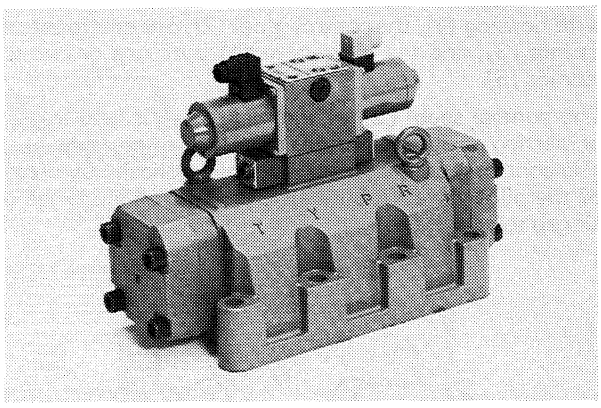
MANNESMANN REXROTH	4/3- and 4/2-Way Directional Control Valves Type WEH 52 / WH 52 Series 50			RE 24 793/7.82
	Size 52	... 350 bar	... 2000 L/min	Replaces: 24 792

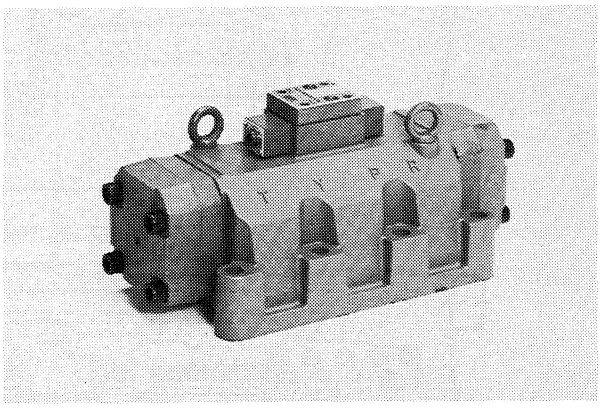
- indirekt (WEH) and direct operated (WH) directional spool valves
- subplate mounting dimensions to DIN 24 340, Form B
- subplate mounting
- flange connections
- DC or AC oil immersed or air gap solenoids, optional
- with or without hand emergency
- individual or central electrical connection
- spring centering or spring return, or pressure centering or hydraulic return of the main control spool to starting position
- pilot choke adjustment
- stroke limiting and/or end position control of main control spool
- with and without limit switch
- 17 standard symbols

K3417/4



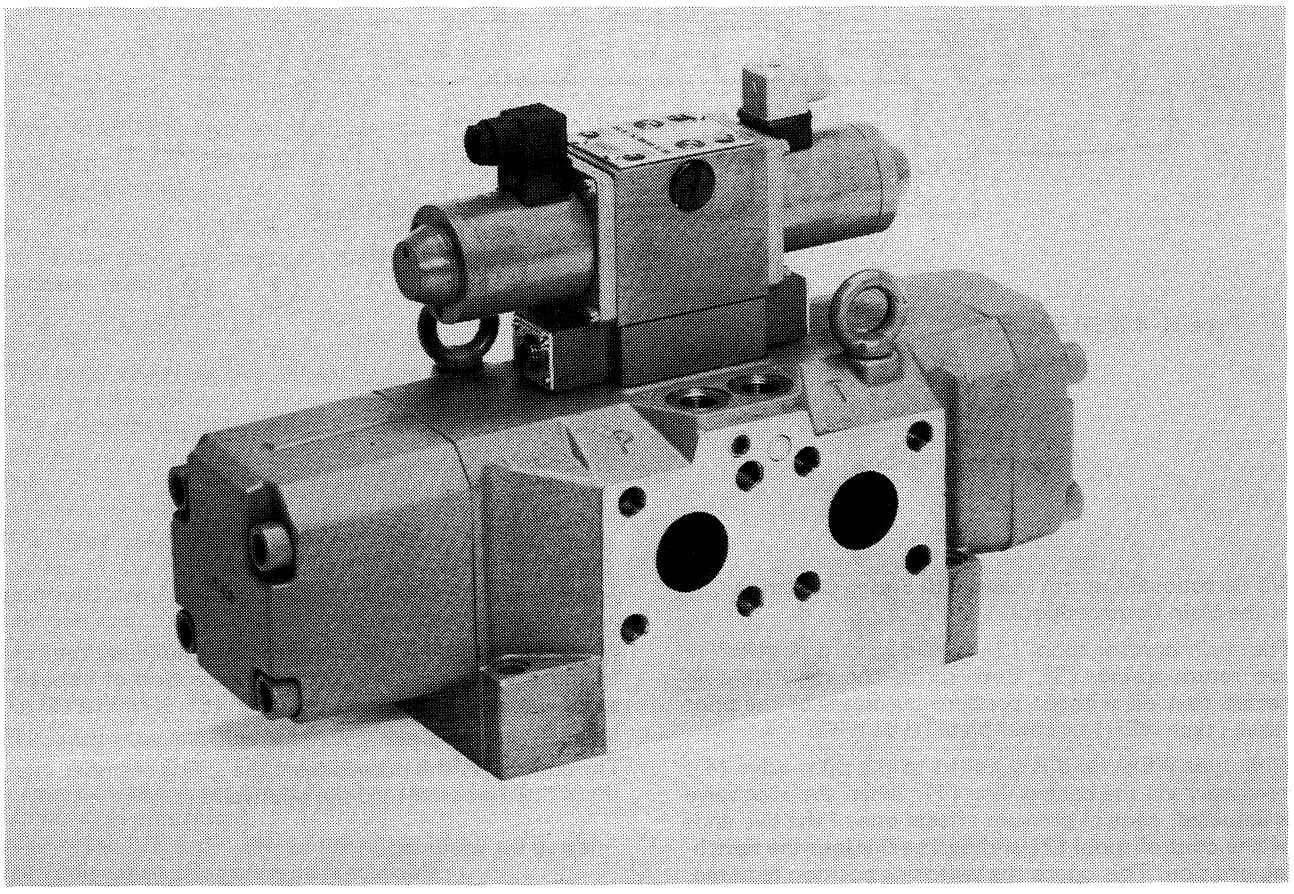
Type H-4 WEH 52 .. 50/.. S ..

K3417/6



Type H-4 WH 52 .. 50/.. S ..

K3417/1



Type H-4 WEH 52 H .. 50F/..10 ... S ...

Description of Function, Section

Directional Control Valves type WEH

Directional valves type WEH are directional spool valves with a solenoid operated pilot valve. They control starting, stopping and the direction of a flow.

These directional control valves comprise the main valve with housing (1), the control spool (2), one or two return springs (3), and the pilot valve (4) with one or two solenoids (5).

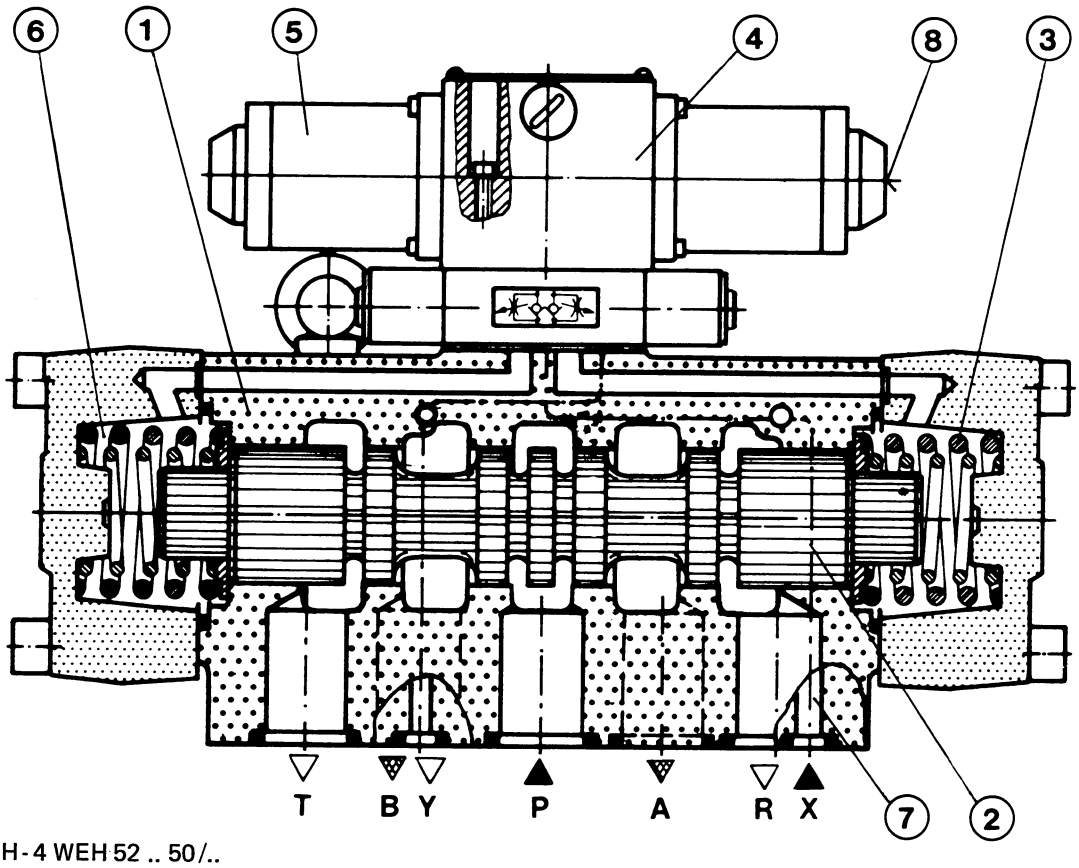
The control spool (2) of the main valve is held in zero or starting position by means of springs or pressure.
The control spool (2) is operated hydraulically by means of the pilot valve, fitted with DC or AC oil immersed or air gap solenoids (5).

A hand emergency device (8) can be fitted, which allows the control spool to be moved without energising the solenoid.

The fluid can be supplied and drained internally or externally.

Directional Control Valves type WH

The function of this valve is basically identical to that of valve type WEH.
However the control spool (2) is operated directly by means of pressure via the cover plate.



Type H-4 WEH 52 .. 50/..

4/3 Directional Control Valve with Spring Centering of the Main Control Spool

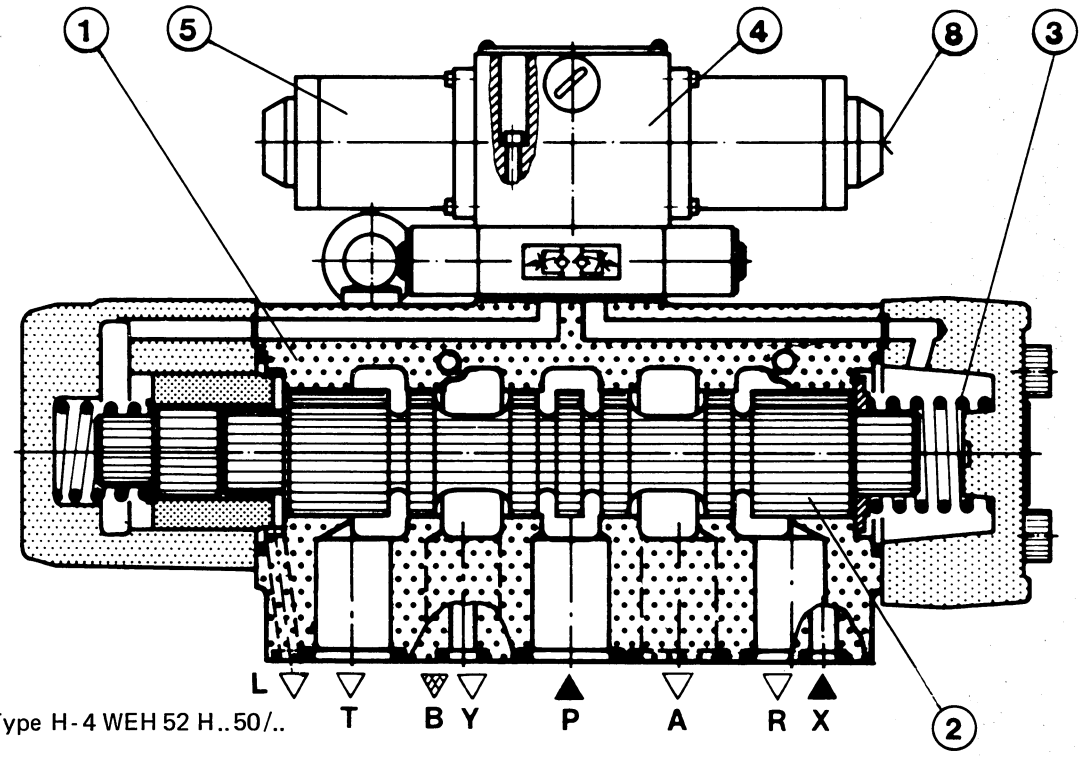
The main control spool (2) is held in zero position by two return springs (3). Both spring chambers are connected to tank without pressure by means of the pilot valve, (type WEH) or cover plate (type WH).

With type WEH fluid is supplied to the pilot valve (4), externally via the control line (7). When the pilot valve is actuated, control pressure affects one of the two ends of the control spool (2) and pushes this into the switching position. This opens the switching position required.

When the solenoid is de-energised, the pilot valve returns to the starting position (with the exception of impulse spool valves). The spring chamber (6) is unloaded to tank.

The control fluid is pushed from the spring chamber into the Y line (external) via the pilot valve.

Description of Function, Section



Type H-4 WEH 52 H..50/..

4/3 Directional Control Valve with Pressure Centering of the Main Control Spool

Control pressure affects the two ends of the main control spool (2) and holds it in zero position. The spool position is fixed by a centering bush in the housing.
The main spool (2) is moved to the operating position by removing pressure from one end of the spool.
Oil from this end of the spool is directed into the tank line via the pilot valve (external).

4/2 Directional Control Valve, WEH

Four different designs are available.

1. Type 4 WEH.../...

Pilot valve and main valve each have one return spring to fix the spool end position (guaranteed operation even if power fails).

2. Type 4 WEH..H../..

The pilot valve has one return spring, which holds the spool in end position.
The main control spool must be held in end position by pressure.

3. Type 4 WEH..H../O..

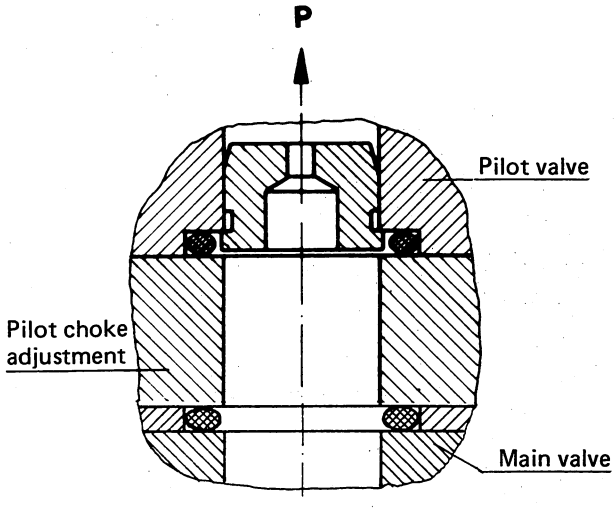
The pilot valve has 2 solenoids. There are no return springs in the pilot valve or in the main valve. The spool positions are fixed by means of solenoid energisation and pressure.
One solenoid must therefore always remain energised.

4. Type 4 WEH..H../OF..

The pilot valve has two solenoids, the spool has detents in switching position (impulse spool valve).
The main valve spool has no detents and moves into position when pressurised.
With types 2, 3 and 4 the switching positions are guaranteed only when pilot pressure is available.

Throttle Insert

It is necessary to use a throttle insert if the pilot supply in the P line of the pilot valve is to be limited.
It is fitted in the P line of the pilot valve.



Type H-4 WEH 52..50/...B...

Ordering Code

H – 4	W		52			50	/

Hydraulically operated	= H
Electro-hydraulically operated	= EH

Spool centering by springs (*)	= no desig.
Hydr. Spool centering (**) (spool return of main valve)	= H

Symbols with crossover pos. (subplate mounting)	Spool Types (subplate mounting)	Symbols with crossover pos. (flange connections)	Spool Types (flange connections)	
	= C		= C	spring return of spool only
	= D		= D	
	= K		= K	
	= Z		= Z	
	= (H)C		= (H)C	only hydr. spool return
	= (H)D		= (H)D	
	= (H)K		= (H)K	
	= (H)Z		= (H)Z	
	= E		= E	
	= F		= F	
	= G		= G	
	= H		= H	
	= J		= J	
	= L		= L	
	= M		= M	
	= Q		= Q	
	= R		= R	
	= S		= S	
	= T		= T	
	= U		= U	
	= V		= V	
	= W		= W	

see pages 6 and 7

Series 50 (50 – 59 = installation and connection dimensions remain unchanged)	= 50

Subplate mounting	= no desig.
Flange connections	= F

Control of spool positions for 2 position valves (2 solenoids) (pilot valve).
Only the pilot valve has a detents.
In both cases, hydraulic spool return "H" should be stated (possible with WEH only).

Without spring return	= O
Without spring return with detent	= OF

Ordering example: (*) Spool return by springs Type H-4 WEH 52 C 50/...
(**) Hydraulic spool return Type H-4 WEH 52 HC 50/...

10					/			*

Further details to be stated in text

no desig. =	mineral oils to DIN 51 524 and 51 525
V =	phosphate ester

no desig. =	without throttle insert
B 08 =	throttle dia. 0.8 mm
B 10 =	throttle dia. 1.0 mm
B 11 =	throttle dia. 1.1 mm
B 12 =	throttle dia. 1.2 mm
B 15 =	throttle dia. 1.5 mm
	(possible with WEH only)

Acessory number (see pages 18 & 19)

Electrical connection, for type letter (see pages 16 & 17)

no desig. =	without pilot choke adjustment
S =	pilot choke adjustment as meter-in control
S2 =	pilot choke adjustment as meter-out control

no desig. =	without hand emergency
Y =	with hand emergency

G24 =	24 V DC
W220 - 50 =	220 V AC, 50 Hz
W110 R =	DC solenoids with built-in rectifier for 110 V AC, independent of frequency

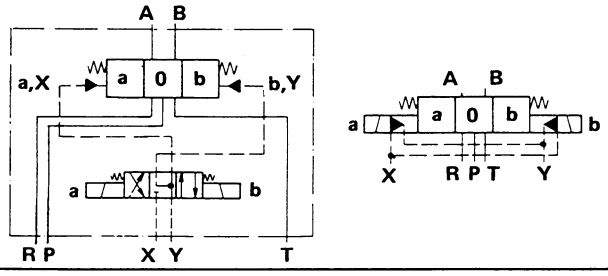
* (possible only with plug "Z5" (e.g. ..R..Z5..)
for further voltages and frequencies, see page 10

A =	pressure tight solenoid (oil immersed)
L =	dry solenoid (air-gap)

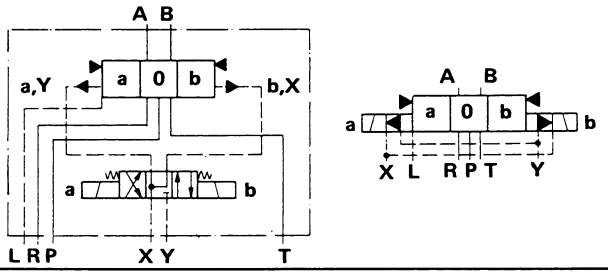
Symbols

Detailed and simplified symbols for 3 position valves

Valve type WEH with spring centered zero position

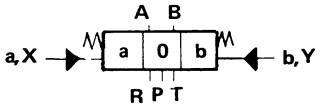


Valve type WEH with pressure centered zero position

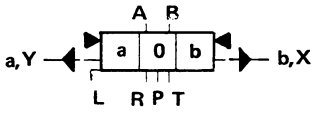


X = external, Y = external

Valve type WH with spring centered zero position



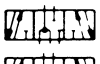
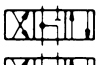
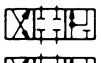
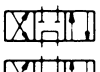
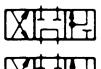
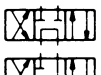
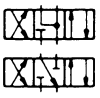
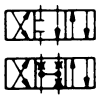
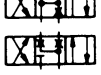
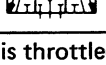
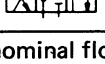
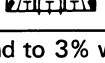
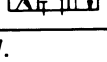
Valve type WH with pressure centered zero position



Valves for subplate mounting have 5 service ports: A, B, P, T, R
Valves for flange connections have 4 service ports: A, B, P, T; port R omitted

G2

Model code spring centered zero position (WEH)	Model code pressure centered zero position (WEH)	Model code spring centered zero position (WH)	Model code pressure centered zero position (WH)
H-4 WEH 52...E.../...	H-4 WEH 52...HE.../...	H-4 WH 52...E.../...	H-4 WH 52...HE.../...
H-4 WEH 52...F.../...	H-4 WEH 52...HF.../...	H-4 WH 52...F.../...	H-4 WH 52...HF.../...
H-4 WEH 52...G.../...	H-4 WEH 52...HG.../...	H-4 WH 52...G.../...	H-4 WH 52...HG.../...
H-4 WEH 52...H.../...	H-4 WEH 52...HH.../...	H-4 WH 52...H.../...	H-4 WH 52...HH.../...
H-4 WEH 52...J.../...	H-4 WEH 52...HJ.../...	H-4 WH 52...J.../...	H-4 WH 52...HJ.../...
H-4 WEH 52...L.../...	H-4 WEH 52...HL.../...	H-4 WH 52...L.../...	H-4 WH 52...HL.../...
H-4 WEH 52...M.../...	H-4 WEH 52...HM.../...	H-4 WH 52...M.../...	H-4 WH 52...HM.../...
H-4 WEH 52...Q.../...	H-4 WEH 52...HQ.../...	H-4 WH 52...Q.../...	H-4 WH 52...HQ.../...
H-4 WEH 52...R.../...	H-4 WEH 52...HR.../...	H-4 WH 52...R.../...	H-4 WH 52...HR.../...
H-4 WEH 52...S.../...	H-4 WEH 52...HS.../...	H-4 WH 52...S.../...	H-4 WH 52...HS.../...
H-4 WEH 52...T.../...	H-4 WEH 52...HT.../...	H-4 WH 52...T.../...	H-4 WH 52...HT.../...
H-4 WEH 52...U.../...	H4- WEH 52...HU.../...	H-4 WH 52...U.../...	H-4 WH 52...HU.../...
H-4 WEH 52...V.../...	H-4 WEH 52...HV.../...	H-4 WH 52...V.../...	H-4 WH 52...HV.../...
H-4 WEH 52...W.../...	H-4 WEH 52...HW.../...	H-4 WH 52...W.../...	H-4 WH 52...HW.../...

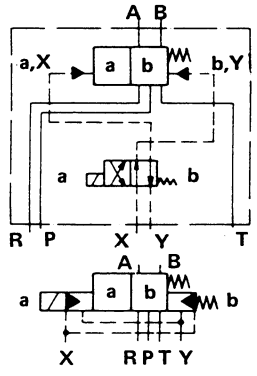
Designation letter	Symbol (subplate mounting)	Symbol (flange connections)	Designation letter	Symbol (subplate mounting)	Symbol (flange connections)
E			Q		 *
F			R		
G			S		
H			T		
J			U		
L			V		 *
M			W		 *

The centre position is throttled to 14% of nominal flow with symbols Q and V, and to 3% with symbol W.

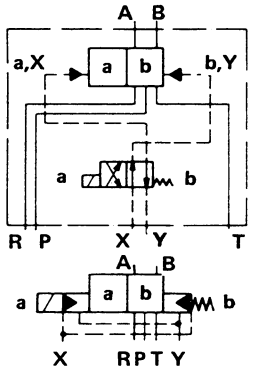
Symbols

Detailed and simplified symbols for 2 position valve (to DIN 24 300)

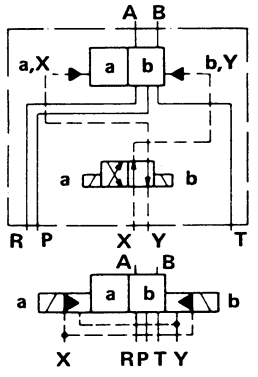
Type H-4 WEH 52.../...



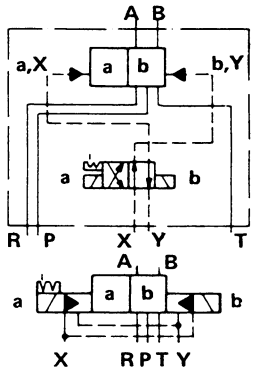
Type H-4 WEH 52 H.../...



Type H-4 WEH 52.H.../O...

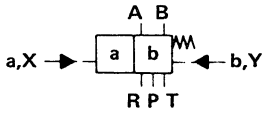


Type H-4 WEH 52.H.../OF...

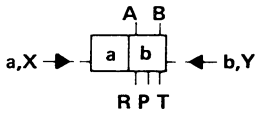


X = external; Y = external

Valve type WH, spring offset



Valve type WH, hydraulic return



Designation letter	Symbol (subplate mounting)	Symbol (flange connections)
C (HC)		
D (HD)		
K (HK)		
Z (HZ)		

Technical Data

hydraulic

Max. operating pressure P, A, B		(bar)	350	
Max. tank pressure T (R)		(bar)	250	
Port Y	pilot drain Y = external (WEH)	(bar)	solenoid type L ... 150	solenoid type A ... 60
Min. pilot pressure	pilot supply X = external	(bar)	12 3 pos. valve, spring centered 15 3 pos. valve, pressure centered 12 2 pos. valve, spring offset 12 2 pos. valve, hydraulic return	
Max. pilot pressure		(bar)	250	
Hydraulic medium			mineral oil to DIN 51 524 and 51 525 phosphate ester	
Fluid temperature range		(°C)	– 30 ... + 70	
Viscosity range		(mm^2/s)	2,8 ... 380	

Pilot oil volume for spool movement

3 pos. valve, spring centered	(cm^3)	66,5
2 pos. valve, hydraulic return	(cm^3)	133
2 pos. valve, spring offset	(cm^3)	66,5
3 pos. valve, pressure centered		
from zero pos. to pos. "a" (solenoid "a" switched)	(cm^3)	35
from zero pos. to pos. "b" (solenoid "b" switched)	(cm^3)	66,5
from switching pos. "a" to zero position	(cm^3)	31,5
from switching pos. "b" to zero position	(cm^3)	35

*** Total Operating Time of Valve from Zero Position to Operated Position (AC current)**

At pilot pressure	(bar)	50		150		250	
3 pos. valve, spring centered	(ms)	110		90		70	
2 pos. valve, hydraulic return	(ms)	170		130		110	
2 pos. valve, spring offset	(ms)	110		90		70	
3 pos. valve,		"a"	"b"	"a"	"b"	"a"	"b"
pressure centered	(ms)	80	110	70	90	60	70

*** Total Operating Time of Valve from Operated Position to Zero Position**

3 pos. valve, spring centered	(ms)	110					
2 pos. valve, hydraulic return	(ms)	170		130		110	
2 pos. valve, spring offset	(ms)	110		90		70	
3 pos. valve,		"a"	"b"	"a"	"b"	"a"	"b"
pressure centered	(ms)	90	110	80	80	80	80
Control flow for shortest switching time "Q_X"	(L/min)	50					

Weight:	subplate mounting		WH	WEH
	valve without pilot valve	(kg)	63,2	–
	valve with 1 solenoid	(kg)	–	67,5
	valve with 2 solenoids	(kg)	–	69,0
	flange connections			
	valve without pilot valve	(kg)	65,0	–
	valve with 1 solenoid	(kg)	–	69,4
	valve with 2 solenoids	(kg)	–	71,0

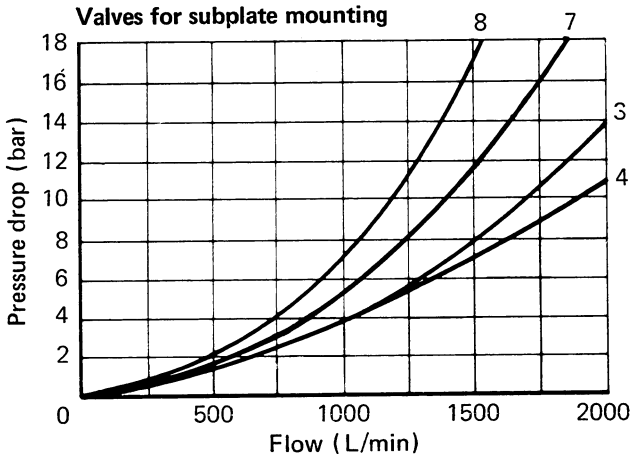
For applications outside the above parameters, please consult us.

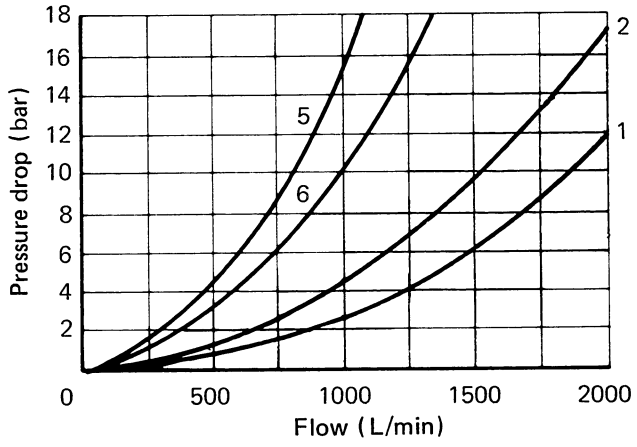
*** Operating Time** = contact at pilot valve until control lands in main valve start to open

With DC current, the operating times from zero position to operated position are incresed by 30 ms.

Performance Curves (measured at ν = 41 mm²/s (cSt) and t = 50°C)

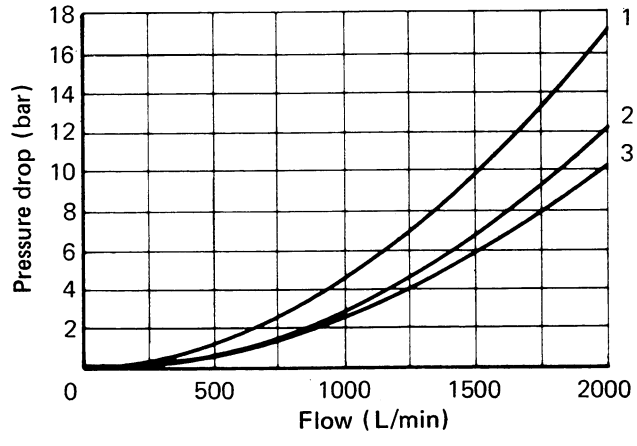
Valves for subplate mounting

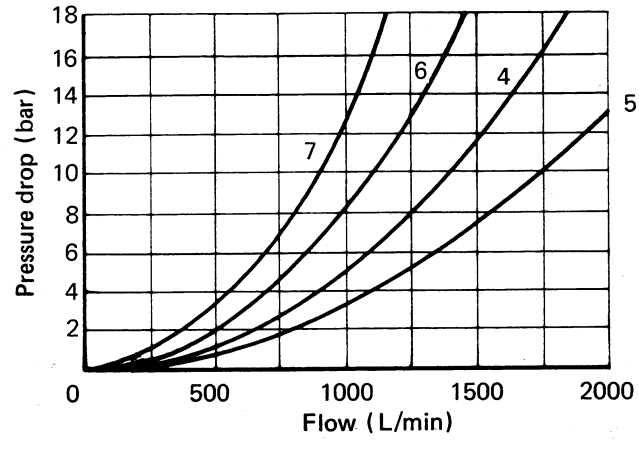




Symbol	spool position					
	P - A	P - B	A - T	B - T	P - T	B - A
C	1	1	1	2	—	—
D	1	1	1	2	—	—
K	1	1	1	2	—	—
Z	1	1	1	2	—	—
E	1	1	1	2	—	—
F	1	1	1	2	—	—
G + T	3	3	3	7	8	—
H	1	1	1	2	—	—
J	1	1	1	2	—	—
L	1	1	1	2	—	—
M	1	1	1	2	—	—
Q	1	1	1	2	—	—
R	4	4	4	—	—	8
S	4	4	4	—	5	6
U	1	1	1	2	—	—
V	1	1	1	2	—	—
W	1	1	1	2	—	—

Valves for flange connections





Symbol	Switching position					
	P - A	P - B	A - T	B - T	P - T	B - A
C	2	3	3	1	—	—
D	2	3	3	1	—	—
K	2	3	3	1	—	—
Z	2	3	3	1	—	—
E	2	3	3	1	—	—
F	2	3	3	1	—	—
G	2	5	2	4	6	—
H	2	3	3	1	—	—
J	2	3	3	1	—	—
L	2	3	3	1	—	—
M	2	3	3	1	—	—
R	5	2	3	—	—	6
S	5	2	3	—	7	6
T	2	5	2	4	6	—
U	2	3	3	1	—	—
V	2	3	3	1	—	—
W	2	3	3	1	—	—

G2

Performance Limitations

Because of silting, the switching function of the valves is dependent on the filtration. In order to obtain the maximum flow values shown, a full flow filtration of 25 mic- also influence the flow performance. On the 4 way valves, ron is recommended. The forces acting within the valves the flow data shown therefore apply for normal application with 2 flow directions (e.g. from P to A and simultaneously return flow from B to T). (See table). If only one direction of flow is required, as for example when a 4 way valve with port A or B plugged is used as a 3 way valve, then in critical cases the maximum flow can be considerably lower.

The performance limitation was measured with solenoids at operating temperature and 10% Reduction in voltage

NB:

At minimum control pressure of 15 bar, the performance limit for all spool types of the 4/3 way valve with hydraulic centering of the main valve is as shown in the column marked (*) in the table opposite. Higher pilot pressure is necessary for applications in excess of the performance limit stated.
When operating pressure p = 350 bar and
flow Q = 2000 L/min, control pressure of 25 bar is therefore required.
The maximum flow for these valves is therefore dependent only on the Δp value for the unit.

1) The flow rates specified can be reached if there is a minimum pilot pressure of 12 bar.

2) The flow rates specified are maximum rates, which can be controlled by release of the operating pressure from the return spring.

	3 position valve, spring centered					
	Flow (L/min)	at pressure (bar) or				
	for Spool types	70	140	210	280	350
	(*) E,J,L,M,Q,R, U,V,W	2000	1400	1150	1000	900
	F,G,H,S,T	1750	1230	1000	880	780
	2 position valve, spring offset 2 position valve, hydr. return					
2)	C,D,K,Z,	2000	1400	1150	1000	900
	HC,HD,HK,HZ	2000	2000	2000	2000	2000
	2 position valve, spring offset					
	Flow (L/min) for Spool types	70	140	210	280	350
1)	C,D,K,Z	2000	2000	2000	2000	2000

G2

Pilot Valve (WEH only)

A 4 way directional control valve size 10 (connection dimensions to DIN 24 340) is used as a pilot valve.
The valve spool is held in zero position by springs, and in switching position by solenoid force or detent.
Operation of the control spool is by means of oil immersed or air gap DC or AC solenoids.

Hand emergency allows operation of the spool without solenoid energisation.
The air gap solenoid is of simple design and is fully encapsulated and tropicalised.

The oil immersed solenoid has a long working life, and is fully encapsulated and tropicalised. The armature runs in oil, thus giving low wear, good heat dissipation and cushioned stop.

The AC solenoid has short switching times. Simple operation and no special contact protection are its main features.

The DC solenoid is extremely reliable, gives smooth operation and is suitable for high switching frequencies. It is not affected by voltage fluctuations in either direction.

For the various models of the main valve, the following models and spool types of the pilot valve are used.

Main valve	Pilot Valve
3 position valve, spring centered	3 position valve, spring centered spool type J = 
3 position valve pressure centered	3 position valve, spring centered spool type M = 
2 position valve spool types: C,D,K, and Z HC, HD, HK and HZ	2 position valve, spring offset without spring return with detent spool type D = 

Electrical Data

Voltages		DC		AC	
Solenoid type		Dry	Wet	Dry	Wet
Data sheet		RD 23 330	RD 23 196	RD 23 332	RD 23 197
Voltages available	(V)	12, 24, 42, 60, 96, 110, 180, 195, 220		42, 110, 127, 220, (50 Hz) 110, 120, 220, (60 Hz)	
Power requirement	(W)	43	35	–	–
Holding current	(VA)	–	–	64	130
In-rush current	(VA)	–	–	430	530
Duty cycle		continuous			
Ambient temperature	(°C)	... + 50			
Max. coil temperature	(°C)	... + 150			
Insulation to DIN 40050		IP 65			

For applications outside the above parameters, please consult us.

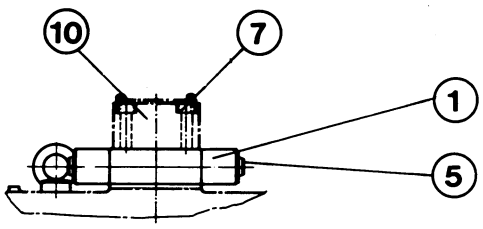
Sandwich plate for pilot choke adjustment type Z2 FS10

Pilot Choke Adjustment

The pilot choke adjustment, designed as a sandwich plate, can be fitted between the pilot valve and the main valve. This is a double throttle check valve (1).

The pilot supply or drain is throttled, depending on the mounting position of the pilot choke adjustment.

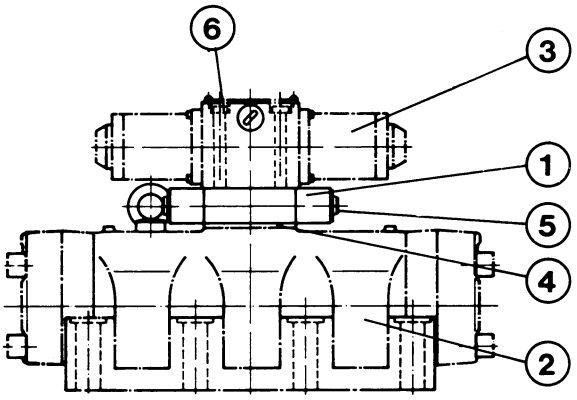
Clockwise rotation of the adjustment screw increases the switching time of the valve, anti-clockwise rotation decreases the operating time.



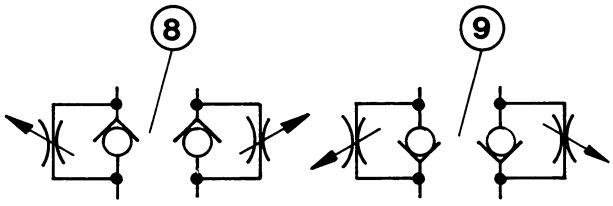
Type H-4 WH 52..50/... S or S2

Conversion from Meter-In to Meter-Out Control

Remove pilot valve, the plate for the seal rings remains; then turn the pilot choke adjustment round the horizontal axis and replace; replace pilot valve.



Type H-4 WEH 52..50/... S or S2



(1) Sandwich plate for pilot choke adjustment type Z2 FS10

(2) Main valve

(3) Pilot valve

(4) Plate for seal rings

(5) Adjustment screw A/F 8

(6) S.H.C.S. M6 x 85 DIN 912 - 10.9

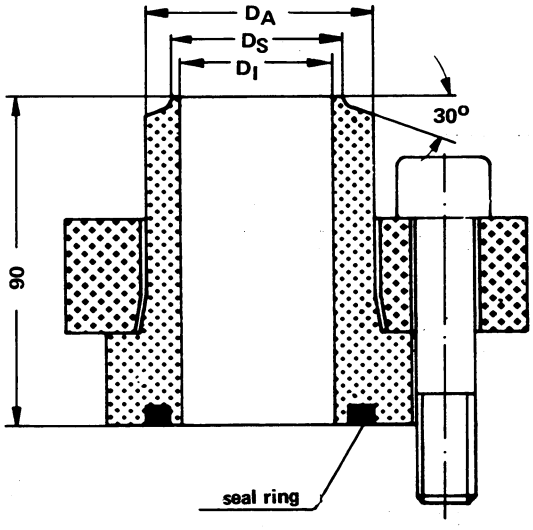
(7) S.H.C.S. M6 x 60 DIN 912 - 10.9

(8) Meter-out control

(9) Meter-in control

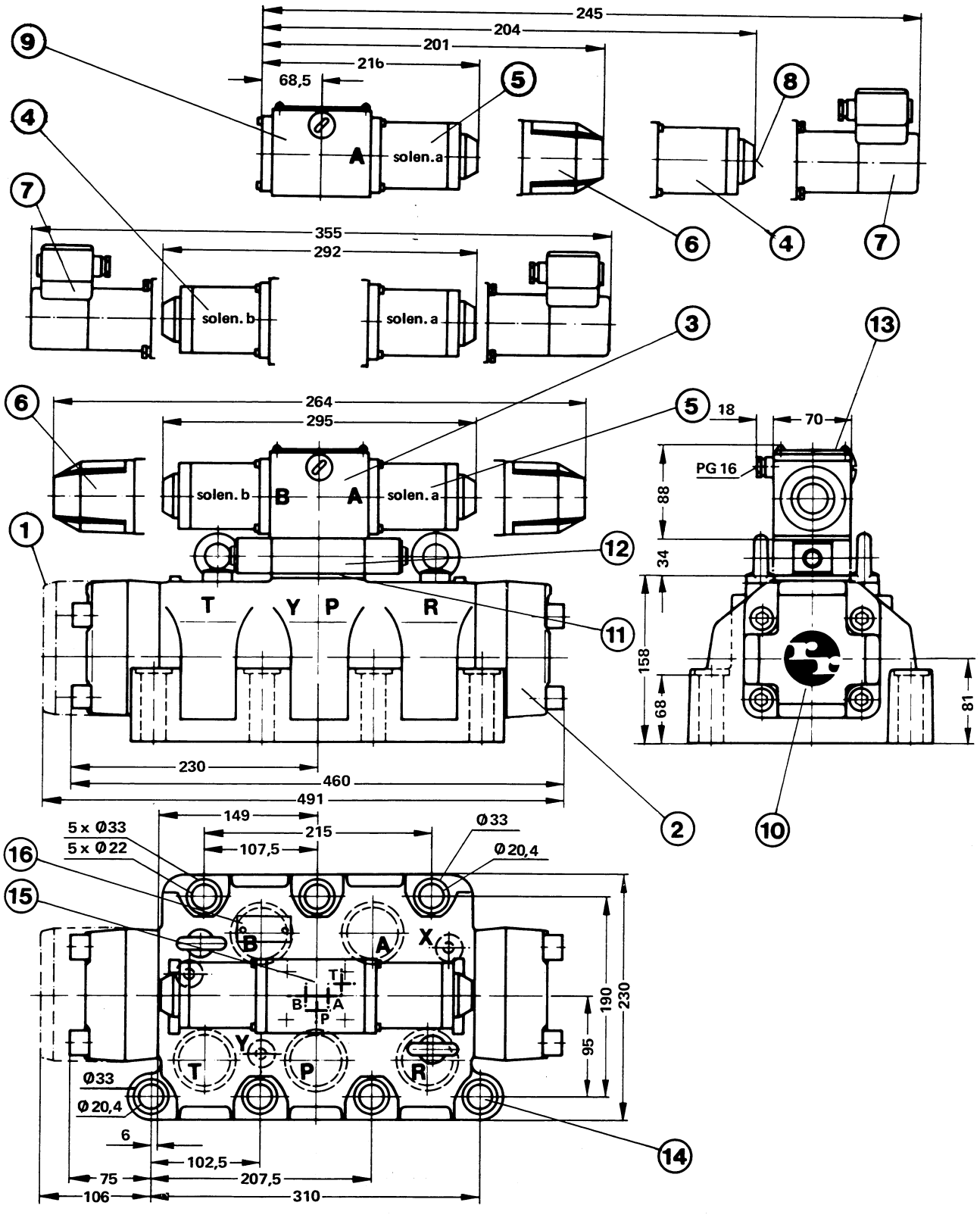
(10) Cover

Connection Flange (for valve with flange connections only) (dimensions in mm)



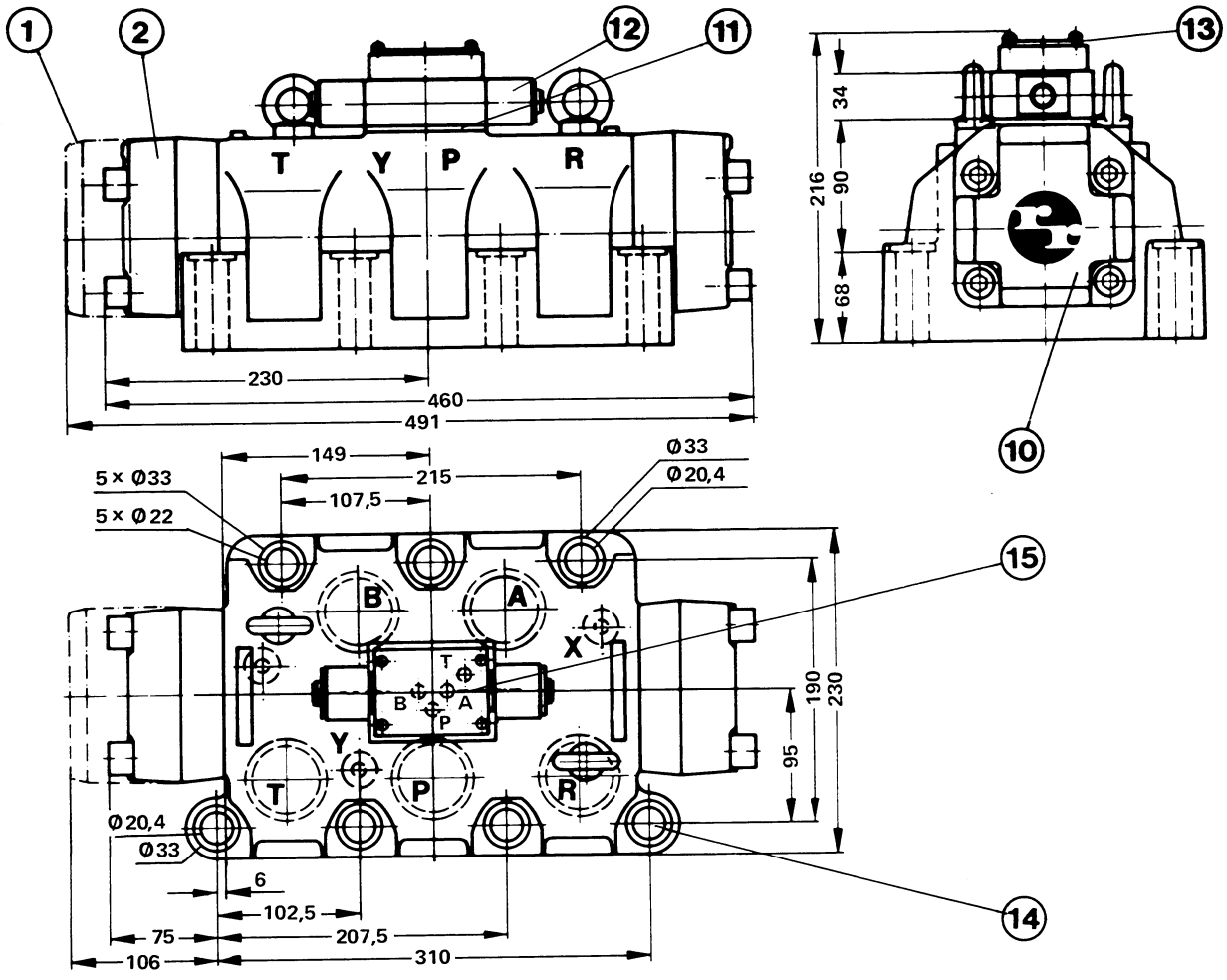
Pressure rating	Size	D_A	D_S	D_I	Fixing Screws	Seal ring	Part no. seal material Perbunan	Viton
160 bar	52	60,3	52	49,1	4 off S.H.C.S. M16 x 80 DIN 912 - 8.8 tightening torque 410 Nm	50,2 x 5,33	303 901	303 941
320 bar	52	60,3	47	44,3			303 921	303 961

Unit Dimensions: Valve Type WEH for Subplate Mounting (dimensions in mm)



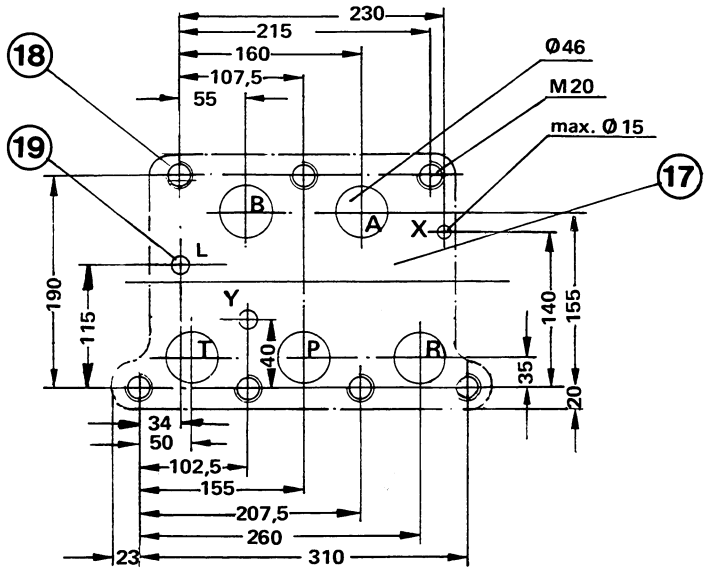
1. 3 position valve with pressure centered zero position
2. 3 position valve with spring centered zero position
   2 pos. valve with hydr. offset
   2 pos. valve, spring offset
3. 2 position valve with 2 solenoids
   3 position valve with 2 solenoids
4. DC or AC oil immersed solenoid
5. DC air gap solenoid
6. AC air gap solenoid
7. DC air gap solenoid with built-in limit switch
8. Hand emergency
9. 2 position valve with 1 solenoid
10. Main valve
11. Plate for O-rings
12. Pilot choke adjustment
13. Nameplate for pilot valve
14. 7 valve fixing screws
    M20 x 90 (for steel)
    M20 x 100 (for cast iron)
    tightening torque: 569 Nm
15. Position of pilot valve ports
16. Nameplate for complete valve

Unit Dimensions: Valve Type WH for Subplate Mounting (dimensions in mm)



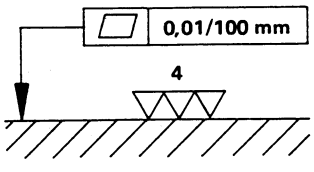
1. 3 position valve with pressure centered zero position
2. 3 position valve with spring centered zero position
   2 pos. valve with hydr. offset
   2 pos. valve, spring offset
10. Main valve
11. Plate for O-rings
12. Pilot choke adjustment
13. Nameplate for pilot valve
14. 7 valve fixing screws
    M20 x 90 (for steel)
    M20 x 100 (for cast iron)
    tightening torque: 569 Nm
15. Position of pilot valve ports

Main Valve Porting Pattern (Subplate Mounting)

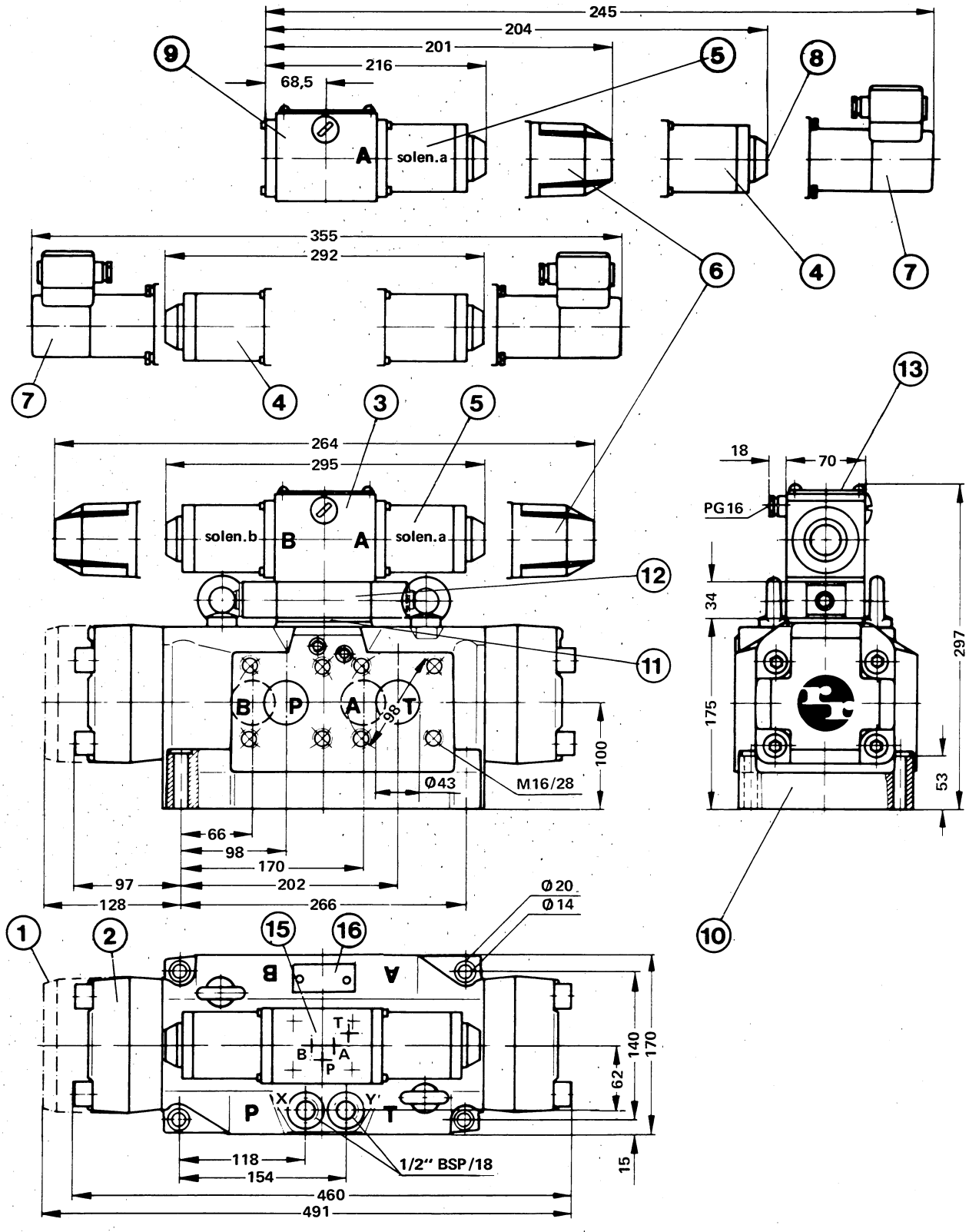


17. Main valve porting pattern
18. Machined valve mounting surface
19. Leakage port L on valves with pressure centered zero position only

Required surface finish of mounting area when not using our subplate

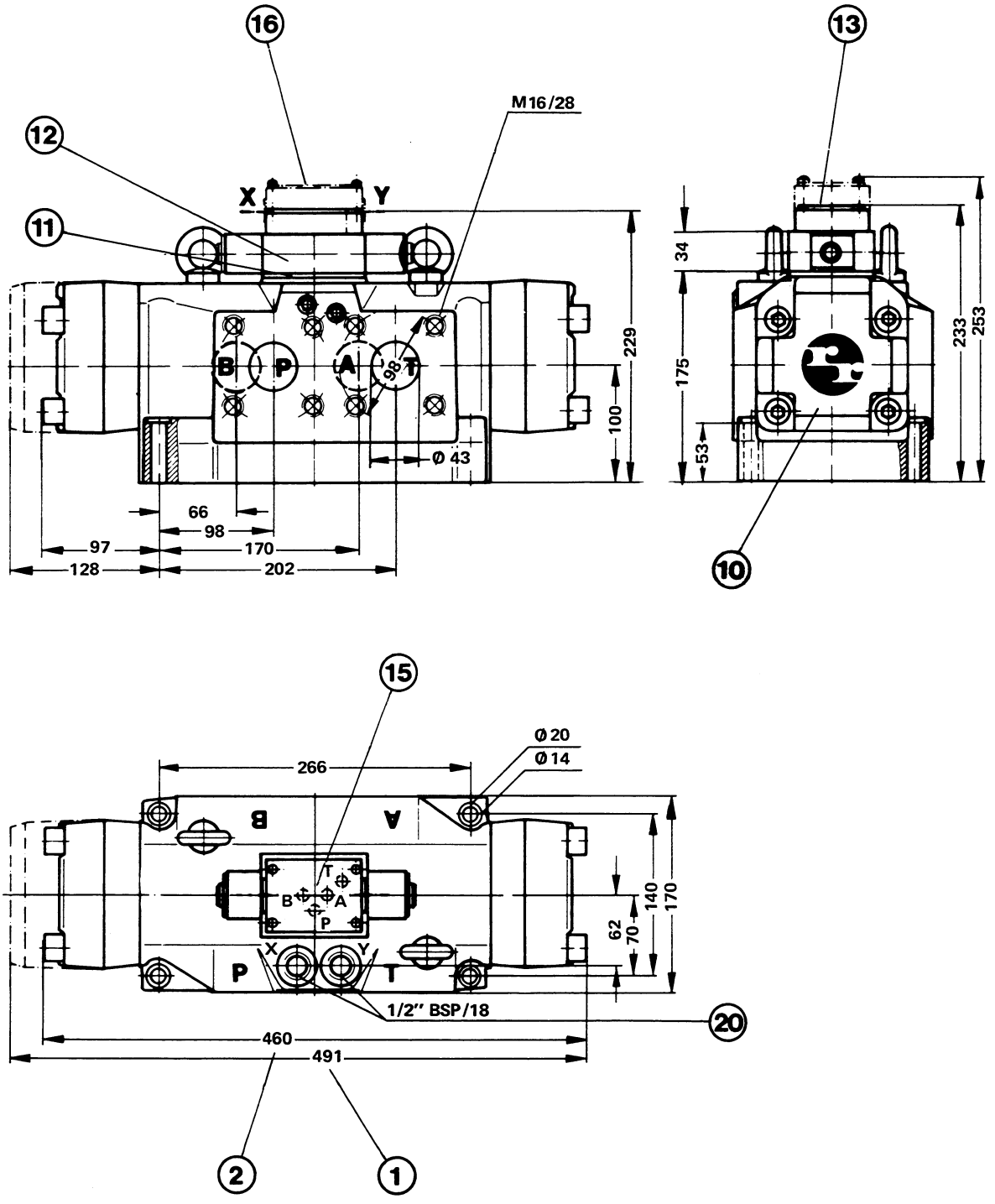


Unit Dimensions: Valve Type WEH for Flange Connections (dimensions in mm)



1. 3 position valve with pressure centered zero position
2. 3 position valve with spring centered zero position
   2 pos. valve with hydr. offset
   2 pos. valve, spring offset
3. 2 position valve with 2 solenoids
   3 position valve with 2 solenoids
4. DC or AC oil immersed solenoid
5. DC air gap solenoid
6. AC air gap solenoid
7. DC air gap solenoid with built-in limit switch
8. Hand emergency
9. 2 position valve with 1 solenoid
10. Main valve
11. Plate for O-rings
12. Pilot choke adjustment
13. Nameplate for pilot valve
15. Position of pilot valve ports
16. Nameplate for complete valve

Unit Dimensions: Valve Type WH for Flange Connections (dimensions in mm)



(1) 3 position valve with pressure centered zero position

(2) 3 position valve with spring centered zero position
2 pos. valve with hydr. offset
2 pos. valve, spring offset

(10) Main valve

(11) Plate for O-rings

(12) Pilot choke adjustment

(13) Nameplate for pilot valve

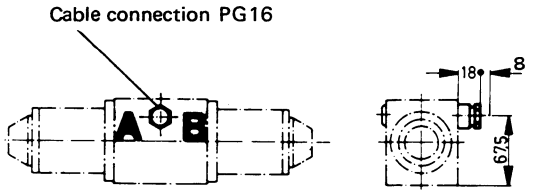
(15) Position of pilot valve ports

(20) Model for pressure centered zero position
Cover with line ports X and Y

(21) Port Y
oil drain on H-4 WH 52 H..;
port X closed

Electrical Connection as Central Connection

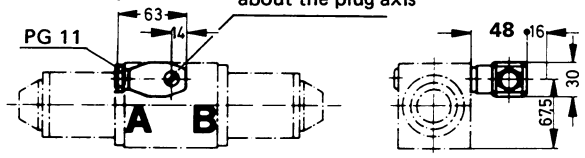
no design. Central connection on tank port side of valve



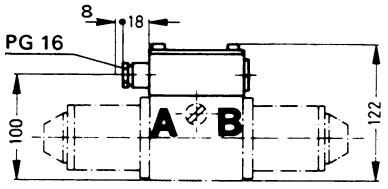
Z Central connection on tank port side of valve with plug-in connector

K Socket only

can be turned 30° about the plug axis

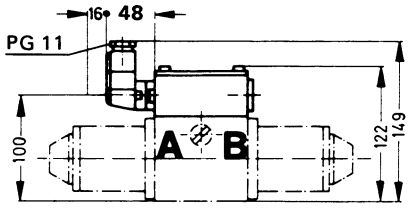


D Central connection on cover

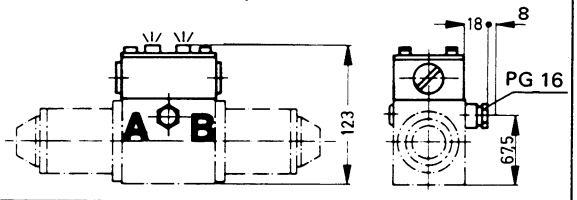


DZ Central connection on cover with plug-in connector

DK Socket only

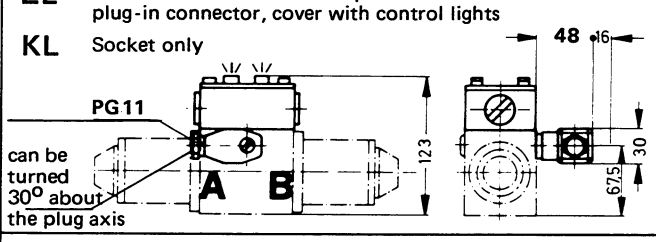


L Cover with control lights
Central connection on tank port side of valve

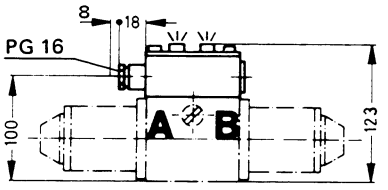


ZL Central connection on tank port side of valve with plug-in connector, cover with control lights

KL Socket only

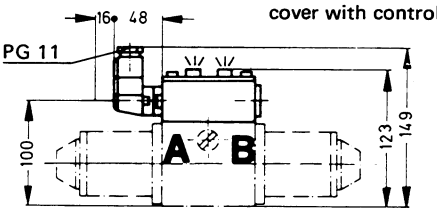


DL Central connection and control lights on cover



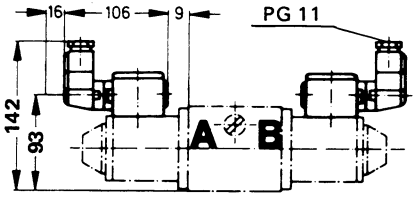
DZL Central connection on cover with plug-in connector cover with control lights

DKL Socket with light

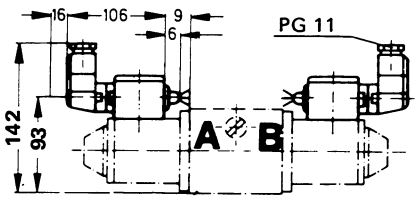


Electrical Connection as Individual Connection

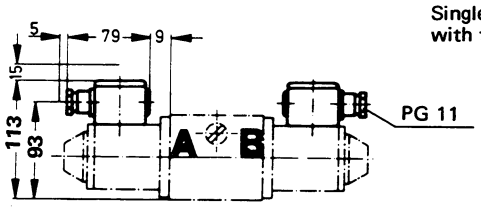
Z1 * Single connection with terminal box and plug-in connector



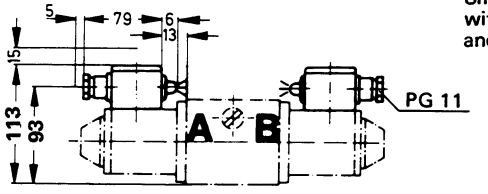
Z1L * Single connection with terminal box, plug-in connector and light



Z2 * Single connection with terminal box

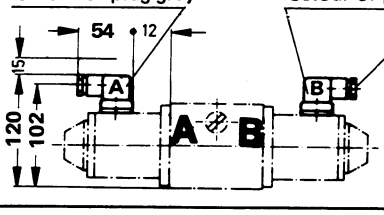


Z2L * Single connection with terminal box and light



Z4 Colour of plug grey — Colour of plug black

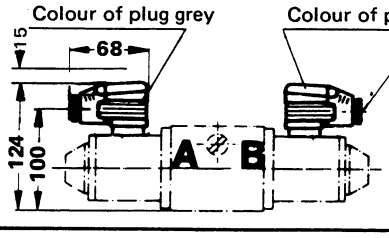
Single connection with plug-in connector to DIN 43650



* **Available only with pilot valves with air gap solenoids**

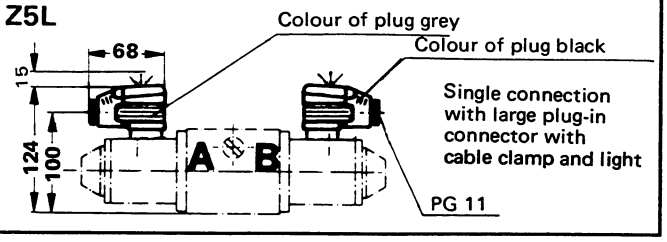
Z5 Colour of plug grey — Colour of plug black

Single connection with large plug-in connector with cable clamp



Z5L Colour of plug grey — Colour of plug black

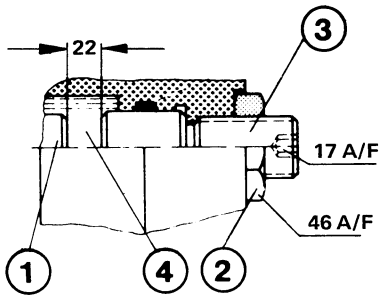
Single connection with large plug-in connector with cable clamp and light



Stroke Limiter, Mounting Possibilities

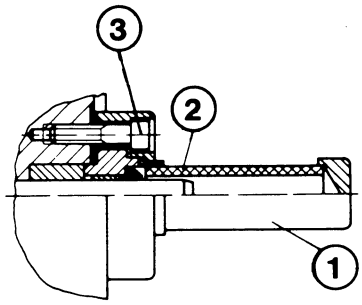
Adjustment range: 22 mm, 1 turn = 1,5 mm adjustment stroke

The stroke limiter limits the stroke of the main spool (1). By loosening the lock nut (2) and clockwise rotation of the adjustment spindle (3) the spool stroke is decreased. The control chamber (4) must not be under pressure.

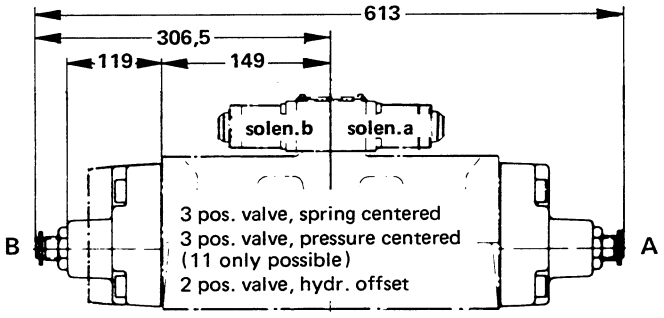


Spool Position Indicator, Mounting Possibilities

By loosening the fixing screws (3) the sleeve (1) with visual indicator can be adjustment through 360°. The control chamber must not be under pressure.



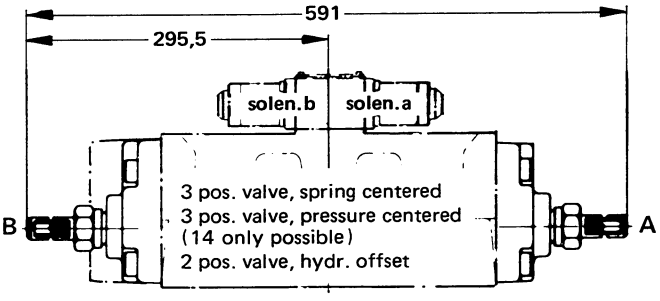
Note: With pressure centering only combination 11 or 14 is possible



stroke limiter on A and B sides of main valve = additional feature 10

stroke limiter on A side = 11

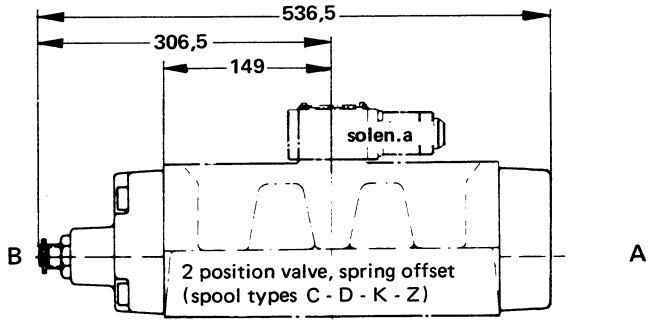
stroke limiter on B side = 12



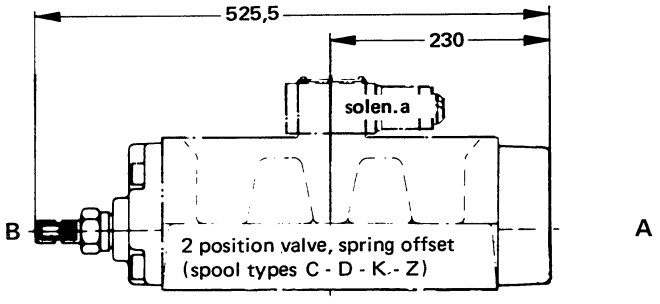
spool position indicator on A and B side = additional feature 13

spool position indicator on A side = 14

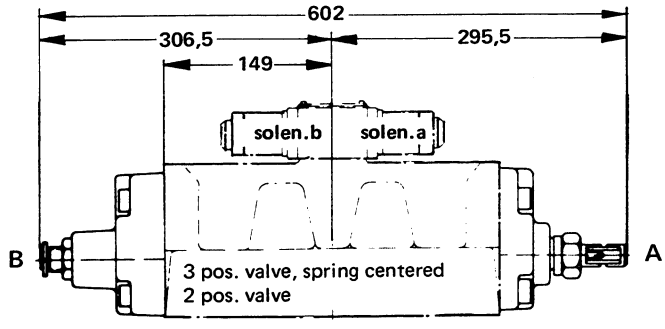
spool position indicator on B side = 15



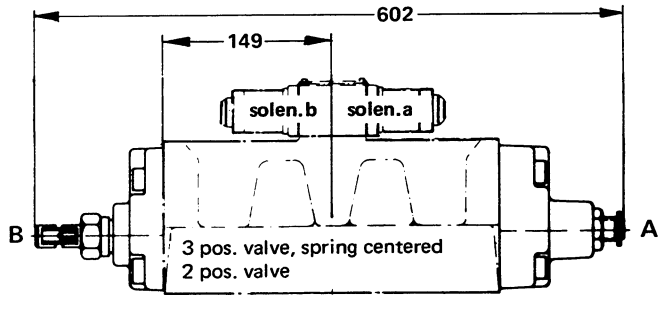
stroke limiter on B side of main valve = addition feature 12



spool position indicator on B side of main valve = additional feature 15



stroke limiter on B side of main valve and spool position indicator on A side — additional feature 17



stroke limiter on A side of main valve and spool position indicator on B side — additional feature 16

G2

Limit Switch at Main Valve

(dimensions in mm)

Limit switch "a" is operated, if the spool of the main valve has reached switching position a.

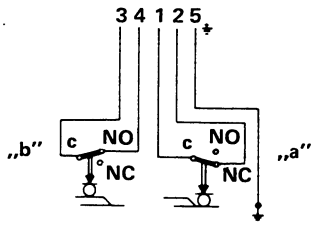
Limit switch "b" is operated, if the spool of the main valve has reached switching position b.

If a stroke limiter is used, the corresponding limit switch ceases to function.

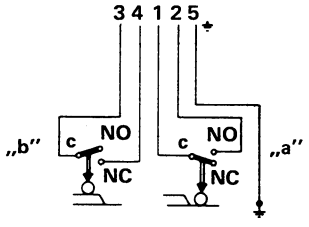
Contact loading:

DC with 30 V – 2 A

AC with 250 V ~ 5 A

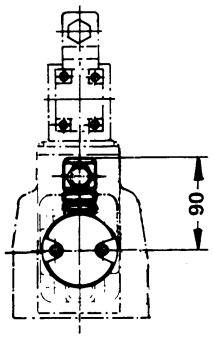


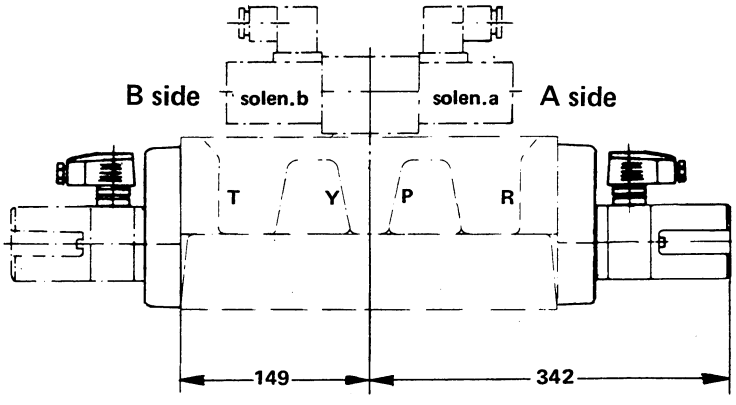
Normally closed contacts



Normally open contacts

Possible mounting arrangements for limit switch to main valve			Additional Feature No.
N.C. contacts	2 position valve, spring and hydr. offset 3 position valve, spring centered 3 position valve, pressure centered	limit switch on A side	18
	2 pos. valve, spring and hydr. offset 3 pos. valve, spring centered	limit switch on B side	19
	2 position valve, spring and hydr. offset	stroke limiter on A side limit switch on B side	20
	3 position valve, spring centered	stroke limiter on B side limit switch on A side	21
N.O. contacts	2 pos. valve, spring and hydr. offset 3 position valve, spring centered 3 position valve, pressure centered	limit switch on A side	22
	2 position valve, spring and hydr. offset 3 position valve, spring centered	limit switch on B side	23
	2 position valve, spring and hydr. offset	stroke limiter on A side limit switch on B side	24
	3 position valve, spring centered	stroke limiter on B side limit switch on A side	25





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