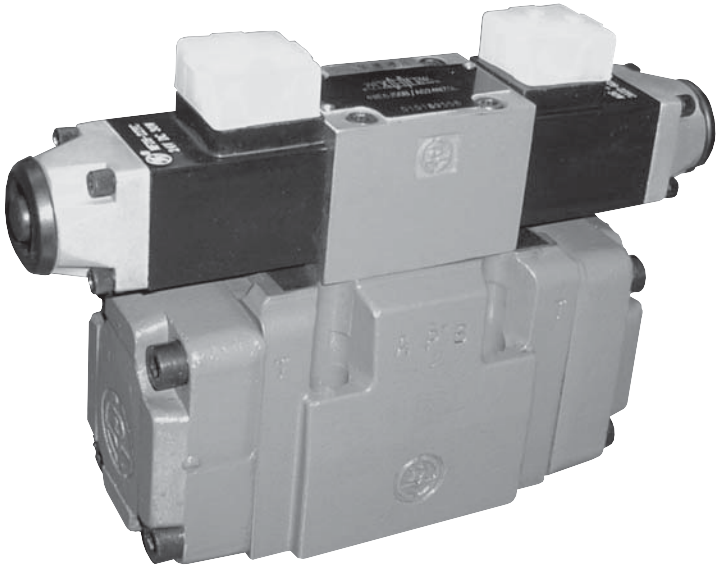
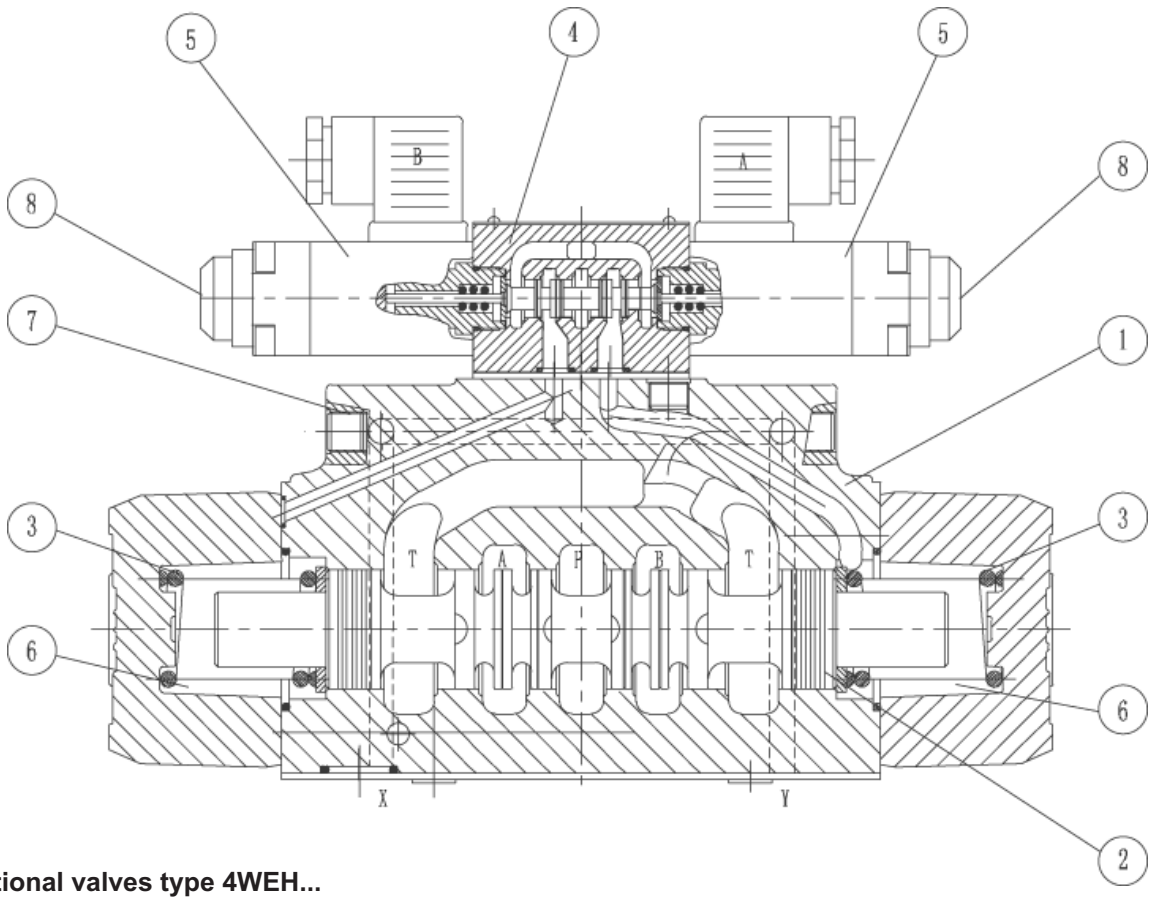
BEIJING HUADE HYDRAULIC INDUSTRIAL GROUP CO.,LTD.	Directional valves electro-hydraulically operated			RE24750/12.2004
	Size10 to 32	up to 28/35 MPa	up to 1100 L/min	Replaces：RE 24750/05.2001

Features:

- Valves used to control the start, stop and direction of a fluid flow
- Electro-hydraulic operation (WEH), hydraulic operation (WH)
- For subplate mounting
- Spring or pressure-centred,spring or hydraulic offset
- Wet-pin DC or AC solenoids, optional
- Manual override, optional
- Electrical connection as individual or central connection
- Shifting time adjustment, optional
- Pre-load valve in the P-channel of the main valve, optional
- Auxiliary equipment to data sheet
  Stroke adjustment at main spool, optional
  Stroke adjustment and/or end position indicator, optional
  Mechanical or inductive limit switch (proximity type) at the main spool, optional
- Porting pattern to Din 24 340 form A, ISO 4401 and CETOP-RP 121H



Functional description, section



Directional valves type 4WEH...

Valves of type WEH are directional spool valves with electro-hydraulic operation.

The directional valves basically consist of the main valve with housing (1), main control spool (2), one or two return springs, and the pilot valve (4) with one or two solenoids.

The main control spool (2) in the main valve is held in the neutral or in the initial position either by the springs or by means of pressure.The pilot oil supply can be either internal or external (external via port X).The pilot oil is expelled from the spring chamber via the pilot valve into the Y channel.The pilot oil supply and drain are internal or external (external via port Y).

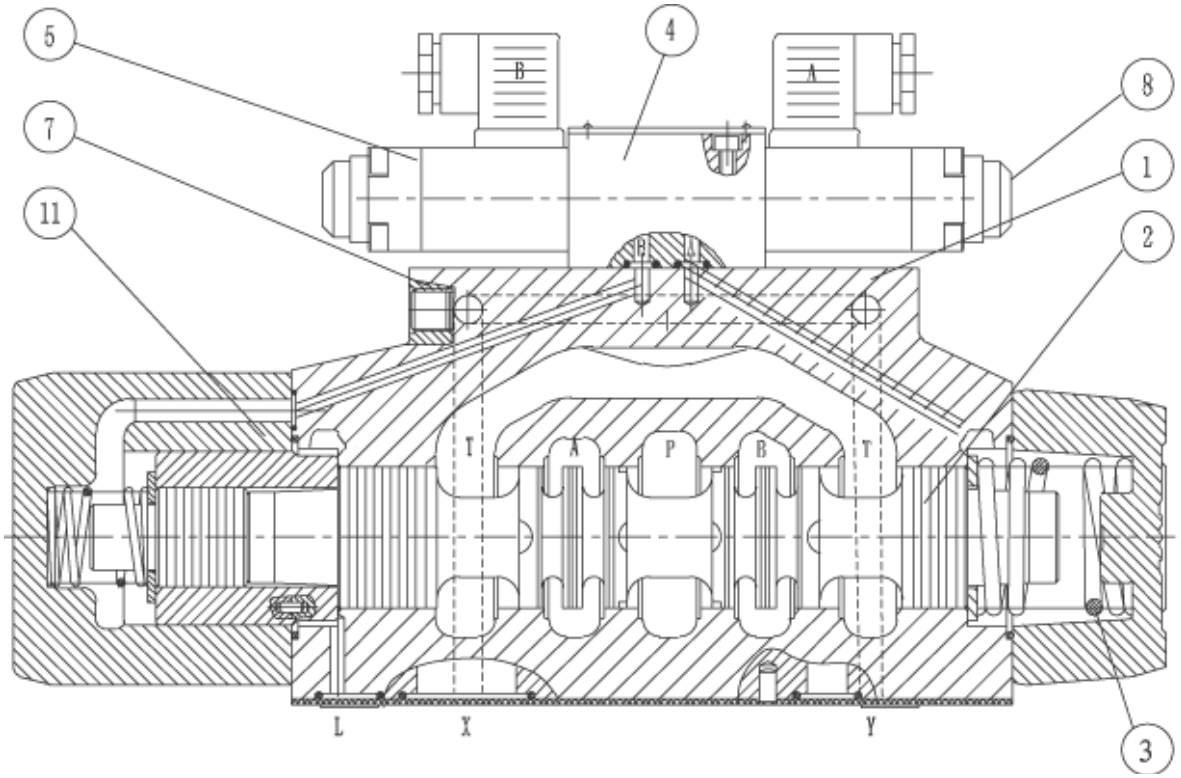
4/3-way directional valve with spring centring of the control spool，type 4WEH...

In this model, the main control spool (2) is held in the neutral position by two return springs. The two spring chambers (6) are connected to ports X and Y via the connector plate .When one of the two ends of the main control spool (2) is pressurized with pilot pressure, the spool is moved to the shifted position.The required ports in the valve are then opened to flow.When the pilot pressure is removed, the spring on the opposite side to the pressurised spool area causes the spool to return to its neutral or initial position.

4/3-way directional valve with pressure centring of the main control spool, type 4WEH...H

The main control spool (2) in the main valve is held in the neutral position by pressurization of the two front faces. A centring sleeve is supported in the housing and holds the spool in position.

By removing the pressure from one of the spool ends, the main control spool (2) is moved to the shifted position. The unloaded spool area displaces the returning pilot oil via the pilot valve into the Y channel (external).



Type WEH...H.../...

Directional valves type 4WH...

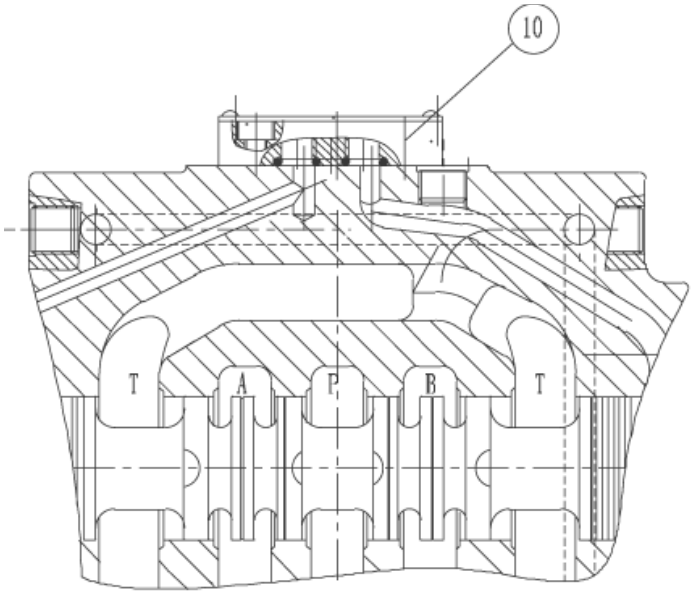
Valves of type WH are directional spool valves with hydraulic operation.

They control the start, stop and direction of a fluid flow.

The directional valves basically consist of the valve housing(1),the main control spool(2), one or two return springs(3) and in the case of valves with spring return or spring centring,and the pilot connecting plate .

The control spool(2) is operated directly by means hydraulic pressure.

The control spool(2) is held in the neutral or in the initial position either by springs or by means of pressure. Pilot oil supply and pilot oil drain are external .



Type WH...

Pilot oil supply

4WEH- ...and 4WH...

The pilot oil supply is sourced externally via channel X from a separate circuit.
The pilot oil drain is led externally via channel Y to tank.

4WEH...E...

The pilot oil supply is sourced internally from channel P of the main valve.
The pilot oil drain is led externally via channel Y to tank. Port X in the subplate is plugged.
Change over from external to internal or from internal to external pilot oil supply (size 16): Remove the cover on the solenoid side "a", remove the plugs and turn end-for-end, insert plugs and re-place the cover.

4WEH...ET...

The pilot oil supply is sourced internally from channel P of the main valve.
The pilot oil drain is led internally via channel T to tank. Ports X and Y in the supblate are plugged.

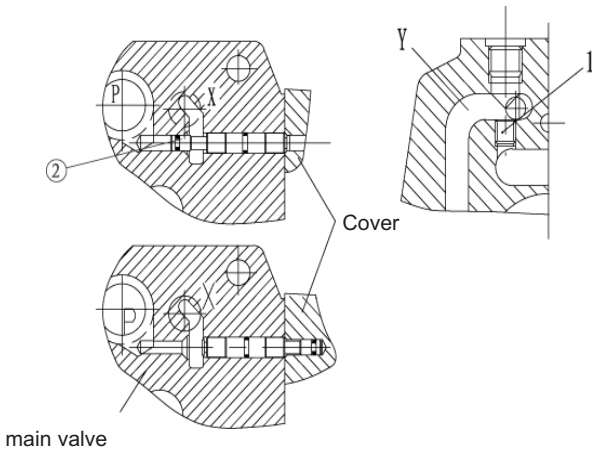
4WEH...T...

The pilot oil supply is sourced externally via channel X from a separate circuit. The pilot oil drain is led internally via channel T to tank. Port Y in the subplate is plugged.
1 Plug screw M6-8.8 pilot oil drain
2 Plug screws M6-8.8 pilot oil supply
3 Plug screws M8-8.8 for external sealing
Tightening torques M_A for cover fixing screws:
Size 16: 35 Nm
Size 25: 68 Nm
Tightening torque M_A for pilot valve fixing screws:
Sizes 10 to 32: 9 Nm

Size 10 main valve
Pilot oil supply
external: 2 plugged
internal: 2 open
Pilot oil drain
external: 1 plugged
internal: 1 open

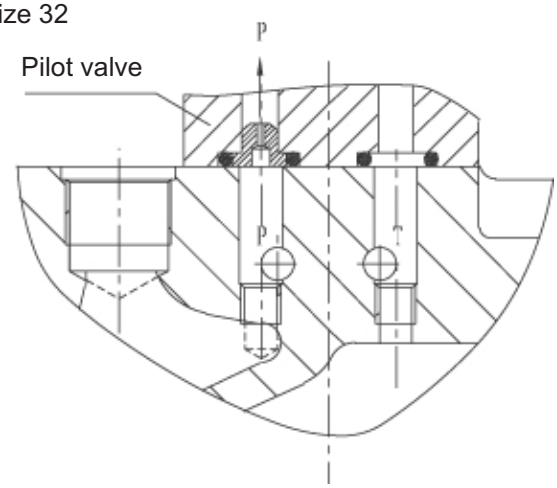
Size 16
Pilot oil supply
external: 2 plugged
internal: 2 open

Pilot oil drain
external 1 plugged
1 open



Size 25
Pilot oil supply
external: 2 plugged
internal: 2 open
Pilot oil drain
external: 1 plugged
internal: 1 open

Size 32

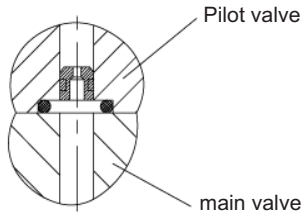


Pilot oil supply
external: 2 plugged
internal: 2 open

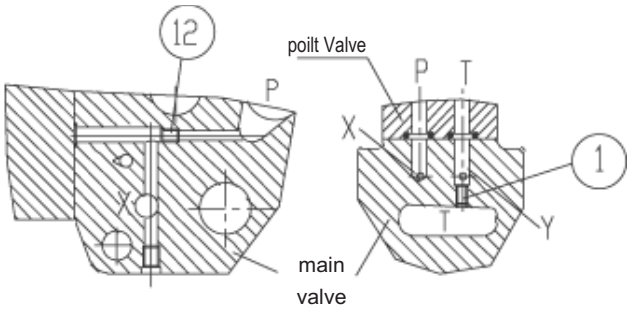
Pilot oil drain
external: 1 plugged
internal: 1 open

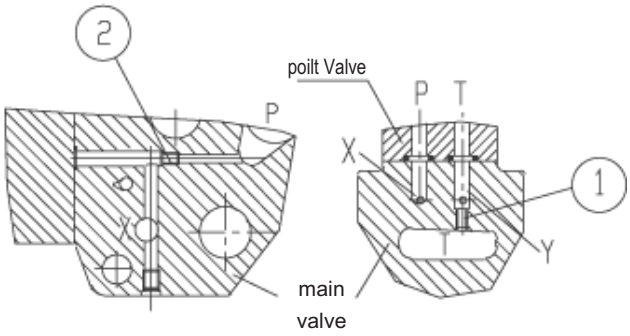
Throttle insert

The use of a throttle insert is required if the pilot oil supply in the P channel of the pilot valve is to be limited .This throttle is inserted in the P channel of the pilot valve.



Throttle insert

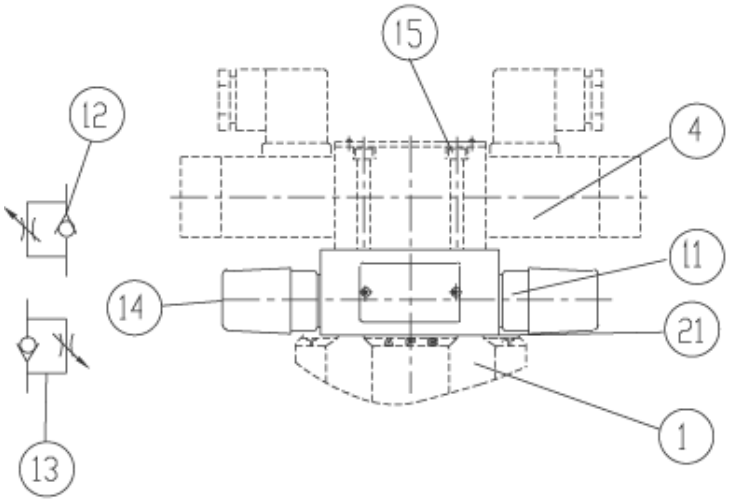




Shifting time adjustment

In order to influence the shifting time of the main valve a double throttle check valve (type Z2 FS 6) is installed.

Change over from meter-in (13) to meter-out control (12):Remove the pilot valve (4) (leave the O-ring support plate (21) in place), rotate the throttle check valve (11) about its longitudinal axis and refit it, replace the pilot valve (4).



Type WEH.../...S

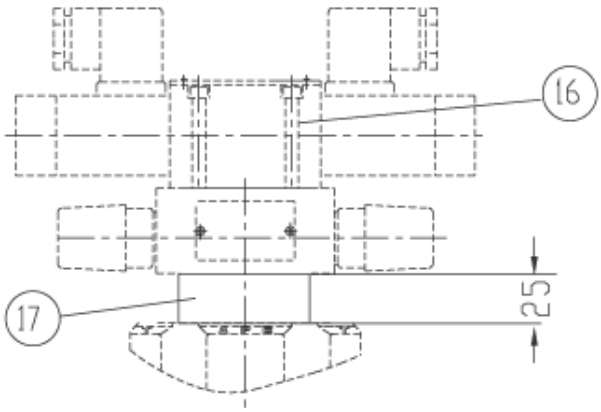
Pressure reducing valve "D3"

The pressure reducing valve (17) must be used if the pilot pressure is higher than 25 MPa.

Thus, the secondary pressure is held constant at 4.5 MPa.

Attention!

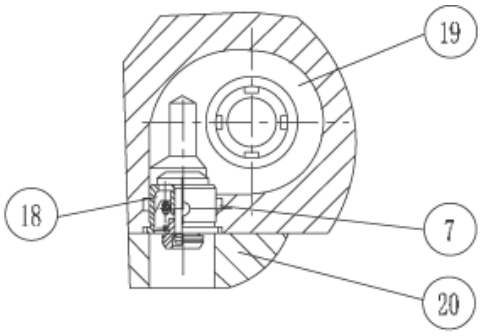
When using a pressure reducing valve "D3" (17), a throttle insert "B10" must be installed in the P channel of the pilot valve.



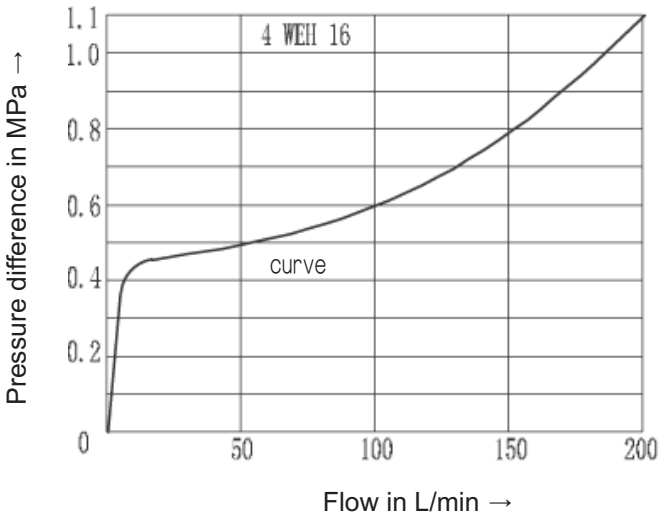
Type WEH.../...S..D3

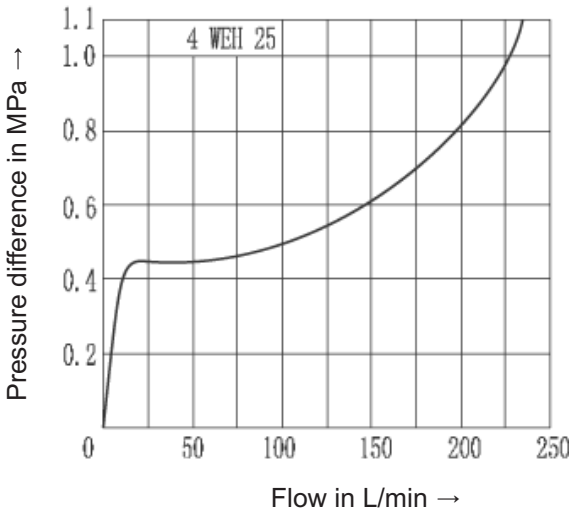
Pre-load valve (not for size 10)

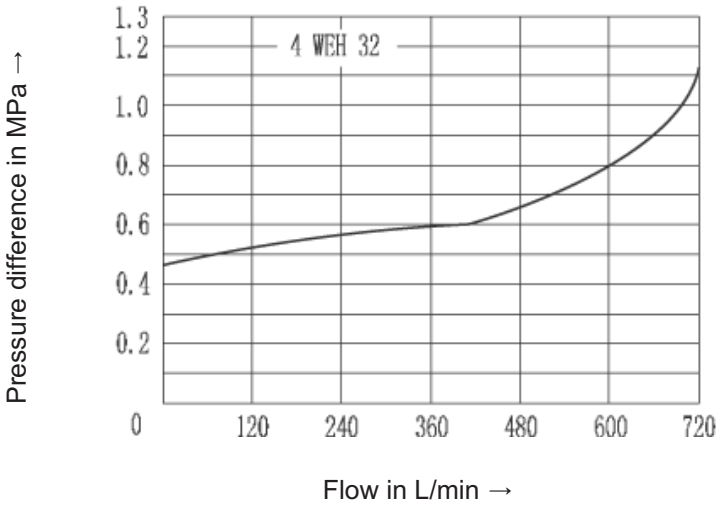
In valves with pressureless by-pass and iternal pilot oil supply, a pre-load valve (18) must be installed in the P channel of the mainvalve to build up the minimum pilot pressure.The pressure difference of the pre-load valve must be added to the pressure difference of the main valve (see characteristic curve) in order to determine the actual value.The cracking pressure of this valve is approx. 0.45 MPa.



Dp/q $_v$ characteristic curve







Ordering code

Up to 28 MPa = No code
Up to 35 MPa = H

4-way design = 4

Electro-hydraulic = WEH
Hydraulic = WH

Size 10 = 10
Size 16 = 16
Size 25 = 25
Size 32 = 32

Spool return
By means of springs = No code
Hydraulic = H

For symbols, see next page

Series 20(NG10) = 20 (20 to 29 unchanged installation and connection dimensions)
Series 50(NG16、25、32) = 50 (50 to 59 unchanged installation and connection dimensions)

Technology of Beijing Huade Hydraulic =B

Spool return in the pilot valve for 2-position valve and 2 solenoids only possible with spools C, D, K, Z and hydraulic spool return in the main valve:
Without spring return = O
Without spring return with detent = OF

Pilot valve with wet-pin solenoids
Standard valve = A
High-performance valve = E

DC 24V = G24
AC 220V; frequency 50Hz = W220-50
Used DC solenoids which are noting with frequency:
AC: 110V = W110R
220V = W220R
(* :use plug Z5 only)
see the other volts in Electric date,please.

No code= Pilot oil supply external, drain external
E= Pilot oil supply internal, drain external
ET= Pilot oil supply internal, drain internal
T= Pilot oil supply external, drain internal
Type 4WH...only available as No code!
Versions ET and T as 3-position valve with pressure centring only possible if $p_{pilot} \geqslant 2 \times p_{tank} + p_{pilot\ min}$!

No code = Without manual override
N= With manual override

No code = Without shifting time adjustment
S = Shifting time adjustment as meter-in control
S_2 = Shifting time adjustment as meter-out control

Type of Electrical connection（see type of Electrical connection dimensions)

Additional equipment NO.
（see Additional equipment ）

No code= Without throttle insert
B08 = Throttle Φ 0.8 mm
B10 = Throttle Φ 1.0 mm
B12 = Throttle Φ 1.2 mm
B15 = Throttle Φ 1.5 mm

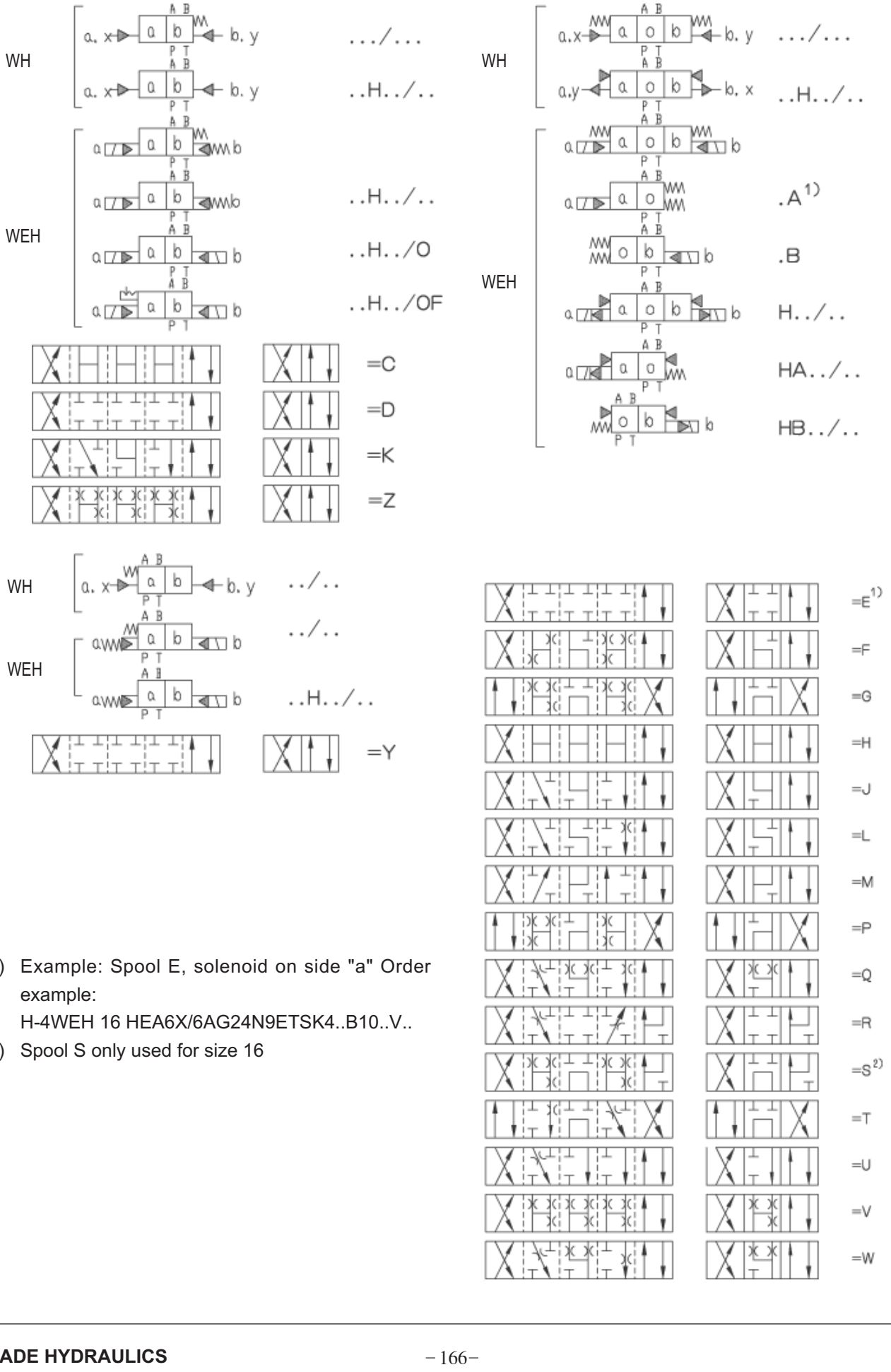
No code = Without pre-load valve
P 4,5 = With pre-load valve (P_{crack} = 0.45 MPa)

No code = Without pressure reducing valve
D3 = With pressure reducing valve

No code= mineral oils
V= phospate ester

Further details in clear text

Symbols

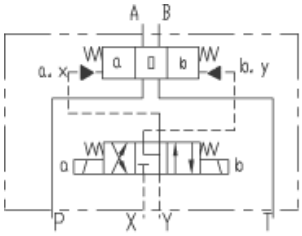
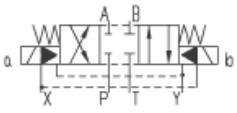
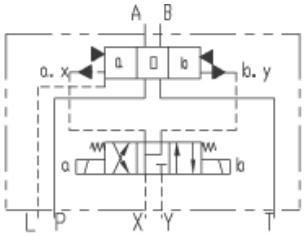
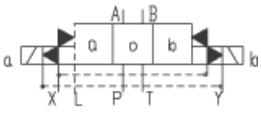
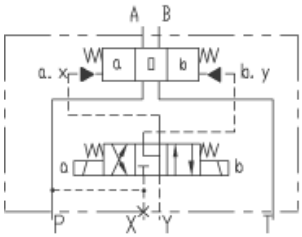
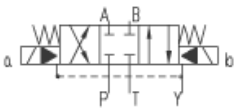
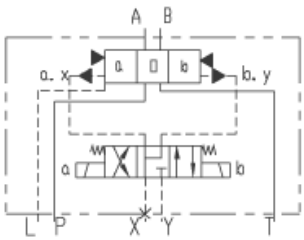
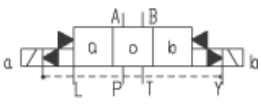
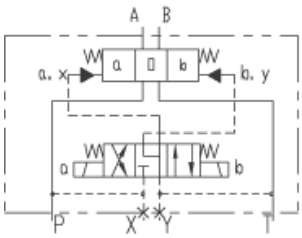
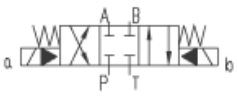
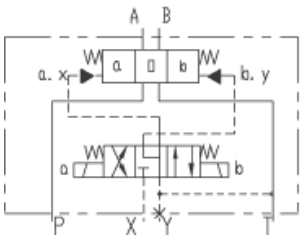
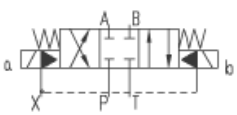


1) Example: Spool E, solenoid on side "a" Order example:
   H-4WEH 16 HEA6X/6AG24N9ETSK4..B10..V..
2) Spool S only used for size 16

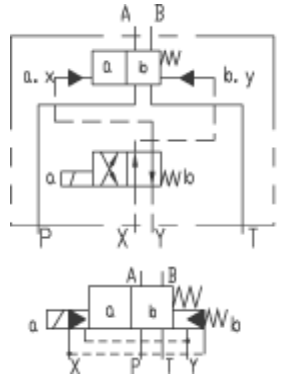
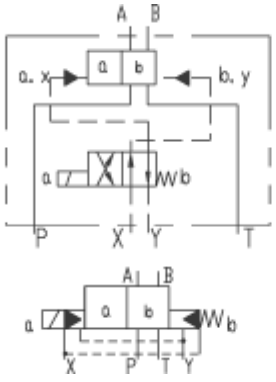
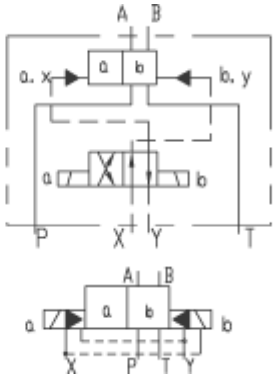
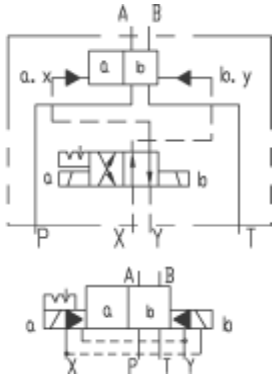
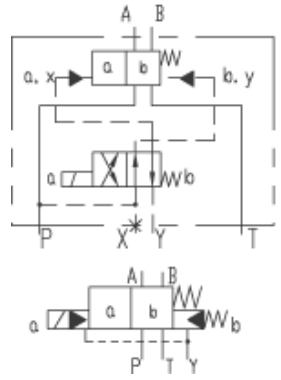
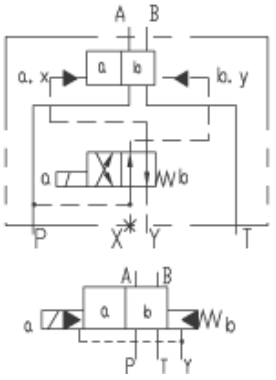
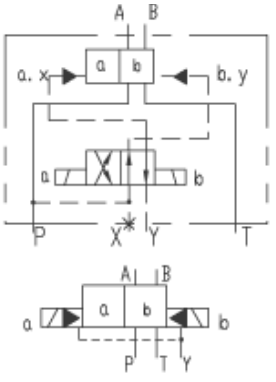
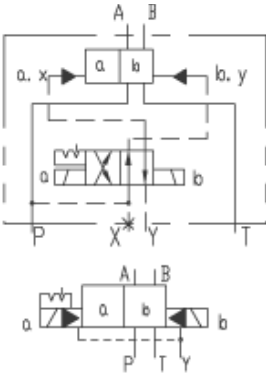
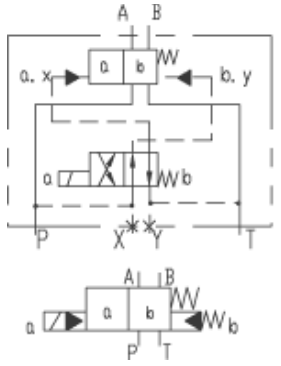
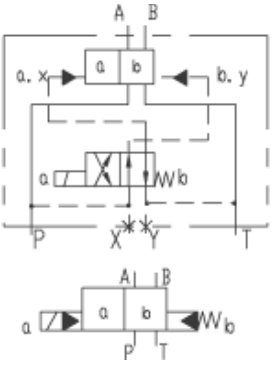
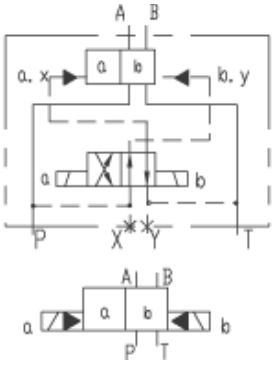
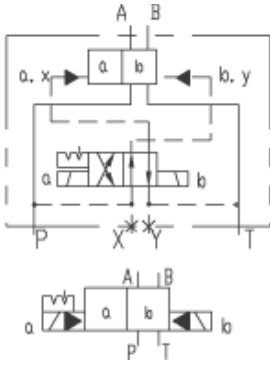
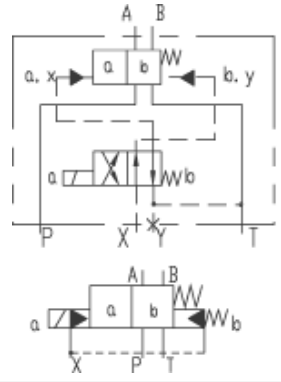
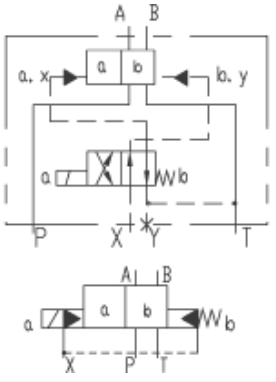
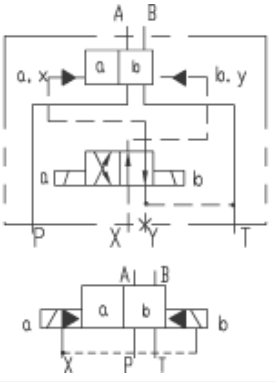
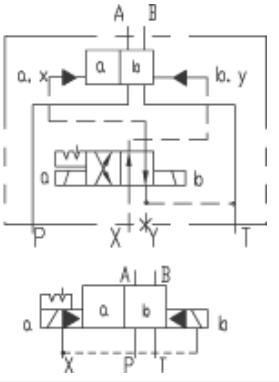
Valve opening in neutral position for spools Q, V and W

Spool \ Size		Valve opening in neutral position (Size in mm²)			
		10	16	25 (type 4W.H 25.50B/)	32
Q	P-A	-	-	-	-
	P-B	-	-	-	-
	A-T	13	32	83	78
	B-T	13	32	83	78
V	P-A	13	32	83	73
	P-B	13	32	83	73
	A-T	13	32	83	84
	B-T	13	32	83	84
W	P-A	-	-	-	-
	P-B	-	-	-	-
	A-T	2.4	6	14	20
	B-T	2.4	6	14	20

Detailed and simplified symbols for 3-position valves

	Valve with spring-centred neutral position		Valve with spring-centred neutral position {only sizes 16, 25 (type 4W.H 25 .50B/... and 32}	
X = external; Y =external		Type 4WEH../.. 		Type 4WEH..H../.. 
X = internal; Y = external		Type 4WEH../..E.. 		Type 4WEH..H../..E.. 
X = internal; Y = internal		Type 4WEH../ET 	3-position valves, pressure-centred, preferrably with external pilot oil supply and/or drain (No code, E) For the preconditions for internal pilot oil supply and/or drain (ET, T) see page 6 or 10.	
X =external; Y = internal		Type 4WEH../..T.. 		

Detailed and simplified symbols for 2-position valves

	Valves with spring offset	Valves with hydraulic offset		
X = external; Y = external	Type 4WEH.../...	Type 4WEH..H.../...	Type 4WEH..H/O...	Type4WEH..H/OF...
				
X = internal; Y = external	Type 4WEH.../...E...	Type 4WEH..H.../...E...	Type 4WEH..H/O...E...	Type 4WEH..H/OF...E...
				
X = internal; Y = internal	Type 4WEH.../...ET...	Type 4WEH..H.../...ET...	Type 4WEH..H/O...ET...	Type 4WEH..H/OF...ET...
				
X = external; Y = internal	Type 4WEH.../...T...	Type 4WEH..H/...T...	Type 4WEH..H/O...T...	Type 4WEH..H/OF...T...
				

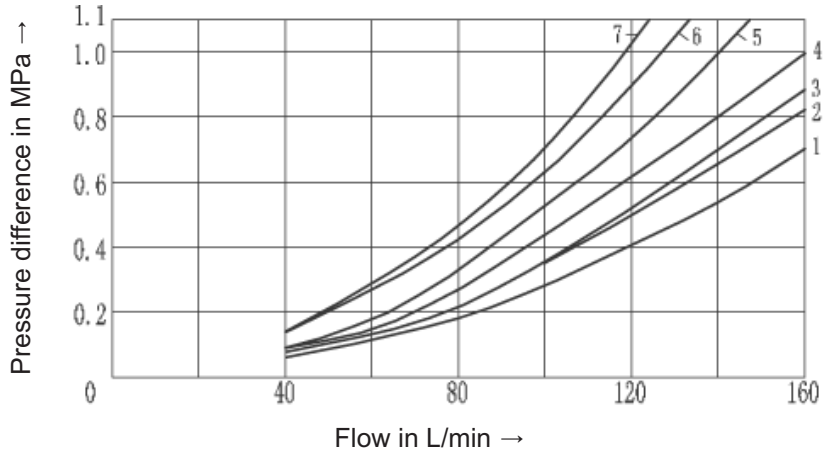
Characteristic curves (measured at v = 41 mm²/s and t = 50℃)

Type WEH10:

Spool	Neutral position		
	A → T	B → T	P → T
F	3	-	6
G	-	-	7
H	1	3	5
P	-	7	5

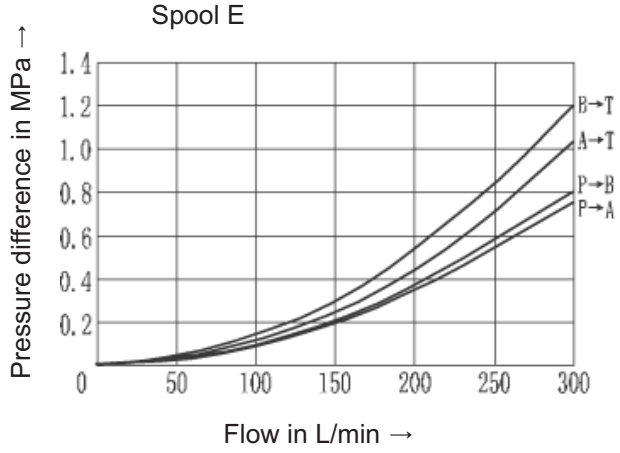
Spool	Neutral position		
	A → T	B → T	P → T
T	-	-	7
L	3	-	-
U	-	4	-

Spool	Shifted position			
	P → A	P → B	A → T	B → T
E	1	2	4	5
F	1	4	1	4
G	4	2	2	6
H	4	4	1	4
J	1	2	1	3
L	2	3	1	4
M	4	4	3	4
P	4	1	3	4
Q	2	2	3	5
R	2	3	3	5
U	3	3	3	4
V	2	2	3	5
W	2	2	3	5
T	4	2	2	6

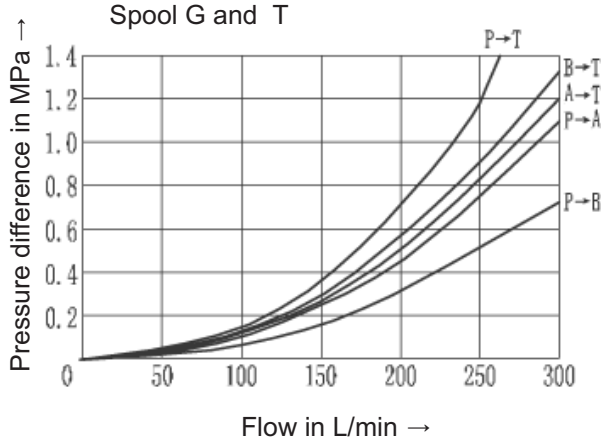


Type WEH16:

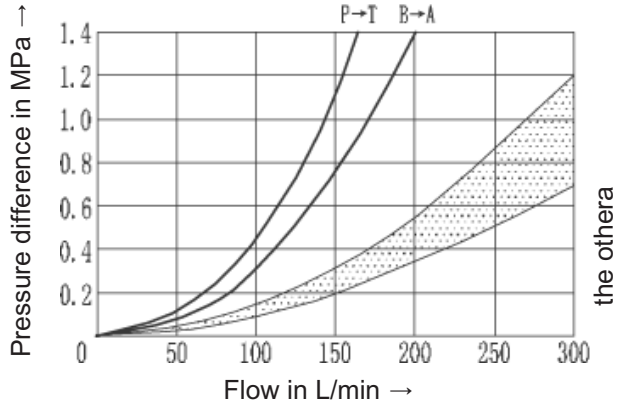
Spool E



Spool G and T

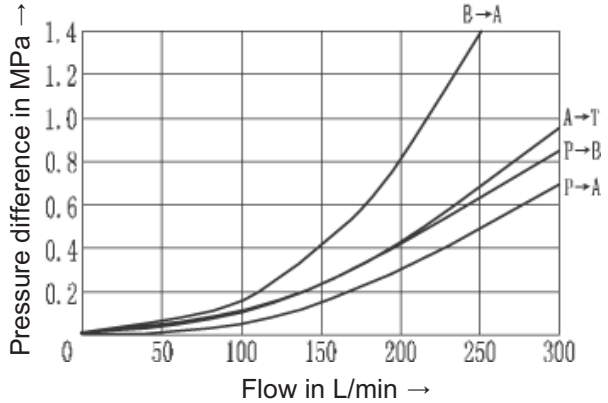


Spool S



the othera

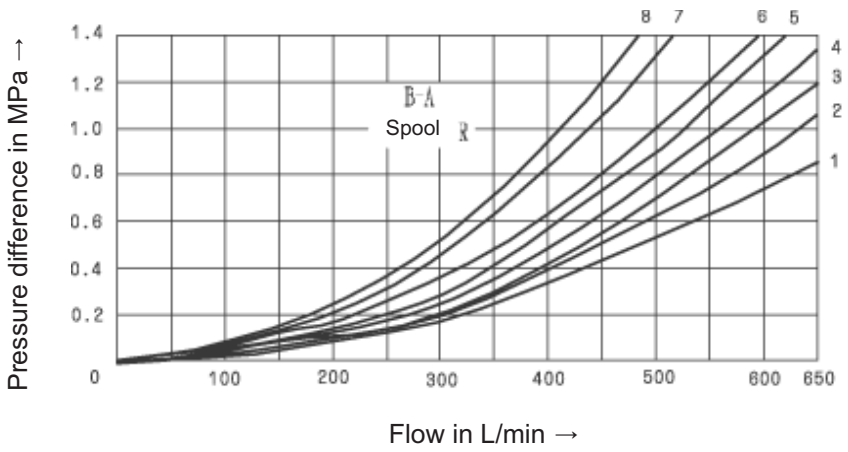
Spool R



Type WEH25:

7 spool G central position P - T

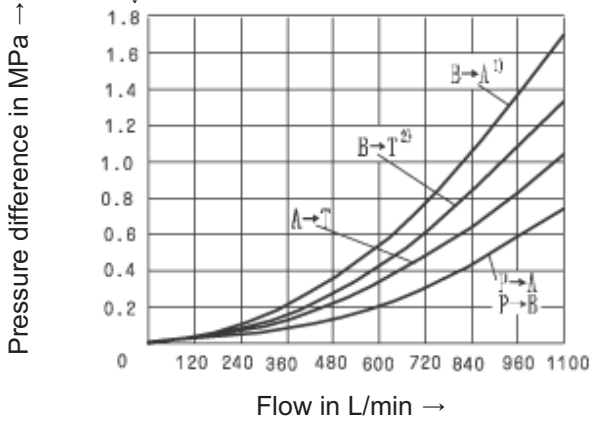
8 spool T central position P - T



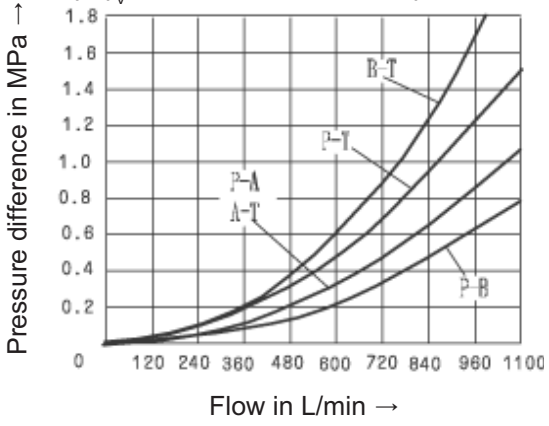
Spool	Shifted position			
	P → A	P → B	A → T	B → T
E	1	1	1	3
F	1	4	3	3
G	3	1	2	4
H	4	4	3	4
J	2	2	3	5
L	2	2	3	3
M	4	4	1	4
P	4	1	1	5
Q	2	2	3	5
R	2	1	1	-
U	2	1	1	6
V	4	4	3	6
W	1	1	1	3
T	3	1	2	4

Type WEH32:

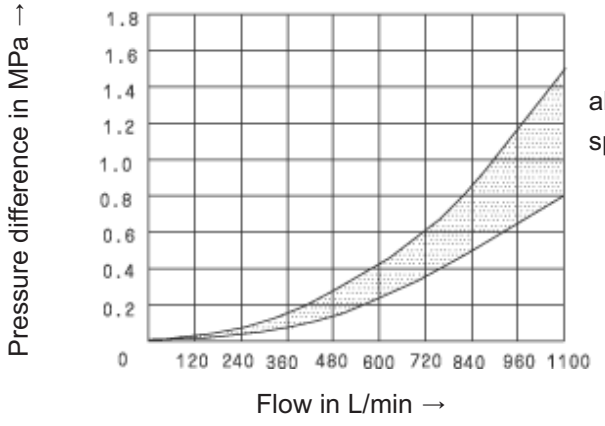
Dp/q_V characteristic curves - spool E, R and W



Dp/q_V characteristic curves - spool G and T



Dp/q_V characteristic curves - all the other spools



all the other spools

1) only with spool R

2) not with spool R

Technical data (For applications outside these parameters, please consult us!)

Hydraulic data

1、Type 4WEH10

Operating pressure, max. (MPa) - Port P、A、B			H- 4WEH10				4WEH10		
			to 35				to 28		
- Port T	Pilot oil drain internal (MPa)		to 16（DC）				to 10（AC）		
- Port Y	Pilot oil drain external (MPa)		to 16（DC）				to 10（AC）		
Pilot pressure, min.	Pilot oil drain external (MPa)		1.0 2-position valve, 3-position valve,with spring offset						
	Pilot oil supply internal (MPa)		0.7 2-position valve with hydraulic offset（not with spools: C、Z、F、G、H、P、T、V）						
	Pilot oil supply internal (MPa) （with spools:C、Z、F、G、H、P、T、V）		0.65 { if the flow from P to T in the neutral position (in a 3-position valve) or when the valve is moving through the neutral position (in a 2-position valve) is large enough to ensure a minimum pressure difference of 0.65 MPa from P to T.						
Operating pressure, max. (MPa)			to 25						
Hydraulic fluid			Mineral oil ; Phospate ester						
Viscosity range (mm^2/s)			2.8 ～ 500						
Fluid temperature range (℃)			-30 ～ +80						
Pilot oil volume for shifting operation									
- 3-position valve, spring-centred (cm^3)			2.04						
- 2-position valve (cm^3)			4.08						
from "O" position to shifted position（AC and DC solenoid）:									
at pilot pressure (MPa)			～7=		～14=		～21=		～28=	
- 3-position valve, spring-centred (ms)			30	65	25	60	20	55	15	50
- 2-position valve (ms)			30	80	30	75	25	70	20	65
from shifted position to "O" position（AC and DC solenoid）:									
- 3-position valve, spring-centred			30						
- 2-position valve (ms)			35	40	30	35	25	30	20	25
Pilot oil flow for shortest shifting time (L/min)			approx.35						
Installation position			optional; valve with hydraulic spool return "H"(spools C, D, K, Z, Y) horizontal						
Weight (Kg)	Valve with one solenoid		6.4						
	Valve with two solenoids		6.8						
	Shifting time adjustment		0.8						
	Pressure reducing valve		0.5						

2、Type 4WEH16

Operating pressure, max. (MPa)			H - 4WEH16							4WEH16								
- Port P、A、B			to 35							to 28								
- Port T	Pilot oil drain external (MPa)		to 25							to 25								
	Pilot oil drain internal (MPa)		solenoid (DC) －							solenoid (AC) ～								
			to 16							to 10								
			It's impossible for pressure centred 3-position valve to pilot oil drain internal															
- Port Y	Pilot oil drain external (MPa)		= 16							～ 10								
Pilot pressure, min.	Pilot oil drain external (MPa) Pilot oil supply internal (MPa)		3-position valve,1.2 2-position valve,with spring offset 1.2 2-position valve with hydraulic offset 1.2															
	Pilot oil supply internal (MPa)		For spools C, F, G, H, P, T, V, Z, S (by means of a pre-load valve or a sufficiently large flow) 0.45															
Operating pressure, max. (MPa)			to 25															
Hydraulic fluid			Mineral oil ; Phospate ester															
Fluid temperature range (℃)			- 30 ～ + 80															
Viscosity range (mm^2/s)			2.8 ～ 500															
Pilot oil volume for shifting operation																		
- 3-position valve, spring-centred (cm^3)			5.72															
- 2-position valve (cm^3)			11.45															
- 3-position valve, pressure-centred			WH							WEH								
from "O" position to shifted position "a" (cm^3)			2.83							2.83								
from shifted position "a" to "O" position (cm^3)			2.9							5.73								
from "O" position to shifted position "b" (cm^3)			5.72							5.73								
from shifted position "b" to "O" position (cm^3)			2.83							8.55								
from "O" position to shifted position (AC and DC solenoid):																		
at pilot pressure (MPa)			～ 5 =				～ 15 =					～ 25 =						
- 3-position valve, spring-centred (ms)			35		65		30		60			30		58				
- 2-position valve (ms)			45		65		35		55			30		50				
- 3-position valve, pressure-centred (ms)			a	b	a	b	a	b	a	b		a	b	a	b			
			30		65		25		55	63		20	25	55	60			
from shifted position to "O" position:																		
- 3-position valve, spring-centred			30…45 for ～; 30 for =															
- 2-position valve (ms)			45…60		45		35…50		35			30…45		30				
- 3-position valve, pressure-centred (ms)			a	b	a	b	a	b	a	b		a	b	a	b			
			20…30		20		20…35		20			20…35		20				
Installation position			optional; valve with hydraulic spool return (spools C, D, K, Z, Y) horizontal															
Pilot oil flow for shortest shifting time (L/min)			approx.35															
Weight			approx.8.6 WH approx.7.3															
*Shifting time = Contacting at the pilot valve up to start of opening of the control land in the main valve																		

3、Type 4WEH 25 :

Operating pressure, max.- Port P, A, B (MPa)			to 35 (H-4WHE25); to 28 (4WEH25)																
- Port T	Pilot oil drain external (MPa)		t0 25																
	Pilot oil drain internal (MPa)		solenoid (DC) –						solenoid (AC) ~										
			t0 16						t0 10										
			It's impossible for pressure centred 3-position valve to pilot oil drain internal																
- Port Y	Pilot oil drain external solenoid (DC) – (MPa)		16																
	solenoid (AC) ~ (MPa)		10																
	for Type 4WH (MPa)		25																
Pilot pressure, min.	Pilot oil supply external (MPa) Pilot oil supply internal (MPa)		3-position valve, spring-centred 1.3 3-position valve, pressure-centred 1.8 2-position valve, with spring offset 1.3 2-position valve, with hydraulic offset 0.8																
	Pilot oil supply internal (MPa)		For spools F, G, H, P, T, V, C and Z (by means of a pre-load valve or a sufficiently large flow) 0.45																
Operating pressure, max. (MPa)			to 25																
Hydraulic fluid			Mineral oil ; Phospate ester																
Viscosity range (°C)			- 30 ~ + 80																
Fluid temperature range (mm^2/s)			2.8 ~ 500																
Pilot oil volume for shifting operation																			
- 3-position valve, spring-centred (cm^3)			14.2																
- 2-position valve, with spring offset (cm^3)			28.4																
- 3-position valve, pressure-centred			WH						WEH										
from "O" position to shifted position "a" (cm^3)			7.15						7.15										
from shifted position "a" to "O" position (cm^3)			14.18						7.0										
from "O" position to shifted position "b" (cm^3)			14.18						14.15										
from shifted position "b" to "O" position (cm^3)			19.88						5.73										
from "O" position to shifted position (AC and DC solenoid):																			
at pilot pressure (MPa)			~ 7 =				~ 14 =				~ 21 =				~ 25 =				
- 3-position valve, spring-centred (ms)			50		85		40		75		35		70		30		65		
- 2-position valve, with spring offset (ms)			120		160		100		130		85		120		70		105		
- 3-position valve, pressure-centred (ms)			a	b	a	b	a	b	a	b	a	b	a	b	a	b	a	b	
			30	35	55	65	30	35	55	65	25	30	50	60	25	30	50	60	
from shifted position to "O" position:																			
- 3-position valve, spring-centred			40…55 for ~; 40 for =																
- 2-position valve, with spring offset (ms)			120		125		95		100		85		90		75		80		
- 3-position valve, pressure-centred (ms)			a	b	a	b	a	b	a	b	a	b	a	b	a	b	a	b	
			30…35		30	35	30…35		30	35	30…35		30	35	30…35		30	35	
Installation position			optional; valve with hydraulic spool return (spools C, D, K, Z, Y) horizontal																
Pilot oil flow for shortest shifting time (L/min)			approx. 35																
Weight (Kg)			the whole valve approx. 18 WH approx. 17.6																
* Shifting time = Contacting at the pilot valve up to start of opening of the control land in the main valve																			

4、Type 4WEH32：

Operating pressure, max. （MPa）			H-4WHE25						4WEH25					
- Port P、A、B			to 35						to 28					
- Port T	Pilot oil drain external （MPa）		to 25											
	Pilot oil drain internal （MPa）		solenoid（DC）－						solenoid（AC）～					
			to 16						to 10					
			It's impossible for pressure centred 3-position valve to pilot oil drain internal											
- Port Y	Pilot oil drain external （MPa）		solenoid（DC）－：16；solenoid（AC）=：10											
Pilot pressure, min.	Pilot oil supply external （MPa） Pilot oil supply internal （MPa）		3-position valve,0.8 2-position valve,with spring offset 1 2-position valve with hydraulic offset 0.5											
	pilot oil supply internal （MPa）		For spools F, G, H, P, T, V,C and Z (by means of a pre-load valve or a sufficiently large flow) 0.45											
Operating pressure, max. （MPa）			to 25											
Hydraulic fluid			Mineral oil ; Phospate ester											
Fluid temperature range （℃）			- 30 ～ + 80											
Viscosity range （mm^2/s）			2.8 ～ 500											
Pilot oil volume for shifting operation														
- 3-position valve, spring-centred （cm^3）			29.4											
- 2-position valve, spring-centred （cm^3）			58.8											
- 3-position valve, pressure-centred														
from "O" position to shifted position "a" （cm^3）			14.4											
from shifted position "a" to "O" position （cm^3）			15.1											
from "O" position to shifted position "b" （cm^3）			29.4											
from shifted position "b" to "O" position （cm^3）			14.4											
from "O" position to shifted position（AC and DC solenoid）：														
at pilot pressure （MPa）			～ 5 =				～ 15 =				～ 25 =			
- 3-position valve, spring-centred （ms）			75		105		55		90		45		80	
- 2-position valve, spring-centred （ms）			120		155		100		135		90		125	
- 3-position valve, pressure-centred （ms）			a	b	a	b	a	b	a	b	a	b	a	b
			50	60	100	105	40	45	85	95	35	40	85	95
*from shifted position to "O" position：														
- 3-position valve, spring-centred			60…75 for ～；50 for =											
- 2-position valve, spring-centred （ms）			115…130		90		85…100		70		65…80		65	
- 3-position valve, pressure-centred （ms）			a	b	a	b	a	b	a	b	a	b	a	b
			35…65		30	40	60…90		30		105…185		50	
Installation position			optional; valve with hydraulic spool return (spools C, D, K, Z, Y) horizontal											
Pilot oil flow for shortest shifting time （L/min）			approx. 50											
Weight （kg）	Valve with one solenoid		approx. 40.5											
	Valve with two solenoids		approx. 41 WH approx. 39.5											
* Shifting time = Contacting at the pilot valve up to start of opening of the control land in the main valve														

Electric date

kinds of volt		DC	AC
Volt	(V)	12、24、42、60、96、 110、180、195 、220	42、110、127、220/50Hz 110、120、220/60Hz
Consume power	(W)	26	-
Absorb power	(VA)	-	46
Starup power	(VA)	-	130
Duty		Continuous	
Circumstance temperature	(℃)	+50	
Coil temperature	(℃)	+50	
Protective setting		IP65	

Performance limits: (measured at v = 41 mm^2/s and t= 50℃)

The shifting performance limits down are valid for applications with two directions of flow (e.g. from P to A and simultaneous return flow from B to T).As a result of the flow forces ccurring within the valve with only one direction of flow (e.g. from P to A with port B blocked)the permissible performance limits may be considerably lower!(In the case of applications of this kind, please consult us.)

The performance limits were determined with the solenoid at operating temperature, 10% undervoltage and with no tank pre-loading.

Type WEH 10

Way	Kinds of spring keeping	spool	Operating pressure in MPa		
			20	25	32
4/2-way	main valve without spring	HC-HD-HK-HZ-HY	160		
		HC../O-HD../O HK../O..-HZ.O	160		
		HC../OF-HD../OF.. HK../OF..-HZ.O.F	160		
	spring offset	C.D.K.Z.Y	160		
4/3-way	spring-centred	E.J.L.M.Q.U.W.R.V	160		
		H	160	150	120
		G.T	160		140
		F.P	160	160	160

Type WEH 16

Way	Kinds of spring keeping	spool	Operating pressure in Mpa					description
			7	14	21	28	35	
4/2-way	spring offset	C	300	300	300	300	300	Spool H .F .P .G .S, Pre-load valve, required for X = internal
		D.Y	300	270	260	250	230	
		K	300	250	240	230	210	
		Z	300	260	190	180	160	
	spring offset	for all spools	300	300	300	300	300	at pilot pressure of 1.2 MPa
	hydraulic offset	C.D.K.Z.Y	300	300	300	300	300	
4/3-way	spring-centred	D.H.J.L.M. Q.U.W.R	300	300	300	300	300	
		F.P	300	250	180	170	150	
		G.T	300	300	240	210	190	
		S	300	300	300	250	220	
		V	300	250	210	200	180	
	pressure-centred	for all spools	300	300	300	300	300	at pilot pressure of 1.6 MPa

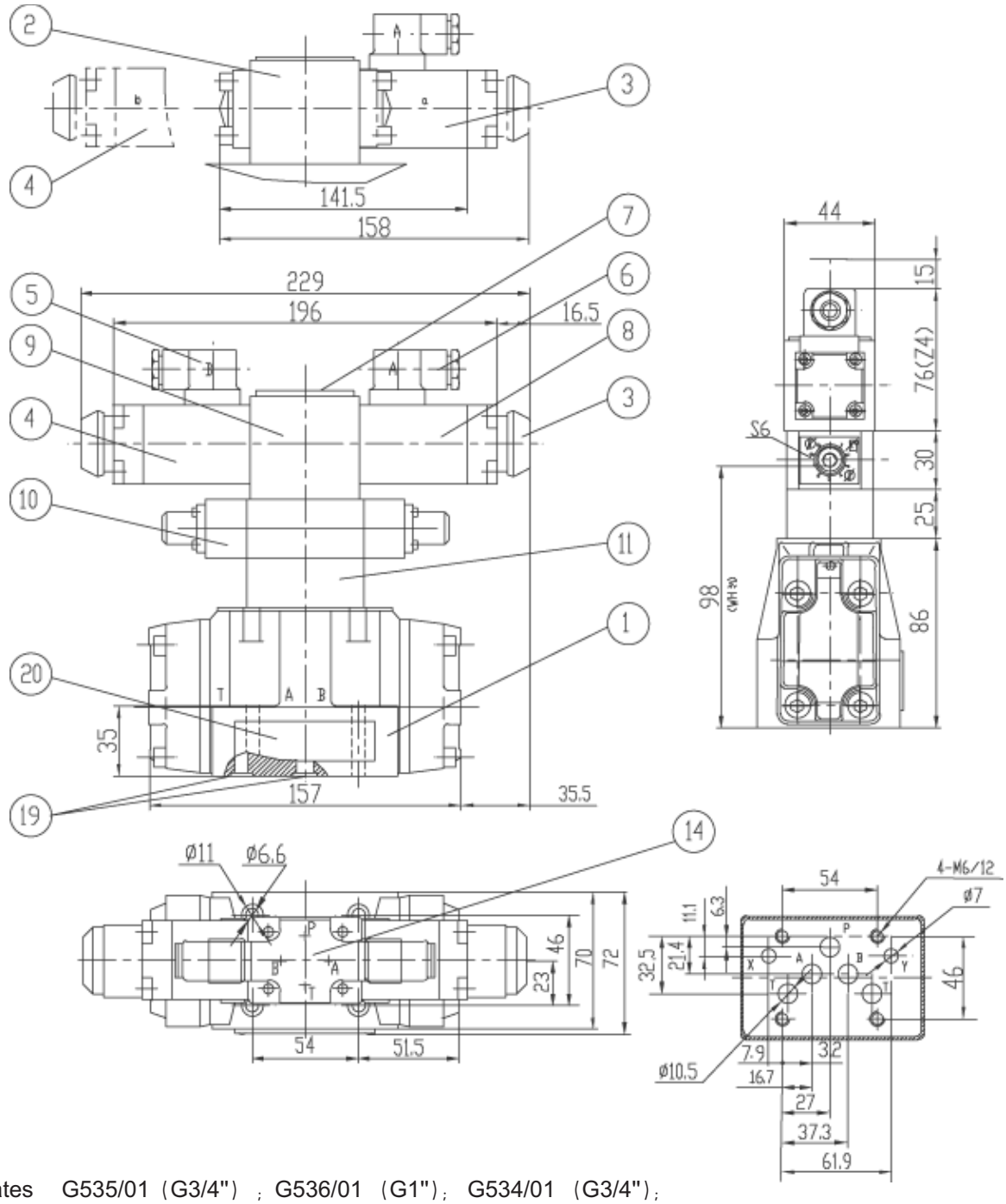
Type WEH 25

Way	Kinds of spring keeping	spool	Operating pressure in Mpa					description
			7	14	21	28	35	
4/2-way	spring offset	C	650	650	650	650	650	Spools C、Z in general,Pre-load valve, required for X=inter, flow up to approx.180 L/min
		D.Y	650	650	400	350	300	
		K	650	650	420	370	320	
		Z	650	650	650	480	400	
	spring offset	for all spools	650	650	650	650	650	min.at pilot pressure of 1.3 MPa
	without spring	C.D.K.Y	650	650	650	650	650	Spools C、Z in general,Pre-load valve, required for X=inter, flow up to approx.180 L/min
	detent	C.D.K.Y	650	650	650	650	650	
4/3-way	spring-centred	E.L.M.Q.U.W	650	650	650	650	650	Spools C、T、F、P、H in general,Pre-load valve, required for X=inter flow up to approx.180 L/min
		H.	650	650	550	400	360	
		F.	650	550	430	330	300	
		G.T	400	400	400	400	400	
		P	650	550	430	330	300	
		J	650	650	650	600	520	
		R	650	650	650	650	580	
		V	650	500	400	350	310	
	pressure-centred	E.F.H.J.L.M P.Q.R.U.V.W	650	650	650	650	650	at pilot pressure of 1.8 MPa
		G.T	400	400	400	400	400	
		G.T	650	650	650	650	650	at pilot pressure of 3 MPa

Type WEH 32

Way	Kinds of spring keeping	spool	Operating pressure in MPa					description
			7	14	21	28	35	
4/2-way	spring offset	D.Y	1100	1040	540	480	420	
		C	1100	1040	860	800	700	
		Z	1100	1040	860	700	650	
		K	1100	1040	860	500	450	
	hydraulic offset	for all spools	1100	1040	860	750	680	at pilot pressure of 1 MPa
4/3-way	spring-centred	E.J.L.M.Q.R.U.W	1100	1040	860	750	680	Spools C、T、F、P、H in general,Pre-load valve, required for X=inter flow up to approx.180 L/min
		H.G.F.T.P.	900	900	800	650	450	
		V	1000	1000	680	500	450	
	pressure-centred	for all spools (at pilot pressure of 0.85 MPa)	1100	1040	860	750	680	

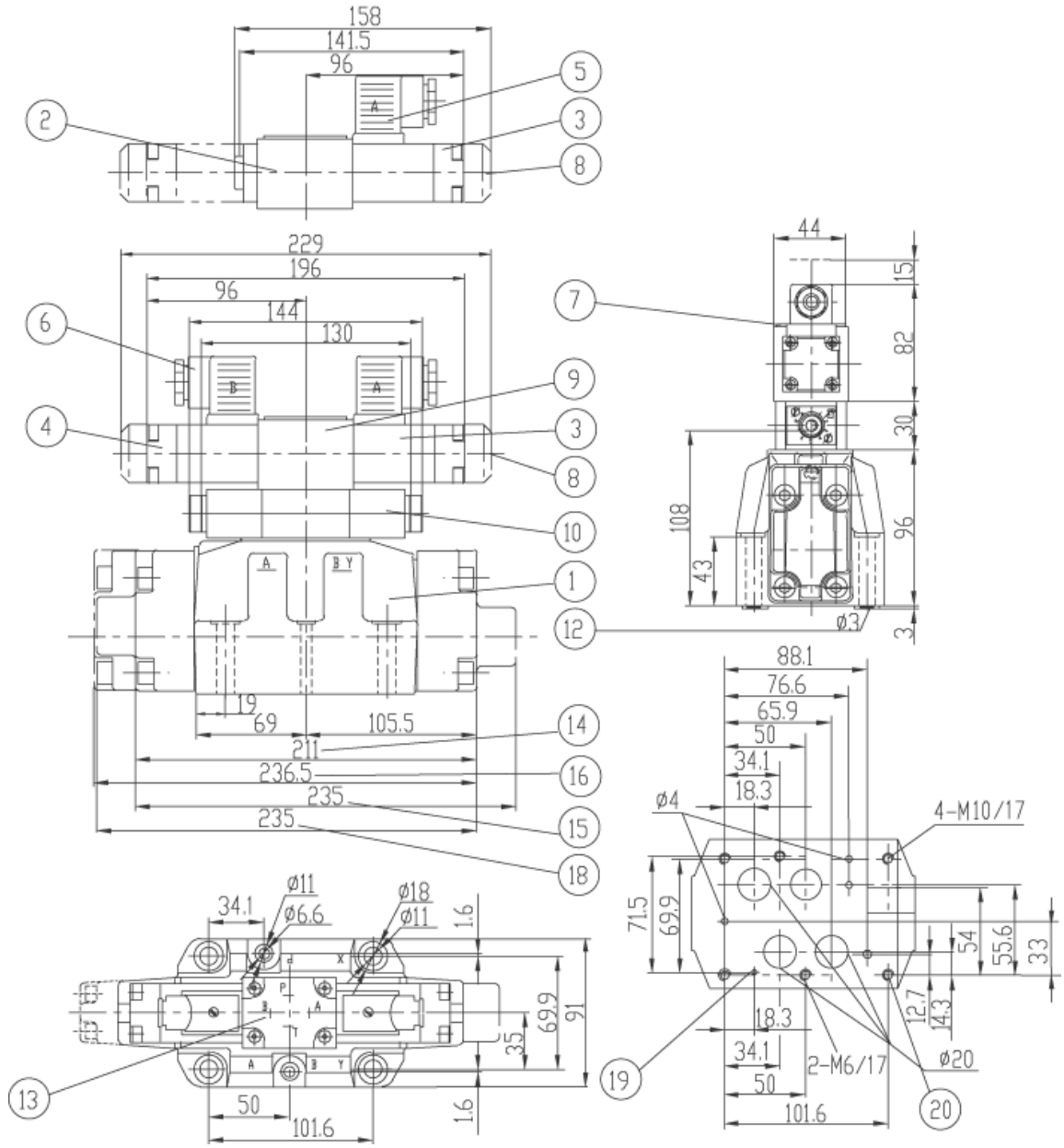
Unit dimensions: Type 4WEH 10 ... **(Dimensions in mm)**



Subplates G535/01（G3/4"）；G536/01（G1"）；G534/01（G3/4"）；
G535/02（M27x2）；G536/02（M33x2）；G534/02（M27x2）see Page 206、207

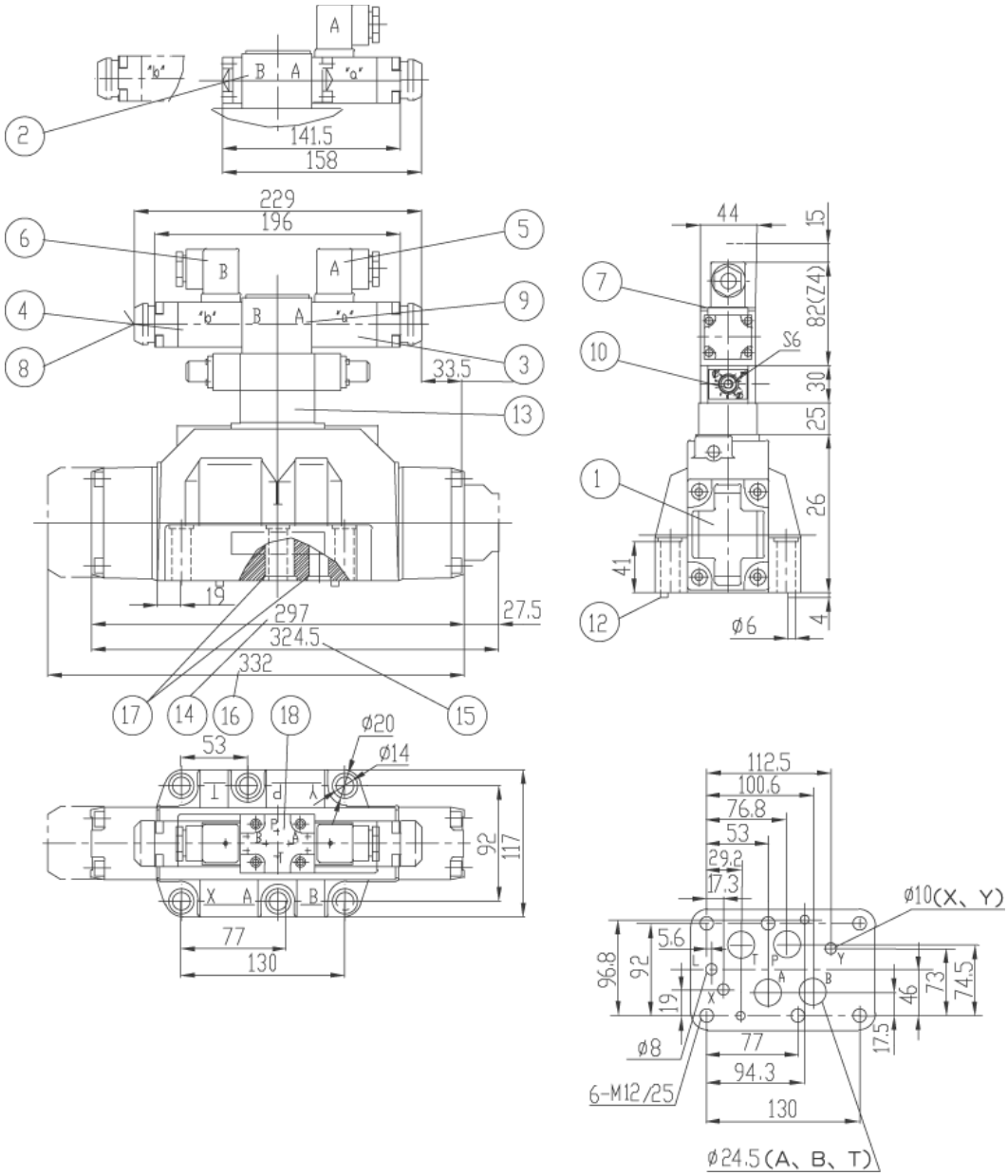
1 Main valve
2 2-position valve with one solenoid and plug-in Z4
3 Solenoid "a"
4 Solenoid "b"
5 Plug-in connector colour grey
6 Plug-in connector colour black
7 Nameplate
8 Manual override "N", optional
9 2 positions (2 solenoids) and plug-in Z4
3 positions (2 solenoids) and plug-in Z4
10 Double throttle/check valve
11 Reducing valve
14 The position for port A、B、P and T of pilot valve
19 O-Ring 12 x 2 for port A、B、P and T；O-Ring 10.82 x 1.78 for port X and Y
20 Nameplate
valves fixing screws
4 - M6 x 45 - 10.9
（GB/T70.1-2000）

Unit dimensions: Type 4WEH 16 ... **(Dimensions in mm)**



Subplates G172 / 01（G3/4"）; G172 / 02（M27x2）; G174 / 01（G1"）;
G174 / 02（M33x2）; G174 / 08 see Page 206、207

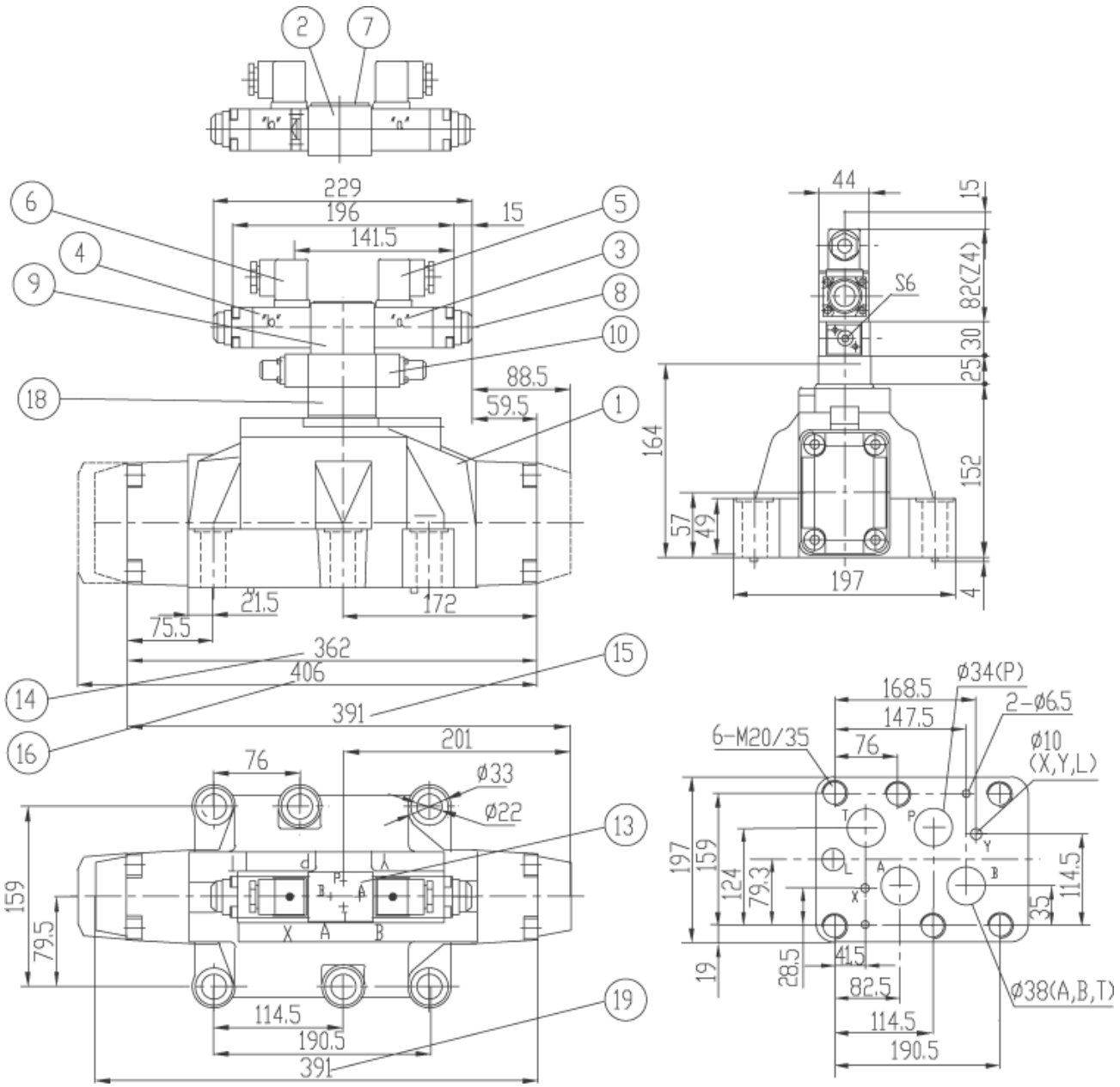
1 Main valve
2 2-position valve with one solenoid
3 Solenoid "a"
4 Solenoid "b"
5 Plug-in connector colour grey
6 Plug-in connector colour black
7 Nameplate for the pilot valve
8 Manual override "N", optional
9 2-position valve with two solenoids and plug Z4
3-position valve with two solenoids and plug Z4
10 Double throttle/check valve
12 Two fixing pins
13 The position for port A、B、P and T of pilot valve
14 3-position valve, spring-centred
2-position valve, pressure-centred
15 2-position valve, with spring offset（C .D .K .Z）
16 3-position valve, pressure-centred
18 2-position valve, with spring offset(Y)
19 Fixing pin hole (Φ 4H12 depth 8)
20 Tightening screws for valves
4 - M10 x 60 -10.9（GB/T70.1-2000）
2 - M 6 x 60 -10.9（GB/T70.1-2000）



Subplates G151/ 01（G1"）；G153 / 01（G1"）；G154 / 01（G11/4"）；
G151 / 02（M33x2）；G153 / 02（M33x2）；G154 / 02（M42x2）；
G156 / 01（G11/2"）；G156 / 02（M48x2）； see Page 209

1 Main valve
2 2-position valve with one solenoid and plug Z4
3 Solenoid "a"
4 Solenoid "b"
5 Plug-in connector colour grey
6 Plug-in connector colour black
7 Nameplate for the pilot valve
8 Manual override "N", optional
9 2 positions (2 solenoids)
3 positions (2 solenoids)
10 Double throttle/check valve
12 Two fixing pins
13 Reducing valve
14 3-position valve, spring-centred
2-position valve, hydraulic offset
15 2-position valve, spring-centred
spring offset （C、D、K、Z）
16 3-position valve, pressure-centred
17 O-Ring 27 x 3 for port A、B、P and T；O-Ring 19 x 3 for port X and Y
18 The position for port A、B、P of pilot valve
fixing screws
6 - M 12 x 60 -10.9（GB/T70.1-2000）

Unit dimensions: Type 4WEH 32 ... **(Dimensions in mm)**



Subplates G157/ 01（G1/2"）；G157 / 02（M48x2）； G158 / 10）； see Page 210、211

1 Main valve
2 2-position valve with one solenoid and plug Z4
3 Solenoid "a"
4 Solenoid "b"
5 Plug-in connector colour grey
6 Plug-in connector colour black
7 Nameplate for the pilot valve
8 Manual override "N", optional
9 2 positions (2 solenoids)
3 positions (2 solenoids)
10 Double throttle/check valve
12 Two fixing pins
13 The position for port A、B、P and T of pilot valve
14 3-position valve, spring-centred
2-position valve, hydraulic offset
15 2-position valve, spring offset (C、D、K、Z)
16 3-position valve, pressure-centred
18 Reducing valve
19 2-position valve, with spring offset
O-Ring 42 x 3 for port A、B、P and T；O-Ring 19 x 3 for port X and Y
fixing screws
6 - M 20 x 80 -10.9（GB/T70.1-2000）

Pilot valve:

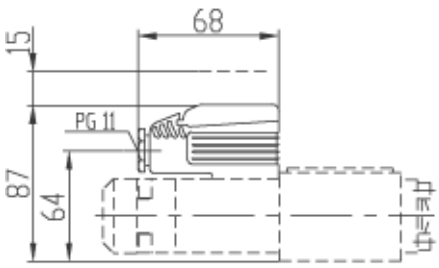
WEH used 4WE6 as pilot valve, the control spool is held in the neutral or initial position by means of reture spring, is held in the working position by solenoids or detent.

All spool of pilot valve see below table.

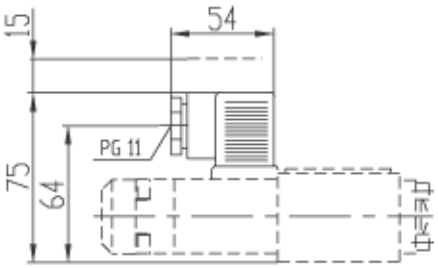
Main valve	Polit valve
3-position valve, spring-centred	spool J ,3-position valve 
3-position valve, pressure-centred	spool M ,3-position valve 
2-position valve Y · · · / · · · and HY · · · / · · ·	spool Y ,2-position valve（with spring offset） 
2-position valve C、D、K、Z and HC、HD、HK、HZ	spool D ,2-position valve  Type of polit valve：with spring offset without spring offset without spring offset,but with detent

Connection dimensions: **(Dimensions in mm)**

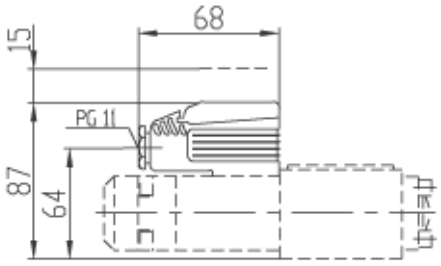
Z5
large plug-in connector



Z4
plug-in connector

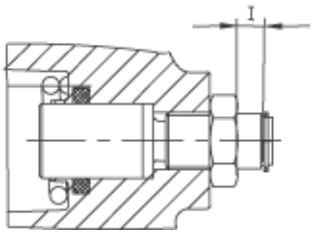


Z5 L
plug-in connector with indicator lamp



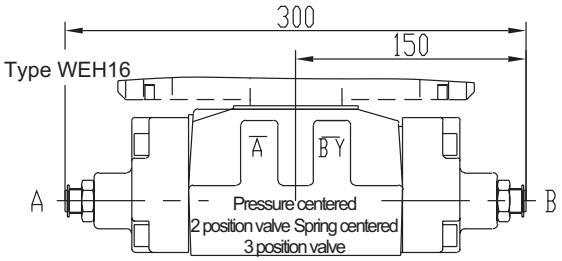
Additional equipment ： The stroke limiter

The stroke limiter limits the stroke of the control spool installed in the cover of main valve,change the moment time of form or spool by adjusting yard of valve orifice,must be without pressure.



Adjustment range (Dimensions in mm)

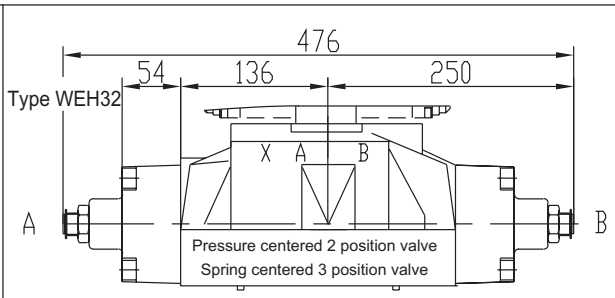
Size	Adjustment range	
WEH16	10	1 turn = 1.5 mm adjustment travel
WEH25	12	
WEH32	13	



Stroke limiter on sides A and B end of main valve

Stroke limiter on valve side A

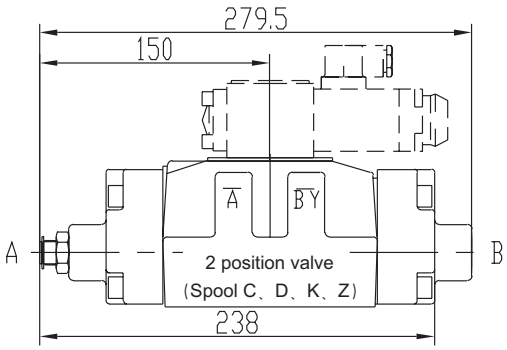
Stroke limiter on valve side B



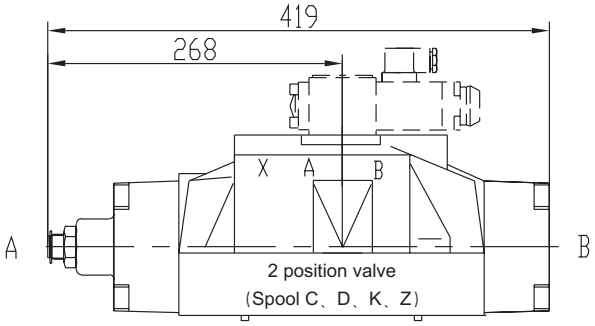
Stroke limiter on sides A and B end of main valve

Stroke limiter on valve side A

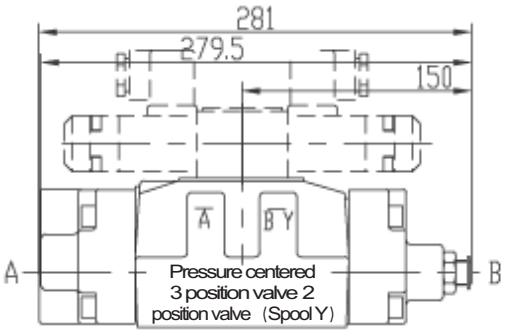
Stroke limiter on valve side B



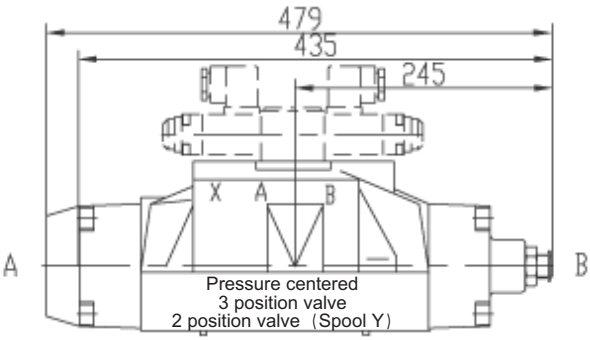
Stroke limiter on side A of valve



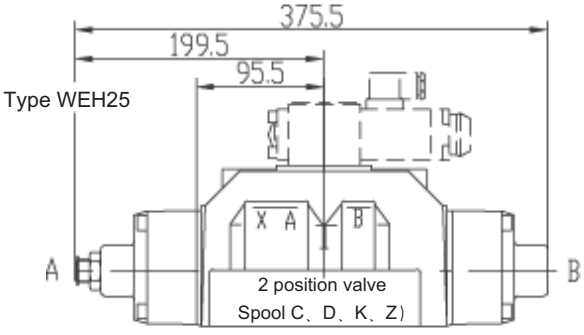
Stroke limiter on side A of valve



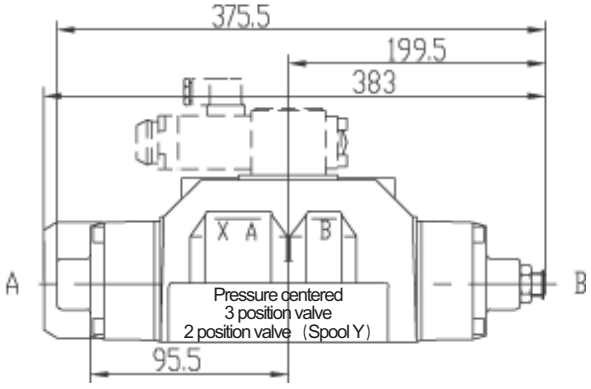
Stroke limiter on side B of valve



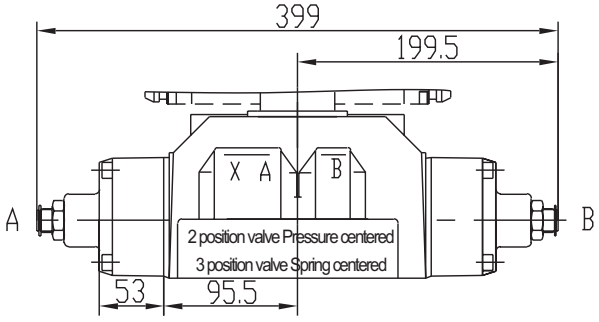
Stroke limiter on side B of valve



Stroke limiter on valve side A



Stroke limiter on valve side B



Stroke limiter on sides A and B end of main valve

Stroke limiter on valve side A

Stroke limiter on valve side B