

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

AB41E2 Series

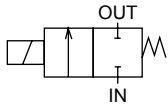


- Pressure and explosion proof construction d2G2 (flame-proof grade 2/ignitability G2)
- Japan Conformity Certificate No.: No. T64351
- China Conformity Certificate No. 2020322307003155
- China explosion-proof standard NEPSI acquired GYB20. 2593X
- NC (open when energized)
- Port size: Rc1/4, Rc3/8



EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/
AD
APK/
ADK

JIS symbol



Common specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item	AB41E2
Working fluid	Air/water/kerosene/oil (50 mm ² /s or less)/steam
Working pressure differential MPa	0 to 5 (refer to max. working pressure differential in individual specifications.)
Max. working pressure MPa	5 (≈730 psi, 50 bar) (1 (≈150 psi, 10 bar) when fluid is steam)
Proof pressure (water pressure) MPa	25 (≈3600 psi, 250 bar)
Fluid temperature °C	-10 (14°F) to 181 (357.8°F)
Ambient temperature °C	-10 (14°F) to 40 (104°F)
Thermal class	Class 180 (H)
Atmosphere	Outdoors/explosive gas (flame-proof grade 1 to 2/ignitability G1 to G2)
Valve structure	Direct acting poppet structure
Valve seat leakage cm ³ /min(ANR)	300 or less (air)
Mounting orientation	Unrestricted
Degree of protection	IP65 or equivalent

Individual specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item	Port size	Orifice size (mm)	Max. working pressure differential (MPa)				Rated voltage	Apparent power (VA)				Power consump (W)		Weight (kg)	
			Air	Water(hot)/Kerosene	Oil (50 mm ² /s)	Steam		When holding		When starting		AC			
								50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz		
AB41E2-02	Rc1/4	-1	1.5	5.0	4.5	4.0	1.0	100 VAC 50/60 Hz 110 VAC 60 Hz	18	15	29	24	8	7	1.0
		-2	2.0	3.0	2.7	2.5	1.0								
		-3	3.0	1.5	1.3	0.9	1.0								
		-4	3.5	1.2	0.9	0.6	0.9								
		-5	4.0	1.0	0.7	0.5	0.7								
		-6	5.0	0.6	0.4	0.25	0.4								
		-7	7.0	0.25	0.2	0.15	0.2								
AB41E2-03	Rc3/8	-1	1.5	5.0	4.5	4.0	1.0	200 VAC 50/60 Hz 220 VAC 60 Hz	18	15	29	24	8	7	1.0
		-2	2.0	3.0	2.7	2.5	1.0								
		-3	3.0	1.5	1.3	0.9	1.0								
		-4	3.5	1.2	0.9	0.6	0.9								
		-5	4.0	1.0	0.7	0.5	0.7								
		-6	5.0	0.6	0.4	0.25	0.4								
		-7	7.0	0.25	0.2	0.15	0.2								

*1: The voltage fluctuation range must be within -10 to +5% of the rated voltage.

Flow characteristics

Model No.	Port size	Orifice size (mm)	Flow characteristics			
			C[dm ³ /(s·bar)]	b	Cv	
AB41E2- ⁰² / ₀₃	Rc1/4 Rc3/8	-1	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	0.49	0.42
				[1.5]	[0.47]	[0.40]
		-5	4.0	2.1	0.48	0.54
				[1.9]	[0.47]	[0.48]
-6	5.0	3.0	0.42	0.8		
		[2.6]	[0.38]	[0.62]		
-7	7.0	4.8	0.29	1.0		
		[4.6]	[0.37]	[0.82]		

*1 : Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 x C.

*2 : Dimensions shown in [] are for stainless steel body.

MXB/G
Other valves
SWD/
MWD
DustColl
CVE/
CVSE
CCH/
CPE/D
LifeSci
Gas-
Combus
Auto-
Water
Outdoor
SpecFld
Custom
Ending

How to order

AB41E2 - **02** - **4** - **C** **4** **T** **B** **CN** - **AC100V**

Model No.

G Organizations for explosive-proof certification

H Voltage
*3
*4

A Port size

B Orifice size

C Body/sealant combination

D Coil

E External wire *1 pull method

F Other options

Code	Description	Code	Description	Code	Description
A Port size					
02	Rc1/4	2G	G1/4	2N	1/4NPT
03	Rc3/8	3G	G3/8	3N	3/8NPT
B Orifice size					
1	ø1.5				
2	ø2				
3	ø3				
4	ø3.5				
5	ø4				
6	ø5				
7	ø7				
C Body/sealant combination					
	Body	Seal	Treatment	Remarks	
C Std.	Copper alloy	PTFE	-	Air/water/kerosene/oil/steam (up to 181°C)	● ●
F Option	Stainless steel	PTFE	-		● ●
K Option	Copper alloy	PTFE	Oil-prohibited		● ●
N Option	Stainless steel	PTFE	Oil-prohibited		● ●
Refer to Intro Page 39 for reference on material combinations.					
D Coil					
4	Thermal class 180 (H) explosion-proof coil				
E External wire pull method					
T Std.	Conduit screw connection (G1/2) *5				
L Option	Pressure proof packing seal (G1/2) connection, cable O.D. ø7.5 to 8.4				
M Option	Pressure proof packing seal (G1/2) connection, cable O.D. ø8.5 to 9.4				
F Other options					
Blank	No option				
B	With mounting plate				
G Organizations for explosive-proof certification					
Blank	Japan certification (TIIS) *6				
CN	China certification (NEPSI) *7				
H Voltage					
AC100V	100 VAC 50/60 Hz, 110 VAC 60 Hz				
AC200V	200 VAC 50/60 Hz, 220 VAC 60 Hz				

[Example of model No.]

AB41E2-02-4-C4TBCN-AC100V

Model: AB41E2

- A** Port size : Rc1/4
- B** Orifice size : ø3.5
- C** Body/sealant combination : Body - copper alloy/sealant - PTFE
- D** Coil : Thermal class 180 (H) explosion-proof coil
- E** External wire pull method : Conduit screw connection (1/2NPT)
- F** Other options : With mounting plate
- G** Organizations for explosive-proof certification : China Certification (NEPSI)
- H** Voltage : 100 VAC 50/60 Hz

⚠ Precautions for model No. selection

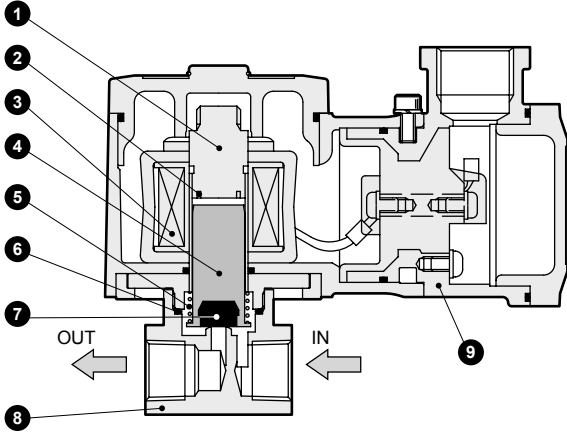
- *1 : A pressure proof packing seal (G3/4) connection is also available. Contact CKD for more information.
Note that the conduit connection (G3/4) is not available.
- *2 : Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information.
- *3 : 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz.
- *4 : Other voltages as below are also available. Contact CKD for details.
12, 24, 48, 110, 115, 120, 220, 240, 380, 400, 415, 440, 480, 500 VAC
- *5 : China certification will be 1/2 NPT.
- *6 : Japan certification (TIIS) is included.
- *7 : China certification (NEPSI) is included.

EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/AD
APK/ADK
DryAir
EX-XPLNprf
XPLNprf
HVB/HVL
SøB/NAB
LAD/NAD
Water-Rela
NP/NAP/NVP
SNP
CHB/G
MXB/G
Other valves
SWD/MWD
DustColl
CVE/CVSE
CCH/CPE/D
LifeSci
Gas-Combus
Auto-Water
Outdoor
SpecFld
Custom
Ending

AB41E2 Series

Internal structure and parts list

- EXA
- FWD
- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG
- AP/AD
- APK/ADK
- DryAir
- EX-XPLNprf
- XPLNprf
- HVB/HVL
- S \diamond B/NAB
- LAD/NAD
- Water-Rela
- NP/NAP/NVP
- SNP
- CHB/G
- MXB/G
- Other valves
- SWD/MWD
- DustColl
- CVE/CVSE
- CCH/CPE/D
- LifeSci
- Gas-Combus
- Auto-Water
- Outdoor
- SpecFld
- Custom
- Ending



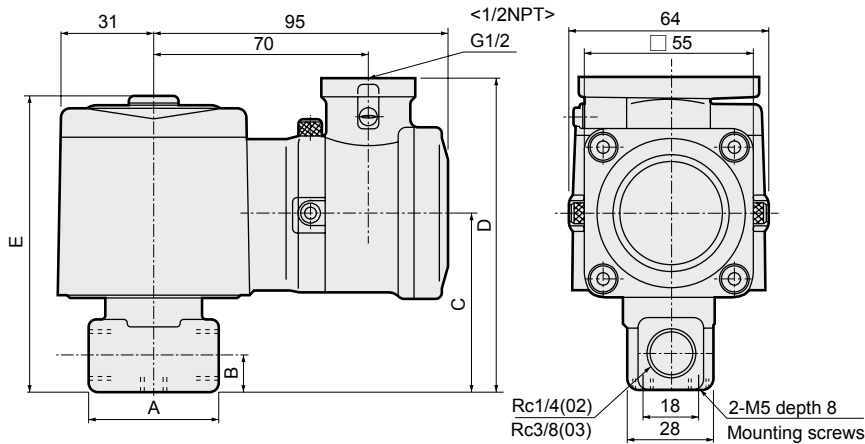
Cannot be disassembled

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

() shows options.

Dimensions

● Conduit screw (G1/2) connection
AB41E2-02/03-1 to 7-*4T



Dimensions in < > are for China certification

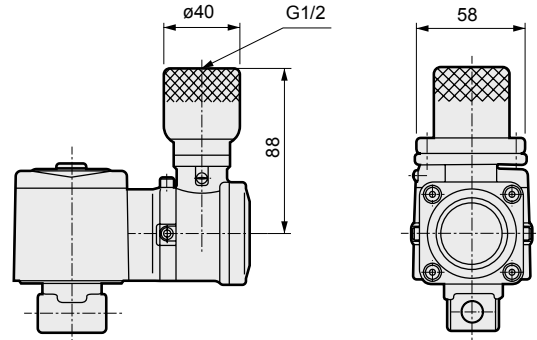
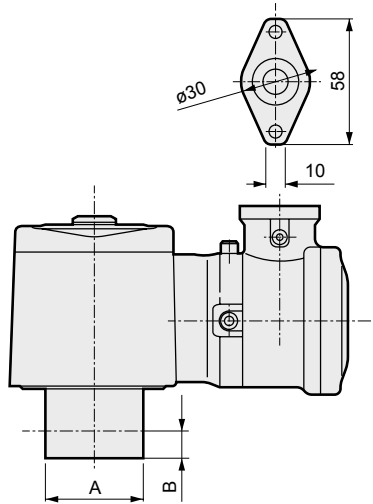
Model No.	A	B	C	D	E
AB41E2-02-1 to 6	36	11	54	97	92
AB41E2-02-7	40	12	57	100	95
AB41E2-03-1 to 7					

Optional dimensions



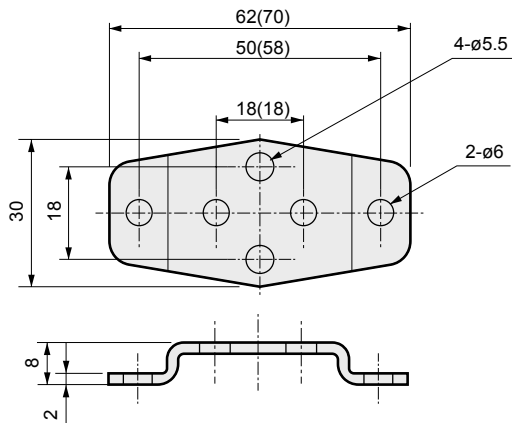
- Stainless steel body
AB41E2-02/03-1 to 7- F,N

- Pressure proof packing (G1/2) connection
AB41E2-02/03-1 to 7- L,M



Model No.	A	B
AB41E2-02-1 to 6□	ø37.5	11
AB41E2-02-7□	ø45	12
AB41E2-03-1 to 7□		

- Mounting plate
AB41E2-02/03-1 to 7-*** B
AB



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

Mounting plate model	Compatibility
AB4-GE-100106-MOUNT-PLATE-KIT (Mounting plate No.1)	● AB41E2-02/03-1 to 7 Copper alloy body
	● AB41E2-02-1 to 6 Stainless steel body
AB4-GE-100159-MOUNT-PLATE-KIT (Mounting plate No.2)	● AB41E2-02-7 Stainless steel body
	● AB41E2-03-1 to 7 Stainless steel body

* Material: Steel/Zinc plated

EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/AD
APK/ADK
DryAir
EX-XPLNprf
XPLNprf
HVB/HVL
S [◇] B/NAB
LAD/NAD
Water-Rela
NP/NAP/NVP
SNP
CHB/G
MXB/G
Other valves
SWD/MWD
DustColl
CVE/CVSE
CCH/CPE/D
LifeSci
Gas-Combus
Auto-Water
Outdoor
SpecFld
Custom
Ending

AP11E2/AP12E2 Series



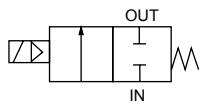
- Pressure and explosion proof construction d2G2 (flame-proof grade 2/ignitability G2)
- NC (open when energized), NO (closed when energized)
- Japan Conformity Certificate No. AP11E2: No. T64351, AP12E2: No. T64354
- China Conformity Certificate No. 2020322307003155
- China explosion-proof standard NEPSI acquired GYB20. 2593X
- Port size: Rc1/2 to Rc1 ● Piston drive



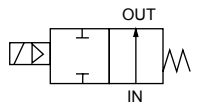
EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/
AD
APK/
ADK
DryAir
EX-
XPLNprf
XPLNprf
HVB/
HVL
S ◇ B/
NAB
LAD/
NAD
Water-
Rela
NP/NAP/
NVP
SNP
CHB/G
MXB/G
Other
valves
SWD/
MWD
DustColl
CVE/
CVSE
CCH/
CPE/D
LifeSci
Gas-
Combustion
Auto-
Water
Outdoor
SpecFld
Custom
Ending

JIS symbol

- AP11E2: NC (open when energized)



- AP12E2: NO (closed when energized)



Common specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item	AP11E2/AP12E2
Working fluid	Air/water/kerosene/oil (50 mm ² /s or less)/steam
Working pressure differential MPa	0.05 to 1.2 (refer to max. working pressure differential in individual specifications.)
Max. working pressure MPa	2 (≈290 psi, 20 bar) (1 (≈150 psi, 10 bar) when fluid is steam)
Proof pressure (water pressure) MPa	10 (≈1500 psi, 100 bar)
Fluid temperature °C	5 (41°F) to 181 (357.8°F)
Ambient temperature °C	-10 (14°F) to 40 (104°F)
Thermal class	Class 180 (H)
Atmosphere	Outdoors/explosive gas (flame-proof grade 1 to 2/ignitability G1 to G2)
Valve structure	Pilot operated poppet, piston drive
Valve seat leakage (*1) cm ³ /min(ANR)	300 or less (air)
Mounting orientation	Free (within working pressure range)
Degree of protection	IP65 or equivalent

*1: Pneumatic pressure used for measurement is 0.05 to 1.2 MPa for AP11E2 (NC [open when energized]), and 0.05 to 0.5 MPa for AP12E2 (NO [closed when energized]).

Individual specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item	Port size	Orifice size (mm)	Min. working pressure differential (MPa)	Max. working pressure differential (MPa)				Rated voltage	Apparent power (VA)				Power consump (W)		Weight (kg)	
				Air		Water/kerosene/Oil (50 mm ² /s)			When holding		When starting		AC			
				AC	AC	AC	AC		50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz		
NC (open when energized)																
AP11E2	-15A	Rc1/2	15	0.05					100 VAC 50/60 Hz							1.9
	-20A	Rc3/4	20	(≈7.3 psi, 0.5 bar)	1.2	1.0	0.6	1.0	110 VAC 60 Hz	18	15	29	24	8	7	2.3
	-25A	Rc1	25						200 VAC 50/60 Hz							3.0
									220 VAC 60 Hz							
NO (closed when energized)																
AP12E2	-15A	Rc1/2	15	0.05					100 VAC 50/60 Hz							1.9
	-20A	Rc3/4	20	(≈7.3 psi, 0.5 bar)	0.5	0.5	0.5	0.5	110 VAC 60 Hz	22	18	35	29	8.7	6.7	2.3
	-25A	Rc1	25						200 VAC 50/60 Hz							3.0
									220 VAC 60 Hz							

* The voltage fluctuation range must be within -10 to +5% of the rated voltage.

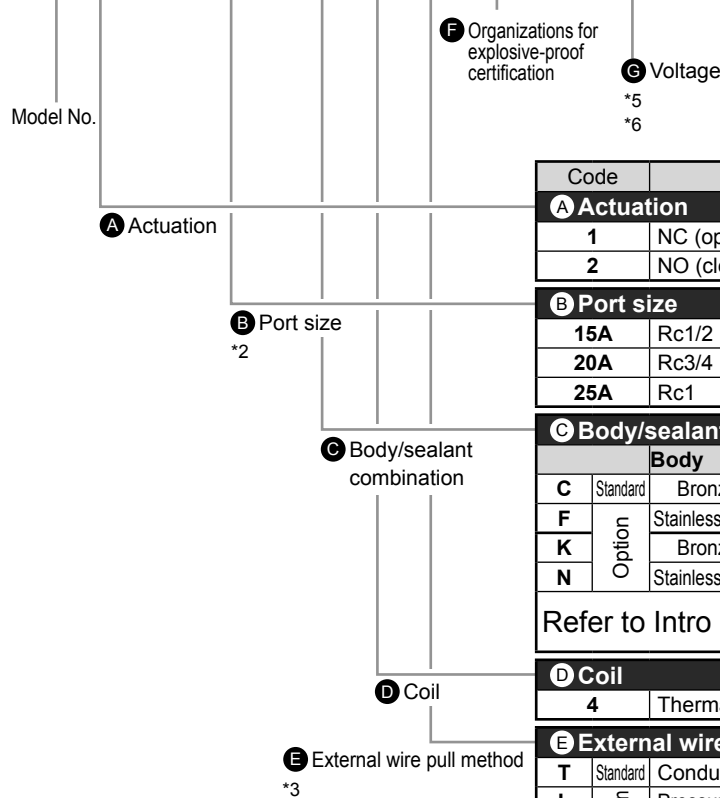
Flow characteristics

Model No.	Port size	Orifice size (mm)	Flow characteristics				
			C[dm ³ /(s·bar)]	b	Cv	S(mm ²)	
NC (open when energized)							
AP11E2	-15A	Rc1/2	15	21	0.22	4.5	-
	-20A	Rc3/4	20	-	-	9.3	162
	-25A	Rc1	25	-	-	12.0	231
NO (closed when energized)							
AP12E2	-15A	Rc1/2	15	21	0.22	4.5	-
	-20A	Rc3/4	20	-	-	9.3	162
	-25A	Rc1	25	-	-	12.0	231

* Effective cross-sectional area S and sonic conductance C are converted as S ≈ 5.0 × C.

How to order

AP11E2 - 15A - C 4 T CN - AC100V



Code		Description	Model No.					
			AP11E2	AP12E2				
A Actuation								
1		NC (open when energized)	●					
2		NO (closed when energized)		●				
B Port size								
15A		Rc1/2	●	●				
20A		Rc3/4	●	●				
25A		Rc1	●	●				
C Body/sealant combination								
		Body	Valve seal	O-ring	Treatment	Remarks		
C	Standard	Bronze	PTFE	Fluoro rubber	-	Air/water/kerosene/oil/steam (up to 181°C)	●	●
F	Option	Stainless steel	PTFE	Fluoro rubber	Oil-prohibited		●	●
K		Bronze	PTFE	Fluoro rubber			●	●
N		Stainless steel	PTFE	Fluoro rubber			●	●
Refer to Intro Page 39 for reference on material combinations.								
D Coil								
4		Thermal class 180 (H) explosion-proof coil	●	●				
E External wire pull method								
T	Standard	Conduit screw connection (G1/2) *7	●	●				
L	Option	Pressure proof packing seal (G1/2) connection, cable O.D. ø7.5 to 8.4	●	●				
M		Pressure proof packing seal (G1/2) connection, cable O.D. ø8.5 to 9.4	●	●				
F Organizations for explosive-proof certification								
Blank		Japan certification (TIIS) *8	●	●				
CN		China certification (NEPSI) *9	●	●				
G Voltage								
AC100V		100 VAC 50/60 Hz, 110 VAC 60 Hz	●	●				
AC200V		200 VAC 50/60 Hz, 220 VAC 60 Hz	●	●				

[Example of model No.]

AP11E2-15A-C4TCN-AC100V

Model: AP11E2

- A** Actuation : NC (open when energized)
- B** Port size : Rc1/2
- C** Body/sealant combination : Body - bronze, valve seal - PTFE, O-ring - fluoro rubber
- D** Coil : Thermal class 180 (H) explosion-proof coil
- E** External wire pull method : Conduit screw connection (1/2NPT)
- F** Organizations for explosive-proof certification : China Certification (NEPSI)
- G** Voltage : 100 VAC 50/60 Hz

⚠ Precautions for model No. selection

- *1 : The combinations indicated with ● above are available.
- *2 : As G and NPT threads can also be used for piping port threads, contact CKD for details.
- *3 : A pressure proof packing seal (G3/4) connection is also available. Contact CKD for more information.
Note that the conduit connection (G3/4) is not available.
- *4 : Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information.
- *5 : 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz.
- *6 : Other voltages as below are also available. Contact CKD for details.
12, 24, 48, 110, 115, 120, 220, 240, 380, 400, 415, 440, 480, 500 VAC
- *7 : China certification will be 1/2 NPT.
- *8 : Japan certification (TIIS) is included.
- *9 : China certification (NEPSI) is included.

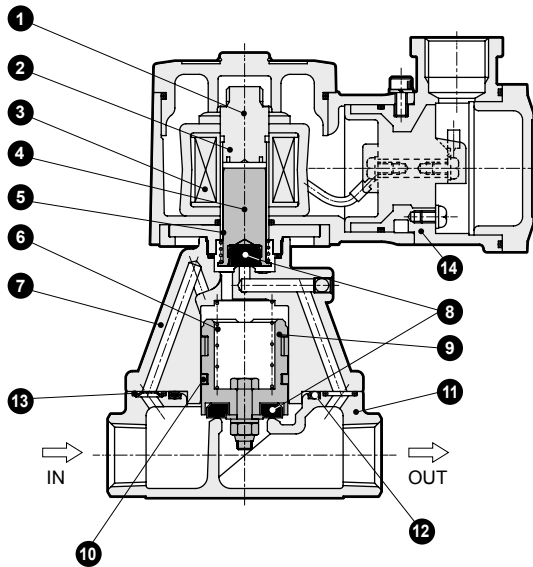
EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/AD
APK/ADK
DryAir
EX-XPLNprf
XPLNprf
HVB/HVL
S&B/NAB
LAD/NAD
Water-Rela
NP/NAP/NVP
SNP
CHB/G
MXB/G
Other valves
SWD/MWD
DustColl
CVE/CVSE
CCH/CPE/D
LifeSci
Gas-Combus
Auto-Water
Outdoor
SpecFld
Custom
Ending

AP11E2/AP12E2 Series

- EXA
- FWD
- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG
- AP/AD
- APK/ADK
- DryAir
- EX-XPLNprf
- XPLNprf
- HVB/HVL
- S◇B/NAB
- LAD/NAD
- Water-Rela
- NP/NAP/NVP
- SNP
- CHB/G
- MXB/G
- Other valves
- SWD/MWD
- DustColl
- CVE/CVSE
- CCH/CPE/D
- LifeSci
- Gas-Combus
- Auto-Water
- Outdoor
- SpecFld
- Custom
- Ending

Internal structure and parts list

● AP11E2 Series



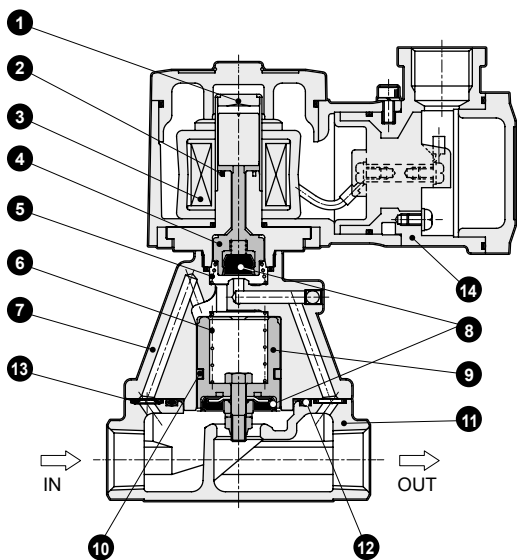
(The figure shows the closing operation)

Cannot be disassembled

No.	Part name	Material	
1	Core assembly	SUS405 or equiv./SUS316L/ SUS403	Stainless steel
2	Shading coil	Cu (Ag for stainless steel body)	Copper (silver for stainless steel body)
3	Coil	—	—
4	Plunger	SUS405 or equiv.	Stainless steel
5	Plunger spring	SUS304	Stainless steel
6	Valve spring	SUS304	Stainless steel
7	Body	CAC408(SCS13)	Bronze casting (S.S. casting)
8	Valve seal	PTFE	Tetrafluoroethylene resin
9	Main valve assembly	C3604/SUS303/SUS304 (SUS303/SUS304)	Stainless steel/copper alloy (Stainless steel)
10	Piston ring	SUS304/PTFE	Stainless steel/ tetrafluoroethylene resin
11	Body	CAC408(SCS13)	Bronze casting (S.S. casting)
12	O-ring	FKM	Fluoro rubber
13	Orifice plate	SUS304(SUS303)	Stainless steel
14	Coil case	ADC12	Aluminum die-casting

() shows options.

● AP12E2 Series



(The figure shows the opening operation)

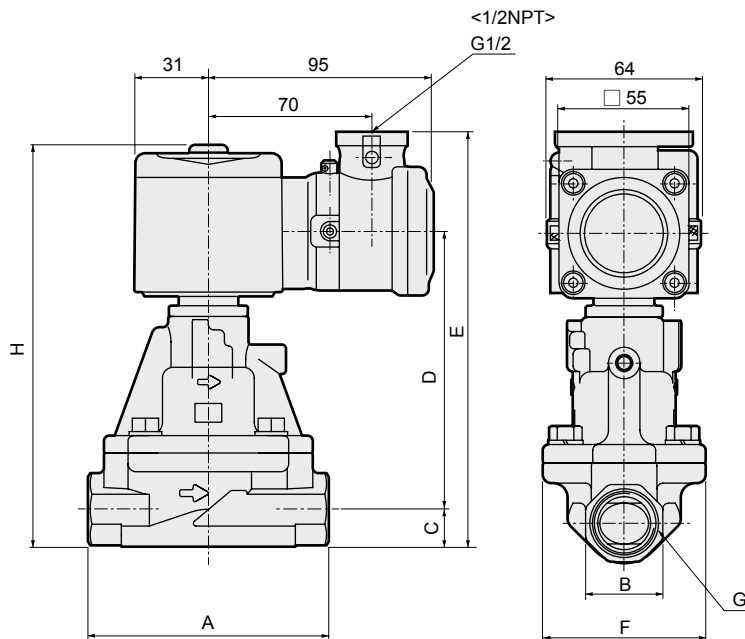
Cannot be disassembled

No.	Part name	Material	
1	Plunger/core assembly	SUS405 or equiv./SUS316L/ SUS304	Stainless steel
2	Shading coil	Cu (Ag for stainless steel body)	Copper (silver for stainless steel body)
3	Coil	—	—
4	NO valve	SUS303/PFA	Stainless steel/ perfluoroalkoxy resin
5	Spring	SUS304	Stainless steel
6	Valve spring	SUS304	Stainless steel
7	Body	CAC408(SCS13)	Bronze casting (S.S. casting)
8	Valve seal	PTFE	Tetrafluoroethylene resin
9	Main valve assembly	C3604/SUS303/SUS304 (SUS303/SUS304)	Stainless steel/copper alloy (Stainless steel)
10	Piston ring	SUS304/PTFE	Stainless steel/ tetrafluoroethylene resin
11	Body	CAC408(SCS13)	Bronze casting (S.S. casting)
12	O-ring	FKM	Fluoro rubber
13	Orifice plate	SUS304(SUS303)	Stainless steel
14	Coil case	ADC12	Aluminum die-casting

() shows options.

Dimensions

- Conduit screw (G1/2) connection
AP11E2
AP12E2 -15A/20A/25A-*4T

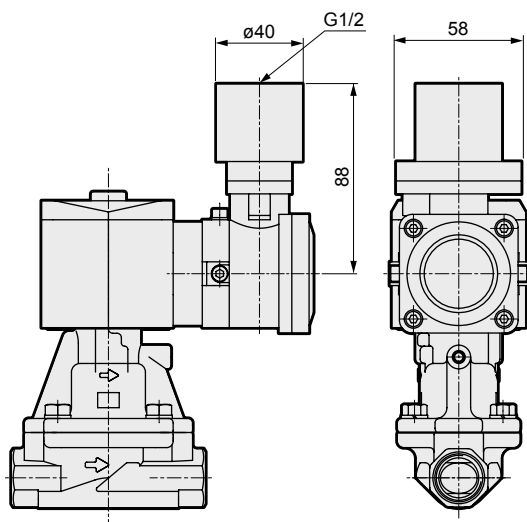


Dimensions in < > are for China certification

Model No.	A	B	C	D	E	F	G	H
AP11E2-15A-*4T	90	27	14	94.5	151.5	57	Rc1/2	146.5
AP11E2-20A-*4T	100	32	17	103.5	163.5	65	Rc3/4	158.5
AP11E2-25A-*4T	110	41	20.5	118	181.5	76	Rc1	176.5
AP12E2-15A-*4T	90	27	14	98.5	155.5	57	Rc1/2	150.5
AP12E2-20A-*4T	100	32	17	107.5	167.5	65	Rc3/4	162.5
AP12E2-25A-*4T	110	41	20.5	122	185.5	76	Rc1	180.5

Optional dimensions

- Pressure proof packing (G1/2) connection
AP11E2
AP12E2 -15A/20A/25A-** L,M



EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
S \leftrightarrow B/ NAB
LAD/ NAD
Water- Rela
NP/NAP/ NVP
SNP
CHB/G
MXB/G
Other valves
SWD/ MWD
DustColl
CVE/ CVSE
CCH/ CPE/D
LifeSci
Gas- Combus
Auto- Water
Outdoor
SpecFld
Custom
Ending

AP21E2/AP22E2 Series



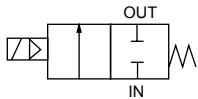
- Pressure and explosion proof construction d2G2 (flame-proof grade 2/ignitability G2)
- NC (open when energized), NO (closed when energized)
- Japan Conformity Certificate No. AP21E2: No. T64351, AP22E2: No. T64354
- China Conformity Certificate No. 2020322307003155
- China explosion-proof standard NEPSI acquired GYB20. 2593X
- Port size: Rc1¹/₄ to Rc2, 32 to 50 flange ● Piston drive



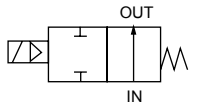
EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/
AD
APK/
ADK
DryAir
EX-
XPLNprf
XPLNprf
HVB/
HVL
S ∓ B/
NAB
LAD/
NAD
Water-
Rela
NP/NAP/
NVP
SNP
CHB/G
MXB/G
Other
valves
SWD/
MWD
DustColl
CVE/
CVSE
CCH/
CPE/D
LifeSci
Gas-
Combus
Auto-
Water
Outdoor
SpecFld
Custom
Ending

JIS symbol

- AP21E2: NC (open when energized)



- AP22E2: NO (closed when energized)



Common specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item	AP21E2/AP22E2
Working fluid	Air/water/kerosene/oil (50 mm ² /s or less)/steam
Working pressure differential MPa	0.05 to 1.2 (refer to max. working pressure differential in individual specifications.)
Max. working pressure MPa	1.6 (≈230 psi, 16 bar) (1 (≈140 psi, 10 bar) when fluid is steam)
Proof pressure (water pressure) MPa	3.2 (≈460 psi, 32 bar)
Fluid temperature °C	5 (41°F) to 181 (357.8°F)
Ambient temperature °C	-10 (14°F) to 40 (104°F)
Thermal class	Class 180 (H)
Atmosphere	Outdoors/explosive gas (flame-proof grade 1 to 2/ignitability G1 to G2)
Valve structure	Pilot operated poppet, piston drive
Valve seat leakage (*1) cm ³ /min(ANR)	400 or less (air)
Mounting orientation	Free (within working pressure range)
Degree of protection	IP65 or equivalent

*1: Pneumatic pressure used for measurement is 0.05 to 1.2 MPa for AP21E2 (NC [open when energized]), and 0.05 to 0.5 MPa for AP22E2 (NO [closed when energized]).

Individual specifications

Item	Port size	Orifice size (mm)	Min. working pressure differential (MPa)	Max. working pressure differential (MPa)				Rated voltage	Apparent power (VA)				Power consump. (W)		Weight (kg)	
				Air	Water/kerosene	Oil (50 mm ² /s)	Steam		When holding		When starting		AC			
									50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz		
NC (open when energized)																
AP21E2	-32A	Rc1 ¹ / ₄	35	0.05 (≈7.3 psi, 0.5 bar)	1.2 (≈170 psi, 12 bar)	1.0 (≈140 psi, 10 bar)	0.6 (≈87 psi, 6 bar)	1.0 (≈140 psi, 10 bar)	100 VAC 50/60 Hz 110 VAC 60 Hz	18	15	29	24	8	7	4.0
	-32F	32 flange														7.5
	-40A	Rc1 ¹ / ₂	43													5.0
	-40F	40 flange														8.5
	-50A	Rc2	53													6.5
-50F	50 flange	10.5														
NO (closed when energized)																
AP22E2	-32A	Rc1 ¹ / ₄	35	0.05 (≈7.3 psi, 0.5 bar)	0.5 (≈73 psi, 5 bar)	0.5 (≈73 psi, 5 bar)	0.5 (≈73 psi, 5 bar)	0.5 (≈73 psi, 5 bar)	100 VAC 50/60 Hz 110 VAC 60 Hz	22	18	35	29	8.7	6.7	4.0
	-32F	32 flange														7.5
	-40A	Rc1 ¹ / ₂	43													5.0
	-40F	40 flange														8.5
	-50A	Rc2	53													6.5
-50F	50 flange	10.5														

*1 : The model numbers above are for the standard products. Refer to How to order for other combinations.

*2 : The voltage fluctuation range must be within -10 to +5% of the rated voltage.

Flow characteristics

Model No.	Port size	Orifice size (mm)	Cv	Effective cross-sectional area (mm ²)	
NC (open when energized)					
AP21E2	-32A	Rc1 ¹ / ₄	35	25	460
	-32F	32 flange			
	-40A	Rc1 ¹ / ₂	43	34	625
	-40F	40 flange			
	-50A	Rc2	53	53	975
	-50F	50 flange			
NO (closed when energized)					
AP22E2	-32A	Rc1 ¹ / ₄	35	25	460
	-32F	32 flange			
	-40A	Rc1 ¹ / ₂	43	34	625
	-40F	40 flange			
	-50A	Rc2	53	53	975
	-50F	50 flange			

EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/AD
APK/ADK
DryAir
EX-XPLNprf
XPLNprf
HVB/HVL
S [∅] B/NAB
LAD/NAD
Water-Rela
NP/NAP/NVP
SNP
CHB/G
MXB/G
Other valves
SWD/MWD
DustColl
CVE/CVSE
CCH/CPE/D
LifeSci
Gas-Combus
Auto-Water
Outdoor
SpecFld
Custom
Ending

AP21E2/AP22E2 Series

How to order

Model No. **AP21E2 - 32F - C 4 T CN - AC100V**

F Organizations for explosive-proof certification
G Voltage
 *6
 *7

	Model No.	
	AP21E2	AP22E2

A Actuation

B Port size
 *2
 *3

C Body/sealant combination

D Coil

E External wire pull method
 *4

Code	Description	Model No.						
		AP21E2	AP22E2					
A Actuation								
1	NC (open when energized)	●						
2	NO (closed when energized)		●					
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			
C	Standard	Bronze	PTFE	Fluoro rubber	-	Air/water/kerosene/oil/steam (up to 181°C)	●	●
F	Option	Stainless steel	PTFE	Fluoro rubber	-		●	●
K		Bronze	PTFE	Fluoro rubber	Oil-		●	●
N		Stainless steel	PTFE	Fluoro rubber	prohibited		●	●
Refer to Intro Page 39 for reference on material combinations.								
D Coil								
4	Thermal class 180 (H) explosion-proof coil					●	●	
E External wire pull method								
T	Standard	Conduit screw connection (G1/2) *8					●	●
L	Option	Pressure proof packing seal (G1/2) connection, cable O.D. ø7.5 to 8.4					●	●
M		Pressure proof packing seal (G1/2) connection, cable O.D. ø8.5 to 9.4					●	●
F Organizations for explosive-proof certification								
Blank	Japan certification (TIIS) *9					●	●	
CN	China certification (NEPSI) *10					●	●	
G Voltage								
AC100V	100 VAC 50/60 Hz, 110 VAC 60 Hz					●	●	
AC200V	200 VAC 50/60 Hz, 220 VAC 60 Hz					●	●	

[Example of model No.]
AP21E2-32F-C4TCN-AC100V
 Model: AP21E2

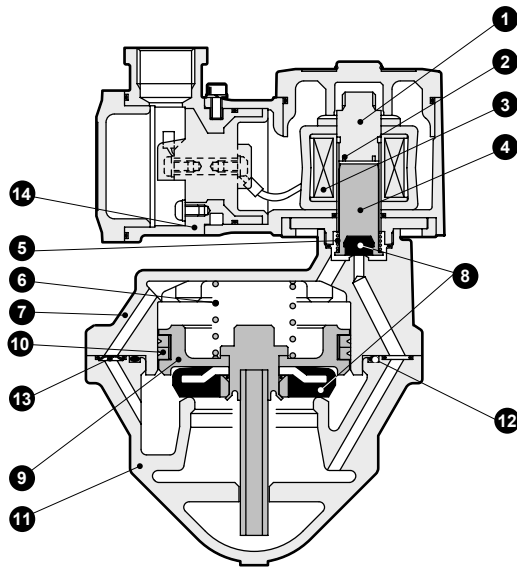
- A** Actuation : NC (open when energized)
- B** Port size : 32 flange
- C** Body/sealant combination : Body - bronze/valve seal - PTFE/O-ring - fluoro rubber
- D** Coil : Thermal class 180 (H) explosion-proof coil
- E** External wire pull method : Conduit screw connection (1/2NPT)
- F** Organizations for explosive-proof certification : China Certification (NEPSI)
- G** Voltage : 100 VAC 50/60 Hz

⚠ Precautions for model No. selection

- *1 : The combinations indicated with ● above are available.
- *2 : The companion flange is JIS B2210 10K.
(Flange is not enclosed with the product and must be purchased separately.)
- *3 : As G and NPT threads can also be used for piping port threads, contact CKD for details.
- *4 : A pressure proof packing seal (G3/4) connection is also available. Contact CKD for more information.
Note that the conduit connection (G3/4) is not available.
- *5 : Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information.
- *6 : 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz.
- *7 : Other voltages as below are also available. Contact CKD for details.
12, 24, 48, 110, 115, 120, 220, 240, 380, 400, 415, 440, 480, 500 VAC
- *8 : China certification will be 1/2 NPT.
- *9 : Japan certification (TIIS) is included.
- *10 : China certification (NEPSI) is included.

Internal structure and parts list

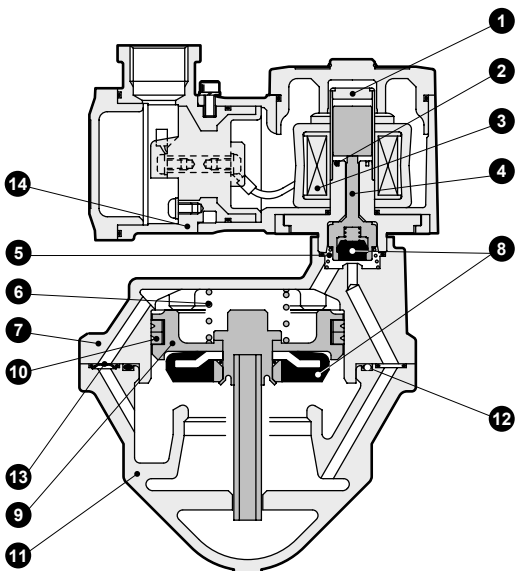
● AP21E2 Series



(The figure shows the closing operation)

Cannot be disassembled

● AP22E2 Series



(The figure shows the opening operation)

Cannot be disassembled

No.	Part name	Material	
1	Core assembly	SUS405 or equiv./SUS316L/ SUS403	Stainless steel
2	Shading coil	Cu (Ag for stainless steel body)	Copper (silver for stainless steel body)
3	Coil	—	—
4	Plunger	SUS405 or equiv.	Stainless steel
5	Plunger spring	SUS304	Stainless steel
6	Valve spring	SUS304	Stainless steel
7	Body	CAC408(SCS13)	Bronze casting (S.S. casting)
8	Valve seal	PTFE	Tetrafluoroethylene resin
9	Main valve assembly	C3604/SUS303/SUS304 (SUS303/SUS304)	Stainless steel/ copper alloy (stainless steel)
10	Seal ring set	SUS304/PTFE	Stainless steel/ tetrafluoroethylene resin
11	Body	CAC408(SCS13)	Bronze casting (S.S. casting)
12	O-ring	FKM	Fluoro rubber
13	Orifice plate	SUS304	Stainless steel
14	Coil case	ADC12	Aluminum die-casting

() shows options.

No.	Part name	Material	
1	Plunger/core assembly	SUS405 or equiv./SUS316L/ SUS304	Stainless steel
2	Shading coil	Cu (Ag for stainless steel body)	Copper (silver for stainless steel body)
3	Coil	—	—
4	NO valve	SUS303/PFA	Stainless steel/ perfluoroalkoxy resin
5	Spring	SUS304	Stainless steel
6	Valve spring	SUS304	Stainless steel
7	Body	CAC408(SCS13)	Bronze casting (S.S. casting)
8	Valve seal	PTFE	Tetrafluoroethylene resin
9	Main valve assembly	C3604/SUS303/SUS304 (SUS303/SUS304)	Stainless steel/ copper alloy (stainless steel)
10	Seal ring set	SUS304/PTFE	Stainless steel/ tetrafluoroethylene resin
11	Body	CAC408(SCS13)	Bronze casting (S.S. casting)
12	O-ring	FKM	Fluoro rubber
13	Orifice plate	SUS304	Stainless steel
14	Coil case	ADC12	Aluminum die-casting

() shows options.

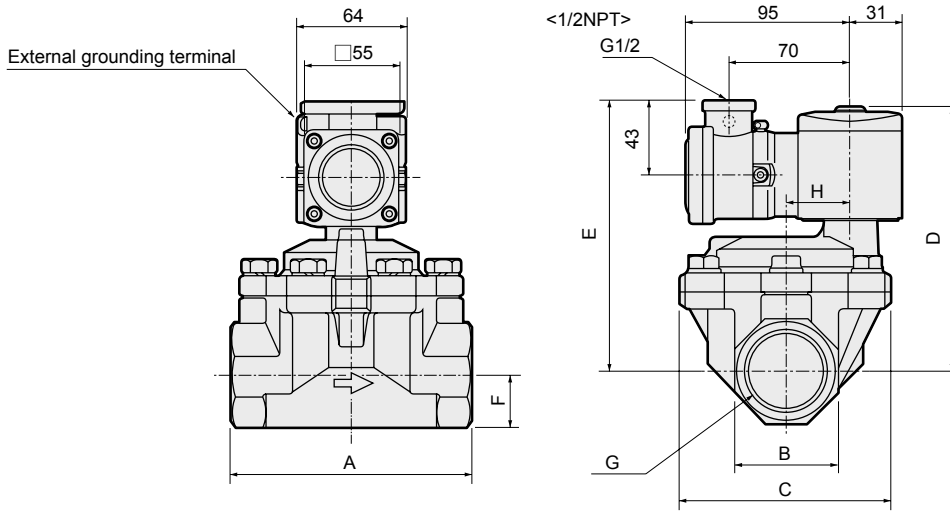
EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/
AD
APK/
ADK
DryAir
EX-
XPLNprf
XPLNprf
HVB/
HVL
S ♂ B/
NAB
LAD/
NAD
Water-
Rela
NP/NAP/
NVP
SNP
CHB/G
MXB/G
Other
valves
SWD/
MWD
DustColl
CVE/
CVSE
CCH/
CPE/D
LifeSci
Gas-
Combus
Auto-
Water
Outdoor
SpecFld
Custom
Ending

AP21E2/AP22E2 Series

- EXA
- FWD
- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG
- AP/AD
- APK/ADK
- DryAir
- EX-XPLNprf
- XPLNprf
- HVB/HVL
- S \diamond B/NAB
- LAD/NAD
- Water-Rela
- NP/NAP/NVP
- SNP
- CHB/G
- MXB/G
- Other valves
- SWD/MWD
- DustColl
- CVE/CVSE
- CCH/CPE/D
- LifeSci
- Gas-Combus
- Auto-Water
- Outdoor
- SpecFld
- Custom
- Ending

Dimensions

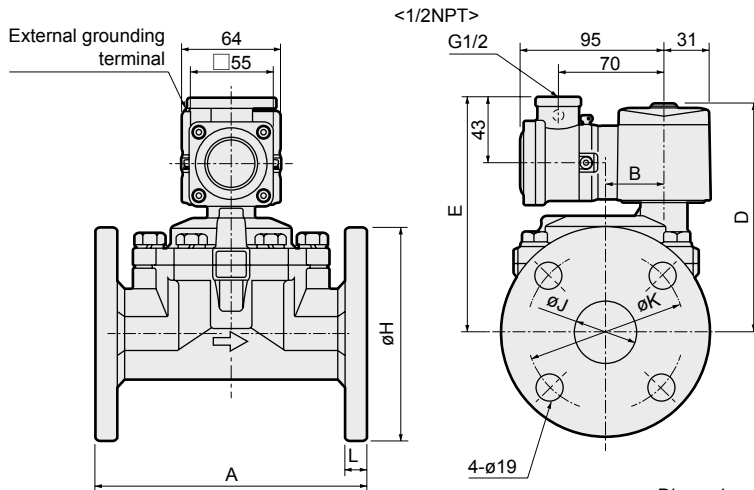
- Conduit screw (G1/2) connection (Rc screw-in)
 AP21E2 -32A/40A/50A-*4T
 AP22E2



Dimensions in < > are for China certification

Model No.	A	B	C	D	E	F	G	H
AP21E2-32A-*4T	125	54	112	147	152	27	Rc1 $\frac{1}{4}$	32
AP21E2-40A-*4T	140	60	122	153	158	30	Rc1 $\frac{1}{2}$	38
AP21E2-50A-*4T	160	74	132	161	166	37	Rc2	45
AP22E2-32A-*4T	125	54	112	151	156	27	Rc1 $\frac{1}{4}$	32
AP22E2-40A-*4T	140	60	122	157	162	30	Rc1 $\frac{1}{2}$	38
AP22E2-50A-*4T	160	74	132	165	170	37	Rc2	45

- Conduit screw (G1/2) connection (flange)
 AP21E2 -32F/40F/50F-*4T
 AP22E2



Dimensions in < > are for China certification

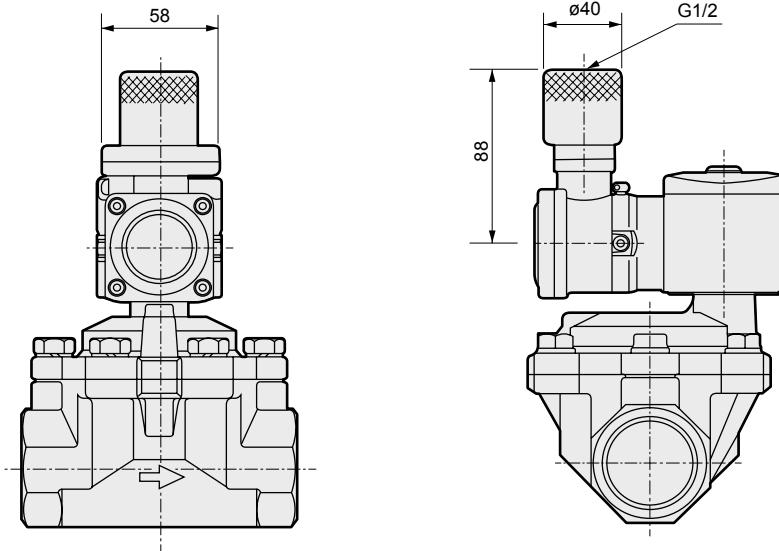
Model No.	A	B	D	E	H	J	K	L
AP21E2-32F-*4T	170	32	147	152	135	36(35)	100	12
AP21E2-40F-*4T	180	38	153	158	140	42	105	14
AP21E2-50F-*4T	180	45	161	166	155	53(52)	120	14
AP22E2-32F-*4T	170	32	151	156	135	36(35)	100	12
AP22E2-40F-*4T	180	38	157	162	140	42	105	14
AP22E2-50F-*4T	180	45	165	170	155	53(52)	120	14

Dimensions shown in () are for stainless steel body.

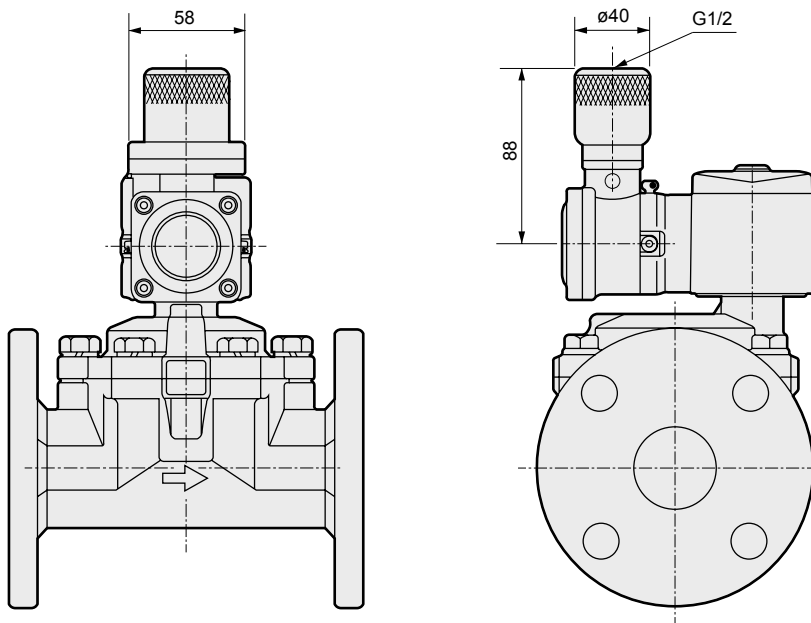
Optional dimensions



- Pressure proof packing (G1/2) connection (Rc screw-in)
 AP21E2
 AP22E2 -32A/40A/50A-** L,M



- Pressure proof packing (G1/2) connection (flange)
 AP21E2
 AP22E2 -32F/40F/50F-** L,M



EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
S ⚡ B/ NAB
LAD/ NAD
Water- Rela
NP/NAP/ NVP
SNP
CHB/G
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SWD/ MWD
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CVE/ CVSE
CCH/ CPE/D
LifeSci
Gas- Combus
Auto- Water
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SpecFld
Custom
Ending