3.21

Pressure shut-off valve pilot operated

Type DA/DAW...L5X

Sizes 10 to 32
Up to 315 bar
Up to 240 L/min

Contents

Features

- Sub-plate mounting
- Porting pattern conforms to DIN 24 340, form D, and ISO 5781
- Manifold plate mounting
- 4 pressure ratings
- 2 adjustment elements:
  • Rotary knob
  • Adjustable bolt with protective cap
- Solenoid unloading valve

Function and configuration

Pressure control valves type DA/DAW are pilot operated pressure shut-off valves.
They are used to charge fluid to accumulator in system, or to unload the low pressure pump in high/low pressure pump system.
Pressure shut-off valves basically consist of the main valve (1) with the spool assembly (3), pilot valve (2) with pressure adjustment element and check valve (4). In valves size 10, the check valve (4.1) is built into the main valve (1). In valve sizes 25 and 32, the check valve (4.2) is built into a separate plate installed under the main valve (1).

Pressure shut-off valve type DA

· Diverting pump flow from P to A to P to T.

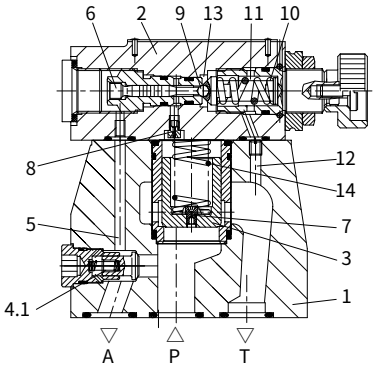
The pump delivers flow via check valve (4) into the hydraulic system (P to A). Pressure in port A acts on the pilot control spool (6)via pilot line (5). At the same time, pressure in port P passes to the spring loaded side of the main spool (3) and ball (9) in the pilot valve (2) via orifices (7) and (8) . As soon as the setting pressure in the hydraulic system is reached, the ball (9) lifts off against spring (10). Pressure fluid now flows via orifices (7) and (8) into spring chamber (11).The fluid returns to tank either internally via control line (12) in valve type DA..L5X/... or externally via control line (13) in valve type DA..L5X/..Y... Due to orifices (7) and (8), pressure drop is now presented at the main spool (3). The main spool (3) now lifts off its seat and opens the connection from P to T. The check valve (4) closes the connection from A to P. The ball valve (9) is kept opening by the system pressure via pilot spool (6).

· Diverting pump flow from P to T to P to A.

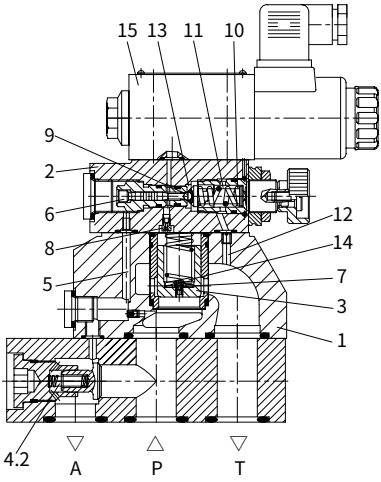
The area of the pilot spool (6) is 10% or optionally 17% greater than the effective area of the ball (9). The effective force on the pilot spool (6) is, therefore, 10 or 17% greater than the effective force on the ball (9).
When the actuator pressure falls to the cut-off pressure which corresponds to the switching pressure differential, spring (10) pushes ball (9) on to its seat. Pressure is then built up on the spring loaded side of the main spool (3). In conjunction with spring (14), the main spool (3) is closed the connection from P to T is isolated. The pump flow passes again via the check valve (4) into the hydraulic system (P to A).

Pressure shut-off valve type DAW

The function of this valve is basically the same as the DA valve. A solenoid directional valve (15) can, however switch the setting cut-off pressure of the pilot valve either from P to A or from P to T.



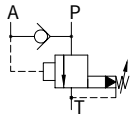
Type:DA10-1-L5X/...



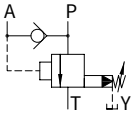
Type:DAW20-1-L5X/...

Symbols

Type:DA...-L5X/...-

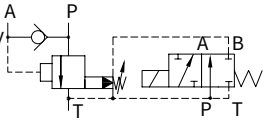


Type:DA...-L5X/...-..Y..



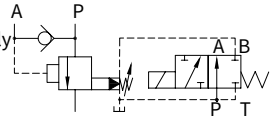
Type:DAW...A...-L5X/...

Normally close



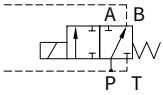
Type:DAW...A..-L5X/..Y..

Normally close



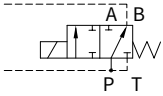
Type:DAW...B..-L5X/...

Normally open



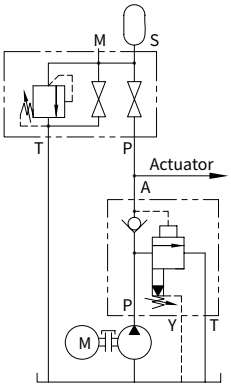
Type:DAW...B..-L5X/..Y..

Normally open

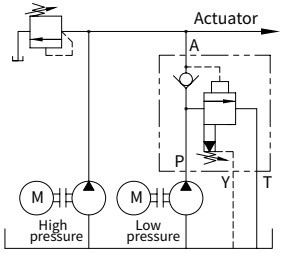


Sample circuit

Hydraulic system with accumulator

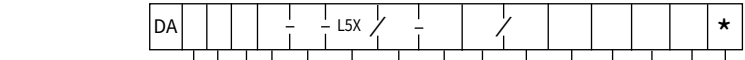


Hydraulic system with high and low pressure pumps



Notes for fixing:
(1) Maintain the resistance as little as possible between the valve DA and accumulator.
(2) For large flow pump and /or low pressure differential (10%), Version Y is best.

Ordering code



Without directional valve = No code
With directional valve=W

Pilot operated valve=No code
Pilot valve without main spool assembly = C
(No mark for nominal size)
Pilot valve with main spool assembly = C
(Marked with size 30)

Nominal size 10 =10
Nominal size 25 =20
Nominal size 32 =30

For DAW:
Normally closed
(load when breakaway, unload when electrified) =A
Normally open
(unload when breakaway, load when electrified) =B

Rotary knob =1
Adjustable bolt with protective c =2

Series L50 to L59 = L5X
(L50 to L59 series : unchanged installation and connection dimensions)

Further details in clear text

No code= NBR seals
V = FKM seals

Only DAW:
Z4= Electrical plug without lamp
Z5L= Electrical plug with lamp

Only DAW:
N= With hand override

Only DAW:
G24 = 24V DC
W220 = 220V AC
W220R = 220V AC rectification
W110 = 110V AC
(Other voltage refer to type WE6)

Only DAW:
6E= With high performance directional spool valve

No code= Internal pilot oil drain
Y = external pilot oil drain

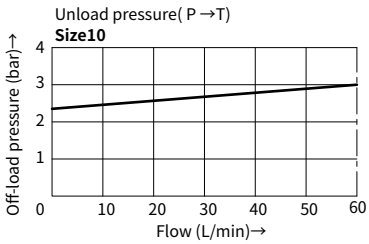
Switching pressure differential (P → A)
17 = In the mid range 17 %

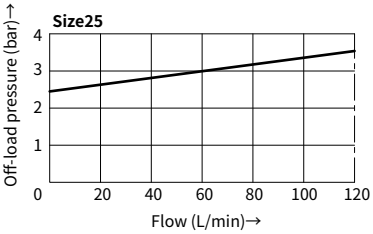
5 = Pressure adjustable 0~ 50bar
10 = Pressure adjustable 50~100bar
20 = Pressure adjustable 100~200bar
31.5 = Pressure adjustable 200~315bar

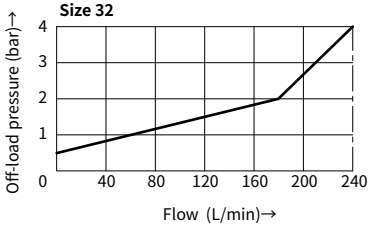
Technical data

Size			10	25	32
Fluid			Mineral oil suitable for NBR and FKM seal		
			Phosphate ester for FKM seal		
Fluid temperature range		℃	-30 to +80 (NBR seal)		
			-20 to +80 (FKM seal)		
Viscosity range		mm^2/s	10 to 800		
Degree of contamination			Maximum permissible degree of fluid contamination: Class 9. NAS 1638 or 20/18/15, ISO4406		
Max.operating pressure	Port A	bar	315		
Max. setting pressure		bar	50, 100, 200, 315		
Max. flow-rate		L/min	60	120	240
Solenoid technical data			Refer to version WE6, normally close chooses 3WE6A9, normally open choose 3WE6B9		
Installation			Optional		
weight	DA	kg	Approx.3.8	Approx.7.9	Approx.12.3
	DAW	kg	Approx.5.3	Approx.9.4	Approx.13.8
	DAC	kg	Approx.1.2 (If version DAWC, add 1.5 kg)		
	DAC30	kg	Approx.1.5 (If version DAWC30, add 1.5 kg)		

Characteristic curves (Measured at ϑ_{oil} =40°C ±5°C , using HLP46)

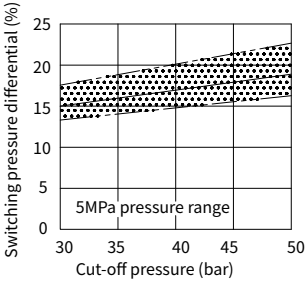


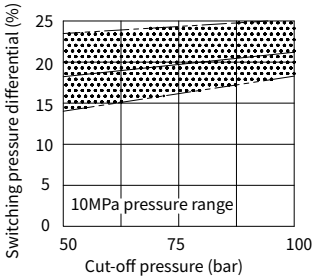




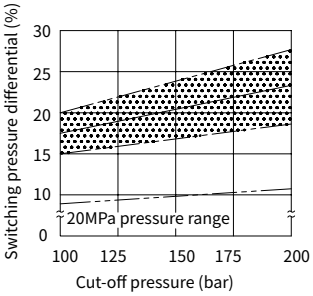
These curves are valid for an outlet pressure (T) = 0bar over the full flow range.

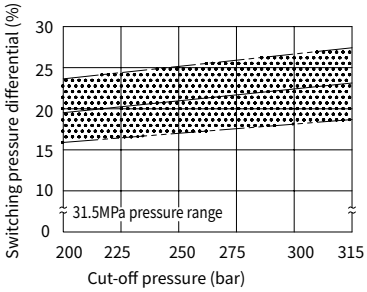
Switching pressure differential based on setting value (P → A)





= Deviation range for the 17% version

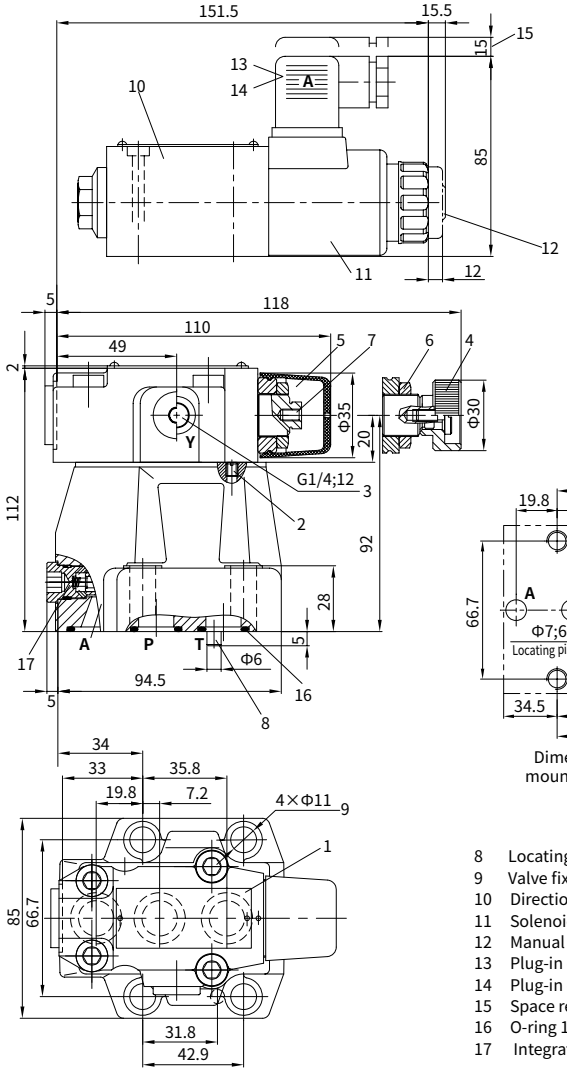




Unit dimensions

(Dimensions in mm)

Size 10



1 Nameplate
2 Without control oil internal returning
3 Port Y used for control oil external returning
4 Adjustment element"1"
5 Adjustment element"2"
6 Lockable Nut S=24
7 Internal hexagon screw S=10
8 Locating pin
9 Valve fixing hole
10 Directional valve,size6
11 Solenoid "a"
12 Manual override "N"button
13 Plug-in connector "Z4" without lamp
14 Plug-in connector "Z5L"with lamp
15 Space required to remove plug-in connector
16 O-ring 17.12 x2.62 (Port A, P and T)
17 Integrated check valve

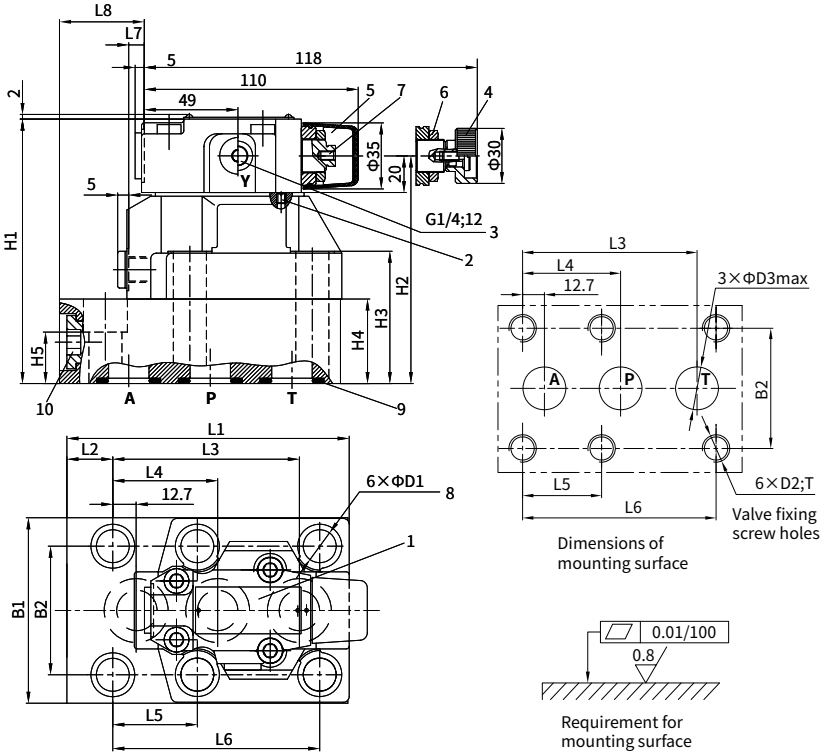
Valve fixing screws:
Internal hexagon screw GB/T 70.1-M10×50-10.9,
Tightening torque M_A =75 Nm

It must be ordered separately, if connection plate is needed.
Type:
G 467/01 G 467/02 G 468/01 G 468/02

Unit dimensions

(Dimensions in mm)

Sizes 25 and 32



1 Nameplate
2 Without control oil internal returning
3 Port Y used for control oil external returning
4 Adjustment element"1"
5 Adjustment element"2"
6 Lockable Nut S=24
7 Internal hexagon bolt S=10
8 Valve fixing hole
9 Size 25: O-ring 28.17×3.53
Size 32: O-ring 34.52×3.53
10 Integrated check valve
Built-on directional valve's size, refer to Page 07/10.

Valve fixing screws:
Size 25: 4pcs M16×100; 2pcs M16×60
Size 32: 4pcs M18×120; 2pcs M18×80
Internal hexagon screw GB/T 70.1-10.9,
Tightening torque M_A =75 Nm

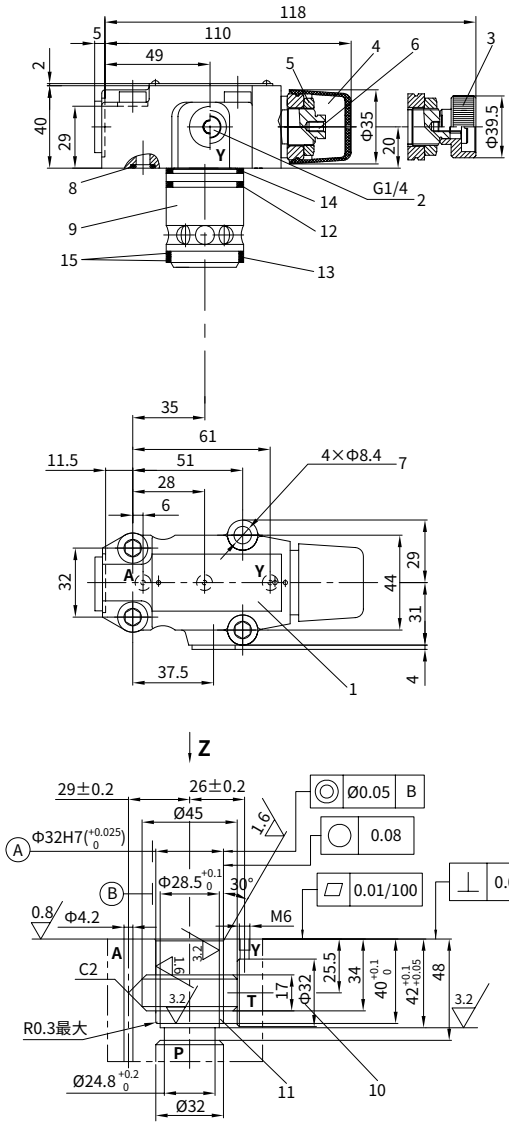
It must be ordered separately, if connection plate is needed
Type:
Size 25: G 469/01; G 469/02 G 470/01; G 470/02
Size 32: G 471/01; G 471/02 G 472/01; G 472/02

Size	L1	L2	L3	L4	L5	L6	L7	L8	H1	H2	H3	H4	H5	B1	B2	D1	D2	T	D3
25	153	25	101.6	57.1	46	112.7	10.5	48.2	144	124	72	46	28	100	70	18	M16	34	22
32	198	41	127	63.5	50.8	139.7	21	69.8	165	145	93	67	45	115	82.5	20	M18	37	30

Unit dimensions

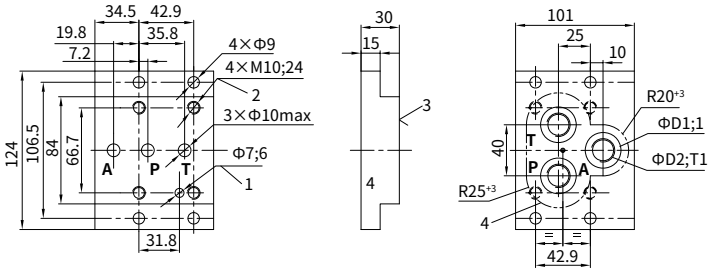
(Dimensions in mm)

Pilot with main spool (DAC30) or without main spool assembly (DAC)

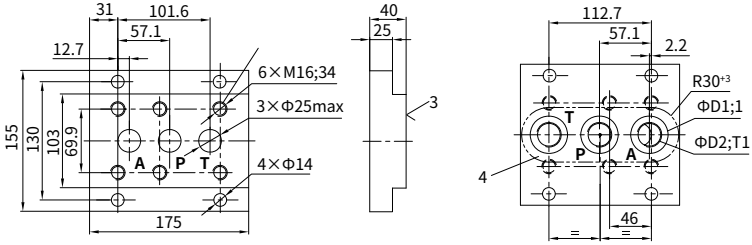


1 Nameplate
2 Port Y used for control oil external returning
3 Adjustment element"1"
4 Adjustment element"2"
5 Lockable Nut S=24
6 Internal hexagon bolt S=10
7 Space required to remove the key
8 O-ring 9.25×1.78 (Port A and T)
Valve fixing screws M8×40;
Internal hexagon bolt GB/T 70.1-10.9,
Tightening torque M_A =37 Nm
9 Main spool
10 The Ø32 hole can intersect the Ø45 hole in any position. Care, however, must be taken to ensure that the connection hole A and the fixing screw holes are not damaged.
11 The back-up ring and O-ring are to be fitted into this bore before the main spool assembly is fitted.
12 O-ring 38×1.8
13 O-ring 27.3×2.4
14 O-ring 28×2.65
15 Back-up ring 28.4×32×0.8
Built-on directional valve's size, refer to Page 07/10.

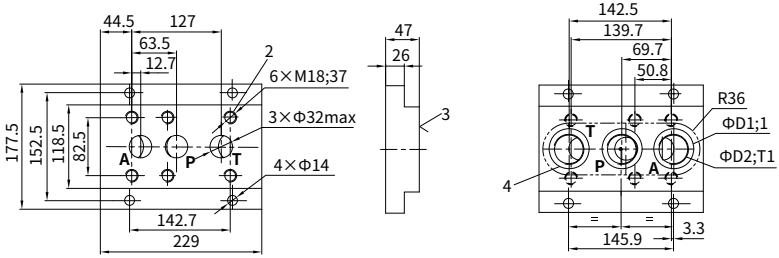
Sub-plate



Size	Type	D1	D2	T1	Valve fixing screw	Torque	Weight
10	G467/01	28	G3/8	12	Accessory: 4pcs M10×50 (GB/T70.1-10.9)	75Nm	2.0kg
	G467/02		M18×1.5				
	G468/01	34	G1/2	14			
	G468/02		M22×1.5				



Size	Type	D1	D2	T1	Valve fixing screw	Torque	Weight
25(20)	G469/01	42	G3/4	16	Accessory: 4pcs M16×100 (GB/T70.1-10.9) 2pcs M16×60 (GB/T70.1-10.9)	310Nm	6.4kg
	G469/02		M27×2				
	G470/01	47	G1	18			
	G470/02		M33×2				



Size	Type	D1	D2	T1	Valve fixing screw	Torque	Weight
32	G471/01	56	G11/4	20	Accessory: 4pcs M18×120 (GB/T70.1-10.9) 2pcs M18×80 (GB/T70.1-10.9)	430Nm	10.6kg
	G471/02		M42×2				
	G472/01	61	G11/2	22			
	G472/02		M48×2				

1 Locating pin hole 2 Valve fixing holes 3 Valve mounting surface 4 Valve panel cut-out