VINCKE
HYDRAULICS

VINCKE INDUSTRIAL HYDRAULIC VALVES

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Introduction

Hydraulic valves, in addition to the force density advantage of actuators, are what help make hydraulics unique in their control of force, torque and motion. Valves govern direction, pressure and flow of hydraulic fluid, enabling smooth, safe and controlled use of actuators.

Every machine both requires and uses valves, varying vastly in execution from a few valves to dozens on one machine. Their use can be as simple as a relief valve to protect your pump and actuator, such as the relief valve built into the kick-off valve on a log splitter. Conversely, the complexity of a hydraulic circuit can be extensive, using a dozen valves per function as can be seen in manifolds, such as a pilot operated valve with dual counterbalance valves, dual flow controls, dual post-compensation and load sensing checks.

Directional control valves are often described as the number of “ways” fluid can travel through itself, and also by the positions available to be shifted into. The ways are equal to the number of work ports, so a 4-way valve will have pressure, tank and A and B work ports. Positions are equal to the number of positional envelopes. For example, one would describe a double acting single-monoblock valve as “4-way, 3-position,” or simply a "4/3 valve.”

Directional valves are available in monoblock or sectional valves, common to the mobile-hydraulic industry, as well as subplate mounted industrial type valves such as ISO style D03’s, D05’s et al. Also common to both mobile and industrial markets are cartridge valves installed into manifold blocks. Cartridge valve manufacturers offer many unique products, and allow high levels of creativity with limitless available valve combinations.

Pressure valves are components designed to in some way limit pressure. Most pressure valves are based on a poppet being pushed against a seat with an adjustable spring. A relief valve controls maximum pressure for either the entire system or a sub-circuit of it, the lowest spring pressure being the one to open up first. Most other pressure valves are based on the relief valve’s simple spring-loaded ball or poppet.

Vincke solenoid valves is designed and tested under innovative concepts to satisfy the advanced needs of currents machines: versatility, reduced power absorbed and safety of use.
Solenoid directional valves are used for changing flow direction in hydraulic systems.

Technical characteristics

		Size/Type	
		6	10
working pressure Mpa	Oil ports P,A,B	35	31.5
	Oil ports T	16	16
Max. Flow L/min		80	120
Working fluid		Mineral oil; phospate-ester	
Fluid Temperature °C		-20…70	
Viscosity mm²/s		2.8..100	
working voltage V	DC	12	24
	AC	110V/50Hz	220V/50Hz
Max. Swich frequency T/h		15000 (DC)	7200 (AC)
insulation grade		IP65	
Weight kg	Single solenoid	1.45 DC 1.4 AC	5.1 DC 4.3 AC
	Double solenoid	1.95 DC 1.9 AC	6.7 DC 5.1 AC

Cleanliness

The maximum allowable cleanliness of the oil should be according to 9th degree of Standard NAS1638. It is suggested that the minimum filter rating should be ß10≥75.

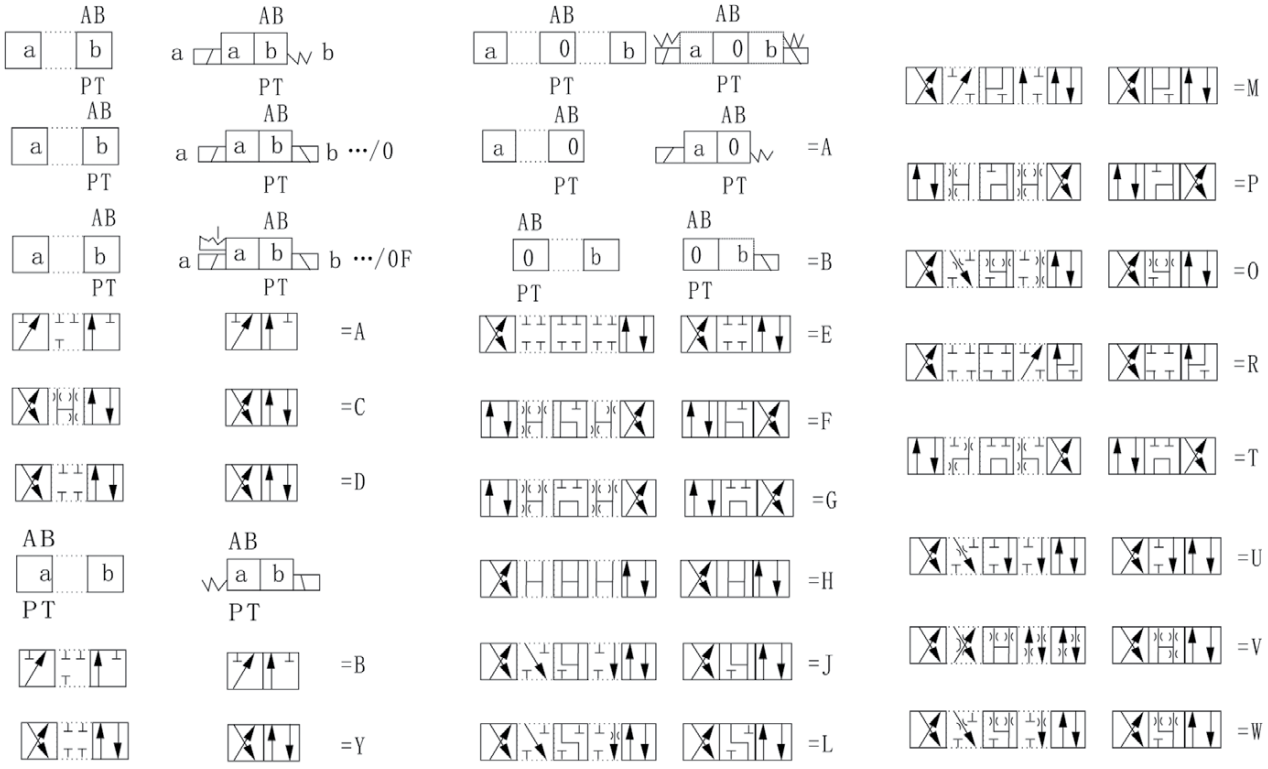
Ordering code

4VNKSV – 6 – E – OF – DC24 – 4L

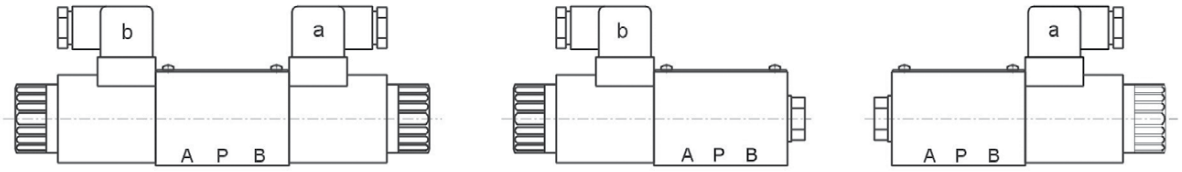
4 main ports
Nominal size 6 Cetop 3 or 10 Cetop 5
Type of spool E,J,D,C,HA,E etc.
With spring return = no code
Without spring return = O
Without spring return with detent =OF

Electrical Connection:
4L= DIN connector+led
4X= DIN connector without led
DC 24 or DC12
AC220 AC110 AC24

Code symbol



1)Example:
Spool symbol H with spool A, ordering code HA
Solenoid directional valves are used for changing flow direction in hydraulic systems.

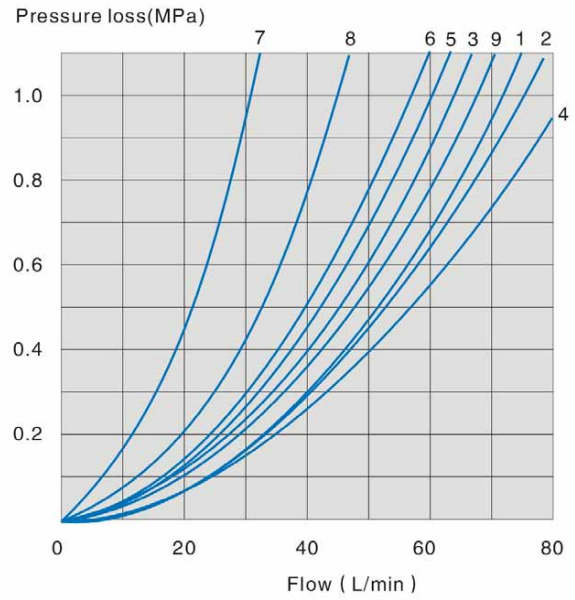


CETOP 3 SIZE 6

SPECIFICATION PERFORMANCE CURVE
Measured at v=41mm²/s and t=50°C

Function Code	Direction			
	P➔A	P➔B	A➔T	B➔T
C	1	1	3	1
D	5	5	3	3
E	3	3	1	1
F	1	3	1	1
G	6	6	9	9
H	2	4	2	2
J	1	1	2	1
L	3	3	4	9
M	2	3	3	3
P	3	1	1	1

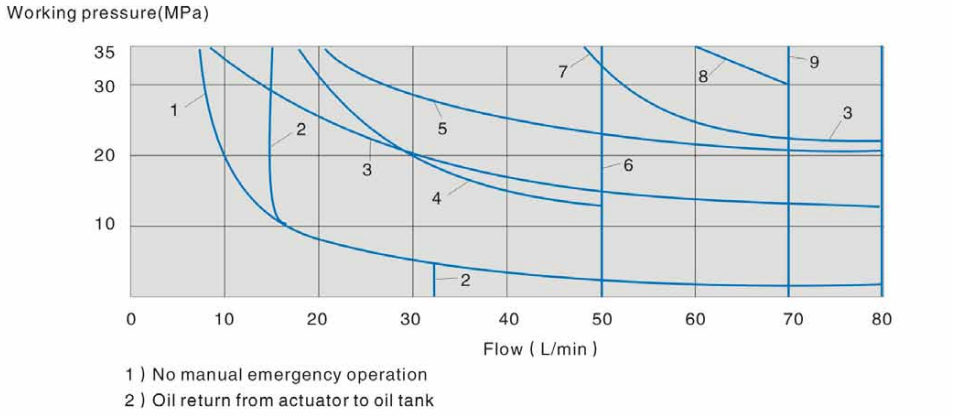
8. Spool symbol G in the neutral position P➔T



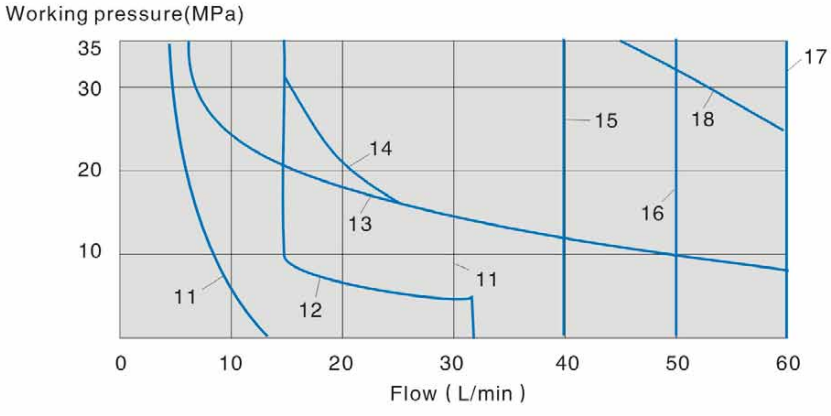
Specification working limits

With regard to the four-way valve, the normal flow data as show is get from the regular use of two directions of the flow. See tables. If only one flow direction is needed, the maximum flow may be very small in the serious condition.

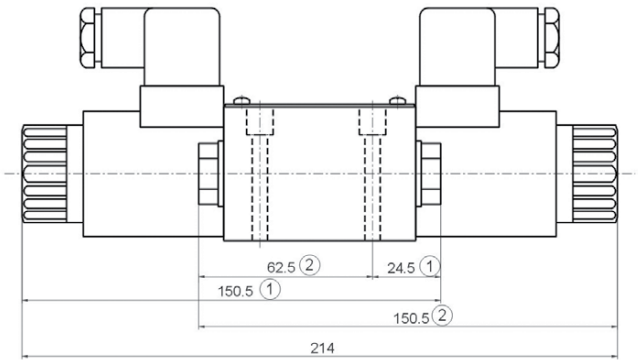
DC 24 12 110		AC 220 110 24, 50HZ	
Curve	Symbol	Curve	Symbol
4	F P	14	F M
5	J	15	G
6	G H	16	H
7	L	17	E H/OF E/OF J M L
8	C D	18	C D
9	M		
10	E H/OF E/OF		

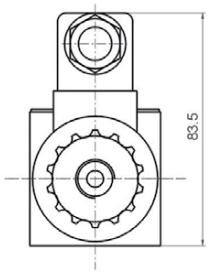


1) No manual emergency operation
2) Oil return from actuator to oil tank



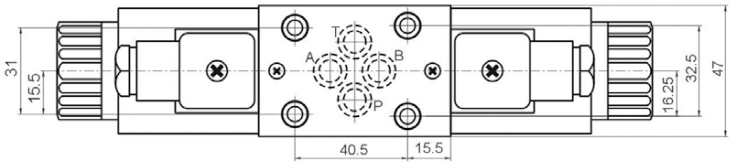
External dimensions



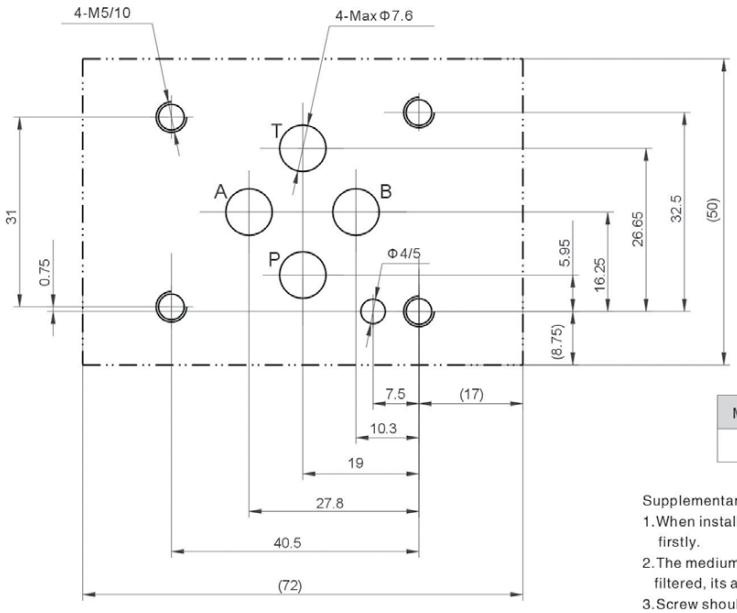


① ②

Two positions Electrical
operated directional control valve



Size of subplate oil port



Mounting screw	Amount	Tighten torque
M5x45-10.9	4	9Nm

Supplementary explanation

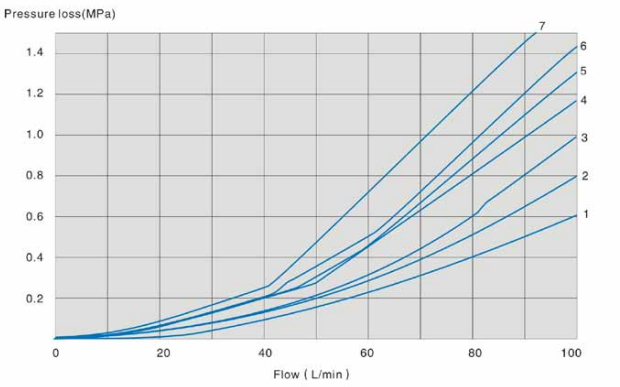
1. When installing the product, considering horizontal position firstly.
2. The medium used in the hydraulic system must be filtered, its accuracy at least 20 μ m.
3. Screw should be according to the parameters in catalogue.
4. The surface, connecting with the valve, should be Ra0.8 roughness, and 0.01/100mm flatness.

CETOP 5 SIZE 10

SPECIFICATION PERFORMANCE CURVE
Measured at v=41mm²/s and t=50°C

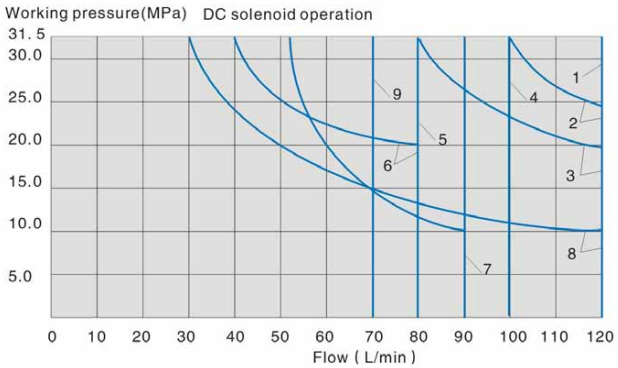
Function Code	Direction			
	P➔A	P➔B	A➔T	B➔T
C D	2	2	3	3
E	2	2	4	4
F	2	3	3	5
G	3	3	4	6
H	1	1	4	5
L	1	1	4	5
M	1	1	5	1
P	3	2	5	3

4.Spool symbol G in neutral position P➔T



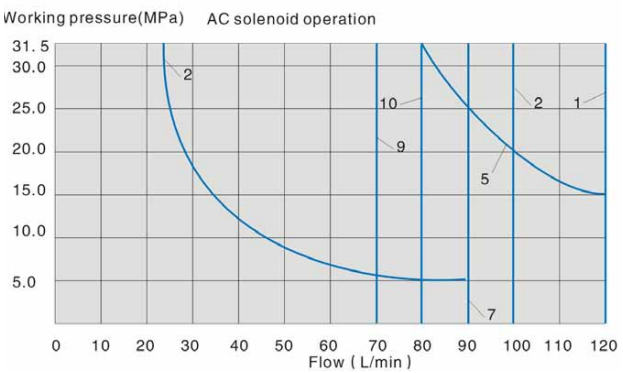
Specification working limits

With regard to the four-way valve, the normal flow data as shown is get from the regular use of two directions of the flow (e.g. P to A, and simultaneous return flow from B to T). See tables, if only one flow direction is needed, for example: when a four port valve which is closed up port A or port B, used as a three-way valve, the maximum flow may be very small in the serious condition.

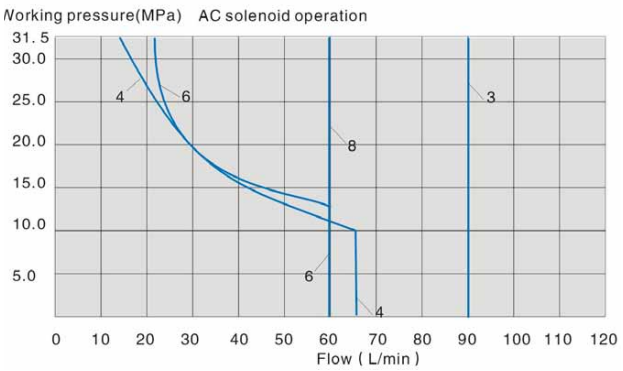


Curve	Symbol
1	C D H/OF E/OF M
2	E
4	L J H
6	G
7	F P

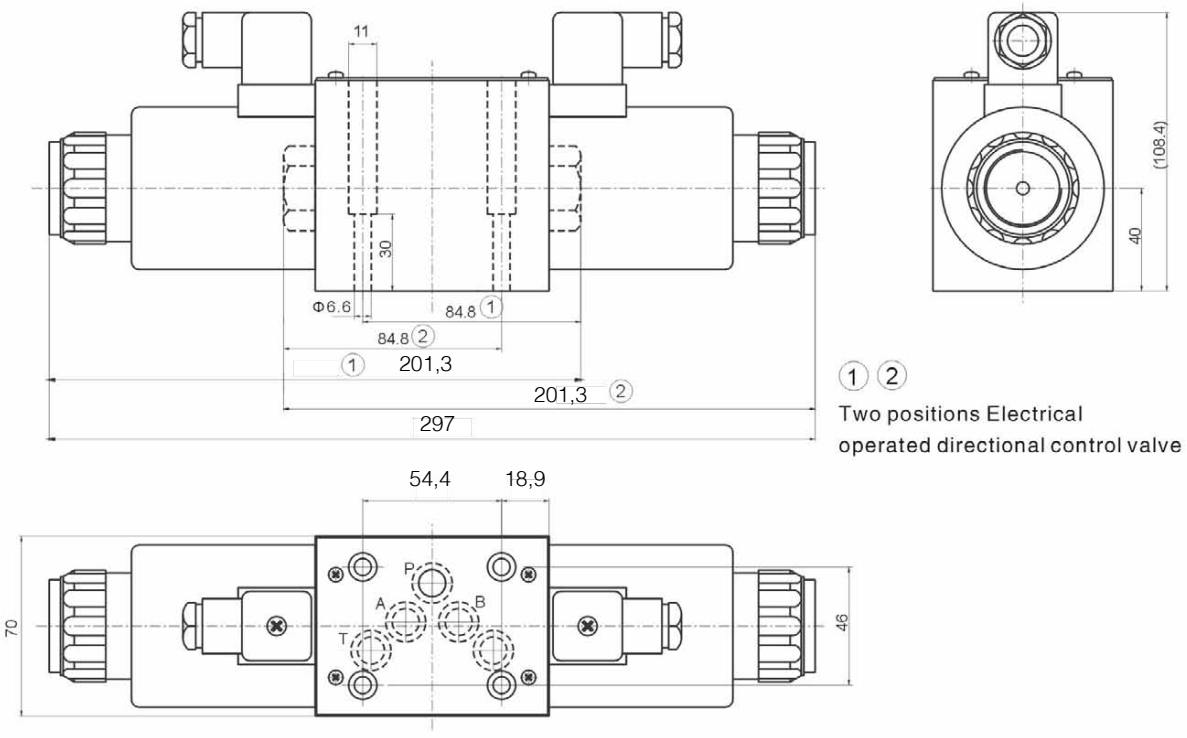
(1) Return circuit (independent of area ratio)



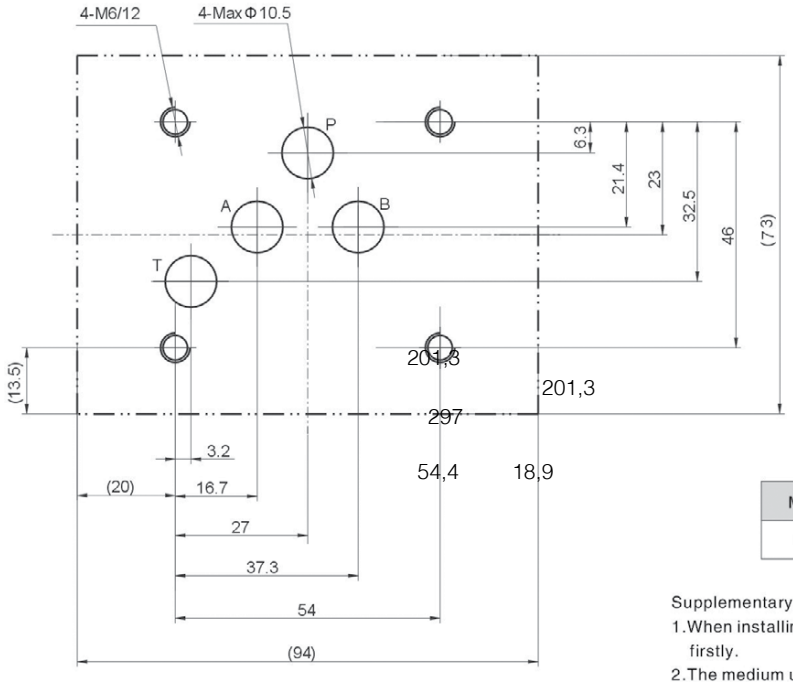
110V 220V	
Curve	Symbol
1	C D E/OF
2	E
3	L M
5	J
6	G
7	F P
8	H



External dimensions

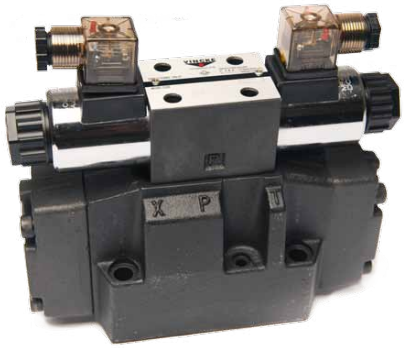


Size of subplate oil port



Mounting screw	Amount	Tighten torque
M6X40-10.9	4	15Nm

Supplementary explanation
1.When installing the product, considering horizontal position firstly.
2.The medium used in the hydraulic system must be filtered, its accuracy is at least 20 μ m.
3.Screw should be according to the parameters in catalogue.
4.The surface, connecting with the valve, should be Ra0.8 roughness, and 0.01/100mm flatness.



Electro-hydraulic directional control valve is a control valve which can use the pressure of the hydraulic circuit to pull the spool and change the hydraulic oil direction.
Electro-hydraulic directional control valve is the combination of the electrical operated directional control valve and the hydraulic directional control valve. It uses the electrical operated directional control valve to control the hydraulic operated directional control valve, and change the hydraulic oil direction.
Electro-hydraulic directional control valve and hydraulic operated directional control valve are used mostly in hydraulic systems when electrical operated directional control valve can not afford the flow. It may control the movement of the power elements, or control the direction of the flowing oil.

Technical characteristics

Size			16	25	32
Allowed maximum pressure (Mpa)	Port A,B,P		31.5		
	Port T	Extl relief	16		
		Intl relief	16		
	Port Y Extl relief		16 for DC; 10 for AC		
Maximum control pressure (Mpa)			25		
Maximum Flow (L/min)			300	650	1100
Working fluid			Mineral oil		
Fluid temperature (°C)			-20~70		
Wheight (Kg.)	With pilot single solenoid valve		8.8	18	41
	With pilot doble solenoid valve		9.5	18.7	41.7

Cleanliness

The maximum allowable cleanliness of the oil should be according to 9th degree of Standard NAS1638. It is suggested that the minimum filter rating should be ß10≥75.

Ordering code

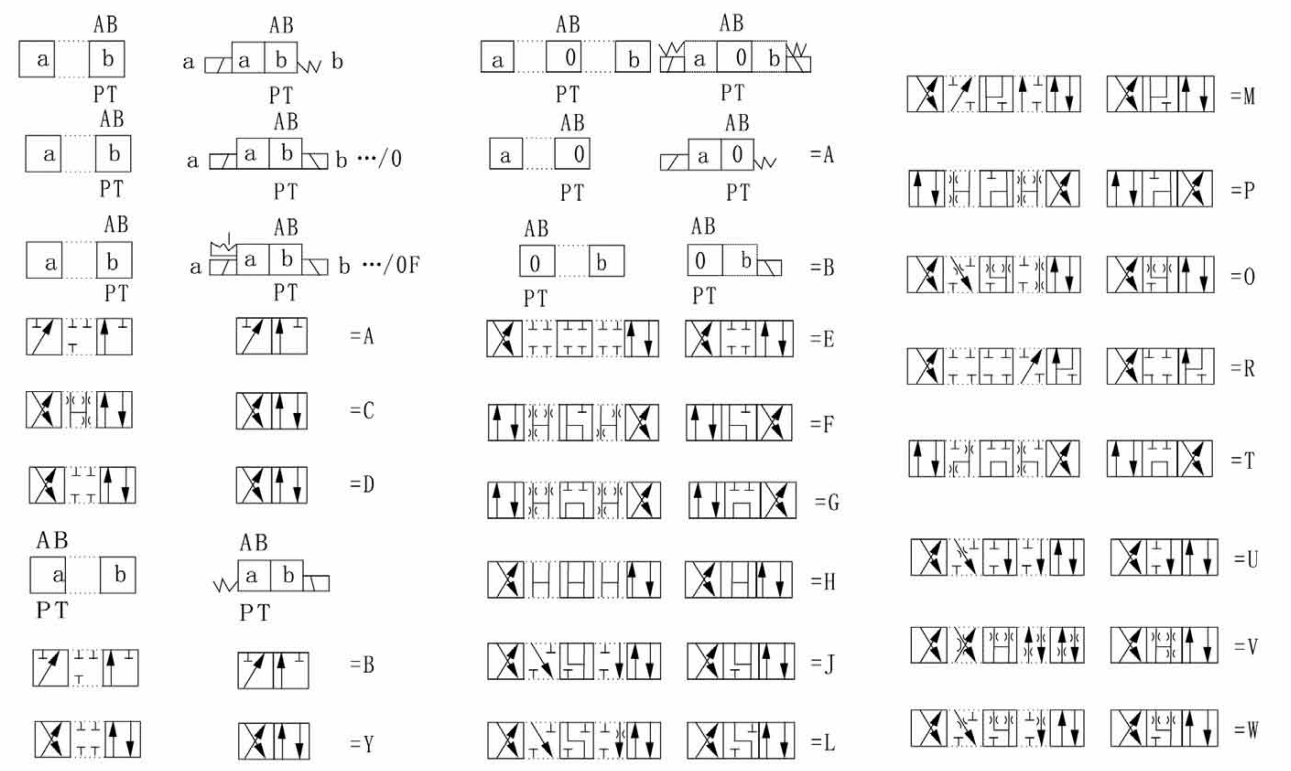
4VNKEH-S – 16 – E – OF – DC24 – N – XY – P4.5

Type: Hydraulic operated D.C.V
S= Solenoid pilot = without solenoid pilot
Nominal Size= 16 Cetop 7 – 25 Cetop 8 – 32 Cetop 10
Type of spool E,J,D,C,HA,E etc.
With spring return = no code
Without spring return = 0
Without spring return with detent =OF

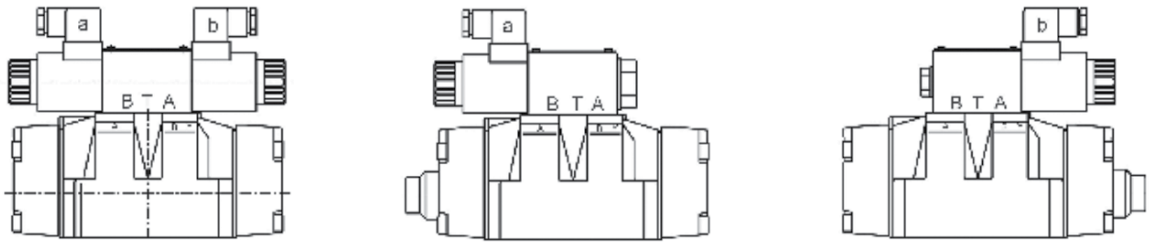
DC 24 or DC12
Omit = without hand
N = With hand emengency
Y= Int control Extl drain
X= Extl control Intl drain
XY= Extl control Extl drain
Omit= Intl control Intl drain

P4.5=0.45MPa P4.5=0.45MPa
No code=Without pilot pressure
P0.45=With pilot pressure
cracking pressure is 0.45MPa

Code symbol



1)Example:
Spool symbol H with spool A, ordering code HA.

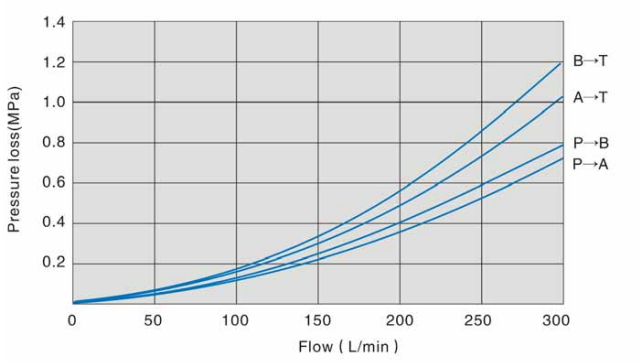


CETOP 7 NG16

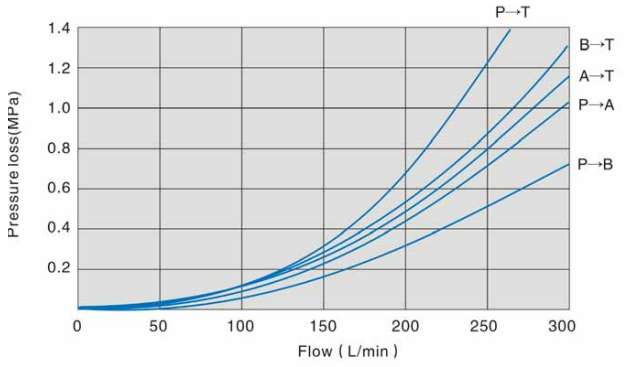
SPECIFICATION PERFORMANCE CURVE
Measured at v=41mm²/s and t=50°C

Pressure loss Mpa

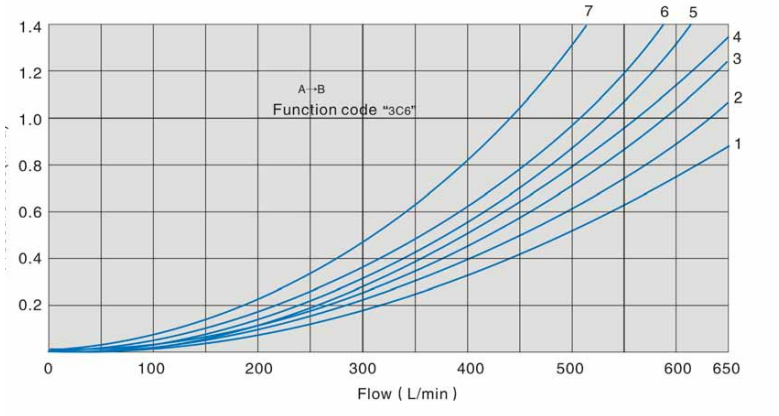
Spool E



Spool G



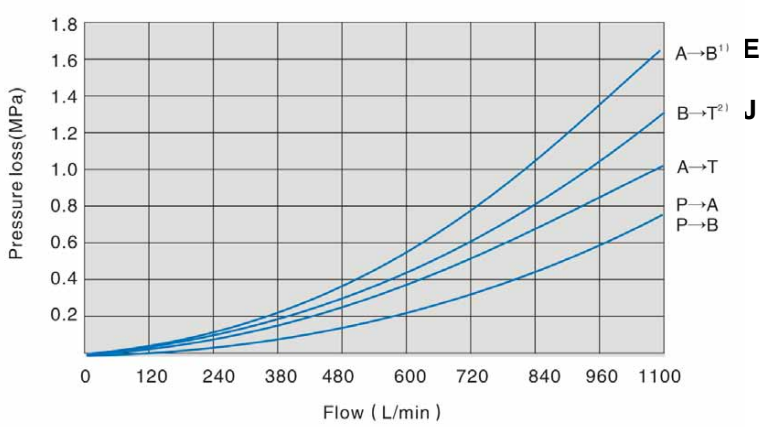
CETOP 8 NG25



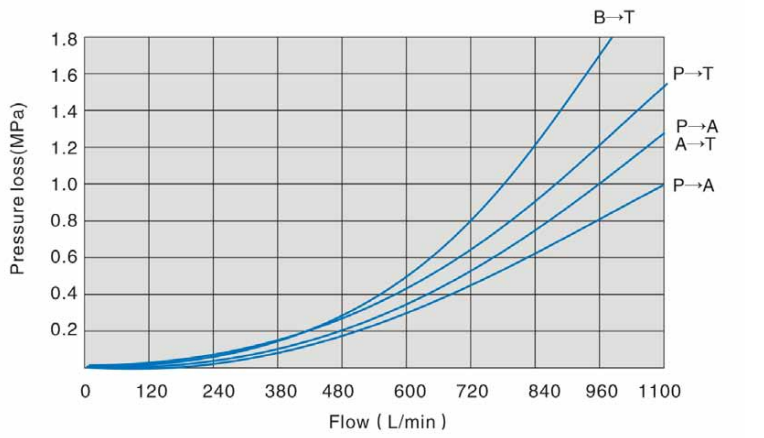
Function Code	Switching position			
Symbol	P→A	P→B	A→T	B→T
E	1	2	4	5
F	1	4	1	1
G	4	2	2	6
H	4	4	1	4
J	1	2	1	3
L	2	3	1	4
M	4	4	3	4
P	4	1	3	4

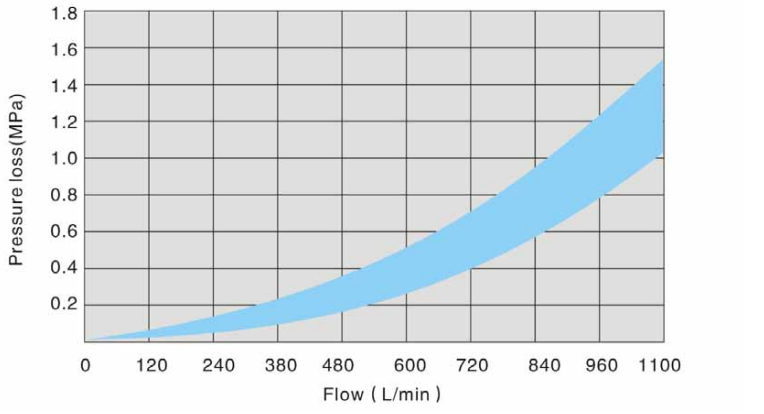
CETOP 10 NG32

Spool E-J



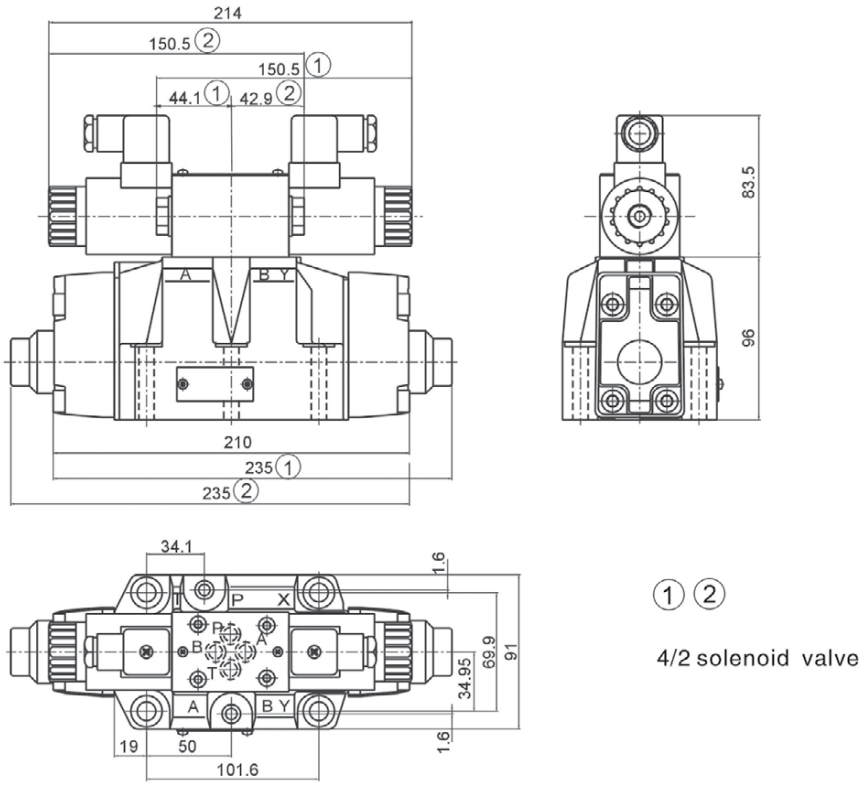
Spool G





CETOP 7 NG16

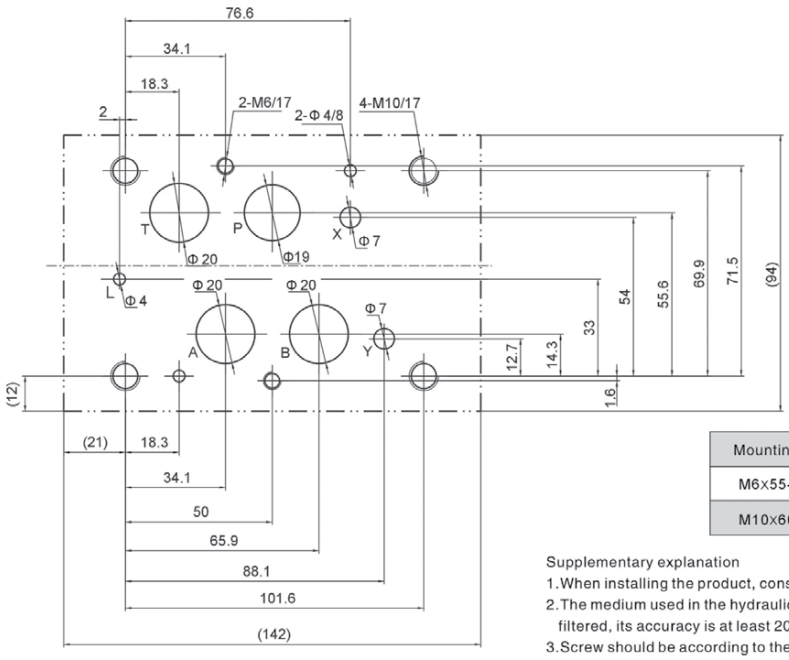
External dimensions



① ②

4/2 solenoid valve

Size of subplate oil port

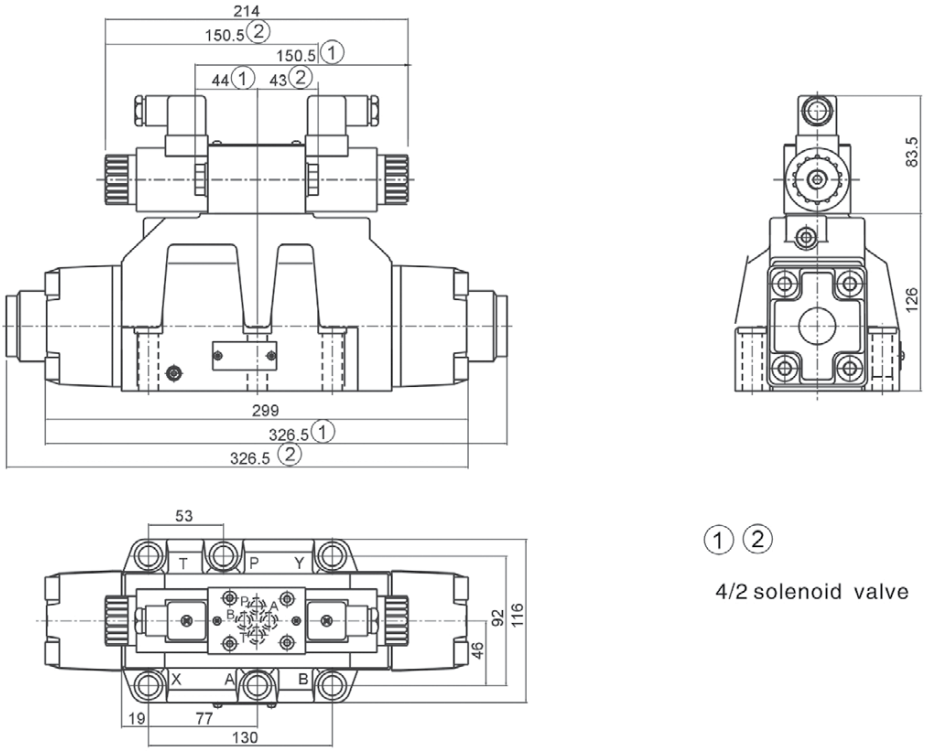


Mounting screw	Amount	Tighten torque
M6x55-10.9	2	15Nm
M10x60-10.9	4	75Nm

Supplementary explanation
1. When installing the product, considering horizontal position firstly.
2. The medium used in the hydraulic system must be filtered, its accuracy is at least 20 μ m.
3. Screw should be according to the parameters in catalogue.
4. The surface, connecting with the valve, should be Ra0.8 roughness, and 0.01/100mm flatness.

CETOP 8 NG25

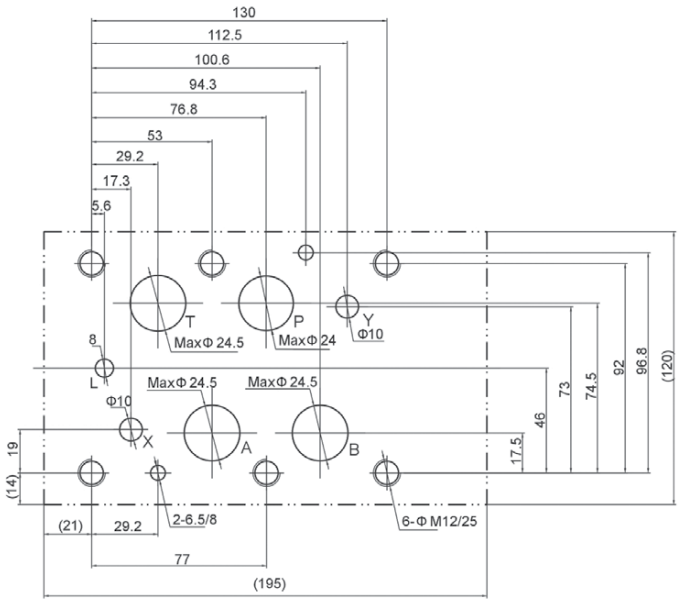
External dimensions



① ②

4/2 solenoid valve

Size of subplate oil port



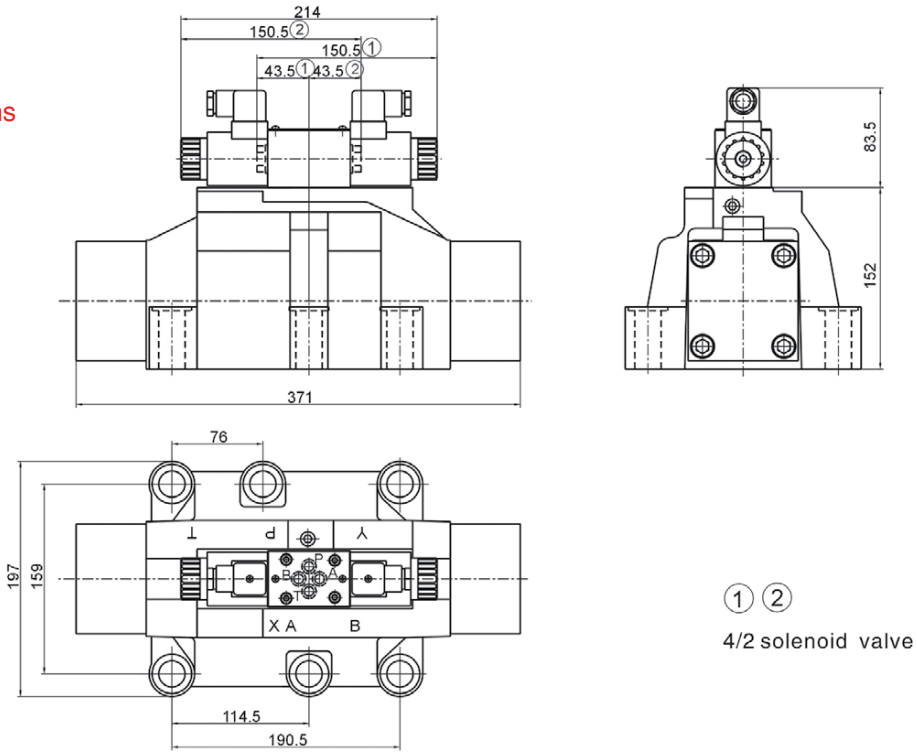
Mounting screw	Amount	Tighten torque
M12x60-10.9	6	130Nm

Supplementary explanation

1. When installing the product, considering horizontal position firstly.
2. The medium used in the hydraulic system must be filtered, its accuracy is at least 20 μ m.
3. Screw should be according to the parameters in catalogue.
4. The surface, connecting with the valve, should be Ra0.8 roughness, and 0.01/100mm flatness.

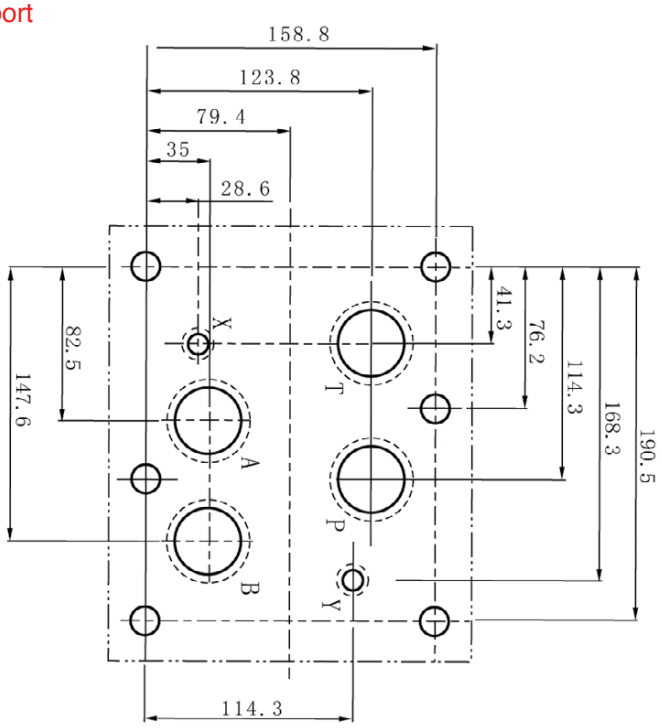
CETOP 10 NG32

External dimensions



① ②
4/2 solenoid valve

Size of subplate oil port



KRV RELIEF VALVES

KRV series modular relief valves can control flow for positive direction pass oil port. Flow can be adjusted by handle. It passes to check valve for reverse flow.

Technical characteristics

Size	6	10	16
Max. Flow (L/min)	35	70	120
Max. W.P (Mpa)	31.5		
Working fluid	mineral oil ; phosphate-ester		
Fluid temperature (°C)	-20~70		
Viscosity (mm²/s)	12~380		

Ordering code

KRV-06-P-1-3

Modular relief Valve

NOMINAL SIZE: 06 Cetop 3 10 Cetop 5 16 cetop 7
P P Pipeline relief **A** A Pipeline relief
B B Pipeline relief **W** AB Pipeline relief
Adjustment type: 1:rotatory knob 2: sleeve with exagon
Setting pressure 5 to 50Mpa 1 to 10Mpa 2 to 20Mpa 3 to 31.5Mpa

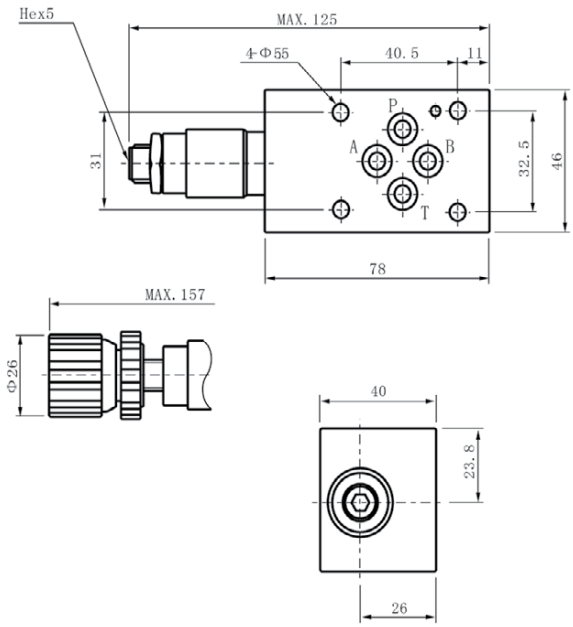
Code symbol

KRV-P KRV-A KRV-B KRV-W

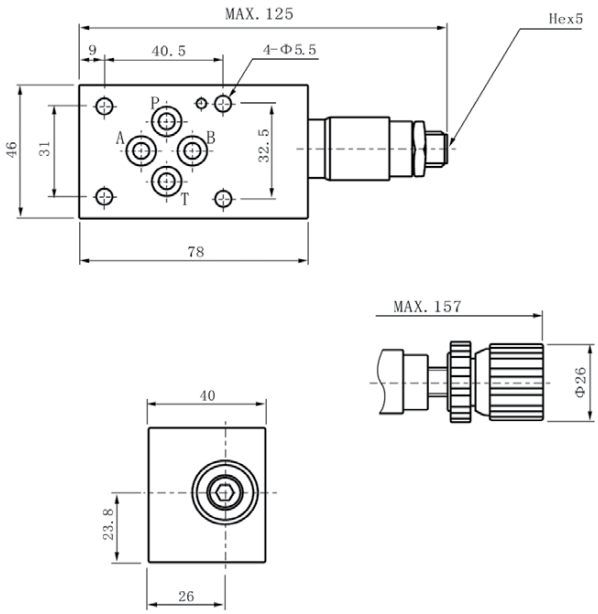
KRV RELIEF VALVES

Dimensions

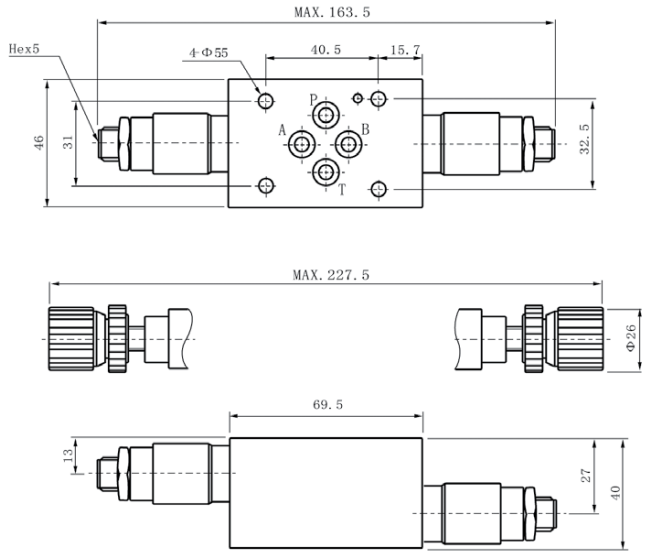
KRV-06-A



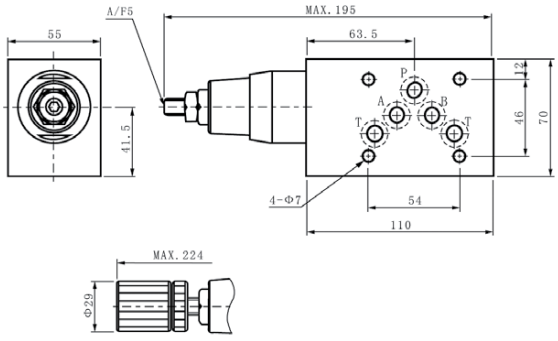
KRV-06-B/P



KRV-06-W



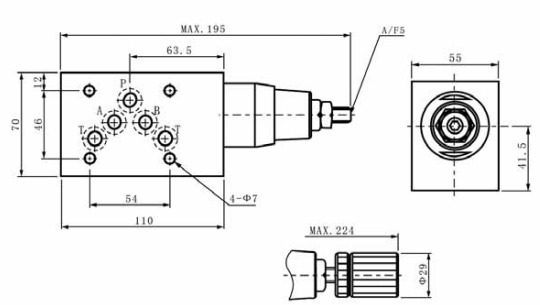
KRV-10-A



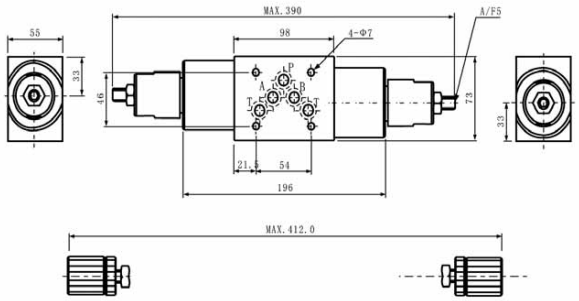
KRV RELIEF VALVES

Dimensions

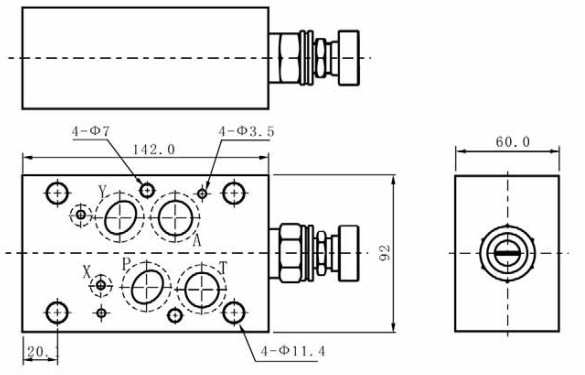
KRV-10-B/P



KRV-10-W

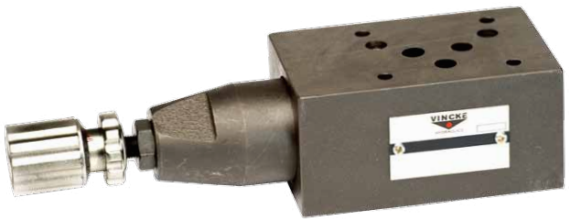


KRV-16-P



KRDV REDUCING VALVES

KRDV series modular reducing valves are used to reduce the pressure in a certain circuit lower than of the main circuit.



Technical characteristics

Size	6	10	16
Max. Flow (L/min)	35	70	120
Max. W.P (Mpa)	210		
Working fluid	mineral oil ; phosphate-ester		
Fluid temperature (°C)	-20~70		
Viscosity (mm^2/s)	12~380		

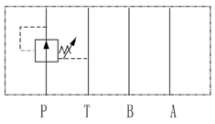
Ordering code

KRDV-06-A-1-2

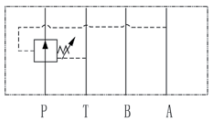
Modular reducing Valve

NOMINAL SIZE: 06 Cetop 3 10 Cetop 5 16 cetop 7
P P Pipeline relief **A** A Pipeline relief
B B Pipeline relief
Adjustment type: 1:rotatory knob 2: sleeve with exagon.
Setting pressure 7 to 70Mpa 1 to 14Mpa 2 to 21Mpa

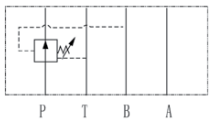
Code symbol



KRDV-P



KRDV-A

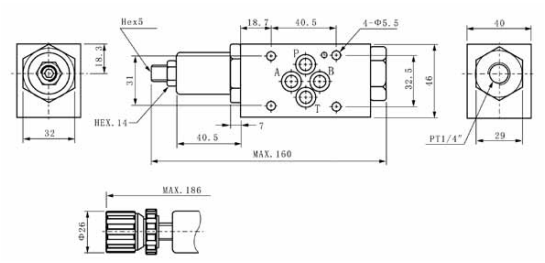


KRDV-B

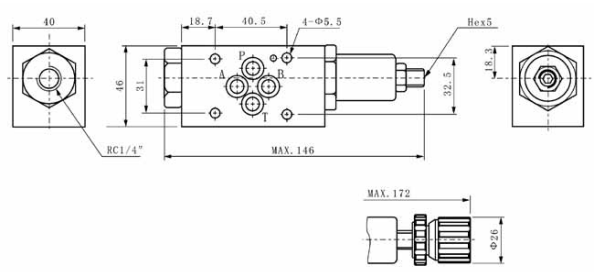
KRDV REDUCING VALVES

Dimensions

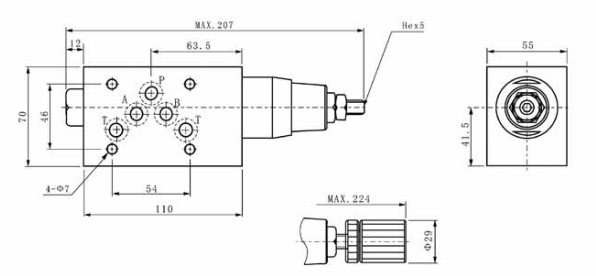
KRDV-06-B



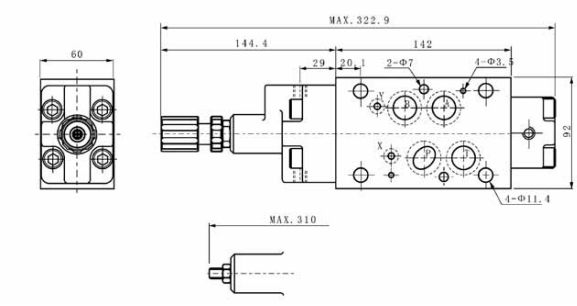
KRDV-06-A/P



KRDV-10-A/B/P



KRDV-16-A/B/P



KCV CHECK VALVES

KCV series modular check valves allow free flow in one direction and block flow in the counter direction.

Technical characteristics

Size	6	10	16
Max. Flow (L/min)	40	100	250
Max. W.P (Mpa)	31.5		
Working fluid	mineral oil ; phosphate-ester		
Fluid temperature (°C)	-20~70		
Viscosity (mm²/s)	12~380		
Opening pressure	A 0.05 B 0.25 C 0.4		

Ordering code

KCV-6-P

Modular check Valve

NOMINAL SIZE: 06 Cetop 3 10 Cetop 5 16 cetop 7

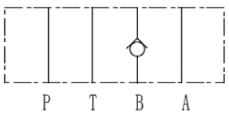
P P Pipeline **A** A Pipeline

B B Pipeline **T** T Pipeline

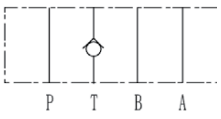
Code symbol

KCV-06-P

KCV-06-A



KCV-06-B

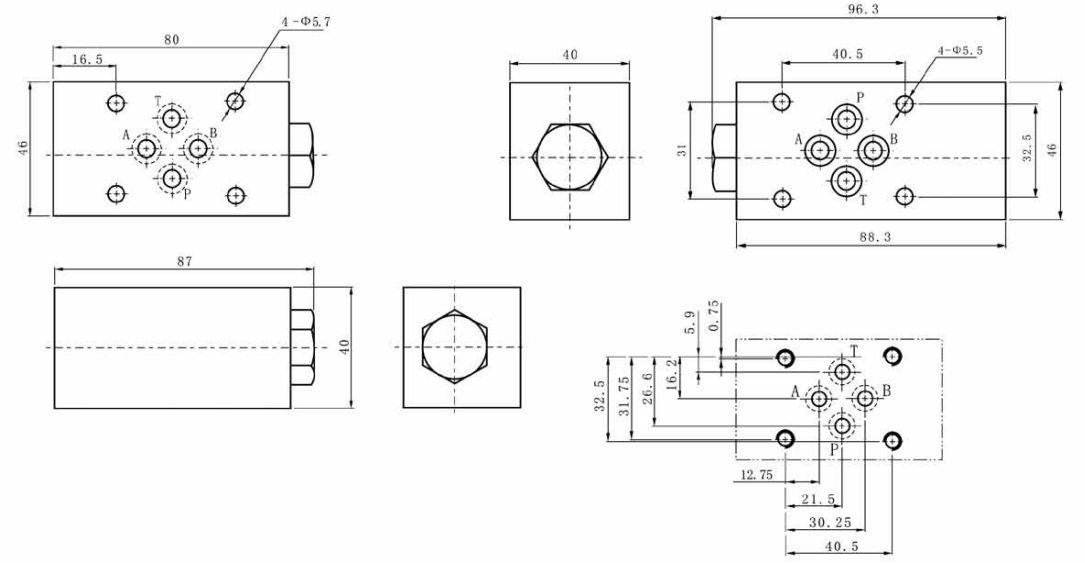


KCV-06-T

KCV CHECK VALVES

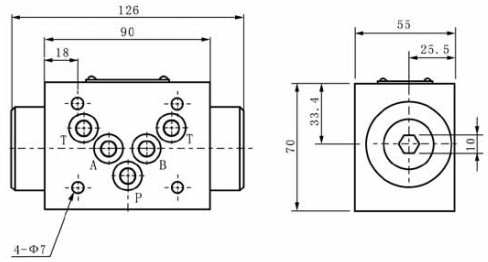
Dimensions

KCV-06-P/T/B

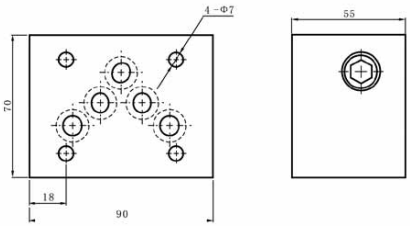


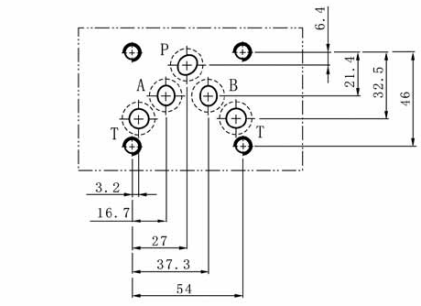
KCV-06-A

KCV-10-A/B

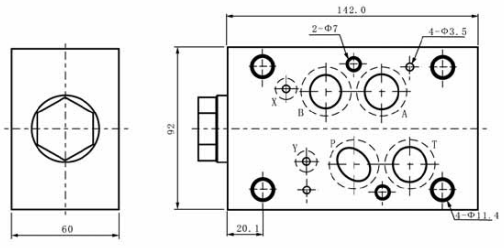


KCV-10-P/T





KCV-16-P



KFR FLOW REGULATOR VALVES

KFR series modular flow regulator valves are used to restrict flow by handle.

Technical characteristics

Size	6	10	16
Max. Flow (L/min)	35	70	200
Max. W.P (Mpa)	31.5		
Working fluid	mineral oil ; phosphate-ester		
Fluid temperature (°C)	-20~70		
Viscosity (mm^2/s)	2.8~380		
Opening pressure	A 0.05		

Ordering code

KFR-6-A-1

Modular flow regulator

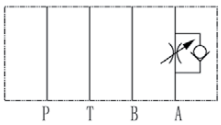
NOMINAL SIZE: 06 Cetop 3 10 Cetop 5 16 cetop 7

A A Pipeline **B** B Pipeline
P P Pipeline **T** T Pipeline **W** AB Pipeline

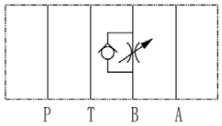
Adjustment type: 1:rotatory knob 2: sleeve with exagon
Throttle direction: Omit meter out 1 meter in

Code symbol

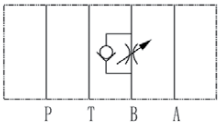
KFR-06-A-**-0



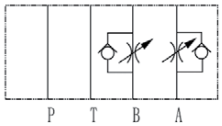
KFR-**-A-**-I



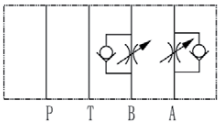
KFR-06-B-**-0



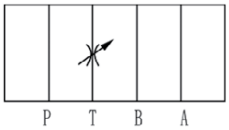
KFR-**-B-**-I



KFR-06-W-**-0



KFR-**-W-**-I

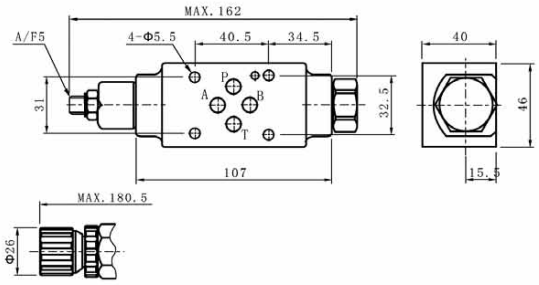


KFR-06/10T

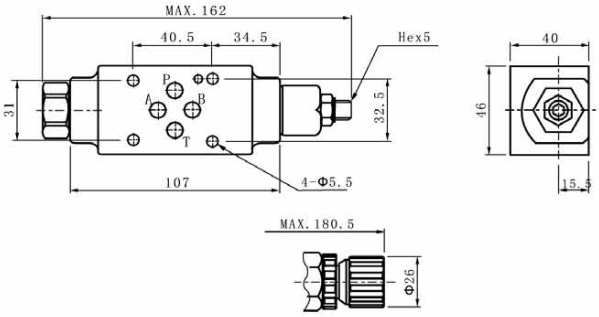
KFR FLOW REGULATOR VALVES

Dimensions

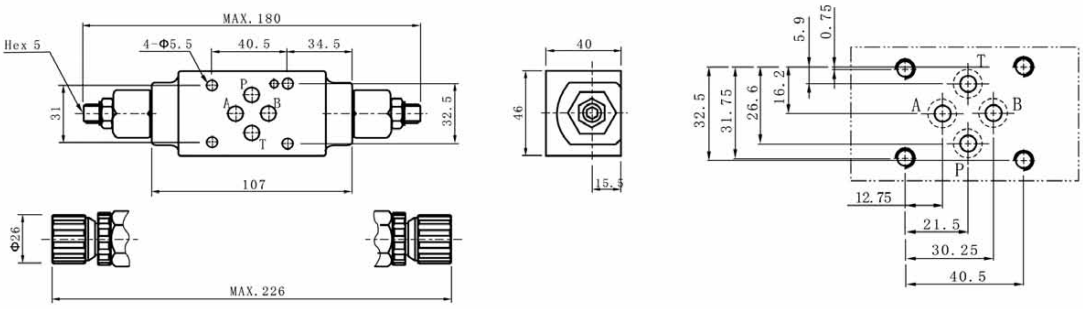
KFR-06-A



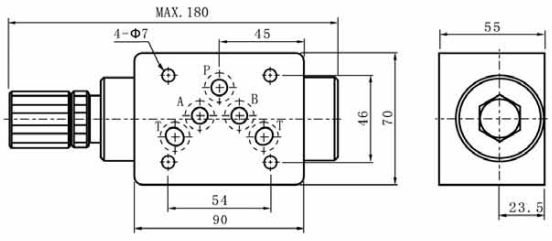
KFR-06-B



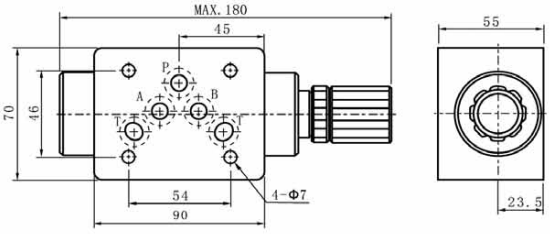
KFR-06-W



KFR-10-A

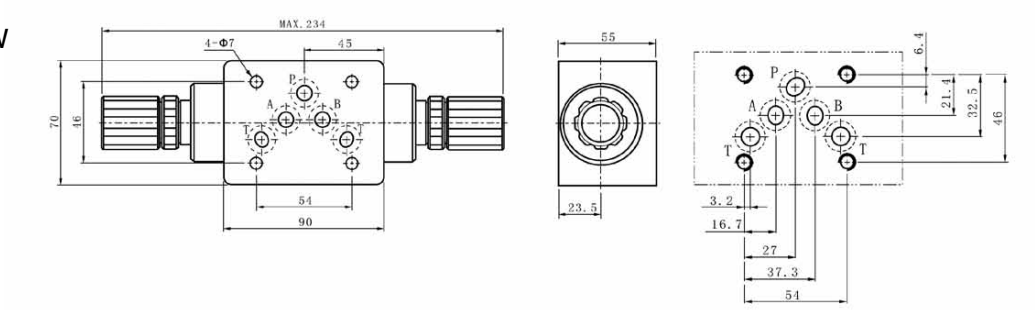


KFR-10-B

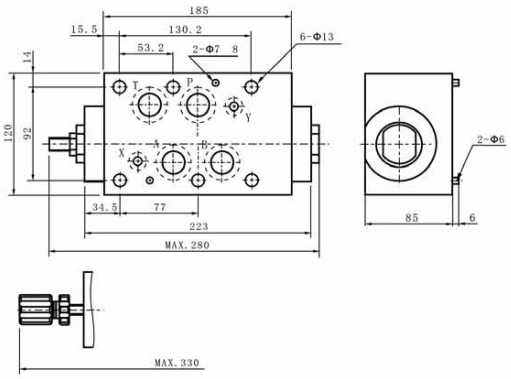


Dimensions

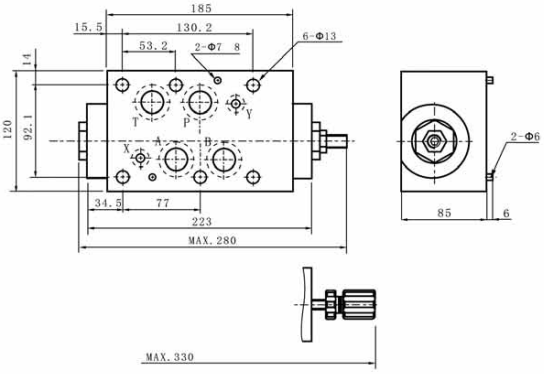
KFR-10-W



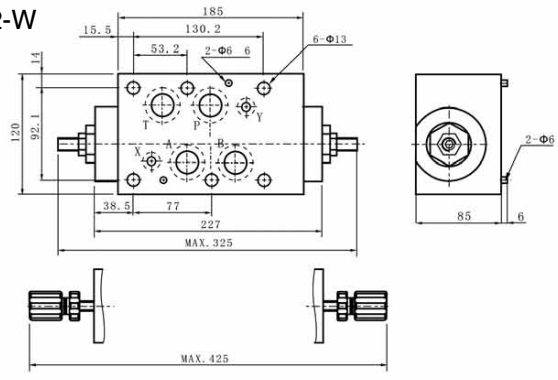
KFR-12-A

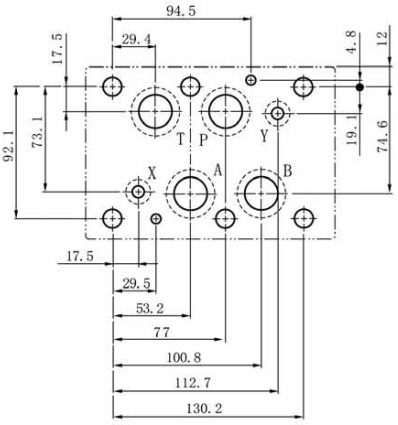


KFR-12-B



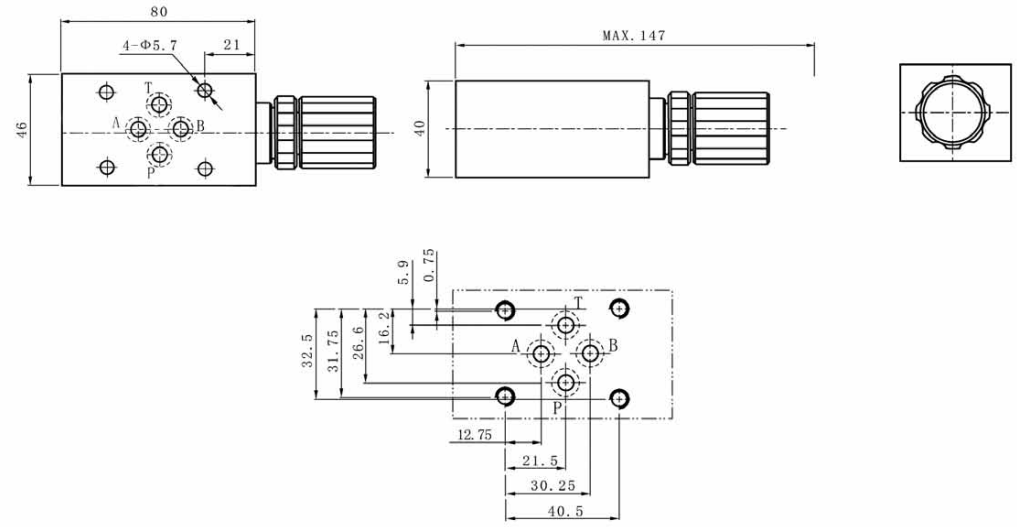
KFR-12-W



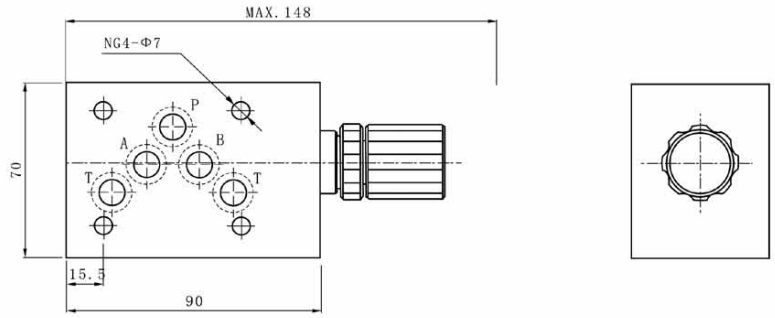


Dimensions

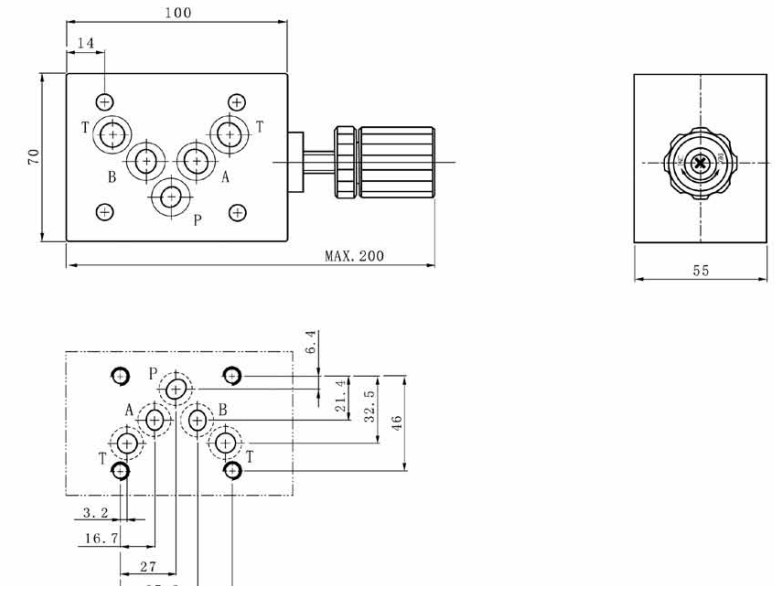
KFR-06-T



KFR-10-T



KFR-CV-10-T



PRESSURE CONTROL

DAM

DAM s series pilot operated relief valves
and DBW series solenoid operated relief valves
can be used to control and unload system pressure.

Technical characteristics

Size	10	20	30
Max. Flow (L/min)	250	500	650
Max. W.P (Mpa)	35		
Working fluid	mineral oil ; phosphate-ester		
Fluid temperature (°C)	-20~70		
Viscosity (mm²/s)	12~380		

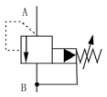
Ordering code

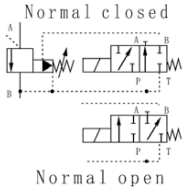
DAM-10-B-1-315-Y-DC24

Pilot operated relief valve+solenoid valve.
Nominal size 10-20-30
State: A normal closed B normal open.
Adjustment type: 1:rotatory knob 2: sleeve with exagon.
Setting pressure 50= 4~50 100 6~100 200 7~200 315 8~315 350 10~350
Oil Control: Omit= Intl control Intl drain XY= Extl control Intl drain
X= Extl control Intl drain Y= Int control Extl drain
Working voltage DC24 DC12 AC110 AC220.

Code symbol

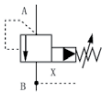
DAM - .....

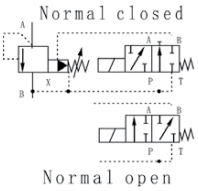




DAM - ..-..

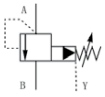
DAM - ..X..

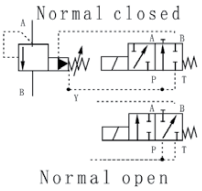




DAM - ..X..

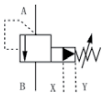
DAM - ..Y..

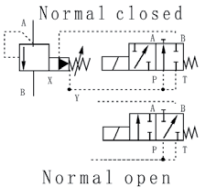




DAM - ..Y..

DAM - ..XY..



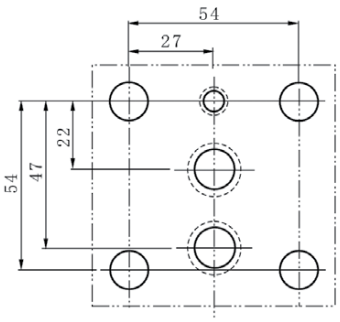


DAM - ..XY..

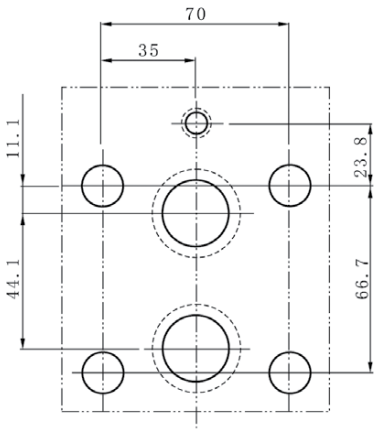
No code	Internal control internal drain
X	External control internal drain
Y	Internal control external drain
XY	External control external drain

DAM

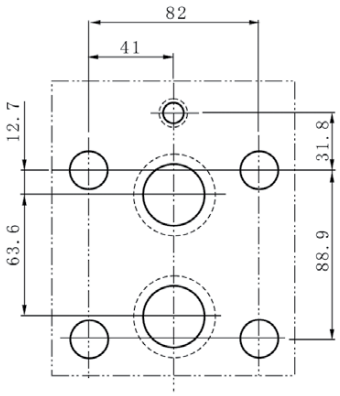
Subplate mounting size:



DAM-10



DAM-20



DAM-30

PRESSURE CONTROL

DIU

DIU series solenoid operated unloading valves are used to unload the oil pumps' pressure in a hydraulic system with accumulator. The valve allows high-pressure pump to operate and low-pressure pump to unload pressure.

Technical characteristics

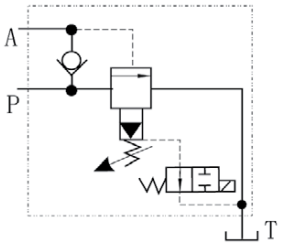
Size	10	20	30
Max. Flow (L/min)	60	120	240
Max. W.P (Mpa)	31.5		
Working fluid	mineral oil ; phosphate-ester		
Fluid temperature (°C)	-20~70		
Viscosity (mm²/s)	12~380		

Ordering code

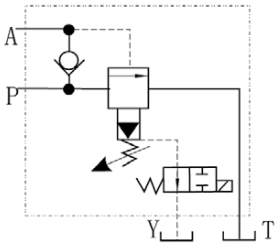
DIU-20-B-1-200-Y-17-DC24

Unloading relief valve+solenoid valve
Nominal size: 10 20 30
State: A normal closed B normal open
Adjustment type: 1:rotatory knob 2: sleeve with exagon
Working pressure: 50 5~50Mpa 100 10~10Mpa 200 80~20Mpa 315 16~31.5Mpa
Oil Control: Omit= Intl control Intl drain XY= Extl control Intl drain
X= Extl control Intl drain Y= Int control Extl drain
Switching differential pressure (P□A) 10 on average 17 on average
Working voltage DC24 DC12 AC110 AC220

Code symbol



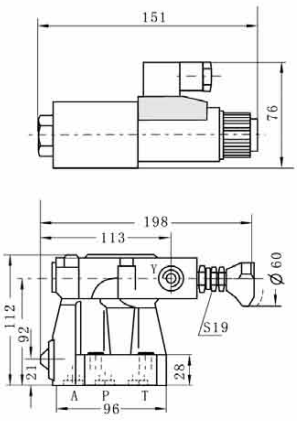
DIU 10/20/30

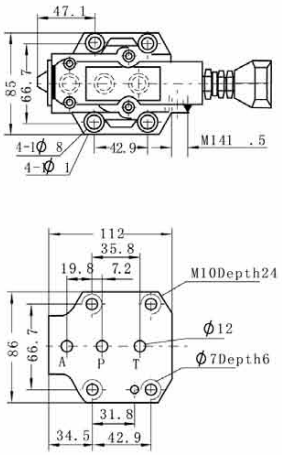


DIU 10/20/30 ...Y...

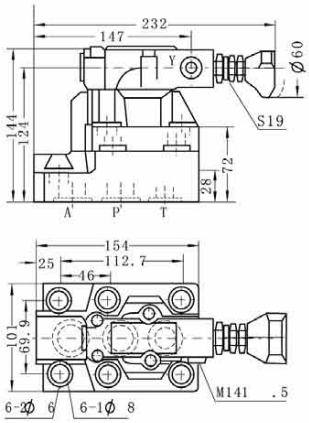
Subplate mounting size:

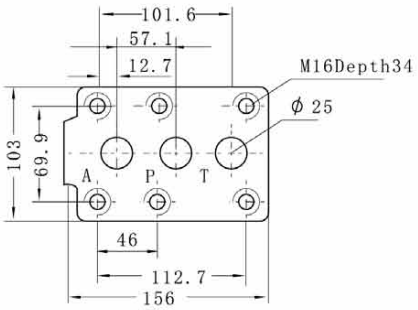
DIU 10



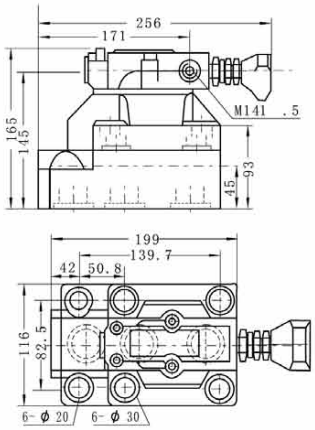


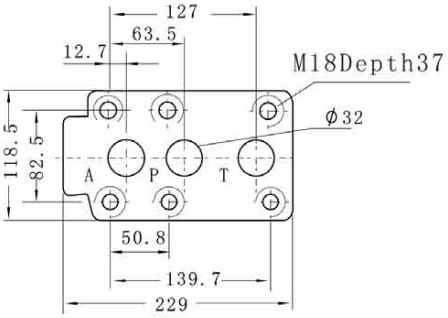
DIU 20





DIU 30





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