





Series variation

Multi-fluid control pilot operated 2-port solenoid valve

* Refer to page 328 for the dry air (-Z).

No. of ports	Model	Structure	Actuation	Working fluid							
				Air	Low vacuum [1.33 x 10 ⁵ Pa (abs)]	Water	Kerosene	Oil [50 mm ² /s or less]	Hot water	Steam	
2-port		AP11	Pilot operated	NC	●		●	●	●		●
		AP12	(Piston drive)	NO	●		●	●	●		●
		AP21		NC	●		●	●	●		●
		AP22		NO	●		●	●	●		●
		AD11	Pilot operated	NC	●		●	●	●		
		AD12	(Diaphragm drive)	NO	●		●	●	●		
		AD21		NC	●		●	●	●		
		AD22		NO	●		●	●	●		
		APK11	Pilot kick	NC	●	●	●	●	●* ₁		●
		APK21	(Piston kick structure)	NC	●	●	●	●	●* ₁		●
		ADK11	Pilot kick	NC	●	●	●	●	●	●	
		ADK12	(Diaphragm drive)	NO	●	●	●	●	●	●	
ADK21			NC	●	●	●	●	●			

*1: 20 mm²/s or less for APK11/21 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
- SAB/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
- SpecFld
- Custom
- Ending

	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	
	● ^{*2}	● ^{*2}	● ^{*2}	● ^{*2}	● ^{*2}							252
	● ^{*2}	● ^{*2}	● ^{*2}	● ^{*2}	● ^{*2}							252
						●	●	●	●	●	●	262
						●	●	●	●	●	●	262
	● ^{*2}	● ^{*2}	● ^{*2}	● ^{*2}	● ^{*2}							272
			● ^{*2}	● ^{*2}	● ^{*2}							272
						●	●	●	●	●	●	282
						●	●	●	●	●	●	282
	● ^{*2}	● ^{*2}	● ^{*2}	● ^{*2}	● ^{*2}							292
						●	●	●	●	●	●	300
	● ^{*2}	● ^{*2}	● ^{*2}	● ^{*2}	● ^{*2}							306
			● ^{*2}	● ^{*2}	● ^{*2}							306
						●	●	●	●	●	●	318

*2: Refer to each How to order column for the thread.

Refer to page 248 for details on the coil system.

- EXA
- FWD
- HNB/G
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- 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
- SpecFld
- Custom
- Ending











Coil selection guide

● Coil housing types and selection guide

Various types are available according to the application.
Refer to the structure and features to select the optimum model.

For AP/AD*

- 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
- SAB/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-Combust
- Auto-Water
- SpecFld
- Custom
- Ending











Coil system		Open frame		Appearance	
Coil system	Thermal class 130 (B) Mold	<ul style="list-style-type: none"> ● AC dedicated (50/60 Hz common) ● Degree of protection: IP61 or equivalent ● Cannot be used outdoors 	Grommet lead wire	<ul style="list-style-type: none"> ● Lead wire length 300 mm 	 <div style="float: right; border: 1px solid black; padding: 2px;">2C 6C</div>
	Thermal class 130 (B) Mold	<ul style="list-style-type: none"> ● For DC and AC (50/60 Hz common) ● Degree of protection: IP61 or equivalent ● Cannot be used outdoors 	DIN terminal box	<ul style="list-style-type: none"> ● Easy wiring and maintenance ● Enhanced electrical safety (by grounding the ground terminal) ● Light available (Optional - 100 VAC, 200 VAC and 24 VDC) 	 <div style="float: right; border: 1px solid black; padding: 2px;">2E 2G 2H 6E 6G 6H</div>
	Thermal class 130 (B) Mold	<ul style="list-style-type: none"> ● For DC and AC (50/60 Hz common) ● Degree of protection: IP65 or equivalent ● Cannot be used outdoors 	Lead wire	<ul style="list-style-type: none"> ● Lead wire length 300 mm ● Conduit (CTC19) for direct piping can be attached. 	 <div style="float: right; border: 1px solid black; padding: 2px;">3A</div>
	Thermal class 130 (B) Mold	<ul style="list-style-type: none"> ● For DC and AC (50/60 Hz common) ● Degree of protection: IP21 or equivalent ● Cannot be used outdoors 	HP terminal box	<ul style="list-style-type: none"> ● Easy wiring ● Light available (Optional - 100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC) 	 <div style="float: right; border: 1px solid black; padding: 2px;">3M 3N</div>
	Thermal class 130 (B) Mold	<ul style="list-style-type: none"> ● For DC and AC (50/60 Hz common) ● Degree of protection: IP65 or equivalent ● Cannot be used outdoors 	HP terminal box	<ul style="list-style-type: none"> ● Easy wiring ● Light available (Optional - 100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC) 	 <div style="float: right; border: 1px solid black; padding: 2px;">3I 3J</div>
	Thermal class 180 (H) Taped	<ul style="list-style-type: none"> ● AC dedicated (50/60 Hz common) ● High temperature fluids and high ambient temperatures usable ● Cannot be used outdoors ● Degree of protection: IP00 	Lead wire	<ul style="list-style-type: none"> ● Lead wire length 300 mm ● Conduit (CTC19) for direct piping can be attached. 	 <div style="float: right; border: 1px solid black; padding: 2px;">4A</div>
	Thermal class 130 (B) mold with diode	<ul style="list-style-type: none"> ● Diode in the coil converts AC to DC. ● AC dedicated (50/60 Hz common) ● Degree of protection: IP65 or equivalent ● Perfect for places where whirring noise should be prevented. ● Cannot be used outdoors 	Lead wire	<ul style="list-style-type: none"> ● Lead wire length 300 mm ● Conduit (CTC19) for direct piping can be attached. 	 <div style="float: right; border: 1px solid black; padding: 2px;">5A</div>
	Thermal class 130 (B) mold with diode	<ul style="list-style-type: none"> ● Diode in the coil converts AC to DC. ● AC dedicated (50/60 Hz common) ● Degree of protection: IP21 or equivalent ● Perfect for places where whirring noise should be prevented. ● Cannot be used outdoors 	HP terminal box	<ul style="list-style-type: none"> ● Easy wiring ● Light available (Optional - 100 VAC, 200 VAC) 	 <div style="float: right; border: 1px solid black; padding: 2px;">5M 5N</div>
	Thermal class 130 (B) mold with diode	<ul style="list-style-type: none"> ● Diode in the coil converts AC to DC. ● AC dedicated (50/60 Hz common) ● Degree of protection: IP65 or equivalent ● Perfect for places where whirring noise should be prevented. ● Cannot be used outdoors 	HP terminal box	<ul style="list-style-type: none"> ● Easy wiring ● Light available (Optional - 100 VAC, 200 VAC) 	 <div style="float: right; border: 1px solid black; padding: 2px;">5I 5J</div>
			Conduit	<ul style="list-style-type: none"> ● Use a conduit (CTC19 or G1/2) when using direct conduit wiring for the open frame lead wire. 	 <div style="float: right; border: 1px solid black; padding: 2px;">G H</div>

Coil selection guide

● Coil housing types and selection guide

Various types are available according to the application.








Refer to the structure and features to select the optimum model.

For APK11/ADK1*		Appearance				
Coil system	Open frame	Thermal class 130 (B) Mold	<ul style="list-style-type: none"> ● AC dedicated (50/60 Hz common) ● Degree of protection: IP61 or equivalent ● Cannot be used outdoors 	Grommet lead wire	<ul style="list-style-type: none"> ● Lead wire length 300 mm 	 2C
		Thermal class 130 (B) Mold	<ul style="list-style-type: none"> ● For DC and AC (50/60 Hz common) ● Degree of protection: IP61 or equivalent ● Cannot be used outdoors 	DIN terminal box	<ul style="list-style-type: none"> ● Easy wiring and maintenance ● Enhanced electrical safety (by grounding the ground terminal) ● Light available (Optional - 100 VAC, 200 VAC and 24 VDC) 	 2E 2G 2H
		Thermal class 130 (B) Mold	<ul style="list-style-type: none"> ● For DC and AC (50/60 Hz common) ● Degree of protection: IP65 or equivalent ● Cannot be used outdoors 	Lead wire	<ul style="list-style-type: none"> ● Lead wire length 300 mm ● Conduit (CTC19) for direct piping can be attached. 	 3A
		Thermal class 130 (B) Mold	<ul style="list-style-type: none"> ● For DC and AC (50/60 Hz common) ● Degree of protection: IP21 or equivalent ● Cannot be used outdoors 	HP terminal box	<ul style="list-style-type: none"> ● Easy wiring ● Light available (optional 100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC) 	 3M 3N
		Thermal class 130 (B) Mold	<ul style="list-style-type: none"> ● For DC and AC (50/60 Hz common) ● Degree of protection: IP65 or equivalent ● Cannot be used outdoors 	HP terminal box	<ul style="list-style-type: none"> ● Easy wiring ● Light available (optional 100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC) 	 3I 3J
		Thermal class 180 (H) Taped	<ul style="list-style-type: none"> ● AC dedicated (50/60 Hz common) ● High temperature fluids and high ambient temperatures usable ● Cannot be used outdoors ● Degree of protection: IP00 	Lead wire	<ul style="list-style-type: none"> ● Lead wire length 300 mm ● Conduit (CTC19) for direct piping can be attached. 	 4A
		Thermal class 130 (B) mold with diode	<ul style="list-style-type: none"> ● Diode in the coil converts AC to DC. ● AC dedicated (50/60 Hz common) ● Degree of protection: IP65 or equivalent ● Perfect for places where whirring noise should be prevented. ● Cannot be used outdoors 	Lead wire	<ul style="list-style-type: none"> ● Lead wire length 300 mm ● Conduit (CTC19) for direct piping can be attached. 	 5A
		Thermal class 130 (B) mold with diode	<ul style="list-style-type: none"> ● Diode in the coil converts AC to DC. ● AC dedicated (50/60 Hz common) ● Degree of protection: IP21 or equivalent ● Perfect for places where whirring noise should be prevented. ● Cannot be used outdoors 	HP terminal box	<ul style="list-style-type: none"> ● Easy wiring ● Light available (Optional - 100 VAC, 200 VAC) 	 5M 5N
		Thermal class 130 (B) mold with diode	<ul style="list-style-type: none"> ● Diode in the coil converts AC to DC. ● AC dedicated (50/60 Hz common) ● Degree of protection: IP65 or equivalent ● Perfect for places where whirring noise should be prevented. ● Cannot be used outdoors 	HP terminal box	<ul style="list-style-type: none"> ● Easy wiring ● Light available (Optional - 100 VAC, 200 VAC) 	 5I 5J
				Conduit	<ul style="list-style-type: none"> ● Use a conduit (CTC19 or G1/2) when using direct conduit wiring for the open frame lead wire. 	 G H

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DryAir
EX-XPLNprf
XPLNprf
HVB/HVL
SDB/NAB
LAD/NAD
Water-Rela
NP/NAP/NVP
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MXB/G
Other valves
SWD/MWD
DustColl
CVE/CVSE
CCH/CPE/D
LifeSci
Gas-Combus
Auto-Water
SpecFld
Custom
Ending

EXA
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FLB
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AP/ AD
APK/ ADK
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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
SpecFld
Custom
Ending

For APK21/ADK21

Open frame	<p>Thermal class 130 (B) Mold</p> <ul style="list-style-type: none"> ● For DC and AC ● Degree of protection: IP65 or equivalent ● Cannot be used outdoors 	<p>Lead wire</p> <ul style="list-style-type: none"> ● Lead wire length 300 mm ● With CTC19 thread for direct conduit piping 	<p>Appearance</p>  <p>3A</p>
	<p>Thermal class 130 (B) Mold</p> <ul style="list-style-type: none"> ● For DC and AC ● Degree of protection: IP21 or equivalent ● Cannot be used outdoors 	<p>HP terminal box</p> <ul style="list-style-type: none"> ● Easy wiring ● Light available (options 100 VAC, 200 VAC, 24 VDC, 100 VDC) 	 <p>3M 3N</p>
	<p>Thermal class 180 (H) Taped</p> <ul style="list-style-type: none"> ● AC dedicated ● High temperature fluids and high ambient temperatures usable ● Degree of protection: IP00 ● Cannot be used outdoors 	<p>Lead wire</p> <ul style="list-style-type: none"> ● Lead wire length 300 mm ● With CTC19 thread for direct conduit piping 	 <p>4A</p>
		<p>HP terminal box</p> <ul style="list-style-type: none"> ● Easy wiring ● Light available (Optional - 100 VAC, 200 VAC) 	 <p>4M 4N</p>
	<p>Thermal class 130 (B) mold with diode</p> <ul style="list-style-type: none"> ● Diode in the coil converts AC to DC. ● AC dedicated (50/60 Hz common) ● Degree of protection: IP65 or equivalent ● Perfect for places where whirring noise should be prevented. ● Cannot be used outdoors 	<p>Lead wire</p> <ul style="list-style-type: none"> ● Lead wire length 300 mm ● With CTC19 thread for direct conduit piping 	 <p>5A</p>
	<p>Thermal class 130 (B) mold with diode</p> <ul style="list-style-type: none"> ● Diode in the coil converts AC to DC. ● AC dedicated (50/60 Hz common) ● Degree of protection: IP21 or equivalent ● Perfect for places where whirring noise should be prevented. ● Cannot be used outdoors 	<p>HP terminal box</p> <ul style="list-style-type: none"> ● Easy wiring ● Light available (Optional - 100 VAC, 200 VAC) 	 <p>5M 5N</p>
		<p>Conduit</p> <ul style="list-style-type: none"> ● Use a conduit (G1/2) when using direct conduit wiring for the open frame lead wire. 	 <p>H</p>

● Repair parts compatibility table by coil option

Coil option code	Supported voltage	Repair parts			
		Plunger assembly	Core assembly	Coil assembly	Actuator assembly *1
2C	AC	○	○	○	-
6C *2	DC	-	-	-	○
2E 2G 2H	AC	○	○	○	-
2E 2G 2H	DC	○	○	○	-
6E 6G 6H *2	DC	-	-	-	○
3A	AC	○	○	○	-
	DC		○	○	-
3M 3N	AC	○	○	○	-
	DC		○	○	-
3I 3J	AC	○	○	○	-
	DC		○	○	-
4A	AC	○	○	○	-
4M 4N	AC	○	○	○	-
5A	AC	○	○	○	-
5M 5N	AC	○	○	○	-
5I 5J	AC	○	○	○	-

*1 : The actuator assembly includes the coil assembly, core assembly and plunger assembly.

*2 : As 6C, 6E, 6G and 6H are dedicated parts, they are provided as part of the actuator assembly.

EXA
FWD
HNB/G
USB/G
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DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
S Δ B/ NAB
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Water- Rela
NP/NAP/ NVP
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Other valves
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DustColl
CVE/ CVSE
CCH / CPE/D
LifeSci
Gas- Combus
Auto- Water
SpecFld
Custom
Ending



Pilot kick 2-port solenoid valve
(general purpose valve)

APK11 Series

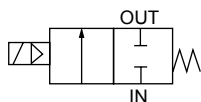
- NC
- Port size: Rc1/4 to Rc1
- Piston drive

Refer to the Ending for details.



- EXA
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- EX-XPLNprf
- XPLNprf
- HVB/HVL
- SAB/NAB
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- CVE/CVSE
- CCH/CPE/D
- LifeSci
- Gas-Combus
- Auto-Water
- SpecFld
- Custom
- Ending

JIS symbol



Common specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Descriptions	Standard specifications	Optional specifications
Working fluid	Air/low vacuum (1.33 x 10 ⁵ Pa (abs))/water/kerosene/oil (20mm ² /s or less)	Steam
Working pressure differential MPa	0 to 1.0 (refer to max. working pressure differential in individual specifications.)	
Max. working pressure MPa	2 (≈290 psi, 20 bar)	1 (≈150 psi, 10 bar)
Proof pressure (water pressure) MPa	4 (≈580 psi, 40 bar)	
Fluid temperature °C	-10 (14°F) to 60 (140°F) (*1)	5 (41°F) to 180 (356°F)
Ambient temperature °C	-10 (14°F) to 60 (140°F)	
Thermal class	Class 130 (B)	Class 180 (H)
Atmosphere	Place free of corrosive gas and explosive gas	
Valve structure	Pilot kick poppet, piston drive	
Valve seat leakage (*2) cm ³ /min(ANR)	0.2 or less (air)	400 or less (air)
Mounting orientation	Limited to the range of vertical orientation with the coil on top to horizontal orientation (*3).	
Body/seal material	Bronze/nitrile rubber	Bronze/PTFE

*1 : No freezing.

*2 : Value at pneumatic pressure of 0.05 to 1.0 MPa. When used at a pressure less than 0.05 MPa, the sealant may be unstable. Contact CKD in this case.

*3 : Limited to vertical orientation when used at a pressure less than 0.05 MPa.

Mounting orientation



Individual specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Model No. Descriptions	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 (20 mm ² /s)		Steam	When holding		When starting		AC	DC																	
				AC	DC	AC	DC	AC	DC	AC	50 Hz		60 Hz	50 Hz	60 Hz	50/60 Hz	DC																
APK11-8A	Rc1/4	12	0	1.0	0.7	0.7	0.7	0.6	1.0	100 VAC 50/60 Hz *5	24	19	61	54	10/8	11	0.7																
APK11-10A	Rc3/8	12																0.6	0.6	0.5	1.0	200 VAC 50/60 Hz *5	32	26	123	106	13/11	20	1.3				
APK11-15A	Rc1/2	16																												12 VDC	48 VDC	100 VDC	1.7
APK11-20A	Rc3/4	23																															
APK11-25A	Rc1	28																															

*1 : The model numbers above show the basic port size (Rc). Refer to How to order for other combinations.

*2 : The voltage fluctuation range must be within ±10% of the rated voltage.

*3 : Refer to DC column for the max. working pressure differential of coil with diode.

*4 : When using at low vacuum, vacuum the OUT port side.

*5 : The 100 VAC (50/60 Hz) can be used with 110 VAC (60 Hz). The 200 VAC (50/60 Hz) can be used with 220 VAC (60 Hz). However, this does not apply to coil housings 5A/5M/5N/5I/5J.

Optional specifications

Sealant	Fluoro rubber		PTFE	
Coil (thermal class)	Class 130 (B)	Class 180 (H)	Class 130 (B)	Class 180 (H)
Fluid temperature °C	5 to 60	5 to 90	-10 to 60 (*1)	5 to 180
Ambient temperature °C	-10 to 60			
Valve seat leakage (*2) cm ³ /min (ANR)	0.2 or less (air)		400 or less (air)	

*1 : No freezing.

*2 : Value at pneumatic pressure of 0.05 to 1.0 MPa. When used at a pressure less than 0.05 MPa, the sealant may be unstable. Contact CKD in this case.

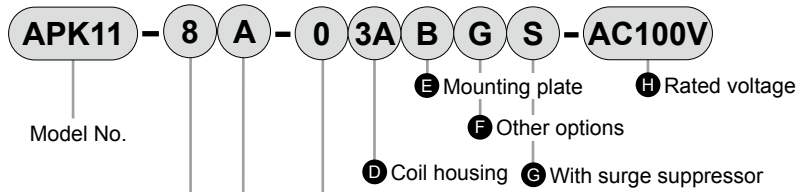
Flow characteristics

Model No.	Port size	Orifice size (mm)	Flow characteristics			
			C[dm ³ /(s·bar)]	b	Cv	S(mm ²)
APK11-8A	Rc1/4	12	9.4	0.41	2.2	-
APK11-10A	Rc3/8	12	15	0.37	2.7	-
APK11-15A	Rc1/2	16	20	0.31	4.5	-
APK11-20A	Rc3/4	23	-	-	8.6	162
APK11-25A	Rc1	28	-	-	12	231

*1 : Effective cross-sectional area S and sonic conductance C are converted as $S \approx 5.0 \times C$.

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
SpecFld
Custom
Ending

How to order



Code	Content	
A Port size		
8	1/4	
10	3/8	
15	1/2	
20	3/4	
25	1	

B Thread	
A	Rc
G	G
N	NPT

C Body/sealant combination						
	Body	Valve seal	O-ring	Treatment	Remarks	
Std	Bronze	O	Nitrile rubber	Nitrile rubber	-	Air/water/low vacuum/kerosene/oil (up to 60°C)
		B	Fluoro rubber	Fluoro rubber		Air/low vacuum/kerosene/oil (up to 90°C *1)
		C	PTFE	Fluoro rubber		Steam (up to 180°C *1)
Option	Stainless steel	D	Nitrile rubber	Nitrile rubber	Oil free	Air/water/low vacuum/kerosene/oil (up to 60°C)
		E	Fluoro rubber	Fluoro rubber		Air/low vacuum/kerosene/oil (up to 90°C *1)
		F	PTFE	PTFE		Steam (up to 180°C *1)
		H	Nitrile rubber	Nitrile rubber		Air/water/low vacuum/kerosene/oil (up to 60°C)
Option	Bronze	J	Fluoro rubber	Fluoro rubber	Oil free	Air/low vacuum/kerosene/oil (up to 90°C *1)
		K	PTFE	Fluoro rubber		Steam (up to 180°C *1)
		L	Nitrile rubber	Nitrile rubber		Air/water/low vacuum/kerosene/oil (up to 60°C)
Option	Stainless steel	M	Fluoro rubber	Fluoro rubber	Oil free	Air/low vacuum/kerosene/oil (up to 90°C *1)
		N	PTFE	PTFE		Steam (up to 180°C *1)

Refer to Intro Page 39 for reference on material combinations.

D to H	
Refer to the following page for details on the coil housing, other options and voltage, etc.	

[Example of model No. 1] APK11-20A-02C-AC100V

Model : APK11

- A** Port size : 3/4
- B** Thread : Rc
- C** Body/sealant combination : Body - bronze, valve seal - nitrile rubber
O-ring - nitrile rubber
- D** Coil housing : Grommet lead wire
- F** to **I** : None
- J** Rated voltage : 100 VAC 50/60 Hz,
110 VAC 60 Hz

[Example of model No. 2] APK11-10G-C4ABS-AC200V

Model : APK11

- A** Port size : 3/8
- B** Thread : G
- C** Body/sealant combination : Body - bronze, valve seal - PTFE,
O-ring - fluoro rubber
- D** Coil housing : Open frame lead wire (thermal class
180(H) coil)
- E** Mounting plate : With mounting plate
- F** Other options : None
- G** Surge suppressor : With surge suppressor
- H** Rated voltage : 200 VAC 50/60 Hz, 220 VAC 60 Hz

⚠ Precautions for model No. selection

Notes for **C**






- *1 : When Item **C** 4A/4M/4N is selected.
- *2 : When using the PTFE valve seal with thermal class 180(H) coil, the O-ring material is fluoro rubber for steam.

- 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
- SAB/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
- SpecFld
- Custom
- Ending


For Items ㉔ to ㉞, the combinations indicated with codes are available.
Note that if options for Items ㉔ to ㉞ are not required, they should be left blank.

㉔ Coil housing		㉔	㉔ Other options					㉔	㉔ Rated voltage
Content	Mounting plate	Cable gland (marine cable gland)	Conduit (conduit piping)			With surge suppressor	Content		
			A-15a	A-15b	A-15c			CTC19	G1/2
2C	㉔	Grommet lead wire						S	100 VAC, 200 VAC
2E		With DIN terminal box (G1/2)							
2G		With DIN terminal box (Pg11)							
2H		DIN terminal box with small lamp (Pg11)							
3A	Option	Open frame	Lead wire (IP65 or equivalent)			G	H	S	100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
3M			With HP terminal box (G1/2)						
3N			HP terminal box with lamp (G1/2)						
3I			HP terminal box (IP65 or equivalent) (G1/2)						
3J			HP term box, lamp (IP65, equiv) (G1/2)						
4A	Option	Open frame (Thermal class 180 (H))	Lead wire			G	H	S	100 VAC, 200 VAC
4M			With HP terminal box (G1/2)						
4N			HP terminal box with lamp (G1/2)						
5A	Option	Open frame (diode integrated)	Lead wire (IP65 or equivalent)			G	H	S	100 VAC, 200 VAC
5M			With HP terminal box (G1/2)						
5N			HP terminal box with lamp (G1/2)						
5I			HP terminal box (IP65 or equivalent) (G1/2)						
5J			HP term box, lamp (IP65, equiv) (G1/2)						

Refer to the following cautions for ㉔ to ㉞.

2C		● Grommet lead wire 300 mm
2E 2G 2H		● DIN terminal box
3A 4A 5A		● Open frame Lead wire 300mm ● 4A (Thermal class 180 (H)) ● 5A (diode integrated)
3M 3N 4M 4N 5M 5N		● Open frame HP terminal box ● 4M, 4N (Thermal class 180 (H)) ● 5M, 5N (diode integrated)
3I 3J 5I 5J		● Open frame HP terminal box (IP65 or equivalent) ● 5I, 5J (diode integrated)

Refer to page 249 for coil selection.

G H		● Conduit ● G(CTC19) ● H(G1/2)
--------	--	--------------------------------------

⚠ Precautions for model No. selection

Notes for ㉔

*3 : Coils for 5A/5M/5N have a diode to convert AC to DC voltage.

Notes for ㉔ to ㉔

*4 : The mounting plate (Item ㉔ B) can be mounted only on Item ㉔ (port size) 8 (1/4) or 10 (3/8).

*5 : For Item ㉔, select an option from D, E, F, G and H.

*6 : The surge suppressor is attached with the lead wire coil. When selecting a coil with a terminal box, the surge suppressor is mounted in the terminal box.

*7 : Surge suppressor is incorporated as standard in the coil with diode.

*8 : Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information.

Notes for ㉔

*9 : 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. However, coils for Item ㉔ 5A/5M/5N can be used with 100 VAC 50/60 Hz and 200 VAC 50/60 Hz only.

*10 : For voltages other than above, contact CKD.

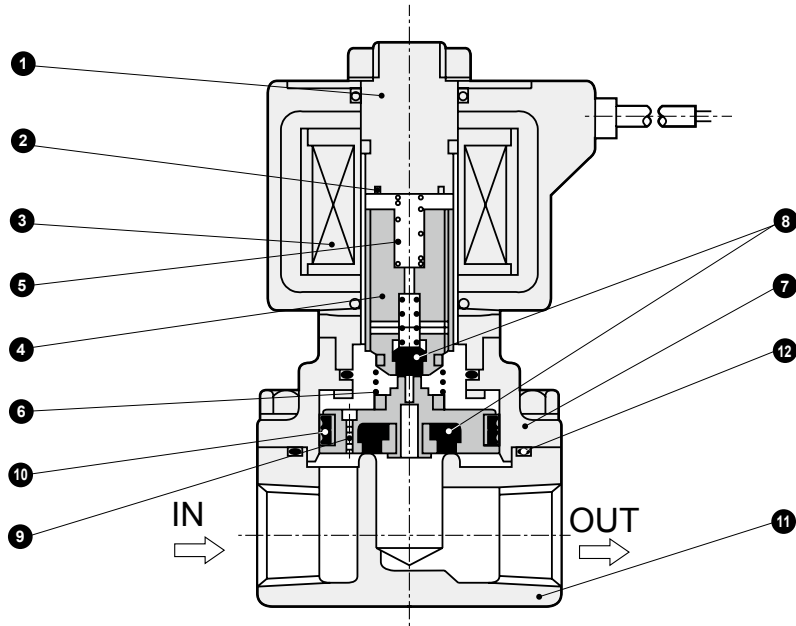
*11 : The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

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
DustCoil
CVE/ CVSE
CCH / CPE/D
LifeSci
Gas- Combust
Auto- Water
SpecFld
Custom
Ending

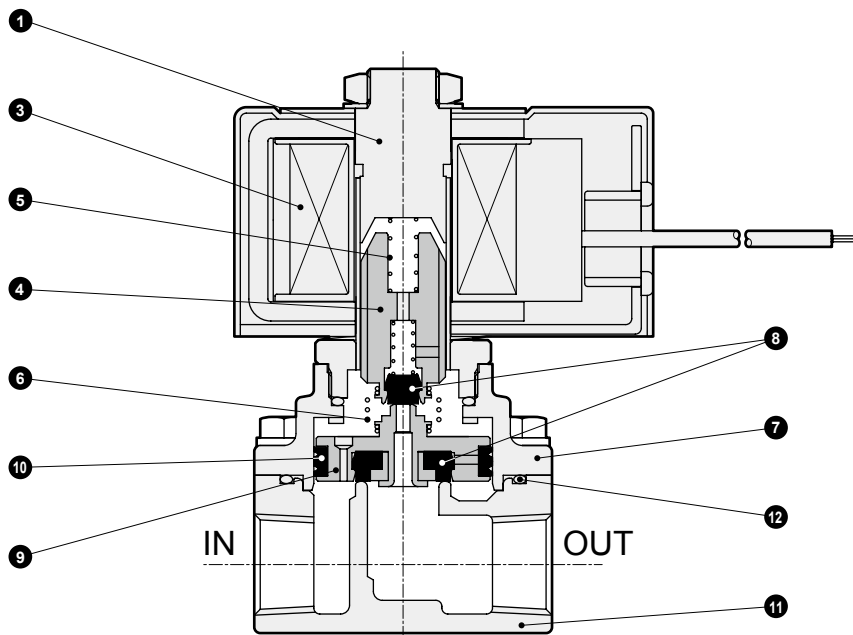
Internal structure and parts list

- 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 ∇ 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
- SpecFld
- Custom
- Ending

● APK11-8A/10A (AC)



● APK11-8A/10A (DC/diode integrated)



No.	Part name	Material	
1	Core assembly	SUS405 or equiv./SUS316L/SUS403 *1	Stainless steel
2	Shading coil *2	Cu (Ag for stainless steel body)	Copper (silver for stainless steel body)
3	Coil	-	-
4	Plunger assembly	SUS405 or equiv./SUS304/NBR (SUS405 or equiv./SUS304/FKM, PFA or PTFE)	Stainless steel
5	Plunger spring	SUS304	Stainless steel
6	Kick spring	SUS304	Stainless steel
7	Body	CAC408(SCS13)	Bronze casting (stainless steel casting)
8	Seal	NBR(FKM, PTFE)	Nitrile rubber (fluoro rubber or tetrafluoroethylene resin)
9	Main valve assembly	SUS303/SUS304/NBR (SUS303/SUS304/FKM or PTFE)	Stainless steel
10	Seal ring set	SUS304/PTFE	Stainless steel/tetrafluoroethylene resin
11	Body	CAC408(SCS13)	Bronze casting (stainless steel casting)
12	O-ring	NBR(FKM, PTFE)	Nitrile rubber (fluoro rubber or tetrafluoroethylene resin)

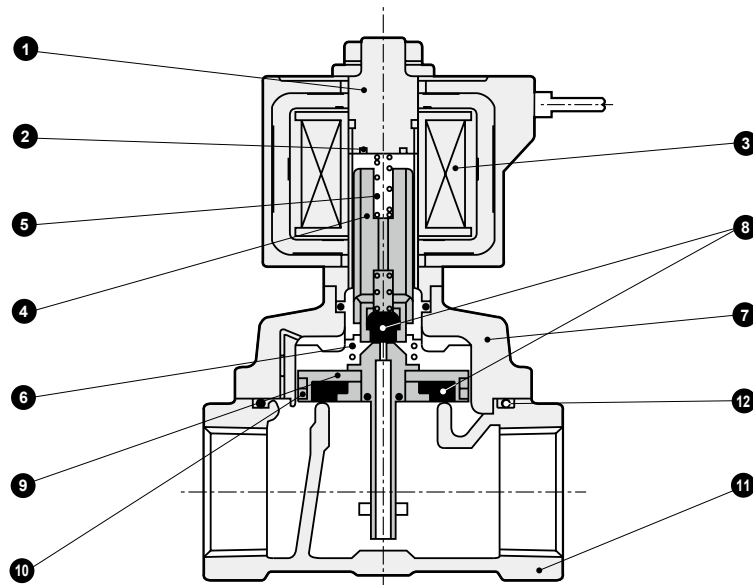
() shows options.

*1 : When the body/sealant combination is other than O and H: SUS405 or equivalent/SUS316L/SUS430.

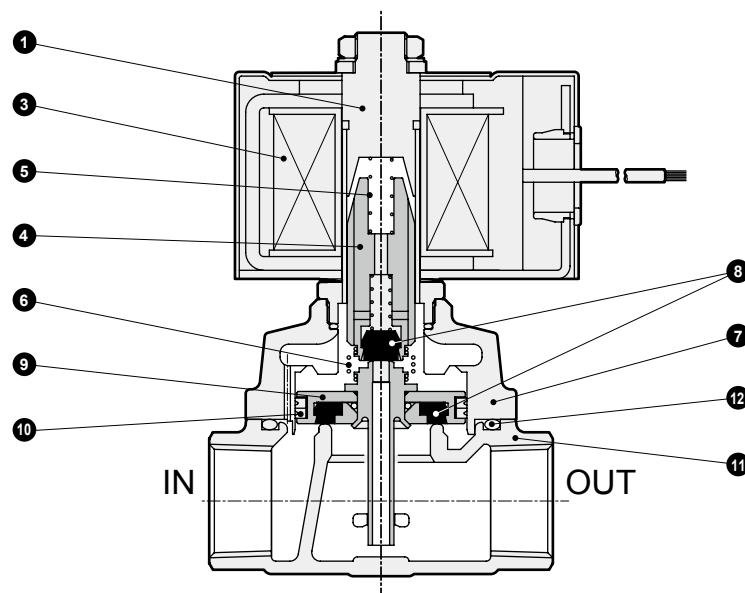
*2 : No shading coil is used for DC coil or coil with diode.

Internal structure and parts list

● APK11-15A/20A/25A (AC)



● APK11-15A/20A/25A (DC/diode integrated)



No.	Part name	Material	
1	Core assembly	SUS405 or equiv./SUS316L/SUS403 *1	Stainless steel
2	Shading coil *2	Cu (Ag for stainless steel body)	Copper (silver for stainless steel body)
3	Coil	-	-
4	Plunger assembly	SUS405 or equiv./SUS304/NBR (SUS405 or equiv./SUS304/FKM, PFA or PTFE)	Stainless steel
5	Plunger spring	SUS304	Stainless steel
6	Kick spring	SUS304	Stainless steel
7	Body	CAC408(SCS13)	Bronze casting (stainless steel casting)
8	Seal	NBR(FKM, PTFE)	Nitrile rubber (fluoro rubber or tetrafluoroethylene resin)
9	Main valve assembly	SUS303/SUS304/NBR (SUS303/SUS304/FKM or PTFE)	Stainless steel
10	Seal ring set	SUS304/PTFE	Stainless steel/tetrafluoroethylene resin
11	Body	CAC408(SCS13)	Bronze casting (stainless steel casting)
12	O-ring	NBR(FKM, PTFE)	Nitrile rubber (fluoro rubber or tetrafluoroethylene resin)

() shows options.

*1 : When the body/sealant combination is other than O and H: SUS405 or equivalent/SUS316L/SUS430.

*2 : No shading coil is used for DC coil or coil with diode.

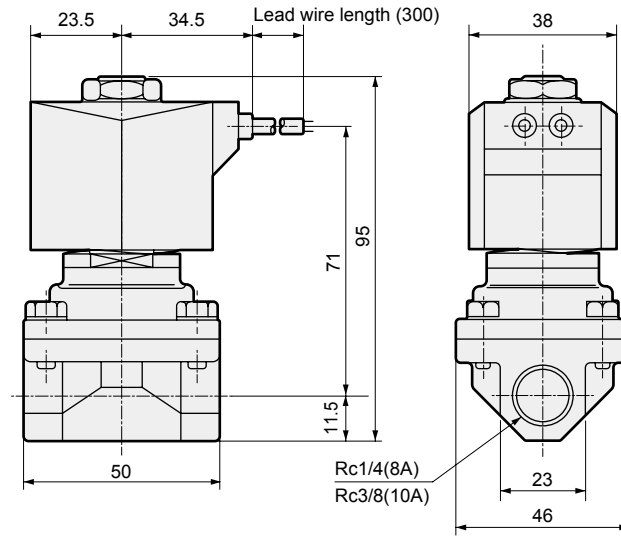
EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
S◇B/ NAB
LAD/ NAD
Water- Rela
NP/NAP/ NVP
SNP
CHB/G
MXB/G
Other valves
SWD/ MWD
DustColl
CVE/ CVSE
CCH / CPE/D
LifeSci
Gas- Combus
Auto- Water
SpecFld
Custom
Ending

APK11 Series

Dimensions

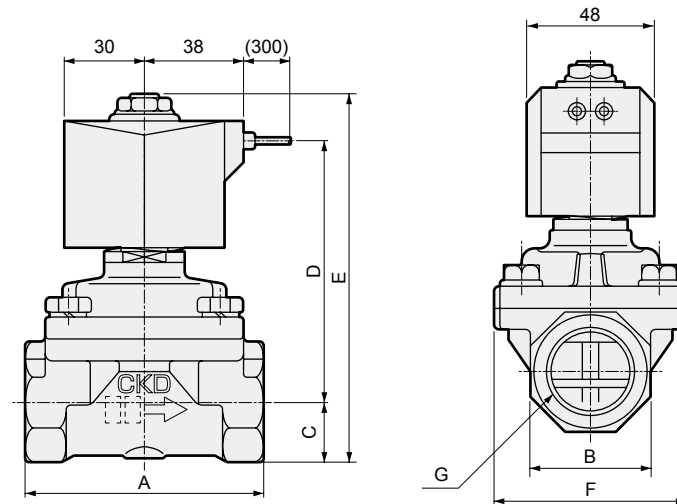
- EXA
- FWD
- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG
- AP/AD
- APK/ADK**
- DryAir
- EX-XPLNprf
- XPLNprf
- HVB/HVL
- S ∇ B/NAB
- LAD/NAD
- Water-Rela
- NP/NAP/NVP
- SNP
- CHB/G
- MXB/G
- Other valves
- SWD/MWD
- DustColl
- CVE/CVSE
- CCH/CPE/D
- LifeSci
- Gas-Combus
- Auto-Water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

● Grommet lead wire
APK11-8A/10A-*2C



*1 : The dimensions are the same for port sizes of G and NPT threads.

● Grommet lead wire
APK11-15A/20A/25A-*2C



Model No.	A	B	C	D	E	F	G
APK11-15A-*2C	71	27(29)	14.5	89	119.5	50	Rc1/2
APK11-20A-*2C	80	32(35)	17.5	93	126.5	60	Rc3/4
APK11-25A-*2C	90	41(45)	21.5(22.5)	99	136.5(137.5)	71	Rc1

*1 : The dimensions are the same for port sizes of G and NPT threads.

*2 : Dimensions shown in () are for stainless steel body.

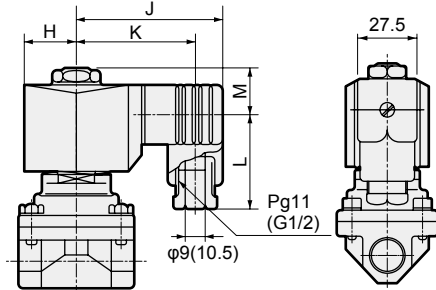
Optional dimensions



* Refer to the dimensions of grommet lead wire on the left page for common dimensions.

- With DIN terminal box
APK11-8A to 25A-*

2E
2G
2H

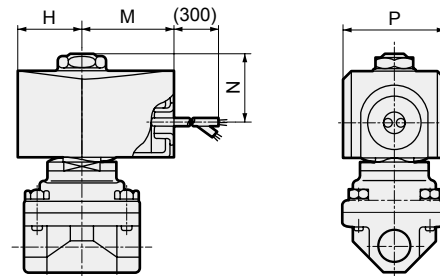


Dimensions shown in () are for G1/2.

Model No.	H	J	K	L	M
APK11-8A/10A	23.5	65.5	54(53.5)	39(41)	22
APK11-15A/20A/25A	30	73	61.5(61)	39(41)	24

- Open frame lead wire
APK11-8A to 25A-*

3A
4A
5A

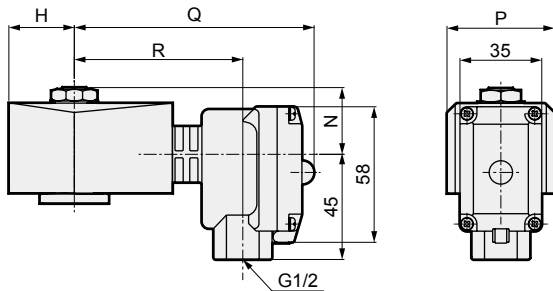


Model No.	H	M	N	P
APK11-8A/10A	28	42	29	46
APK11-15A/20A/25A	34	46	33	56

- Open frame + HP terminal box

APK11-8A to 25A-*

3M
4N
5

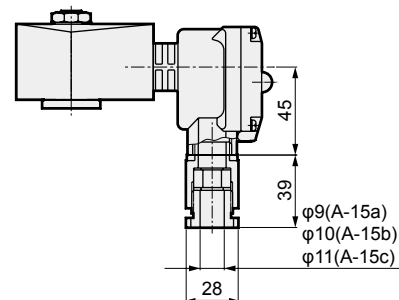


Model No.	H	N	P	Q	R
APK11-8A/10A	28	29	46	103	72
APK11-15A/20A/25A	34	33	56	98	68

- Open frame + cable gland

APK11-8A to 25A-*

3M
4N
5

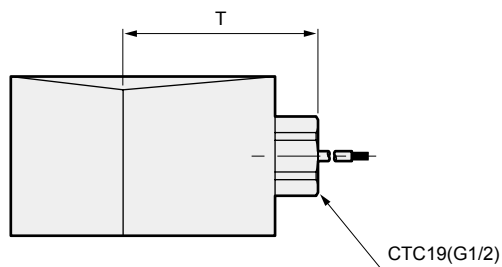


- Mounting plate

APK11-8A/10A-***

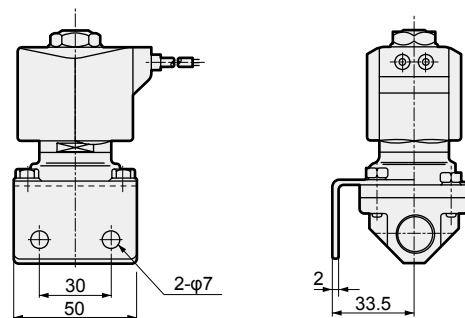
B

Material: Steel
Zinc plated



Dimensions shown in () are for G1/2.

Model No.	T
APK11-8A/10A	57(60)
APK11-15A to 25A	59(62)



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
SAB/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
SpecFld
Custom
Ending



Pilot kick 2-port solenoid valve
(general purpose valve)

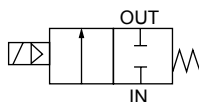
APK21 Series

- NC
- Port size: Rc1¹/₄ to Rc2, 32 to 50 flange
- Piston drive

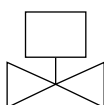


- EXA
- FWD
- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG
- AP/AD
- APK/ADK
- DryAir
- EX-XPLNprf
- XPLNprf
- HVB/HVL
- SAB/NAB
- LAD/NAD
- Water-Rela
- NP/NAP/NVP
- SNP
- CHB/G
- MXB/G
- Other valves
- SWD/MWD
- DustColl
- CVE/CVSE
- CCH/CPE/D
- LifeSci
- Gas-Combus
- Auto-Water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

JIS symbol



Mounting orientation



Common specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Descriptions	Standard specifications	Optional specifications
Working fluid	Air/low vacuum (1.33 x 10 ⁵ Pa (abs))/water/kerosene/oil (20mm ² /s or less)	Steam
Working pressure differential MPa	0 to 0.7 (refer to max. working pressure differential in individual specifications.)	
Max. working pressure MPa	1 (≈150 psi, 10 bar)	
Proof pressure (water pressure) MPa	3.2 (≈460 psi, 32 bar)	
Fluid temperature °C	-10 (14°F) to 60 (140°F) (*1)	5 (41°F) to 180 (356°F)
Ambient temperature °C	-10 (14°F) to 60 (140°F)	
Thermal class	Class 130 (B)	Class 180 (H)
Atmosphere	Place free of corrosive gas and explosive gas	
Valve structure	Pilot kick poppet, piston drive	
Valve seat leakage (*2) cm ³ /min(ANR)	1 or less (air)	800 or less (air)
Mounting orientation	Limited to vertical orientation with the coil on top	
Body/seal material	Bronze/nitrile rubber	Bronze/PTFE

*1 : No freezing.

*2 : Value at pneumatic pressure of 0.05 to 0.7 MPa. When used at a pressure less than 0.05 MPa, the sealant may be unstable. Contact CKD in this case.

Individual specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Descriptions Model No.	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 (20 mm ² /s)		Steam			When holding		When starting		AC	DC				
				AC	DC	AC	DC	AC	DC	AC	DC		50 Hz	60 Hz	50 Hz	60 Hz	50/60 Hz	DC				
APK21-32A	Rc1 ¹ / ₄	35	0	0.7	0.6	0.7	0.6	0.5	0.5	0.7	100 VAC 50/60 Hz	64	69	274	289	44/48	20	4.5				
APK21-32F	32 flange										200 VAC 50/60 Hz								8			
APK21-40A	Rc1 ¹ / ₂	43									12 VDC									9		
APK21-40F	40 flange																				24 VDC	
APK21-50A	Rc2	53																			48 VDC	7
APK21-50F	50 flange																					

*1 : The model numbers above are for the basic port size. Refer to How to order for other combinations.

*2 : Refer to DC column for the max. working pressure differential of coil with diode.

*3 : The voltage fluctuation range must be within ±10% of the rated voltage.

*4 : When using at low vacuum, vacuum the OUT port side.

Optional specifications

Sealant	Fluoro rubber		PTFE	
Coil (thermal class)	Class 130 (B)	Class 180 (H)	Class 130 (B)	Class 180 (H)
Fluid temperature °C	5 to 60	5 to 90	-10 to 60 (*1)	5 to 180
Ambient temperature °C	-10 to 60			
Valve seat leakage (*2) cm ³ /min (ANR)	1 or less (air)		800 or less (air)	

*1 : No freezing.

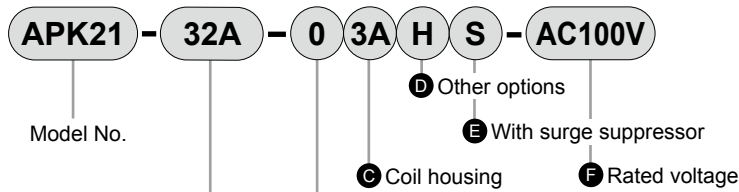
*2 : Value at pneumatic pressure of 0.05 to 0.7 MPa. When used at a pressure less than 0.05 MPa, the sealant may be unstable. Contact CKD in this case.

Flow characteristics

Model No.	Port size	Orifice size (mm)	Cv	Effective cross-sectional area (mm ²)
APK21-32A	Rc1 ¹ / ₄	35	25	460
APK21-32F	32 flange			
APK21-40A	Rc1 ¹ / ₂	43	34	625
APK21-40F	40 flange			
APK21-50A	Rc2	53	53	975
APK21-50F	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
SpecFld
Custom
Ending

How to order



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

B Body/sealant combination						
	Body	Valve seal	O-ring	Treatment	Remarks	
0	Std	Bronze	Nitrile rubber	Nitrile rubber	-	Air/water/low vacuum/kerosene/oil (up to 60°C)
			Fluoro rubber	Fluoro rubber		Air/low vacuum/kerosene/oil (up to 90°C *3)
			PTFE	Fluoro rubber		Steam (up to 180°C *3)
B	Std	Bronze	Nitrile rubber	Nitrile rubber		Air/water/low vacuum/kerosene/oil (up to 60°C)
			Fluoro rubber	Fluoro rubber		Air/low vacuum/kerosene/oil (up to 90°C *3)
			PTFE	Fluoro rubber		Steam (up to 180°C *3)
C	Std	Bronze	Nitrile rubber	Nitrile rubber		Air/water/low vacuum/kerosene/oil (up to 60°C)
			Fluoro rubber	Fluoro rubber		Air/low vacuum/kerosene/oil (up to 90°C *3)
			PTFE	Fluoro rubber		Steam (up to 180°C *3)
D	Option	Stainless steel	Nitrile rubber	Nitrile rubber		Air/water/low vacuum/kerosene/oil (up to 60°C)
			Fluoro rubber	Fluoro rubber	Air/low vacuum/kerosene/oil (up to 90°C *3)	
			PTFE	PTFE	Steam (up to 180°C *3)	
E	Option	Stainless steel	Nitrile rubber	Nitrile rubber	Air/water/low vacuum/kerosene/oil (up to 60°C)	
			Fluoro rubber	Fluoro rubber	Air/low vacuum/kerosene/oil (up to 90°C *3)	
			PTFE	PTFE	Steam (up to 180°C *3)	
F	Option	Stainless steel	Nitrile rubber	Nitrile rubber	Air/water/low vacuum/kerosene/oil (up to 60°C)	
			Fluoro rubber	Fluoro rubber	Air/low vacuum/kerosene/oil (up to 90°C *3)	
			PTFE	PTFE	Steam (up to 180°C *3)	
H	Option	Bronze	Nitrile rubber	Nitrile rubber	Air/water/low vacuum/kerosene/oil (up to 60°C)	
			Fluoro rubber	Fluoro rubber	Air/low vacuum/kerosene/oil (up to 90°C *3)	
			PTFE	Fluoro rubber	Steam (up to 180°C *3)	
J	Option	Bronze	Nitrile rubber	Nitrile rubber	Air/water/low vacuum/kerosene/oil (up to 60°C)	
			Fluoro rubber	Fluoro rubber	Air/low vacuum/kerosene/oil (up to 90°C *3)	
			PTFE	Fluoro rubber	Steam (up to 180°C *3)	
K	Option	Bronze	Nitrile rubber	Nitrile rubber	Air/water/low vacuum/kerosene/oil (up to 60°C)	
			Fluoro rubber	Fluoro rubber	Air/low vacuum/kerosene/oil (up to 90°C *3)	
			PTFE	Fluoro rubber	Steam (up to 180°C *3)	
L	Option	Stainless steel	Nitrile rubber	Nitrile rubber	Air/water/low vacuum/kerosene/oil (up to 60°C)	
			Fluoro rubber	Fluoro rubber	Air/low vacuum/kerosene/oil (up to 90°C *3)	
			PTFE	PTFE	Steam (up to 180°C *3)	
M	Option	Stainless steel	Nitrile rubber	Nitrile rubber	Air/water/low vacuum/kerosene/oil (up to 60°C)	
			Fluoro rubber	Fluoro rubber	Air/low vacuum/kerosene/oil (up to 90°C *3)	
			PTFE	PTFE	Steam (up to 180°C *3)	
N	Option	Stainless steel	Nitrile rubber	Nitrile rubber	Air/water/low vacuum/kerosene/oil (up to 60°C)	
			Fluoro rubber	Fluoro rubber	Air/low vacuum/kerosene/oil (up to 90°C *3)	
			PTFE	PTFE	Steam (up to 180°C *3)	

Refer to Intro Page 39 for reference on material combinations.

C to F
Refer to the following page for details on the coil housing, other options and voltage, etc.

[Example of model No. 1]
APK21-32F-03A-DC24V

Model : APK21

- A** Port size : 32 flange
- B** Body/sealant combination : Body - bronze, valve seal - nitrile rubber
O-ring - nitrile rubber
- C** Coil housing : Open frame lead wire
- D** Other options : None
- E** Surge suppressor : None
- F** Rated voltage : 24 VDC

[Example of model No. 2]
APK21-50F-B4MD-AC100V

Model : APK21

- A** Port size : 50 flange
- B** Body/sealant combination : Body - bronze, valve seal - fluoro rubber
O-ring - fluoro rubber
- C** Coil housing : Open frame
(Thermal class 180 (H) coil)
HP terminal box (G1/2)
- D** Other options : Cable gland A-15a
- E** Surge suppressor : None
- F** Rated voltage : 100 VAC 50/60 Hz

⚠ Precautions for model No. selection

- *1 : The companion flange is JIS B2210 10K. (Flange is not enclosed with the product and must be purchased separately.)
- *2 : As G and NPT threads can also be used for piping port threads, contact CKD for details.

Notes for **B**



- *3 : When Item **B** 4A/4M/4N is selected.
- *4 : When using the PTFE valve seal with thermal class 180(H) coil, the O-ring material is fluoro rubber for steam.


- 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
- SAB/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-Combust
- Auto-Water
- SpecFld
- Custom
- Ending

For Items © to ƒ, the combinations indicated with codes are available.
 Note that if options ④ and ⑤ are not required, they should be left blank.

© Coil housing			④ Other options				⑤	ƒ Rated voltage
Content			Cable gland		Conduit		With surge suppressor	Content
			(marine cable gland)		(conduit piping)			
			A-15a	A-15b	A-15c	G1/2		
3A	Option 2 Open frame	Lead wire (IP65 or equivalent)				H	S	100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
3M		With HP terminal box (G1/2)	D	E	F			
3N		HP terminal box with lamp (G1/2)						
4A	Option 1 Open frame (Thermal class 180 (H))	Lead wire				H	S	100 VAC, 200 VAC
4M		With HP terminal box (G1/2)	D	E	F			
4N		HP terminal box with lamp (G1/2)						
5A	Option 3 Open frame (diode integrated)	Lead wire (IP65 or equivalent)				H		100 VAC, 200 VAC
5M		With HP terminal box (G1/2)	D	E	F			
5N		HP terminal box with lamp (G1/2)						

⚠ Refer to the following cautions for © to ƒ.

3A 4A 5A		<ul style="list-style-type: none"> ● Open frame lead wire 300 mm ● With CTC19 thread for direct conduit piping
3M 3N 4M 4N 5M 5N		<ul style="list-style-type: none"> ● Open frame HP terminal box ● 4M, 4N (Thermal class 180 (H)) ● 5M, 5N (diode integrated)

H		<ul style="list-style-type: none"> ● Conduit (G1/2)
----------	--	--

Refer to page 250 for coil selection.

⚠ Precautions for model No. selection

Notes for ©

*5 : Coils for 5A/5M/5N have a diode to convert AC to DC voltage.

Notes for ④/⑤

- *6 : For Item ④, select an option from D, E, F and H.
- *7 : The surge suppressor is attached with the lead wire coil. When selecting a coil with a terminal box, the surge suppressor is mounted in the terminal box.
- *8 : Surge suppressor is incorporated as standard in the coil with diode.
- *9 : Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information.

Notes for ƒ

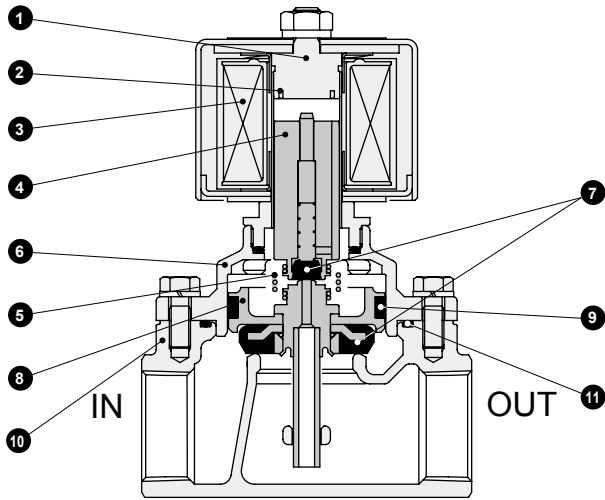
- *10 : For voltages other than above, contact CKD.
- *11 : The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

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
SAB/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
SpecFld
Custom
Ending

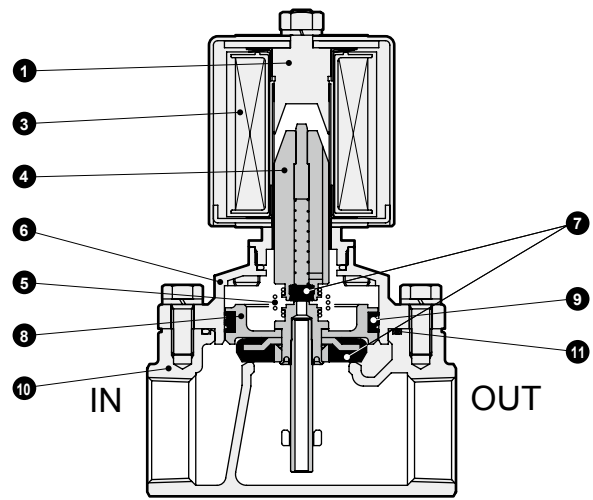
APK21 Series

Internal structure and parts list

● APK21-32A/40A/50A (AC)



● APK21-32A/40A/50A (DC/diode integrated)



No.	Part name	Material
1	Core assembly	SUS405 or equiv./SUS316L/SUS403 ; Stainless steel
2	Shading coil *1	Cu (Ag for stainless steel body) ; Copper (silver for stainless steel body)
3	Coil	- ; -
4	Plunger assembly	SUS405 or equiv./SUS304/C3604/NBR (SUS405 or equiv./SUS304/FKM, PFA or PTFE); Stainless steel
5	Kick spring	SUS304 ; Stainless steel
6	Body	CAC408(SCS13) ; Bronze casting (stainless steel casting)
7	Seal	NBR(FKM, PTFE) ; Nitrile rubber (fluoro rubber or tetrafluoroethylene resin)
8	Main valve assembly	SUS303/SUS304/C3604/NBR (SUS303/SUS304/FKM or PTFE); Stainless steel/copper alloy (stainless steel)
9	Seal ring set	SUS304/PTFE ; Stainless steel/tetrafluoroethylene resin
10	Body	CAC408(SCS13) ; Bronze casting (stainless steel casting)
11	O-ring	NBR(FKM, PTFE) ; Nitrile rubber (fluoro rubber or tetrafluoroethylene resin)

() shows options.

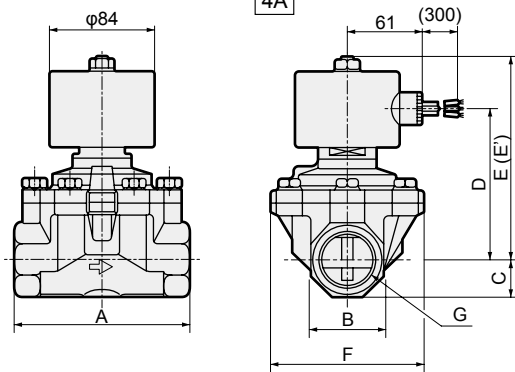
*1 : No shading coil is used for DC coil or coil with diode.

Dimensions



● Open frame lead wire (Rc screw-in)

APK21-32A/40A/50A-*
3A
4A



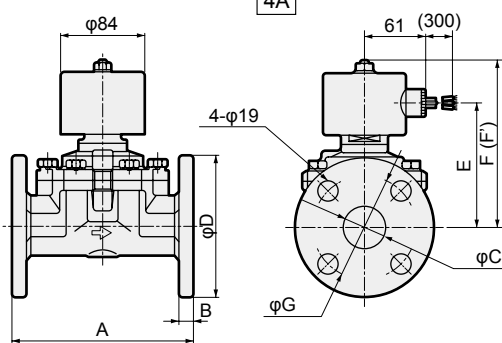
- Conduit size
Thin steel conduit thread
JIS B 0204 CTC19
- Lead wire

30/0.18(0.75 mm²)

Length 300 mm

● Open frame lead wire (flange)

APK21-32F/40F/50F-*
3A
4A



- Conduit size
Thin steel conduit thread
JIS B 0204 CTC19
- Lead wire

30/0.18(0.75 mm²)

Length 300 mm

The dimension (E') applies only to the APK21-32A/40A/50A-*3A DC specifications.

Model No.	A	B	C	D	E	E'	F	G
APK21-32A-*□A	125	54	27	116.5	158.5	183.5	112	Rc1 ¹ / ₄
APK21-40A-*□A	140	60	30	123.5	165.5	190.5	122	Rc1 ¹ / ₂
APK21-50A-*□A	160	74	37	132.5	174.5	199.5	132	Rc2

The dimension (F') applies only to the APK21-32F/40F/50F-*3A DC specifications.

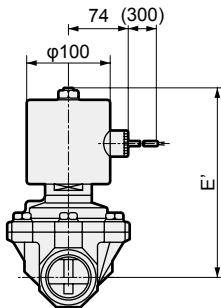
Model No.	A	B	C	D	E	F	F'	G
APK21-32F-*□A	170	12	36	135	116.5	158.5	183.5	100
APK21-40F-*□A	180	14	42	140	123.5	165.5	190.5	105
APK21-50F-*□A	180	14	53	155	132.5	174.5	199.5	120

Optional dimensions



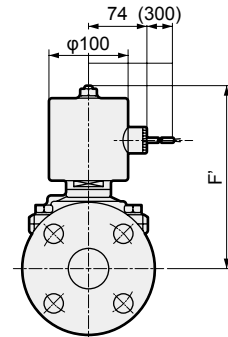
* Refer to the open frame lead wire dimensions on the left page for common dimensions.

- Open frame diode integrated lead wire (Rc screw-in)
APK21-32A/40A/50A-*5A



Model No.	E'
APK21-32A-*5A	183.5
APK21-40A-*5A	190.5
APK21-50A-*5A	199.5

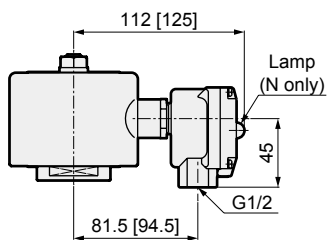
- Open frame diode integrated lead wire (flange)
APK21-32F/40F/50F-*5A



Model No.	F'
APK21-32F-*5A	183.5
APK21-40F-*5A	190.5
APK21-50F-*5A	199.5

- Open frame + HP terminal box
APK21-32^Δ to 50^Δ -*5

3	M
4	N
5	



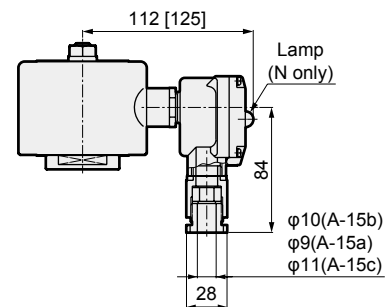
[] shows APK21-32^Δ to 50^Δ -*5

M
N

 type.

- Open frame + cable gland
APK21-32^Δ to 50^Δ -*5

3	M	D
4	N	E
5		F



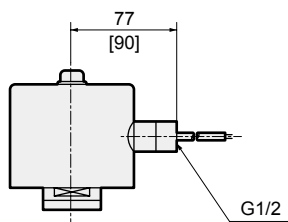
[] shows APK21-32^Δ to 50^Δ -*5

M
N

 type.

- Open frame + conduit
APK21-32^Δ to 50^Δ -*5

3	A	H
4	A	
5	A	



[] shows APK21-32^Δ to 50^Δ -*5

M
N

 type.

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
SΔB/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
SpecFld
Custom
Ending



Safety precautions

Fluid Control Components: Warnings and Cautions

Be sure to read this section before use.

Precautions for each model series: product-specific cautions

Pilot operated 2-port solenoid valve (AP/AD) and pilot kick 2-port solenoid valve (APK/ADK)

Design/selection

⚠ WARNING

1 Working fluids

- (1) When using this valve for dry air or inert gas, the life can be shortened considerably due to wear. Use a valve intended for dry air.
- (2) This valve cannot be used for maintaining vacuum.

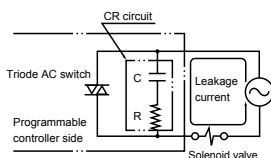
⚠ CAUTION

1 Fluid viscosity

The fluid viscosity must be 50 mm²/s or less. Malfunctions could occur if the viscosity is higher than 50 mm²/s.
(For APK Series, 20 mm²/s or less)

2 Leakage current from other fluid control components

When operating the solenoid valve with a programmable controller, etc., check that the output leakage current from the programmable controller is within the following specifications.



Model No.	AC		AC diode		DC	
	100 V	200 V	100 V	200 V	12 V	24 V
AP,AD	6 mA or less	3 mA or less	2 mA or less	1 mA or less	2 mA or less	1 mA or less
APK,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

Mounting, piping and wiring

⚠ CAUTION

1 Mounting

- (1) As a general rule, the mounting orientation is vertical, with the coil on top.

2 Piping

- (1) If the pipe vibrates when the solenoid valve is opened and closed, securely fix the piping.
- (2) For steam fluids, steam generated from a boiler will contain a large amount of drainage. Always install a drain trap.
- (3) When passing steam, the make-up water in the boiler will contain substances such as "calcium salt" and "magnesium salt". As these substances will react with oxygen and carbon dioxide, and cause scales and sludge to form, always install a "water softener" and a filter for steam.
- (4) When the regulator and solenoid valve are directly coupled, the parts could mutually vibrate, causing resonance and chattering.
- (5) If the piping cross-sectional area on the fluid inlet is reduced, the operation may become unstable due to differential pressure failure during valve operation. For the fluid inlet, use piping of a piping size that matches the port size of the valve. Do not use a needle valve.

3 Wiring

- (1) Refer to Intro Page 64 for information on how to wire a terminal box.

When using the product

⚠ CAUTION

1 Sudden leakage

With the pilot operated or pilot kick 2-port valve, if the pressure is suddenly applied when the pump starts while the valve is closed, the valve may open for an instant causing fluid to leak. Caution is required during use.

2 Operation

Do not apply back pressure. This could lead to malfunction.

3 Water hammer

If the water hammer poses problems, consider using the CKD "RSV type" solenoid valve or a motor valve.

4 Manual operation

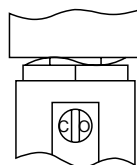
When using a product with a manual override, follow the operations below:
[For NC]

Opening: Insert a flathead screwdriver into the slit on the manual adjustment shaft, and turn it approx. 120° to the right or left. The plunger will rise and the valve will open.

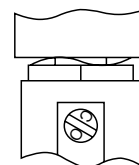
The open state is held even when the screwdriver is removed.

Always return the valve to the original position after use.

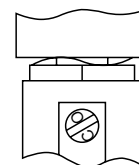
Closing: From the open position, turn the manual adjustment shaft so that the slit is returned to the perpendicular position, which will lower the plunger and close the valve. (Refer to the figure below)



Valve closed state



Valve open state



Valve open state

[For NO]

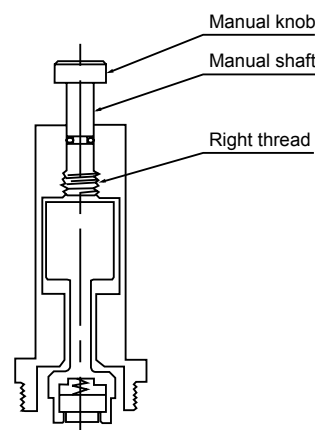
(1) When closing the valve with manual operation

The manual shaft is threaded, so hold the manual dial and rotate the shaft clockwise.

When the manual dial has been rotated downward 5 to 6 mm and no longer rotates, the solenoid valve will switch to closing operation.

(2) Reset (when not using a manual override)

Always rotate the manual dial counterclockwise and return it to the highest point.



Maintenance

⚠ CAUTION

1 Thermal insulation cover

When piping for steam or hot water, etc., use an insulating cover structure that can be disassembled for maintenance purposes.

Avoid placing an insulating cover on the entire solenoid valve or on the coil section. The coil could burn.

2 Tightening torque

When disassembling or assembling, tighten the body bolt, core assembly and nut with the following tightening torques.

		Body bolt tightening torque	Core assembly tightening torque	Nut tightening torque
AP ₁₂ ¹¹ AD ₁₂ ¹¹	8A	3 to 4 Nm	30 to 45 Nm (45 to 60 Nm for APK11-15A to 25A)	8 to 16 Nm
	10A			
APK11 ADK ₁₂ ¹¹	15A	5 to 7 Nm		
	20A	9 to 12 Nm		
AP ₂₂ ²¹ AD ₂₂ ²¹	25A			
	32 _F ^A			
	40 _F ^A			
APK21 ADK21	50 _F ^A	80 to 120 Nm		
	32 _F ^A			
	40 _F ^A			
	50 _F ^A			

Working environment

⚠ CAUTION

IP65 (IEC60529 [IEC529:1989-11]) standards are applied to the test. Avoid use in conditions where water or cutting oil directly contacts the valve.

Degree of protection of IP65 and explanation of test method

● Degree of protection

Note: IP65 is based on the following testing method.

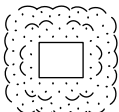
■ IEC (International Electrotechnical Commission) standards (IEC60529 [IEC529:1989-11])

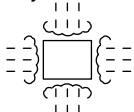
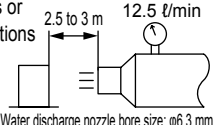
IP-

Degree of protection (International Protection)

1st characteristic No. (degree of protection for foreign solid matter)

2nd characteristic No. (degree of protection for water entry)

Grade	Degree of protection	
6	Dust proof 	No inflow of dust.

Grade	Degree of protection		Overview of test method (fresh water is used)
5	Protection against water jets 	No harmful effects occur even when water is sprayed with nozzles from all directions.	The sample (exterior) is exposed to water jetting of 1 m ² per minute for a total of 3 minutes or more from all directions with the testing equipment in the figure below. 

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- Combust
Auto- Water
SpecFld
Custom
Ending