Explosion-proof direct acting 2-port solenoid valve General purpose

AB41E4/AB42E4 Series

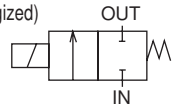


- Pressure and explosion proof construction d2G4 (flame-proof grade 2/ignitability G4)
- Japan Conformity Certificate No. AB41E4: No. T64349, AB42E4: No. T64352
- China Conformity Certificate No. 2020322307003155
- China explosion-proof standard NEPSI acquired GYB20. 2593X
- NC (open when energized), NO (closed when energized)
- Port size: Rc1/4, Rc3/8

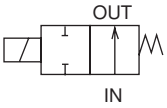
RoHS CAD

JIS symbol

● AB41E4: NC (open when energized)



● AB42E4:NO (closed when energized)



Common specifications

Item	AB41E4	AB42E4
Working fluid	Air/low vacuum [1.33 × 10^2Pa(abs)]/water/kerosene/oil (50mm^2/s or less)	
Working pressure differential MPa	0 to 5 (Refer to max. working press diff, indiv specs)	0 to 2 (Refer to max. working press diff, indiv specs)
Max. working pressure MPa	5	2
Proof pressure (water pressure) MPa	25	
Fluid temperature °C	-10 to 60 (no freezing)	
Ambient temperature °C	−10 to 50	
Thermal class	Class 130 (B)	
Atmosphere	Outdoors/explosive gas (flame-proof grade 1 to 2/ignitability G1 to G4)	
Valve structure	Direct acting poppet structure	
Valve seat leakage cm^3/min (ANR)	0.2 or less (PTFE sealant: 300 or less) (air)	
Mounting orientation	Unrestricted	
Degree of protection	IP 65 or equiv.	

Individual specifications

Item / Model No.	Port size	Orifice size (mm)	Max. working pressure differential (MPa) Air AC	Air DC	Water(hot)/Kerosene AC	Water(hot)/Kerosene DC	Oil (50mm^2/s) AC	Oil (50mm^2/s) DC	Rated voltage	Apparent power (VA) When holding 50Hz	When holding 60Hz	When starting 50Hz	When starting 60Hz	Power consumption (W) AC 50Hz/60Hz	Power consumption (W) DC	Weight (kg)
NC (normally closed)																
AB41E4- -1$^{02}_{03}$	Rc 1/4 Rc 3/8	1.5	5.0	4.0	4.5	4.0	4.0	4.0	100 VAC 50/60Hz 110 VAC 60Hz 200 VAC 50/60Hz 220 VAC 60Hz (12 VDC) (24 VDC) (48 VDC) (100 VDC)*5	18	15	29	24	8/7	11.6	1.0
-2		2.0	3.0	2.5	2.7	2.5	2.5	2.5								
-3		3.0	1.5	0.9	1.3	0.9	0.9	0.9								
-4		3.5	1.2	0.6	0.9	0.6	0.6	0.6								
-5		4.0	1.0	0.5	0.7	0.5	0.5	0.5								
-6		5.0	0.6	0.25	0.4	0.25	0.25	0.25								
$^{02}_{03}$ -7		7.0	0.25	0.1	0.2	0.1	0.15	0.1								
NO (closed when energized)																
AB42E4- -1	Rc 1/4 Rc 3/8	1.5	2.0	2.0	2.0	2.0	2.0	2.0	100 VAC 50/60Hz 110 VAC 60Hz 200 VAC 50/60Hz 220 VAC 60Hz (12 VDC) (24 VDC) (48 VDC) (100 VDC)*5	22	18	35	29	8.7/6.7	15.5	1.0
-2		2.0	1.0	1.0	1.0	1.0	1.0	1.0								
-3		3.0	0.7	0.7	0.7	0.7	0.7	0.7								
-4		3.5	0.5	0.5	0.5	0.5	0.5	0.5								
-5		4.0	0.4	0.4	0.4	0.4	0.4	0.4								
-6		5.0	0.25	0.25	0.25	0.25	0.25	0.25								
-7		7.0	0.15	0.15	0.15	0.15	0.15	0.15								

*1: The port size model No. is 02 for Rc1/4 (8A) and 03 for Rc3/8 (10A).
*2: Refer to DC column for the max. working pressure differential of AB41E4 type coil with diode.
*3: The voltage fluctuation range must be within -10 to +5% of the rated voltage.
*4: When using at low vacuum, vacuum the OUT port side.
*5: ( ) shows options.

Flow characteristics

Model No.	Port size	Orifice size (mm)	Flow characteristics		
			C[dm³/(s·bar)]	b	Cv
NC (open when energized)					
AB41E4-02/03 -1	Rc1/4 Rc3/8	1.5	0.29	0.53	0.1
-2		2.0	0.53	0.52	0.15
-3		3.0	1.1	0.52	0.31
-4		3.5	1.7 [1.5]	0.49 [0.47]	0.42 [0.40]
-5		4.0	2.1 [1.9]	0.48 [0.47]	0.54 [0.48]
-6		5.0	3.0 [2.6]	0.42 [0.38]	0.80 [0.62]
-7		7.0	4.8 [4.6]	0.29 [0.37]	1.0 [0.82]
NO (closed when energized)					
AB42E4-02/03 -1	Rc1/4 Rc3/8	1.5	0.29	0.53	0.1
-2		2.0	0.53	0.52	0.15
-3		3.0	1.1	0.52	0.31
-4		3.5	1.7 [1.5]	0.49 [0.47]	0.42 [0.40]
-5		4.0	2.1 [1.9]	0.48 [0.47]	0.54 [0.48]
-6		5.0	3.0 [2.6]	0.42 [0.38]	0.80 [0.62]
-7		7.0	4.8 [4.6]	0.29 [0.37]	1.0 [0.82]

*1 : Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 x C.
*2 : Dimensions shown in [ ] are for stainless steel body.

How to order

AB4①E4 - 02 - 3 - 0 3 T A CN - AC100V

Model No. | Ⓐ Actuation | Ⓑ Port size | Ⓒ Orifice size | Ⓓ Body/sealant combination *2 | Ⓔ Coil type *3 | Ⓕ External wire pull method *4 | Ⓖ Other options *5 | Ⓗ Organizations for explosive-proof certification | Ⓘ Voltage *7, *8

Code	Description	Model No. AB41E4	Model No. AB42E4
Ⓐ Actuation			
1	NC (normally closed)	●	
2	NO (closed when energized)		●

Code	Description	Code	Description	Code	Description		
Ⓑ Port size							
02	Rc1/4	2G	G1/4	2N	1/4NPT	●	●
03	Rc3/8	3G	G3/8	3N	3/8NPT	●	●

Ⓒ Orifice size			
1	ø1.5	●	●
2	ø2	●	●
3	ø3	●	●
4	ø3.5	●	●
5	ø4	●	●
6	ø5	●	●
7	ø7	●	●

Ⓓ Body/sealant combination

		Body	Seal	Treatment	Remarks		
0	Std.	Copper alloy	Nitrile rubber	-	Air/water/low vacuum/kerosene/oil (up to 60°C)	●	●
B	Option	Copper alloy	Fluoro rubber	-	-	●	●
C	Option	Copper alloy	PTFE	-	-	●	●
D	Option	Stainless steel	Nitrile rubber	-	Air/water/low vacuum/kerosene/oil (up to 60°C)	●	●
E	Option	Stainless steel	Fluoro rubber	-	-	●	●
F	Option	Stainless steel	PTFE	-	-	●	●
H	Option	Copper alloy	Nitrile rubber	Oil-prohibited	Air/water/low vacuum/kerosene/oil (up to 60°C)	●	●
J	Option	Copper alloy	Fluoro rubber	Oil-prohibited	-	●	●
K	Option	Copper alloy	PTFE	Oil-prohibited	-	●	●
P	Option	Copper alloy	Ethylene propylene rubber	Oil-prohibited	-	●	●
L	Option	Stainless steel	Nitrile rubber	Oil-prohibited	Air/water/low vacuum/kerosene/oil (up to 60°C)	●	●
M	Option	Stainless steel	Fluoro rubber	Oil-prohibited	-	●	●
N	Option	Stainless steel	PTFE	Oil-prohibited	-	●	●
R	Option	Stainless steel	Ethylene propylene rubber	Oil-prohibited	-	●	●

Refer to Intro Page 39 for reference on material combinations.

Ⓔ Coil type			
3		Thermal class 130 (B) explosion-proof coil	●	●
5		Thermal class 130 (B) diode integrated explosion-proof coil	●	●

Ⓕ External wire pull method				
T	Std.	Conduit screw connection (G1/2) *9	●	●
L	Option	Pressure proof packing seal (G1/2) connection, cable O.D. ø7.5 to 8.4	●	●
M	Option	Pressure proof packing seal (G1/2) connection, cable O.D. ø8.5 to 9.4	●	●

Ⓖ Other options				
Blank	Std.	No option	●	●
A	Option	Manual override (locking)	●	
B	Option	With mounting plate	●	●
AB	Option	Manual override/mounting plate	●	

Ⓗ Organizations for explosive-proof certification			
Blank	Japan Certification (TIIS) * 10	●	●
CN	China certification (NEPSI) * 11	●	●

Ⓘ Voltage				
100 VAC	Std.	100 VAC 50/60 Hz	●	●
200 VAC	Std.	200 VAC 50/60 Hz	●	●
12 VDC	Option	12 VDC	●	●
24 VDC	Option	24 VDC	●	●
48 VDC	Option	48 VDC	●	●
100 VDC	Option	100 VDC	●	●

[Example of model No.]

AB41E4-02-3-03TACN-AC100V

Model: AB41E4

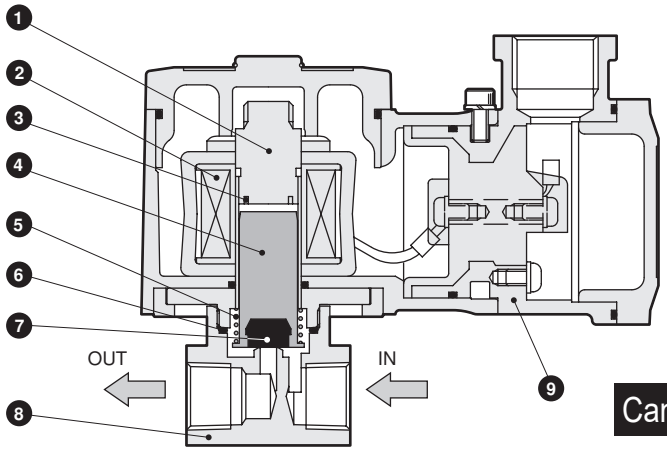
Ⓐ Actuation : NC (normally closed)
Ⓑ Port size : Rc1/4
Ⓒ Orifice size : ø3
Ⓓ Body/sealant combination : Body - Brass, sealant - nitrile rubber
Ⓔ Type of coil : Thermal class 130 (B) explosion-proof coil
Ⓕ External wire pull method : Conduit screw connection (1/2NPT)
Ⓖ Other options : Manual override (locking)
Ⓗ Explosion-proof certification agency : China certification (NEPSI)
Ⓘ Voltage : AC 100V50/60Hz

⚠ Precautions for model No. selection

*1 : The combinations indicated with ● above are available.
*2 : The ethylene propylene rubber seal combination (Item Ⓓ P/R) cannot be used with air. (Compressed air contains oil, and ethylene propylene rubber is not oil-resistant.)
*3 : For the thermal class 130 (B) diode integrated coil, the AC power supply voltage is converted into a DC coil voltage by the diode.
*4 : A pressure proof packing seal (G3/4) connection is also available. Contact CKD for more information. Note that the conduit connection (G3/4) is not available.
*5 : When Item Ⓓ is C, F, K or N, the manual override (Item Ⓖ A or AB) is not available. When Item Ⓐ is 2, the manual override (Item Ⓖ A or AB) is not available.
*6 : Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information. Note that tropicalization is not available when the manual override option (A) is selected.
*7 : 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz.
The thermal class 130 (B) diode integrated explosion-proof coil (Item Ⓔ 5) can be used with 100 VAC 50/60 Hz or 200 VAC 50/60 Hz.
*8 : Other voltages as below are also available. Contact CKD for details.
12, 24, 48, 110, 115, 120, 220, 240, 380, 400, 415, 440, 480, 500 VAC (with diode) 110, 220 VAC 6, 110, 200, 220 VDC
*9 : China certification will be 1/2 NPT.
*10 : Japan certification (TIIS) is included.
*11 : China certification (NEPSI) is included.

Internal structure and parts list

● AB41E4 Series

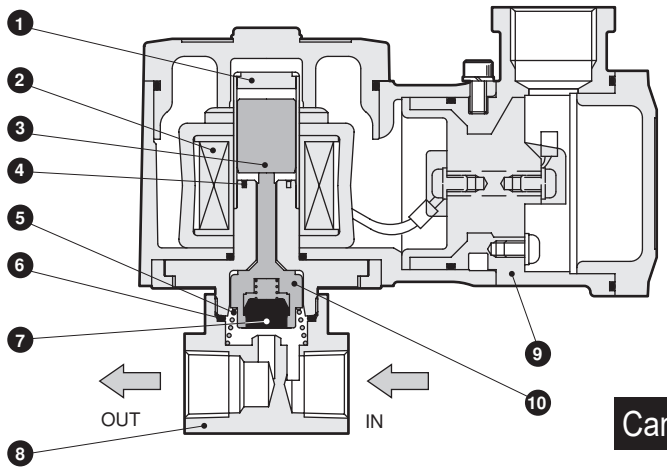


Cannot be disassembled

No.	Part name	Material		No.	Part name	Material	
1	Core assembly	SUS405 or equiv./316L/403	Stainless steel	6	O-ring	NBR (FKM/PTFE/EPDM)	NBR: Nitrile rubber FKM: Fluoro rubber
2	Coil assembly	-	-				
3	Shading coil	Cu (Ag for stainless steel body)	Copper (silver - S.S. body)	7	Valve seal	NBR (FKM/PTFE/EPDM)	EPDM: Ethylene propylene rubber PTFE: Tetrafluoroethylene resin
4	Plunger	SUS405 or equiv.	Stainless steel	8	Body	C3771(SUS303)	Copper alloy (stainless steel)
5	Plunger spring	SUS304	Stainless steel	9	Coil case	ADC12	Aluminum die-casting

( ) shows options.

● AB42E4 Series



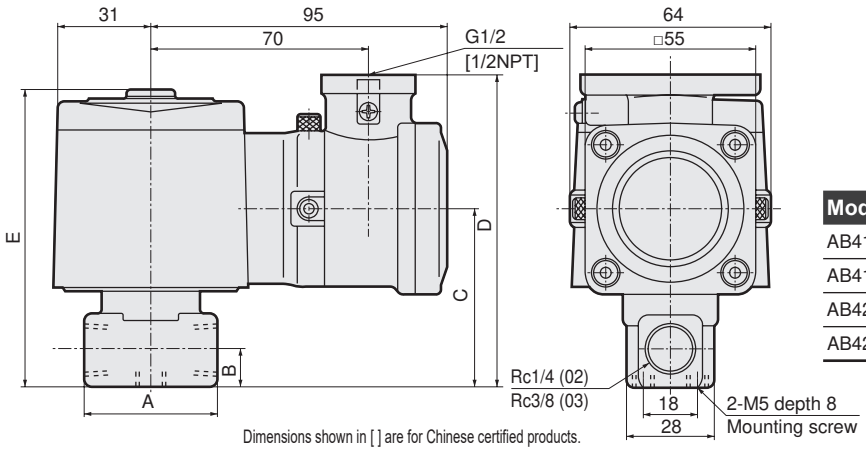
Cannot be disassembled

No.	Part name	Material		No.	Part name	Material	
1	Core assembly	SUS405 or equiv./316L/304	Stainless steel	8	Body	C3771 (SUS303)	Copper alloy (stainless steel)
2	Coil	-	-	9	Coil case	ADC12	Aluminum die-casting
3	Plunger	SUS405 or equiv.	Stainless steel	10	NO Valve	POM (PPS/SUS303/PFA)	Body/sealant combination When O/D/H/L: Polyacetal resin When B/E/J/M/P/R: Polyphenylene sulfide resin When C/F/K/N: Stainless steel/perfluoroalkoxy resin
4	Shading coil	Cu (Ag for stainless steel body)	Copper (silver for stainless steel body)				
5	Spring	SUS304	Stainless steel				
6	O-ring	NBR (FKM/PTFE/EPDM)	NBR: Nitrile rubber FKM: Fluoro rubber				
7	Valve seal	NBR (FKM/PTFE/EPDM)	EPDM: Ethylene propylene rubber PTFE: Tetrafluoroethylene resin				

( ) shows options.

Dimensions CAD

● Conduit screw (G1/2) connection
AB41E4 -*-*-**T
AB42E4

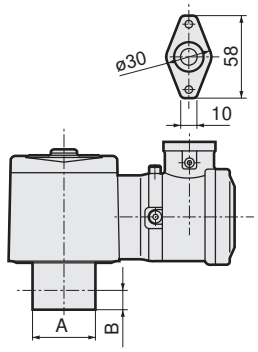


Dimensions shown in [ ] are for Chinese certified products.

Model No.	A	B	C	D	E
AB41E4-02-1 to 6	36	11	54	97	92
AB41E4- 02-7 03-1 to 7	40	12	57	100	95
AB42E4-02-1 to 6	36	11	58	101	96
AB42E4- 02-7 03-1 to 7	40	12	61	104	99

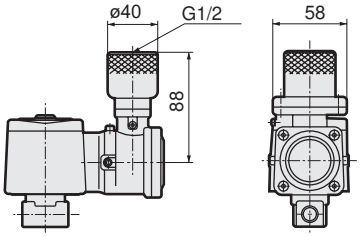
Optional dimensions CAD

● Stainless steel body
AB41E4 -*-* D,E,F,R L, M, N
AB42E4

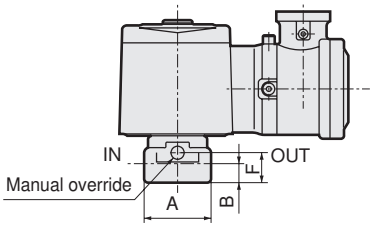


Model No.	A	B
AB41E4-02-1 to 6	ø37.5	11
AB41E4- 02-7 03-1 to 7	ø45	12
AB42E4-02-1 to 6	ø37.5	11
AB42E4- 02-7 03-1 to 7	ø45	12

● Pressure proof packing (G1/2) connection
AB41E4 -*-*-** L, M
AB42E4

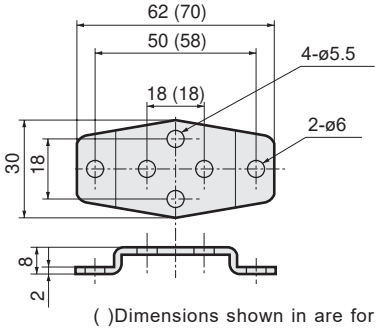


● Manual override (locking)
AB41E4-*-*-***A



Model No.	A	B	F
AB41E4-02-1 to 6	36	11	19.5
AB41E4- 02-7 03-1 to 7	40	12	22.5

● Mounting plate
AB41E4 -*-*-** * B AB
AB42E4



( )Dimensions shown in are for mounting. Plate No.2

Mounting plate model No.	Compatibility	
AB4-GE-100106-MOUNT-PLATE-KIT (mounting plate No.1)	●AB41E4-02, 03-1 to 7	Brass body
	●AB41E4-02-1 to 6	Stainless steel body
	●AB42E4-02, 03-1 to 7	Brass body
	●AB42E4-02-1 to 6	Stainless steel body
AB4-GE-100159-MOUNT-PLATE-KIT (mounting plate No.2)	●AB41E4-02-7	Stainless steel body
	●AB41E4-03-1 to 7	Stainless steel body
	●AB42E4-02-7	Stainless steel body
	●AB42E4-03-1 to 7	Stainless steel body

* Material: Steel/zinc plated