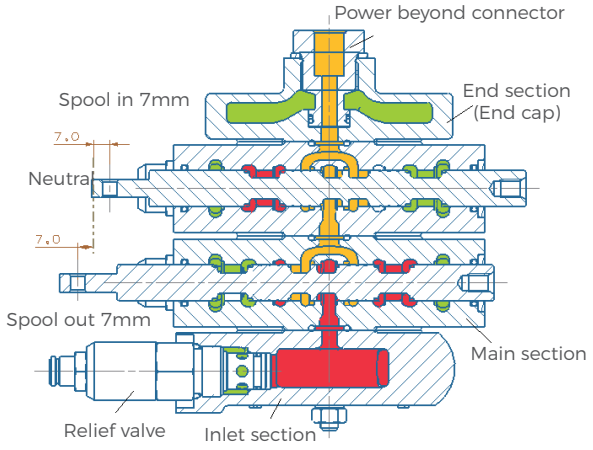
Drawing 2



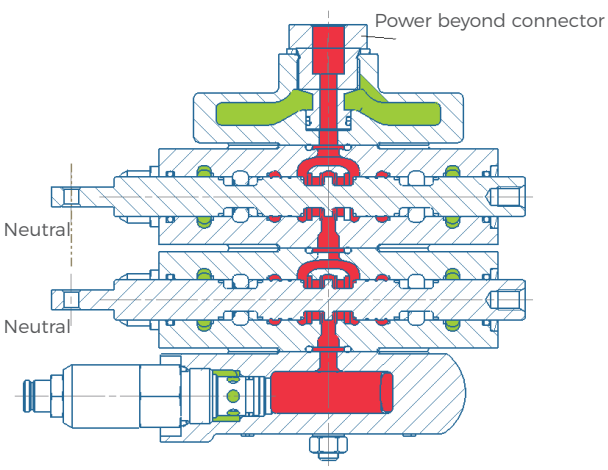
GKV50 series sectional valves is an open circuit 3-position 4-way valve. When spool is in its neutral position, the flow from pump passes through the neutral passage to tank, with small pressure drops. Like it shows in the drawing 1, the schematic drawing like drawing 2When one of the spool is moved to 1 or 2 position, the neutral passage is blocked. The flow from pump can only pass the parallel passage to load check valve, then passes through the bridge and spool opening to work port A or B.as shown in drawing 3.

When power beyond function is selected as shown in drawing 4, when all spools are in neutral position, the flow from inlet passes neutral passage to power beyond port to provide source of the flow to other auxiliary functions.

Drawing 3



Drawing 4

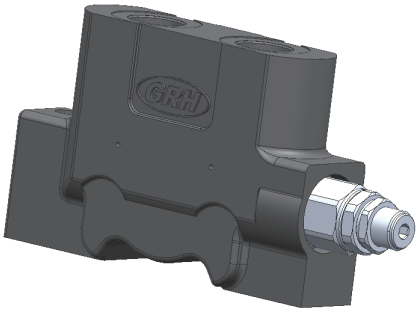


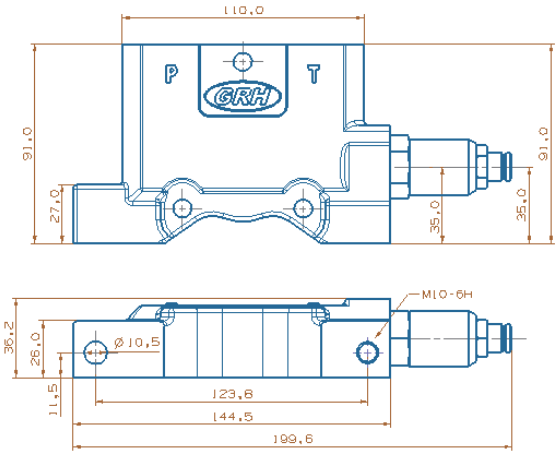
For multi-section valves， if one of the sections spool is in 1 or 2 position, there is no flow in its down stream sections neutral passage. The main throttle occurs on the valve opening between bridge passage and spool. The operator can control more than one spool, but the flow rate for each controlled section depends on the magnitude of the load, as shown in drawing 3.

When power beyond function is selected as shown in drawing 4, when all spools are in neutral position, the flow from inlet passes neutral passage to power beyond port to provide source of the flow to other auxiliary functions.

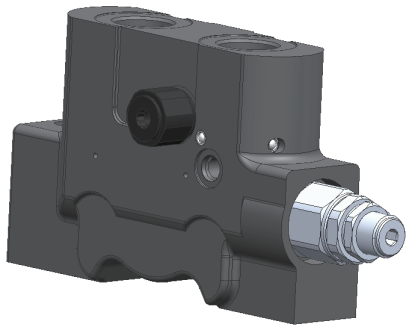
Inlet Section Dimensions

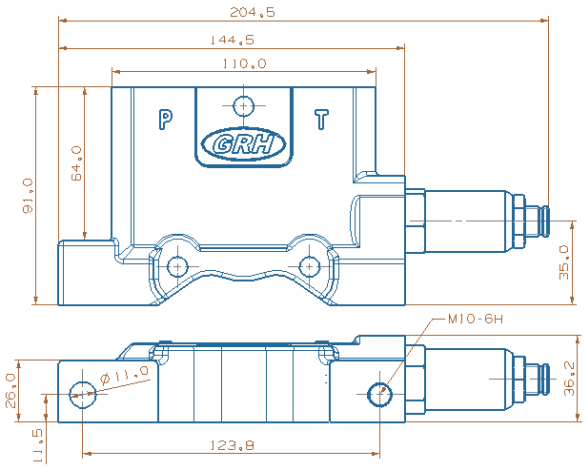
JK01 Inlet Section



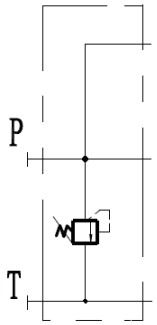
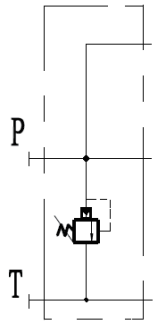


JK02 Inlet Section

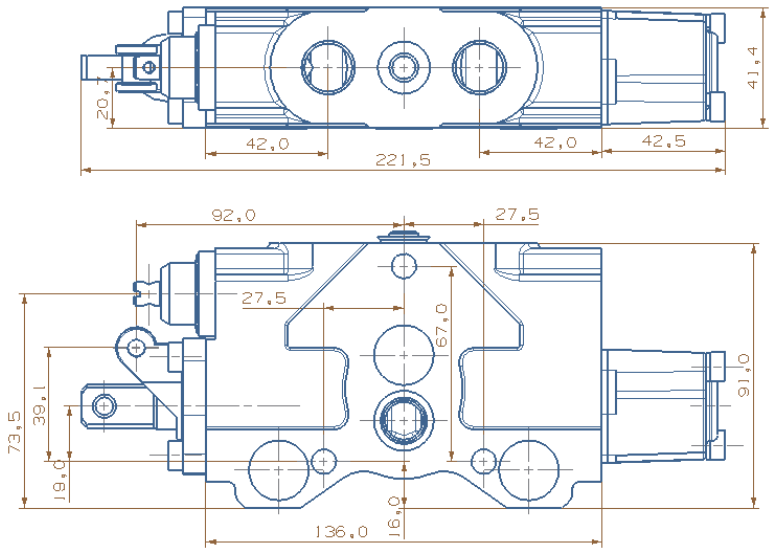




Inlet Section Hydraulic Schematics

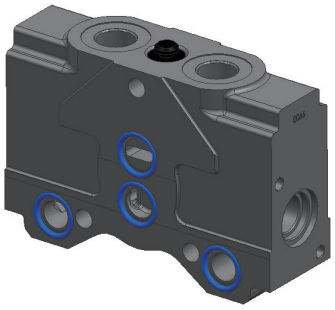
Code	Hydraulic Schematic	Main Functions	Notes
JK01		Inlet section with direct acting relief valve	
JK02		Inlet section with pilot relief valve	

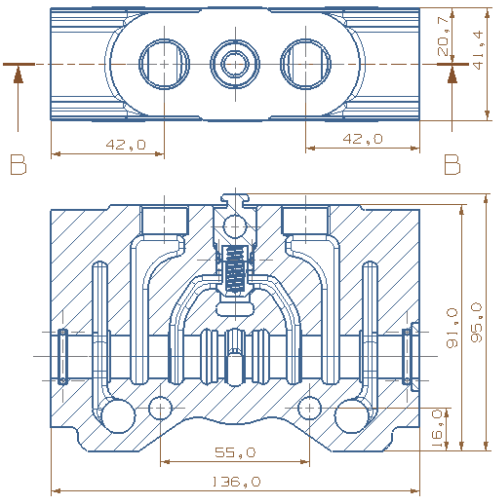
Typical Work Section Dimensions



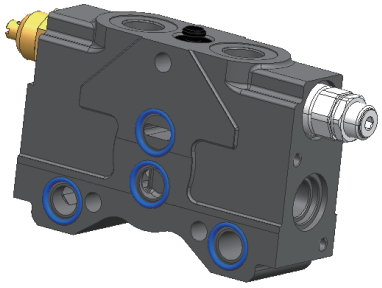
Typical Work Section (Main Section) Dimensions

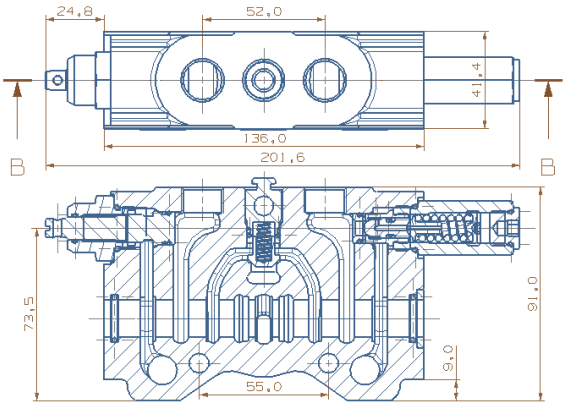
YT01 Work Section



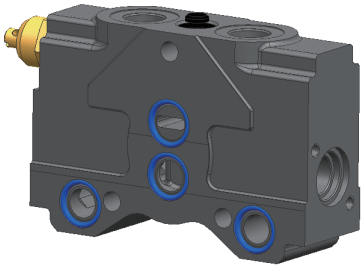


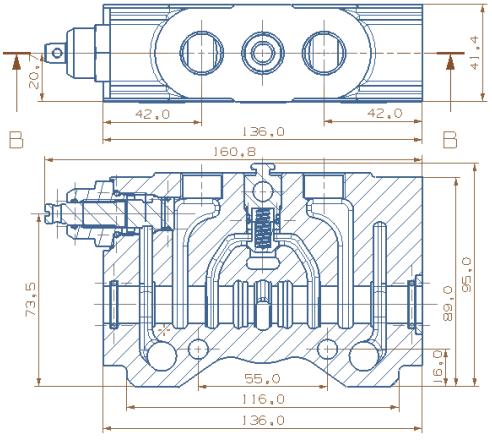
YT06 Work Section



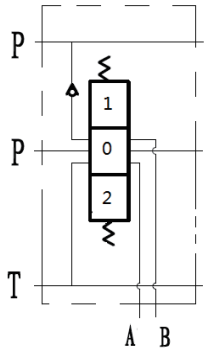
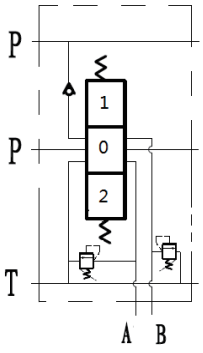
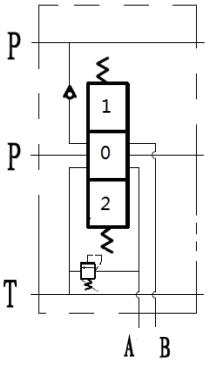
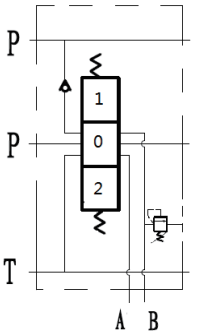


YT07 Work Section

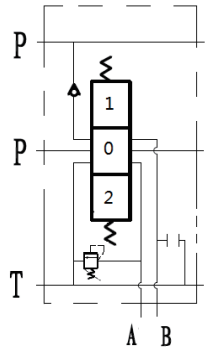
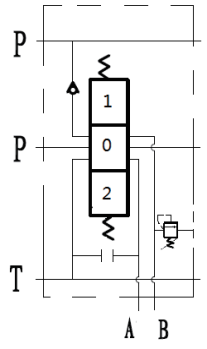
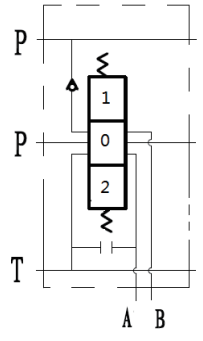
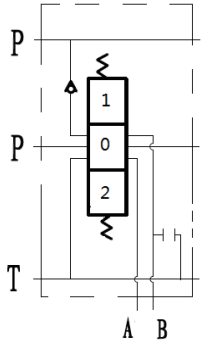




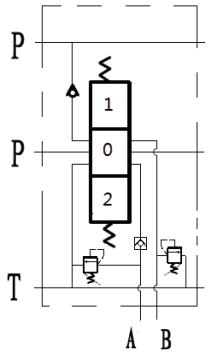
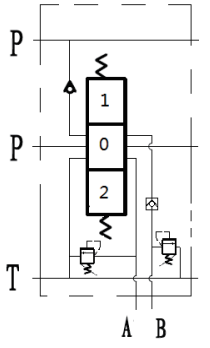
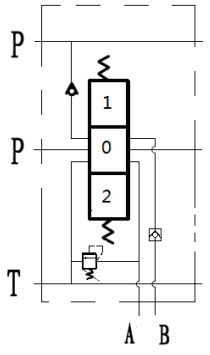
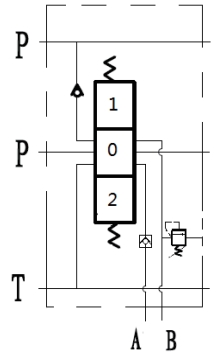
Typical Work Section (Main Section) Hydraulic Schematics

Code	Hydraulic Schematic	Main Functions	Notes
YT01		Without overload relief valves at both A and B ports	
YT02		Both A and B ports have overload relief valves	
YT03		Overload relief valve on A port	
YT04		Overload relief valve on B port	

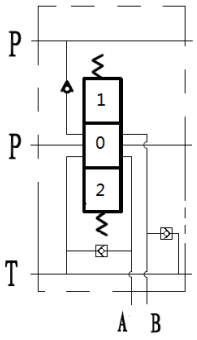
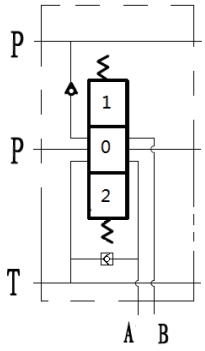
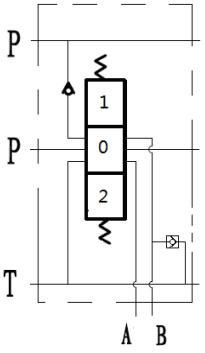
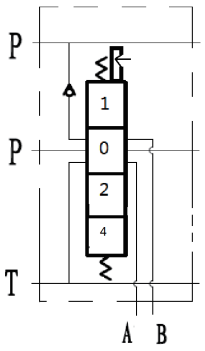
Typical Work Section (Main Section) Hydraulic Schematics

Code	Hydraulic Schematic	Main Functions	Notes
YT05		Overload relief valve on A port Check valve on B port	Tractor and other auxiliary equipment applications
YT06		Overload relief valve on B port Check valve on A port	Tractor and other auxiliary equipment applications
YT07		Check valve on A port	Tractor and other auxiliary equipment applications
YT08		Check valve on B port	Tractor and other auxiliary equipment applications

Typical Work Section (Main Section) Hydraulic Schematics

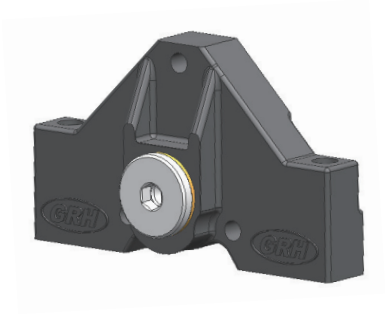
Code	Hydraulic Schematic	Main Functions	Notes
YT09		Overload relief valves on both A and B ports. One mechanically actuated P. O. check on A port	Lifting and Locking equipment applications
YT10		Overload relief valves on both A and B ports. One mechanically actuated P. O. check on B port	Lifting and Locking equipment applications
YT11		One load relief valves on A port. One mechanically actuated P. O. check on B port	Lifting circuit, lock the heavy duty on a specific height, for example circur for tractor
YT12		Overload relief valves on B port. One mechanically actuated P. O. check on A port	Lifting circuit, lock the heavy duty on a specific height, for example circur for tractor

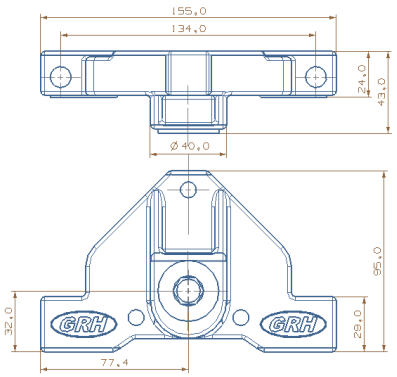
Typical Work Section (Main Section) Hydraulic Schematics

Code	Hydraulic Schematic	Main Functions	Notes
YT13		Anti-cavitation valves on both A and B ports	Hydraulic motor applications for avoiding cavitation
YT14		Anti-cavitation valves on A port	Hydraulic motor applications for avoiding cavitation
YT15		Anti-cavitation valves on B port	Hydraulic motor applications for avoiding cavitation
YT16		Fourth poisition has mechanical detent	

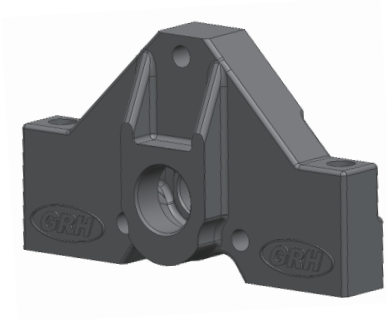
Typical Return Section (End Cap) Dimensions

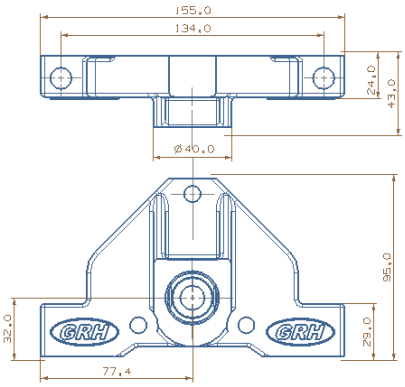
DY01 End Section (End Cap)



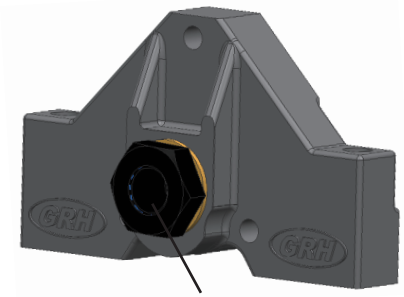


DY02 End Section (End Cap)

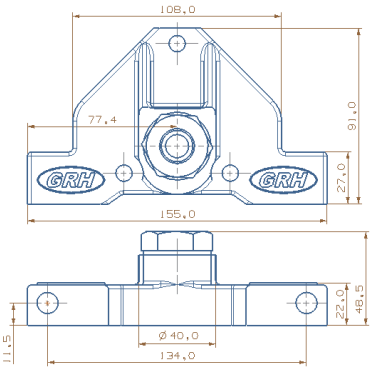




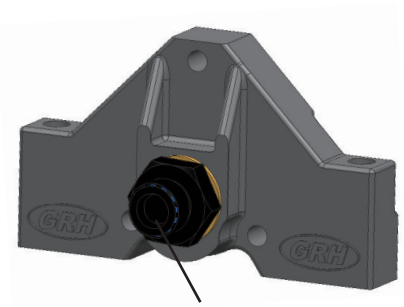
DY03 End Section (End Cap)



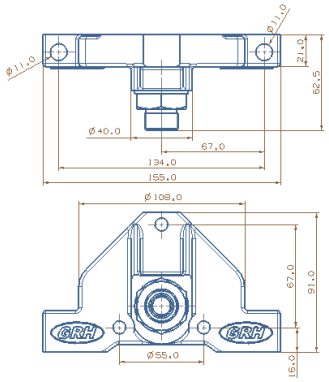
Power beyond (Female thread)



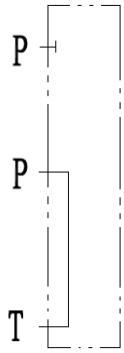
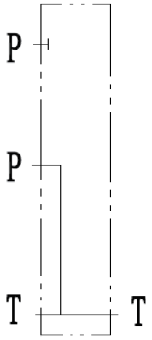
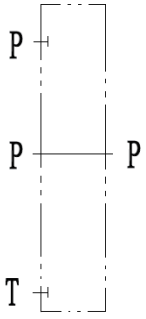
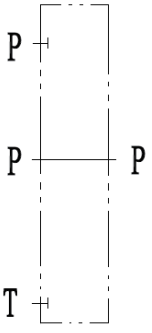
DY04 End Section (End Cap)



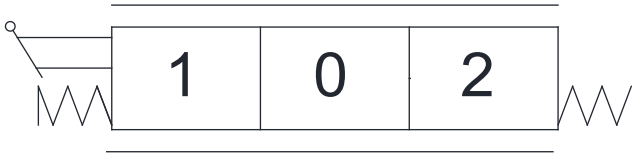
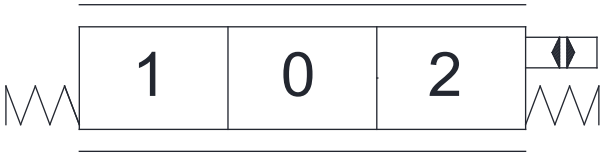
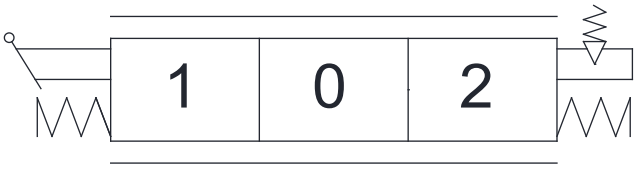
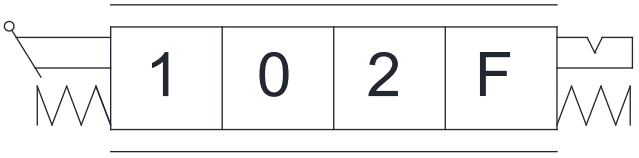
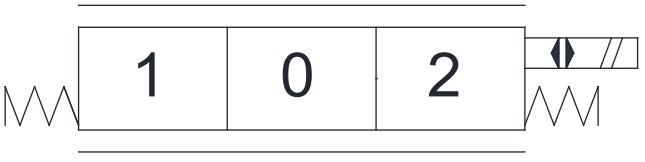
Power beyond (Male thread)



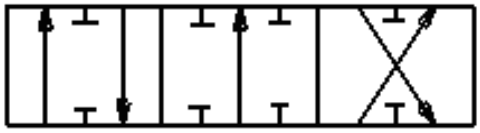
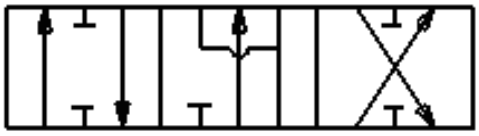
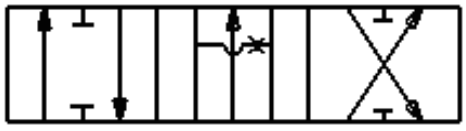
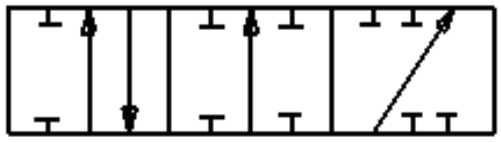
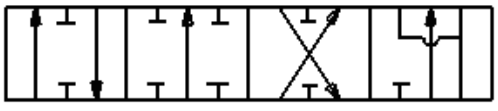
Typical Return Section (End Cap) Hydraulic Schematics

Code	Hydraulic Schematic	Main Functions	Notes
DY01		Oil return to tank through end cap to inlet section	
DY02		Oil return port on the end section	
DY03		No oil return port with power beyond port (internal thread connector)	Tractor application
DY04		No oil return port with power beyond port (external thread connector)	Tractor application

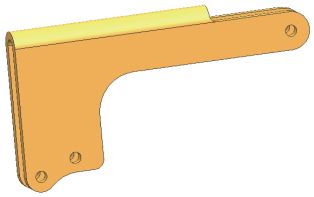
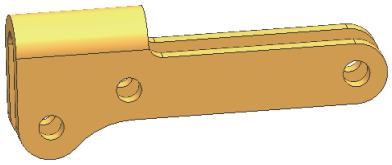
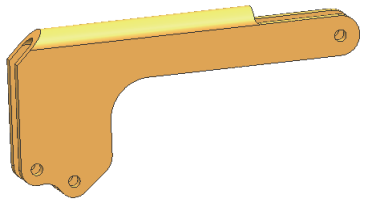
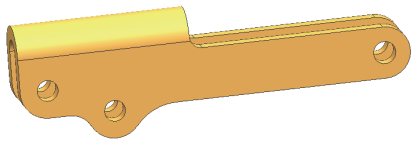
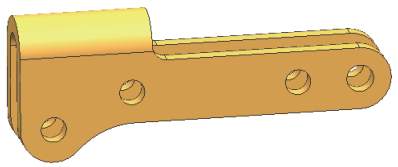
Work Section (Main Section) Drive Styles

Drive Style Code	Hydraulic Schematic	Functions
KQ1		Standard manual control
KQ2		Hydraulic control
KQ3		Manual control with mechanical detent
KQ4		Manual control with 4th position floating and detent
KQ5		Electrical actuated (on/off)
KQ6		Electrical actuated with floating function

Typical Spool Functions

Drive Style Code	Hydraulic Schematic	Functions	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

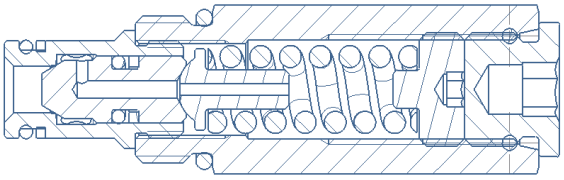
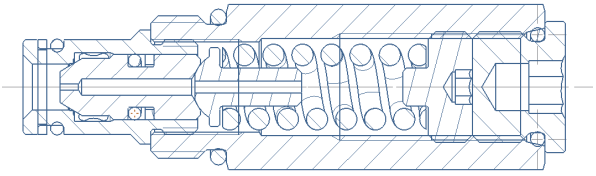
Handle Bracket Types

Code	Drawings	Notes
SL0	Valve without handle bracket	
SL1		
SL2		
SL3		
SL4		
SL5		

Handle Types

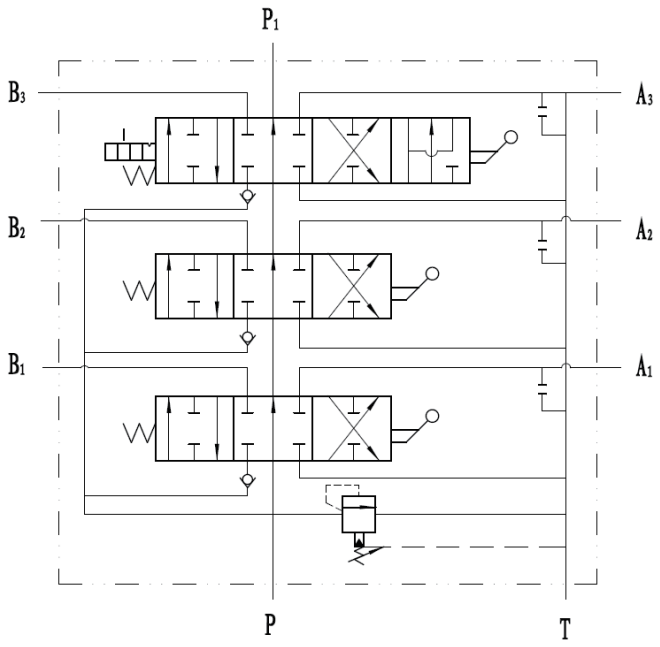
Code	Drawings	Notes
SB0	No Handle	
SB1		
SB2		
SB3		
SB4		Long handle

Overload Relief Valve Types

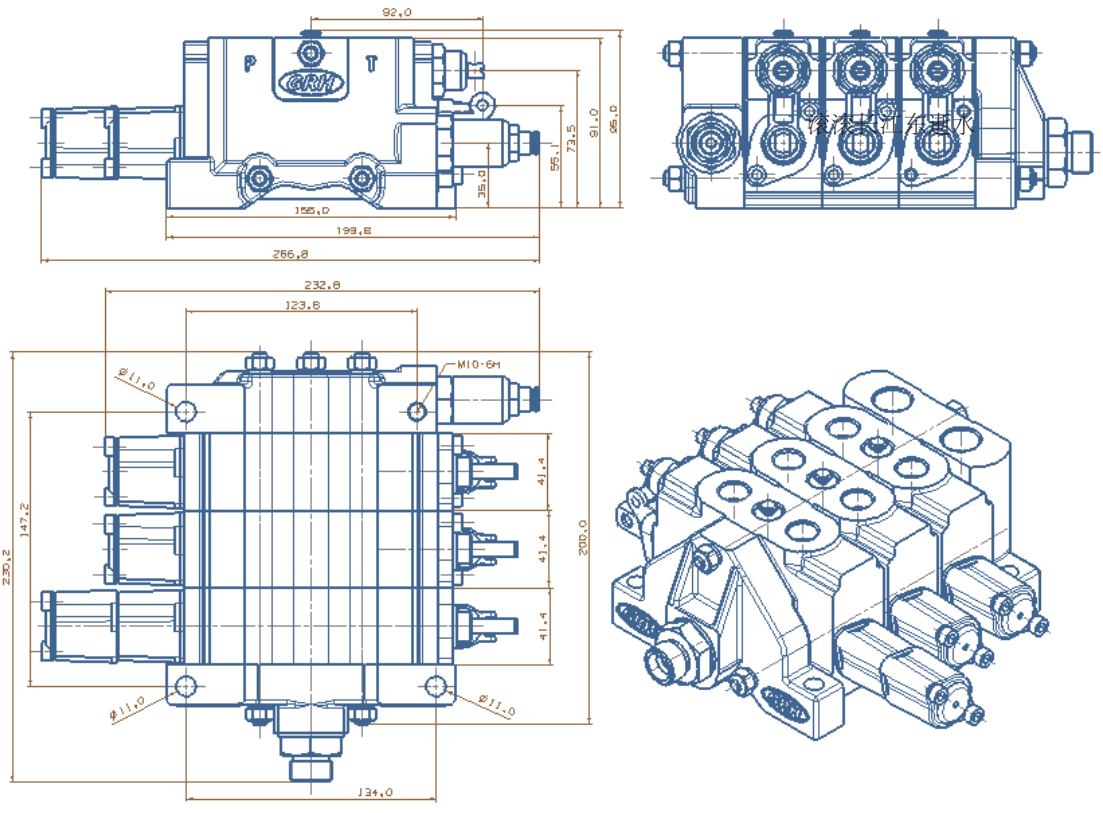
Code	Drawings	Notes
RF0	No over load relief valve	No over load relief valve
RF1		Direct acting relief valve
RF2		Differential relief valve

Application Example

3 Sections Valve (Third Section Has Mechanical Detent and Floating Function)



Manual Control 3 Sections Valve



Ordering Code

GKV50	/*	-JY**	/***	-DY**	-O1	-YT**	-KQ*	-FG*	-DC/**	-QL/***	-SL*	-SB*	-RF*
a	b	c	d	e	f	g	h	i	j	k	l	m	n

ⓐ Model
ⓑ Number of sections
ⓒ Inlet section code
ⓓ Main relief valve settings(bar)
ⓔ Return section (end cap) code
ⓕ First section
ⓖ Work section code
ⓗ Drive style code
ⓘ Spool function code
ⓙ Electrical option
12VDC, 24VDC, 00=None electrical
ⓚ Expected flow rate (L/min)
ⓛ Handle bracket code
ⓜ Handle code
ⓝ Overload relief valve code

-O2	-YT**	-KQ*	-FG*	-DC/**	-QL/***	-SL*	-SB*	-RF*	-O3	.....
o	p	q	r	s	t	u	v	w	x	y

ⓞ Second section
ⓟ Work section code
ⓠ Drive style code
ⓡ Spool code
ⓢ Electrical option
12VDC, 24VDC, 00=None electrical
ⓣ Expected flow rate (L/min)
ⓤ Handle bracket code
ⓥ Handle code
ⓦ Overload relief valve code
ⓧ Third section
ⓨ .....

Ordering Example

GKV50	/*	-JY2	/210	-DY1	-O1	-YT01	-KQ1	-FG2	-DC/00	-QL/40	-SL1	-SB1	-RF0
a	b	c	d	e	f	g	h	i	j	k	l	m	n

ⓐ Model
ⓑ Two section valve
ⓒ Inlet section code
ⓓ Main relief valve settings (210bar)
ⓔ Return section (end cap) code
ⓕ First section
ⓖ Work section code
ⓗ Drive style code
ⓘ Spool function code
ⓙ None electrical
ⓚ Expected flow rate (40L/min)
ⓛ Handle bracket code
ⓜ Handle code
ⓝ Overload relief valve code

-O2	-YT03	-KQ2	-FG3	-DC/00	-QL/50	-SL0	-SB0	-RF2
a	b	c	d	e	f	g	h	i

ⓐ Second section
ⓑ Work section code
ⓒ Drive code
ⓓ Spool code
ⓔ No electrical
ⓕ Expected flow rate (50L/min)
ⓖ Handle bracket code (No bracket)
ⓗ Overload relief valve code (Differential type)
ⓘ Handle code (No handle)

Notes

Choose GKV50 series sectional valve, with two work sections, Inlet relief valve is setting is 210 bar. There is no return port on end section of the valve. The first work section is basic standard section without overload relief valves. This section is manual control (wire pulling type). Spool is Y type. Required flow for the first section is 40L/min. Not required for handle and handle bracket. The second section is hydraulic remote control. There is an overload relief on A port. Spool is H type. Required flow is 50L/min. Not required for handle and handle bracket. The overload relief is differential type.