

AH-4WE6...Type Solenoid-Operated Directional Valve



AH-WE6...60S...type

Size (NG) 6
Max. Working Pressure: 315 bar
Max. Flow: 80 L/min

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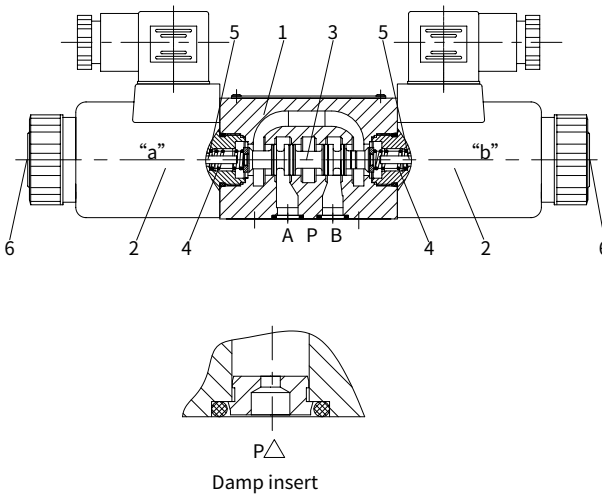
Features

- Direct operated directional solenoid valve,
- Porting pattern according to DIN 24 340 form A, ISO 4401 and CETOP-RP 121 H
- Wet-pin AC or DC solenoids with detachable coil
- Pressure-tight chamber needs not to be opened for a coil change
- Electrical connection as individual or central connection

Function and configurations

AH-WE6...60S...type valves are solenoid operated directional spool valves. They control the start, stop and direction of hydraulic oil flow. The directional control valves consist of valve body(1), one or two solenoids (2), the valve core (3), and one or two return springs (4). In the de-energized condition the valve core(3) is held in the neutral or initial position by means of return springs (4) (except for impulse spools). The control spool (3) is actuated via wet pin solenoids (2).

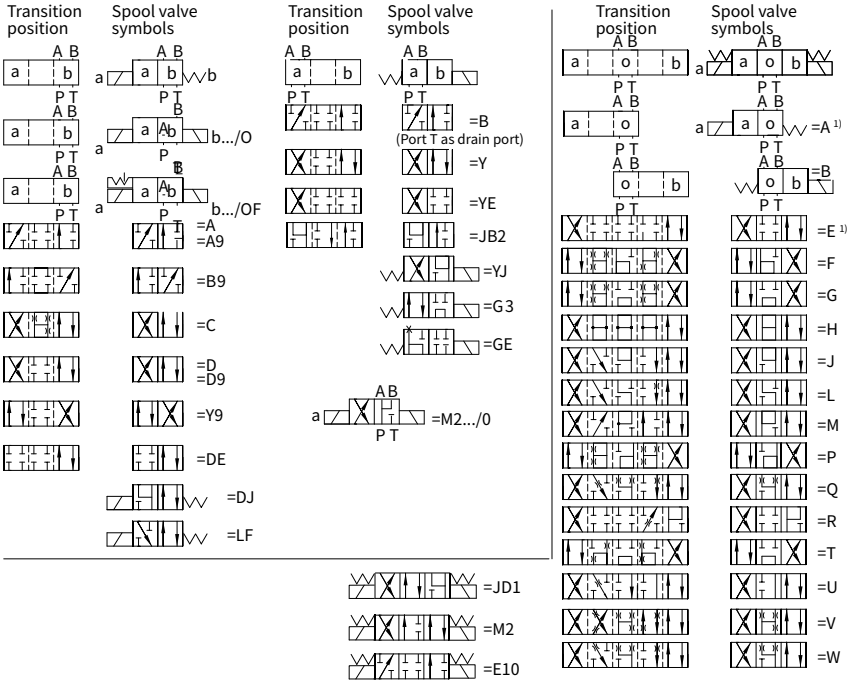
To ensure proper operation, the pressure chamber of the solenoid must be filled with oil. The valve core(3) is moved to the expected position by solenoids(2) and pushing rod(5). This gives free-flow from P to A and B to T or P to B and A to T. When solenoid (2) is de-energized, the valve core (3) is returned to its initial position by means of the return springs (4). The solenoids may also control the valve core (3) by an optional override button(6) under the de-energized condition.



Specification

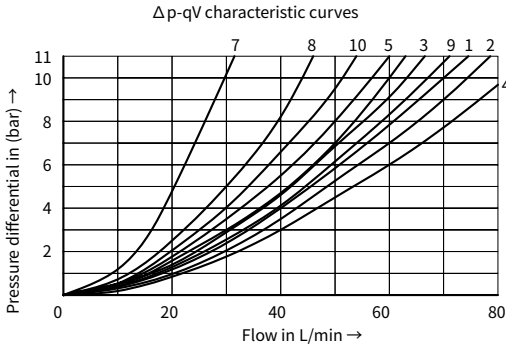
AH	WE	6	-60S	/	/	*
3 ways (For spool A and B)	= 3					
4 ways	= 4					
Solenoid directional valve Nominal size 6	=6					
Symbols e.g. C, E etc.						
Series 60 to 69 (60 to 69: unchanged installation and connection dimensions)	=60					
With spring return	= No code					
Without spring return	=O					
Without spring return, and with detent	=OF					
Standard solenoid	=E					
Large-scope solenoid (Only for 12V and 24V)	=N					
24V DC	=G24 220V					
AC 50/60 Hz rectification 220V	=W220 Plug					
50/60 Hz	=W220R 110V AC					
	=W110					
With concealed hand emergency	= N9					
						Further details in clear text
						No code=Without locating hole /60= With locating hole /62=With locating pin hole ISO 8752-3×8-St
						No code = NBR seals V = FKM seals
						No code = Without throttle insert B08 = Throttle Ø0.8 mm B10 = Throttle Ø1.0 mm B12 = Throttle Ø1.2 mm B15 = Throttle Ø1.5mm B20 = Throttle Ø2.0 mm B25 = Throttle Ø2.5 mm B30 = Throttle Ø3.0 mm
						Z4 = square plugs (not applicable for the integer)
						Z5L = square plugs with lamps
						K4 = DIN4365 sockets without plugs
						DL = Connecting box

Symbols



Characteristic curves

(Measured at $t=40^{\circ}\text{C} \pm 5^{\circ}\text{C}$, using HLP46)



- 7 Symbol "R" in switched positions B → A
- 8 Symbol "G" and "T" in neutral position P → T
- 9 Symbol "H" in neutral position P → T

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

Technical data

Fixing position			Optional
Environment temperature range		°C	-30 to +50 (NBR seal) -20 to +50 (FKM seal)
Weight	Single solenoid	kg	1.5
	Double solenoids	kg	2.0
Max. operating pressure	Port A,B,P	bar	315
	Port T	bar	210 (DC),160 (AC), when the operating pressure exceed the permission value, port T must be used as drain port for spool symbol A and B
Max. flow-rate		L/min	80 (DC), 60 (AC)
Flow cross section (switching neutral position)		mm ²	for symbol Q 6% of nominal cross section
		mm ²	for symbol W 3% of nominal cross section
Fluid			Mineral oil suitable for NBR and FKM seal Phosphate ester for FKM seal
Fluid temperature range		°C	-30 to +80 (NBR seal) -20 to +80 (FKM seal)
Viscosity range		mm ² /s	2.8 to 500
Degree of contamination			Maximum permissible degree of fluid contamination: Class 9. NAS 1638 or 20/18/15, ISO4406

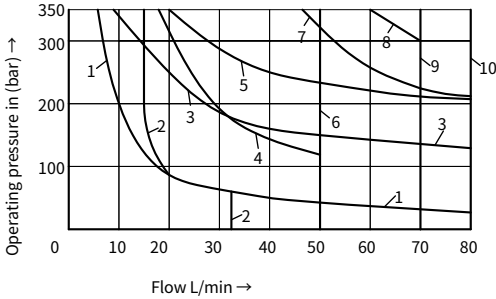
Electric data

Type of voltage			DC	AC 50Hz
Usable voltage		V	12,24,28 ¹ ,48,96,110,205,220	110, 127, 220
Permissible voltage (deviation)		%	Standard solenoid:+10~-15; Large-scope solenoid:+20~-30	
Power consumption		W	Standard solenoid:30; Large-scope solenoid:32	
Holding power		VA	-	50
Making capacity		VA	-	220
Duty			Continuous working	
Switching time to ISO 6403	ON	ms	25 to 45	10 to 20
	OFF	ms	10 to 25	15 to 40
Switched frequency		times/h	to 15000	to 7200
Type of protection to DIN 40050			IP65(Z4, Z5L plug), IP67 (K7 Deutsch)	
Max. coils temperature		°C	+150	+180

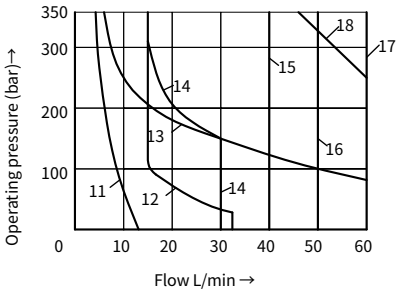
Performance limits

The specified switching performance limits are valid with two directions of flow. Due to the flow forces acting within the valve, the permissible switching performance limit can be significantly lower with only one direction of flow! The switching performance limit was determined with the solenoid at operating temperature, at 15 % under-voltage and without tank pre-loading.

Solenoid DC		Solenoid AC-50Hz		Solenoid AC-60Hz	
Curve	Spool symbol	Curve	Spool symbol	Curve	Spool symbol
1	A, B ₁₎	11	A, B ₁₎	19	A, B ₁₎
2	V	12	V	20	V
3	A, B	13	A, B	21	A, B
4	F, P	14	F, P	22	F, P
5	J	15	G, T	23	G, T
6	G, H, T	16	H	24	J, L, U
7	A/O, A/OF, L, U	17	A/O, A/OF, C/O,	25	A/O, A/OF, Q, W
8	C, D, Y		C/OF, D/O, D/OF	26	C, D, Y
9	M		E, J, L, M	27	H
10	E, R ₂₎ , C/O, C/OF	18	Q, R ₂₎ , U, W	28	C/O, C/OF, D/O
	D/O, D/OF, Q, W		C, D, Y		D/OF, M, R, E, R ₂₎



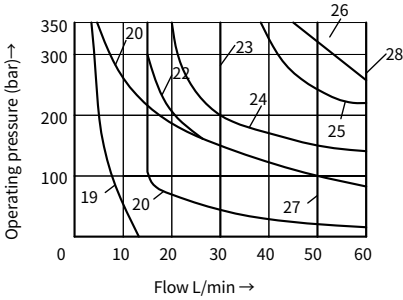
Solenoid DC	
Curve	Solenoid voltage(V)
1 to 10	12, 24, 48, 96, 205



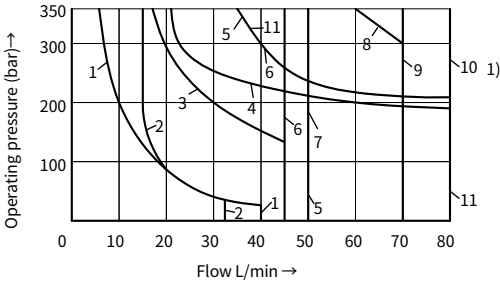
Solenoid AC		
Curve	Solenoid voltage	
11 to 18	W110	110V, 50Hz
	W127	127V, 50Hz
	W230	230V, 50Hz

Performance limits

(Measured at $t=40^{\circ}\text{C} \pm 5^{\circ}\text{C}$, using HLP46)

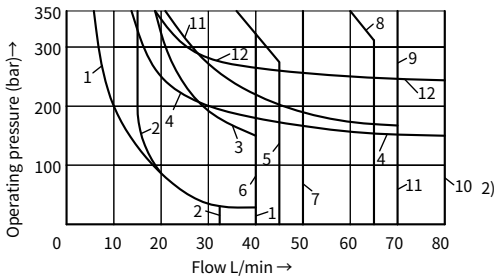


Solenoid AC		
Curve	Solenoid voltage	
19 to 28	W110	110V, 60Hz
	W230	230V, 60Hz



Solenoid DC	
Curve	Solenoid voltage
1 to 10 ₁₎	110, 180

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

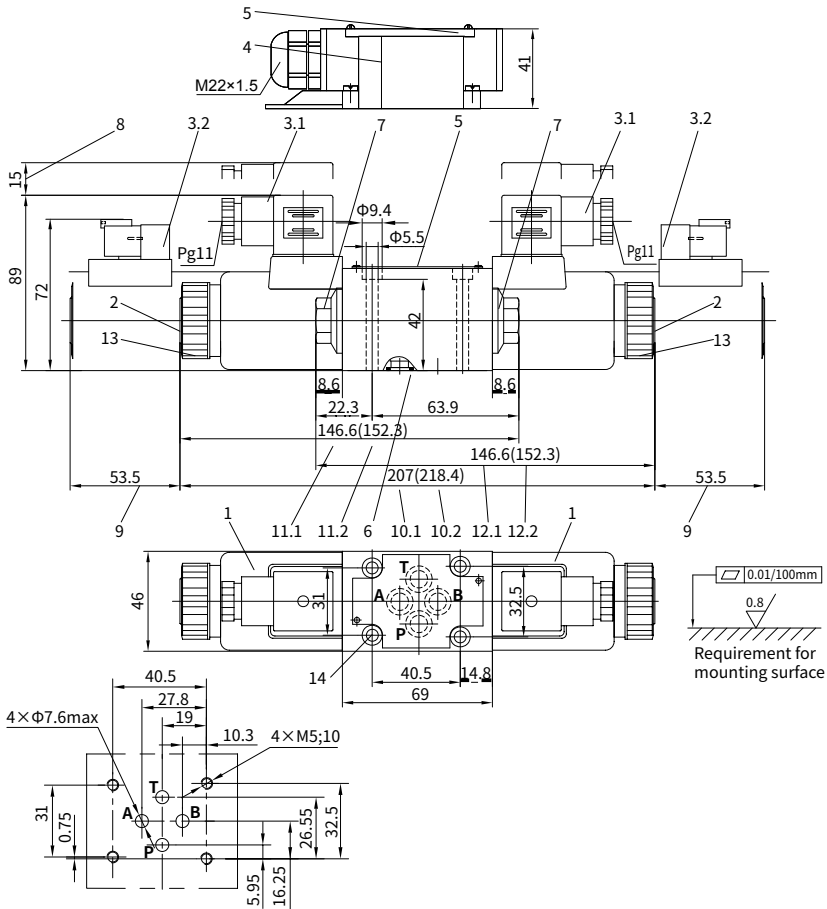


Solenoid AC	
Curve	Solenoid voltage
1 to 12, see 10 ₂₎	220

Unit dimensions

(Dimensions in mm)

Valve with DC or rectification AC solenoid

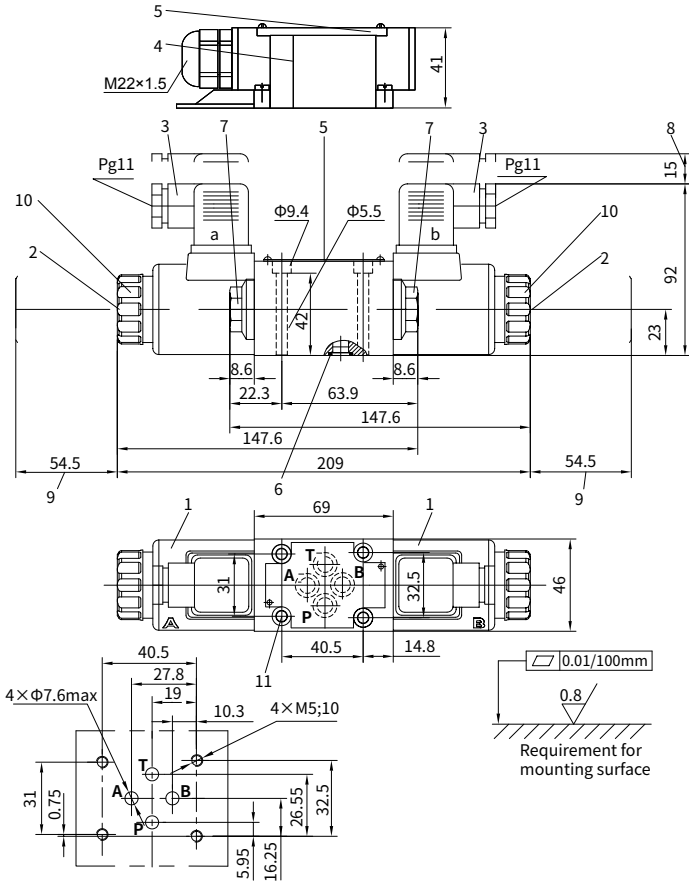


- | | |
|--|--|
| <p>1 Solenoid</p> <p>2 Manual override button</p> <p>3.1 Plug-in connector to DIN 43 650</p> <p>3.2 Deutsch connector assembly</p> <p>4 Junction box with lead and light, M22×1.5 interface</p> <p>5 Nameplate</p> <p>6 O-ring: 9.25×1.78</p> <p>7 Plug screw for valves with one solenoid</p> <p>8 Space required to remove connector</p> <p>9 Space required to remove coil</p> <p>10.1 Dimension of 3-position valves, standard version</p> <p>10.2 Dimension of 3-position valves, large-scope Type of voltage</p> <p>11.1 Dimension of 2-position valves with solenoid at 'A', standard version</p> | <p>11.2 Dimension of 2-position valves with solenoid at 'A', large-scope Type of voltage</p> <p>12.1 Dimension of 2-position valves with solenoid at 'B', standard version</p> <p>12.2 Dimension of 2-position valves with solenoid at 'B', large-scope Type of voltage</p> <p>13 Securing nut, tightening torque $M_n=4Nm$</p> <p>14 Valve fixing screws.
Hexagon socket head cap screw
M5×50 GB/T 70.1-10.9,
Tightening torque $M_n=8.9Nm$</p> |
|--|--|

Unit dimensions

(Dimensions in mm)

Valve with AC solenoid



- 1 Solenoid
- 2 Manual override button
- 3 Plug-in connector to DIN 43 650 (rotatable 90°)
- 4 Junction box with lead and light, M22×1.5 interface
- 5 Nameplate
- 6 Seal rings 9.25×1.78
- 7 Plug screw for valves with one solenoid
- 8 Space required to remove connector
- 9 Space required to remove coil
- 10 Securing nut, tightening torque, $M_A = 4 \text{ Nm}$
- 11 Valve fixing screws. Hexagon socket head cap screw M5×50 GB/T 70.1-10.9, Tightening torque $M_A = 8.9 \text{ Nm}$