CKD

Compatible with international explosion proof guideline ExdⅡBT4/ExdⅡBT2

New Products

Explosion proof 2/3 port solenoid valve

General purpose valve EX Series

EXPLOSION PROOF GENERAL PURPOSE2,3 PORT SOLENOID VALVE

Safe use in dangerous atmosphere is supported
Compatible with IEC standard

Compatible with international standard matching explosion proof guideline

AB41EX4, AG4*EX4, AP*1EX4, AD*1EX4, ADK11EX4

- Explosion proof performance ExdⅡBT4
- Flameproof construction d
- Group ⅡB
- Temperature class T4

Type examination certificate no.:
AB, AP, AD (for AC) : TC20594
(for DC, AC diode coil): TC20618
AG (for AC) : TC20593
(for DC, AC diode coil): TC20617
ADK (for AC) : TC20592
(for DC, AC diode coil): TC20616

AB41EX2, AP*1EX2

- Explosion proof performance ExdⅡBT2
- Flameproof construction d
- Group ⅡB
- Temperature class T2

Type examination certificate no.: TC20614

Available for outdoor use

Degree of protection IP65 (dust-proof, jet-proof)

Selectable range of cable diameter is increased

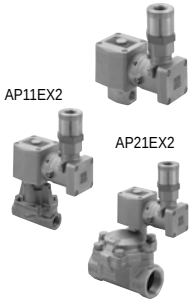
φ 7.5 to 13.5 is lined up

CKD Corporation

CC-1175A

Series variation

2/3 port direct acting/pilot operated explosion proof solenoid valve for various fluids (explosion proof general purpose valve)

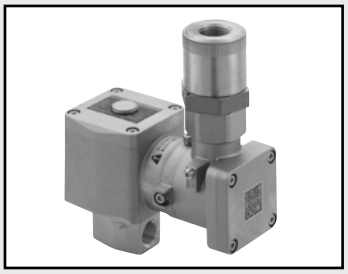
Explosion proof construction	No. of port	Model name		Structure	Actuation	Working fluid						
						Air	Low vacuum	Water	Paraffin oil	Oil (50 mm²/S or lower)	Steam	
ExdⅡBT4	2 port		AB41EX4	Direct acting type	NC (normally closed) type	●	●	●	●	●		
	3 port		AG41EX4	Direct acting type	Universal type	●	●	●	●	●		
			AG43EX4		NC pressuring type	●	●	●	●	●		
			AG44EX4		NO pressuring type	●	●	●	●	●		
	2 port		AP11EX4	Pilot-operated type piston drive	NC (normally closed) type	●		●	●	●		
			AP21EX4		NC (normally closed) type	●		●	●	●		
			AD11EX4	Pilot-operated type diaphragm drive	NC (normally closed) type	●		●	●	●		
			AD21EX4		NC (normally closed) type	●		●	●	●		
			ADK11EX4	Pilot-operated type diaphragm kick drive	NC (normally closed) type	●	●	●	●	●		
ExdⅡBT2	2 port		AB41EX2	Direct acting type	NC (normally closed) type	●		●	●	●	●	
			AP11EX2	Pilot-operated type piston drive	NC (normally closed) type	●		●	●	●	●	
			AP21EX2		NC (normally closed) type	●		●	●	●	●	

● Explosion proof performance

Explosion proof construction	Certification no.	Certification type	Voltage	No. of port	Coil insulation class	Ambient temperature	Fluid temperature	Applicable solenoid valve
ExdⅡBT4	No. TC20594	EH21-G	AC	2	180 (H)	-10 to +50°C	-10 to +60°C	● Direct acting type (AB41EX4 Series) ● Pilot-operated type Piston drive (AP11EX4, AP21EX4 Series) Diaphragm drive (AD11EX4, AD21EX4 Series)
	No. TC20618	EB21-G	DC *		130 (B)			
	No. TC20593	EH31-G	AC	3	180 (H)			● Direct acting type (AG41EX4 Series) ● Direct acting type (AG43EX4 Series) ● Direct acting type (AG44EX4 Series)
	No. TC20617	EB31-G	DC *		130 (B)			
	No. TC20592	EH23-G	AC	2	180 (H)			● Pilot operated diaphragm kick drive (ADK11EX4 Series)
	No. TC20616	EB23-G	DC *		130 (B)			
ExdⅡBT2	No. TC20614	EH21-G	AC	2	180 (H)	-10 to +40°C	+5 to +170°C	● Direct acting type (AB41EX2 Series) ● Pilot operated piston drive (AP11EX2, AP21EX2 Series)

* Diode integrated AC coil performs as DC.

	Port size											Page
	Rc1/4	Rc3/8	Rc1/2	Rc3/4	Rc1	Rc1 1/4	32 Flange	Rc1 1/2	40 Flange	Rc2	50 Flange	
	●	●										1
	●	●										5
	●	●										
	●	●										
			●	●	●							9
						●	●	●	●	●	●	13
			●	●	●							19
						●	●	●	●	●	●	23
			●	●	●							29
	●	●										33
			●	●	●							37
						●	●	●	●	●	●	41



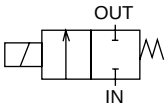
Explosion proof 2 port direct acting solenoid valve
(general purpose valve)

AB41EX4 Series

- Flameproof construction Exd Ⅱ BT4 (group ⅡB, temperature level T4)
- Type examination certificate no. AC: TC20594, DC: TC20618
- NC (normally closed) type
- Port size: Rc1/4, Rc3/8

RoHS

JIS symbol



Common specifications

Descriptions	AB41EX4
Working fluid	Air/low vacuum [1.33 × 10^2 Pa (abs)]/water/paraffin oil/oil (50 mm^2/s or less)
Operating pressure differential MPa	0 to 5 (Varies depending on the type. For max. operating pressure differential, refer to the Specification for each model)
Max. working pressure MPa	5
Proof pressure (water pressure) MPa	25
Fluid temperature °C	-10 to 60 (no freezing)
Ambient temperature °C	-10 to 50
Thermal class	AC: class 180 (H) AC diode integrated, DC: class 130 (B)
Atmosphere	Outdoor, explosive gas etc. (group ⅡB, temperature level T4)
Valve structure	Direct acting poppet structure
Valve seat leakage cm^3/min (ANR)	0.2 or less (sealant material PTFE: 300 or less) (in air)
Mounting orientation	Free

Individual specifications

Descriptions / Model no.	Port size	Orifice size (mm)	Max. operating pressure differential (MPa)						Rated voltage	Apparent power (VA)				Power consumption (W)		Weight (kg)
			Air		Water, hot water, paraffin oil		Oil (50 mm^2/s)			When retaining		When starting		AC	DC	
			AC	DC	AC	DC	AC	DC		50 Hz	60 Hz	50 Hz	60 Hz	50 Hz/60 Hz		
NC (normally closed) type																
AB41EX4-$\frac{02}{03}$-1	Rc 1/4 Rc 3/8	1.5	5.0	4.0	4.5	4.0	4.0	4.0	100 VAC 50/60 Hz 200 VAC 50/60 Hz	18	15	29	24	8/7	11.6	1.2
-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								
-7		7.0	0.25	0.1	0.2	0.1	0.15	0.1								

*1: Model no. for port size: 02 for Rc1/4 (8 A), 03 for Rc3/8 (10 A).
*2: Apply DC column for max. operating pressure differential of diode integrated coil.
*3: Use within voltage fluctuation range of -10 to +10% of rated voltage.
*4: When used at low vacuum, the Out port side should be evacuated.

Flow characteristics

Model no.	Port size	Orifice size (mm)	Flow characteristics		
			C [dm^3/(s·bar)]	b	Cv
NC (normally closed) type					
AB41EX4-$\frac{02}{03}$-1	Rc 1/4 Rc 3/8	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 the speed of sound conductance C are converted as S ≒ 5.0 × C.
*2: Value in ( ) is applicable for stainless steel bodies.

How to order

AB4①EX4 - 02 - 3 - 0 4 G 10 A - AC100V

Model no. | Ⓐ Actuation | Ⓑ Port size *1 | Ⓒ Orifice size | Ⓓ Body/sealant combination *2 | Ⓔ Coil types *3 | Ⓕ Applicable cable outer diameter | Ⓖ Other options *4 | Ⓗ Voltage *5

Symbol	Descriptions
Ⓐ Actuation	
1	NC (normally closed) type
Ⓑ Port size	
02	Rc1/4
03	Rc3/8
Ⓒ Orifice size	
1	φ 1.5
2	φ 2
3	φ 3
4	φ 3.5
5	φ 4
6	φ 5
7	φ 7

Ⓓ Body/sealant combination

		Body	Seal	Treatment	Remarks
0	Standard	Brass	Nitrile rubber	-	Air, water, low vacuum, paraffin oil, oil (under 60°C)
B	Option	Brass	Fluoro rubber	-	-
C	Option	Brass	PTFE	-	-
D	Option	Stainless steel	Nitrile rubber	-	Air, water, low vacuum, paraffin oil, oil (under 60°C)
E	Option	Stainless steel	Fluoro rubber	-	-
F	Option	Stainless steel	PTFE	-	-
H	Option	Brass	Nitrile rubber	Oil prohibited	Air, water, low vacuum, paraffin oil, oil (under 60°C)
J	Option	Brass	Fluoro rubber	Oil prohibited	-
K	Option	Brass	PTFE	Oil prohibited	-
P	Option	Brass	Ethylene-propylene rubber	Oil prohibited	-
L	Option	Stainless steel	Nitrile rubber	Oil prohibited	Air, water, low vacuum, paraffin oil, oil (under 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	-

Ⓔ Coil types	
3	Thermal class 130 (B) Explosion proof coil (for DC)
4	Thermal class 180 (H) Explosion proof coil (for AC)
5	Thermal class 130 (B) Diode integrated explosion proof coil (for AC)

Ⓕ Applicable cable outer diameter	
9	φ 7.5 to φ 9.5
10	φ 9.5 to φ 10.5
11	φ 10.5 to φ 11.5
13	φ 11.5 to φ 13.5

Ⓖ Other options		
Blank	Standard	No option
A	Option	Manual override (lock type)
B	Option	Mounting plate
AB	Option	Manual override, mounting plate

Ⓗ Voltage	
AC100V	100 VAC 50/60 Hz
AC200V	200 VAC 50/60 Hz

<Example of model no.>

AB41EX4-02-3-04G10A-AC100V

Model name: AB41EX4

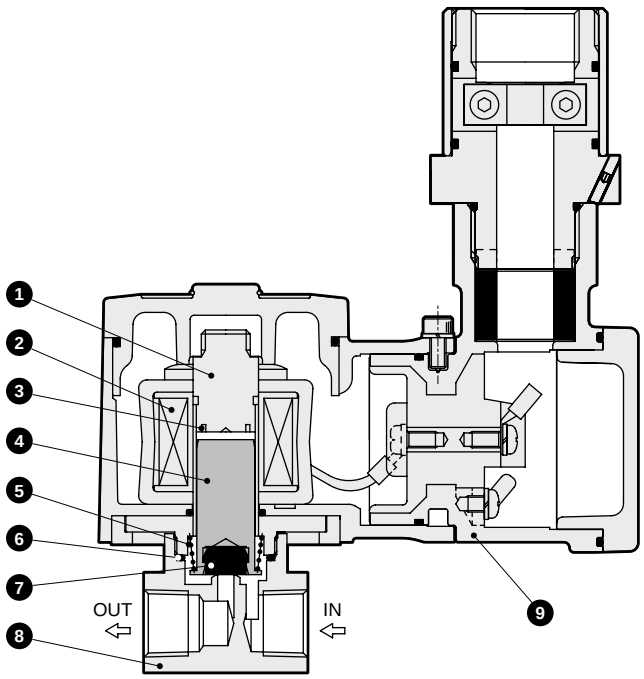
Ⓐ Actuation : NC (normally closed) type
Ⓑ Port size : Rc 1/4
Ⓒ Orifice diameter : φ 3
Ⓓ Combination of body and seal materials
: Body = brass, sealant = nitrile rubber
Ⓔ Coil type : Thermal class 180 (H), explosion-proof coil (for AC)
Ⓕ Applicable cable outer diameter
: φ 9.5 to φ 10.5
Ⓖ Other options : Manual override (lock type)
Ⓗ Voltage : 100 VAC 50/60 Hz

⚠ Note on model no. selection

*1: G threads and NPT threads are available for the piping port threads. Contact CKD for information.
*2: Combination of ethylene-propylene rubber sealant (Ⓓ items P, R) cannot be used if the fluid is air. (This is because compressed air contains oil while ethylene-propylene rubber is not oil-proof.)
*3: Thermal class B diode coil is a coil which is AC-DC converted from power supply voltage AC to coil voltage DC with diode.
*4: Manual override (Ⓖ items A, AB) is not mountable when Ⓓ items is any of C, F, K or N.
*5: For other voltages, voltages in below are available. Please contact CKD for more information.
12, 24, 48, 110, 115, 120, 220, 240, 380, 400, 415, 440, 480, 500 VAC
110, 220 VAC (with diode) 6, 12, 24, 48, 100, 110, 200, 220 VDC

Internal structure and parts list

● AB41EX4 Series

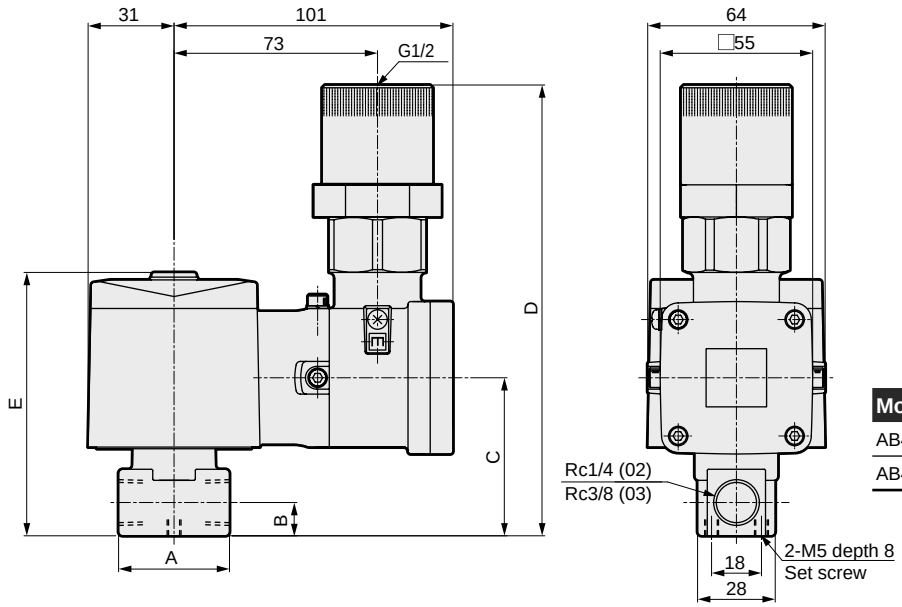


No.	Parts name	Material		No.	Parts name	Material	
1	Core assembly	SUS405 equivalent, 316L, 403	Stainless steel	6	O ring	NBR (FKM/PTFE/EPDM)	NBR : Nitrile rubber
2	Coil assembly	-	-				FKM : Fluoro rubber
3	Shading coil	Cu (Ag for stainless steel body)	Copper (Silver for stainless steel body)	7	Valve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

Items inside parentheses are optional

Dimensions

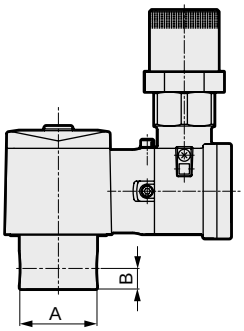
● Standard type
AB41EX4



Model no.	A	B	C	D	E
AB41EX4-02-1 to 6	36	11	54	160	92
AB41EX4-$^{02\text{-}7}_{03\text{-}1\text{ to }7}$	40	12	57	163	95

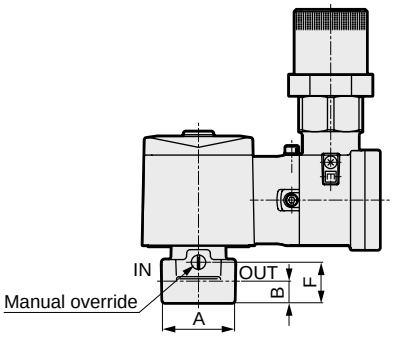
Option dimensions

● Stainless steel body
AB41EX4-*-* D, E, F, R, L, M, N



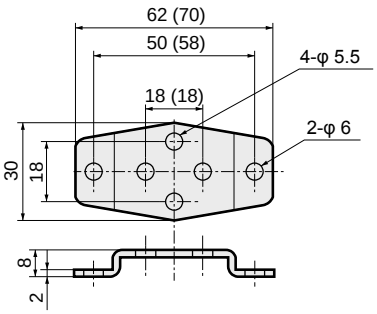
Model no.	A	B
AB41EX4-02-1 to 6	φ 37.5	11
AB41EX4-$^{02\text{-}7}_{03\text{-}1\text{ to }7}$	φ 45	12

● Manual override (lock type)
AB41EX4-*-*-*** A



Model no.	A	B	F
AB41EX4-02-1 to 6	36	11	19.5
AB41EX4-$^{02\text{-}7}_{03\text{-}1\text{ to }7}$	40	12	22.5

● Mounting plate
AB41EX4-*-*-*** B, AB



Dimensions inside parentheses are mounting plate no. 2

Code	Applicable model	
Mounting plate no. 1	● AB41EX4-$^{02}_{03}$-1 to 7	Brass body
GE-100106	● AB41EX4-02-1 to 6	Stainless steel body
Mounting plate no. 2	● AB41EX4-02-7	Stainless steel body
GE-100159	● AB41EX4-03-1 to 7	Stainless steel body

Explosion proof 3 port direct acting solenoid valve
(general purpose valve)

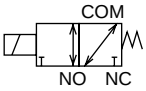
AG41EX4/AG43EX4/AG44EX4 Series

- Flameproof construction Exd Ⅱ BT4 (group ⅡB, temperature level T4)
- Type examination certificate no. AC: TC20593, DC: TC20617
- Universal type, NC pressuring type, NO pressuring type
- Port size: Rc1/4, Rc3/8

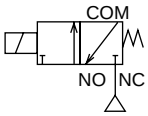
RoHS

JIS symbol

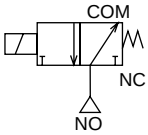
- AG41EX4: Universal type



- AG43EX4: NC pressuring type



- AG44EX4: NO pressuring type



Common specifications

Descriptions	AG41EX4/AG43EX4/AG44EX4
Working fluid	Air/low vacuum [1.33 × 10^2 Pa (abs)]/water/paraffin oil/oil (50 mm^2/s or less)
Operating pressure differential MPa	0 to 1.5 (Varies depending on the type. For max. operating pressure differential, refer to the Specification for each model)
Proof pressure (water pressure) MPa	25
Fluid temperature °C	-10 to 60 (no freezing)
Ambient temperature °C	-10 to 50
Thermal class	AC: class 180 (H) AC diode integrated, DC: class 130 (B)
Atmosphere	Outdoor, explosive gas etc. (group ⅡB, temperature level T4)
Valve structure	Direct acting poppet structure
Valve seat leakage cm^3/min (ANR)	0.2 or less (sealant material PTFE: 300 or less) (in air)
Mounting orientation	Free

Individual specifications

Descriptions / Model no.	Port size	Orifice size (mm)		Max. operating pressure differential (MPa)						Max. working pressure	Rated voltage	Apparent power (VA)				Power consumption (W)		Weight (kg)
				Air		Water, hot water, paraffin oil		Oil (50 mm^2/s)				When retaining		When starting		AC	DC	
		TOP	BODY	AC	DC	AC	DC	AC	DC	MPa		50 Hz	60 Hz	50 Hz	60 Hz	50 Hz/60 Hz		
Universal type																		
AG41EX4-02 -1	Rc 1/4	2.0	2.0	1.0	0.7	1.0	0.7	0.4	0.3	1	100 VAC 50/60 Hz 200 VAC 50/60 Hz	22	17	35	27	10/8	11.6	1.3
AG41EX4-03 -1	Rc 3/8	2.3	2.3	0.7	0.4	0.7	0.4	0.25	0.15	1		22	17	35	27	10/8	11.6	1.3
NC pressuring type																		
AG43EX4-02 -4	Rc 1/4	3.0	3.0	0.7	0.7	0.7	0.7	0.7	0.7	1		22	17	35	27	10/8	11.6	1.3
AG43EX4-03 -5	Rc 3/8	3.5	3.0	0.4	0.4	0.4	0.4	0.4	0.4	1		22	17	35	27	10/8	11.6	1.3
NO pressuring type																		
AG44EX4-02 -1	Rc 1/4	2.0	2.0	1.2	0.75	1.5	1.0	1.0	0.45	1.5		22	17	35	27	10/8	11.6	1.3
AG44EX4-03 -3	Rc 3/8	2.0	3.0	1.2	0.75	1.5	0.9	1.0	0.45	1.5		22	17	35	27	10/8	11.6	1.3
AG44EX4-03 -4	Rc 3/8	3.0	3.0	0.4	0.3	0.5	0.3	0.3	0.2	1.5		22	17	35	27	10/8	11.6	1.3

*1: Model no. for port size: 02 for Rc1/4 (8 A), 03 for Rc3/8 (10 A).
*2: Apply DC column for max. operating pressure differential of diode integrated coil.
*3: Use within voltage fluctuation range of -10 to +10% of rated voltage.
*4: NO pressuring is not available in case sealant material is PTFE for AG41EX4.
*5. When used at low vacuum, the port side discribed in below should be evacuated.
Universal type…COM, NC, NO port NC pressuring type…NO port NO pressuring type…NC port

Flow characteristics

Model no.	Port size	Orifice size (mm)		Flow characteristics					
				C [dm^3/(s·bar)]		b		Cv	
		TOP	BODY	TOP	BODY	TOP	BODY	TOP	BODY
Universal type									
AG41EX4-02 -1	Rc 1/4	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
AG41EX4-03 -2	Rc 3/8	2.3	2.3	0.74	0.74	0.66	0.53	0.19	0.19
NC pressuring type									
AG43EX4-02 -4	Rc 1/4	3.0	3.0	1.1	1.1	0.72	0.52	0.31	0.31
AG43EX4-03 -5	Rc 3/8	3.5	3.0	1.5	1.1	0.62	0.52	0.40	0.31
NO pressuring type									
AG44EX4-02 -1	Rc 1/4	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
AG44EX4-03 -3	Rc 3/8	2.0	3.0	0.53	1.1	0.54	0.52	0.15	0.31
AG44EX4-03 -4	Rc 3/8	3.0	3.0	1.1	1.1	0.72	0.52	0.31	0.31

*: Effective cross sectional area S and the speed of sound conductance C are converted as S ≒ 5.0 × C.

How to order

AG4①EX4 - 02 - 2 - 0 4 G 10 A - AC200V

- AG4①EX4: Model no.
- 02: Ⓑ Port size *2
- 2: Ⓒ Orifice size
- 0 4: Ⓓ Body/sealant combination *3 *7
- G: Ⓖ Other options *6
- 10: Ⓕ Applicable cable outer diameter *5
- A: Ⓐ Actuation
- AC200V: Ⓗ Voltage

Symbol	Descriptions	AG41EX4	AG43EX4	AG44EX4
Ⓐ Actuation				
1	Universal type	●		
3	NC pressuring type		●	
4	NO pressuring type			●
Ⓑ Port size				
02	Rc1/4	●	●	●
03	Rc3/8	●	●	●
Ⓒ Orifice size				
	TOP / BODY			
1	φ 2.0 / φ 2.0	●		●
2	φ 2.3 / φ 2.3	●		
3	φ 2.0 / φ 3.0			●
4	φ 3.0 / φ 3.0		●	●
5	φ 3.5 / φ 3.0		●	
Ⓓ Body/sealant combination				
	Body / Seal / Treatment / Remarks			
0 (Standard)	Brass / Nitrile rubber / - / Air, water, low vacuum, paraffin oil, oil (under 60°C)	●	●	●
B (Option)	Brass / Fluoro rubber / - / -	●	●	●
C (Option)	Brass / PTFE / - / -	●	●	
D (Option)	Stainless steel / Nitrile rubber / - / Air, water, low vacuum, paraffin oil, oil (under 60°C)	●	●	●
E (Option)	Stainless steel / Fluoro rubber / - / -	●	●	●
F (Option)	Stainless steel / PTFE / - / -	●	●	
H (Option)	Brass / Nitrile rubber / Oil prohibited / Air, water, low vacuum, paraffin oil, oil (under 60°C)	●	●	●
J (Option)	Brass / Fluoro rubber / Oil prohibited / -	●	●	●
K (Option)	Brass / PTFE / Oil prohibited / -	●	●	
P (Option)	Brass / Ethylene-propylene rubber / Oil prohibited / -	●	●	●
L (Option)	Stainless steel / Nitrile rubber / Oil prohibited / Air, water, low vacuum, paraffin oil, oil (under 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 / -	●	●	●
Ⓔ Coil types				
3	Thermal class 130 (B) Explosion proof coil (for DC)	●	●	●
4	Thermal class 180 (H) Explosion proof coil (for AC)	●	●	●
5	Thermal class 130 (B) Diode integrated explosion proof coil (for AC)	●	●	●
Ⓕ Applicable cable outer diameter				
9	φ 7.5 to φ 9.5	●	●	●
10	φ 9.5 to φ 10.5	●	●	●
11	φ 10.5 to φ 11.5	●	●	●
13	φ 11.5 to φ 13.5	●	●	●
Ⓖ Other options				
Blank (Standard)	No option	●	●	●
A (Option)	Manual override (lock type)	●	●	●
B (Option)	Mounting plate	●	●	●
AB (Option)	Manual override, mounting plate	●	●	●
Ⓗ Voltage				
AC100V	100 VAC 50/60 Hz	●	●	●
AC200V	200 VAC 50/60 Hz	●	●	●

<Example of model no.>

AG41EX4-02-2-04G10A-AC200V

Model name: AG41EX4

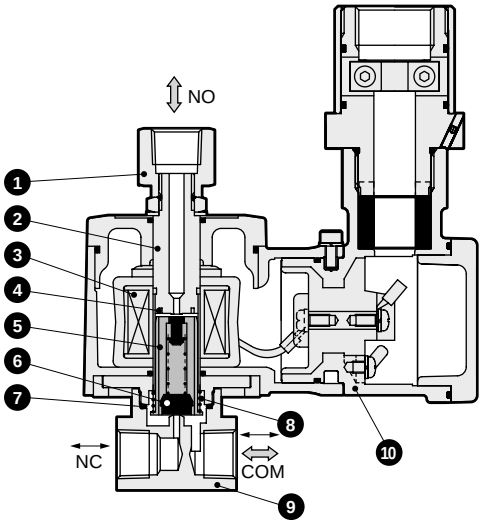
- Ⓐ Actuation : Universal type
- Ⓑ Port size : Rc 1/4
- Ⓒ Orifice diameter : TOP φ 2.3, BODY φ 2.3
- Ⓓ Combination of body and seal materials : Body = brass, sealant = nitrile rubber
- Ⓔ Coil type : Thermal class 180 (H), explosion-proof coil (for AC)
- Ⓕ Applicable cable outer diameter : φ 9.5 to φ 10.5
- Ⓖ Other options : Manual override (lock type)
- Ⓗ Voltage : 200 VAC 50/60 Hz

⚠ Note on model no. selection

*1: Combinations of ● in the table above are available.
*2: For piping port threads, G thread and NPT thread can be applied for only COM, NC ports. Contact CKD for details.
*3: Combination of ethylene-propylene rubber sealant (Ⓓ items P, R) cannot be used if the fluid is air. (This is because compressed air contains oil while ethylene-propylene rubber is not oil-proof.)
*4: Thermal class B diode coil is a coil which is AC-DC converted from power supply voltage AC to coil voltage DC with diode.
*5: Manual override (Ⓖ items A, AB) is not mountable when Ⓓ items is any of C, F, K or N.
*6: For other voltages, voltages in below are available. Please contact CKD for more information.
12, 24, 48, 110, 115, 120, 220, 240, 380, 400, 415, 440, 480, 500 VAC
110, 220 VAC (with diode) 6, 12, 24, 48, 100, 110, 200, 220 VDC
*7: For AG44EX4, sealant material on NO side will be fluoro rubber, even when nitrile rubber is selected for sealant material.

Internal structure and parts list

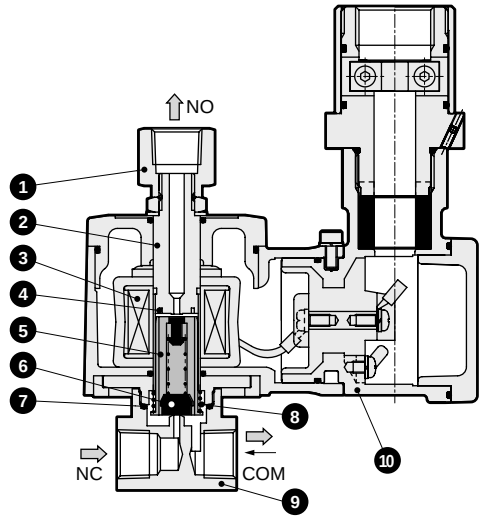
● AG41EX4 Series



No.	Parts name	Material	
1	Socket	C3604 (SUS303)	Brass (stainless steel)
2	Core assembly	SUS405 equivalent, 316L, 403	Stainless steel
3	Coil	-	-
4	Shading coil	Cu (Ag for stainless steel body)	Copper (Silver for stainless steel body)
5	Plunger	SUS405 equivalent	Stainless steel
6	Valve seal	NBR (FKM/PTFE/EPDM)	NBR : Nitrile rubber FKM : Fluoro rubber EPDM : Ethylene-propylene rubber PTFE : Polytetrafluoroethylene resin
7	O ring	NBR (FKM/PTFE/EPDM)	
8	Plunger spring	SUS304	Stainless steel
9	Body	C3771 (SUS303)	Brass (stainless steel)
10	Coil case	ADC12	Aluminum die-casting

Items inside parentheses are optional

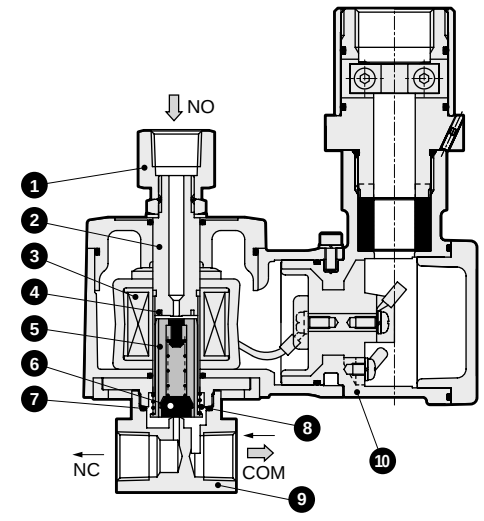
● AG43EX4 Series



No.	Parts name	Material	
1	Socket	C3604 (SUS303)	Brass (stainless steel)
2	Core assembly	SUS405 equivalent, 316L, 403	Stainless steel
3	Coil	-	-
4	Shading coil	Cu (Ag for stainless steel body)	Copper (Silver for stainless steel body)
5	Plunger	SUS405 equivalent	Stainless steel
6	Valve seal	NBR (FKM/PTFE/EPDM)	NBR : Nitrile rubber FKM : Fluoro rubber EPDM : Ethylene-propylene rubber PTFE : Polytetrafluoroethylene resin
7	O ring	NBR (FKM/PTFE/EPDM)	
8	Plunger spring	SUS304	Stainless steel
9	Body	C3771 (SUS303)	Brass (stainless steel)
10	Coil case	ADC12	Aluminum die-casting

Items inside parentheses are optional

● AG44EX4 Series

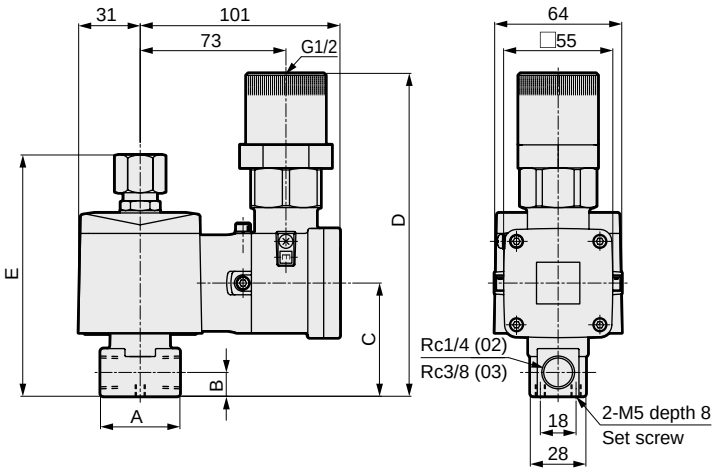


No.	Parts name	Material	
1	Socket	C3604 (SUS303)	Brass (stainless steel)
2	Core assembly	SUS405 equivalent, 316L, 403	Stainless steel
3	Coil	-	-
4	Shading coil	Cu (Ag for stainless steel body)	Copper (Silver for stainless steel body)
5	Plunger	SUS405 equivalent	Stainless steel
6	Valve seal	NBR (FKM/EPDM)	NBR : Nitrile rubber FKM : Fluoro rubber EPDM : Ethylene-propylene rubber
7	O ring	NBR (FKM/EPDM)	
8	Plunger spring	SUS304	Stainless steel
9	Body	C3771 (SUS303)	Brass (stainless steel)
10	Coil case	ADC12	Aluminum die-casting

Items inside parentheses are optional

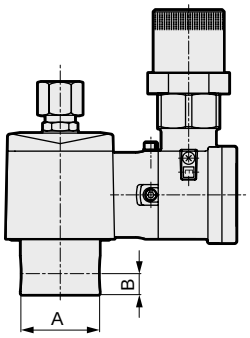
Dimensions and optional dimensions

● Standard type
AG4*EX4



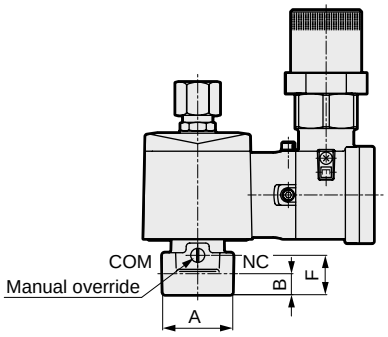
Model no.	A	B	C	D	E
AG41EX4-02-1/2	36	11	54	160	116
AG41EX4-03-1/2	40	12	57	163	122
AG43EX4-02-4/5	36	11	54	160	116
AG43EX4-03-4/5	40	12	57	163	122
AG44EX4-02-1/3/4	36	11	54	160	116
AG44EX4-03-1/3/4	40	12	57	163	122

● Stainless steel body
AG4*E4-*-*- D, E, F, R L, M, N



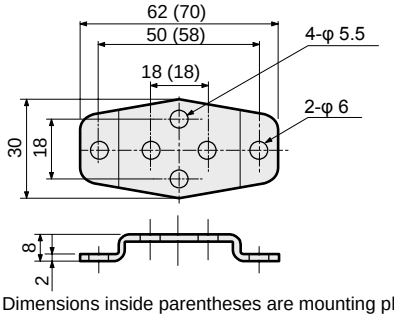
Model no.	A	B
AG41EX4-02-1/2	φ 37.5	11
AG41EX4-03-1/2	φ 45	12
AG43EX4-02-4/5	φ 37.5	11
AG43EX4-03-4/5	φ 45	12
AG44EX4-02-1/3/4	φ 37.5	11
AG44EX4-03-1/3/4	φ 45	12

● With manual override (lock type)
AG4*EX4-*-*-***A



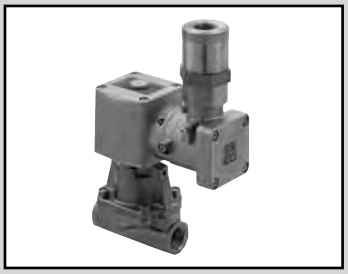
Model no.	A	B	F
AG41EX4-02-1/2	36	11	19.5
AG41EX4-03-1/2	40	12	22.5
AG43EX4-02-4/5	36	11	19.5
AG43EX4-03-4/5	40	12	22.5
AG44EX4-02-1/3/4	36	11	19.5
AG44EX4-03-1/3/4	40	12	22.5

● Mounting plate
AG4*EX4-*-*-***B



Dimensions inside parentheses are mounting plate no. 2

Code	Applicable model	
Mounting plate no. 1 GE-100106	● AG41EX4-$^{02}_{03}$-1/2	Brass body
	● AG41EX4-02-1/2	Stainless steel body
	● AG43EX4-$^{02}_{03}$-4/5	Brass body
	● AG43EX4-02-4/5	Stainless steel body
	● AG44EX4-$^{02}_{03}$-1/3/4	Brass body
	● AG44EX4-02-1/3/4	Stainless steel body
Mounting plate no. 2 GE-100159	● AG41EX4-03-1/2	Stainless steel body
	● AG43EX4-03-4/5	Stainless steel body
	● AG44EX4-03-1/3/4	Stainless steel body



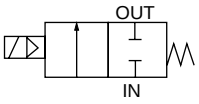
Explosion proof 2 port pilot operated solenoid valve
(general purpose valve)

AP11EX4 Series

- Flameproof construction Exd Ⅱ BT4 (group ⅡB, temperature level T4)
- NC (normally closed) type
- Port size: Rc1/2 - Rc1
- Piston drive
- Type examination certificate no. AC: TC20594, DC: TC20618

RoHS

JIS symbol



Common specifications

Descriptions	AP11EX4
Working fluid	Air, water, paraffin oil, oil (less than 50 mm^2/s)
Operating pressure differential MPa	0.05 to 1.2 (Varies depending on the type. For max. operating pressure differential, refer to the Specification for each model)
Max. working pressure MPa	2
Proof pressure (water pressure) MPa	10
Fluid temperature °C	-10 to 60 (no freezing)
Ambient temperature °C	-10 to 50
Thermal class	AC: class 180 (H) AC diode integrated, DC: class 130 (B)
Atmosphere	Outdoor, explosive gas etc. (group ⅡB, temperature level T4)
Valve structure	Pilot type poppet structure piston drive
Valve seat leakage (*) cm^3/min (ANR)	0.2 or less (sealant material PTFE: 300 or less) (in air)
Mounting orientation	Free (however should be within the operating pressure range)

*: This applies at a pneumatic pressure between 0.05 to 1.2 MPa.

Individual specifications

Descriptions / Model no.	Port size	Orifice size (mm)	Min. Operating pressure differential (MPa)	Max. operating pressure differential (MPa)						Rated voltage	Apparent power (VA)				Power consumption (W)		Weight (kg)
				Air		Water, paraffin oil		Oil (50 mm^2/s)			When retaining		When starting		AC	DC	
				AC	DC	AC	DC	AC	DC		50 Hz	60 Hz	50 Hz	60 Hz	50 Hz/ 60 Hz		
NC (normally closed) type																	
AP11EX4 -15A	Rc 1/2	15	0.05	1.2	0.6	1.0	0.6	0.6	0.6	100 VAC 50/60 Hz 200 VAC 50/60 Hz	18	15	29	24	8/7	11.6	2.1
-20A	Rc 3/4	20															2.5
-25A	Rc 1	25															3.2

*1: Apply DC column for max. operating pressure differential of diode integrated coil.
*2: Use within voltage fluctuation range of -10 to +10% of rated voltage.

Flow characteristics

Model no.	Port size	Orifice size (mm)	Flow characteristics			
			C [$dm^3/(s \cdot bar)$]	b	Cv	S (mm^2)
NC (normally closed) type						
AP11EX4 -15A	Rc 1/2	15	21	0.22	4.5	-
-20A	Rc 3/4	20	-	-	9.3	162
-25A	Rc 1	25	-	-	12.0	231

*: Effective cross sectional area S and the speed of sound conductance C are converted as $S \fallingdotseq 5.0 \times C$.

How to order

AP1①EX4 - 25A - 0 4 G 10 A - AC200V

- Model no.
- Ⓐ Actuation
- Ⓑ Port size *1
- Ⓒ Body/sealant combination
- Ⓓ Coil types *2
- Ⓔ Applicable cable outer diameter
- Ⓕ Other options *3
- Ⓖ Voltage *4

Symbol	Descriptions
Ⓐ Actuation	
1	NC (normally closed) type
Ⓑ Port size	
15A	Rc1/2
20A	Rc3/4
25A	Rc1

Ⓒ Body/sealant combination

		Body	Valve seal	O ring	Fluorine	Remarks
0	Standard	Bronze	Nitrile rubber	Nitrile rubber	-	Air, water, paraffin oil, oil (under 60°C)
B	Option	Bronze	Fluoro rubber	Fluoro rubber	-	-
C	Option	Bronze	PTFE	Fluoro rubber	-	-
D	Option	Stainless steel	Nitrile rubber	Nitrile rubber	-	Air, water, paraffin oil, oil (under 60°C)
E	Option	Stainless steel	Fluoro rubber	Fluoro rubber	-	-
F	Option	Stainless steel	PTFE	PTFE	-	-
H	Option	Bronze	Nitrile rubber	Nitrile rubber	Oil prohibited	Air, water, paraffin oil, oil (under 60°C)
J	Option	Bronze	Fluoro rubber	Fluoro rubber	Oil prohibited	-
K	Option	Bronze	PTFE	Fluoro rubber	Oil prohibited	-
L	Option	Stainless steel	Nitrile rubber	Nitrile rubber	Oil prohibited	Air, water, paraffin oil, oil (under 60°C)
M	Option	Stainless steel	Fluoro rubber	Fluoro rubber	Oil prohibited	-
N	Option	Stainless steel	PTFE	PTFE	Oil prohibited	-

Ⓓ Coil types	
3	Thermal class 130 (B) Explosion proof coil (for DC)
4	Thermal class 180 (H) Explosion proof coil (for AC)
5	Thermal class 130 (B) Diode integrated explosion proof coil (for AC)
Ⓔ Applicable cable outer diameter	
9	φ 7.5 to φ 9.5
10	φ 9.5 to φ 10.5
11	φ 10.5 to φ 11.5
13	φ 11.5 to φ 13.5
Ⓕ Other options	
Blank (Standard)	No option
A	Manual override (lock type)
Ⓖ Voltage	
AC100V	100 VAC 50/60 Hz
AC200V	200 VAC 50/60 Hz

<Example of model no.>

AP11EX4-25A-04G10A-AC100V

Model name: AP11EX4

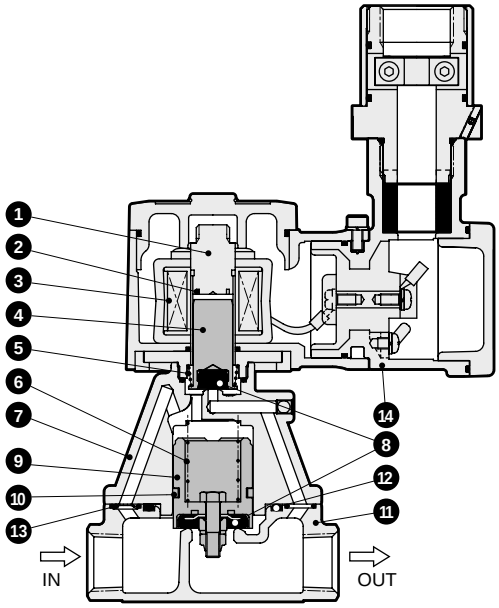
- Ⓐ Actuation : NC (normally closed) type
- Ⓑ Port size : Rc 1
- Ⓒ Body/sealant combination
  : Body = bronze, valve seal = nitrile rubber
  : O ring = nitrile rubber
- Ⓓ Coil type : Thermal class 180 (H), explosion-proof coil (for AC)
- Ⓔ Applicable cable outer diameter
  : φ 9.5 to φ 10.5
- Ⓕ Other options : With manual override (lock type)
- Ⓖ Voltage : 100 VAC 50/60 Hz

⚠ Note on model no. selection

*1: G threads and NPT threads are available for the piping port threads. Contact CKD for information.
*2: Thermal class B diode coil is a coil which is AC-DC converted from power supply voltage AC to coil voltage DC with diode.
*3: Manual override (Ⓕ item A) is not mountable when Ⓒ items is any of C, F, K or N.
*4: For other voltages, voltages in below are available. Please contact CKD for more information.
12, 24, 48, 110, 115, 120, 220, 240, 380, 400, 415, 440, 480, 500 VAC
110, 220 VAC (with diode) 6, 12, 24, 48, 100, 110, 200, 220 VDC

Internal structure and parts list

● AP11EX4 Series



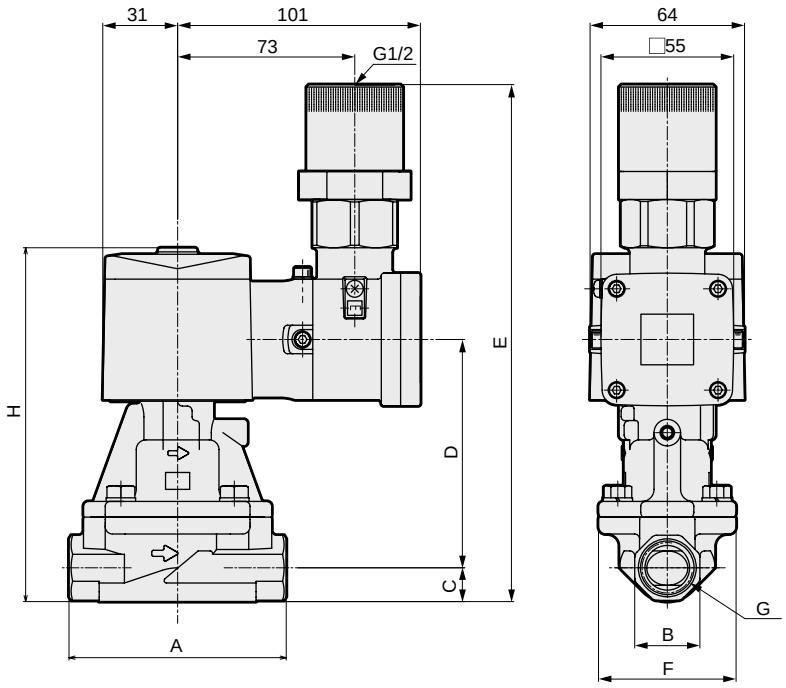
No.	Parts name	Material	
1	Core assembly	SUS405 equivalent, SUS316L, SUS403	Stainless steel
2	Shading coil	Cu (Ag for stainless steel body)	Copper (Silver for stainless steel body)
3	Coil	-	-
4	Plunger	SUS405 equivalent	Stainless steel
5	Plunger spring	SUS304	Stainless steel
6	Valve spring	SUS304	Stainless steel
7	Stuffing	CAC408 (SCS13) *	Bronze casting (stainless casting)
8	Valve seal	NBR (FKM, PTFE)	Nitrile rubber (fluoro rubber, polytetrafluoroethylene resin)
9	Valve assembly	C3604/SUS303/SUS304 (SUS303/SUS304)	Stainless steel, brass (stainless steel)
10	Piston ring	SUS304/PTFE	Stainless steel, polytetrafluoroethylene resin
11	Body	CAC408 (SCS13) *	Bronze casting (stainless casting)
12	O ring	NBR (FKM, PTFE)	Nitrile rubber (fluoro rubber, polytetrafluoroethylene resin)
13	Orifice plate	SUS304 (SUS303)	Stainless steel
14	Coil case	ADC12	Aluminum die cast

Items inside parentheses are optional

* For port size 8 (1/4), 10 (3/8), body, stuffing material is brass (C3771) as standard, and orifice material is SUS303 (stainless steel) as both standard and option.

Dimensions

● Standard type
AP11EX4

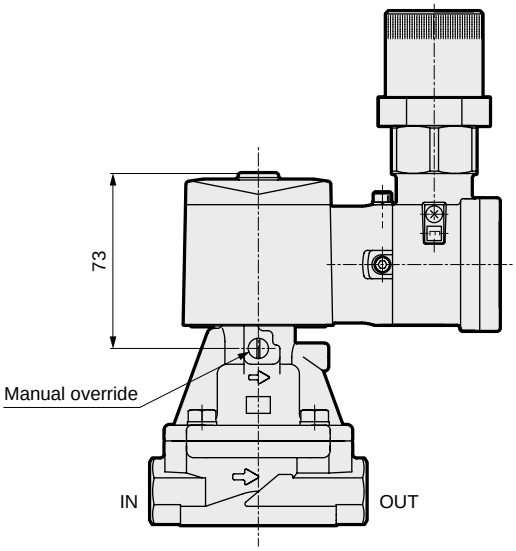


Model no.	A	B	C	D	E	F	G	H
AP11EX4-15A	90	27 (29)	14 (14.5)	94.5	214.5 (215)	57	Rc1/2	146.5 (147)
AP11EX4-20A	100	32 (35)	17 (17.5)	103.5	226.5 (227)	65	Rc3/4	158.5 (159)
AP11EX4-25A	110	41 (44)	20.5 (22)	118	244.5 (246)	76	Rc1	176.5 (178)

Note1: Dimensions in ( ) are the values when stainless steel is used as body

Option dimensions

● With manual override (lock type)
AP11EX4-*-***A



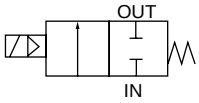
Explosion proof 2 port pilot operated solenoid valve (general purpose valve)

AP21EX4 Series

- Flameproof construction Exd Ⅱ BT4 (group ⅡB, temperature level T4)
- NC (normally closed) type
- Port size: Rc1 1/4 to Rc2, 32 to 50 flanges
- Piston drive
- Type examination certificate no. AC: TC20594, DC: TC20618

RoHS

JIS symbol



Common specifications

Descriptions	AP21EX4
Working fluid	Air, water, paraffin oil, oil (less than 50 mm^2/s)
Operating pressure differential MPa	0.05 to 1.2 (Varies depending on the type. For max. operating pressure differential, refer to the Specification for each model)
Max. working pressure MPa	1.6
Proof pressure (water pressure) MPa	3.2
Fluid temperature °C	-10 to 60 (no freezing)
Ambient temperature °C	-10 to 50
Thermal class	AC: class 180 (H) AC diode integrated, DC: class 130 (B)
Atmosphere	Outdoor, explosive gas etc. (group ⅡB, temperature level T4)
Valve structure	Pilot type poppet structure piston drive
Valve seat leakage (*) cm^3/min	1 or less (sealant material PTFE: 400 or less) (in air)
Mounting orientation	Free (however should be within the operating pressure range)

*: This applies at a pneumatic pressure between 0.05 to 1.2 MPa.

Individual specifications

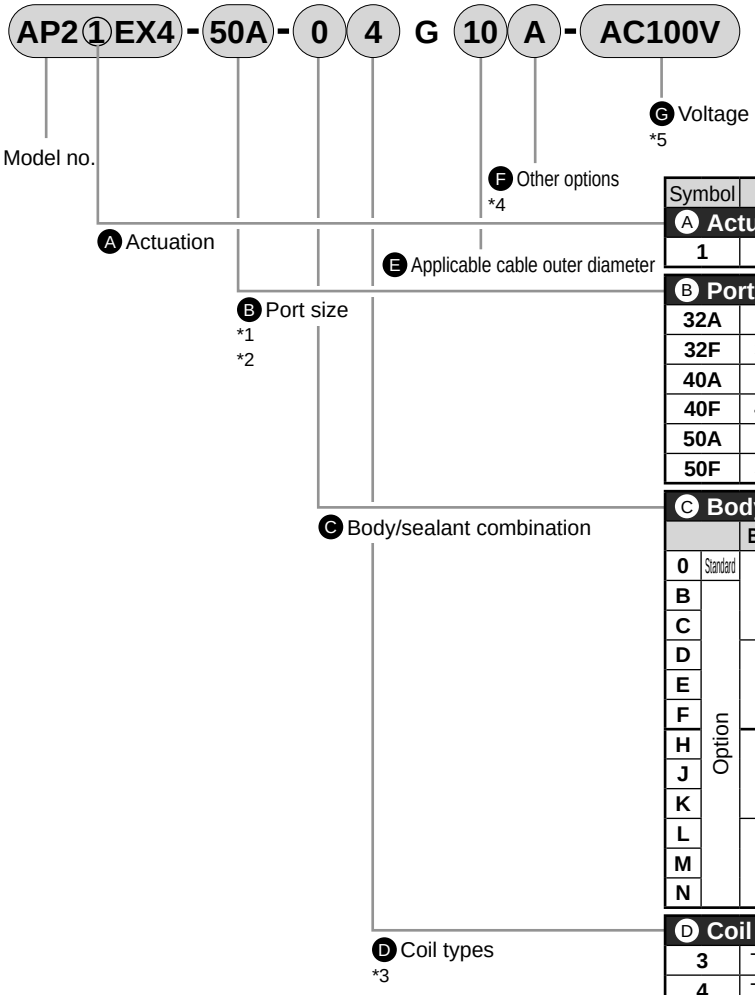
Descrip / Model no.	Port size	Orifice size (mm)	Minimum operating pressure differential (MPa)	Max. operating pressure differential (MPa)						Rated voltage	Apparent power (VA)				Power consumption (W)		Weight (kg)
				Air		Water, paraffin oil		Oil (50 mm^2/s)			When retaining		When starting		AC	DC	
				AC	DC	AC	DC	AC	DC		50 Hz	60 Hz	50 Hz	60 Hz	50 Hz/ 60 Hz		
NC (normally closed) type																	
AP21EX4-32A	Rc1 1/4	35	0.05	1.2	0.6	1.0	0.6	0.6	0.6	100 VAC 50/60 Hz 200 VAC 50/60 Hz	18	15	29	24	8/7	11.6	4.2
-32F	32 flange																7.7
-40A	Rc1 1/2	43															5.2
-40F	40 flange																8.7
-50A	Rc 2	53															6.7
-50F	50 flange																10.7

*1: Apply DC column for max. operating pressure differential of diode integrated coil.
*2: Use within voltage fluctuation range of -10 to +10% of rated voltage.

Flow characteristics

Model no.	Port size	Orifice size (mm)	Cv	Effective area (mm^2)
NC (normally closed) type				
AP21EX4-32A	Rc1 1/4	35	25	460
-32F	32 flange			
-40A	Rc1 1/2	43	34	625
-40F	40 flange			
-50A	Rc 2	53	53	975
-50F	50 flange			

How to order



Symbol	Descriptions
A Actuation	
1	NC (normally closed) type

B Port size	
32A	Rc1 1/4
32F	32 flange
40A	Rc1 1/2
40F	40 flange
50A	Rc2
50F	50 flange

C Body/sealant combination

		Body	Valve seal	O ring	Treatment	Remarks
0	Standard	Bronze	Nitrile rubber	Nitrile rubber	-	Air, water, paraffin oil, oil (under 60°C)
B	Option		Fluoro rubber	Fluoro rubber		-
C			PTFE	Fluoro rubber		-
D		Stainless steel	Nitrile rubber	Nitrile rubber	-	Air, water, paraffin oil, oil (under 60°C)
E			Fluoro rubber	Fluoro rubber		-
F			PTFE	PTFE		-
H		Bronze	Nitrile rubber	Nitrile rubber	Oil prohibited	Air, water, paraffin oil, oil (under 60°C)
J			Fluoro rubber	Fluoro rubber		-
K			PTFE	Fluoro rubber		-
L		Stainless steel	Nitrile rubber	Nitrile rubber		Air, water, paraffin oil, oil (under 60°C)
M			Fluoro rubber	Fluoro rubber		-
N			PTFE	PTFE		-

D Coil types	
3	Thermal class 130 (B) Explosion proof coil (for DC)
4	Thermal class 180 (H) Explosion proof coil (for AC)
5	Thermal class 130 (B) Diode integrated explosion proof coil (for AC)

E Applicable cable outer diameter	
9	φ 7.5 to φ 9.5
10	φ 9.5 to φ 10.5
11	φ 10.5 to φ 11.5
13	φ 11.5 to φ 13.5

F Other options		
Blank	Standard	No option
A		Manual override (lock type)

G Voltage	
AC100V	100 VAC 50/60 Hz
AC200V	200 VAC 50/60 Hz

<Example of model no.>

AP21EX4-50F-04G10A-AC100V

Model name: AP21EX4

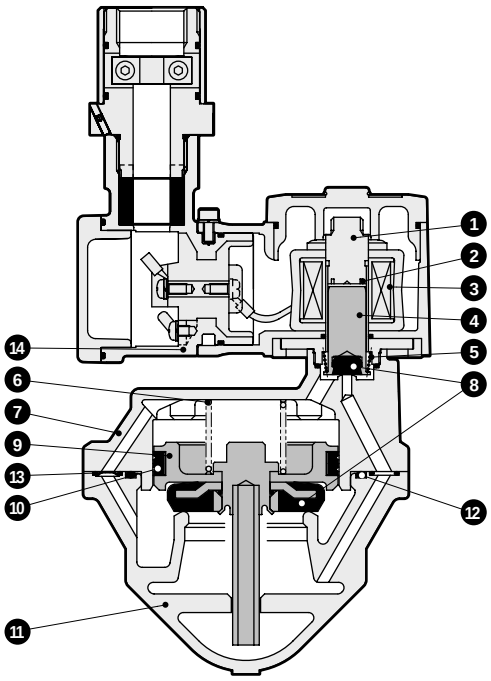
- A Actuation : NC (normally closed) type
- B Port size : 50 flange
- C Body/sealant combination : Body = bronze, sealant = nitrile rubber, O ring = nitrile rubber
- D Coil type : Thermal class 180 (H), explosion-proof coil (for AC)
- E Applicable cable outer diameter : φ 9.5 to φ 10.5
- F Other options : Manual override (lock type)
- G Voltage : 100 VAC 50/60 Hz

⚠ Note on model no. selection

*1: Companion flange is 10K flange of JIS B2210. (They are not included in the product. Please purchase separately.)
*2: G threads and NPT threads are available for the piping port threads. Contact CKD for information.
*3: Thermal class B diode coil is a coil which is AC-DC converted from power supply voltage AC to coil voltage DC with diode.
*4: Manual override (F item A) is not mountable when C items is any of C, F, K or N.
*5: For other voltages, voltages in below are available. Please contact CKD for more information.
12, 24, 48, 110, 115, 120, 220, 240, 380, 400, 415, 440, 480, 500 VAC
110, 220 VAC (with diode) 6, 12, 24, 48, 100, 110, 200, 220 VDC

Internal structure and parts list

● AP21EX4 Series

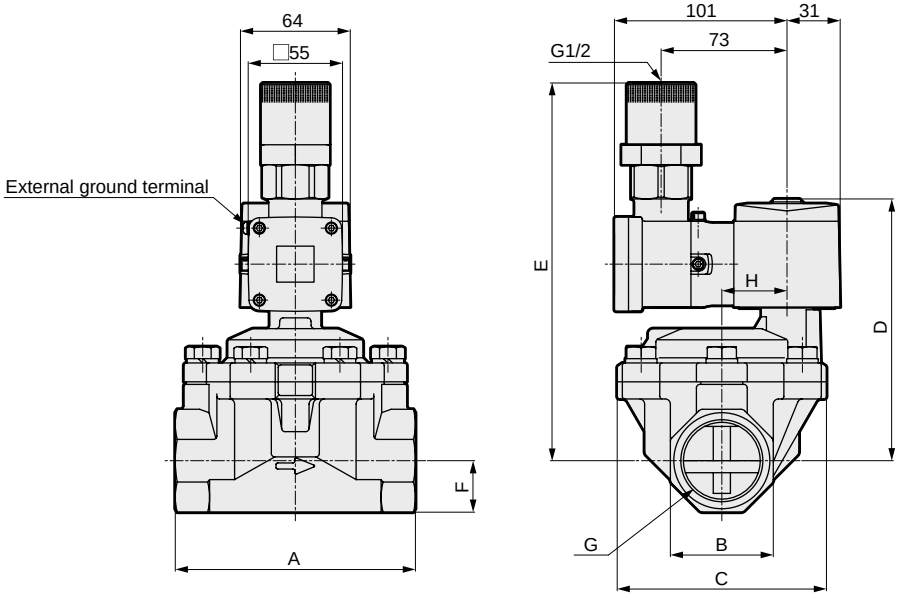


No.	Parts name	Material	
1	Core assembly	SUS405 equivalent, SUS316L, SUS403	Stainless steel
2	Shading coil	Cu (Ag for stainless steel body)	Copper (Silver for stainless steel body)
3	Coil	-	-
4	Plunger	SUS405 equivalent	Stainless steel
5	Plunger spring	SUS304	Stainless steel
6	Valve spring	SUS304	Stainless steel
7	Stuffing	CAC408 (SCS13)	Bronze casting (stainless casting)
8	Valve seal	NBR (FKM, PTFE)	Nitrile rubber (fluoro rubber, polytetrafluoroethylene resin)
9	Main valve assembly	C3604/SUS303/SUS304 (SUS303/SUS304)	Stainless steel, Brass (stainless steel)
10	Seal ring set	SUS304/PTFE	Stainless steel, Polytetrafluoroethylene resin
11	Body	CAC408 (SCS13)	Bronze casting (stainless casting)
12	O ring	NBR (FKM, PTFE)	Nitrile rubber (fluoro rubber, polytetrafluoroethylene resin)
13	Orifice plate	SUS304	Stainless steel
14	Coil case	ADC12	Aluminum die cast

Items inside parentheses are optional

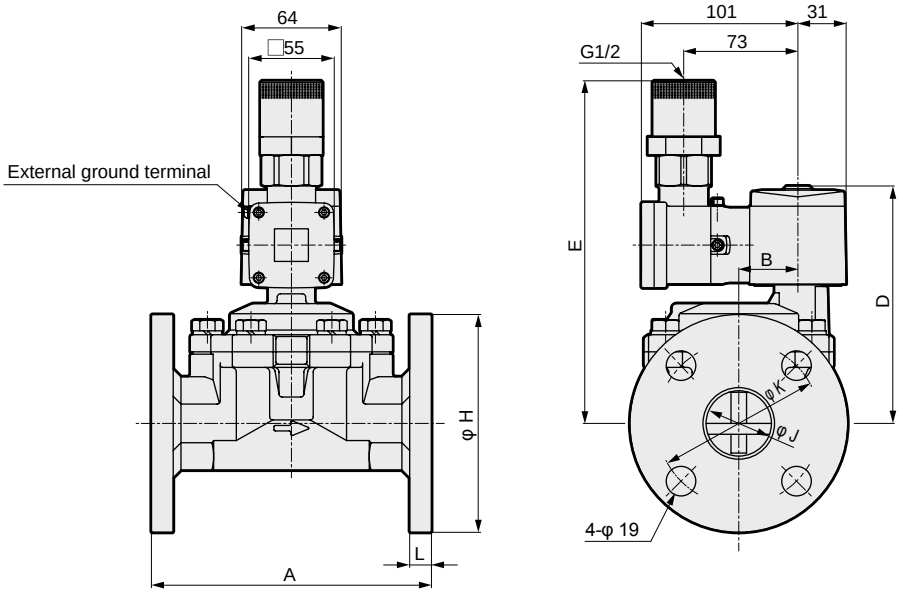
Dimensions

● Standard type (Rc screw-in type)
AP21EX4-32A/40A/50A



Model no.	A	B	C	D	E	F	G	H
AP21EX4-32A	125	54	112	147	215	27	Rc1 1/4	32
AP21EX4-40A	140	60	122	153	221	30	Rc1 1/2	38
AP21EX4-50A	160	74	132	161	229	37	Rc2	45

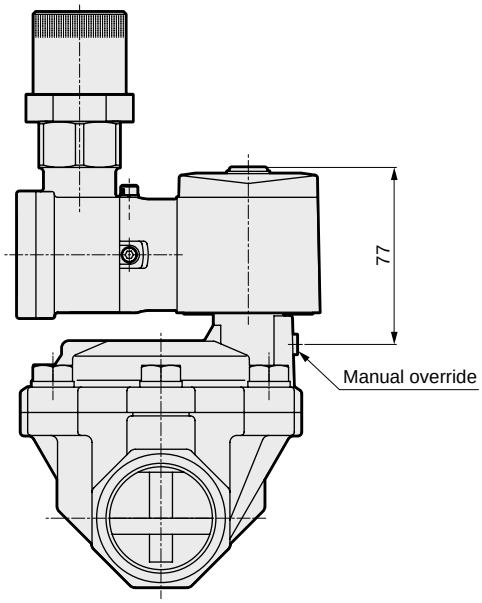
● Standard type (flange type)
AP21EX4-32F/40F/50F



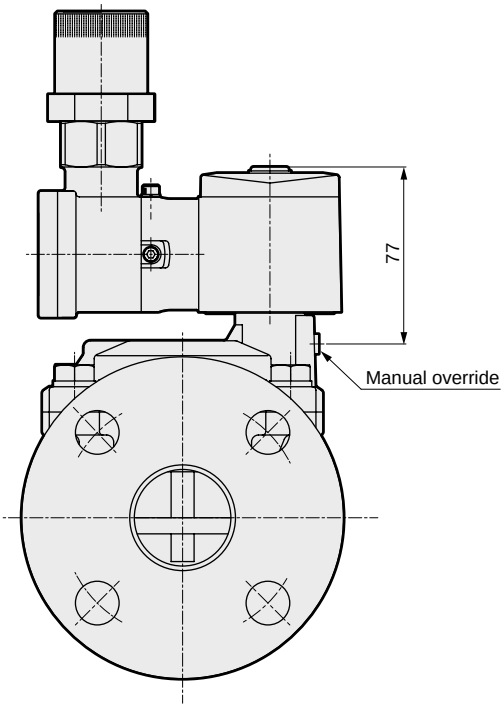
Model no.	A	B	D	E	H	J	K	L
AP21EX4-32F	170	32	147	215	135	36	100	12
AP21EX4-40F	180	38	153	221	140	42	105	14
AP21EX4-50F	180	45	161	229	155	53	120	14

Option dimensions

● Manual override (lock type) (Rc screw-in type)
AP21EX4-32A/40A/50A-*** A



● Manual override (lock type) (flange type)
AP21EX4-32F/40F/50F-*** A



MEMO

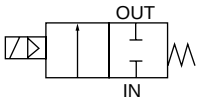
Explosion proof 2 port pilot operated solenoid valve
(general purpose valve)

AD11EX4 Series

- Flameproof construction Exd Ⅱ BT4 (group ⅡB, temperature level T4)
- NC (normally closed) type
- Port size: Rc1/2 - Rc1
- Diaphragm drive
- Type examination certificate no. AC: TC20594, DC: TC20618

RoHS

JIS symbol



Common specifications

Descriptions	AD11EX4
Working fluid	Air, water, paraffin oil, oil (less than 50 mm^2/s)
Operating pressure differential MPa	0.02 to 1 (Varies depending on the type. For max. operating pressure differential, refer to the Specification for each model.)
Max. working pressure MPa	2
Proof pressure (water pressure) MPa	8
Fluid temperature °C	-10 to 60 (no freezing)
Ambient temperature °C	-10 to 50
Thermal class	AC: class 180 (H) AC diode integrated, DC: class 130 (B)
Atmosphere	Outdoor, explosive gas etc. (group ⅡB, temperature level T4)
Valve structure	Pilot poppet type poppet structure diaphragm drive
Valve seat leakage (*) cm^3/min (ANR)	0.2 or less (in air)
Mounting orientation	Free (however should be within the operating pressure range)

*: This applies at a pneumatic pressure between 0.02 to 1 MPa.

Individual specifications

Descriptions / Model no.	Port size	Orifice size (mm)	Min. operating pressure differential (MPa)	Max. operating pressure differential (MPa)						Rated voltage	Apparent power (VA)				Power consumption (W)		Weight (kg)
				Air		Water, paraffin oil		Oil (50 mm^2/s)			When retaining		When starting		AC 50 Hz/ 60 Hz	DC	
				AC	DC	AC	DC	AC	DC		50 Hz	60 Hz	50 Hz	60 Hz			
NC (normally closed) type																	
AD11EX4 -15A	Rc 1/2	15	0.02	1	0.6	0.7	0.6	0.6	0.6	100 VAC 50/60 Hz 200 VAC 50/60 Hz	18	15	29	24	8/7	11.6	1.7
-20A	Rc 3/4	20															1.9
-25A	Rc 1	25															2.3

*1: Apply DC column for max. operating pressure differential of diode integrated coil.
*2: Use within voltage fluctuation range of -10 to +10% of rated voltage.

Flow characteristics

Model no.	Port size	Orifice size (mm)	Flow characteristics			
			C [$dm^3/(s \cdot bar)$]	b	Cv	S (mm^2)
NC (normally closed) type						
AD11EX4 -15A	Rc 1/2	15	21	0.22	4.5	-
-20A	Rc 3/4	20	-	-	9.3	162
-25A	Rc 1	25	-	-	12.0	231

*: Effective cross sectional area S and the speed of sound conductance C are converted as $S \fallingdotseq 5.0 \times C$.

How to order

AD1①EX4 - 20A - 0 4 G 10 A - AC100V

Model no.

Ⓐ Actuation

Ⓑ Port size *1

Ⓒ Body/sealant combination

Ⓓ Coil types *2

Ⓔ Applicable cable outer diameter

Ⓕ Other options

Ⓖ Voltage *3

Symbol	Descriptions
Ⓐ Actuation	
1	NC (normally closed) type
Ⓑ Port size	
15A	Rc1/2
20A	Rc3/4
25A	Rc1

Ⓒ Body/sealant combination

		Body	Seal	Lubricant	Remarks
0	Standard	Bronze	Nitrile rubber	-	Air, water, paraffin oil, oil (under 60°C)
B	Option		Fluoro rubber		-
D		Stainless steel	Nitrile rubber	-	Air, water, paraffin oil, oil (under 60°C)
E			Fluoro rubber		-
H		Bronze	Nitrile rubber	Oil prohibited	Air, water, paraffin oil, oil (under 60°C)
J			Fluoro rubber		-
L		Stainless steel	Nitrile rubber		Air, water, paraffin oil, oil (under 60°C)
M			Fluoro rubber		-

Ⓓ Coil types	
3	Thermal class 130 (B) Explosion proof coil (for DC)
4	Thermal class 180 (H) Explosion proof coil (for AC)
5	Thermal class 130 (B) Diode integrated explosion proof coil (for AC)
Ⓔ Applicable cable outer diameter	
9	φ 7.5 to φ 9.5
10	φ 9.5 to φ 10.5
11	φ 10.5 to φ 11.5
13	φ 11.5 to φ 13.5
Ⓕ Other options	
Blank (Standard)	No option
A	Manual override (lock type)
Ⓖ Voltage	
AC100V	100 VAC 50/60 Hz
AC200V	200 VAC 50/60 Hz

<Example of model no.>

AD11EX4-20A-04G10A-AC100V

Model name: AD11EX4

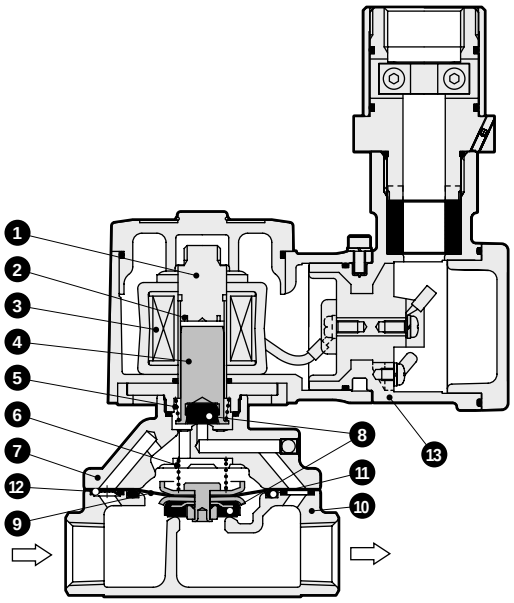
Ⓐ Actuation : NC (normally closed) type
Ⓑ Port size : Rc 3/4
Ⓒ Body/sealant combination
: Body = bronze, sealant = nitrile rubber
Ⓓ Coil type : Thermal class 180 (H), explosion-proof coil (for AC)
Ⓔ Applicable cable outer diameter
: φ 9.5 to φ 10.5
Ⓕ Other options : Manual override (lock type)
Ⓖ Voltage : 100 VAC 50/60 Hz

⚠ Note on model no. selection

*1: G threads and NPT threads are available for the piping port threads. Contact CKD for information.
*2: Thermal class B diode coil is a coil which is AC-DC converted from power supply voltage AC to coil voltage DC with diode.
*3: For other voltages, voltages in below are available. Please contact CKD for more information.
12, 24, 48, 110, 115, 120, 220, 240, 380, 400, 415, 440, 480, 500 VAC
110, 220 VAC (with diode) 6, 12, 24, 48, 100, 110, 200, 220 VDC

Internal structure and parts list

● AD11EX4 Series

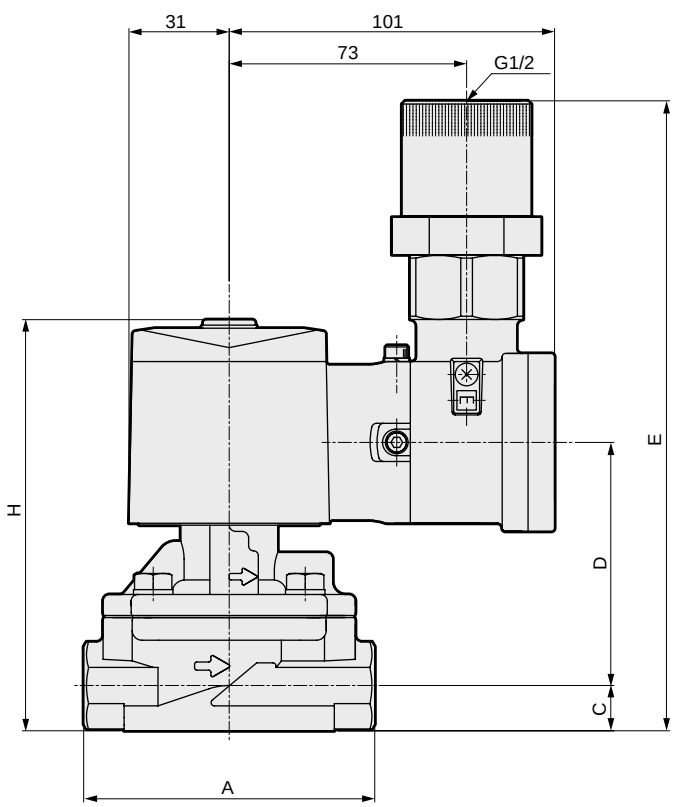


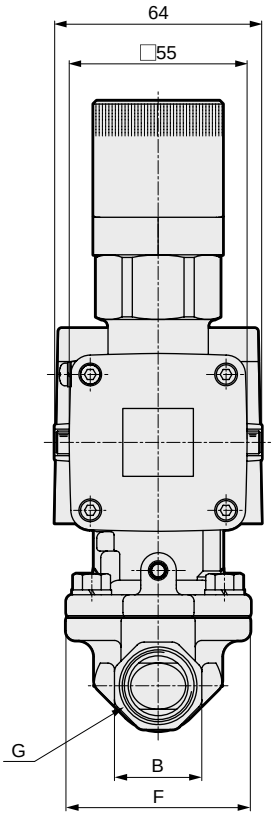
No.	Parts name	Material	
1	Core assembly	SUS405 equivalent, SUS316L, SUS403	Stainless steel
2	Shading coil	Cu (Ag for stainless steel body)	Copper (Silver for stainless steel body)
3	Coil	-	-
4	Plunger	SUS405 equivalent	Stainless steel
5	Plunger spring	SUS304	Stainless steel
6	Valve spring	SUS304	Stainless steel
7	Stuffing	CAC408 (SCS13)	Bronze casting (stainless casting)
8	Seal	NBR (FKM)	Nitrile rubber (fluoro rubber)
9	Diaphragm assembly	SUS303/SUS304/NBR (SUS303/SUS304/FKM)	Stainless steel·nitrile rubber (stainless steel·fluoro rubber)
10	Body	CAC408 (SCS13)	Bronze casting (stainless casting)
11	O ring	NBR (FKM)	Nitrile rubber (fluoro rubber)
12	Orifice plate	SUS304	Stainless steel
13	Coil case	ADC12	Aluminum die cast

Items inside parentheses are optional

Dimensions and optional dimensions

● Standard type
AD11EX4-15A/20A/25A

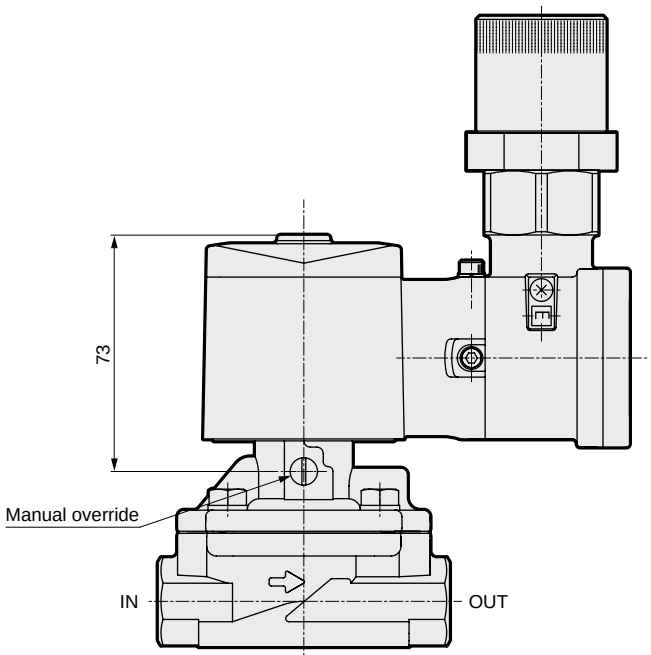




Model no.	A	B	C	D	E	F	G	H
AD11EX4-15A	90	27 (29)	14 (14.5)	75.5	195.5 (196)	57	Rc1/2	127.5 (128)
AD11EX4-20A	100	32 (35)	17 (17.5)	81.5	204.5 (205)	65	Rc3/4	136.5 (137)
AD11EX4-25A	110	41 (44)	20.5 (22)	87	213.5 (215)	76	Rc1	145.5 (147)

Note1: Dimensions in ( ) are the values when stainless steel is used as body.

● With manual override (lock type)
AD11EX4-15A/20A/25A-***A



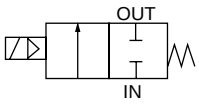
Explosion proof 2 port pilot operated solenoid valve
(general purpose valve)

AD21EX4 Series

- Flameproof construction Exd Ⅱ BT4 (group ⅡB, temperature level T4)
- NC (normally closed) type
- Port size: Rc1¼ to Rc2, 32 to 50 flanges
- Diaphragm drive
- Type examination certificate no. AC: TC20594, DC: TC20618

RoHS

JIS symbol



Common specifications

Descriptions	AD21EX4
Working fluid	Air, water, paraffin oil, oil (less than 50 mm²/s)
Operating pressure differential MPa	0.02 to 0.7 (Varies depending on the type. For max. operating pressure differential, refer to the Specification for each model.)
Max. working pressure MPa	1
Resist pressure (water pressure) MPa	3.2
Fluid temperature °C	-10 to 60 (no freezing)
Ambient temperature °C	-10 to 50
Thermal class	AC: class 180 (H) AC diode integrated, DC: class 130 (B)
Atmosphere	Outdoor, explosive gas etc. (group ⅡB, temperature level T4)
Valve structure	Pilot poppet type poppet structure diaphragm drive
Valve seat leakage (*) cm³/min (ANR)	1 or less (in air)
Mounting orientation	Free (however should be within the operating pressure range)

*: This applies at a pneumatic pressure between 0.02 to 0.7 MPa.

Individual specifications

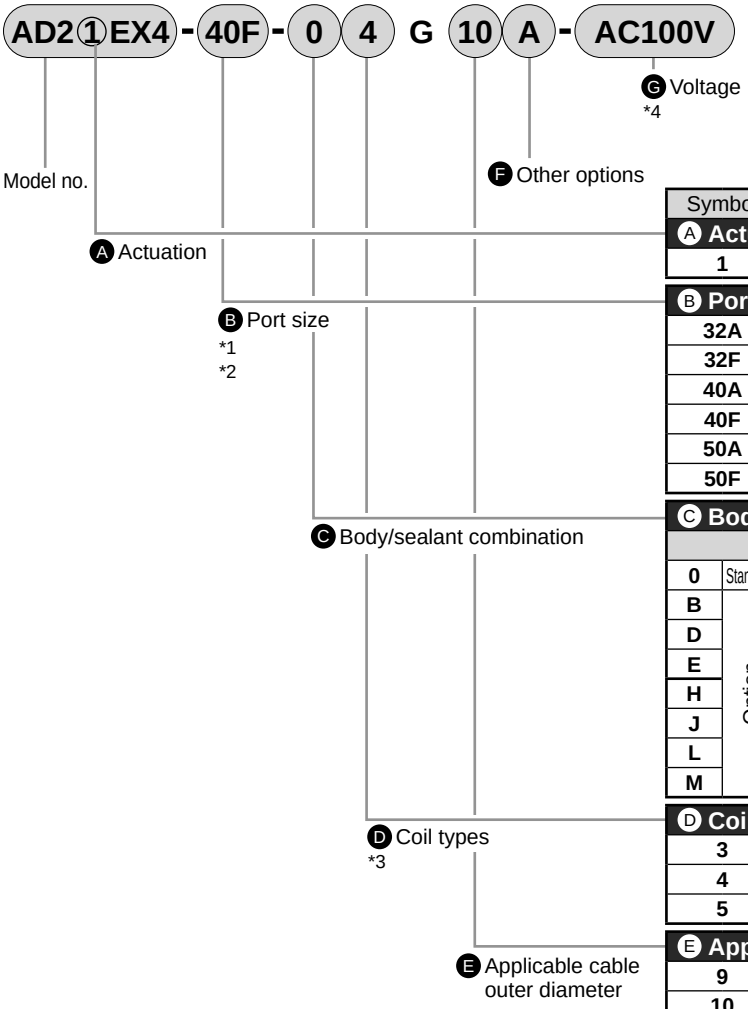
Descriptions / Model no.		Port size	Orifice size (mm)	Minimum operating pressure differential (MPa)	Max. operating pressure differential (MPa)						Rated voltage	Apparent power (VA)				Power consumption (W)		Weight (kg)
					Air		Water, paraffin oil		Oil (50 mm²/s)			When retaining		When starting		AC 50 Hz/ 60 Hz	DC	
					AC	DC	AC	DC	AC	DC		50 Hz	60 Hz	50 Hz	60 Hz			
NC (normally closed) type																		
AD21EX4	-32A	Rc1¼	35	0.02	0.7	0.6	0.7	0.6	0.6	0.6	100 VAC 50/60 Hz 200 VAC 50/60 Hz	18	15	29	24	8/7	11.6	4.0
	-32F	32 flange																7.5
	-40A	Rc1½	43															5.0
	-40F	40 flange																8.5
	-50A	Rc 2	53															6.5
	-50F	50 flange																10.5

*1: Apply DC column for max. operating pressure differential of diode integrated coil.
*2: Use within voltage fluctuation range of -10 to +10% of rated voltage.

Flow characteristics

Model no.		Port size	Orifice size (mm)	Cv	Effective area (mm²)
NC (normally closed) type					
AD21EX4	-32A	Rc 1¼	35	25	460
	-32F	32 flange			
	-40A	Rc 1½	43	34	625
	-40F	40 flange			
	-50A	Rc 2	53	53	975
	-50F	50 flange			

How to order



Symbol	Descriptions
A Actuation	
1	NC (normally closed) type
B Port size	
32A	Rc1 1/4
32F	32 flange
40A	Rc1 1/2
40F	40 flange
50A	Rc2
50F	50 flange

C Body/sealant combination

		Body	Seal	Treatment	Remarks
0	Standard	Bronze	Nitrile rubber	-	Air, water, paraffin oil, oil (under 60°C)
B	Option		Fluoro rubber		-
D		Stainless steel	Nitrile rubber	-	Air, water, paraffin oil, oil (under 60°C)
E			Fluoro rubber		-
H		Bronze	Nitrile rubber	Oil prohibited	Air, water, paraffin oil, oil (under 60°C)
J			Fluoro rubber		-
L		Stainless steel	Nitrile rubber		Air, water, paraffin oil, oil (under 60°C)
M			Fluoro rubber		-

D Coil types	
3	Thermal class 130 (B) Explosion proof coil (for DC)
4	Thermal class 180 (H) Explosion proof coil (for AC)
5	Thermal class 130 (B) Diode integrated explosion proof coil (for AC)

E Applicable cable outer diameter	
9	φ 7.5 to φ 9.5
10	φ 9.5 to φ 10.5
11	φ 10.5 to φ 11.5
13	φ 11.5 to φ 13.5

F Other options		
Blank	Standard	No option
A		Manual override (lock type)

G Voltage	
AC100V	100 VAC 50/60 Hz
AC200V	200 VAC 50/60 Hz

<Example of model no.>

AD21EX4-40F-04G10A-AC100V

Model: AD21EX4

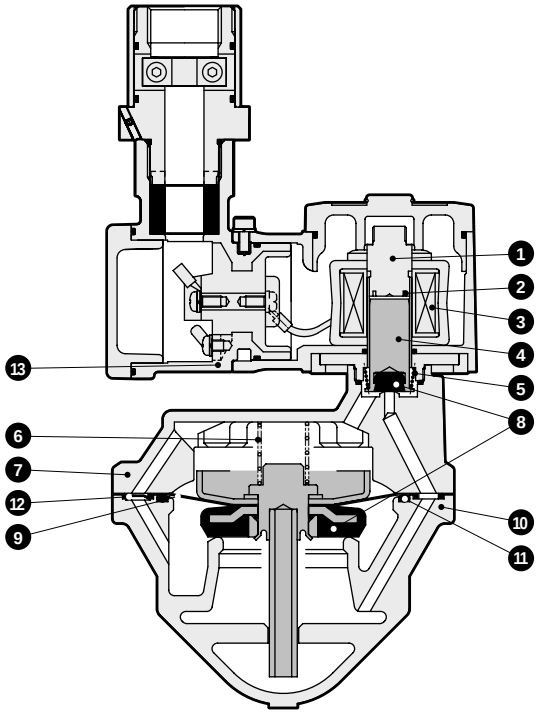
- A Actuation method : NC (normally closed) type
- B Port size : 40 flange
- C Body/sealant material combination : Body = bronze, seal = nitrile rubber
- D Coil type : Thermal class 180 (H), explosion-proof coil (for AC)
- E Applicable cable outer diameter : φ 9.5 to φ 10.5
- F Other options : Manual override (lock type)
- G Voltage : 100 VAC 50/60 Hz

⚠ Note on model no. selection

*1: Companion flange is 10K flange of JIS B2210. (They are not included in the product. Please purchase separately.)
*2: G threads and NPT threads are available for the piping port threads. Contact CKD for information.
*3: Thermal class B diode coil is a coil which is AC-DC converted from power supply voltage AC to coil voltage DC with diode.
*4: For other voltages, voltages in below are available. Please contact CKD for more information.
12, 24, 48, 110, 115, 120, 220, 240, 380, 400, 415, 440, 480, 500 VAC
110, 220 VAC (with diode) 6, 12, 24, 48, 100, 110, 200, 220 VDC

Internal structure and parts list

● AD21EX4 Series

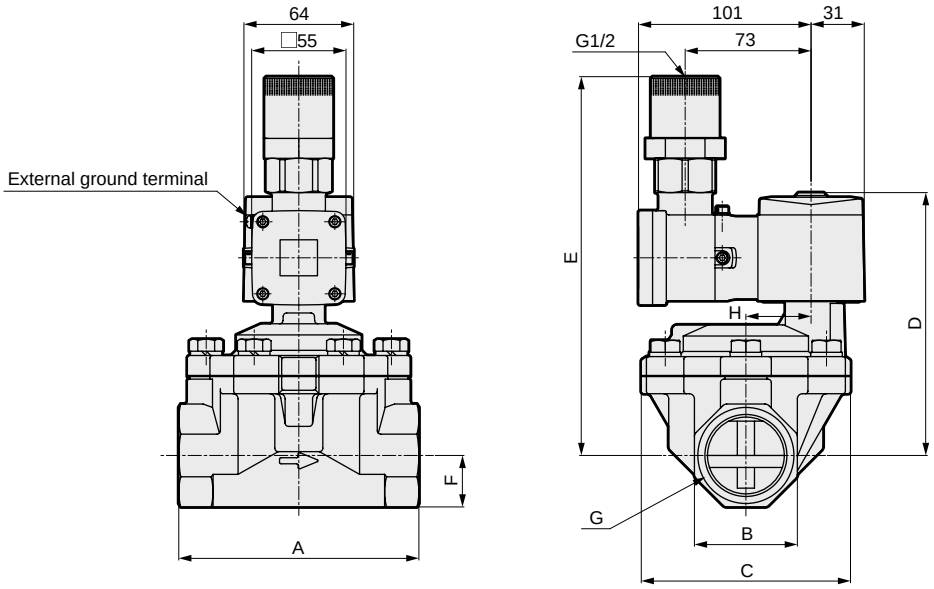


No.	Parts name	Material	
1	Core assembly	SUS405 equivalent, SUS316L, SUS403	Stainless steel
2	Shading coil	Cu (Ag for stainless steel body)	Copper (Silver for stainless steel body)
3	Coil	-	-
4	Plunger	SUS405 equivalent	Stainless steel
5	Plunger spring	SUS304	Stainless steel
6	Valve spring	SUS304	Stainless steel
7	Stuffing	CAC408 (SCS13)	Bronze casting (stainless casting)
8	Seal	NBR (FKM)	Nitrile rubber (fluoro rubber)
9	Diaphragm assembly	SUS303/SUS304/NBR (SUS303/SUS304/FKM)	Stainless steal, nitrile rubber (Stainless steel, fluoro rubber)
10	Body	CAC408 (SCS13)	Bronze casting (stainless casting)
11	O ring	NBR (FKM)	Nitrile rubber (fluoro rubber)
12	Orifice plate	SUS304	Stainless steel
13	Coil case	ADC12	Aluminum die cast

Items inside parentheses are optional

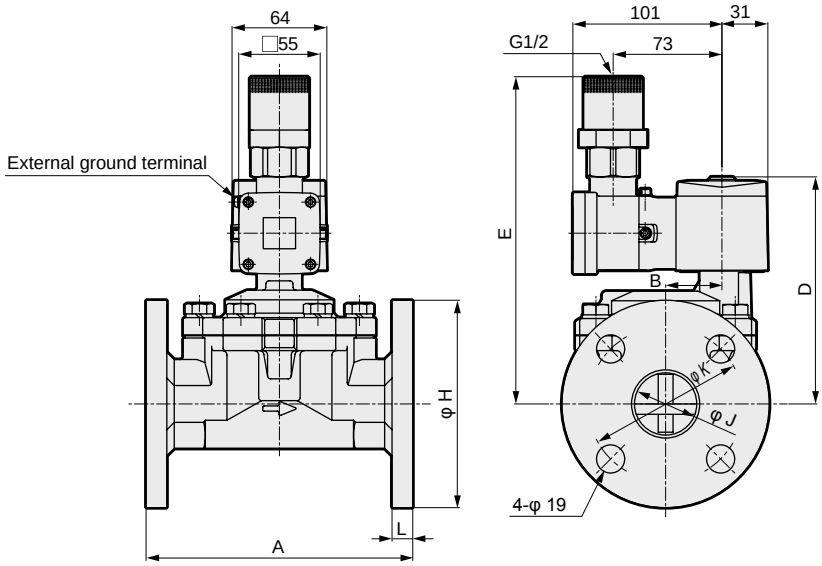
Dimensions

● Standard type (Rc screw-in type)
AD21EX4-32A/40A/50A



Model no.	A	B	C	D	E	F	G	H
AD21EX4-32A	125	54	112	147.5	215.5	27	Rc1 1/4	32
AD21EX4-40A	140	60	122	153.5	221.5	30	Rc1 1/2	38
AD21EX4-50A	160	74	132	161.5	229.5	37	Rc2	45

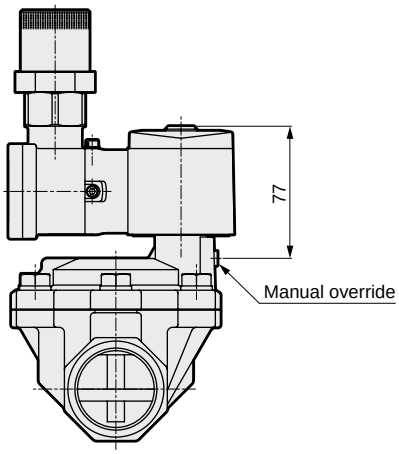
● Standard type (flange type)
AD21EX4-32F/40F/50F



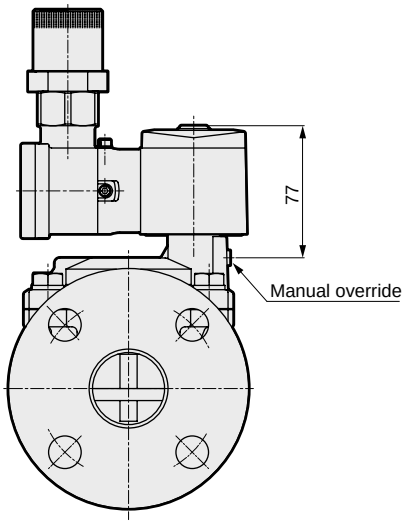
Model no.	A	B	D	E	H	J	K	L
AD21EX4-32F	170	32	147.5	215.5	135	36	100	12
AD21EX4-40F	180	38	153.5	221.5	140	42	105	14
AD21EX4-50F	180	45	161.5	229.5	155	53	120	14

Option dimensions

● Manual override (lock type) (Rc screw-in type)
AD21EX4-32A/40A/50A-*** A



● Manual override (lock type) (flange type)
AD21EX4-32F/40F/50F-*** A



MEMO

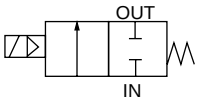
Explosion proof 2 port pilot kick operated solenoid valve (general purpose valve)

ADK11EX4 Series

- Flameproof construction Exd Ⅱ BT4 (group ⅡB, temperature level T4)
- NC (normally closed) type
- Port size: Rc1/2, Rc3/4, Rc1
- Diaphragm drive
- Type examination certificate no. AC: TC20592, DC: TC20616

RoHS CAD

JIS symbol



Common specifications

Model no.	ADK11EX4
Working fluid	Air/low vacuum (1.33 × 10^3 Pa)/water/paraffin oil/oil (50 mm^2/s or less)
Operating pressure differential MPa	0 to 1 (Varies depending on the type. For max. operating pressure differential, refer to the Specification for each model.)
Max. working pressure MPa	2
Resist pressure (water pressure) MPa	4
Fluid temperature °C	-10 to 60 (no freezing)
Ambient temperature °C	-10 to 50
Thermal class	AC: class 180 (H) AC diode integrated, DC: class 130 (B)
Atmosphere	Outdoor, explosive gas etc. (group ⅡB, temperature level T4)
Valve structure	Pilot-kick type poppet structure diaphragm drive
Valve seat leakage (*) cm^3/min (ANR)	1 or less (in air)
Mounting orientation	Free

*: This applies at a pneumatic pressure between 0.02 to 1 MPa.
When used at 0.02 MPa or less, the seal may become unstable. Contact us for details.

Individual specifications

Descriptions / Model no.	Port size	Orifice size (mm)	Minimum operating pressure differential (MPa)	Max. operating pressure differential (MPa)						Rated voltage	Apparent power (VA)				Power consumption (W)		Weight (kg)
				Air		Water, paraffin oil		Oil (50 mm^2/s)			When retaining		When starting		AC 50/60 Hz	DC	
				AC	DC	AC	DC	AC	DC		50 Hz	60 Hz	50 Hz	60 Hz			
NC (normally closed) type																	
ADK11EX4 -15A	Rc1/2	16	0	1	0.6	1	0.6	0.6	0.5	100 VAC 50/60 Hz 200 VAC 50/60 Hz	20	16	80	64	10/8.5	15	1.4
-20A	Rc3/4	23															1.5
-25A	Rc1	28															1.9

*1: Apply DC column for max. operating pressure differential of diode integrated coil.
*2: Use within voltage fluctuation range of -10 to +10% of rated voltage.
*3: When used at low vacuum, the OUT port side should be evacuated.

Flow characteristics

Model no.	Port size	Orifice size (mm)	Flow characteristics			
			C [dm^3/(s·bar)]	b	Cv	S (mm^2)
NC (normally closed) type						
ADK11EX4 -15A	Rc 1/2	16	20	0.31	4.5	-
-20A	Rc 3/4	23	-	-	8.6	162
-25A	Rc 1	28	-	-	12.0	231

*: Effective cross sectional area S and the speed of sound conductance C are converted as S ≒ 5.0 × C.

How to order

ADK1①EX4 - 20A - 0 4 G 10 - AC100V

- Model no.
- Ⓐ Actuation
- Ⓑ Port size *1
- Ⓒ Body/sealant combination *2 *3
- Ⓓ Coil types *4
- Ⓔ Applicable cable outer diameter
- Ⓕ Voltage *5

Symbol	Descriptions
Ⓐ Actuation	
1	NC (normally closed) type
Ⓑ Port size	
15A	Rc1/2
20A	Rc3/4
25A	Rc1

Ⓒ Body/sealant combination

		Body	Seal	Treatment	Treatment
0	Standard	Bronze	Nitrile rubber	-	Air, water, low vacuum, paraffin oil, oil (under 60°C)
B	Option	Bronze	Fluoro rubber	-	-
D	Option	Stainless steel	Nitrile rubber	-	Air, water, low vacuum, paraffin oil, oil (under 60°C)
E	Option	Stainless steel	Fluoro rubber	-	-
H	Option	Bronze	Nitrile rubber	Oil prohibited	Air, water, low vacuum, paraffin oil, oil (under 60°C)
J	Option	Bronze	Fluoro rubber	Oil prohibited	-
P	Option	Bronze	Ethylene-propylene rubber	Oil prohibited	-
L	Option	Stainless steel	Nitrile rubber	Oil prohibited	Air, water, low vacuum, paraffin oil, oil (under 60°C)
M	Option	Stainless steel	Fluoro rubber	Oil prohibited	-
R	Option	Stainless steel	Ethylene-propylene rubber	Oil prohibited	-

Ⓓ Coil types	
3	Thermal class 130 (B) Explosion proof coil (for DC)
4	Thermal class 180 (H) Explosion proof coil (for AC)
5	Thermal class 130 (B) Diode integrated explosion proof coil (for AC)
Ⓔ Applicable cable outer diameter	
9	φ 7.5 to φ 9.5
10	φ 9.5 to φ 10.5
11	φ 10.5 to φ 11.5
13	φ 11.5 to φ 13.5
Ⓕ Voltage	
AC100V	100 VAC 50/60 Hz
AC200V	200 VAC 50/60 Hz

<Example of model no.>

ADK11EX4-20A-04G10-AC100V

Model: ADK11EX4

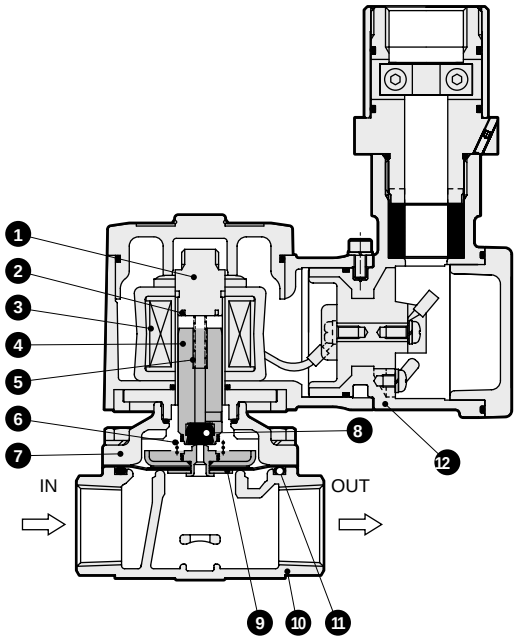
Ⓐ Actuation : NC (normally closed) type
Ⓑ Port size : Rc3/4
Ⓒ Body/sealant material combination
: Body = bronze, seal = nitrile rubber
Ⓓ Coil type : Thermal class 180 (H), explosion-proof coil (for AC)
Ⓔ Applicable cable outer diameter
: φ 9.5 to φ 10.5
Ⓕ Voltage : 100 VAC 50/60 Hz

⚠ Note on model no. selection

*1: G threads and NPT threads are available for the piping port threads. Contact CKD for information.
*2: Combination of ethylene-propylene rubber sealant (Ⓒ items P, R) has 0.6 MPa for max. operating pressure differential.
*3: Combination of ethylene-propylene rubber sealant (Ⓒ items P, R) cannot be used if the fluid is air. (This is because compressed air contains oil while ethylene-propylene rubber is not oil-proof.)
*4: Thermal class B diode coil is a coil which is AC-DC converted from power supply voltage AC to coil voltage DC with diode.
*5: For other voltages, voltages in below are available. Please contact CKD for more information.
12, 24, 48, 110, 115, 120, 220, 240, 380, 400, 415, 440, 480, 500 VAC
110, 220 VAC (with diode) 6, 12, 24, 48, 100, 110, 200, 220 VDC

Internal structure and parts list

● ADK11EX4 Series

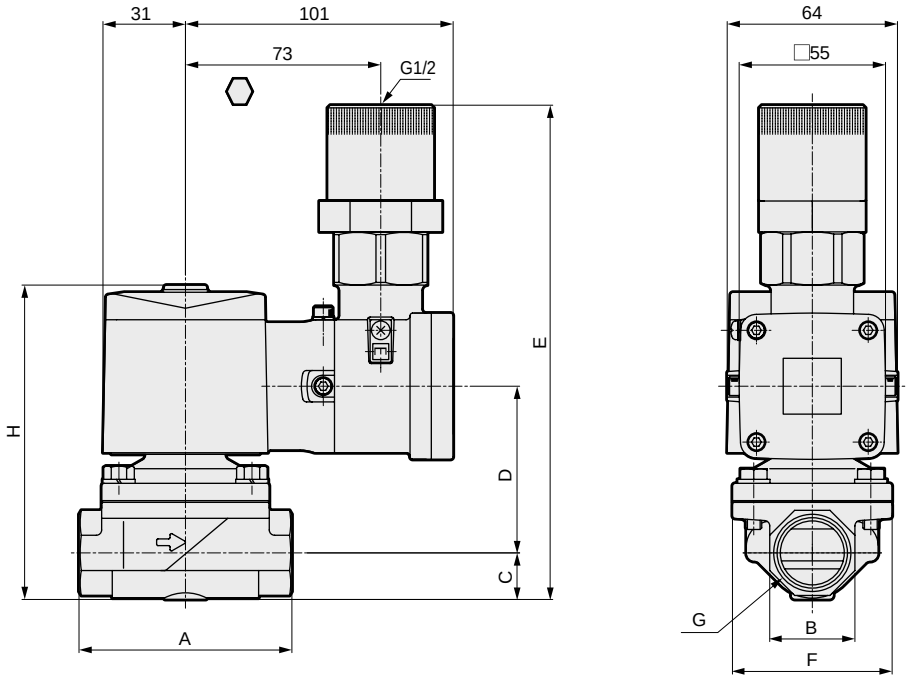


No.	Parts name	Material	
1	Core assembly	SUS405 equivalent, SUS316L, SUS403	Stainless steel
2	Shading coil*	Cu (Ag for stainless steel body)	Copper (Silver for stainless steel body)
3	Coil	-	-
4	Plunger assembly	SUS405 equivalent, NBR (SUS405 equivalent, FKM or EPDM)	Stainless steel
5	Plunger spring	SUS304	Stainless steel
6	Kick spring	SUS304	Stainless steel
7	Stuffing	C3771 (SCS13)	Brass (stainless casting)
8	Seal	NBR (FKM, EPDM)	Nitrile rubber (fluoro rubber, ethylene-propylene rubber)
9	Diaphragm assembly	SUS303/SUS304/NBR (SUS303/SUS304/FKM or EPDM)	Stainless steal, nitrile rubber (Stainless steel, fluoro rubber, or ethylene-propylene rubber)
10	Body	CAC408 (SCS13)	Bronze casting (stainless casting)
11	O ring	NBR (FKM, EPDM)	Nitrile rubber (fluoro rubber, ethylene-propylene rubber)
12	Coil case	ADC12	Aluminum die cast

Items inside parentheses are optional
* For DC coil or diode integrated coil, shading coil cannot be used.

Dimensions

● Standard type
ADK11EX4-15A/20A/25A



Model no.	A	B	C	D	E	F	G	H
ADK11EX4-15A	71	27 (29)	14.5	59	179.5	50	Rc1/2	111.5
ADK11EX4-20A	80	32 (35)	17.5	62.5	186	60	Rc3/4	118
ADK11EX4-25A	90	41 (45)	21.5 (22.5)	68	195.5 (196.5)	71	Rc1	127.5 (128.5)

Dimensions in ( ) are the values when stainless steel is used as body.

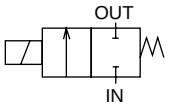
Explosion proof 2 port direct acting solenoid valve
(general purpose valve)

AB41EX2 Series

- Flameproof construction Exd Ⅱ BT2 (group ⅡB, temperature level T2)
- Type examination certificate no. AC: TC20614
- NC (normally closed) type
- Port size: Rc1/4, Rc3/8

RoHS

JIS symbol



Common specifications

Descriptions	AB41EX2
Working fluid	Air, water, paraffin oil, oil (less than 50 mm²/s), steam
Operating pressure differential MPa	0 to 4 (Varies depending on the type. For max. operating pressure differential, refer to the Specification for each model.)
Max. working pressure MPa	5 (Fluid: 0.7 for steam)
Proof pressure (water pressure) MPa	25
Fluid temperature °C	-10 to +170
Ambient temperature °C	-10 to +40
Thermal class	Class 180 (H)
Atmosphere	Outdoor, explosive gas etc. (group ⅡB, temperature level T2)
Valve structure	Direct acting poppet structure
Valve seat leakage cm³/min (ANR)	300 or less (in air)
Mounting orientation	Free

Individual specifications

Descriptions / Model no.		Port size	Orifice size (mm)	Max. operating pressure differential (MPa)				Rated voltage	Apparent power (VA)				Power consumption (W)		Weight (kg)
				Air	Water, hot water, paraffin oil	Oil (50 mm²/s)	Steam		When retaining		When starting		AC		
				AC	AC	AC	AC		50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	
AB41EX2-02	-1	Rc1/4	1.5	4	2.5	2	0.7	100 VAC 50/60 Hz 200 VAC 50/60 Hz	11	9.5	30	26	5.5	5	1.2
	-2		2.0	2	1.5	1.2	0.7								
	-3		3.0	0.9	0.7	0.4	0.7								
	-4		3.5	0.7	0.6	0.3	0.6								
	-5		4.0	0.5	0.4	0.2	0.4								
	-6		5.0	0.3	0.3	0.15	0.3								
	-7		7.0	0.15	0.15	0.10	0.15								
AB41EX2-03	-1	Rc3/8	1.5	4	2.5	2	0.7								
	-2		2.0	2	1.5	1.2	0.7								
	-3		3.0	0.9	0.7	0.4	0.7								
	-4		3.5	0.7	0.6	0.3	0.6								
	-5		4.0	0.5	0.4	0.2	0.4								
	-6		5.0	0.3	0.3	0.15	0.3								
	-7		7.0	0.15	0.15	0.10	0.15								

*: Use within voltage fluctuation range of -10 to +10% of rated voltage.

Flow characteristics

Model no.		Port size	Orifice size (mm)	Flow characteristics		
				C [dm³/(s·bar)]	b	Cv
AB41EX2-02/03	-1	Rc 1/4 Rc 3/8	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>	0.8 <0.62>
	-7		7.0	4.8 <4.6>	0.29 <0.37>	1.0 <0.82>

*1: Effective cross sectional area S and the speed of sound conductance C are converted as S ≒ 5.0 × C.
*2: Value in ( ) is applicable for stainless steel bodies.

How to order

AB41EX2 - 02 - 4 - C 4 G 10 B - AC100V

- AB41EX2: Model no.
- 02: A Port size *1
- 4: B Orifice size
- C: C Body/sealant combination
- 4: D Coil types
- 10: E Applicable cable outer diameter
- B: F Other options
- AC100V: G Voltage *2

Symbol	Descriptions
A Port size	
02	Rc1/4
03	Rc3/8
B Orifice size	
1	φ 1.5
2	φ 2
3	φ 3
4	φ 3.5
5	φ 4
6	φ 5
7	φ 7

C Body/sealant combination

		Body	Seal	Treatment	Remarks
C	Standard	Brass	PTFE	-	Air, water, paraffin oil, oil, steam (under 170°C)
F	Option	Stainless steel	PTFE	-	
K	Option	Brass	PTFE	Oil prohibited	
N	Option	Stainless steel	PTFE	Oil prohibited	

D Coil types	
4	Thermal class 180 (H) Explosion proof coil (for AC)
E Applicable cable outer diameter	
9	φ 7.5 to φ 9.5
10	φ 9.5 to φ 10.5
11	φ 10.5 to φ 11.5
13	φ 11.5 to φ 13.5
F Other options	
Blank	No option
B	Mounting plate
G Voltage	
AC100V	100 VAC 50/60 Hz
AC200V	200 VAC 50/60 Hz

<Example of model no.>

AB41EX2-02-4-C4G10B-AC100V

Model: AB41EX2

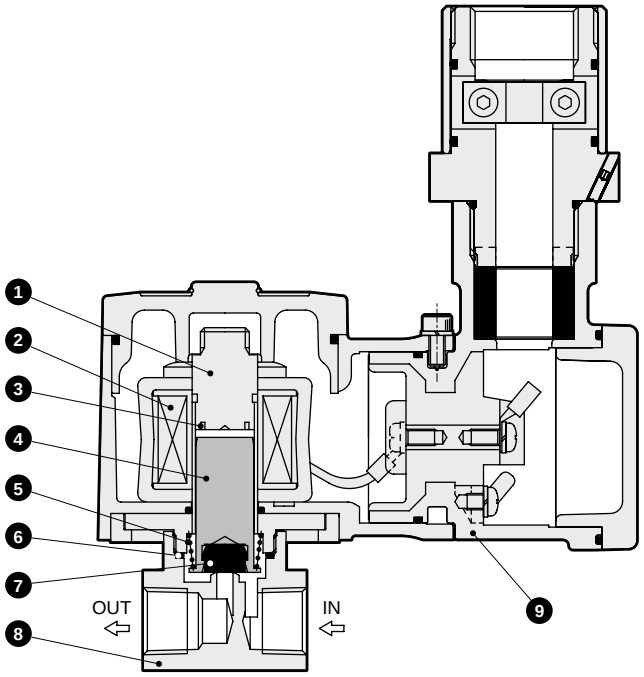
- A Port size : Rc1/4
- B Orifice diameter : φ 3.5
- C Body/sealant material Combination : Body = brass, seal = PTFE
- D Coil type : Thermal class 180 (H), explosion-proof coil (for AC)
- E Applicable cable outer diameter : φ 9.5 to φ 10.5
- F Other options : Mounting plate
- G Voltage : 100 VAC 50/60 Hz

⚠ Note on model no. selection

*1: G threads and NPT threads are available for the piping port threads. Contact CKD for information.

*2: For other voltages, voltages in below are available. Please contact CKD for more information.
12, 24, 48, 110, 115, 120, 220, 240, 380, 400, 415, 440, 480, 500 VAC

Internal structure and parts list

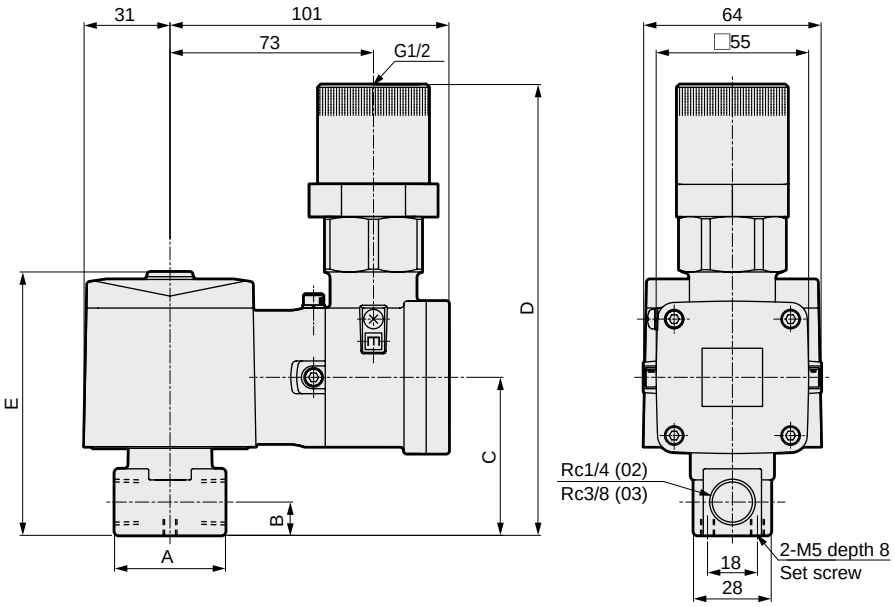


No.	Parts name	Material	
1	Core assembly	SUS405 equivalent, 316L, 403	Stainless steel
2	Coil	-	-
3	Shading coil	Cu (Ag for stainless steel body)	Copper (Silver for stainless steel body)
4	Plunger	SUS405 equivalent	Stainless steel
5	Plunger spring	SUS304	Stainless steel
6	O ring	PTFE	Polytetrafluoroethylene resin
7	Valve seal	PTFE	Polytetrafluoroethylene resin
8	Body	C3771 (SUS303)	Brass (stainless steel)
9	Coil case	ADC12	Aluminum die-casting

Items inside parentheses are optional

Dimensions

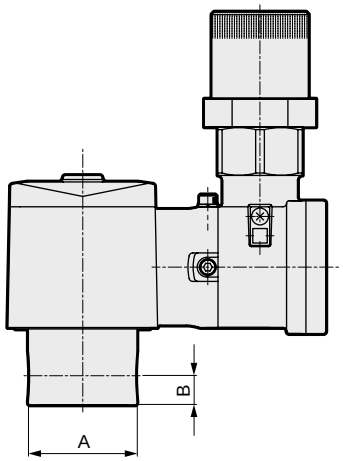
● Standard type
AB41EX2-02/03-1 to 7



Model no.	A	B	C	D	E
AB41EX2-02-1 to 6	36	11	54	160	92
AB41EX2-02-7 AB41EX2-03-1 to 7	40	12	57	163	95

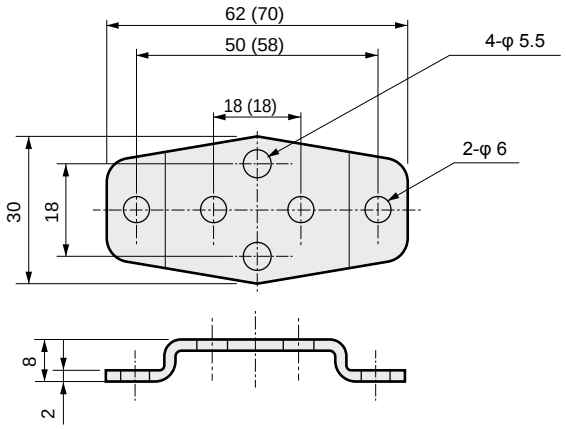
Option dimensions

● Stainless steel body
AB41EX2-02/03-1 to 7-F,N



Model no.	A	B
AB41EX2-02-1 to 6□	φ 37.5	11
AB41EX2-02-7□ AB41EX2-03-1 to 7□	φ 45	12

● Mounting plate
AB41EX2-02/03-1 to 7-***B,AB



Dimensions inside parentheses are mounting plate no. 2

Code	Applicable model	
Mounting plate no. 1 GE-100106	● AB41EX2-$^{02}_{03}$-1 to 7	Brass body
	● AB41EX2-02-1 to 6	Stainless steel body
Mounting plate no. 2 GE-100159	● AB41EX2-02-7	Stainless steel body
	● AB41EX2-03-1 to 7	Stainless steel body

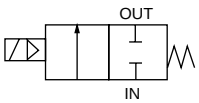
Explosion proof 2 port pilot operated solenoid valve
(general purpose valve)

AP11EX2 Series

- Flameproof construction Exd Ⅱ BT2 (group ⅡB, temperature level T2)
- NC (normally closed) type
- Port size: Rc1/2 - Rc1
- Piston drive
- Type examination certificate no. TC20614

RoHS

JIS symbol



Common specifications

Descriptions	AP11EX2
Working fluid	Air, water, paraffin oil, oil (less than 50 mm^2/s), steam
Operating pressure differential MPa	0.05 to 0.6 (Varies depending on the type. For max. operating pressure differential, refer to the Specification for each model.)
Max. working pressure MPa	2 (Fluid: 0.7 for steam)
Proof pressure (water pressure) MPa	10
Fluid temperature °C	+5 to +170
Ambient temperature °C	-10 to +40
Thermal class	Class 180 (H)
Atmosphere	Outdoor, explosive gas etc. (group ⅡB, temperature level T2)
Valve structure	Pilot type poppet structure piston drive
Valve seat leakage (*) cm^3/min (ANR)	300 or less (in air)
Mounting orientation	Free (however should be within the actuation pressure range)

*: This applies at a pneumatic pressure between 0.05 to 0.6 MPa.

Individual specifications

Descriptions / Model no.	Port size	Orifice size (mm)	Min. operating pressure differential (MPa)	Max. operating pressure differential (MPa)				Rated voltage	Apparent power (VA)				Power consumption (W)		Weight (kg)
				Air	Water, paraffin oil	Oil (50 mm^2/s)	Steam		When retaining		When starting		AC		
				AC	AC	AC	AC		50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	
NC (normally closed) type															
AP11EX2-15A	Rc1/2	15	0.05	0.7	0.6	0.3	0.6	AC100V 50/60 Hz AC200V 50/60 Hz	11	9.5	30	26	5.5	5	2.1
-20A	Rc3/4	20													2.5
-25A	Rc1	25													3.2

*: Use within voltage fluctuation range of -10 to +10% of rated voltage.

Flow characteristics

Model no.	Port size	Orifice size (mm)	Flow characteristics			
			C [$dm^3/(s \cdot bar)$]	b	Cv	S (mm^2)
NC (normally closed) type						
AP11EX2-15A	Rc 1/2	15	21	0.22	4.5	-
-20A	Rc 3/4	20	-	-	9.3	162
-25A	Rc 1	25	-	-	12.0	231

*: Effective cross sectional area S and the speed of sound conductance C are converted as $S \fallingdotseq 5.0 \times C$.

How to order

AP1①EX2 - 15A - C 4 G 10 - AC100V

- Model no.
- Ⓐ Actuation
- Ⓑ Port size *1
- Ⓒ Body/sealant combination
- Ⓓ Coil types
- Ⓔ Applicable cable outer diameter
- Ⓕ Voltage *2

Symbol	Descriptions
Ⓐ Actuation	
1	NC (normally closed) type
Ⓑ Port size	
15A	Rc1/2
20A	Rc3/4
25A	Rc1
Ⓒ Body/sealant combination	

		Body	Valve seal	O ring	Treatment	Remarks
C	Standard	Bronze	PTFE	Fluoro rubber	-	Air, water, paraffin oil, oil, steam (under 170°C)
F	Option	Stainless steel	PTFE	Fluoro rubber		
K		Bronze	PTFE	Fluoro rubber	Oil prohibited	
N		Stainless steel	PTFE	Fluoro rubber		

Ⓓ Coil types	
4	Thermal class 180 (H) Explosion proof coil (for AC)
Ⓔ Applicable cable outer diameter	
9	φ 7.5 to φ 9.5
10	φ 9.5 to φ 10.5
11	φ 10.5 to φ 11.5
13	φ 11.5 to φ 13.5
Ⓕ Voltage	
AC100V	100 VAC 50/60 Hz
AC200V	200 VAC 50/60 Hz

<Example of model no.>

AP11EX2-15A-C4G10-AC100V

Model: AP11EX2

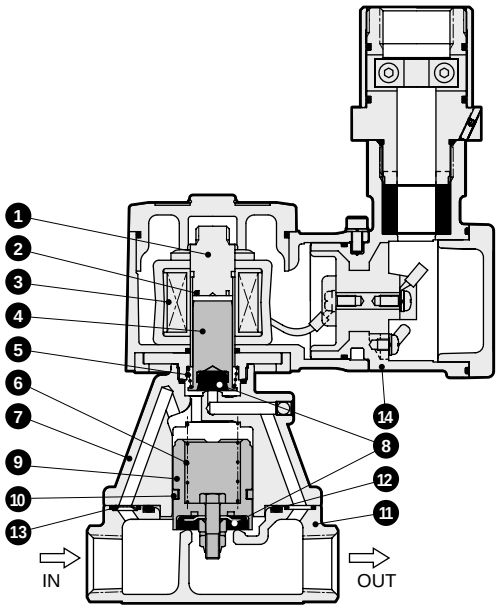
Ⓐ Actuation : NC (normally closed) type
Ⓑ Port size : Rc1/2
Ⓒ Body/sealant material combination
: Body = bronze, valve seal = PTFE, O ring = fluoro rubber
Ⓓ Coil type : Thermal class 180 (H), explosion-proof coil (for AC)
Ⓔ Applicable cable outer diameter
: φ 9.5 to φ 10.5
Ⓕ Voltage : 100 VAC 50/60 Hz

⚠ Note on model no. selection

*1: G threads and NPT threads are available for the piping port threads. Contact CKD for information.
*2: For other voltages, voltages in below are available. Please contact CKD for more information.
12, 24, 48, 110, 115, 120, 220, 240, 380, 400, 415, 440, 480, 500 VAC

Internal structure and parts list

● AP11EX2 Series

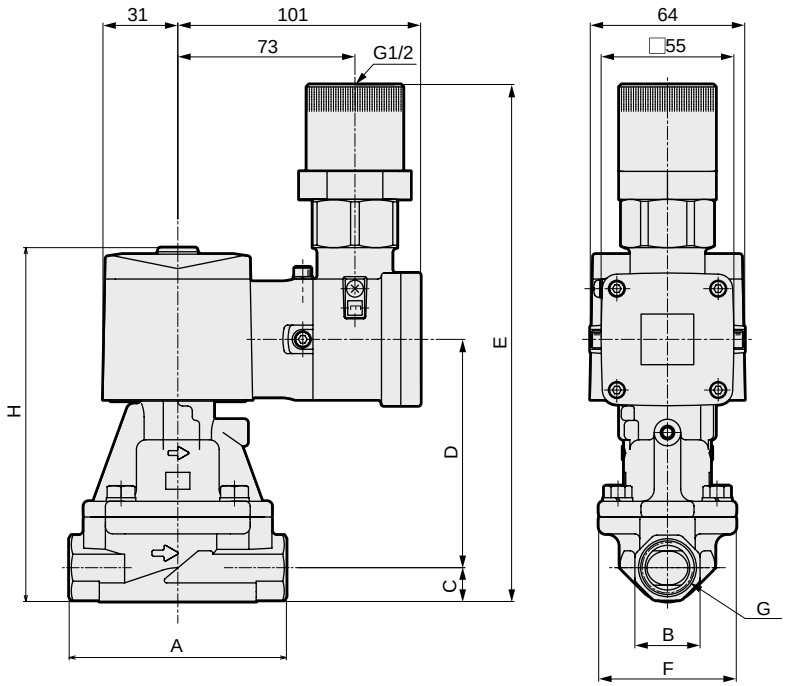


No.	Parts name	Material	
1	Core assembly	SUS405 equivalent, SUS316L, SUS403	Stainless steel
2	Shading coil	Cu (Ag for stainless steel body)	Copper (Silver for stainless steel body)
3	Coil	-	-
4	Plunger	SUS405 equivalent	Stainless steel
5	Plunger spring	SUS304	Stainless steel
6	Valve spring	SUS304	Stainless steel
7	Stuffing	CAC408 (SCS13)	Bronze casting (stainless casting)
8	Valve seal	PTFE	Polytetrafluoroethylene resin
9	Main valve assembly	C3604/SUS303/SUS304 (SUS303/SUS304)	Stainless steel, brass (Stainless steel)
10	Piston ring	SUS304/PTFE	Stainless steel, Polytetrafluoroethylene resin
11	Body	CAC408 (SCS13)	Bronze casting (stainless casting)
12	O ring	FKM	Fluoro rubber
13	Orifice plate	SUS304 (SUS303)	Stainless steel
14	Coil case	ADC12	Aluminum die cast

Items inside parentheses are optional

Dimensions

● Standard type
AP11EX2-15A/20A/25A



Model no.	A	B	C	D	E	F	G	H
AP11EX2-15A	90	27 (29)	14 (14.5)	94.5	214.5 (215)	57	Rc1/2	146.5 (147)
AP11EX2-20A	100	32 (35)	17 (17.5)	103.5	226.5 (227)	65	Rc3/4	158.5 (159)
AP11EX2-25A	110	41 (44)	20.5 (22)	118	244.5 (246)	76	Rc1	176.5 (178)

*: Dimensions in ( ) are the values when stainless steel is used as body.

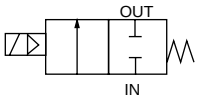
Explosion proof 2 port pilot operated solenoid valve
(general purpose valve)

AP21EX2 Series

- Flameproof construction Exd Ⅱ BT2 (group ⅡB, temperature level T2)
- NC (normally closed) type
- Port size: Rc1 1/4 to Rc2, 32 to 50 flanges
- Piston drive
- Type examination certificate no. TC20614

RoHS

JIS symbol



Common specifications

Descriptions	AP21EX2
Working fluid	Air, water, paraffin oil, oil (less than 50 mm²/s), steam
Operating pressure differential MPa	0.05 to 0.6 (Varies depending on the type. For max. operating pressure differential, refer to the Specification for each model.)
Max. working pressure MPa	1.6 (Fluid: 1 for steam)
Proof pressure (water pressure) MPa	3.2
Fluid temperature °C	+5 to +170
Ambient temperature °C	-10 to +40
Thermal class	Class 180 (H)
Atmosphere	Outdoor, explosive gas etc. (group ⅡB, temperature level T2)
Valve structure	Pilot type poppet structure piston drive
Valve seat leakage (*) cm³/min (ANR)	400 or less (air)
Mounting orientation	Free (however should be within the actuation pressure range)

*: This applies at a pneumatic pressure between 0.05 to 0.6 MPa.

Individual specifications

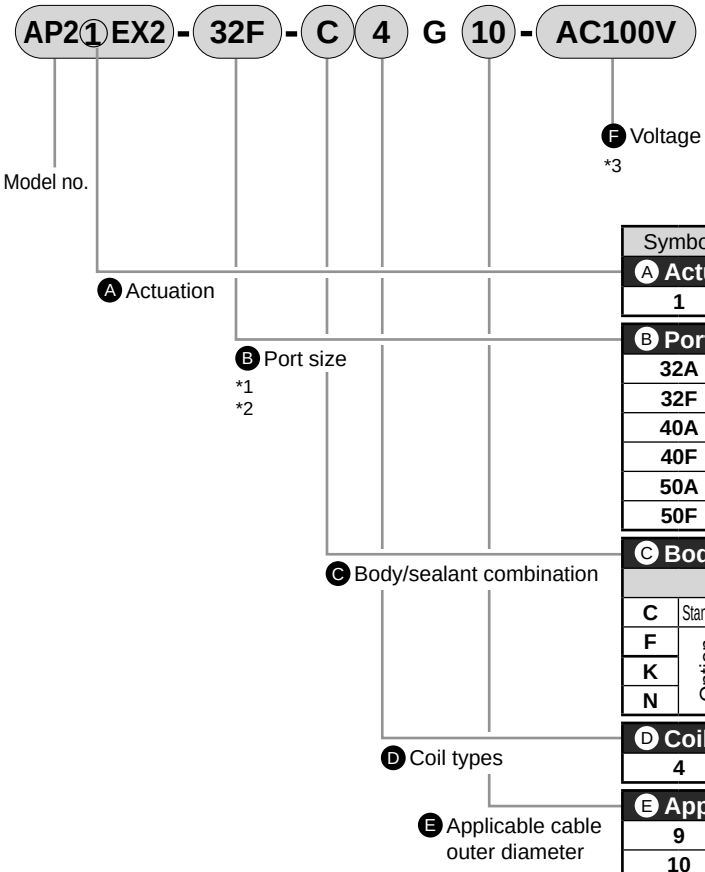
Descriptions / Model no.	Port size	Orifice size (mm)	Min. operating pressure differential (MPa)	Max. operating pressure differential (MPa)				Rated voltage	Apparent power (VA)				Power consumption (W)		Weight (kg)
				Air	Water, paraffin oil	Oil (50 mm²/s)	Steam		When retaining		When starting		AC		
				AC	AC	AC	AC		50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	
NC (normally closed) type															
AP21EX2 -32A	Rc1 1/4	35	0.05	0.7	0.6	0.3	0.6	100 VAC 50/60 Hz 200 VAC 50/60 Hz	11	9.5	30	26	5.5	5	4.2
-32F	32 flange														7.7
-40A	Rc1 1/2	43													5.2
-40F	40 flange														8.7
-50A	Rc 2	53													6.7
-50F	50 flange														10.7

*1: Model no. above indicates standard. For other combinations, please refer to "How to order".
*2: Use in voltage fluctuation range of -10 to +10% of rated voltage.

Flow characteristics

Model no.	Port size	Orifice size (mm)	Cv	Effective area (mm²)
NC (normally closed) type				
AP21EX2-32A	Rc1 1/4	35	25	460
-32F	32 flange			
-40A	Rc1 1/2	43	34	625
-40F	40 flange			
-50A	Rc 2	53	53	975
-50F	50 flange			

How to order



Symbol	Descriptions
Ⓐ Actuation	
1	NC (normally closed) type
Ⓑ Port size	
32A	Rc1¼
32F	32 flange
40A	Rc1½
40F	40 flange
50A	Rc2
50F	50 flange

Ⓒ Body/sealant combination

		Body	Valve seal	O ring	Treatment	Remarks
C	Standard	Bronze	PTFE	Fluoro rubber	-	Air, water, paraffin oil, oil, steam (under 170°C)
F	Option	Stainless steel	PTFE	Fluoro rubber		
K	Option	Bronze	PTFE	Fluoro rubber	Oil prohibited	
N	Option	Stainless steel	PTFE	Fluoro rubber		

Ⓓ Coil types	
4	Thermal class 180 (H) Explosion proof coil (for AC)
Ⓔ Applicable cable outer diameter	
9	φ 7.5 to φ 9.5
10	φ 9.5 to φ 10.5
11	φ 10.5 to φ 11.5
13	φ 11.5 to φ 13.5
Ⓕ Voltage	
AC100V	100 VAC 50/60 Hz
AC200V	200 VAC 50/60 Hz

<Example of model no.>

AP21EX2-32F-C4G10-AC100V

Model: AP21EX2

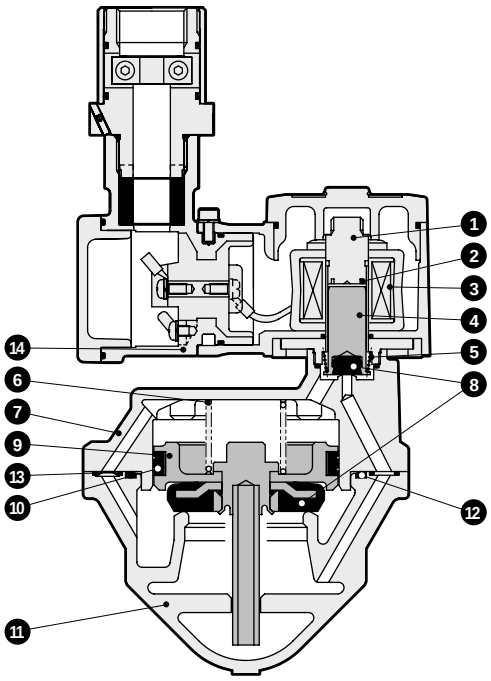
Ⓐ Actuation : NC (normally closed) type
Ⓑ Port size : 32 flange
Ⓒ Body/sealant material combination
: Body = bronze, valve seal = PTFE, O ring = fluoro rubber
Ⓓ Coil type : Thermal class 180 (H), explosion-proof coil (for AC)
Ⓔ Applicable cable outer diameter
: φ 9.5 to φ 10.5
Ⓕ Voltage : 100 VAC 50/60 Hz

⚠ Note on model no. selection

*1: Companion flange is 10K flange of JIS B2210.
(They are not included in the product. Please purchase separately.)
*2: G threads and NPT threads are available for the piping port threads. Contact CKD for information.
*3: For other voltages, voltages in below are available. Please contact CKD for more information.
12, 24, 48, 110, 115, 120, 220, 240, 380, 400, 415, 440, 480, 500 VAC

Internal structure and parts list

● AP21EX2 Series

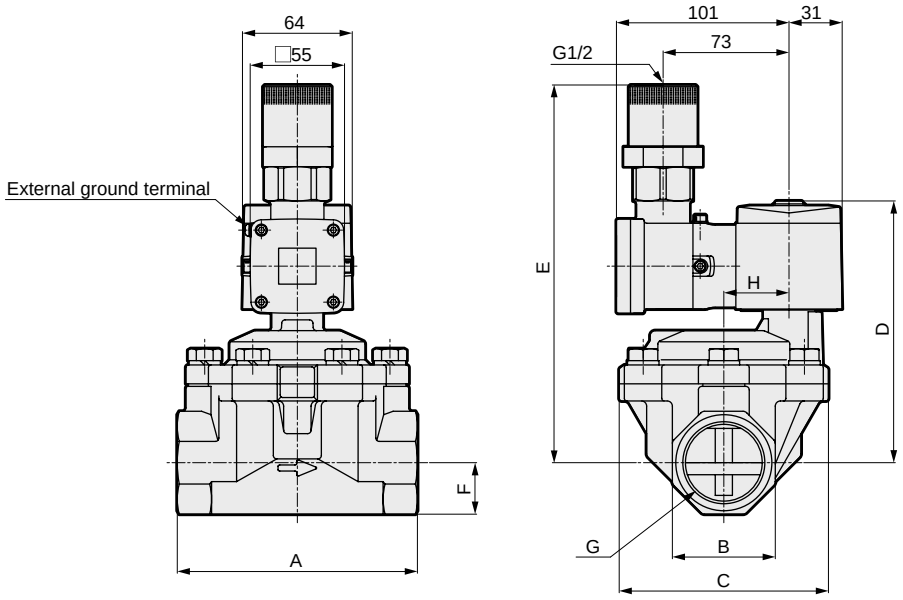


No.	Parts name	Material	
1	Core assembly	SUS405 equivalent, SUS316L, SUS403	Stainless steel
2	Shading coil	Cu (Ag for stainless steel body)	Copper (Silver for stainless steel body)
3	Coil	-	-
4	Plunger	SUS405 equivalent	Stainless steel
5	Plunger spring	SUS304	Stainless steel
6	Valve spring	SUS304	Stainless steel
7	Stuffing	CAC408 (SCS13)	Bronze casting (stainless casting)
8	Valve seal	PTFE	Polytetrafluoroethylene resin
9	Main valve assembly	C3604/SUS303/SUS304 (SUS303/SUS304)	Stainless steel, brass (stainless steel)
10	Seal ring set	SUS304/PTFE	Stainless steel, polytetrafluoroethylene resin
11	Body	CAC408 (SCS13)	Bronze casting (stainless casting)
12	O ring	FKM	Fluoro rubber
13	Orifice plate	SUS304	Stainless steel
14	Coil case	ADC12	Aluminum die cast

Items inside parentheses are optional

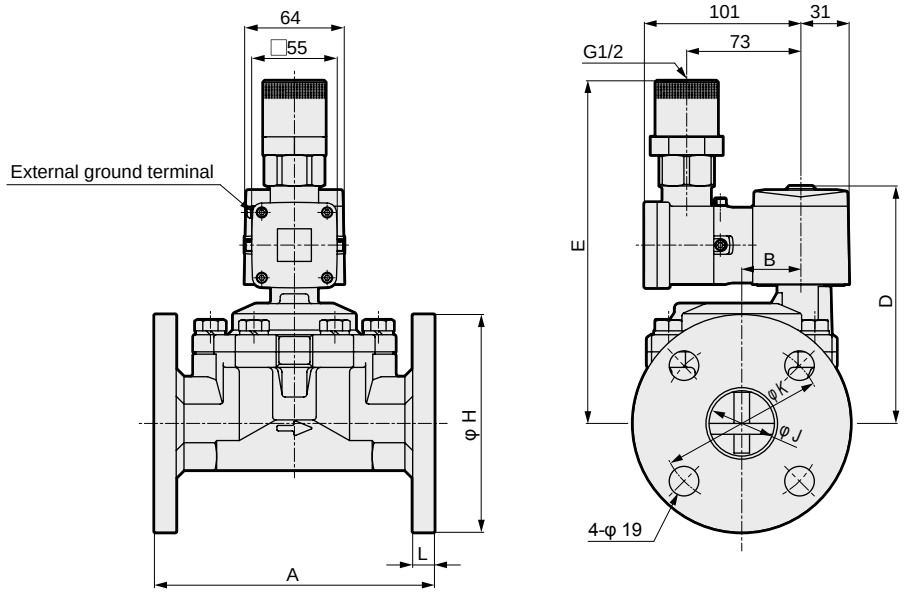
Dimensions

● Standard type (Rc screw-in type)
AP21EX2-32A/40A/50A



Model no.	A	B	C	D	E	F	G	H
AP21EX2-32A	125	54	112	147	215	27	Rc1¼	32
AP21EX2-40A	140	60	122	153	221	30	Rc1½	38
AP21EX2-50A	160	74	132	161	229	37	Rc2	45

● Standard type (flange type)
AP21EX2-32F/40F/50F



Model no.	A	B	D	E	H	J	K	L
AP21EX2-32F	170	32	147	215	135	36	100	12
AP21EX2-40F	180	38	153	221	140	42	105	14
AP21EX2-50F	180	45	161	229	155	53	120	14

Safety precautions

Always read this section before starting use.

When designing and manufacturing a device using CKD products, the manufacturer is obligated to check that device safety mechanism, pneumatic control circuit, or water control circuit and the system operated by electrical control that controls the devices is secured.
It is important to select, use, handle, and maintain the product appropriately to ensure that the CKD product is used safely.
Observe warnings and precautions to ensure device safety.
Check that device safety is ensured, and manufacture a safe device.

WARNING

1 This product is designed and manufactured as a general industrial machine part.
It must be handled by an operator having sufficient knowledge and experience in handling.

2 Use this product in accordance with specifications.

This product must be used within its stated specifications. It must not be modified or machined.
This product is intended for use as a general-purpose device for industrial machine or parts. It is not intended for use outdoors (not applied for outdoor specification products) or for use under the following conditions or environment.
(If you consult CKD upon adoption and consent to CKD product specifications, it will be applicable; however, safeguards should be adopted to circumvent dangers in the event of failure.)

❶ Use for special applications including nuclear energy, railway, aircraft, marine vessel, vehicle, medicinal devices, devices or applications coming into contact with beverages or foodstuffs, amusement devices, emergency shutoff circuits, press machine, brake circuits, or for safeguard.
❷ Use for applications where life or assets could be adversely affected, and special safety measures are required.

3 Observe corporate standards and regulations, etc., related to the safety of device design and control, etc.

ISO 4414, JIS B 8370 (pneumatic system rules)
JFPS2008 (Principles for pneumatic cylinder selection and use)
Including High Pressure Gas Maintenance Law, Occupational Safety and Sanitation Laws, other safety rules, body standards and regulations, etc.

4 Do not handle, pipe, or remove devices before confirming safety.

❶ Inspect and service the machine and devices after confirming safety of the entire system related to this product.
❷ Note that there may be hot or charged sections even after operation is stopped.
❸ When inspecting or servicing the device, turn off the energy source (air supply or water supply), and turn off power to the facility. Discharge any compressed air from the system, and pay attention to possible leakage of water and electricity.
❹ When starting or restarting a machine or device that incorporates pneumatic components, make sure that the system safety, such as pop-out prevention measures, is secured.

5 Observe warnings and cautions on the pages below to prevent accidents.

■ The safety cautions are ranked as "DANGER", "WARNING" and "CAUTION" in this section.

DANGER: When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries, or when there is a high degree of emergency to a warning.

WARNING: When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries.

CAUTION: When a dangerous situation may occur if handling is mistaken leading to minor injuries or physical damage.

Note that some items described as "CAUTION" may lead to serious results depending on the situation.
In any case, important information that must be observed is explained.

Limited warranty and disclaimer

1 Warranty period

"Warranty Period" is one (1) year from the first delivery to the customer.

2 Scope of warranty

In case any defect attributable to CKD is found during the term of warranty.
Note that the following faults are excluded from the warranty term:
(1) Product abuse/misuse contrary to conditions/environment recommended in its catalogs/specification
(2) Failure caused by other than the delivered product
(3) Use other than original design purposes.
(4) Third-party repair/modification.
(5) Faults caused by reason that is unforeseeable with technology put into practical use at the time of delivery.
(6) Failure attributable to force majeure.
The warranty mentioned here covers the discrete delivered product. Only the scope of warranty shall not cover losses induced by the failure of the delivered product.

3 Compatibility confirmation

In no event shall CKD be liable for merchantability or fitness for a particular purpose, notwithstanding any disclosure to CKD of the use to which the product is to be put.

Safety precautions

Always refer to this section before starting use.

Design & Selection

⚠ WARNING

■ This product can be used in a Class 1 or Class 2 Danger Zone with flammable gas or steam. This product cannot be used in a Class 0 Zone.

■ To select model and install, please keep to JIS.C.60079 and JNIOSH-TR-NO.44 (2012), USERS' GUIDELINES Explosive Atmospheres in General Industry.

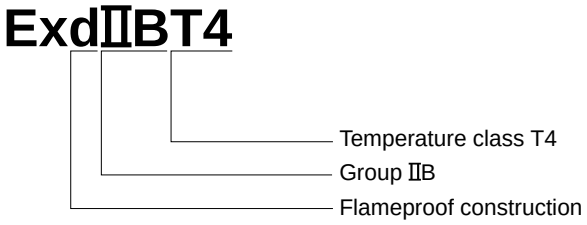
⚠ CAUTION

■ Explosive gas and explosion proof structure

The degree of explosive gas danger is classified based on the group and temperature class. Gases with an equivalent risk are grouped into one group, and explosion proof structure standards are set for each group.

Symbols to indicate the type, group, and temperature grade are indicated on explosion proof electrical devices. These symbols must be indicated in this sequence. These symbols indicate which group or temperature class the electrical device has been manufactured for, and indicate which gases can be used.

Example: ExdⅡBT4 is indicated in explosion proof solenoid valve



Based on Table 2, this indicates that the valve can be used for a gas with a group ⅡB and temperature grade T4. This also indicates that explosion proof properties are ensured for gases having a risk lower than this.

Temperature class is divided into 6 levels to shows the level of possibility of ignition. For each grade, the max. surface temperature of corresponding device is determined (see table 1). The higher the number goes up, the more dangerous the gas is, which can catch fire in lower temperature. Group indicates the possibility for flame to go out through tiny gaps. Groups are classified into 3 levels according to those gaps, and indicated as shown in Table 1. In other word, group is classification based on the explosion energy. The smaller max. experimental safe gap, the more dangerous the gas is. It means its explosion energy is bigger and the flame can pop out through the tiny gap easily.

Table 1

Descriptions	Symbol	Conditions
Temperature class	T1	Max. surface temperature 450°C
	T2	300°C
	T3	200°C
	T4	135°C
	T5	100°C
	T6	85°C
Group	ⅡA	Max. Experimental Safe Gap: More than 0.9 mm
	ⅡB	More than 0.5, less than 0.9
	ⅡC	0.5 mm or less

Table 2

Temperature class / Group	T1	T2	T3	T4	T5
ⅡA	Acetone Ammonia Carbon monoxide Ethane Acetic acid Acetic ether Toluene Propane Benzene Methanol Methane	Ethanol Isoamyl acetate Butane Acetic anhydride	Gasoline Hexane	Acetaldehyde	
ⅡB		Ethylene Ethylene oxide		Ethyl ether	
ⅡC	Hydrogen	Acethylene			Carbon bisulfide

■ Danger zones

Areas where explosive gases and air mix at a level high enough to cause an explosion or fire are called danger zones and are classified into Class 0, Class 1, and Class 2 zones based on the time and frequency at which the dangerous atmosphere is reached. The explosion proof structure that can be used is determined based on these classes.

● Class 0 zone (explosion proof solenoid valve EX series cannot be used)

Zone where a dangerous atmosphere is or could be continuously generated, and where the concentration of explosive gas is maintained continuously or for a long time above the lower limit for explosions.

Example: a. Space above the liquid level in a reservoir or a tank of inflammable fluid.
b. Inside of a reservoir or tank of inflammable gas.
c. Near a liquid level of inflammable fluid in a open reservoir.

● Class 1 zone

(1) Zone where explosive gas could accumulate to a dangerous concentration during normal operation such as removal of a product, opening/closing of a lid, or operation of a safety valve.

(2) Zone where explosive gas could frequently accumulate to a dangerous concentration due to repairs, maintenance or to a leakage, etc.

● Class 2 zone

(1) Zone where combustible or flammable fluids are handled, but where the fluids are sealed in a container or facility, and where the fluid could leak to a dangerous concentration only if the container or facility breaks or if operation is incorrect.

■ Explosion resistance test passed models

Electrical magnet is explosion resistance certificated.
Test format and model no. of electrical magnets are as listed in explosion proof performance on Intro 1.

Design & Selection

⚠WARNING

1 Working fluid

(1) If dry air, inactive gas, or vacuum, the service life could be extremely short due to the attrition.
(2) This valve cannot be used for maintaining the vacuum. Consult with CKD when the vacuum needs to be maintained.

⚠CAUTION

1 Continuous energizing

Use NO pressurized type to energize (to use) 3 port valve on NO side pressurized continuously. Also, use fluorine rubber seal to energize universal type and NC pressurized type continuously.

2 Click

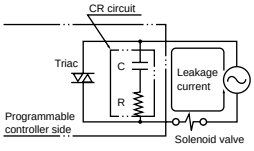
AC voltage specification raises loud click shortly after the power is on. If you would like to avoid click, please select diode integrated coil or DC voltage. It will reduce click.

3 Viscosity of fluid

Use a liquid with viscosity of 50 mm^2/s or less. Malfunctions could occur if the viscosity is higher than 50 mm^2/s.

4 Leakage current from other control device

Please make sure that leakage current of programmable controller output is included in the specifications below when actuate solenoid valve using programmable controllers.
It may cause faulty operation.



Voltage / Model no.	AC		Diode		DC			
	100 V	200 V	100 V	200 V	12 V	24 V	48 V	100 V
AB, AG, AP, AD ADK	6 mA or less	3 mA or less	2 mA or less	1 mA or less	2 mA or less	1 mA or less	0.5 mA or less	0.2 mA or less

Installation, piping & wiring

⚠CAUTION

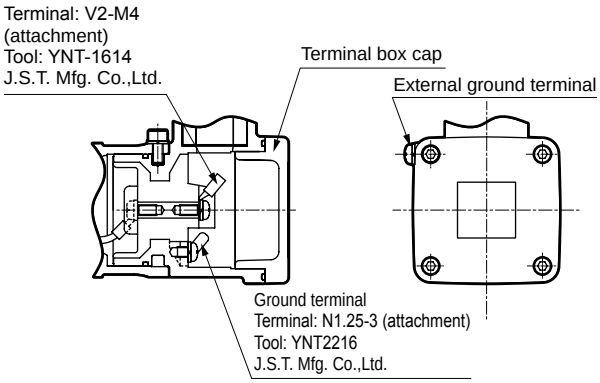
1 Piping

(1) To pipe on NO side of 3 port valve, fasten with holding socket with a wrench.
(2) If the piping vibrates when opening or closing the solenoid valve, firmly stabilize the pipe.
(3) When steam is flowed, the steam generated in the boiler contains high amounts of drainage. Please be sure to use a drain trap.
(4) When using steam, feed water in the boiler may contain calcium/magnesium salts. It can react to oxygen/carbonic gases, melt, and form scales or sludge. Therefore, please be sure to install the hard water softener and the steam filter.
(5) When AP, AD, AKD and the regulator are directly connected, parts could mutually vibrate causing resonance and chattering.
(6) If the cross section of the fluid inlet pipe is too narrow, then operation may become unstable due to a pressure differential fault. Please use an inlet pipe of the same size as the port size of the valve. Also do not set any throttle.

2 Wiring

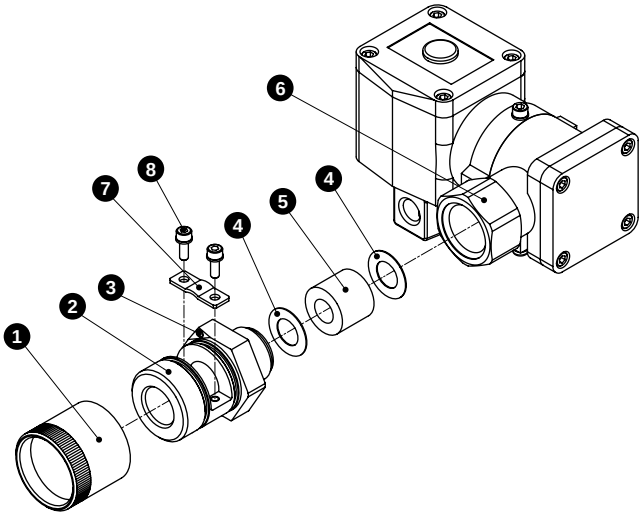
■ Wiring

- Use wire with nominal cross sectional area of 1.04 to 2.63 mm^2 and allowable temperature as below.
  AB* EX4, AG4* EX4, AP** EX4, AD** EX4, ADK* EX4⋯ allowable temperature of 80°C and over
  AB* EX2, AP** EX2⋯ allowable temperature of 100°C and over
  Do not apply force to the wire.
- Wire keeping to JIS explosion-proof guide line.
- Remove the cap of terminal box, then wire. Use specified tools in the figure below for caulking crimp terminals on wiring. Make sure to fix cap of terminal box, after finishing wiring.



■ How to ground fastening

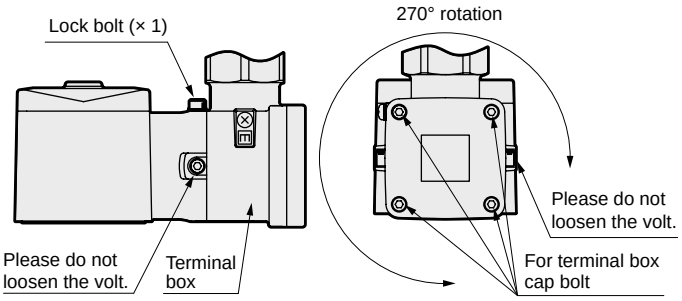
1. Pass cable through (1) connector cap, (2) ground, (4) spacer, (5) packing, (4) spacer, then connect (6) terminal box.
2. Insert (4) spacer, (5) packing, (4) spacer into (6) terminal box, then squeeze (2) ground into (6) terminal box with torque 40 to 44 N·m until gap removed.
3. To stop (2) ground loosening, make sure to fasten (3) hexagon socket head cap lock screw.
4. To fix cable, fasten (7) holder with (8) hexagon socket head cap lock bolt (× 2) and spring washer (× 2) with torque 1.9 to 2.0 N·m.
5. Fasten (1) connector cap until it reaches to (2) ground.



■ 4 types of packing sizes (number indicated on packing) are available as shown in below.

(1) φ 7.5 to 9.5, φ 9.5 to 10.5, φ 10.5 to 11.5, φ 11.5 to 13.5 make sure to use cables whose diameters are within range indicated on the packing. If packing size and cable diameter doesn't match, the explosion proof performance becomes impaired.

(2) Terminal box rotates 270°. Its direction can be switched by loosen lock bolt. Fix the terminal box with fasten lock bolt with 0.6 to 0.8 N·m, after wiring and setting wiring directions. Lock bolt might be fallen during use, if it is loosen. Also, rotate of the terminal box could lead damaging rotor or termination of internal wiring. Do not loosen any bolts other than 4 bolts of terminal box and lock bolt, which are necessary for electric wiring. We cannot guarantee the explosion proof performance under the condition.



(3) Put fuse (1 A) or equivalent material in the electric circuit.

During use

⚠ CAUTION

1 About instantaneous leakage

For piloted and 2-port pilot kick-type valves, in the event of a violent surge of pressure when the valve is in the closed state, the instantaneous valve will be opened by launching the pomp, etc., and fluid may leakage. Caution must be taken.

2 About operation

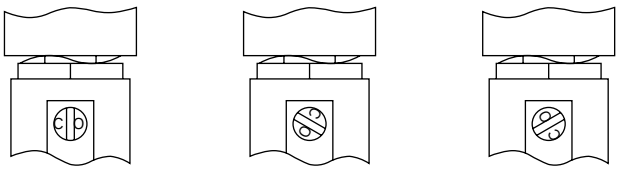
Do not apply back pressure. This may cause a malfunction.

3 Manual operation method

Please keep to the following for w/ manual override models.

Opening operation: Insert ⊖ driver in the slit on manual axis, then rotate about 120° to the left or right. This will rise plunger to make open state (open on NC valve side, and close on NO valve side for 3 port valve).
Open state will remain after the driver was removed.
Make sure to reset the position after use.

Closing operation: Rotate the manual axis from the open state position to place the slit back to the vertical position. This will put the plunger down and make close state (close on NC side valve seat, open on NO side valve seat for 3 port valve). (See below)



Valve closed　　Valve opened　　Valve opened

Maintenance

⚠ CAUTION

1 Maintenance of coil case part

Please do not disassemble a explosion proof solenoid valve which is used in explosive dangerous zones, even if there is necessity of service.
If the necessity raised to disassemble the coil case part of explosion proof construction during check, please contact CKD sales personnel.
To guarantee the explosion proof performance, CKD will keep the explosion proof solenoid valve to service it in our manufacturing plant.

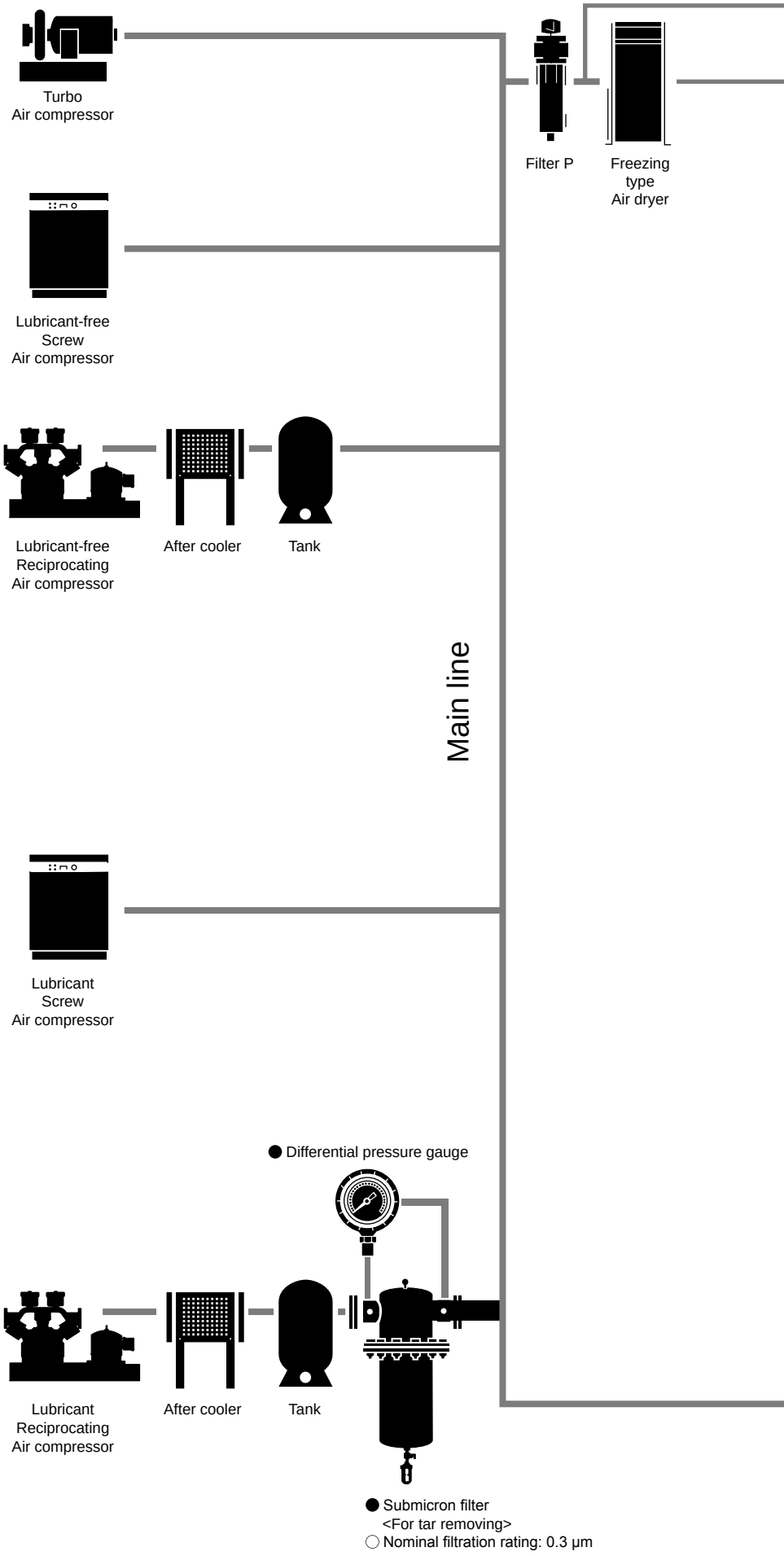
Cleaning compressed air guide

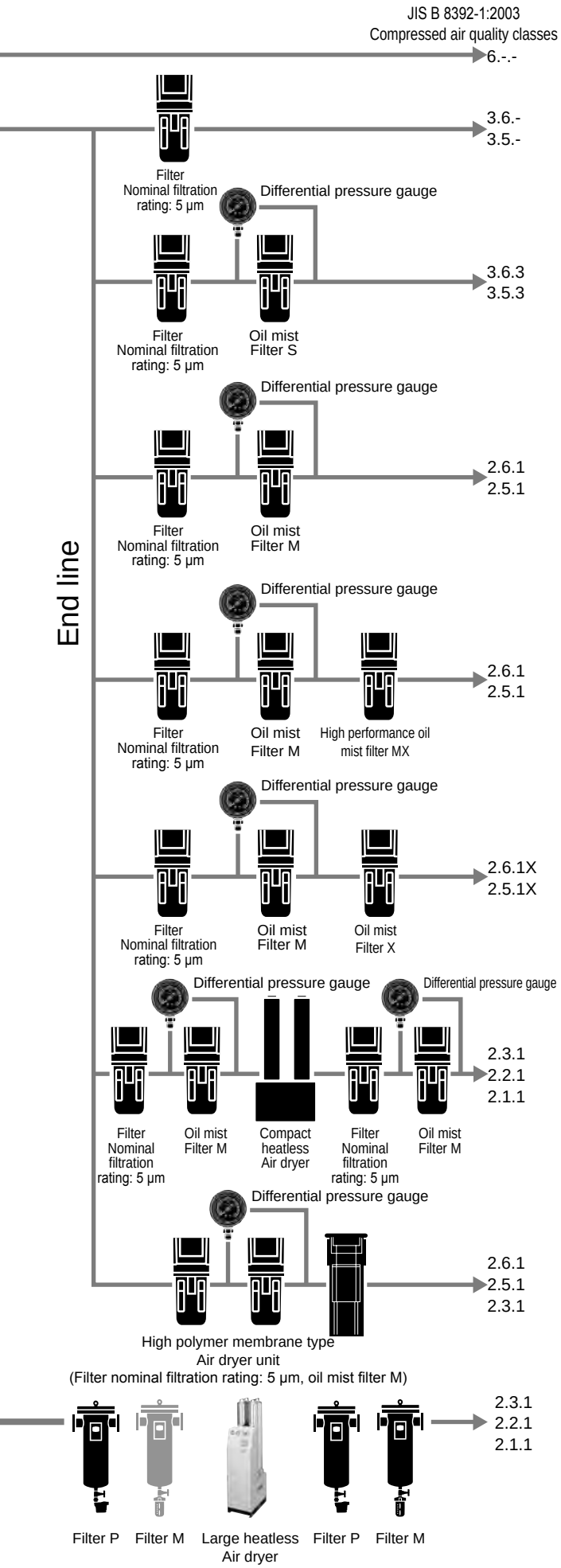
CKD clean air system

CKD clean air system removes impurities from compressed air effectively and economically.
Diverse clean air system is available per industry or application to solve any annoying caused by compressed air.

What is CKD clean air system?

An air compressor is normally used to make compressed air by compressing the atmosphere. Therefore, viper and invisible foreign matters in atmosphere increase its percentage content in proportion to the compression ratio of compressor. This will result in very dirty compressed air. In some types of lubrication type air compressor, lubricant is oxidized by compression heat or frictional heat to form oil oxide, or may generate solid substance such as carbon and tar, etc. Oil free air compressor generates carbon particles. Anyway, impurity in the compressed air will be increased.
In order to remove impurity substance in compressed air, CKD clean air system provides diverse types of components such as submicron filters to remove tar and carbon, etc., dryers to remove moisture, and oil mist filters to remove oil oxide and oil odor, etc.





Compressed air quality classes with JIS B 8392-1:2003	Impurities in compressed air					Applications	Air	Dry air
	Solids (nominal)	Moisture	Secondary oil concentration (21°C)	Odor				
6.-.-	5 µm	-	-	-	Water drip removal Coarse dust removal	• For construction/civil engineering machine • Cleaning air blow (drying not required)	●	
3.6.3 3.5.3	0.3 µm	Pressure dew point 10°C Pressure dew point 7°C	0.5 mg/m³	-	General dry air	• Air tools • Air drill, air driver • Air grinder • For labor saving device and air Jigs and tools • Air chuck /air vice • Air for cleaning precision parts	●	
2.6.1 2.5.1	0.01 µm	Pressure dew point 10°C Pressure dew point 7°C	0.01 mg/m³	-	Oil free Clean dry air	• Instrumentation • Measurement • Sequence control • Luxury painting • Precision mining industry		●
2.6.1 2.5.1	0.01 µm	Pressure dew point 10°C Pressure dew point 7°C	0.001 mg/m³	-	Super oil free Clean dry air	• For precise measuring • Luxury painting		●
2.6.1 2.5.1	0.01 µm	Pressure dew point 10°C Pressure dew point 7°C	0.003 mg/m³	None	Odor-free air	• Food industry • Pharmaceutical industry • Stirring • Transportation • Drying • Packaging • Air for brewing		●
2.3.1 2.2.1 2.1.1	0.01 µm	Pressure dew point -20°C Pressure dew point -40°C Pressure dew point -70°C	0.01 mg/m³	-	Super dry air	• Drying of computer rooms • Drying of furnace atmosphere gas • Ozone generator • Drying of high voltage generator insulation gas • Drying of high voltage breaker input air • For instrumentation of centralized control		●

Note 1. The system no. is based on the class below.
X not listed in the Table below means odor removal, while " - " means no regulation.

● Compressed air purity grade - JIS B 8392-1:2003

Grade	Solid particle						Humidity and moisture		Oil
	Max. particle quantity per 1 m³				Particle diameter µm	Density mg/m³	Pressure dew point °C	Moisture concentration Cw g/m³	Total oil concenfration mg/m³
	Particle diameter d µm								
	d ≦ 0.10	0.10 < d ≦ 0.5	0.5 < d ≦ 1.0	1.0 < d ≦ 5.0					
0	User and vendor shall determine using stricter conditions than grade 1.								
1	-	100	1	0	-	-	≦ -70	-	≦ 0.01
2	-	100,000	1,000	10	-	-	≦ -40	-	≦ 0.1
3	-	-	10,000	500	-	-	≦ -20	-	≦ 1
4	-	-	-	1,000	-	-	≦ +3	-	≦ 5
5	-	-	-	20,000	-	-	≦ +7	-	-
6	-	-	-	-	≦ 5	≦ 5	≦ +10	-	-
7	-	-	-	-	≦ 40	≦ 10	-	Cw ≦ 0.5	-
8	-	-	-	-	-	-	-	0.5 < Cw ≦ 5	-
9	-	-	-	-	-	-	-	5 < Cw ≦ 10	-

JIS B 8392-1:2000 has been revised and is now JIS B 8392-1:2003. The contents have changed.

For example,
"Grade 2.2.1" refers to the grade with

- Solid particle 0.1 to 0.5 µm are 100,000 or less, 0.5 to 1.0 µm are 1,000 or less and 1.0 to 5.0 µm are 10 or less.
- Pressure dew point below -40°C
- Oil concentration below 0.01 mg/m³

⚠ Notes on system selection

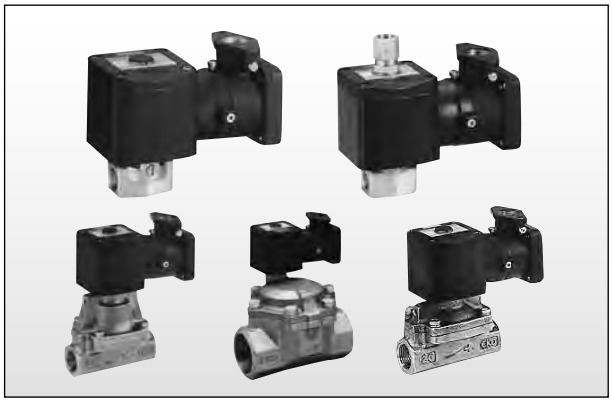
Note 1: For different conditions, select models referring to specifications listed on the catalog.
Note 2: Use rust-proof treated pipes (galvanized pipes, lined pipes or stainless steel pipes, etc.) Use stainless steel pipe for super dry air.
Note 3: Make sure to delipidate pipes after oil mist.
Note 4: Make sure to pipe with grade of 1/100 for main piping.
Note 5: Install filter to remove contaminated material generated in piping just before using the device.

Related products

Explosion proof 2/3 port solenoid valves for various fluids control AB/AG/AP/AD/ADK series

- Air control of automatic valve and steam control are available
- Explosion proof construction d2G4/d2G2

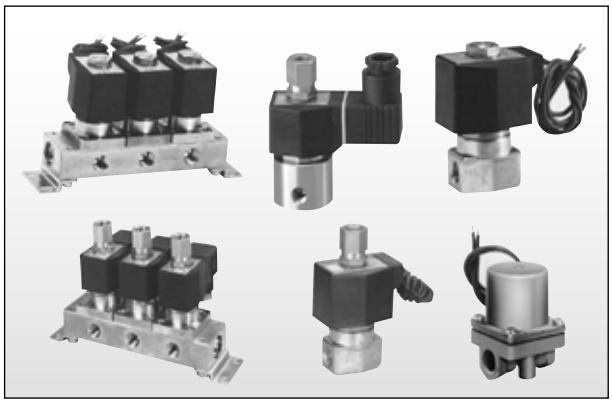
Catalog no. CB-03-1SA



Direct acting type 2/3 port solenoid valve for various fluids control AB/AG/AP/AD/ADK series

- Many various types of fluid are supported with body material and sealant combinations
- Ample options
  - Open frame
  - Diode integrated coil
  - Terminal box etc.
- Rc1/8 to Rc1 of direct acting compact type are supported (port size)

Catalog no. CB-03-1SA



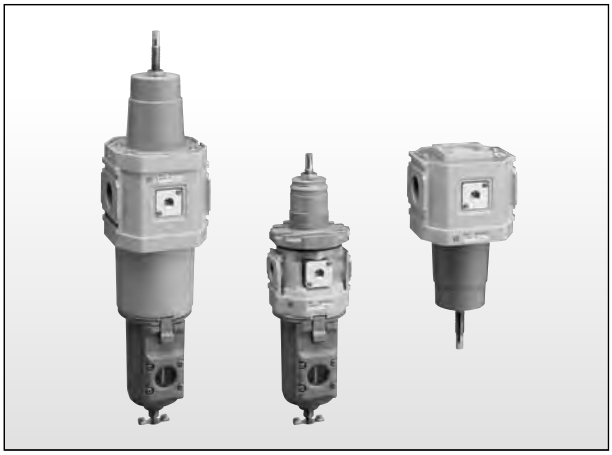
Filter, regulator, outside series

- Accelerated weathering*1 test 3-year acceleration equivalent cleared
- Combined cycle*2 test 7-year acceleration equivalent cleared
- Metal is used for all exterior part
- Susbolt specification

*1: Sunshine weather meter test

*2: Neutral salt spray test

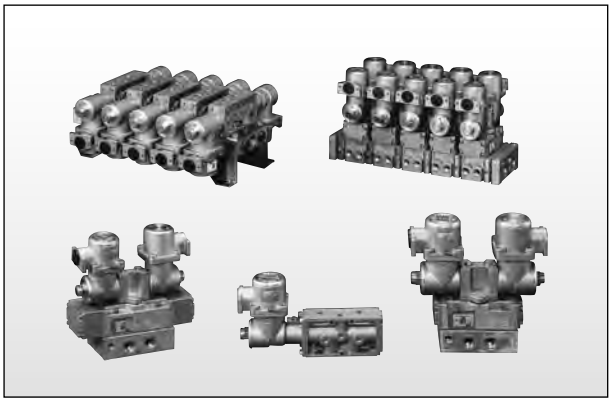
Catalog no. CC-1158A



Related products

Explosion proof 5 port pilot operated valve 4F**0E series

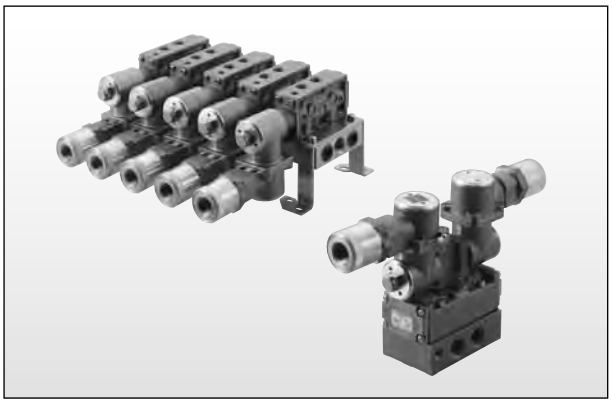
Catalog no. CB-023SA



- Explosion proof performance d2G4
  Pressure and explosion proof structure, explosion class 2, ignitability G4
- Driving cylinders up to φ 250
  4F3 to 6 : C (dm^3/(S·bar)): 3.9 to 18
  4F7 : Effective area : 160 mm^2
- Easy wiring
  Pilot solenoid valve can be manually rotated 360°. Wiring port can be rotated by 90°
  Wide wiring BOX
- Many variations are provided
  Discrete, manifold and locking manual knob are equipped as standard

Explosion proof 5 port pilot operated valve 4F**0EX series

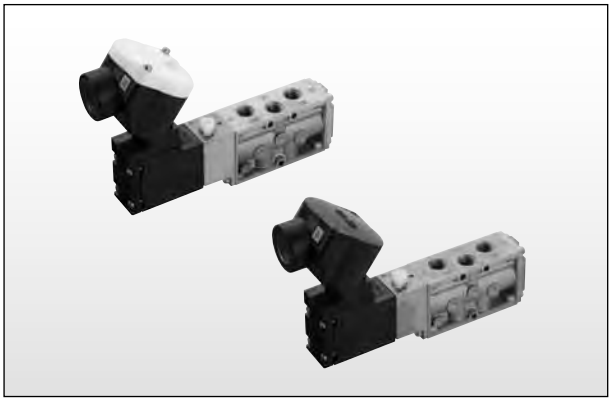
Catalog no. CC-1159A



- Available for outside use
- Safe use in dangerous atmosphere is supported
- Applicable cable outside diameter range is increased to φ 7.5 to 13.5 mm
- Explosion proof performance: international specification (IEC) ExdⅡBT4

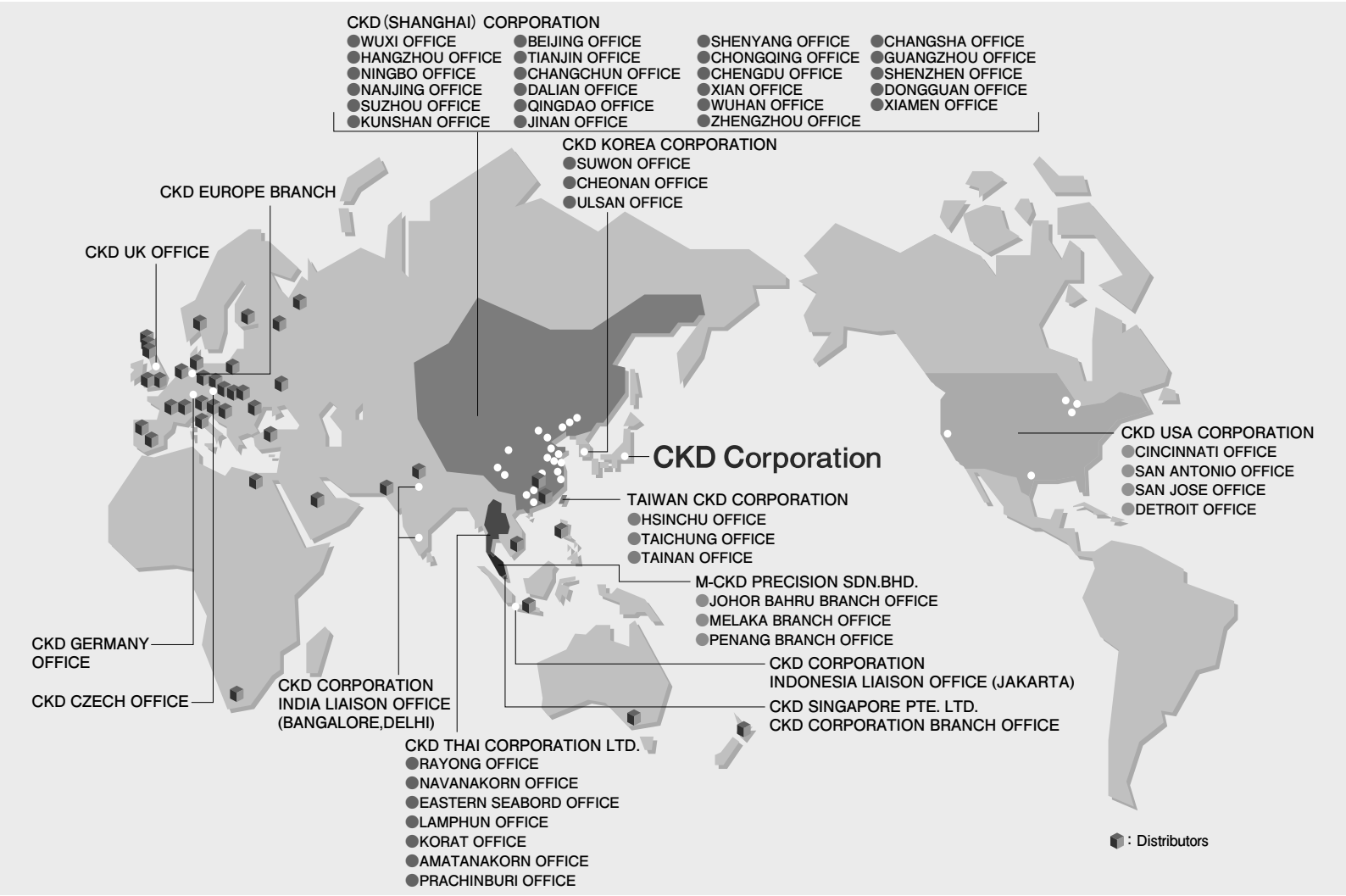
5 port pilot operated valve, 4F series, outdoor option

Catalog no. CC-1070A



- Suitable for outdoor use
  Accelerated weathering test (sunshine weather meter): Cleared 1,000 h
  Combined cycle corrosion test : Cleared 960 h
- Conforms to IP65 (compliance standard: IEC/EN 60529)
- Now with a more durable terminal box cover seal structure
- Equipped with stainless steel set screw

WORLD-NETWORK



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2014.7.