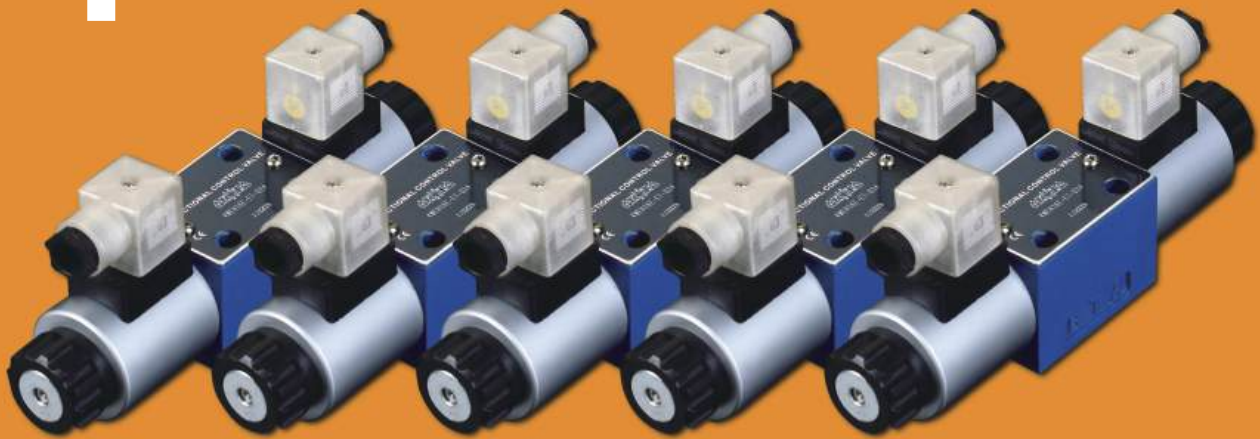




SMART

MH MACHYDRA[™]

Hydraulic Valves



Product Technical Manual

SMART HYDRAULICS CO.,LTD.

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WE3-61 series solenoid operated directional valves

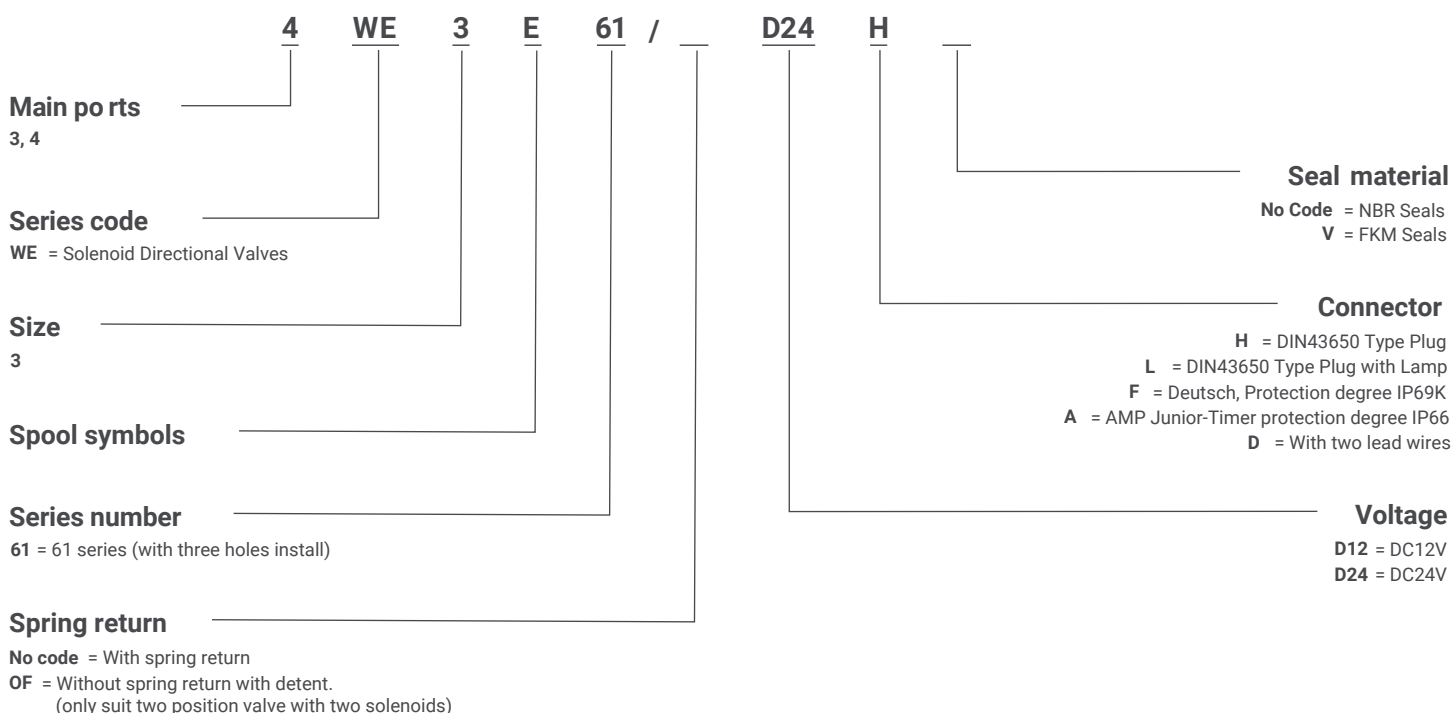


CONTENT

1. WE3-61 series solenoid operated directional valves, using plate connection and meeting the ISO4401 standard, have the smallest shape within the similar products, but still keep the superior performance.
2. It is convenient to replace the coil for the valve body and solenoids with screw connection structure.
3. Adopting wet solenoid, making the commutation action smoothly and low noise.
4. The designation of valve structure is exquisite, and the channel manufacture enjoys high precision, which could get relatively large flow when in a relatively low pressure drop ΔP .
5. Solenoid coils usually according to DIN43650 ISO4400EN175301-803 standard configuration plug, and the shell protection class is IP65. Higher protection class AMP, DEUTSCH plugs can also be configured or using irradiation as the power line of the solenoid directly according to user's need.



ORDERING DETAILS



TECHNICAL DATA

General Data

The total weight of solenoid (with two solenoids)	kg	0.7
The total weight of solenoid (with one solenoid)	kg	0.55
Installation site		anywhere
Ambient temperature	°C	-20~+50 (adopt NBR sealing ring)

Hydraulic Data

Maximum working oil pressure ports P, A and B	bar	315
The highest oil pressure T cavity can bear	bar	100
Rated flow	l/min	10
Maximum flow	l/min	15
Liquid medium		Mineral hydraulic oil, Phosphate ester hydraulic oil
Hydraulic fluid temperature range	°C	-20~+80
Hydraulic fluid cleanliness		ISO4572: $\beta_{10} \geq 75$ NAS1638: level 9
Hydraulic fluid viscosity		ISO-VG32(5420)cSt

Electric Data

Voltage category		DC, RAC(coil with a rectifier component)				
Duty cycle	ED	100%				
Allowed voltage fluctuation range	%	-10~+10				
The reserving and reset time	ms	On 50...90 off 40...80 (do not include RAC type)				
Maximum reversing rate	Hz	3				
Coil insulation class		H				
The maximum operating temperature coil allowed	°C	180				
Coil weight	kg	0.18				
Voltage	V	12	24	48	110	220
Power types		DC	DC	DC	DC	DC
Power rate	Hz	-	-	-	50/60	50/60
Power consumption	W	16	16	16	19	19
Coil resistance(20°C)	ohm	9.5	37	108	108	501
Operating current(20°C)	A	1.3	0.65	0.32	0.21	0.11

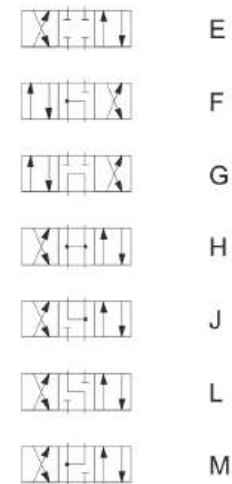
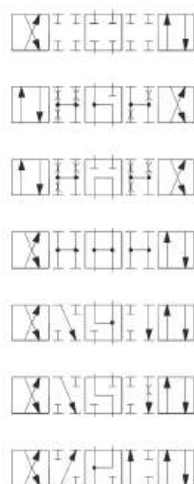
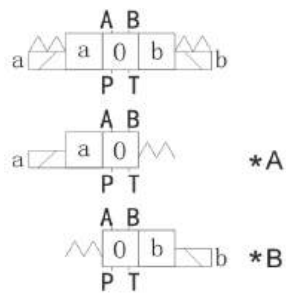
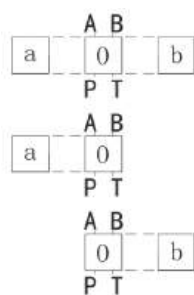
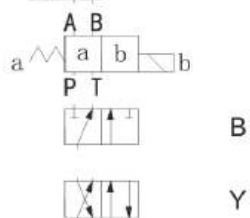
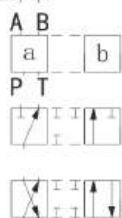
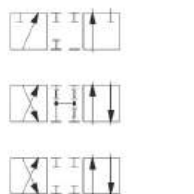
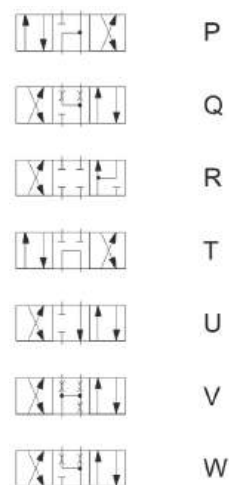
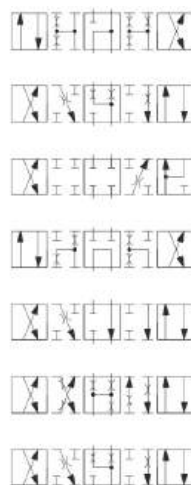
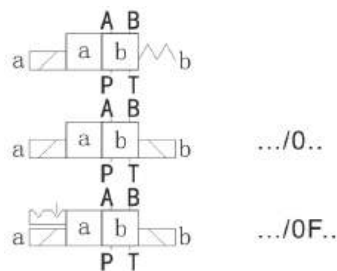
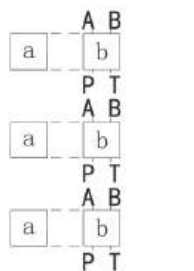
SYMBOLE

TRANSITION SPOOL

SLIDE VALVE SPOOL

TRANSITION SPOOL

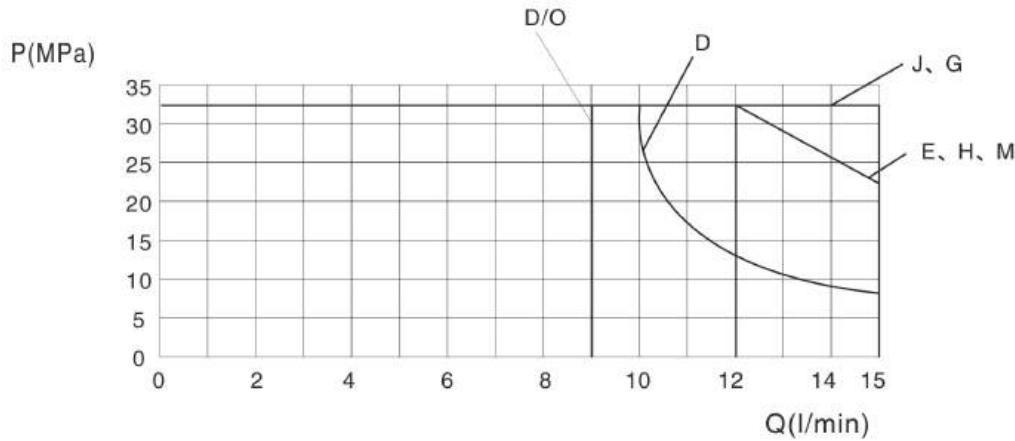
SLIDE VALVE SPOOL



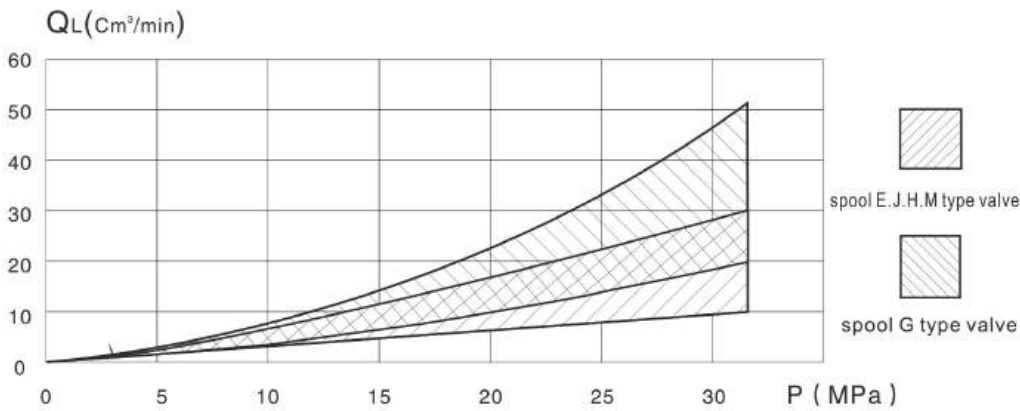
spool take spool position a/b, then its spool code is changed to be *A/*B
 For example: spool E take spool position a, then its spool code is EA

CHARACTERISTIC CURVE

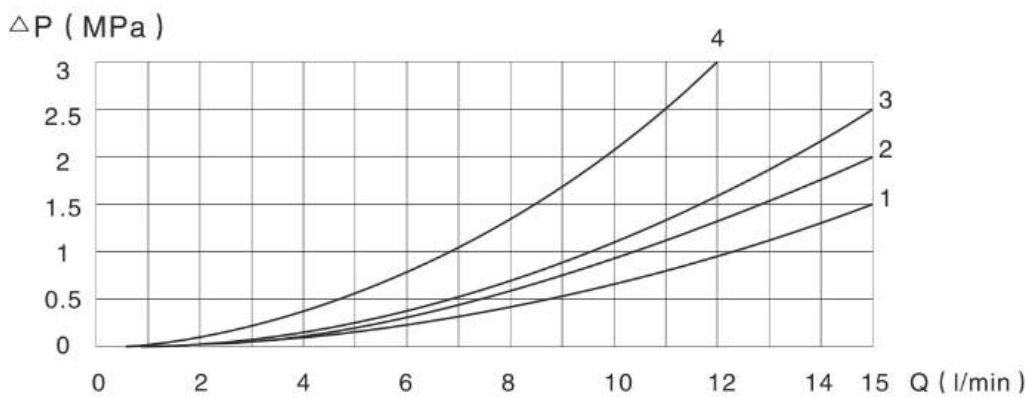
【Flow-pressure feature $P=f(Q)$ 】



【Pressure-leakage feature $P=f(Q)$ 】

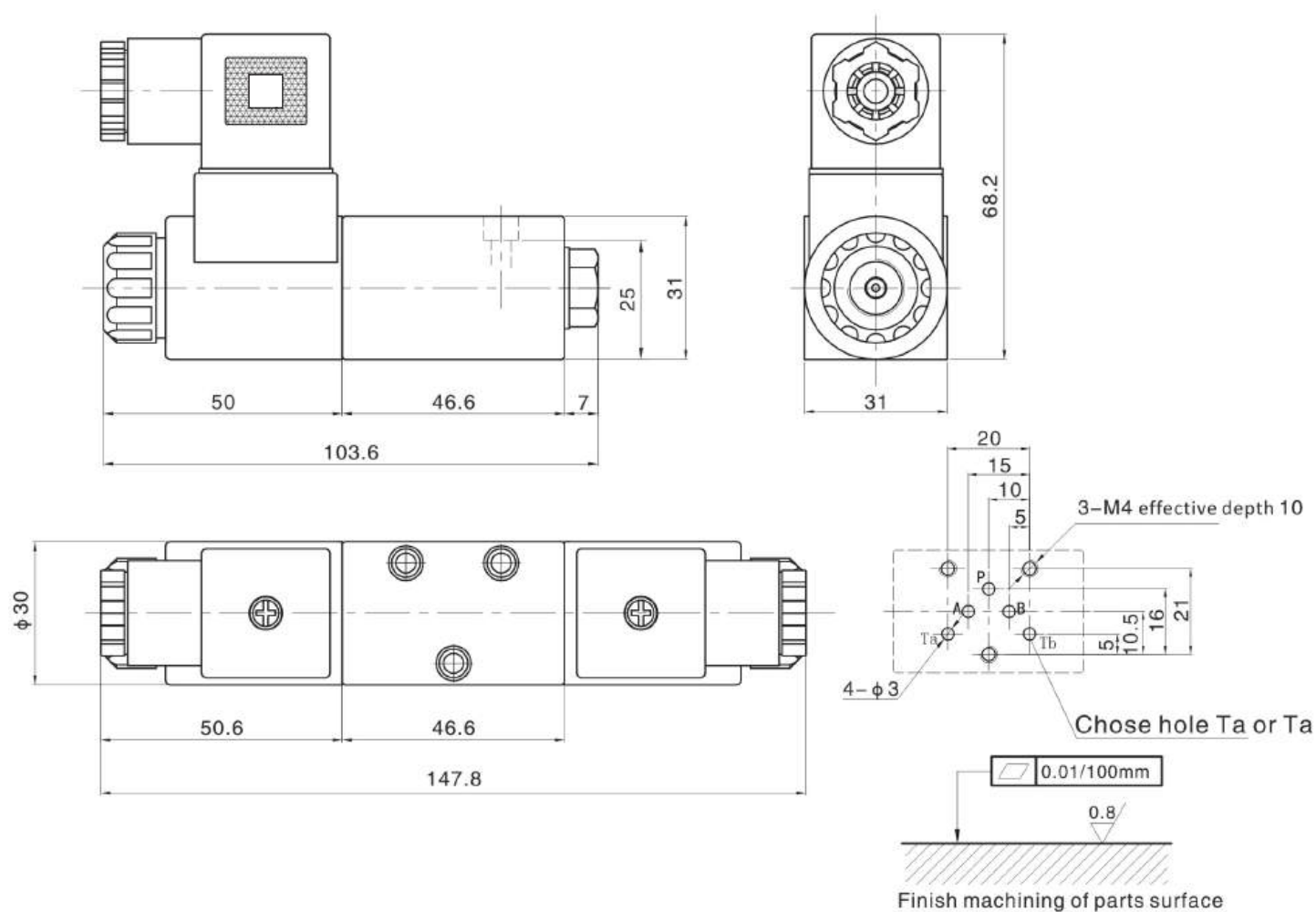


【flow-pressure drop feature $\Delta P=f(Q)$ 】



Spool type	Feature				
	P-A	P-B	P-T	P-T	P-T
D/O.D.Y	3	3	-	2	2
E.EA.EB	3	3	-	2	2
J.JA.JB	3	3	-	1	1
G.GA.GB	4	4	3	4	4
H.HA.HB	4	4	3	1	1
M.MA.MB	2	2	-	2	2

UNIT DIMENSIONS



WE4-60 series solenoid operated directional valves

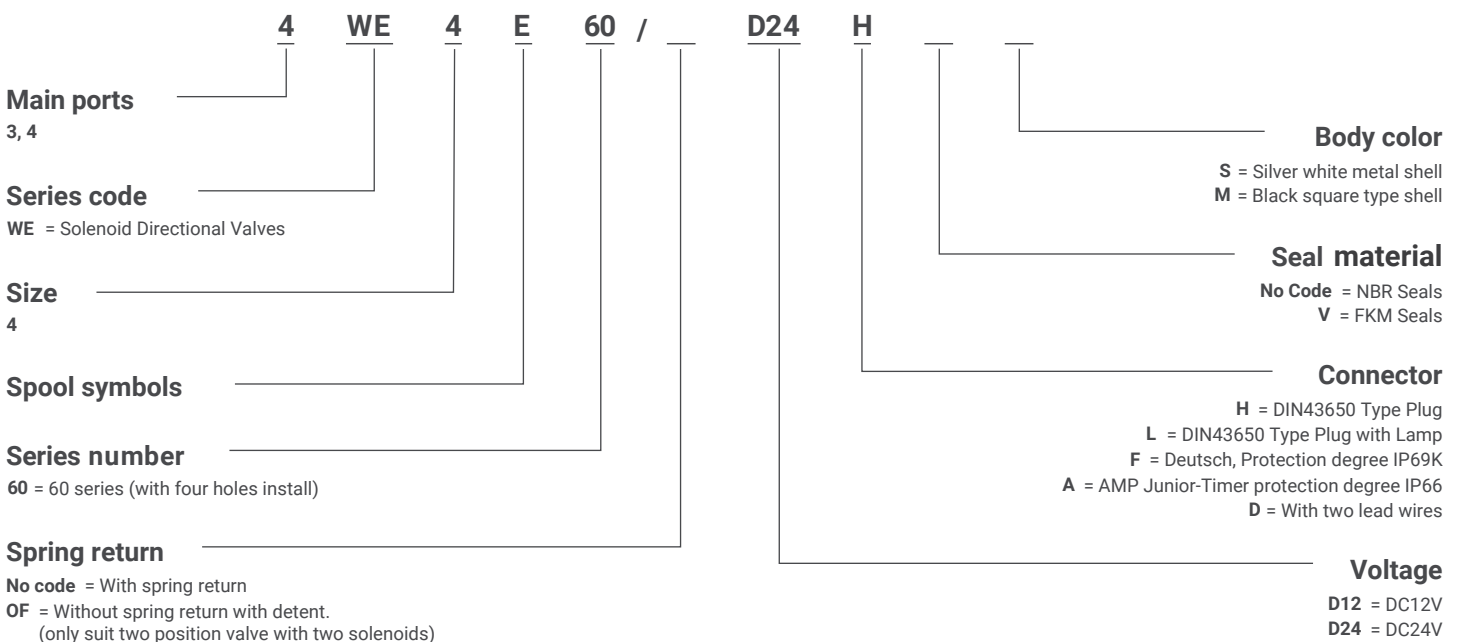


CONTENT

1. WE4-60 series solenoid operated directional valves, using plate connection and meeting the ISO4401 standard, have the smallest shape in the similar products, but still keep the superior performance.
2. It is convenient to replace the coil for the valve and the solenoid use thread connection structure.
3. Adopting wet solenoid, making smoothly reversing action and low noise.
4. The designation of valve structure is exquisite, and the channel manufacture enjoys high precision, which could get relatively large flow when the delta P is low. Solenoid coils usually in DIN43650 ISO4400EN175301-803 standard to configure plug and the protection class is Ip6.
5. Higher protectionclass AMP, DEUTSCH plugs can also be configured or using irradiation as the power line of the solenoid directly.



ORDERING DETAILS



TECHNICAL DATA

General Data

The total weight of solenoid (with two solenoids)	kg	0.89
The total weight of solenoid (with one solenoid)	kg	0.72
Installation site		Optional position
Operating temperature	°C	-20~+50(adopt NBR seal ring)

Hydraulic Data

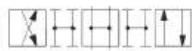
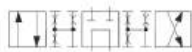
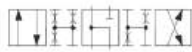
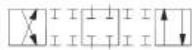
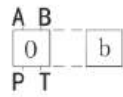
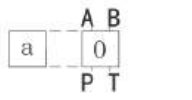
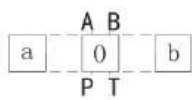
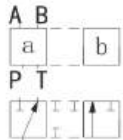
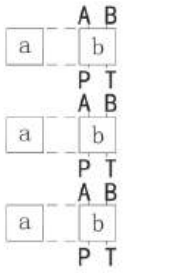
Maximum working oil pressure ports P, A and B	bar	315
The highest oil pressure T cavity can bear	bar	210
Rated flow	l/min	25
Liquid medium		Mineral hydraulic oil, Phosphate hydraulic oil
The oil temperature range	°C	-20~+80
Hydraulic fluid cleanliness		ISO4572: β10≥75NAS1638: level 9
Hydraulic fluid viscosity		ISO-VG32(5420)cSt

Electric Data

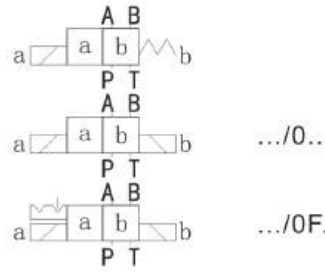
Voltage category		DC, RAC(coil with a rectifier component)					
Duty cycle	ED	100%					
Allowed voltage fluctuation range	%	-10~+10					
The reserving and resetting time	ms	On 50...90 off 40...80 (do not include RAC type)					
Maximum reversing rate	Hz	3					
Coil insulation class		H					
The maximum operating temperature coil allowed	°C	180					
Coil weight	kg	0.215					
Voltage	V	12	24	48	110	R110	R220
Power types		DC	DC	DC	DC	AC	AC
Power rate	Hz	-	-	-	-	50/60	50/60
Power consumption	W	26	26	26	26	29	29
Coil resistance(20°C)	A	2.18	1.10	0.50	0.26	0.33	0.17
Operating current(20°C)	ohm	5.5	22	89	413	89	413

SYMBOLE

TRANSITION SPOOL



SLIDE VALVE SPOOL



.../0..

.../0F..

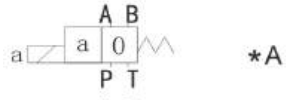
A

C

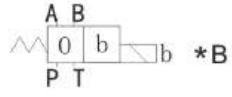
D

B

Y



*A



*B

E

F

G

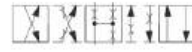
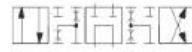
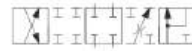
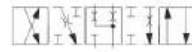
H

J

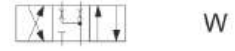
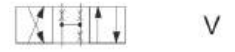
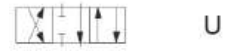
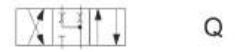
L

M

TRANSITION SPOOL



SLIDE VALVE SPOOL



P

Q

R

T

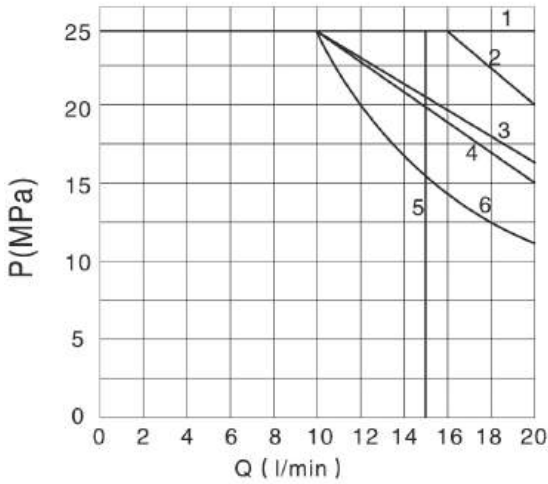
U

V

W

spool take spool position a/b, then its spool code is changed to be *A/*B
 For example: spool E take spool position a, then its spool code is EA

CHARACTERISTIC CURVE



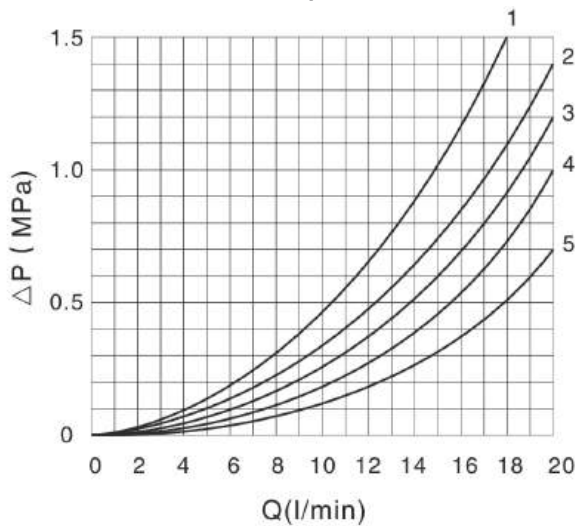
spool type	curve
E	1
M	3
W	1
G	4
J	1
U	1
L	1
Y	2 (6*)
D/OF	5

(6*) = When Y type spool be used to 2 way or 3 way, it meets the curve of No.4

Test condition: the solenoid is on working temperature, input voltage is 10% less than rated value, fluid oil temperature is 40°C, fluid oil viscosity is 46mm²/(40°C). The chart showing is the numerical value when two channels with oil flowing at the same time (For example, from P to A, also from B to T). If the valve with two positions & four way was working, or three position & four way the fluid oil only flow in one way, and the working limit will be changed, even changed to negative value.

When testing, close the spool regularly, oil pressure is 12.5 Mpa, flow is 10L/min, the standard coil without other additional electronic device is under working temperature. The data as the chart showing influenced by the following factors: the changes from hydraulic circuit, working medium, pressure, flow and temperature.

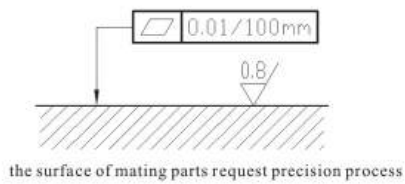
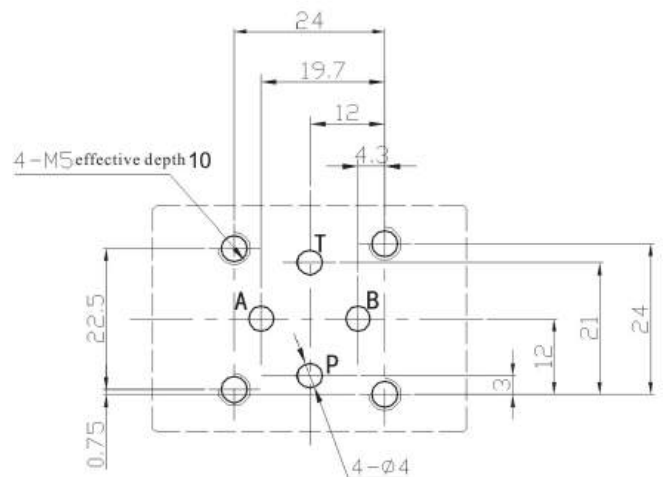
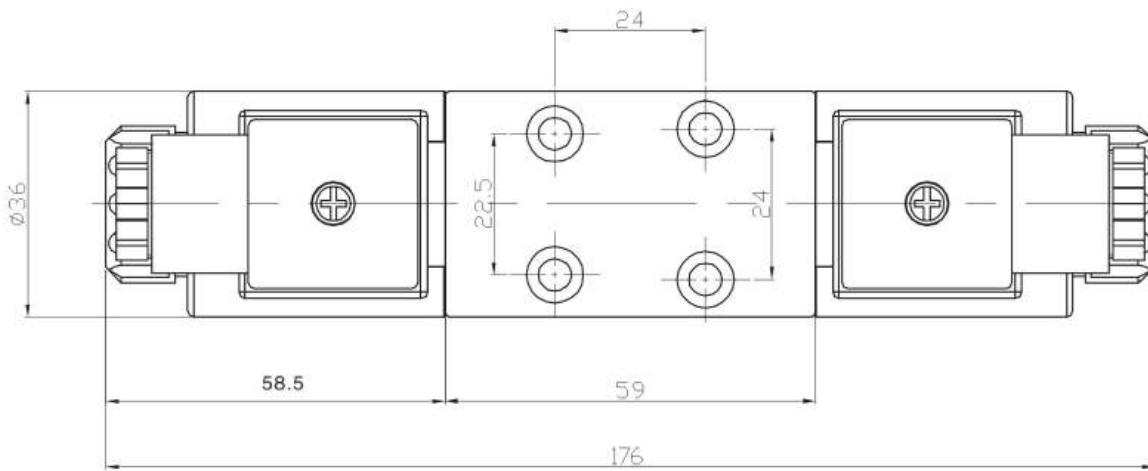
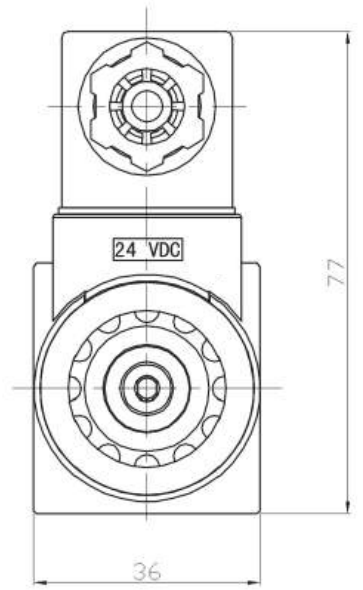
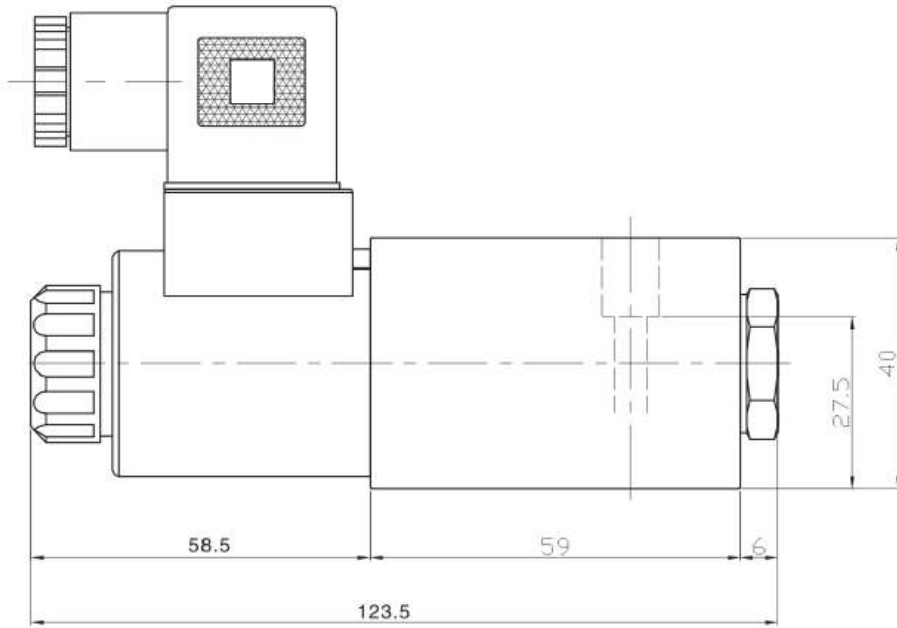
【Pressure drop-flow curve】



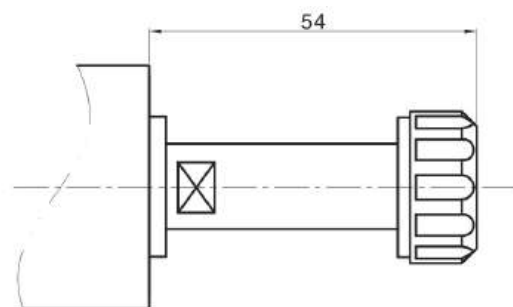
spool type	flow direction				
	P→A	P→B	A→T	B→T	P→T
E	2	2	4	4	
H	4	4	5	5	3
W	2	2	5	5	
G	2	2	2	2	1
J	4	4	2	2	
U	3	3	3	3	
L	3	3	5	5	
Y	3	3	4	4	
D/OF	3	3	4	4	
curve code					

Above chart is the pressure drop curve when the spool working regularly.
Testing condition: fluid oil viscosity is 46mm²/s, fluid oil temperature is 40°C

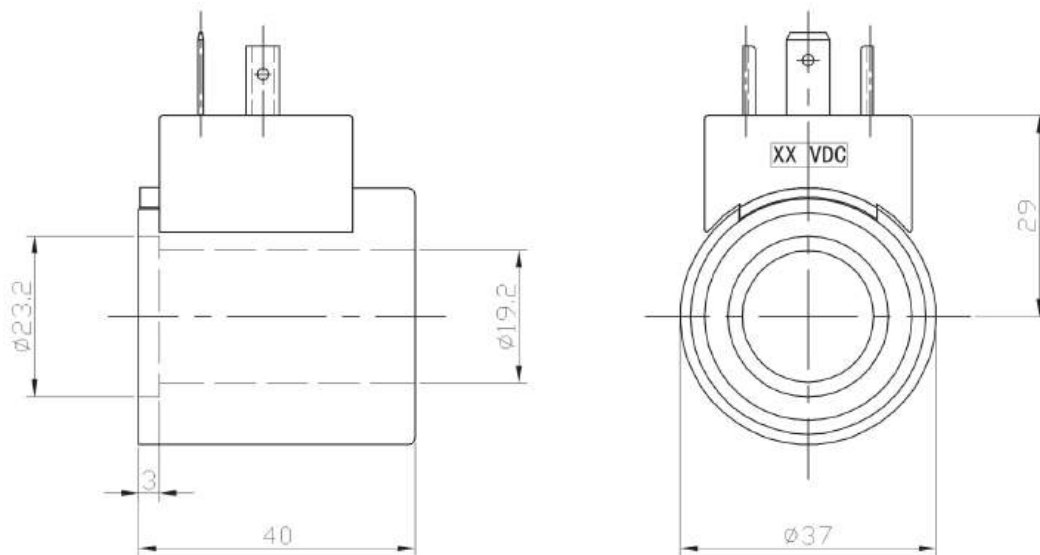
UNIT DIMENSIONS



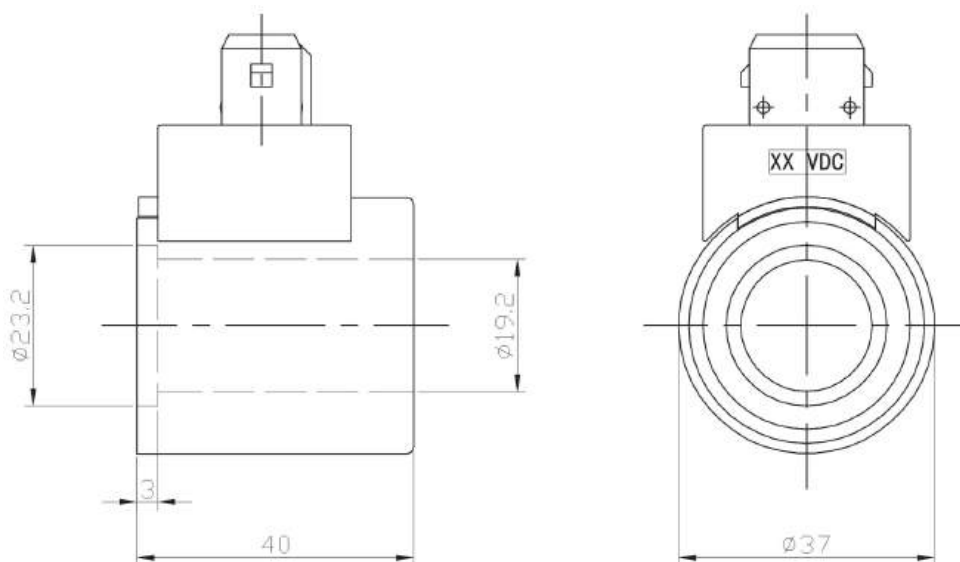
Without coil, fastening the tube and locknut on the homologous valve body, according to the different IP grade, then choose the coil with homologous structure.



Coil with connector meets DIN43650EN175301-803 ISO4400

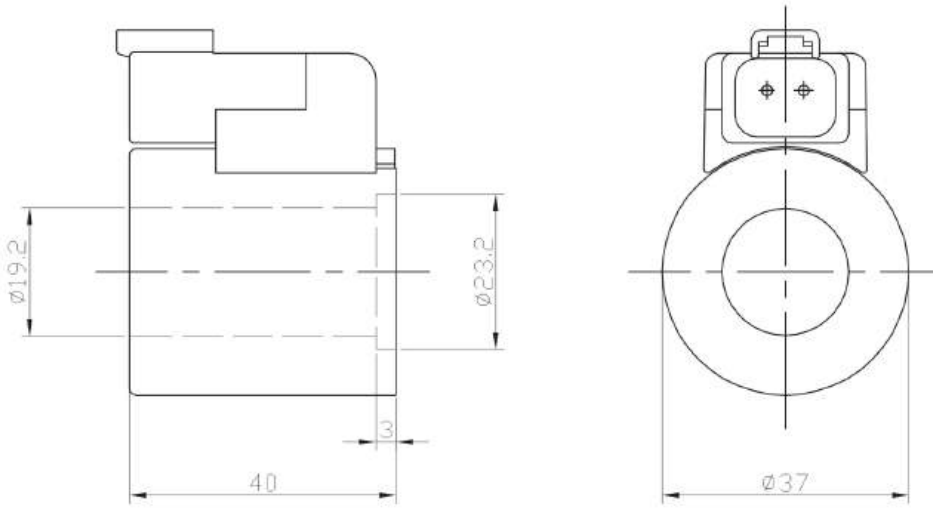


Coil with connector AMP, the IP grade of coil house is IP67

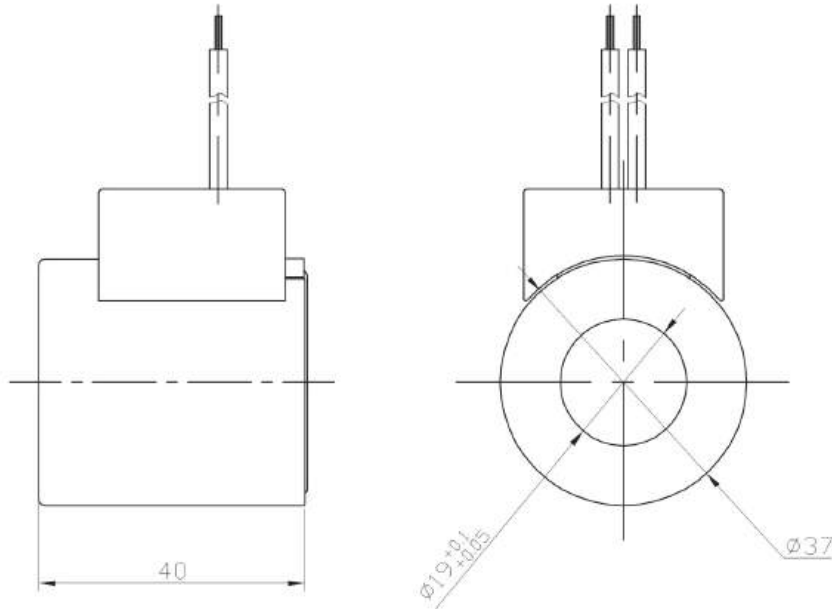


【Option of electronic connector】

coil with connector DEUTSCH DT04-2P, the IP grade of coil house is IP-69K



coil with irradiation ray (length 350mm,also can choose as user's requirement)



WE4-61 series solenoid operated directional valves

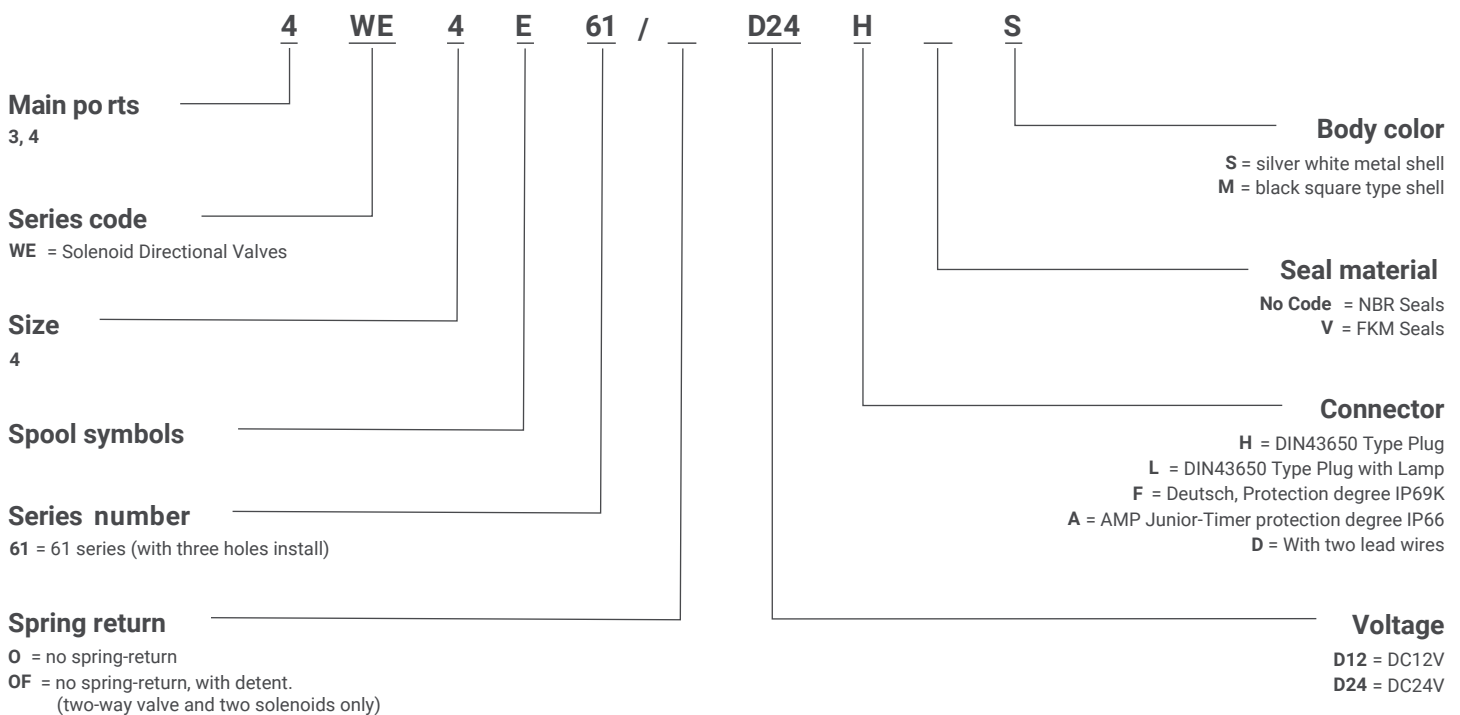


CONTENT

1. WE4-61 series solenoid operated directional valves, using plate connection and meeting the ISO4401 standard, have the smallest shape in the similar products, but still keep the superior performance.
2. The valve adopts five groove runners, three mounting holes.
3. It is convenient to replace the coil for the valve and solenoids use thread connection structure.
4. Adopting wet solenoid, making smoothly reversing action and low noise.
5. The designation of valve structure is exquisite, and the channel manufacture enjoys high precision, which could get relatively large flow when the delta P is low.
6. Solenoid coils usually in DIN43650 ISO4400EN175301-803 standard to configure plug and the protection class is IP65. Higher protection class AMP, DEUTSCH plugs can also be configured or using irradiation as the power line of the solenoid directly according to users need.



ORDERING DETAILS



TECHNICAL DATA

General Data

The total weight of solenoid (with two solenoids)	kg	0.89
The total weight of solenoid (with one solenoid)	kg	0.72
Installation site		Optional position
Operating temperature	°C	-20~+50(adopt NBR seal ring)

Hydraulic Data

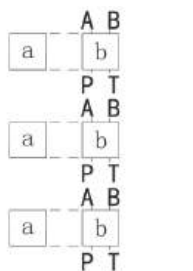
Maximum working oil pressure ports P, A and B	bar	315
The highest oil pressure T cavity can bear	bar	180
Rated flow	l/min	20
Liquid medium		Mineral hydraulic oil, Phosphate hydraulic oil
The oil temperature range	°C	-20~+80
Hydraulic fluid cleanliness		ISO4572: β10≥75NAS1638: level 9
Hydraulic fluid viscosity		ISO-VG32(5420)cSt

Electric Data

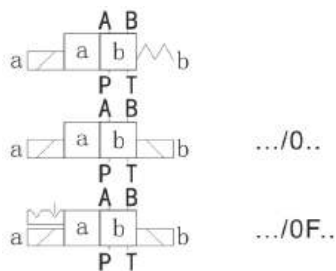
Voltage category		DC, RAC(coil with a rectifier component)					
Duty cycle	ED	100%					
Allowed voltage fluctuation range	%	-10~+10					
The reserving and reset time	ms	On 50...90 off 40...80 (do not include RAC type)					
Maximum reversing rate	Hz	3					
Coil insulation class		H					
The maximum operating temperature coil allowed	°C	180					
Coil weight	kg	0.215					
Voltage	V	12	24	48	110	R110	R220
Power types		DC	DC	DC	DC	AC	AC
Power rate	Hz	-	-	-	-	50/60	50/60
Power consumption	W	26	26	26	26	29	29
Coil resistance(20°C)	A	2.18	1.10	0.50	0.26	0.33	0.17
Operating current(20°C)	ohm	5.5	22	89	413	89	413

SYMBOLE

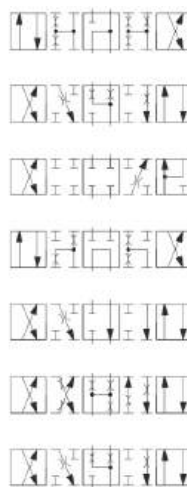
TRANSITION SPOOL



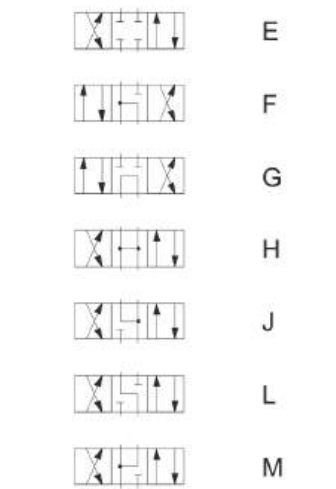
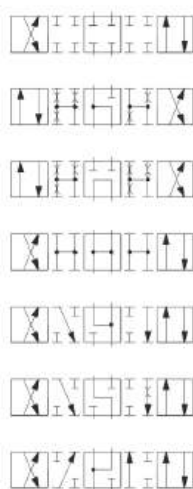
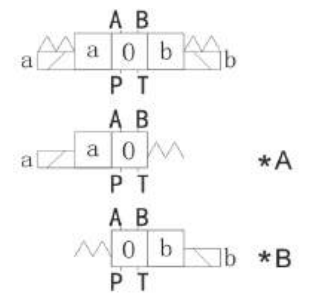
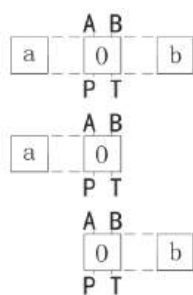
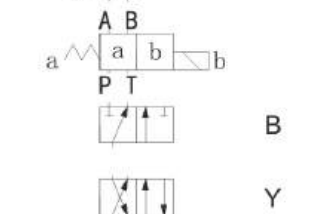
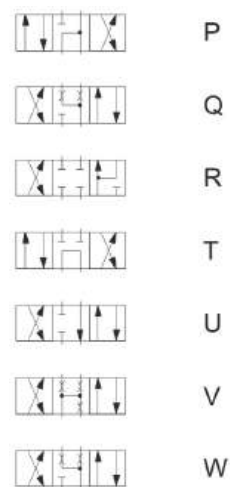
SLIDE VALVE SPOOL



TRANSITION SPOOL

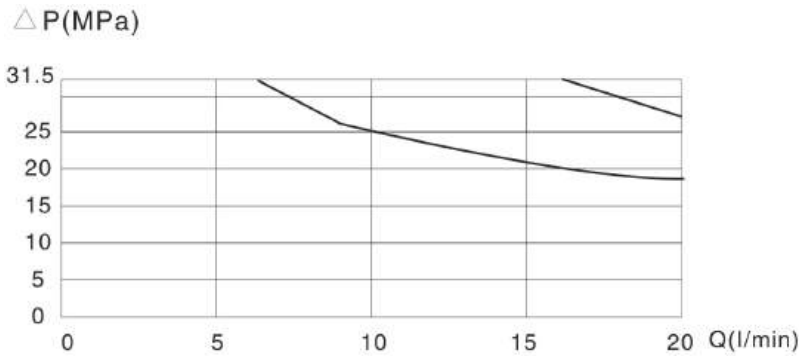


SLIDE VALVE SPOOL



spool take spool position a/b, then its spool code is changed to be *A/*B
 For example: spool E take spool position a, then its spool code is EA

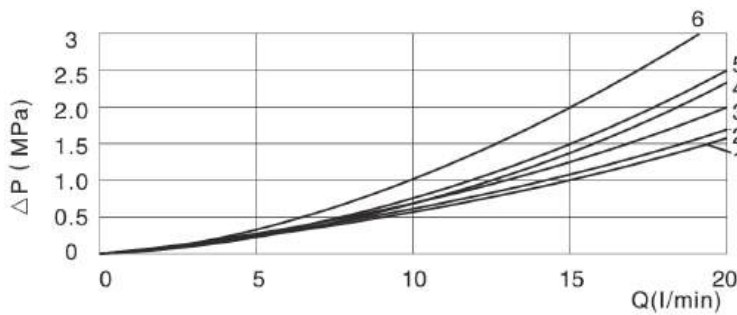
CHARACTERISTIC CURVE



Test condition: the solenoid is on working temperature, input voltage is 10% less than rated value, fluid oil temperature is 40°C, fluid oil viscosity is 46mm²/(40°C). The chart showing is the numerical value when two channels with oil flowing at the same time (For example, from P to A, also from B to T). If the valve with two positions four way, or three position four way was working, the fluid oil only flow in one way, and the working limit will be changed, even changed to negative value.

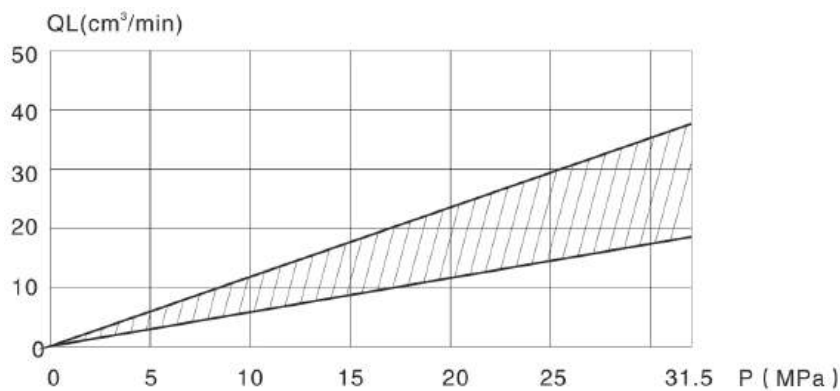
When testing, close the spool regularly, oil pressure is 12.5Mpa, flow is 10L/min, the standard coil without other additional electronic device is under working temperature. The data as the chart showing influenced by the following factors: the changes from hydraulic circuit, working medium, pressure, flow and temperature.

【Flow-pressure drop feature $\Delta P=f(Q)$ 】

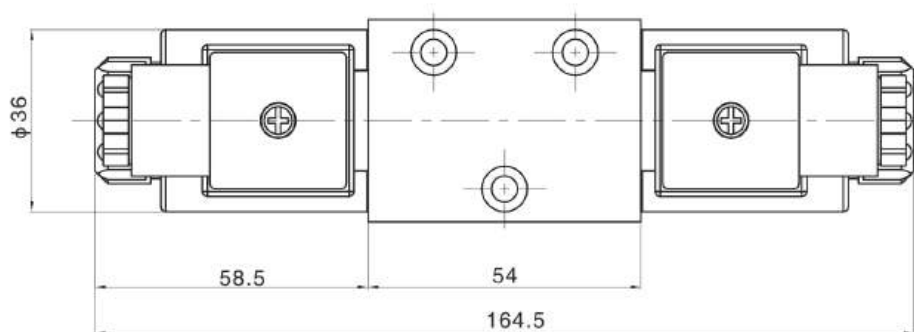
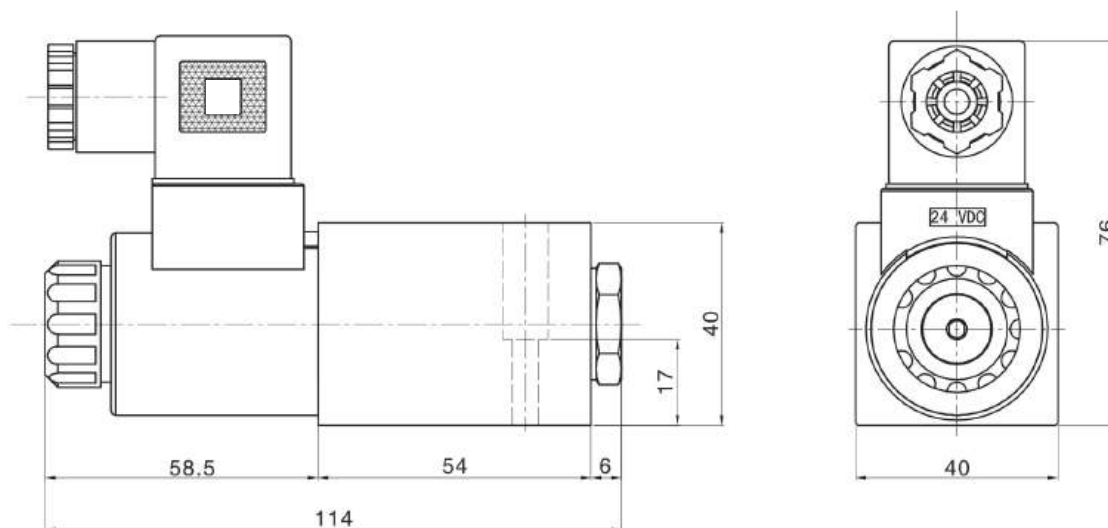


spool type	feature				
	P-A	P-B	P-T	A-T	B-T
D,Y	5	5	-	2	2
E,EA,EB	5	5	-	2	2
J,JA,JB	5	5	-	1	1
G,GA,GB	4	4	6	2	2
H,HA,HB	4	4	3	2	2
M,MA,MB	4	4	-	2	2

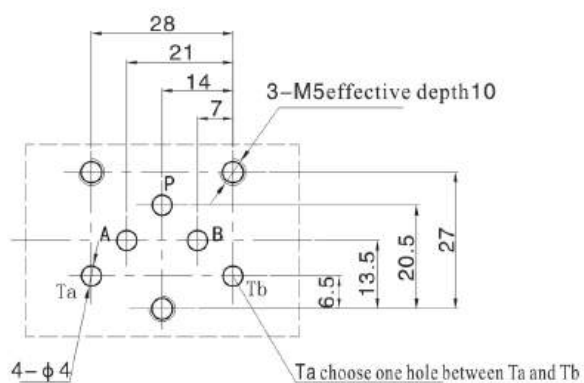
【 $QL=f(P)$ pressure-leakage feature】



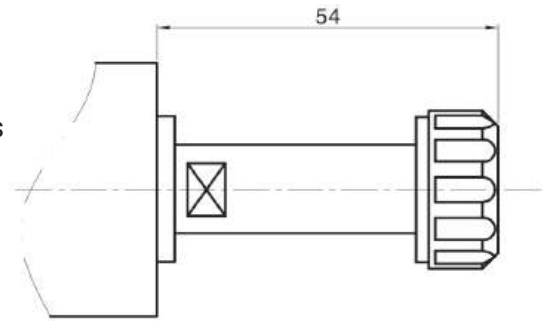
UNIT DIMENSIONS



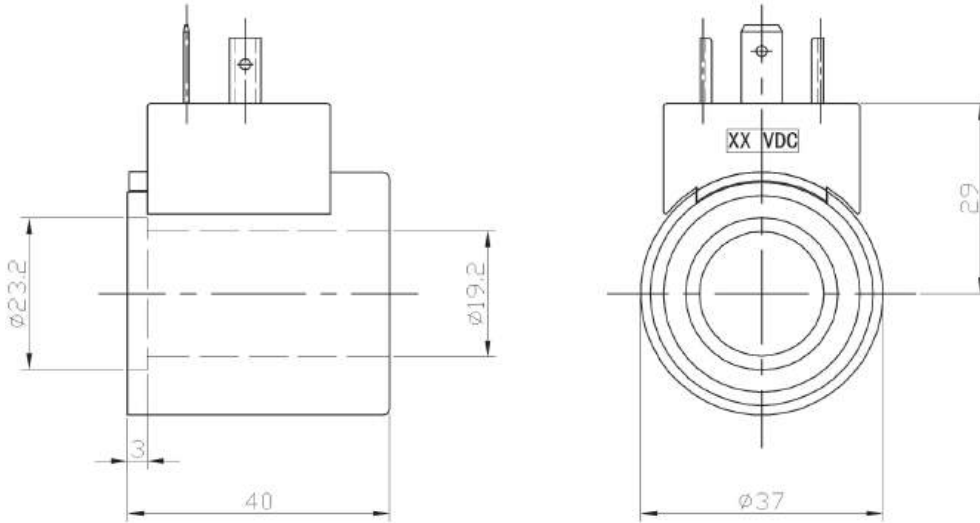
the surface of mating parts request precision process



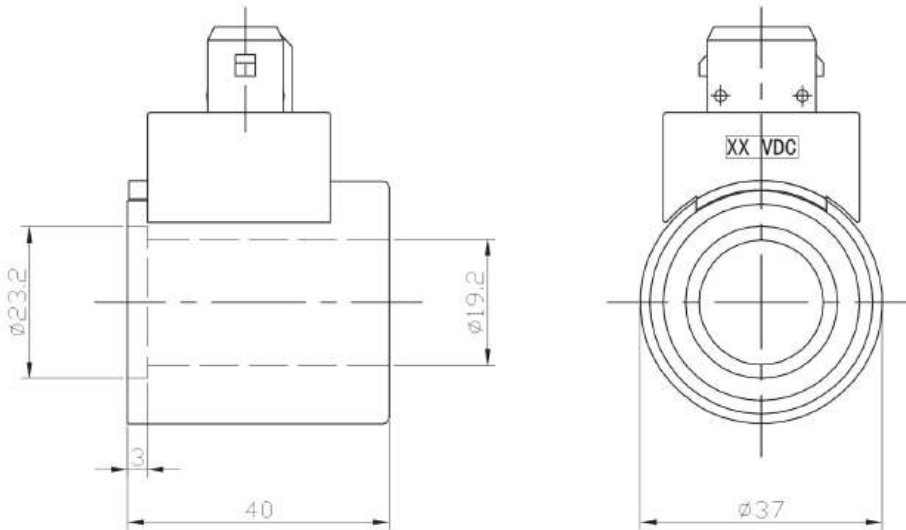
Without coil, fastening the tube and locknut on the homologous valve body, according to the different IP grade, then choose the coil with homologous structure.



Coil with connector meets DIN43650EN175301-803 ISO4400

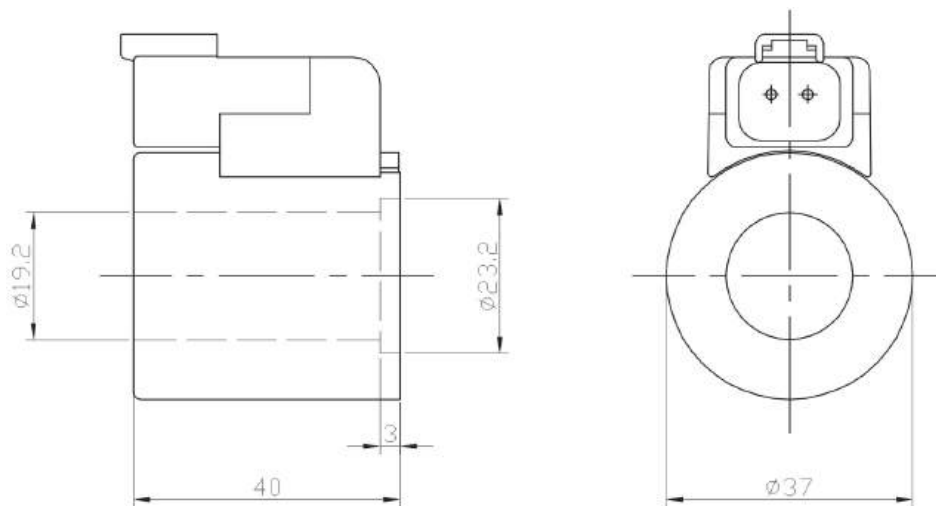


Coil with connector AMP, the IP grade of coil shell is IP67

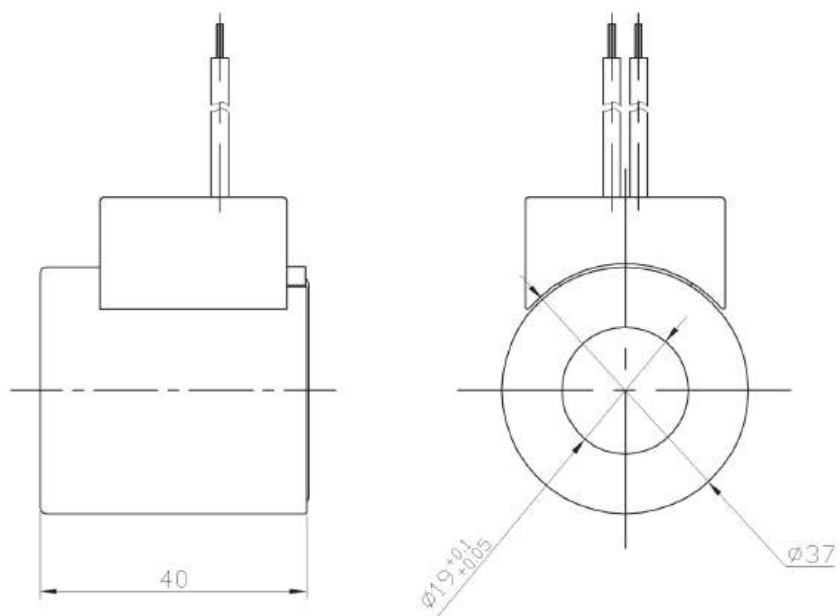


【Option of electronic connector】

Coil with connector meets DIN43650EN175301-803 ISO4400



Coil with connector meets DIN43650EN175301-803 ISO4400



WE6-6X series wet-type solenoid operated directional valves

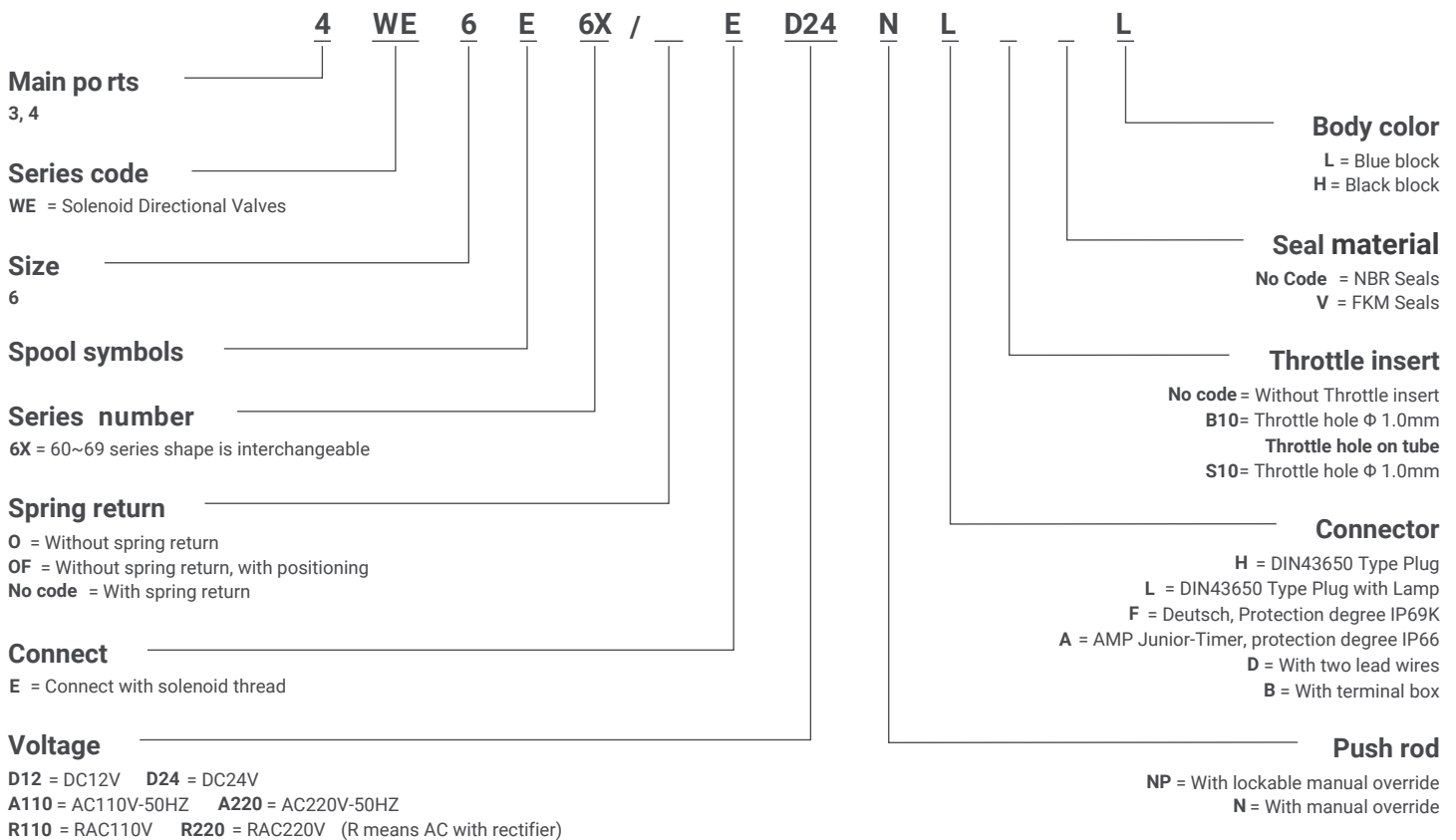


CONTENT

1. Direct-acting solenoid operational direction valve as standard type.
2. Installation area by DIN24340 type A
3. DC or AC wet-type solenoid that can be arbitrary rotation and with detachable coil.
4. Coil can be replaced without oil.
5. Equipped with manual emergency operation push rod.



ORDERING DETAILS



TECHNICAL DATA

General Data

Mounting position		optional
Operating temperature	°C	-30~+50 (nitrile rubber seal)
Operating temperature	°C	-20~+50 (rubber seal)
Weight	Single solenoid valve	kg 1.45
Weight	Double solenoid valve	kg 1.95

Hydraulic Data

Maximum operating pressure fluid ports P, A and B	bar	315
Hydraulic fluid port	bar	21(DC);16(AC) When working pressure exceeds the allowable pressure, valves with the sign bit A, B must use T as oil drain port
Maximum flow rate	l/min	80(DC);60(AC)
Flux areas when in the median	Type Q mm ²	About 6% of the nominal cross-sectional area
	Type W mm ²	About 6% of the nominal cross-sectional area
Hydraulic oil 1.Suitable for nitrile rubber and fluoro rubber seal 2.Fluoro seal only		Mineral oil (HL, HLP) by DIN51 524 Rapid biological solution oil by VDMA24 568 HETG1); HEPG2); HEES 3)
Hydraulic fluid cleanliness	°C	-30~+80 (nitrile rubber seal); -20~+80 (rubber seal)
Viscosity range	mm ² /s	2.8-500
Oil cleanliness		The highest oil pollution level by NAS1639 Class 9 recommend minimum filter filtration precision β10≥75

Electric Data

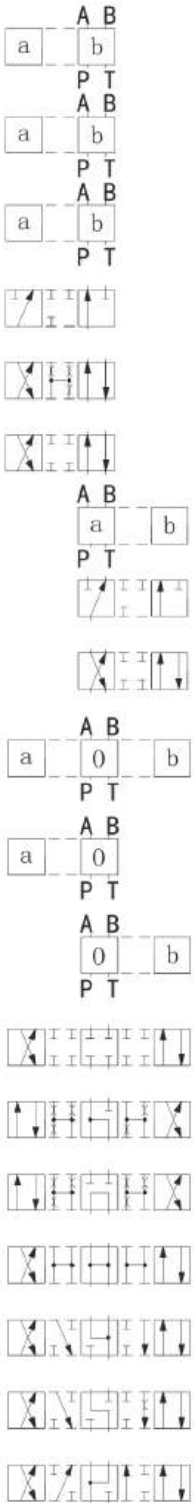
Voltage category		DC	AC(50HZ)
Duty cycle	ED	12, 24, 48, 110, 220	110, 220
Allowed voltage fluctuation range	%	-15~+10	-15~+10
Power consumption	W	30	-
Holding current	A	-	0.27(220V)
Starting current	A	-	0.72(220V)
Working system	ED%	100	100
Reversing time	ms	125~145	10~20
Resetting time	ms	100~250	15~40
Switching time	times/h	≤15000	≤7200
Protection class by DIN 40050		IP65(AMP:IP66)	(Deutsch:IP69k)
Maximum coil temperature	°C	135°C(Class B)	180°C(Class H)

NOTICE:

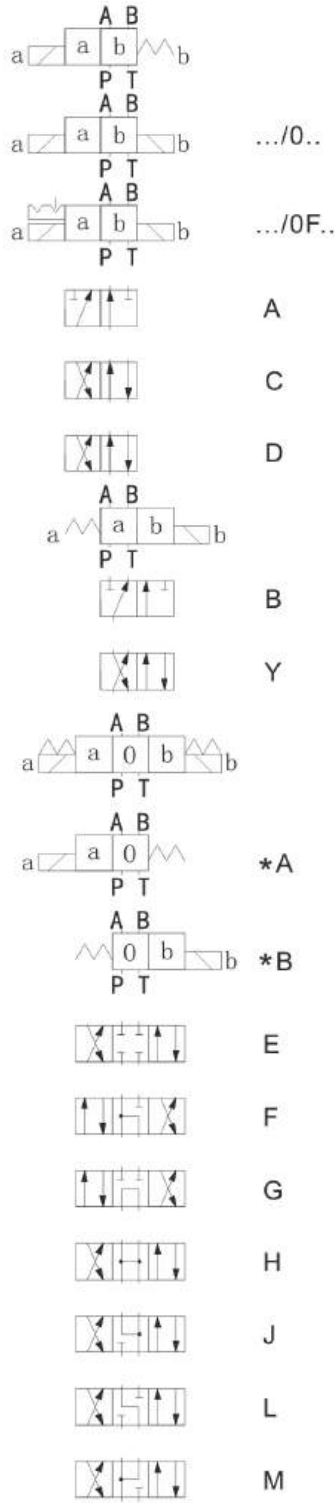
- 1) Grounding according to the provision when connecting electricity to protect wires.
- 2) The reversing time of RAC is close to DC, but the resetting time is longer and random.

SYMBOLE

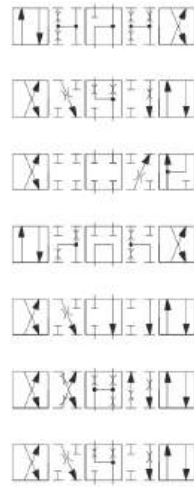
TRANSITION SPOOL



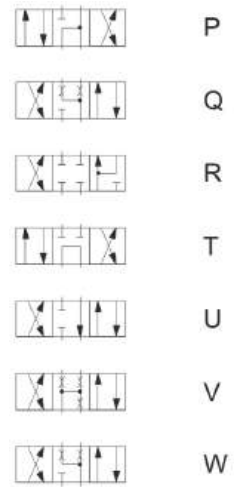
SLIDE VALVE SPOOL



TRANSITION SPOOL



SLIDE VALVE SPOOL

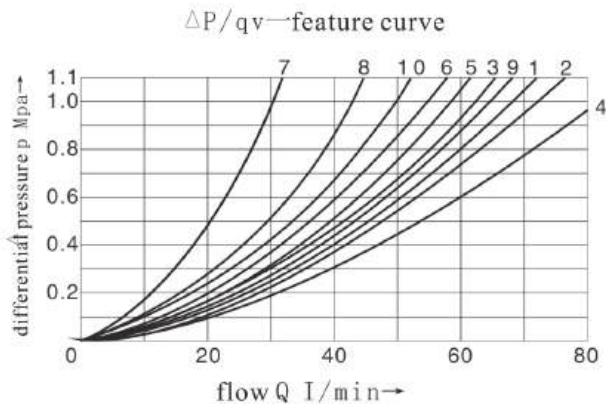


spool take spool position a/b, then its spool code is changed to be *A/*B
 For example: spool E take spool position a, then its spool code is EA

CHARACTERISTIC CURVE

【Feature curve】

(testing result on basis of that when $v=41\text{mm/s}$ & $t=50^\circ\text{C}$)



Curve 7: spool type "R" is in switch position A→B
 Curve 8: spool type "G" and "T" are in median position P→T
 Curve 9: spool type "H" is in median position P→T

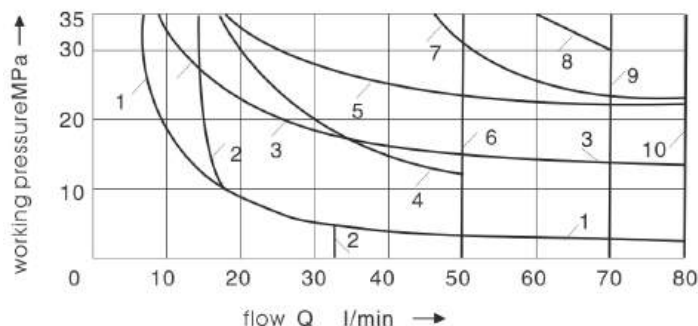
spool symbol	flow direction			
	P-A	P-B	A-T	B-T
A,B	3	3	-	-
C	1	1	3	1
D,Y	5	5	3	3
E	3	3	1	1
F	1	3	1	1
T	10	10	9	9
H	2	4	2	2
J,Q	1	1	2	1
L	3	3	4	9
M	2	4	3	3
P	3	1	1	1
R	5	5	4	-
V	1	2	1	1
W	1	1	2	2
U	3	3	9	4
G	6	6	9	9

【Switching performance limit】

(Testing result on basis of using HLP46, $t=50^\circ\text{C}$)

1. The working limit can be used for both the two flow direction (For example: Flow return from B to T, at the same time, flow from P to A)
2. Power limit tested when solenoid is at working temperature, under voltage 10%, and port T have no back pressure.
3. When unidirectional flow (if it was clogged from P to A, B port), due to the fluid power in the valve, the allowed switching limit may drop.

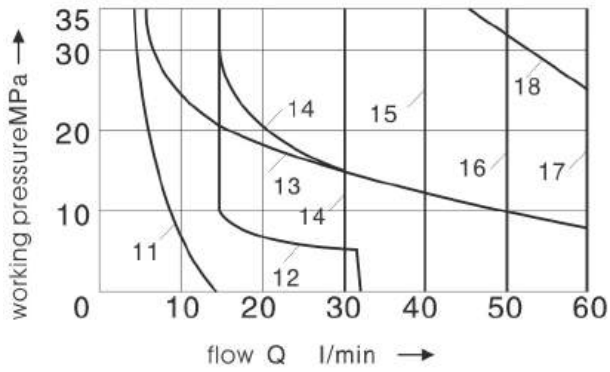
DC solenoid		AC solenoid-50Hz		AC solenoid-60Hz	
curve	symbol	curve	symbol	curve	symbol
1	A,B	11	A,B	19	A,B
2	V	12	V	20	V
3	A,B	13	A,B	21	A,B
4	F,P	14	F,P	22	F,P
5	J	15	G,T	23	G,T
6	G,H,T	16	H	24	J,L,U
7	A/O,A/OF,L,U	17	A/O,A/OF,C/O	25	A/O,A/OF,Q,W
8	C,D,Y		C/OFD/O,/D/OF,	26	C,D,Y
9	M		E,J,LM	27	H
10	E,R,C/O,C/OF		Q,R2,U,W	28	C/O,C/OF,D/C,
	D/O,D/OF,Q,W	C,D,Y	D/OF,E,M,R2		



NOTICE:

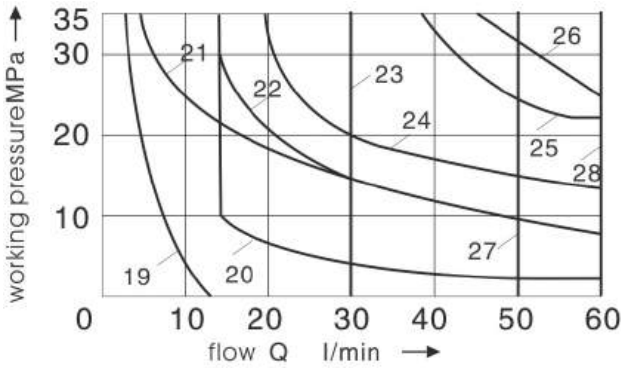
- 1) With emergency operation
- 2) Flow from actuator components back to tank

DC solenoid	
Feature curve	Solenoid voltage
1~10	12, 24, 48, 96, 110



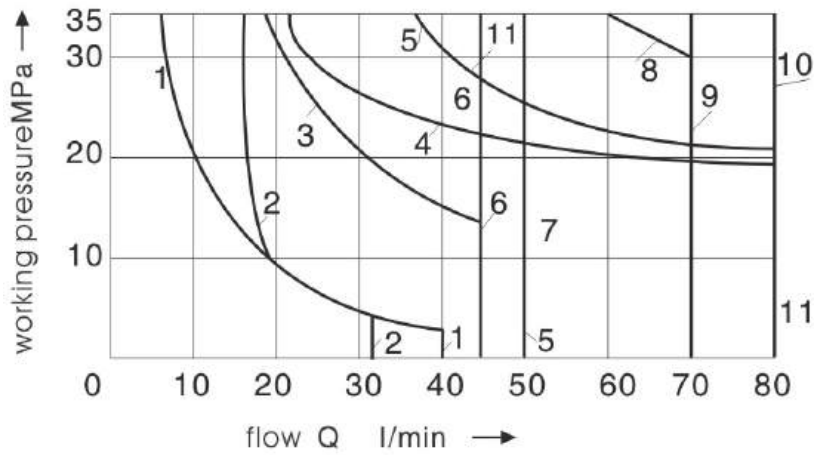
AC solenoid

Feature curve	Power source voltage	
	11~18	AC110
AC220		220V, 50Hz



AC solenoid

Feature curve	Power source voltage	
	19~28	AC110
AC220		220V, 50Hz



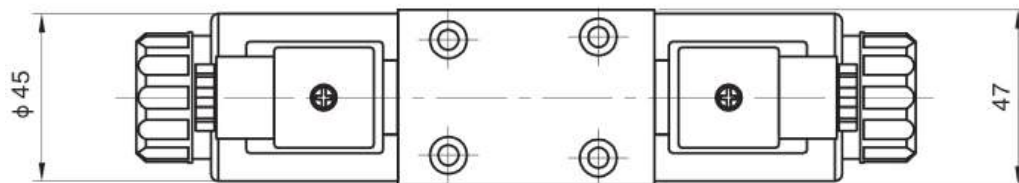
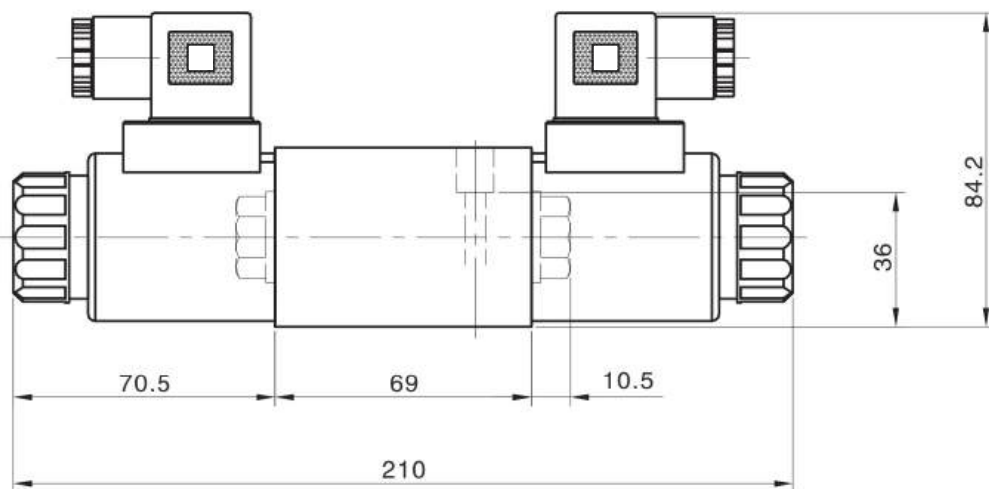
AC solenoid

Feature curve	Power source voltage	
	19~28	AC110
AC220		

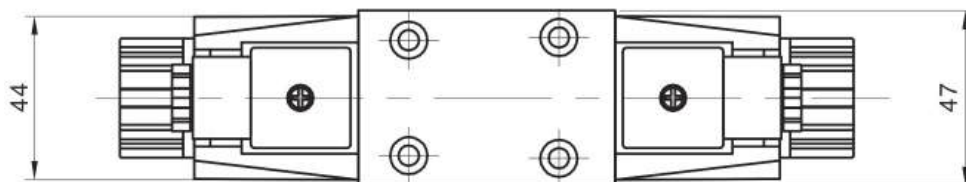
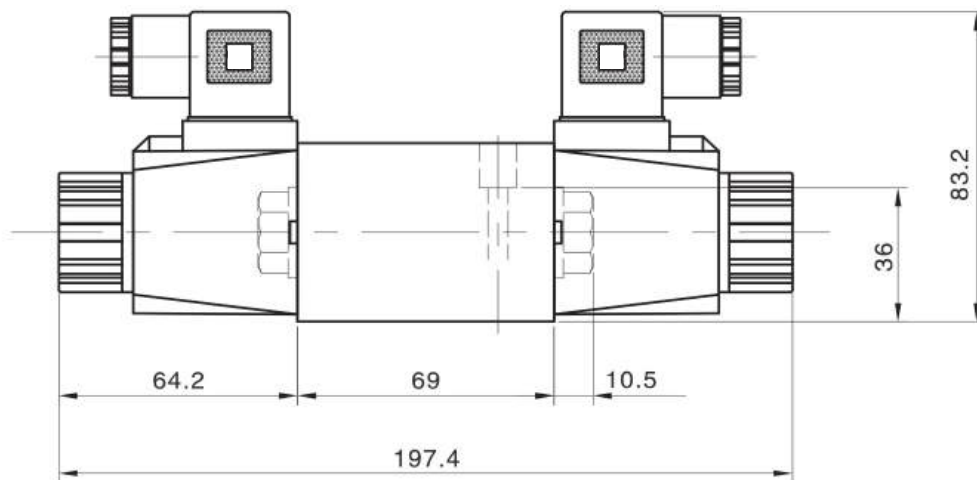
Curve	Symbol
1	A, B
2	V
3	F, P
4	J, L, U
5	G
6	T
7	H
8	C, D
9	M
10	E, R, C/O, C/OF, D/O, D/OF, Q, W, E1
11	A/O, A/OF
12	E

UNIT DIMENSIONS

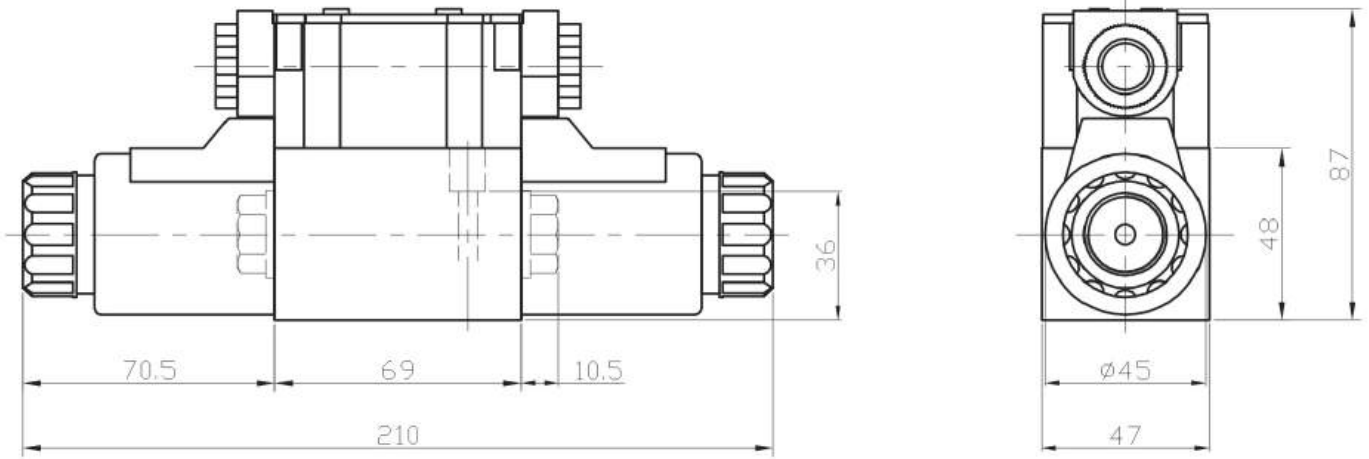
4WE6-DC-H



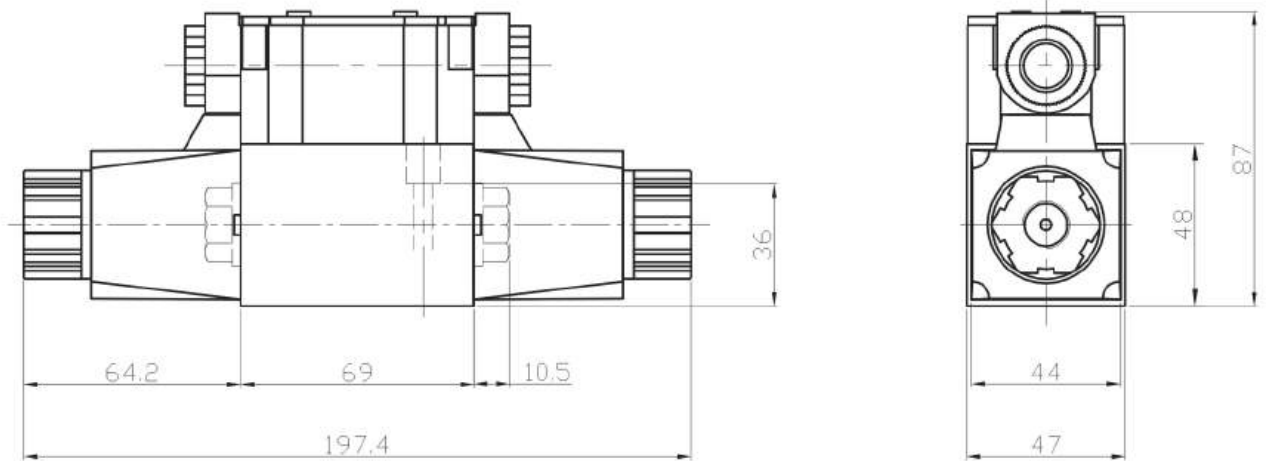
4WE6-AC-H



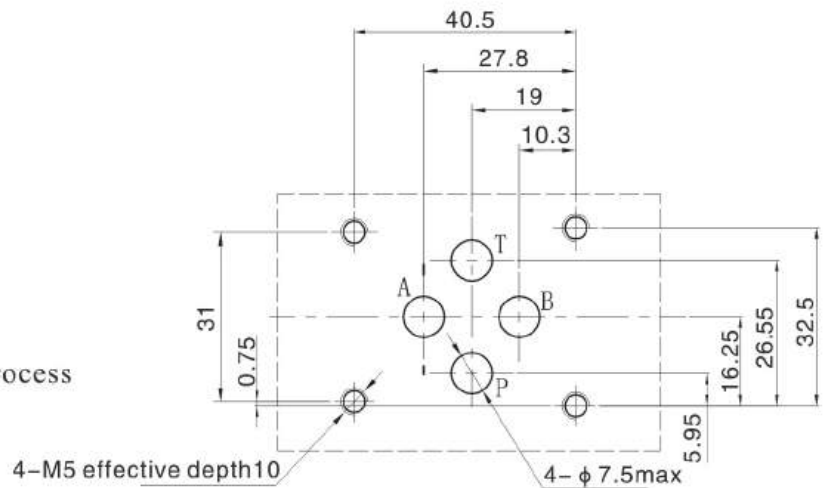
4WE6E-D24-B



4WE6 E-A220-B

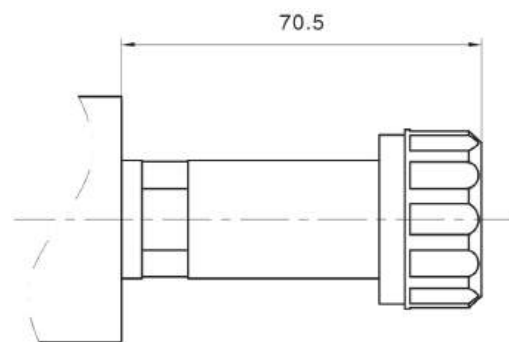


the surface of mating parts request precision process



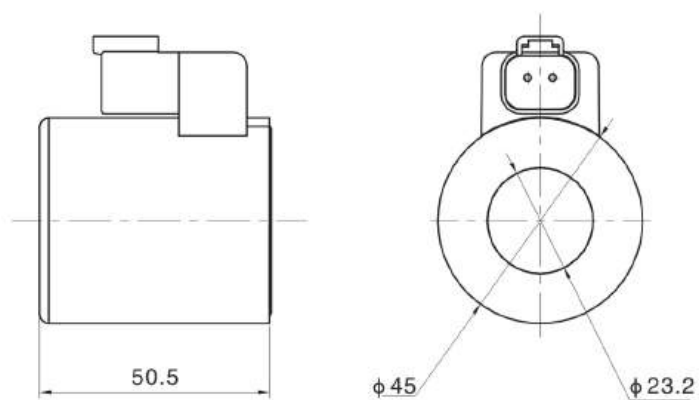
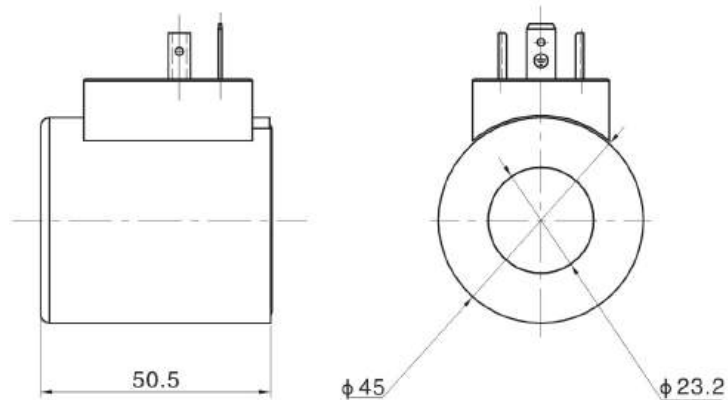
【Option of electronic connector】

Without coil, fastening the tube and locknut on the homologous valve body, according to the different IP grade, then choose the coil with homologous structure.



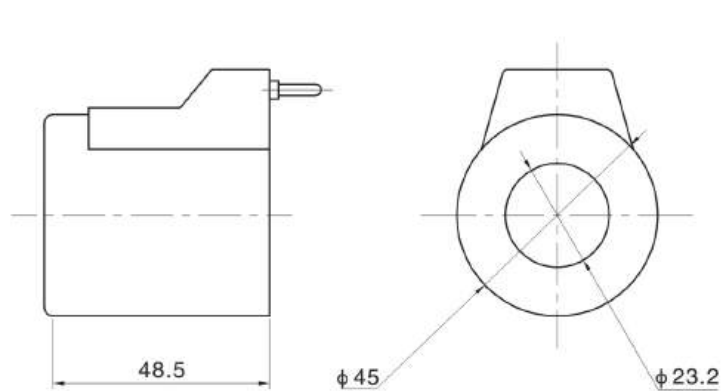
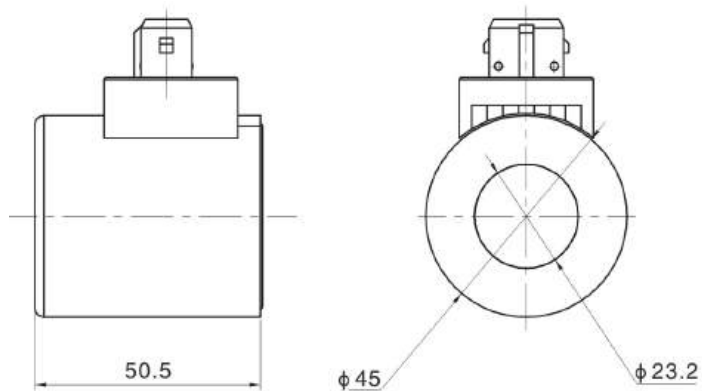
Coil with connector meets
DIN43650EN175301-803ISO4400

Coil with connector AMP,
the IP grade of coil house is IP67



Coil with connector meets
DEUTSCH DT04-2P,
the IP grade of coil house is IP-69K

apply to pin type coil with connection type B



WE10-3X series wet-type solenoid operated directional valves

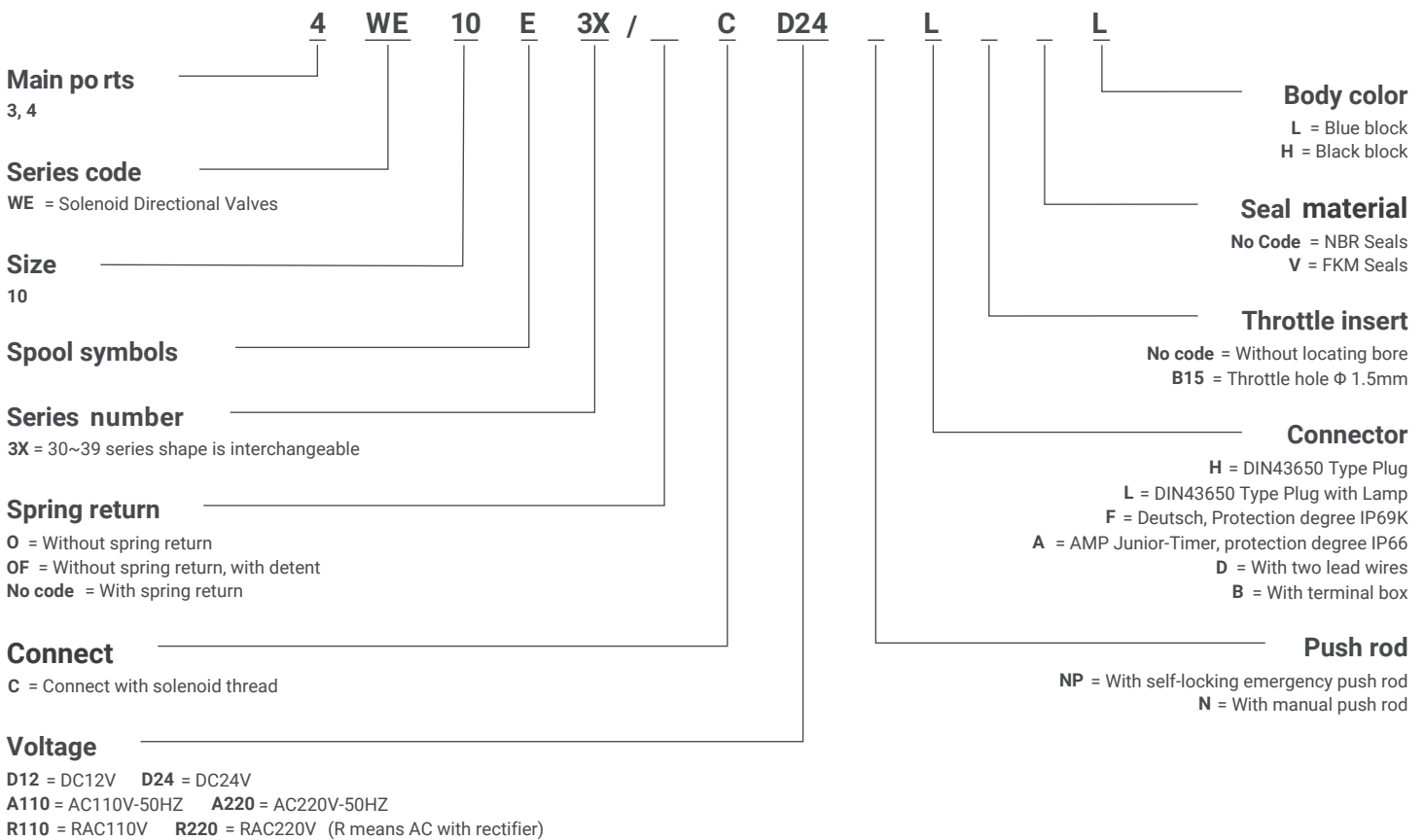


CONTENT

1. Direct-acting solenoid operational direction valve as standard type.
2. Installation area by DIN24340 type A and CETOP-RP 121H.
3. DC or AC wet-type solenoid that can be arbitrary rotation and with detachable coil.
4. Coil can be replaced without oil.
5. Equipped with manual emergency operation push rod.



ORDERING DETAILS



TECHNICAL DATA

General Data

Mounting position			anywhere
Operating temperature		°C	-30~+50 (nitrile rubber seal)
Operating temperature		°C	-20~+50 (fluorous rubber seal)
Weight	Single solenoid valve	kg	4.3(DC); 3.5(AC)
Weight	Double solenoid valve	kg	6.0(DC); 4.9(AC)

Hydraulic Data

Maximum operating pressure fluid ports P, A and B		bar	315
Hydraulic fluid port T		bar	21(DC); 16(AC) When working pressure exceeds the allowable pressure, valves with the sign bit A, B must use T as oil drain port
Maximum flow rate		l/min	120
Flux areas (when in the median)	Type Q	mm ²	11(A/B→T); 10.3(P→A/B)
	Type W	mm ²	2.5(A/B→T)
	Type Q	mm ²	2.5(A/B→T)
Hydraulic oil 1. Suitable for nitrile rubber and fluoro rubber seal			Mineral oil (HL, HLP) by DIN51 524 Rapid biological solution oil by VDMA24 568
Fluoro seal only			HETG1); HEPG2); HEES 3)
Hydraulic fluid cleanliness		°C	-30~+80 (nitrile rubber seal)
Hydraulic fluid cleanliness		°C	-20~+80 (rubber seal)
Viscosity range		mm ² /s	2.8-500
Oil cleanliness			The highest oil pollution level by NAS1639 Class 9 recommend minimum filter filtration precision β10≥75

Electric Data

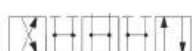
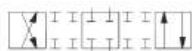
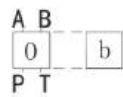
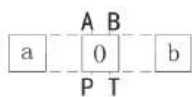
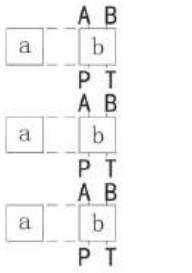
Voltage category		DC	AC(50HZ)
Supply voltage	V	12, 24, 48, 96, 110, 220V	110, 220
Allowable voltage tolerance	%	+10~-15	
Power consumption	W	36	-
Holding current	A	-	0.42(220V)
Starting current	A	-	1.40(220V)
Working system	ED%	180	
Reversing time	ms	145~160	15~25
Resetting time	ms	120~130	20~30
Switching time	times/h	≤15000	≤7000
Protection class by DIN 40050		IP65(AMP:IP66)	Deutsch: IP69k
Maximum coil temperature	°C	135°C(class B)	180°C(class H)

NOTICE:

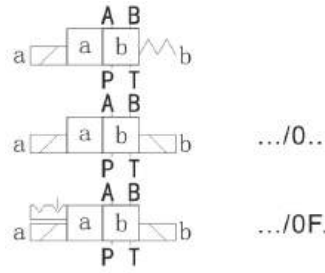
1) The reversing time of RAC is close to DC, but the resetting time is longer and random.

SYMBOLE

TRANSITION SPOOL



SLIDE VALVE SPOOL



.../0..

.../0F..

A

C

D

B

Y

*A

*B

E

F

G

H

J

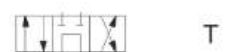
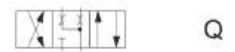
L

M

TRANSITION SPOOL



SLIDE VALVE SPOOL



P

Q

R

T

U

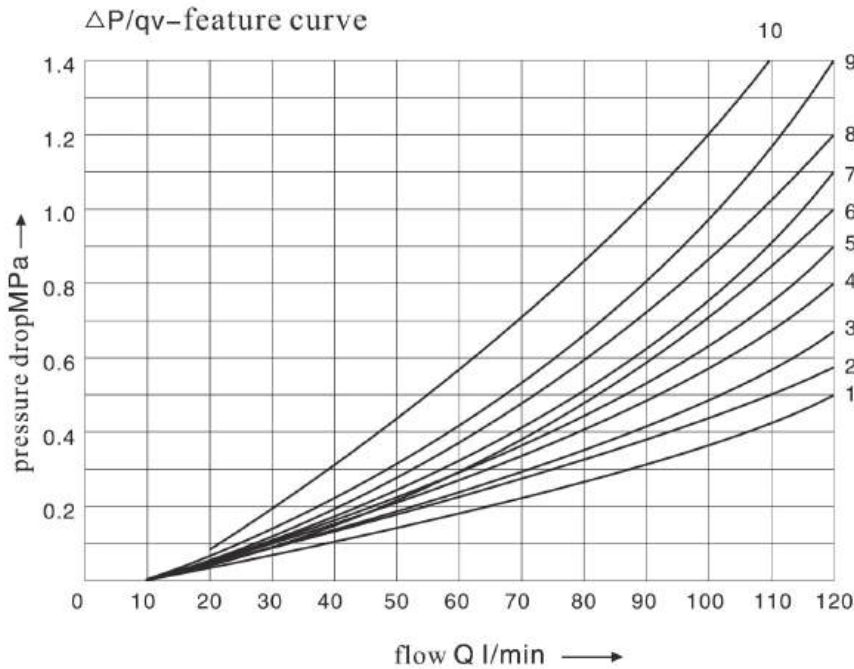
V

W

Spool take spool position a/b, then its spool code is changed to be *A/*B
 For example: spool E take spool position a, then its spool code is EA

CHARACTERISTIC CURVE

(testing result on basis of using HLP46, $t=40^{\circ}\text{C}$)

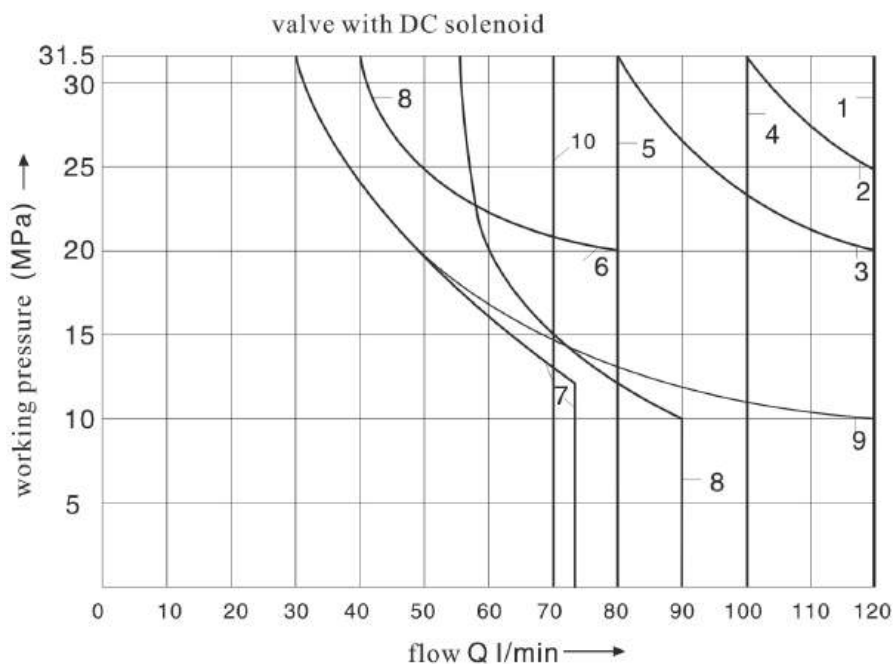


symbol	flow direction				
	P→A	P→B	A→T	B→T	
A,B	3	3	-	-	
C	3	3	4	5	
D,Y	5	5	6	6	
E	1	1	4	4	
F	2	3	7	4	
G	3	3	6	7	
H	1	1	6	7	
J	1	1	3	3	
L	2	2	3	5	
M	1	1	4	5	
P	4	2	5	7	
Q	1	2	1	3	
R	3	6	4	-	
T	3	3	6	7	
U,V	2	2	3	3	
W	2	3	4	5	
on-position	P→A	P→B	A→T	B→T	
R	-	9	-	-	
on-position	P→A	P→B	B→T	A→T	P→T
F	4	-	-	9	9
P	-	5	8	-	10
G,T			-	-	9
H			-	-	3

【Flow-pressure drop feature $\Delta P=f(Q)$ 】

(Testing result on basis of using HLP46, $t=40^{\circ}\text{C}$)

1. The working limit can be used for both the two flow direction (For example: Flow return from B to T, at the same time, flow from P to A)
2. Power limit tested when solenoid is at working temperature, under voltage 10%, and port T have no back pressure.
3. When unidirectional flow (if flow from P to A, port B closed), due to the fluid power in the valve, the allowed reverse power limit will drop obviously.



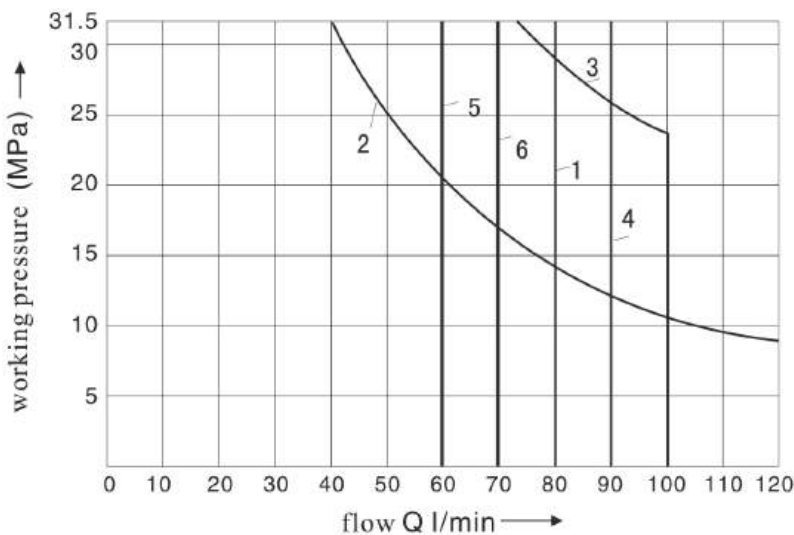
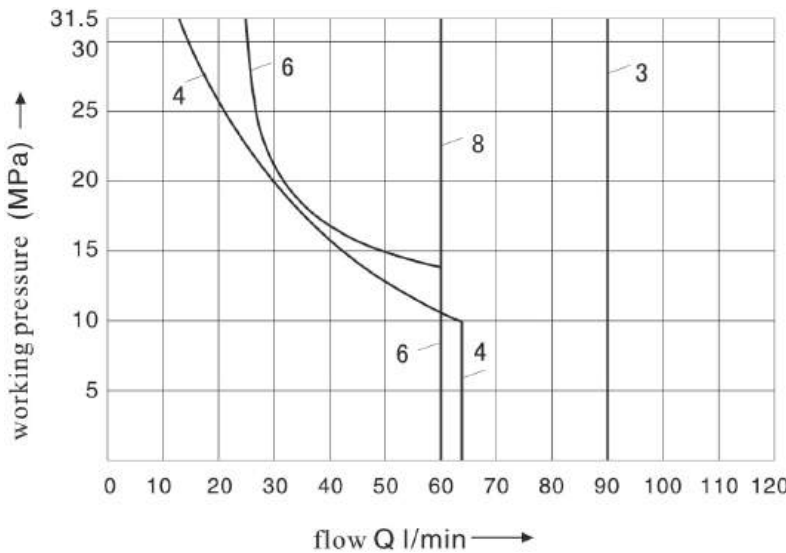
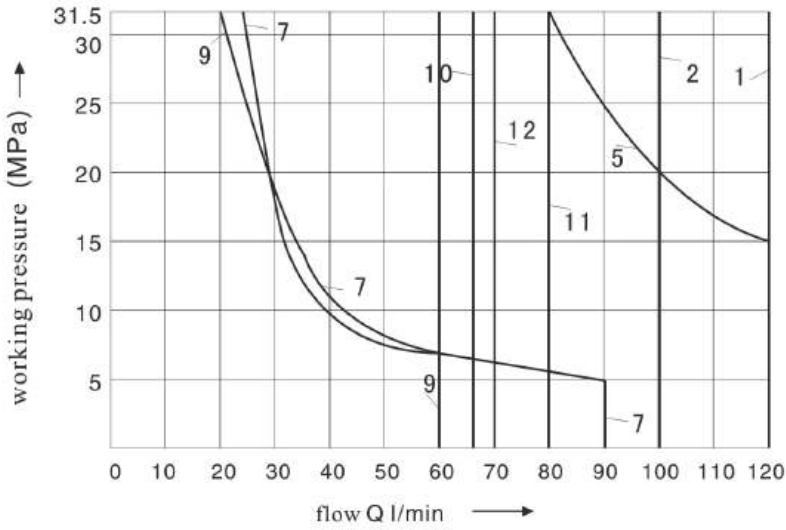
feature curve	symbol
1	C, C/O, C/OF D, D/O, D/OF Y, M
2	E
3	A/O, A/OF L, U, J, Q, W
4	H
5) 1)	R, L2), U2)
6	G
7	T
8	F, P
9	A, B
10	V

NOTICE:

- 1) the flow of oil return (have no relation with area ratio)
- 2) Be only applied to the condition that spool is in the median position

【Flow-pressure drop feature AP=f(Q)】

(testing result on basis of using HLP46, t=40°C)



feature curve	spool symbol
1	C, C/O, C/OF D, D/O, D/OF Y
2	E, L, U, Q, W
3	M
4	A, B
5	A/O, A/OF, J
6	G
7	F, P
8	V
9	T
10	H
11	R
121)	L, U

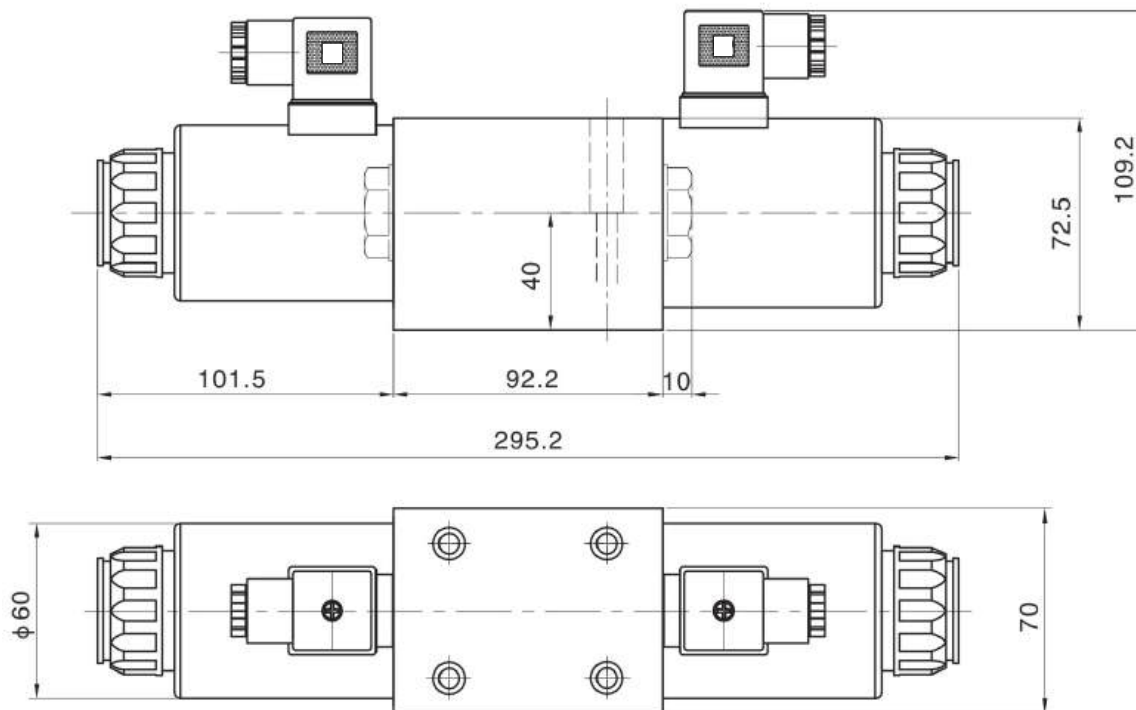
Be only applied to the condition that spool is in the median position

feature curve	spool symbol
1	C, C/O, C/OF D, D/O, D/OF Y
2	A/O, A/OF
3	E
4	M
5	V
6	H

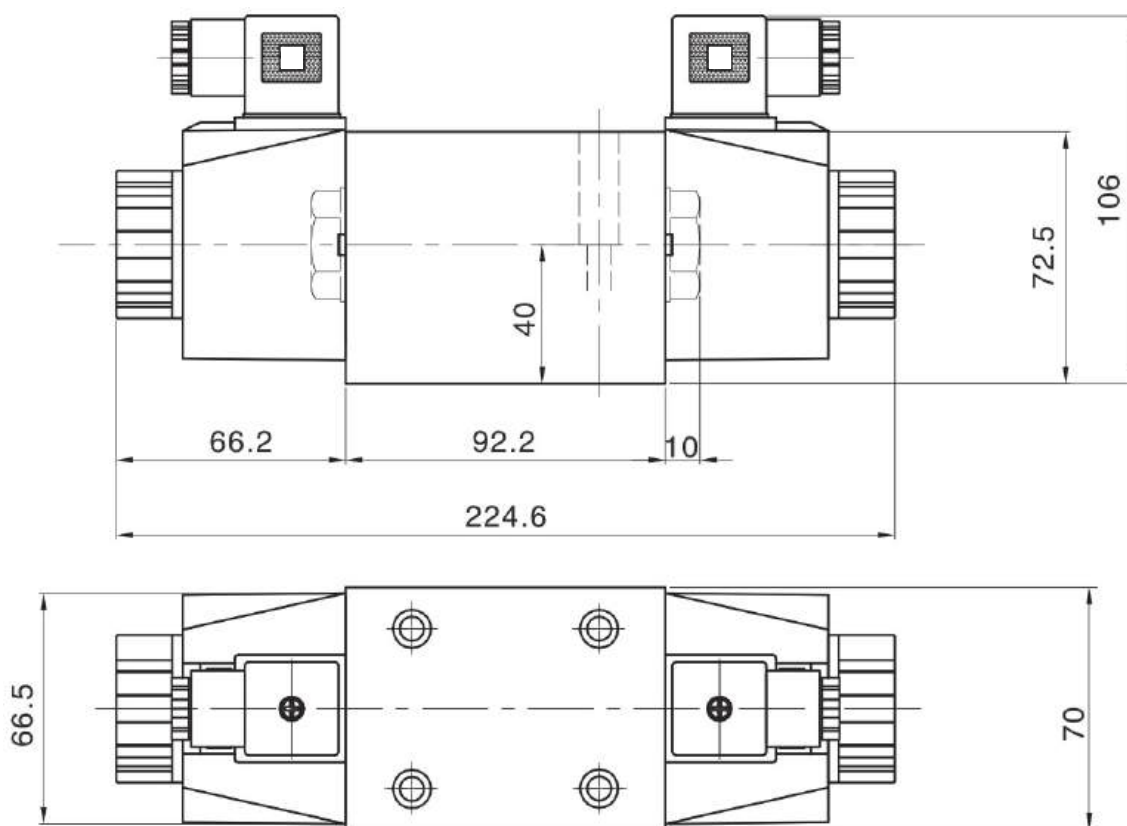
110V, 60Hz
220V, 60Hz

UNIT DIMENSIONS

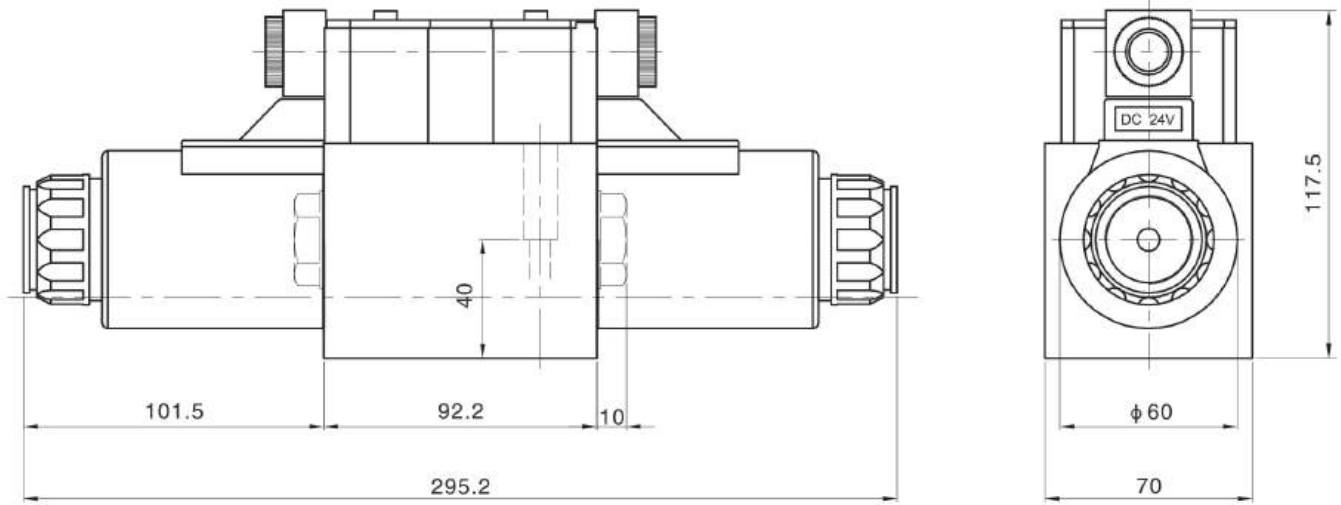
4WE10-DC-H



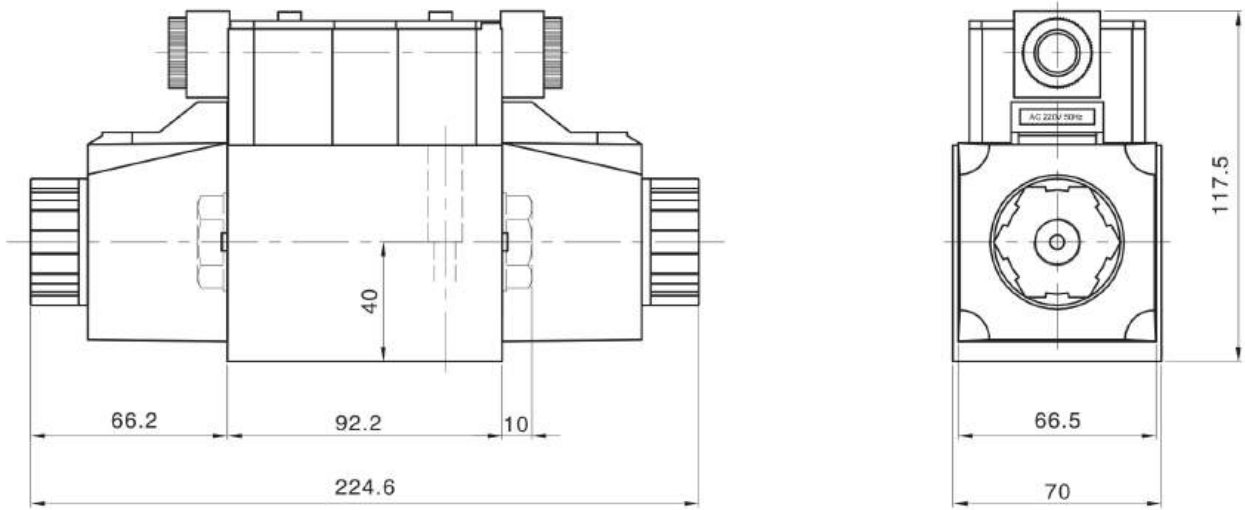
4WE10-AC-H



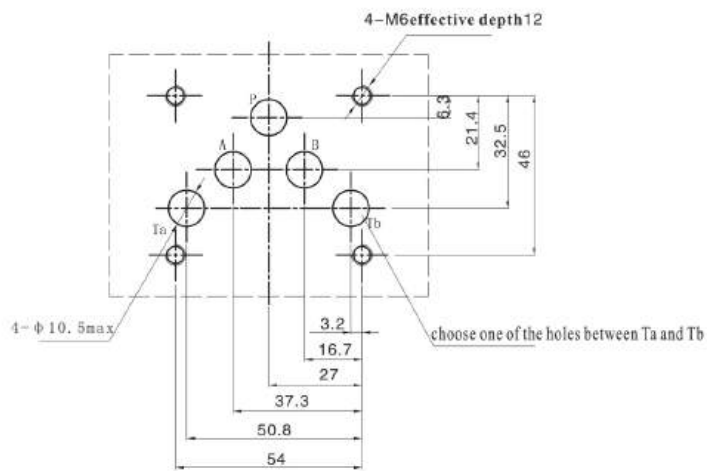
4WE10-DC-B



4WE6 E-A220-B

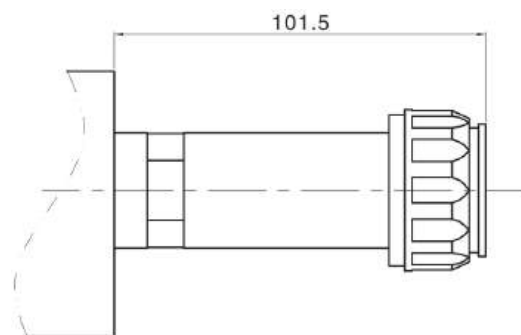


the surface of mating parts request precision process

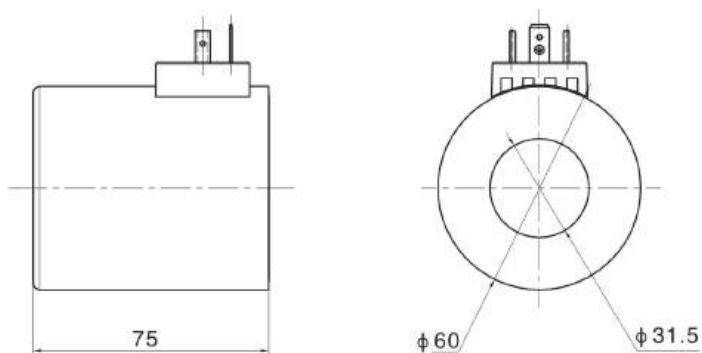


【Option of electronic connector】

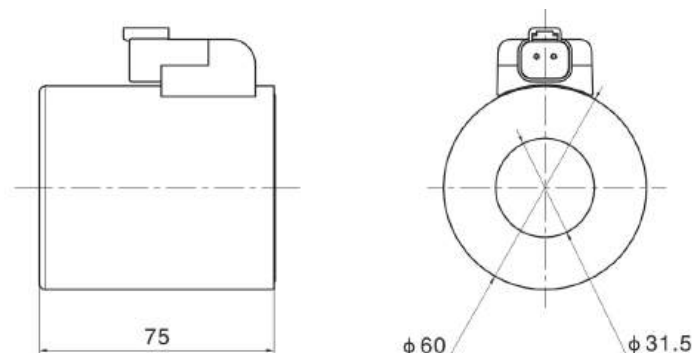
Without coil, fastening the tube and locknut on the homologous valve body, according to the different IP grade, then choose the coil with homologous structure.



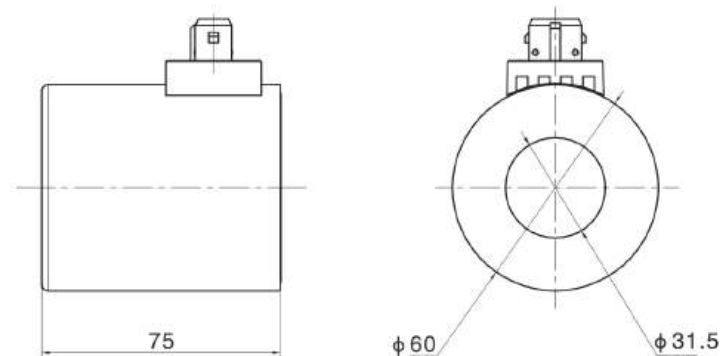
Coil with connector meets
DIN43650EN175301-803ISO4400



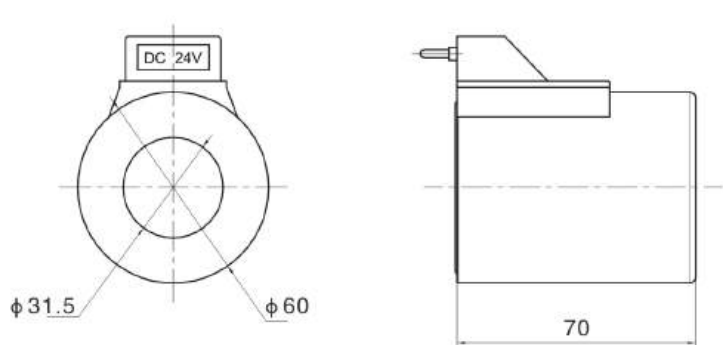
Coil with connector AMP,
the IP grade of coil house is IP67



Coil with connector meets
DIN43650EN175301-803ISO4400



apply to pin type coil with connection type B



WMME6-1X series with manual lever control

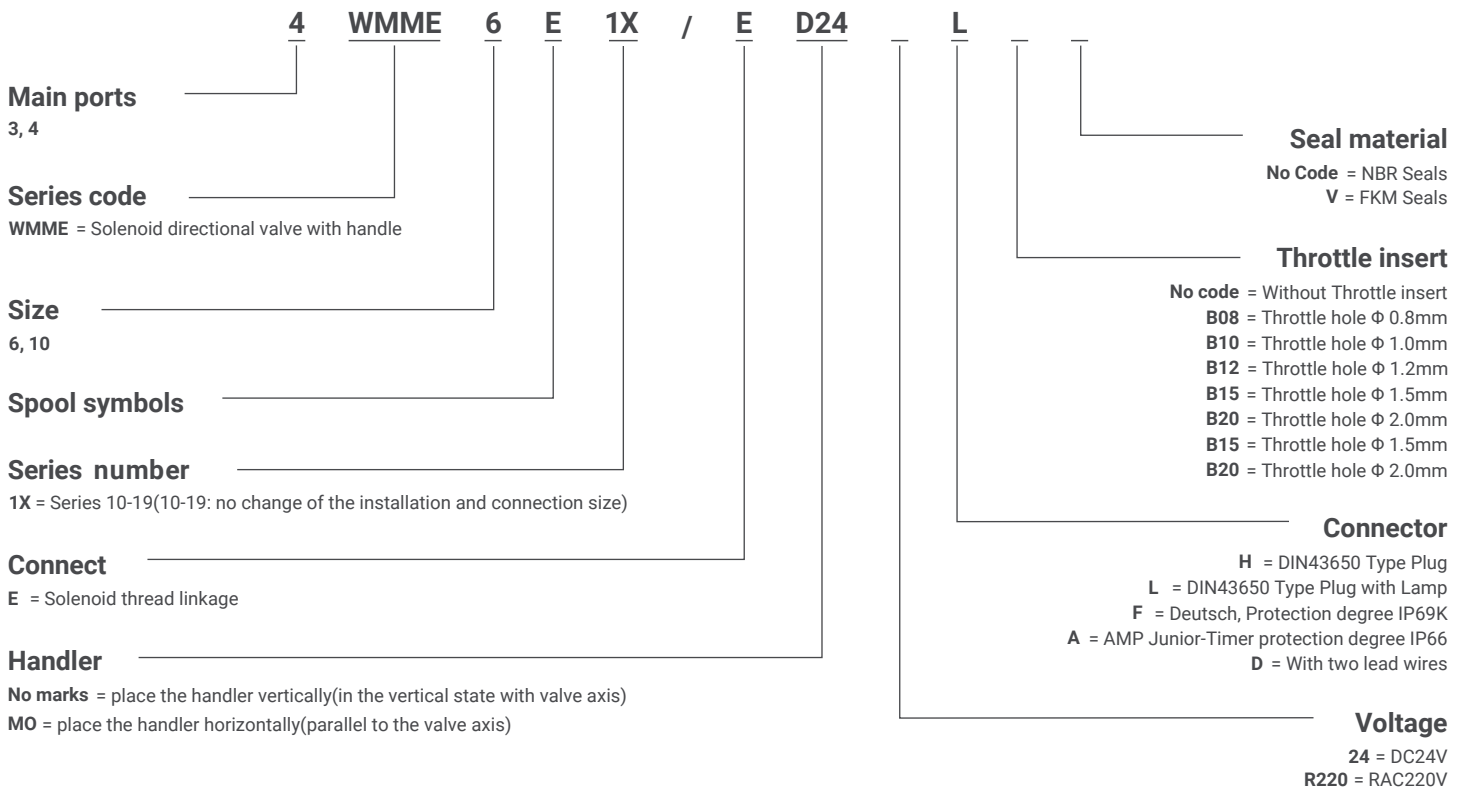


CONTENT

1. This kind of valve can also be operated with auxiliary handler in the case of losing electricity.
2. Two different kinds of model code are needed according to the requirements of installation.
3. The auxiliary handler should in the original position
4. When the valve is operated by electricity, and the handler does not effect any performance of the valve.
5. Can be used as pilot valve of electrohydraulic operated directional valves.



ORDERING DETAILS



NOTICE:

the code symbol of slide valve

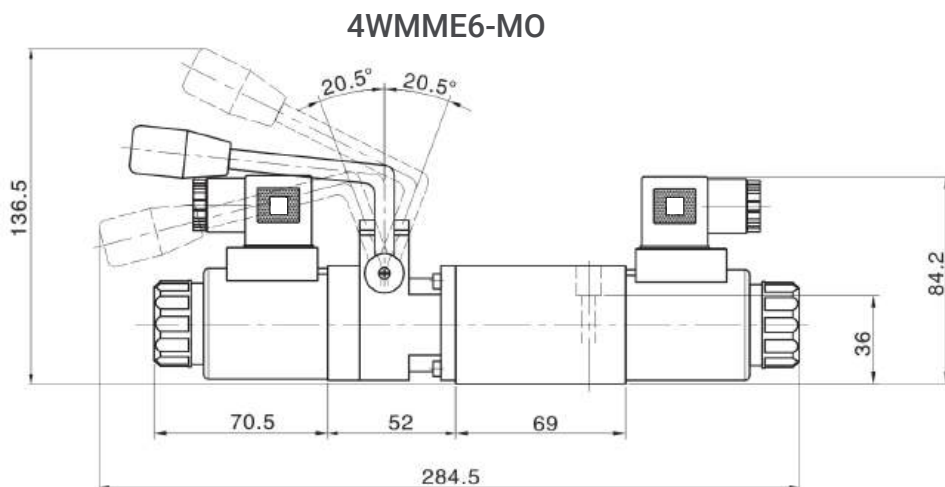
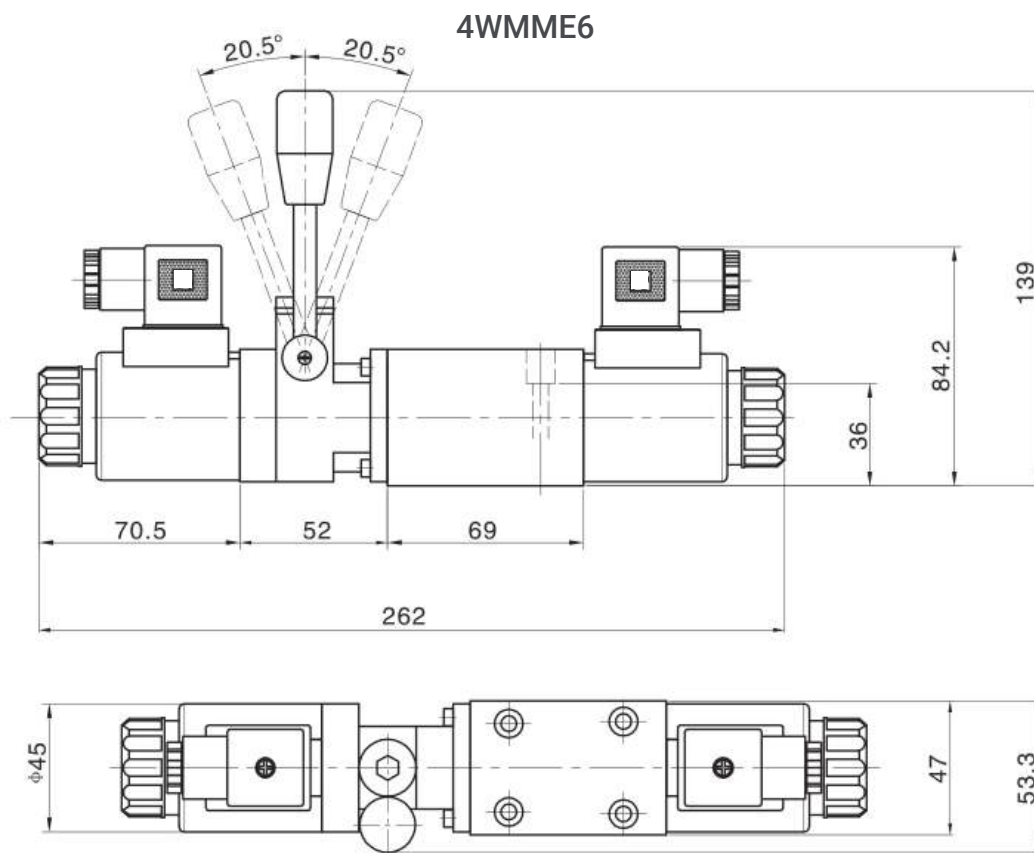
Two-way valve:refer to 4WE6 two-way spring-return valve. Three-way valve: refer to 4WE6 three-way spring-return valve

Emergency handler can be mounted in A and B cavity(add A or B after code symbol)

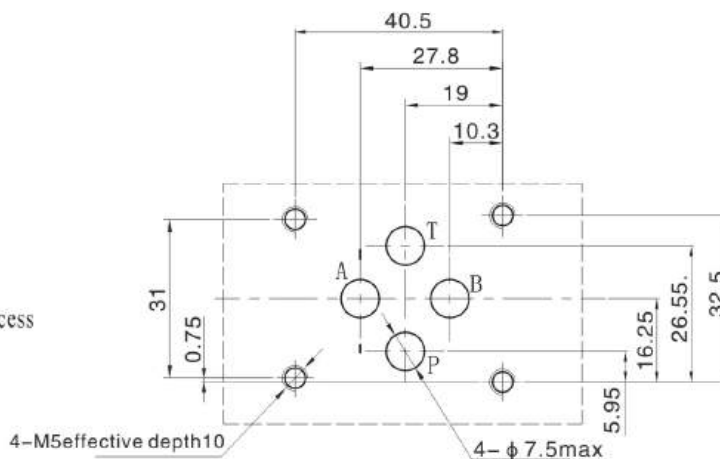
Eg: EA E slide valve's functional handler is in the three-way valve's cavity EB E slide valve's functional handler is in the three-way valve's cavity

Technical parameters:refer to WE6-6X series solenoid operated directional valves Performance characteristics: refer to WE6-6X series solenoid operated directional valves

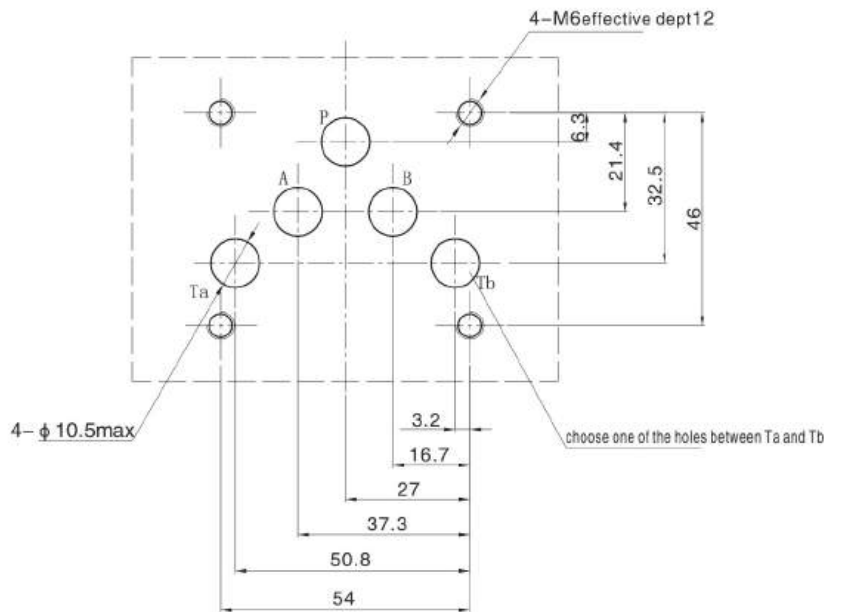
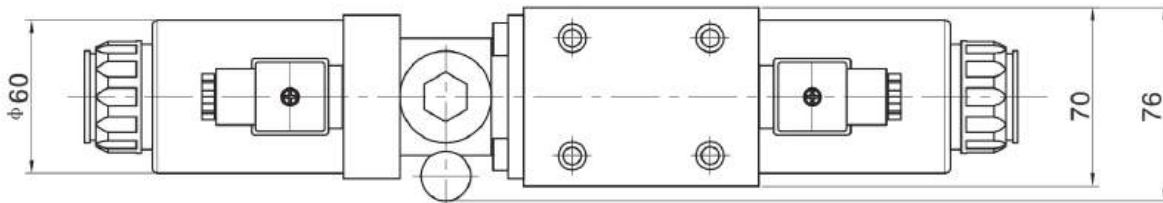
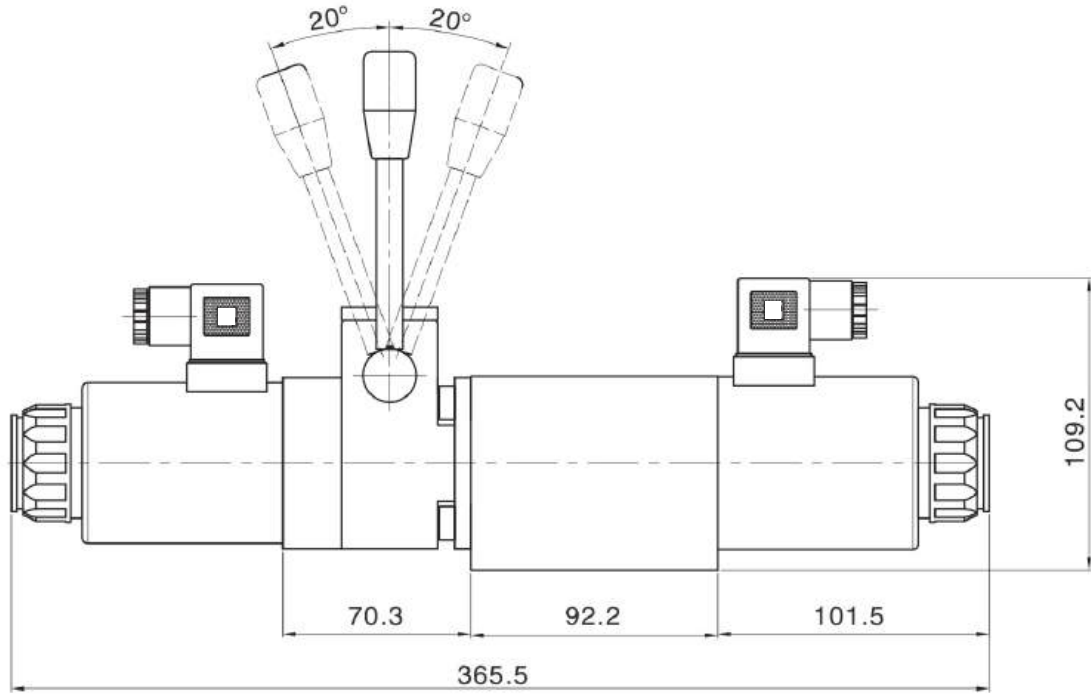
UNIT DIMENSIONS



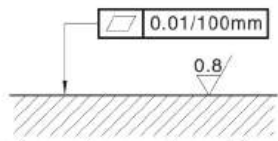
0.01/100mm
 0.8
 the surface of mating parts request precision process



4WE6-DC-H



the surface of mating parts request precision process



DG4V-3-40 series solenoid operated directional valves

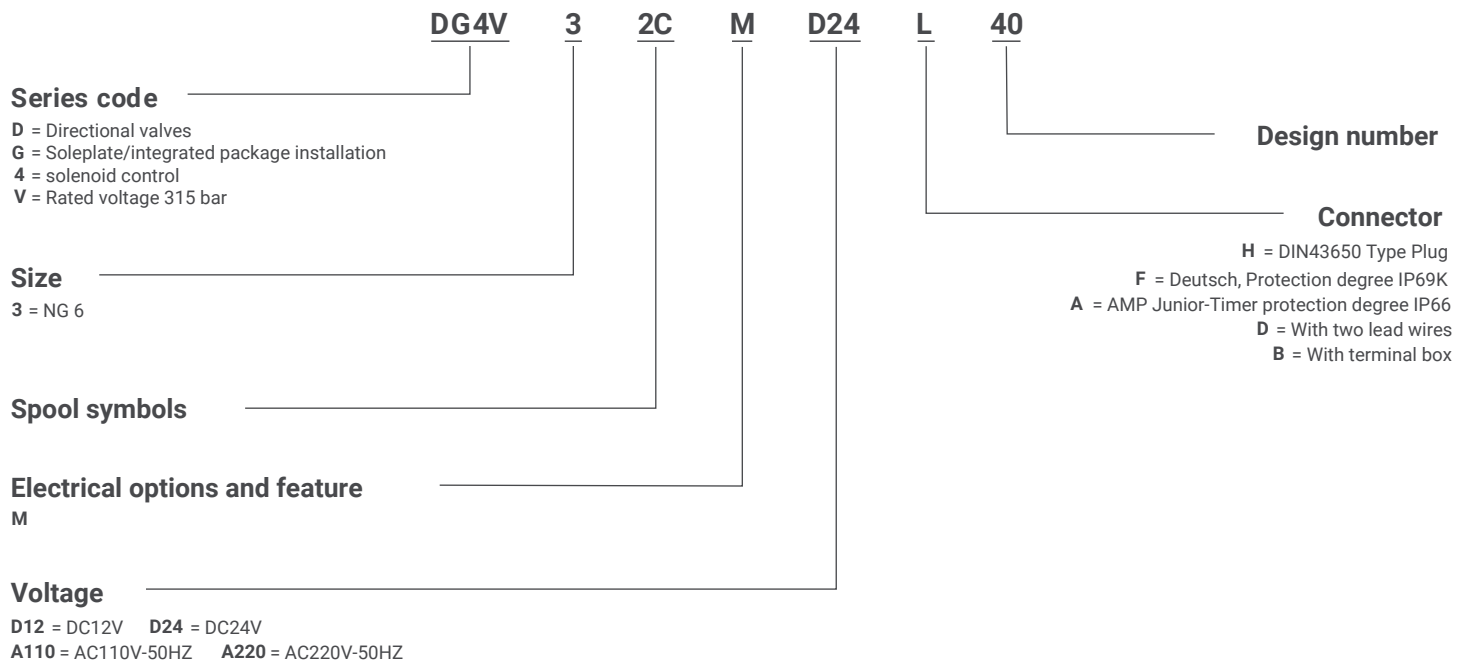


CONTENT

1. DG4V-3-40 series solenoid operated directional valves are equipped with wet-type solenoid that matches the reaction of valve, which has reasonable oil duct design, and with high pressure, large flow, small pressure loss, easy disassembling, etc. characteristics. As wet-type solenoid, it enjoys long working lifespan, low noise, stably and reliably reversing action.
2. Solenoid coil, whose shell's protection class is Ip65, and usually configuring DIN43650 ISO4400 EN 175301-803 standard plug. Higher protection class AMP, DEUTSCH plugs can also be configured or using irradiation as the power line of the solenoid directly.



ORDERING DETAILS



TECHNICAL DATA

General Data

The total weight of one solenoid valve (with two solenoids)	kg	2.30
The total weight of one solenoid valve (with one solenoid)	kg	1.69
The total weight of one solenoid valve (with two solenoids)		Optional position
The total weight of one solenoid valve (with one solenoid)	°C	~20~+50 (adopt NBR seal ring)

Hydraulic Data

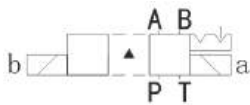
Maximum operating pressure fluid ports P, A and B	bar	350
The highest dynamic oil pressure T cavity can bear	bar	155
The highest static oil pressure T cavity can bear	bar	210
Rated flow	L/min	38
Maximum flow	L/min	50
Liquid medium		Mineral hydraulic oil, Phosphate hydraulic oil
The oil temperature range	°C	-20~+80
The oil cleanliness	°C	ISO4572:β10≥75NAS1638:Class9

Electric Data

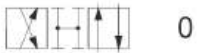
Voltage category		DC, RAC (coil with a rectifier component)					
Duty cycle	ED	100%					
Voltage allowable fluctuation range	%	-10~+10					
The reserving and resetting time	ms	on 120 off 100 (do not include RAC type)					
Maximum operating frequency	Hz	3					
Coil insulation class		H					
The maximum operating temperature coil allowed		180					
Coil weight	kg	0.35					
Voltage	V	12	24	48	110	R110	R220
Power types		DC	DC	DC	DC	AC	AC
Power frequency	Hz					50/60	50/60
Power consumption	W	30	30	30	30	32	32
Coil resistance(20°C)	ohm	4.8	19.2	76.8	403	75.2	313
Operating current (20°C)	A	2.5	1.25	0.63	0.27	0.38	0.19

SYMBOLE

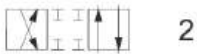
double solenoid valve
(two positions, with spring return)



DG4V-3/5- *N

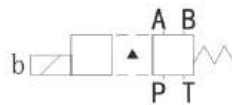


0



2

single solenoid valve
(solenoid is at "a" side)



DG4V-3/5-*A

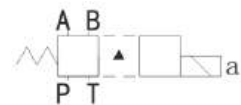


0



2

single solenoid valve
(solenoid is at "b" side)



DG4V-3/5-*AL

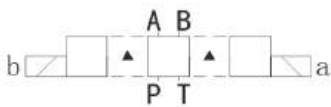


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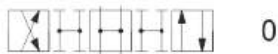


2

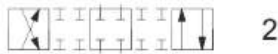
double solenoid valve
(spring in the middle position)



DG4V-3/5-*C



0



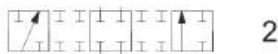
2



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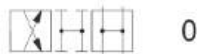
22



34

☆ ▲ just transient state

DG4V-3/5-*B/F



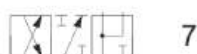
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DG4V-3/5-*BL/FL



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2



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22



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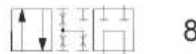
☆ "8 type 8 is specific spool symbol

DG4V-3/5-8C



8

DG4V-3/5-8BL



8

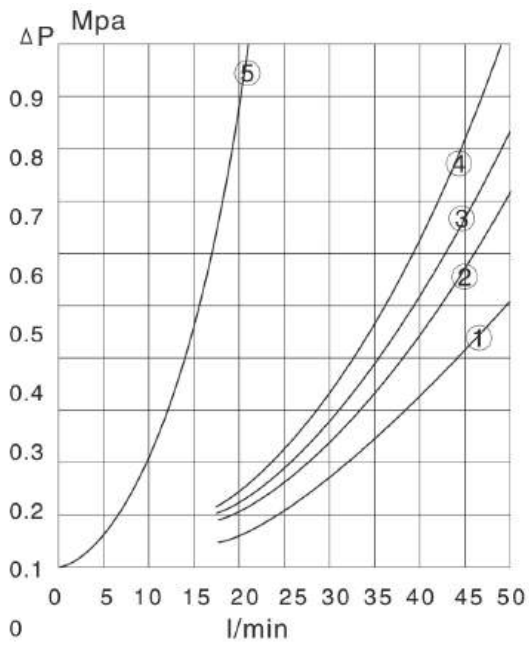
DG4V-3/5-8B



8

CHARACTERISTIC CURVE

【Pressure drop character】

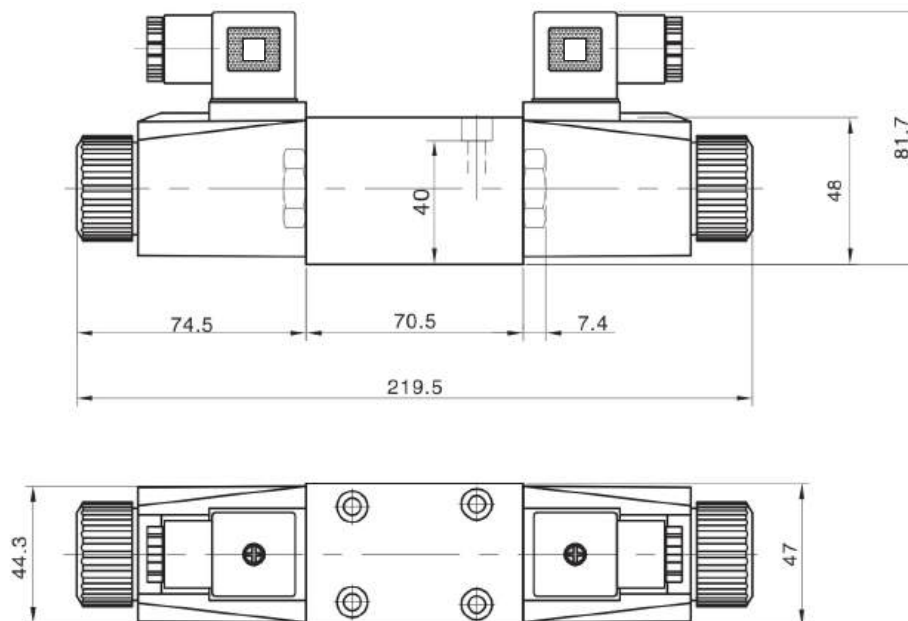


Result tested when working fluid oil is mineral oil,
when viscosity be 21mm/s proportion be 0.865

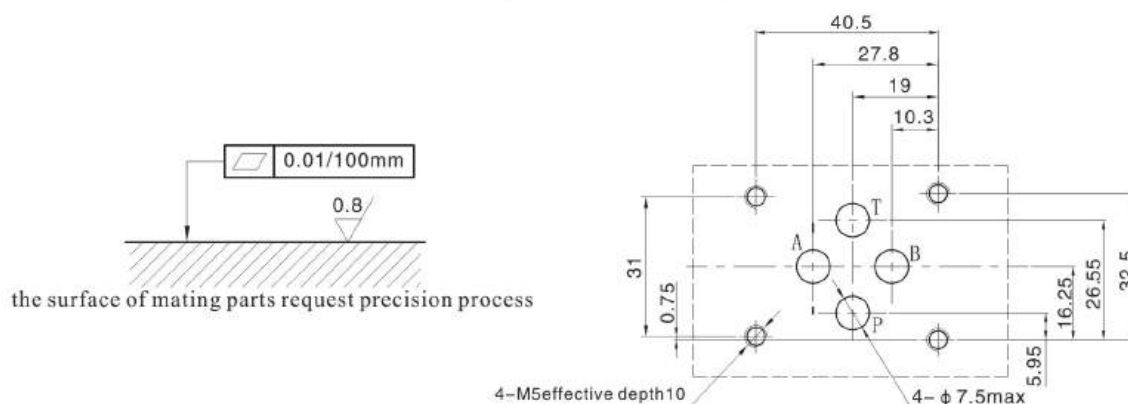
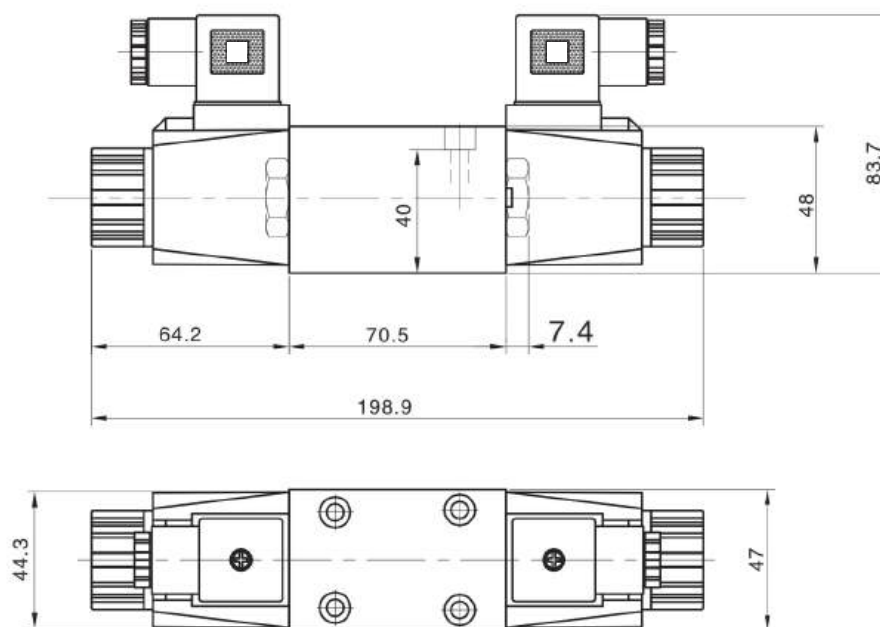
spool type	P→A	B→T	P→B	A→T	P→T in the middle position
OA, ON	3	3	3	3	4
2A, 2N	4	4	4	4	-
6A, 6N	4	4	3	3	-
7A	4	4	4	4	-
22A	4	4	4	-	-
OB, OC, OF	3	3	3	3	
1B, 1C, 1F	3	4	3	3	
2B, 2C, 2F	3	4	3	4	-
3B, 3C, 3F	3	4	3	3	-
6B, 6C, 6F	3	2	4	2	-
7B, 7C, 7F	1	4	1	4	-
8B, 8C, 8F	2	3	2	3	5
11B, 11C, 11F	3	3	3	4	3
31B, 31C, 31F	3	3	3	4	-
33B, 33C, 33F	3	3	3	3	3

UNIT DIMENSIONS

DG4V3-40-DC



DG4V3-40-AC



DG4V-3-40 series solenoid operated directional valves

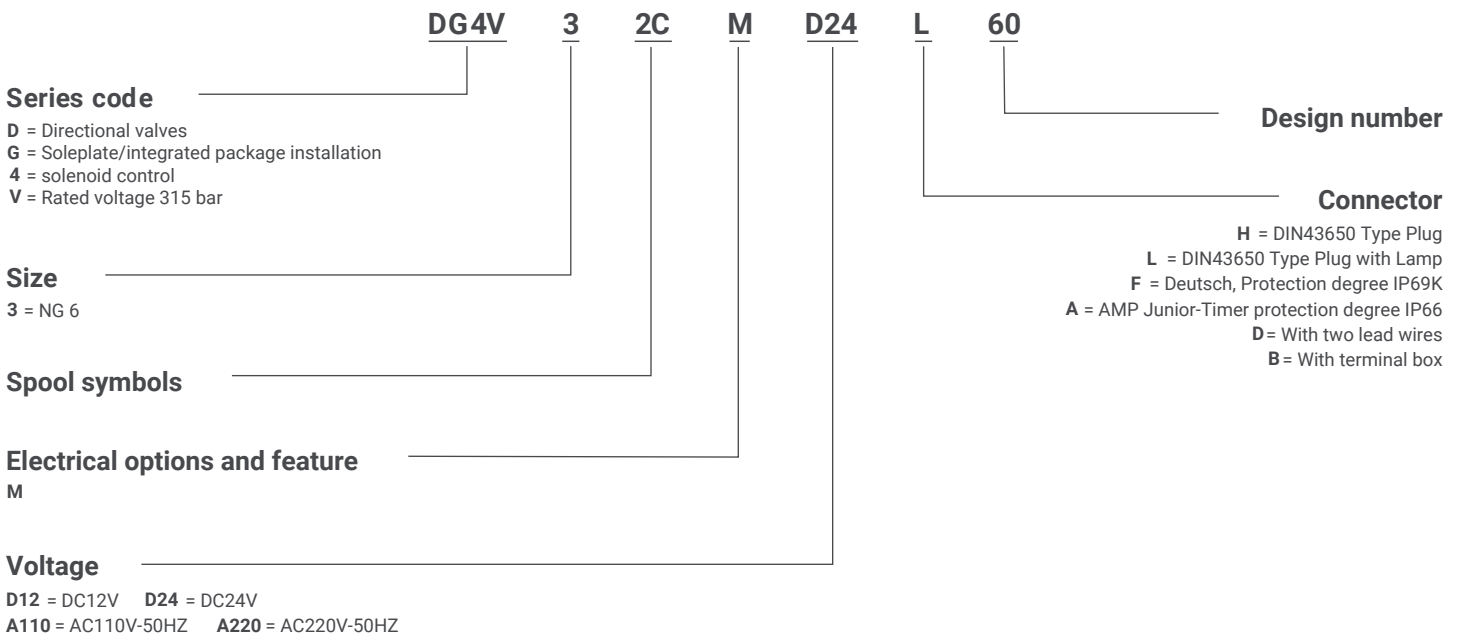


CONTENT

1. DG4V-3-60 series solenoid operated directional valves are equipped with wet-type solenoid that matches the reaction of valve, which has reasonable oil duct design, and with high pressure, large flow, small pressure loss, easy disassembling, etc. characteristics. As wet-type solenoid, it enjoys long working lifespan, low noise, stably and reliably reversing action.
2. Solenoid coil, whose shell's protection class is IP65, and usually configuring DIN43650 ISO4400 EN 175301-803 standard plug. Higher protection class AMP, DEUTSCH plugs can also be configured or using irradiation as the power line of the solenoid directly.



ORDERING DETAILS



TECHNICAL DATA

General Data

The total weight of one solenoid valve (with two solenoids)	kg	DC:2.30; AC:2.1
The total weight of one solenoid valve (with one solenoid)	kg	DC:1.7; AC:1.5
Installation site		Optional position
Operating temperature	°C	~20~+50 (adopt NBR seal ring)

Hydraulic Data

Maximum operating pressure fluid ports P, A and B	bar	350
The highest dynamic oil pressure T cavity can bear	bar	210
The highest static oil pressure T cavity can bear	bar	210
Rated flow	L/min	60
Maximum flow	L/min	80
Liquid medium	Mineral hydraulic oil, Phosphate hydraulic oil	
The oil temperature range	°C	-20~+80
The oil cleanliness	°C	ISO4572: β10≥75 NAS1638:Class9

Electric Data

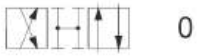
Voltage category	DC, AC, RAC(coil with a rectifier component)								
Duty cycle	ED	100%							
Voltage allowable fluctuation range	%	-10~+10							
The reserving and resetting time	ms	AC:on 20ms off 40ms(do not include RAC type)DC:on 120ms off 100ms							
Maximum operating frequency	Hz	3							
Coil insulation class	DC:class B; AC:class H								
The maximum operating temperature coil allowed	DC:135; AC:180								
Coil weight	kg	DC:0.6; AC:0.38							
Voltage	V	12	24	48	110	R110	R220	110	220
Power types		DC	DC	DC	DC	AC	AC	AC	AC
Power frequency	Hz					50/60	50/60	50	50
Power consumption	W	30	30	30	30	32	32	32	32
Coil resistance(20°C)	ohm	4.8	18.8	75.2	395	73.6	313	27.5	110
Operating current (20°C)	A	2.5	1.25	0.63	0.27	0.38	0.19	0.56	0.28

SYMBOLE

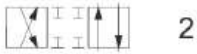
double solenoid valve
(two positions, with spring return)



DG4V-3/5- *N

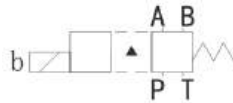


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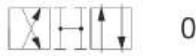


2

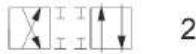
single solenoid valve
(solenoid is at "a" side)



DG4V-3/5-*A

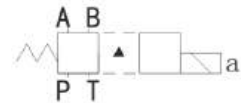


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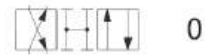


2

single solenoid valve
(solenoid is at "b" side)



DG4V-3/5-*AL

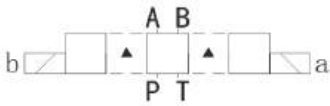


0



2

double solenoid valve
(spring in the middle position)



DG4V-3/5-*C



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2



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☆ ▲ just transient state

DG4V-3/5-*B/F



0



2



6



7

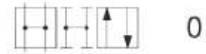


22



34

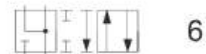
DG4V-3/5-*BL/FL



0



2



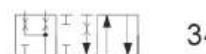
6



7



22



34

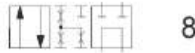
☆ "8 type 8 is specific spool symbol

DG4V-3/5-8C



8

DG4V-3/5-8BL



8

DG4V-3/5-8B

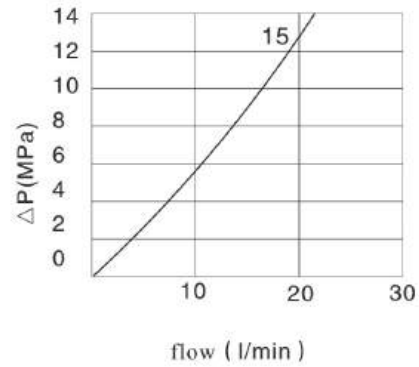
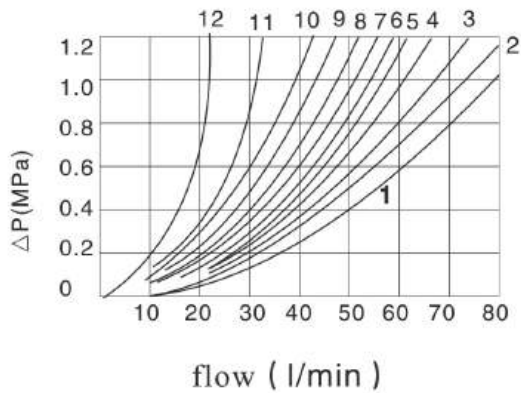


8

CHARACTERISTIC CURVE

【Pressure drop-flow character】

(testing result on basis of using HLP46, t=40°C)



character curve of spool type 6: the flow exceeding 60L/min will not be advised

code of spool and spring	the spool position included	P to A	P to B	A to T	B to T	P to T	B to A or A to B
OA (L)	both	5	5	2	2	-	-
OB (L) and OC	power off	-	-	-	-	4△	-
	power on	4	4	2	2	-	-
2A (L)	both	6	6	5	5	-	-
2B (L) and 2C	power on	5	5	2	2	-	-
2N	both	6	6	3	3	-	-
6B (L) and 6C	power off	-	-	3▲	3	-	-
	power on	6	6	1	1	-	-
7B (L) and 7C	power off	6▲	6△	-	-	-	7●
	power on	4	4	3	3	-	-
8B (L) and BC	all	9	9	5	5	3	-
22A (L) 22B (L) and 22C	all	6	6	-	-	-	-
24A (L)	power off	6	6	2	2	-	-
33B (L) and 33C	power off	-	-	15▲	15△	-	-
	power on	5	5	2	2	-	-

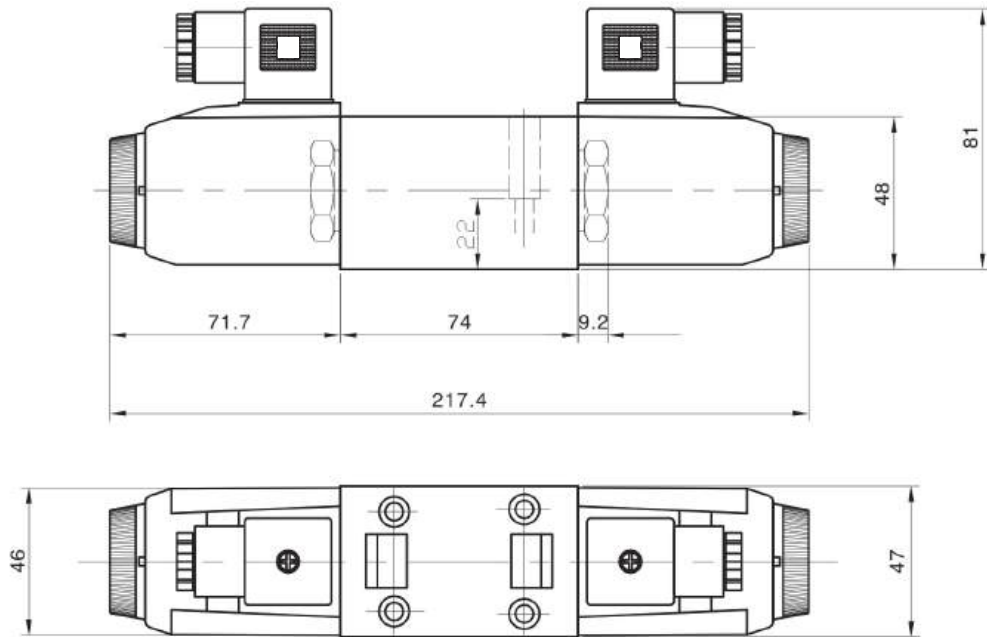
For other viscosity, pressure drop approximate to viscosity

14	20	43	54	65	76	85
(17.5)	(97.8)	(200)	(251)	(302)	(352)	(399)
%OfΔp						
81	88	104	111	116	120	124

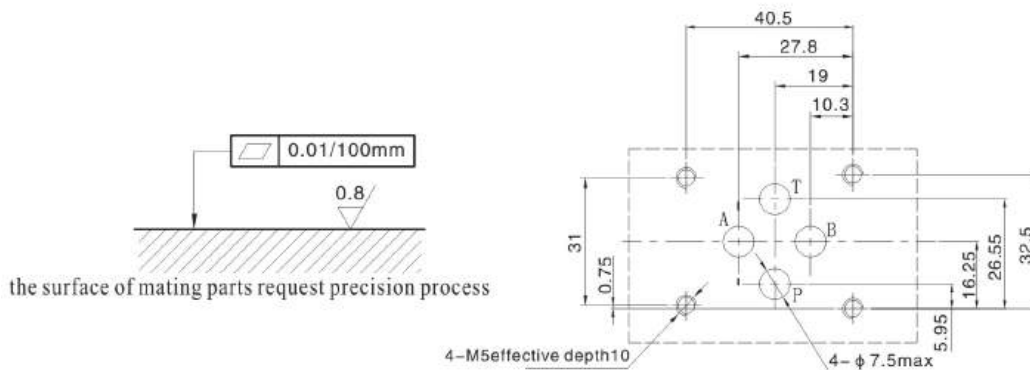
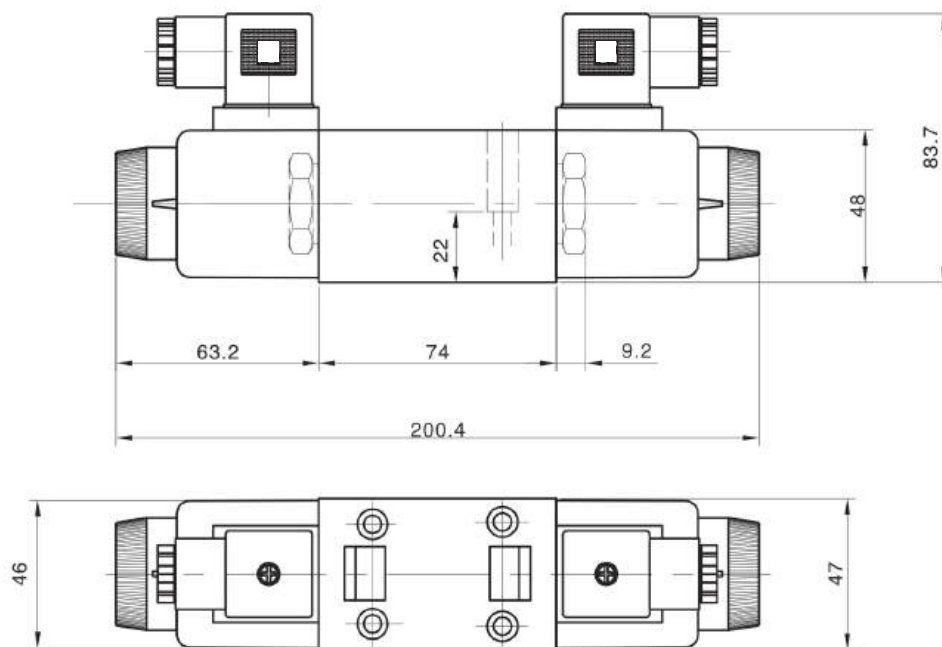
▲ "B" close △ "A" close ● "P" close

UNIT DIMENSIONS

DG4V3-60-DC



DG4V3-60-AC



DG4V-5-20 series solenoid operated directional valves

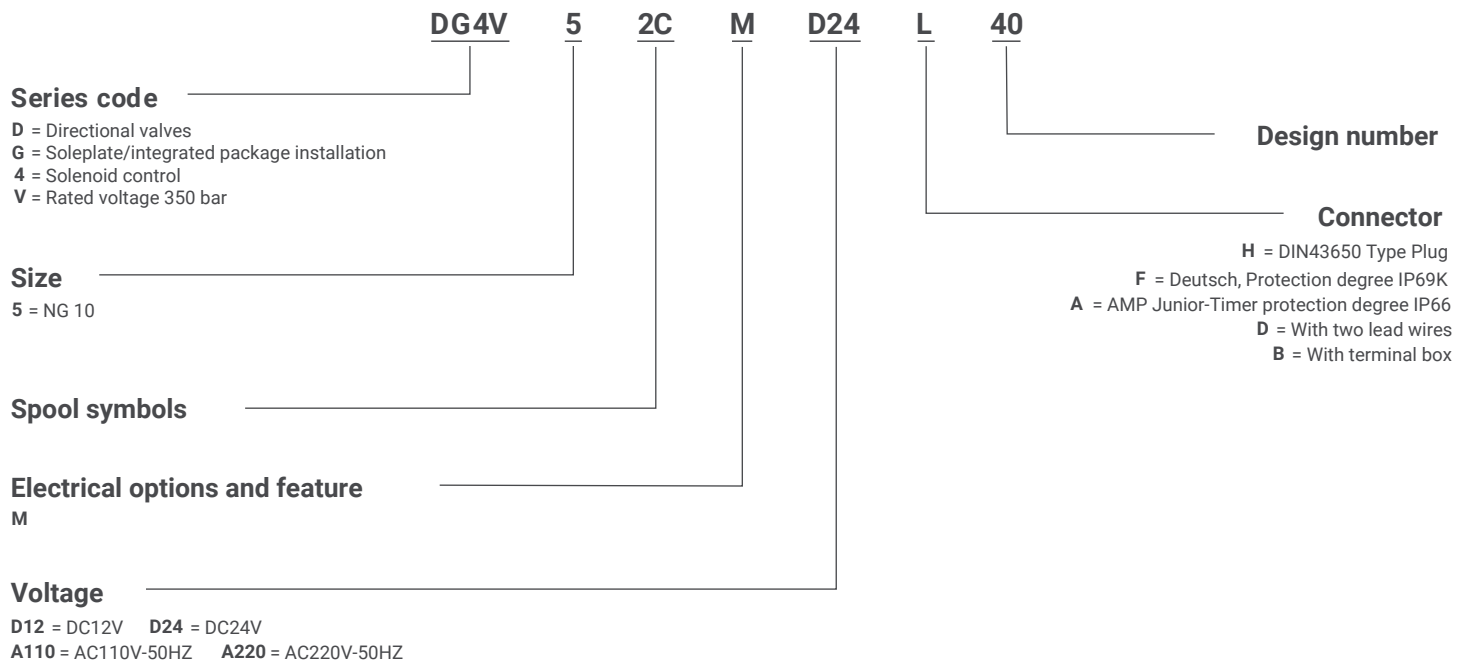


CONTENT

1. DG4V-5-20 series solenoid operated directional valves are equipped with wet-type solenoid that matches the reaction of valve, which has reasonable oil duct design, and with high pressure, large flow, small pressure loss, easy disassembling, etc. characteristics. As wet-type solenoid, it enjoys long working lifespan, low noise, stably and reliably reversing action.
2. Solenoid coil, whose shell's protection class is IP65, and usually configuring DIN43650 ISO4400 EN 175301-803 standard plug. Higher protection class AMP, DEUTSCH plugs can also be configured or using irradiation as the power line of the solenoid directly.



ORDERING DETAILS



TECHNICAL DATA

General Data

The total weight of one solenoid valve (with two solenoids)	kg	DC:6.55; AC:5.7
The total weight of one solenoid valve (with one solenoid)	kg	DC:5.00; AC:4.2
Installation site		Optional position
The total weight of one solenoid valve (with one solenoid)	°C	~20~+50 (adopt NBR seal ring)

Hydraulic Data

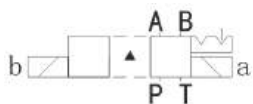
Maximum operating pressure fluid ports P, A and B	bar	315
The highest dynamic oil pressure T cavity can bear	bar	160
The highest static oil pressure T cavity can bear	bar	160
Rated flow	L/min	80
Maximum flow	L/min	120
Liquid medium		Mineral hydraulic oil, Phosphate hydraulic oil
The oil temperature range	°C	-20~+80
The oil cleanliness	°C	ISO4572:β10≥75NAS1638:Class9

Electric Data

Voltage category	DC, AC, RAC (coil with a rectifier component)							
Duty cycle	ED	100%						
Voltage allowable fluctuation range	%	-10~+10						
The reserving and resetting time	ms	on:160; off:120		on:25; off:30		on:160; Off:along with the change of phase angle when electric disconnects		
Coil with connector AMP, the IP grade of coil house is IP67		Class B		Class H		Class B		
The maximum operating temperature coil allowed	°C	135		180		135		
Coil weight	kg	1.0		0.7		1.0		
Voltage	V	12	24	110	220			
Power rate	Hz			50	50	50/60	50/60	
Power consumption	W	38	38	38	40	40	40	
Coil resistance (20°)	ohm	38	15.2	319	28	55	59.5	238
Operating current(20°)	A	3.15	1.58	0.35	0.22	0.42	0.47	0.24

SYMBOLE

double solenoid valve
(two positions, with spring return)



DG4V-3/5- *N

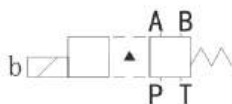


0



2

single solenoid valve
(solenoid is at "a" side)



DG4V-3/5- *A

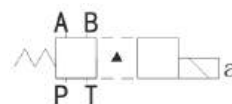


0



2

single solenoid valve
(solenoid is at "b" side)



DG4V-3/5- *AL

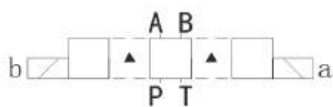


0



2

double solenoid valve
(spring in the middle position)



DG4V-3/5- *C



0



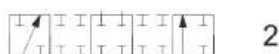
2



6



7



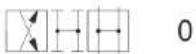
22



34

☆ ▲ just transient state

DG4V-3/5- *B/F



0



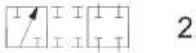
2



6



7



22



34

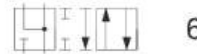
DG4V-3/5- *BL/FL



0



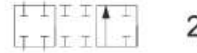
2



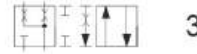
6



7



22



34

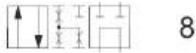
☆ "8 type 8 is specific spool symbol

DG4V-3/5-8C



8

DG4V-3/5-8BL



8

DG4V-3/5-8B



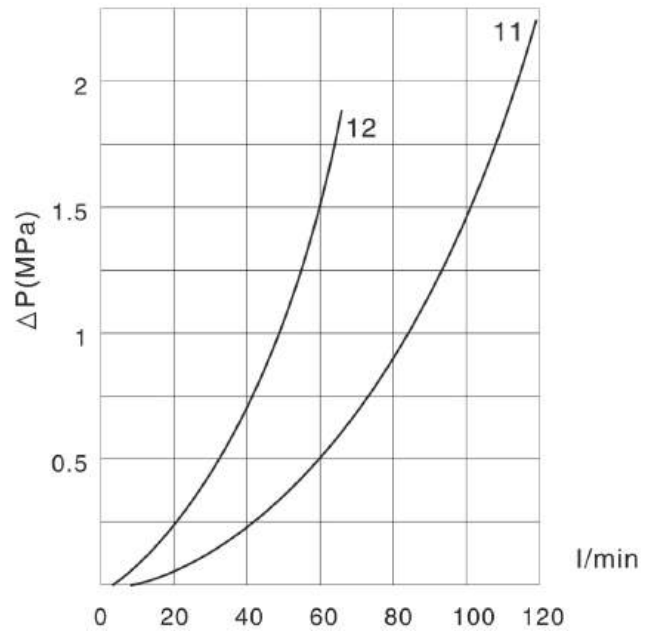
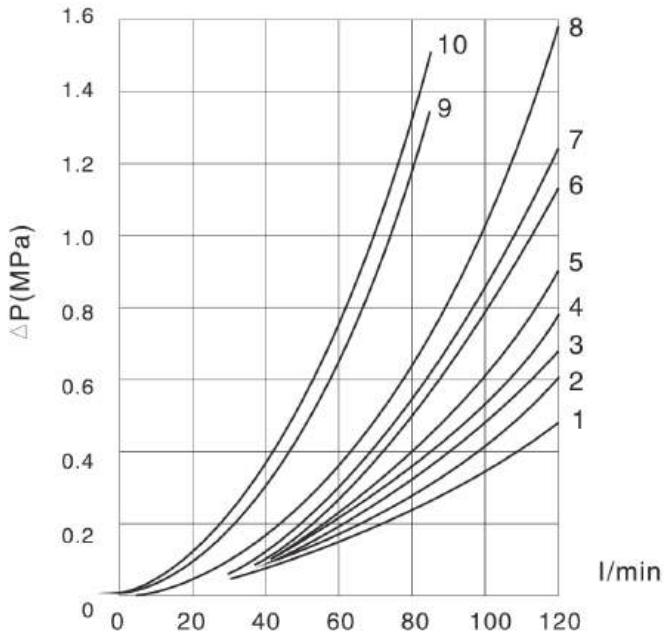
8

CHARACTERISTIC CURVE

【Pressure drop character】

result tested when working fluid oil is mineral oil, when viscosity be 21 mm/s & proportion be 0.865

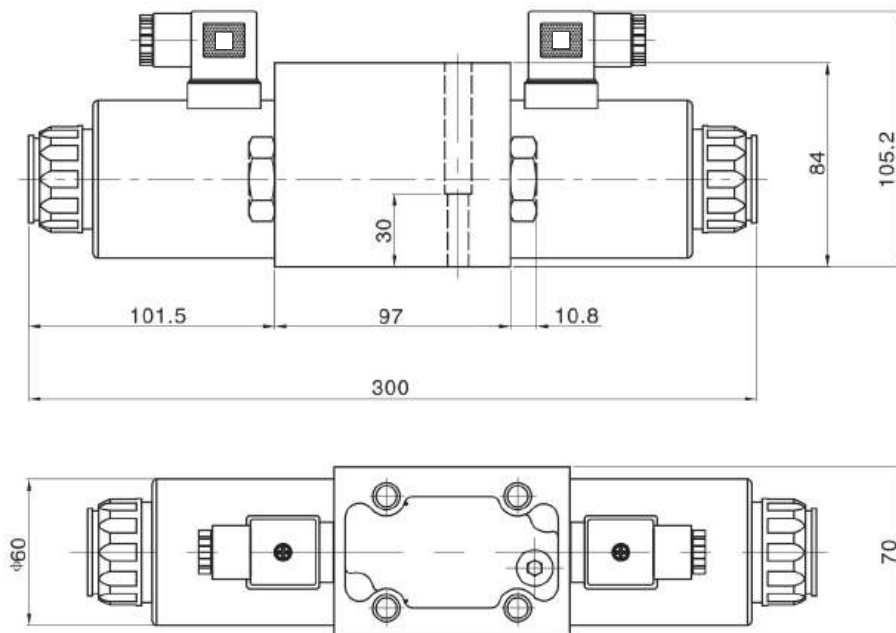
the characteristics of pressure loss



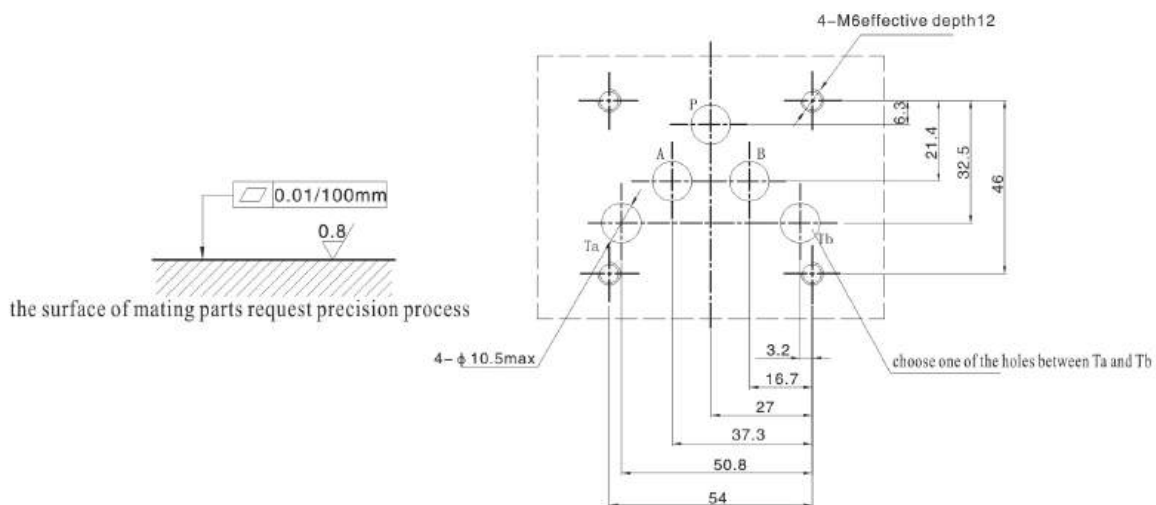
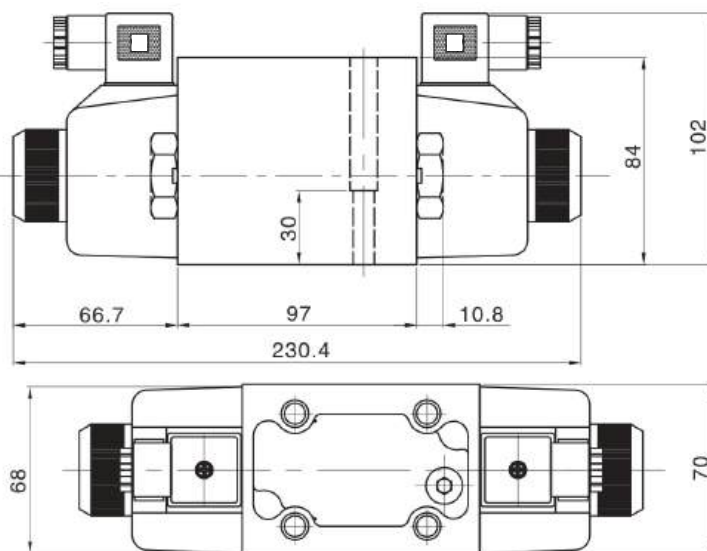
spool type	P→A	B→T	P→B	A→T	P→T	spool type	P→A	B→T	P→B	A→T	P→T
OA	2	5	2	4	-	7B、7C	3	6	3	5	-
0B、0C	1	7	1	6	3	8B、8C	2	8	2	7	8
1B、1C	1	4	2	6	6	11B、11C	2	7	1	4	6
2A	3	6	3	5	-	22A	3	-	3	-	-
2B、2C	2	5	2	4	-	23A	3	6	3	5	-
2N	3	6	3	5	-	31B、31C	3	7	3	5	-
3B、3C	2	5	3	6	-	33B、33C	2	12	2	12	-
6B、6C	3	7	3	6	-	52B、52C	7	10	8	4	-
6N	4	5	4	4	-	56B、56C	7	5	8	8	-

UNIT DIMENSIONS

DG4V5-20-DC



DG4V5-20-AC



DSG-02 series solenoid operated directional valves

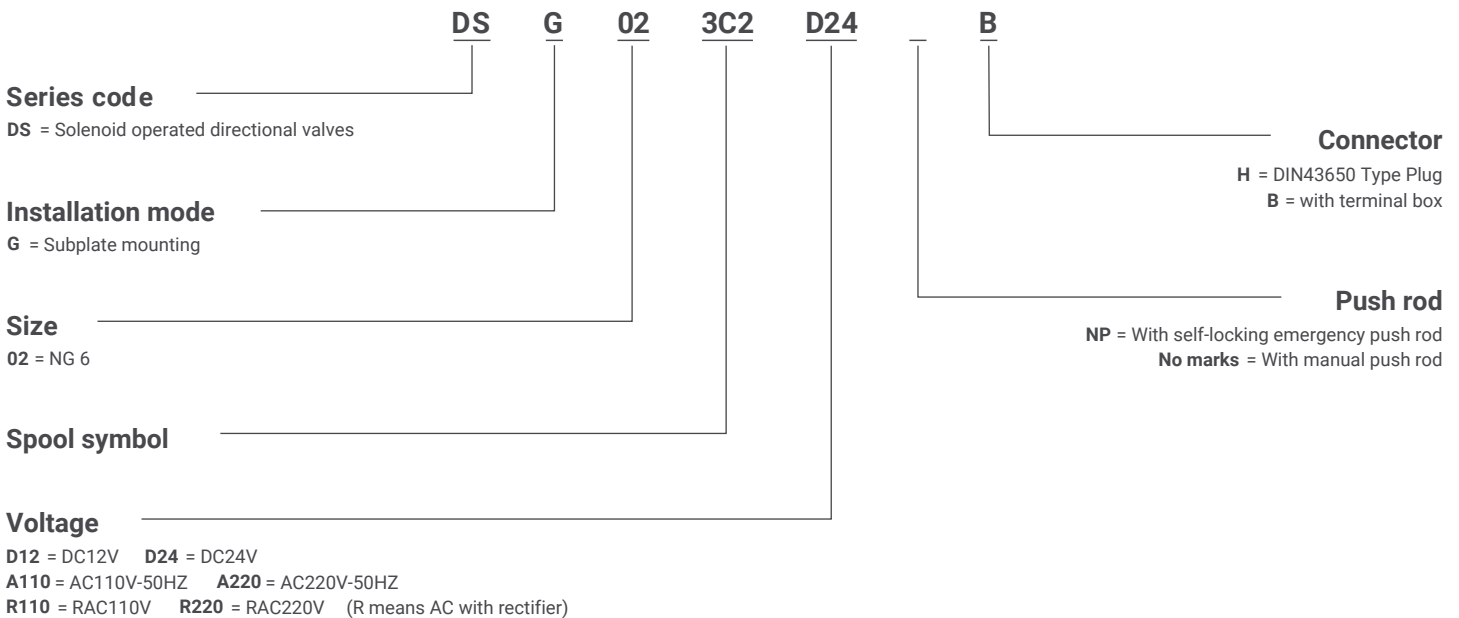


CONTENT

1. The design of solenoid and runner process large electromagnetic suction, which make this product suitable for high pressure large flow.
2. The design of electromagnetic suction that matches the valve and improve the spring force makes this valve operated reliably in the polluted working environment.
3. Excellent electrical waterproof and dust-proof features
4. Solenoid coil, whose shell's protection class is IP65, and usually configuring DIN43650 ISO4400 EN 175301-803 standard plug. Higher protection class AMP, DEUTSCH plugs can also be configured or using irradiation as the power line of the solenoid directly.



ORDERING DETAILS



TECHNICAL DATA

General Data

The total weight of one solenoid valve (with two solenoids)	kg	1.94
The total weight of one solenoid valve (with one solenoid)	kg	1.50
Installation site		Optional position
Operating temperature	°C	~20~+50 (adopt NBR seal ring)

Hydraulic Data

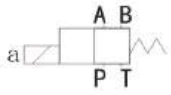
Maximum operating pressure fluid ports P, A and B	bar	315
The highest dynamic oil pressure T cavity can bear	bar	160
The highest static oil pressure T cavity can bear	L/min	20
Rated flow	L/min	63
Maximum flow		Mineral hydraulic oil, Phosphate hydraulic oil
Liquid medium	°C	-20~+80
The oil temperature range		ISO4572:β10≥75 NAS1638:Class9

Electric Data

Voltage category		DC, RAC(coil with a rectifier component)				
Duty cycle	ED	100%				
Voltage allowable fluctuation range	%	-10~+10				
The reserving and resetting time	ms	on:50; off:40 (do not include RAC type)				
Maximum operating frequency	Hz	3				
Coil insulation class		class B				
The maximum operating temperature coil allowed		130				
Coil weight	kg	0.30				
Voltage	V	12	24	110	110	220
Power types		DC	DC	DC	RAC	RAC
Power frequency	Hz				50/60	50/60
Power consumption	W	34	34	34	36	36
Coil resistance(20°C)	ohm	4.2	16.5	346	64.6	258
Operating current (20°C)	A	2.8	1.45	0.31	0.42	0.21

SYMBOLE

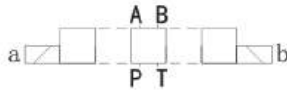
single solenoid valve
(spring return)



2B * BL

	2
	3
	4
	40
	5
	6
	60
	9
	10
	11
	12

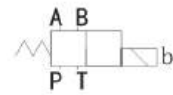
double solenoid valve
(three position, spring centralizing)



3C *

	2
	3
	4
	40
	5
	6
	60
	9
	10
	11
	12

single solenoid valve
(spring return)



2B * B

	2
	3
	4
	40
	5
	6
	60
	9
	10
	11
	12

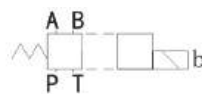
two position, without spring



2N *

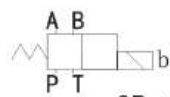
	2
	3
	4
	7

two position, spring return



2B *

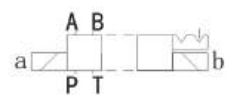
	2
	3
	8



2B * A

	2
	3

two position,
mechanical locating

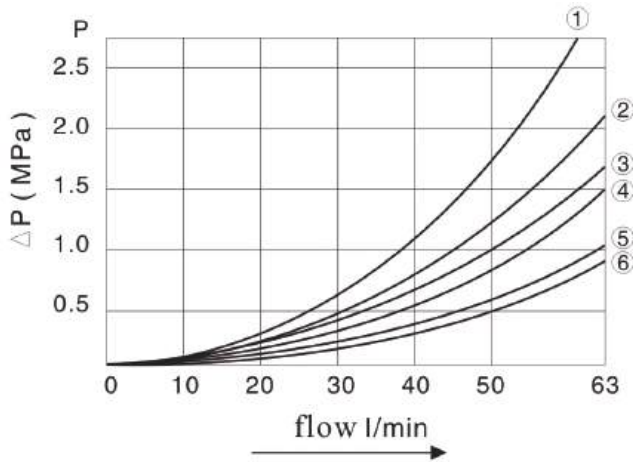


2D *

	2
--	---

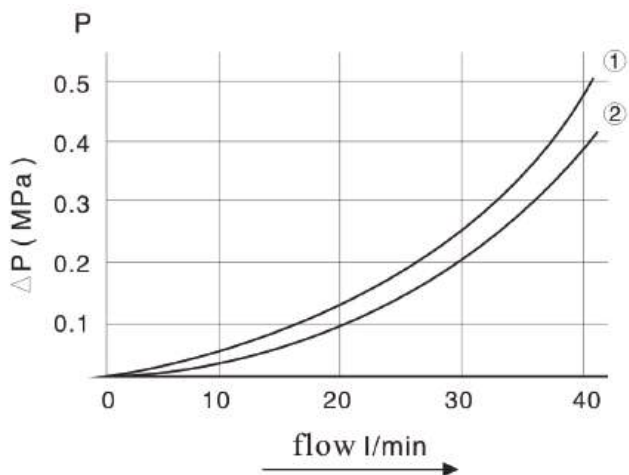
CHARACTERISTIC CURVE

【Pressure drop-flow character】



Test condition:
 Pressure: 7Mpa
 Flow: 63L/min
 Viscosity: 35cst
 Voltage: 100%(thermal state)

spool type	curve character of pressure drop				
	P→A	B→T	P→B	A→T	P→T
3C2	5	5	5	5	-
3C3	6	6	6	6	4
3C4	5	6	5	6	-
3C40	5	5	5	5	-
3C5	2	2	2	2	4
3C6	1	1	1	1	4
3C60	1	1	1	1	3
3C9	6	5	6	5	-
3C12	6	5	6	5	-
3C11	5	5	5	6	-
2D2	6	5	5	5	-
2D3	5	3	5	3	-
2B2	4	5	4	5	-
2B3	3	3	5	5	-
2B8	2	-	5	-	-
2B2-L	4	5	4	5	-
2B3-L	5	5	3	3	-
2B8-L	5	-	2	-	-



spool type	curve character of pressure drop			
	P→A	B→T	P→B	A→T
3C2	1	1	1	1
3C4	1	2	1	2
2B2	1	1	1	1

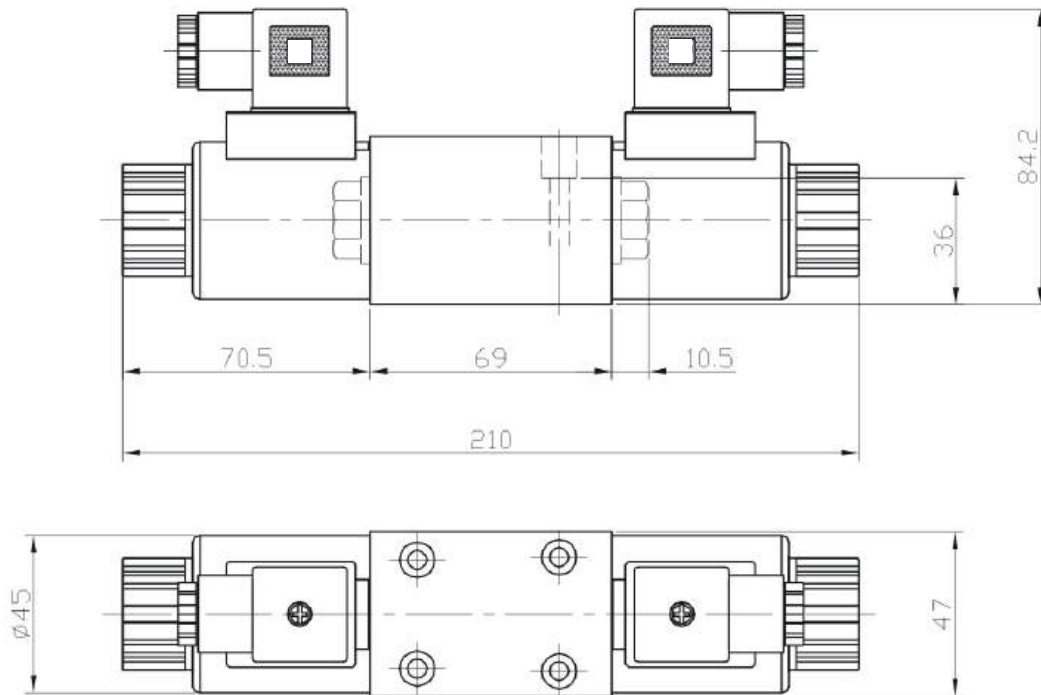
【Viscosity change】

viscosity	cSt	15	20	30	40	50	60	70	80	90	100
	SSU		77	98	141	186	232	278	324	371	417
coefficient (G')		0.81	0.87	0.96	1.03	1.09	1.14	1.19	1.23	1.27	1.30

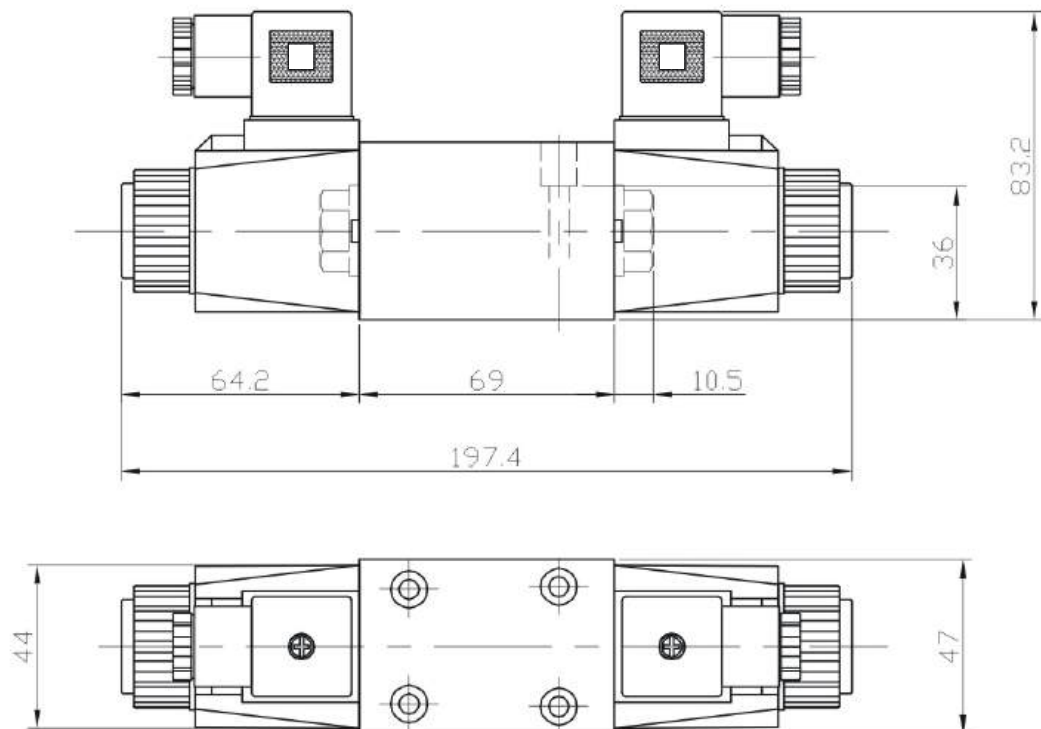
As for other proportion (G') pressure drop can accord to formula $\Delta P' = \Delta P (G' / 0.85)$ to calculate

UNIT DIMENSIONS

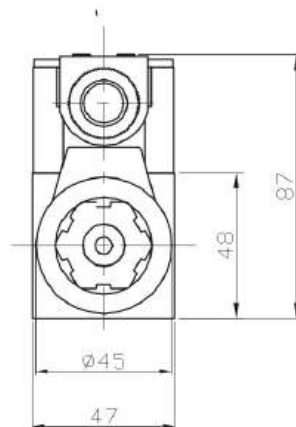
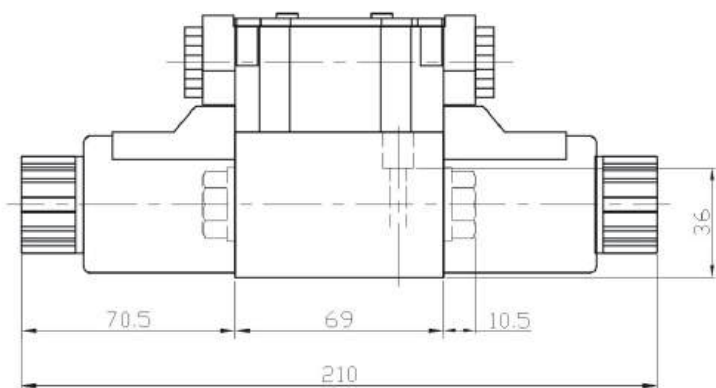
DSG 02-DC-H



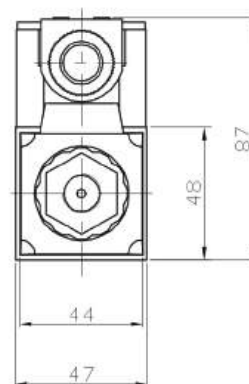
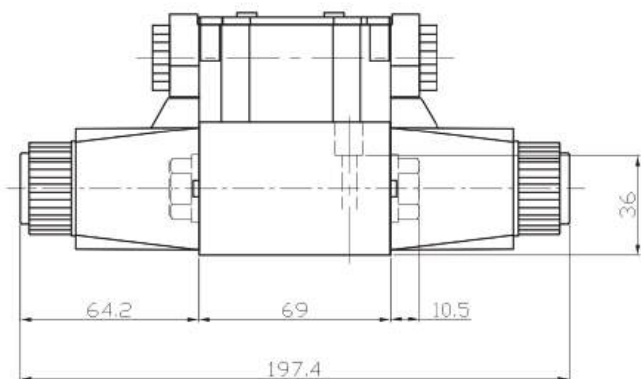
DSG 02-AC -H

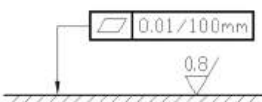


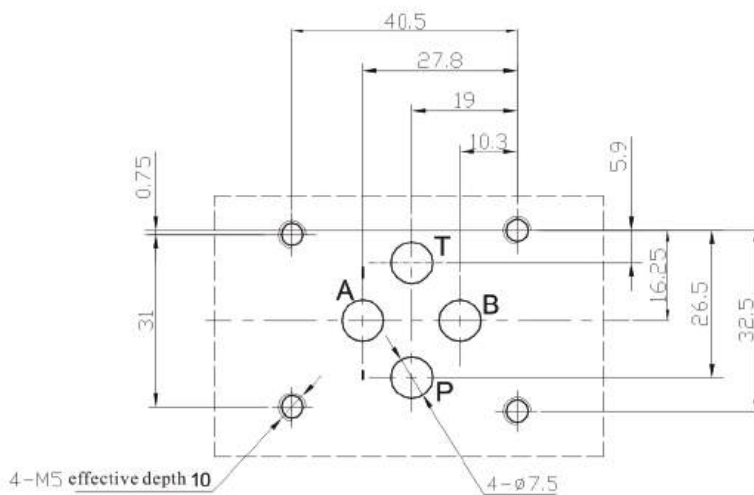
DSG 02-DC-B



DSG 02-AC-B




 the surface of mating parts request precision process



DSG-03 series solenoid operated directional valves

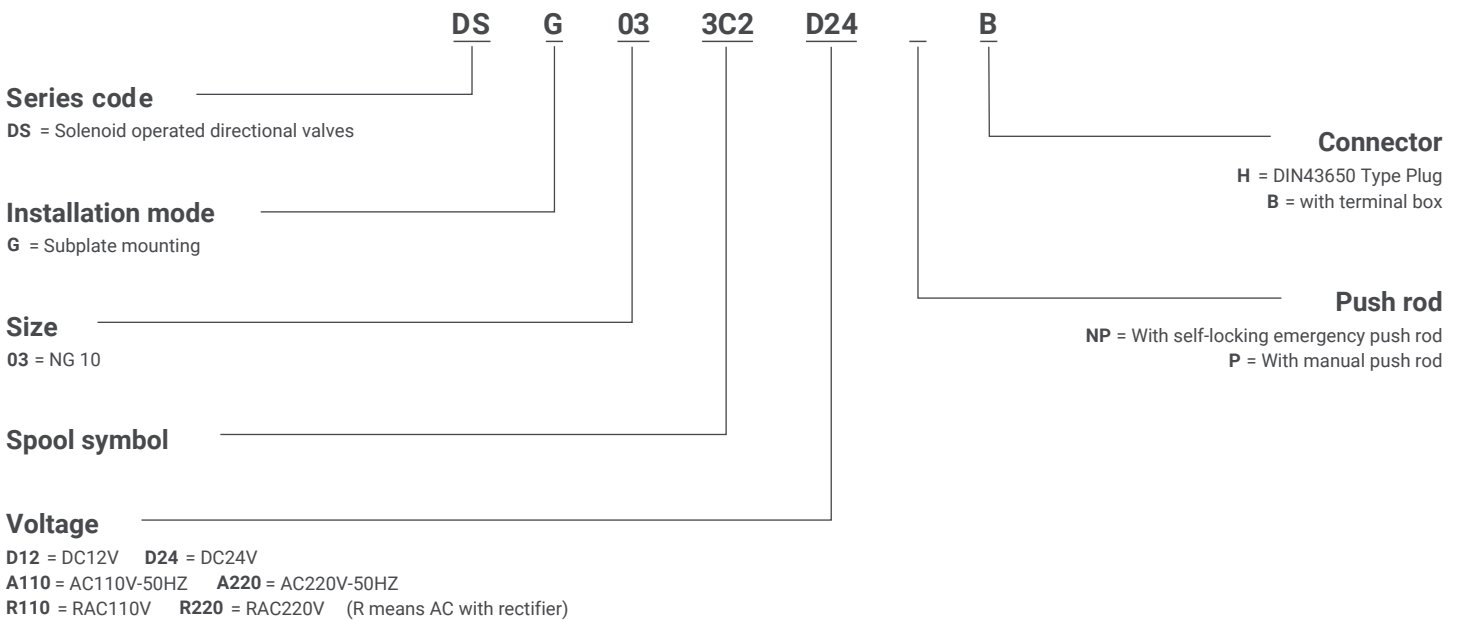


CONTENTS

1. The design of solenoid and runner process large electromagnetic suction, which make this productsuitable for high pressure large flow.
2. The design of electromagnetic suction that matches the valve and improve the spring force makes this valve operated reliably in the polluted working environment.
3. Excellent electrical waterproof and dust-proof features
4. Solenoid coil, whose shell's protection class is IP65, and usually configuring DIN43650 ISO4400 EN 175301-803 standard plug. Higher protection class AMP, DEUTSCH plugs can also be configured or using irradiation as the power line of the solenoid directly.



ORDERING DETAILS



TECHNICAL DATA

General Data

The total weight of one solenoid valve (with two solenoids)	kg	4.8
The total weight of one solenoid valve (with one solenoid)	kg	3.50
Installation site		Optional position
Operating temperature	°C	~20~+50 (adopt NBR seal ring)

Hydraulic Data

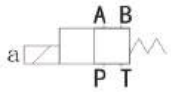
Maximum operating pressure fluid ports P, A and B	bar	315
The highest dynamic oil pressure T cavity can bear	bar	160
The highest static oil pressure T cavity can bear	L/min	20
Rated flow	L/min	120
Liquid medium	Mineral hydraulic oil, Phosphate hydraulic oil	
The oil temperature range	°C	-20~+80
The oil cleanliness	ISO4572:β10≥75 NAS1638:Class9	

Electric Data

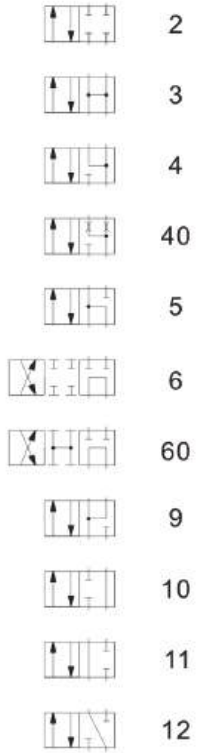
Voltage category	DC, RAC(coil with a rectifier component)					
Duty cycle	ED	100%				
Voltage allowable fluctuation range	%	-10~+10				
The reserving and resetting time	ms	on:150; off:80 (do not include RAC type)				
Maximum rev frequency	Hz	3				
Coil insulation class	class B					
The maximum operating temperature coil allowed	130					
Coil weight	kg	0.82				
Voltage	V	12	24	110	110	220
Power types		DC	DC	DC	RAC	RAC
Power frequency	Hz				50/60	50/60
Power consumption	W	46	46	46	54	54
Coil resistance(20°C)	ohm	3.2	12.5	1050	49	110
Operating current (20°C)	A	3.75	1.92	0.21	0.56	0.28

SYMBOLE

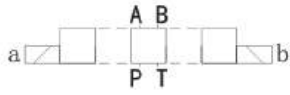
single solenoid valve
(spring return)



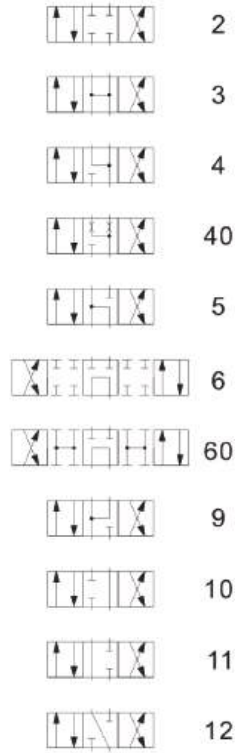
2B * BL



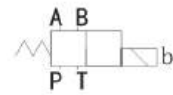
double solenoid valve
(three position, spring centralizing)



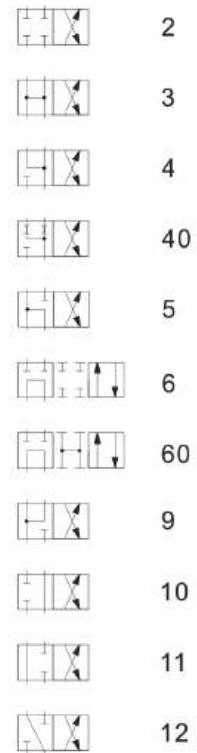
3C*



single solenoid valve
(spring return)



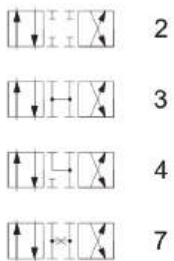
2B * B



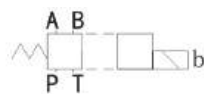
two position, without spring



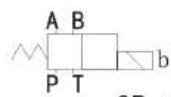
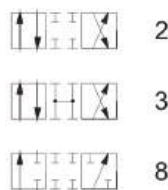
2N *



two position, spring return



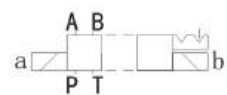
2B *



2B * A



two position,
mechanical locating

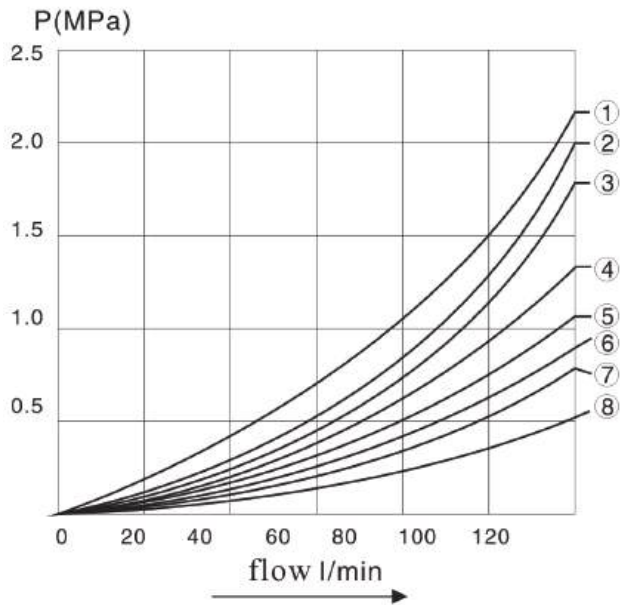


2D *



CHARACTERISTIC CURVE

【Pressure drop-flow character】



flow-pressure drop feature $\Delta P=f(Q)$

spool symbol	character				
	P→A	B→T	P→B	A→T	P→T
3C2	6	6	6	6	-
3C3	7	7	7	7	5
3C4	6	7	6	7	-
3C40	6	7	6	7	-
3C5	5	2	2	5	8
3C6	2	2	2	2	5
3C60	1	1	1	1	4
3C9	7	6	7	6	-
3C12	6	6	6	7	-
3C11	7	6	6	6	-
2B2	2	2	6	6	-
2B3	3	3	6	6	-
2B8	5	-	5	-	-
2B2-L	6	6	2	2	-
2B3-L	6	6	3	3	-
2B8-L	5	-	5	-	-

Test condition:
 Pressure: 7Mpa
 Flow: 120L/min
 Viscosity: 35cst

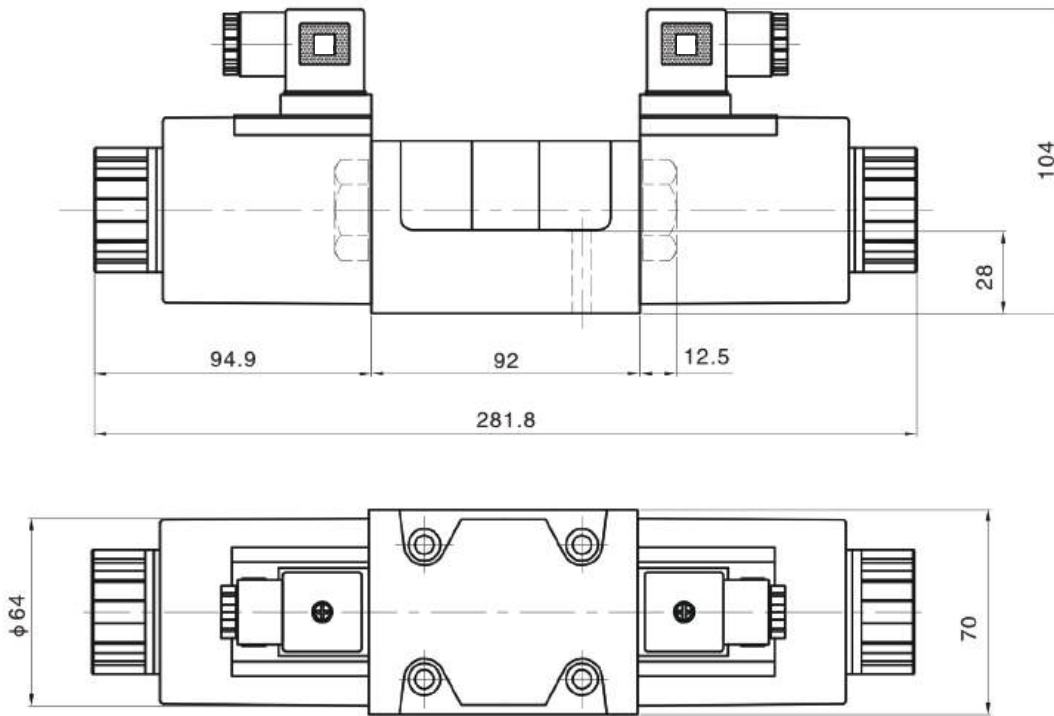
【Viscosity change】

viscosity	cSt	15	20	30	40	50	60	70	80	90	100
		SSU	77	98	141	186	232	278	324	371	417
coefficient (G')		0.81	0.87	0.96	1.03	1.09	1.14	1.19	1.23	1.27	1.30

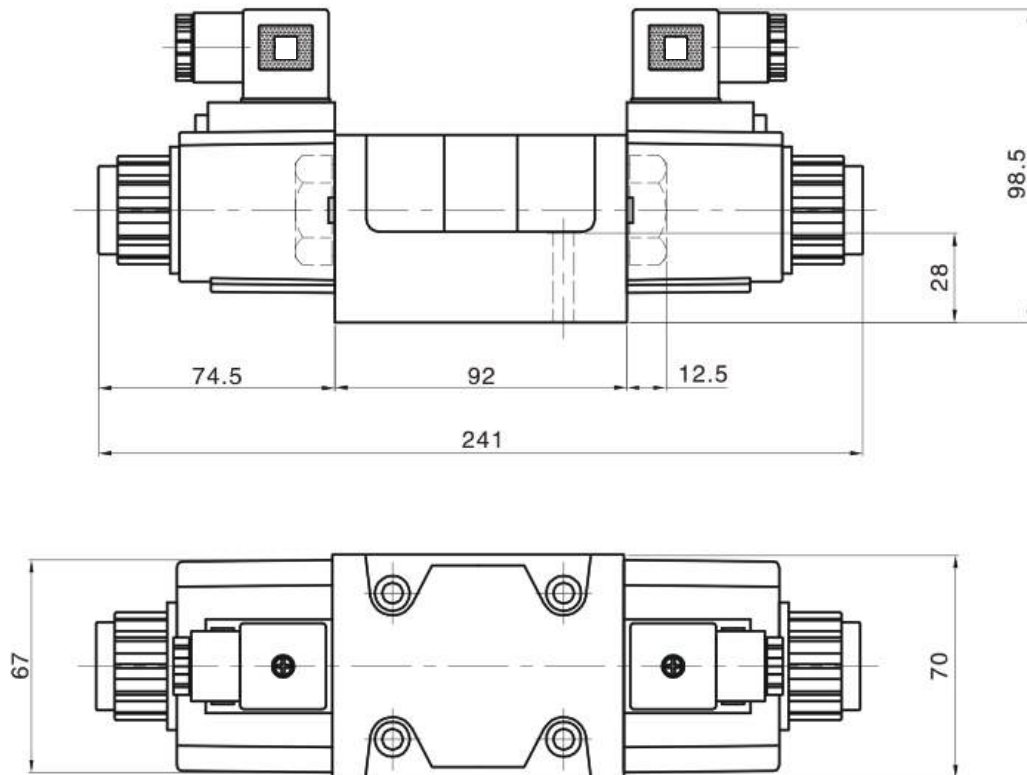
As for other proportion (G') pressure drop can accord to formula $\Delta P' = \Delta P(G' 0.85)$ to calculate

UNIT DIMENSIONS

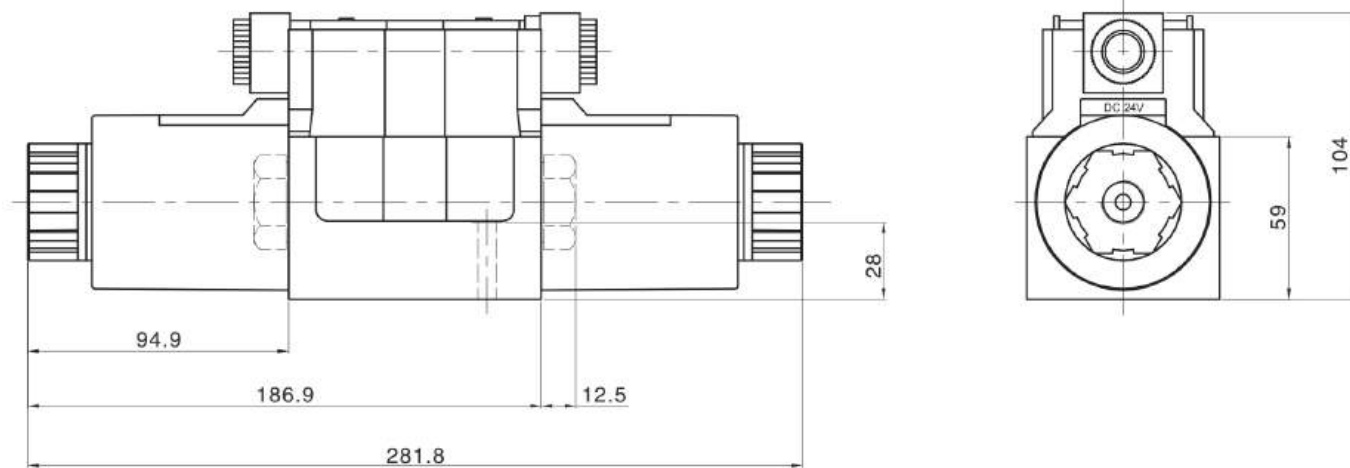
DSG 03-DC-H



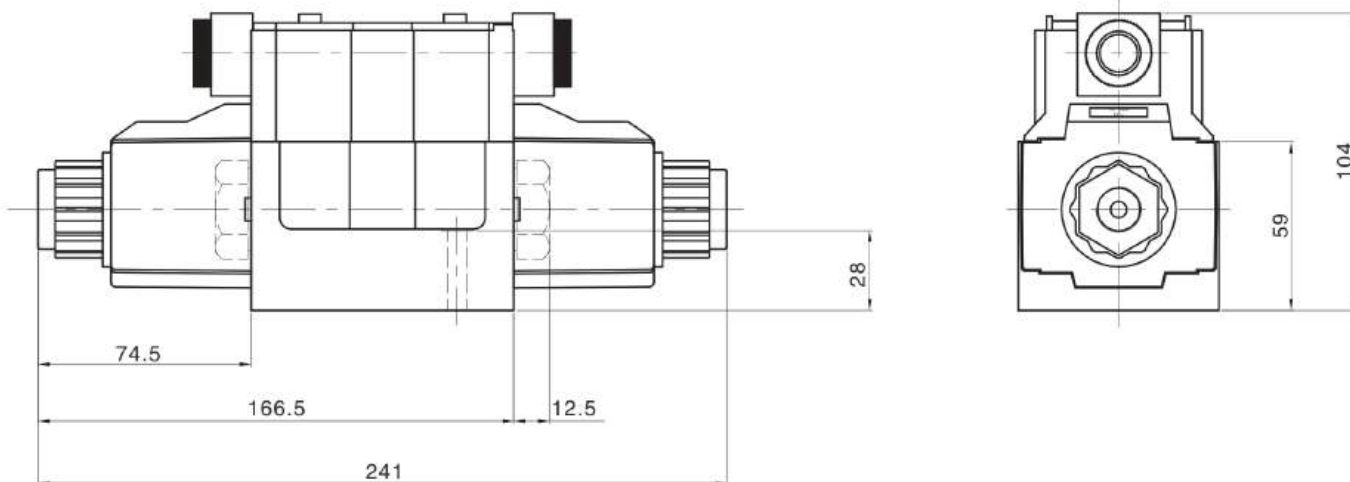
DSG 03-AC-H



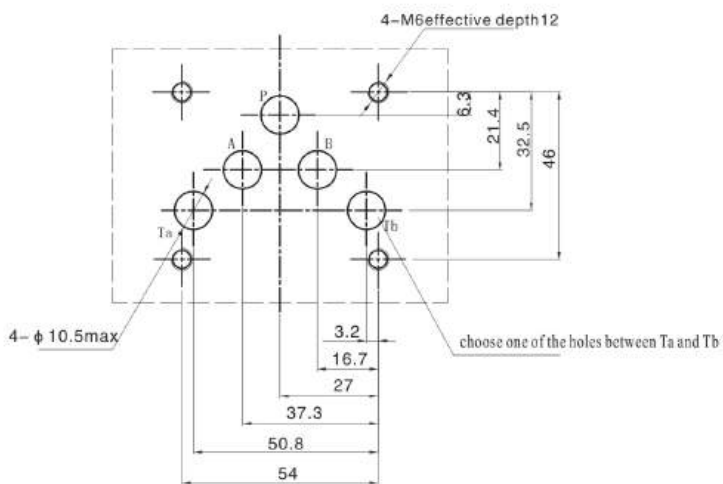
DSG 03-DC-B



DSG 03-AC-B



the surface of mating parts request precision process

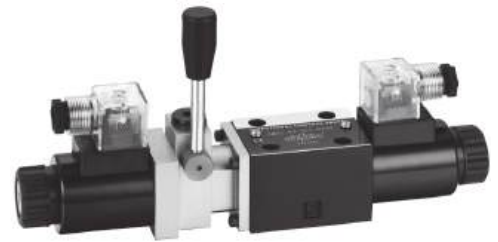


DMSG series solenoid operated directional valves

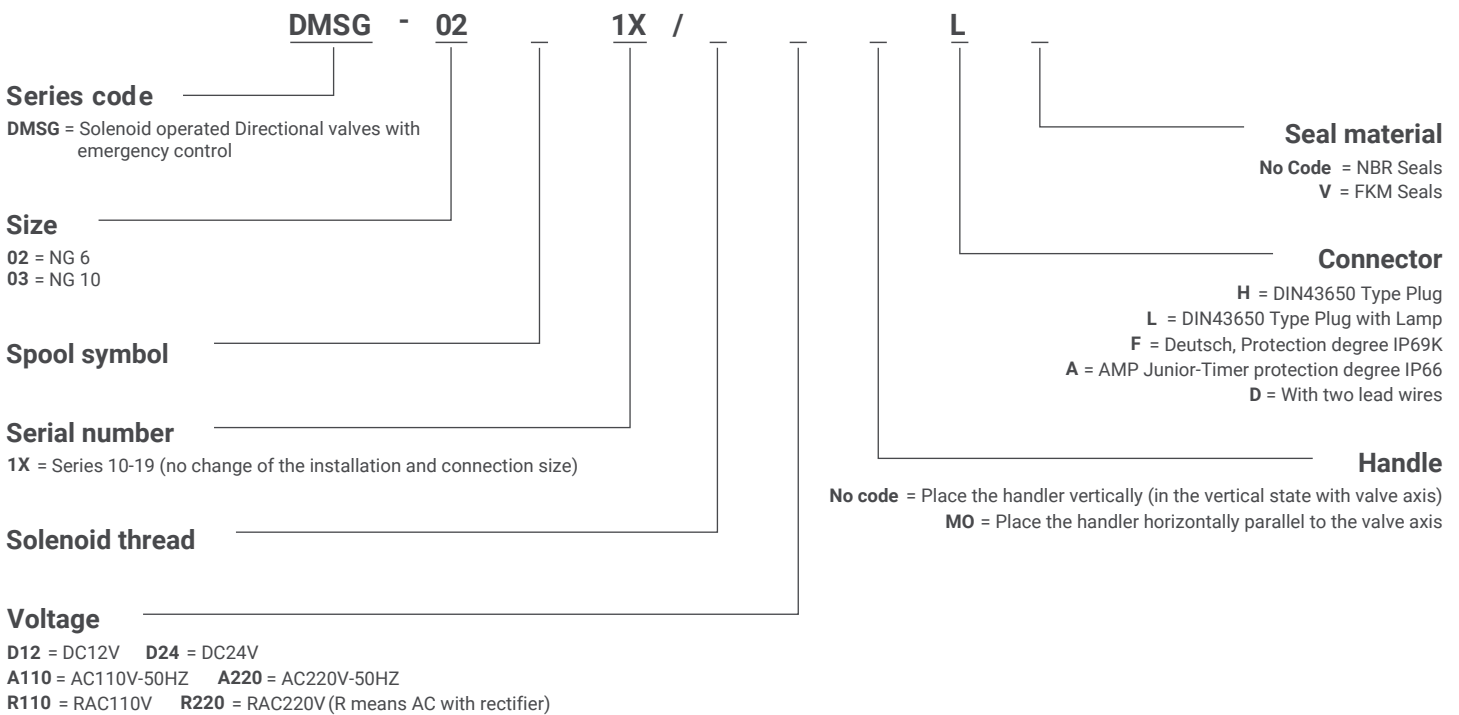


CONTENT

1. This kind of valve can also be operated with auxiliary handler in the case of losing electricity.
2. Two different kinds of model code are needed according to the requirements of installation.
3. The auxiliary handler should in the original position when the valve is operated by electricity, and the handler does not effect any performance of the valve.
4. Can be used as pilot valve of electro-hydraulic operated directional valves.
5. Mounting surface according to DIN24340, type A, and is consistent with WE6.

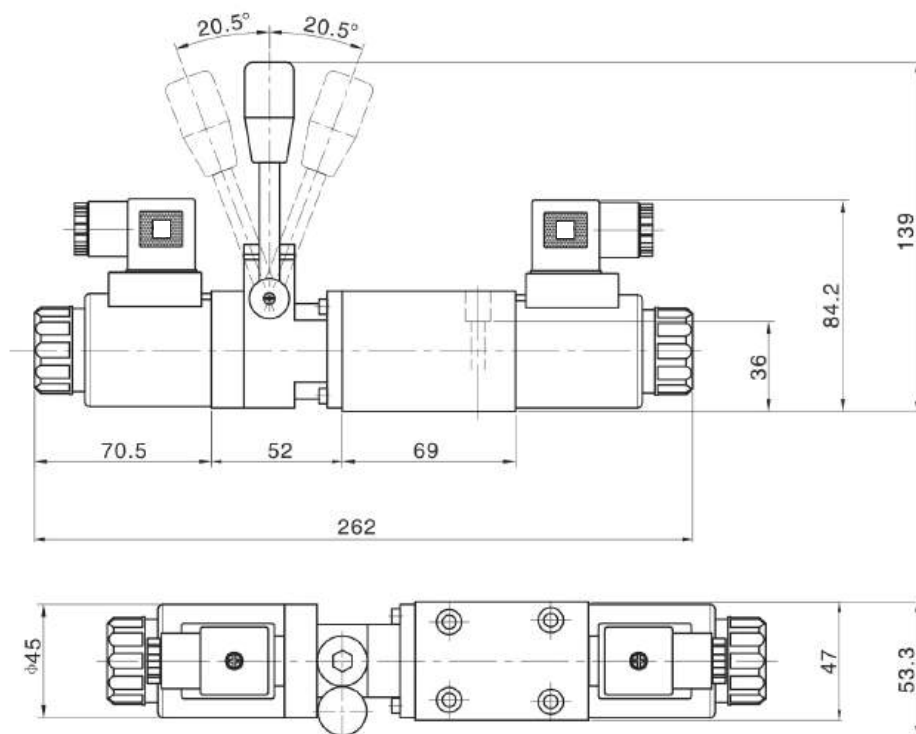


ORDERING DETAILS

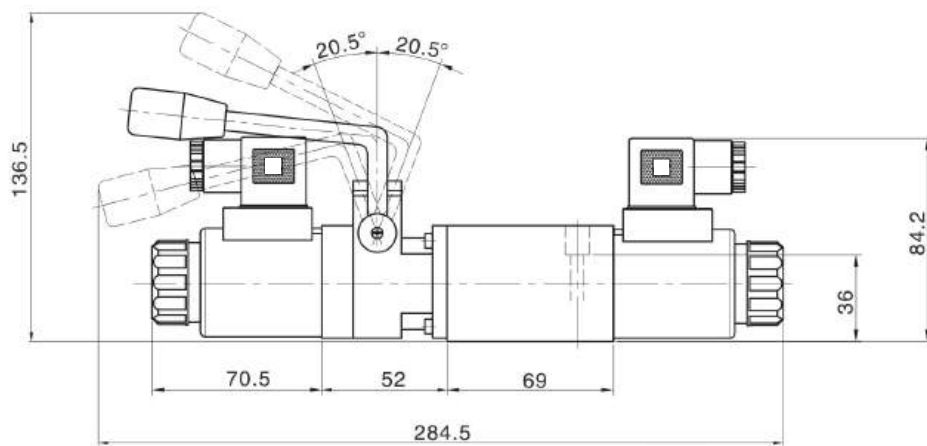



UNIT DIMENSIONS

DMSG 02

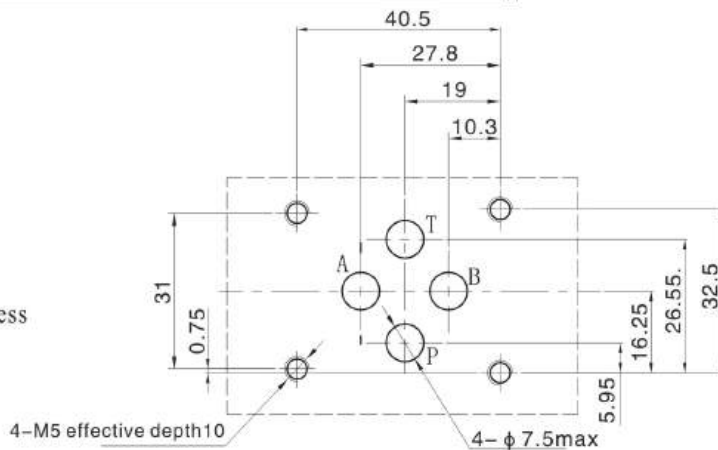


DMSG 02-MO

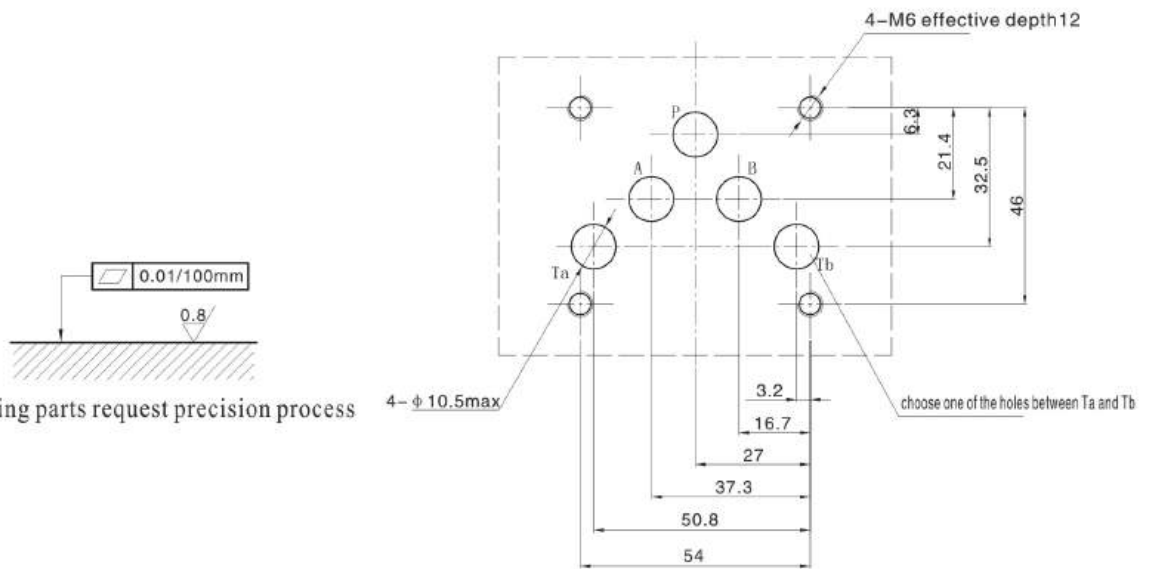
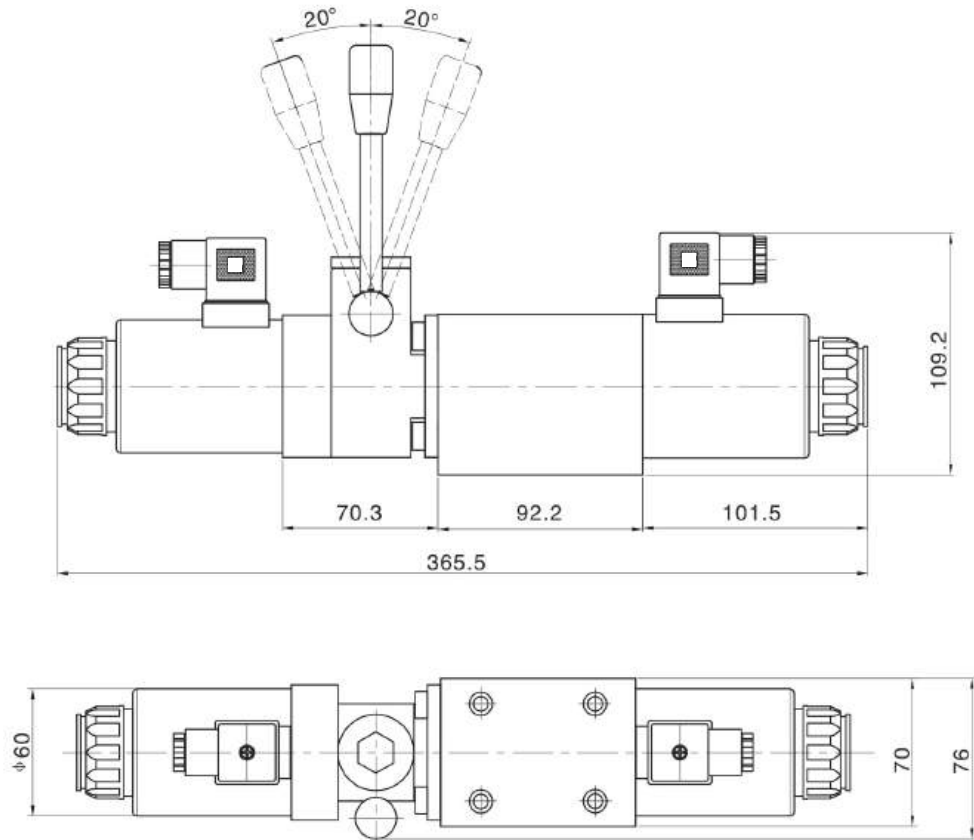




 the surface of mating parts request precision process



DMSG 03



the surface of mating parts request precision process

WSH-01 series solenoid operated directional valves

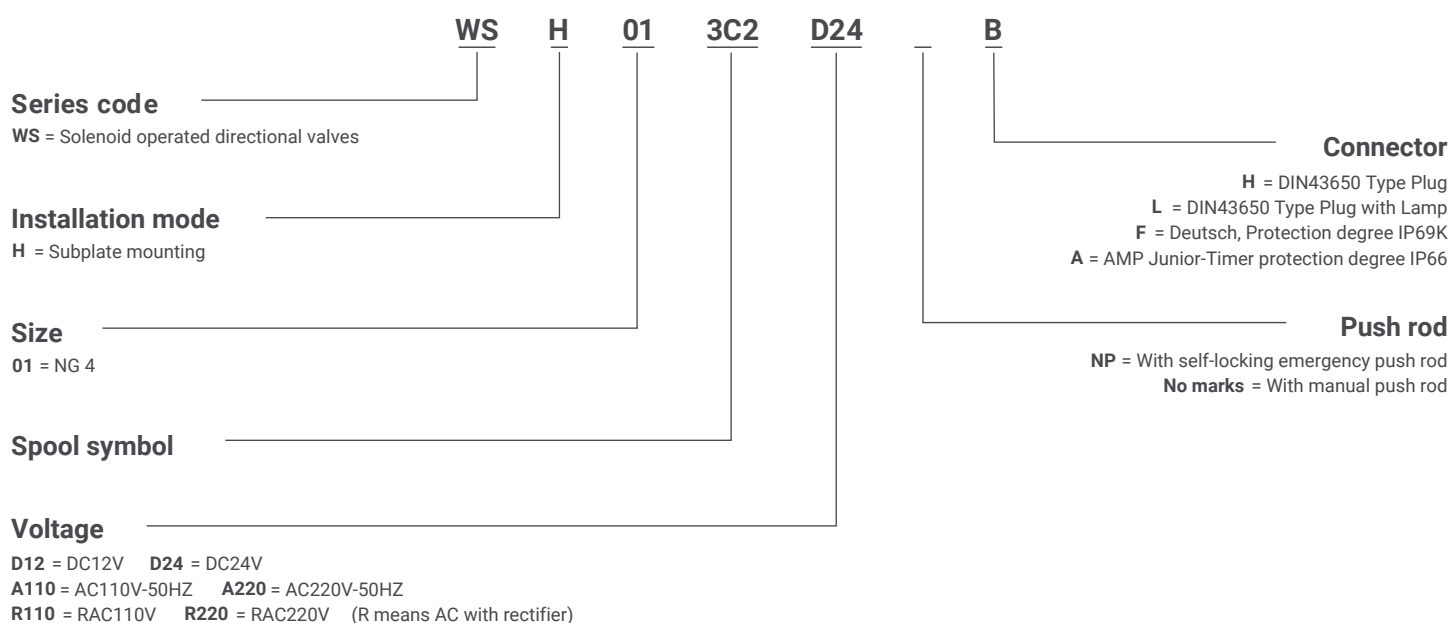


CONTENT

1. The design of solenoid and runner process large electromagnetic suction, which make this product suitable for high pressure large flow.
2. The design of electromagnetic suction that matches the valve and improve the spring force makes this valve operated reliably in the polluted working environment.
3. Excellent electrical waterproof and dust-proof features.
4. Solenoid coil, whose shell's protection class is IP65, and usually configuring DIN43650 ISO4400 EN 175301-803 standard plug. Higher protection class AMP, DEUTSCH plugs can also be configured or using irradiation as the power line of the solenoid directly.



ORDERING DETAILS



TECHNICAL DATA

General Data

The total weight of one solenoid valve (with two solenoids)	kg	0.89
The total weight of one solenoid valve (with one solenoid)	kg	0.72
Installation site		Optional position
Operating temperature	°C	~20~+50 (adopt NBR seal ring)

Hydraulic Data

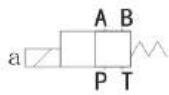
Maximum operating pressure fluid ports P, A and B	bar	315
The highest dynamic oil pressure T cavity can bear	bar	21
The highest static oil pressure T cavity can bear	L/min	25
Liquid medium	Mineral hydraulic oil, Phosphate hydraulic oil	
The oil temperature range	°C	-20~+80
The oil cleanliness	ISO4572:β10≥75 NAS1638:Class9	

Electric Data

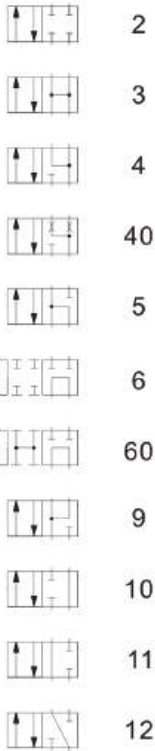
Voltage category	DC, RAC(coil with a rectifier component)						
Duty cycle	ED	100%					
Voltage allowable fluctuation range	%	-10~+10					
The reserving and resetting time	ms	on:50~90; off:40~80 (do not include RAC type)					
Maximum reversing rate	Hz	3					
Coil insulation class	class H						
The maximum operating temperature coil allowed	°C	180					
Coil weight	kg	0.215					
Voltage	V	12	24	48	110	110	220
Power types		DC	DC	DC	DC	RAC	RAC
Power frequency	Hz					50/60	50/60
Power consumption	W	26	26	26	26	29	29
Coil resistance(20°C)	ohm	3.2	12.5	1050	413	89	413
Operating current (20°C)	A	2.18	1.10	0.50	0.26	0.33	0.17

SYMBOLE

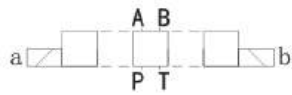
single solenoid valve
(spring return)



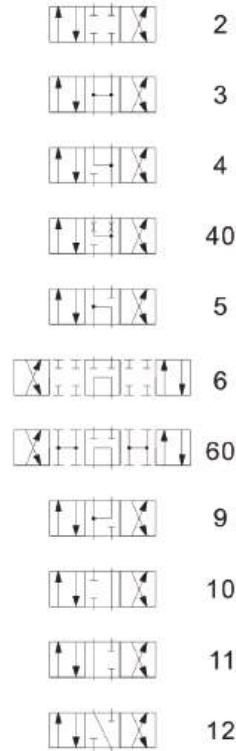
2B * BL



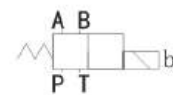
double solenoid valve
(three position, spring centralizing)



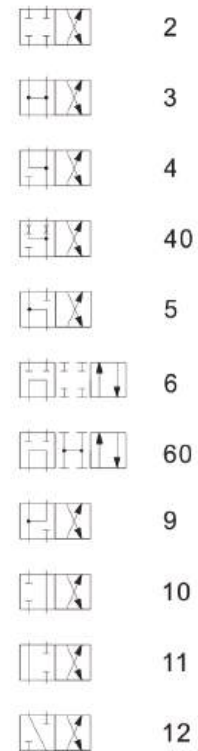
3C *



single solenoid valve
(spring return)



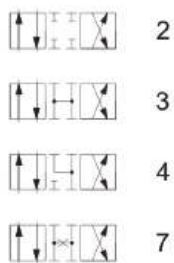
2B * B



two position, without spring



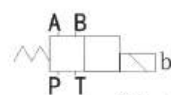
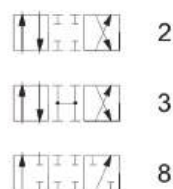
2N *



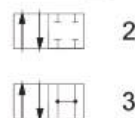
two position, spring return



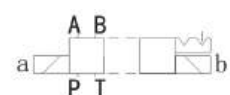
2B *



2B * A



two position,
mechanical locating

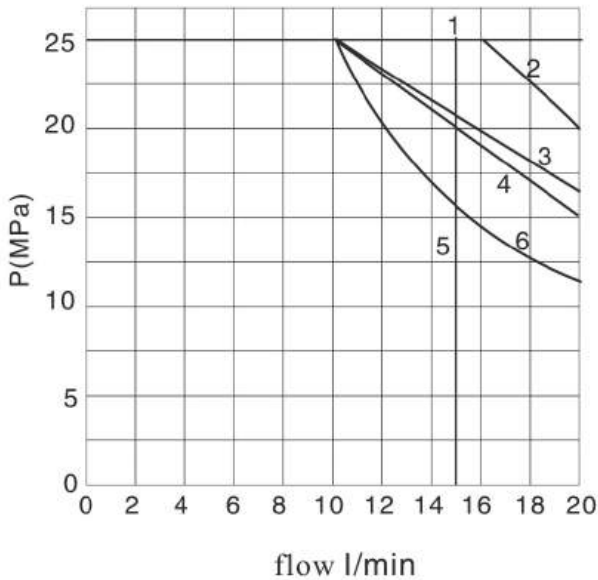


2D *



CHARACTERISTIC CURVE

【Working feature】



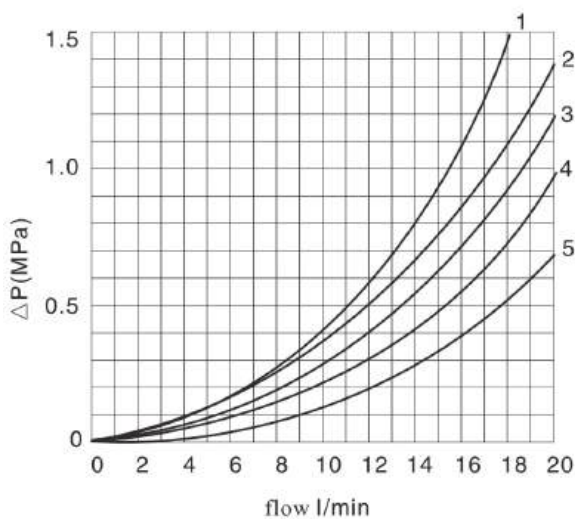
spool type	curve
3C2	1
3C9	3
3C40	1
3C60	4
3C4	1
3C10	1
3C12	1
2B2L	2(6*)
2D2	5

(6*) = When Y type spool be used to 2 way or 3 way, it meets the curve of No.4

Test condition: the solenoid is on working temperature, input voltage is 10% less than rated value, fluid oil temperature is 40°C, fluid oil viscosity is 46mm²/(40°C). The chart showing is the numerical value when two channels with oil flowing at the same time(For example, from P to A, also from B to T). If the valve with two positions & four way, or three position & four way was working, the fluid oil only flow in one way, and the working limit will be changed, even changed to negative value.

When testing, close the spool regularly, oil pressure is 125 bar, flow is 10L/min, the standard coil without other additional electronic device is under working temperature. The data as the chart showing influenced by the following factors: the changes from hydraulic circuit, working medium, pressure, flow and temperature. Below chart is the pressure drop curve when spool symbol working regularly. Test condition: fluid oil temperature is 40°C, fluid oil viscosity is 46mm²/(40°C).

pressure drop-flow curve

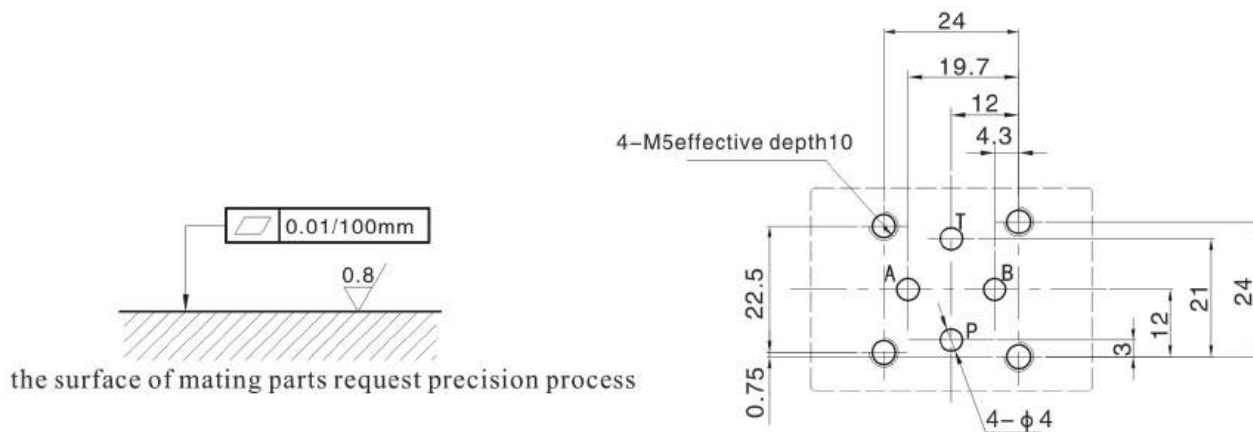
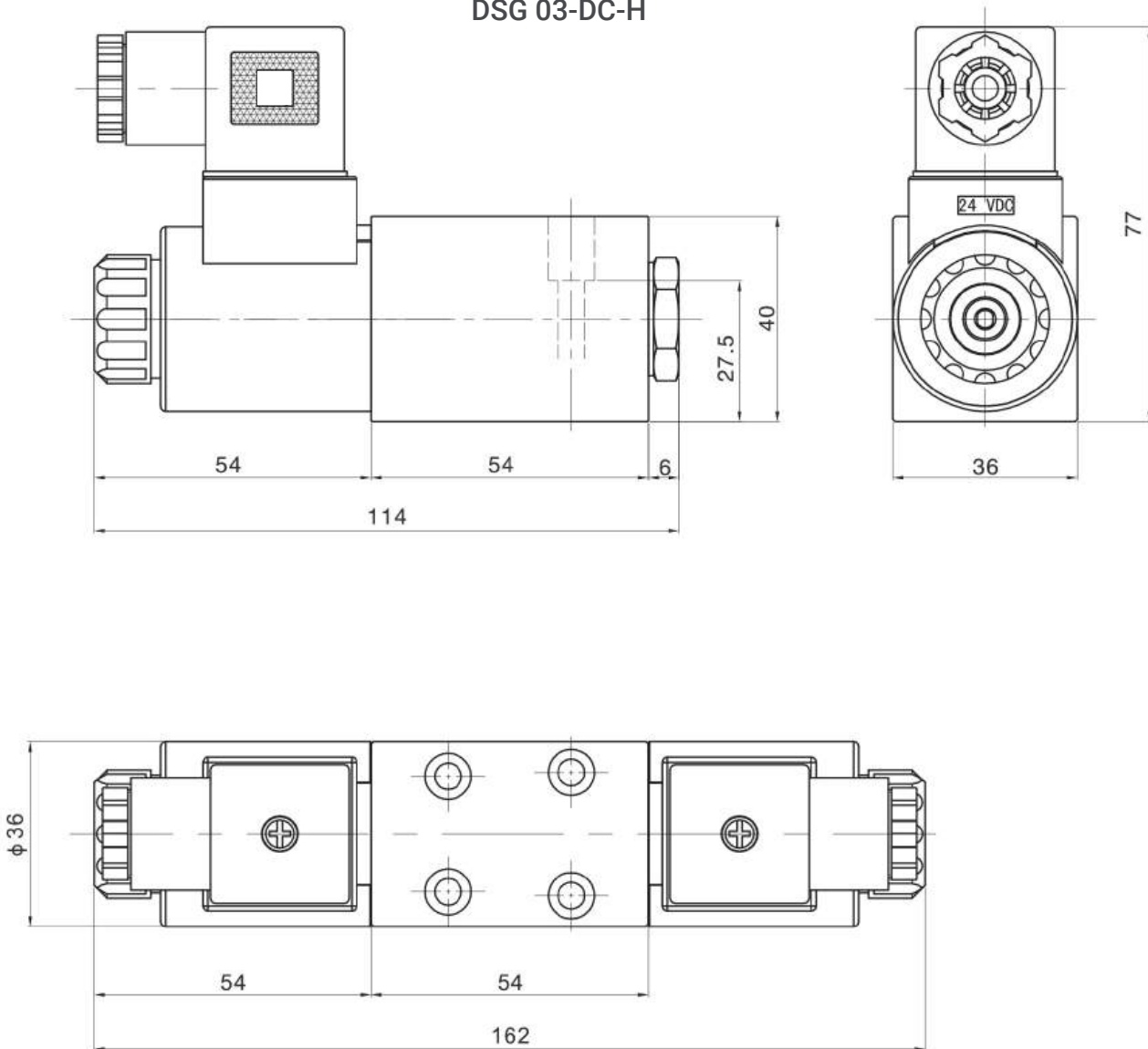


spool type	flow direction				
	P→A	P→B	A→B	B→T	P→T
3C2	2	2	4	4	
3C3	4	4	5	5	3
3C40	2	2	5	5	
3C60	2	2	2	2	1
3C4	4	4	2	2	
3C10	3	3	3	3	
3C12	3	3	5	5	
2B2L	3	3	4	4	
2D2	3	3	4	4	

curve code

UNIT DIMENSIONS

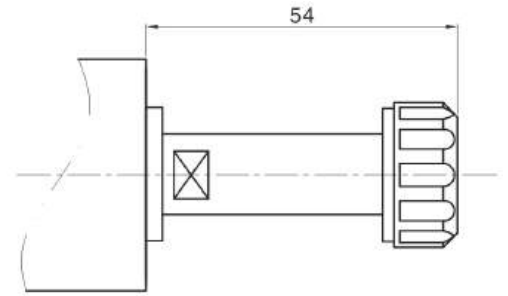
DSG 03-DC-H



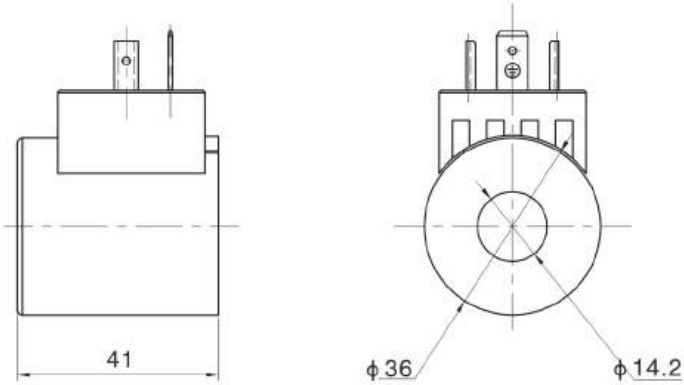
the surface of mating parts request precision process

【Option of electronic connector】

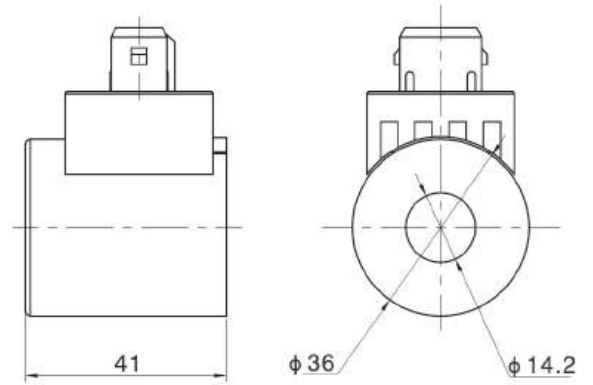
Without coil, fastening the tube and locknut on the homologous valve body, according to the different IP grade, then choose the coil with homologous structure.



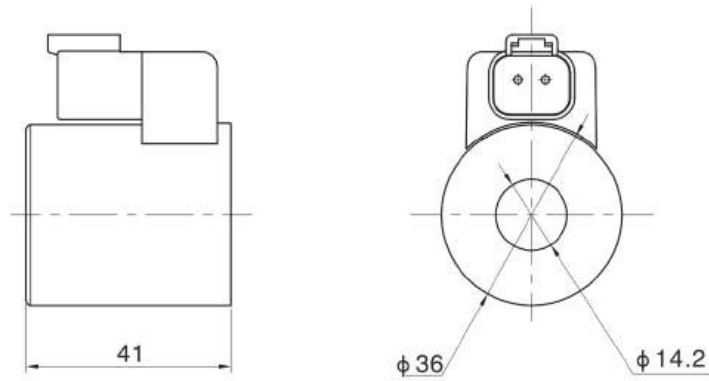
Coil with connector meets
DN43650EN175301-803ISO4400



Coil with connector AMP
the IP grade of coil house is IP67



coil with connector DEUTSCH DT04-2P, the IP grade of coil house is IP-69K



WSH-02 series solenoid operated directional valves

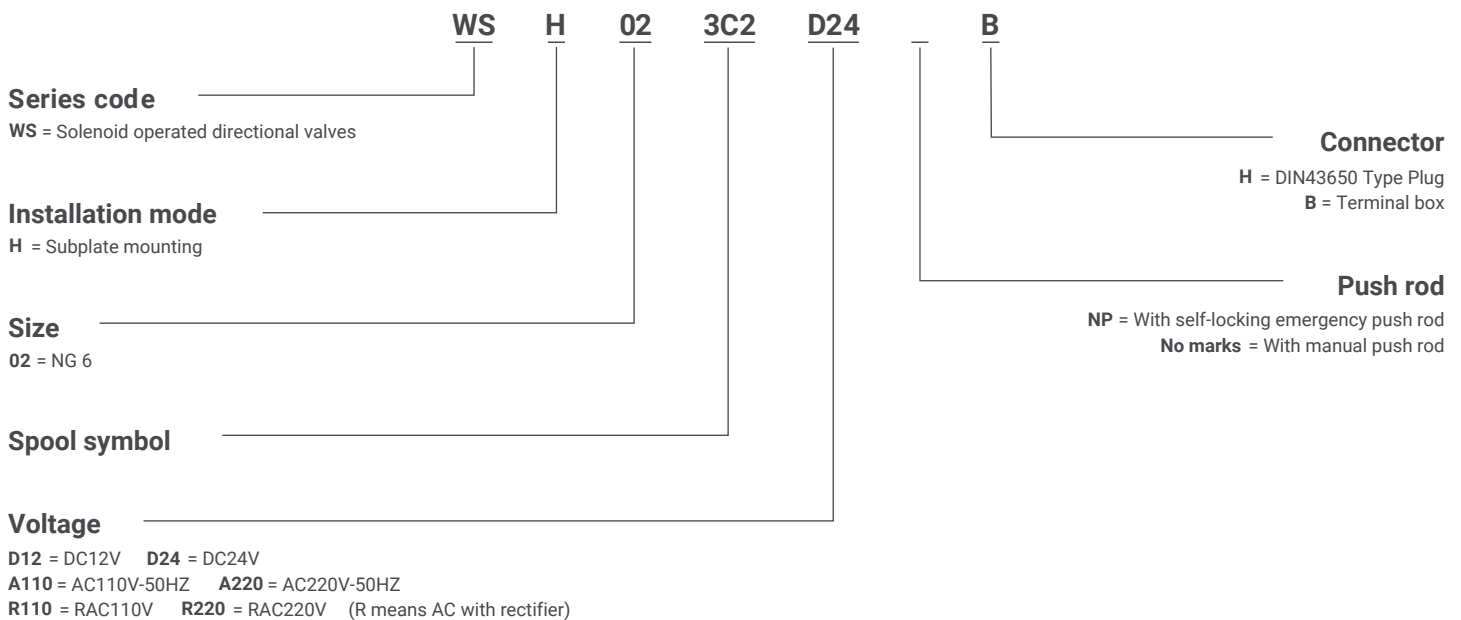


CONTENT

1. The design of solenoid and runner process large electromagnetic suction, which make this product suitable for high pressure large flow.
2. The design of electromagnetic suction that matches the valve and improve the spring force makes this valve operated reliably in the polluted working environment.
3. Excellent electrical waterproof and dust-proof features
4. Solenoid coil, whose shell's protection class is IP65, and usually configuring DIN43650 ISO4400 EN 175301-803 standard plug. Higher protection class AMP, DEUTSCH plugs can also be configured or using irradiation as the power line of the solenoid directly



ORDERING DETAILS



TECHNICAL DATA

General Data

The total weight of one solenoid valve (with two solenoids)	kg	2.10
The total weight of one solenoid valve (with one solenoid)	kg	1.45
Installation site		Optional position
Operating temperature	°C	~20~+50 (adopt NBR seal ring)

Hydraulic Data

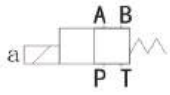
Maximum operating pressure fluid ports P, A and B	bar	315
The highest dynamic oil pressure T cavity can bear	bar	160
The highest static oil pressure T cavity can bear	L/min	20
Rated flow	L/min	63;45(AC)
Liquid medium		Mineral hydraulic oil, Phosphate hydraulic oil
The oil temperature range	°C	-20~+80
The oil cleanliness		ISO4572: β 10≥75 NAS1638: Class9

Electric Data

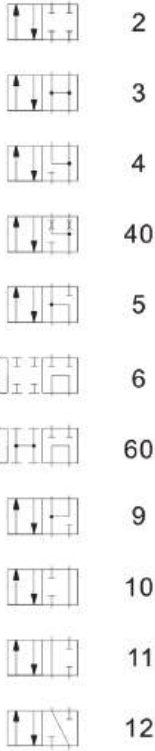
Voltage category		DC, RAC(coil with a rectifier component)					
Duty cycle	ED	100%					
Voltage allowable fluctuation range	%	-10~+10					
The reserving and resetting time	ms	on:14, off:19 (do not include RAC type); on:50, off:40					
Maximum operating frequency	Hz	AC:8, DC:3					
Coil insulation class		class B, class H(AC)					
The maximum operating temperature coil allowed	°C	130, 180(AC)					
Coil weight	kg	0.34					
Voltage	V	12	24	110	110	220	220
Power types		DC	DC	DC	RAC	RAC	AC
Power frequency	Hz				50/60	50/60	50
Power consumption	W	28	28	28	30	30	33
Coil resistance(20°C)	ohm	5.2	20.6	432	80.6	322	
Operating current (20°C)	A	2.3	1.16	0.25	0.35	0.18	0.3
Starting current	A						1.2

SYMBOLE

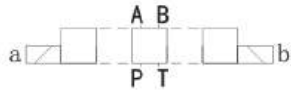
single solenoid valve
(spring return)



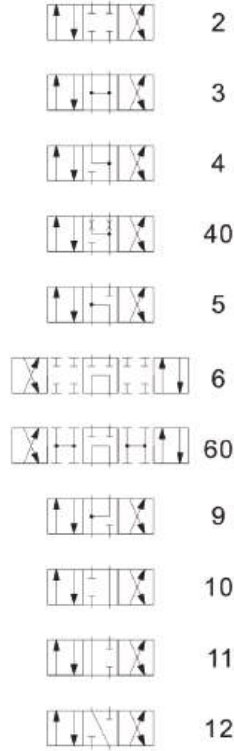
2B * BL



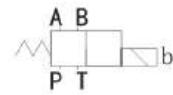
double solenoid valve
(three position, spring centralizing)



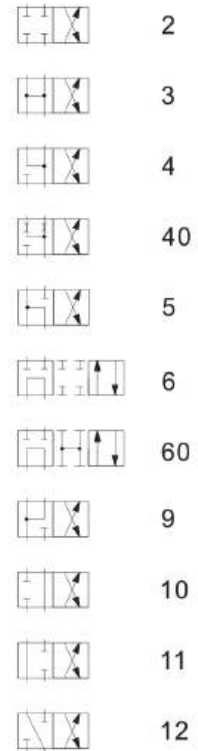
3C *



single solenoid valve
(spring return)



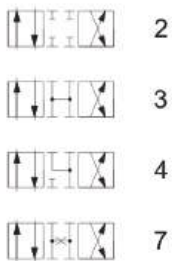
2B * B



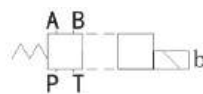
two position, without spring



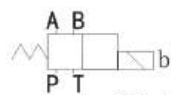
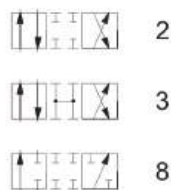
2N *



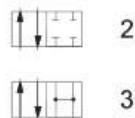
two position, spring return



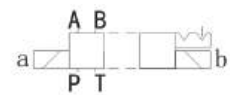
2B *



2B * A



two position,
mechanical locating

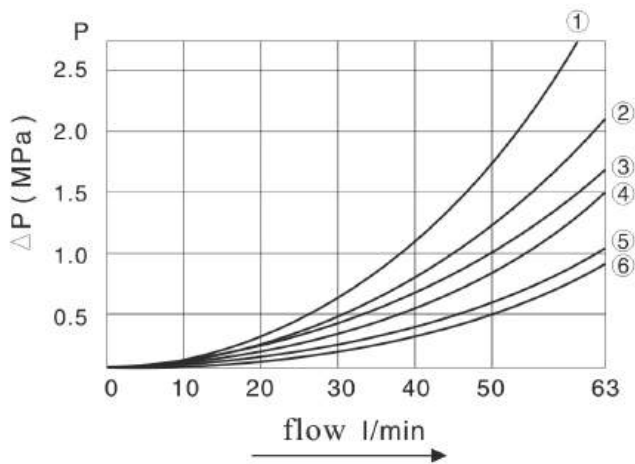


2D *



CHARACTERISTIC CURVE

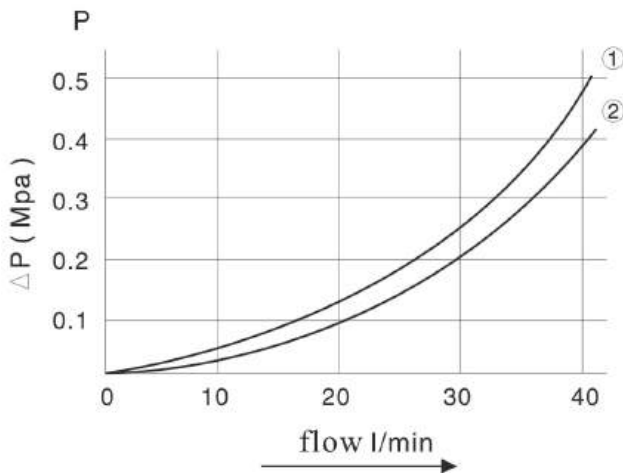
【Pressure drop-flow character】



Test condition:
 Pressure: 7Mpa
 Flow: 63L/min
 Viscosity: 35cst
 Voltage:100%(thermal state)

flow-pressure drop feature $\Delta P=f(Q)$

spool type	curve character of pressure drop				
	P→A	B→T	P→B	A→T	P→T
3C2	5	5	5	5	-
3C3	6	6	6	6	4
3C4	5	6	5	6	-
3C40	5	5	5	5	-
3C5	2	2	2	2	4
3C6	1	1	1	1	4
3C60	1	1	1	1	3
3C9	6	5	6	5	-
3C12	6	5	6	5	-
3C11	5	5	5	6	-
2D2	6	5	5	5	-
2D3	5	3	5	3	-
2B2	4	5	4	5	-
2B3	3	3	5	5	-
2B8	2	-	5	-	-
2B2-L	4	5	4	5	-
2B3-L	5	5	3	3	-
2B8-L	5	-	2	-	-



spool type	curve character of pressure drop			
	P→A	B→T	P→B	A→T
3C2	1	1	1	1
3C4	1	2	1	2
2B2	1	1	1	1

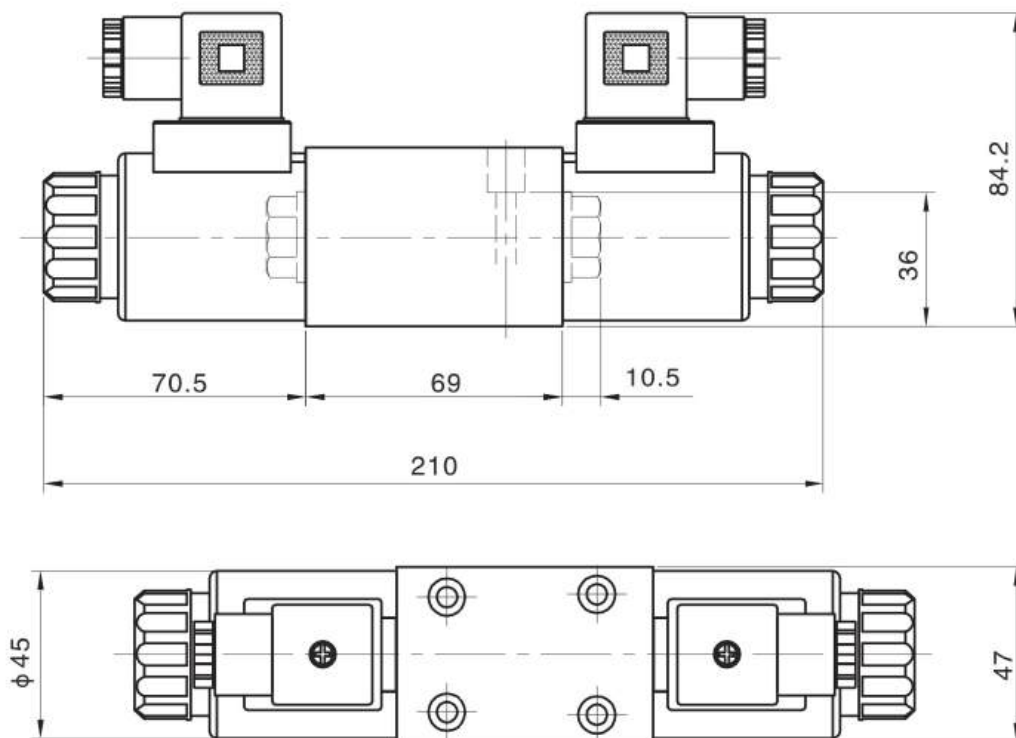
【Viscosity change】

viscosity	CSt	15	20	30	40	50	60	70	80	90	100
	SSU	77	98	141	186	232	278	324	371	417	464
coefficient (G')		0.81	0.87	0.96	1.03	1.09	1.14	1.19	1.23	1.27	1.30

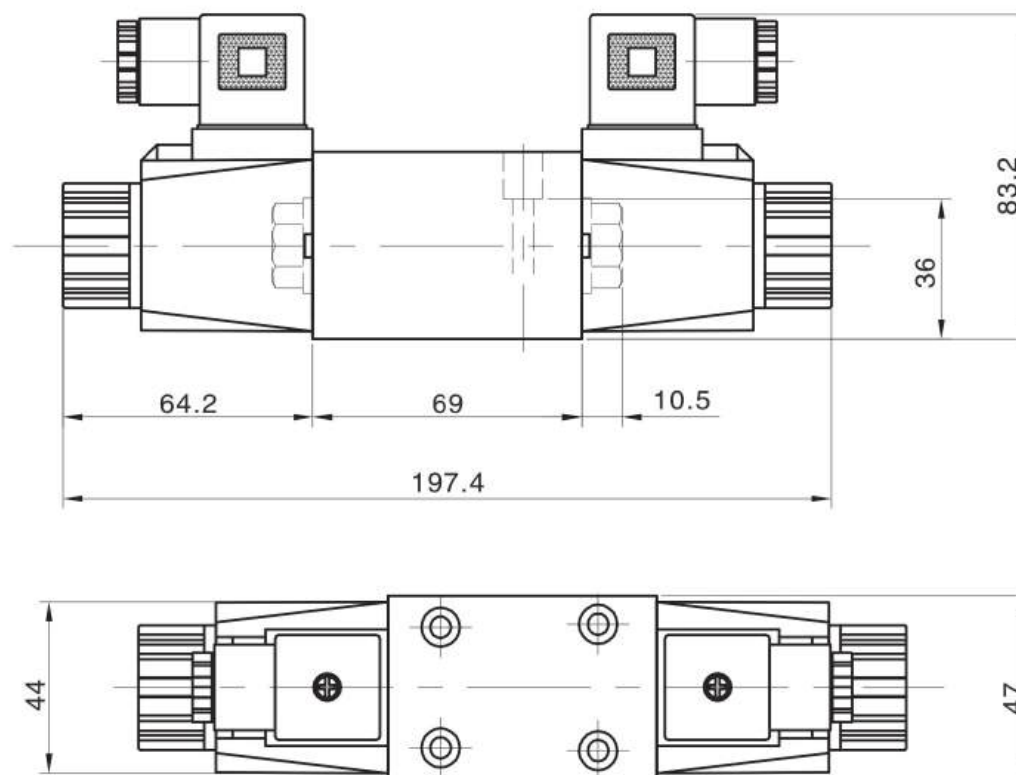
As for other proportion (G') pressure drop can accord to formula $\Delta P' = \Delta P(G' 0.85)$ to calculate

UNIT DIMENSIONS

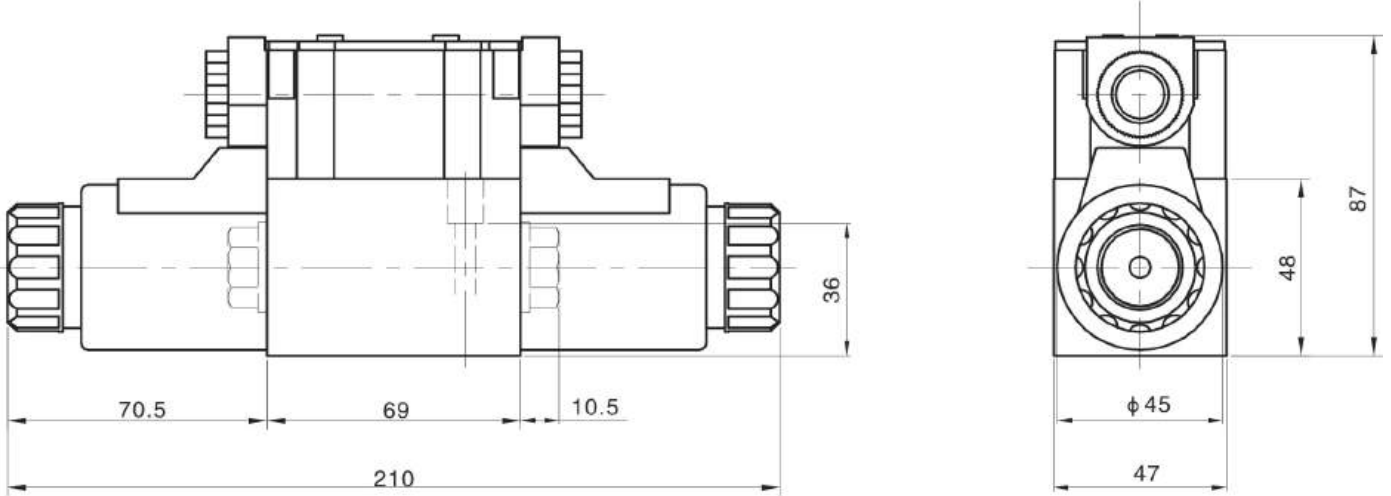
WSH-02-DC-H



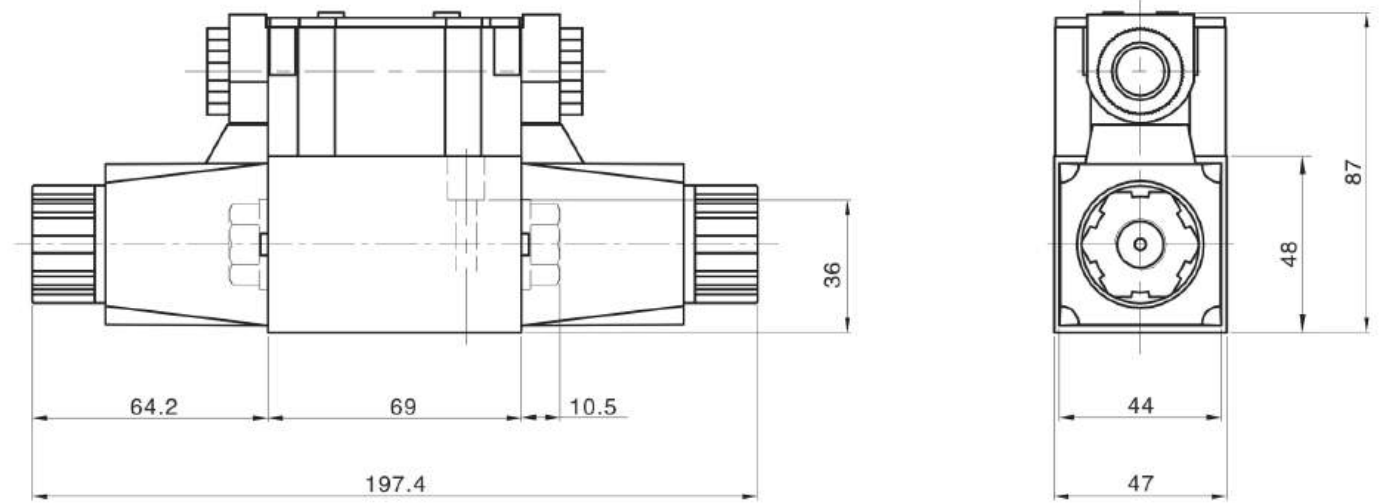
WSH-02-AC-H





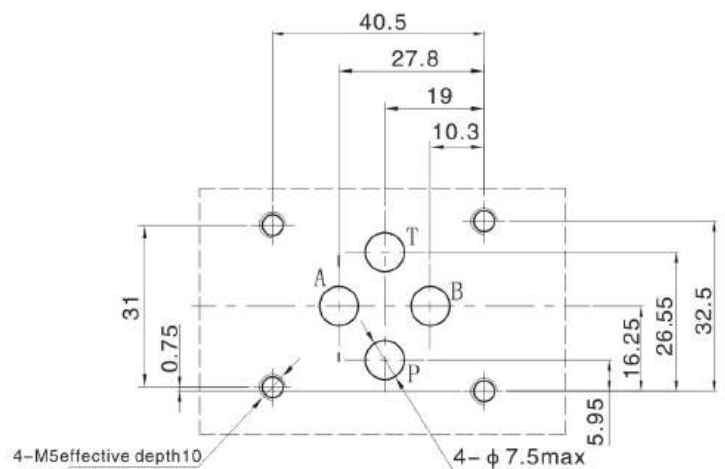
WSH-02-DC-B



WSH-02-AC-B



 0.01/100mm
 0.8
 the surface of mating parts request precision process



WSH-03 series solenoid operated directional valves

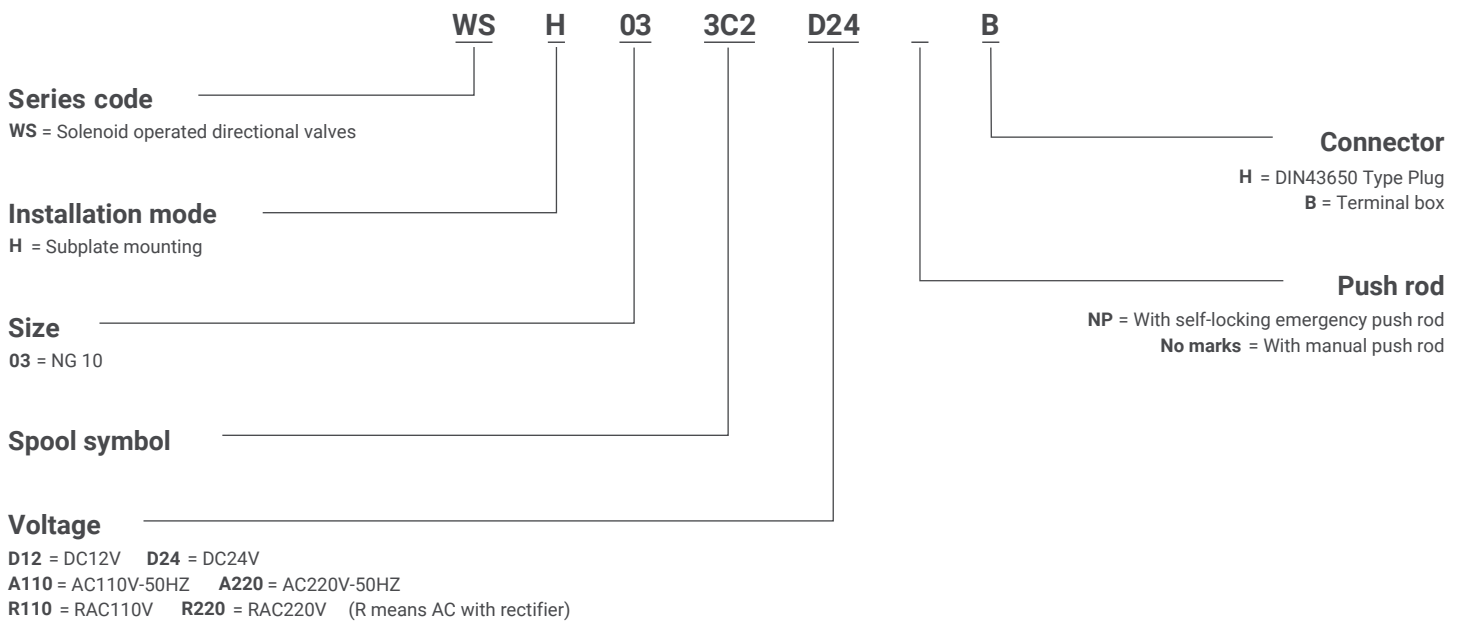


CONTENT

1. The design of solenoid and runner process large electromagnetic suction, which make this product suitable for high pressure large flow.
2. The design of electromagnetic suction that matches the valve and improve the spring force makes this valve operated reliably in the polluted working environment.
3. Excellent electrical waterproof and dust-proof features
4. Solenoid coil, whose shell's protection class is IP65, and usually configuring DIN43650 ISO4400 EN 175301-803 standard plug. Higher protection class AMP, DEUTSCH plugs can also be configured or using irradiation as the power line of the solenoid directly



ORDERING DETAILS



TECHNICAL DATA

General Data

The total weight of one solenoid valve (with two solenoids)	kg	4.90(DC); 3.60(AC)
The total weight of one solenoid valve (with one solenoid)	kg	3.50(DC); 2.90(AC)
Installation site		Optional position
Operating temperature	°C	~20~+50 (adopt NBR seal ring)

Hydraulic Data

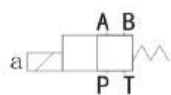
Maximum operating pressure fluid ports P, A and B	bar	315
The highest dynamic oil pressure T cavity can bear	bar	160
The highest static oil pressure T cavity can bear	L/min	63
Rated flow	L/min	120
Maximum flow		Mineral hydraulic oil, Phosphate hydraulic oil
Liquid medium	°C	-20~+80
The oil temperature range		ISO4572:β 10≥75 NAS1638:Class9

Electric Data

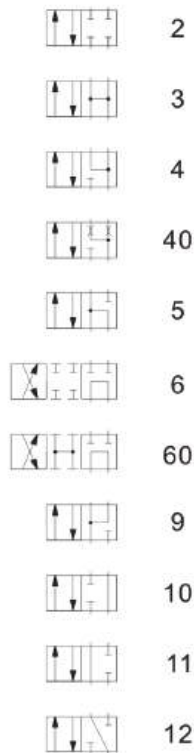
Voltage category		DC, AC, RAC(coil with a rectifier component)						
Duty cycle	ED	100%						
Voltage allowable fluctuation range	%	-10~+10						
The reserving and resetting time	ms	on:50, off:40 (do not include RAC type); on:24, off:21						
Maximum operating frequency	Hz	AC:8, DC:3						
Coil insulation class		class B(DC), class H(AC)						
The maximum operating temperature coil allowed		135(DC), 180(AC)						
Coil weight	kg	0.91(DC), 0.57(AC)						
Voltage	V	12	24	110	110	220	110	220
Power types		DC	DC	DC	RAC	RAC	AC	AC
Power frequency	Hz				50/60	50/60	50	50
Power consumption	W	38	38	38	40	40	37	37
Coil resistance(20°C)	ohm	3.9	15.5	325	60.5	243		
Operating current (20°C)	A	3.12	1.56	0.34	0.42	0.21	0.42	0.21
Starting current	A						1.68	0.85

SYMBOLE

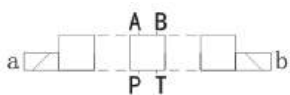
single solenoid valve
(spring return)



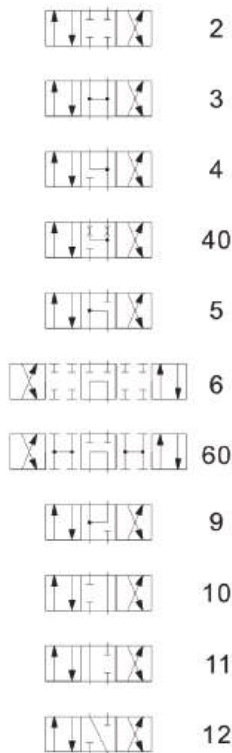
2B * BL



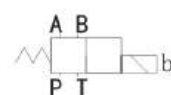
double solenoid valve
(three position, spring centralizing)



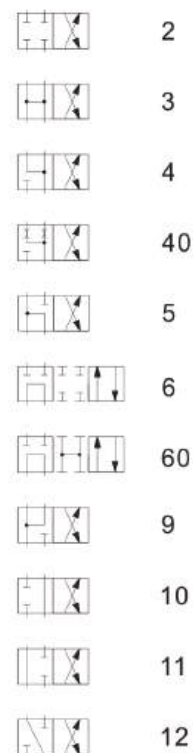
3C *



single solenoid valve
(spring return)



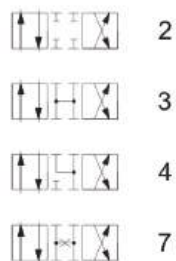
2B * B



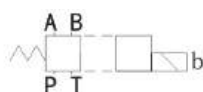
two position, without spring



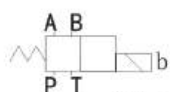
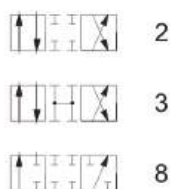
2N *



two position, spring return



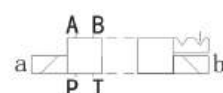
2B *



2B * A



two position,
mechanical locating

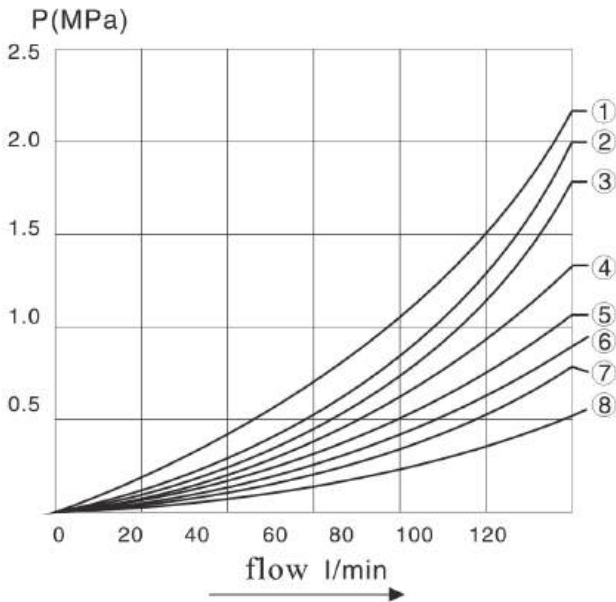


2D *



CHARACTERISTIC CURVE

【Pressure drop-flow character】



Test condition:
 Pressure: 7Mpa
 Flow: 63L/min
 Viscosity: 35cst
 Voltage: 100%(thermal state)

pressure drop-flow character $\Delta P=f(Q)$

spool type	curve character of pressure drop				
	P→A	B→T	P→B	A→T	P→T
3C2	6	6	6	6	-
3C3	7	7	7	7	5
3C4	6	7	6	7	-
3C40	6	7	6	7	-
3C5	5	2	2	5	8
3C6	2	2	2	2	5
3C60	1	1	1	1	4
3C9	7	6	7	6	-
3C12	6	6	6	7	-
3C11	7	6	6	6	-
2B2	2	2	6	6	-
2B3	3	3	6	6	-
2B8	5	-	5	-	-
2B2-L	6	6	2	2	-
2B3-L	6	6	3	3	-
2B8-L	5	-	5	-	-

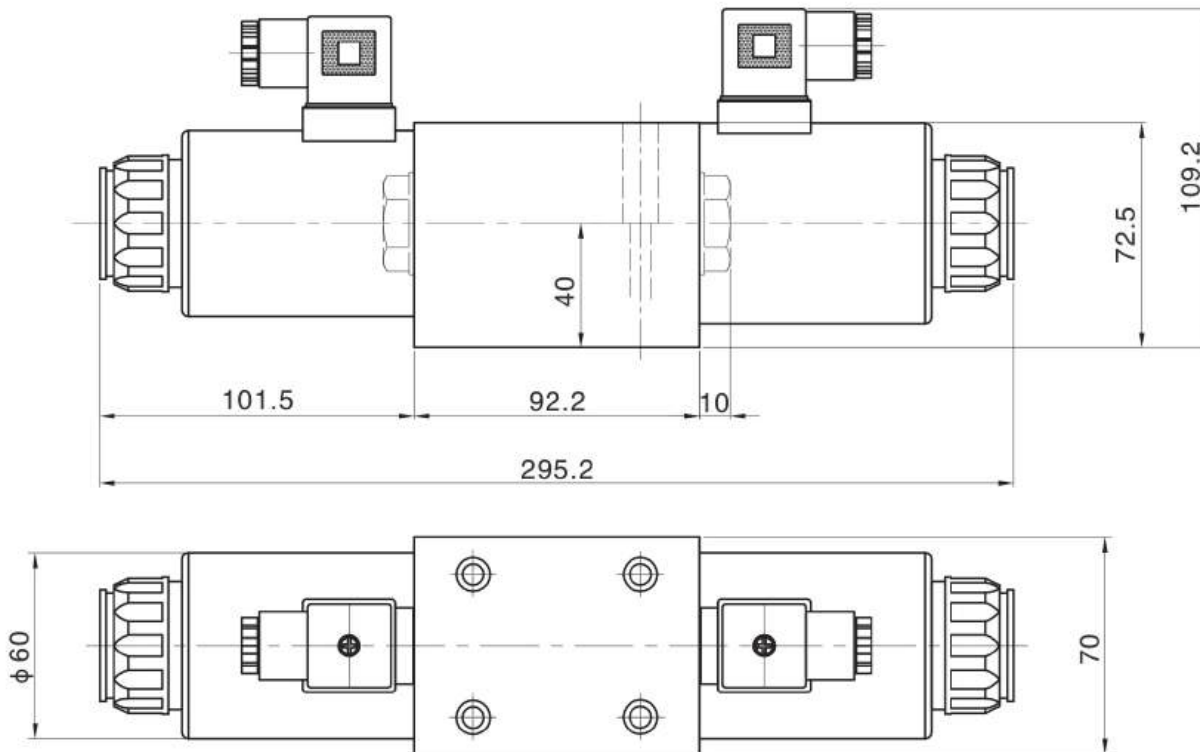
【Viscosity change】

viscosity	CSt	15	20	30	40	50	60	70	80	90	100
	SSU		77	98	141	186	232	278	324	371	417
coefficient (G')		0.81	0.87	0.96	1.03	1.09	1.14	1.19	1.23	1.27	1.30

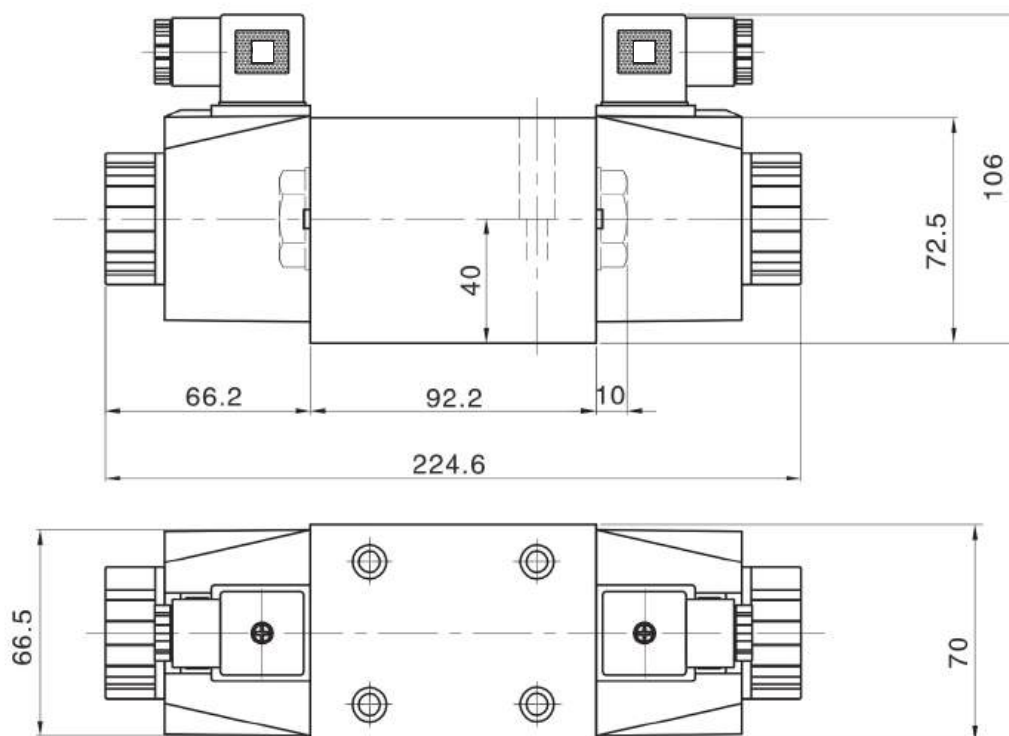
As for other proportion (G') pressure drop can accord to formula $\Delta P'=\Delta P(G' 0.85)$ to calculate

UNIT DIMENSIONS

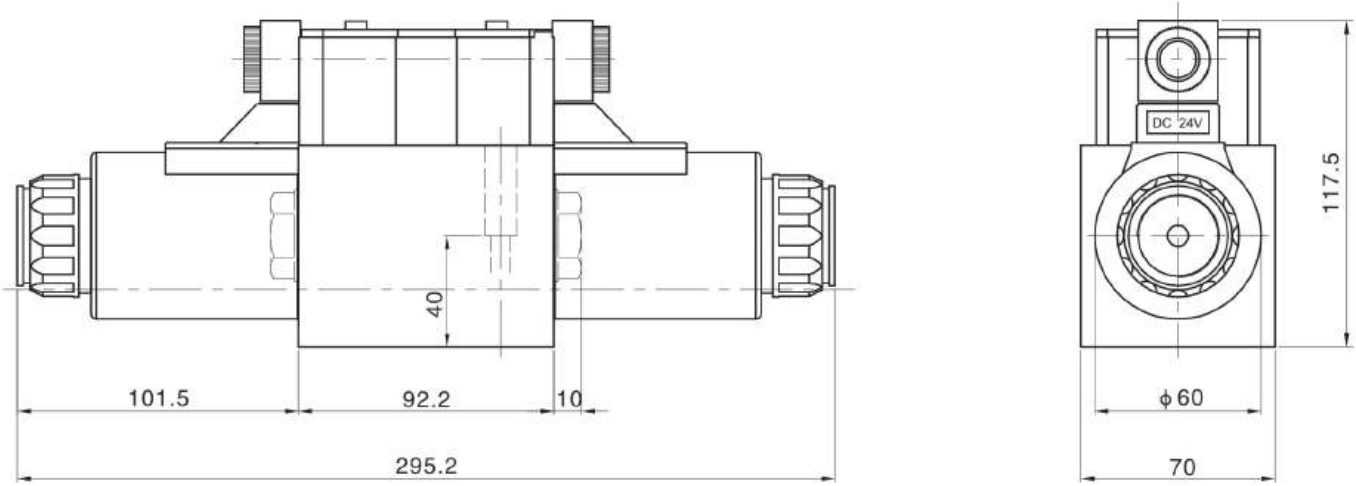
WSH 03-DC-H



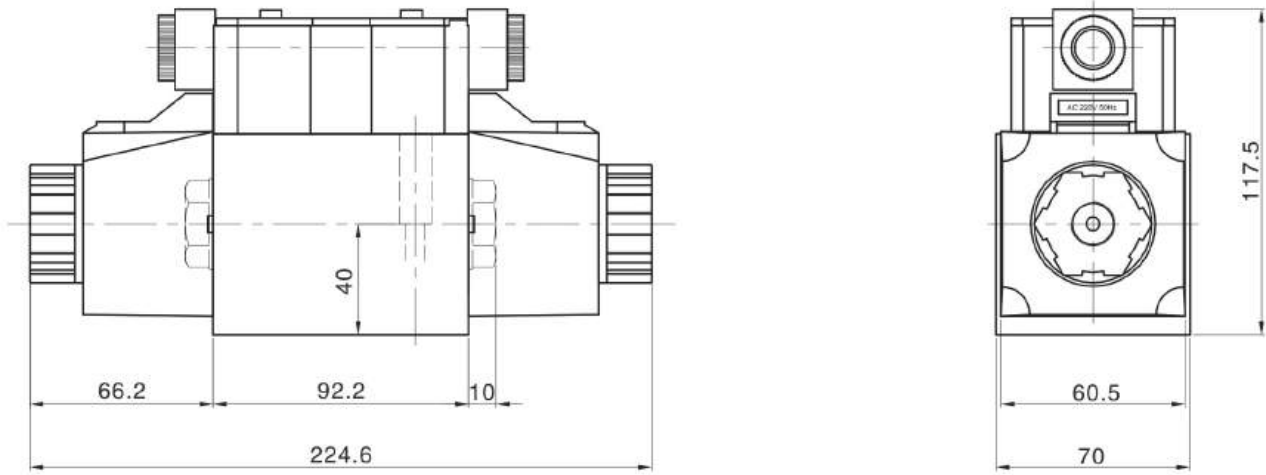
WSH 03-AC-H



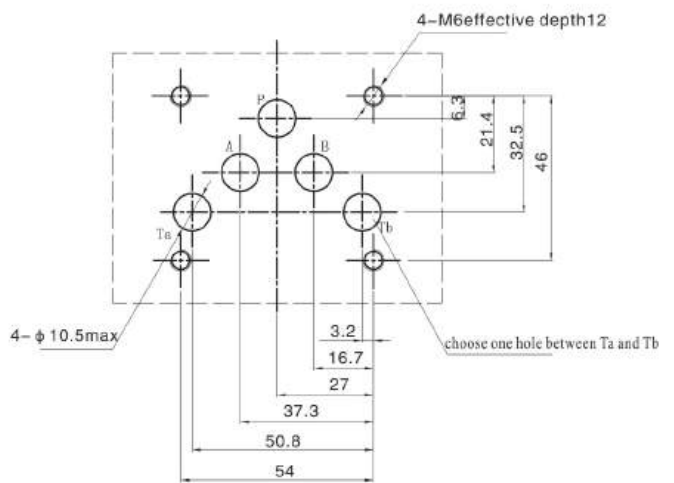
WSH 03-DC-B



WSH 03-AC-B



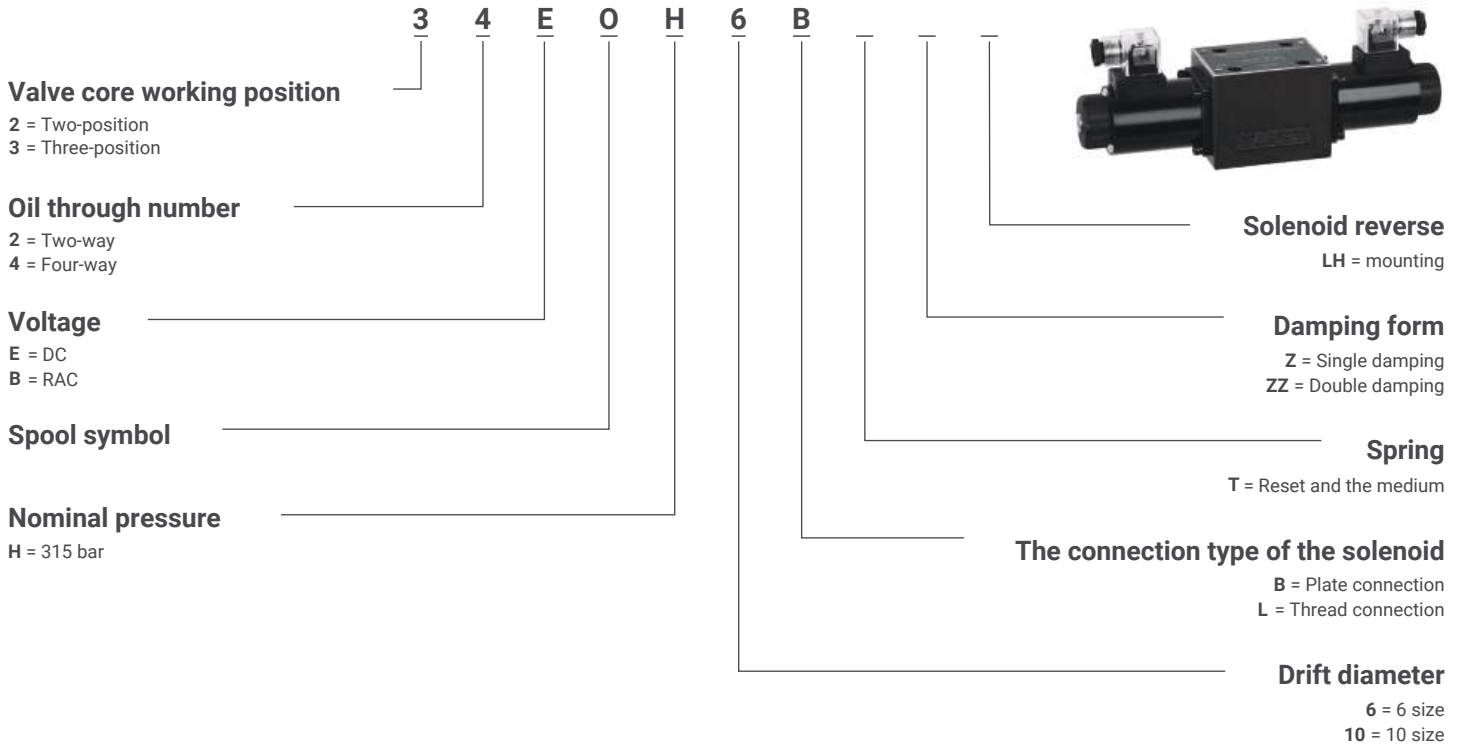
The surface of mating parts request precision process



H*B joint design series solenoid operated directional valves



ORDERING DETAILS



TECHNICAL DATA

General Data

Drift diameter		NG6	NG10
The total weight of one solenoid valve (with two solenoids)	kg	2.50	5.90
The total weight of one solenoid valve (with one solenoid)	kg	1.80	4.50
Installation site		Optional position	
Operating temperature	°C	~20~+50 (adopt NBR seal ring)	

Hydraulic Data

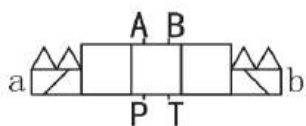
Maximum operating pressure fluid ports P, A and B	bar	315	
The highest dynamic oil pressure T cavity can bear	bar	63	
The highest static oil pressure T cavity can bear	bar	63	
Rated flow	L/min	10	60
Maximum flow	L/min	20	80
Liquid medium		Mineral hydraulic oil, Phosphate hydraulic oil	
The oil temperature range	°C	-20~+80	
The oil cleanliness		ISO4572:β10≥75 NAS1638:Class9	

Electric Data

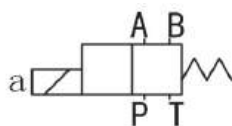
Voltage category		DC, AC, RAC(coil with a rectifier component)			
Duty cycle	ED	100%			
Voltage allowable fluctuation range	%	-10~+10			
The reserving and resetting time	ms	on:50, off:20 (do not include RAC type); on:24, off:21			
Maximum operating frequency	Hz	3			
Coil insulation class		class B			
The maximum operating temperature coil allowed	°C	130			
Coil weight	kg	0.38		0.68	
Voltage	V	24	48	24	220
Power types		DC	RAC	DC	RAC
Power frequency	Hz		50/60		50/60
Power consumption	W	30	32	44	47
Coil resistance(20°C)	ohm	18.8	395	13.2	215
Operating current (20°C)	A	12.8	0.32	1.8	0.28

SYMBOLE

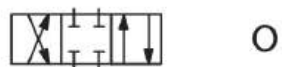
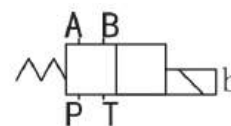
three position,
spring centralizing



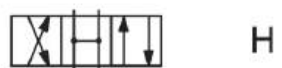
two position,
standard solenoid



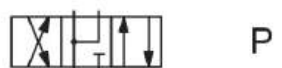
two position,
solenoid installed against



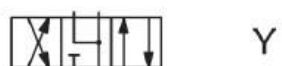
O



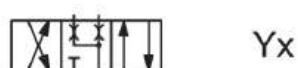
H



P



Y



Yx



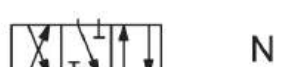
X



C



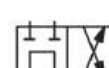
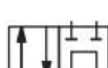
J



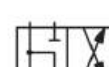
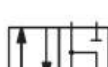
N



M



K



I1



I2

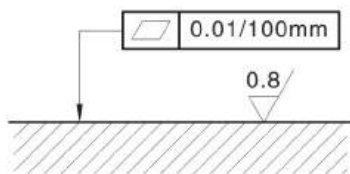
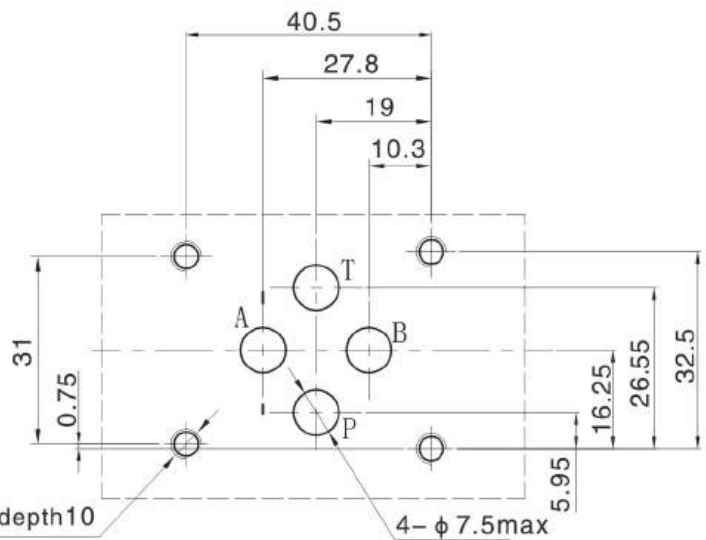
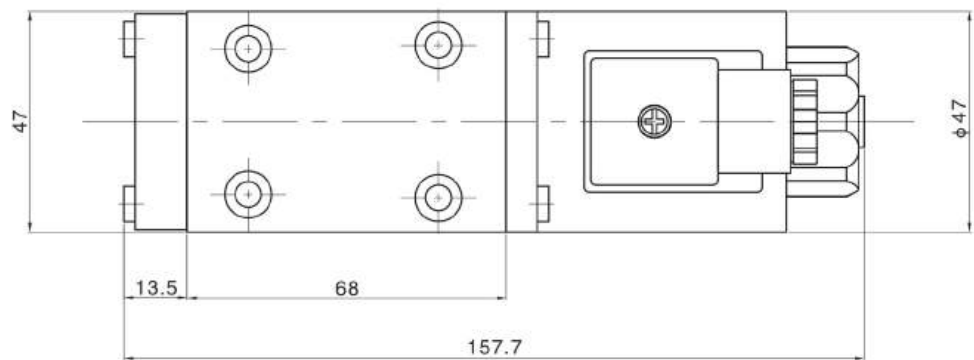
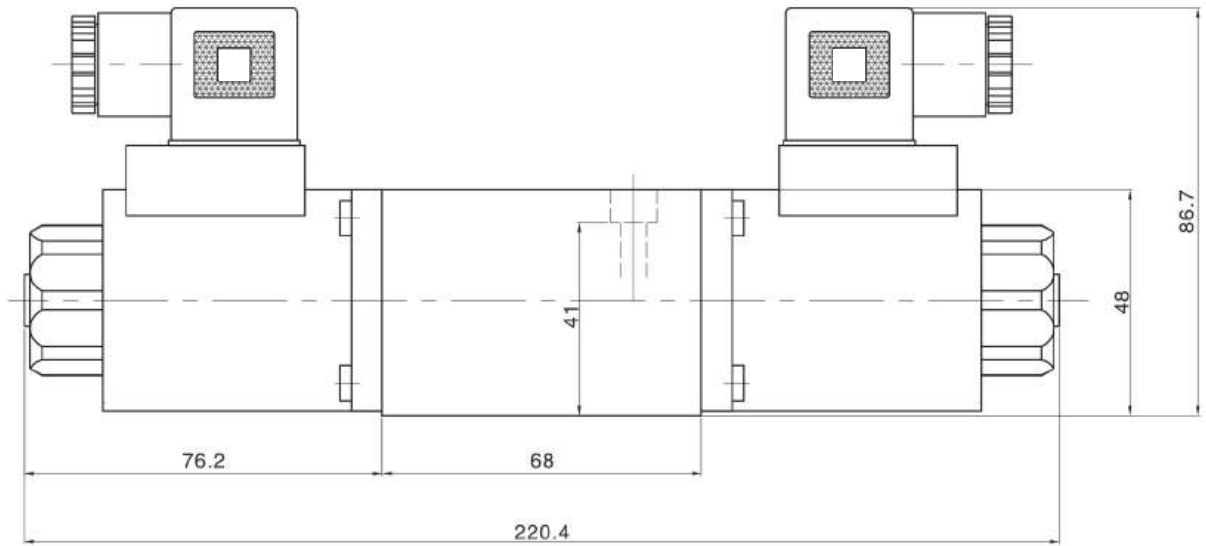


I3



UNIT DIMENSIONS

H6B

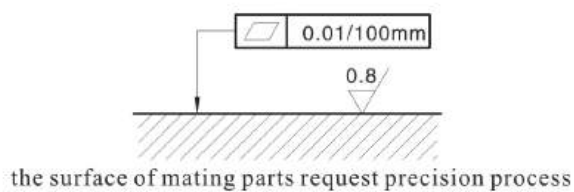
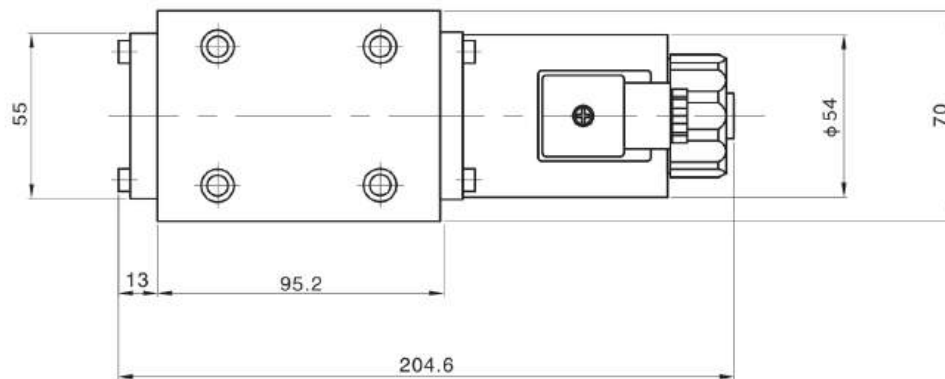
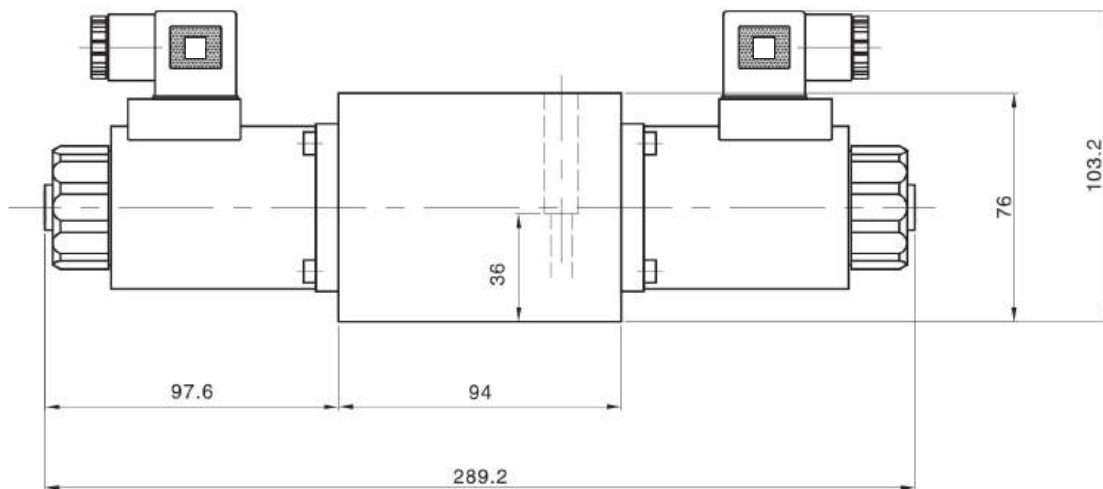


the surface of mating parts request precision process

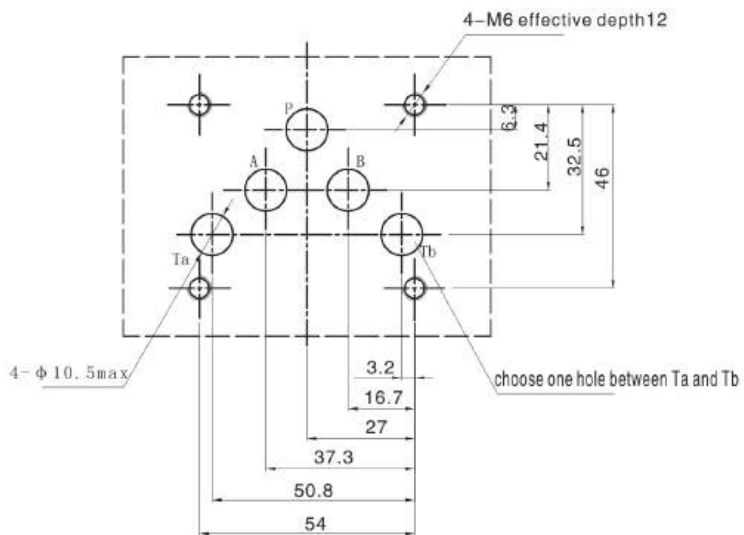
4-M5 effective depth 10

4-φ 7.5max

H10B



the surface of mating parts request precision process



WEH series electrohydraulic operated directional valves

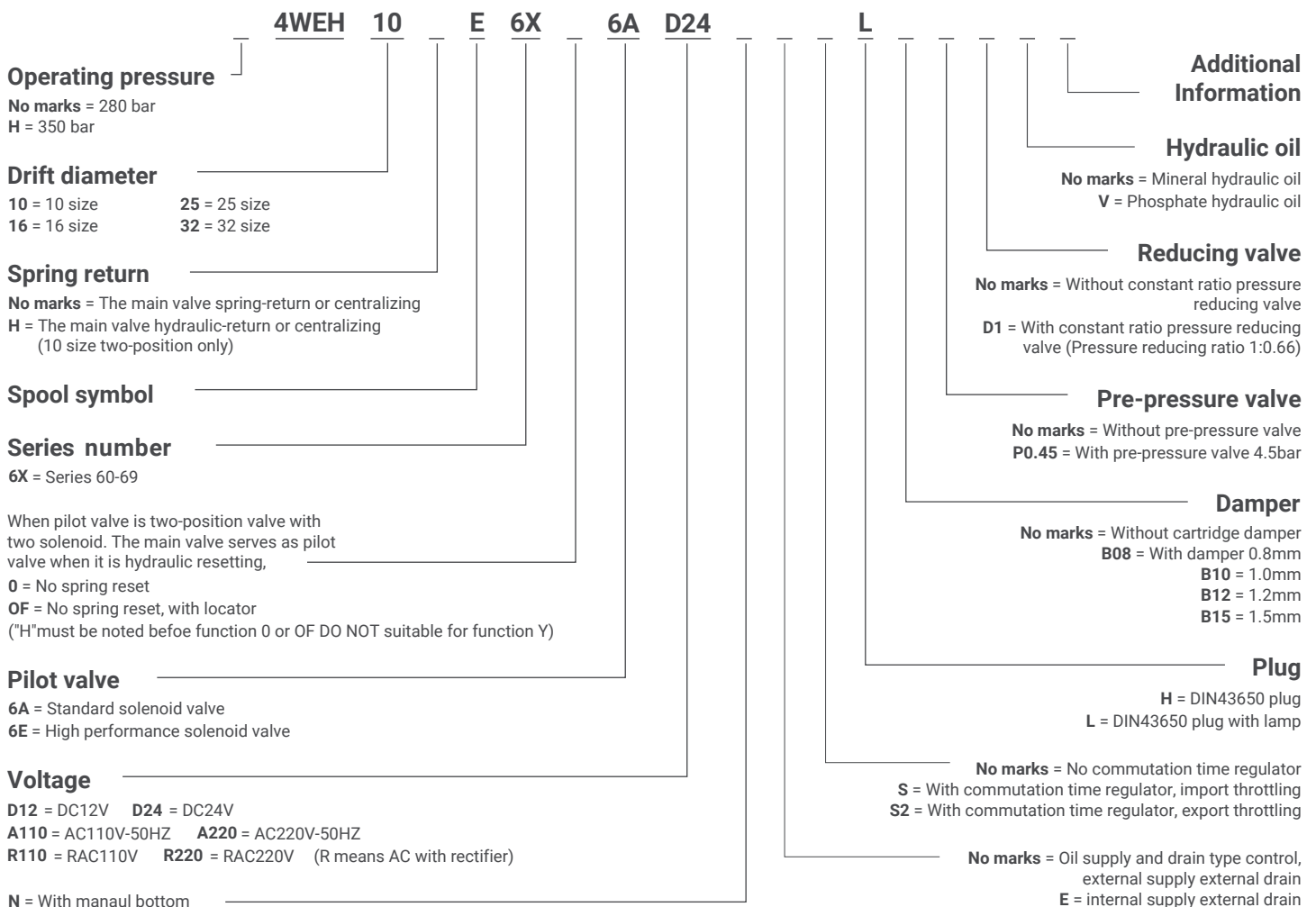


CONTENT

1. WEH series electrohydraulic operated directional valves is controlled by solenoid valve as pilot, using plate connection and its size meets DIN2430 and ISO4401. It has many different properties and additional devices are available.
2. Solenoid valve, used as pilot control, has wet-type DC or AC series; the main valve adopts spring centralizing and spring-return, hydraulic centralizing and resetting; with or without reversing time regulator; with or without the main valve stroke regulator; pressure valve can be mounted in the main valve; cartridge damper can be mounted; pressure reducing valve can be mounted when operating pressure over 25Pa.



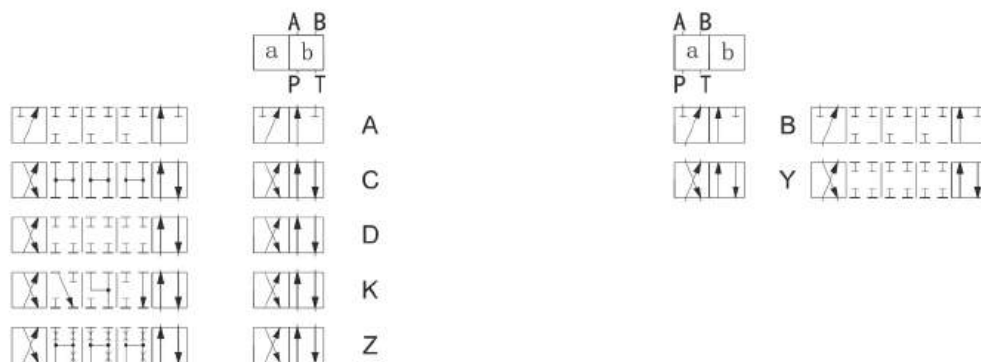
ORDERING DETAILS



(For the three-position hydraulic valve can not adapt to the T, ET form)

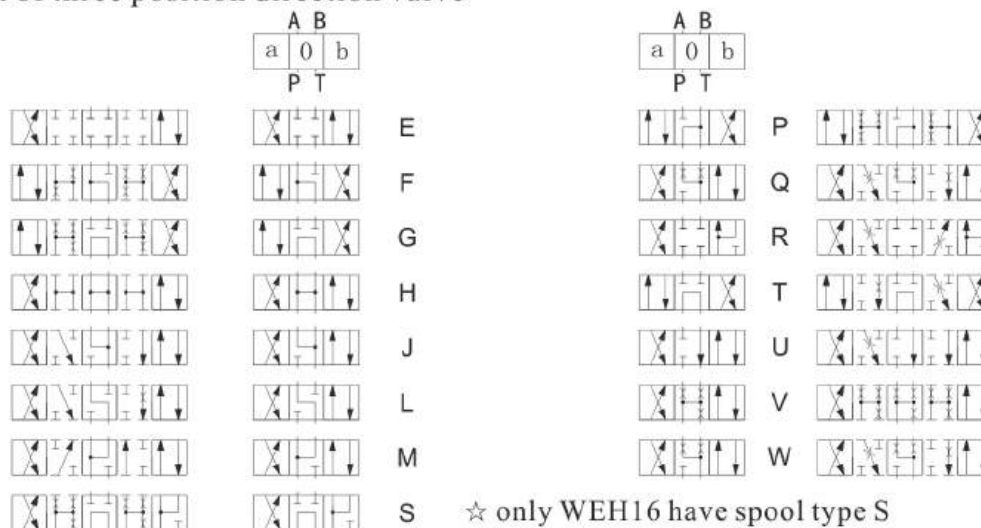
SYMBOLE

Spool symbol of two position direction valve



spool type	form	hydraulic drive	electro-hydraulic drive	spool type	form	hydraulic drive	electro-hydraulic drive
A, C, D, K, Z	.../...			B, Y	.../...		
	..H../...				..H../...		
	..H../O						
	..H../OF						

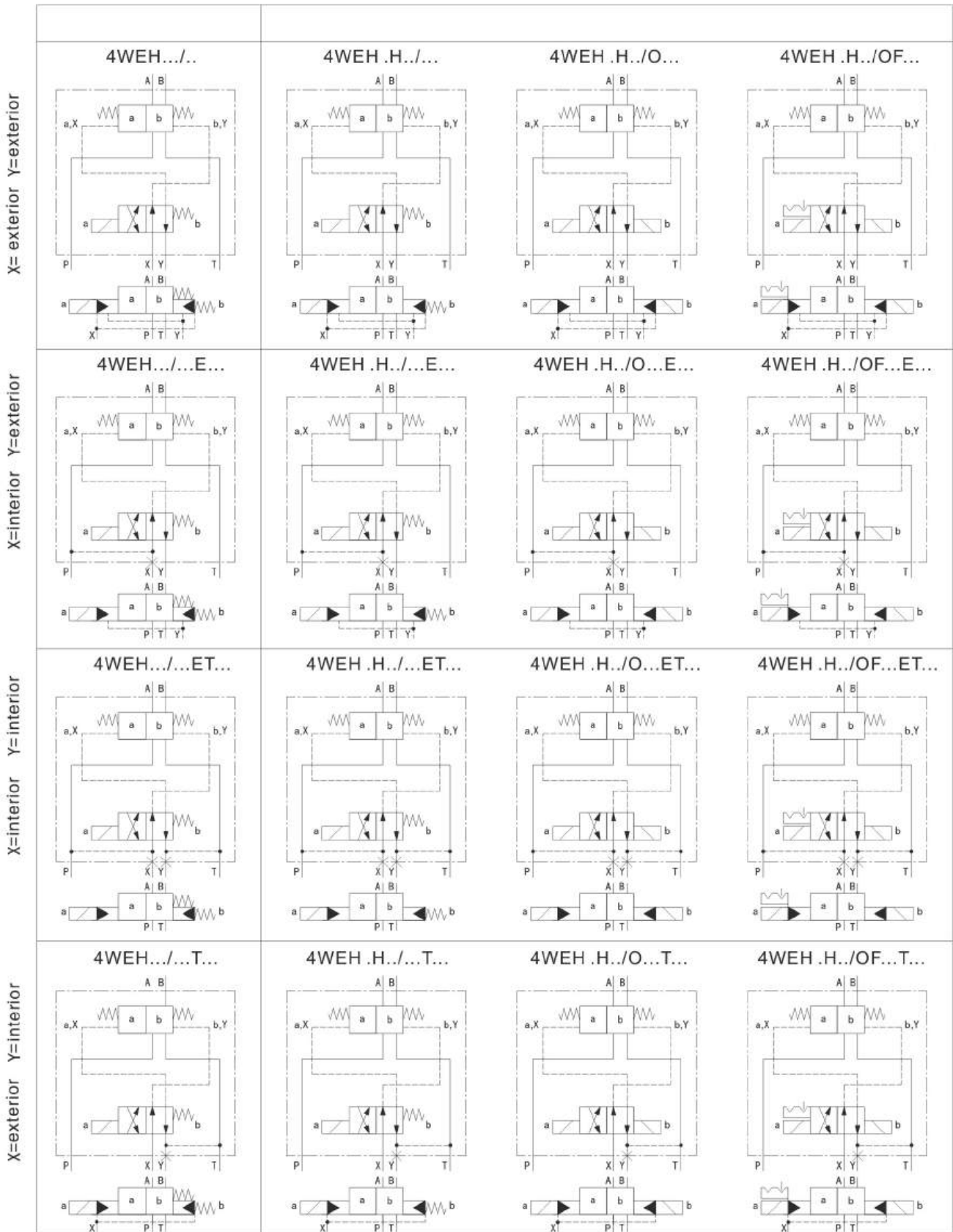
spool symbol of three position direction valve



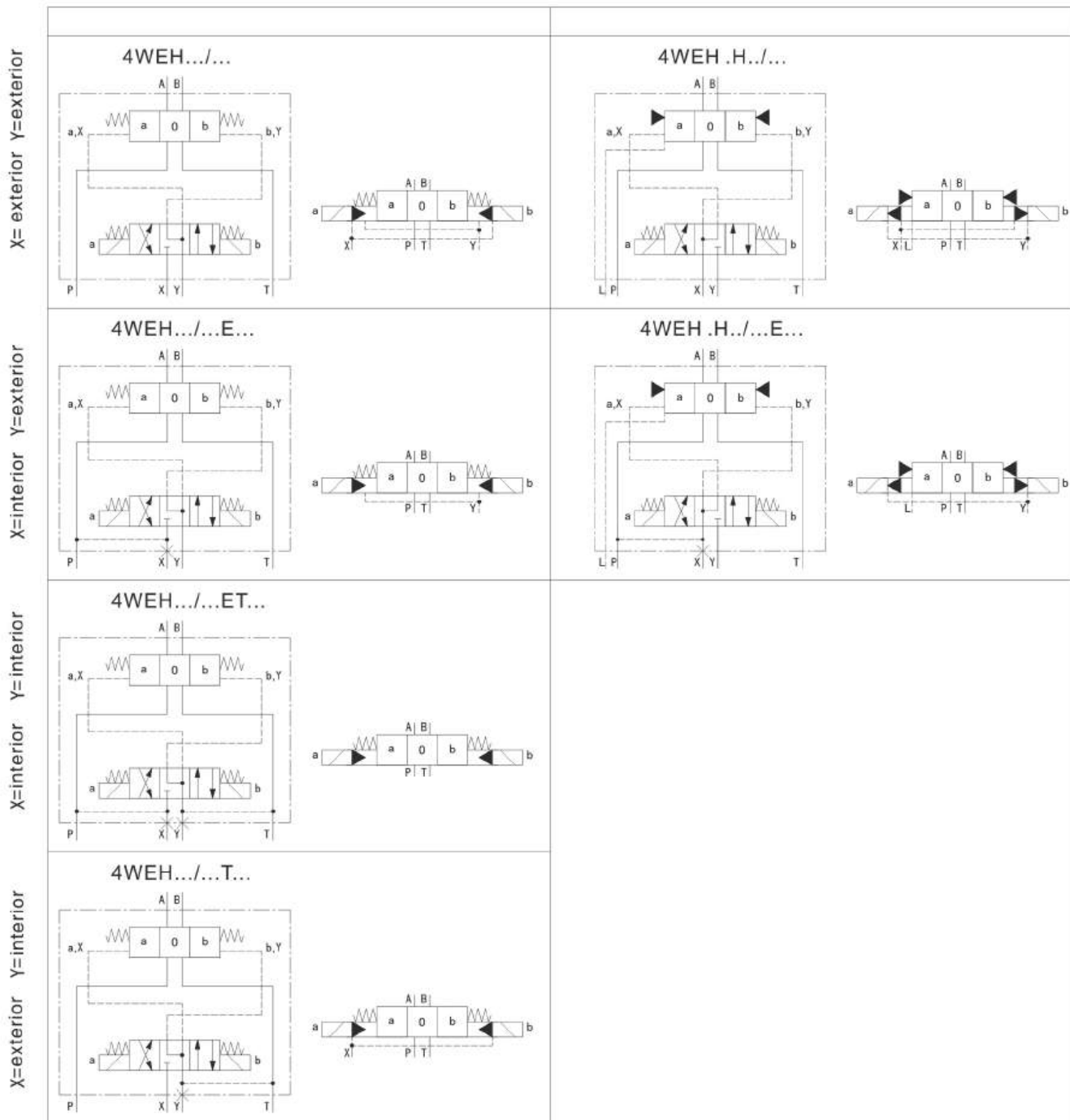
☆ only WEH16 have spool type S

spool type	direction	spool return	hydraulic drive	electro-hydraulic drive	direction	spool return	hydraulic drive	electro-hydraulic drive
E, F, G, H, J, L, M, Q, R, S, T, U, V, W		.../...				..H../...		
		.A				H.A		
		.B				H.B		

The detailed simplified spool symbol of two position direction valve



The detailed simplified spool symbol of three position direction valve



TECHNICAL DATA

WEH10 type of electro-hydraulic operated directional valve

Hydraulic Data

The highest working pressure: P, A, B		bar	315
T port	Controlling oil external drain	bar	315
	Controlling oil internal drain	bar	210(DC); 160(AC)
Y port	Controlling oil external drain	bar	210(DC); 160(AC)
Minimum Control pressure	Controlling oil external supply Controlling oil internal supply (not suitable to C/Z/F/G/H/P/T/V)	bar	Three-way valve 10
			Two-way valve with spring return 10
			Two-way valve with hydraulic return 7
T port	Controlling oil internal supply (not suitable to C/Z/F/G/H/P/T/V)	bar	4.5
Maximum control pressure		bar	250
Liquid medium		Mineral oil, organic phosphate oil	
Oil temperature range		°C	-30~+80 (used to NBR seal)
			-20~+80 (used to rubber seal)
Viscosity range		mm ² /s	2.8~500
Control flow when switch		cm ³	Three-way valve 2.04 two-way valve 4.08

The total switch time of valve switching from zero position to switch position

Control pressure	bar	7		14		21		25	
		AC	DC	AC	DC	AC	DC	AC	DC
Three-way valve	ms	30	65	25	60	20	55	15	50
Two-way valve	ms	35	80	30	75	25	70	20	65

The total switch time of valve switching from zero position to switch position

Three-way valve	ms	30							
Two-way valve	ms	35	40	30	35	25	30	20	25
The flow of minimum time switching	L/min	~35							
Installation position	HC.HD.HK.HZ.HY with hydraulics return should be installed horizontally.								
Weight	Single solenoid valve	kg	6.4						
	Double solenoids valve	kg	6.8						
	The regulator for timing the switch time	kg	0.8						
	Constant ratio pressure reducing valve	kg	0.5						

Reversing time means the time which is taken between the solenoid of pilot valve pull-in and the main valve fully opening

WEH16 type of electro-hydraulic operated directional valve

Hydraulic Data

The highest working pressure: P, A, B		bar	H-WEH16...type	...WEH16...type
			350	280
Fluid Port T	Controlling oil internal drain	bar	250	250
	Controlling oil external drain	bar	210(DC)	160(AC)
			Three-way valve with hydraulic centre	Controlling oil internal drain is impossible
Fluid Port Y	Controlling oil external supply	bar	210(DC)	160(AC)
Minimum controlling pressure (Mpa)	Controlling oil external supply	bar	Three-way valve 14 Two-way valve with spring return 14 Two-way valve with hydraulics return 14 Using pre-pressure valve or when flow is big, if spool symbol with C, Z, F, G, H, P, S, T, V, it is 4.5	
	Controlling oil internal supply			
	Controlling oil internal supply			
Maximum control pressure		bar	250	
Liquid medium			Mineral oil, organic phosphate oil	
Oil temperature range		°C	-30~+80 (used to NBR seal)	
			-20~+80 (used to rubber seal)	
Viscosity range		mm ² /s	2.8~500	

The maximum capacity of controlling oil when switch

Three-way with spring centralize	cm ³	5.72
Two-way valve	cm ³	11.45

Three-way valve with hydraulics centralize

From position "0" to working position "a"	cm ³	2.83
From working position "a" to position "0"	cm ³	2.9
From position "a" to working position "b"	cm ³	5.72
From working position "b" to "0"	cm ³	2.83

The total switch time of valve switching from zero position to switch position

Pilot control pressure	bar	50		150		250					
		AC	DC	AC	DC	AC	DC				
Three-way valve with spring centralize	ms	35	65	30	60	30	58				
Two-way valve with spring return	ms	45	65	35	65	30	50				
Three-way valve with hydraulics centralize	ms	a	b	a	b	a	b				
		300	300	650	650	250	250	550	630	200	250
Three-way valve with spring centralize	ms	30									
Two-way valve with spring return	ms	45	45	35	35	30	30				
Three-way valve with hydraulics centralize		a	b	a	b	a	b				
		200	200	200	200	200	200				
Mounting position		Except C.D.K.Z.Y type valve with hydraulics return installed horizontally, others can installed as your will									
The flow of shorter time switching	L/min	About 35									
Whole valve weight	kg	About 8.6									

Reversing time means the time which is taken between the solenoid of pilot valve pull-in and the main valve fully opening

WEH25 type of electro-hydraulic operated directional valve

Hydraulic Data

The highest working pressure: P, A, B		bar	H-WEH25...type	...WEH25...type
			350	280
Fluid Port T	Controlling oil internal drain	bar	250	250
	Controlling oil external drain	bar	210(DC)	160(AC)
			Three-way valve with hydraulic centre	Controlling oil internal drain is impossible
Fluid Port Y	Controlling oil external supply	bar	210(DC)	160(AC)
Minimum controlling pressure (Mpa)	Controlling oil external supply	bar	Three-way valve 14 Two-way valve with spring return 14 Two-way valve with hydraulics return 14 Using pre-pressure valve or when flow is big, if spool symbol with C, Z, F, G, H, P, S, T, V, it is 4.5	
	Controlling oil internal supply			
			Mineral oil, organic phosphate oil	
Maximum control pressure		bar	250	
Liquid medium	Mineral oil, organic phosphate oil			
Oil temperature range		°C	-30~+80 (used to NBR seal), -20~+80 (used to rubber seal)	
Viscosity range		mm ² /s	2.8~500	

The maximum capacity of controlling oil when switch

Three-way with spring centralize	cm ³	14.2
Two-way valve	cm ³	28.4

Three-way valve with hydraulics centralize

From position "0" to working position "a"	cm ³	7.15
From working position "a" to position "0"	cm ³	7.0
From position "a" to working position "b"	cm ³	14.15
From working position "b" to "0"	cm ³	5.73

The time for switching from position "0" to working position (solenoid DC and AC)

Pilot control pressure	bar	50		150		210		250	
		AC	DC	AC	DC	AC	DC	AC	DC
Three-way valve with spring centralize	ms	50	65	30	60	30	60	30	58
Two-way valve with spring return	ms	120	125	95	100	85	90	75	80
Three-way valve with hydraulics centralize	ms	a	b	a	b	a	b	a	b
Pilot control pressure	bar	300	350	550	650	300	350	550	650
Three-way valve with spring centralize	ms	40							
Two-way valve with spring return	ms	120	125	95	100	85	90	75	80
Three-way valve with hydraulics centralize		a	b	a	b	a	b	a	b
		300	350	300	350	300	350	300	350
Mounting position	Except C.D.K.Z.Y type valve with hydraulics return installed horizontally, others can installed as your will								
The flow of shorter time switching	L/min	About 35							
Whole valve weight	kg	About 18							

Reversing time means the time which is taken between the solenoid of pilot valve pull-in and the main valve fully opening

WEH32 type of electro-hydraulic operated directional valve

Hydraulic Data

The highest working pressure: P, A, B		bar	H-WEH32...type	...WEH32...type
			350	280
Fluid Port T	Controlling oil internal drain	bar	250	250
	Controlling oil external drain	bar	210(DC)	160(AC)
			Three-way valve with hydraulic centre	Controlling oil internal drain is impossible
Fluid Port Y	Controlling oil external supply	bar	210(DC)	160(AC)
Minimum controlling pressure (Mpa)	Controlling oil external supply	bar	Three-way valve 8 Two-way valve with spring return 10 Two-way valve with hydraulics return 5	
	Controlling oil internal supply			
Maximum control pressure		bar	Using pre-pressure valve or when flow is big, if spool symbol with C, Z, F, G, H, P, S, T, V, it is 4.5	
Maximum control pressure		bar	250	
Liquid medium			Mineral oil, organic phosphate oil	
Oil temperature range		°C	-30~+80 (used to NBR seal), -20~+80 (used to rubber seal)	
Viscosity range		mm ² /s	2.8~500	

The maximum capacity of controlling oil when switch

Three-way with spring centralize	cm ³	29.4
Two-way valve	cm ³	58.8

Three-way valve with hydraulics centralize

From position "0" to working position "a"	cm ³	14.4
From working position "a" to position "0"	cm ³	15.1
From position "a" to working position "b"	cm ³	29.4
From working position "b" to "0"	cm ³	14.4

The time for switching from position "0" to working position (solenoid DC and AC)

Pilot control pressure	bar	50		150		250					
		AC	DC	AC	DC	AC	DC				
Three-way valve with spring centralize	ms	65	80	50	90	35	105				
Two-way valve with spring return	ms	100	130	75	100	60	115				
Three-way valve with hydraulics centralize	ms	a	b	a	b	a	b				
		550	600	1000	1050	400	450	850	950		
Pilot control pressure	bar	(DC:500) (AC:600)									
Two-way valve with spring return	ms	115	90	85	70	65	65				
Three-way valve with hydraulics centralize		a	b	a	b	a	b				
		300	500	300	400	600	750	300	300	1050	1400
Mounting position		Except C.D.K.Z.Y type valve with hydraulics return installed horizontally, others can installed as your will									
The flow of shorter time switching	L/min	About 50									
Whole valve weight	kg	Valve with single solenoid is 40.5kg, with double solenoids is 41kg									

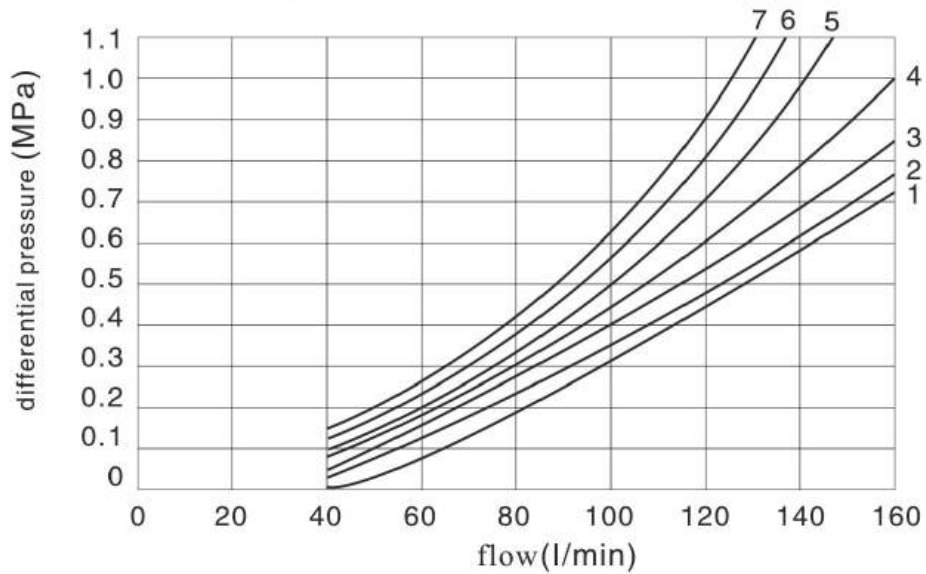
Reversing time means the time which is taken between the solenoid of pilot valve pull-in and the main valve fully opening

Electric Data

Voltage type		DC	AC
Voltage	V	12, 24, 48, 96, 110, 220	110, 220
Power	W	30	-
Holding power(P)	W		36
Start voltage and current (VA)	VA		220
Running status		continuous	
Environment temperature range	°C	~+50	
Coil temperature range	°C	~+150	
Protectiondegreeofenclosure		IP65	

CHARACTERISTIC CURVE

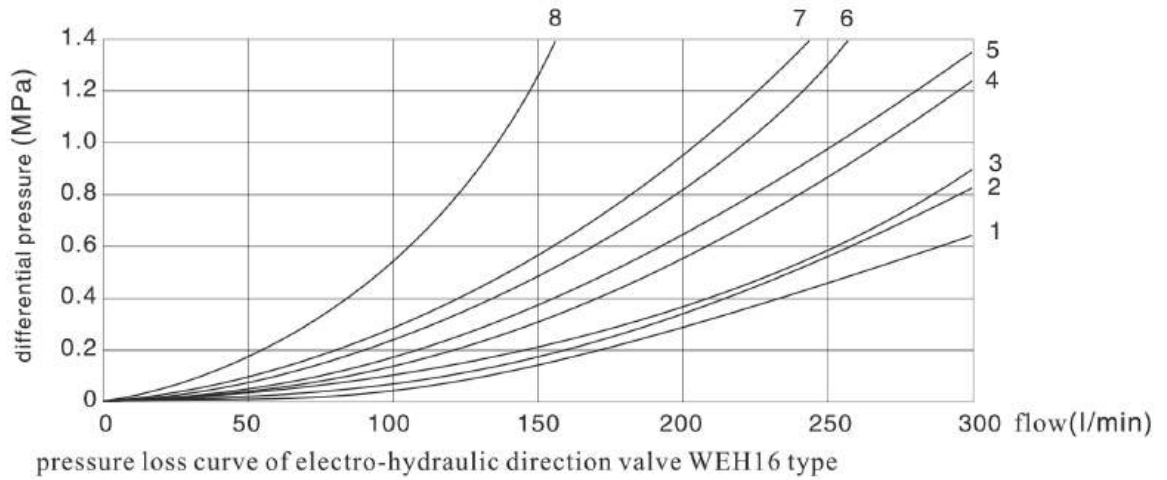
4WEH10...type (result tested when using HLP46, t=40°C ±50°C)



pressure loss curve of electro-hydraulic direction valve WEH10 type

spool symbol	switch position				spool symbol	meso-position		
	P—A	P—B	A—T	B—T		A—T	B—T	P—T
E、Y、D	2	2	4	5				
F	1	4	1	4	F	3	—	6
G、T	4	2	2	6	G、T	—	—	7
H、C	4	4	1	4	H	1	3	5
J、K	1	2	1	3				
L	2	3	1	4	L	3	—	—
M	4	4	3	4				
P	4	1	3	4	P	—	7	5
Q、V、W、Z	2	2	3	5				
R	2	2	3	—				
U	3	3	3	4	U	—	4	—

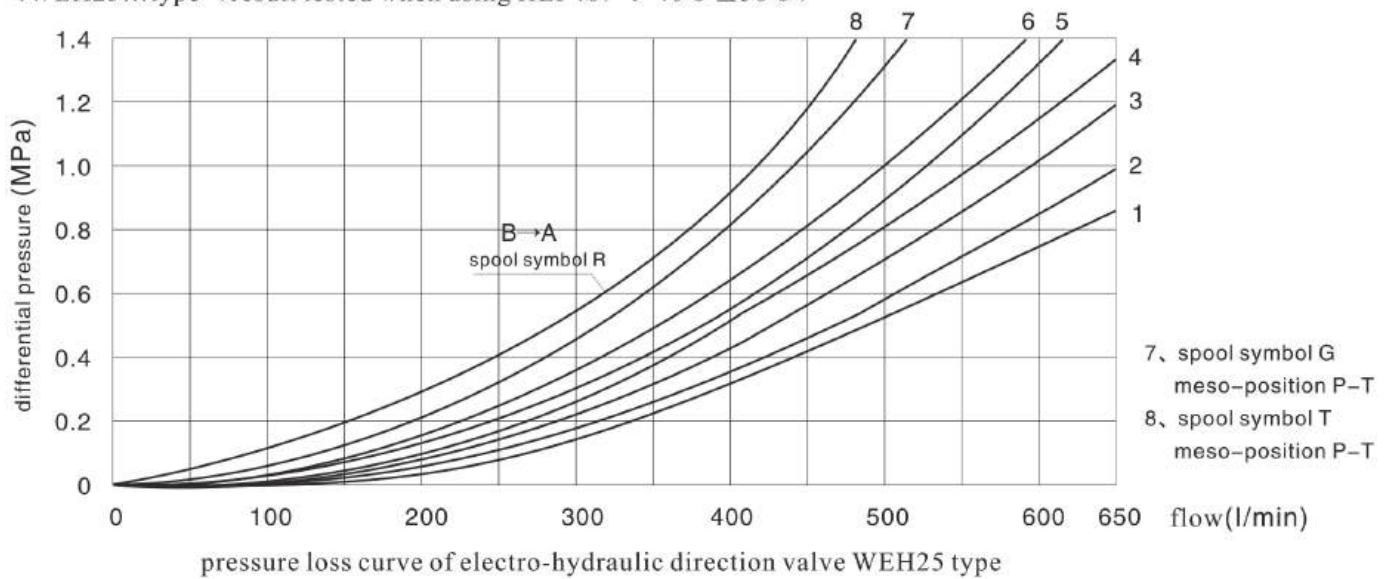
4WEH16...type (result tested when using HLP46, $t=40^{\circ}\text{C} \pm 50^{\circ}\text{C}$)



spool symbol	switch position				
	P→A	P→B	A→T	B→T	P→T
E, Y, D	1	1	1	3	-
F	2	2	3	3	-
G, T	5	1	3	7	6
H, C, Q, V, Z	2	2	3	3	-
J, K, L	1	1	3	3	-

spool symbol	switch position				
	P→A	P→B	A→T	B→T	P→T
M, W	2	2	4	3	-
R	2	2	4	-	-
U	1	1	4	7	-
S	4	4	4	-	8

4WEH25...type (result tested when using HLP46, $t=40^{\circ}\text{C} \pm 50^{\circ}\text{C}$)

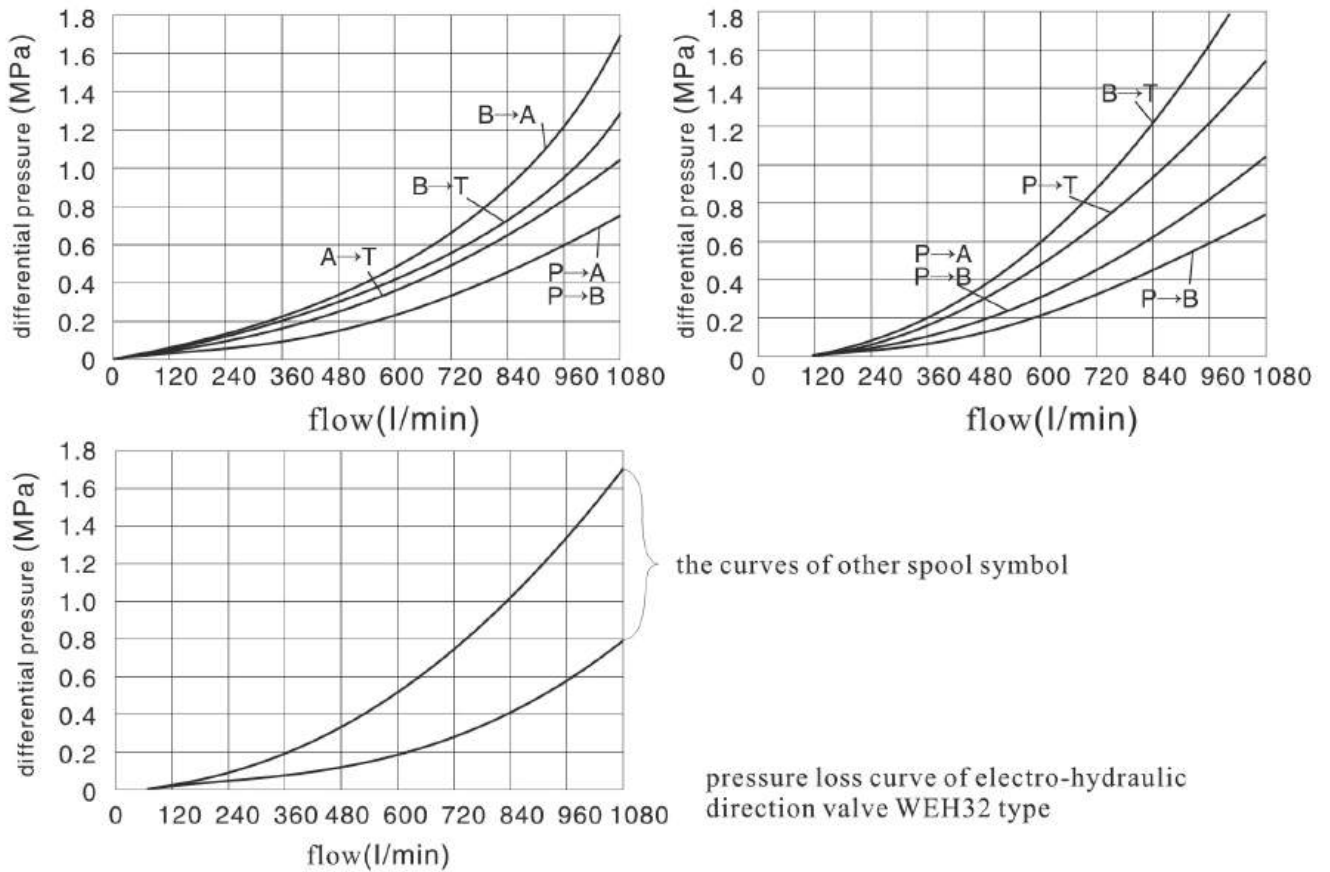


spool symbol	switch position			
	P→A	P→B	A→T	B→T
E	1	1	1	3
F	1	4	3	3
G	3	1	2	4
H	4	4	3	4
J, Q	2	2	3	5

spool symbol	switch position			
	P→A	P→B	A→T	B→T
L	2	2	3	3
M	4	4	1	4
P	4	1	1	5
R	2	1	1	-

spool symbol	switch position			
	P→A	P→B	A→T	B→T
U	4	1	1	6
V	2	4	3	6
W	1	1	1	3
T	3	1	2	4

4WEH16...type (result tested when using HLP46, $t=40^{\circ}\text{C} \pm 50^{\circ}\text{C}$)



the open area of each flow direction when spool is in the centre position

Size	spool symbol	Open Area (mm ²)			
		P→A	P→B	A→T	B→T
WEH10	Q	-	-	13	13
	V	13	13	13	13
	W	-	-	2.4	2.4
WEH16	Q	-	-	32	32
	V	32	32	32	32
	W	-	-	6	6
WEH25	Q	-	-	83	83
	V	83	83	83	83
	W	-	-	14	14
WEH32	Q	-	-	78	78
	V	73	73	84	84
	W	-	-	20	20

【Power limit】

Due to the adhesion effect the valve's reversing function. In order to reach the allowed maximum flow and without affecting the performance, advise to use full flow filter of 25 microns in system. Fluid power of internal valve also influence on the reversing performance, thus different slide valve function have different power limit, if A flow direction, such as the port A or B of four-way valve closed, used as three way valve, in serious cases will greatly reduce the flow.

Function limit form of WEH10 type electro-hydraulic operated directional valve

Three-way valve, spring centralizing			
flow (l/min) spool symbol	Pressure stage (MPa)		
	20	25	31.5
E, J, L, M, Q, U W, R, V	160		
H	160	150	120
G, T	160		140
F, P	160	140	120
Three-way valve which its main valve with spring return			
G, D, K, Z, Y	160		

Two-way valve, main valve without spring			
flow (l/min) spool symbol	Pressure stage (MPa)		
	20	25	31.5
HC HD HK HZ HY	160		
HC.../O HD.../O HK.../O HZ.../O	160		
HC.../OF... HD.../OF... HK.../OF... HZ.../OF...	160		

Function limit form of WEH10 type electro-hydraulic operated directional valve

Three-way valve with spring centralizing						Two way valve					
flow (l/min)	Pressure stage (MPa)					flow (l/min) spool symbol	Pressure stage (MPa)				
	7	14	21	28	35		7	14	21	28	35
E, J, L, M, Q, U W, R, H	300	300	300	300	300	C	300	300	300	300	300
						D, Y	300	270	260	250	230
F, P	300	250	180	170	150	K	300	250	240	230	210
G, T	300	300	240	210	190	Z	300	260	190	180	160
S	300	300	300	250	220	Two-way valve with hydraulics return					
V	300	250	210	200	180	HC, HZ, HK, HZ, HY	300	300	300	300	300
Three-way valve with hydraulics centralizing (minimum control pressure 1.6MPa)						When control oil is internal supply, and installed pre-pressure valve, the flow of spool symbol H,F,P,G,T,S,V,C,Z hit 160 l/min					
All spool symbol	300	300	300	300	300						

Remark: For three-way four channel directional valve with hydraulics centralizing, if its pressure exceeded regulation power limit, the controlling pressure have to be improved higher, when working pressure P=35Mpa, flow Q=300 L/min, controlling pressure need to be 1.6Mpa

Three-way valve with spring centralizing						Two way valve					
flow (l/min) spool symbol	Pressure stage (MPa)					flow (l/min) spool symbol	Pressure stage (MPa)				
	7	14	21	28	35		7	14	21	28	35
E, L, M U, W, Q	650	650	650	650	650	G, D, K, Z, Y	650	650	650	650	650
						Two-way valve with hydraulics return					
G, T	400	400	400	400	400	HC HD HK HZ HY	650	650	650	650	650
F	650	550	430	330	300	HC.../O HD.../O HK.../O HZ.../O	650	650	650	650	650
H	650	650	550	400	360						
J	650	650	650	600	520	HC.../OF... HD.../OF... HK.../OF... HZ.../OF...	650	650	650	650	650
P	650	550	430	350	300						
V	650	550	400	350	310						
R	650	650	650	650	580						
Three-way valve with hydraulics centralizing (minimum control pressure 1.8MPa)						When control oil is internal supply, and installed pre-pressure valve, the flow of spool symbol H,F,P,G,T,S,V,C,Z hit 180 l/min					
E, F, H, J, L, M P, Q, R, U, V, W	650	650	650	650	650						
G, T	400	400	400	400	400						
Three-way valve with hydraulics centralizing (minimum control pressure 3MPa)											
G, T	650	650	650	650	650						

Function limit form of WEH10 type electro-hydraulic operated directional valve

Three-way valve, spring centralizing						Two way valve					
flow (l/min) spool symbol	Pressure stage (MPa)					flow (l/min) spool symbol	Pressure stage (MPa)				
	7	14	21	28	35		7	14	21	28	35
E, J, L, M, R U, W, Q	1100	1040	860	750	680	C, D, K, Z, Y	1100	1040	860	750	680
H, G	1100	1000	680	500	450	Two-way valve with hydraulics return					
F, T, P	820	630	510	450	400						
Three-way valve with hydraulics centralizing (minimum control pressure 0.85MPa)						HC, HD, HK, HZ, HY	1100	1040	860	750	680
All spool symbol	1100	1040	860	750	680	When control oil is internal supply, and installed pre-pressure valve, the flow of spool symbol H,F,P,G,T,S,V,C,Z hit 180 l/min					

Pilot solenoid operated valve

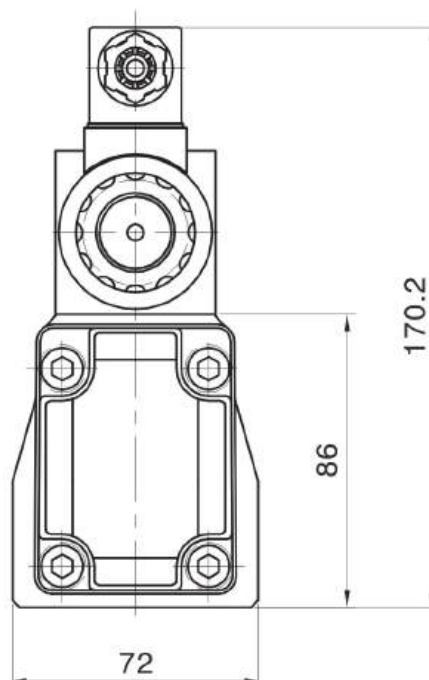
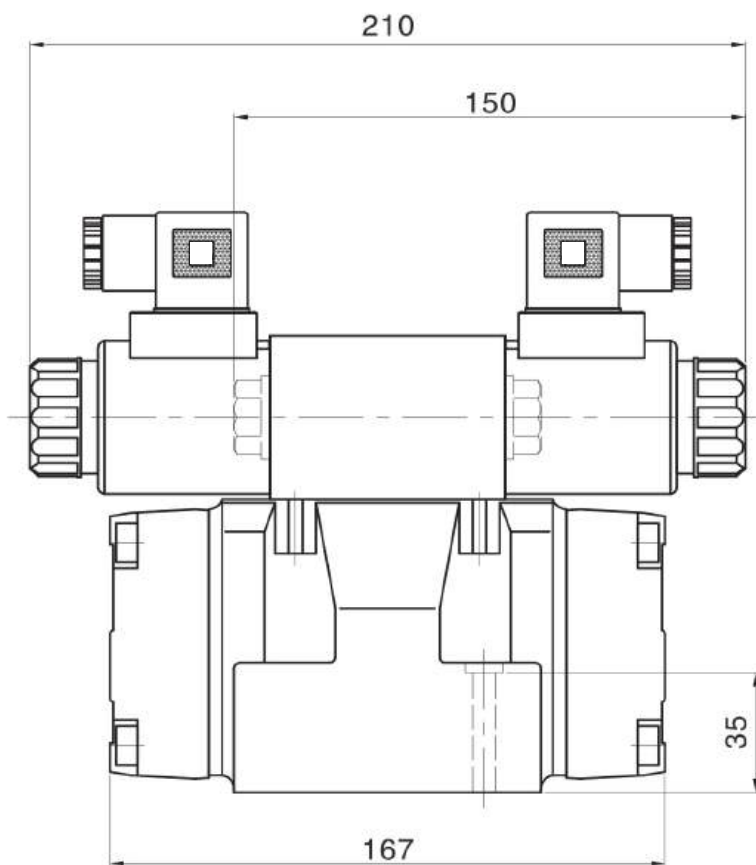
Using 4-way direction valve with nominal diameter size 6 (4WE6) as pilot valve. Slide valve be kept in center or original position by spring, and according to solenoid or locator, slide valve kept in the working position.

The pilot valve adopt wet-type AC or DC solenoid, toward the spool symbol of the pilot valve be used on the main valve which with kinds of different spool symbol.

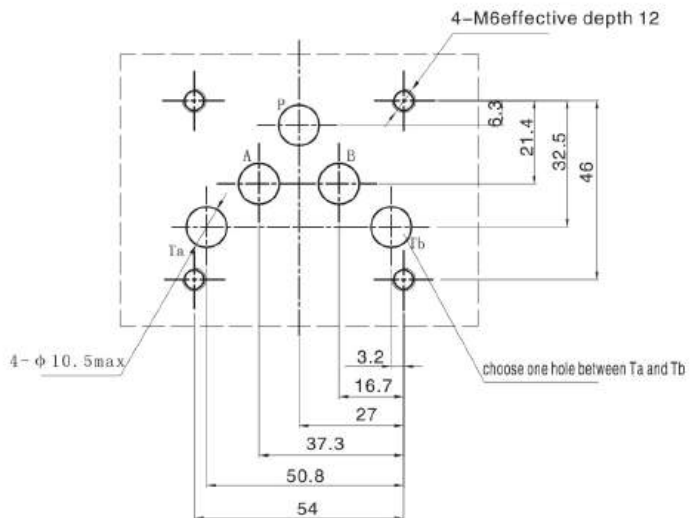
Main valve	Pilot solenoid operated valve
Valve with spring centralizing/ converted two position valve	Using 4WE6J-6X/...three position valve/ 4WE6JA... 4WE6JB...
Valve with spring centralizing/ converted two position valve	Using 4WE6J-6X/...three position valve/ 4WE6MA... 4WE6MB...
Structure of main valve with two position Y.../...and HY.../... B.../...and HB.../...	Using 4WE6Y-6X/...two position valve
Two position valve A, C, D, K and Z type spool HA, HC, HD, HK, HZ type valve	Using two position valve with spool type D Structure form of the pilot valve: With spring return, using 4WE6D-6X/... Without spring return, using 4WE6D-6X/O... Without spring return, but with locating device, using 4WE6D-6X/OF...

UNIT DIMENSIONS

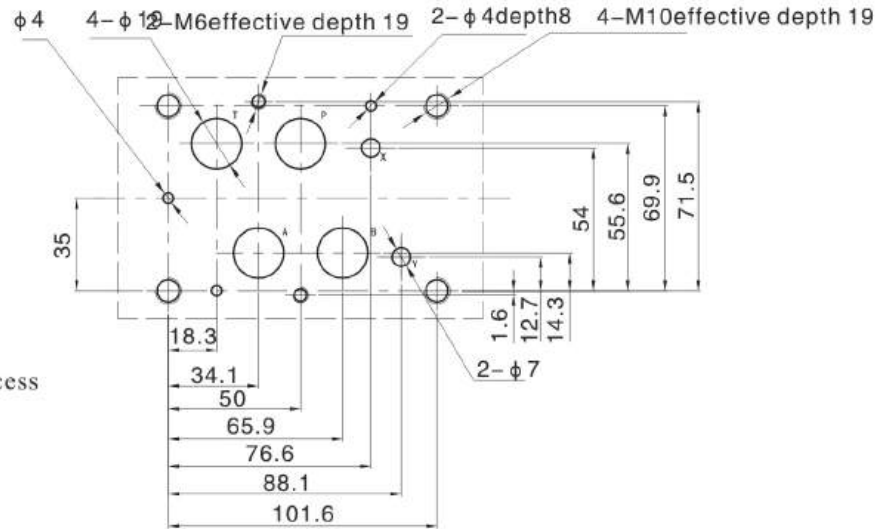
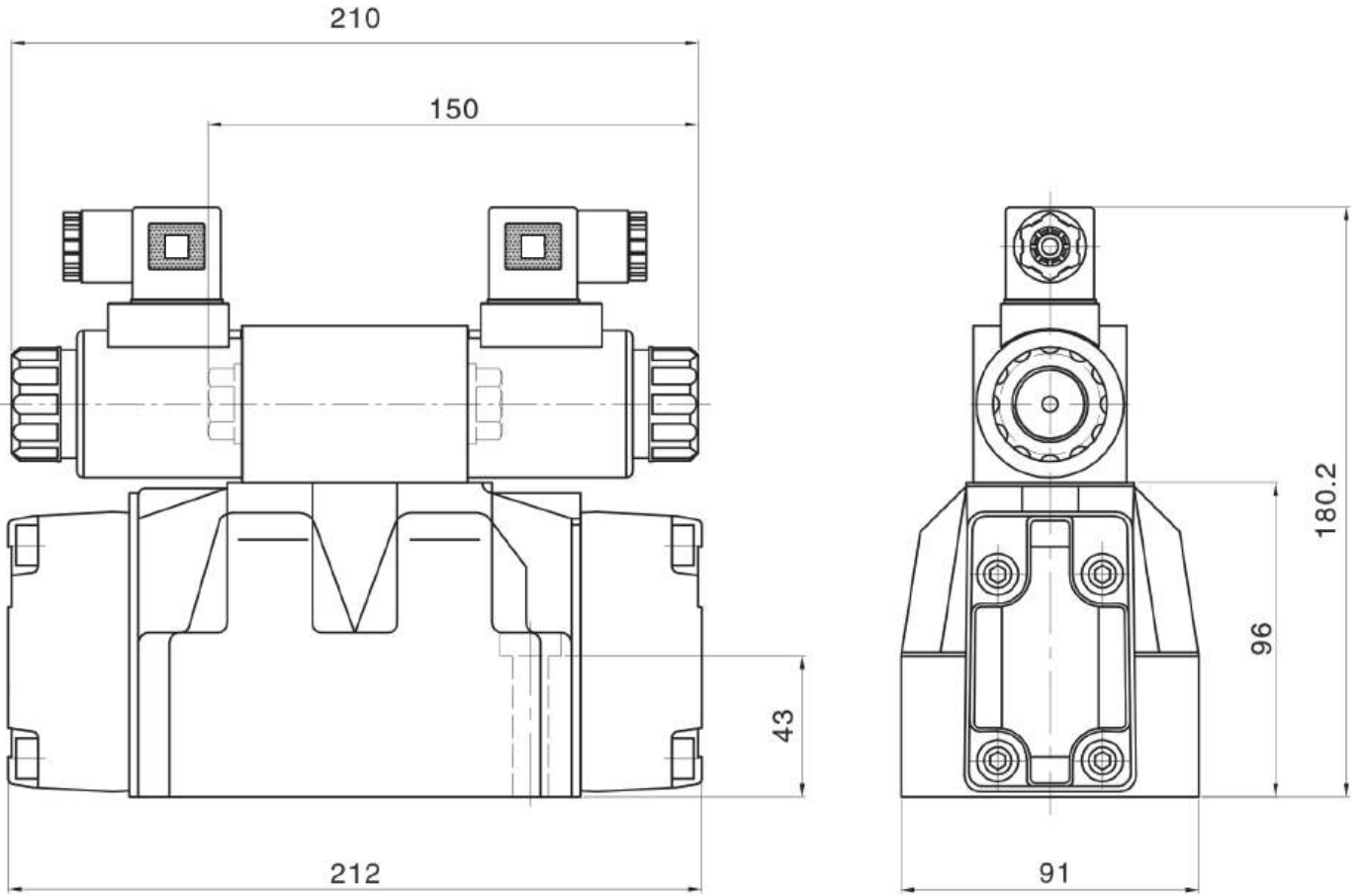
WE-H10

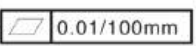


the surface of mating parts request precision process

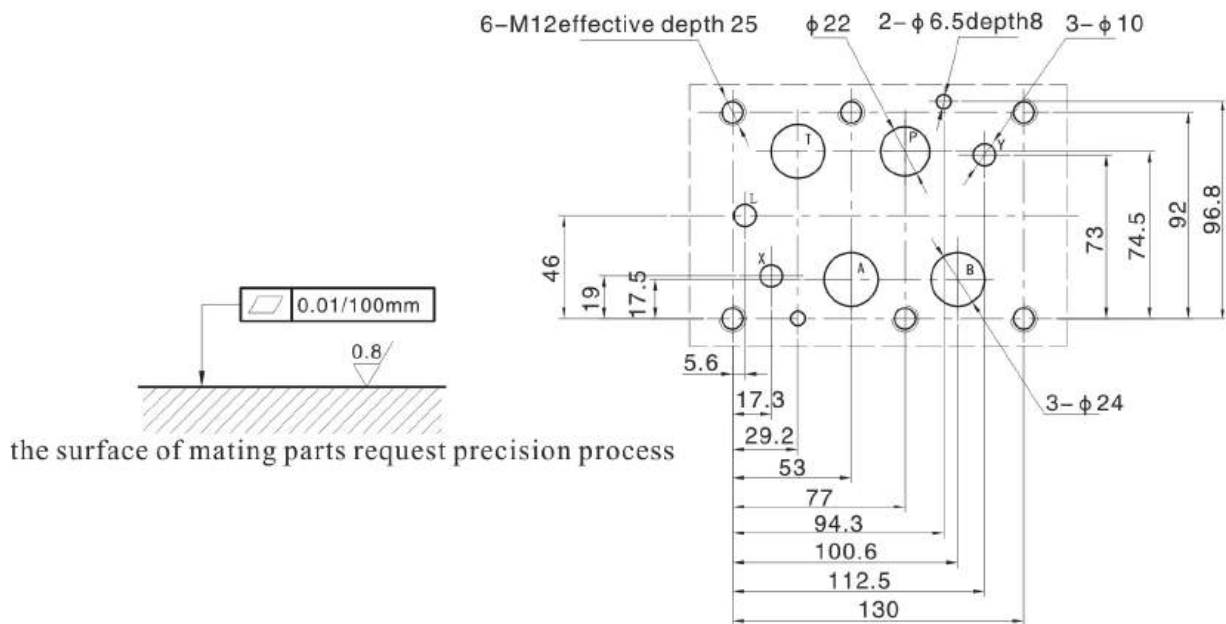
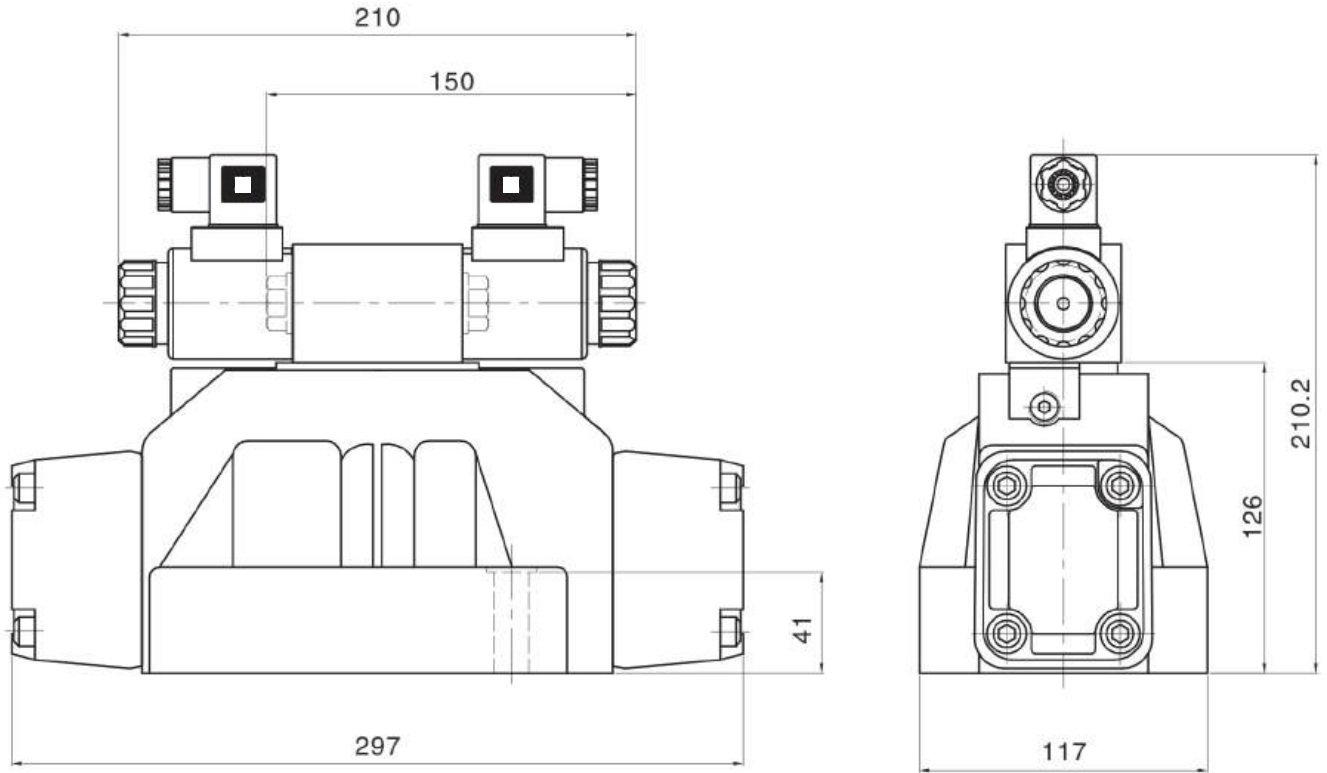


WE-H16

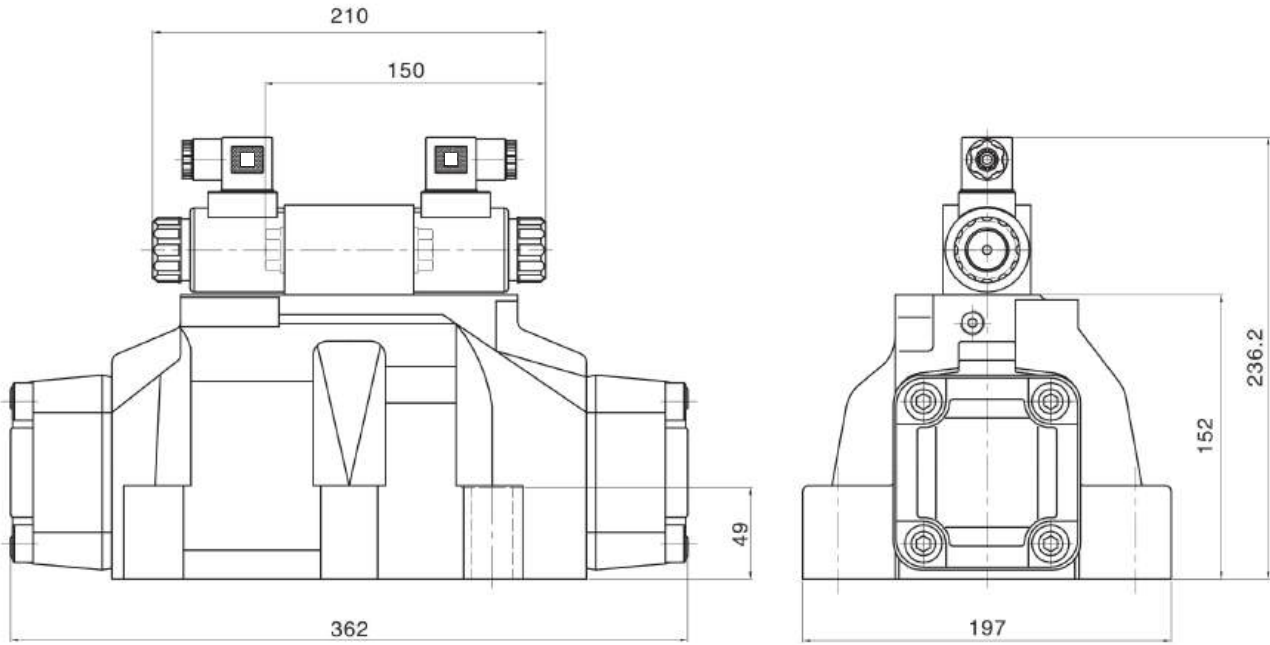



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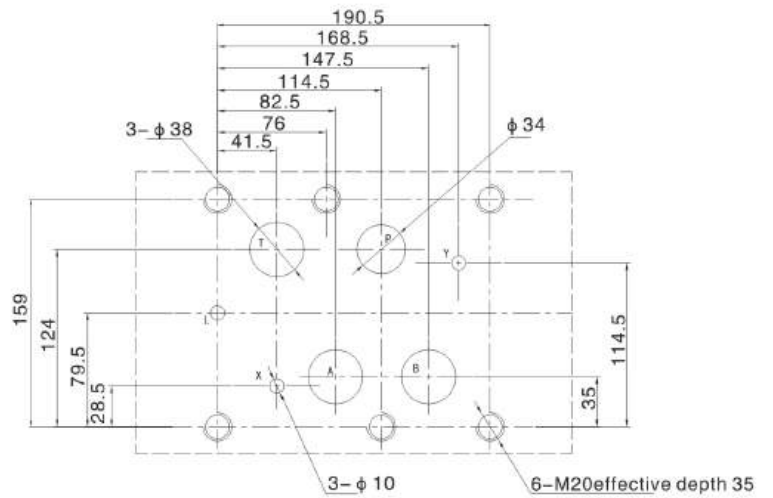
WE-H25



WE-H32



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DSHG series electrohydraulic operated directional valve

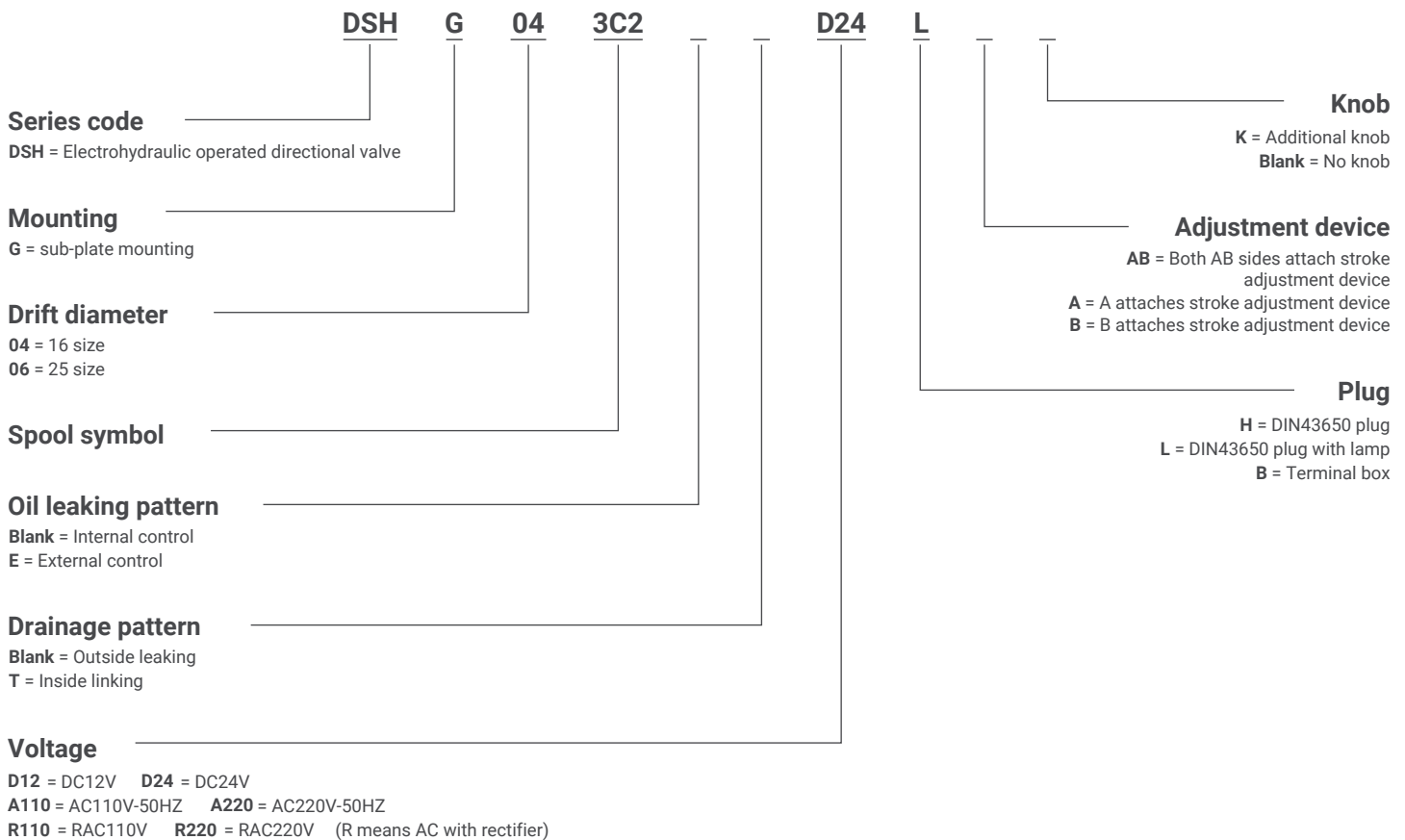


CONTENT

1. DSHG series electrohydraulic operated directional valve is controlled by solenoid valve as pilot, using plate connection and its size meets DIN2430 and ISO4401. It has many different properties and additional devices are available.
2. Solenoid valve, used as pilot control, has wet-type DC or AC series; the main valve adopts spring centralizing and spring-return, hydraulic centralizing and resetting; with or without reversing time regulator; with or without the main valve stroke regulator type damper.



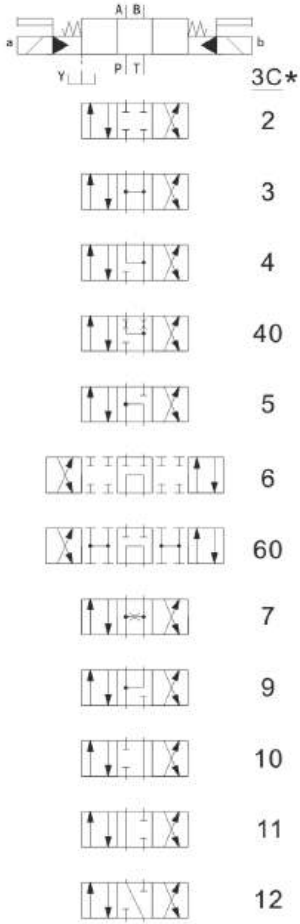
ORDERING DETAILS



SYMBOLE

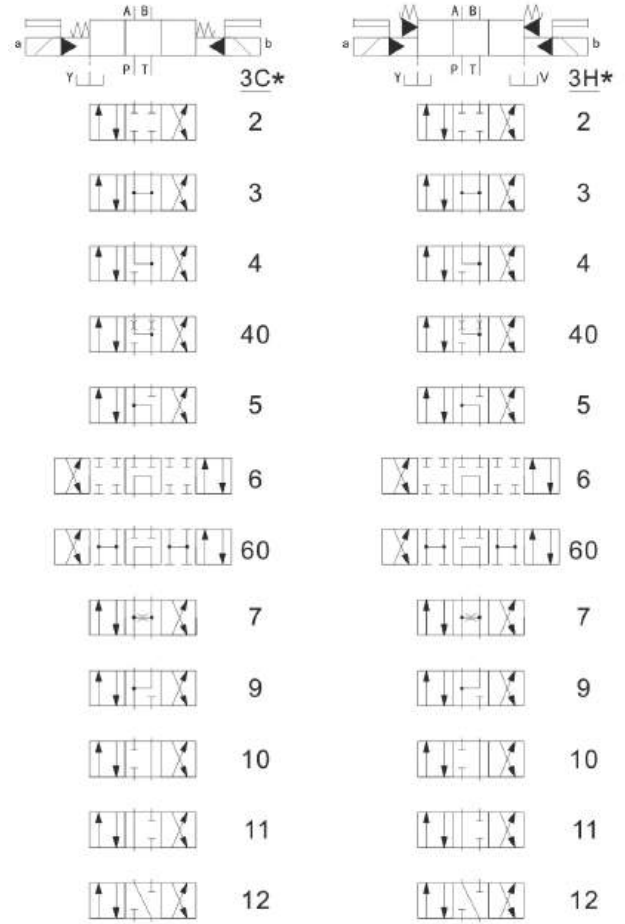
DSHG-04

three position type
spring return to the middle position

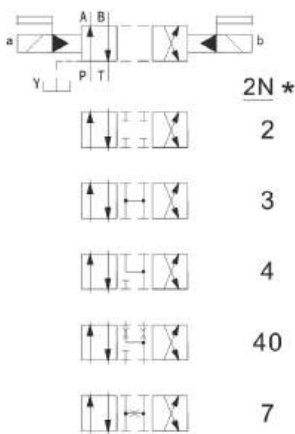


DSHG-06

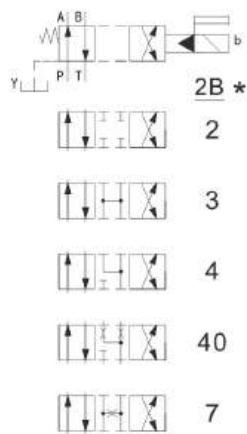
three position type
spring return to the middle position pressure return to middle



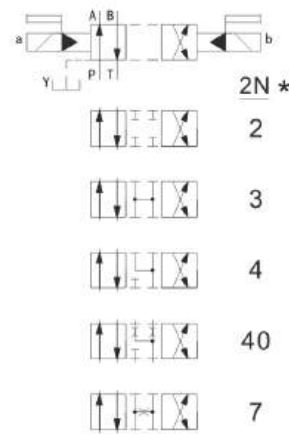
two position
without spring



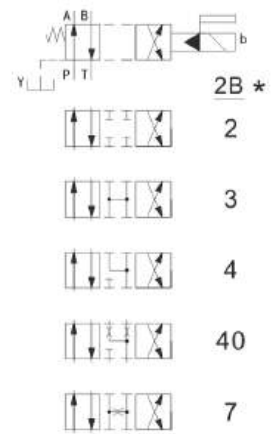
spring return



without spring



spring return



Standard function menu

DSHG-04

three-position type

spring return to the middle				
the type of the vane core	maximum flow l/min			
	10MPa	16MPa	25MPa	31.5MPa
DSHG-04-3C2	300	300	200	145
DSHG-04-3C3	300	300	300	300
DSHG-04-3C4	300	300	300	165
DSHG-04-3C40	300	300	250	145
DSHG-04-3C5	255	250	245	235
DSHG-04-3C6	300	260	245	235
DSHG-04-3C60	300	300	300	300
DSHG-04-3C7	300	300	200	145
DSHG-04-3C9	300	300	280	250
DSHG-04-3C10	300	300	200	150
DSHG-04-3C11	300	260	160	140
DSHG-04-3C12	300	280	170	135

Type two

spring return to the middle				
the type of the vane core	maximum flow l/min			
	10MPa	16MPa	25MPa	31.5MPa
SDHG-04-2N2	300	300	300	300
SDHG-04-2N3	300	300	300	300
SDHG-04-2N4	300	300	300	300
SDHG-04-2N40	300	300	300	300
SDHG-04-2N7	300	300	300	300

spring return to the middle				
the type of the vane core	maximum flow l/min			
	10MPa	16MPa	25MPa	31.5MPa
SDHG-04-2B2	300	300	300	300
SDHG-04-2B3	300	300	300	300
SDHG-04-2B4	300	300	300	300
SDHG-04-2B40	300	300	300	300
SDHG-04-2B7	300	300	300	300

The table on the maximum flow rate of control pressure greater than 0.8MPa value.

DSHG-06**three-position type**

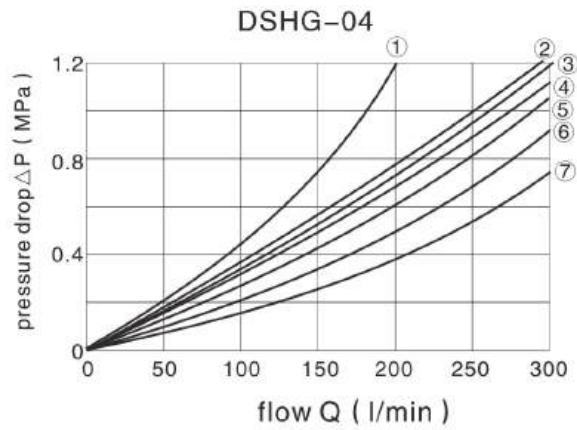
spring return to the middle					spring return to the middle				
the type of the vale core	maximum flow l/min				the type of the vale core	maximum flow l/min			
	10MPa	16MPa	25MPa	31.5MPa		10MPa	16MPa	25MPa	31.5MPa
DSHG-06-3C2	500	500	410	310	DSHG-06-3H2	500	500	500	420
			500	410					500
DSHG-06-3C3	500	500	460	370	DSHG-06-3H3	500	500	500	500
				310					
DSHG-06-3C4	500	500	410	500	DSHG-06-3H4	500	500	500	420
			500	310					500
DSHG-06-3C40	500	500	410	500	DSHG-06-3H40	500	500	500	420
			500	350					500
DSHG-06-3C5	500	500	425	230	DSHG-06-3H5	500	500	500	470
									500
DSHG-06-3C6	475	390	300	280	DSHG-06-3H6	500	500	500	420
									500
DSHG-06-3C60	475	420	340	360	DSHG-06-3H60	500	500	500	420
									500
DSHG-06-3C7	500	500	450	360	DSHG-06-3H7	500	500	500	500
DSHG-06-3C9	500	500	450		DSHG-06-3H9	500	500	500	500
			500	500					
DSHG-06-3C10	500	500	410	310	DSHG-06-3H10	500	500	500	460
			500	500					500
DSHG-06-3C11	500	500	410	310	DSHG-06-3H11	500	500	500	460
			500	500					500
DSHG-06-3C12	500	500	410	310	DSHG-06-3H12	500	500	500	460
			500	500					500

Type two

spring return to the middle					spring return to the middle				
the type of the vale core	maximum flow l/min				the type of the vale core	maximum flow l/min			
	10MPa	16MPa	25MPa	31.5MPa		10MPa	16MPa	25MPa	31.5MPa
SDHG-06-2N2	500	500	500	500	SDHG-06-2N2	500	500	500	500
SDHG-06-2N3	500	500	500	500	SDHG-06-2N3	500	500	500	500
SDHG-06-2N4	500	500	500	500	SDHG-06-2N4	500	500	500	500
SDHG-06-2N40	500	500	500	500	SDHG-06-2N40	500	500	500	500
SDHG-06-2N7	500	500	500	500	SDHG-06-2N7	500	500	500	500

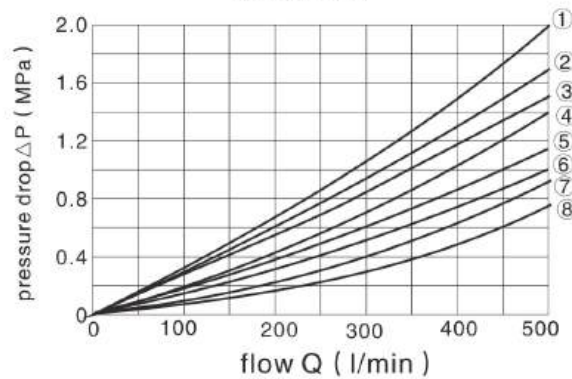
CHARACTERISTIC CURVE

below characteristics tested when fluid oil viscosity is 35mm²/s, specific gravity is 0.85.



spool type	curve code of pressure drop					spool type	curve code of pressure drop				
	P→A	B→T	P→B	A→T	P→T		P→A	B→T	P→B	A→T	P→T
2	⑤	④	⑤	⑥	-	60	⑦	⑤	⑦	⑦	-
3	⑤	③	⑤	⑤	⑦	7	⑤	④	⑤	⑥	-
4	⑤	③	⑤	⑤		9	⑤	④	⑤	⑥	-
40	⑤	④	⑤	⑥	-	10	⑤	②	⑤	⑥	-
5	⑦	④	⑤	⑤	⑤	11	⑥	④	⑤	⑥	-
6	⑤	③	⑤	⑥	①	12	⑤	④	⑤	⑤	-

DSHG-06



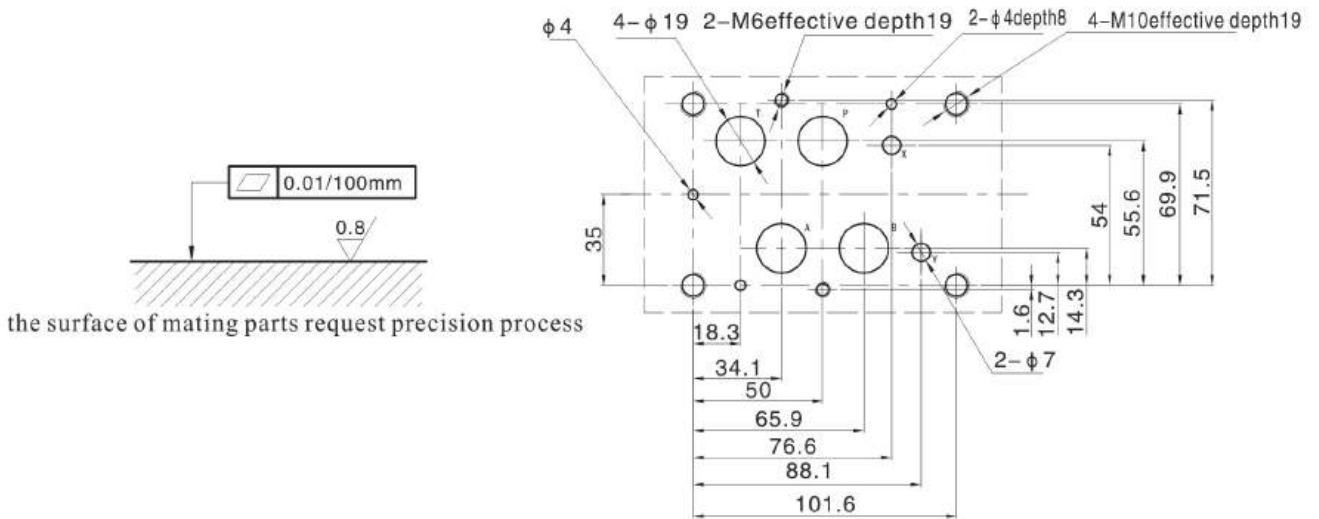
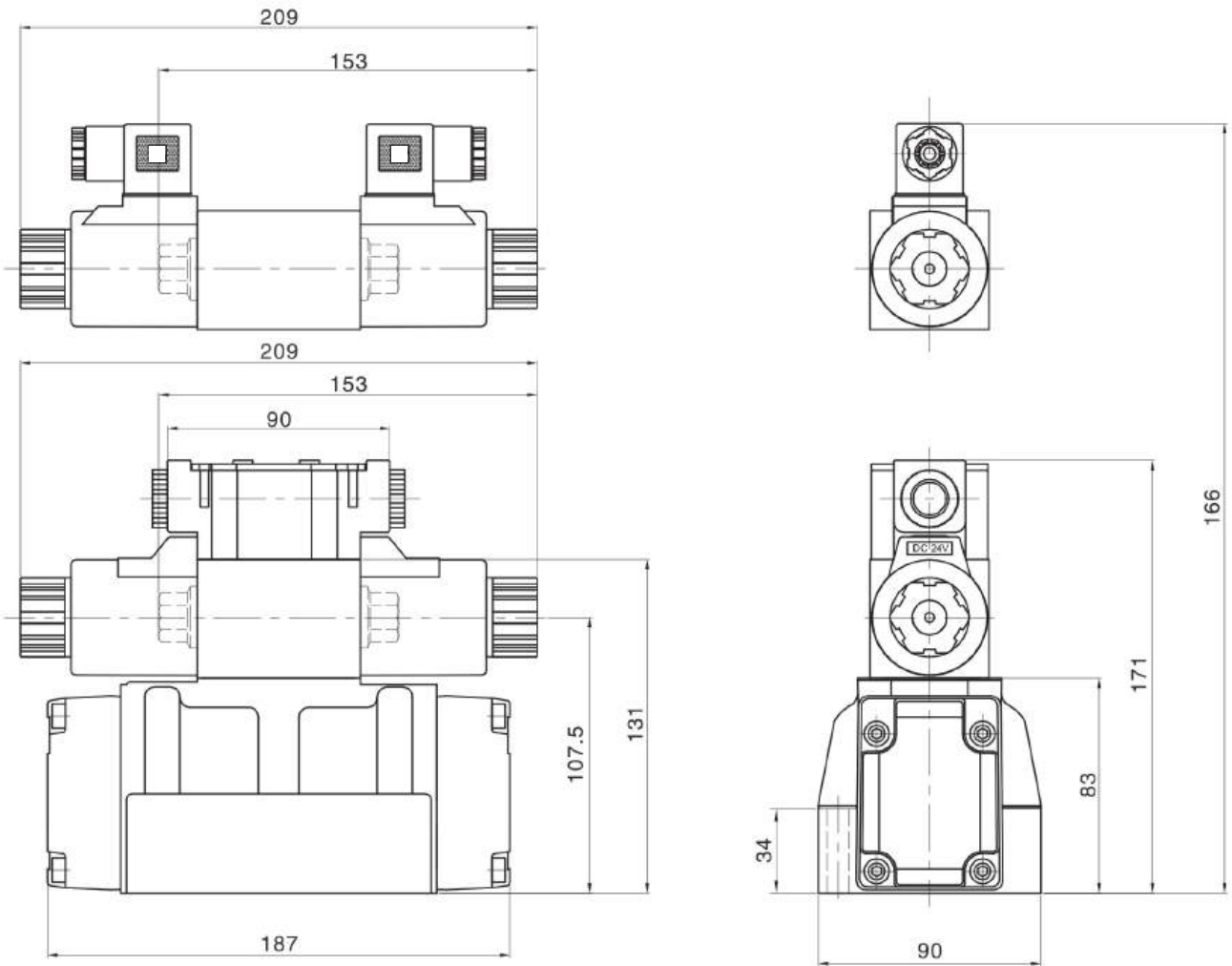
spool type	curve code of pressure drop					spool type	curve code of pressure drop				
	P→A	B→T	P→B	A→T	P→T		P→A	B→T	P→B	A→T	P→T
2	⑧	⑤	⑧	⑦	-	60	⑥	⑤	⑥	⑦	①
3	⑥	④	⑥	⑦	④	7	⑥	④	⑥	⑦	-
4	⑧	⑤	⑧	⑦	-	9	⑥	⑤	⑥	⑦	-
40	⑧	⑤	⑧	⑦	-	10	⑧	⑤	⑧	⑦	-
5	⑧	④	⑤	⑦	①	11	⑧	④	⑤	⑦	-
6	⑤	③	⑤	④	①	12	⑧	⑤	⑧	⑦	-

For other viscosity, have to times the coefficient in below table

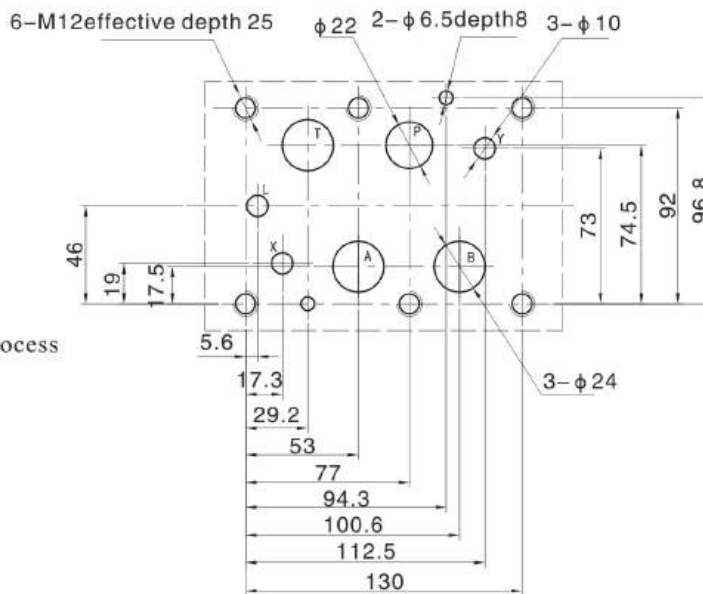
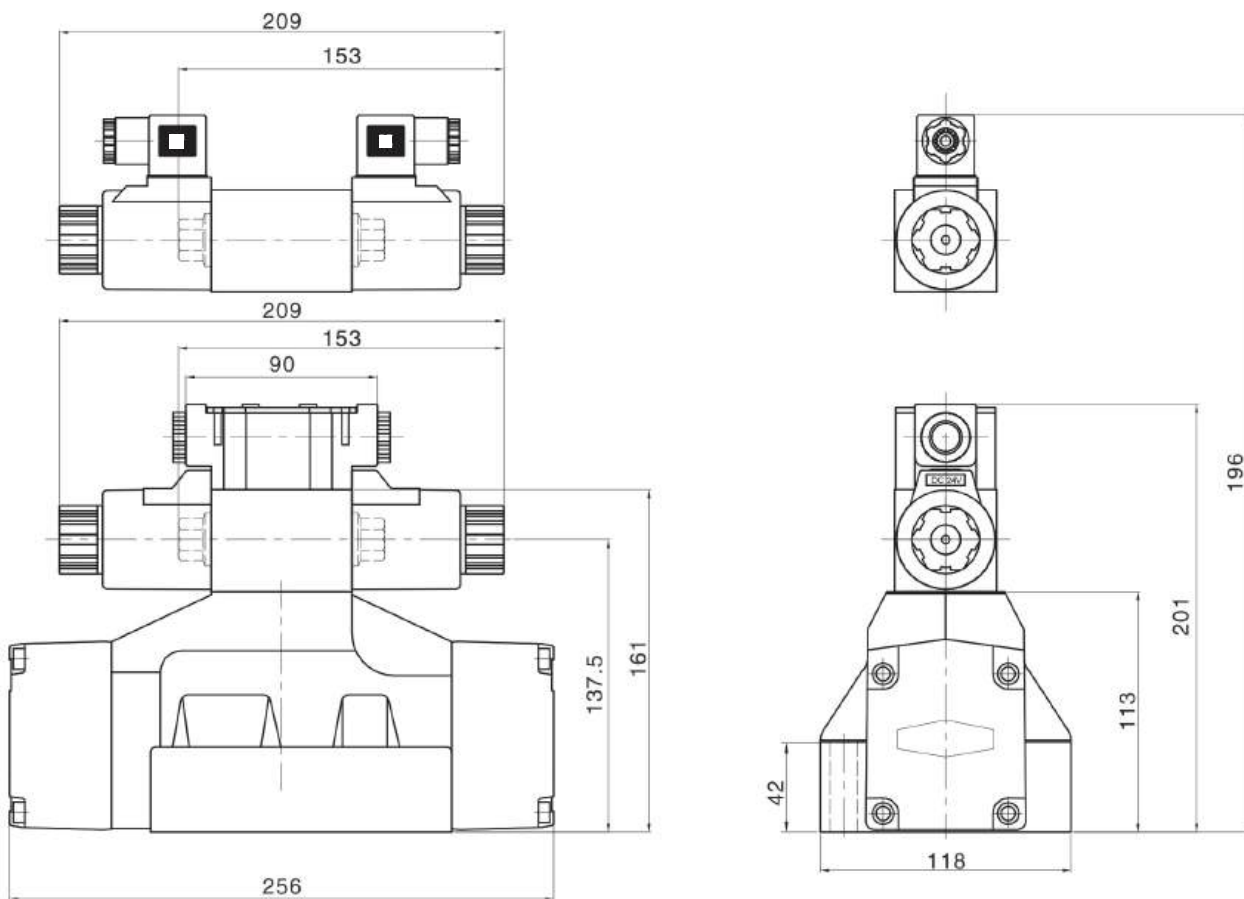
viscosity	mm ² /s	15	20	30	40	50	60	70	80	90	100
		SSU	77	98	141	186	232	278	324	371	471
	coefficient	0.81	0.87	0.96	1.03	1.09	1.14	1.19	1.23	1.27	1.30

UNIT DIMENSIONS

DSHG-04



DSHG-06



the surface of mating parts request precision process

4WMM4-70 lever operated directional valve

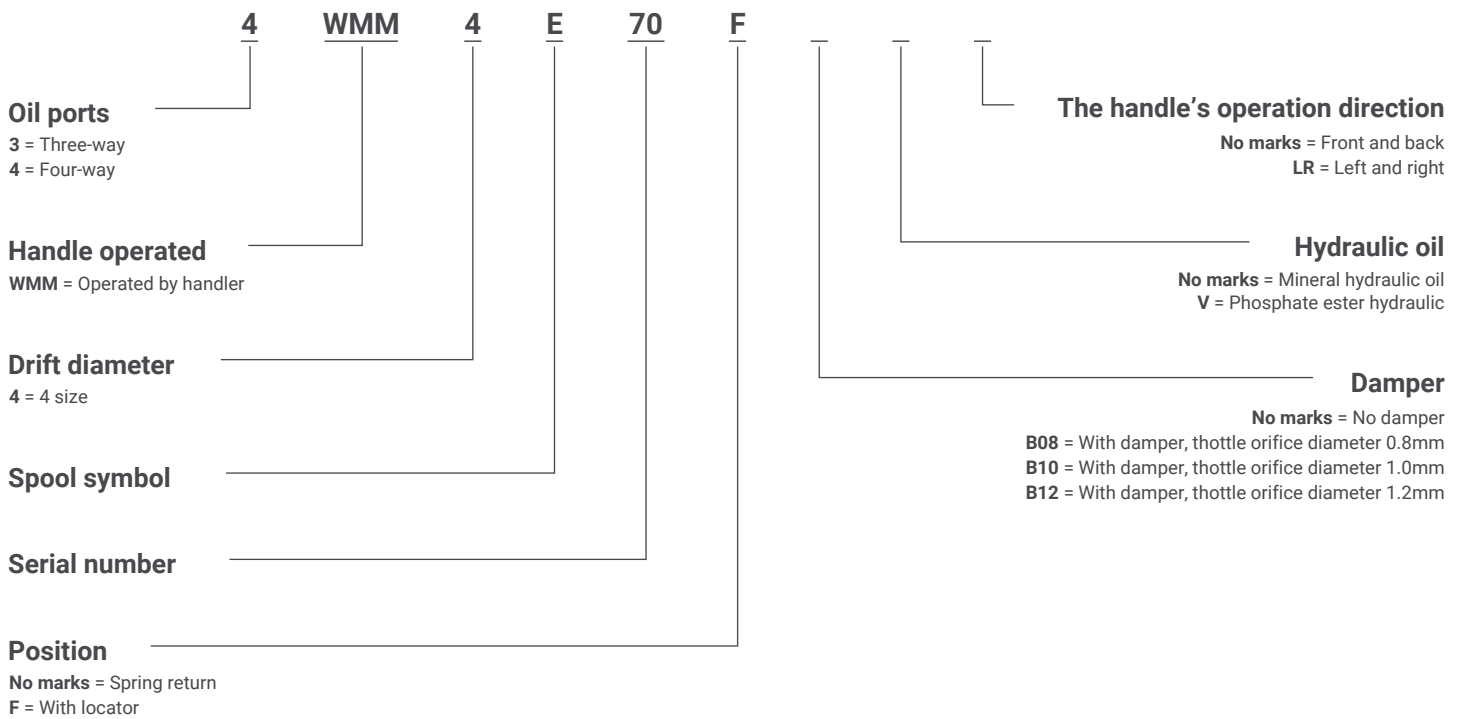


CONTENT

1. Direct directional operated slide valve
2. Sub-plate mounting
3. Operated by handler, this valve has two operation types--left to right, and front to back
4. Surface for mounting DIN24340 type A ISO4401

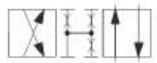
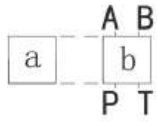


ORDERING DETAILS

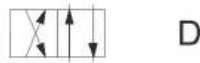
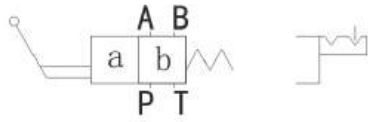


SYMBOLE

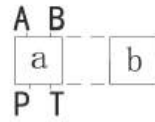
the transition spool symbol



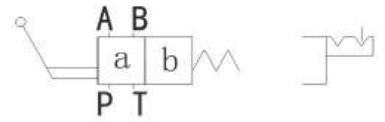
slide valve spool symbol



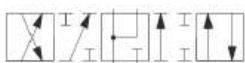
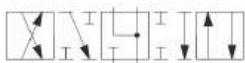
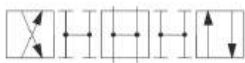
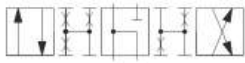
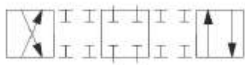
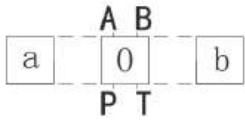
the transition spool symbol



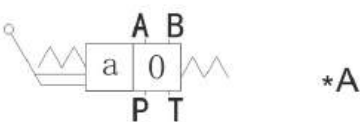
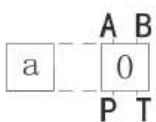
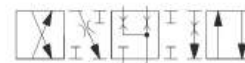
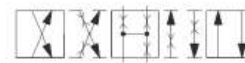
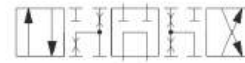
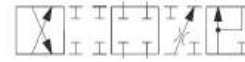
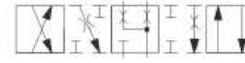
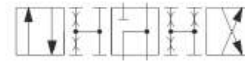
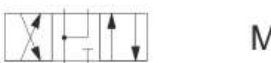
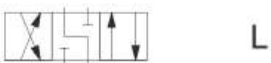
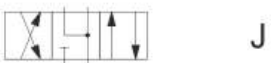
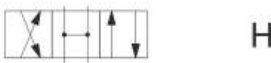
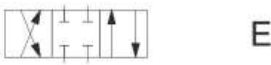
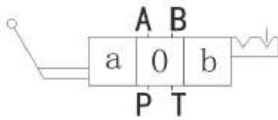
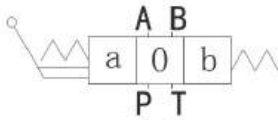
slide valve spool symbol



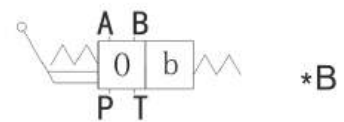
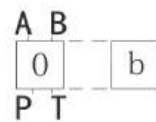
the transition spool symbol



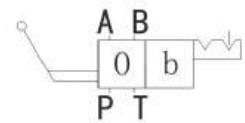
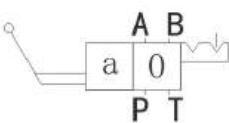
slide valve spool symbol



*A



*B



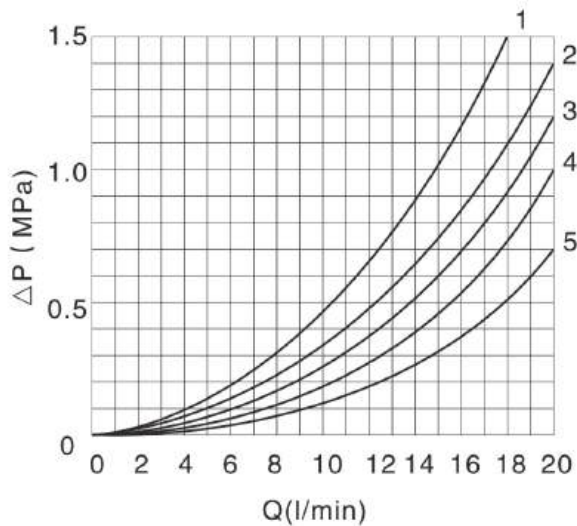
TECHNICAL DATA

Hydraulic Data

Mounting site		Optional	
Working medium temperature	°C	-30~+80(Nitrile rubber seal)	
		-20~+80(viton seal)	
The maximum working pressure of oil mouth	Oil port P, A, B	bar	315
	Oil port T	bar	160
Maximum flow	L/min		20
Effective overload section type Q	mm ²	For the valve core type Q 6% of the nominal cross section	
(in the medium) type W	mm ²	For the valve core type W 3% of the nominal cross section	
Working medium	Mineral oil-suitable for NBR or fluorine rubber seal		
	Phosphate-suitable for fluorine rubber seal		
Viscosity range	mm ² /s	2.8-500	
The oil cleanliness	The highest oil pollution level by NAS1638 class 9 and ISO4406 class 20, 18, 15		
Weight	kg	0.86	

CHARACTERISTIC CURVE

(the test result was from the condition that HLP46, t=40°C +5°C)

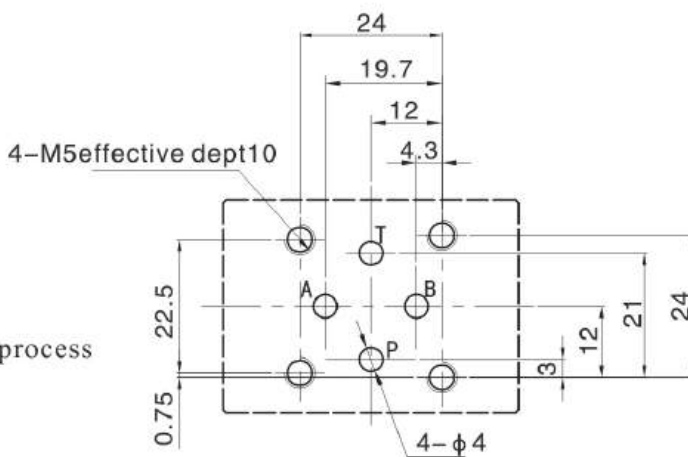
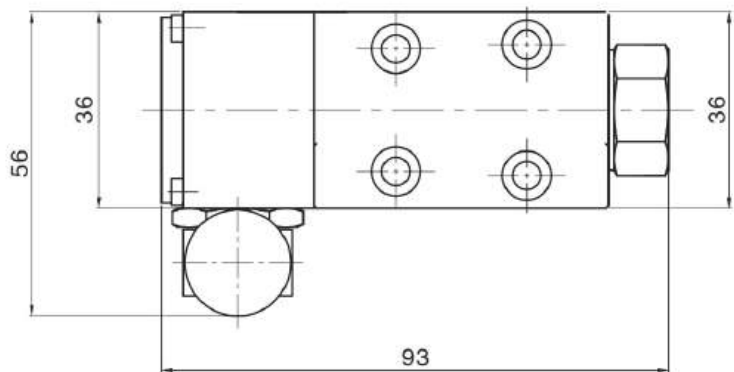
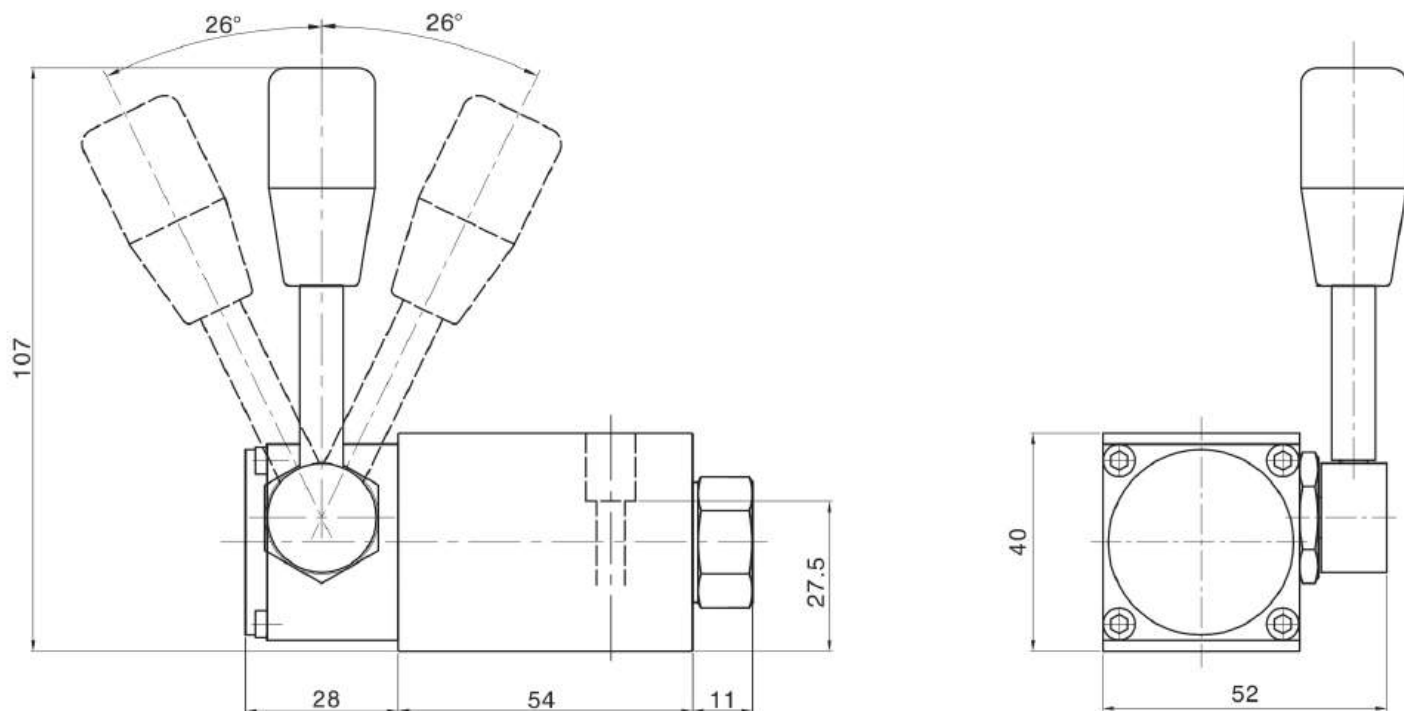


spool type	curve code of pressure drop				
	P→A	P→B	A→T	B→T	P→T
E	2	2	4	4	
H	4	4	5	5	3
W	2	2	5	5	
G	2	2	2	2	1
J	4	4	2	2	
U	3	3	3	3	
L	3	3	5	5	
Y	3	3	4	4	
D/OF	3	3	4	4	

The above chart is the pressure drop curve when the spool working regularly. Testing condition: fluid oil viscosity is 46mm²/s, temperature is 40°C

UNIT DIMENSIONS

WMM4

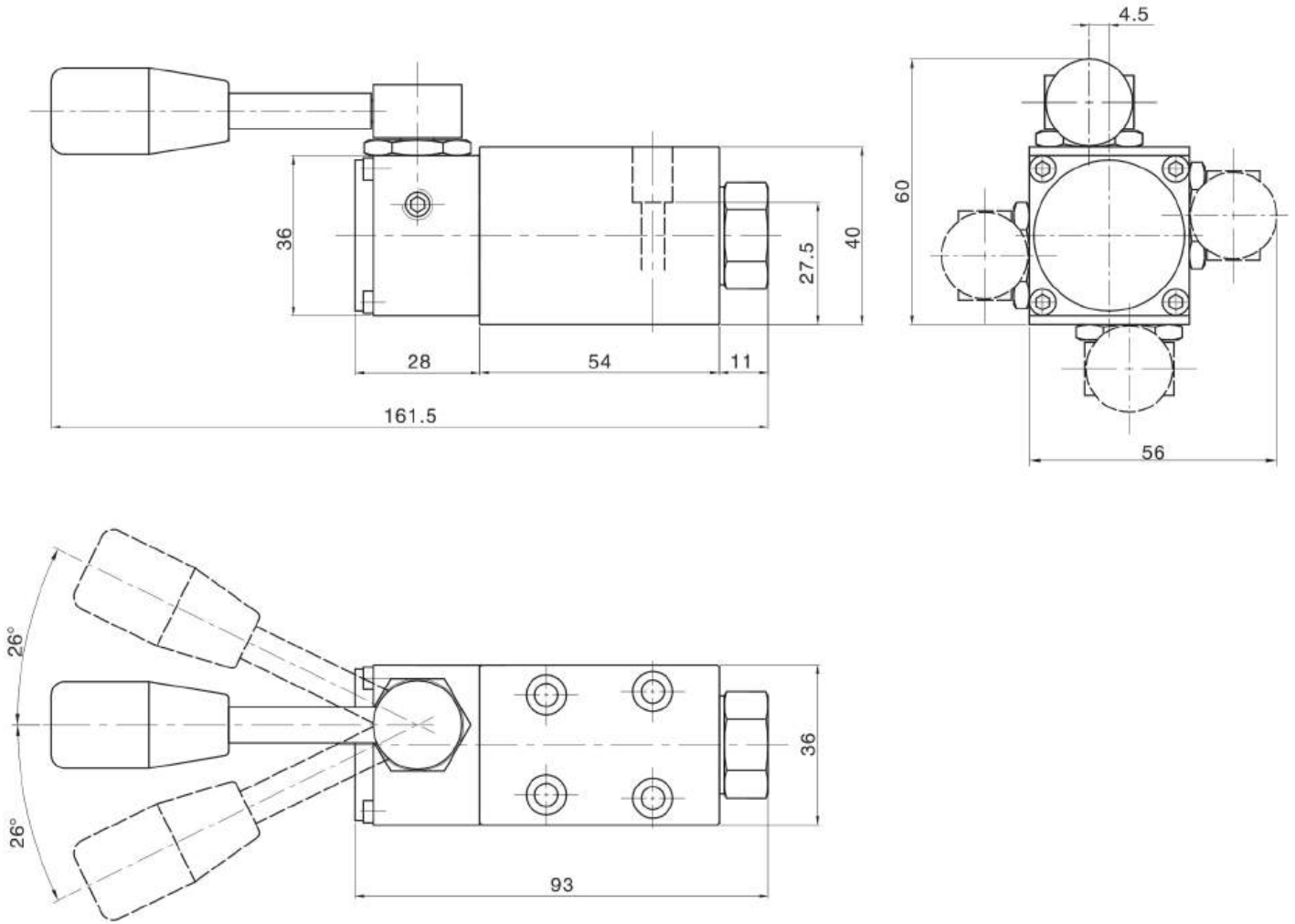



0.01/100mm

0.8

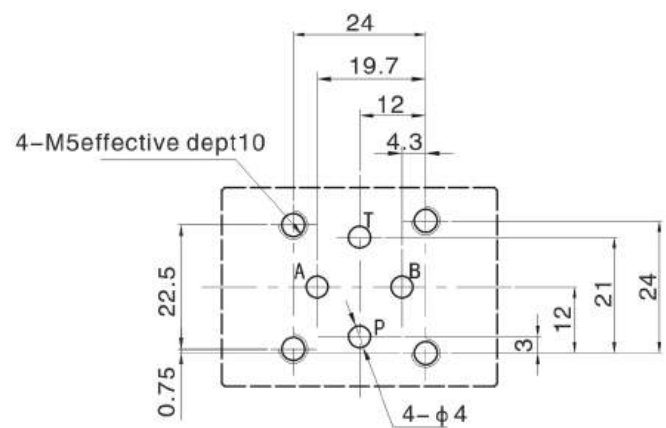
the surface of mating parts request precision process

WMM4-LR





 the surface of mating parts request precision process



WMM6-70 lever operated directional valve

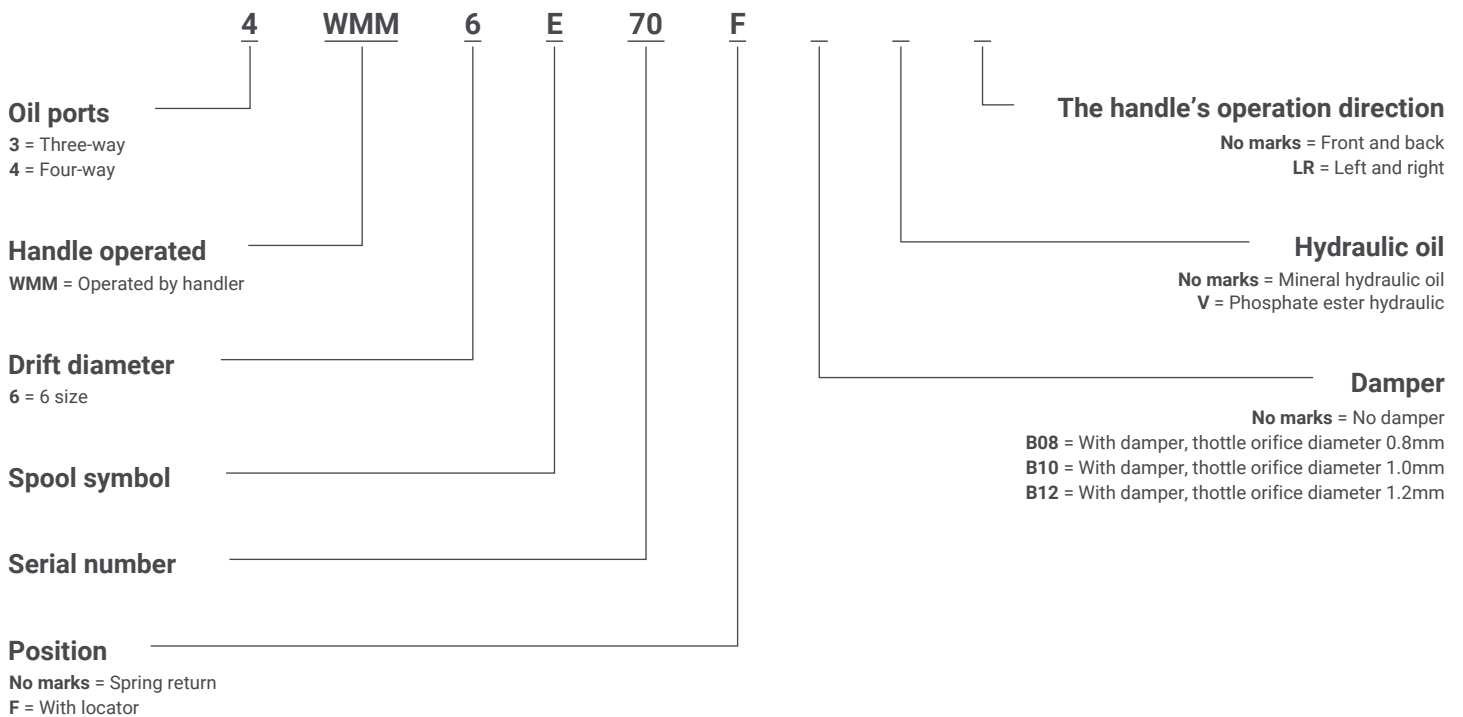


CONTENT

1. Direct directional operated slide valve
2. Sub-plate mounting
3. Operated by handler, this valve has two operation types—left to right, and front to back
4. DIN24340 type A ISO4401 mounting surface

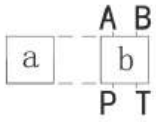


ORDERING DETAILS

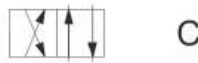
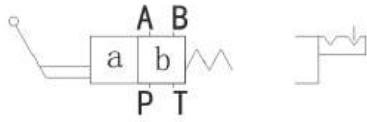


SYMBOLE

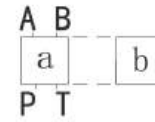
the transition spool symbol



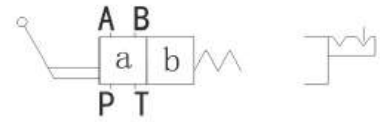
slide valve spool symbol



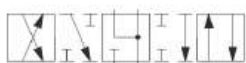
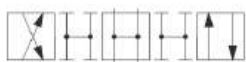
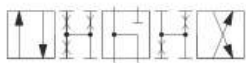
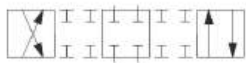
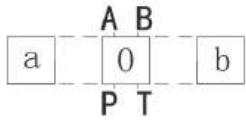
the transition spool symbol



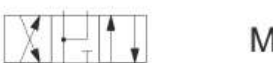
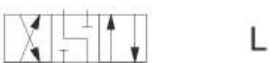
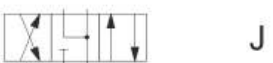
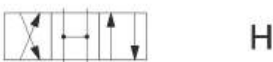
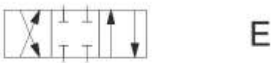
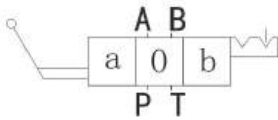
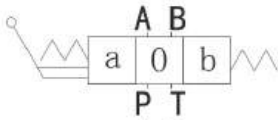
slide valve spool symbol



the transition spool symbol



slide valve spool symbol



E

F

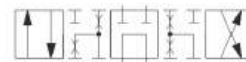
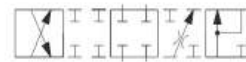
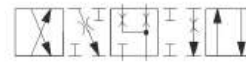
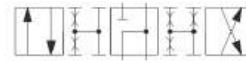
G

H

J

L

M



P

Q

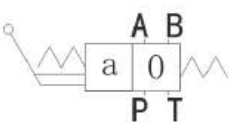
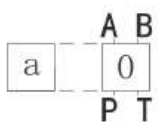
R

T

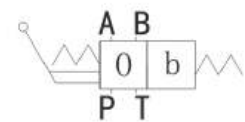
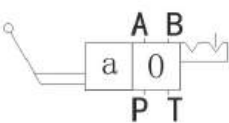
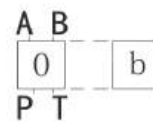
U

V

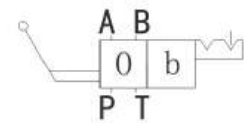
W



*A



*B



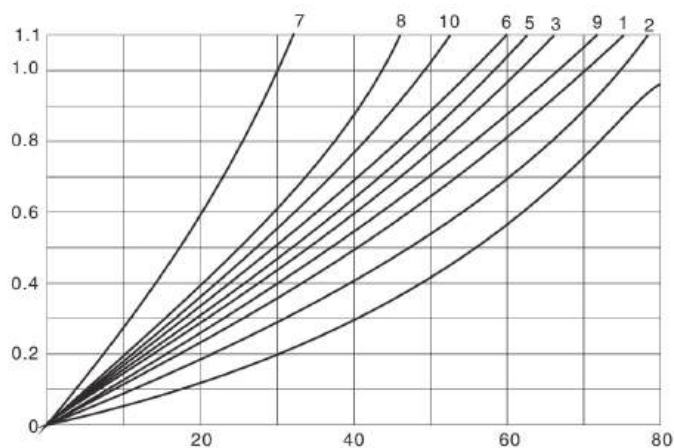
TECHNICAL DATA

Hydraulic Data

Mounting site		Optional	
Working medium temperature	°C	-30~+80(Nitrile rubber seal)	
		-20~+80(viton seal)	
The maximum working pressure of oil mouth	Oil port P, A, B	bar	315
	Oil port T	bar	160
Maximum flow	L/min		20
Effective overload section type Q	mm ²	For the valve core type Q 6% of the nominal cross section	
(in the medium) type W	mm ²	For the valve core type W 3% of the nominal cross section	
Working medium	Mineral oil-suitable for NBR or fluorine rubber seal		
	Phosphate-suitable for fluorine rubber seal		
Viscosity range	mm ² /s	2.8-500	
The oil cleanliness	The highest oil pollution level by NAS1638 class 9 and ISO4406 class 20, 18, 15		
Weight	kg	1.62	

CHARACTERISTIC CURVE

(the result is tested when HLP46, t=40°C +5°C)

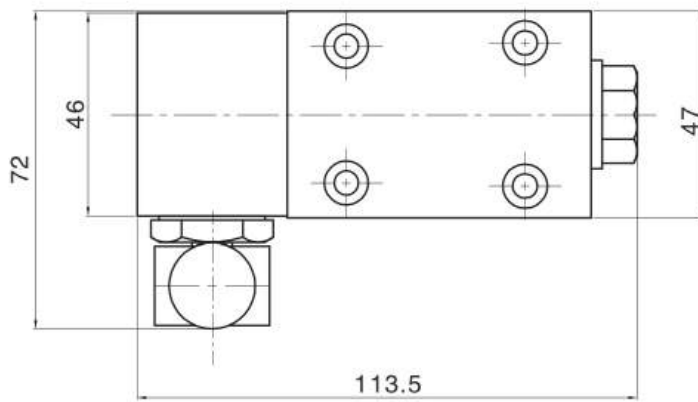
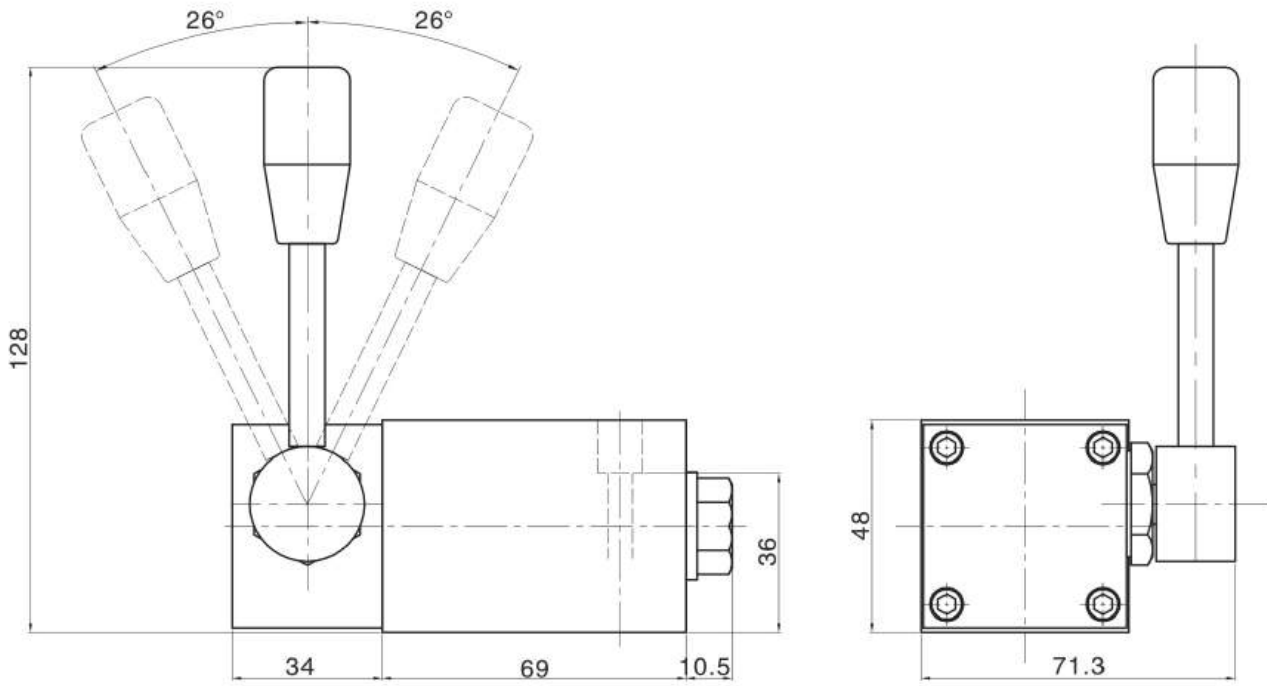


spool type "R" is in switch position B→A
 spool type "G" and "T" are in median position P→A
 spool type "H" is in median position P→T

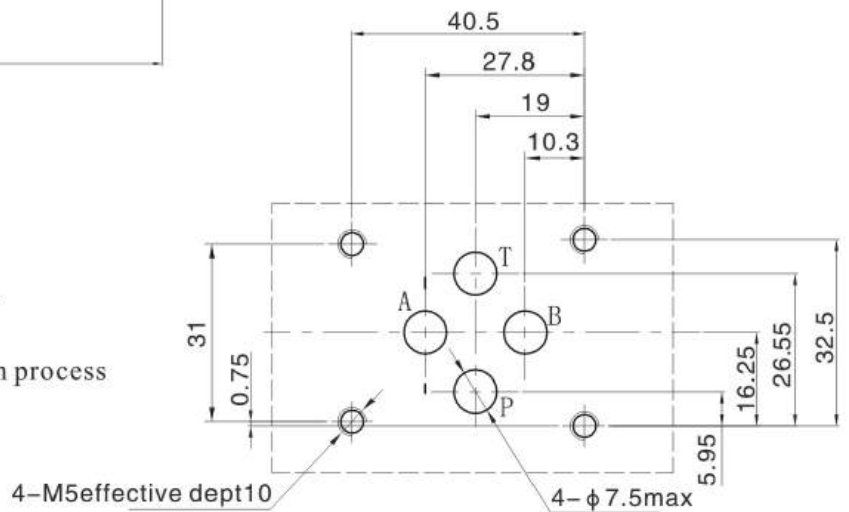
spool symbol	flow direction			
	P→A	P→B	A→T	B→T
AB	3	3	-	-
C	1	1	3	1
DY	5	5	3	3
E	3	3	1	1
F	1	3	1	1
T	10	10	9	9
H	2	4	2	2
JQ	1	1	2	1
L	3	3	4	9
M	2	4	3	3
P	3	1	1	1
R	5	5	4	-
V	1	2	1	1
W	1	1	2	2
U	3	3	9	4
G	6	6	9	9

UNIT DIMENSIONS

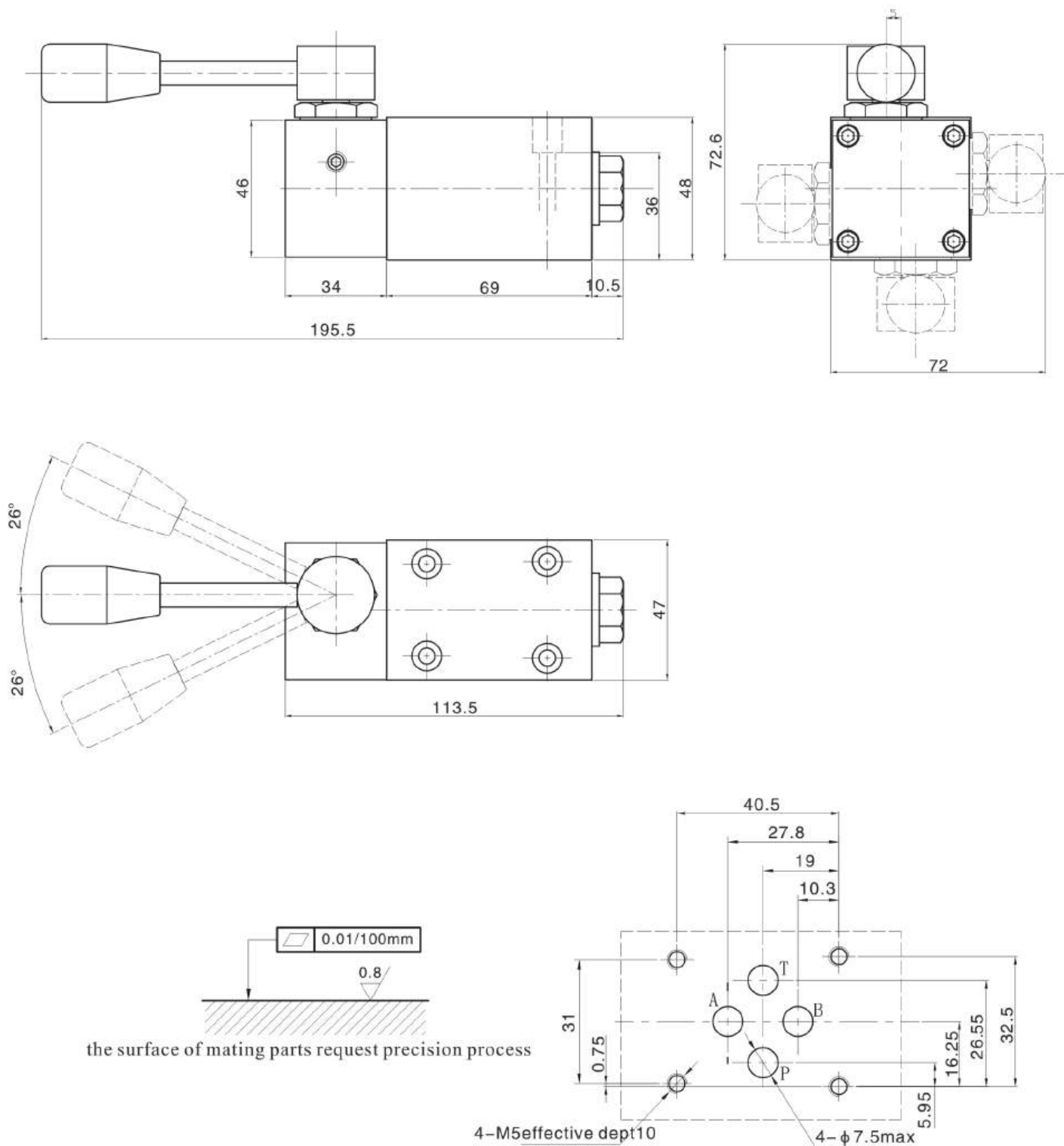
WMM6-70



the surface of mating parts request precision process



WMM6-LR-70



4WMM10-70 lever operated directional valve

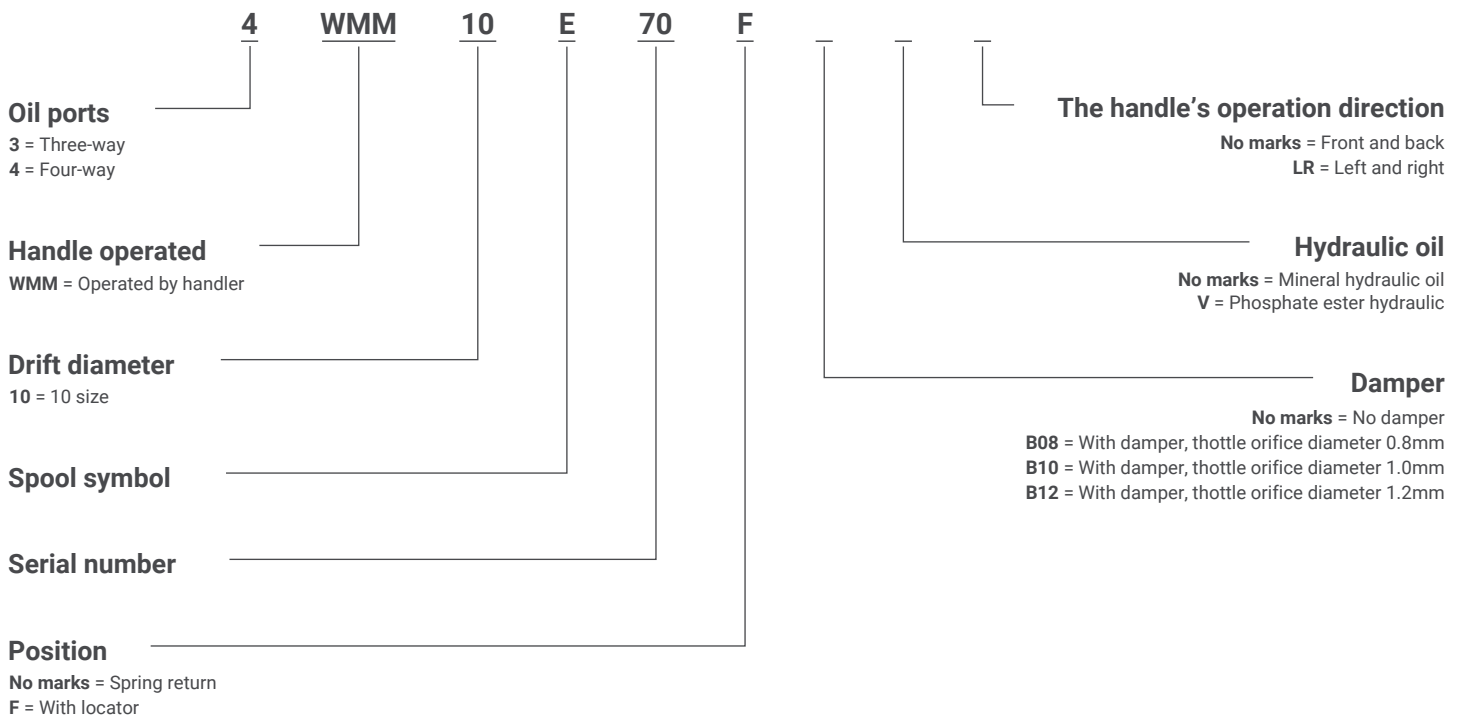


CONTENT

1. Direct directional operated slide valve
2. Sub-plate mounting
3. Operated by handler, this valve has two operation types--left to right, and front to back
4. DIN24340 type A ISO4401 mounting surface



ORDERING DETAILS



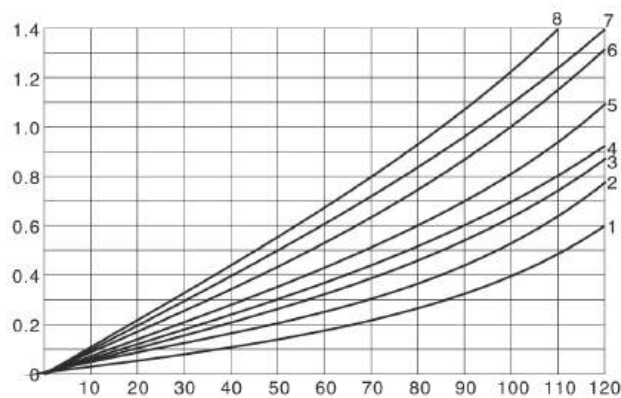
TECHNICAL DATA

Hydraulic Data

Mounting site			Optional
Working medium temperature	°C		-30~+80(Nitrile rubber seal)
			-20~+80(viton seal)
The maximum working pressure of oil mouth	Oil port P, A, B	bar	315
	Oil port T	bar	160
Maximum flow		L/min	120
Effective overload section (in the medium)	Type V	mm ²	11(A/B to T);10.3(P to A/B)
	Type W	mm ²	2.5(A/B to T)
	Type Q	mm ²	5.5(A/B to T)
Working medium			Mineral oil—suitable for NBR or fluorine rubber seal
			Phosphate-suitable for fluorine rubber seal
Viscosity range		mm ² /s	2.8-500
The oil cleanliness			The highest oil pollution level by NAS1638 class 9 and ISO4406 class 20, 18, 15
Weight		kg	4.42

CHARACTERISTIC CURVE

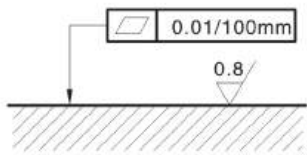
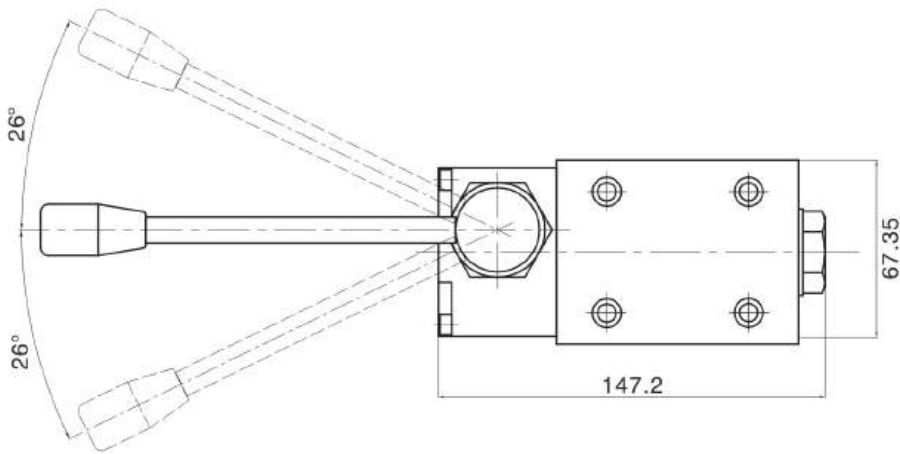
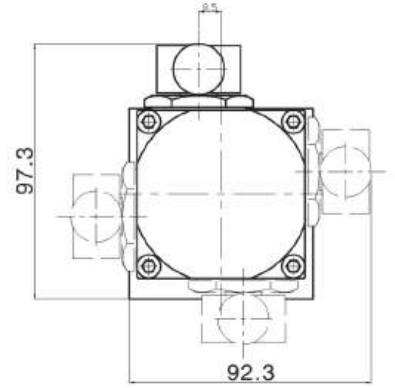
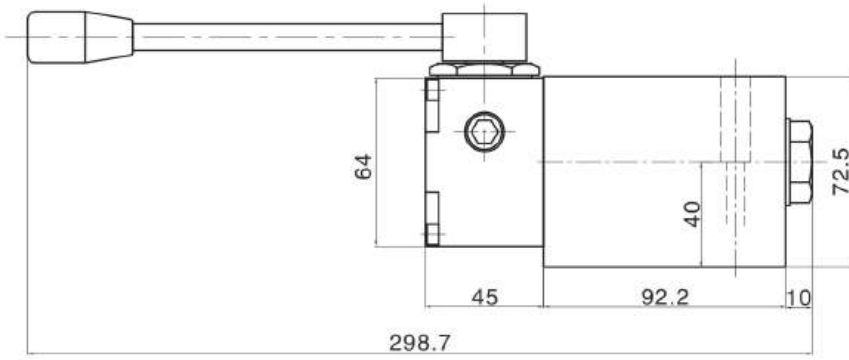
(the result is tested when HLP46, t=40°C +5°C)



spool type "G" and "T" are in median position P→A
spool type "R" is in switch position A→B

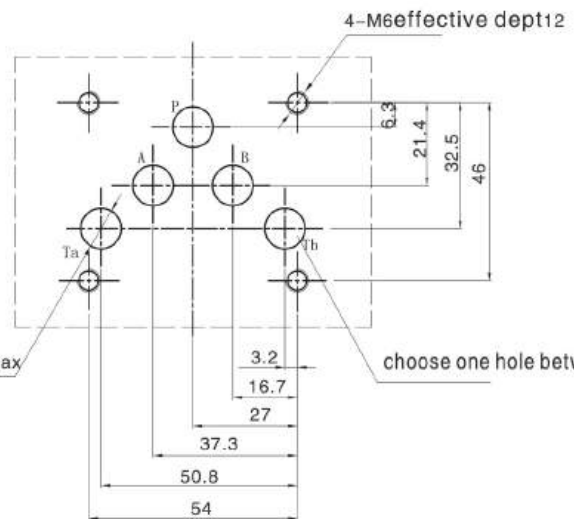
spool symbol	flow direction			
	P→A	P→B	A→T	B→T
A	4	3	—	—
B	3	4	—	—
C	3	3	4	4
D	3	3	5	5
E	2	2	4	4
F	1	2	3	4
G.T	4	4	7	7
H	1	1	5	5
J	2	2	3	3
L	3	3	2	4
M	1	1	4	4
P	3	1	5	5
Q	2	2	2	2
R	3	4	3	—
U	3	3	5	2
V	2	2	3	3
W	3	3	3	3
Y	4	4	6	6

WMM10-LR-70



the surface of mating parts request precision process

4- ϕ 10.5max



choose one hole between Ta and Tb

WMM6-80 lever operated directional valve

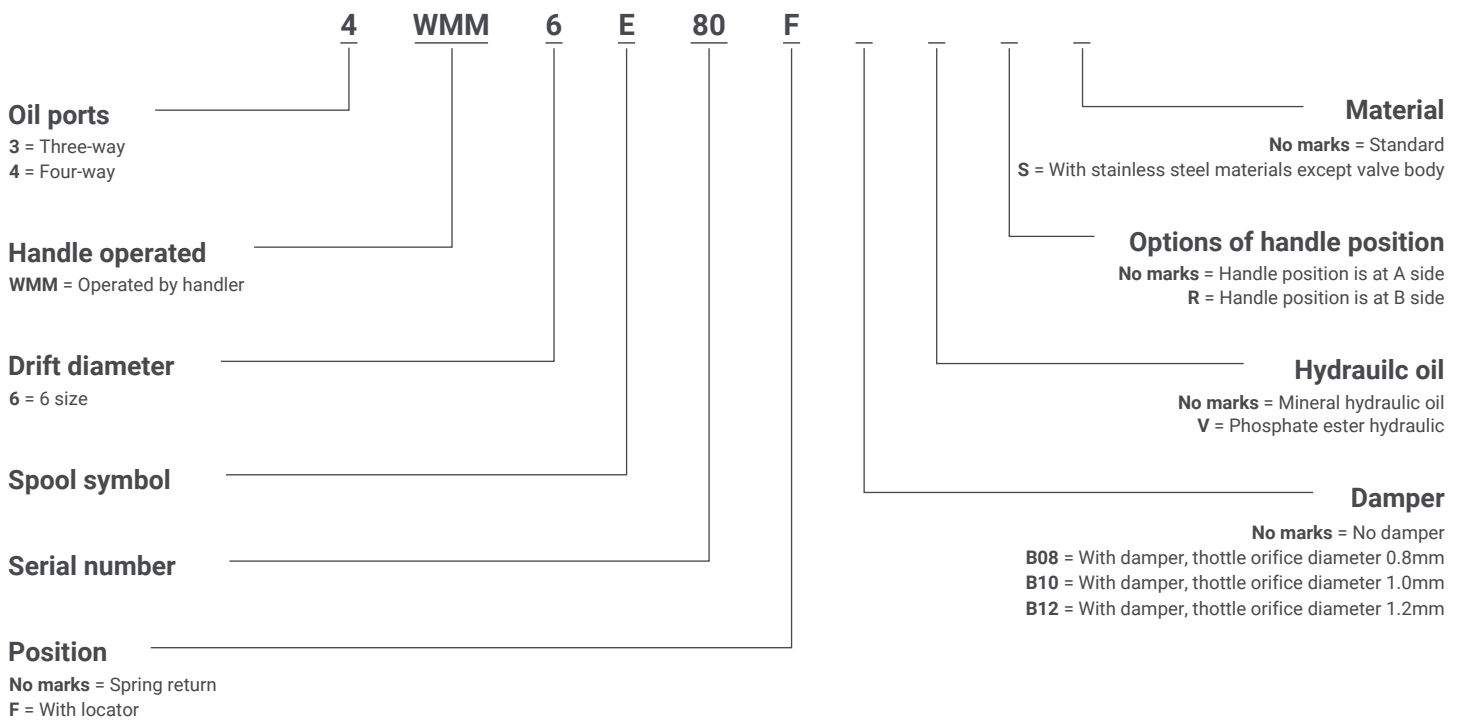


CONTENT

1. Direct directional operated valve
2. Sub-plate mounting
3. Lever operated
4. Surface for mounting DIN24340 type A ISO4401

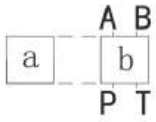


ORDERING DETAILS

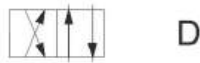
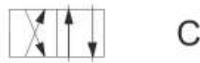
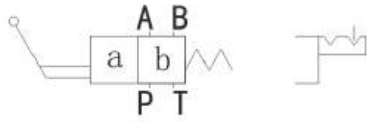


SYMBOLE

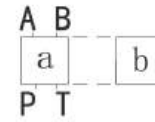
the transition spool symbol



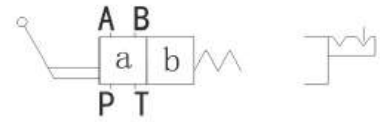
slide valve spool symbol



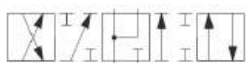
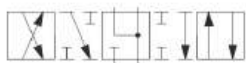
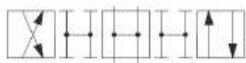
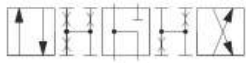
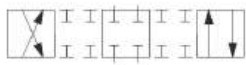
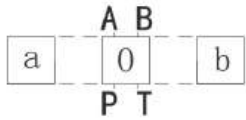
the transition spool symbol



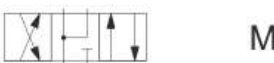
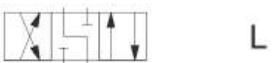
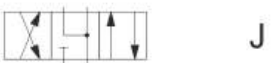
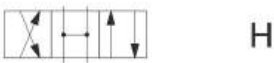
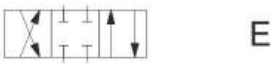
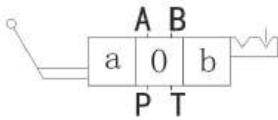
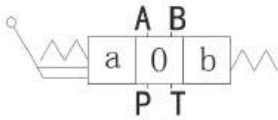
slide valve spool symbol



the transition spool symbol



slide valve spool symbol



E

F

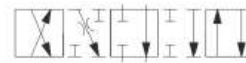
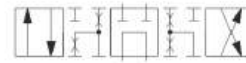
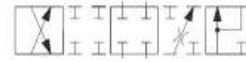
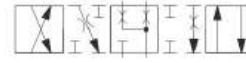
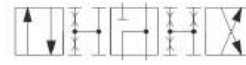
G

H

J

L

M



P

Q

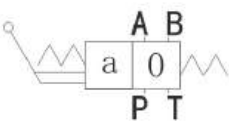
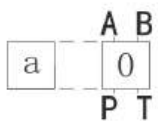
R

T

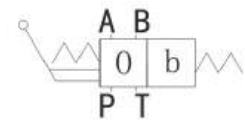
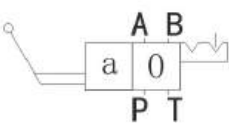
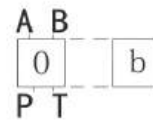
U

V

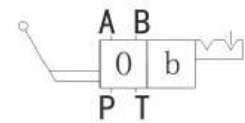
W



*A



*B



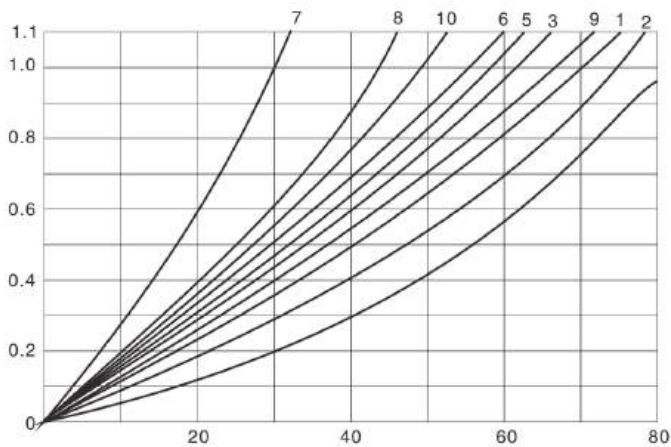
TECHNICAL DATA

Hydraulic Data

Mounting site		Optional
Working medium temperature	°C	-30~+80(Nitrile rubber seal)
		-20~+80(viton seal)
The maximum working pressure of oil mouth	Oil port P, A, B	bar
	Oil port T	bar
Maximum flow	L/min	60
Effective overload section type Q	mm ²	For the valve core type Q 6% of the nominal cross section
(in the medium) type W	mm ²	For the valve core type W 3% of the nominal cross section
Working medium		Mineral oil-suitable for NBR or fluorine rubber seal
		Phosphate-suitable for fluorine rubber seal
Viscosity range	mm ² /s	2.8-500
The oil cleanliness		The highest oil pollution level by NAS1638 class 9 and ISO4406 class 20, 18, 15
Weight	kg	1.62

CHARACTERISTIC CURVE

(the result is tested when HLP46, t=40°C +5°C)

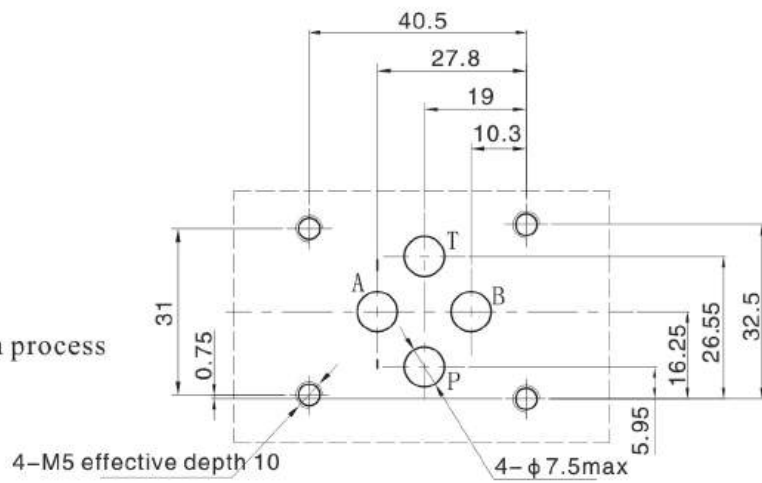
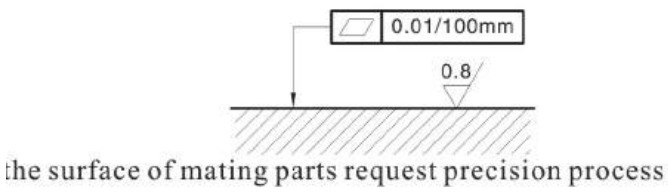
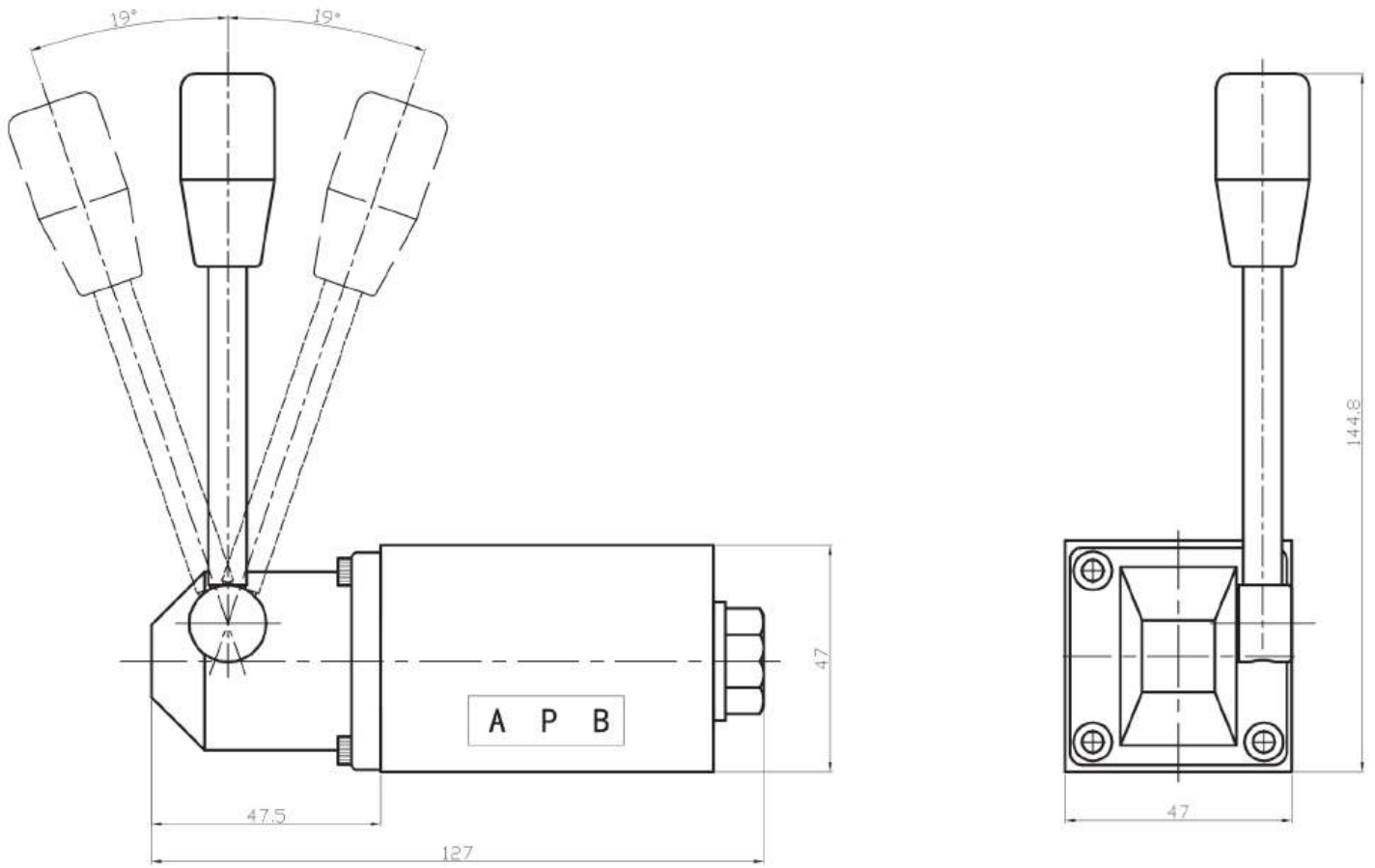


spool type "R" is in switch position B→A
 spool type "G" and "T" are in median position P→A
 spool type "H" is in median position P→T

spool symbol	flow direction			
	P→A	P→B	A→T	B→T
AB	3	3	-	-
C	1	1	3	1
DY	5	5	3	3
E	3	3	1	1
F	1	3	1	1
T	10	10	9	9
H	2	4	2	2
JQ	1	1	2	1
L	3	3	4	9
M	2	4	3	3
P	3	1	1	1
R	5	5	4	-
V	1	2	1	1
W	1	1	2	2
U	3	3	9	4
G	6	6	9	9

UNIT DIMENSIONS

WMM6-80



WMM10-80 lever operated directional valve

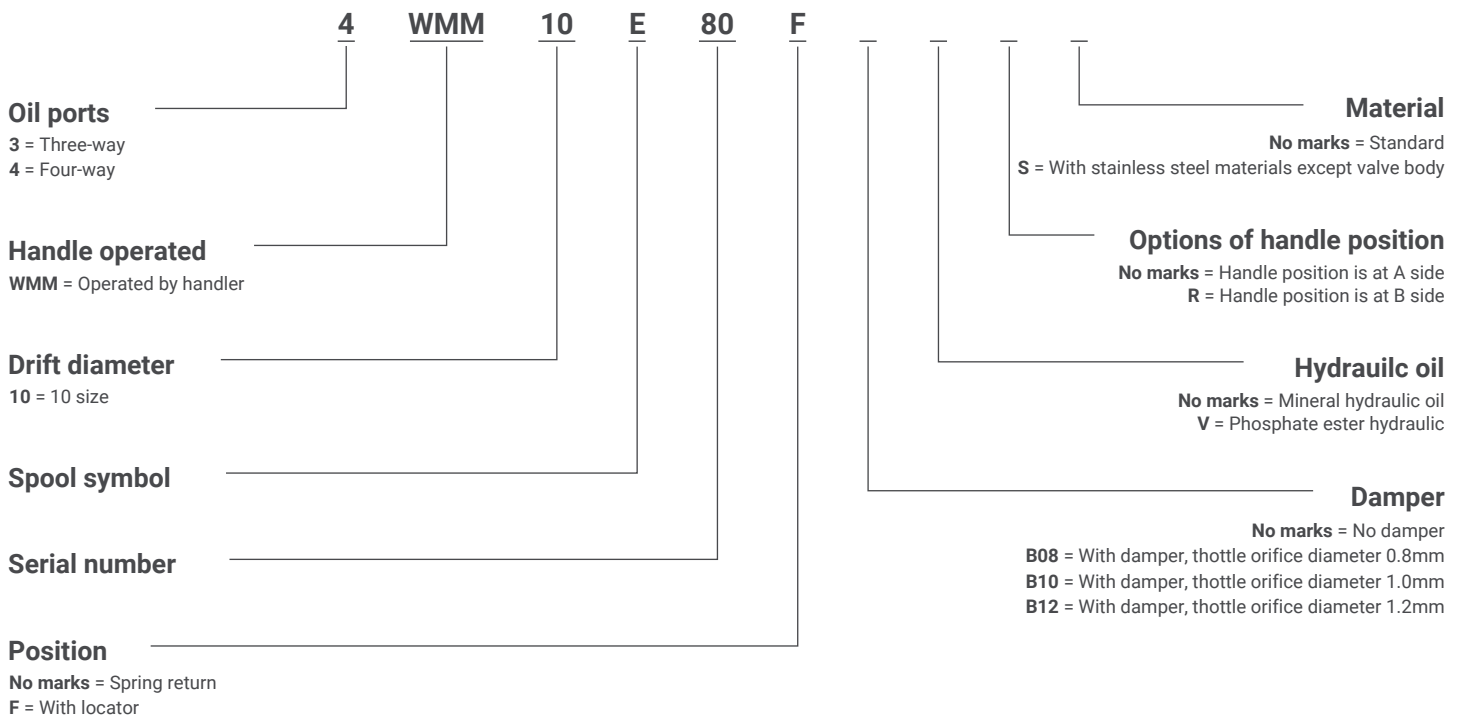


CONTENT

1. Direct directional operated valve
2. Sub-plate mounting
3. Lever operated
4. DIN24340 type A ISO4401 mounting surface

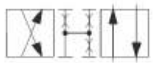
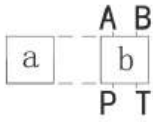


ORDERING DETAILS

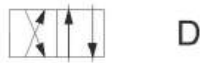
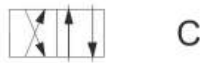
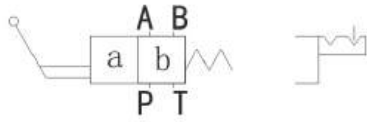


SYMBOLE

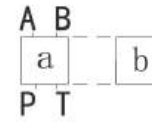
the transition spool symbol



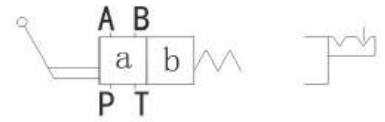
slide valve spool symbol



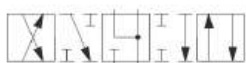
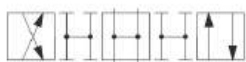
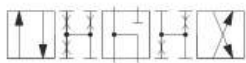
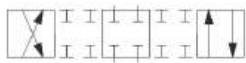
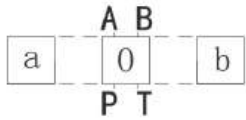
the transition spool symbol



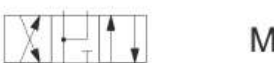
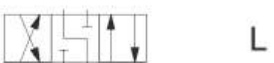
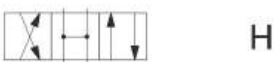
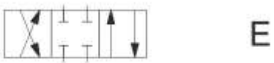
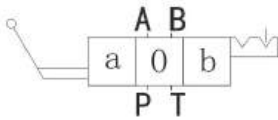
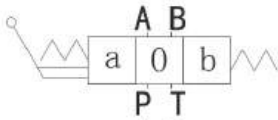
slide valve spool symbol



the transition spool symbol



slide valve spool symbol



E

F

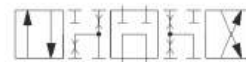
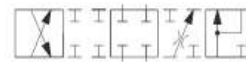
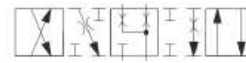
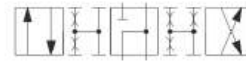
G

H

J

L

M



P

Q

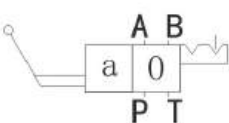
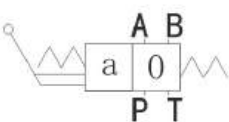
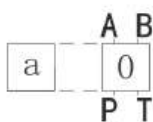
R

T

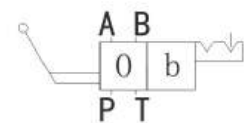
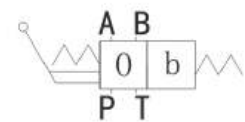
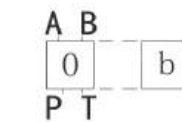
U

V

W



*A



*B

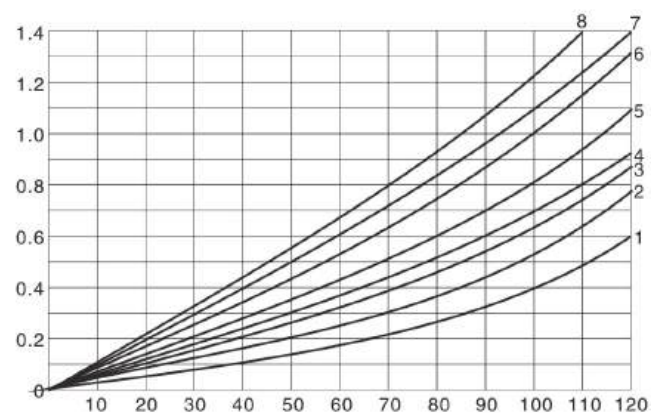
TECHNICAL DATA

Hydraulic Data

Mounting site			Optional
Working medium temperature	°C		-30~+80(Nitrile rubber seal)
			-20~+80(viton seal)
The maximum working pressure of oil mouth	Oil port P, A, B	bar	315
	Oil port T	bar	160
Maximum flow		L/min	120
Effective overload section (in the medium)	Type V	mm ²	11(A/B to T);10.3(P to A/B)
	Type W	mm ²	2.5(A/B to T)
	Type Q	mm ²	5.5(A/B to T)
Working medium			Mineral oil--suitable for NBR or fluorine rubber seal
			Phosphate-suitable for fluorine rubber seal
Viscosity range		mm ² /s	2.8-500
The oil cleanliness			The highest oil pollution level by NAS1638 class 9 and ISO4406 class 20, 18, 15
Weight		kg	4.42

CHARACTERISTIC CURVE

(the test result was from the condition that HLP46, t=40°C +5°C)

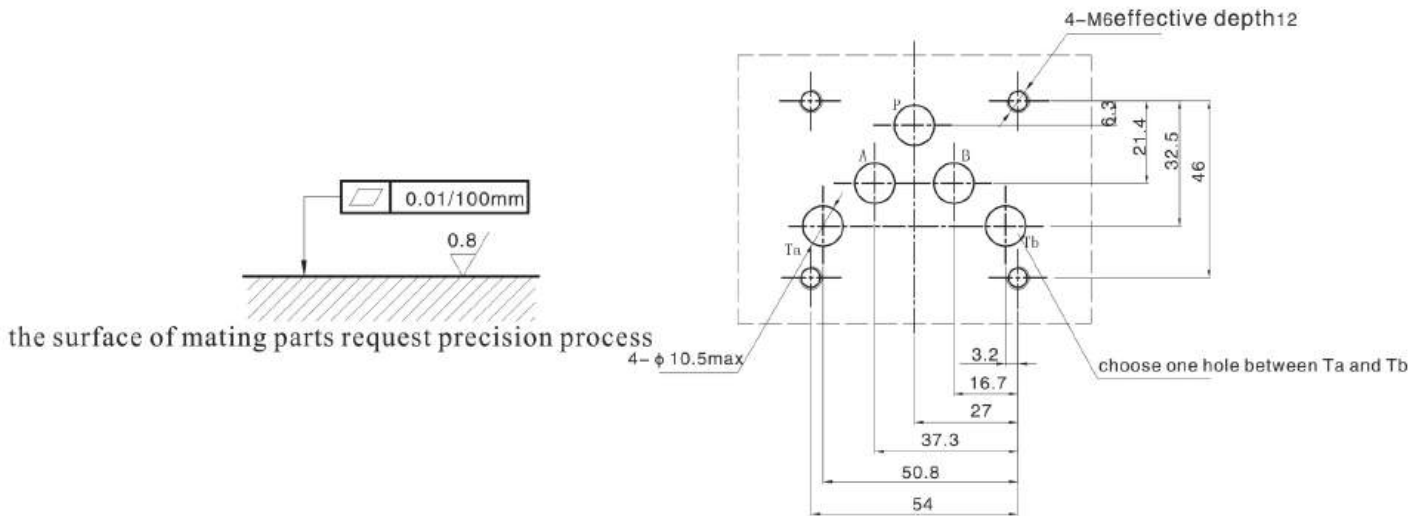
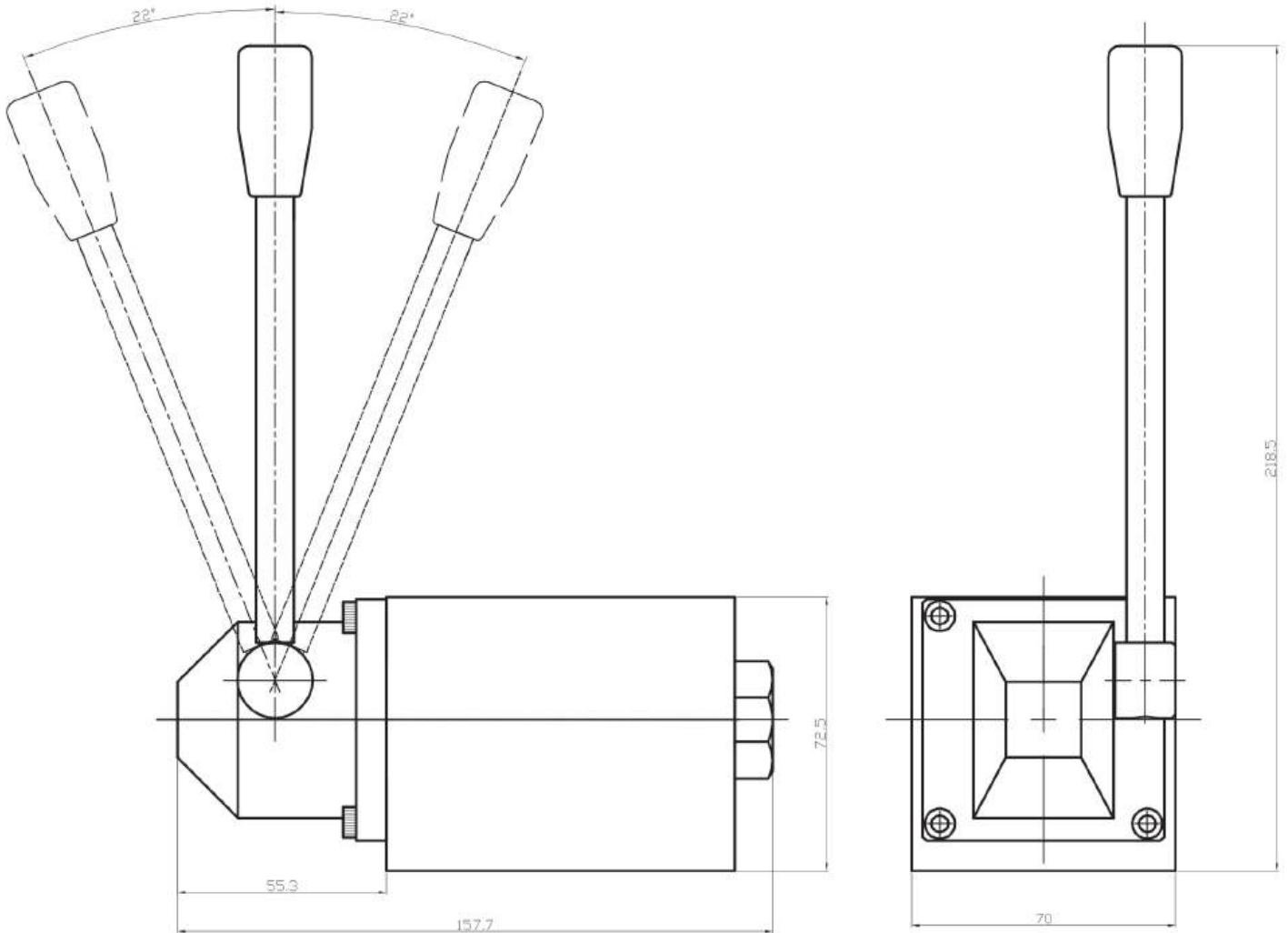


spool type "G" and "T" are in median position P→A
spool type "R" is in switch position A→B

spool symbol	flow direction			
	P→A	P→B	A→T	B→T
A	4	3	-	-
B	3	4	-	-
C	3	3	4	4
D	3	3	5	5
E	2	2	4	4
F	1	2	3	4
G.T	4	4	7	7
H	1	1	5	5
J	2	2	3	3
L	3	3	2	4
M	1	1	4	4
P	3	1	5	5
Q	2	2	2	2
R	3	4	3	-
U	3	3	5	2
V	2	2	3	3
W	3	3	3	3
Y	4	4	6	6

UNIT DIMENSIONS

WMM10-80



4WMM16/25-80 lever operated directional valve

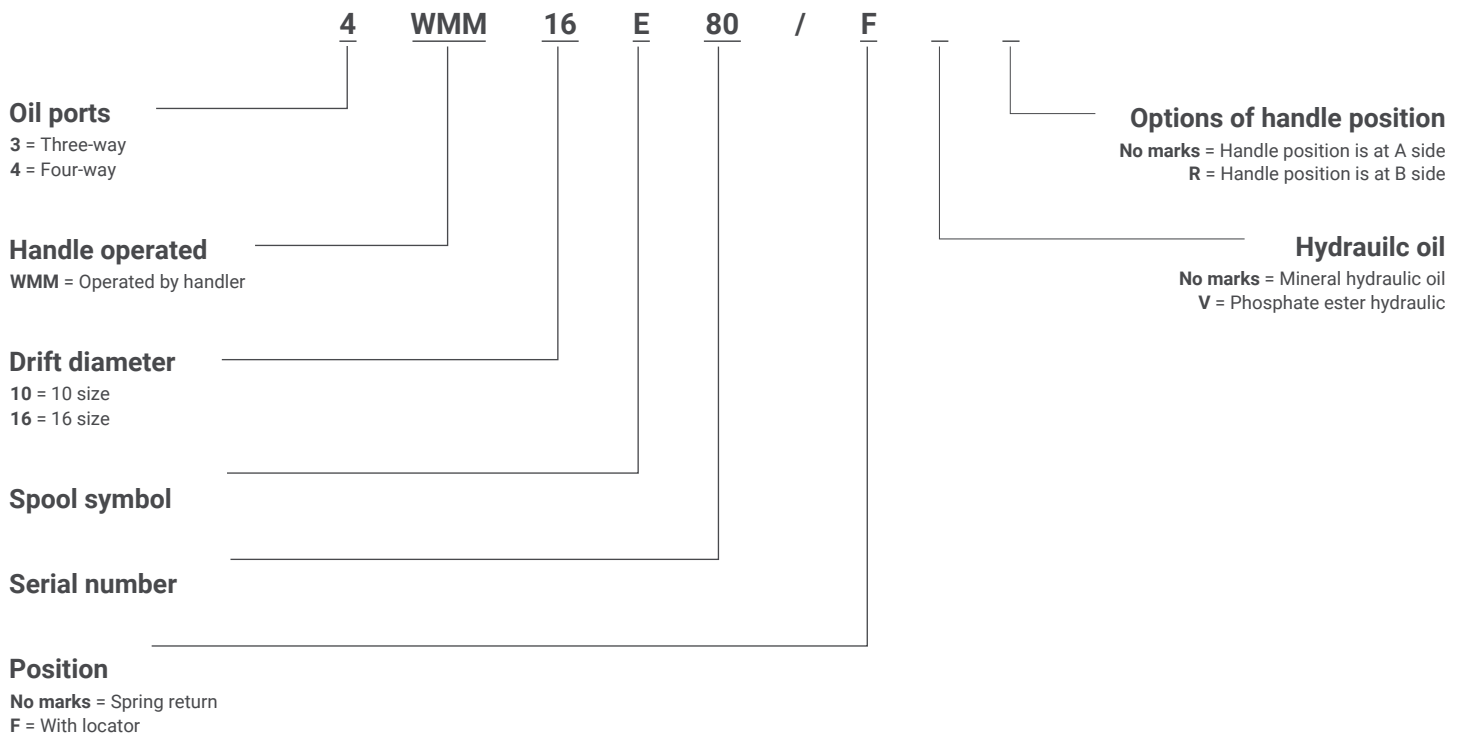


CONTENT

1. Direct directional operated valve
2. Sub-plate mounting
3. Lever operated
4. DIN24340 type A ISO4401 mounting surface

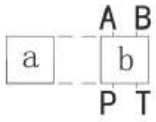


ORDERING DETAILS

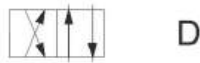
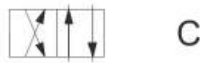
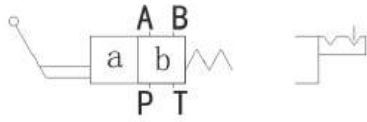


SYMBOLE

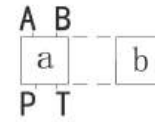
the transition spool symbol



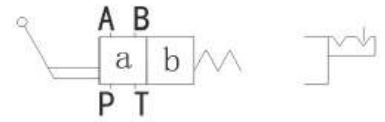
slide valve spool symbol



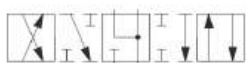
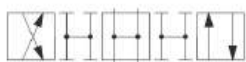
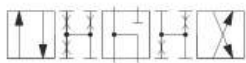
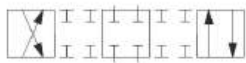
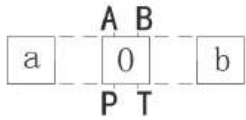
the transition spool symbol



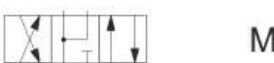
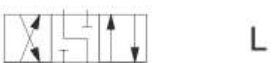
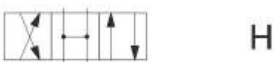
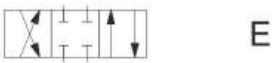
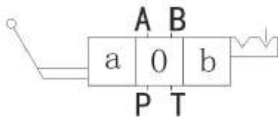
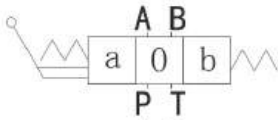
slide valve spool symbol



the transition spool symbol



slide valve spool symbol



E

F

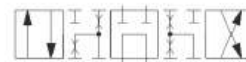
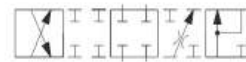
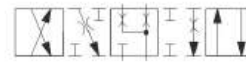
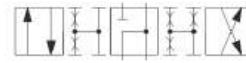
G

H

J

L

M



P

Q

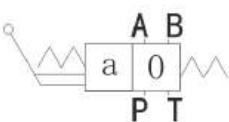
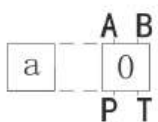
R

T

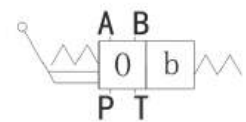
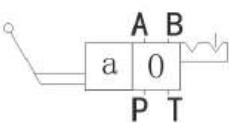
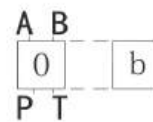
U

V

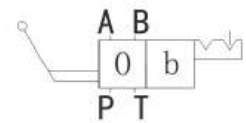
W



*A

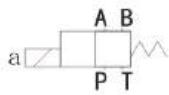


*B

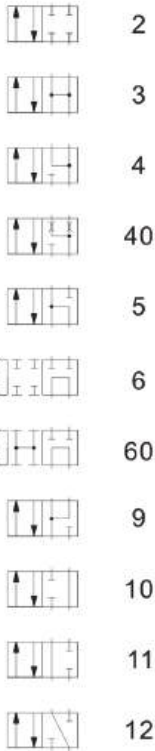


SYMBOLE

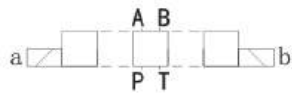
single solenoid valve
(spring return)



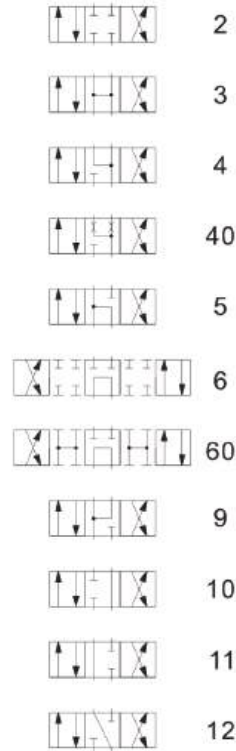
2B * BL



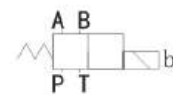
double solenoid valve
(three position, spring centralizing)



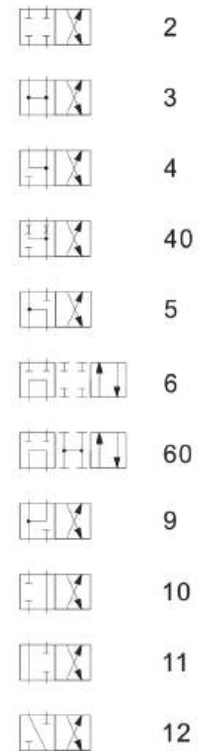
3C *



single solenoid valve
(spring return)



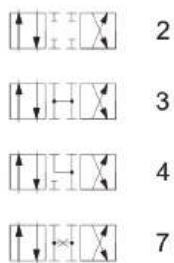
2B * B



two position, without spring



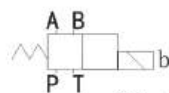
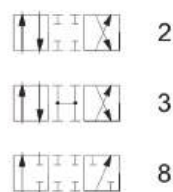
2N *



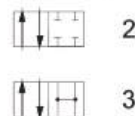
two position, spring return



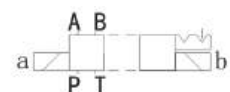
2B *



2B * A



two position,
mechanical locating



2D *



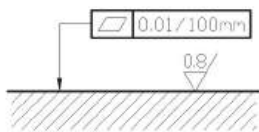
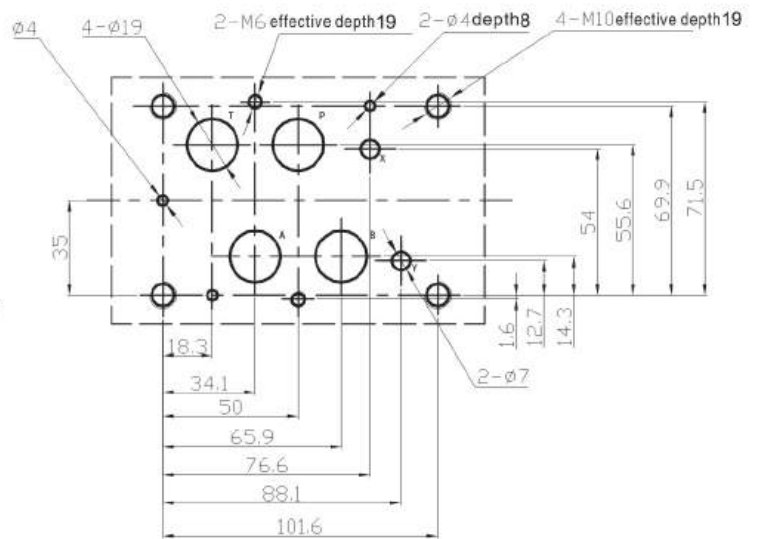
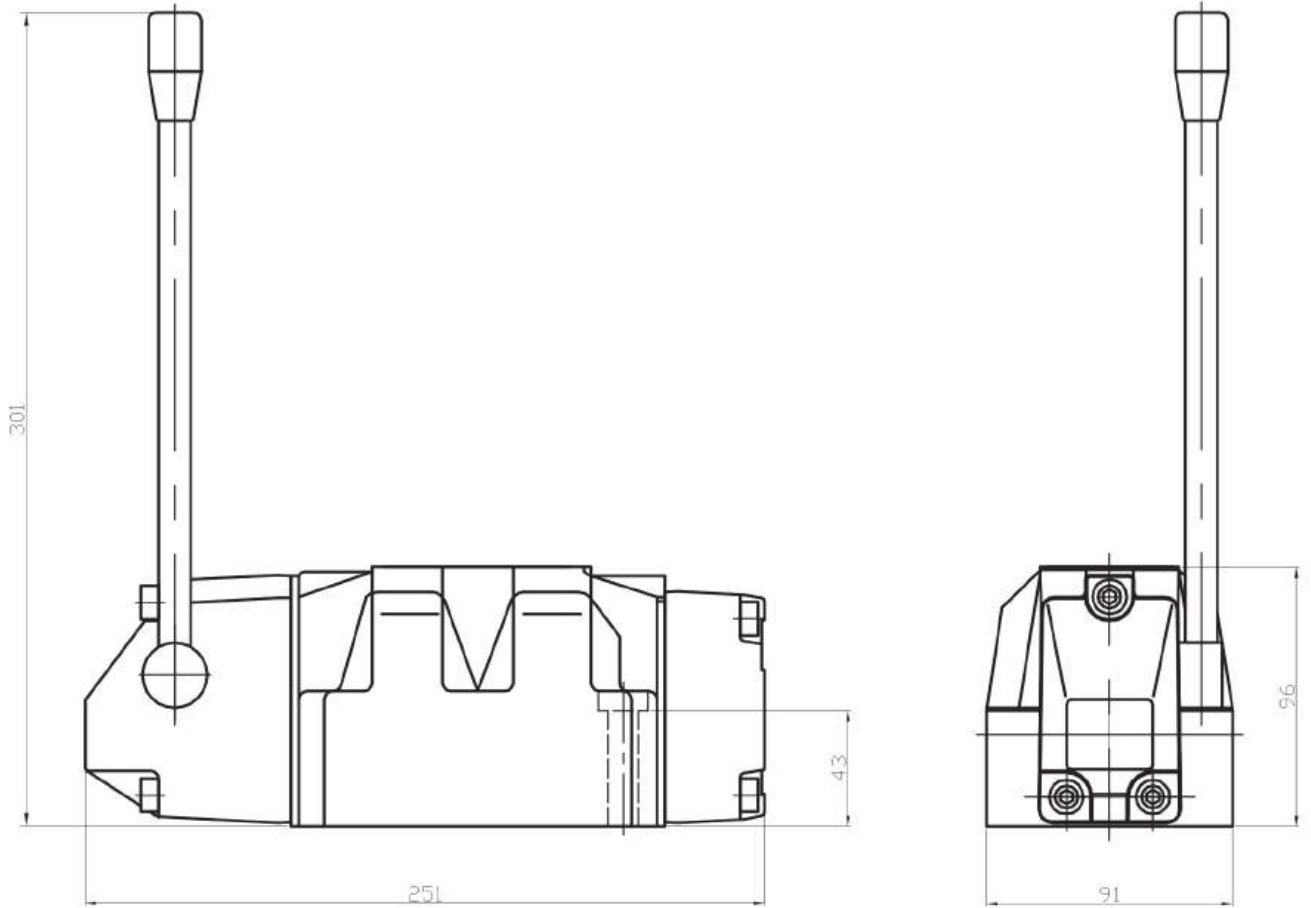
TECHNICAL DATA

Hydraulic Data

Installation position		Optional		
Weight	kg	Diameter 16	Diameter 25	
		Around 8	Around 12.2	
Operating force	With spring return	bar	Around 75	Around 105
	With locating mechanism	bar	Around 75	Around 105
Max working pressure	Oil port P, A, B	bar	315	
	Oil port T	bar	25	
Pressure medium	Suitable for NBR seals	Mineral oil		
	Suitable for FKM seals	Organic phosphate oil		
Temperature range of pressure medium	°C	-30 to +80 (NBR seals)		
		-20 to +80 (FKM seals)		
Viscosity range	mm ² /s	2.8-38		
Cleanness of fluid	The highest pollution grade of oil as NAS1638 grade 9, advise the filtration of filter β 10≥75			
Flow synchronizing with power				

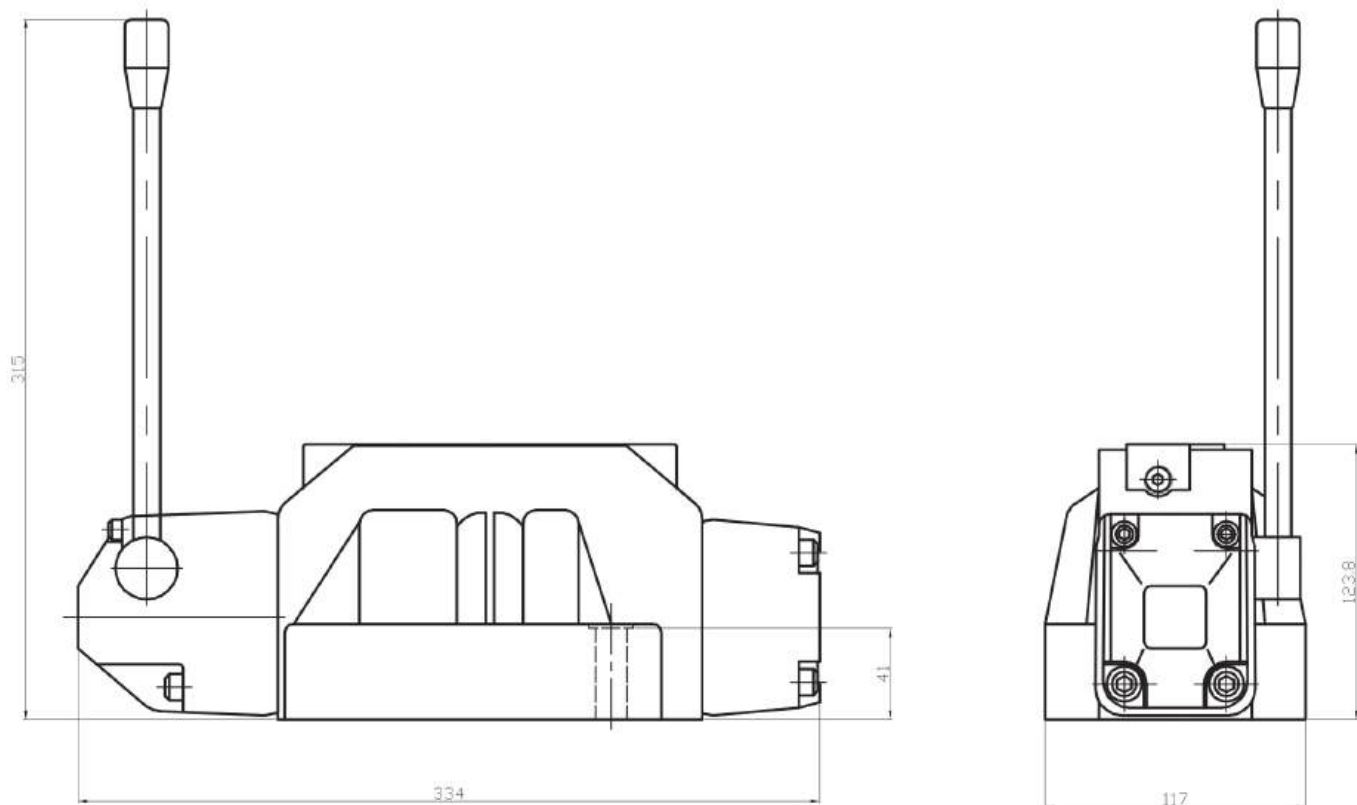
UNIT DIMENSIONS

4WMM16-80

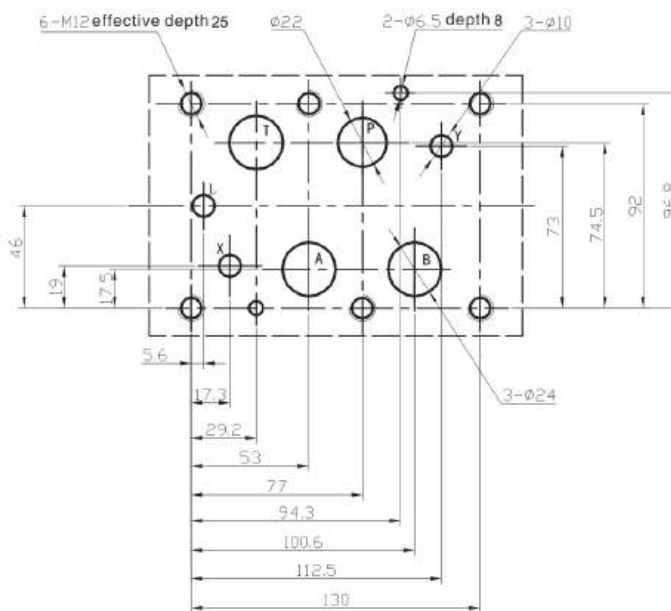


the surface of mating parts request precision process

4WMM25-80



the surface of mating parts request precision process



DMG-02-70 lever operated directional valve

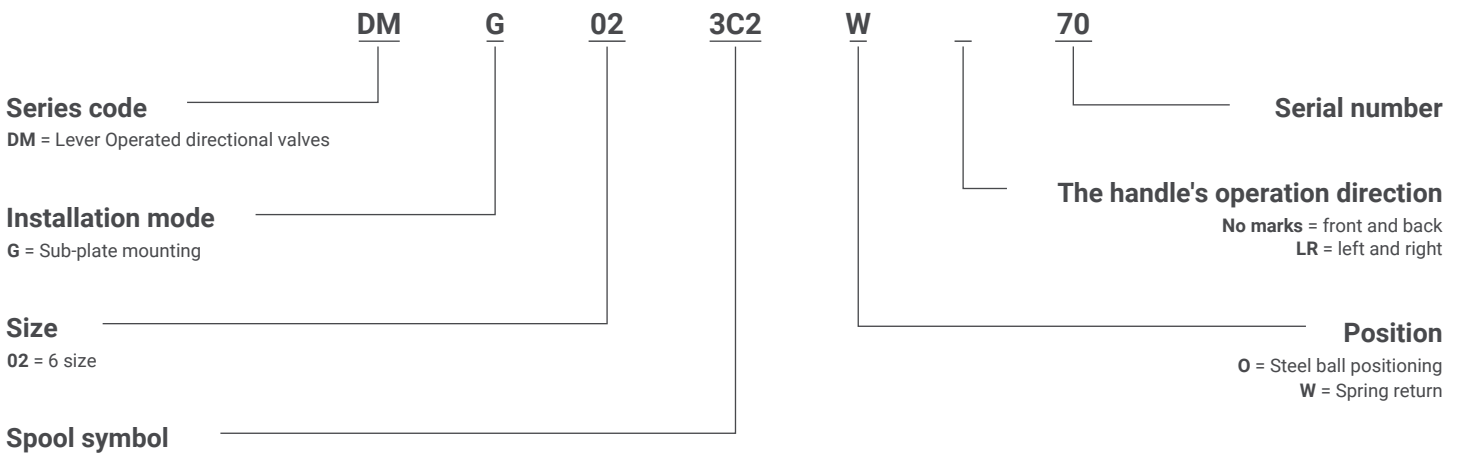


CONTENT

1. Direct directional operated slide valve
2. Sub-plate mounting
3. Operated by handler, this valve has two operation types--left to right, and front to back
4. DIN24340 type A ISO4401 mounting surface

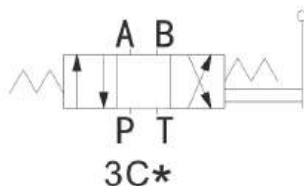


ORDERING DETAILS

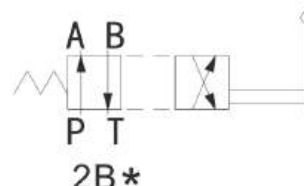


SYMBOLE

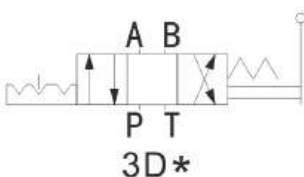
three position, spring centralizing



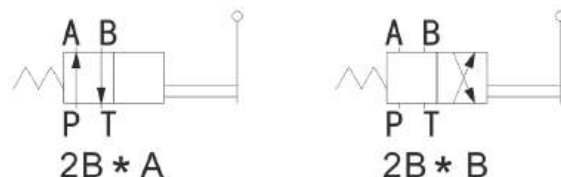
two position, spring return

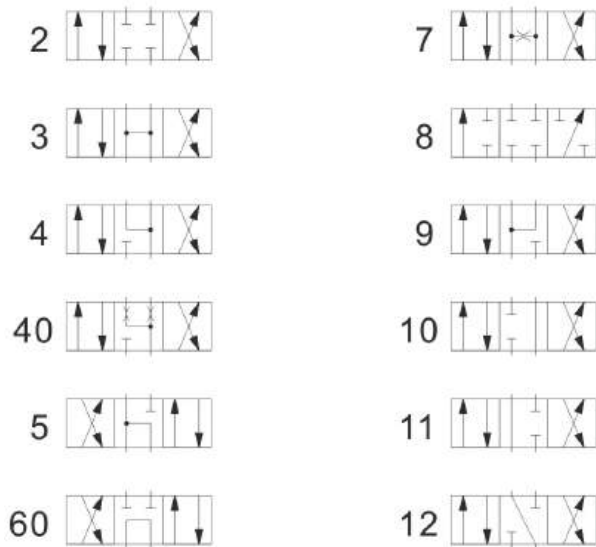


without spring, machine locating

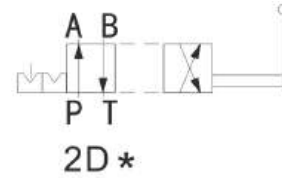


two position derived by three position, spring return

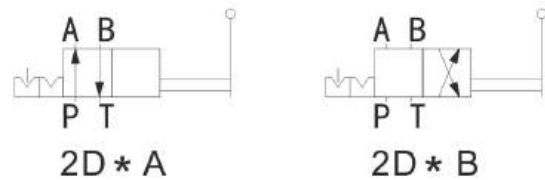




without spring, machine locating



without spring, machine locating



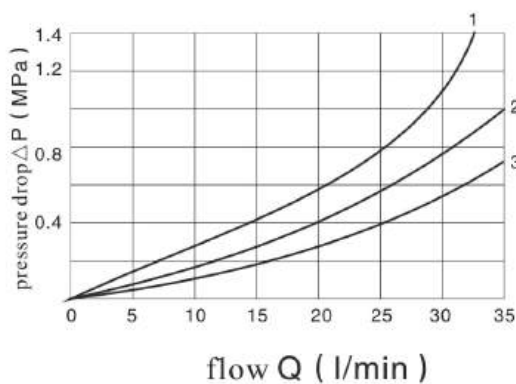
TECHNICAL DATA

Hydraulic Data

Model	Maximum flow L/min				Maximum operating pressure bar	Back pressure drain back allowed bar	Weight kg
	70bar	140bar	210bar	315bar			
DMG-02-3C-10	35	35	35	-	250	140	1.8
DMG-02-3D-10							
DMG-02-2D-10							
DMG-02-2B-10							

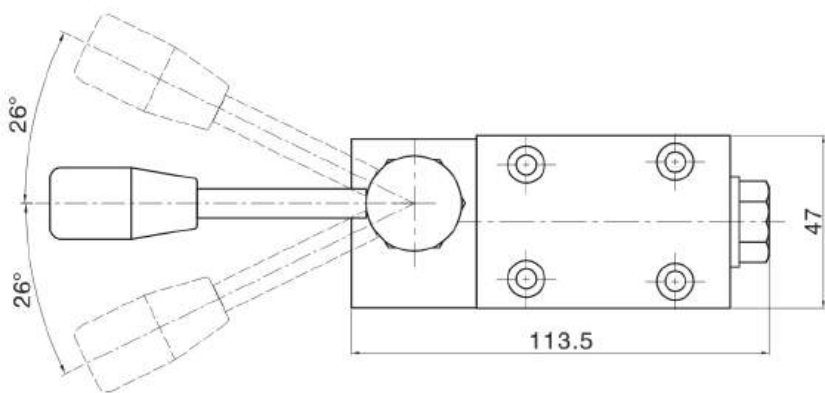
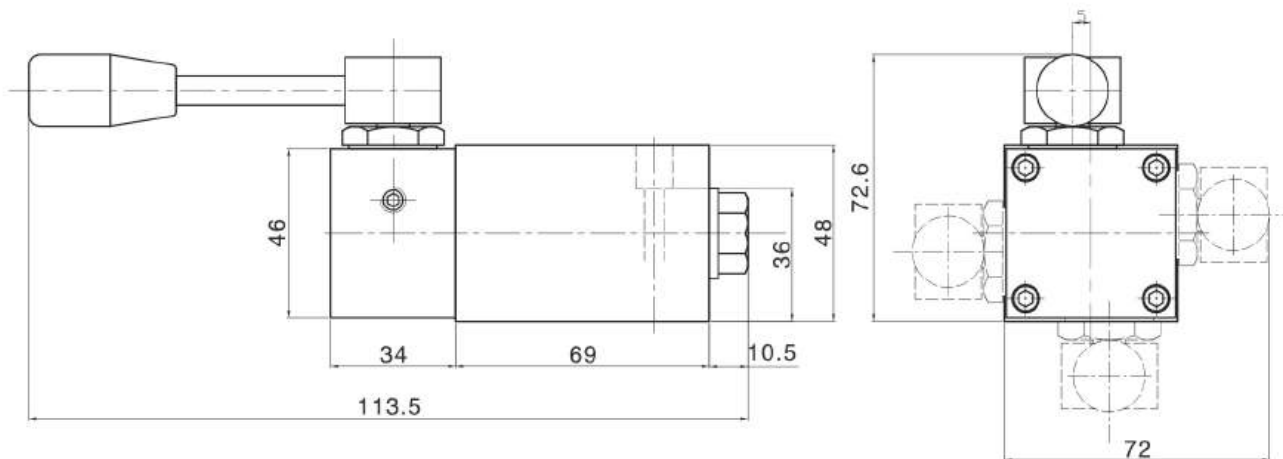
CHARACTERISTIC CURVE


(the result is tested when HLP46, t=40°C +5°C)



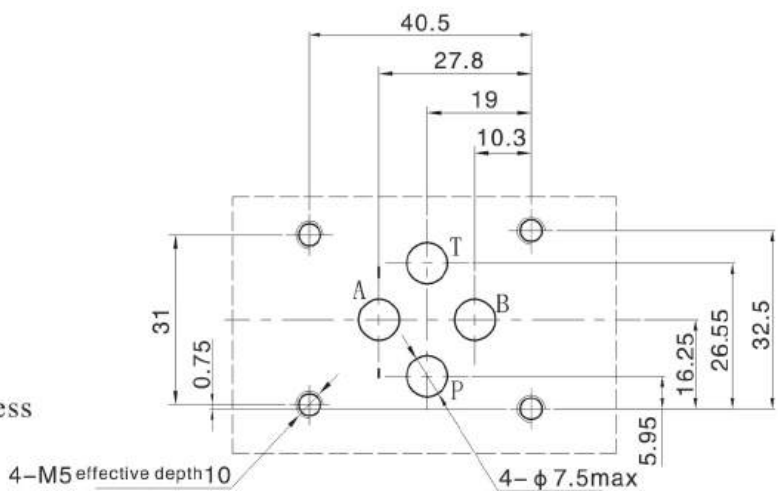
spool type				the number of pressure drop curve				
3C	3D	2D	2B	P→A	B→T	P→B	A→T	P→T
3C2	3D2	2D2		3	3	3	3	-
3C3	3D3	2D3		3	3	3	3	2
3C4	3D4			3	3	3	3	-
3C40	3D40			3	3	3	3	-
3C5	3D5			2	1	1	1	3
3C60	3D60			1	1	1	1	3
3C7	3D7	2D7		3	3	3	3	-
3C8	3D8	2D8		3	-	3	-	-
3C9	3D9			3	3	3	3	-
3C10	3D10			3	3	3	3	-
3C11	3D11			3	3	3	3	-
3C12	3D12			3	3	3	3	-
			2B2	2	2	3	3	-
			2B3	2	2	3	3	-
			2B8	3	-	3	-	-

DMG-02-LR-70





 the surface of mating parts request precision process



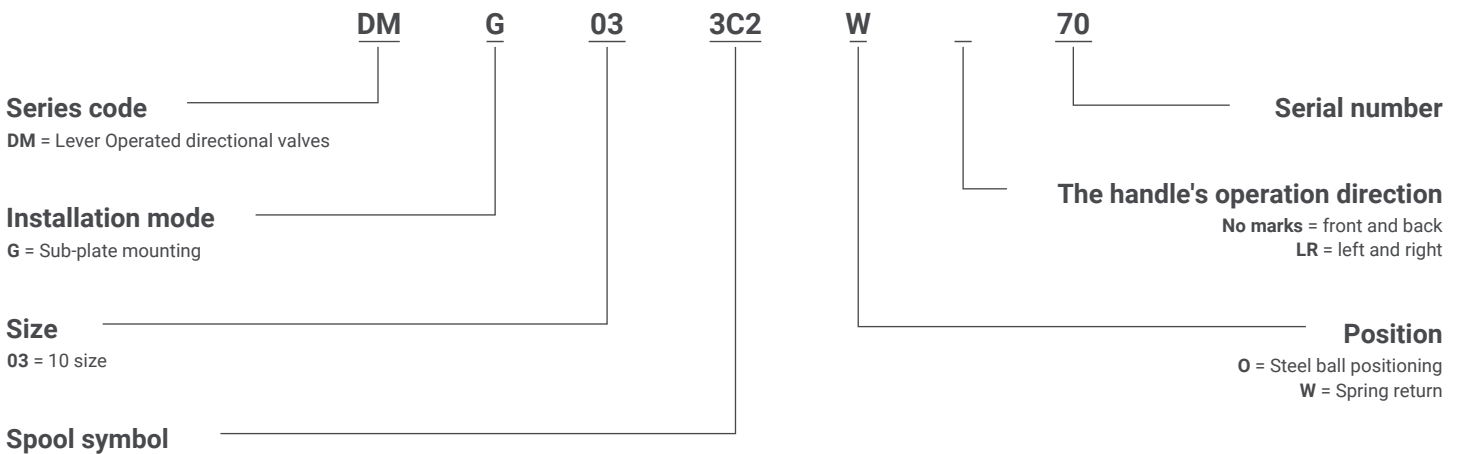
DMG-03-70 lever operated directional valve



CONTENT

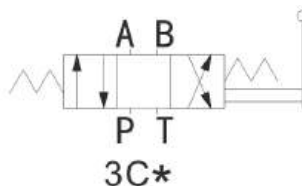
1. Direct directional operated slide valve
2. Sub-plate mounting
3. Operated by handler, this valve has two operation types--left to right, and front to back
4. DIN24340 type A ISO4401 mounting surface

ORDERING DETAILS

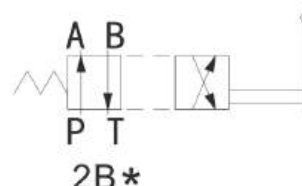


SYMBOLE

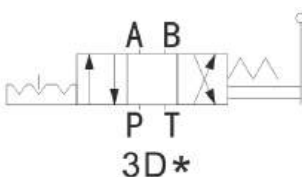
three position, spring centralizing



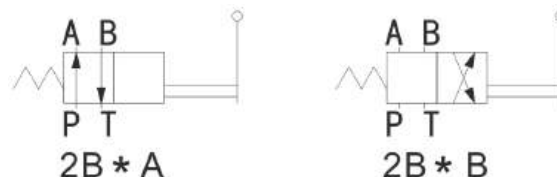
two position, spring return

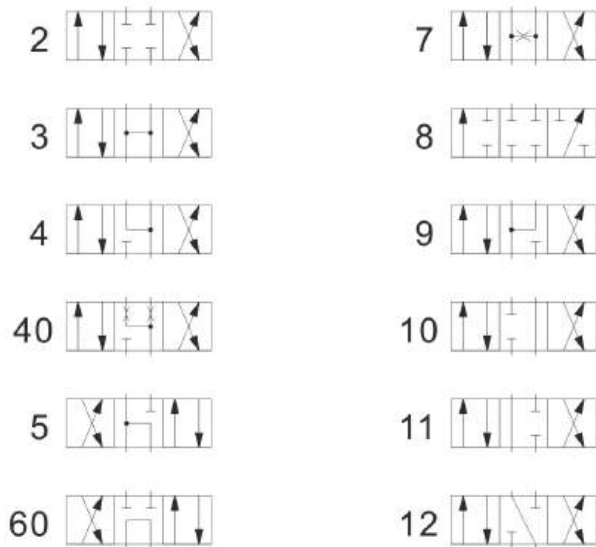


without spring, machine locating

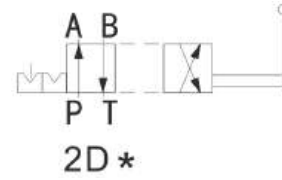


two position derived by three position, spring return

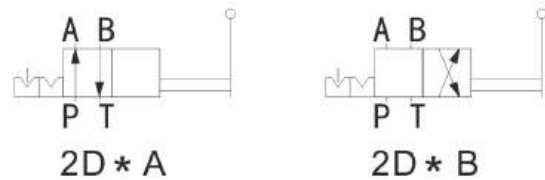




without spring, machine locating



without spring, machine locating



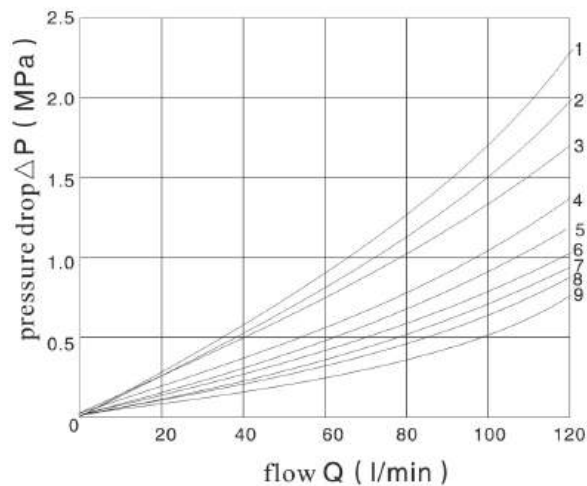
TECHNICAL DATA

Hydraulic Data

Model	Maximum flow L/min				Maximum operating pressure bar	Back pressure drain back allowed bar	Weight kg
	70bar	140bar	210bar	315bar			
DMG-03-3C-10	100	100	100	-	250	160	4.0
DMG-03-3D-10							
DMG-03-2D-10							
DMG-03-2B-10							

CHARACTERISTIC CURVE

(the result is tested when HLP46, t=40°C +5°C)

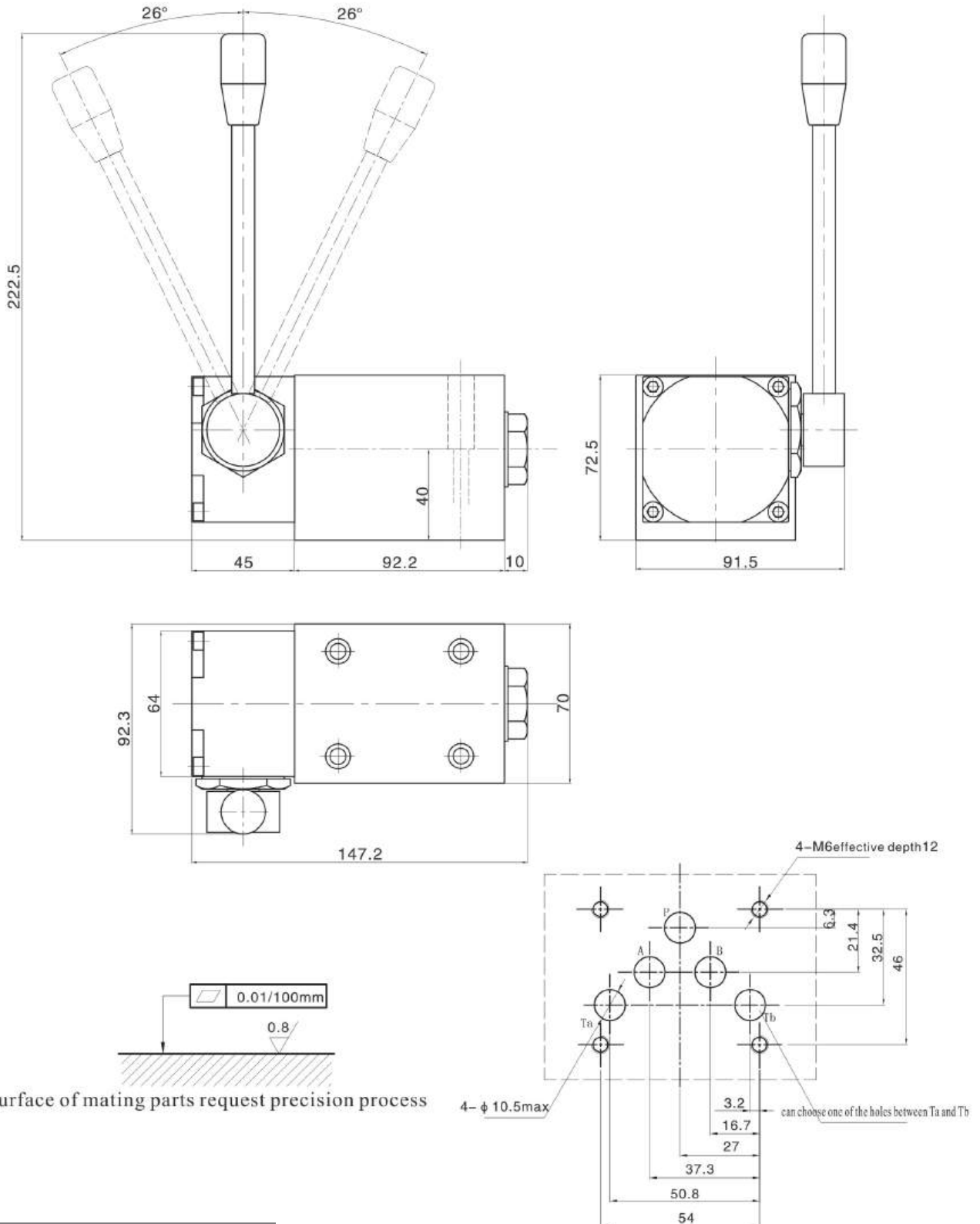


spool type	the number of pressure drop curve				
	P→A	B→T	P→B	A→T	P→T
DMG-03-3C2	7	7	7	7	-
DMG-03-3C3	9	9	9	9	5
DMG-03-3C4	7	8	7	8	-
DMG-03-3C40	7	7	7	7	-
DMG-03-3C5	9	7	7	9	1
DMG-03-3C60	6	5	6	5	1
DMG-03-3C9	9	7	9	7	-
DMG-03-3C10	7	8	7	7	-
DMG-03-3C11	9	7	7	7	-
DMG-03-3C12	7	7	7	8	-
DMG-03-2D2	4	3	6	6	-
DMG-03-2B2	2	1	7	7	-
DMG-03-2B3	3	2	9	9	-
DMG-03-2B8	6	-	5	-	-

viscosity	mm ² /s	15	20	30	40	50	60	70	80	90	100
	SSU	77	98	141	186	232	278	324	371	471	464
coefficient		0.81	0.87	0.96	1.03	1.09	1.14	1.19	1.23	1.27	1.30

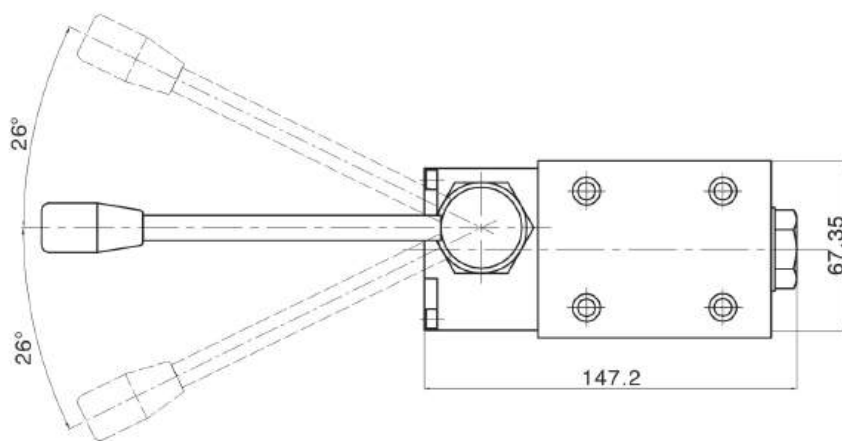
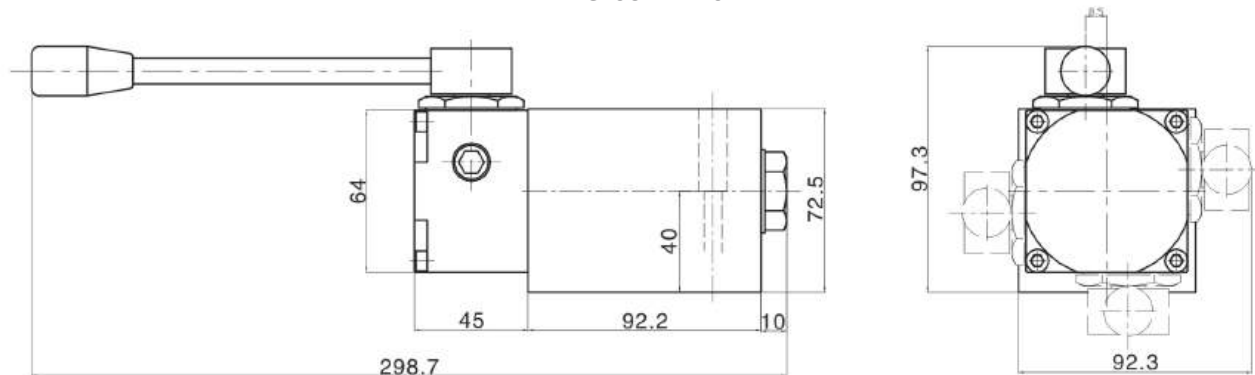
UNIT DIMENSIONS

DMG-03-70



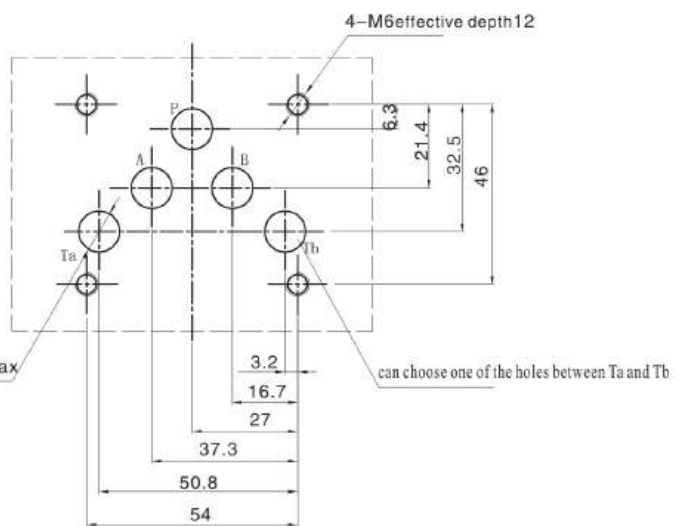
the surface of mating parts request precision process

DMG-03-LR-70



the surface of mating parts request precision process

4- ϕ 10.5max



DMG-02-80 lever operated directional valve

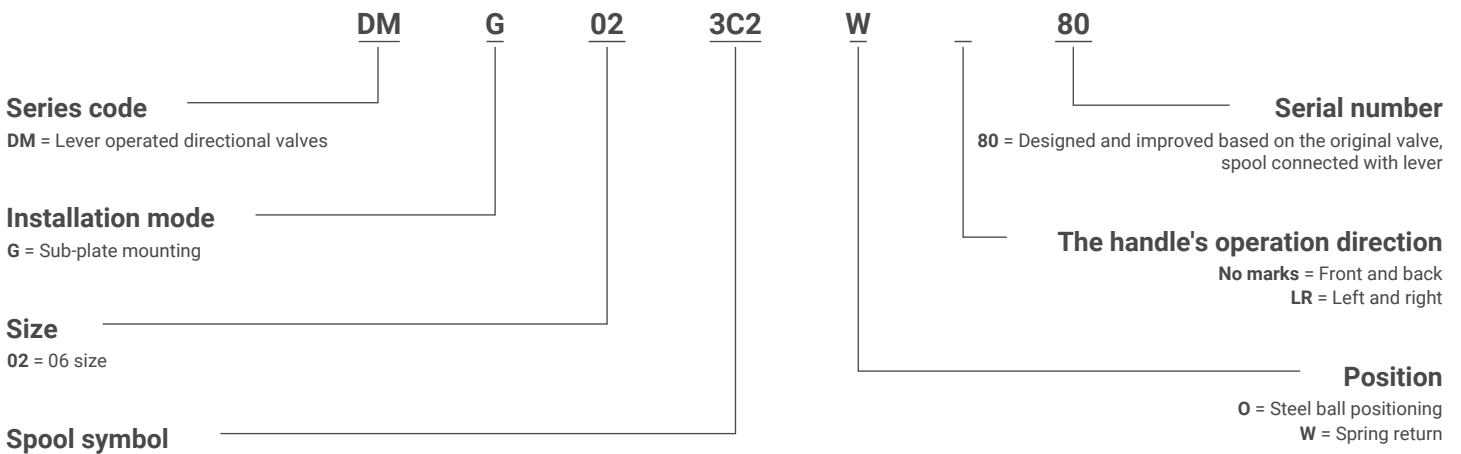


CONTENT

1. Direct-acting directional valve
2. Sub-plate mounting
3. Lever operated
4. Mounting surface follow DIN24340 type A ISO4401

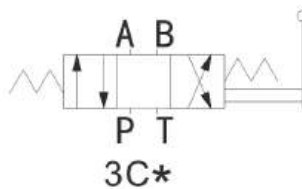


ORDERING DETAILS

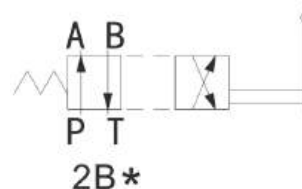


SYMBOLE

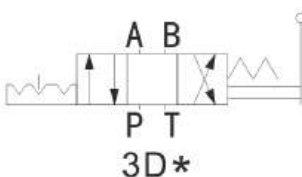
three position, spring centralizing



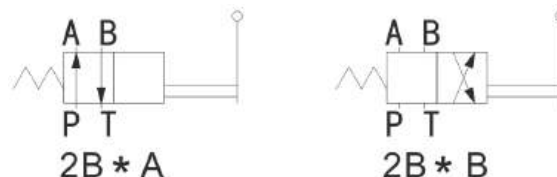
two position, spring return

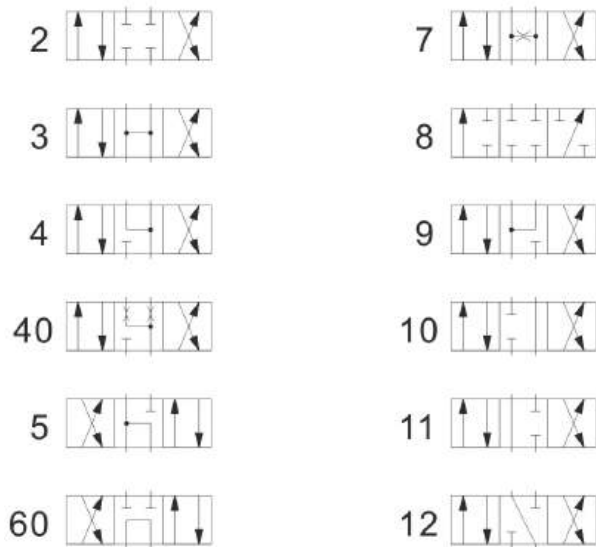


without spring, machine locating

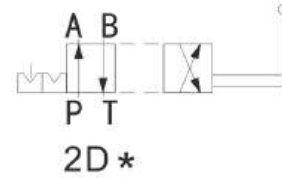


two position derived by three position, spring return

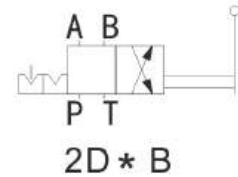
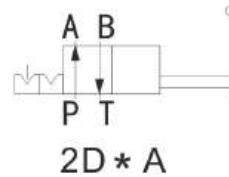




without spring, machine locating



without spring, machine locating

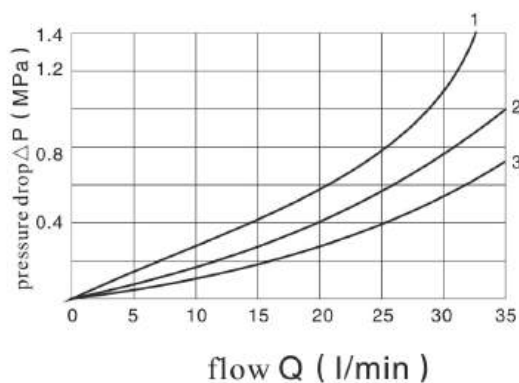


TECHNICAL DATA

Hydraulic Data

Model	Maximum flow L/min				Maximum operating pressure bar	Back pressure drain back allowed bar	Weight kg
	70bar	140bar	210bar	315bar			
DMG-02-3C-10	35	35	35	-	250	140	1.8
DMG-02-3D-10							
DMG-02-2D-10							
DMG-02-2B-10							

CHARACTERISTIC CURVE

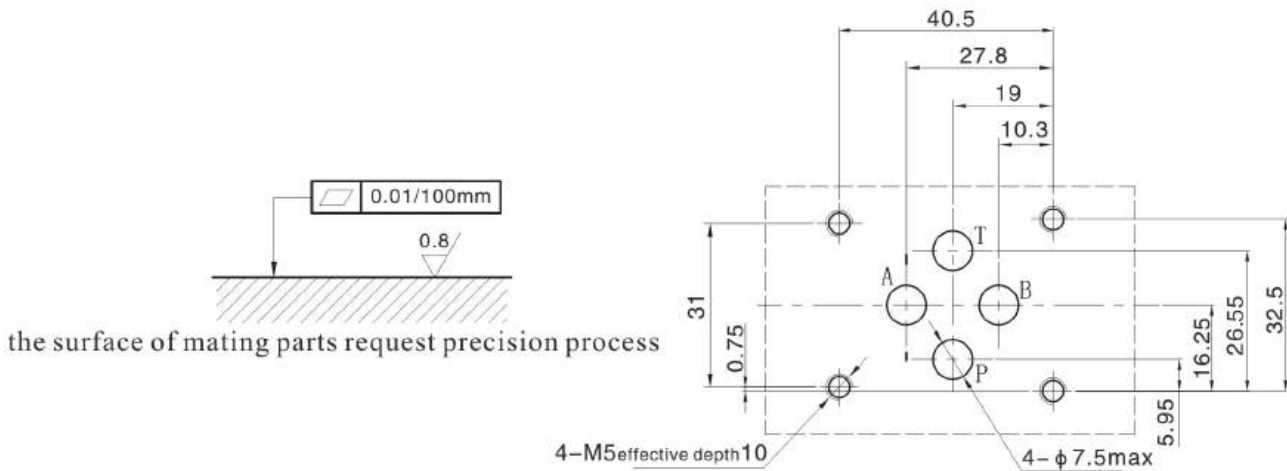
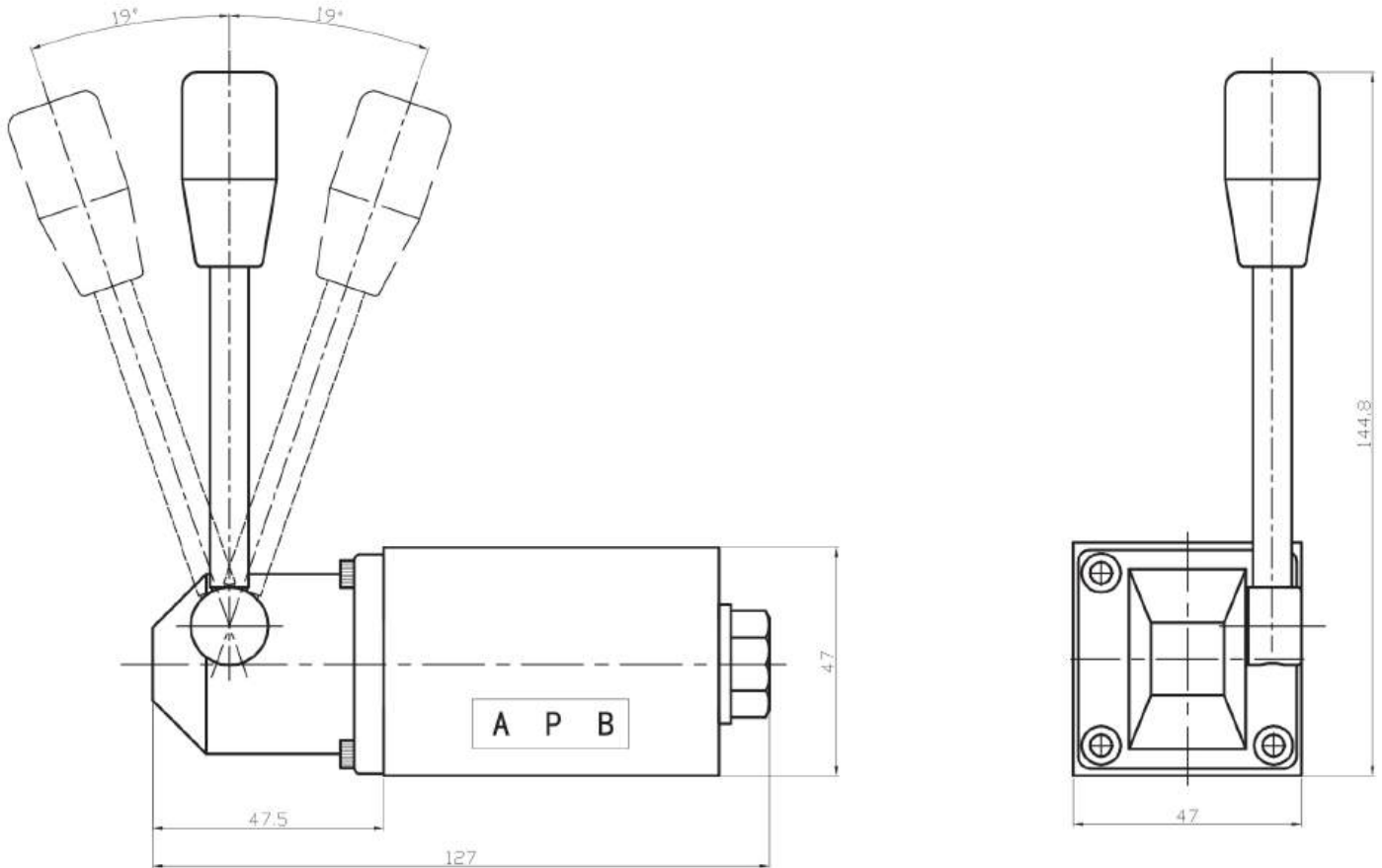


spool type				the number of pressure drop curve				
3C	3D	2D	2B	P→A	B→T	P→B	A→T	P→T
3C2	3D2	2D2		3	3	3	3	-
3C3	3D3	2D3		3	3	3	3	2
3C4	3D4			3	3	3	3	-
3C40	3D40			3	3	3	3	-
3C5	3D5			2	1	1	1	3
3C60	3D60			1	1	1	1	3
3C7	3D7	2D7		3	3	3	3	-
3C8	3D8	2D8		3	-	3	-	-
3C9	3D9			3	3	3	3	-
3C10	3D10			3	3	3	3	-
3C11	3D11			3	3	3	3	-
3C12	3D12			3	3	3	3	-
			2B2	2	2	3	3	-
			2B3	2	2	3	3	-
			2B8	3	-	3	-	-

viscosity	mm ² /s	15	20	30	40	50	60	70	80	90	100
	SSU	77	98	141	186	232	278	324	371	471	464
coefficient		0.81	0.87	0.96	1.03	1.09	1.14	1.19	1.23	1.27	1.30

UNIT DIMENSIONS

DMG-02-80



DMG-03-80 lever operated directional valve

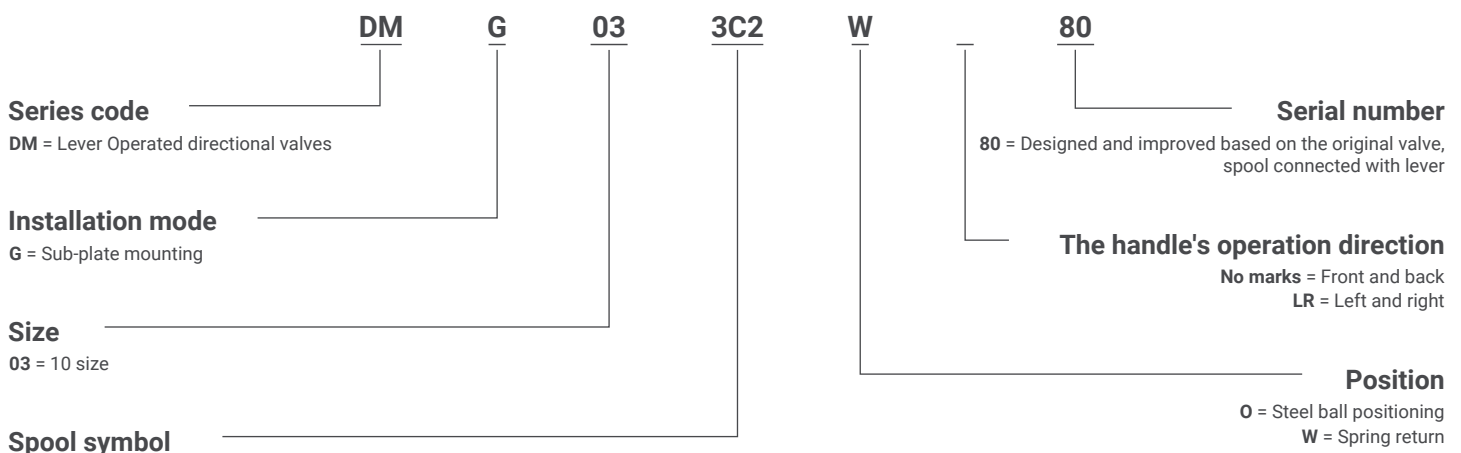


CONTENT

1. Direct-acting directional valve
2. Sub-plate mounting
3. Lever operated
4. Mounting surface follow DIN24340 type A ISO4401

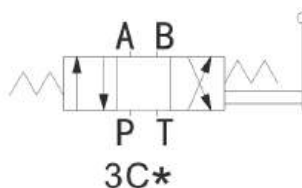


ORDERING DETAILS

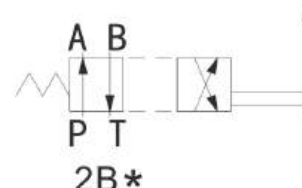


SYMBOLE

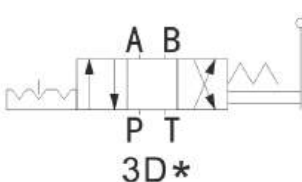
three position, spring centralizing



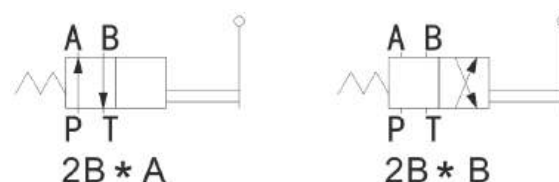
two position, spring return

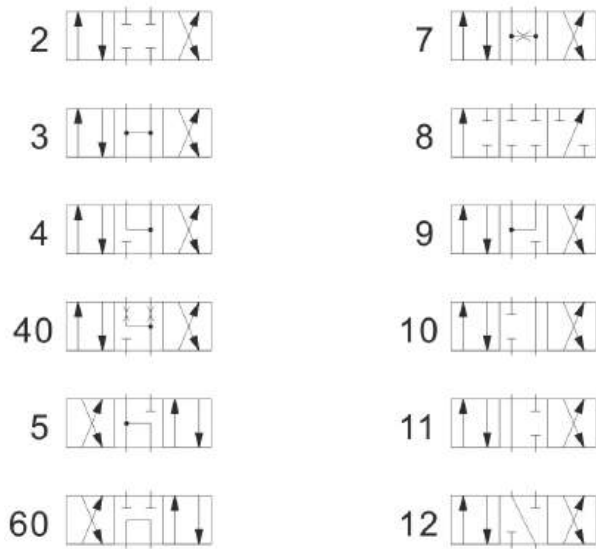


without spring, machine locating

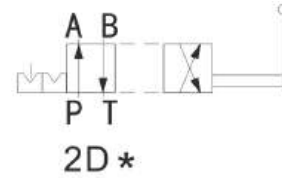


two position derived by three position, spring return

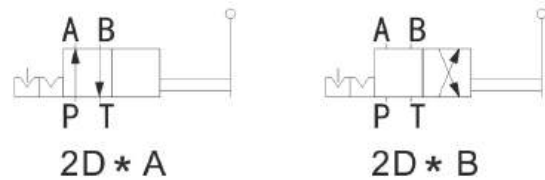




without spring, machine locating



without spring, machine locating



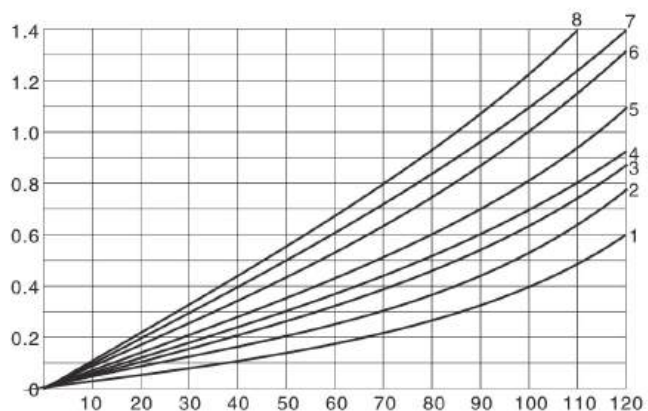
TECHNICAL DATA

Hydraulic Data

Mounting site			Optional
Working medium temperature	°C		-30~+80(Nitrile rubber seal)
			-20~+80(Viton seal)
The maximum working pressure of oil mouth	Oil port P, A, B	bar	315
	Oil port T	bar	160
Maximum flow		L/min	120
Effective overload section (in the medium)	Type V	mm ²	11(A/B to T);10.3(P to A/B)
	Type W	mm ²	2.5(A/B to T)
	Type Q	mm ²	5.5(A/B to T)
Working medium			Mineral oil-suitable for NBR or fluorine rubber seal
			Phosphate-suitable for fluorine rubber seal
Viscosity range		mm ² /s	2.8-500
The oil cleanliness			The highest oil pollution level by NAS1638 class 9 and ISO4406 class 20, 18, 15
Weight		kg	4.42

CHARACTERISTIC CURVE

(the test result was from the condition that HLP46,
t=40°C +5°C)

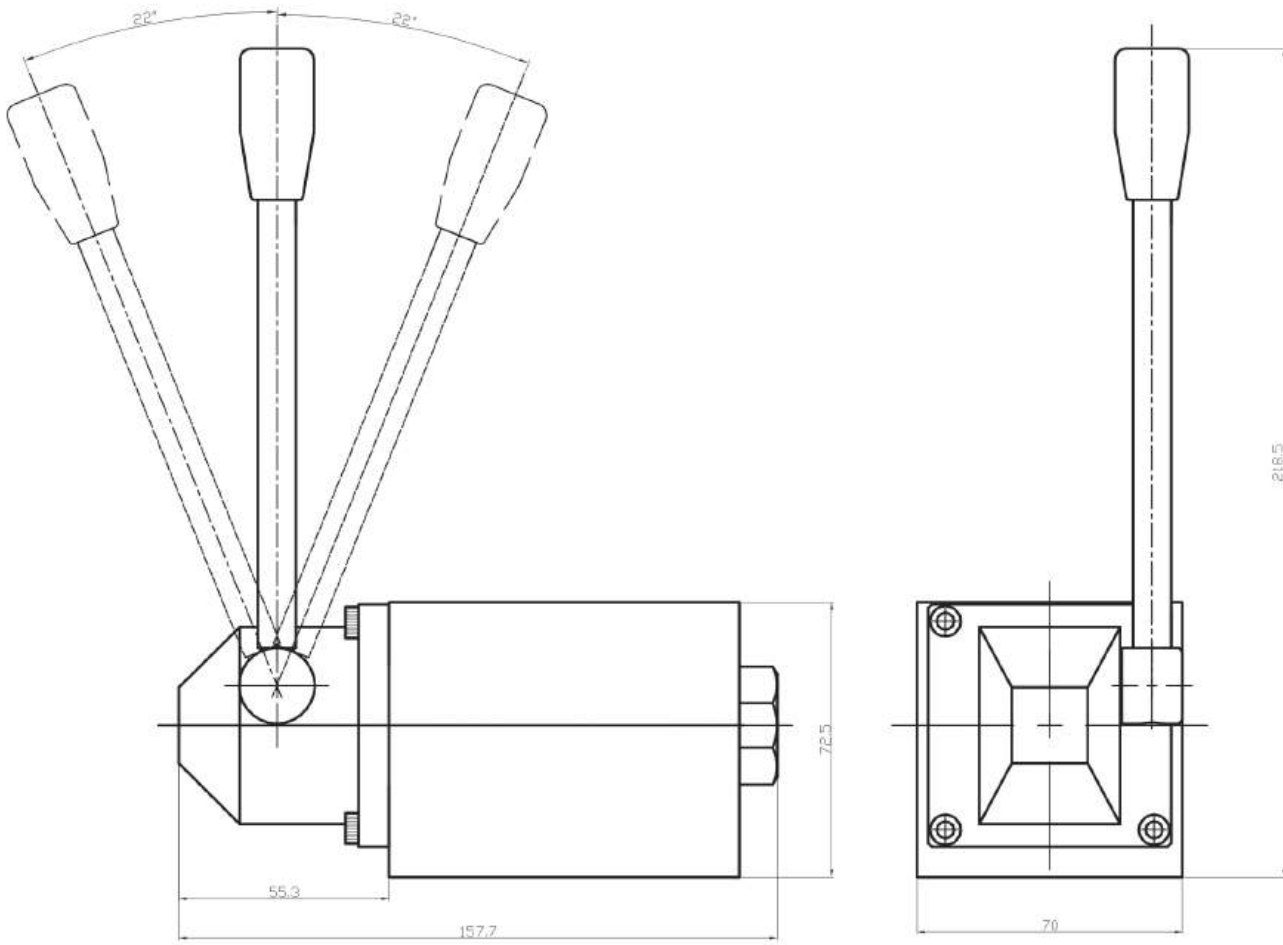


spool type "G" and "T" are in median position P→A
spool type "R" is in switch position A→B

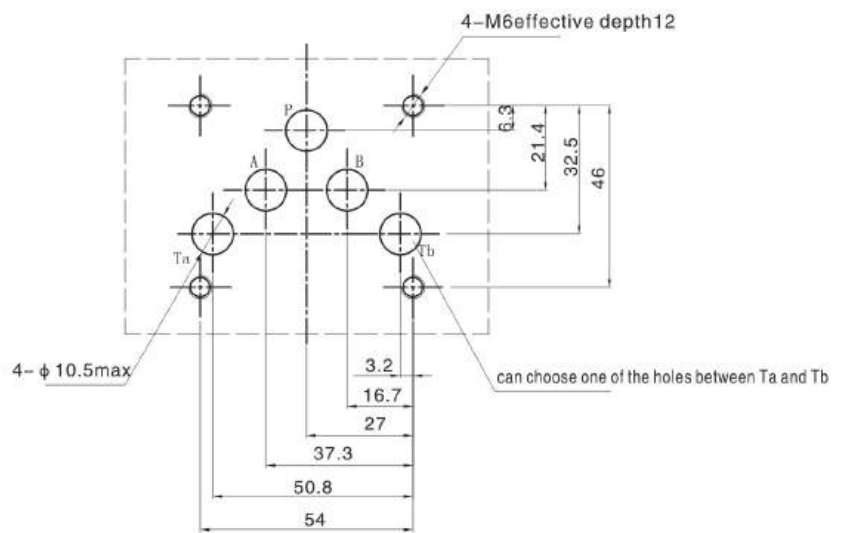
spool symbol	flow direction			
	P→A	P→B	A→T	B→T
A	4	3	-	-
B	3	4	-	-
C	3	3	4	4
D	3	3	5	5
E	2	2	4	4
F	1	2	3	4
G.T	4	4	7	7
H	1	1	5	5
J	2	2	3	3
L	3	3	2	4
M	1	1	4	4
P	3	1	5	5
Q	2	2	2	2
R	3	4	3	-
U	3	3	5	2
V	2	2	3	3
W	3	3	3	3
Y	4	4	6	6

UNIT DIMENSIONS

DMG-03-80



the surface of mating parts request precision process



DMT-03-80 lever operated directional valve



ORDERING DETAILS

Series code DM T 03 3C2 W 80

DM = Lever Operated directional valves

Installation mode T = Pipe installation


Size 03 = 10 size

Spool symbol

Serial number 80 = Designed and improved based on the original valve, spool connected with lever

The handle's operation direction
No marks = Handle position is at A side
R = Handle position is at B side

Position
O = Steel ball positioning
W = Spring return



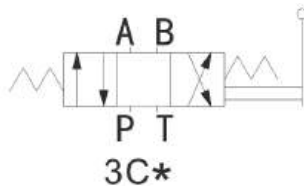
TECHNICAL DATA

Hydraulic Data

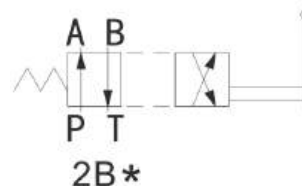
Model	Maximum pressure bar	Maximum flow L/min	Weight kg
DMT-03	250	50	4.8

SYMBOLE

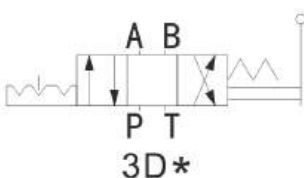
three position, spring centralizing



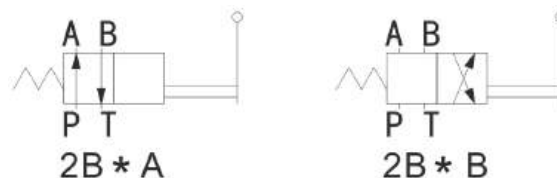
two position, spring return



without spring, machine locating

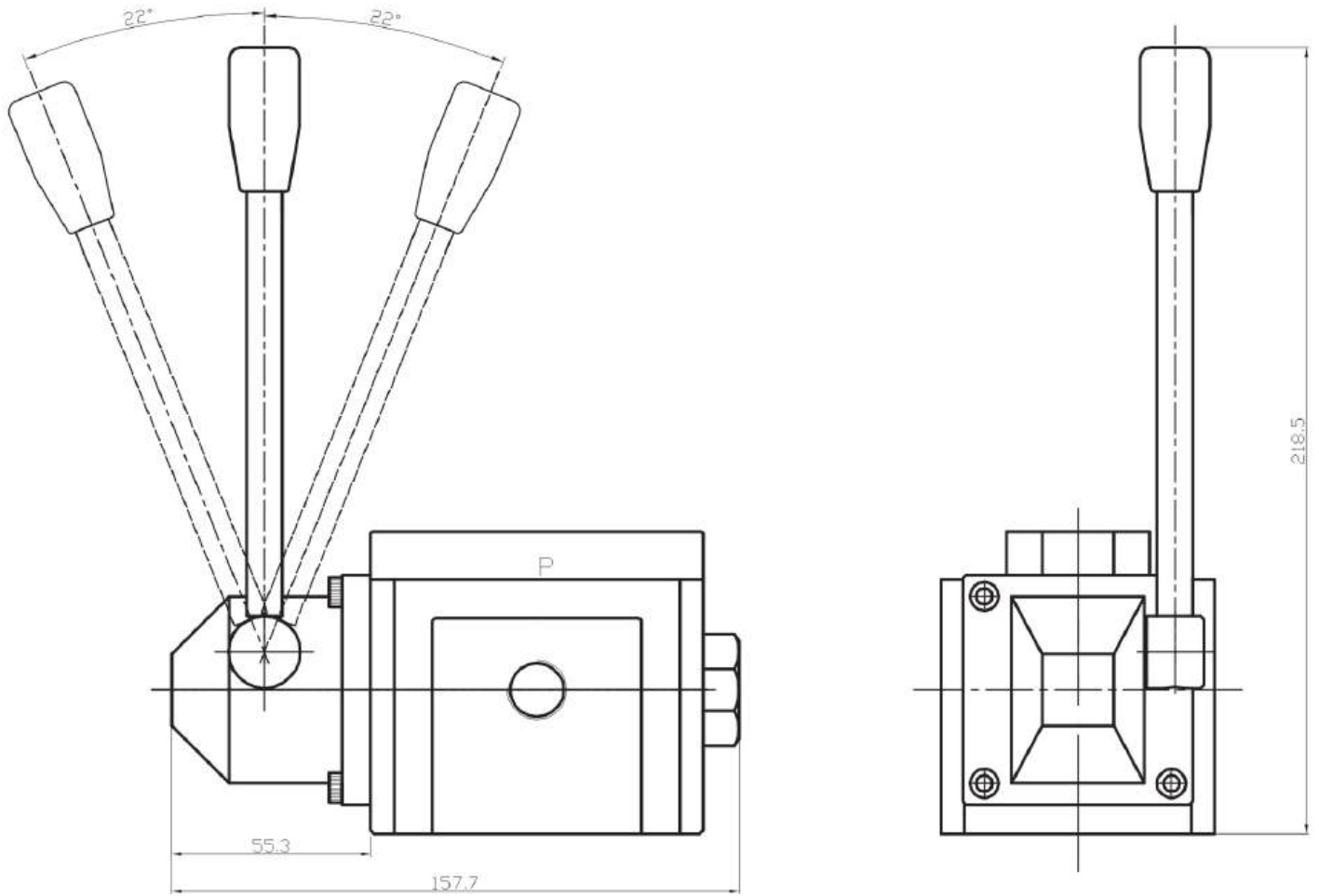


two position derived by three position, spring return



UNIT DIMENSIONS

DMT03-80



Model	A	B	C	D	E	F	G	H	J	K	L
DMT-03	174	82	39	74	68	50	33	3/8"	6.8	58	92

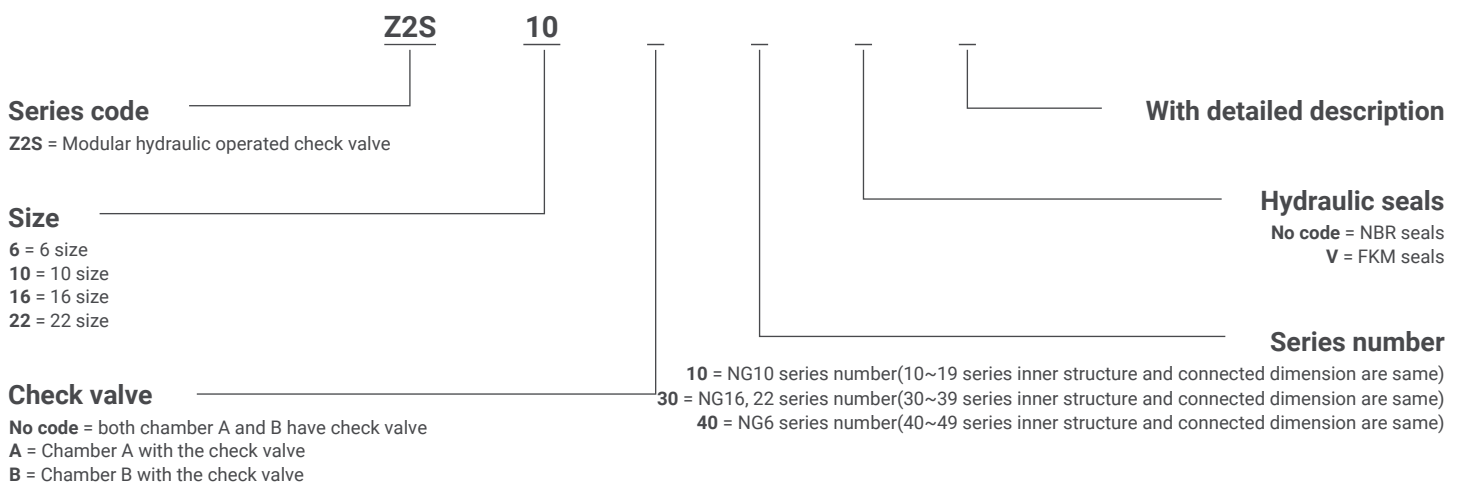
Z2S Series Modular Hydraulic Operated Check Valve



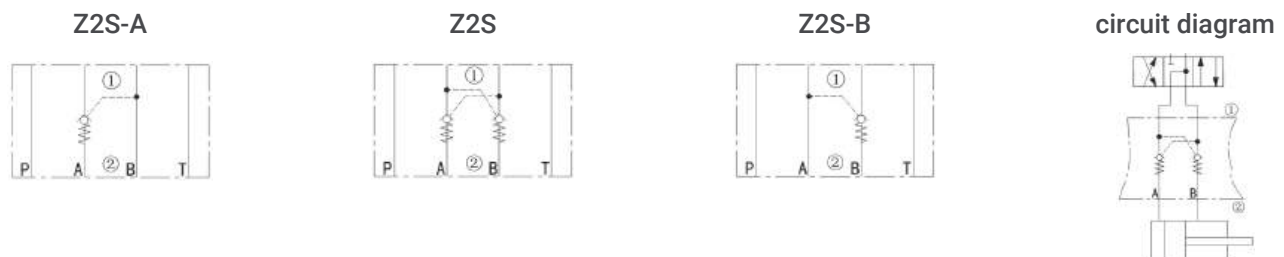
CONTENT

1. Modular type
2. Mounting surface according to DIN24340 A type
3. ISO 4401 and CETOP RP121H
4. Used to close one or more chamber oil, no leakage, good stability
5. Suitable for modular mounting

ORDERING DETAILS



SYMBOLE



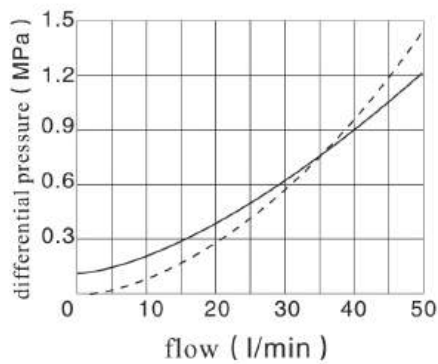
TECHNICAL DATA

Hydraulic Data

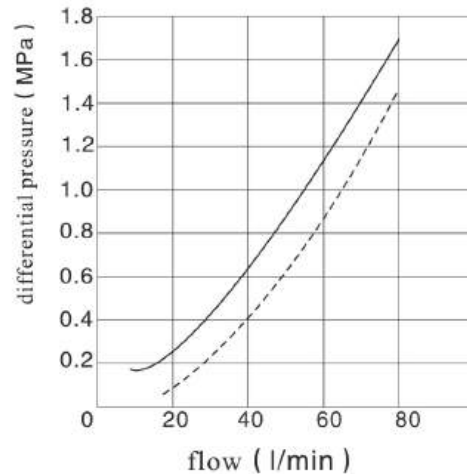
Working medium	Mineral hydraulic oil Phosphate hydraulic oil				
Working medium temperature range	°C	-20~+80			
Viscosity scope	mm ² /s	2.8~500			
Oil flow direction		See the sign			
Operating pressure	Mpa	31.5			
Check valve starting valve (bar) positive circulation		Size 6:0.15; Size 10, 16:0.1; Size 22:0.25			
Drift diameter		6	10	16	22
Weight	kg	0.8	2	11.7	11.7

CHARACTERISTIC CURVE

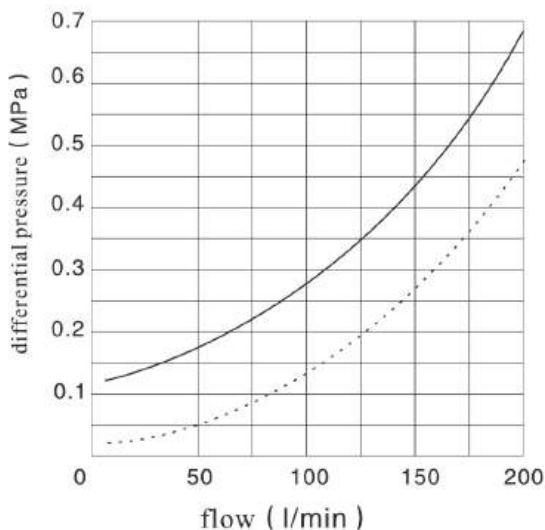
characteristic curve of ** type (Z2S6 type)
superposition style of hydraulic-control one-way valve



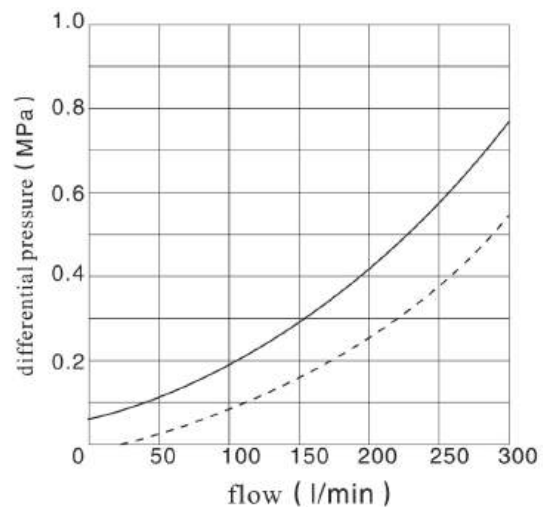
characteristic curve of ** type (Z2S10 type)
superposition style of hydraulic-control one-way valve



characteristic curve of ** type (Z2S16 type)
superposition style of hydraulic-control one-way valve



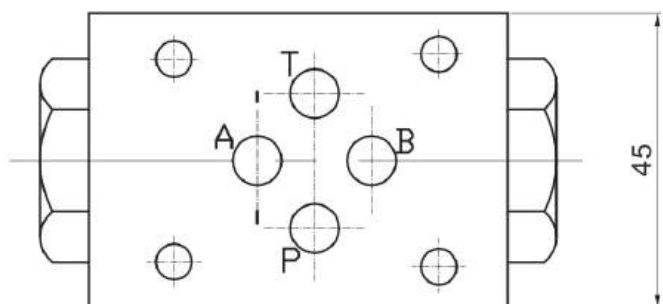
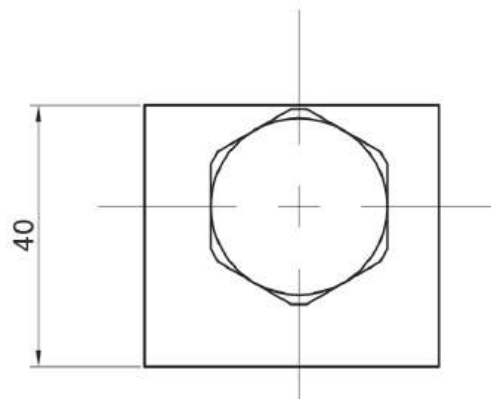
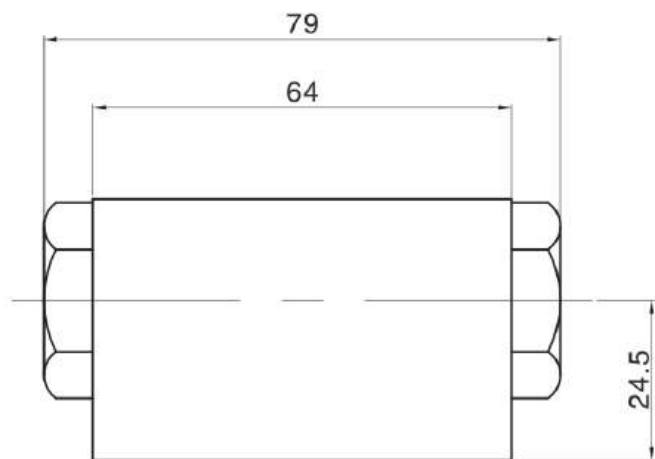
characteristic curve of ** type (Z2S22 type)
superposition style of hydraulic-control one-way valve



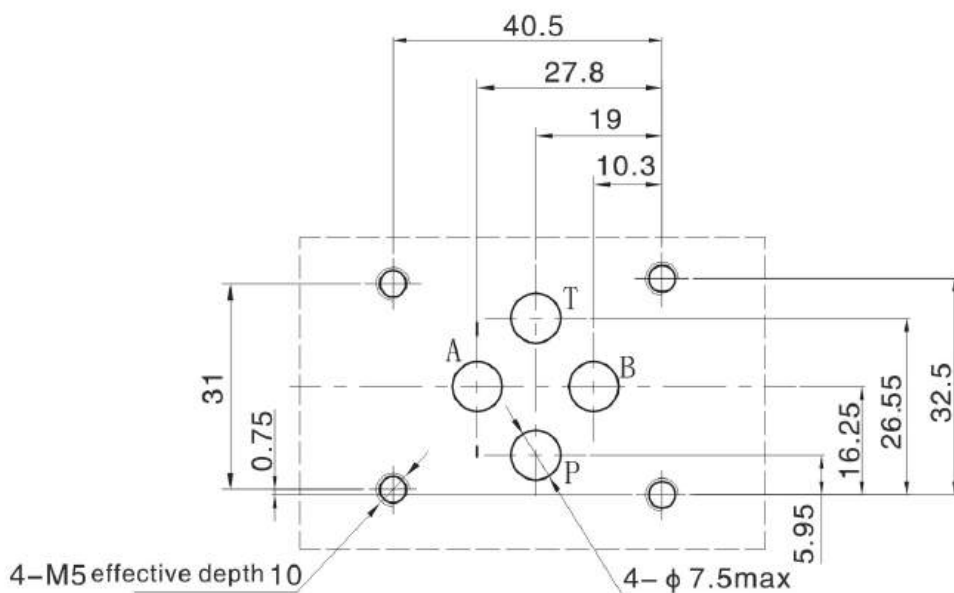
Notice: testing condition $v=36\text{mm}^2/\text{s}$; $t=50^\circ\text{C}$

UNIT DIMENSIONS

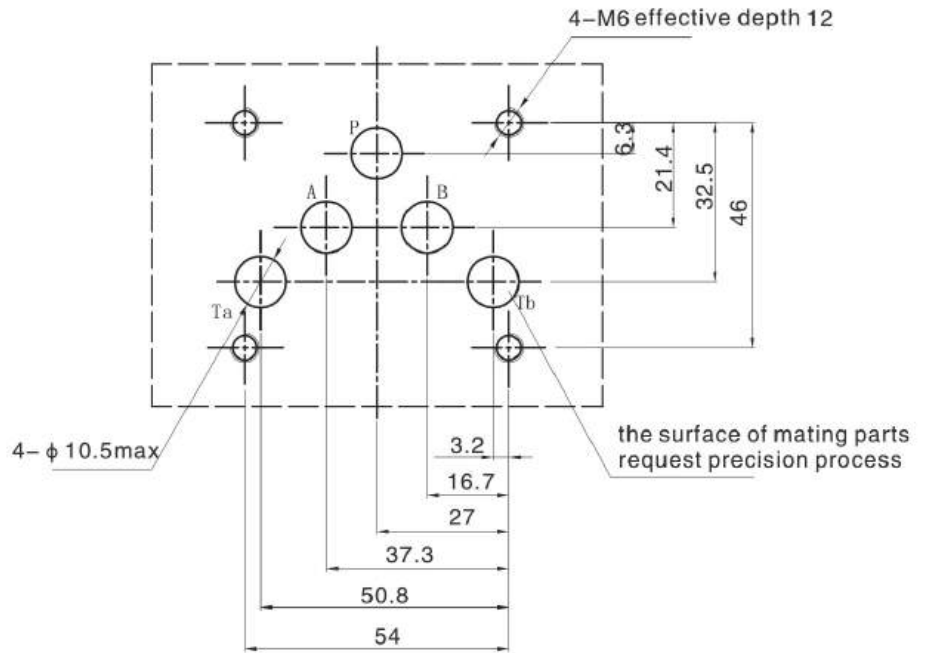
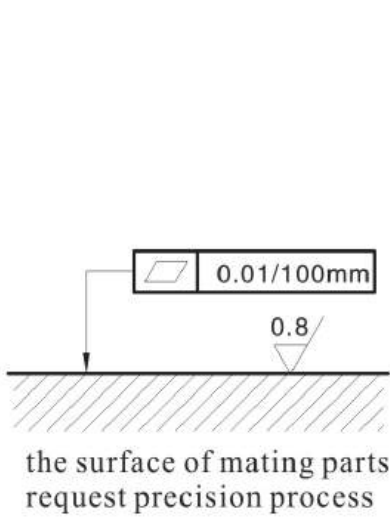
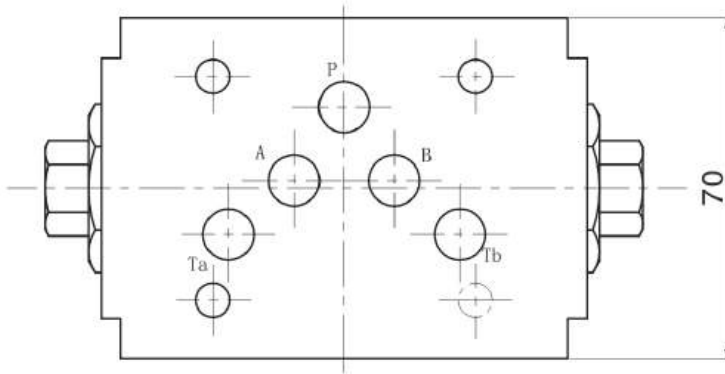
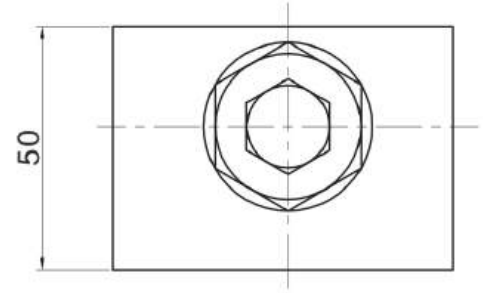
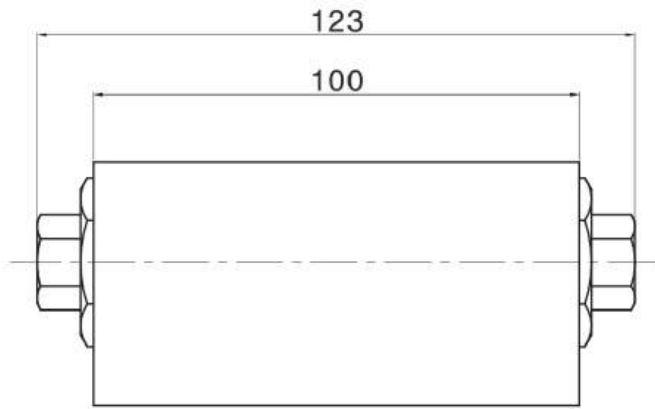
Z2S6



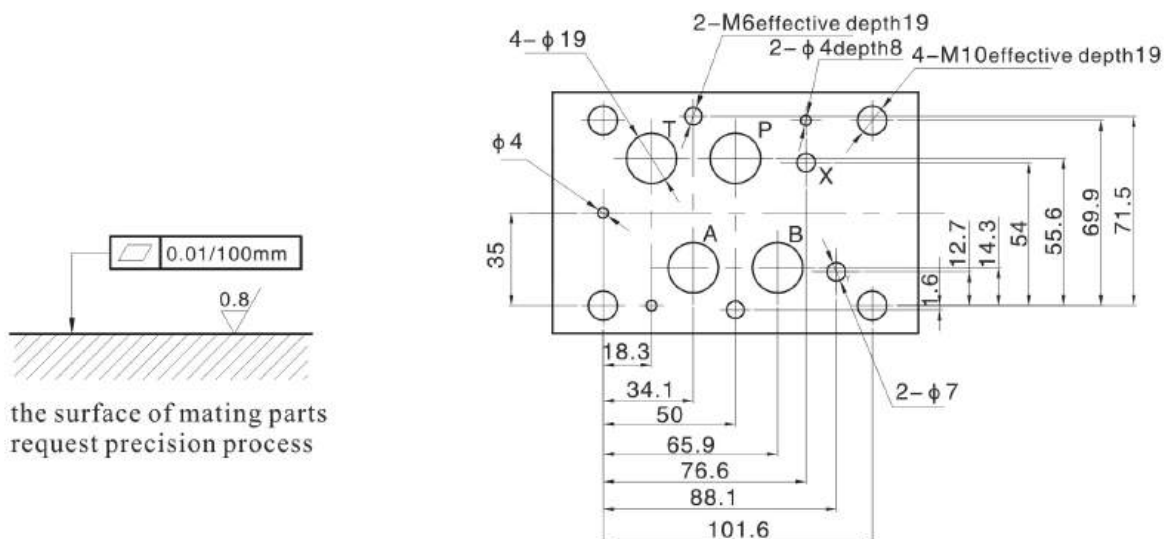
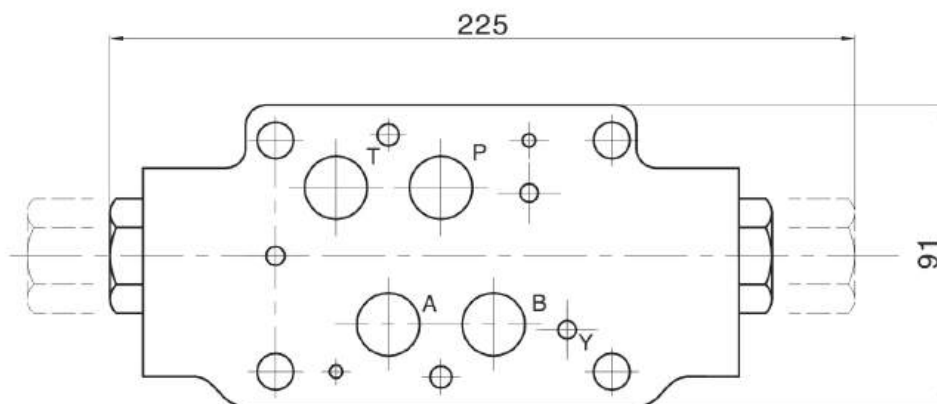
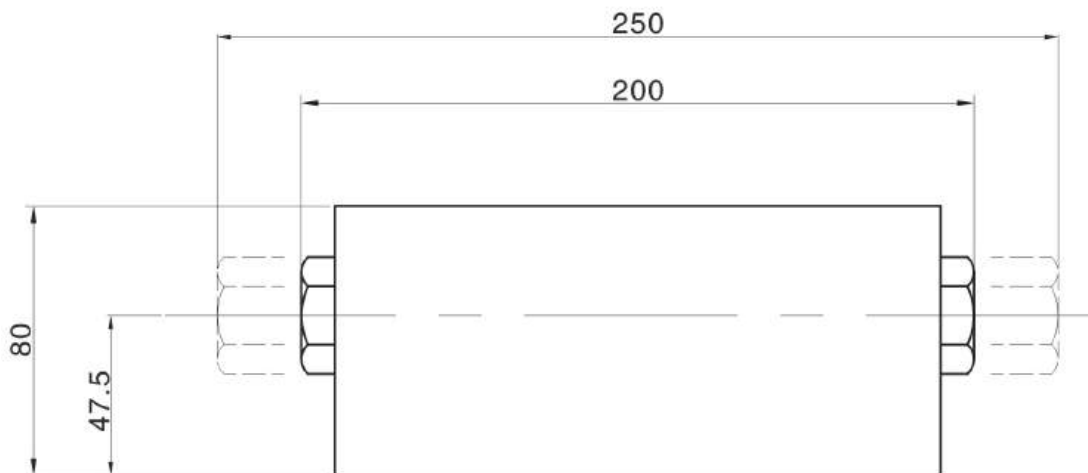
the surface of mating parts request precision process



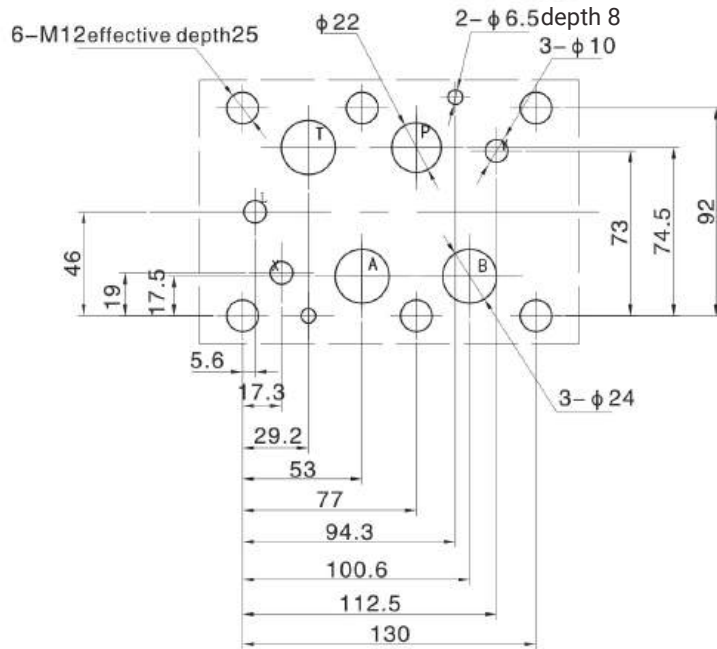
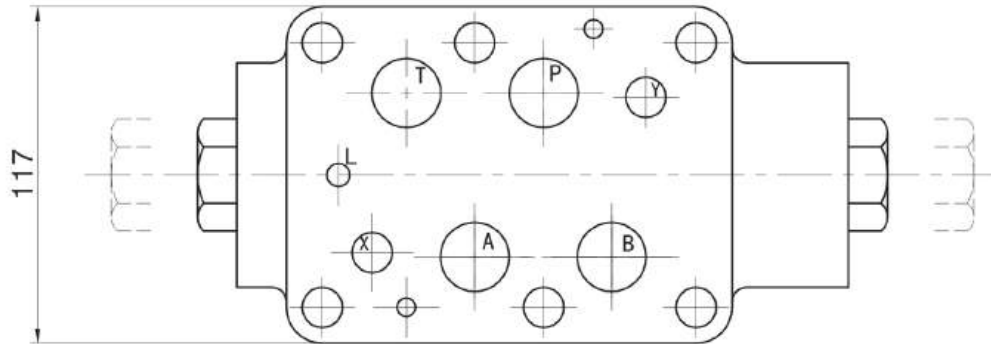
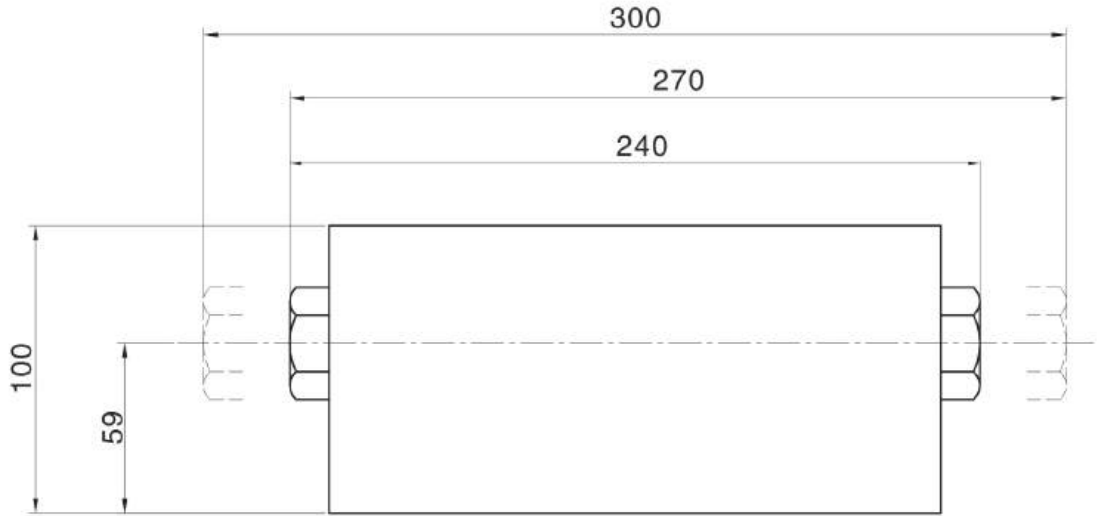
Z2S10



Z2S16



Z2S22



MPCV Series Modular Hydraulic Operated Check Valve



ORDERING DETAILS


Series code MPCV 02 W 20

MPCV = Modular hydraulic operated check valve

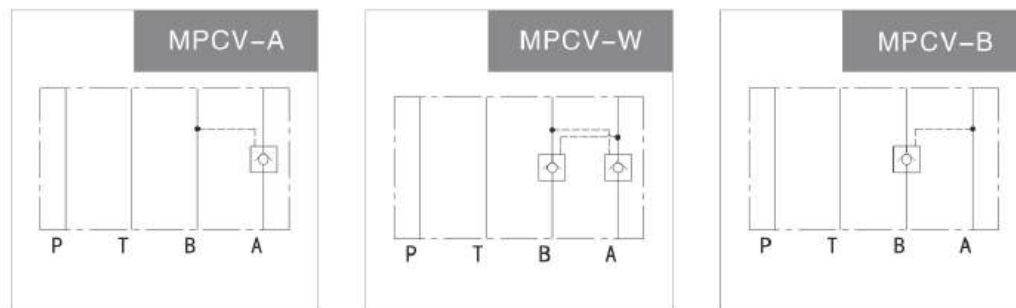
Size 02 = 6 size
03 = 10 size

Function bore W = bore A&B
A = bore A
B = bore B

Design code



SYMBOLE



TECHNICAL DATA

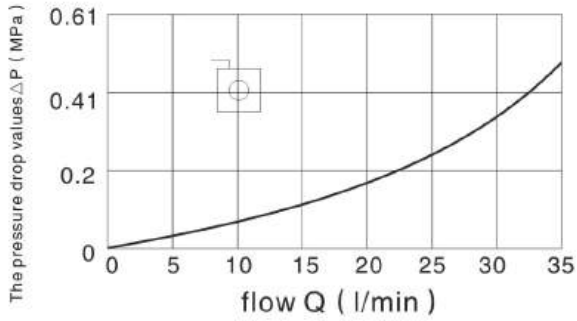
Hydraulic Data

Model	Maximum pressure bar	Maximum flow L/min	Weight kg
MPCV-02	210	35	1.1
MPCV-03		70	2.8

CHARACTERISTIC CURVE

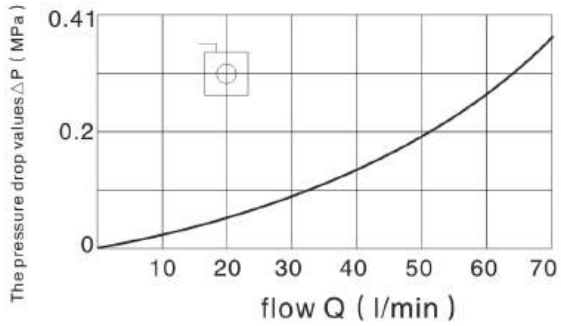
MPCV-02

pressure drop characteristics of inverting free flow

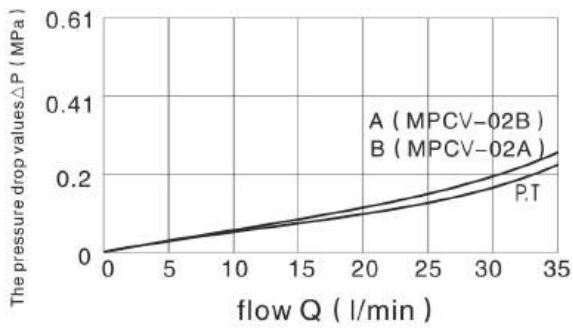


MPCV-03

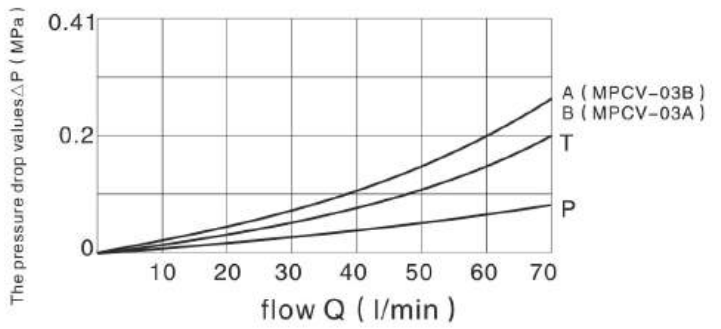
pressure drop characteristics of inverting free flow



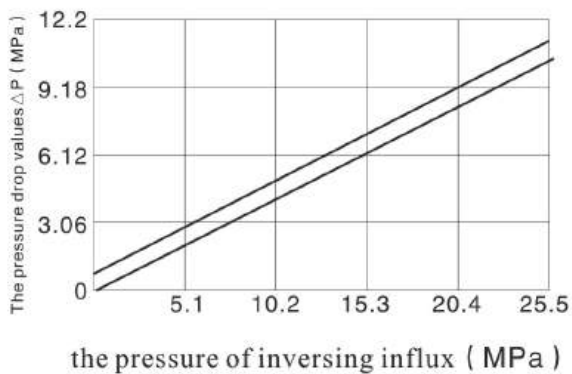
pressure drop characteristics



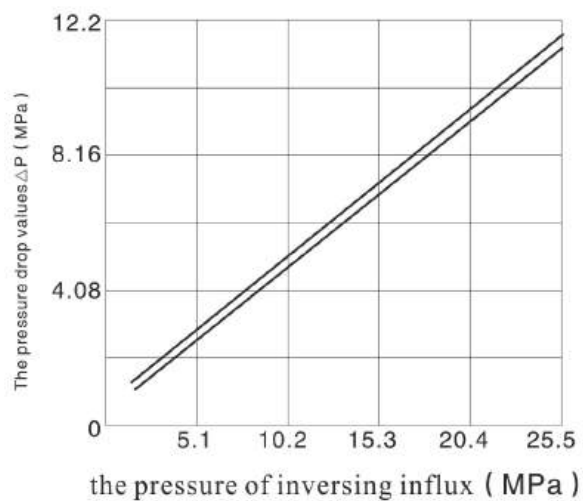
pressure drop characteristics



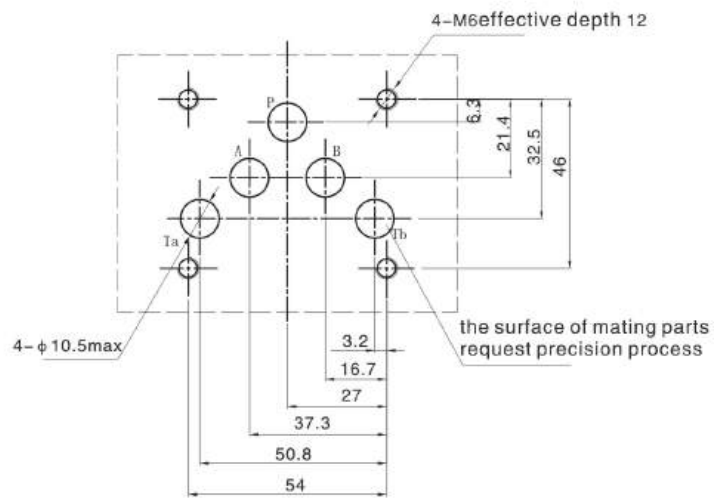
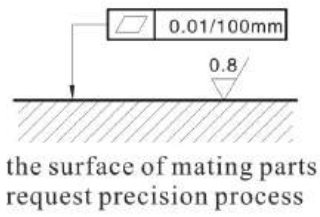
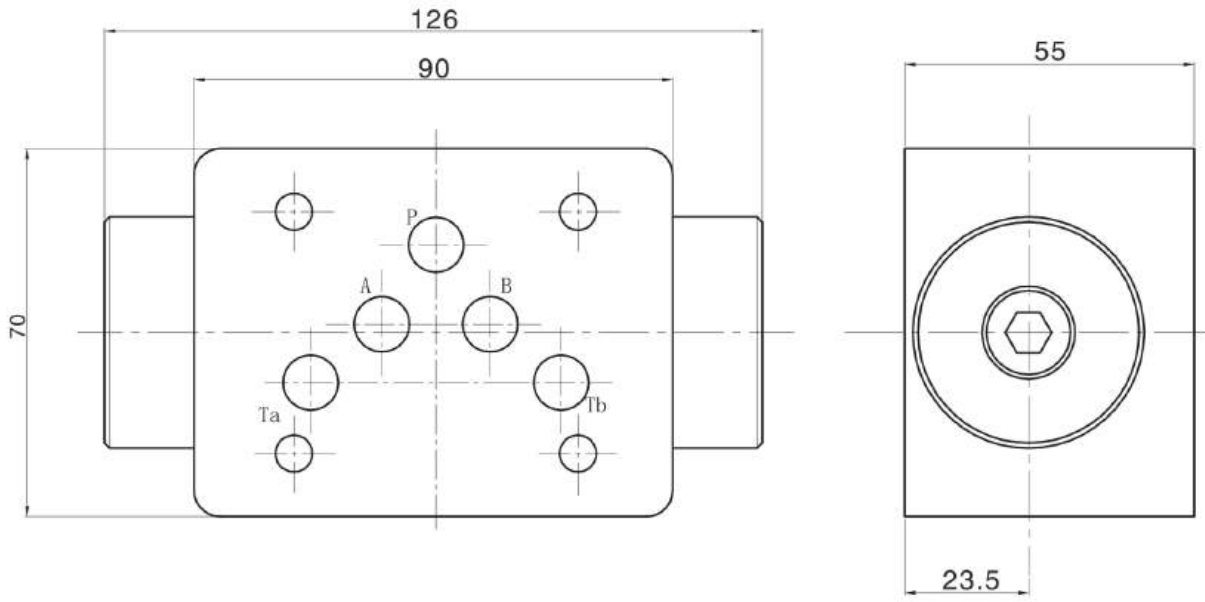
The characteristics of the minimum pilot pressure



The characteristics of the minimum pilot pressure



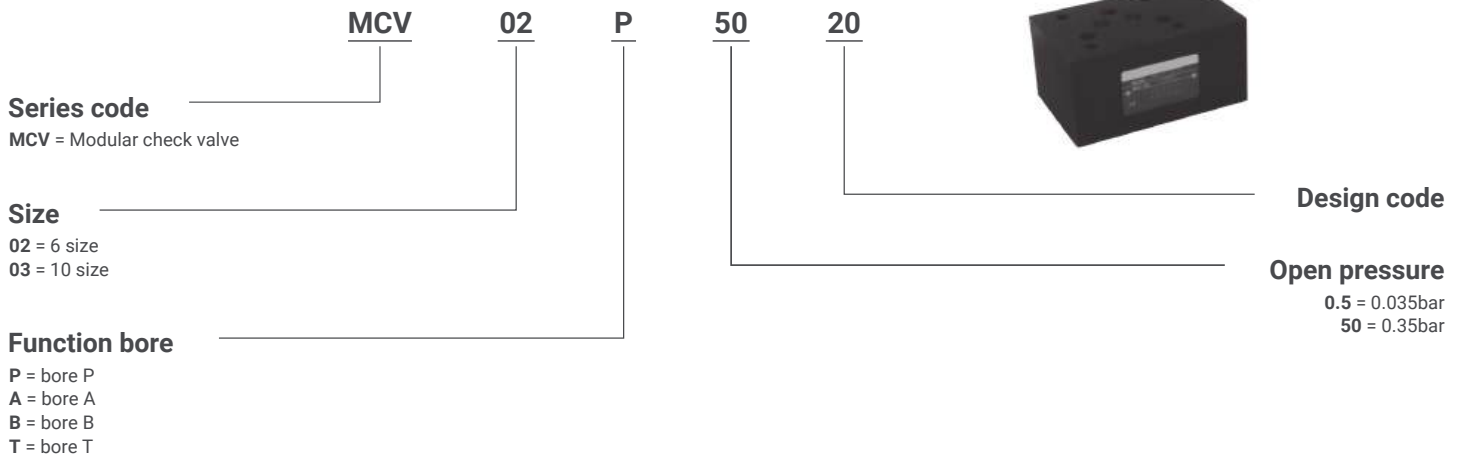
MPCV-03



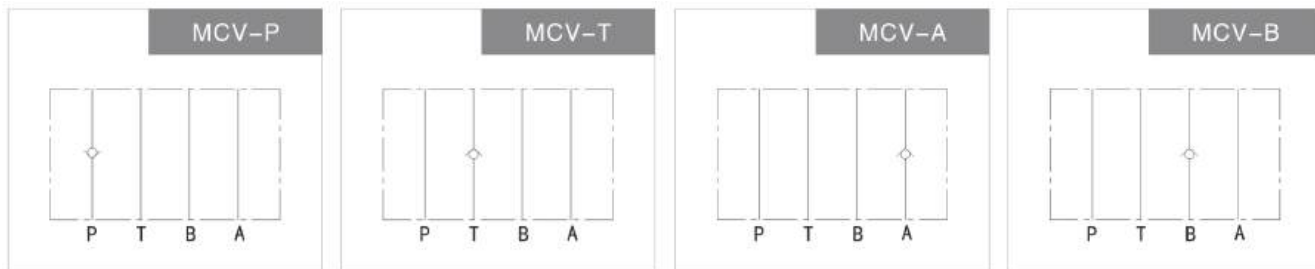
MCV Series Modular Check Valve



ORDERING DETAILS



SYMBOLE

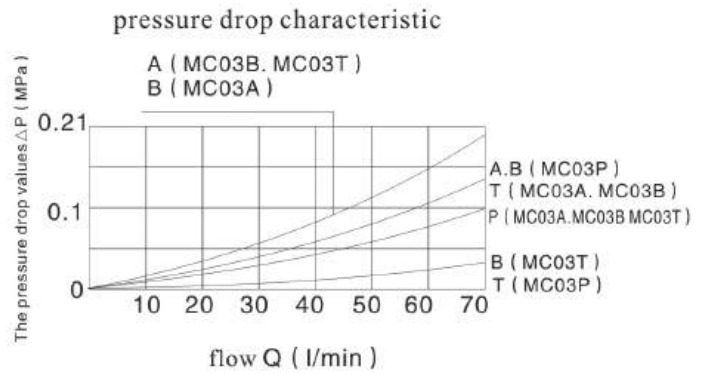
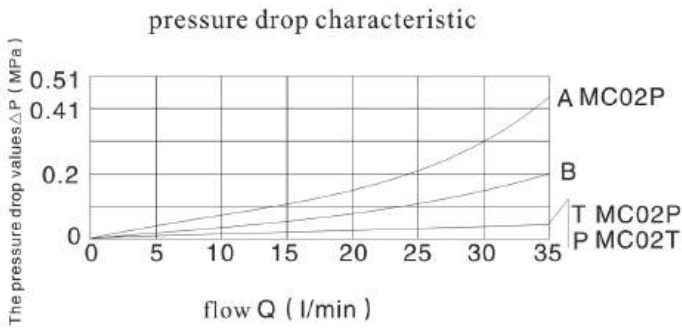


TECHNICAL DATA

Hydraulic Data

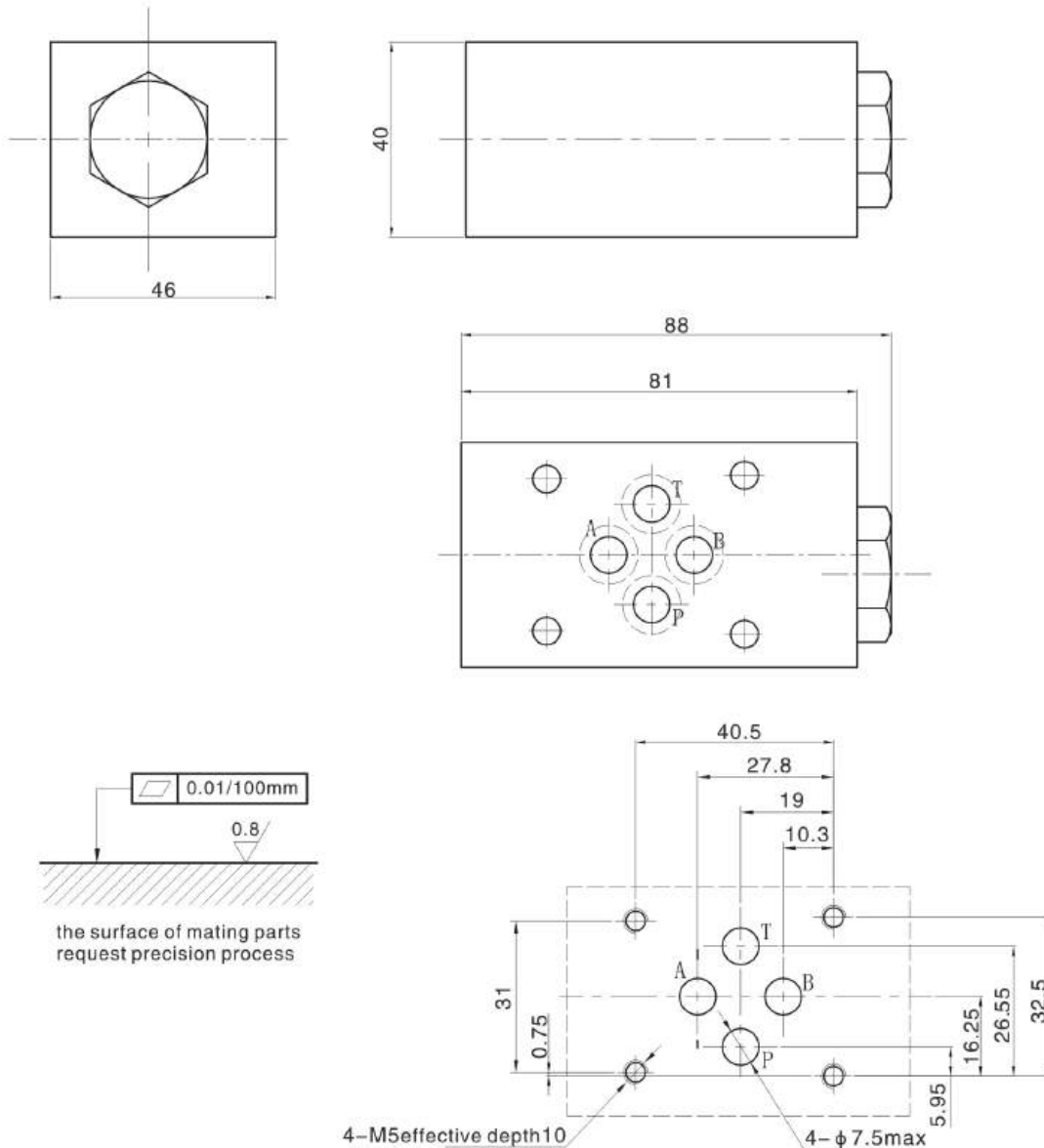
Model	Maximum pressure bar	Open pressure selection MPa	Maximum flow L/min	Weight kg
MCV-02	210	05:0.035	35	1.1
MCV-03		50:0.35	70	2.5

CHARACTERISTIC CURVE

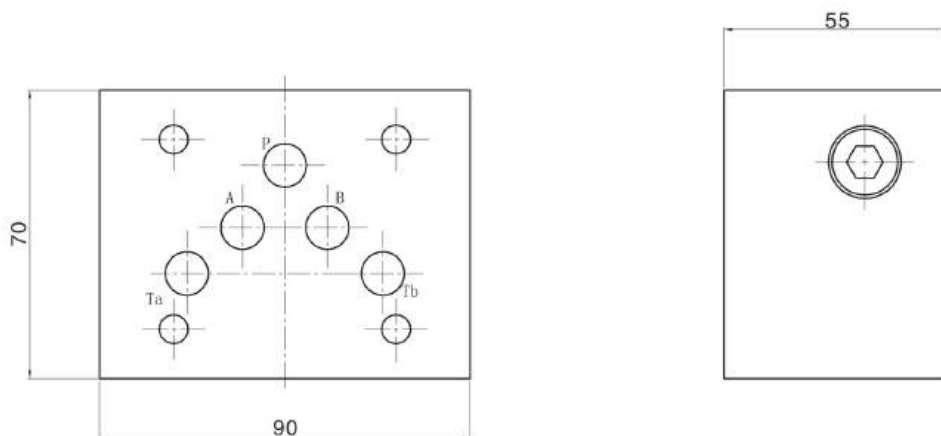


UNIT DIMENSIONS

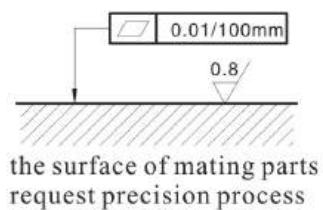
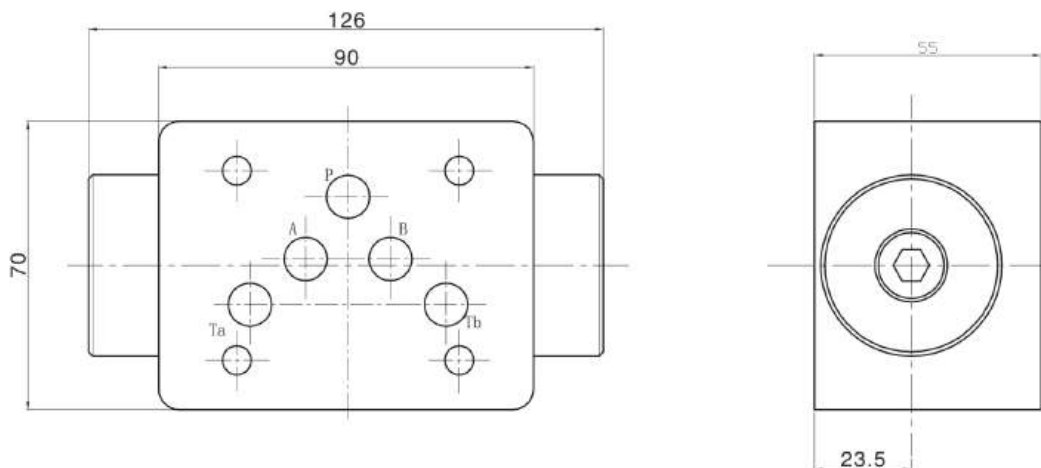
MCV-02



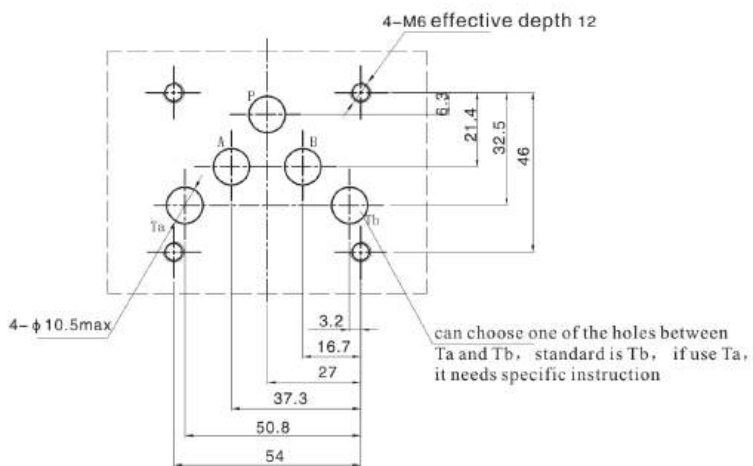
MCV-03P/T



MCV-03A/B



the surface of mating parts request precision process

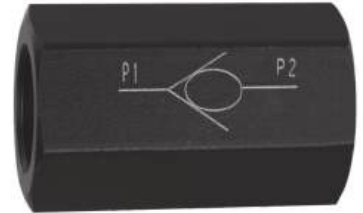


S type check valve

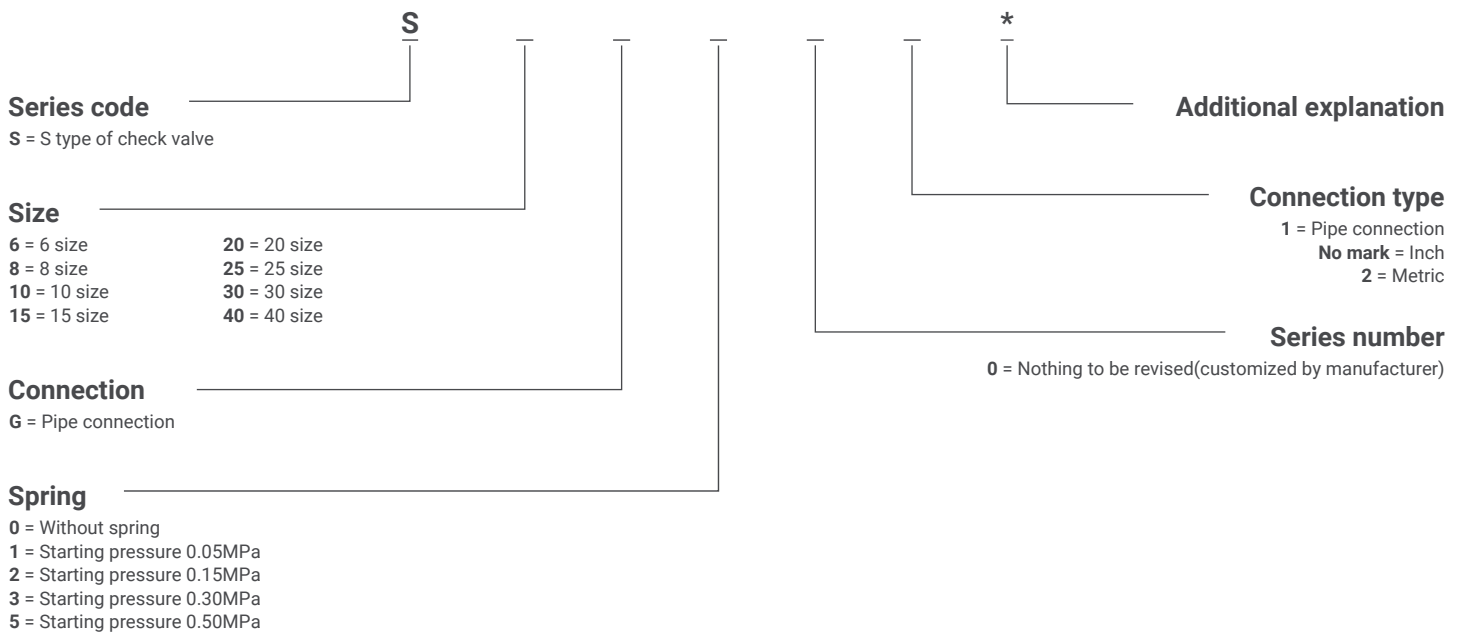


CONTENT

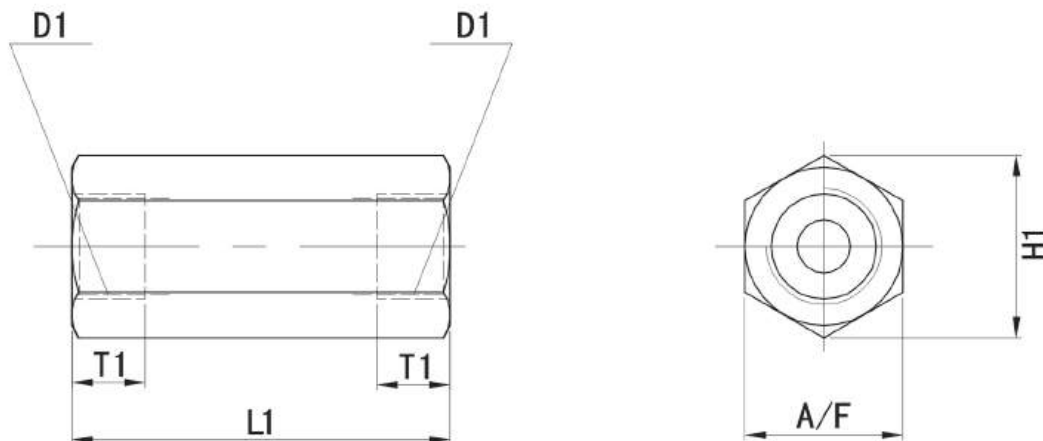
- Specifications: The function of S type check valve is making the oil flow in one direction but stop in another direction.



ORDERING DETAILS



UNIT DIMENSIONS



Diameter		6	8	10	15	20	25	30	40
D1	Inch	G1/4	G3/8	G1/2	G3/4	G1	G1 1/4	G1 1/2	G2
	Metric	M14X1.5	M18X1.5	M22X1.5	M27X2	M33X2	M42X2	M48X2	M60X2
H1		22	28	34.5	41.5	53	69	75	92
L1		58	58	72	85	98	120	132	165
T1		12	12	13	16	18	20	22	28
A/F		19	24	30	36	46	60	65	80
Weight(kg)		0.1	0.2	0.3	0.5	1	2	2.5	4.4

TECHNICAL DATA

Hydraulic Data

Working fluid		Mineral oil
Oil temperature range	°C	-30~+80
Viscosity range	mm ² /s	2.8~500
Highest working pressure	MPa	31.5

Diameter	6	8	10	15	20	25	30	40
Max flow L/min	15	30	40	120	200	300	400	600

SV/SL type of flow control check valve



ORDERING DETAILS

Series code **S**
 S = Flow control check valve

Drain port
 V = Without drain port
 L = With drain port

Specification

Type	SV		SL	
Oil Port	G	P	G	P
Specification 10	10	10	10	10
Specification 16	15	15	15	15
Specification 20	20	20	20	20
Specification 25	25	25	25	25
Specification 32	30	30	30	30

Connection
 P = Sub-plate mounting
 G = Thread connection

Pilot valve
 A = With pilot valve
 B = Without pilot valve

30
 30 = 30series (30~39=connection and installation dimension without interchangeable)

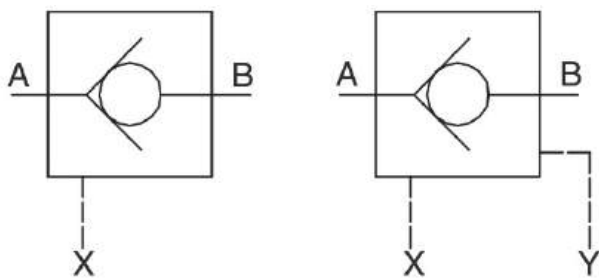
 Explain Other details with words

Hydraulic oil
 No code = Mineral oil with DIN51524 and DIN51525 organic phosphate

Series number
 1, 2, 3

Starting pressure
 1, 2, 3

SYMBOLE



Function

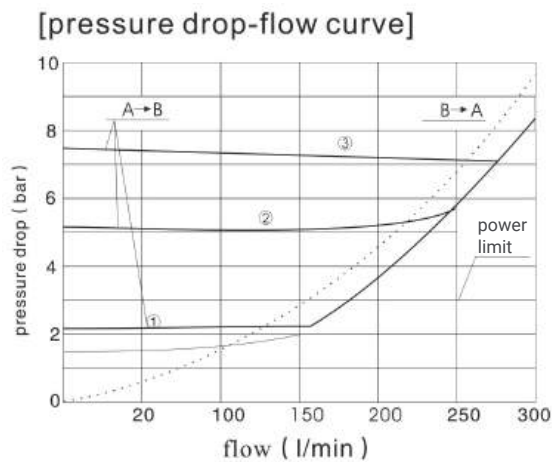
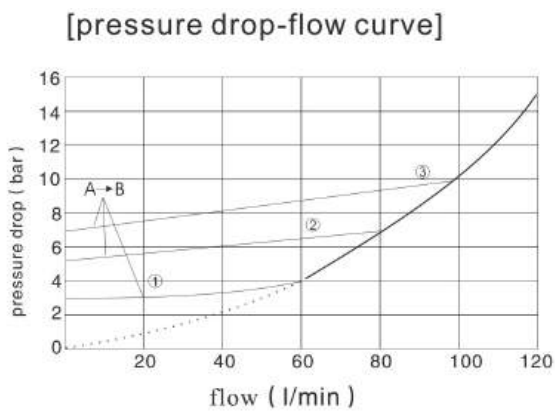
Valve code	A1(cm ²)	A2(cm ²)	A3(cm ²)	A4(cm ²)
SV10-SL10	1.13	0.28	3.15	0.50
SV15:SV20:SL15:SL20	3.14	0.78	9.62	1.13
SV25:SV30:SL25:SL30	5.30	1.44	15.90	1.54

TECHNICAL DATA

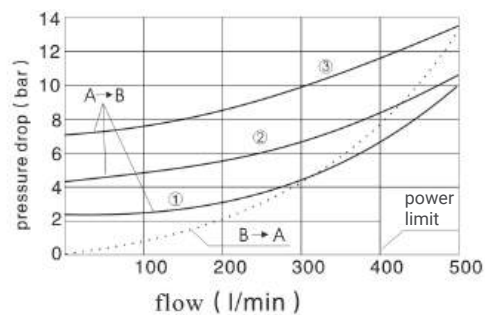
Hydraulic symbol

Valve type		SV10	SL10	SV15&20	SL15&20	SV15&30	SL15&30
Controlling-volume of X port	cm ³	2.2		8.7		17.5	
Viscosity range	cm ³	-	1.9	-	7.7	-	15.8
Direction of fluid flow		Free flow from A-B, free flow from B-A (when controlling by pilot valve)					
Working pressure	bar	...315					
Controlling pressure	bar	5...315					
Working fluid		Mineral oil with organic phosphate DIN51524 and DIN51525					
Range of oil temperature	°C	-30~+70					
Range of viscosity	cst	2.8~380					
		SV/SL10	SV15&20	SL15&20	SV/SL25	SV/SL30	
Weight	kg	2.5	4.0	4.5	8.0		

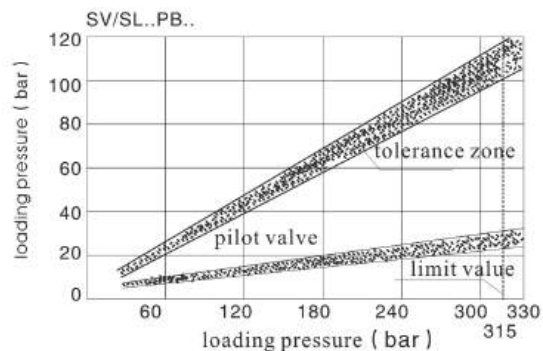
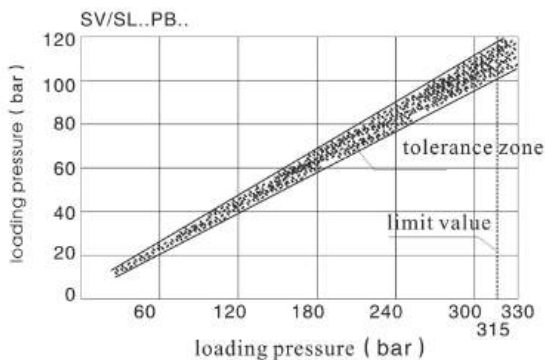
CHARACTERISTIC CURVE



curve O is used to start pressure 1.2 and 3



curve of controlling pressure / loading pressure



DB*K-L4X series pilot operated relief valves

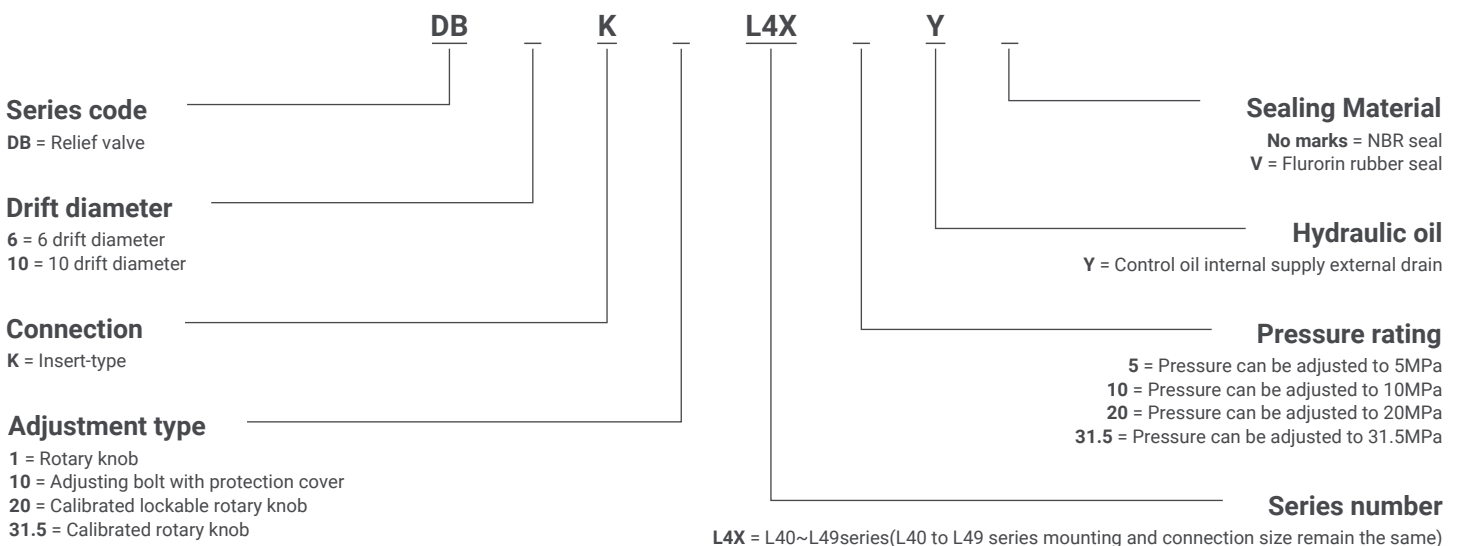


CONTENT

1. Cartridge structure
2. Four kinds of pressure range
3. Four kinds of adjusting forms
4. Rotary knob: Adjusting bolt with protection cover; Calibrated lockable rotary knob; Calibrated rotary knob
5. capable of directly inserting into the oil block

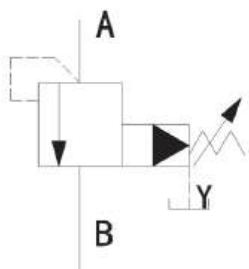


ORDERING DETAILS



Lectotype attention: Pilot control relief valve has low starting pressure and large flux, but internal leakage is larger than DBD series direct pressure relief valve. For example hydraulic system requires low on the least starting pressure, but as used as small internal leakage safety valve, clients can choose DBD direct pressure relief valves.

SYMBOLE

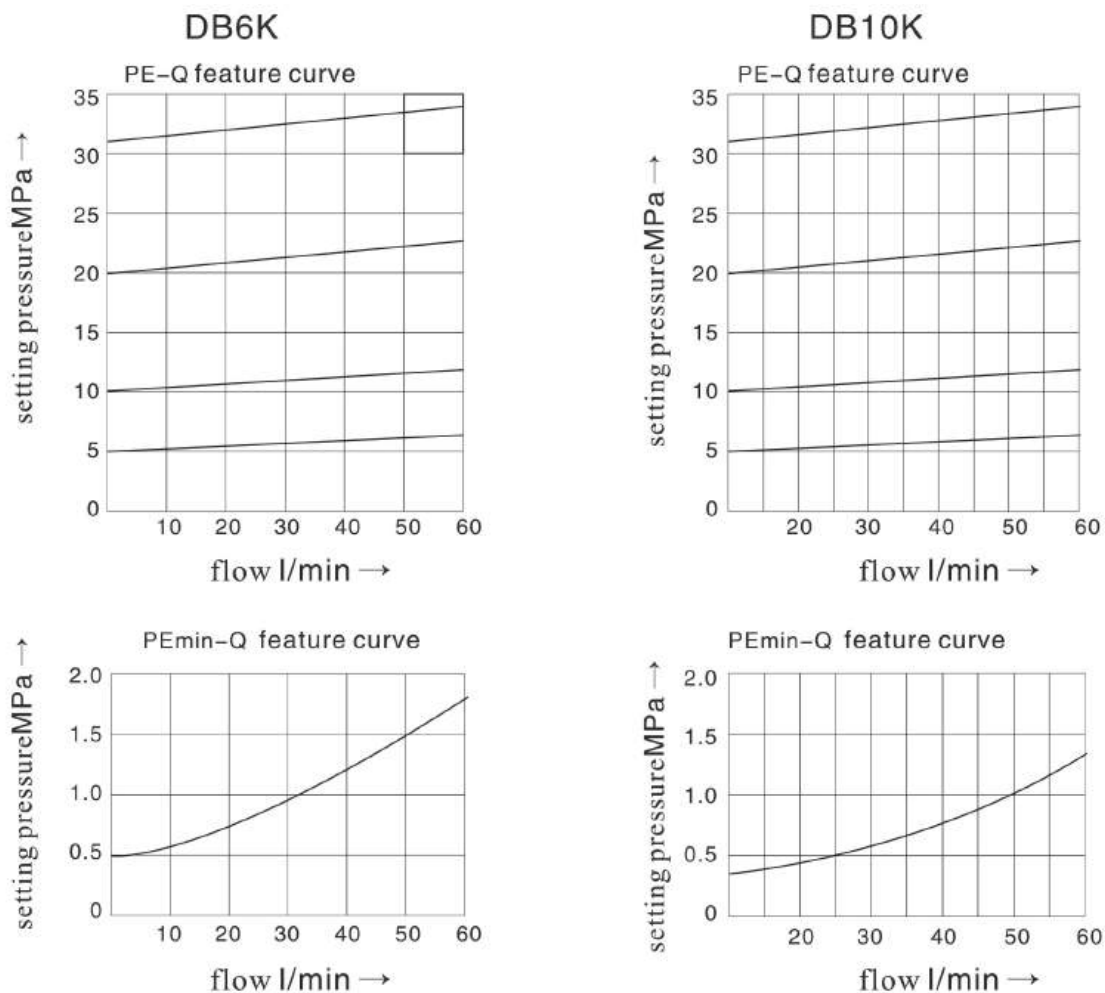


TECHNICAL DATA

Hydraulic Data

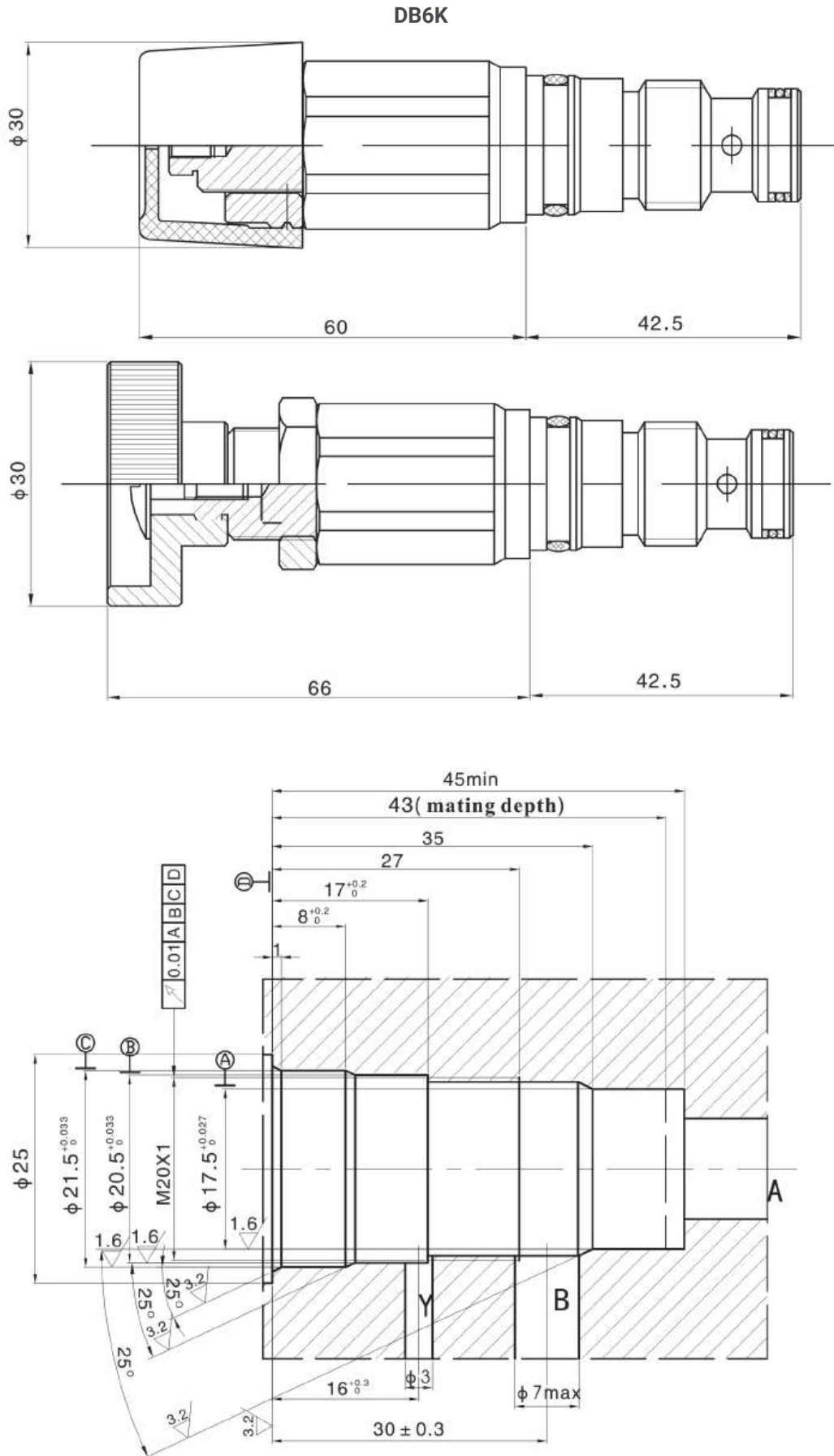
Norminal size		6	10
Working medium		Mineral oil-Suitable for NBR or fluorine rubber seal	
		Phosphate-Suitable for fluorine rubber seal	
Working medium temperature range	°C	-30~+80(Nitrile rubber seal)	
		-20~+80 (Nitrile rubber seal)	
Viscosity range	mm ² /s	From 10 to 800	
Oil cleanliness		The maximum oil pollution grade according to NAS1638 class 9 and ISO4406 class 20/18/15	
Maximum operating voltage	MPa	31.5	
Maximum adjustable voltage	MPa	5; 10; 20; 31.5	
Maximum flow rate	L/min	To 60	To 100
Weight	kg	About 0.22	About 0.3

CHARACTERISTIC CURVE



Above curve was measured when there was no back pressure, and using mineral oil HLP46 which viscosity 41mm²/s, oil temperature 50°C

UNIT DIMENSIONS



DBD-10 series direct pressure relief valves

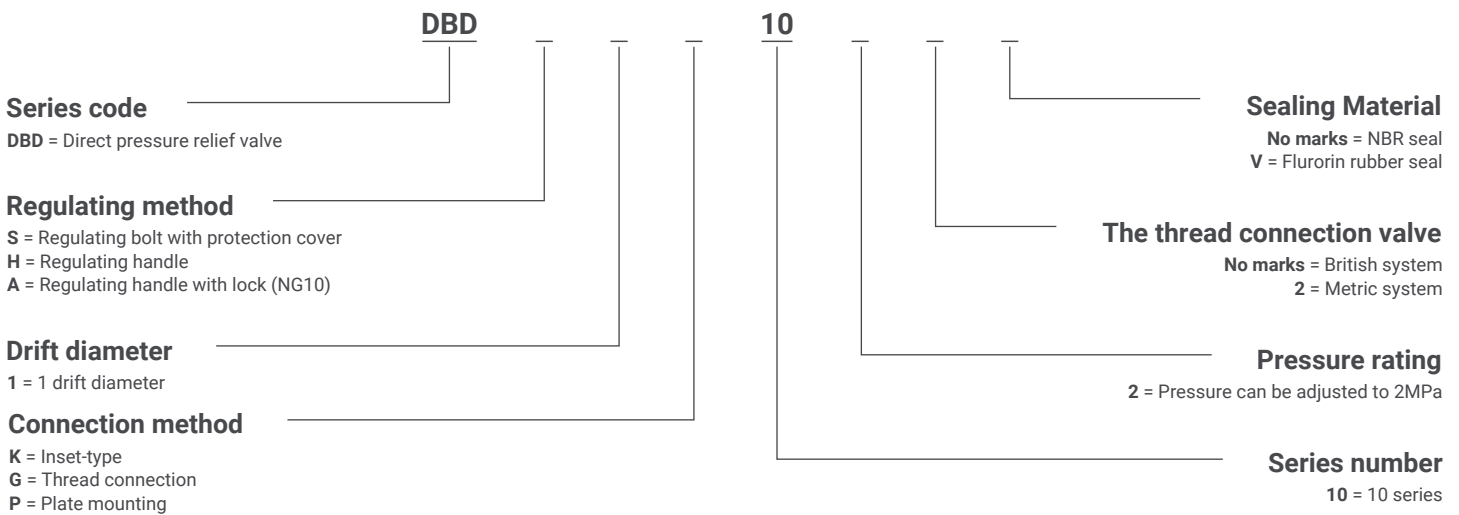


CONTENT

1. Three kinds of connection methods. Insert-type: Thread connection; Plate connection
2. Seven kinds of pressure level 2.5, 5, 10, 20, 31.5, 40 and 63MPa
3. Three kinds of regulating forms: Regulating bolt with protection cover; Regulating handle with lock



ORDERING DETAILS



Note 1

Connection method		G	K	P
G1/4	M14X1.5	6	6	6
G3/8	M18X1.5	8	-	-
G1/2	M22X1.5	10	10	10
G3/4	M27X2	15	-	-
G1	M33X2	20	20	20
G1 1/4	M42X2	25	-	-
G1 1/2	M48X2	30	30	30

Note 2

Drift diameter	10	6, 8, 15 and 20	25 and 30
Pressure rating (Pressure can be adjusted to...)	2.5=2.5MPa	2.5=2.5MPa	2.5=2.5MPa
	5=5MPa	5=5MPa	5=5MPa
	10=10MPa	10=10MPa	10=10MPa
	20=20MPa	20=20MPa	20=20MPa
	31.5=31.5MPa	31.5=31.5MPa	31.5=31.5MPa
	40=40MPa	40=40MPa	
	63=63MPa		

Lectotype attention: DBD direct pressure relief valve has low starting pressure and large flux, but internal leakage is larger than DBD series direct pressure relief valve. For example hydraulic system requires low on the least starting pressure, but as used as small internal leakage safety valve, clients can choose DBD direct pressure relief valves.

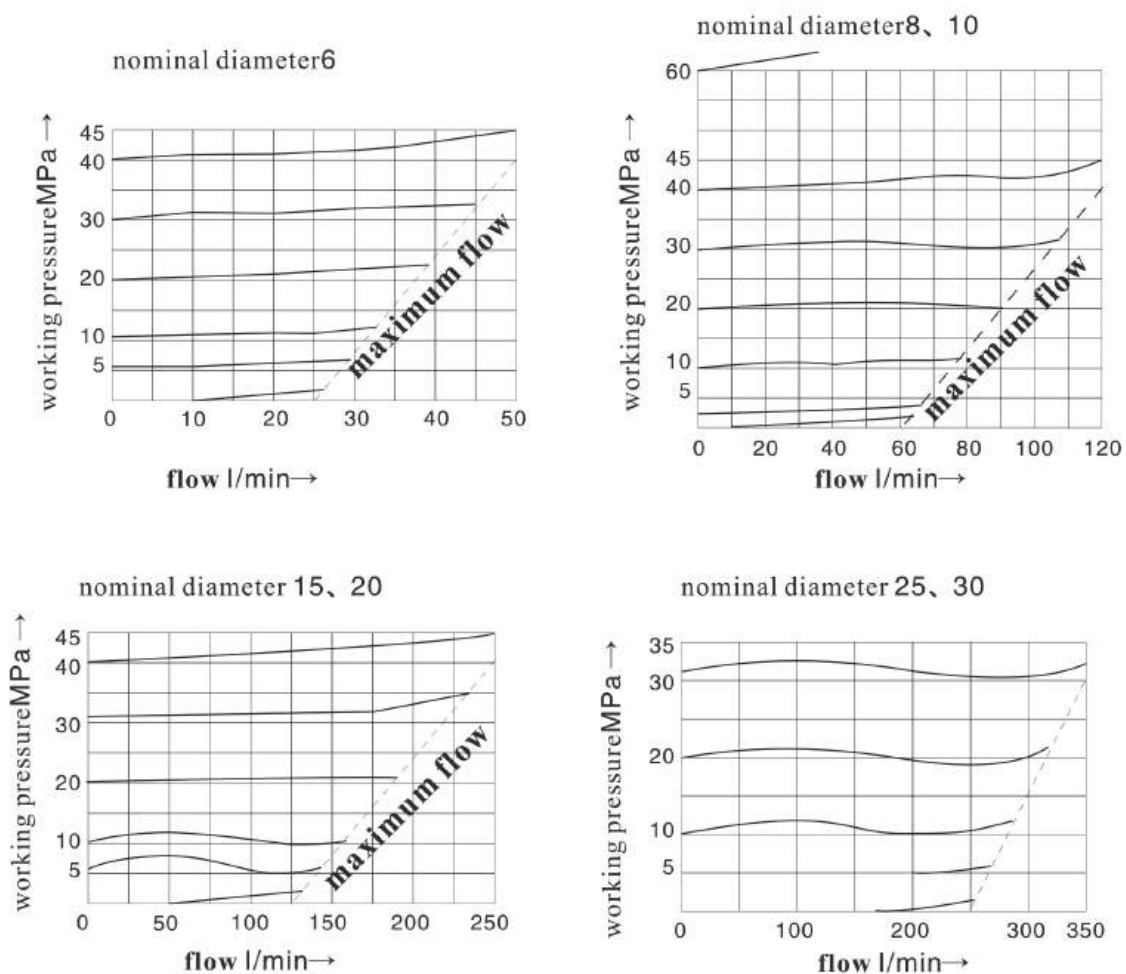
TECHNICAL DATA

Hydraulic Data

Working medium Suitable for NBR or fluorine rubber seal	Mineral oil				
Suitable for fluorine rubber seal	Phosphate				
Working medium temperature range	°C	-30~+80(Nitrile rubber seal)			
		-20~+80 (Nitrile rubber seal)			
Viscosity range	mm ² /s	From 10 to 800			
Oil cleanliness		The maximum oil pollution grade according to NAS1638 class 9 and ISO4406 class 20/18/15			
Working pressure range drift diameter		6, 8	10	15, 20	25, 30
Import	MPa	~ 40	~ 63	~ 40	~ 31.5
Import	MPa	31.5			
Maximum flow	L/min	Refer to the function curve			

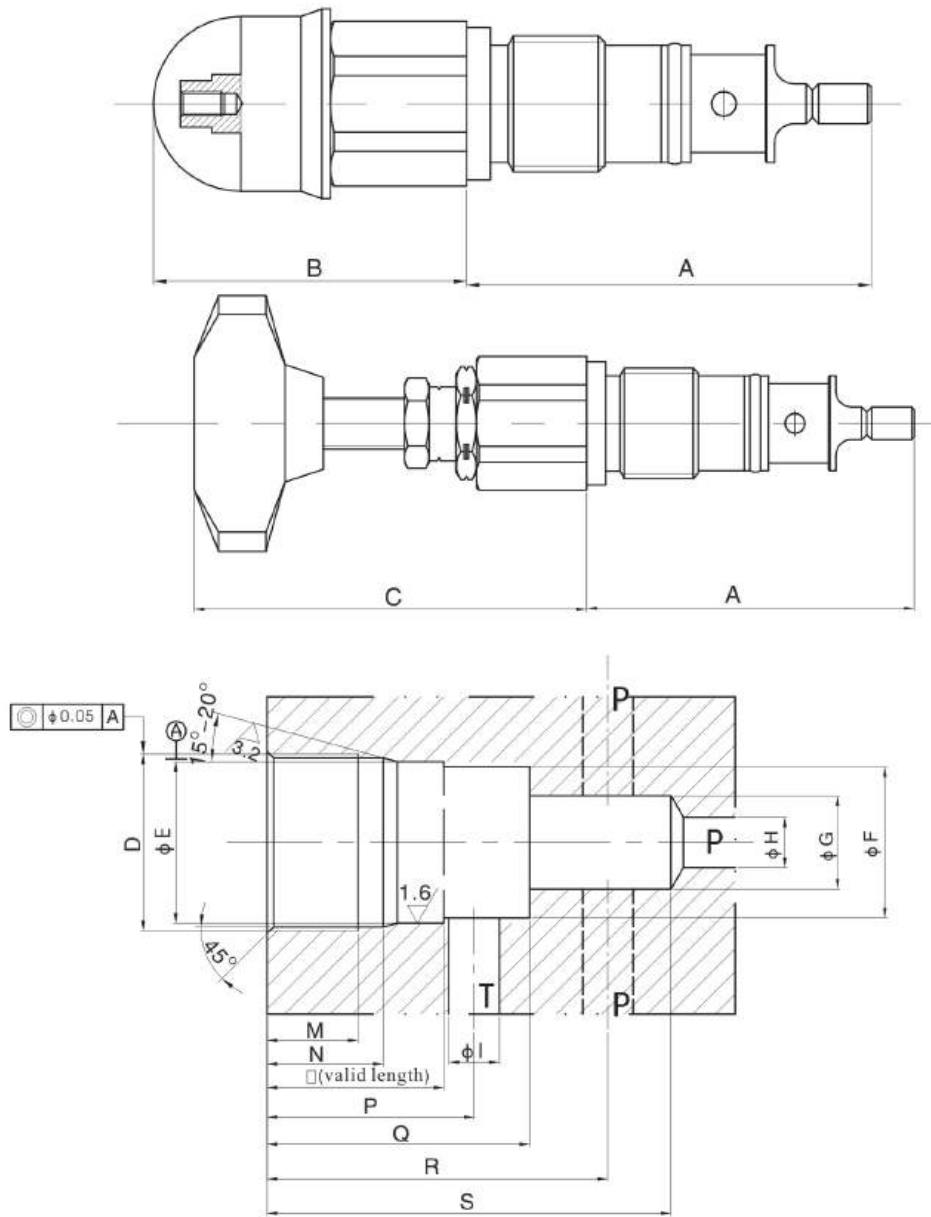
CHARACTERISTIC CURVE

characteristic of flow-pressure (measured by using HLP46, t=40°C)

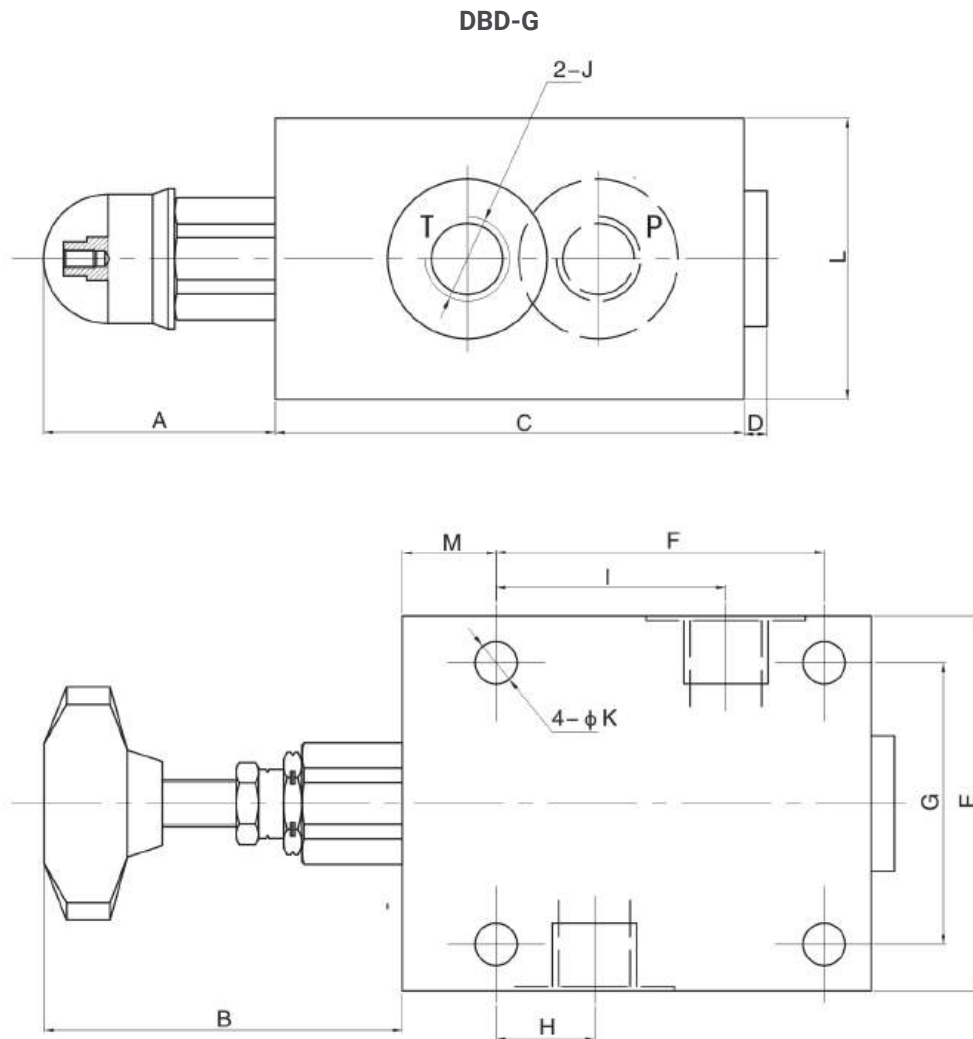


UNIT DIMENSIONS

DBD-K

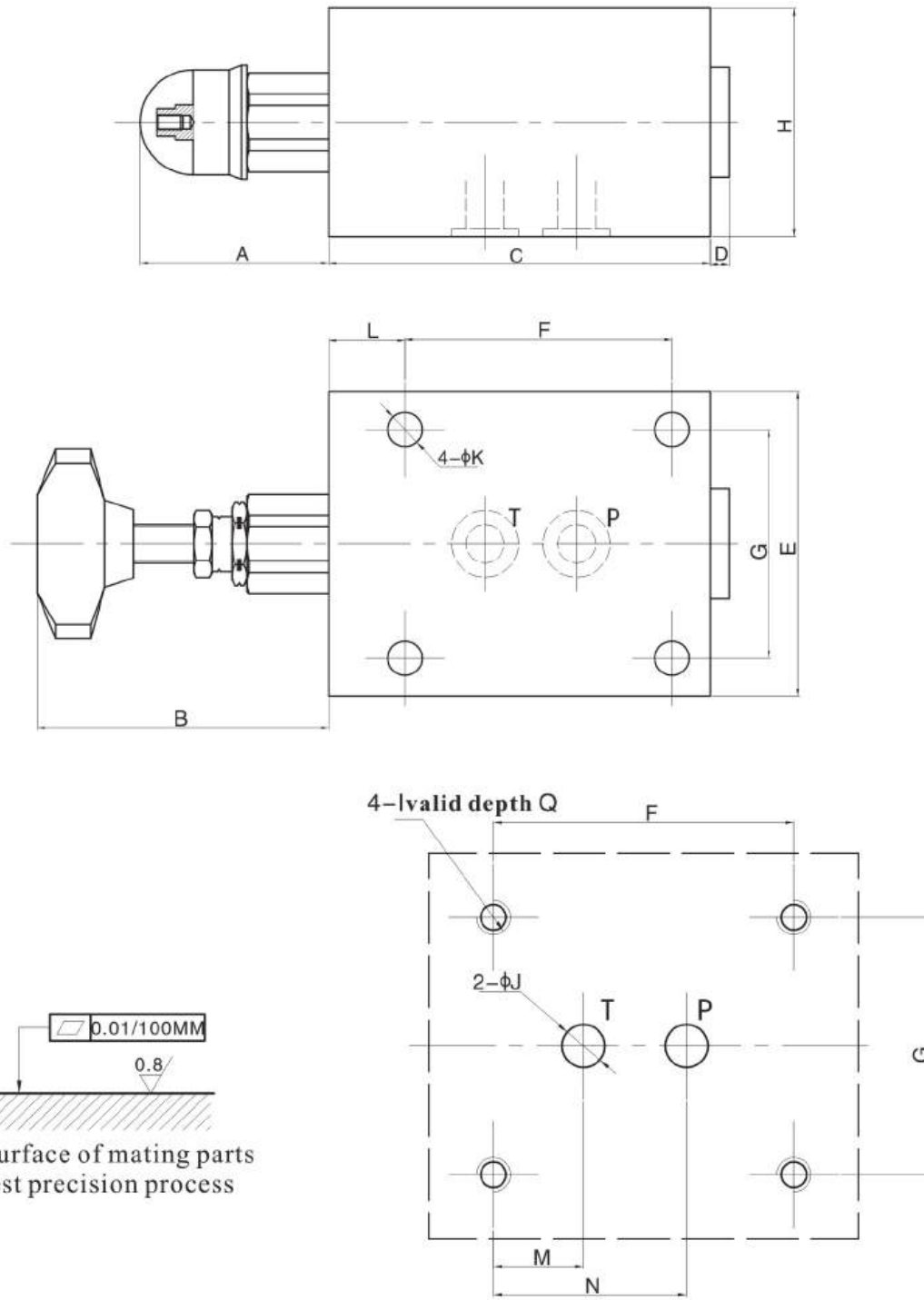


type	A	B	C	D	E	F	G	H	I	M	N	O	P	Q	R	S
DBD6K	64	72	88	M28 × 1.5	25H9	24.9	15	6	6	15	19	39	35	45	56.5 ± 5.5	65
DBD10K	75	68	79	M35 × 1.5	32H9	31.9	18.5	10	10	18	23	35	41	52	67.5 ± 7.5	80
DBD20K	106	65	77	M45 × 1.5	40H9	39.9	24	20	20	21	27	45	54	70	91.5 ± 8.5	110
DBD30K	131	83	56	M60 × 2	50H9	54.9	38.75	30	30	23	29	45	60	84	113.5 ± 11.5	140



type	A	B	C	D	E	F	G	H	I	J	K	L	M
DBD6G	72	83	80	2	60	55	45	20	40	G1/4;M14×1.5	6.6	40	15
DBD8G	68	79	100	2	80	70	60	21	49	G3/8;M18×1.5	9	60	20
DBD10G	68	79	100	3	80	70	60	21	49	G1/2;M22×1.5	9	60	20
DBD15G	65	77	135	3	100	100	70	34	65	G3/4;M27×2	9	70	20
DBD20G	65	77	135	4	100	100	70	34	65	G1;M33×2	9	70	20
DBD25G	83	56	180	4	130	130	100	35	85	G1½;M42×2	11	90	25
DBD30G	83	56	180	4	130	130	100	35	85	G1½;M48×2	11	90	25

DBD-P



type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Q
DBD6P	72	83	80	2	60	55	45	40	M6	6	6.6	15	20	40	15
DBD10P	68	79	100	3	80	70	60	60	M8	10	9	20	21	45	15
DBD20P	65	77	135	4	100	100	70	70	M8	20	9	20	34	65	22
DBD30P	83	56	180	4	130	130	100	90	M10	30	11	25	35	85	22

ZDB/Z2DB-L4 Series Modular Relief Valve

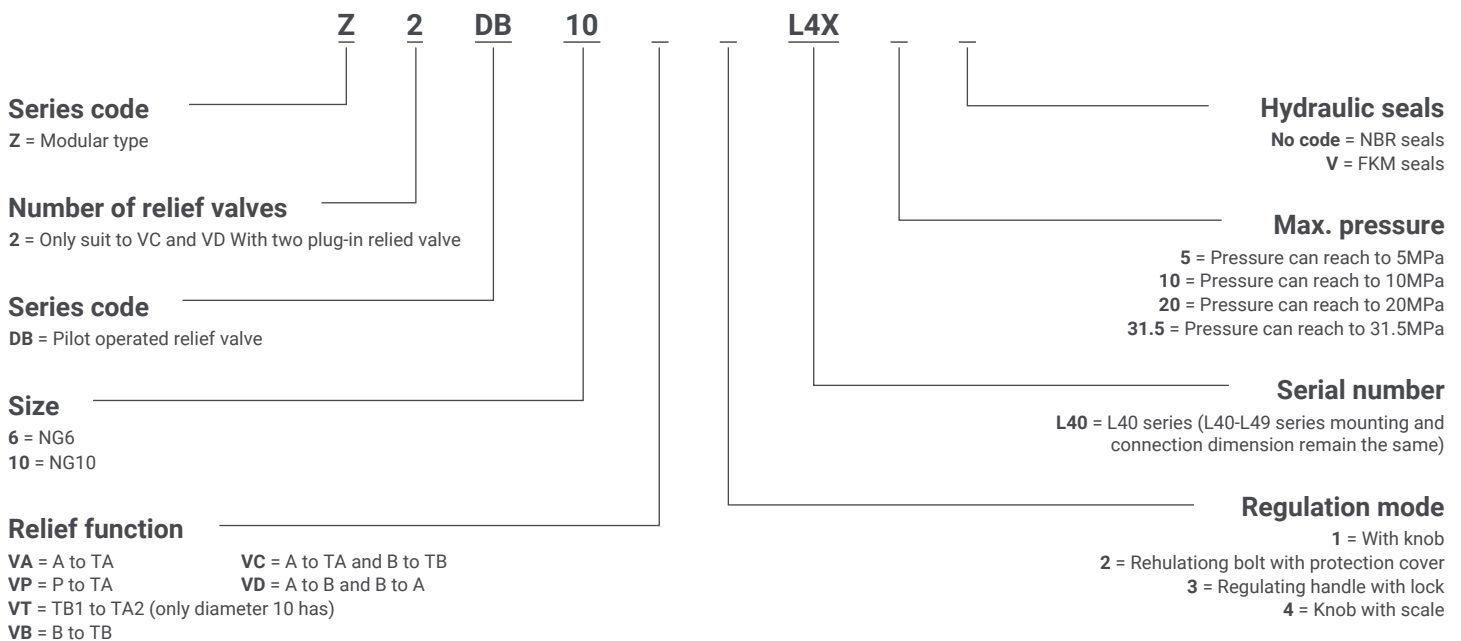


CONTENT

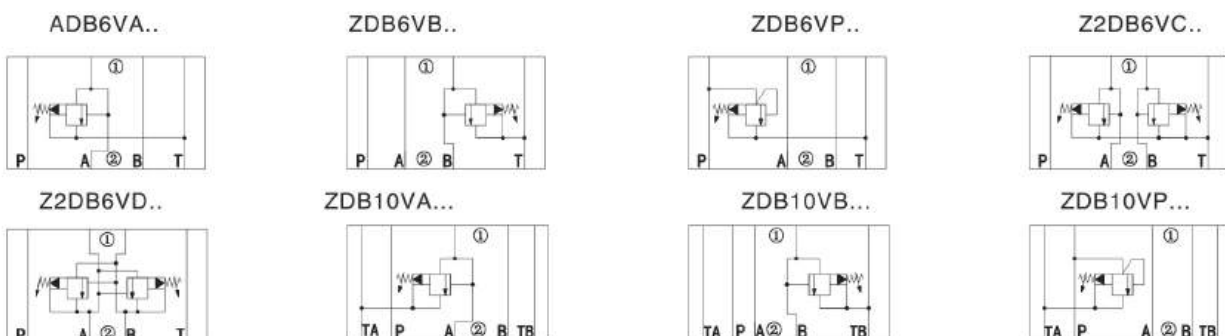
1. Modular structure
2. Mounting surface according to DIN24320E D type and ISO 5781
3. Used as thread connection and oil block mounting
4. Four kinds of pressure scope
5. Six kinds of alternative effective flow
6. Four adjustment types: Knob; Adjusting-bolt with protection cover; Lockable knob with scale; Knob with scale

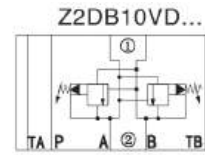
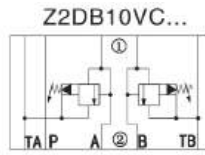
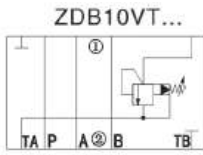


ORDERING DETAILS



SYMBOLE





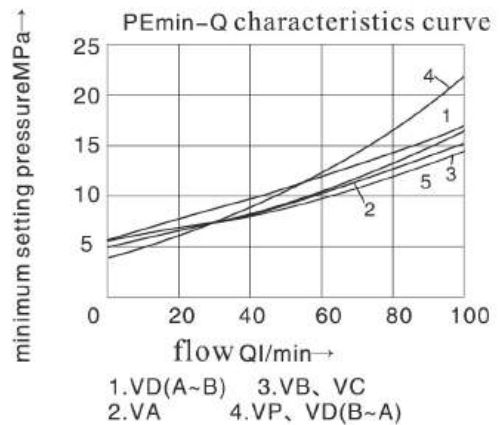
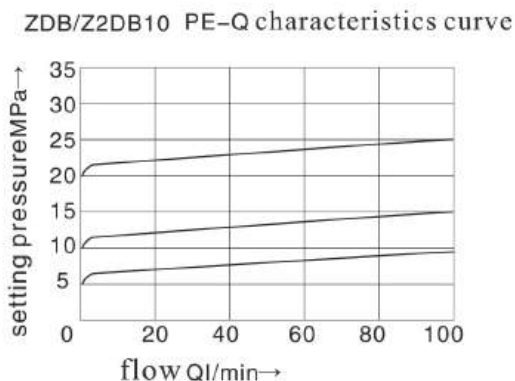
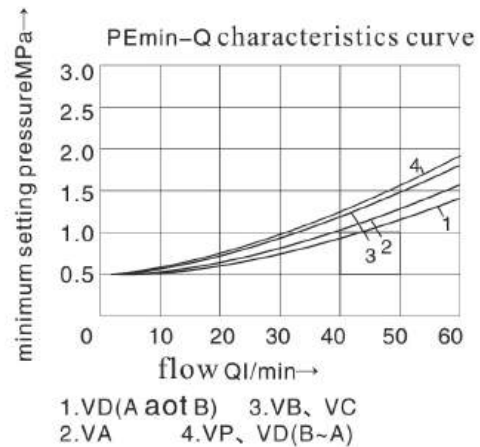
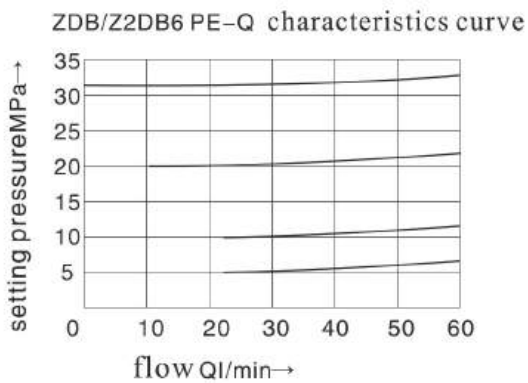
TECHNICAL DATA

Hydraulic Data

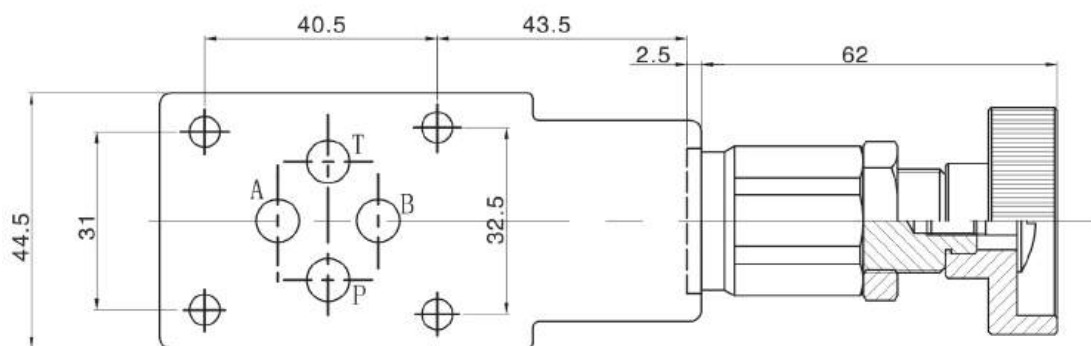
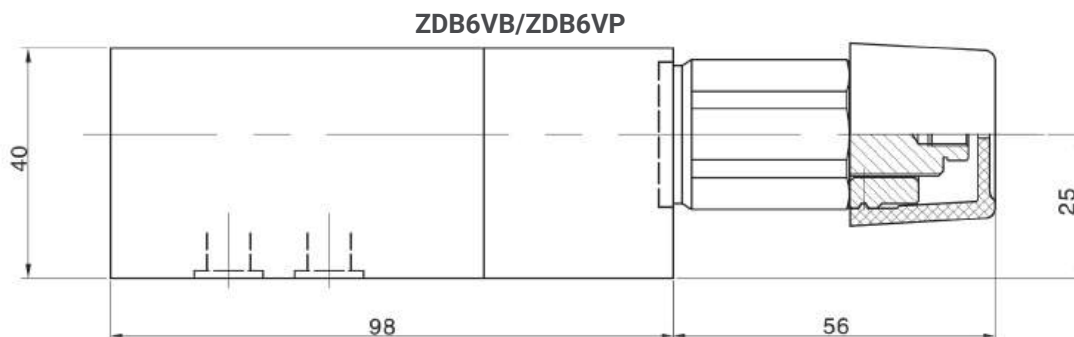
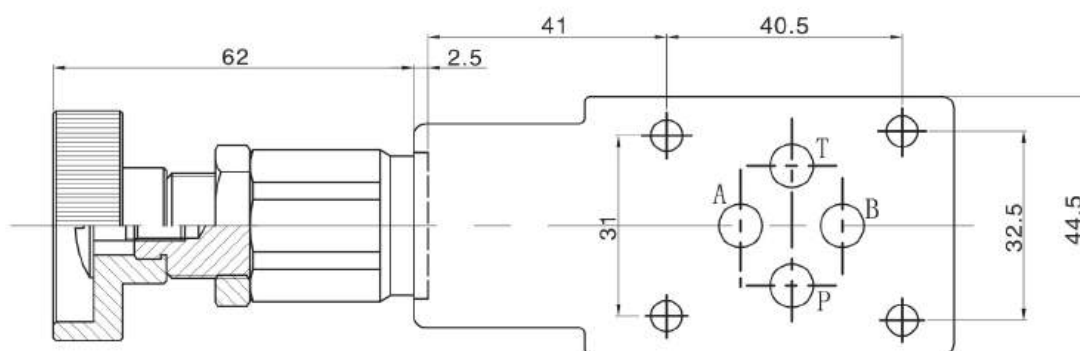
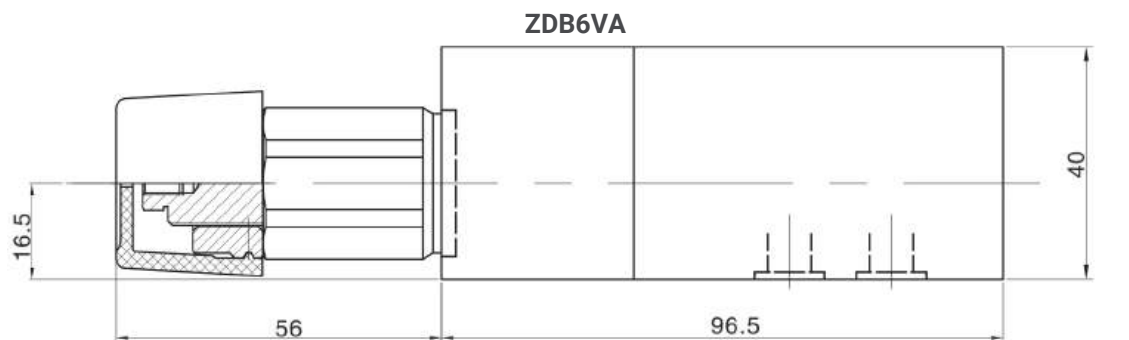
Mounting site	Suitable for NBR or fluorine rubber seal	Mineral oil-suit to NBR or FKM seals	
	Suitable for fluorine rubber seal	Phosphate-suit to FKM seals	
Temperature range of the scope	°C	-30~+80(NBR seals)	
		-20~+80(FKM seals)	
Viscosity scope	mm ² /s	10~800	
The oil cleanliness		The maximum oil pollution level according to NAS1638 class 9 and ISO4406 20, 18, class 15	
The maximum working pressure Chamber A	MPa	31.5	
The maximum adjustment pressure	MPa	5; 10; 20; 31.5	
The maximum flow	L/min	100	
Weight	ZDB6, Z2DB6	kg	1.0, 1.2
	ZDB10, Z2DB10	kg	2.7, 3.1

CHARACTERISTIC CURVE

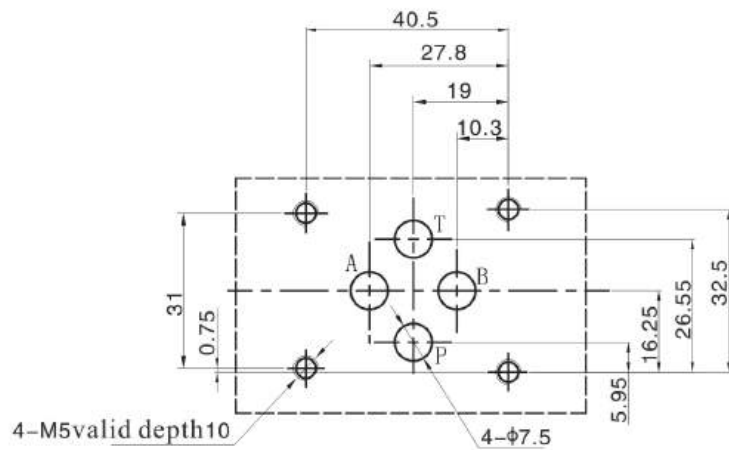
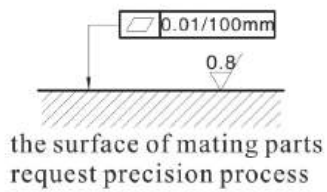
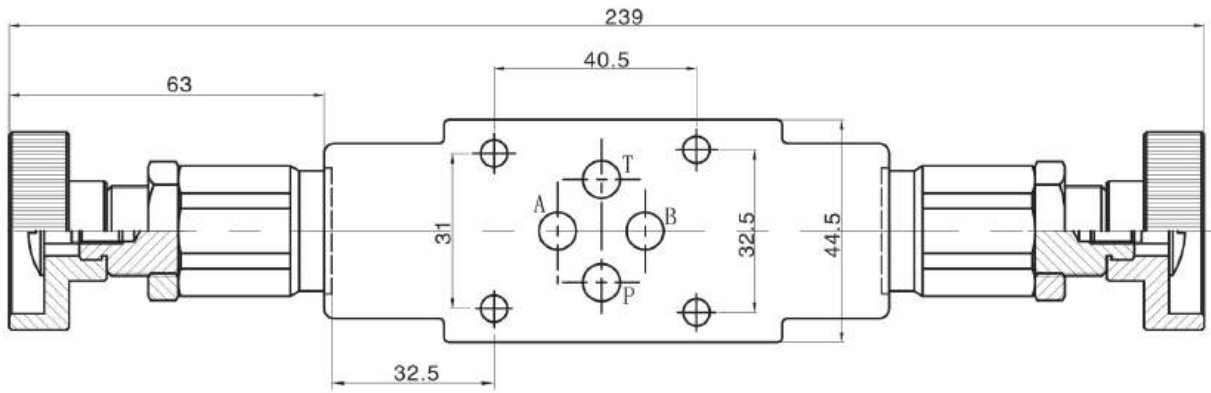
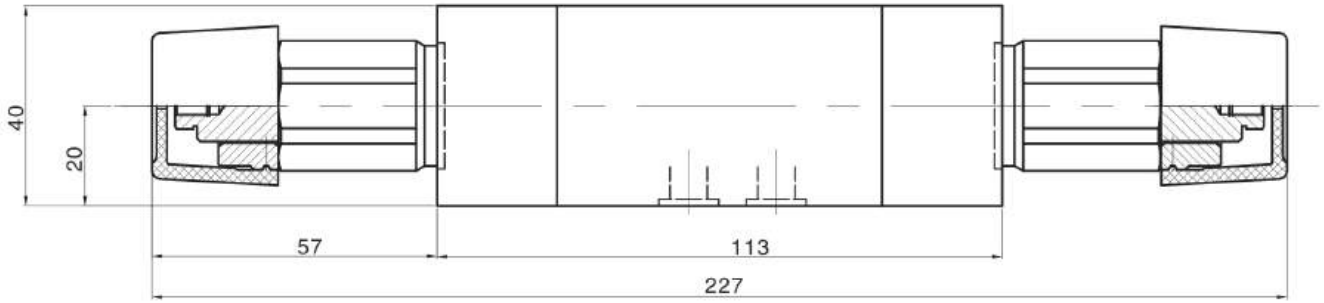
measured when there was no back pressure, and using mineral oil HLP46 which its oil temperature is 40°C



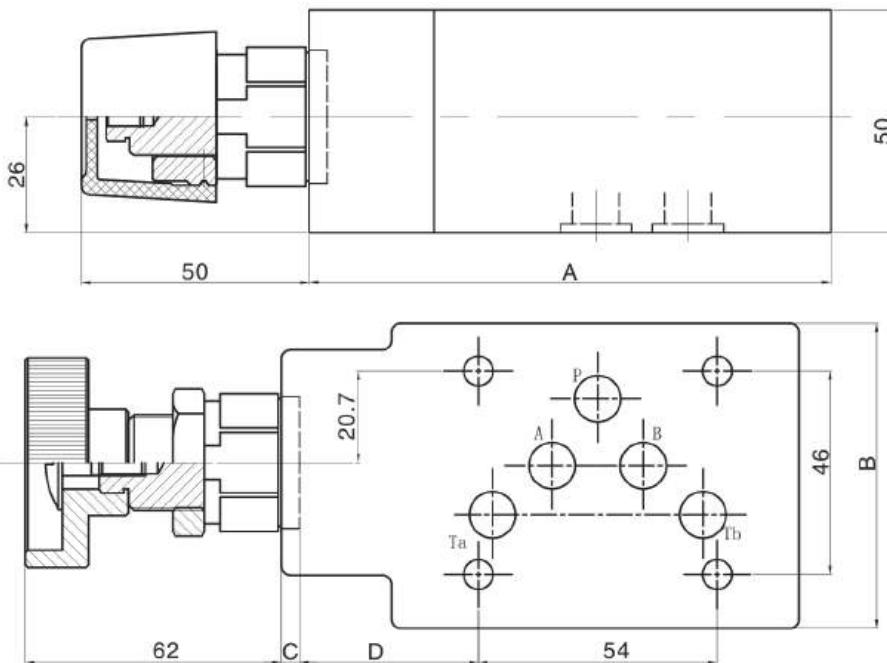
UNIT DIMENSIONS



Z2DB6VC/Z2DB6VD

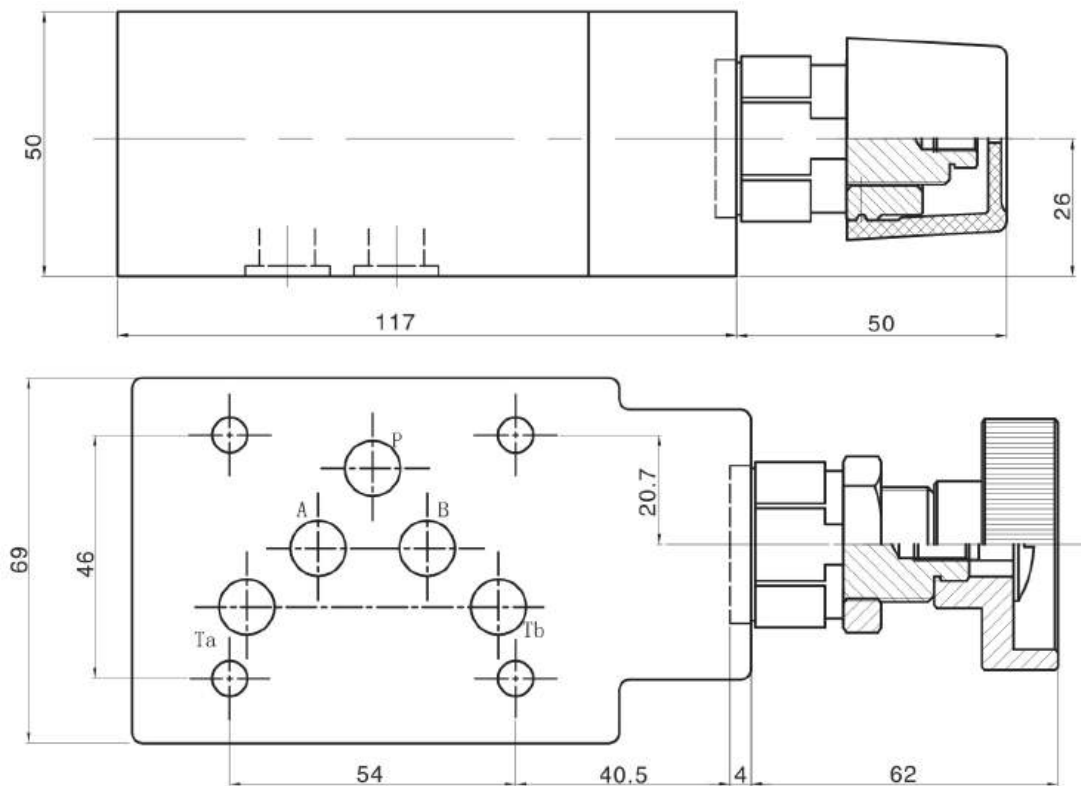


ZDB10VA/ZDB10VP/ZDB10VT

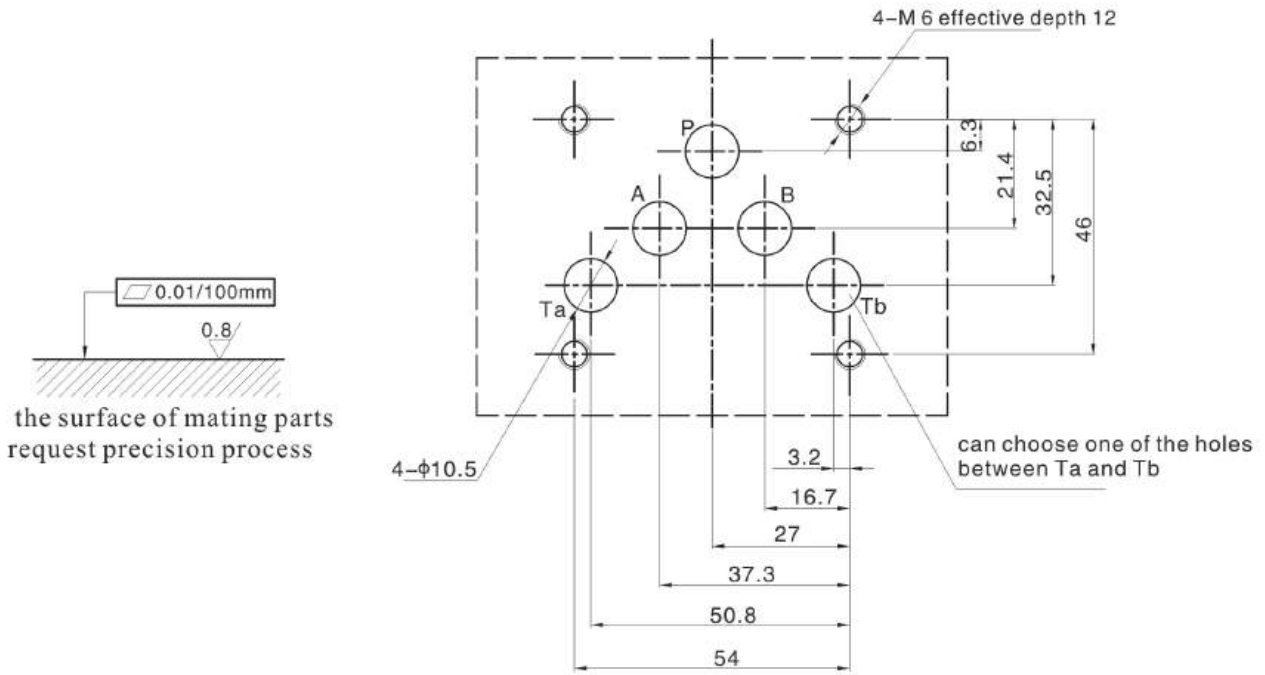
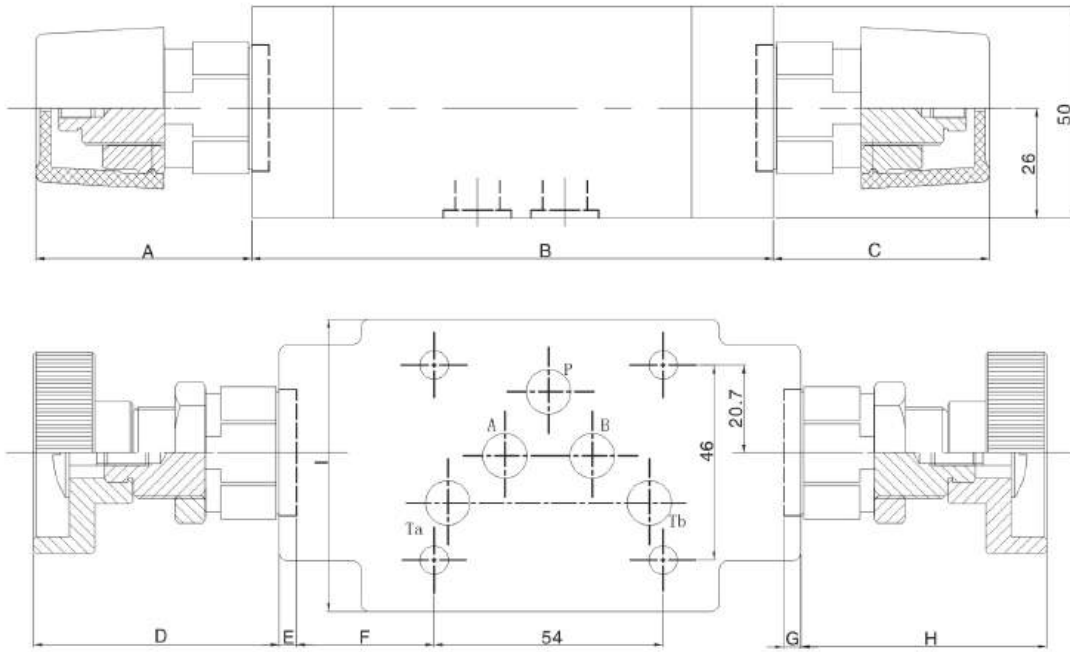


type	A	B	C	D
ZDB10VA and ZDB10VP	117	69	4	40.5
ZDB10VT	105	70	2	27.8

ZDB10VB



Z2DB10VC/Z2DB10VD

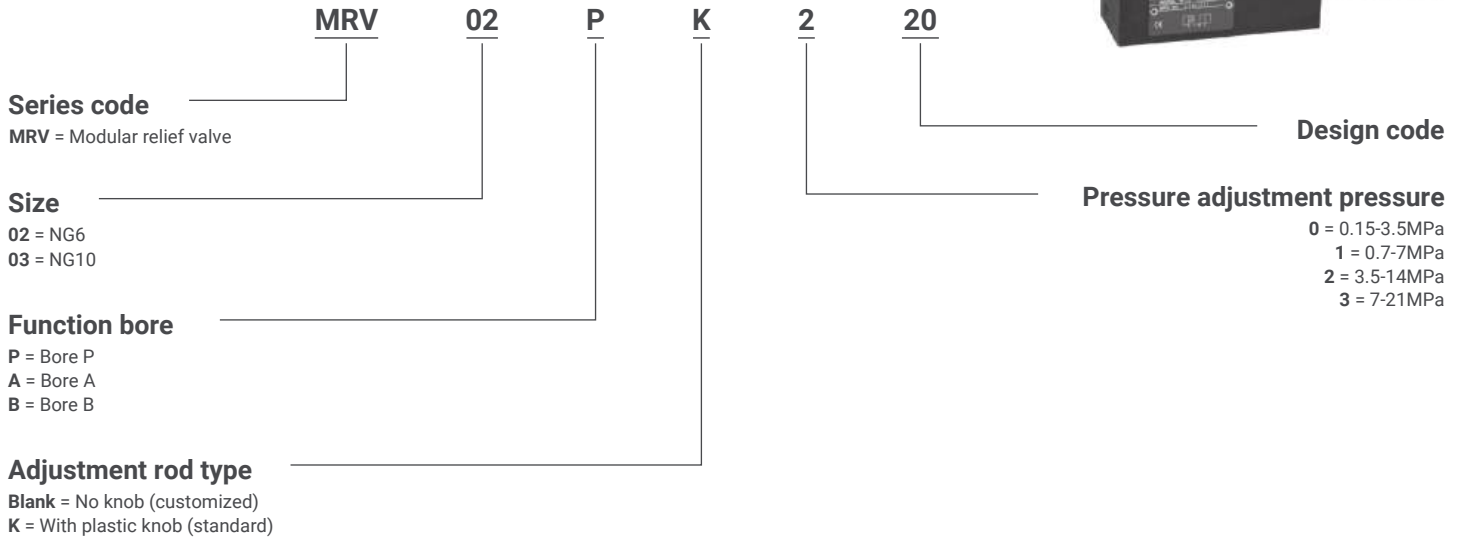


type	A	B	C	D	E	F	G	H	I
ZDB10VC	52	123	53	64	2	32.5	1	53	69
ZDB10VD	48	132	48	60	6	33	6	48	70

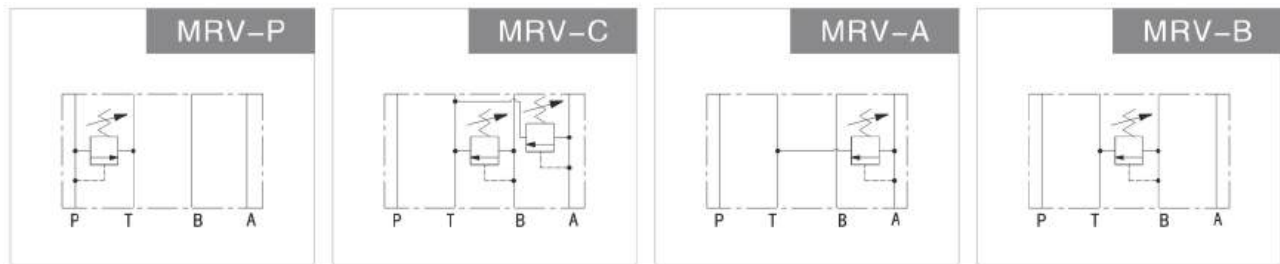
MRV Series Modular Relief Valves



ORDERING DETAILS



SYMBOLE



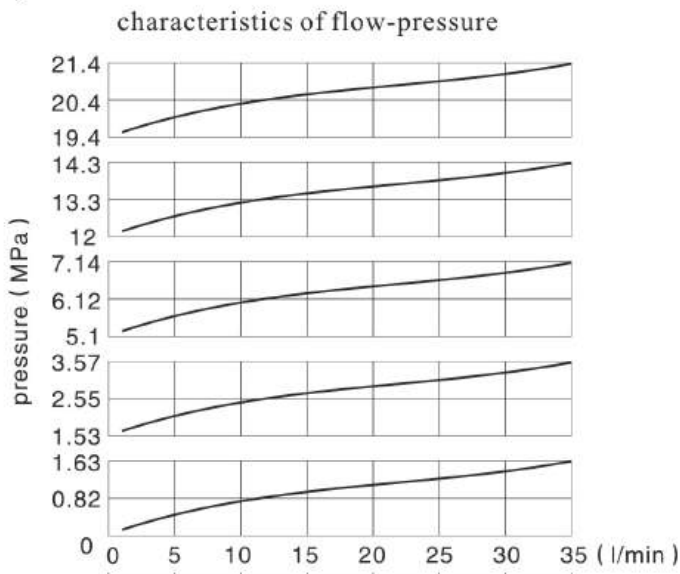
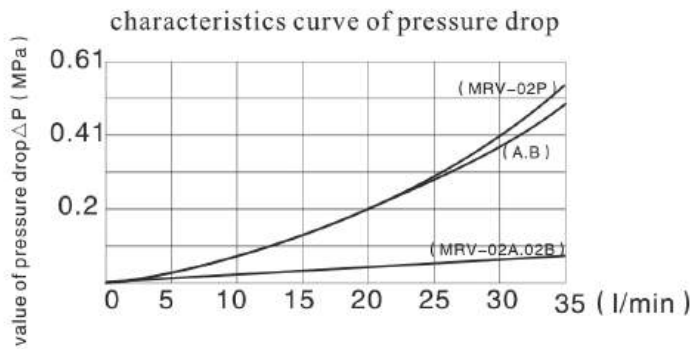
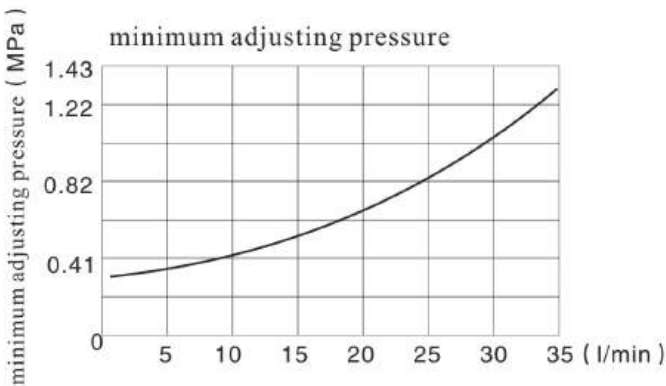
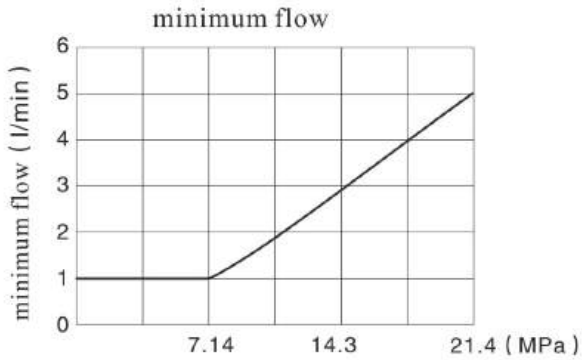
TECHNICAL DATA

Hydraulic Data

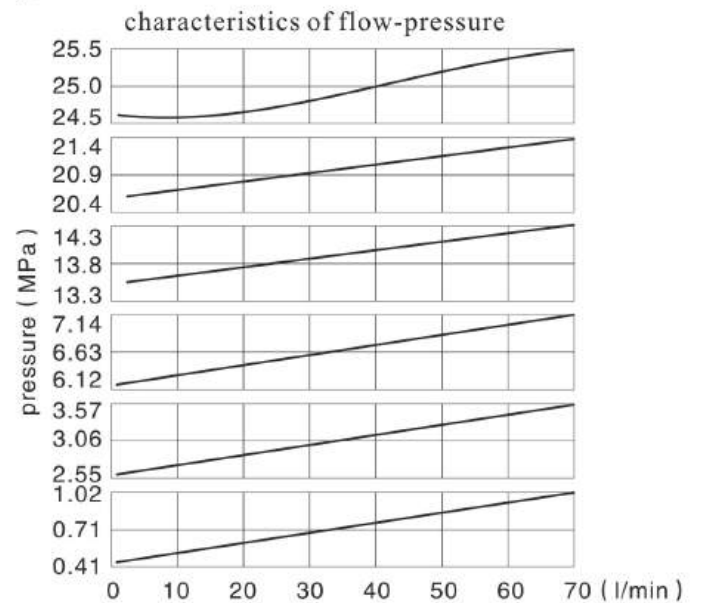
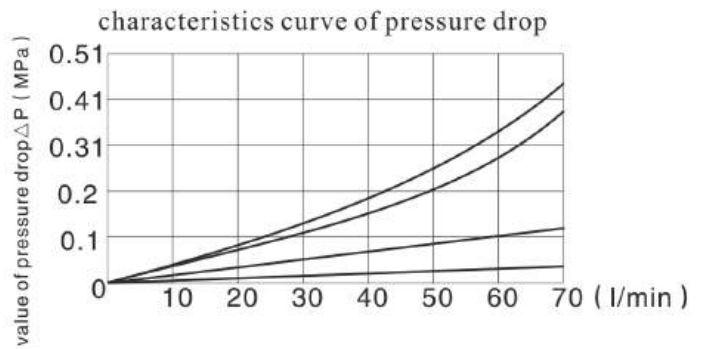
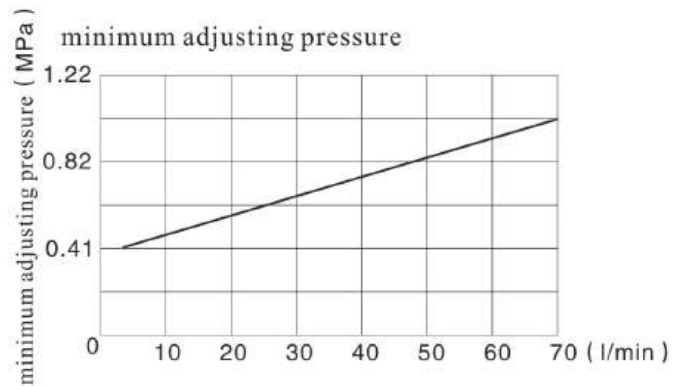
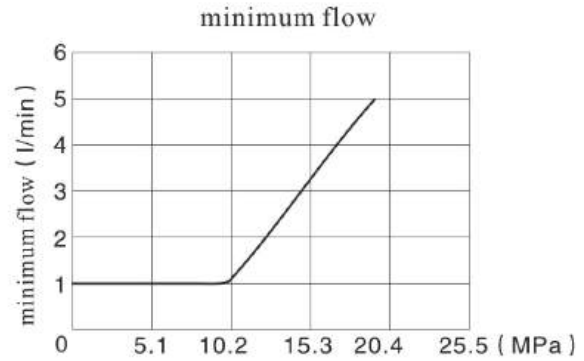
Model	Maximum pressure bar	Open pressure selection MPa	Maximum flow L/min	Weight kg
MRV-02	210	0.7-7; 3.5-14; 7-25	35	1.2
MRV-03			70	2.7

CHARACTERISTIC CURVE

MRV-02

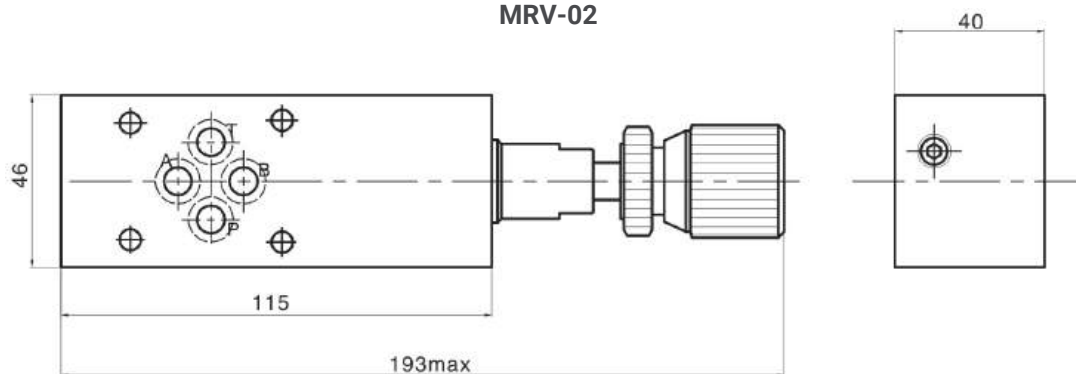


MRV-03

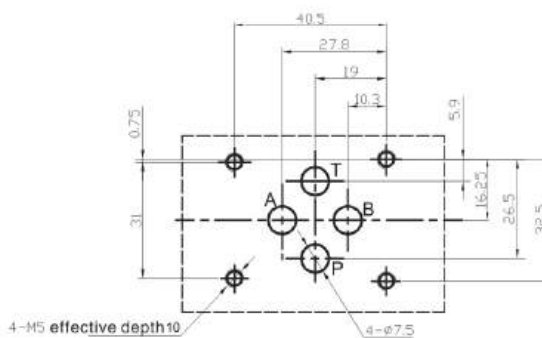


UNIT DIMENSIONS

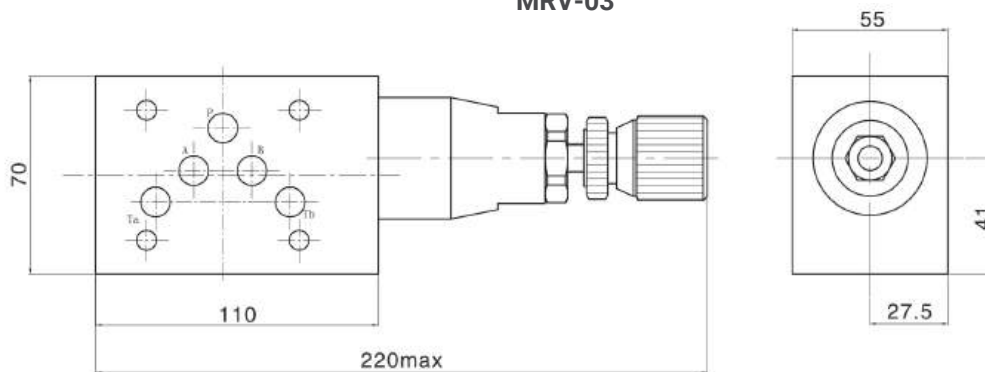
MRV-02



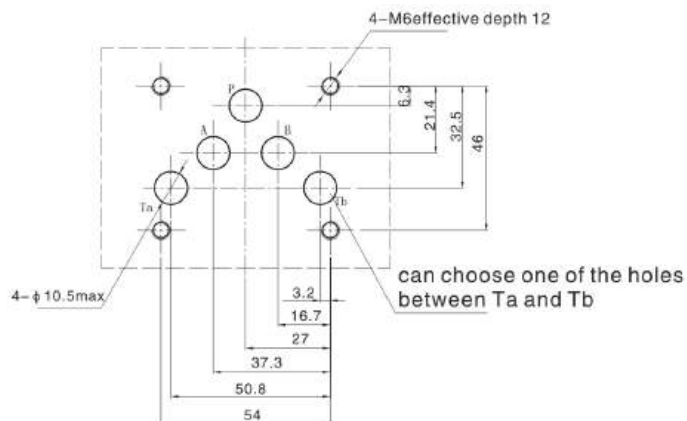
the surface of mating parts request precision process



MRV-03



the surface of mating parts request precision process



DG series direct pressure relief valves

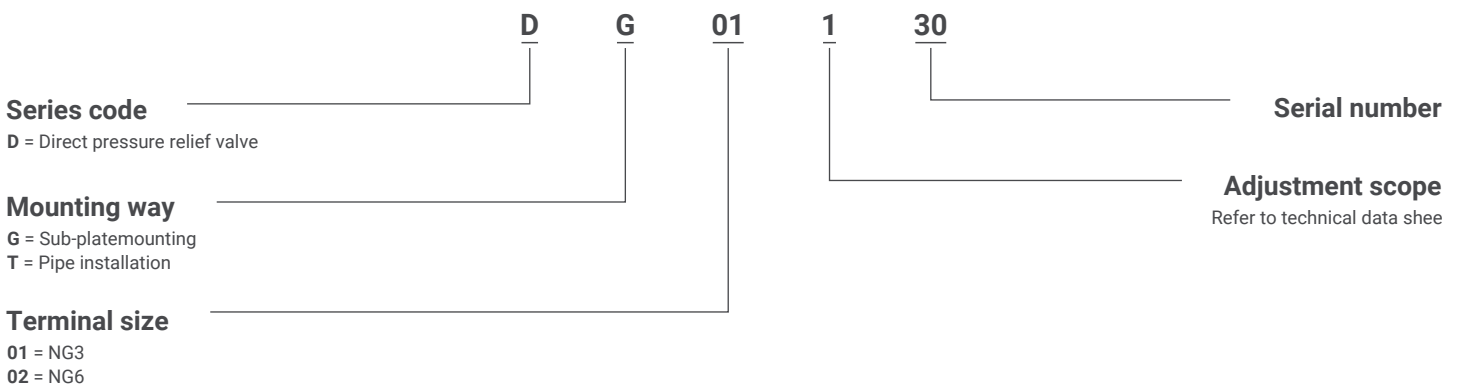


CONTENT

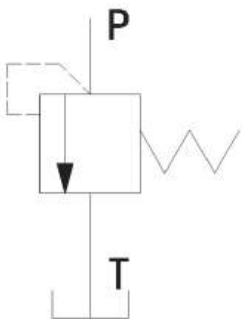
1. DG-01 series valve is used as far-distance control, it is used to connect with the control chamber and control double pressure and triplicate pressure as well.
2. DG-02 series valve is used as the pressure adjustment of small flow valve or regarded as safety valve.



ORDERING DETAILS



SYMBOLE



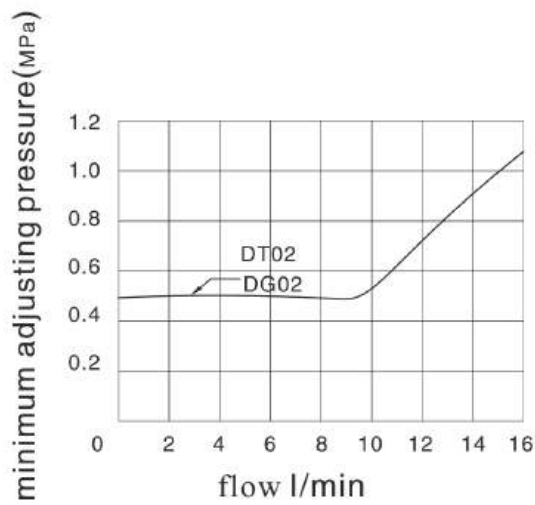
TECHNICAL DATA

Hydraulic Data

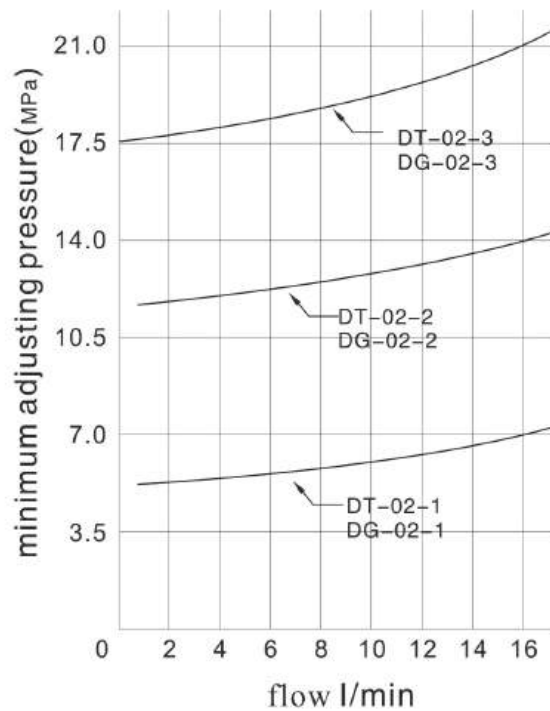
Model	Maximum pressure MPa	Maximum flow L/min	Pressure adjustment scope MPa	Weight kg	
				Pipe installation	Sub-plate mounting
DG-T01-**	25	2	*~25	1.6	1.4
DG-T02-**	21	16	1: *~7 2: 3.5~14 3: 7~21	1.5	1.5

CHARACTERISTIC CURVE

[minimum adjusting pressure]

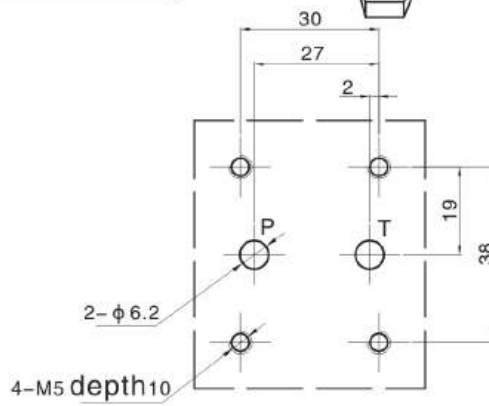
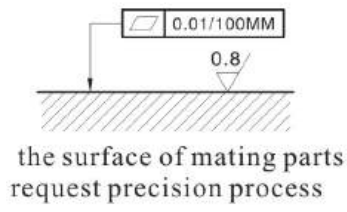
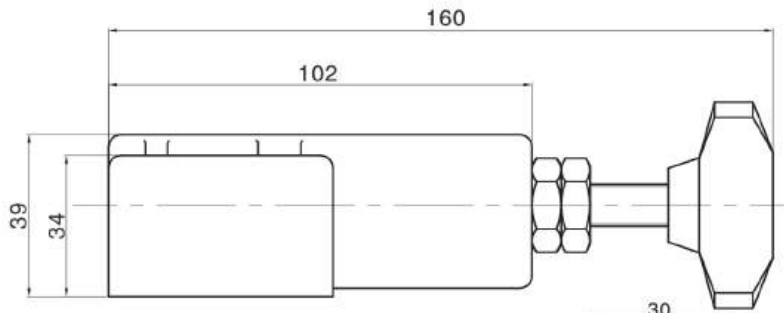
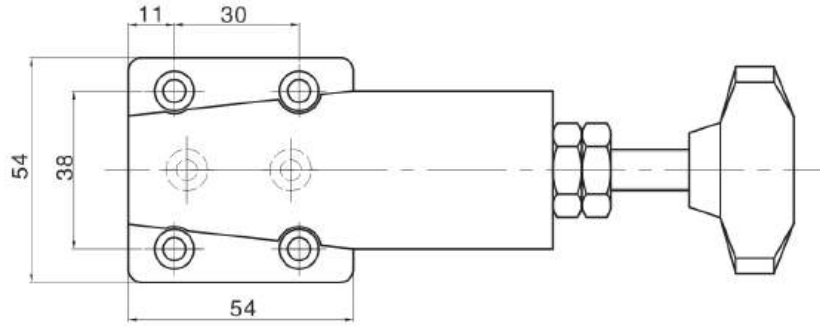


[characteristics of flow-pressure]

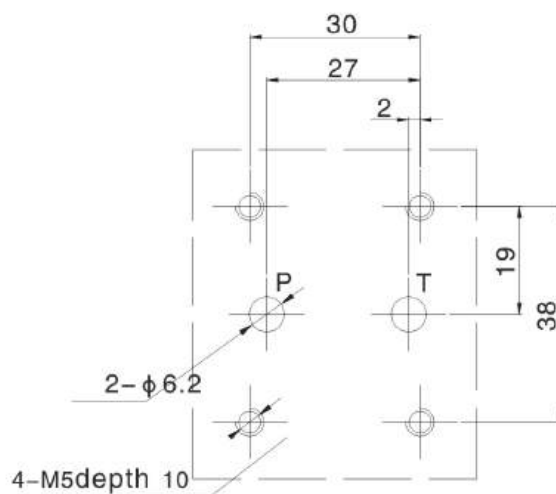
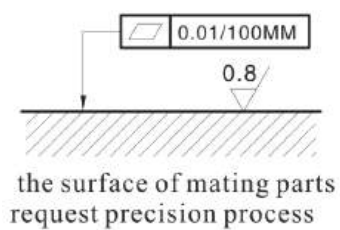
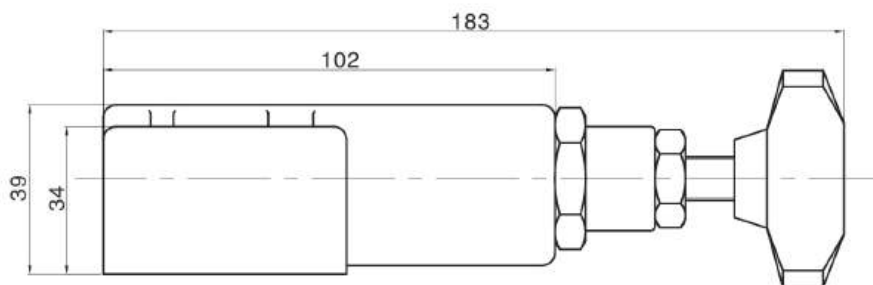
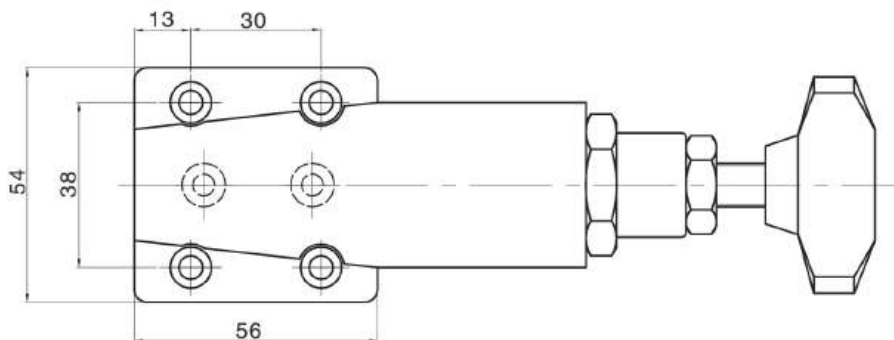


UNIT DIMENSIONS

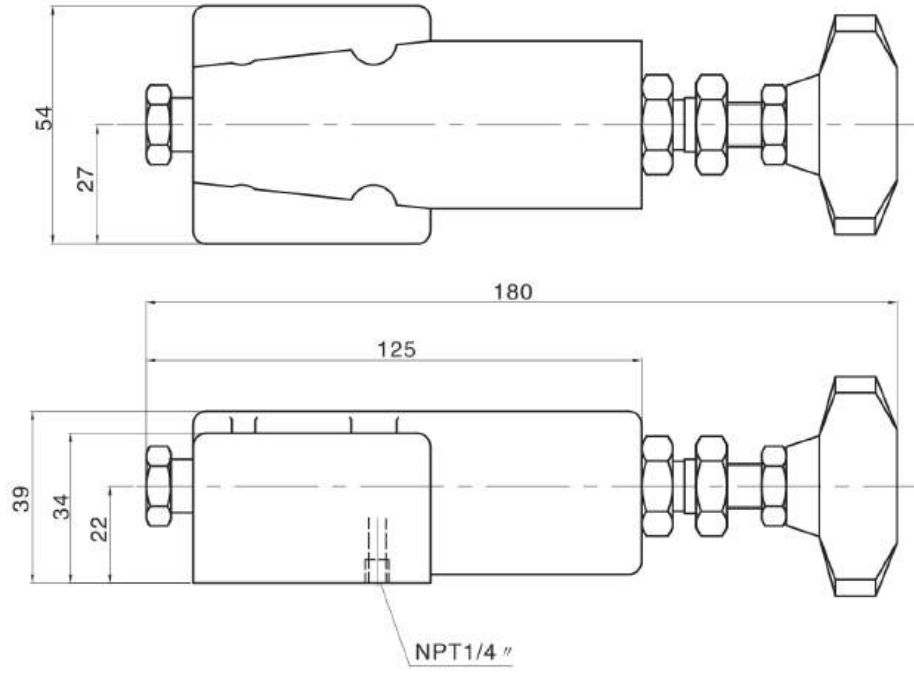
DG-01



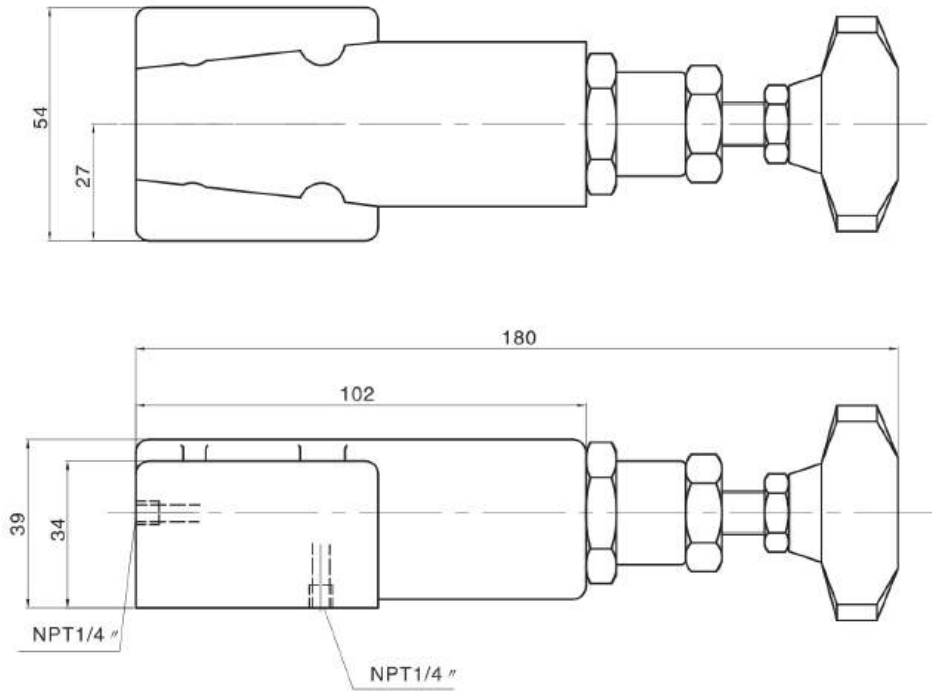
DG-02



DT-01



DT-02



DB/DBW-5X series pilot operated relief valves

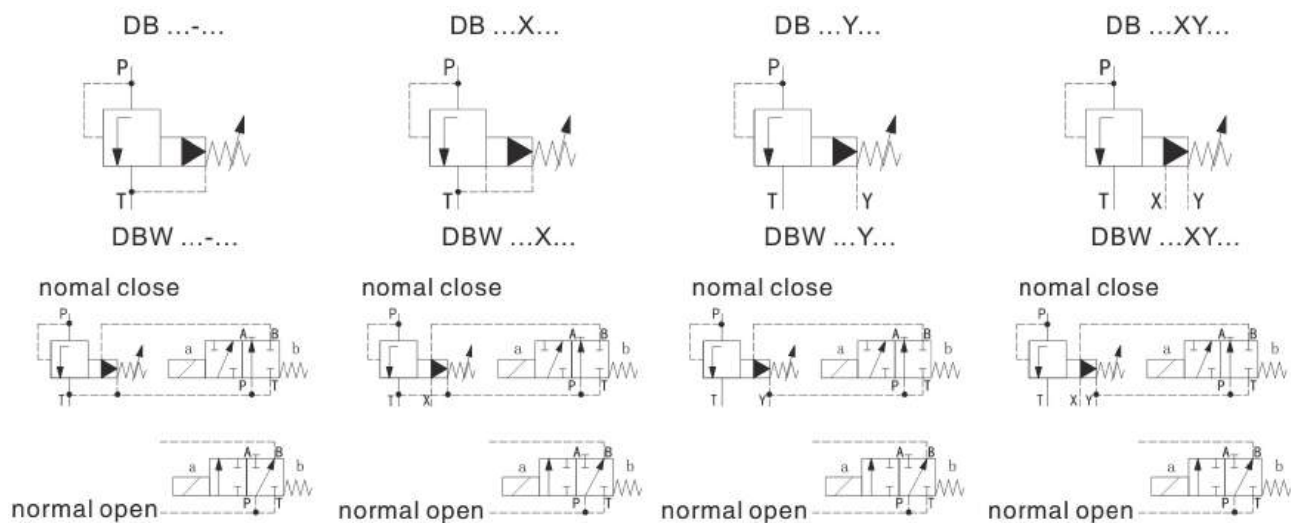


CONTENT

1. Used for sub-plate mounting
2. Mounting surface according to TYPE DIN24320E ISO 6264 and CETOP=RP121H
3. Used for thread connector and oil block installation
4. 4 kinds of adjusting components
5. Rotary knob
6. Adjusting bolt with shield
7. Knob with scale
8. 5 kinds of setting pressure
9. Unloading with the aid of the direct solenoid valve
10. Alternative transit time delay (type DBW only)



SYMBOLE



ORDERING DETAILS

DB W 10 A 1 5X 10 X D24 L

No code = Without solenoid
W = With solenoid

No code = Pilot-operated valve (complete)
C = Pilot control valve without main spool insert (do not enter any size)
C1 = Pilot control valve with main spool insert (enter size 10 or 30)
T = Pilot control valve without main spool insert for subplate mounting (do not enter any size)

Size

Size	Mounting type	
	Subplate mounting	Thread connection
Marking		
10	= 10	10
15		15
20	= 20	20
25		25
32	= 30	32

A = Normally closed
B = Normally open

Type of connection
No code = Subplate mounting or cartridge valve
G = Threaded connection

Adjustment type for pressure adjustment
1 = Rotary knob (not for version "C" and "T")
2 = Sleeve with hexagon and protective cap
3 = Lockable rotary knob with scale
7 = Rotary knob with scale

Serial number
5X = Component series 50...59

Pressure rating
5 = Set pressure up to 50 bar
10 = Set pressure up to 100 bar
20 = Set pressure up to 200 bar
31.5 = Set pressure up to 315 bar
35 = Set pressure up to 350 bar

Pilot oil supply and pilot oil return
No code = Internal pilot oil supply and pilot oil return
X = External pilot oil supply, internal pilot oil return
Y = Internal pilot oil supply, external pilot oil return
XY = External pilot oil supply and pilot oil return

Additional mark

Hydraulic oil
No code = Mineral hydraulic oil
V = Phosphonolipid hydraulic oil

Thread
No code = British thread
2 = Metric thread

R12 = Solenoid valve orifice diameter 1.2mm

Connector
L = With DIN 43650 connector
H = DIN 43650 connector with lamp

N = Manually override

Voltage
D12 = DC12V **D24** = DC24V
A110 = AC110V-50HZ **A220** = AC220V-50HZ
R110 = RAC110V **R220** = RAC220V

No code = Without switching shock damping
S = With switching shock damping (only version "DBW")

TECHNICAL DATA

Hydraulic Data

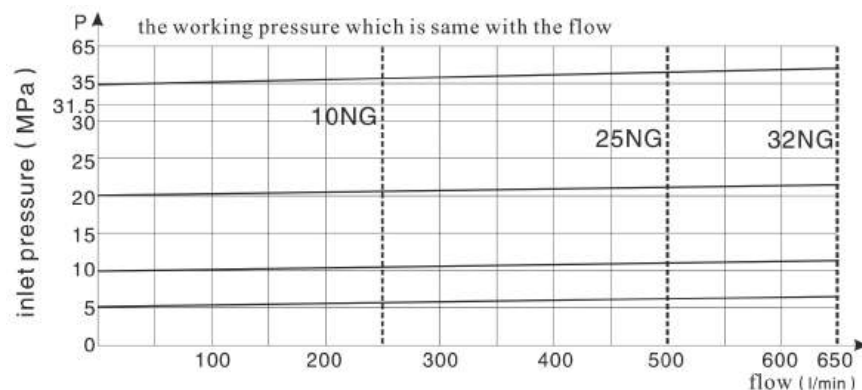
Mounting site				Optional				
Weigh				DB..10	DB..15	DB..20	DB..25	DB..30
Sub-plate mounting	DB	kg	2.6	-	3.5	-	4.4	
	DBW	kg	3.8	-	4.7	-	5.6	
	DBC	kg	1.2(DBWC type+1.2kg)					
	DBC 10 or 30	kg	1.5(DBWC10 type+1.5kg)					
Thread connection	DB...G...	kg	5.3	5.2	5.1	5.0	4.8	
	DBW...G..	kg	6.5	6.4	6.3	6.2	6.0	
Transit time delay		kg	0.6					
Technical data of directional data				Refer to type WE6 directional solenoid valve				

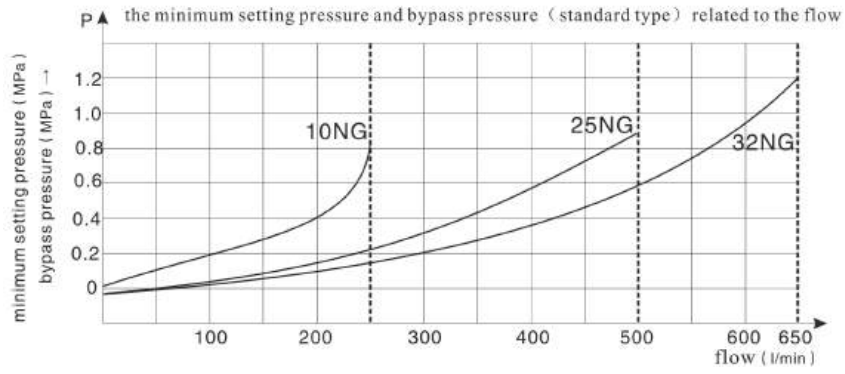
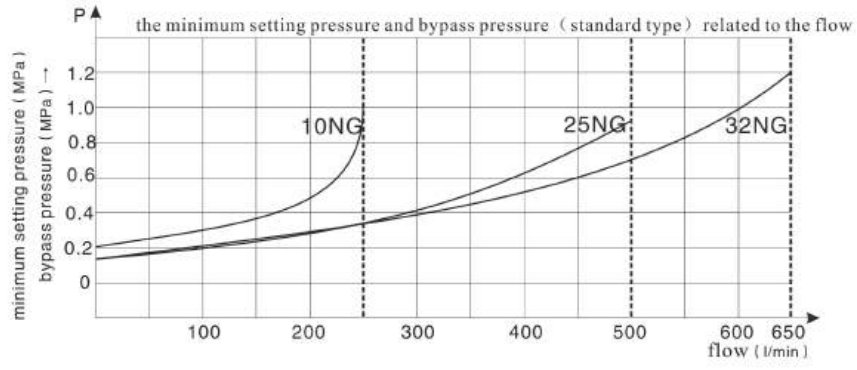
Hydraulic parameter

Working pressure oil port A/B/X/P		bar	350max				
Back pressure oil port Y	DB	bar	315max				
	DBW	bar	AC 160max, DC 210max				
Setting pressure	min.	bar	Associated with Q (Refer to performance curve)				
	max.	bar	50, 100, 200, 315, 350				
Maximum flow			DB10	DB15	DB20	DB25	DB30
	Sub-plate mounting	L/min	250	-	500	-	650
	Thread connection	L/min	250	500	500	500	650
Oil			Mineral oil by type DIN51524(HL, HLP), Phosphate (HFD-R)				
Temperature range of oil			-30~+80 (NBR seal)				
			-20~+80(FK seal)				
Viscosity range	mm ² /s	From 10 to 800					
The cleanliness of oil		The maximum oil pollution level according to NAS1638 class 9 So we recommend the minimum filtration precision of filter β10≥75					

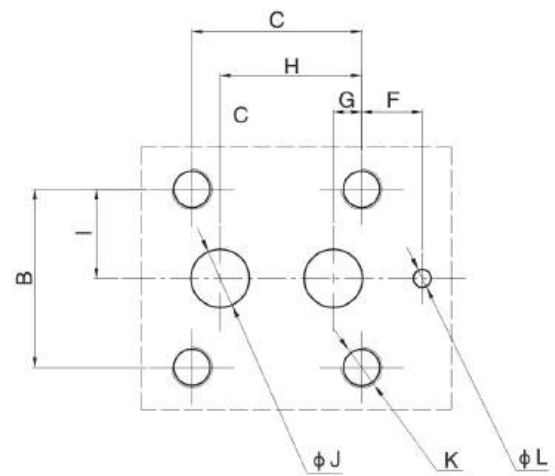
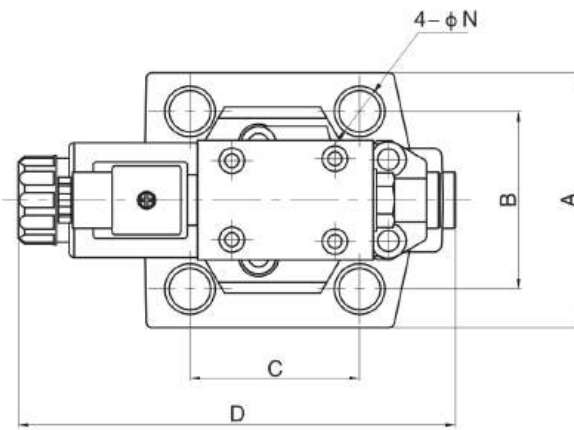
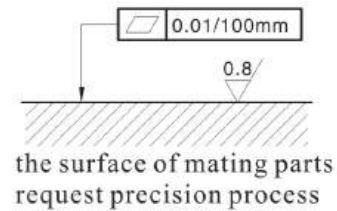
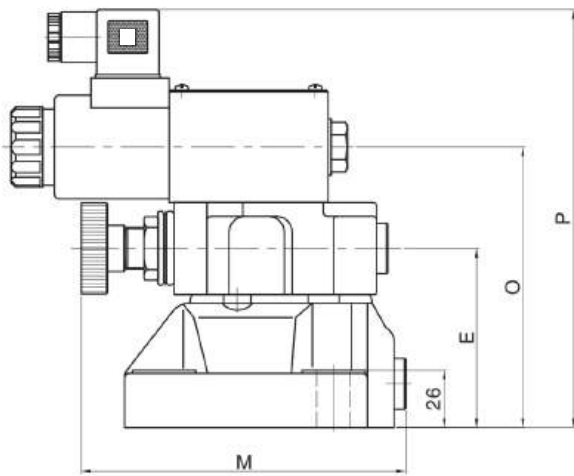
CHARACTERISTIC CURVE

The curve was measured when draining external controlling oil under zero-pressure.
For the oil return of internal controlling oil, take the pressure of port B to be added on the showing value.





UNIT DIMENSIONS



Model	A	B	C	D	E	F	G	H	I
DB10/DBW10	78	53.8	53.8	166	78	0	22.1	47.5	26.9
DB20/DBW20	100	70	66.7	174.5	78	23.8	11.1	55.6	35
DB30/DBW30	115	82.6	88.9	185	78	31.8	12.7	76.2	30

Model	J	K	L	M	N	O	P
DB10/DBW10	12	M12	6	125	14	122	182
DB20/DBW20	22	M16	6	133.5	18	122	182
DB30/DBW30	30	M18	7	144	20	122	182

SBG Series Low Noise Pilot Control Relief Valve

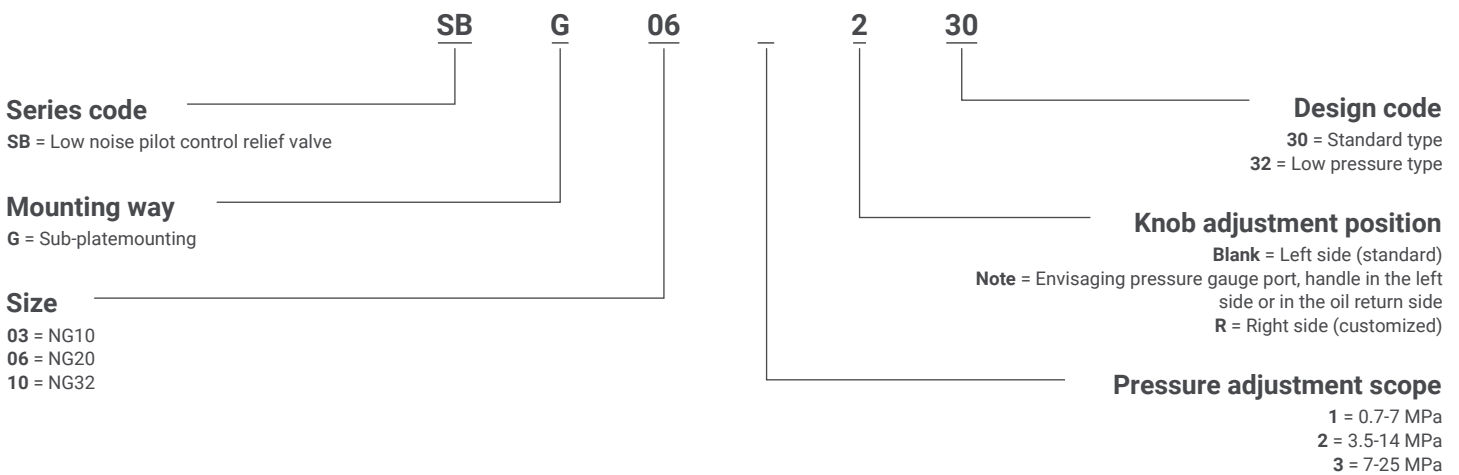


CONTENT

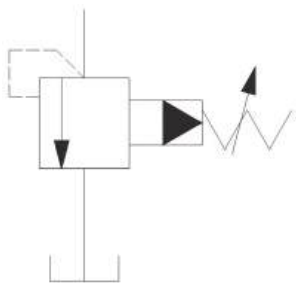
1. Low noise design can ensure the high stability.
2. Protect the pump and dominate valve in case of exceeding the rated voltage, as well as keeping the whole hydraulic system working under the rated pressure.
3. Use the far-distance control to actualize the far-distance control and unloading control.



ORDERING DETAILS



SYMBOLE

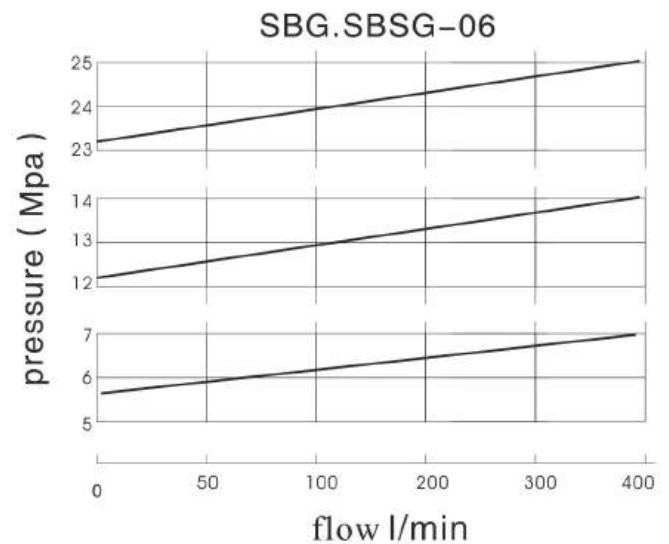
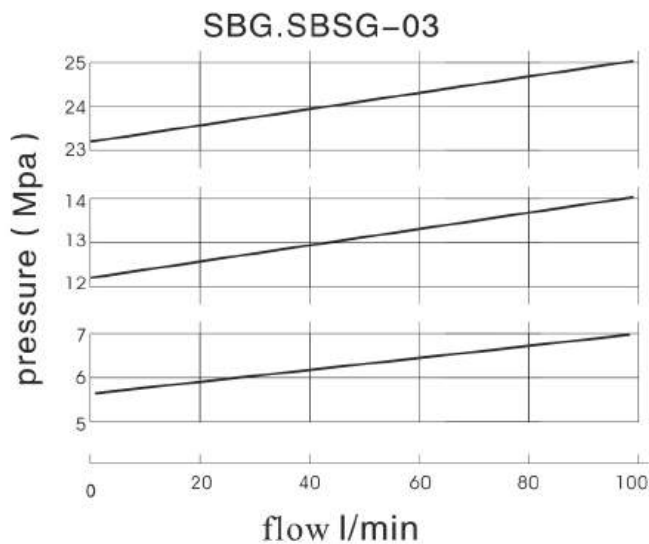


TECHNICAL DATA

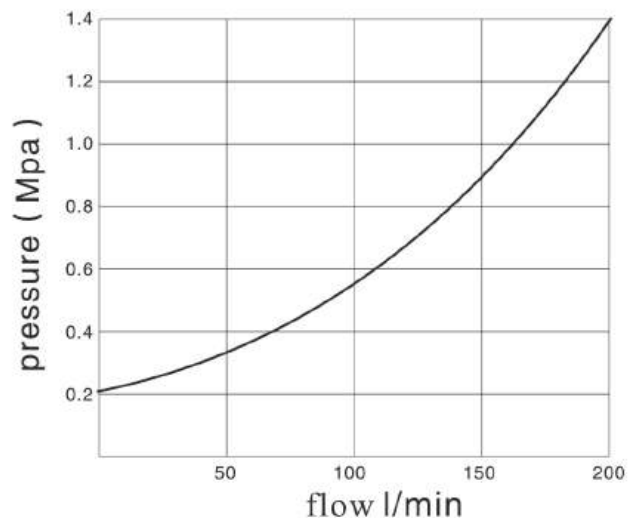
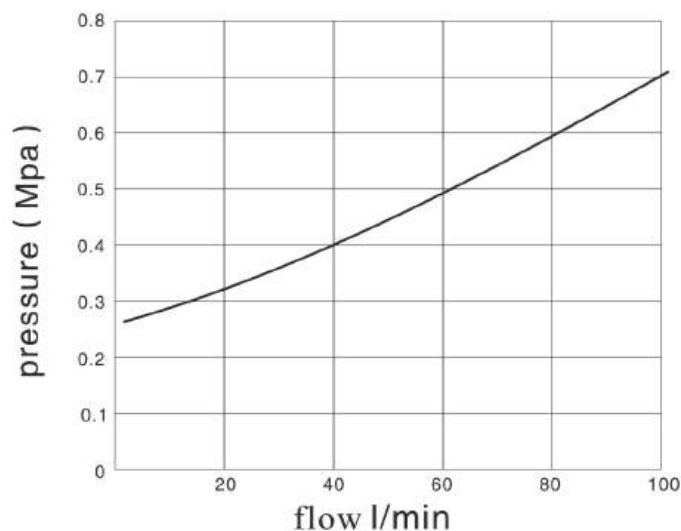
Hydraulic Data

Model	Maximum pressure bar	Open pressure selection bar	Maximum flow L/min	Weight kg
SBG-03	250	0-250	100	4.8
SBG-06			200	5.9

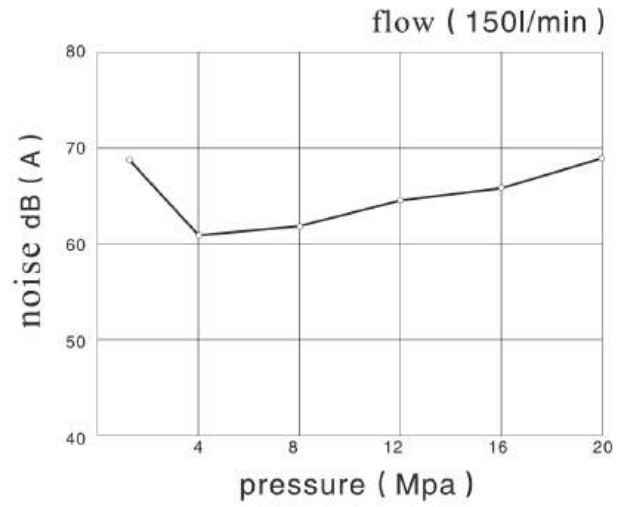
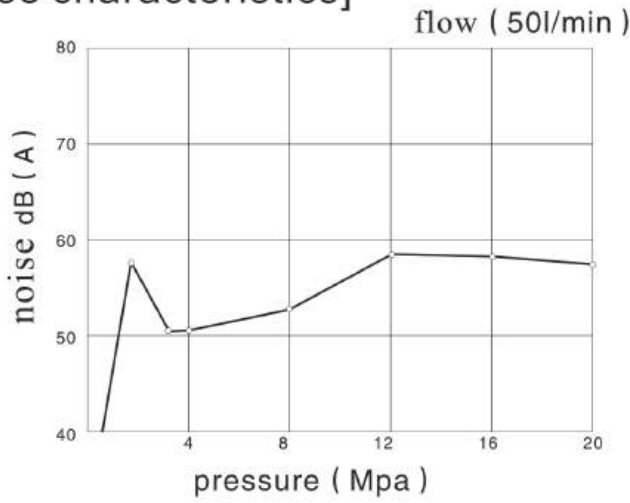
CHARACTERISTIC CURVE



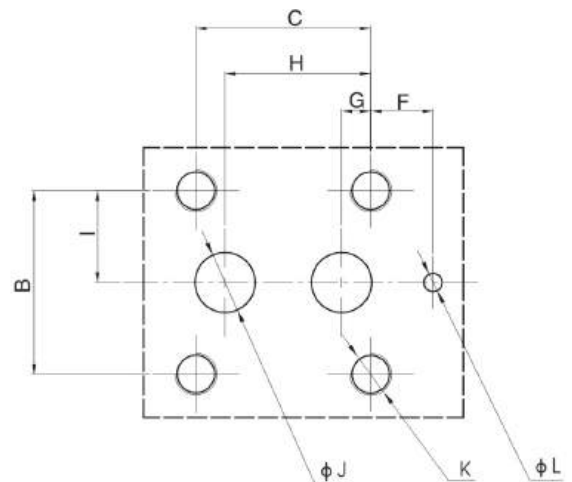
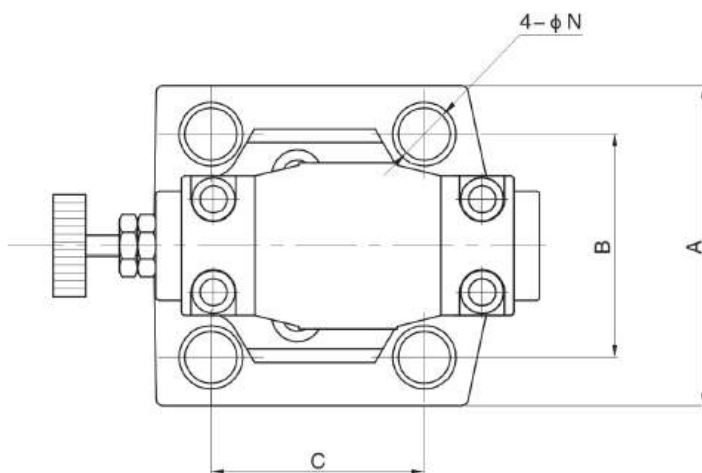
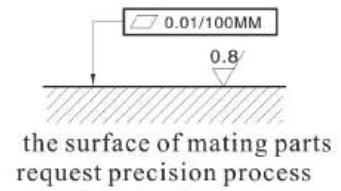
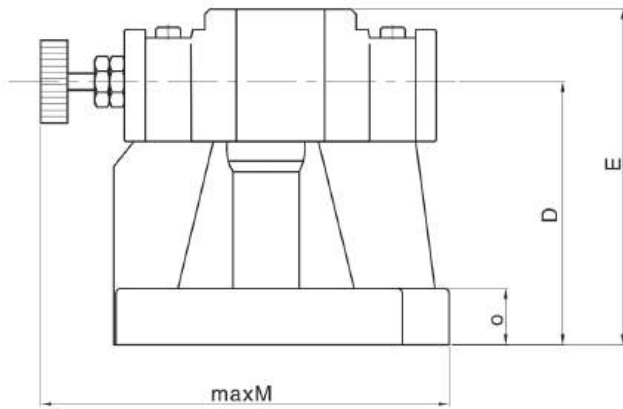
[characteristics of flow-maximum adjusting-pressure]



[noise characteristics]



 **UNIT DIMENSIONS**



Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
SBG03	78	53.8	53.8	103	153	0	22.1	47.5	26.9	14.5	M12	6.2	163.5	13.5	25
SBG06	98	70	66.7	106	156	23.8	11.1	55.6	35	23	M16	6.2	163.5	17.5	29

SBSG Series Low Noise Solenoid Control Relief Valves

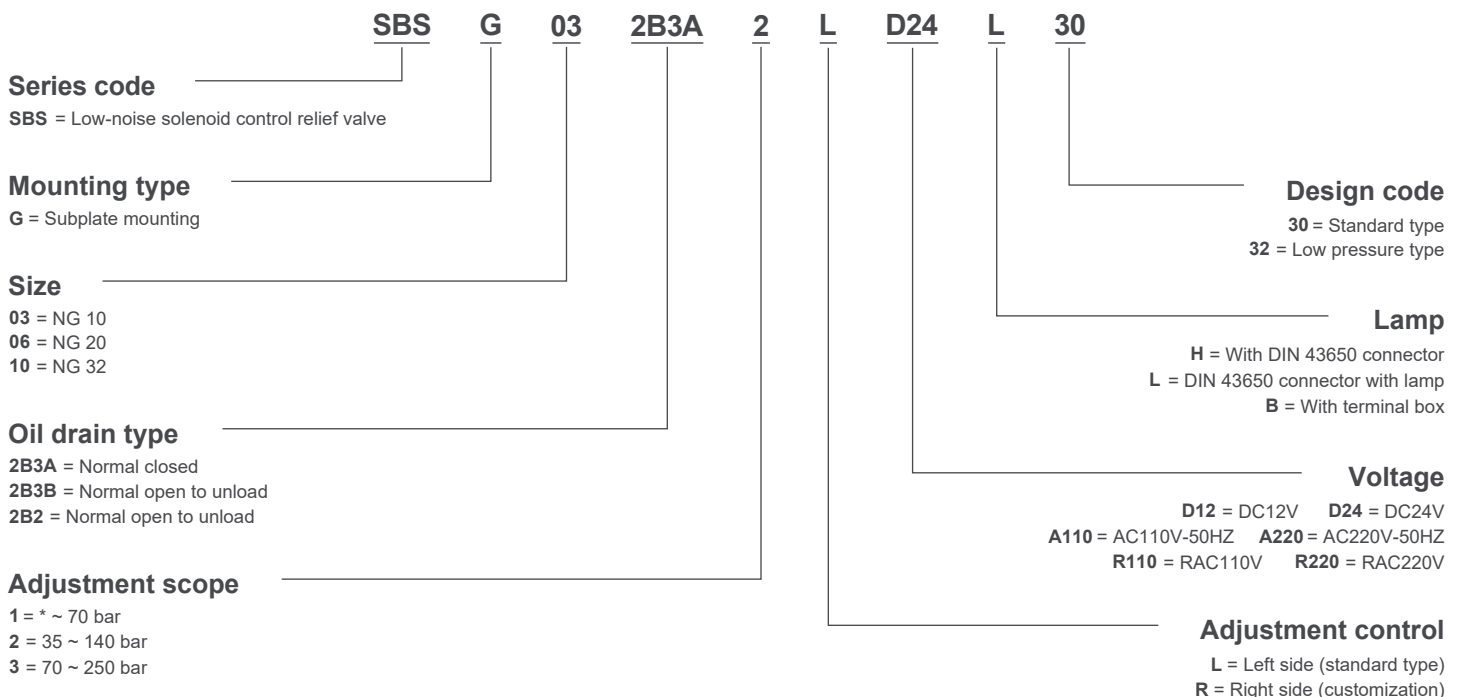


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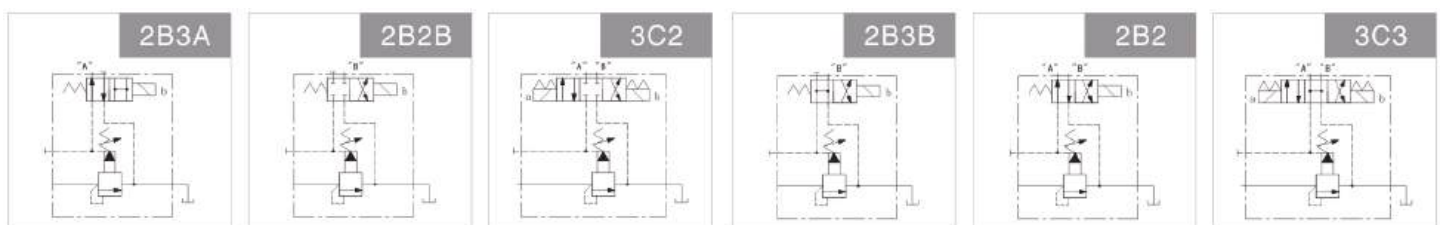
1. Low noise design can ensure the high stability.
2. Under the electric control can ensure oil pump and hydraulic system unloading and keep the rated pressure; Combining with the remote valve can actualize 2~3 degree pressure control.



ORDERING DETAILS



SYMBOLE




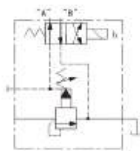
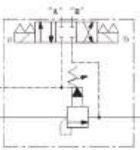
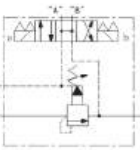


TECHNICAL DATA

Hydraulic Data

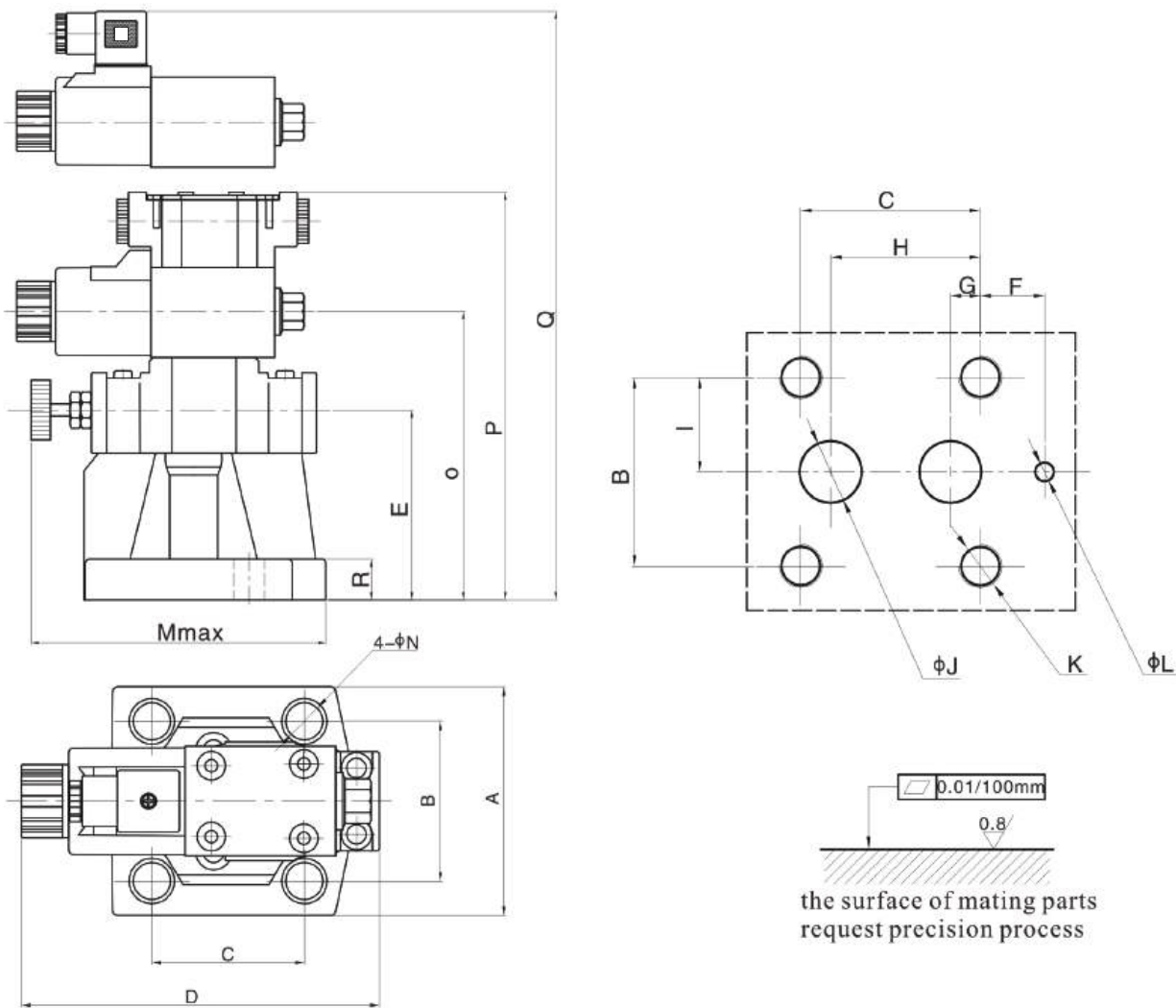
Model	Maximum pressure bar	Open pressure selection bar	Maximum flow L/min	Weight kg
SBSG-03	250	0-250	100	4.8
SBSG-06			200	5.9

Form of drainage

form of oil drainage	hydraulic symbol	type of solenoid valve	the relationship between solenoid powered on and remote connected		
			Solenoid a	Solenoid b	Connection of oil drainage
2B3A		DSG-02-2B3A		Power off	Connect to port A
				Power on	Connect to tank (no load)
2B3B		DSG-02-2B3B		Power off	Connect to tank (no load)
				Power on	Connect to port B
2B2B		DSG-02-2B2B		Power off	In closed state (setting pressure of relief valve)
				Power on	Connect to port B
2B2		DSG-02-2B2		Power off	Connect to port A
				Power on	Connect to port B
3C2		DSG-02-3C2		Power off	In closed state (setting pressure of relief valve)
				Power on	Connect to port A
				Power off	Connect to port B
3C3		DSG-02-3C3		Power off	In closed state (setting pressure of relief valve)
				Power on	Connect to port A
				Power off	Connect to port B

UNIT DIMENSIONS

SBSG



Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
SBSG03	78	53.8	53.8	168	103	0	22.1	47.5	26.9	14.5	M12	6.2	163.5	13.5	153	218	214	25
SBSG06	98	70	66.7	168	106	23.8	11.1	55.6	35	23	M16	6.2	163.5	17.5	156	221	217	29

BG Series Pilot Control Relief Valve

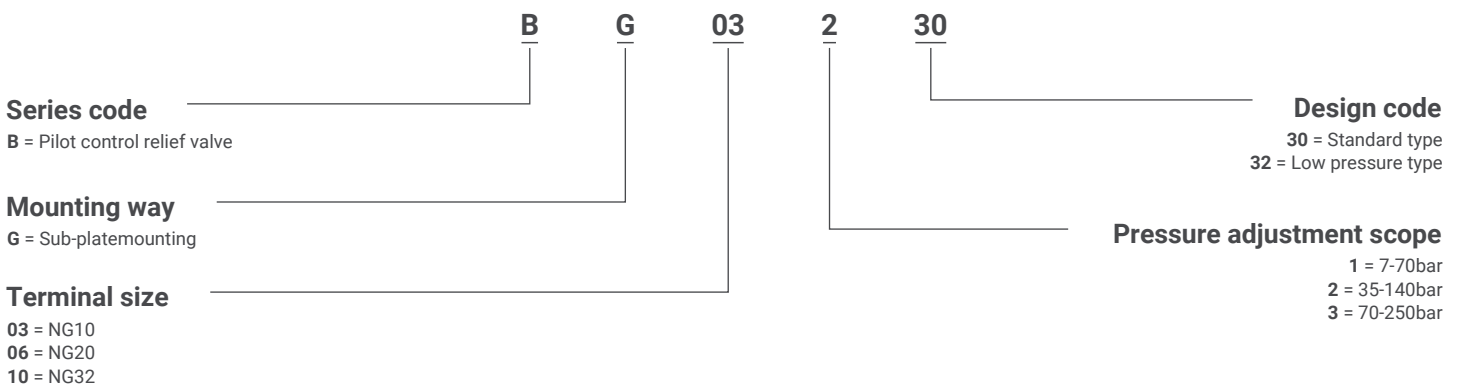


CONTENT

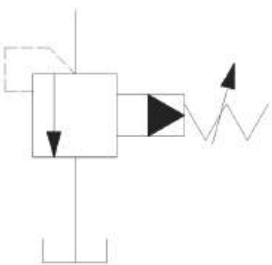
1. Protect pump and control valve in case of exceeding the rated voltage and keep the whole hydraulic system working under the stable pressure.
2. Use the unloading port or far-distance control to actualize far-distance control or unloading.
3. The pilot control design can ensure large flow and low noise.



ORDERING DETAILS



SYMBOLE



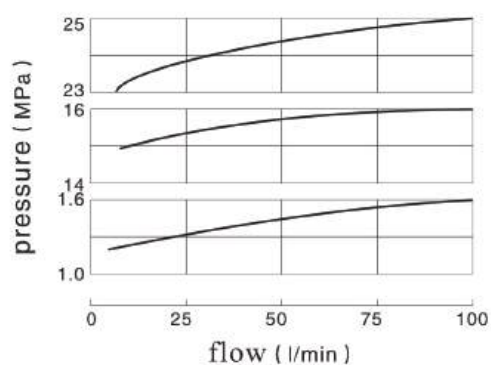
TECHNICAL DATA

Hydraulic Data

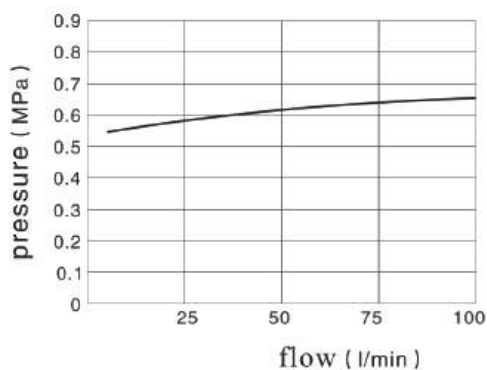
Model	Maximum pressure bar	Open pressure selection bar	Maximum flow L/min	Weight kg
BG-03	250	0~250	100	5.4
BG-06			200	6.8

CHARACTERISTIC CURVE

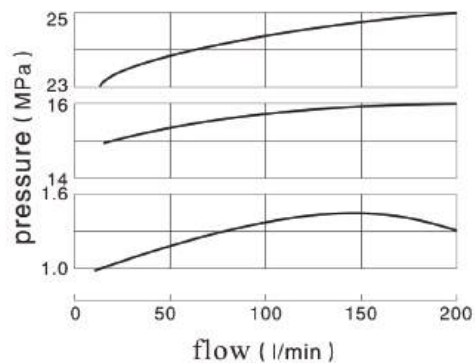
BG-03, BSG-03



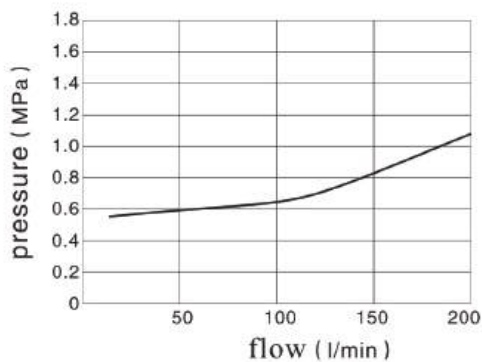
BG-03, BSG-03



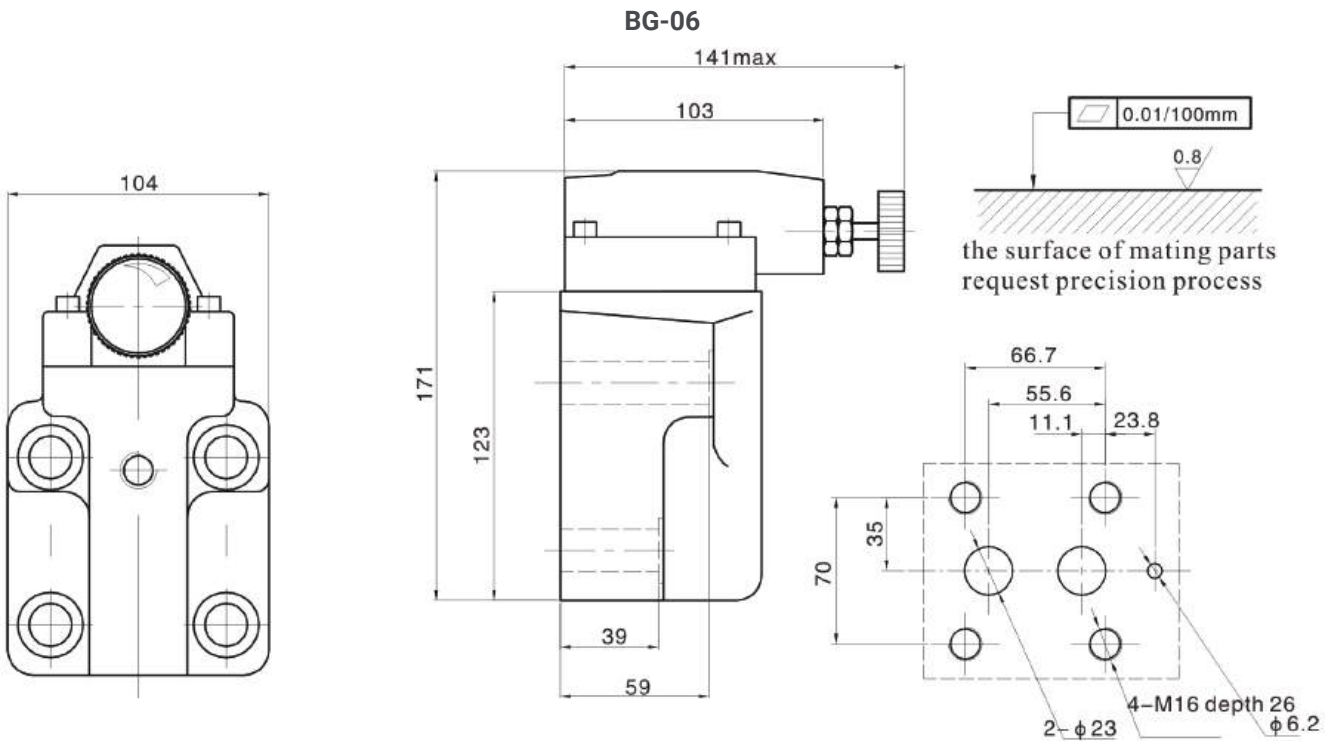
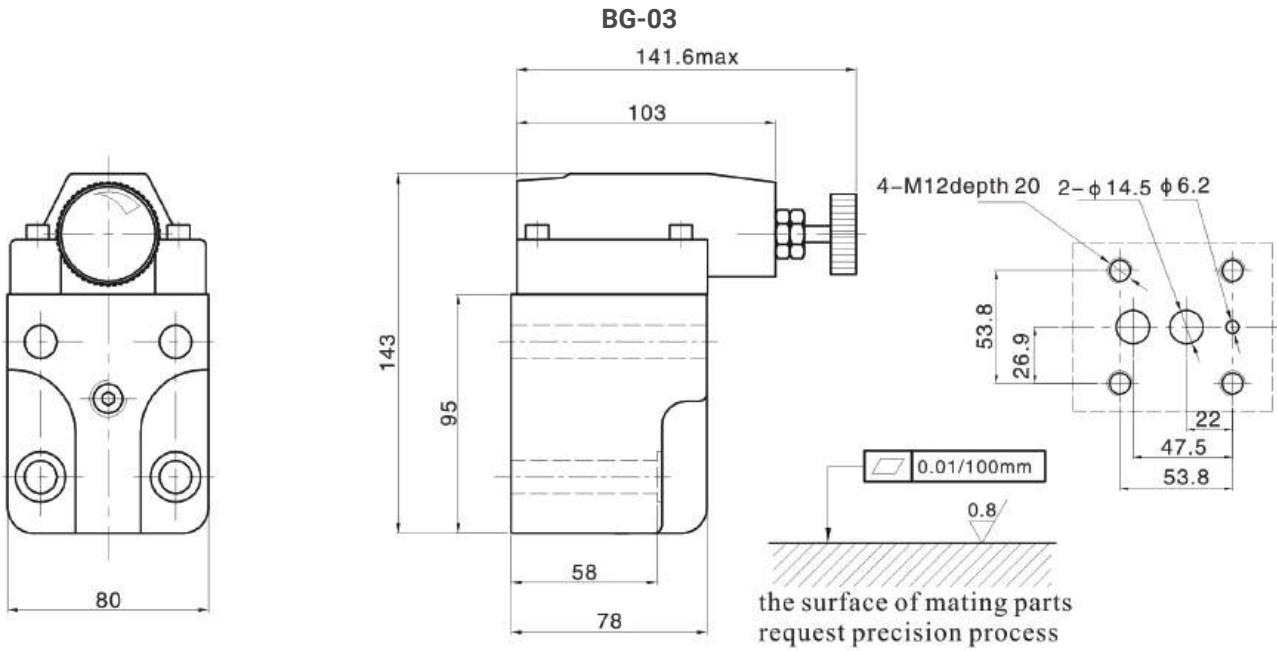
BG-06, BSG-06



BG-06, BSG-06



UNIT DIMENSIONS



BSG (SRV) Series Solenoid Control Relief Valve



CONTENT

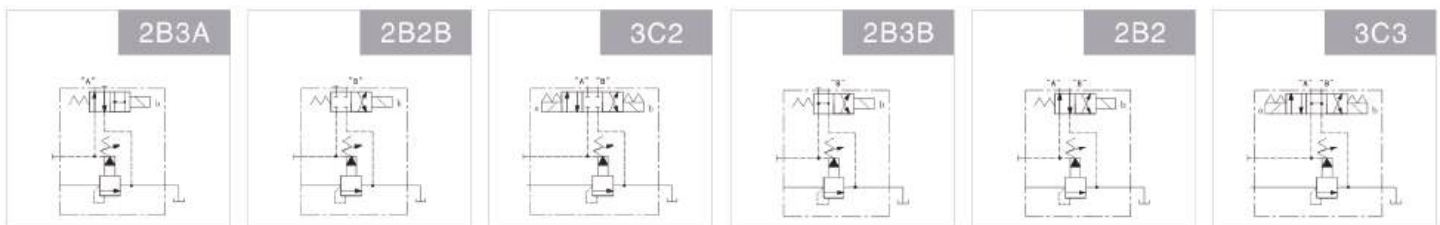
1. This valve is a combination of relief valve and solenoid valve and can use the electric signals to unload the pump.
2. It can also use pilot control relief valve to control the valve system under double or three-stage pressure.



ORDERING DETAILS

	BS(SRV)	G	03	2B3A	2	D24	L	
Series code	_____							Connector
BS(SRV) = Solenoid control relief valves								H = With DIN 43650 connector L = DIN 43650 connector with lamp B = With terminal box
Mounting type	_____							Voltage
G = Subplate mounting								D12 = DC12V D24 = DC24V A110 = AC110V-50HZ A220 = AC220V-50HZ R110 = RAC110V R220 = RAC220V
Size	_____							
03 = NG 10 06 = NG 20 10 = NG 32								
Oil drain type	_____							
2B3A = Normal closed 2B3B = Normal open to unload 2B2 = Normal open to unload								
Adjustment scope	_____							
1 = * ~ 70 bar 2 = 35 ~ 140 bar 3 = 70 ~ 250 bar								

SYMBOLE



TECHNICAL DATA

Hydraulic Data

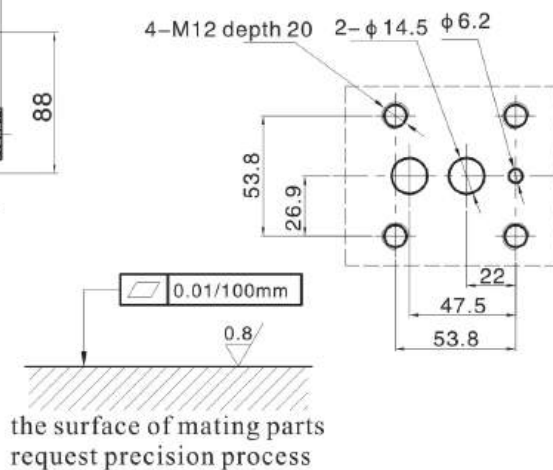
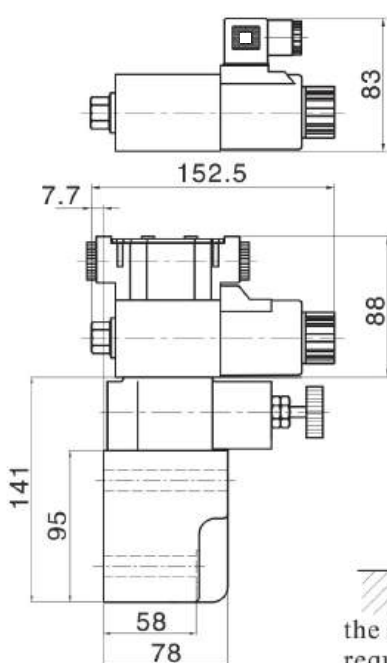
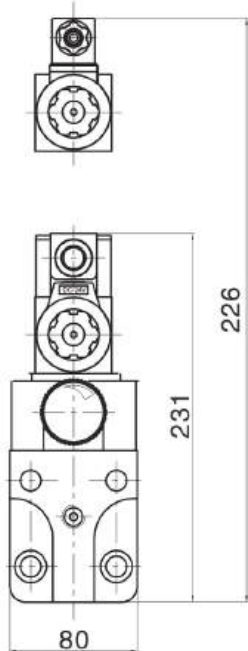
Model	Maximum pressure bar	Open pressure selection bar	Maximum flow L/min	Weight kg
BSG-03	250	0~250	100	5.5
BSG-06			200	7.1

Form of drainage

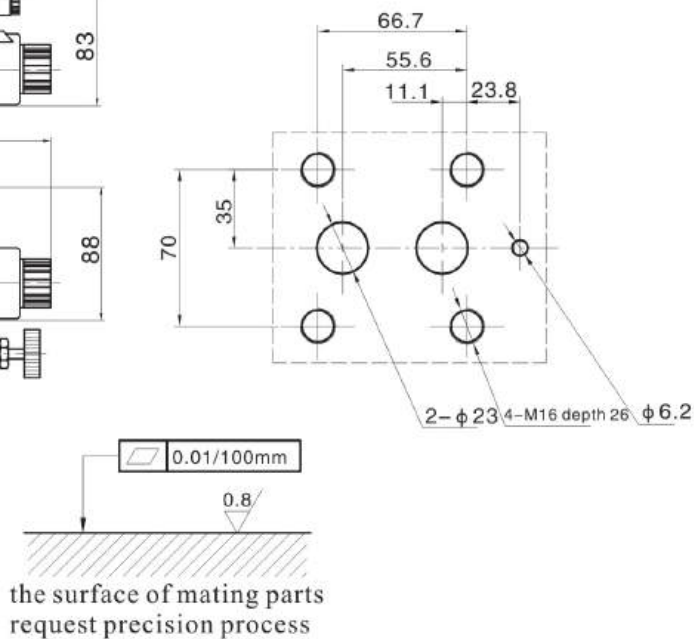
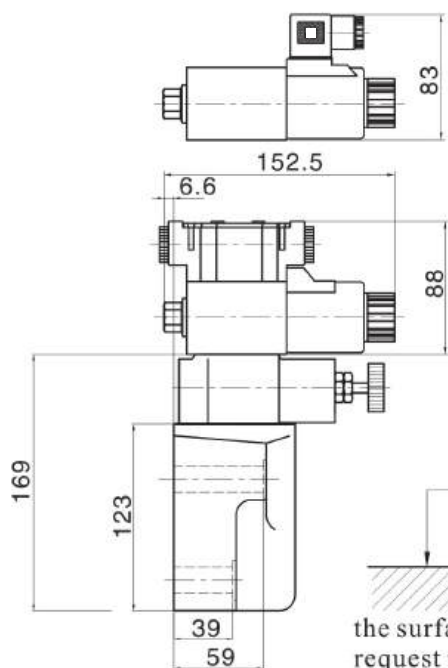
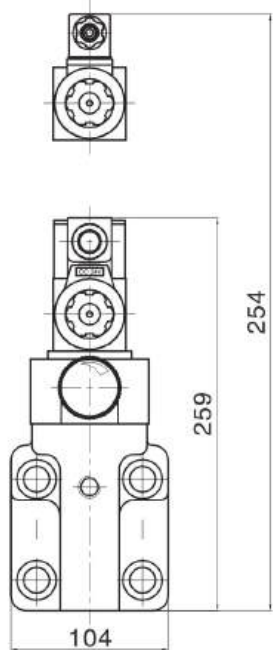
form of oil drainage	hydraulic symbol	type of solenoid valve	the relationship between solenoid powered on and remote connected		
			Solenoid a	Solenoid b	Connection of oil drainage
2B3A		DSG-02-2B3A	Power off		Connect to port A
			Power on		Connect to tank(no load)
2B3B		DSG-02-2B3B	Power off		Connect to tank(no load)
			Power on		Connect to port B
2B2B		DSG-02-2B2B	Power off		In closed state(setting pressure of relief valve)
			Power on		Connect to port B
2B2		DSG-02-2B2	Power off		Connect to port A
			Power on		Connect to port B
3C2		DSG-02-3C2	Power off	Power off	In closed state(setting pressure of relief valve)
			Power on	Power off	Connect to port A
			Power off	Power on	Connect to port B
3C3		DSG-02-3C3	Power off	Power off	In closed state(setting pressure of relief valve)
			Power on	Power off	Connect to port A
			Power off	Power on	Connect to port B

UNIT DIMENSIONS

BSG-03



BSG-06



BST type of solenoid controlled relief valve



ORDERING DETAILS

Series code BS T 06 2 30

BS = Solenoid controlled relief valve

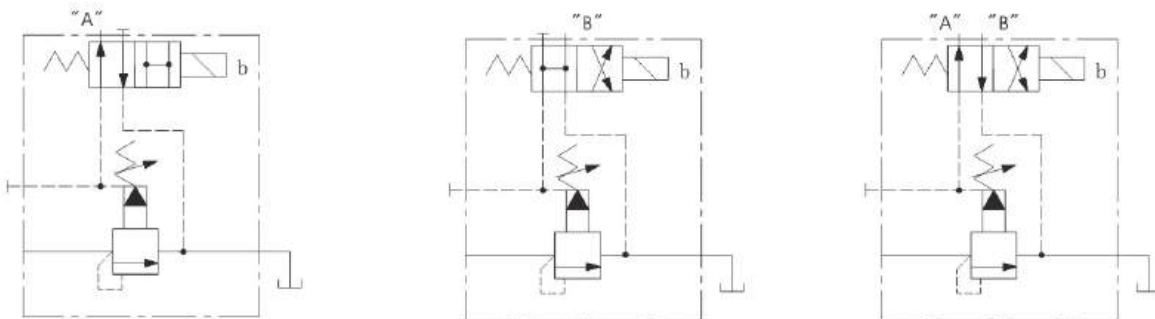
Installation type G = Pipe installation

Specification of valve 06 = 3/4

Design code
30 = Standard type
31 = Low pressure type

Pressure adjustment scope
1 = 0.7-7 MPa
2 = 3.5-14 MPa
3 = 7-25 MPa

SYMBOLE

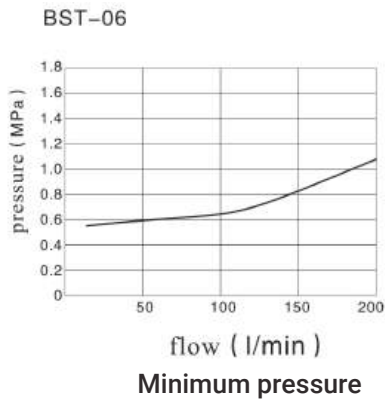
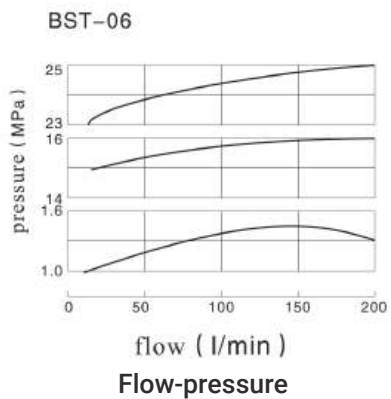


TECHNICAL DATA

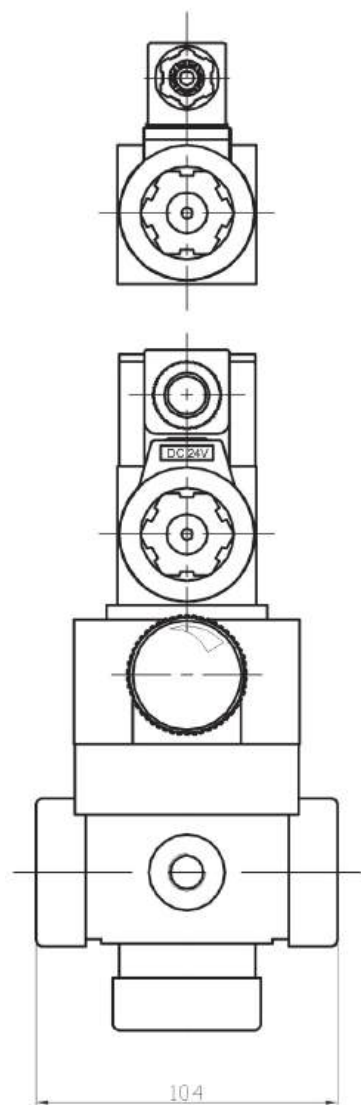
Hydraulic Data

Model	Maximum pressure bar	Maximum flow L/min	Weight kg
BS-T06	250	200	4.3

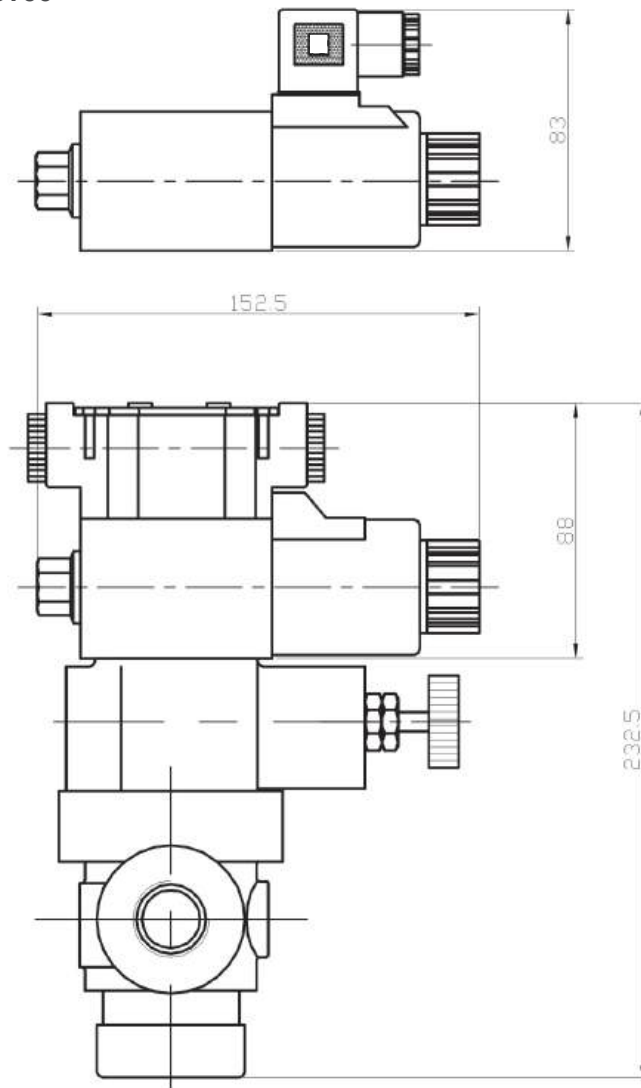
CHARACTERISTIC CURVE



UNIT DIMENSIONS



BST06




type	P PPLRT	T PPLRT	G PPLRT
BST06	PT3/4"	PT3/4"	PT1/4"

BT type of piloted relief valve



ORDERING DETAILS



Series code
B = Piloted relief valve

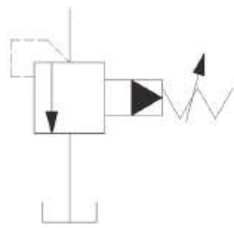
Installation type
T = Pipe installation

Specification of valve
04 = 1/2"
06 = 3/4"

Serial number of design
30 = Standard type
31 = Low bottom plane

Pressure adjustment range
1 = 7~70kgf/cm²
2 = 35~140kgf/cm²
3 = 70~250kgf/cm²

SYMBOLE



TECHNICAL DATA

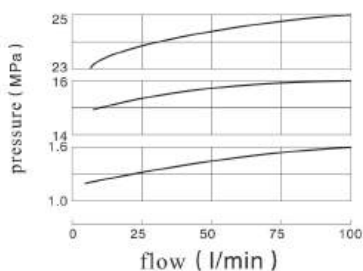
Hydraulic Data

Model	Maximum pressure bar	Maximum flow L/min	Weight kg
B-T04	250	80	2.7
B-T06	250	200	4.3

CHARACTERISTIC CURVE

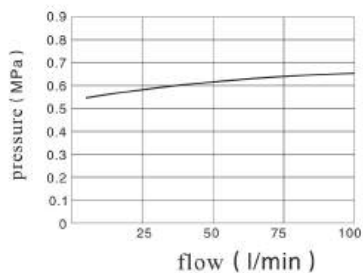
Flow-pressure

BT-04

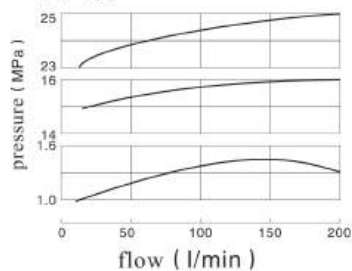


Minimum pressure

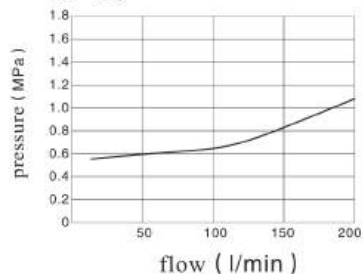
BT-04



BT-06

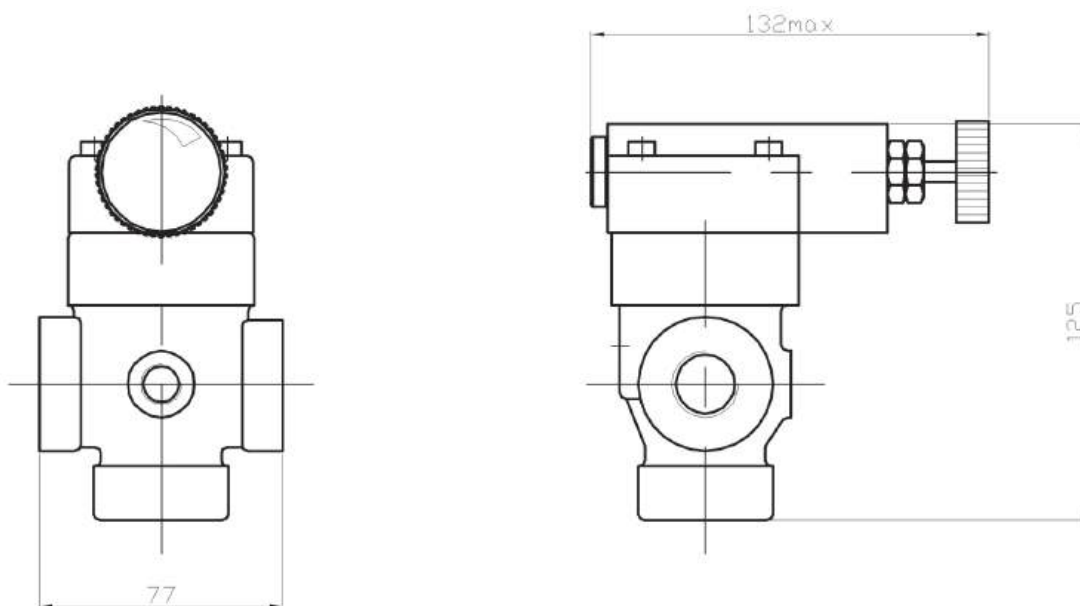


BT-06

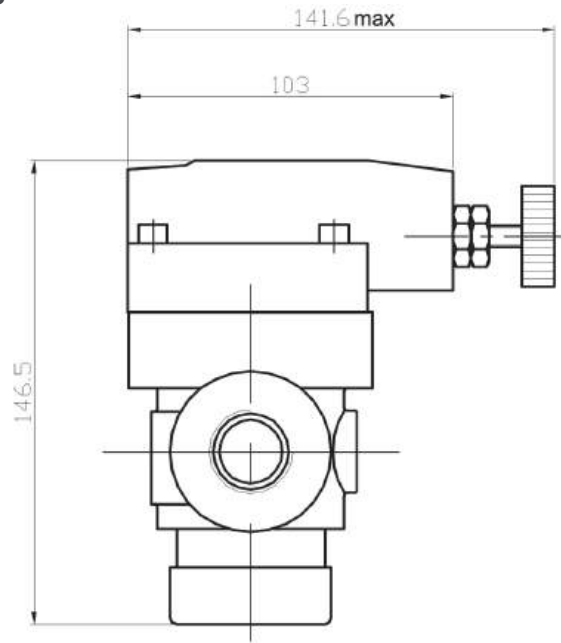
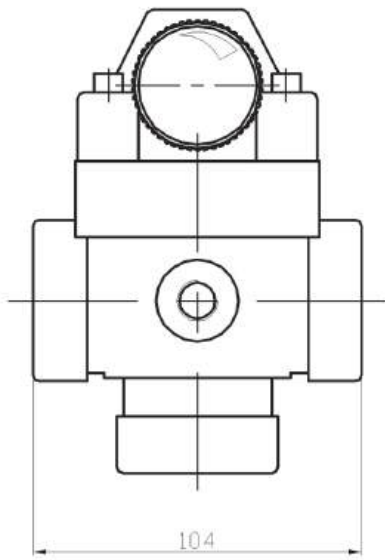


UNIT DIMENSIONS

BT04



BT06



Code	P PPLRT	T PPLRT	G PPLRT
BT04	PT1/2"	PT1/2"	PT1/4"
BT06	PT3/4"	PT3/4"	PT1/4"

DZ-30 Series Pilot Operated Sequencing Valves

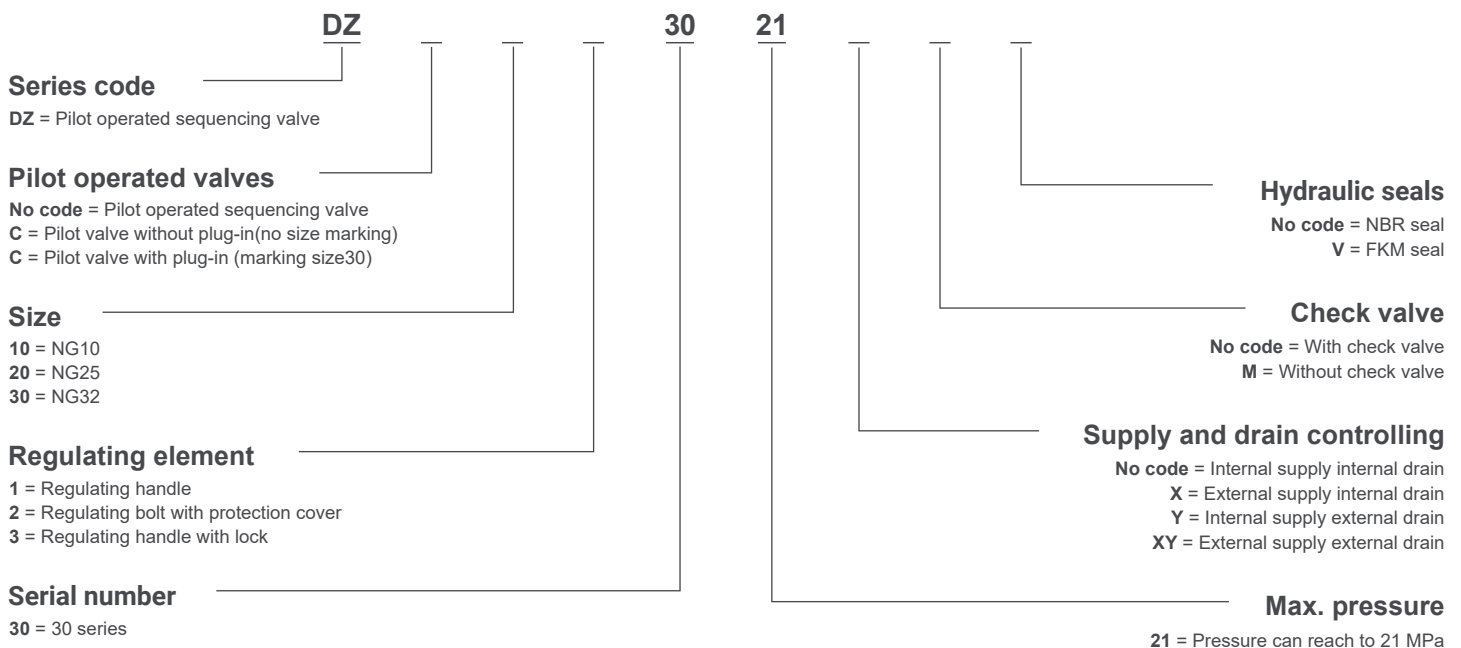


CONTENT

1. This valve can be used as sequencing valves, back pressure valves, and unloading valves
2. Connection size according to DIN24340, type D and ISO 5781
3. Insert or connect
4. Can select with check valve
5. Three pressure adjustment ways: Adjusting bolt with protection cover; Regulating handle with lock

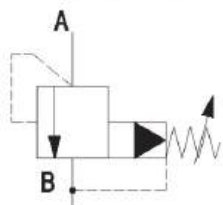


ORDERING DETAILS

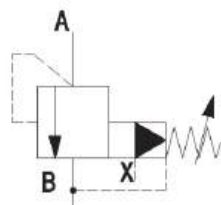


SYMBOLE

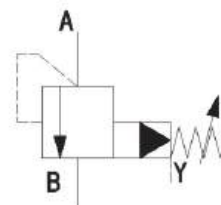
DZ.../...M
DZC.../...M



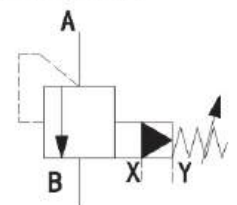
DZ.../...XM



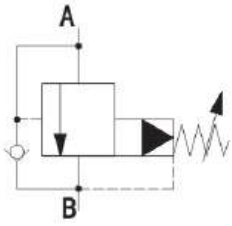
DZ.../...YM



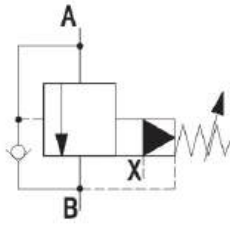
DZ.../...XYM
DZC.../...XYM



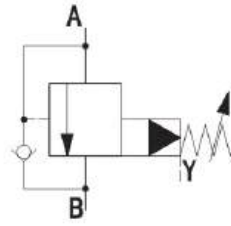
DZ...30



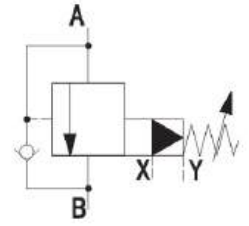
DZ...30...X



DZ...30...Y...



DZ...30...XY



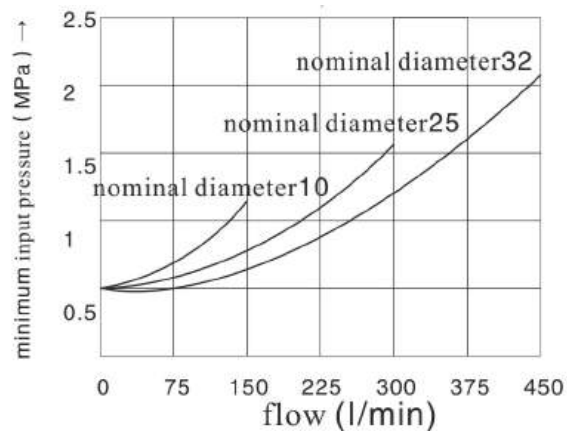
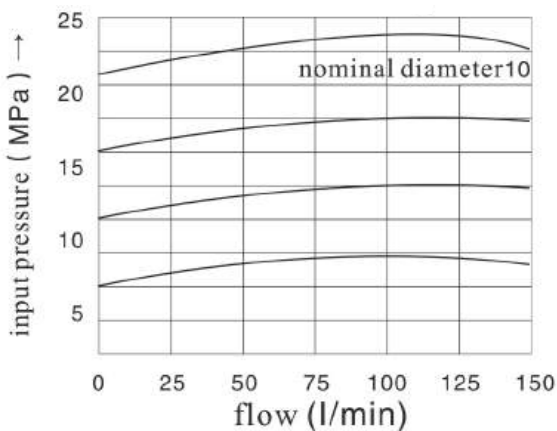
TECHNICAL DATA

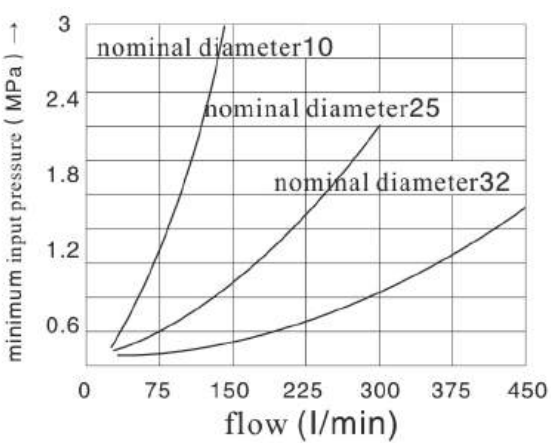
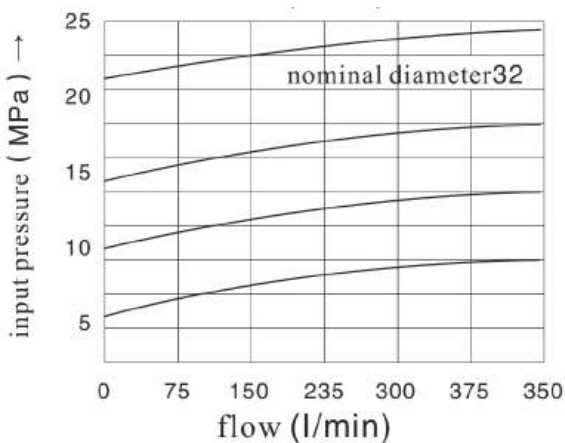
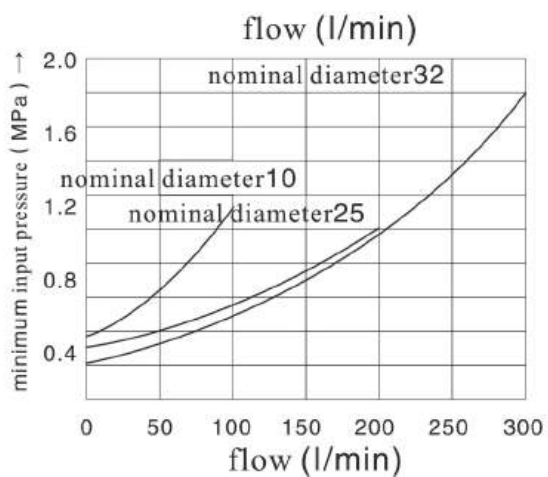
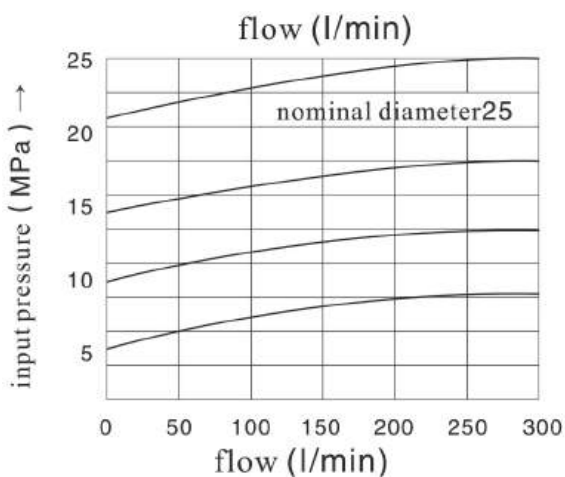
Hydraulic Data

Operating medium	Suitable for NBR or fluorine rubber seal	Mineral oil-suit to NBR or FKM seals			
	Suitable for fluorine rubber seal	Phosphate-suit to FKM seals			
Temperature range of working medium	°C	-30~+80(NBR seals)			
		-20~+80(FKM seals)			
Viscosity scope	mm ² /s	10~800			
The oil cleanliness		The maximum oil pollution level according to NAS1638 class 9 and ISO4406 20, 18, class 15			
Maximum operating pressure	Maximum operating pressure	MPa	31.5		
	The maximum adjustment pressure	MPa	31.5		
Pressure setting the maximum		MPa	21		
The minimum		MPa	Associated with the flow (see the performance curve)		
Size			DZ10	DZ20	DZ30
The maximum flow	L/min		200	400	600
Mounting site			Optional		

CHARACTERISTIC CURVE

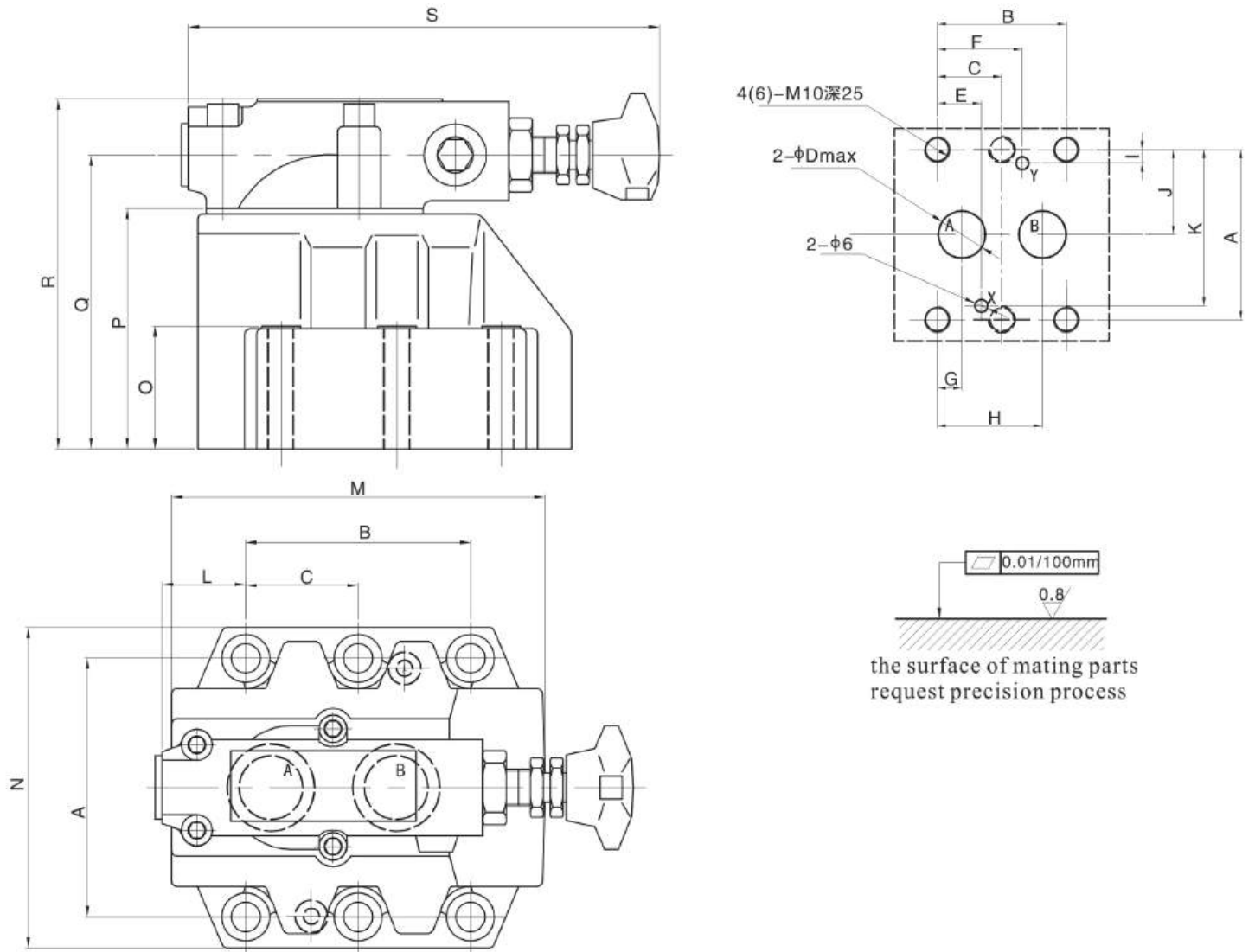
(curve was measured when there was no back pressure, and using mineral oil HLP46, t=40°C)





UNIT DIMENSIONS

DZ-30



code	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
DZ10	66.7	42.9	-	13	21.5	21.5	7.2	35.8	7.9	33.3	58.8	34.5	90	85	28	72	92	112	183
DZ20	79.4	60.3	-	22	20.6	39.7	11.1	49.2	6.4	39.7	73	37	112	102	38	82	102	122	183
DZ30	96.8	84.2	42.1	30	24.6	59.5	16.7	67.5	3.8	48.4	92.8	31.3	140	120	46	90	110	130	183

DZ-30 Series Pilot Operated Sequencing Valves

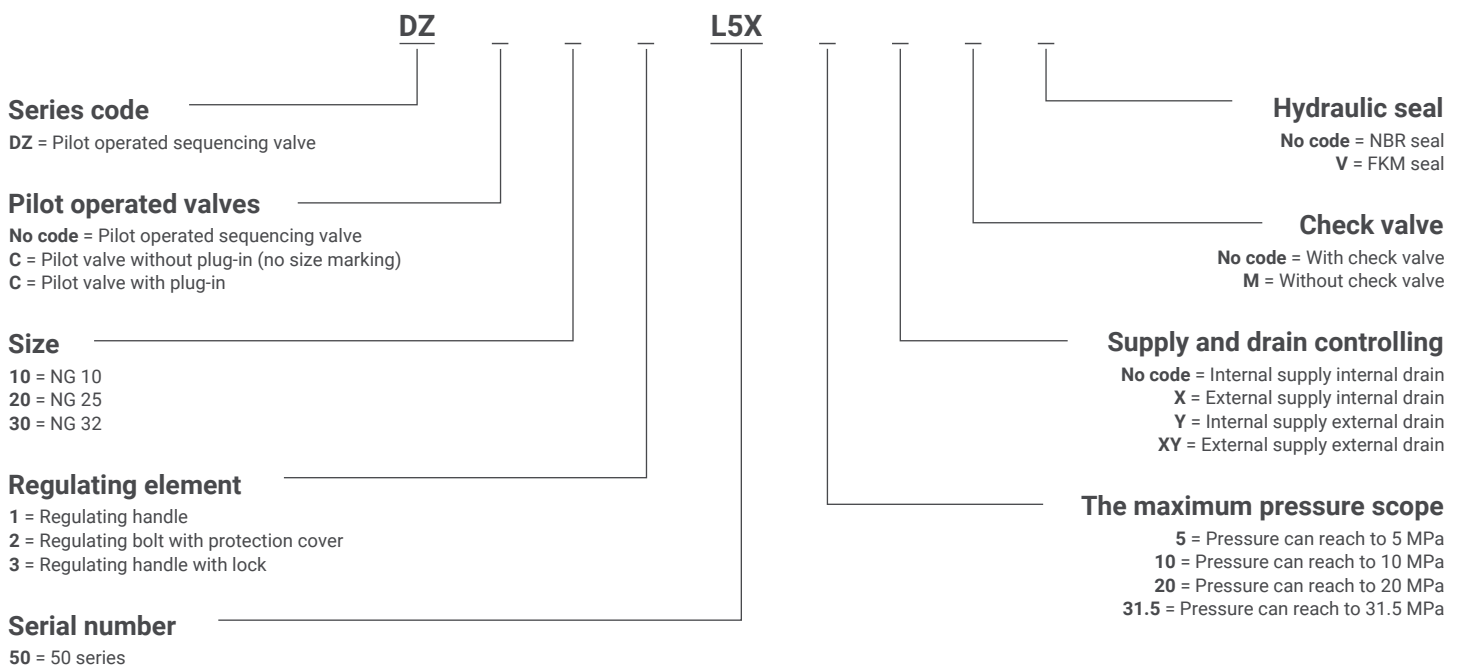


CONTENT

1. Used as sub-plate mounting
2. Mounting surface according to DIN24320E D type and ISO 5781
3. Used as oil block mounting
4. Four types of pressure range
5. Four adjustment type: Knob, adjusting-bolt with protection cover, Lockable knob with scale
6. Can select check valve
7. Can replace DZ30 series pilot control sequencing valve

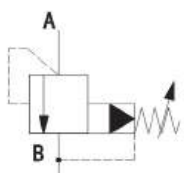


ORDERING DETAILS

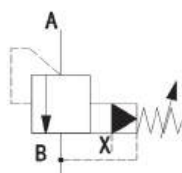


SYMBOLE

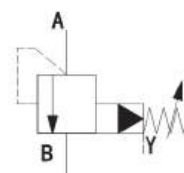
DZ...L50/...M
DZC...L50/...M



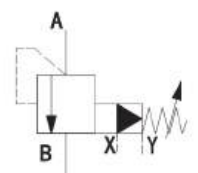
DZ...L50/...XM



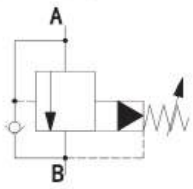
DZ...L50/...YM



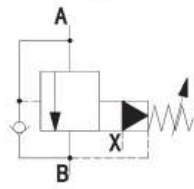
DZ...L50/...XYM
DZC...L50/...XYM



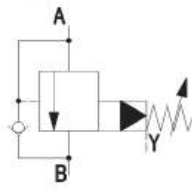
DZ...L50/



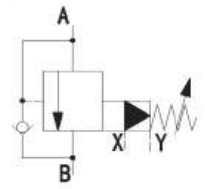
DZ...L50/...X



DZ...L50/...Y



DZ...L50/...XY



TECHNICAL DATA

Hydraulic Data

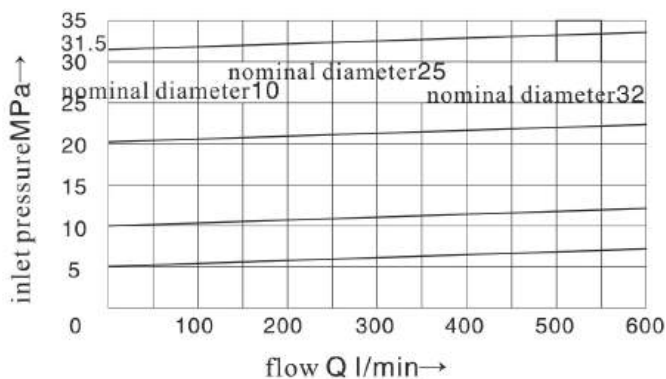
Operating medium		Mineral oil-suit to NBR or FKM seals		
		Phosphate-suit to FKM seals		
Temperature range of working medium		°C		
		-30~+80(NBR seals)		
		-20~+80(FKM seals)		
Viscosity scope		mm ² /s	10~800	
The oil cleanliness		The maximum oil pollution level according to NAS1638 class 9 and ISO4406 20, 18, class 15		
Maximum operating pressure		Chamber A.B.X	MPa	31.5
		Chamber Y	MPa	31.5
Pressure setting the maximum			MPa	5;10;20;31.5
The minimum			MPa	Associated with the flow (see the performance curve)
Size		DZ10	DZ20	DZ30
The maximum flow		L/min	200	400
Mounting site		Optional		

CHARACTERISTIC CURVE

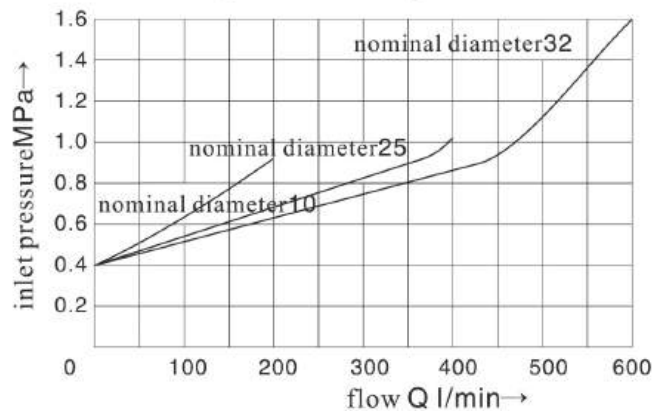
(curve was measured when there was no back pressure, and using mineral oil HLP46, t=40°C)

relationship between bypass pressure and flow (A→B) ,
Only for type "...XY..."

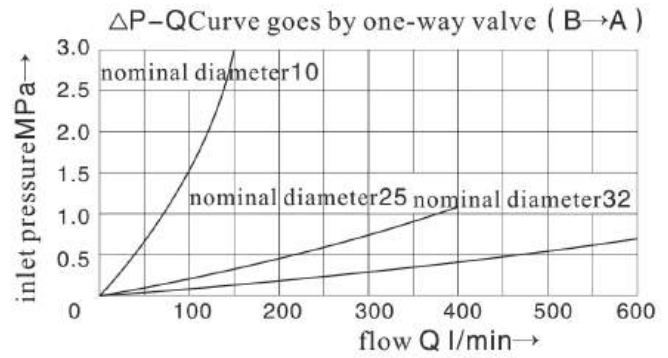
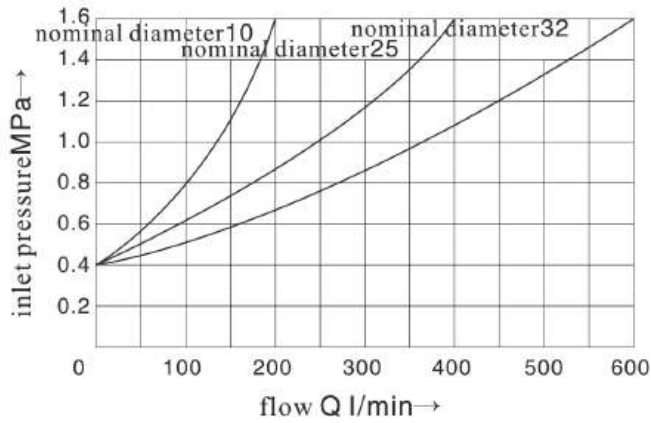
relationship between inlet pressure and flow



relationship between inlet pressure and flow

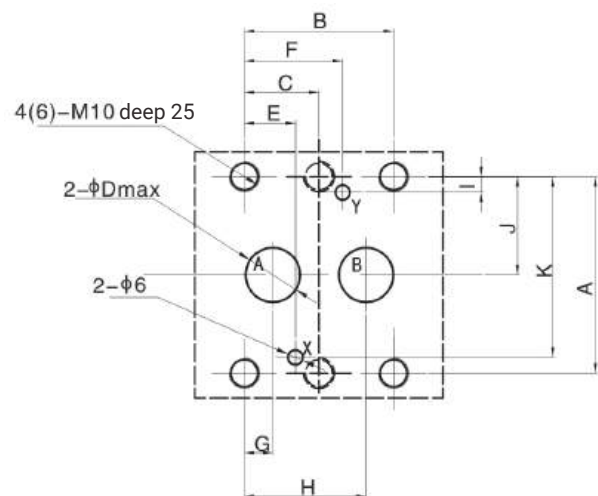
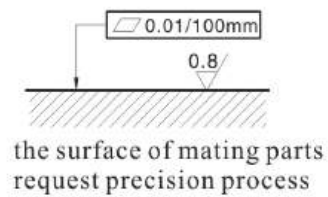
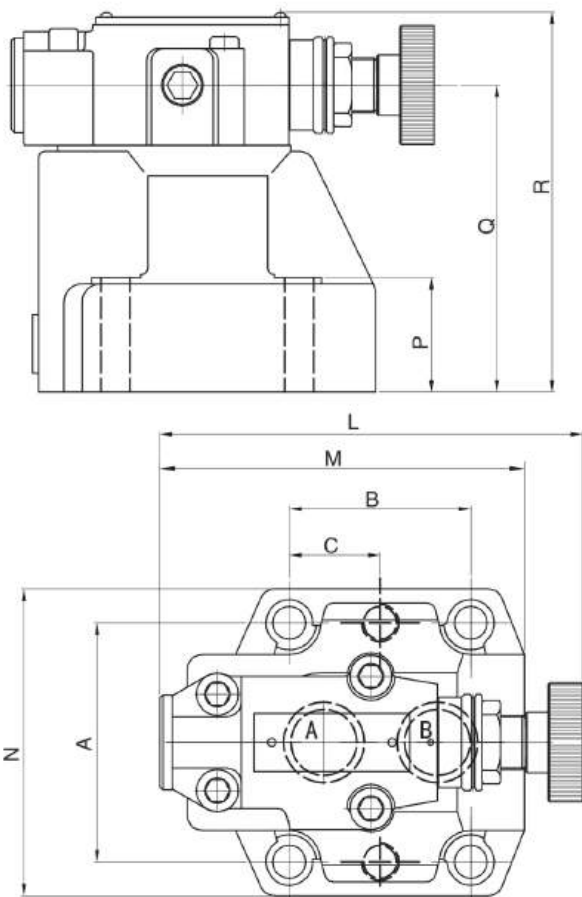


relationship between bypass pressure and flow (A→B) ,
Only for type "...XY..."
relationship between inlet pressure and flow



UNIT DIMENSIONS

DZ-50



Code	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	Q	R
DZ10	66.7	42.9	-	13	21.5	21.5	7.2	35.8	7.9	33.3	58.8	123	99	85	28	92	115
DZ20	79.4	60.3	-	22	20.6	39.7	11.1	49.2	6.4	39.7	73	123	119	102	38	102	125
DZ30	96.8	84.2	42.1	30	24.6	59.5	16.7	67.5	3.8	48.4	92.8	147.5	148	120	46	110	133

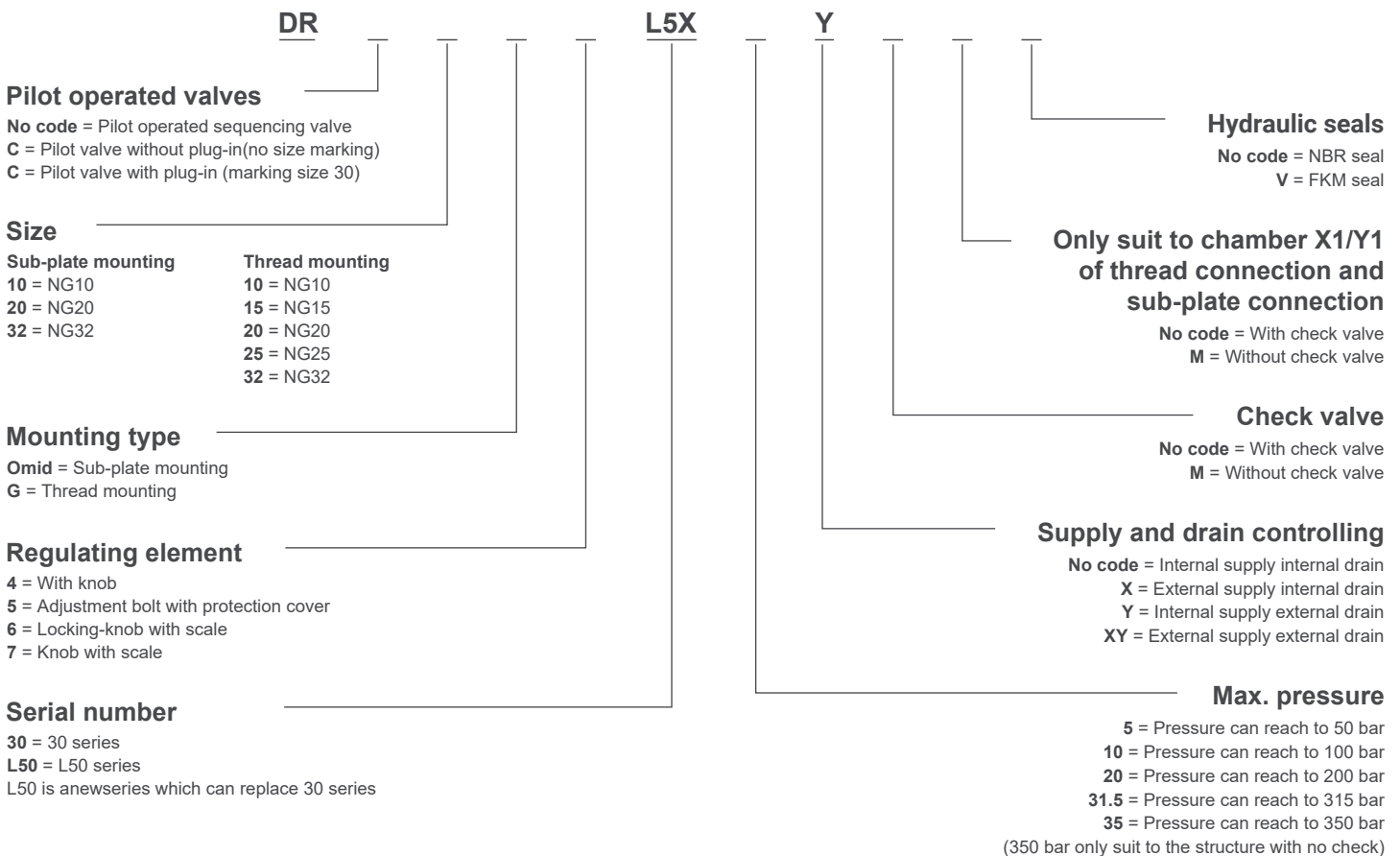
DR-L5X Series Pilot Operated Reducing Valves



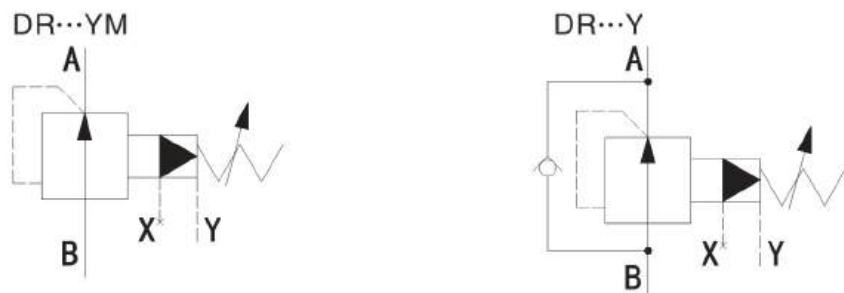
CONTENT

1. Used as sub-plate mounting
2. Mounting surface according to DIN24320E D type and ISO 5781
3. Used as thread connection and oil block mounting
4. Five types of pressure range
5. Four adjustment types: Knob; Adjusting-bolt with protection cover; Lockable knob with scale; Knob with scale
6. Can select check valve(only suitable for sub-plate mounting)

ORDERING DETAILS



SYMBOLE



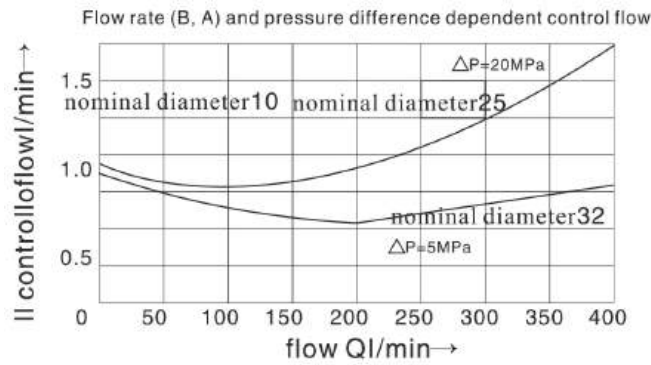
TECHNICAL DATA

Hydraulic Data

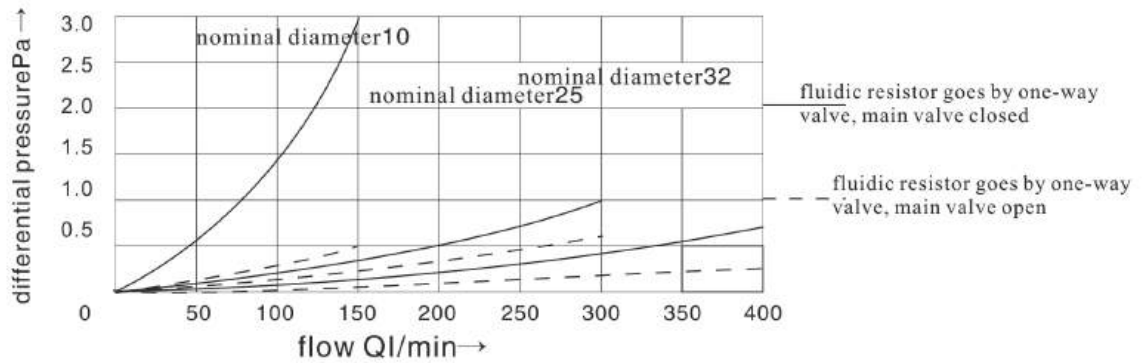
Operating medium		Mineral oil-suit to NBR or FKM seals							
		Phosphate-suit to FKM seals							
Temperature range of working medium		°C	-30~+80(NBR seals)						
			-20~+80(FKM seals)						
Viscosity scope		mm ² /s	10~800						
The oil cleanliness			The maximum oil pollution level according to NAS1638 class 9 and ISO4406 20, 18, class 15						
Maximum operating pressure chamber B		MPa	35						
Operating pressure scope chamber A		MPa	1~35						
Maximum back pressure chamber Y		MPa	35 (only suit to no check valve structure), 31.5 with check valve)						
Back pressure setting the maximum		MPa	5; 10; 20; 31.5; 35						
The minimum		MPa	Associated with the flow (see the performance curve)						
Size			DR10	DR15	DR20	DR25	DR30		
The maximum flow		The maximum flow	L/min	150	-	300	-	400	
		Chamber A.B.X	L/min	150	300	300	400	400	
Mounting site			Optional						
Size			DR10	DR15	DR20	DR25	DR30		
Weight		Sub-plate mounting	DR	kg	3.6	-	5.5	-	8.2
			DR...G	kg	5.3	5.5	5.1	5.1	5.0
Thread connection		DRC	kg	1.2					
		DRC30	kg	1.5					

CHARACTERISTIC CURVE

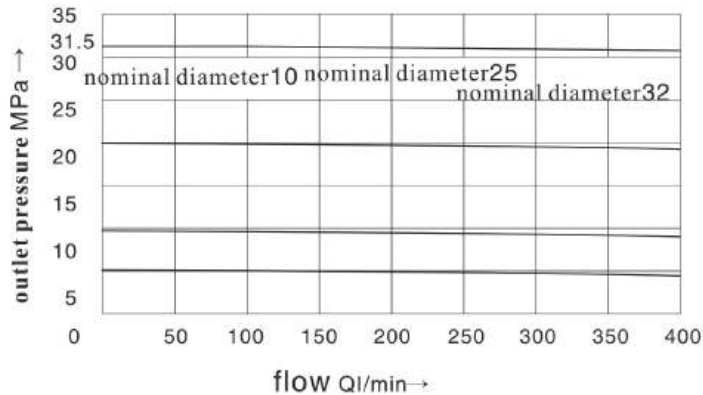
(curve was measured when using mineral oil HLP46, $t=40^{\circ}\text{C}$)



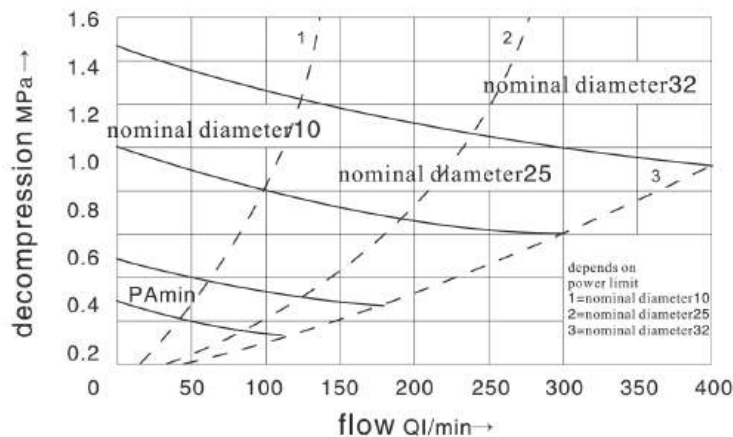
Characteristics curve (A→B) (minimum setting differential pressure)



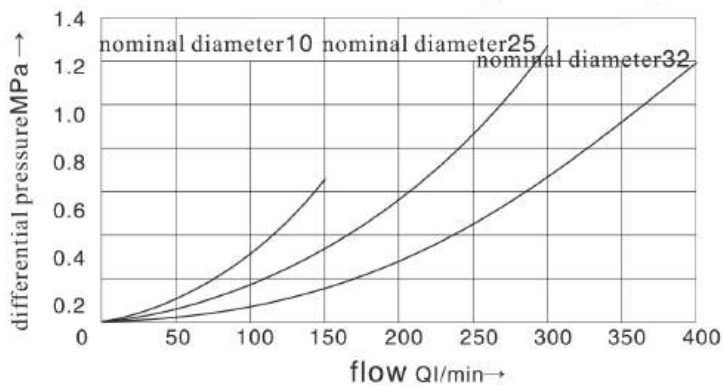
relationship between outlet pressure A and flow (B→A)



relationship between minimum setting pressure P_{Amin} and flow (B→A)

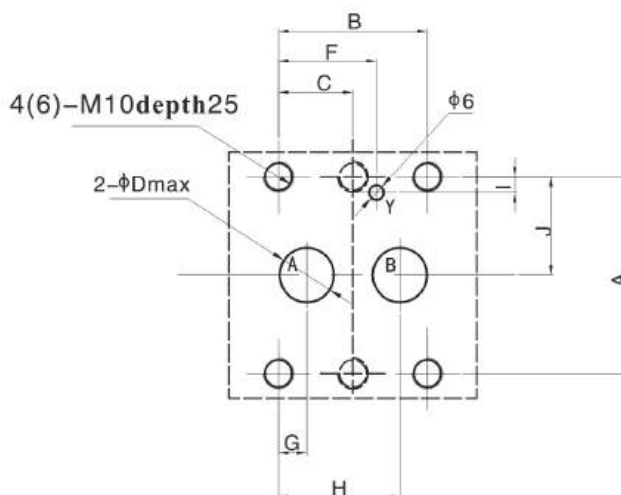
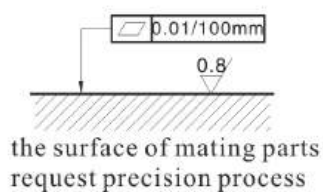
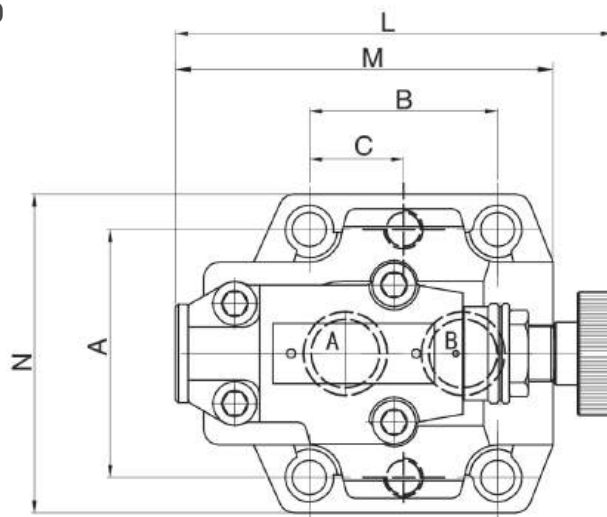
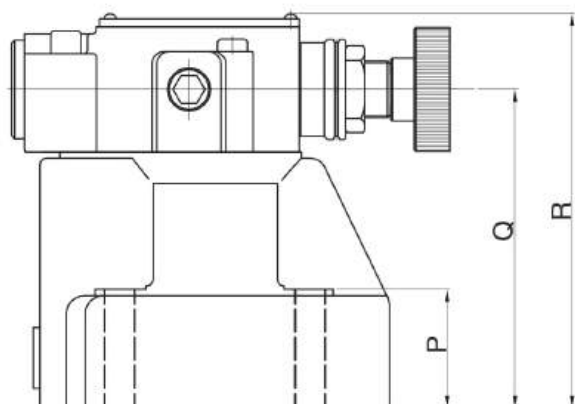


ΔP - Q Characteristics curve (A→B) (minimum setting differential pressure)



UNIT DIMENSIONS

DR-50



type	A	B	C	D	F	G	H	I	J	L	M	N	P	Q	R
Dr10	66.7	42.9	-	13	21.5	7.2	38.8	7.9	33.3	123	99	85	28	92	115
Dr20	79.4	60.3	-	22	39.7	11.1	49.2	6.4	39.7	123	119	102	38	102	125
Dr30	96.8	84.2	42.1	30	59.5	16.7	67.5	3.8	48.	147.5	148	120	46	110	133

ZDR-40 Series Modular Relief Valve

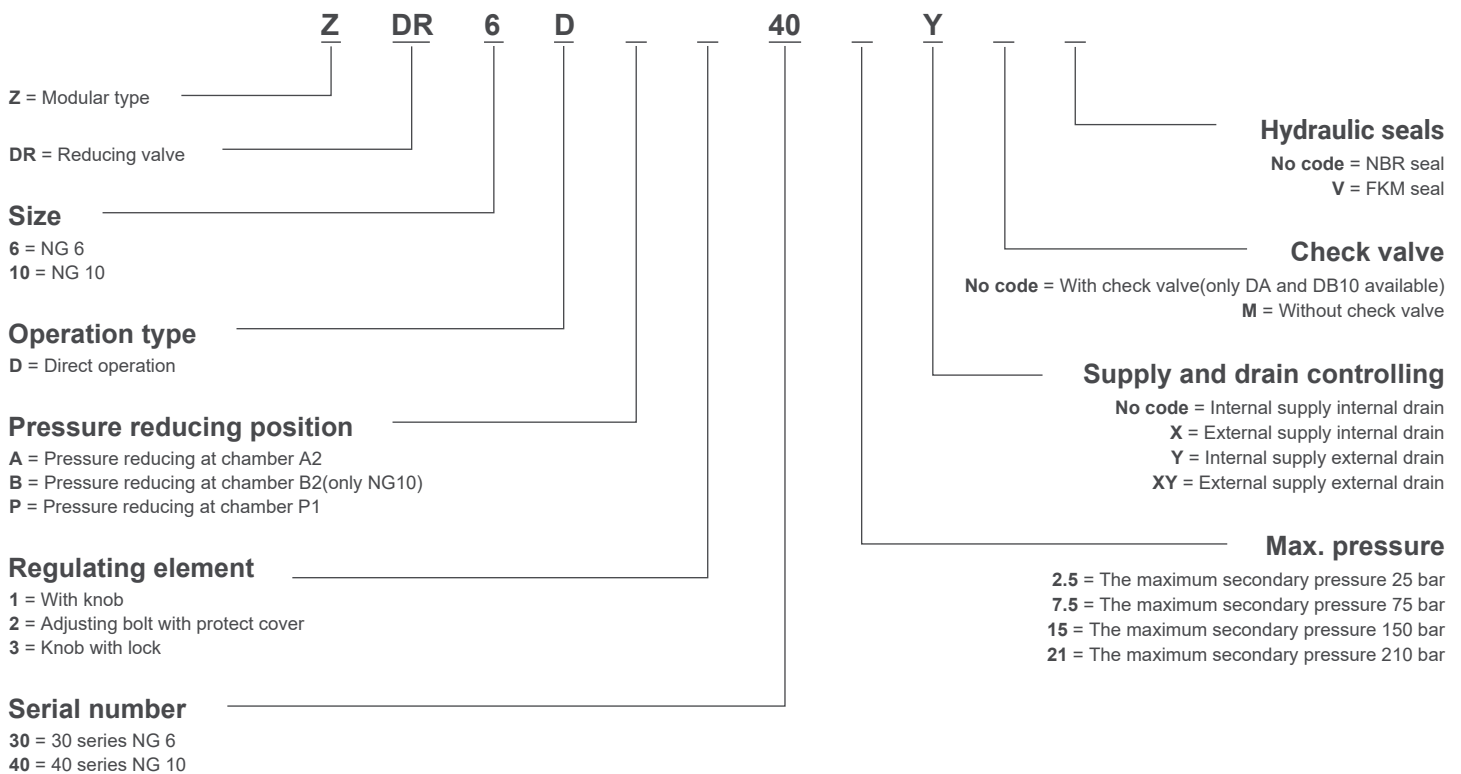


CONTENT

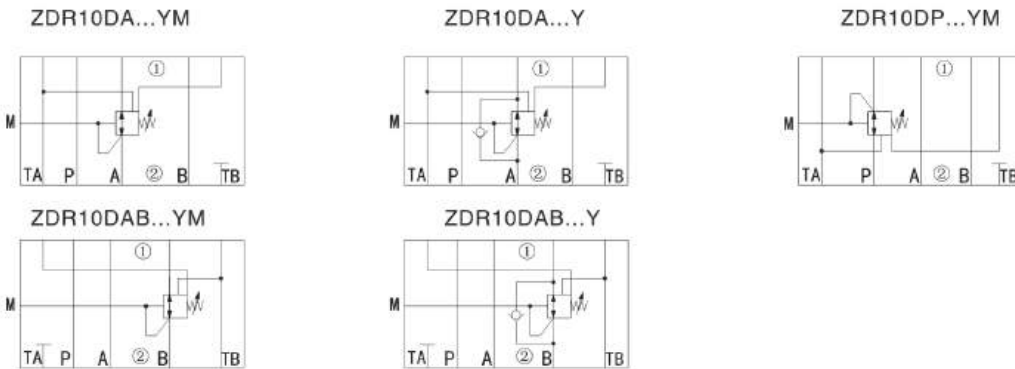
1. Modular type
2. Mounting surface according to DIN24320E D type and ISO 5781
3. Used as thread connection and oil block mounting
4. Four kinds of pressure scope
5. Three adjustment types: Knob; Adjusting-bolt with protection cover; Knob with lock
6. Connecting port with pressure gauge
7. Can select check valve



ORDERING DETAILS



SYMBOLE



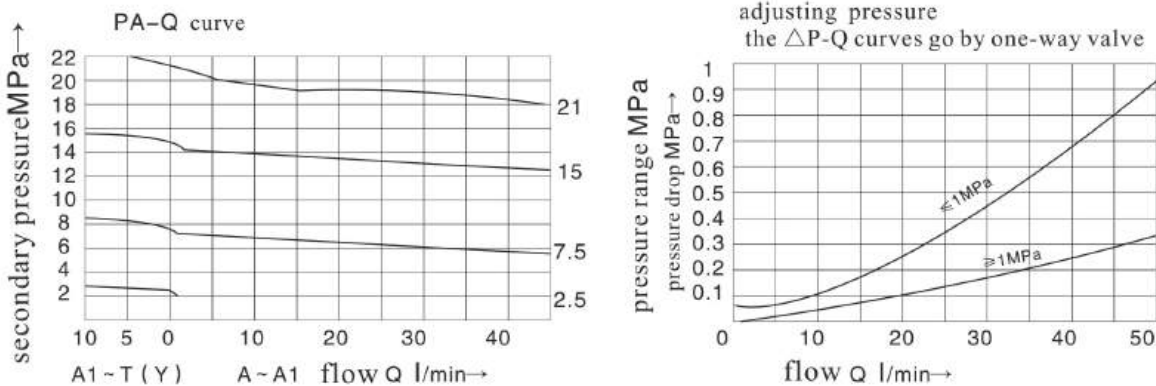
TECHNICAL DATA

Hydraulic Data

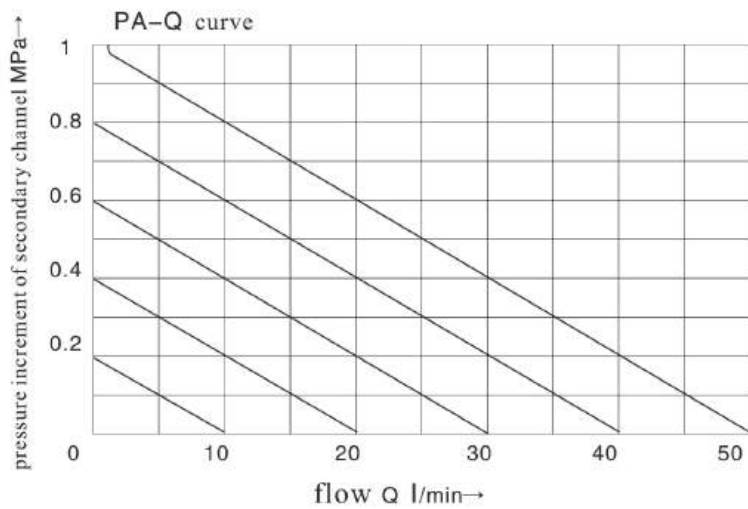
Operating medium		Mineral oil-suit to NBR or FKM seals
		Phosphate-suit to FKM seals
Temperature range of working medium	°C	-30~+80(NBR seals)
		-20~+80(FKM seals)
Viscosity scope	mm ² /s	10~800
The oil cleanliness		The maximum oil pollution level according to NAS1638 class 9 and ISO4406 class 20/18/15
Maximum operating pressure (import)	MPa	31.5
The highest secondary pressure export	MPa	2.5; 7.5; 15; 21
Maximum back pressure	MPa	6
Maximum flow	L/min	40
Weight	kg	1.2

CHARACTERISTIC CURVE

(curve was measured when using mineral oil HLP46, t=40°C)



Notice: when setting pressure is low, characteristics curve stay in the range of corresponding pressure grade

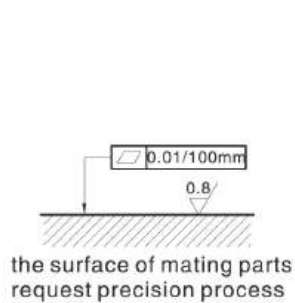
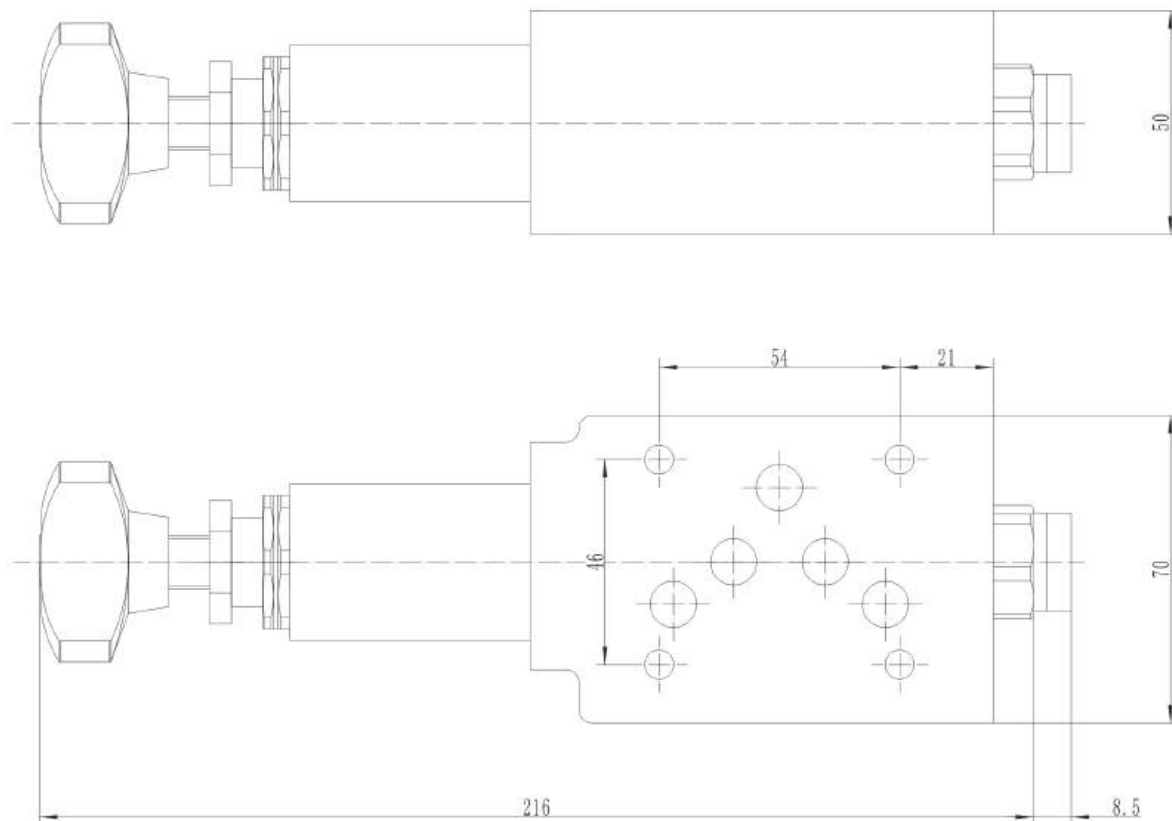


PAmin-Q curve of pressure grade 2.5Mpa indicate the relationship between the corresponding fluid flow A1→A2 & the minimum set of P2→P1 and the flow

introduction:

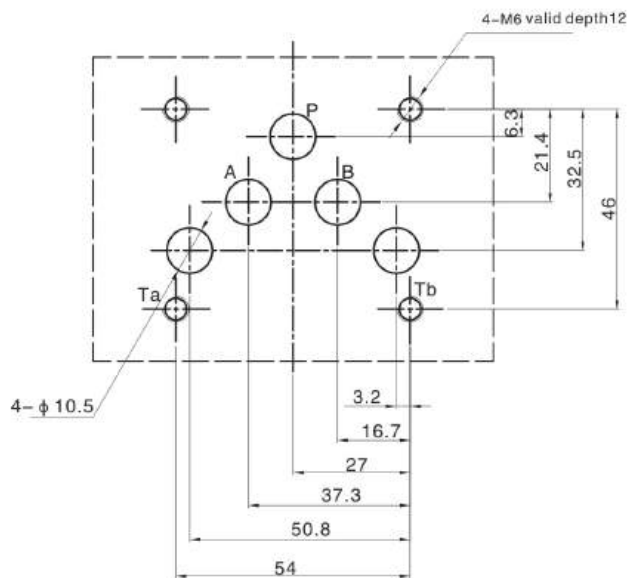
For example: if A2 or P1 port adjusted to 3Mpa when flow is 10L/min, as secondary pressure up to 3.6Mpa, flow reduced to zero.

UNIT DIMENSIONS



suggestion:


When using the valve, valve block use Tb as oil port, if use Ta as oil return port for 7.5, 15 and 21Mpa, the Ta port of valve block have to be drilled through from opposite (the surface with O-ring) as drain holes, (it is not allowed to be drilled through for 2.5Mpa valve)



MBRV Series Modular Reducing Valves



ORDERING DETAILS



Series code
MBRV = Modular reducing valve

Size
02 = NG 6
03 = NG10

Function bore
P = bore P
A = bore A
B = bore B

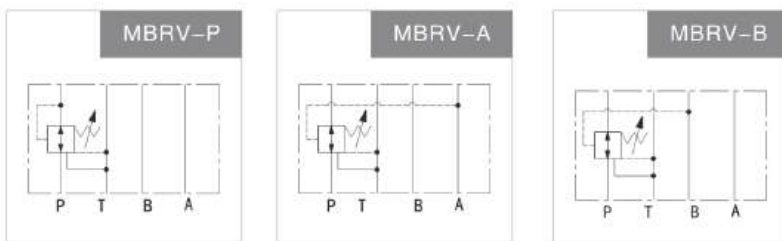
Adjustment rod type
Blank = No knob customized)
K = with plastic knob (standard)

Design code

Pressure adjustment pressure
0 = 0.15-3.5 MPa
1 = 0.7-7 MPa
2 = 3.5-14 MPa
3 = 7-21 MPa

Ordering code example: **MBRV 02 P K 3 20**

SYMBOLE



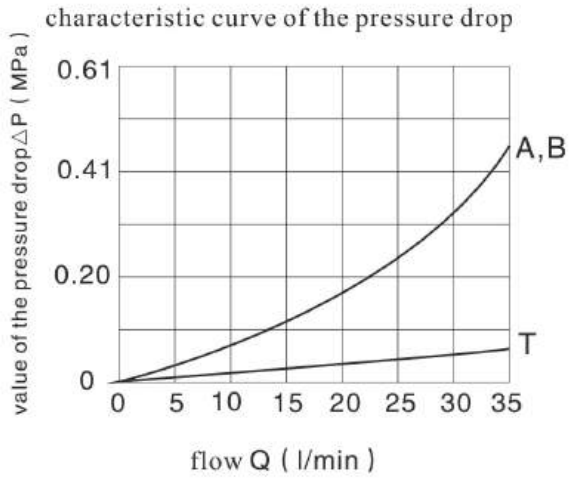
TECHNICAL DATA

Hydraulic Data

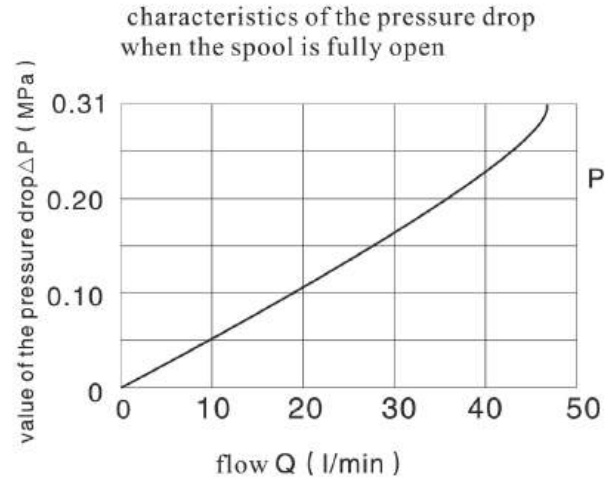
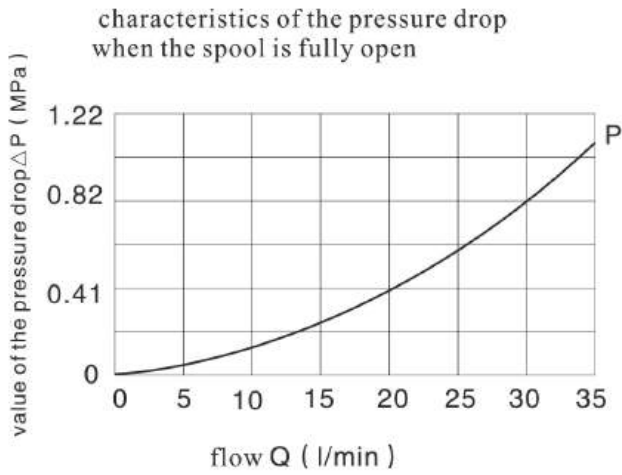
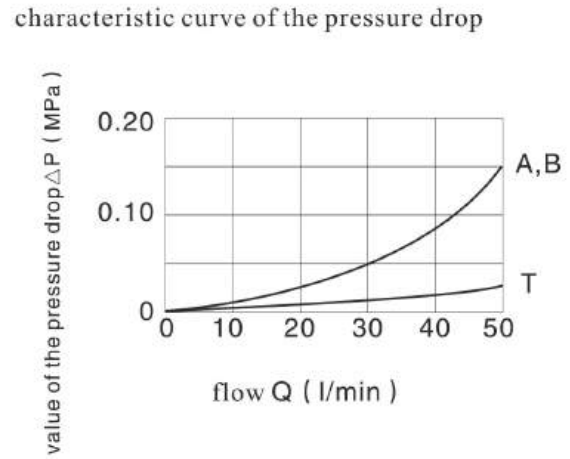
Model	Maximum pressure bar	Pressure adjustment scope	Maximum flow L/min	Weight kg
MBRV-02	210	0.7-7.0; 3.5-14 70-21	35	1.3
MBRV-03			70	2.8

CHARACTERISTIC CURVE

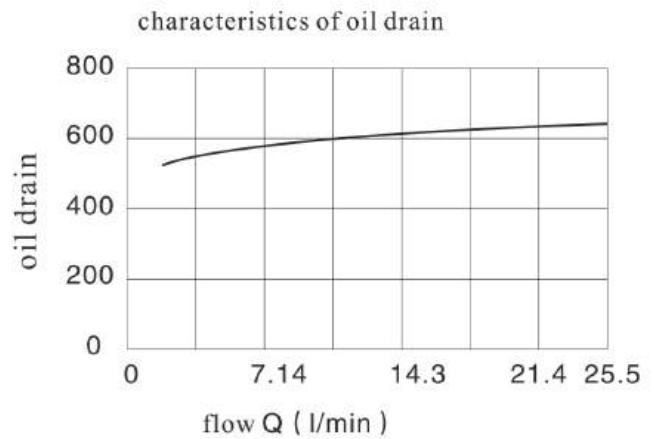
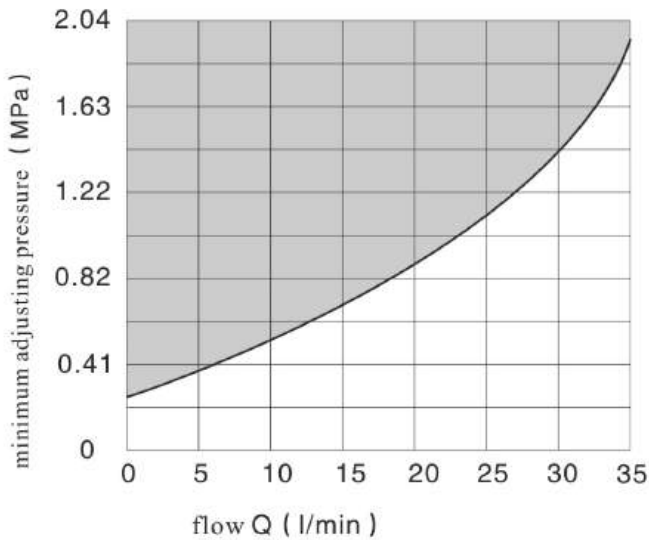
MBRV-02



MBRV-03

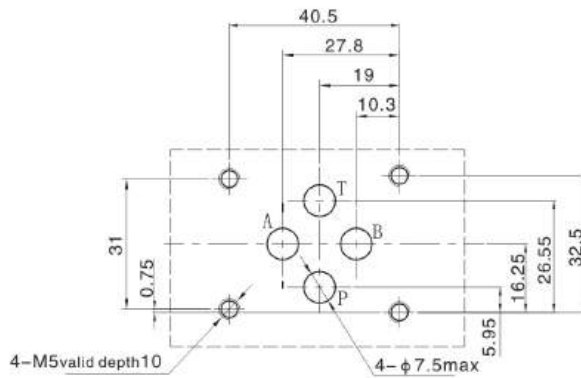
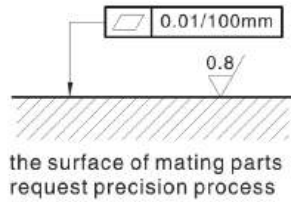
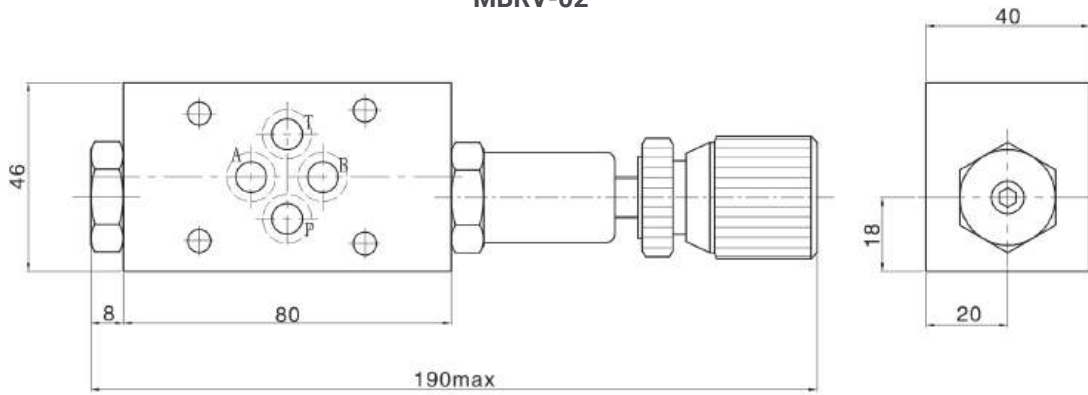


characteristics of the minimum adjusting pressure-maximum flow

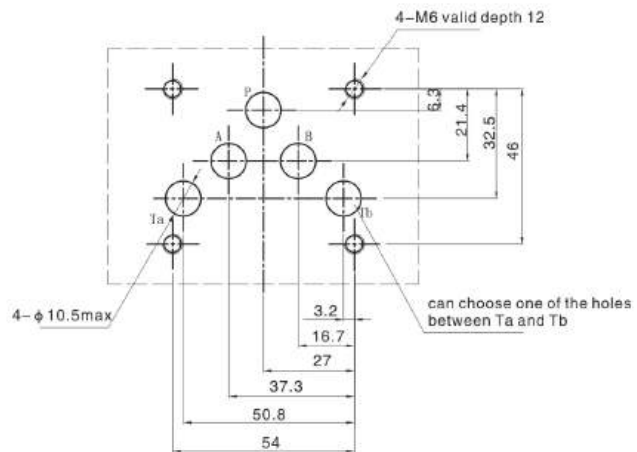
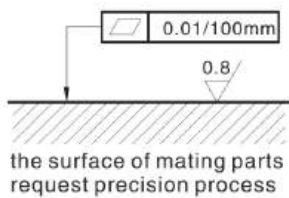
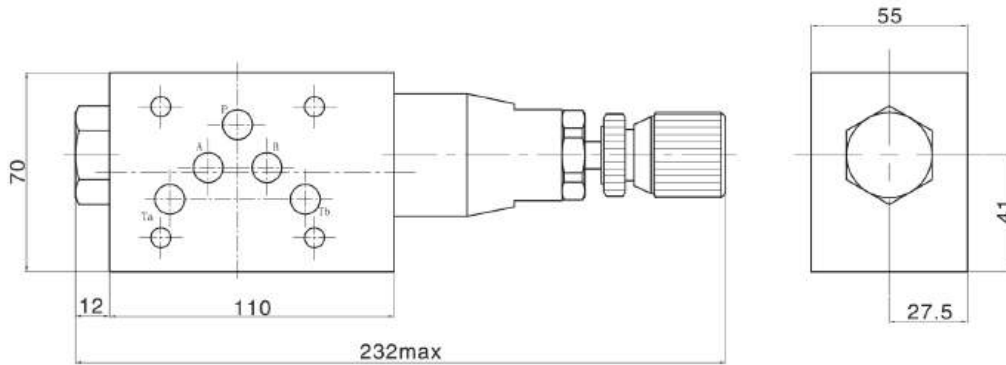


UNIT DIMENSIONS

MBRV-02



MBRV-03



DA/DAW-30 Series Pilot Operated Unloading Valves

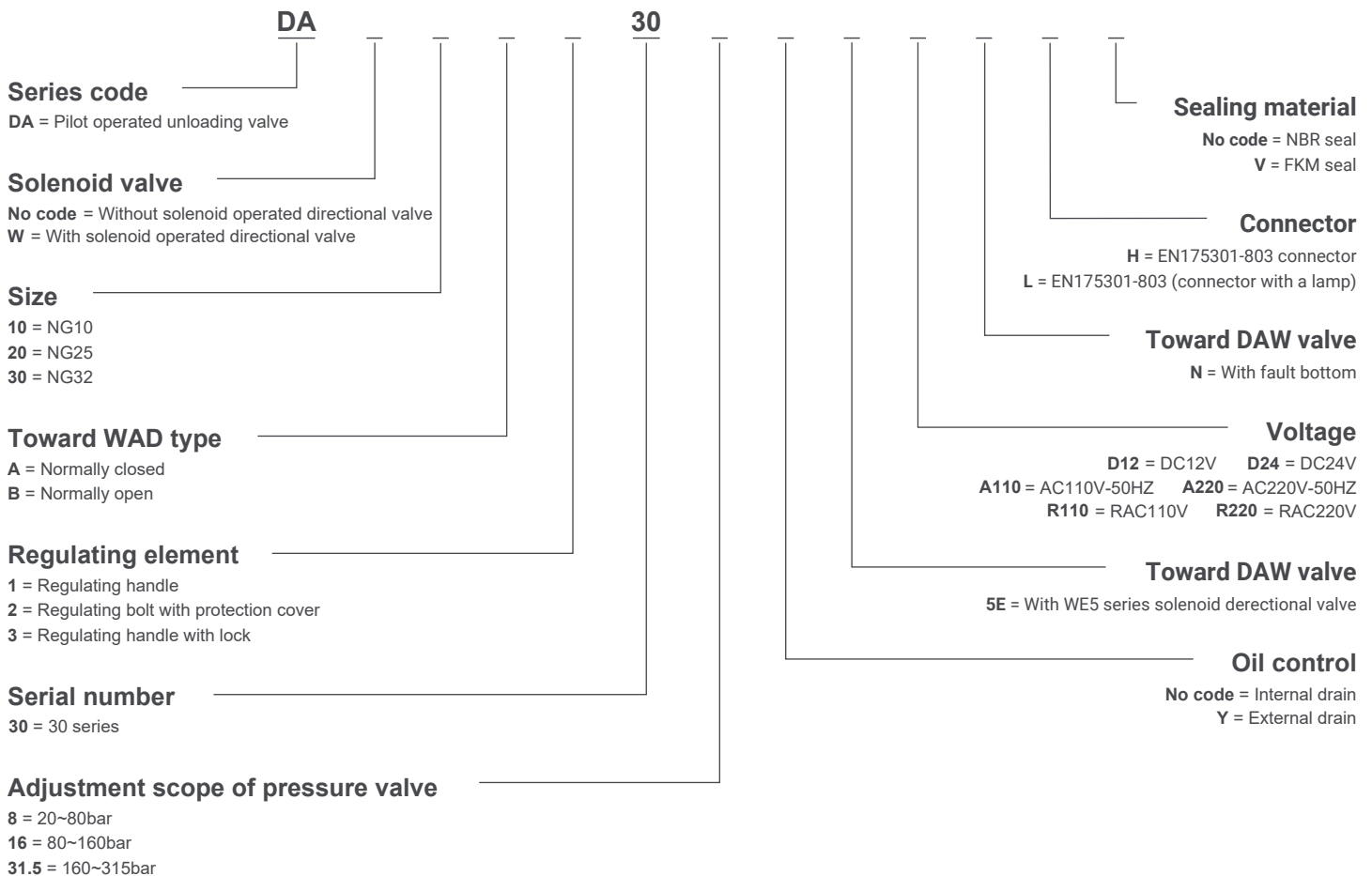


CONTENT

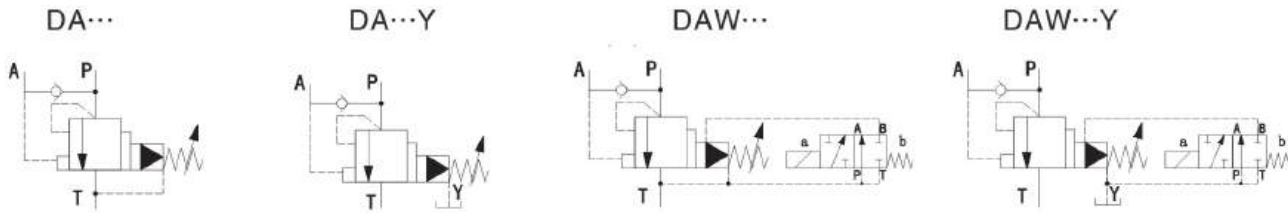
1. Used as sub-plate mounting
2. Mounting surface according to DIN24320E D type and ISO 5781
3. Used to oil block mounting
4. Three kinds of pressure scope
5. Three types of adjustment: Adjusting-bolt with protect cover, lockable knob with scale, knob with scale
6. Solenoid controlled unloading valve



ORDERING DETAILS



SYMBOLE



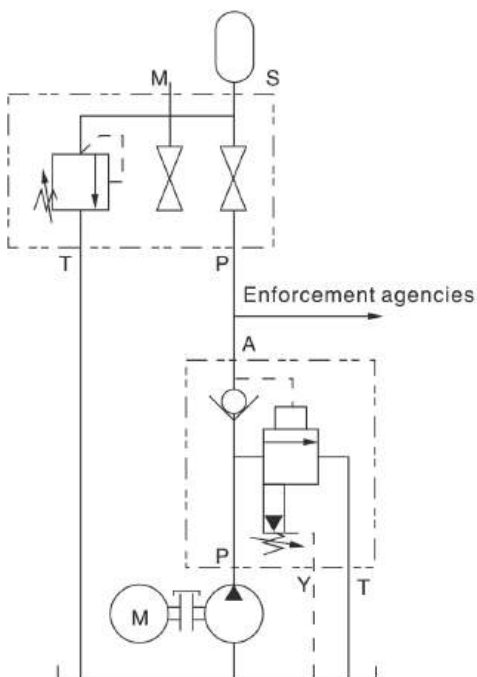
TECHNICAL DATA

Hydraulic Data

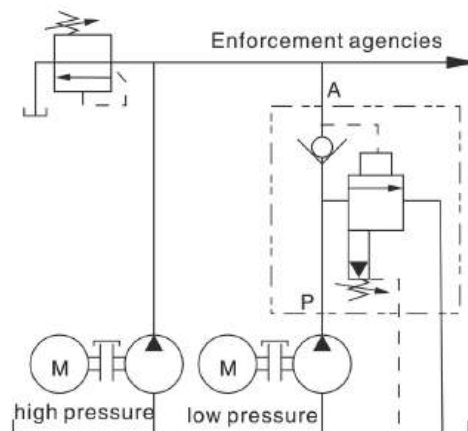
Operating medium		Mineral oil-suit to NBR or FKM seals			
		Phosphate-suit to FKM seals			
Temperature range of working medium	°C	-30~+80(NBR seals)			
		-20~+80(FKM seals)			
Viscosity scope	mm ² /s	10~800			
The oil cleanliness		The maximum oil pollution level according to NAS1638 class 9 and ISO4406 20, 18, class 15			
Switching pressure scope (from T to A)		Within 17% (see the character curve)			
Input pressure entrance (P~T unloading)	MPa	~350			
Mounting site		Optional			
Size		10	25	32	
The maximum pressure type 17%	L/min	40	100	250	
Weight	DA	kg	3.8	7.7	13.4
	DAW	kg	4.9	8.8	14.5

typical loop

hydraulic system with accumulator



hydraulic system with double pumps in high and low pressure



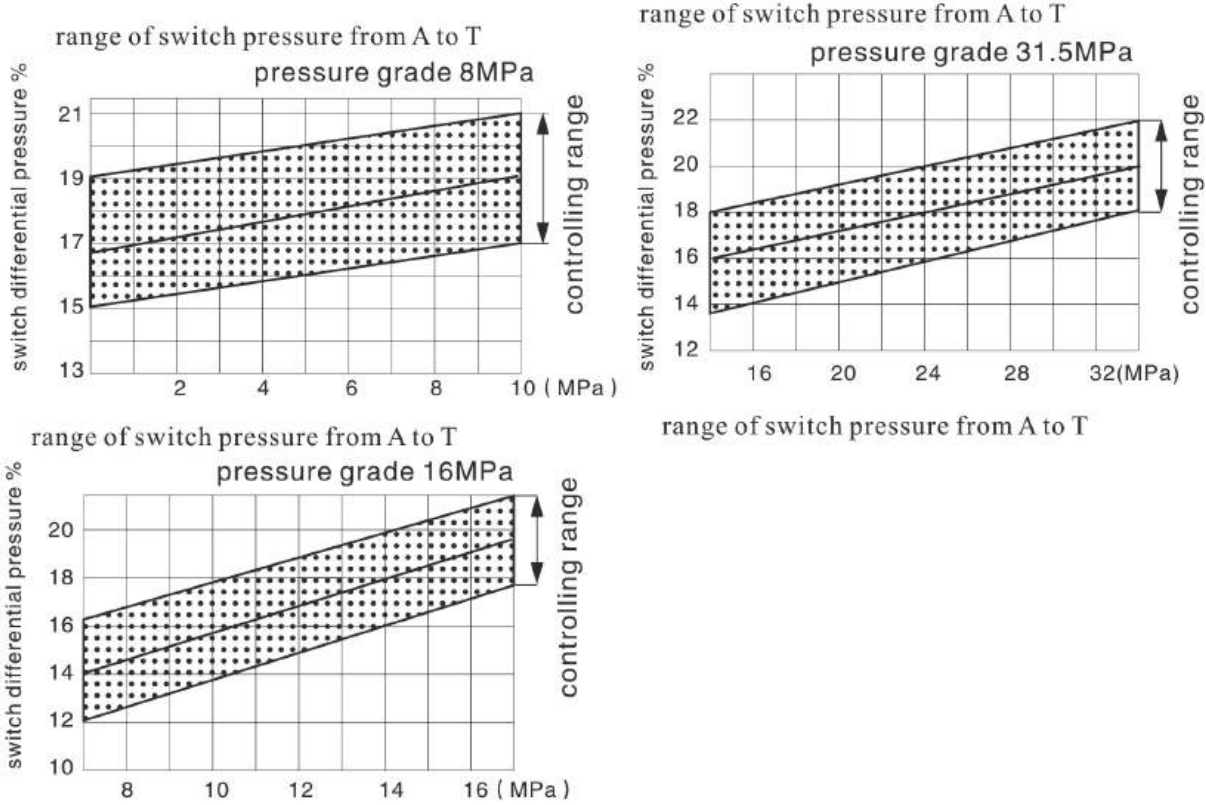
installation caution:

- (1) Keep the connecting resistance between valve DA and accumulator as small as possible
- (2) For big pump flow and/or low differential pressure (10%), external drain of type Y is the best.

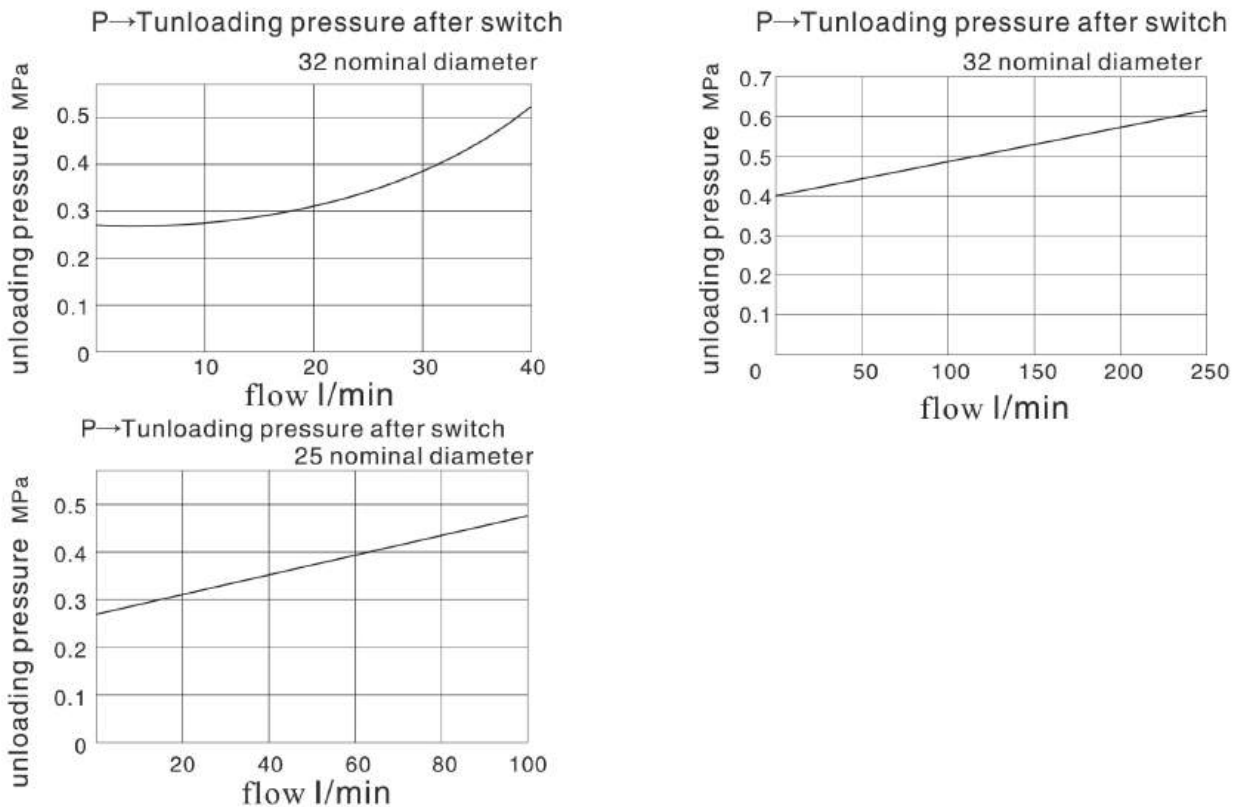
CHARACTERISTIC CURVE

characteristics of switch differential pressure- switch pressure

characteristics curve was measured when using mineral oil HLP46, $t=40^{\circ}\text{C}$)

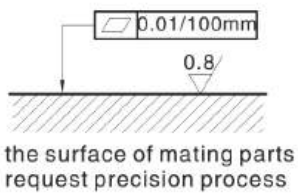
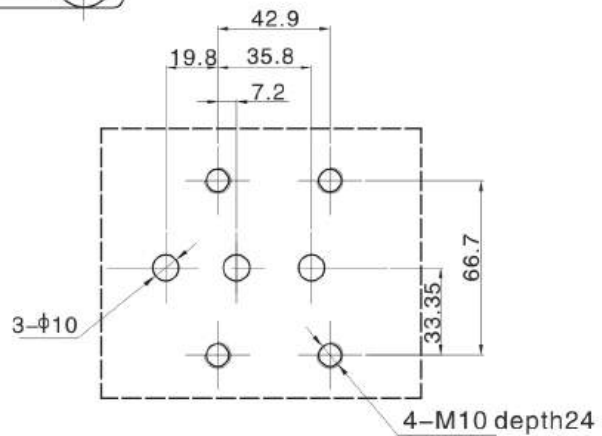
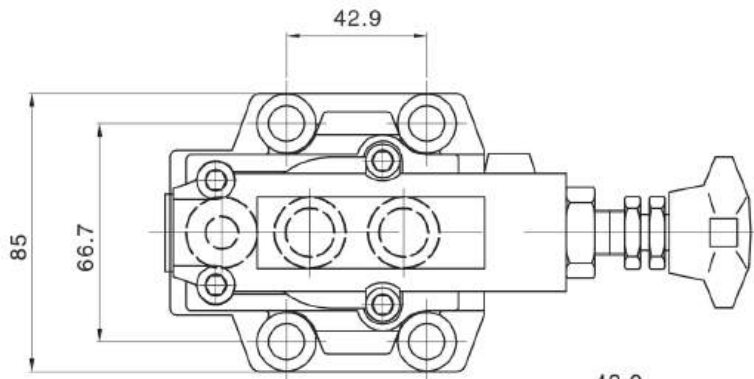
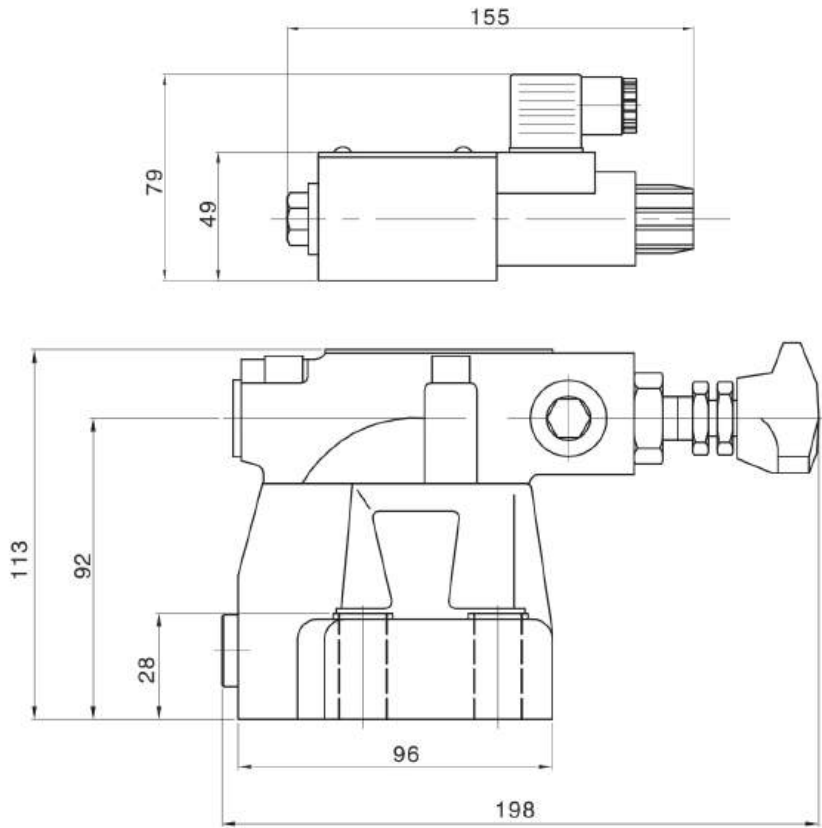


characteristics of unload pressure-flow

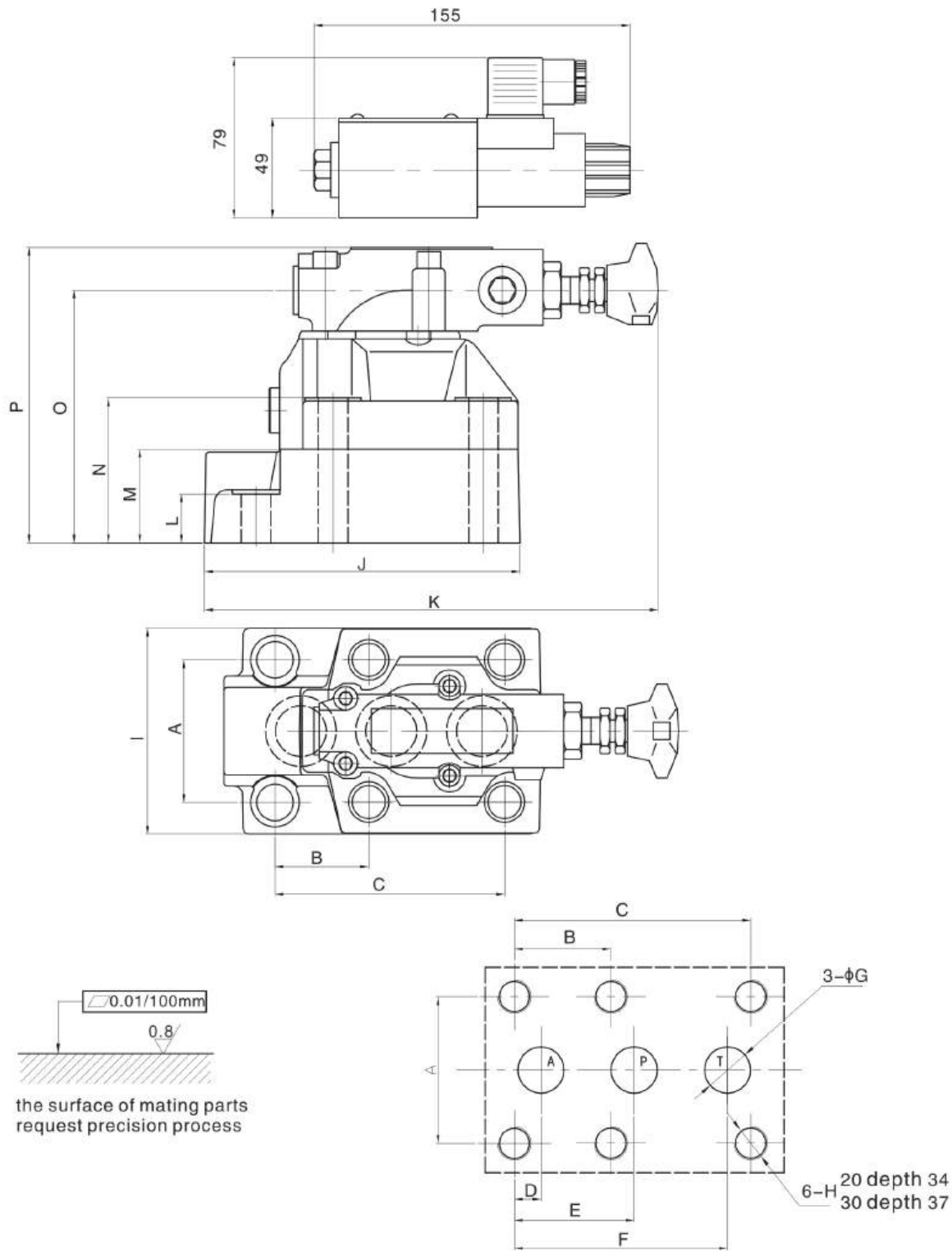


UNIT DIMENSIONS

DA10-DAW10



DA20, 30/DAW20, 30



type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
DA20/DAW20	70	46	112.7	12.7	57.1	101.6	22	M16	101	153	232	28	46	72	124	144
DA30/DAW30	82.5	50.8	139.7	12.7	63.5	127	30	M18	116	199	256	45	67	93	149	165

DA/DAW-L5X Series Pilot Operated Unloading Valves

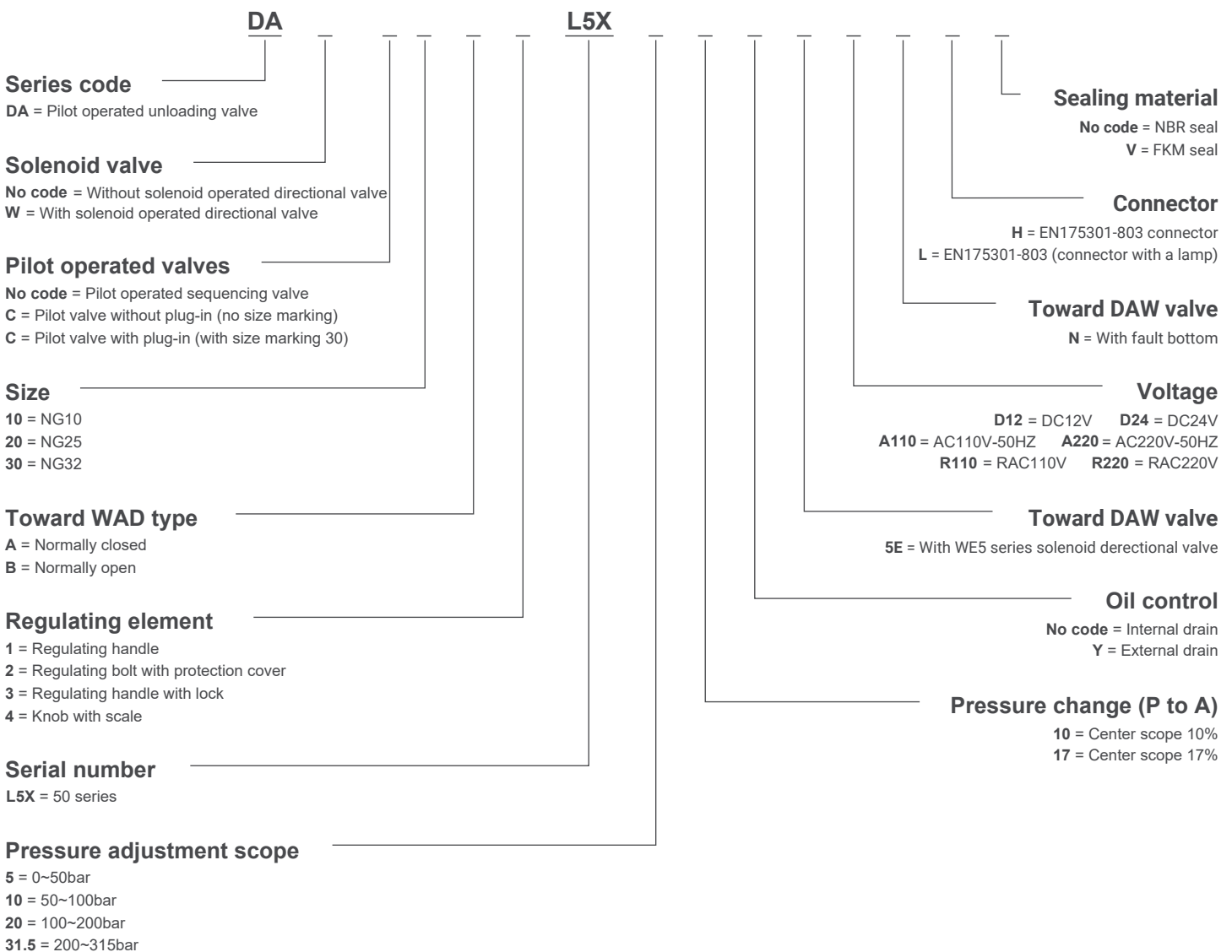


CONTENT

1. Used as sub-plate mounting
2. Mounting surface according to DIN24320E D type and ISO 5781
3. Used to oil block mounting
4. Four kinds of pressure scope
5. Four types of adjustment: Knob, adjusting-bolt with protect cover, lockable knob with scale, knob with scale
6. Solenoid unloading valve

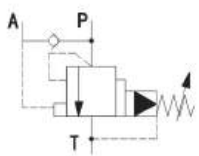


ORDERING DETAILS

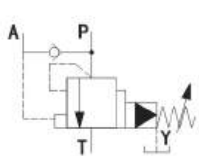


SYMBOLE

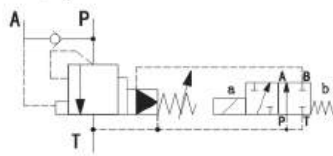
DA...



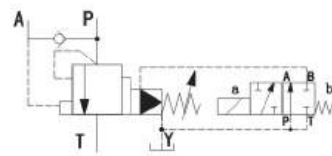
DA...Y



DAW...



DAW...Y



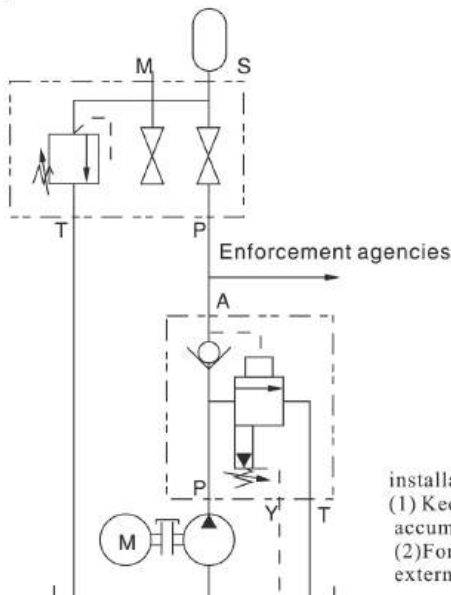
TECHNICAL DATA

Hydraulic Data

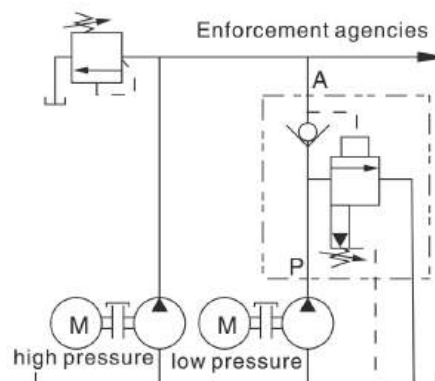
Operating medium		Mineral oil-suit to NBR or FKM seals			
		Phosphate-suit to FKM seals			
Temperature range of working medium		°C			
		-30~+80(NBR seals)			
		-20~+80(FKM seals)			
Viscosity scope		mm ² /s	10~800		
The oil cleanliness		The maximum oil pollution level according to NAS1638 class 9 and ISO4406 20, 18, class 15			
Maximum operating pressure Chamber A		MPa	315		
The maximum setting pressure		MPa	50; 100; 200; 315		
Mounting site		Optional			
The maximum flow	10% type	L/min	40	80	120
	17% type	L/min	60	120	240
Size		kg	10	25	32
Weight	DR	kg	3.8	7.9	12.3
	DR...G	kg	5.3	9.4	13.8
	DRC	kg	1.2(toward DAWC type adds 1.5kg)		
	DRC30	kg	1.5(toward DAWC30 type adds 1.5kg)		

typical loop

hydraulic system with accumulator



hydraulic system with double pumps in high and low pressure



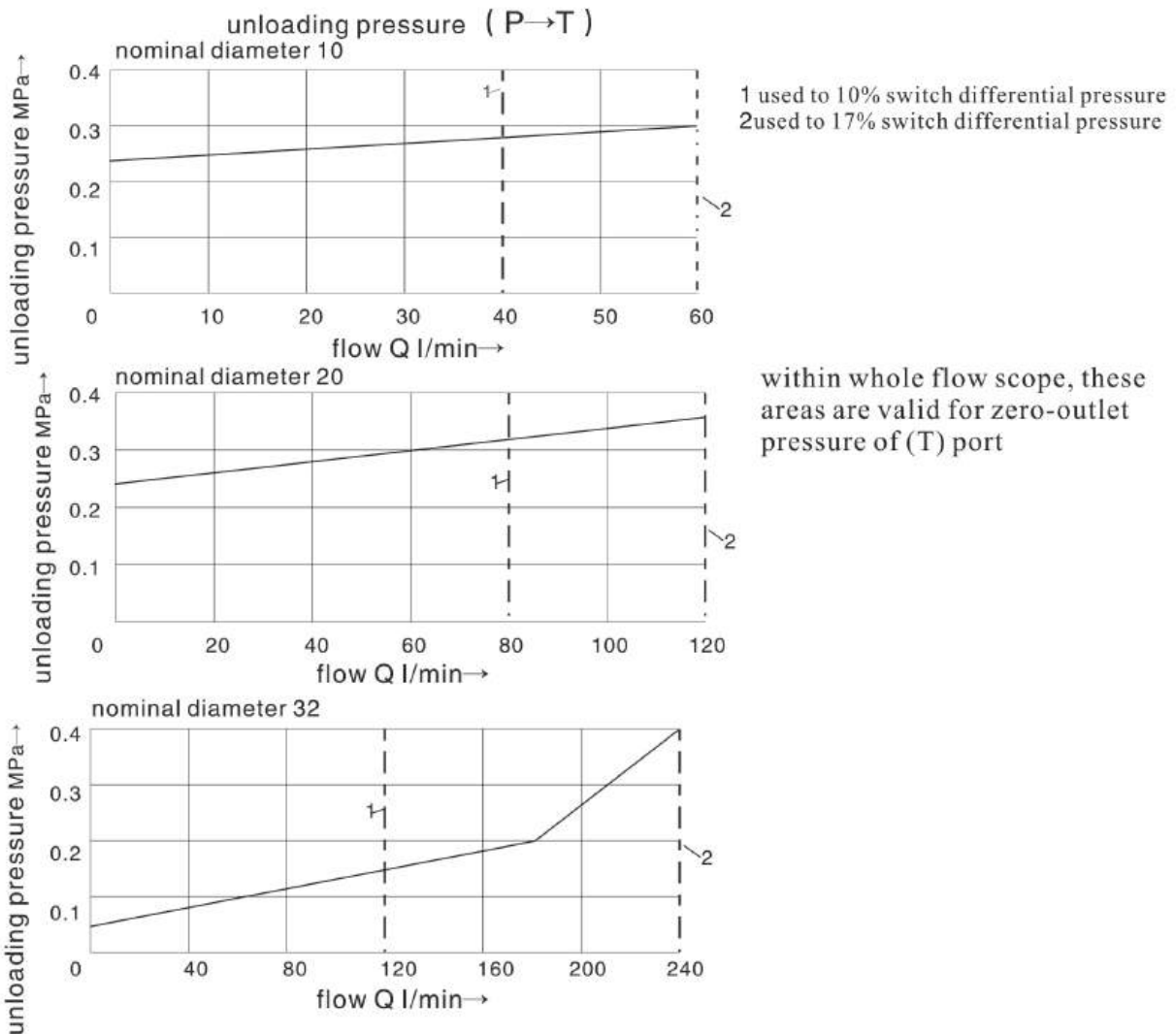
installation caution:

- (1) Keep the connecting resistance between valve DA and accumulator as small as possible
- (2) For big pump flow and/or low differential pressure (10%), external drain of type Y is the best.

CHARACTERISTIC CURVE

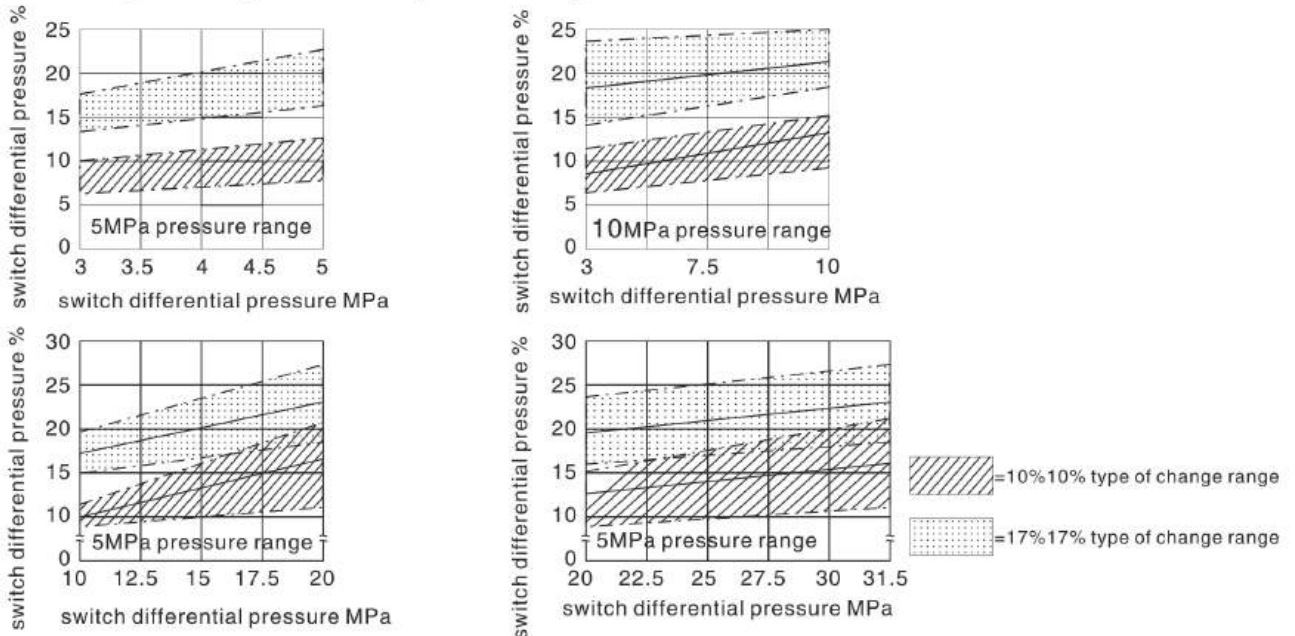
characteristics of unloading pressure-flow

(curve was measured when using mineral oil HLP46, $t=40^{\circ}\text{C}$)



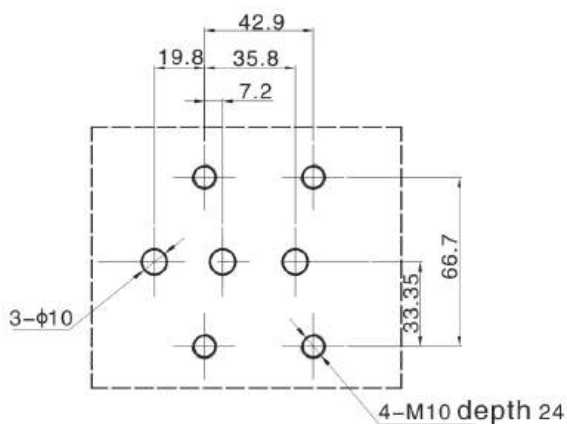
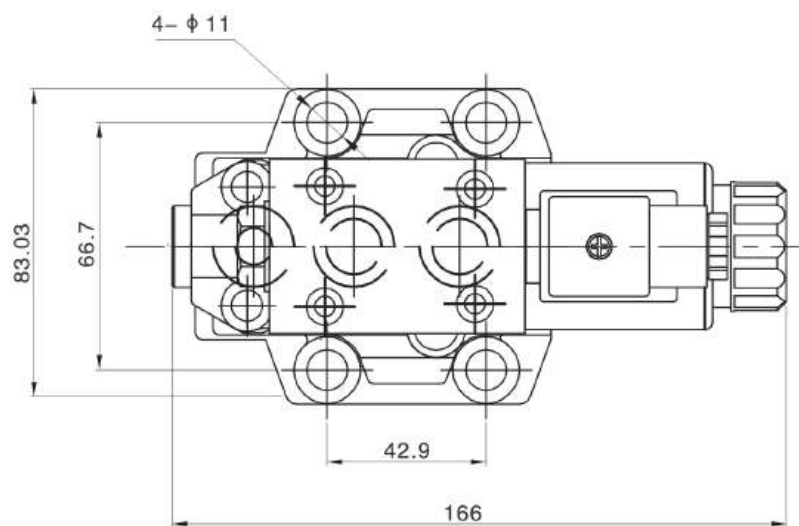
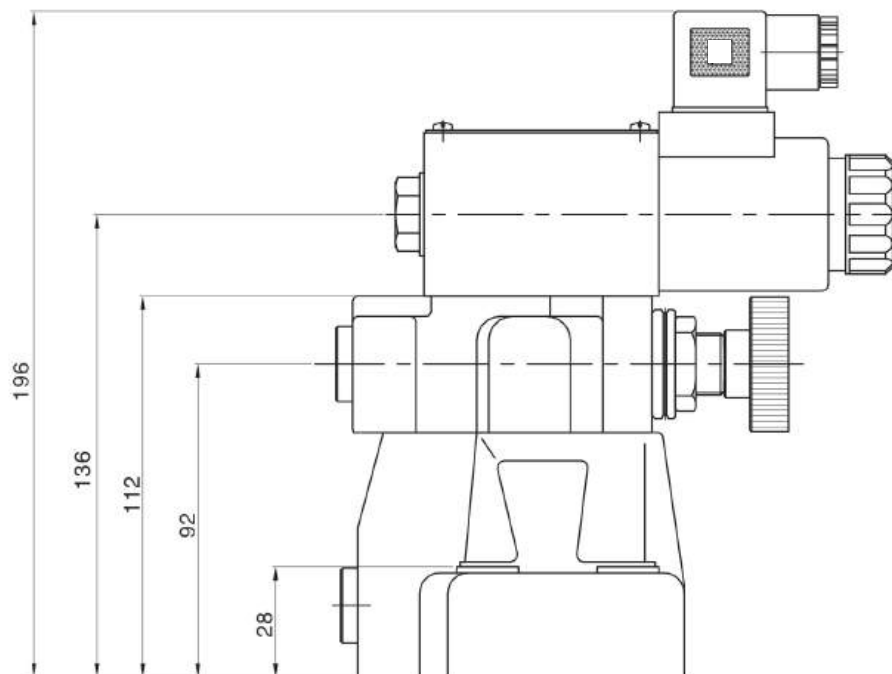
characteristic of convert differential pressure-switch pressure

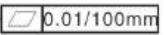
(convert Differential pressure depends on switch pressure setting P→A)



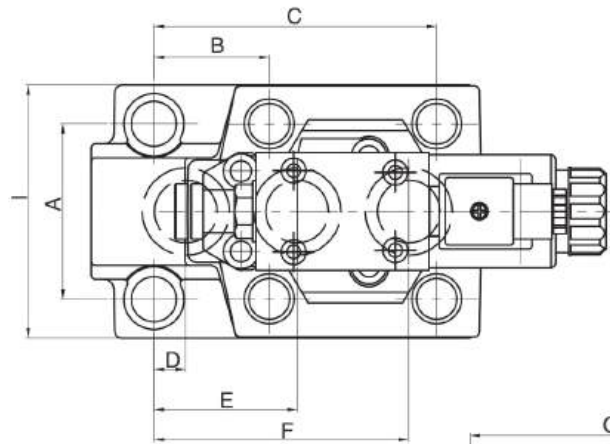
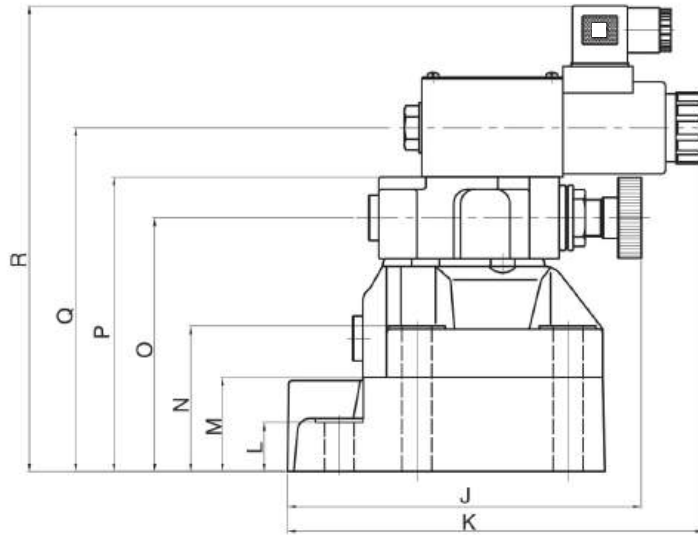
UNIT DIMENSIONS

DA10/DAW10

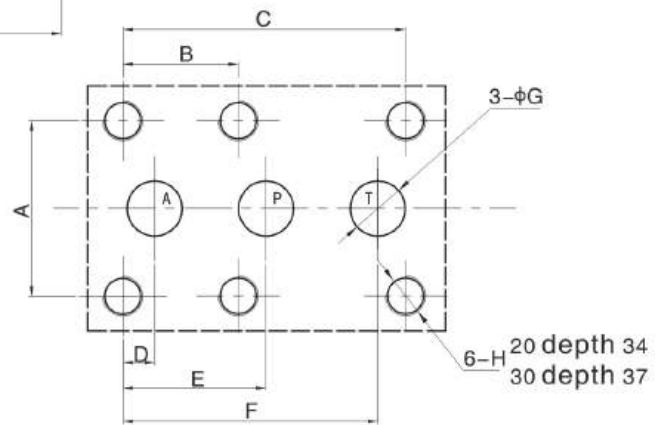



 0.8
 the surface of mating parts
 request precision process

DA20, 30/DAW20, 30



$\frac{0.01}{100\text{mm}}$
0.8
the surface of mating parts
request precision process



type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
DA20/DAW20	70	46	112.7	12.7	57.1	101.6	22	M16	100	166	207	28	46	72	124	144	168	228
DA30/DAW30	82.5	50.8	139.7	12.7	63.5	127	30	M18	115	182	223	45	67	93	145	165	189	249

Z2FS Series Modular Check Flow Regular Valves

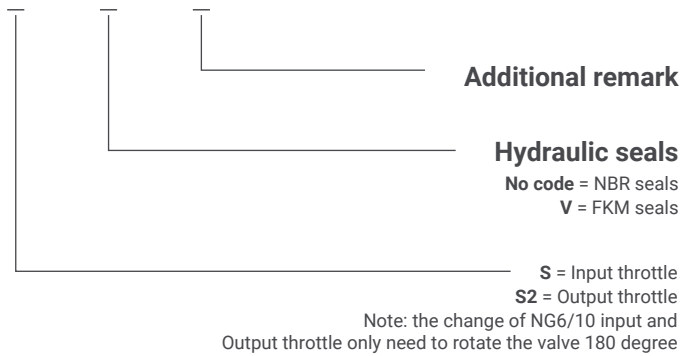
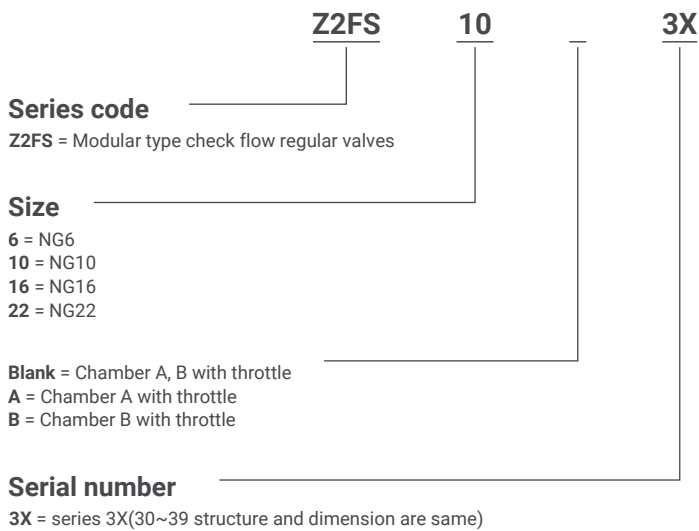


CONTENT

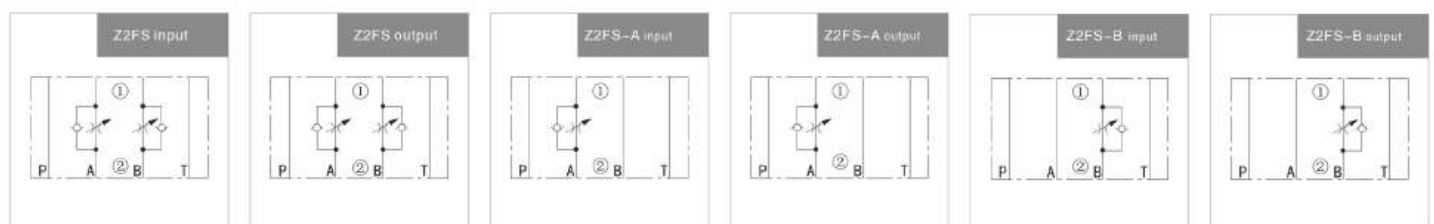
1. Z2FS type modular check valve, it controls the flow through the way of changing fracture surface to actualize flow control.



ORDERING DETAILS



SYMBOLE

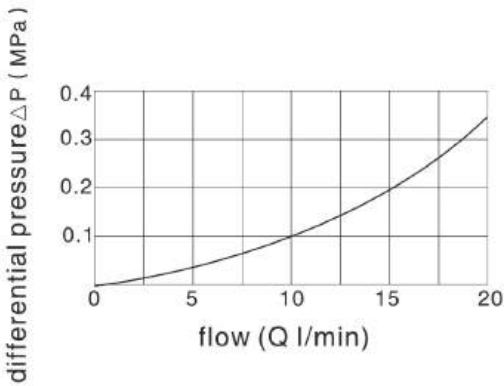


TECHNICAL DATA

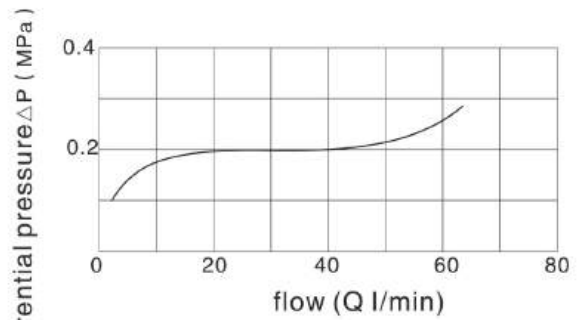
Hydraulic Data

Mounting site	Optional				
Flow direction	One direction throttles, another direction back flow through the check valve				
Pressure medium	Mineral oil (HL, HLP) according to DIN51524; phosphate (HFD-R)				
The oil pollution level	The maximum oil pollution level according to NAS1638 class9				
Working medium temperature range	°C	-20~+80°C			
Viscosity scope	mm ² /s	10~800mm ² /s			
The maximum operating pressure	35MPa				
Drifter diameter	6	10	16	25	
Weight	kg	10	3.1	4.7	8

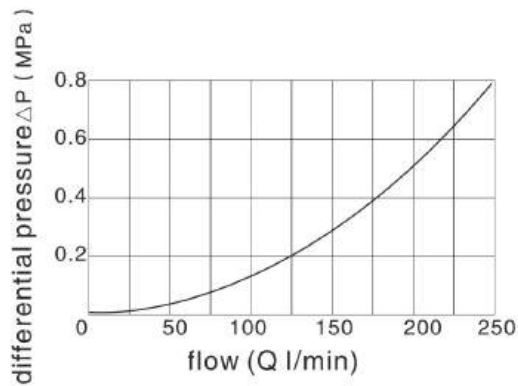
CHARACTERISTIC CURVE



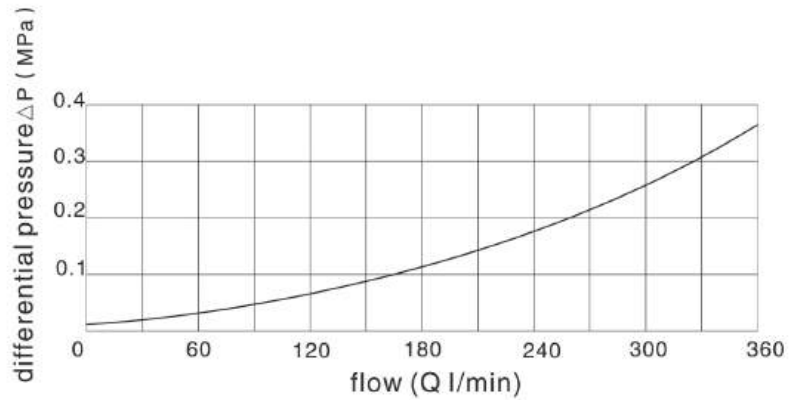
the ΔP -Q curves go by one-way valve (Z2FS6)



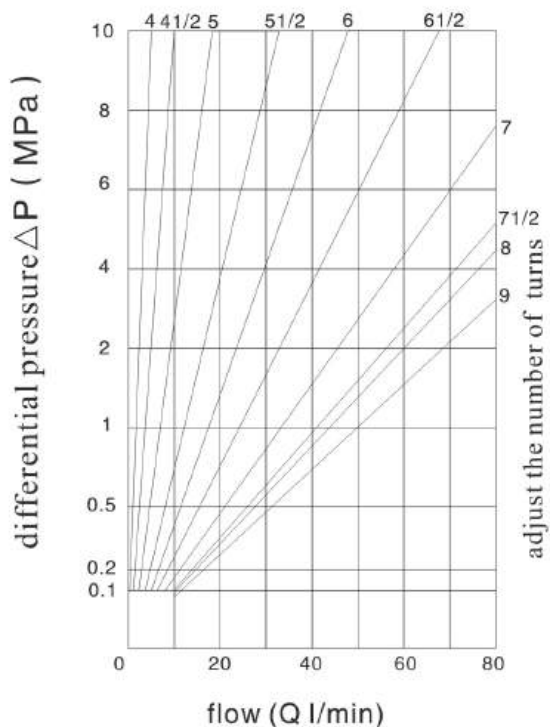
the ΔP -Q curves go by one-way valve (Z2FS10)



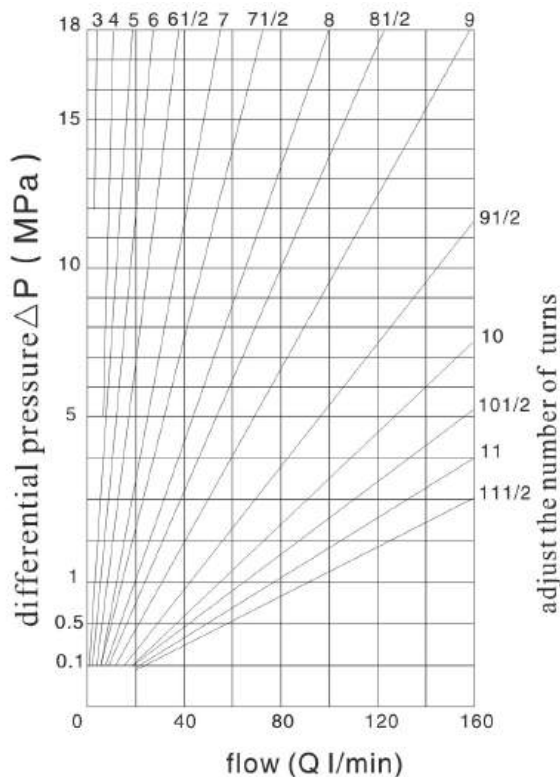
the ΔP -Q curves go by one-way valve (Z2FS16)



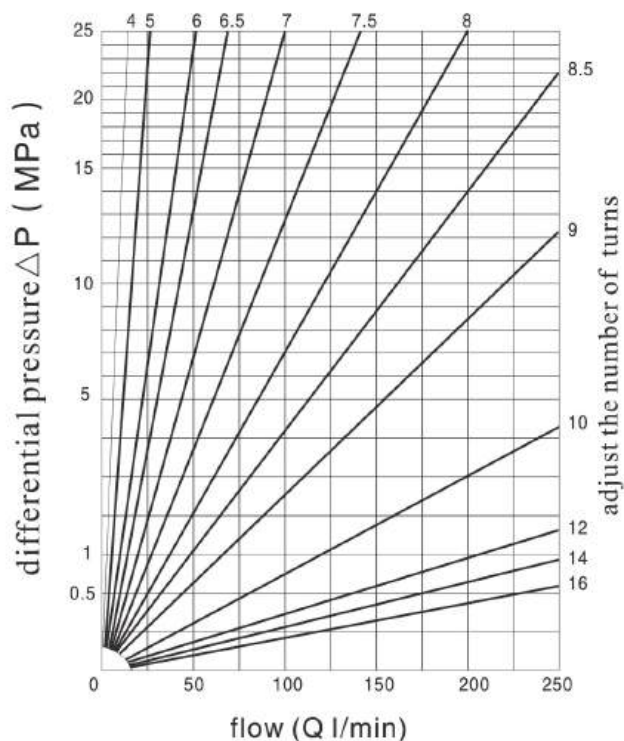
the ΔP -Q curves go by one-way valve (Z2FS22)



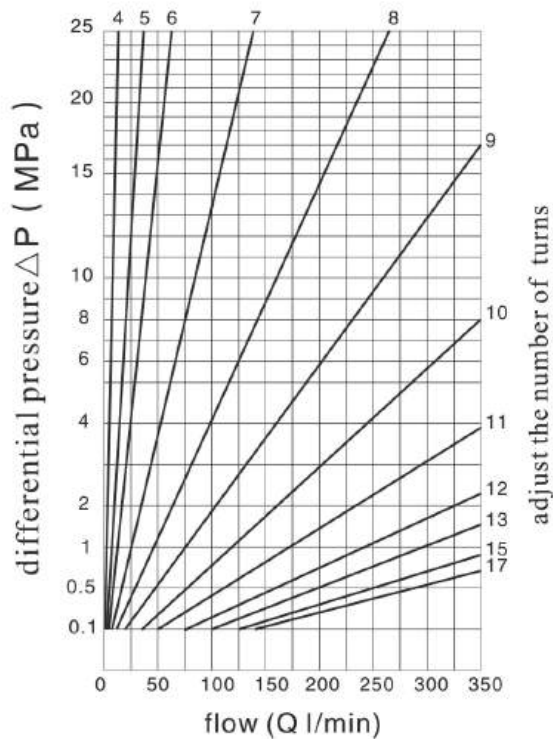
curve chart (type) of ΔP - Q in each position with throttling set (Z2FS6 type)



curve chart (type) of ΔP - Q in each position with throttling set (Z2FS10 type)



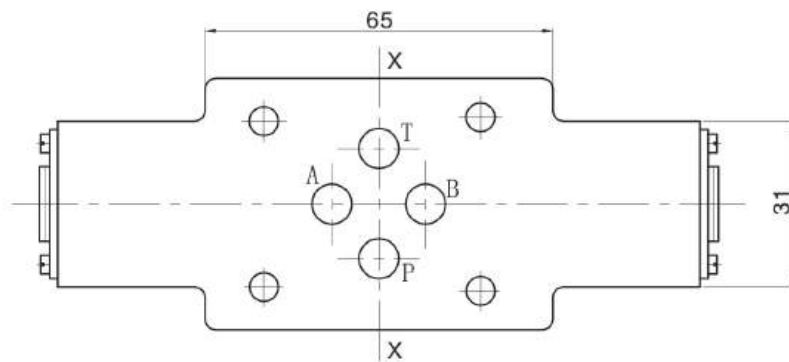
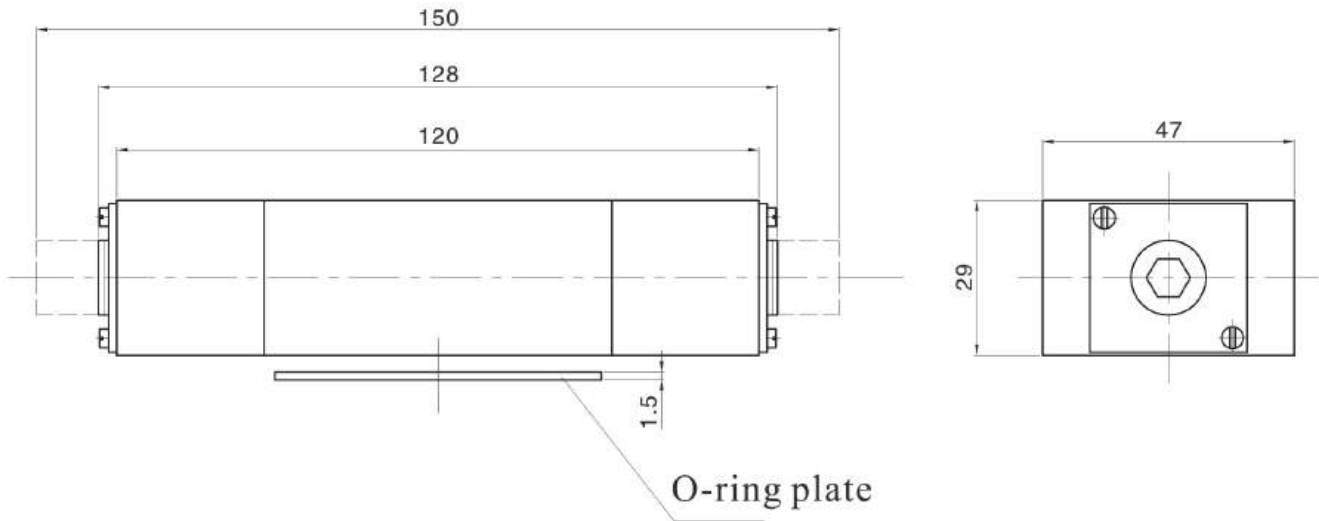
curve chart (type) of ΔP - Q in each position with throttling set (Z2FS16 type)



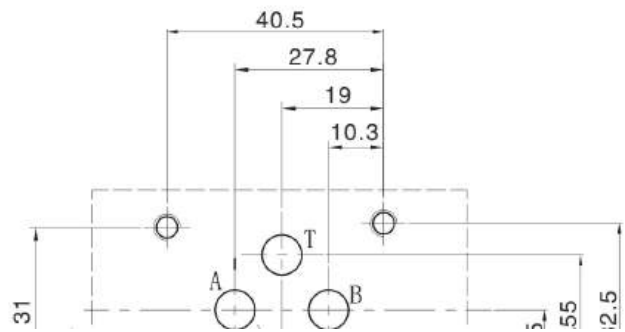
curve chart (type) of ΔP - Q in each position with throttling set (Z2FS22 type)

UNIT DIMENSIONS

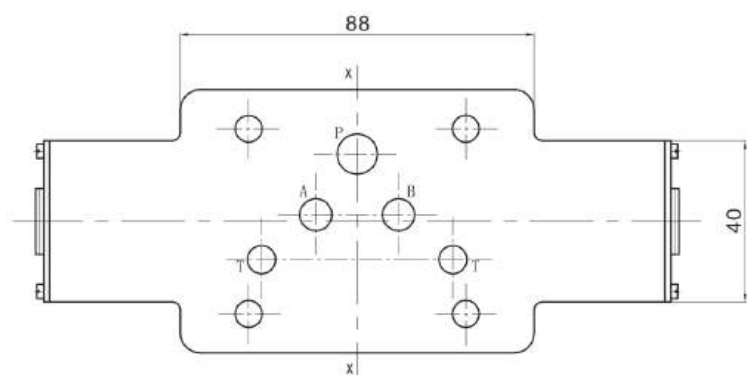
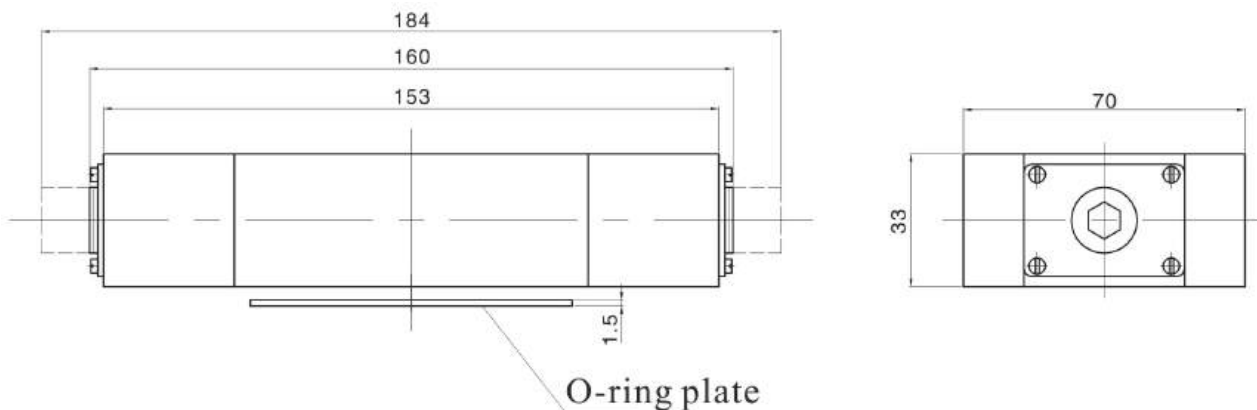
Z2FS6



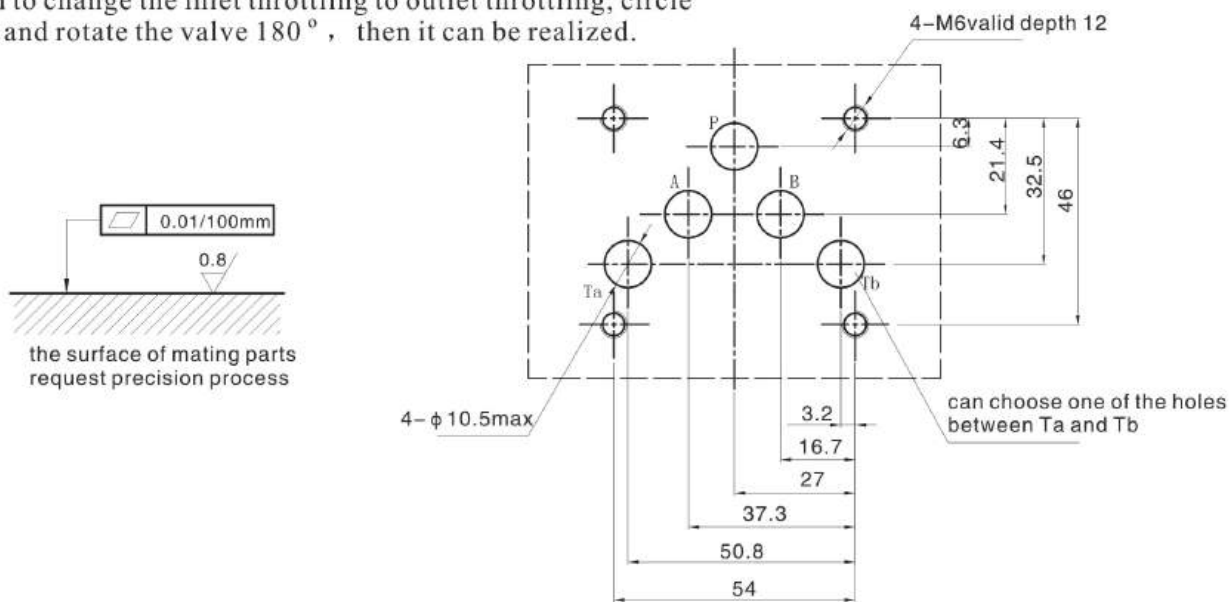
when we need to change the inlet throttling to outlet throttling, circle the axel X-X and rotate the valve 180°, then it can be realized.



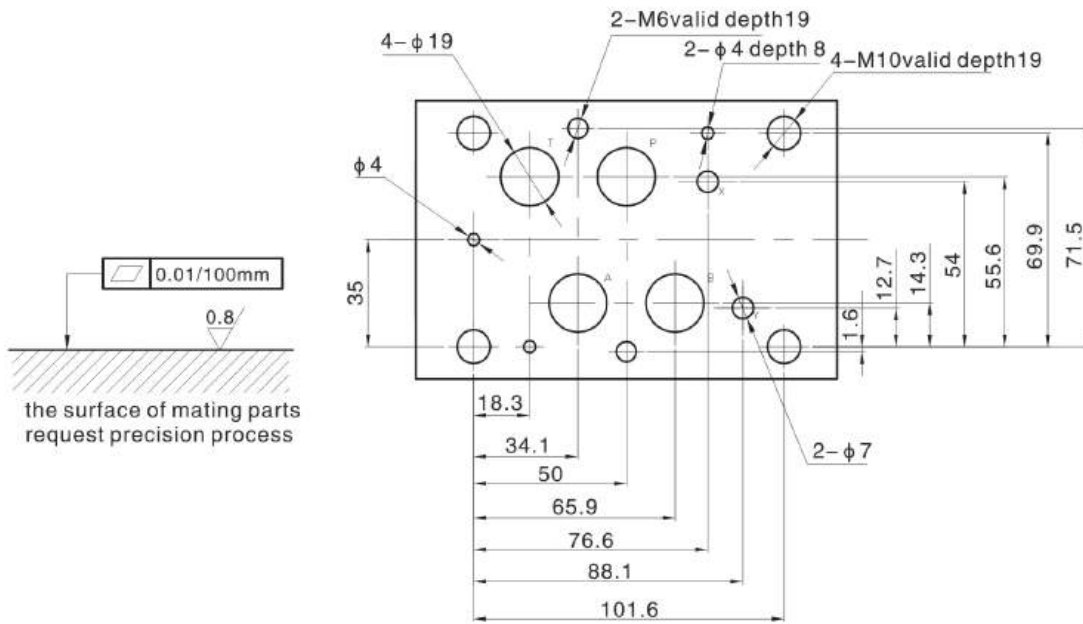
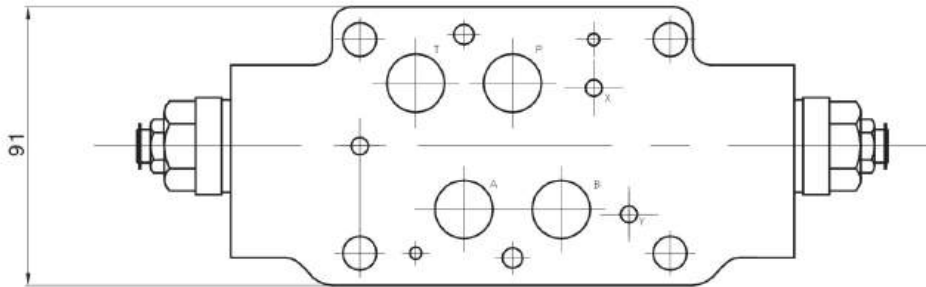
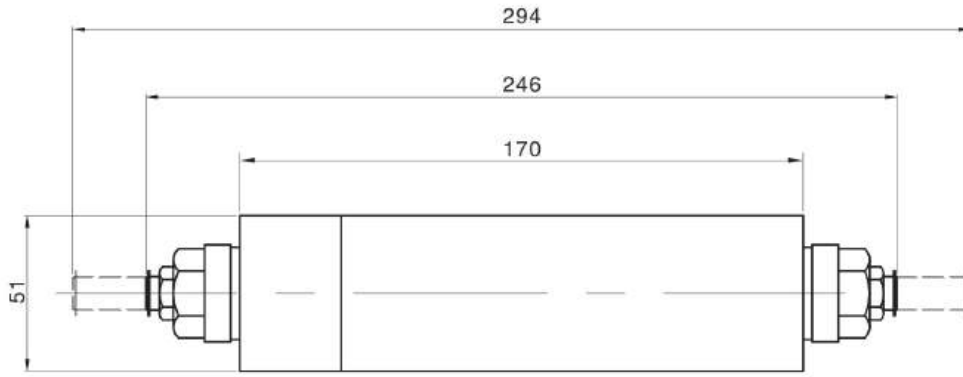
Z2FS10



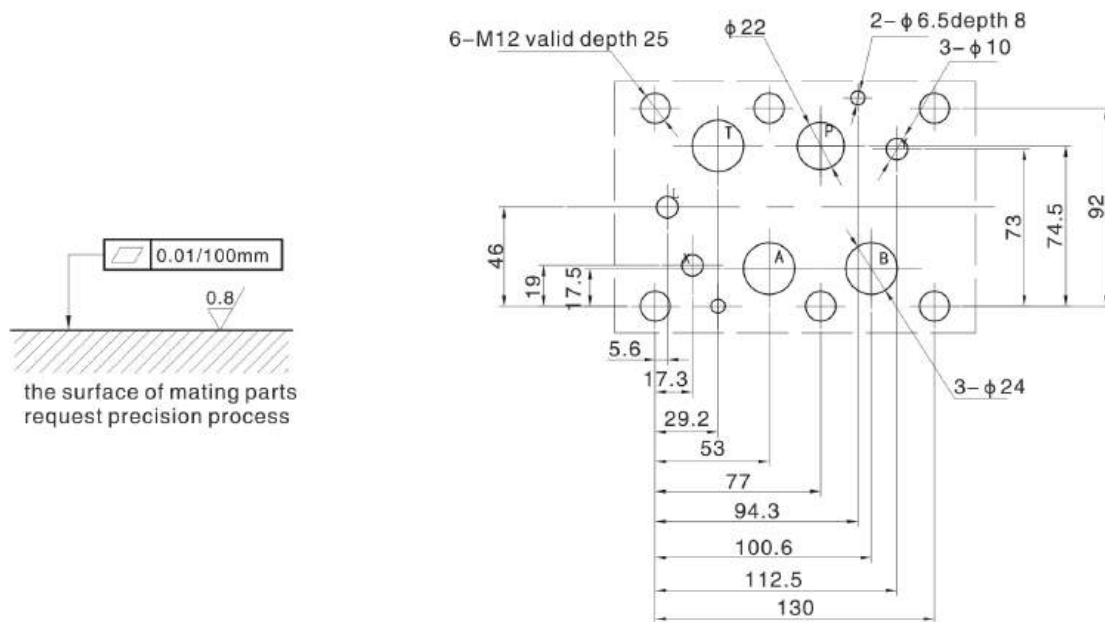
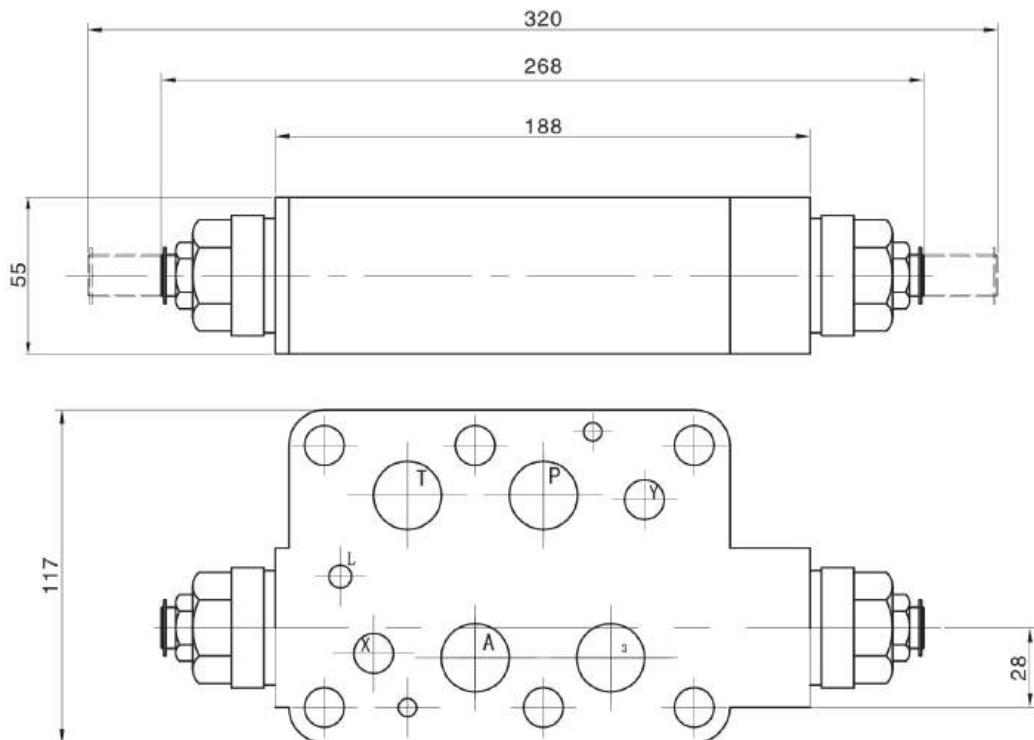
when we need to change the inlet throttling to outlet throttling, circle the axel X-X and rotate the valve 180°, then it can be realized.



Z2FS16



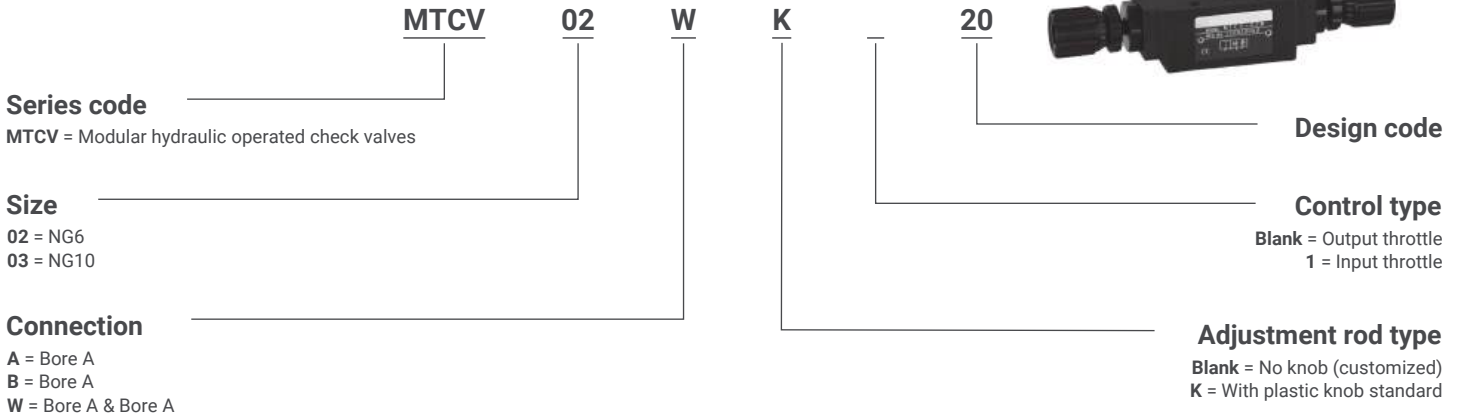
Z2FS22



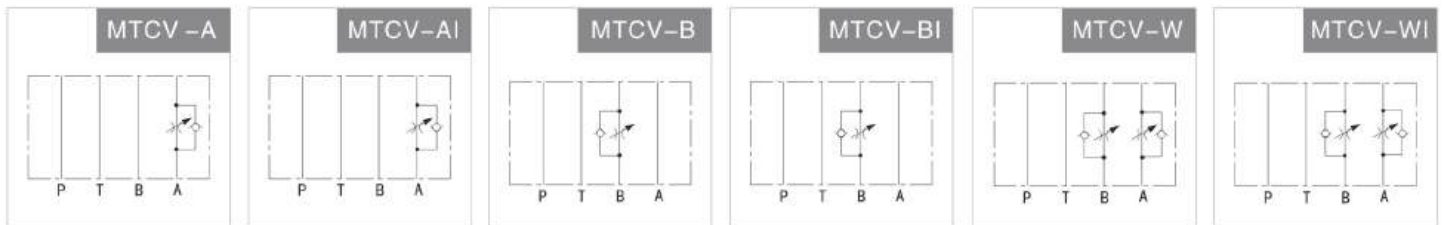
MTCV Series Modular Check Relief Valve



ORDERING DETAILS



SYMBOLE



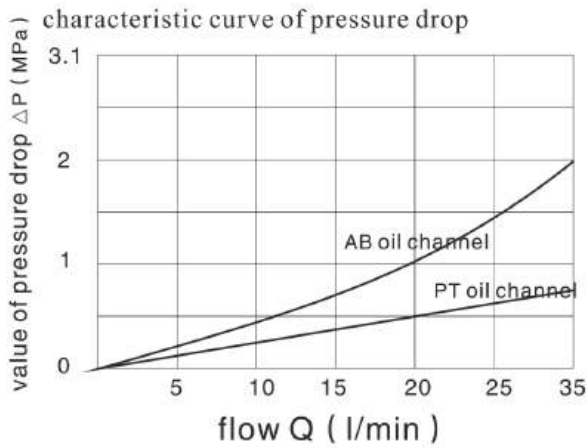
TECHNICAL DATA

Hydraulic Data

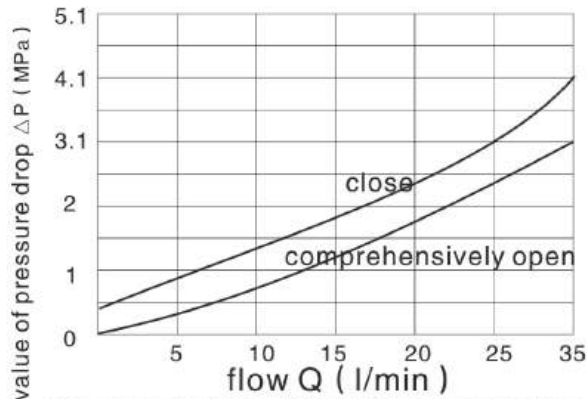
Model	Maximum pressure bar	Maximum flow L/min	Weight kg
MTCV-02	210	35	1.3
MTCV-03		70	2.8

CHARACTERISTIC CURVE

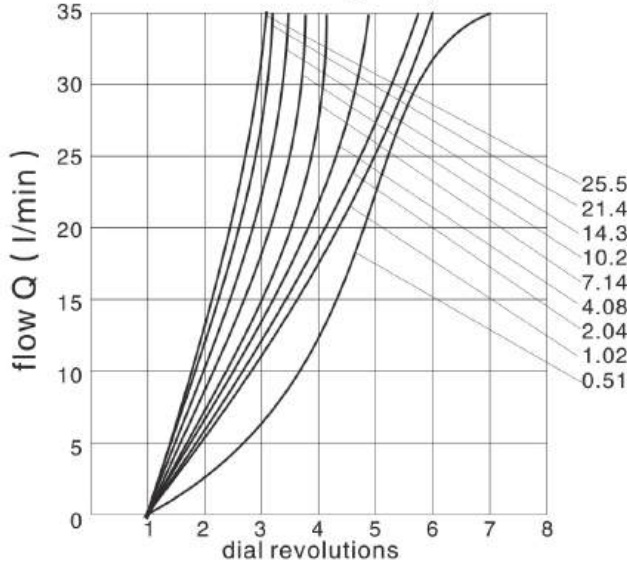
MTCV-02



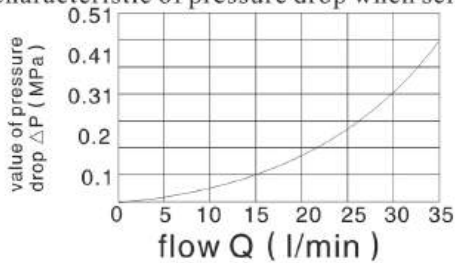
The characteristic of pressure drop when flow freely.



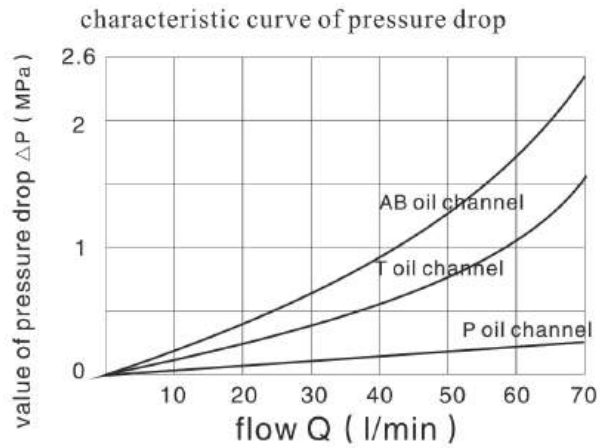
The characteristic of throttling rotary knob switch-flow



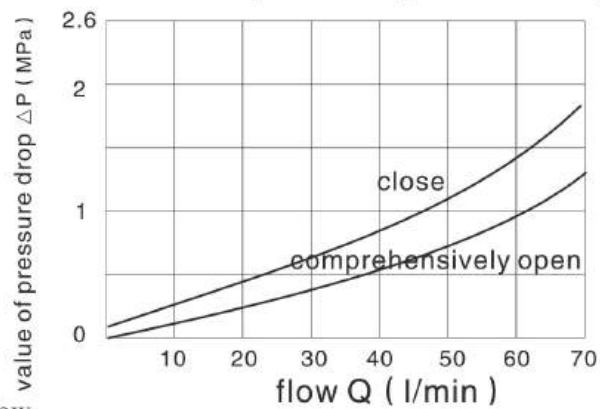
The characteristic of pressure drop when screw fully open



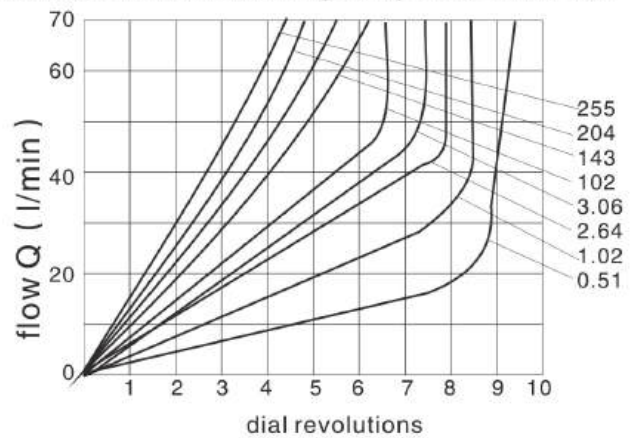
MTCV-03



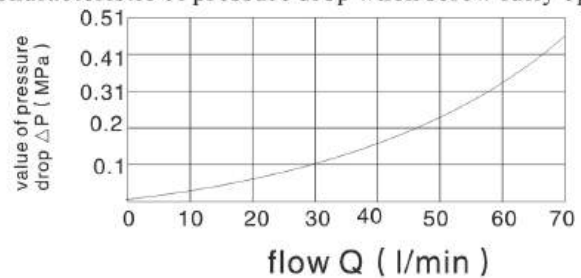
The characteristic of pressure drop when flow freely.



The characteristic of throttling rotary knob switch-flow

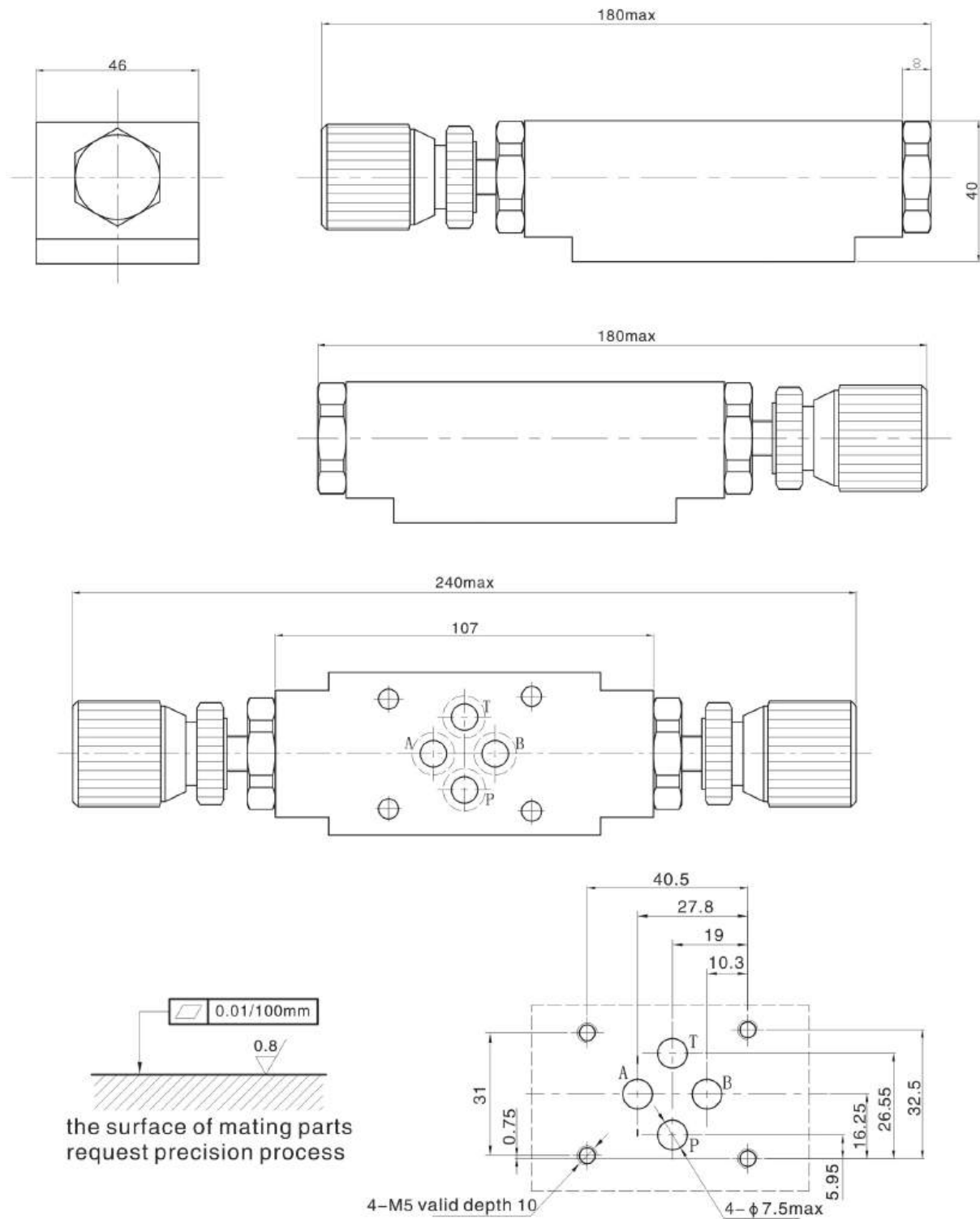


The characteristic of pressure drop when screw fully open

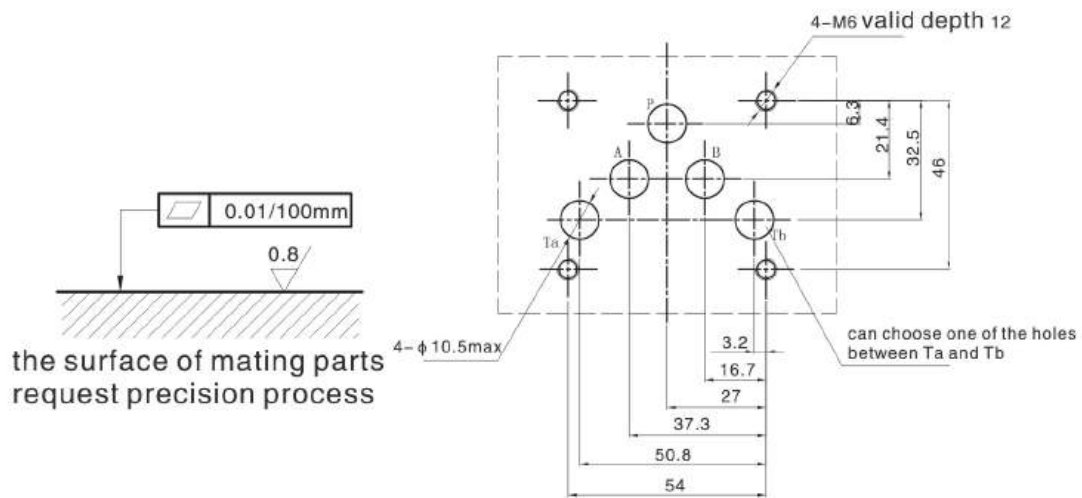
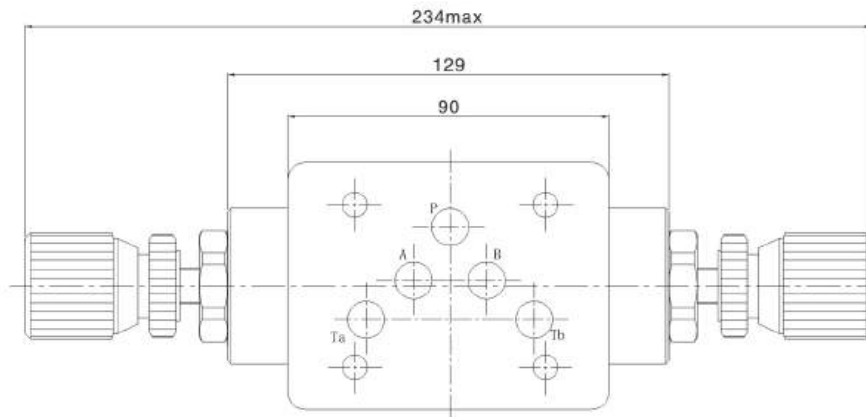
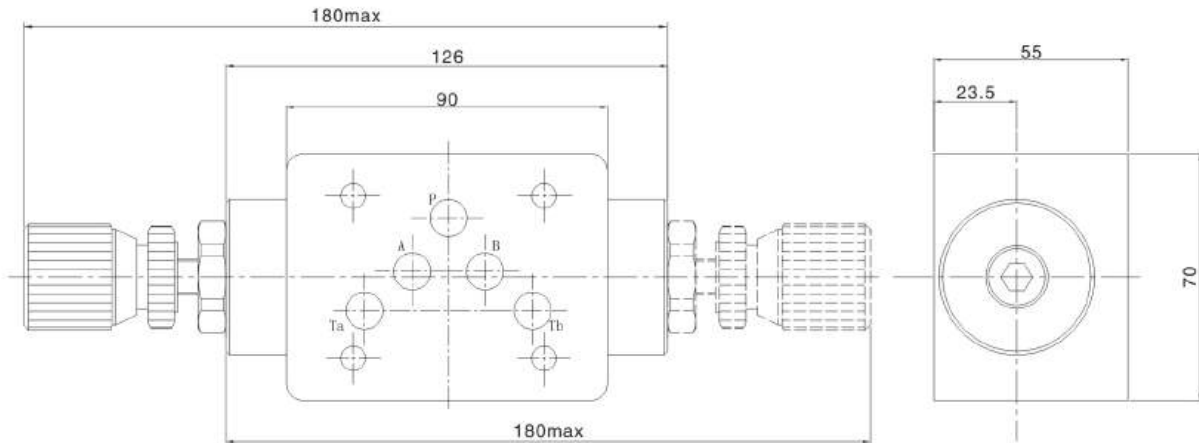


UNIT DIMENSIONS

MTCV-02



MTCV-03



TECHNICAL DATA

Hydraulic Data

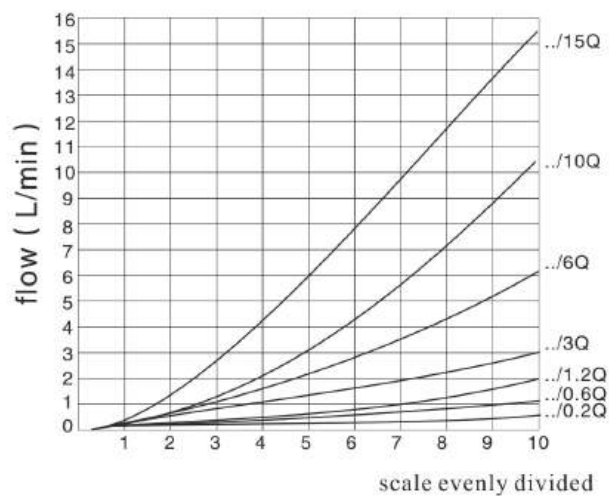
Fluid oil	HLP-mineral oil meet DIN51525 organic phosphate								
Oil temperature range	°C	-20~+70°C							
Viscosity range	Cst	2.8~380cst							
Two-way flow control valve									
Maximum flow	L/min	0.2	0.6	1.2	3.0	6.0	10.0	16.0	
B to A free back, ΔP related to Q	bar	0.5	0.5	0.6	0.9	1.8	3.6	6.7	
Flow control	Constant temperature (-20~+70°C)	±5%	±3%	±2%					
	Constant pressure (to $\Delta=210$ bar)	±2%					±4%		
Working pressure, A port	To 210bar								
Minimum pressure drop	bar	3..5					6..8		
Filtration (increase service life)	bar	25(Q<5L/min)				10(Q<0.5L/min)			
Weight	kg	1.6							
Rectifier stack board									
Rated flow	L/min	15							
Working pressure	bar	To 210bar							
Start pressure	bar	1							
Weight	kg	0.6							

Using occasion for other technical condition, please consult for our company

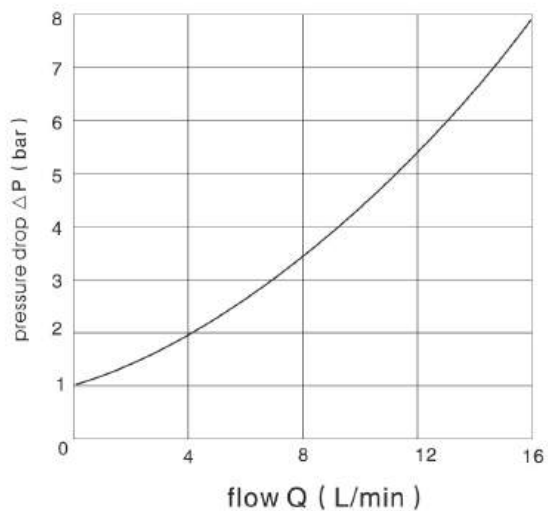
CHARACTERISTIC CURVE

(measured when $v=36\text{mm}^2/\text{s}$; $t=50^\circ\text{C}$)

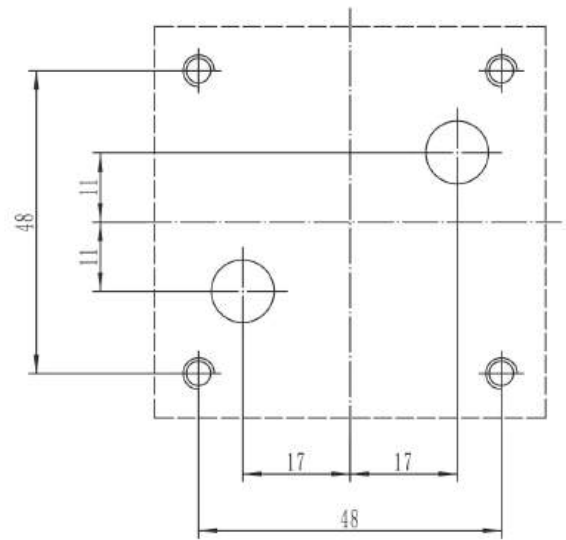
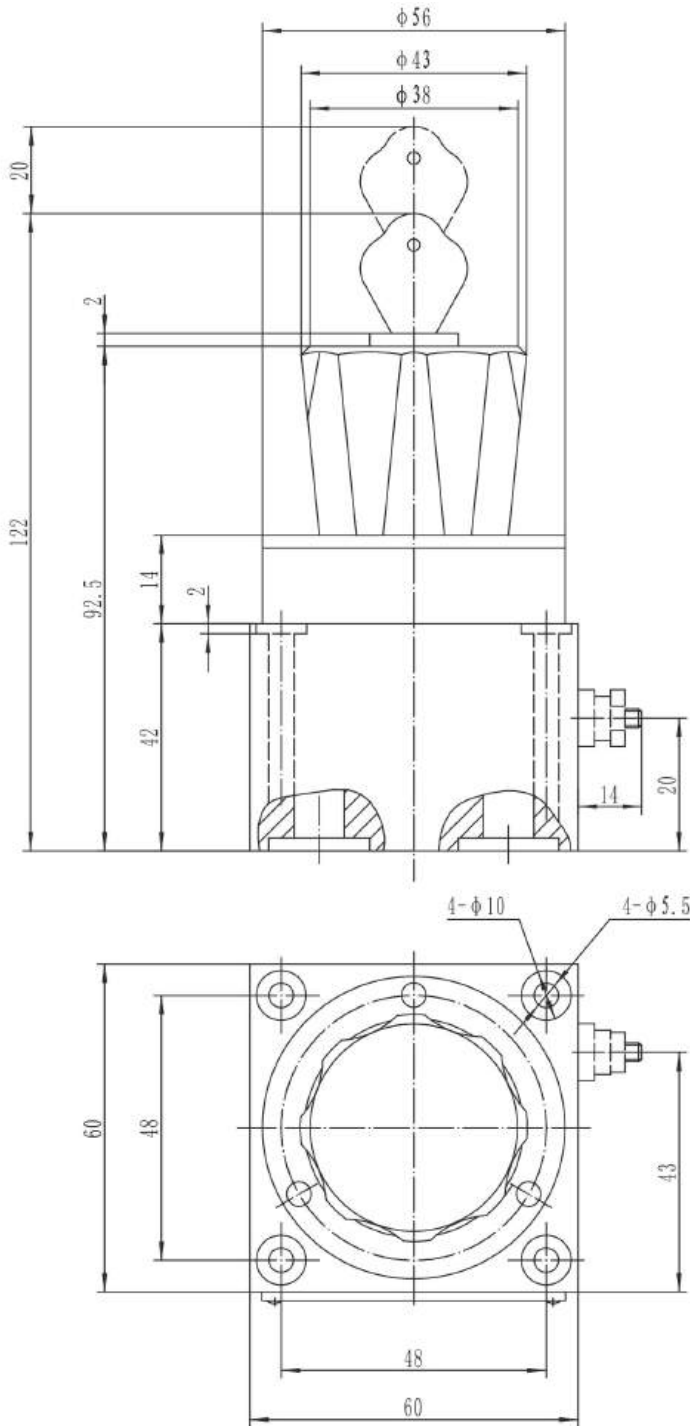
the measurement related to scale value A→B



pressure drop of stack plate



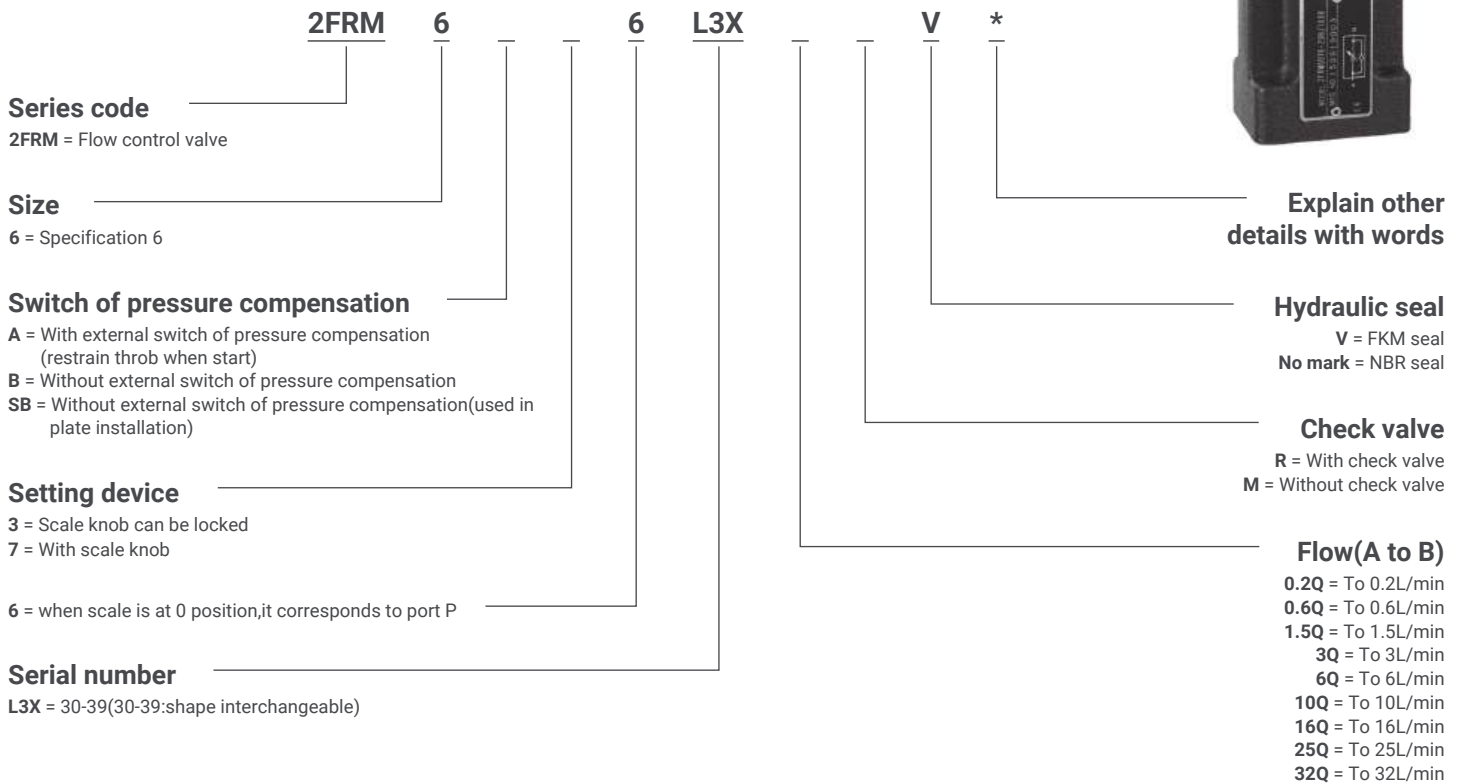
UNIT DIMENSIONS



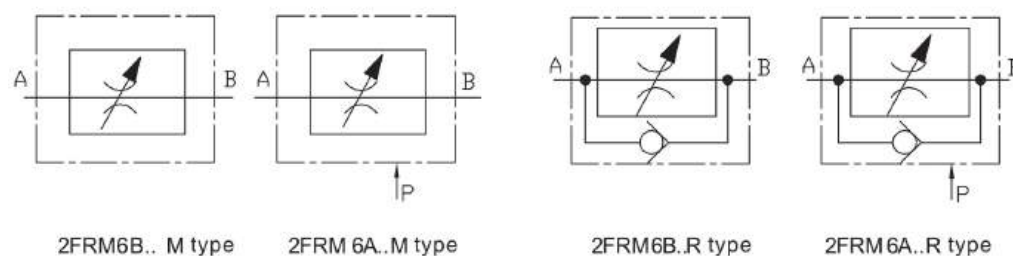
2FRM6 type of flow control valve



ORDERING DETAILS



SYMBOLE



TECHNICAL DATA

Hydraulic Data

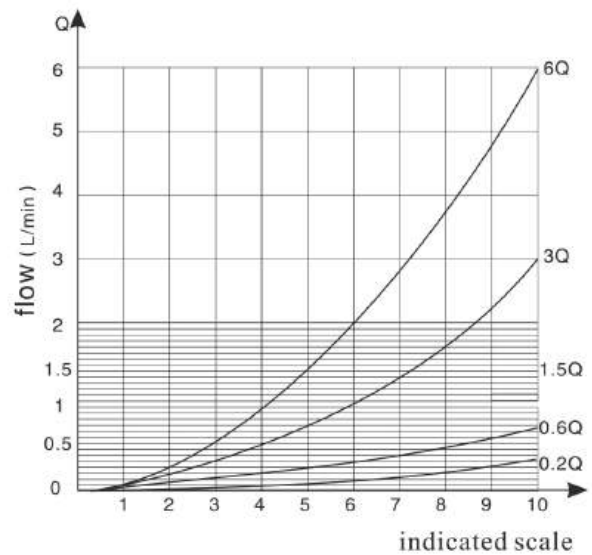
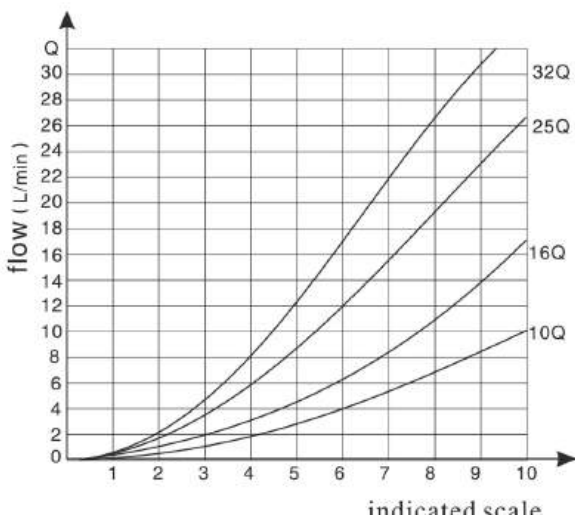
2-way flow control valve		Mineral oil (HL, HLP)with DIN51524; organic phosphate (HFD-R)									
Fluid											
Temperature range of oil		°C	-20~+80								
Viscosity range		mm ² /s	10~800								
Cleanness of oil		The maximum oil pollution level according to NAS1638 class 9 So we recommend the minimum filtration precision of filter β10≥75									
Flow	Q _{max}	L/min	0.2	0.6	1.5	3.0	6.0	10.0	16.0	25.0	32.0
	Q _{min} to 10Mpa	ML/min	15	15	15	15	25	50	70	100	250
	~31.5Mpa	ML/min	25	25	25	25	25	50	70	100	250
The pressure drop ΔP, when B to A flow reversely-freely		see the back curve									
Minimum differential pressure		bar	6~14								
Pressure stability, to ΔP=31.5Mpa		%	±2(Q _{max})								
Working pressure, port A		bar	~315								
Weight		kg	T01.3(SB~1.5)								
Rectifier stack board											
Nominal flow rate		L/min	32								
Working pressure		bar	~210								
Start pressure		bar	0.7								
Weight		kg	about 0.9								

Under the small flow, when flow from P (entrance of directional valve) to A (exit of flow control valve), the pressure loss is substantial.

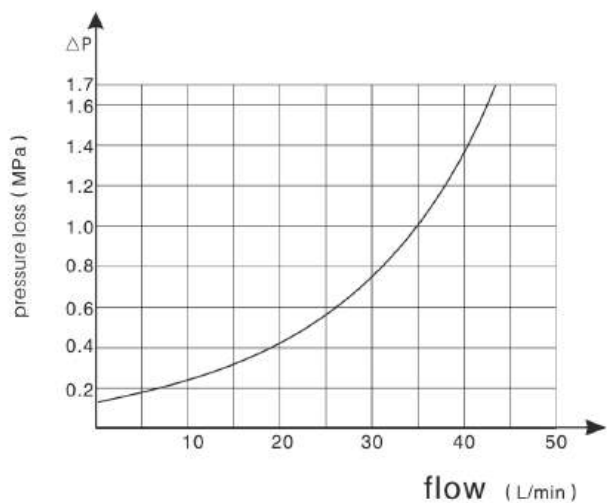
CHARACTERISTIC CURVE

(measured when $v=36\text{mm}^2/\text{s}$; $t=50^\circ\text{C}$)

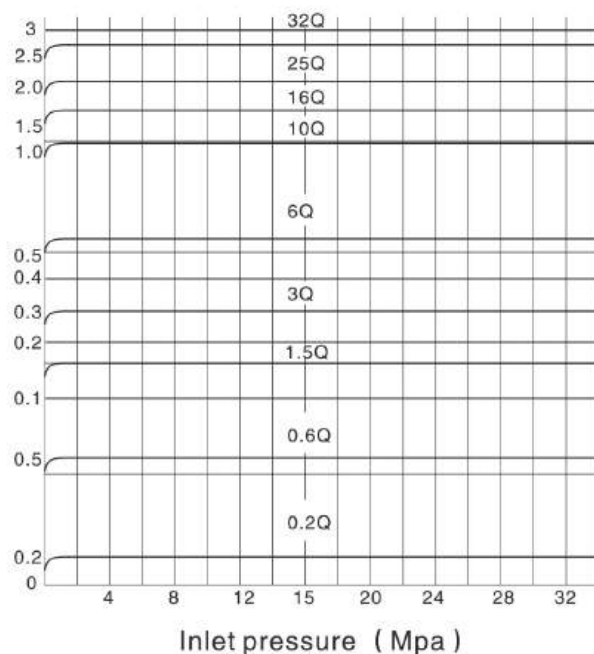
curve of flow-scale (flow control A→B)



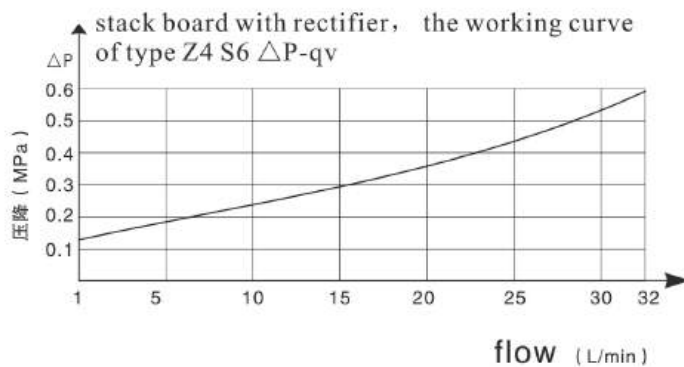
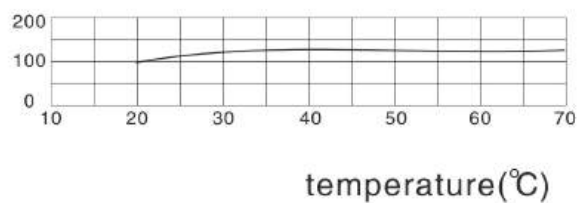
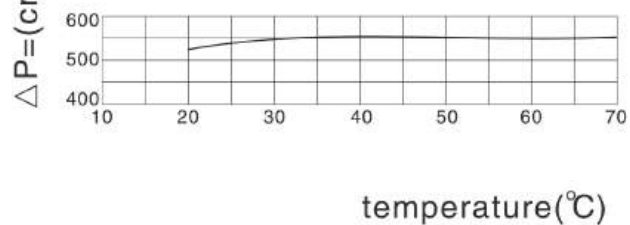
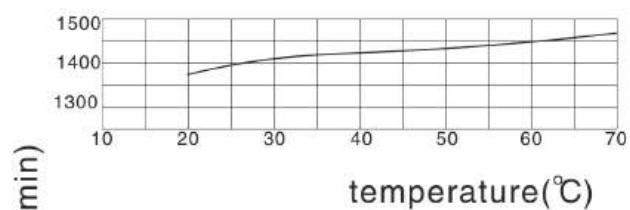
choke orifice closed, the differential pressure goes by one-way valve from B to A.



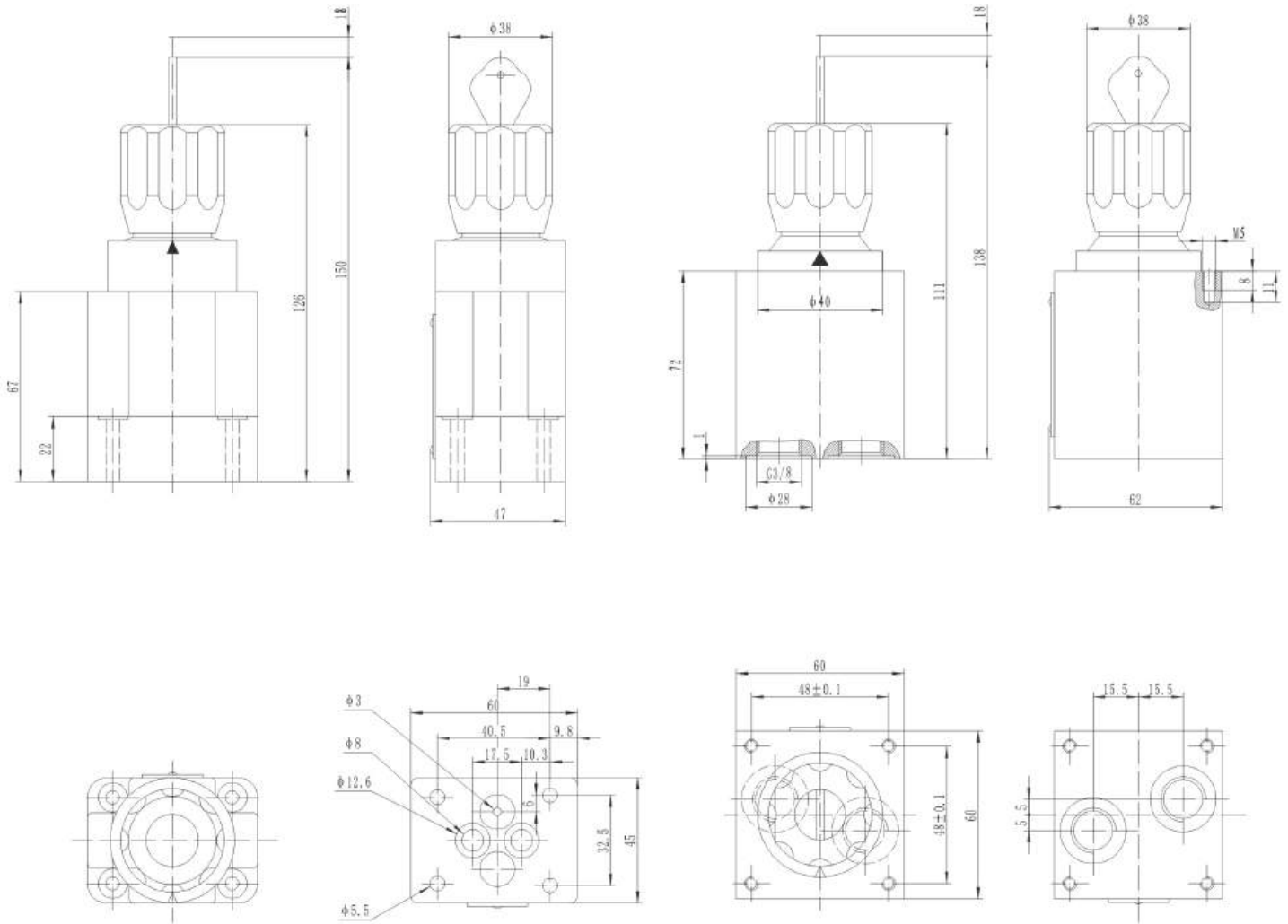
curve of pressure and flow



the effect from temperature when $\Delta P=2\text{Mpa}$



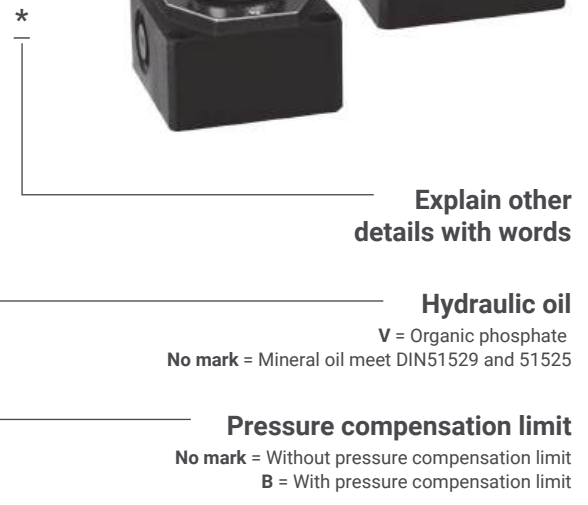
UNIT DIMENSIONS



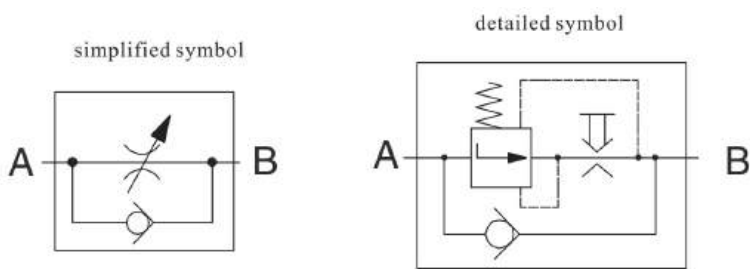
2FRM10/16 type speed control valve



ORDERING DETAILS



SYMBOLE



TECHNICAL DATA

Hydraulic Data

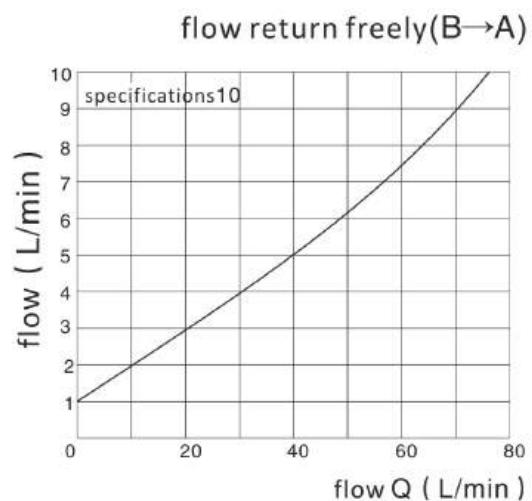
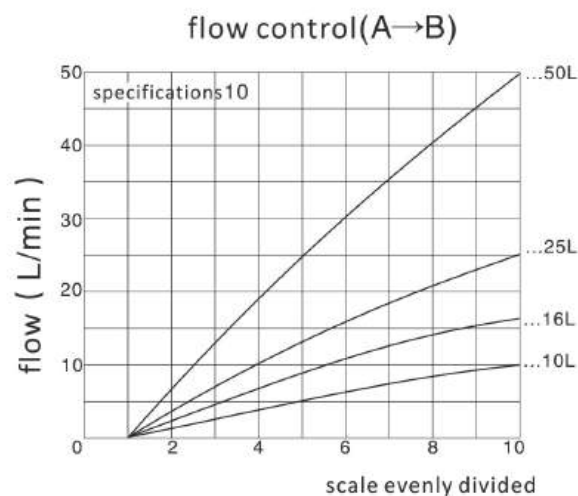
Fluid oil	HLP-mineral oil meet DIN51525 organic phosphate						
Temperature range of oil	°C	-20~+70					
Viscosity range	mm ² /S	2.8~380					
Two-way flow control valve							
Maximum flow	L/min	Specification 10				Specification 16	
		10	16	25	50	60	100
B to A free back, ΔP related to Q	bar	Specification 10				Specification 16	
		2	2.5	3.5	6	2.8	4.3
Flow control	Constant temperature (-20+70°C)		±2%(Q _{max})				
	Constant pressure (to A=315bar)		±2%(Q _{max})				
Working pressure, port A	bar	~315					
Minimum pressure drop	bar	Specification 10				Specification 16	
		3...7				5...12	
Filtration (increase service life)	μm	25(Q<5L/min)				10(Q<0.5L/min)	
Weight	kg	Specification 10				Specification 16	
		0.07				11.3	
Rectifier stack board							
Nominal flow	L/min	Specification 10				Specification 16	
		50				160	
Working pressure	bar	~315					
Start pressure	bar	1.5					
Weight	kg	Specification 10				Specification 16	
		3.2				9.3	

Be used to occasion of other technical condition, please consult for our company

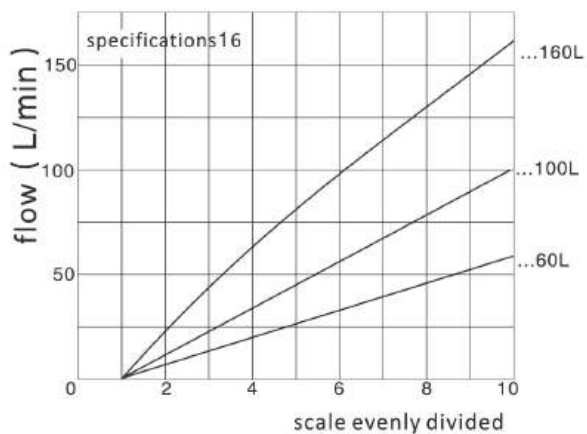
CHARACTERISTIC CURVE

(measured when $v=36\text{mm}^2/\text{s}$; $t=50^\circ\text{C}$)

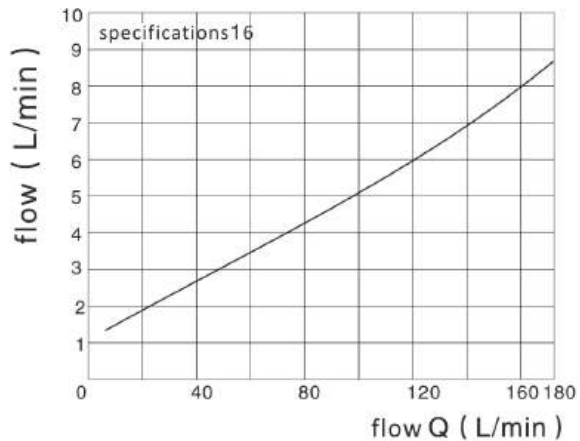
two-way flow control valve



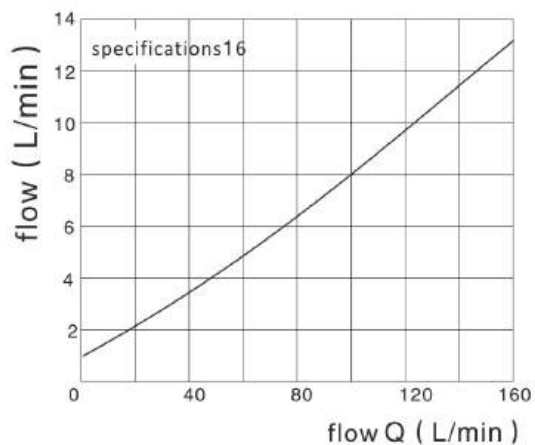
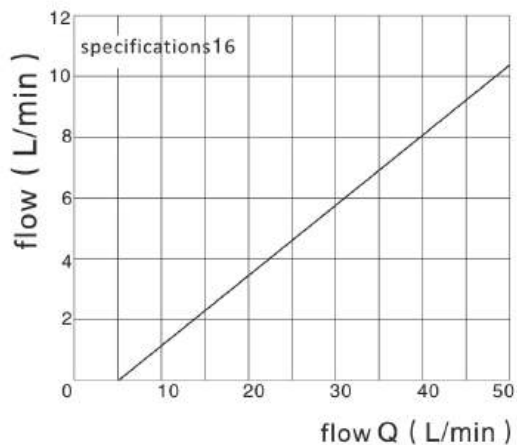
flow control(A→B)



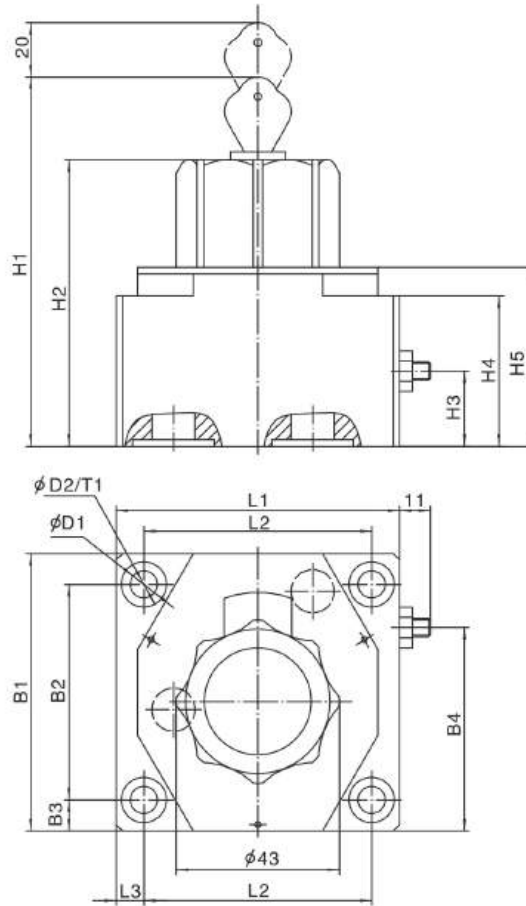
flow return freely(B→A)



the pressure drop in two directions are same, flow A→B

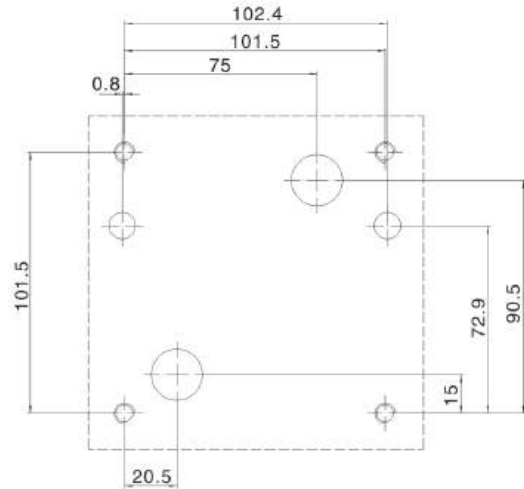
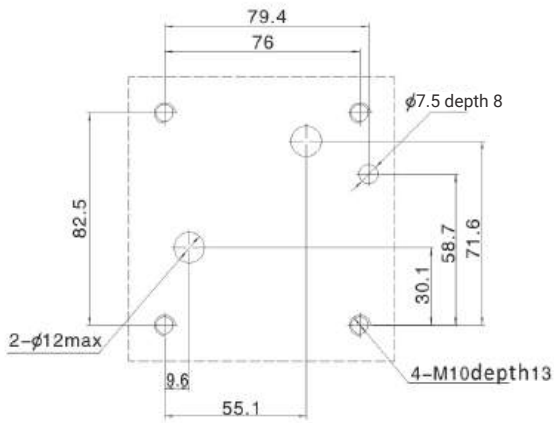


UNIT DIMENSIONS



2FRM10

2FRM16

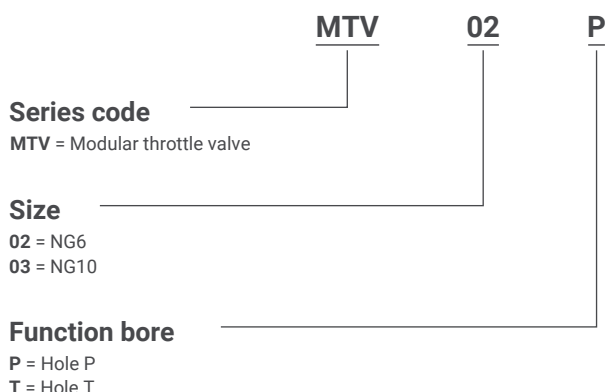


components	B1	B2	B3	B4	D1	D2	H1	H2	H3	H4	H5	L1	T1
specifications10	101.5	35.5	9.5	68	9	15	125	95	26	51	60	95	13
specifications16	123.5	41.5	11.5	81.5	11	18	147	117	34	72	82	123.5	12

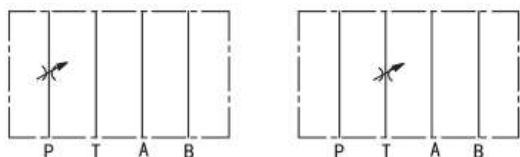
MTV type of modular throttle valve



ORDERING DETAILS



SYMBOLE



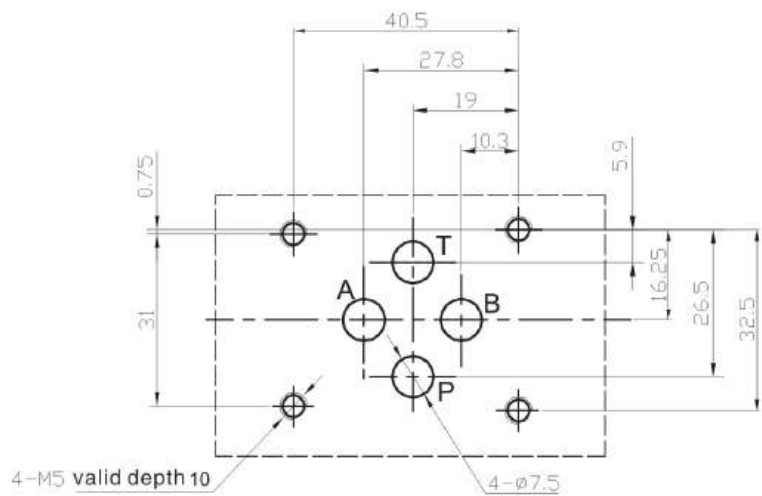
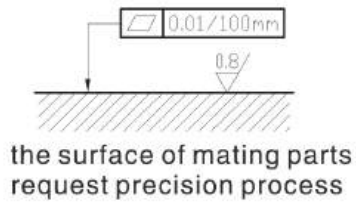
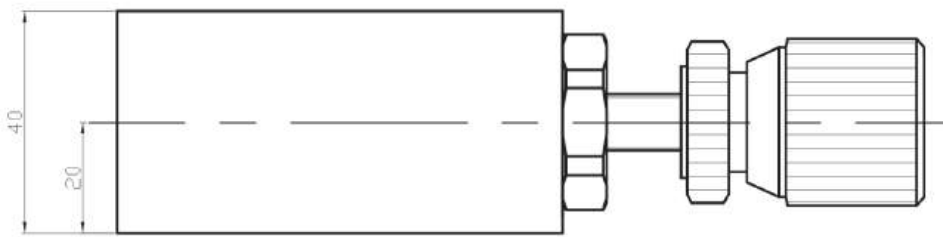
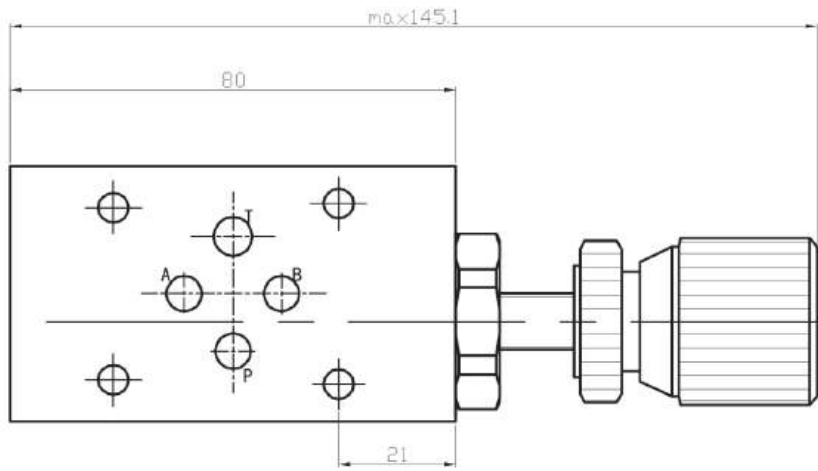
TECHNICAL DATA

Hydraulic Data

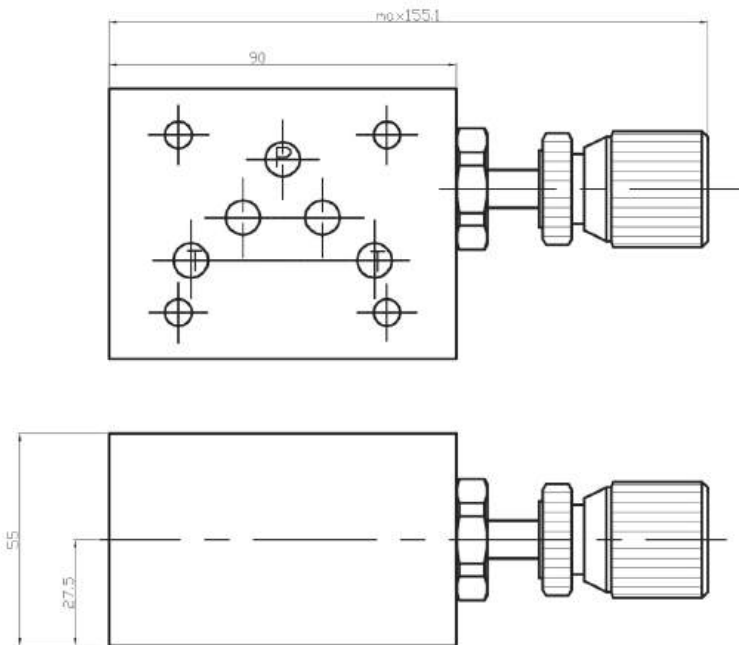
Model	Maximum pressure bar	Maximum flow L/min	Weight kg
MRV-02	210	35	1.2
MRV-03	210	70	2.7

UNIT DIMENSIONS

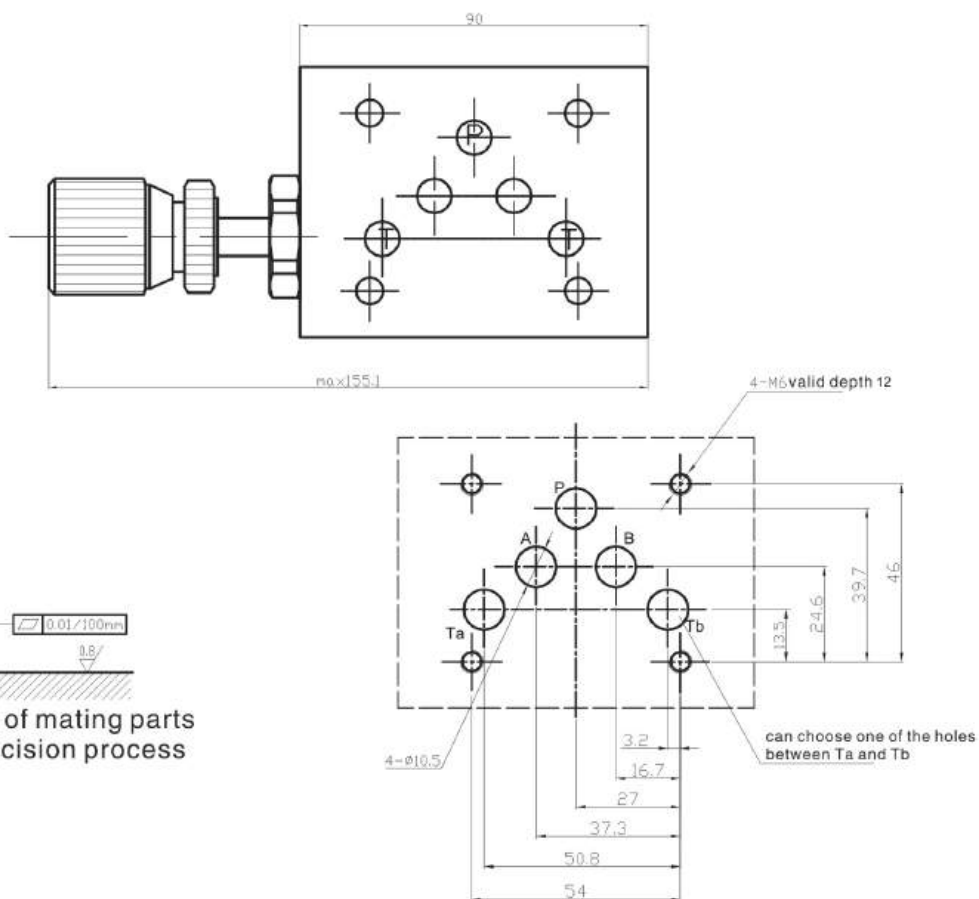
MTV-02



MTV-03P



MTV-03T



the surface of mating parts request precision process

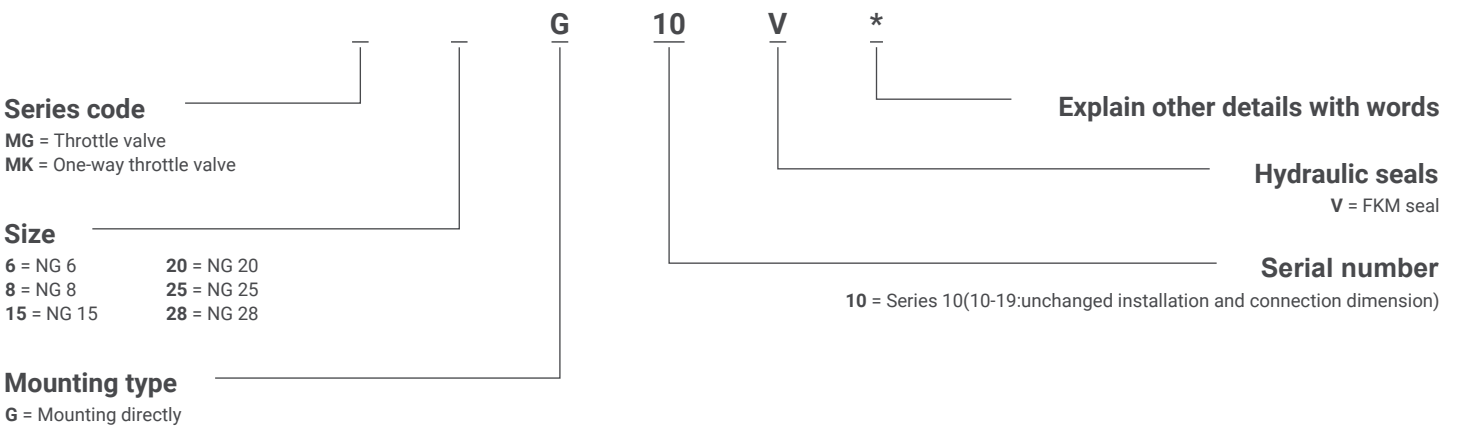
MG/MK type of throttle valve



CONTENT

1. Suitable for direct installation
2. Related to the pressure and viscosity

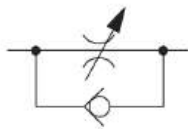
ORDERING DETAILS



SYMBOLE



MG type



Mk type

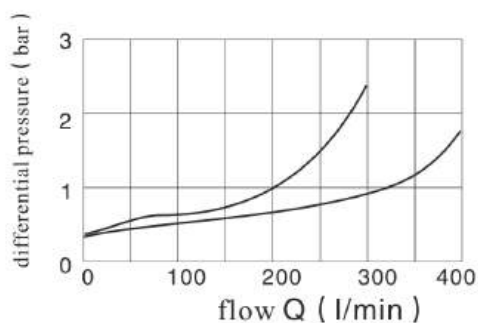
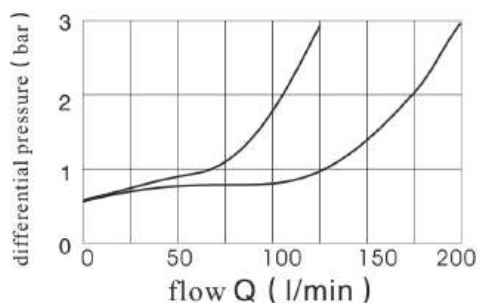
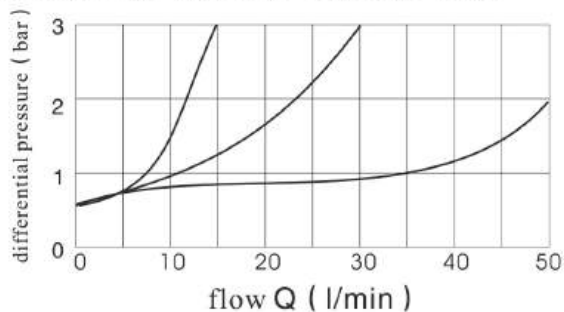
TECHNICAL DATA

Hydraulic Data

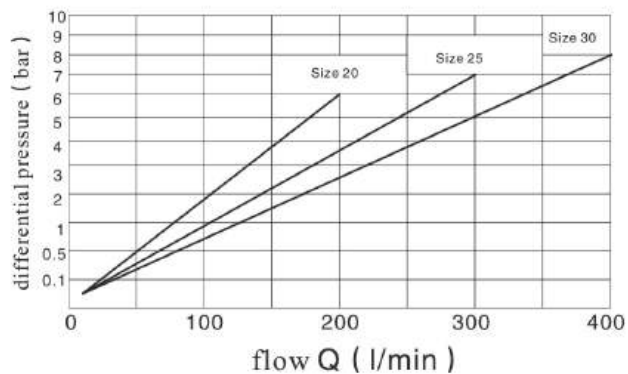
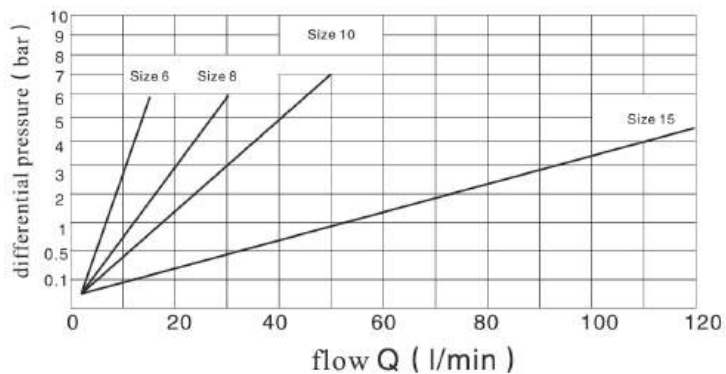
Hydraulic oil		Meet mineral oil and organic phosphate of DIN51524,51525
Oil temperature range	°C	-30~+80
Viscosity range	mm ² /s	2.8-380
Working pressure	bar	315
Start pressure		MK type valve

CHARACTERISTIC CURVE

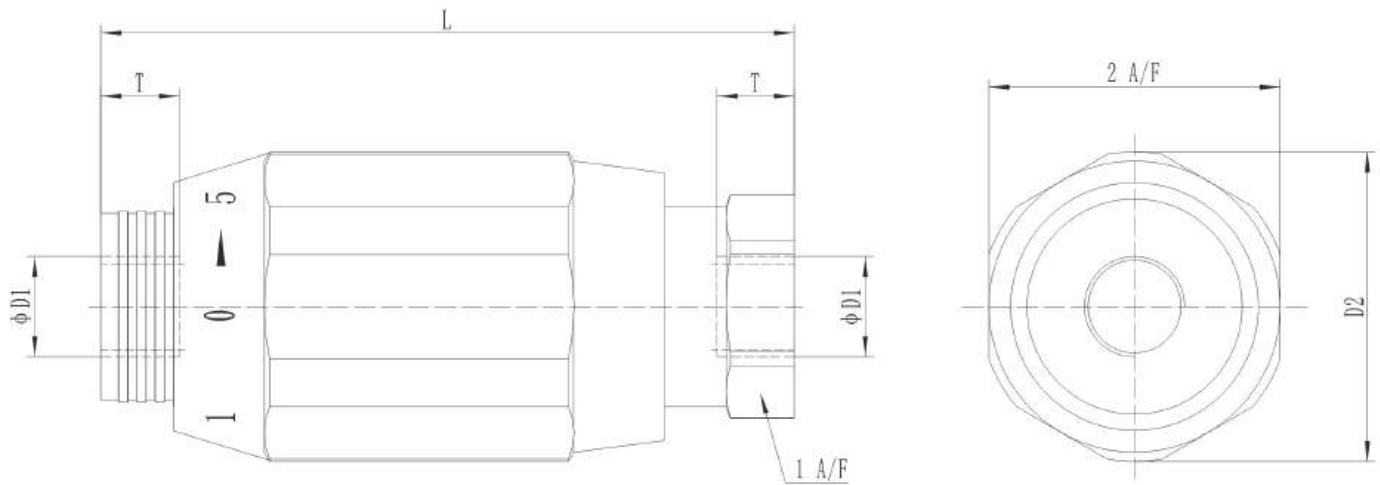
close the choke valve, it is the curve of ΔP -Q when open one-way valve (MK type valve)



the curve of ΔP -Q when open the choke valve (MG, MK type valve)



UNIT DIMENSIONS



specification	pipe D1 m	$\phi D2$	L	1A/F	2A/F	T	weight (kg)
6	G1/4 " (M14X1.5)	34	65	22	32	12	0.3
8	G3/8 " (M18X1.5)	38	65	24	36	12	0.4
10	G1/2 " (M22X1.5)	48	80	30	46	14	0.7
15	G3/4 " (M27X2)	58	100	41	55	16	1.1
20	G1 " (M33X2)	72	110	46	70	18	1.9
25	G1 1/4 " (M42X2)	87	130	55	85	20	3.2
30	G1 1/2 " (M48X1.5)	93	150	60	90	22	4.1

DBET series proportional control valves

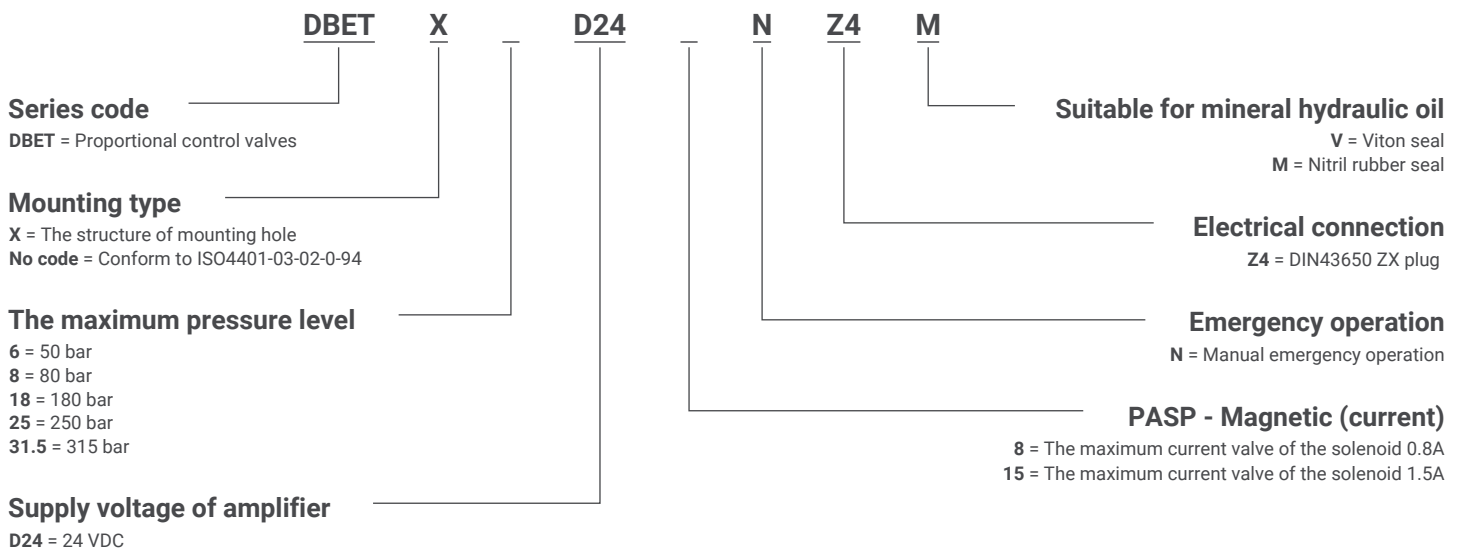


CONTENT

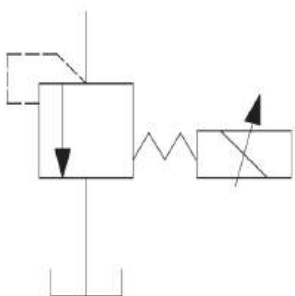
1. Electrohydraulic proportional pilot control valve is composed of solenoid and direct proportional pilot control valve, which can proportionally adjust pressure according the values of the input current.
2. The valve can be used with AC-YO--1 proportional amplifier produced by our company.
3. I=0.8A I=1.5A these two solenoids are alternative.



ORDERING DETAILS



SYMBOLE



TECHNICAL DATA

General Parameter

Structure	Slide valve	
Actuate	Proportional solenoid without position feedback	
Connection type	Sub-plate mounting, size 6 mounting hole(ISO 4401-03-02-0-94)	
Mounting site	arbitrarily	
Operating temperature range	°C	-20~+50
Weight	kg	1.9

Hydraulic Pressure (Measured in the oil temperature of 40°C +/-5 °C)

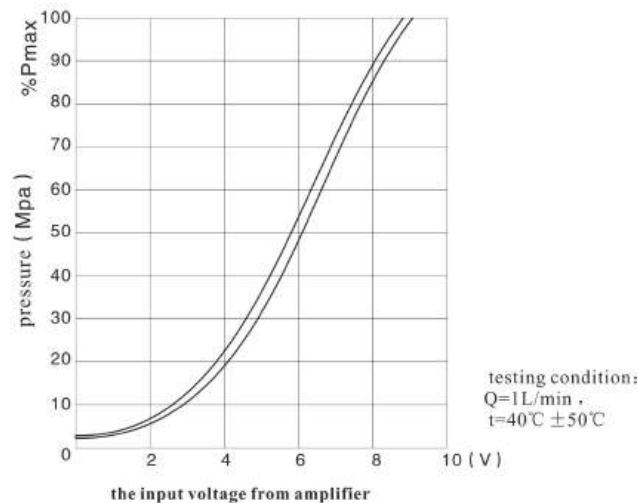
Hydraulic medium	Mineral hydraulic oil, phosphate hydraulic oil					
Recommended viscosity range	mm ² /s	20~100				
Maximum allowable valve	mm ² /s	10~800				
Oil temperature	°C	-20~+80				
The maximum pollution level oil allowed	MAS 1638 class7					
The maximum setting pressure (Q=1 L/min)	bar	50	80	180	250	315
The minimum setting pressure (Q=1 L/min)	bar	2	3	4	5	8
The maximum operating pressure (Q=1 L/min)	bar	Port P: 315				
The maximum return oil pressure	bar	Port T: 250				

Electric Parameter

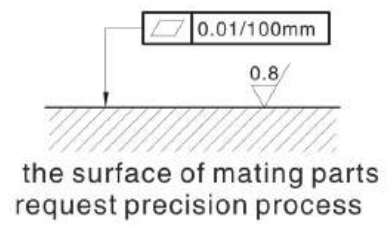
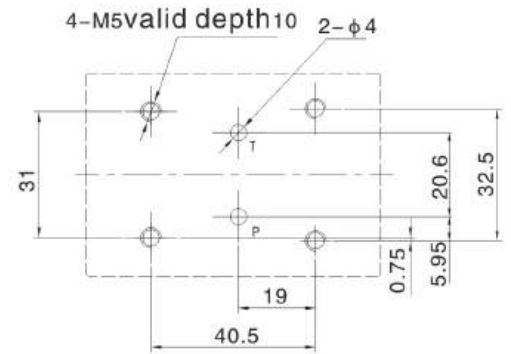
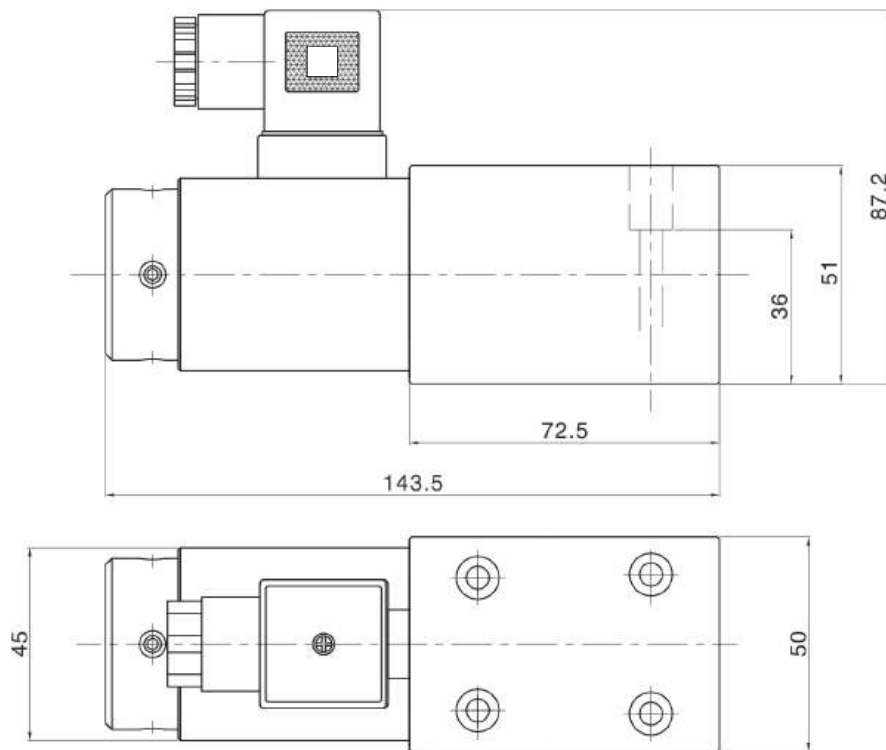
Connection rate	%	100	
Protection class		IP65	
Solenoid electrical connection		DIN43650/ISO4400, plug	
Power type		DC	DC
The maximum solenoid current I _{max}	A	0.8A	1.5A
Coil resistance R	°C	19.5	4.5
The maximum operating temperature at 100% load value voltammetry	VA	25	30
Hysteresis	%	≤3	
Response time 100%signal changes	ms	on≤60 off≤70	

CHARACTERISTIC CURVE

[characteristic curve of current (voltage) -pressure]



UNIT DIMENSIONS



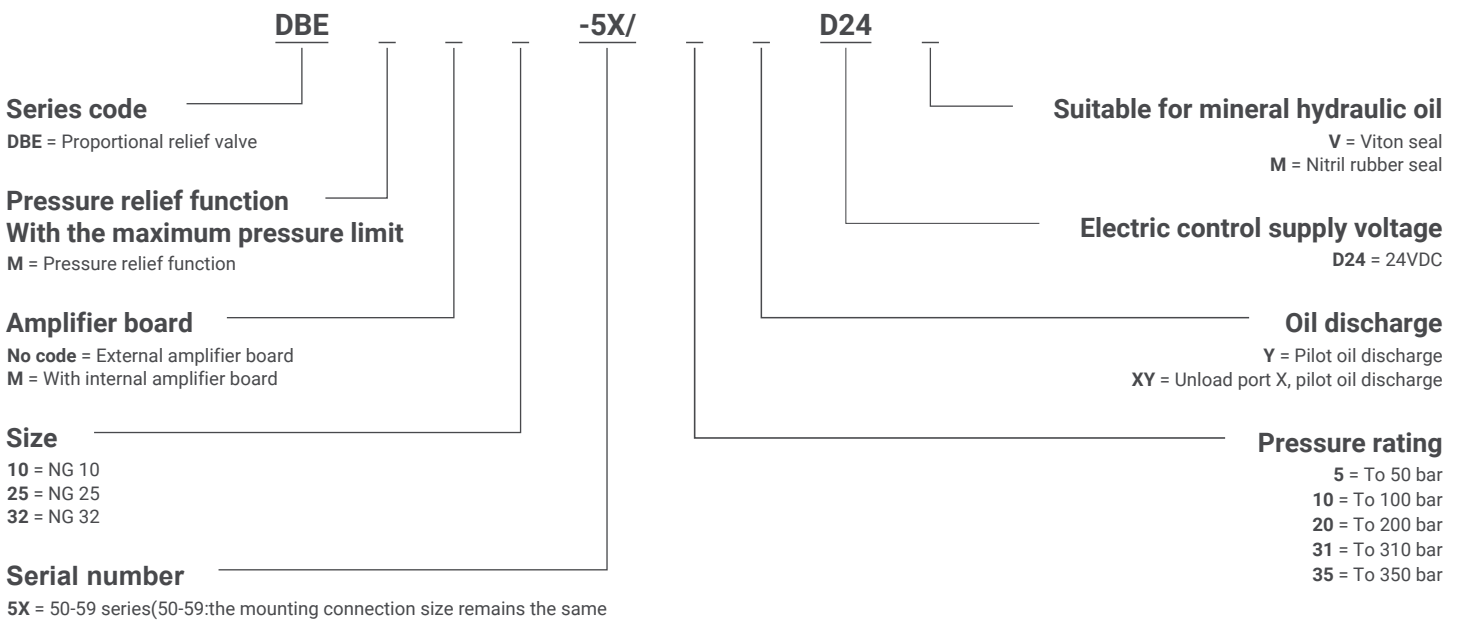
DBEM5X series electrohydraulic proportional relief valves



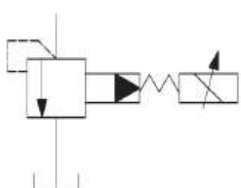
CONTENT

1. The pilot control valve is used to control the system pressure
2. The valve and electric controller assort, and can be used with AC-YO-1 proportional amplifier produced by our company.
3. The pilot control valve with spring can limit the maximum pressure
4. The maximum safe pressure can be divided into five-range, and all can be non-polar control.

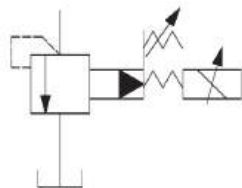
ORDERING DETAILS



SYMBOLE



DBE



DBEM

TECHNICAL DATA

General parameter

Drifter Diameter			10	25	32
Weight	DBEM	kg	4.5	5.4	6.8
	DBEMM	kg	4.8	5.7	7.1
Mounting site			anywhere		
Deposited temperature range		°C	-20~+80		
Temperature range	DBEM	°C	-20~+70		
	DBEMM	°C	-20~+50		

Hydraulic Parameter (Measured in the oil temperature of HLP 46=40°C+/-5°C)

Drifter diameter			10	25
The maximum operating pressure	Oil port A, B and X	bar	350	
	Oil port Y		Independent no-pressure oil-returning tank	
The maximum setting pressure	Pressure rating 5	bar	50	
	Pressure rating 10	bar	100	
	Pressure rating 20	bar	200	
	Pressure rating 31.5	bar	315	
	Pressure rating 35	bar	350	
Working pressure, A port	L/min		200	400
Minimum pressure drop	L/min		0.5-1.8	0.5-2.1
Filtration (increase service life)			Mineral hydraulic oil	Phosphate hydraulic oil
Oil temperature		°C	-20~+80	
Viscosity range		mm ² /s	2.8~500	
The maximum pollution level oil allowed ISO 4406 (c)			Class 20/18/15	
Hysteresis(Refer to instruction value pressure character curve)		%	About +/-1.5 of the maximum setting pressure	
Repetition rate		%	Less than the maximum pressure of +/-2	
Linearity		%	The maximum setting pressure of +/-3.5	

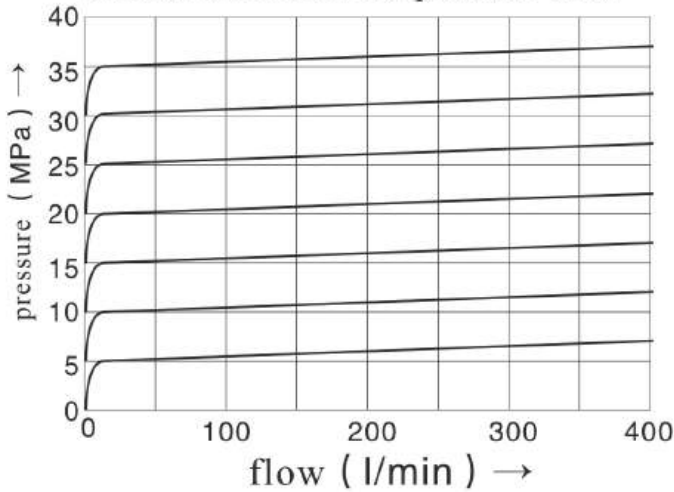
Electrical

Power voltage		V	24	
The minimum control current		mA	100	
The maximum control current		mA	800(1500)	
Coil resistance	20°C cold value	Ω	19.5	
	The maximum heat valve	Ω	25.4	
Connection rate		%	100	
Electric connection			With plug conform to DIN EN 175201-803	
The protection class of the shell			IP65	

CHARACTERISTIC CURVE

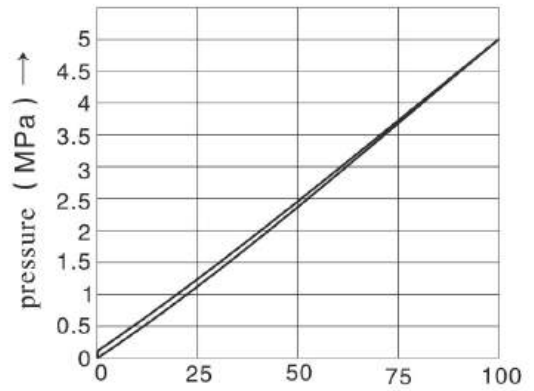
measured when $t=40^{\circ}\text{C} \pm 50^{\circ}\text{C}$

characteristic curve of pressure-flow



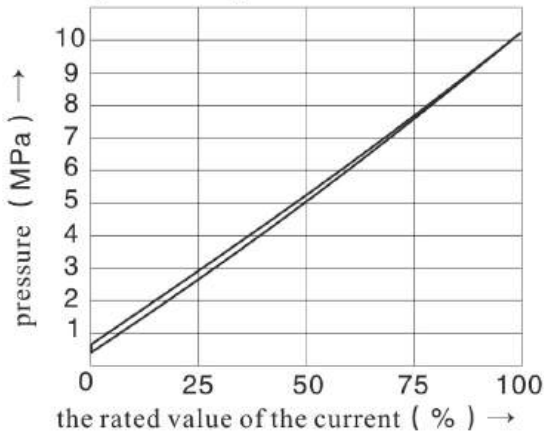
The characteristic curve of current-pressure, measured when $Q=27\text{L/min}$

pressure grade 5MPa



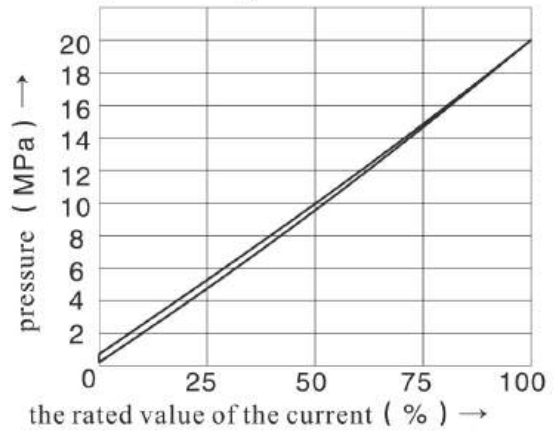
the rated value of the current (%) →

pressure grade 10MPa



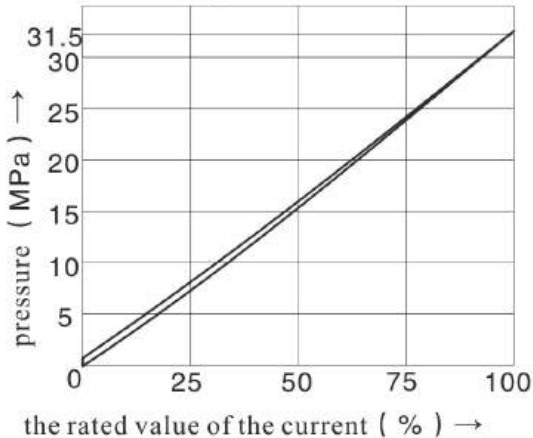
the rated value of the current (%) →

pressure grade 20MPa



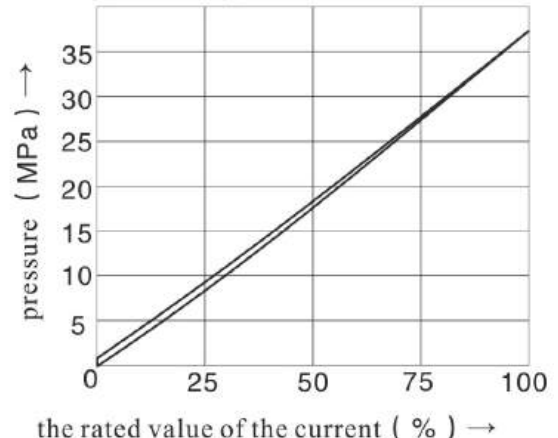
the rated value of the current (%) →

pressure grade 31.5MPa



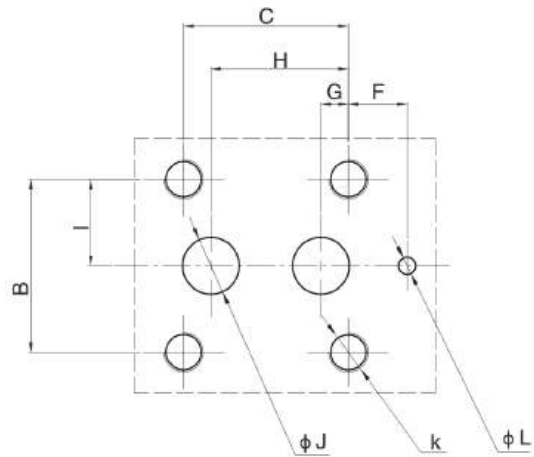
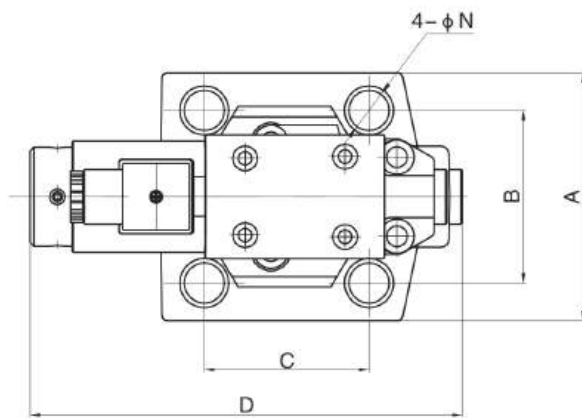
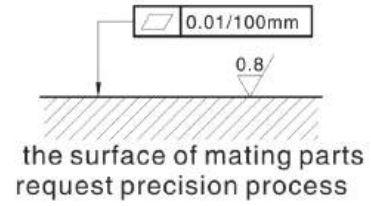
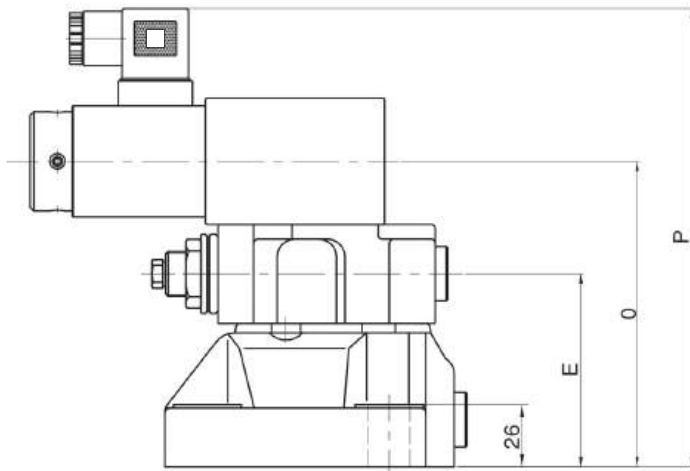
the rated value of the current (%) →

pressure grade 35MPa



the rated value of the current (%) →

UNIT DIMENSIONS



type	A	B	C	D	E	F	G	H
DBEM10	78	53.8	53.8	163	78	0	22.1	47.5
DBEM20	100	70	66.7	175	78	23.8	11.1	55.6
DBEM30	115	82.6	88.9	186.5	78	31.8	12.7	76.2

type	I	J	K	L	N	O	P
DBEM10	26.9	12	M12	6	14	123.5	185.5
DBEM20	35	22	M16	6	18	123.5	185.5
DBEM30	41.3	30	M18	7	20	123.5	185.5

EDG series proportional control valve

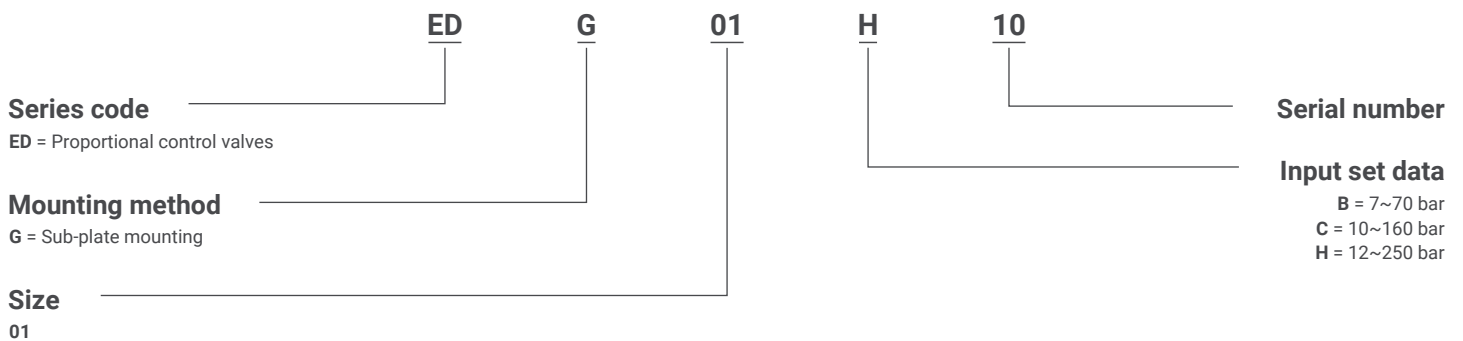


CONTENT

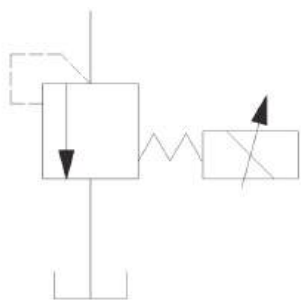
1. Hydraulic proportional pilot control valve is composed of solenoid and direct proportional pilot control valve, which can proportionally adjust pressure according to the values of the input current.
2. The valve can be used with AC-YO-1 proportional amplifier produced by our company.
3. Suitable for injection molding machine and automatic system with much pressure level changes.



ORDERING DETAILS



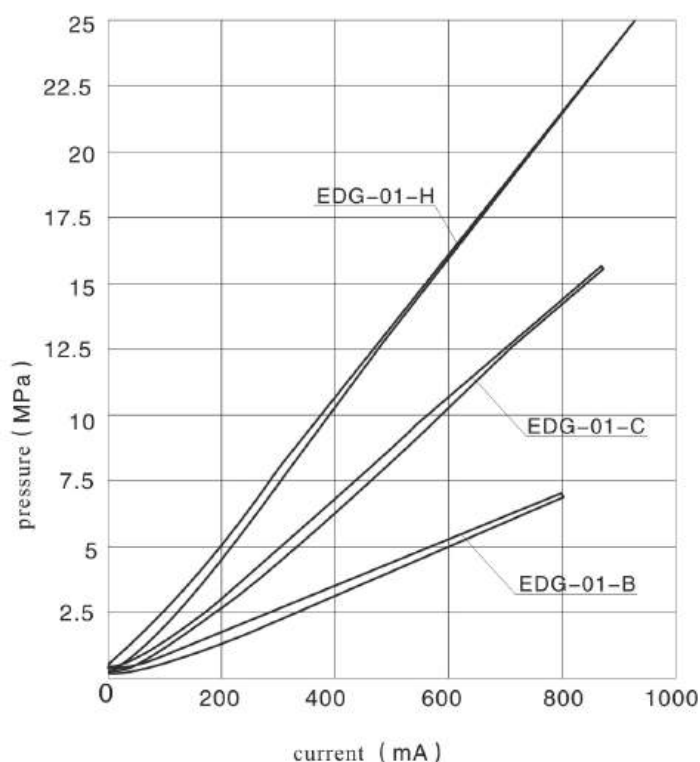
SYMBOLE



CHARACTERISTIC CURVE

[the characteristic of input current-pressure]

Maximum operating pressure	MPa	25
The maximum flow	l/min	2
The minimum flow	l/min	0.3
Pressure adjusting range	MPa	B:0.4-7.0
		C:1.4-16
		H:0.6-25
Rated flow	mA	800
Coil resistance	ohm (+20°C)	10
Magnetic Hui	%	2
Repeated accuracy	%	1
weight	kg	2



Operation Cautions

In order to control stably, the inner air should be exhausted thoroughly and the solenoid core should be filled with oil. The vent of solenoid should be loosed gradually for purpose of drain the air to the full. There are three vents in the solenoid and you can choose the upside vent so that the air can be expelled more easily.

Oil-Return and Drainage Pipe

The back pressure of the oil-return and drain pipe can influence the operation of the minimum adjusting pressure or the main core of flow adjusting valves directly. Thus, DO NOT connect oil-return or drainage pipe with other pipes, both of them should connect with the oil tank directly for the purpose of make the back pressure as low as possible. Make sure that the terminals of the oil-return and drainage pipes immerse into the oil.

Hysteresis and Repeatability Value

Each hysteresis and repeatability value of the control valves in the manual was measured in the plug proportional amplifier of SMART company in the same condition.

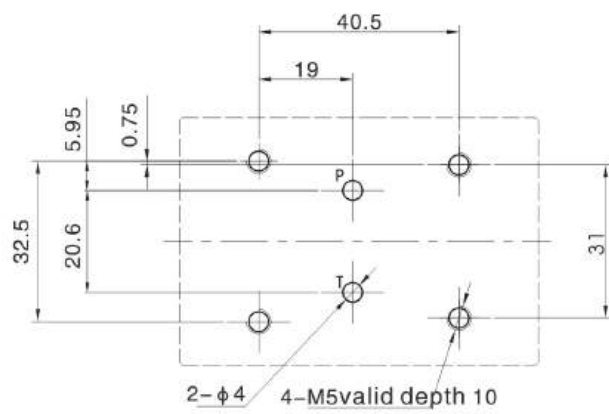
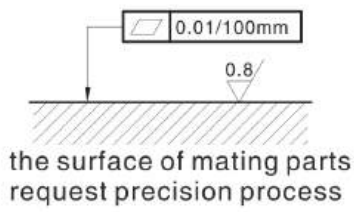
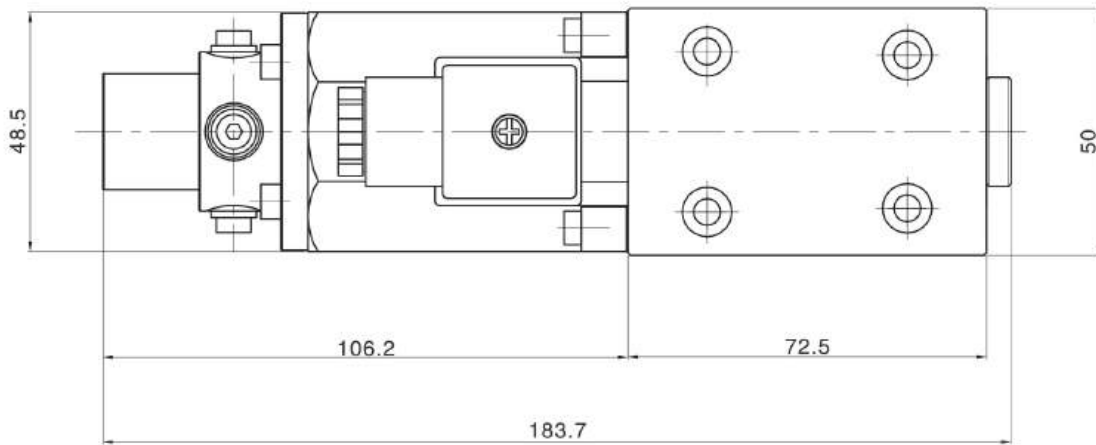
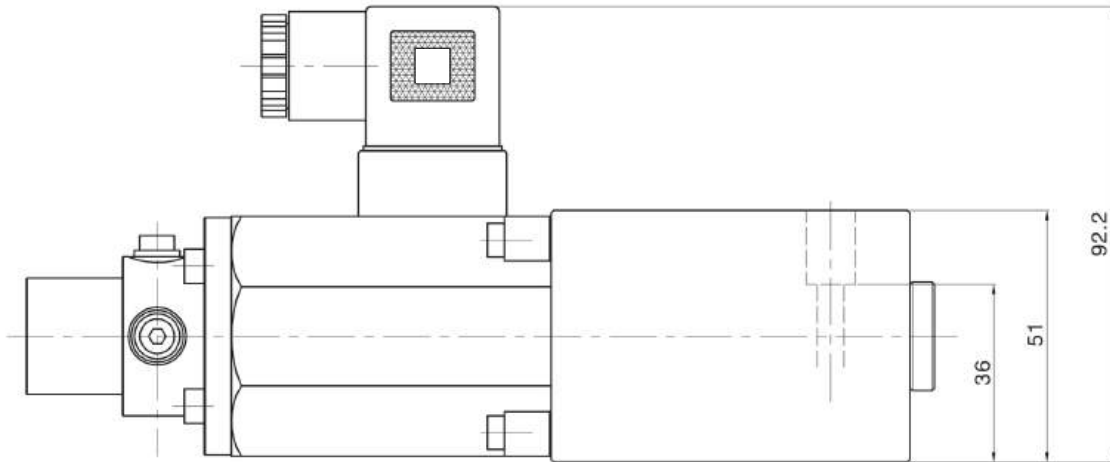
To Prevent Debris

Debris mixed into hydraulic oil will damage the valve and shorten its working life. So keep the oil clean, and pollution level within NAS1638-11, adopting 0 μ m or more sophisticated pipeline oil filter.

Manually Adjusting Push Rod

Rotating the adjusting push rod when it is the first time to adjust the valve or suffer electrical accidents and the valve fails to input current, setting the pressure and flow of the valve temporary. However, in normal circumstances, the push rod must in its original place.

UNIT DIMENSIONS



EBG series proportional relief valves

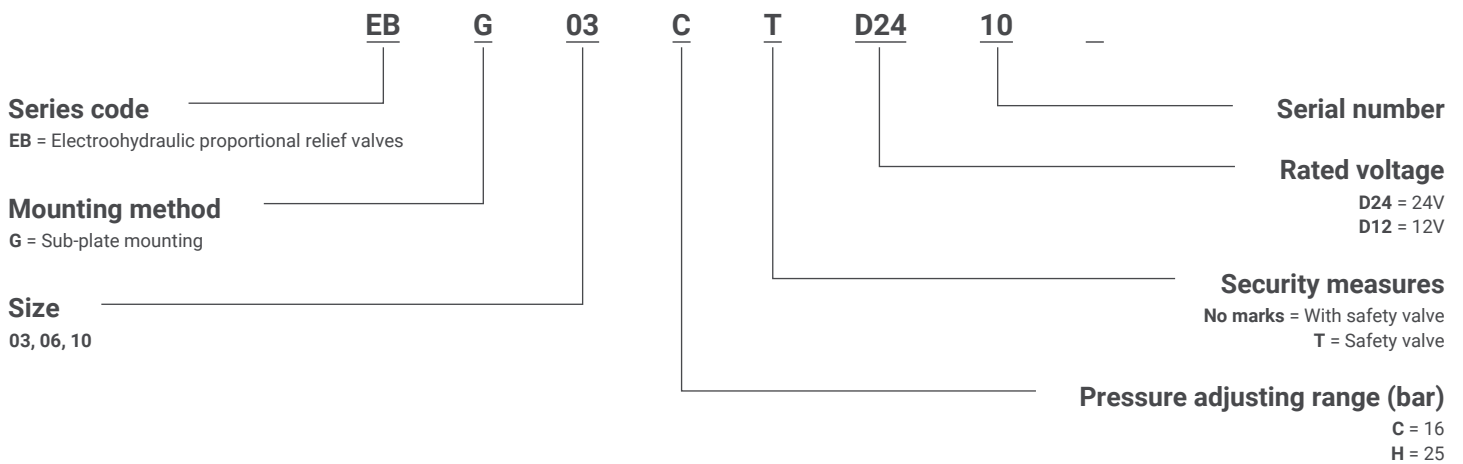


CONTENT

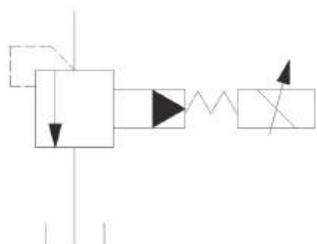
1. It is open loop single-stage valve and could control pressure of small flow system or used as larger pressure control valve's pilot control.
2. The valve has small hysteresis and high repeat precision.
3. The valve and electric controller assort, and can be used with AC-YO-1 proportional amplifier produced by our company.
4. It has two pressure ranges and can choose either of them.



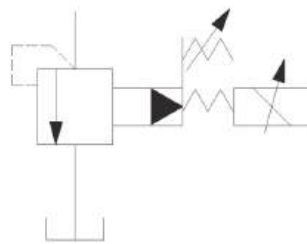
ORDERING DETAILS



SYMBOLE



without safety valve



with safety valve

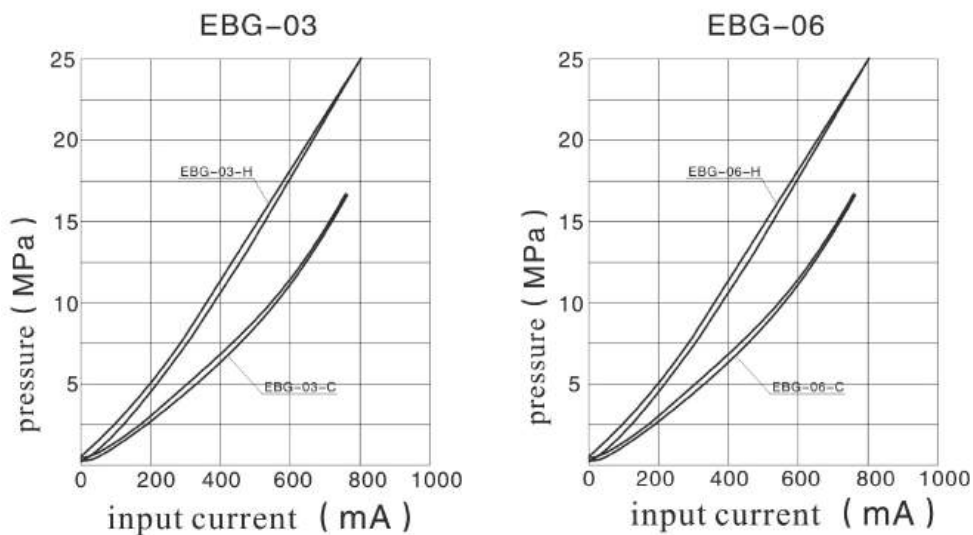
TECHNICAL DATA

Technical Data

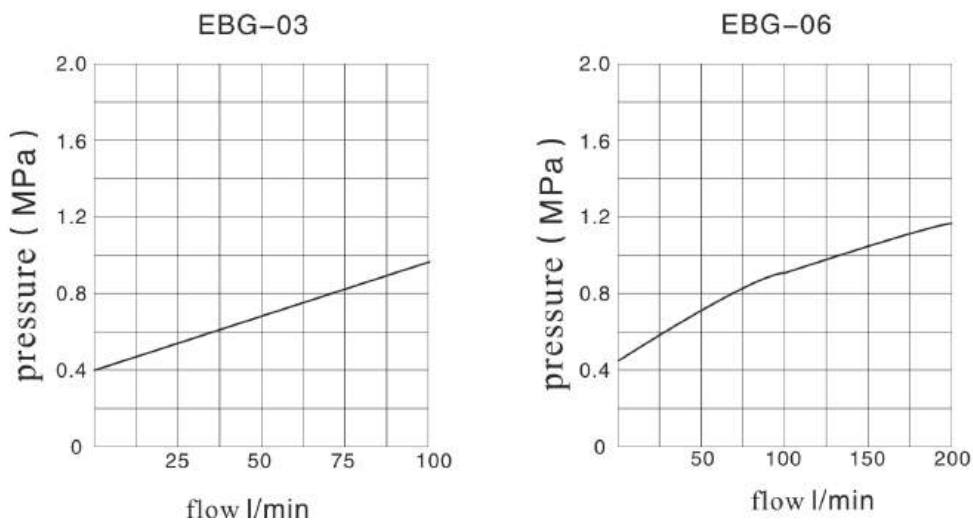
Model		EBG-03	EBG-06
Maximum operating pressure	bar	250	250
The maximum flow	L/min	100	200
The minimum flow	L/min	3	3
Pressure adjusting range	bar	C:160	H:250
Rated flow	mA	C:770; H:820	C:750; H:800
Coil resistance	ohm(+20°C)	10	10
Magnetic Hui	%	≤2	≤2
Repeated accuracy	%	≤1	≤1
Weight	kg	5.6	6.3

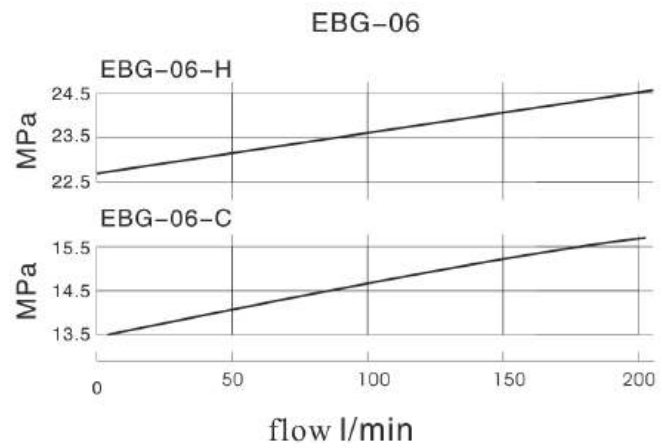
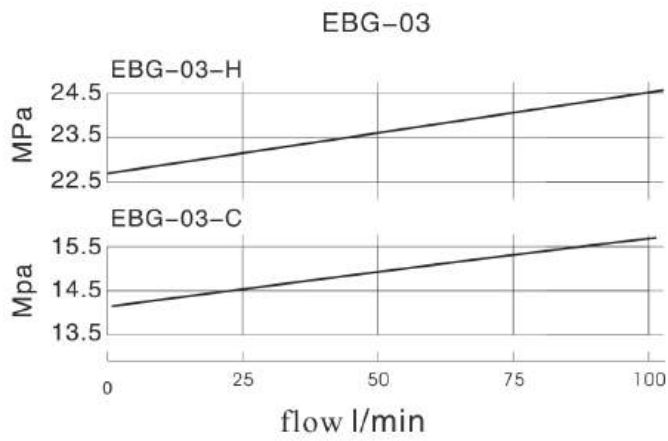
CHARACTERISTIC CURVE

[the characteristic of input current-pressure]

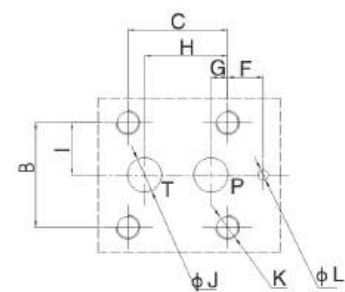
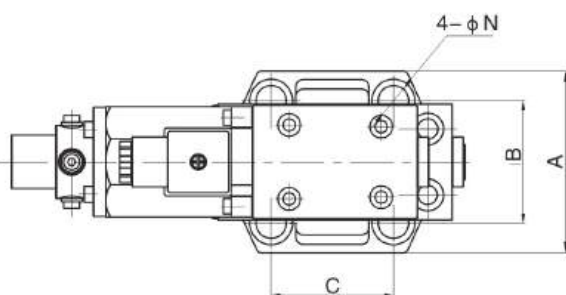
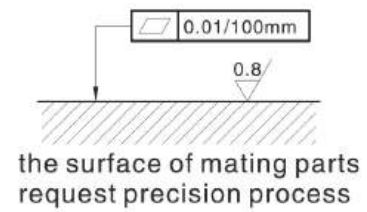
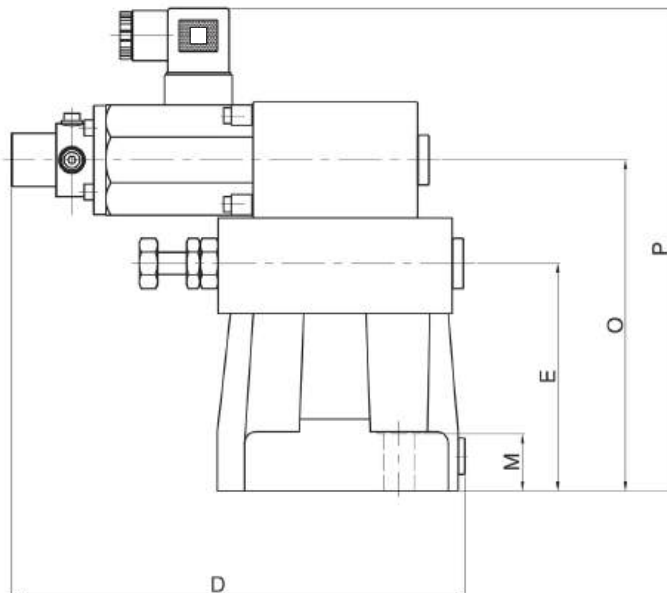


[the characteristic of minimum adjusting pressure]





UNIT DIMENSIONS



type	A	B	C	D	E	F	G	H
EBG-03	78	53.8	53.8	200	102	0	22.1	47.5
EBG-06	98	70	66.7	206	105	23.8	11.1	55.6

type	I	J	K	L	M	N	O	P
EBG-03	26.9	14.5	M12	6.2	25	13.5	147.5	214.2
EBG-06	35	23	M16	6.2	29	17.5	150.5	217.2

EFB-G-03-125-H-20 serial proportional flow control valve

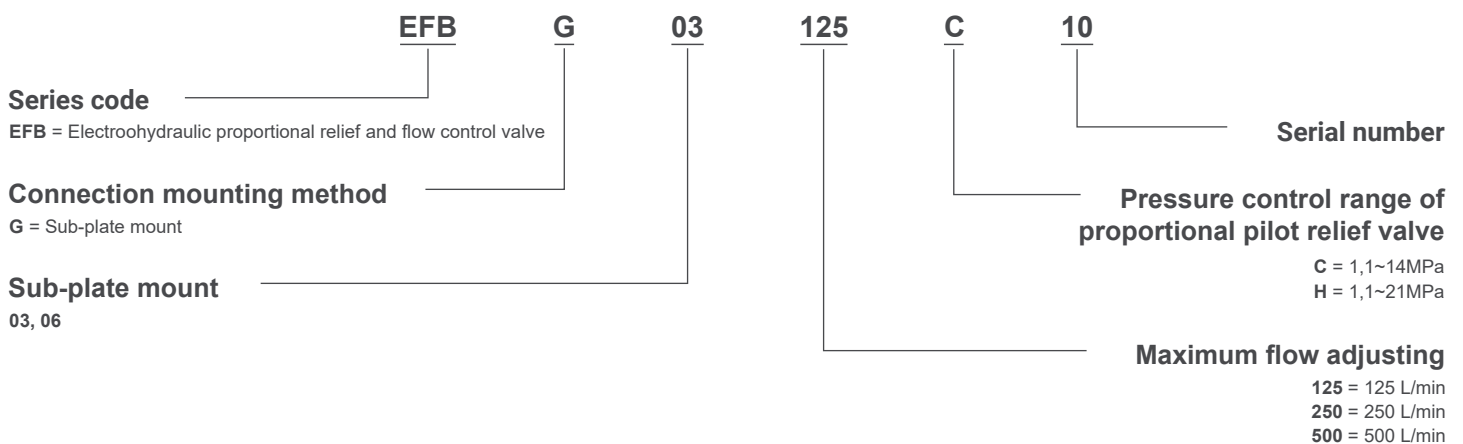


CONTENT

1. This kind of valve only supply the minimum pressure that the driving components need and flow of inlet throttle type energy saving valve.
2. This kind of valve can make the pressure of oil pump side maintains differential pressure 6~9bar greater than load pressure so that can safe energy.



ORDERING DETAILS



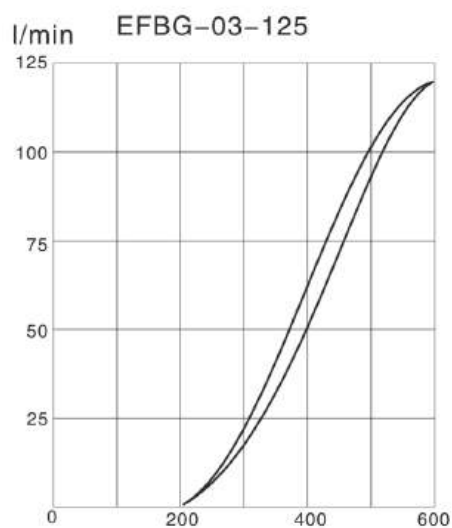
TECHNICAL DATA

Technical Data

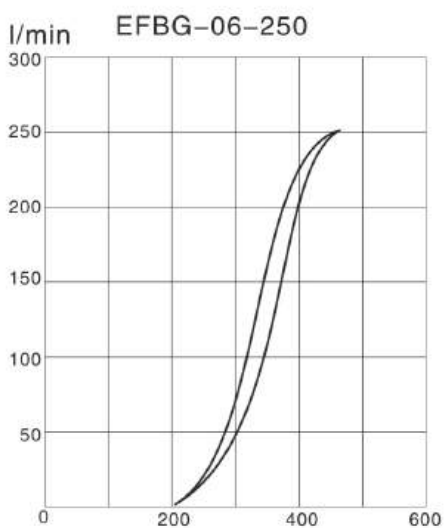
Model		EFBG-03-125	EFBG-06-250	EFBG-10-500
Maximum operating pressure	bar	250	250	250
Maximum flow	L/min	125	250	500
Flow control range	L/min	1~125	2.5~250	5~500
Flow control	Rated flow	mA	680	700
	Coil resistance	ohm(+20°C)	40	40
	Pressure drop	bar	6	7
	Hysteresis	≤%	7	7
	Repeated accuracy	≤%	1	1
Pressure control	Pressure control range	bar	C:14~140; H:14~210	C:15~140; H:15~210
	Rated flow	mA	C:780; H:820	C:780; H:820
	Coil resistance	ohm(+20°C)	10	10
	Pressure drop	≤%	3	3
	Hysteresis	≤%	1	1
Weight	kg	18	18	18

CHARACTERISTIC CURVE

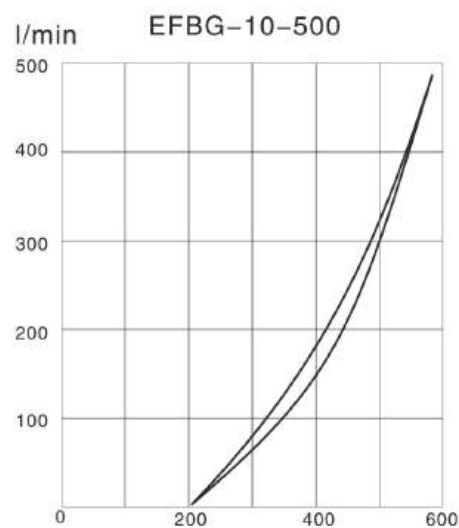
[the characteristic of input current-flow]



input current (mA)

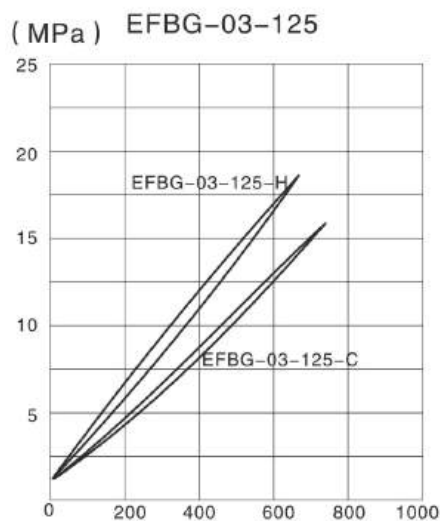


input current (mA)

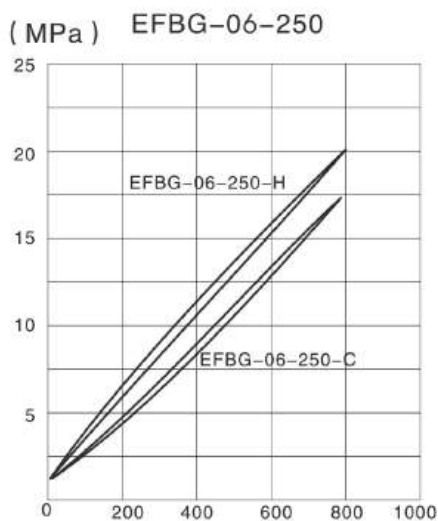


input current (mA)

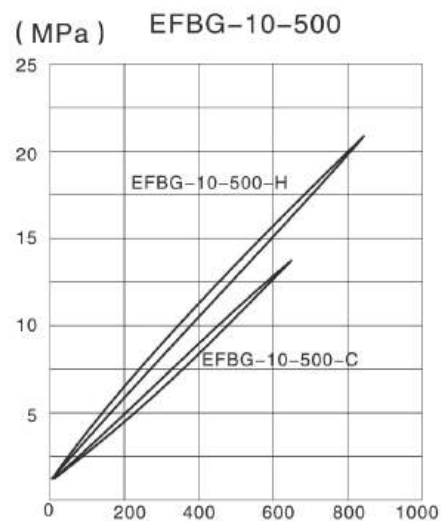
[the characteristic of input current-pressure]



input current (mA)

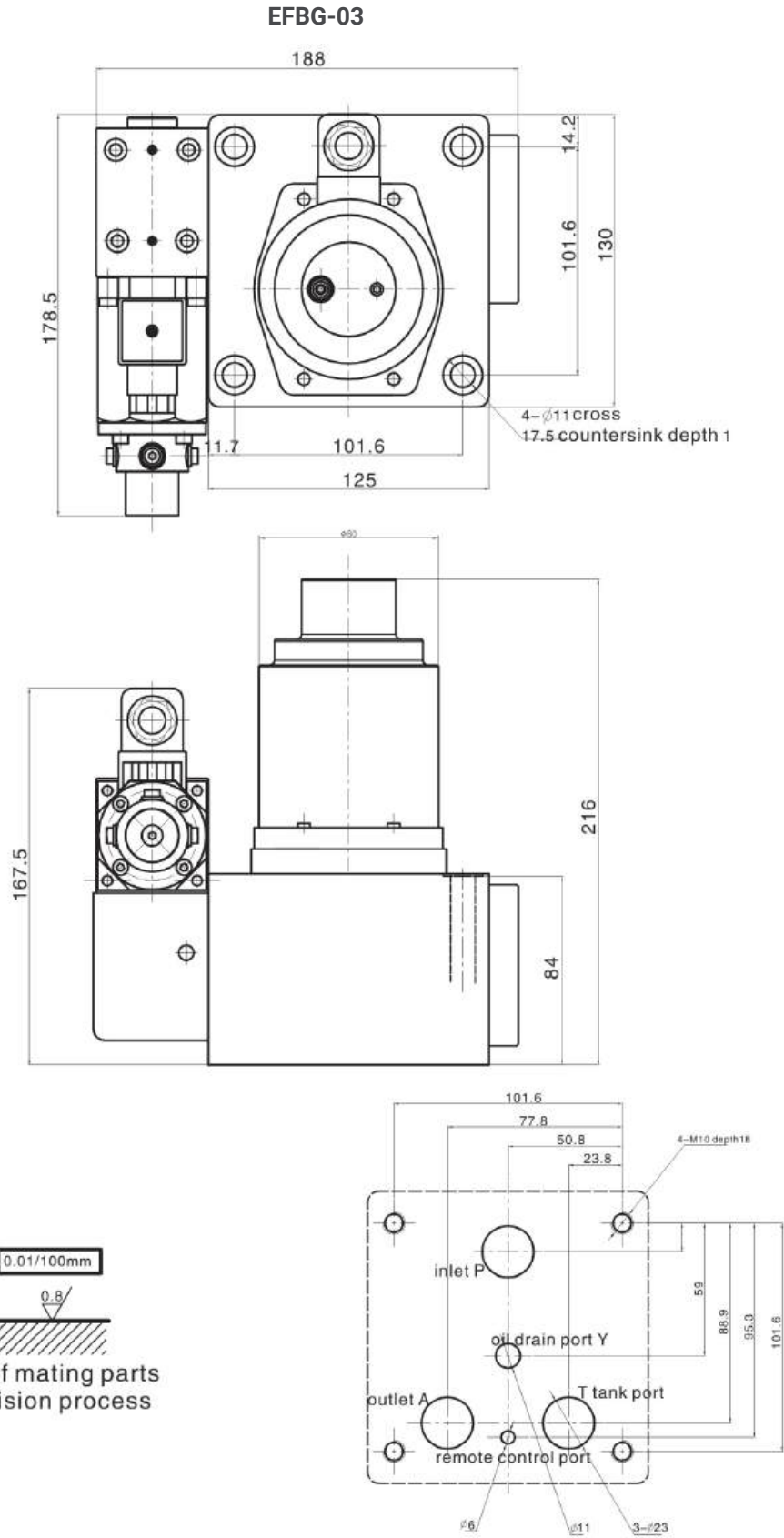


input current (mA)

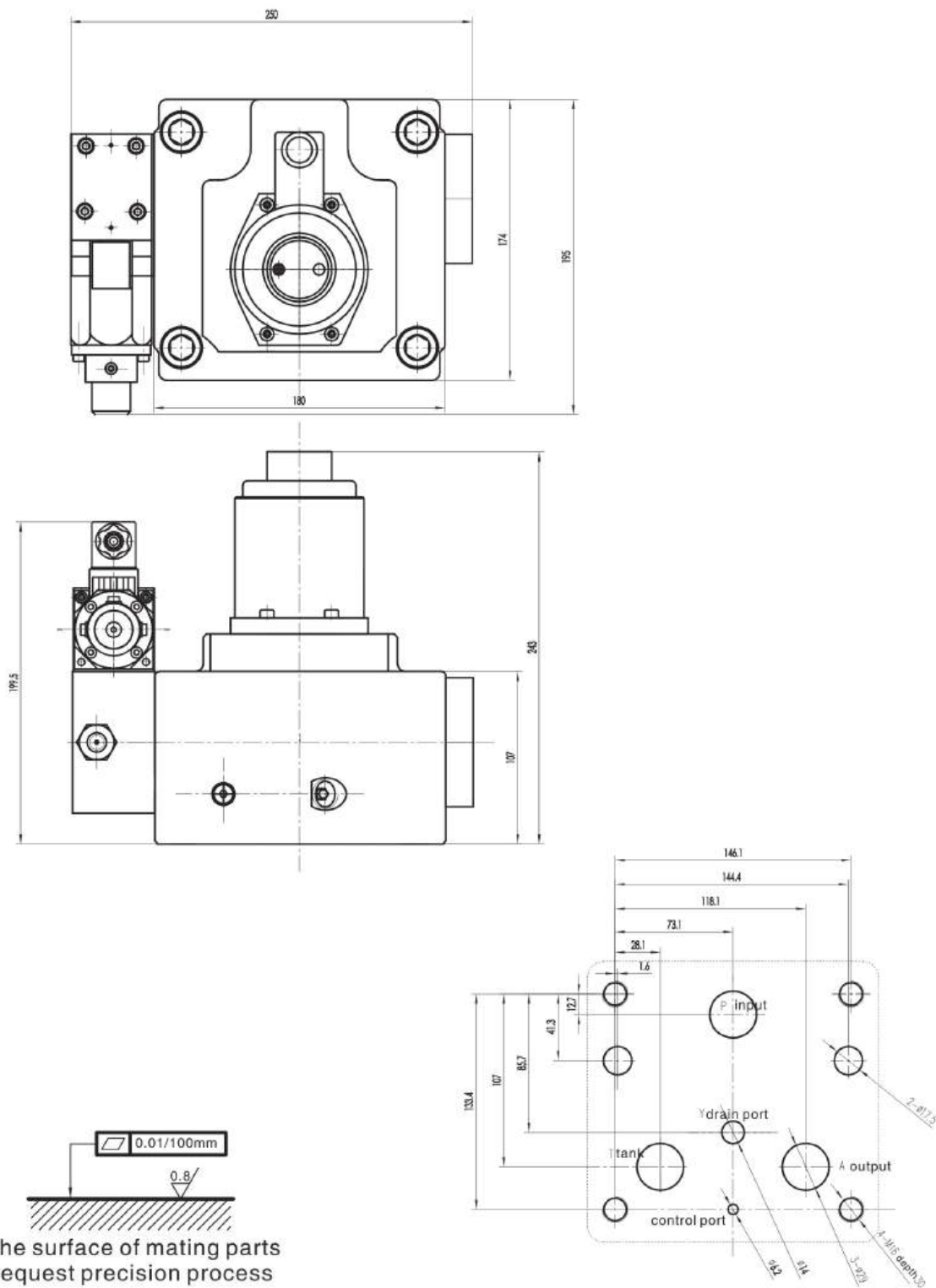


input current (mA)

UNIT DIMENSIONS



EFBG-06



ADF11-A-D2-3-40 Digital Amplifier Plug Version for Single Solenoid Proportional Valves

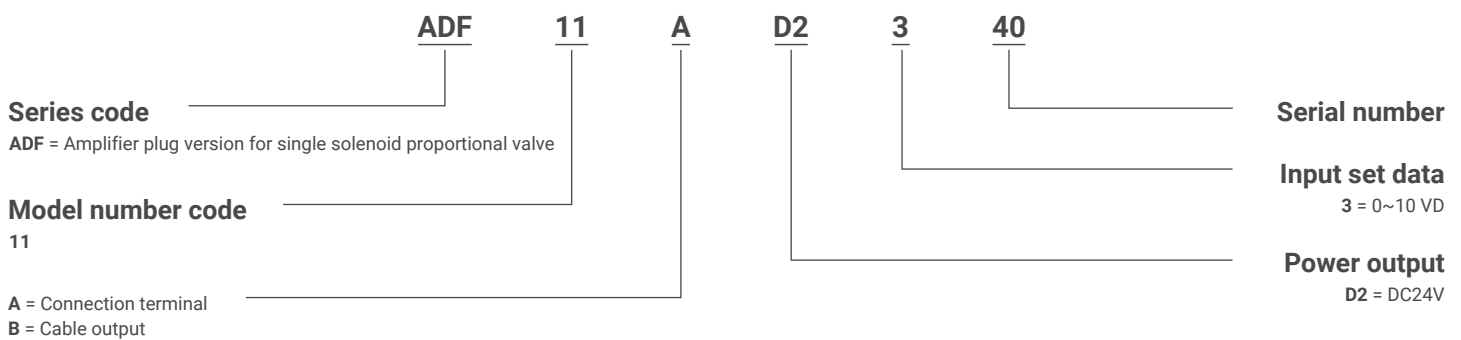


CONTENT

The amplifier can be mounted in the proportional valve directly, and the plug conforms to EN175301-803. The proportional class is IP-65. The amplifier has the function of anti-splash water and its connection mode is so simple that no professional tools are needed when put into use; it also matches proportional solenoid valve with different resistance and models for it sets convenient operation parameter.



ORDERING DETAILS



TECHNICAL DATA

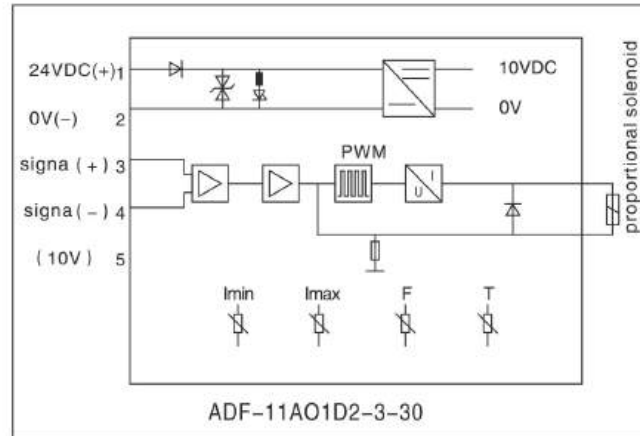
Applications for the Followings

Model of proportional valve	Rated pressure (V)	Resistance value (ohm)	Maximum current setting(mA)
DBET	24	19.5	800
	12	4.5	1500
KBCG	12	7.5	1600
EDG	12	10~13	800

Electrical Technical Specifications

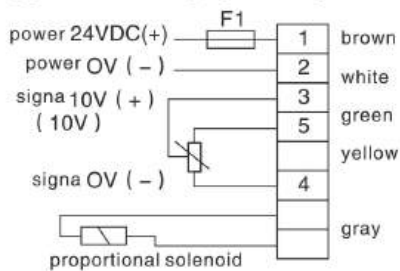
Power voltage	24VDC±10%
Input set data	0~10VDC
Input impedance	≥100Kohm
Output stabilivolt	10VDC maximum load 2mA
Flutter signal	200Hz
Solenoid current	0~1600mA
No-load power consumption	0.3W
Minimum current I _{min}	0~600mA (adjustable)
Maximum current I _{max}	0~1600mA (adjustable)

【structure diagram】

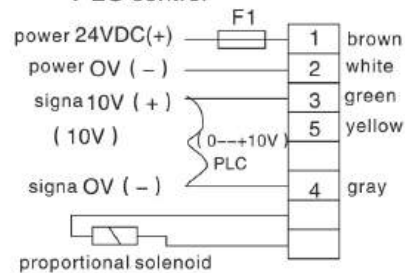


【demonstration connection】

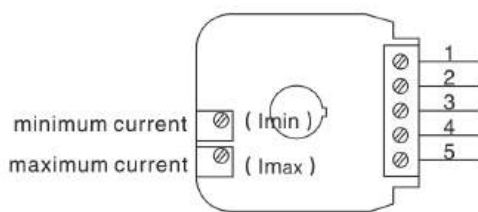
adjusting potentiometer of proportional-pressure valve



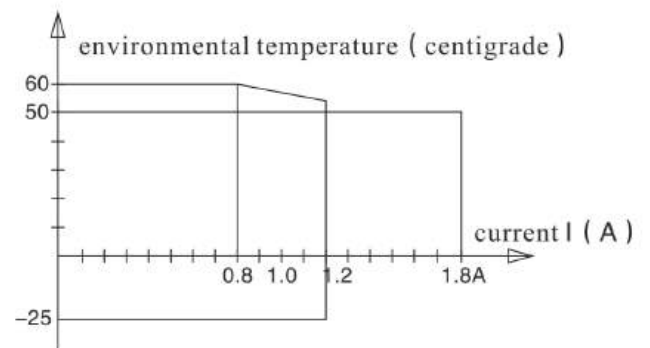
PLC control



【parameter set】



【maximum environmental temperature】

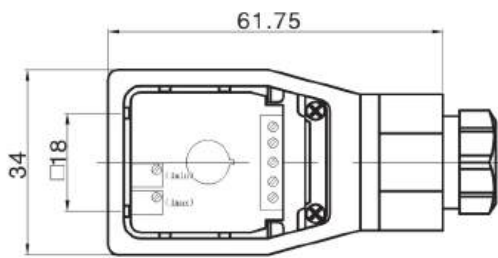
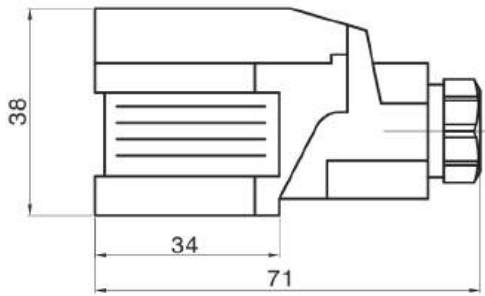


[starting current I_{min} and maximum current I_{max} adjustment]

adjust the I_{min} potentiometer to make the solenoid current be adjusted to the minimum output value which customer demand.

adjust the I_{max} potentiometer to make the solenoid current be adjusted to the minimum output value which customer demand.

UNIT DIMENSIONS



ADE Series Digital Amplifier for Single Solenoid Proportional valves

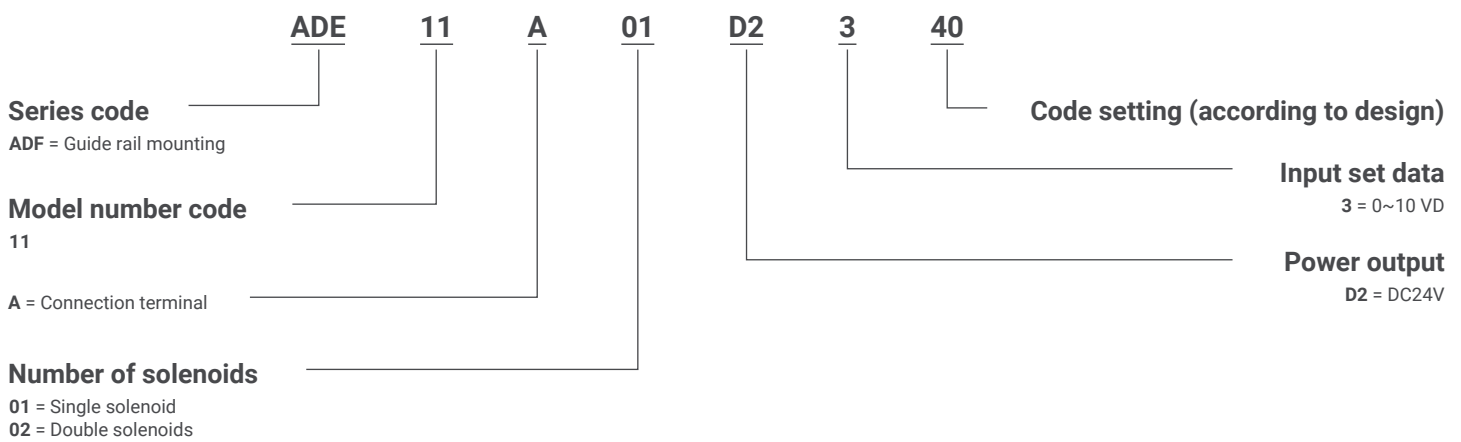


CONTENT

1. Embedded computer module design
2. With large input power, and suitable for each type of the proportional valve
3. With high control precision and strong anti-jamming
4. Can be mounted with no special tools for its convenient connection and simple guide rail structure.



ORDERING DETAILS



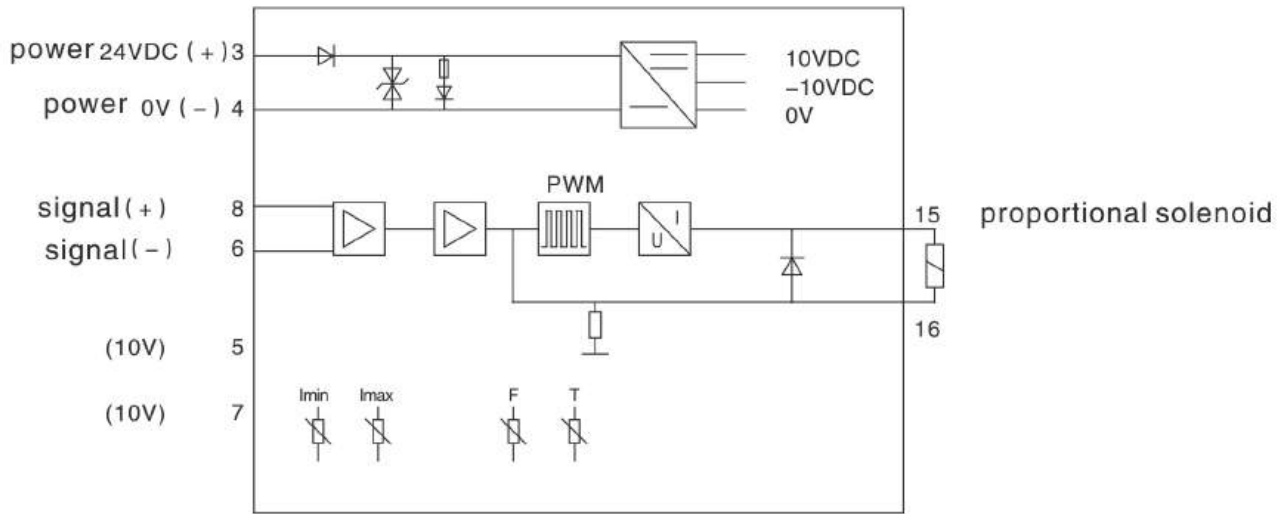
TECHNICAL DATA

Technical Data

Power voltage	24VDC±10%
Input set data	0~10VDC
Input impedance	≥100Kohm
Output stabilivolt	10VDC maximum load 2mA
Flutter signal	200Hz
Solenoid current	0~1600mA
No-load power consumption	0.3W
Minimum current I _{min}	0~600mA (adjustable)
Maximum current I _{max}	0~1600mA (adjustable)

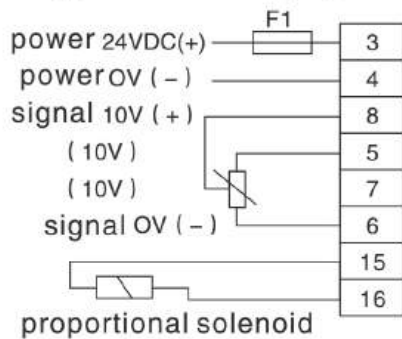
ADE-11-A-01-D2-3-40 type amplifier

【structure diagram】

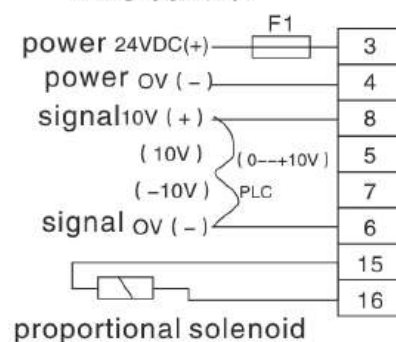


【demonstration connection】

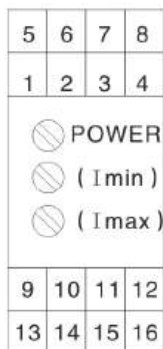
adjusting potentiometer of proportional-pressure valve



PLC control

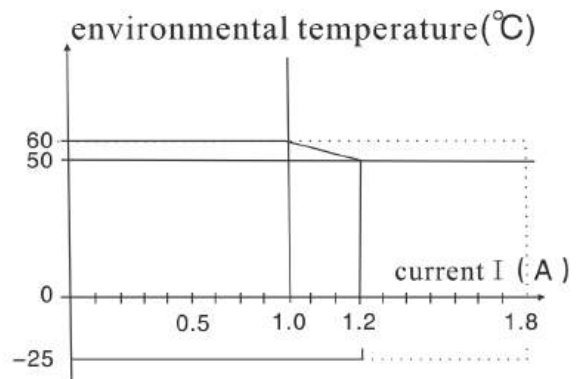


【parameter set】



power indicator
 minimum current
 maximum current

【maximum environmental temperature】



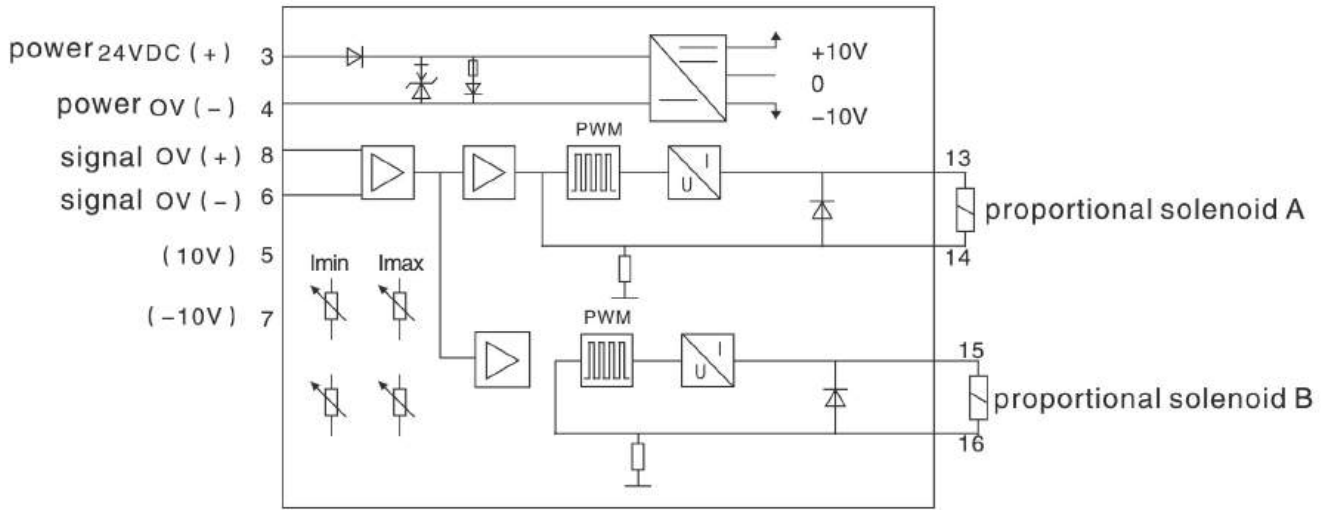
[starting current Imin and maximum current Imax adjustment]

adjust the I min potentiometer to make the solenoid current be adjusted to the minimum output value which customer demand.

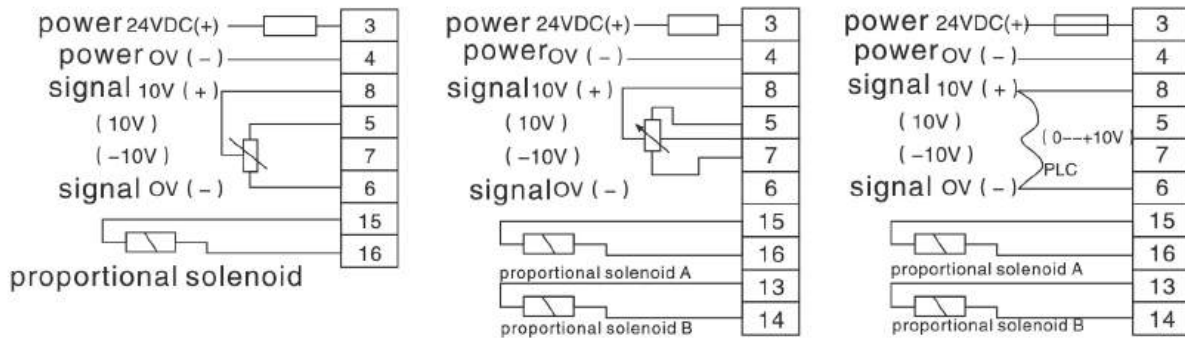
adjust the I max potentiometer to make the solenoid current be adjusted to the minimum output value which customer demand.

ADE-11-A-02-D2-3-40 type amplifier

【structure diagram】



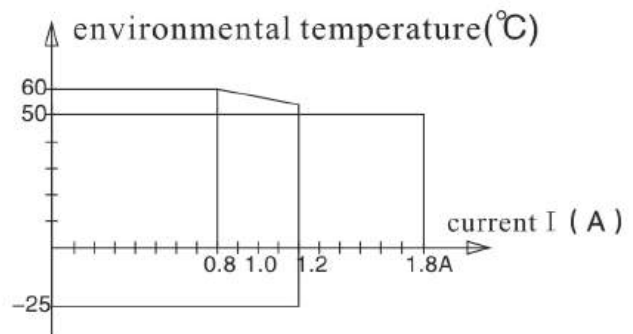
【demonstration connection】



【parameter set】

5	6	7	8
1	2	3	4
POWER	○	power indicator	
(PImin)	⊗	the minimum current of proportion-pressure valve	
(PImax)	⊗	the maximum current of proportion-pressure valve	
(QImin)	⊗	the minimum current of proportion-flow valve	
(QImax)	⊗	the maximum current of proportion-flow valve	
9	10	11	12
13	14	15	16

【maximum environmental temperature】

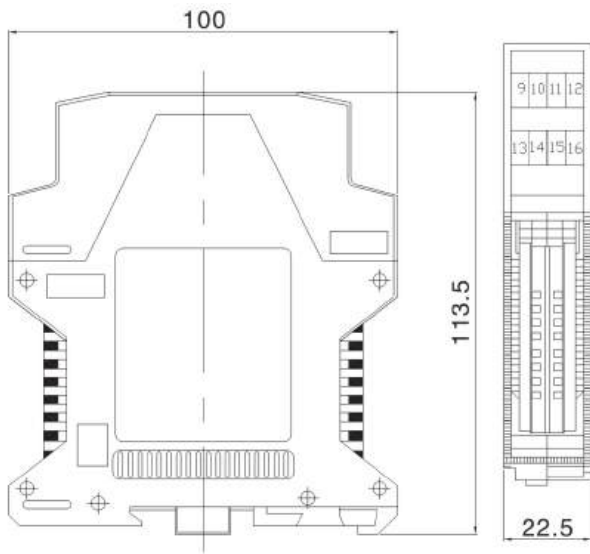


【starting current Imin and maximum current Imax adjustment】

adjust the I min potentiometer to make the solenoid current be adjusted to the minimum output value which customer demand.

adjust the I max potentiometer to make the solenoid current be adjusted to the minimum output value which customer demand.

UNIT DIMENSIONS



HED1 type pressure switch

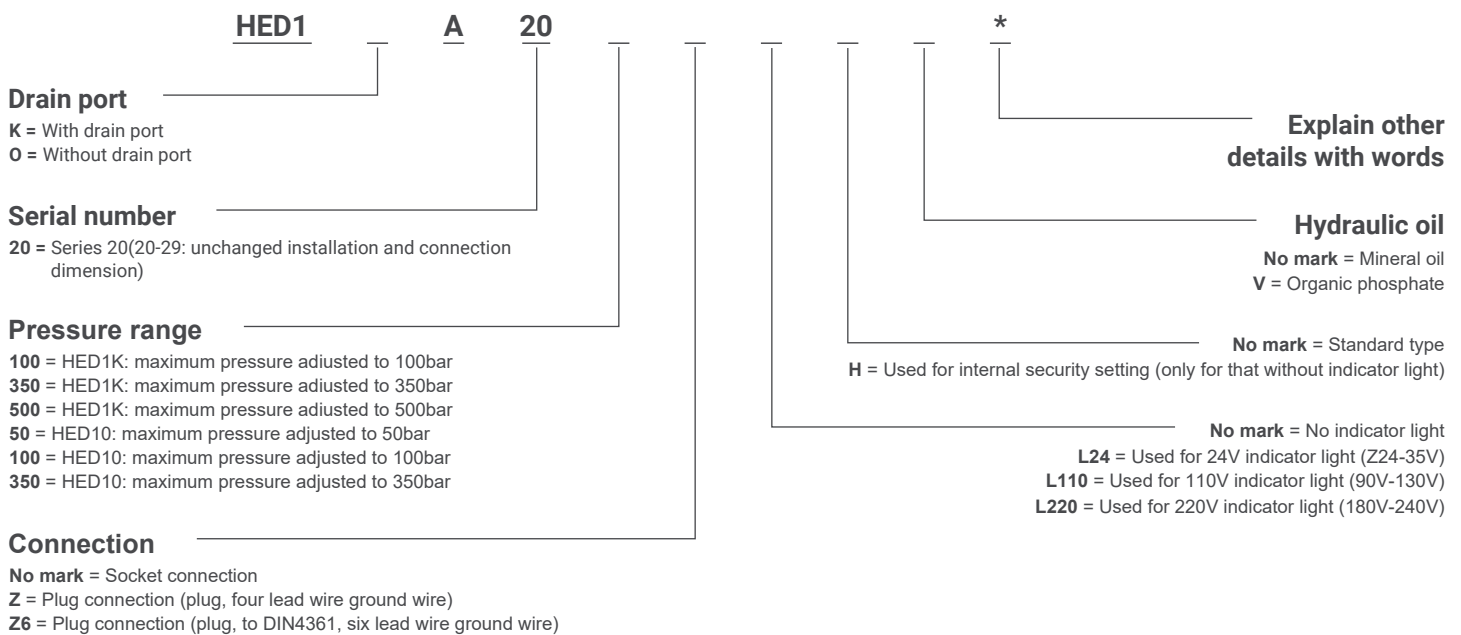


CONTENT

1. With or without drain port
2. With or without indicator light
3. Used for internal security setting (EX or SCH protect)



ORDERING DETAILS



SYMBOLE

diagram symbol	connection position
<p>without oil drain port</p> <p>with oil drain port</p>	<p>electric connection "Z"</p> <p>electric connection "ZL"</p> <p>electric connection "Z6" (electric connection DIN 43651)</p> <p>electric connection "Z6L" (electric connection DIN 43651)</p> <p>thread BSP=G</p>

TECHNICAL DATA

Hydraulic Data

Fluid oil		Mineral oil organic phosphate
Oil temperature range	°C	-20~+70
Viscosity scope	cst	2.8~380
Switch accuracy		< +2% of constant pressure
Switch frequency	HED 1 KA 20/...type	To 300 times/min
	HED 10 A 20/...type	To 300 times/min (100 times/min if time was short)
Setting Pressure of HED1 KA 20/...type	bar	31.5

Rated flow	Maximum working pressure (Short time)	Recovery pressure		Action pressure	
		Minimum	Maximum	Minimum	Maximum
100	600	3	92	6	100
350	600	6	325	10	350
500	600	10	465	20	500

Setting Pressure of HED 10 A 20/...type

Rated flow	Maximum working pressure (Short time)	Recovery pressure		Action pressure	
		Minimum	Maximum	Minimum	Maximum
50	50	2	45	3.5	50
100	350	3	85	8	100
350	350	6	295	20	350

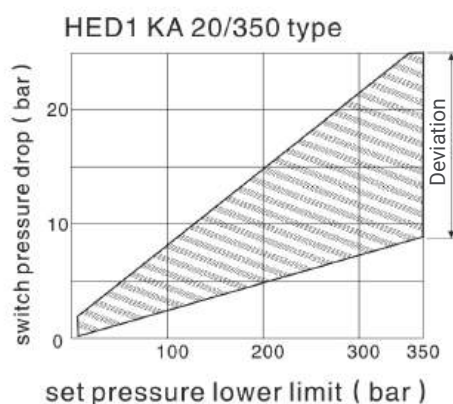
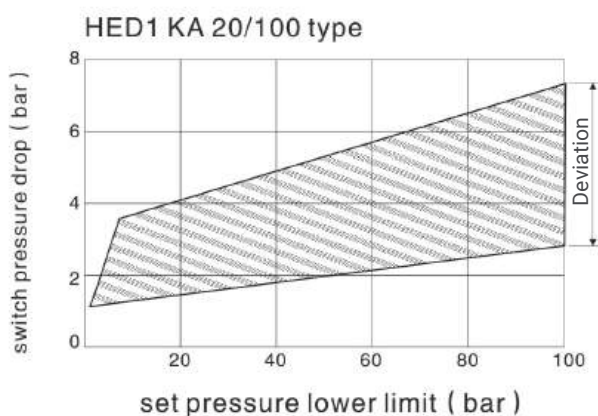
Electric connection		Plug be connected with PGI(maximum cable diameter is 11 mm)
		Plug connection
Cross section connecting	-Plug connection	T04
	-Plug connection	T01.5
Electric connection	-AC voltage	460V:15A
	-DC voltage	40V:1.0A; OR 125V:0.4A or 250V:0.2A

In order to lengthen service life, please use arc-control device which is higher than DC voltage

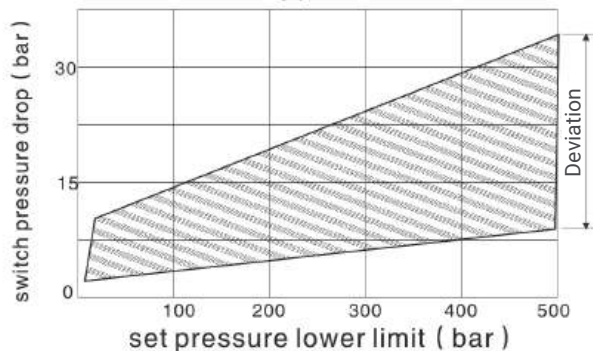
Insulation according to DIN40050		IP65
Weight	kg	0.8

CHARACTERISTIC CURVE

pressure relay with oil drain port

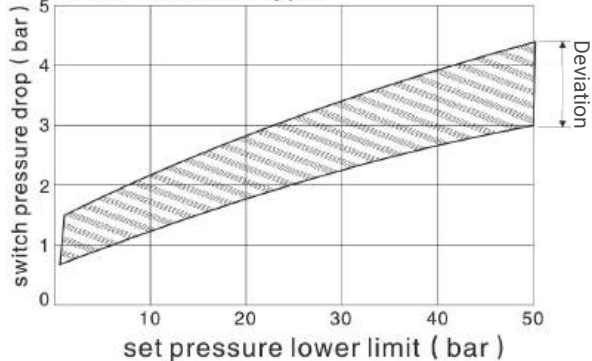


HED1 KA 20/500 type

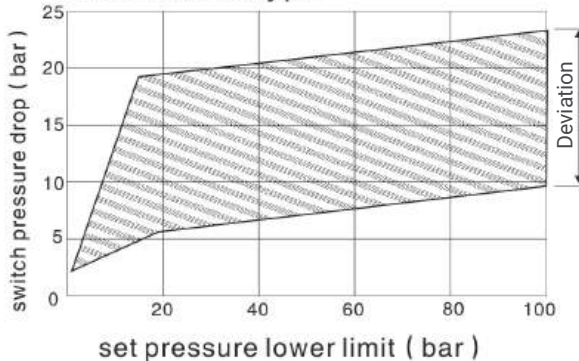


pressure relay without oil drain port

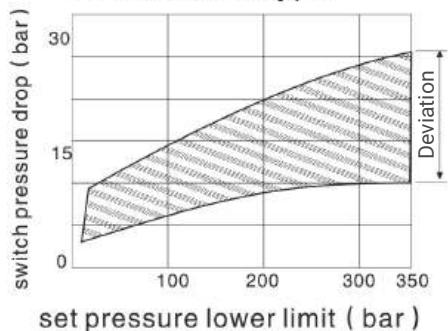
HED1 OA 20/50 type



HED1 OA 20/100 type

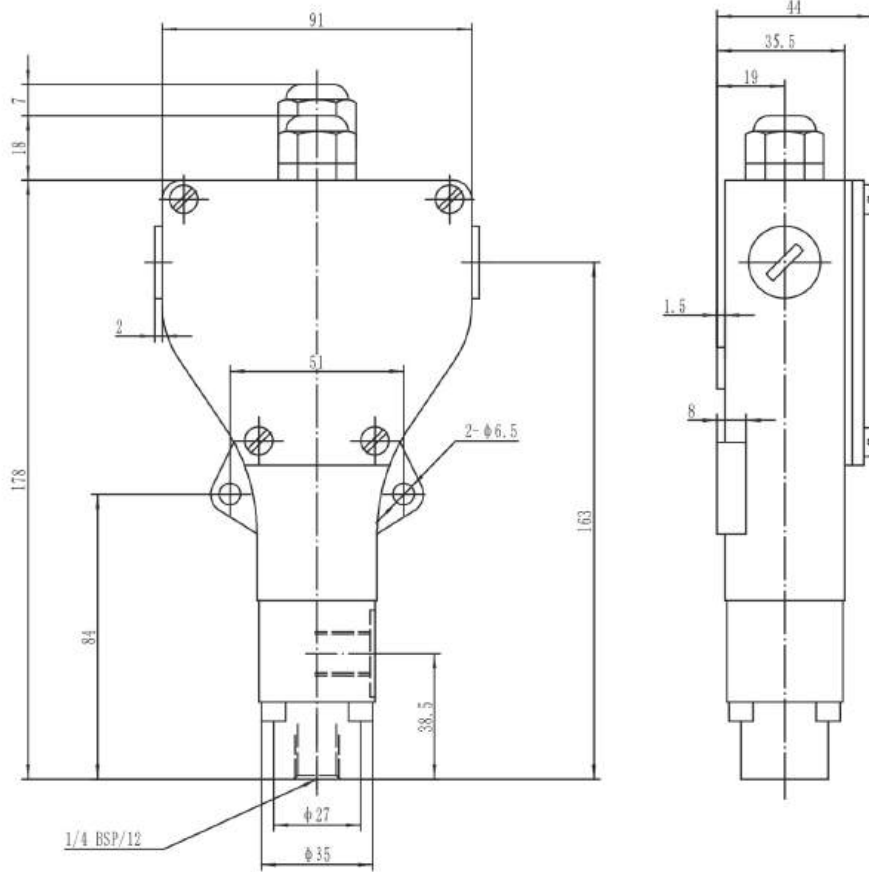


HED1 OA 20/350 type



UNIT DIMENSIONS

HED1



HED4 type pressure switch

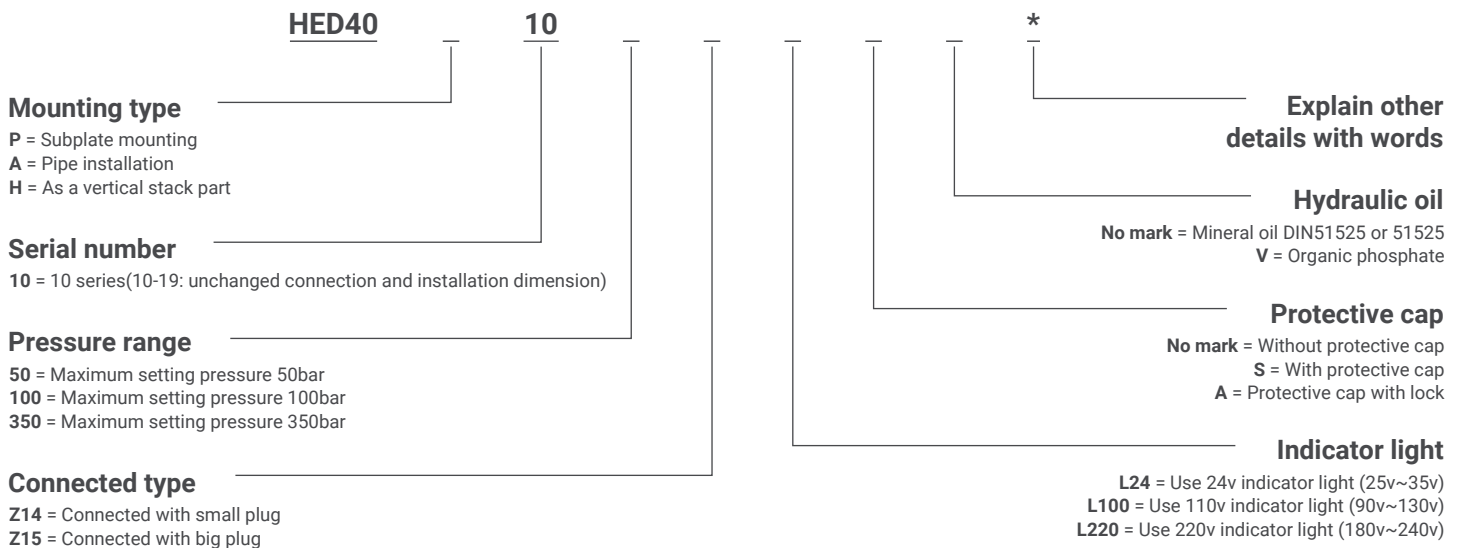


CONTENT

1. Subplate installation
2. Thread installation
3. As a vertical stack seal in the horizontal combination type of assembly valve.
4. With or without indicator light



ORDERING DETAILS



SYMBOLE

diagram symbol	connection position
	<p>electric connection "Z14" "Z15"</p> <p>electric connection "Z15L"</p> <p>indicator may installed on socket (3) or on normally open contact(2), two options.</p>

TECHNICAL DATA

Hydraulic Data

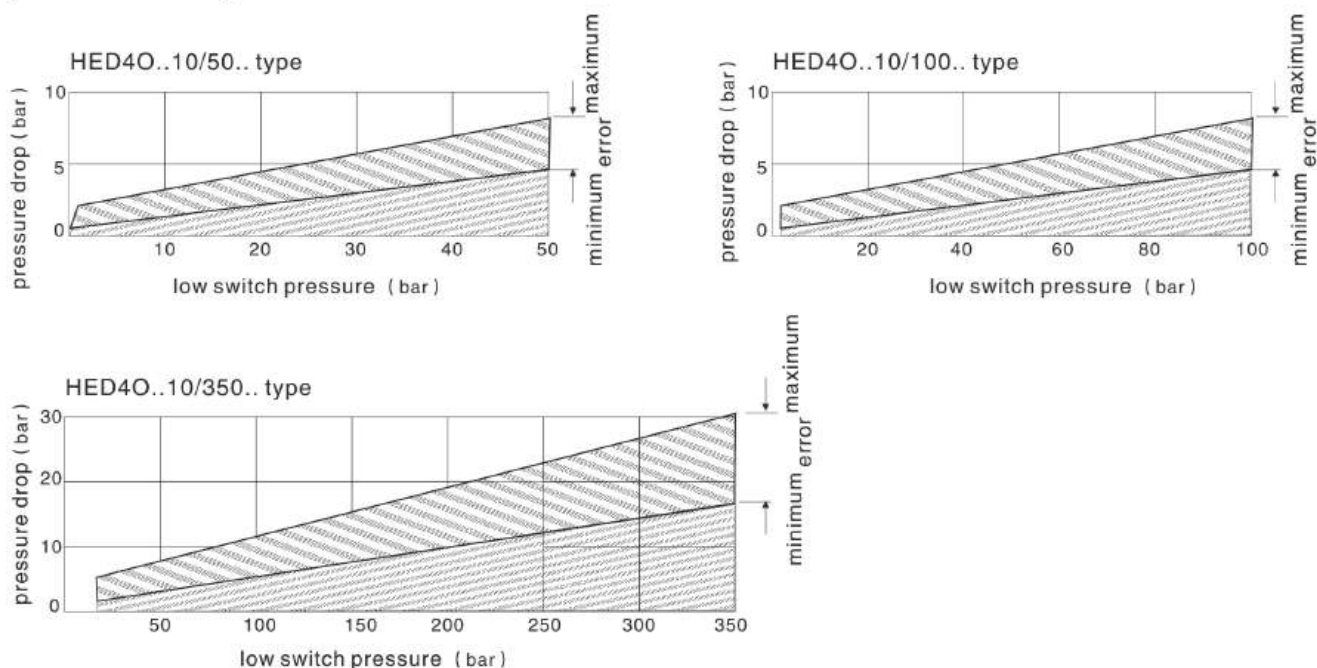
Fluid oil	Mineral oil according to DIN51524 and 51525 organic phosphate	
Oil temperature range	°C	-20~+70
Viscosity range	cst	2.8~380mm ²
Switch accuracy(repeat accuracy)	< +2% of setting pressure	
Switch frequency	120 times/min	
Circuit connection	plug/3 leading wires ground wire	
Cross section connecting	1.5 mm ² (max)	
Insulation	IP65	
Contacteur load	AC 250V:5A, DC50V:1A or 250V:0.2A	
Switch frequency	< +2% of setting pressure	
Reduction of arc instrument can prove that its service life can be increased if Load with DC and inductance		
Weight	Pressure switch 0.6 kg	
Modular board used to horizontal assembly is 0.8 kg(specification 6);1.9kg(specification 10)		

Pressure adjustment range (bar)

Rated pressure	Maximum working pressure	Recovery pressure		Action pressure	
		Minimum	Maximum	minimum	maximum
50	100	2	46	4	50
100	350	3	89	8	100
350	350	6	322	20	350

CHARACTERISTIC CURVE

pressure drop



UNIT DIMENSIONS

HED4

