

Air operated 3-port valve for medium/high pressure (coolant valve)

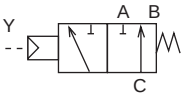
CVSE3-35/70 Series CVE3-35/70 Series

- Directional (C-port pressurization only)
- Medium pressure 3.5 MPa: Port size: Rc3/8 to Rc2
- High pressure 7.0 MPa: Port size: Rc3/8 to Rc1

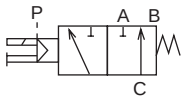


JIS symbol

- CVE3 (air operated)



- CVSE3 (with solenoid valve)



Common specifications

Item	Standard specifications
Actuation	Directional (port C pressurization only)
Working fluid	Coolant/Other non-corrosive fluids(*1)
Fluid viscosity mm ² /s	500 or less
Working pressure MPa	0 to 7.0 (refer to working pressure in individual specifications....)
Fluid temperature °C	-10 to 60 (no freezing)
Ambient temperature °C	-10 to 60
Valve seat leakage cm ³ /min	20 or less (water pressure)
Mounting orientation	Unrestricted
Pilot fluid	Air
Pilot pressure MPa	0.25 to 0.5

*1: Fluids that do not affect cast iron (nickel plating), stainless steel, nitrile rubber or fluoro rubber

Electrical specifications

Rated voltage	(*2)	100 VAC (50/60 Hz) / 110 VAC (60 Hz), 200 VAC (50/60 Hz) / 220 VAC (60 Hz), 24 VDC
Apparent power (VA)	When holding	3.6 (50Hz), 2.8 (60Hz)
	When starting	11 (50Hz), 9 (60Hz)
Power consumption (W)	AC	1.9 (50Hz), 1.5 (60Hz)
	DC	2.0
Thermal class	Class 130 (B)	
Degree of protection (IEC standards 529)	With DIN terminal box (Pg9)	IPX5
	With DIN terminal box (M12-4P connector)	IPX5
	With T type terminal box (G1/2)	IPX5

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

Individual specifications for 3.5 MPa, 7.0 MPa

Item Model No.	Port size	Orifice size (mm)		Cv		Pilot port size	Working pressure (MPa)	Proof pressure (water pressure) (MPa)	Weight (kg)	
		NC side	NO side	NC side	NO side				CVE3	CVSE3
CVE3/CVSE3-10A-35	Rc 3/8	5.8 or equiv.	4.5	1.3	1	Rc 1/8	0 to 3.5	7	1.0	1.1
CVE3/CVSE3-15A-35	Rc 1/2	7.1 or equiv.	6	2.2	1.8				1.6	1.7
CVE3/CVSE3-20A-35	Rc 3/4	8.9 or equiv.	8	3.6	3				2.7	2.8
CVE3/CVSE3-25A-35	Rc 1	13.2 or equiv.	9	6	3.8				4.3	4.4
CVE3/CVSE3-32A-35	Rc 1¼	22 or equiv.	20	23	18.5				13.8	13.9
CVE3/CVSE3-40A-35	Rc 1½	22 or equiv.	20	23	17				13.5	13.6
CVE3/CVSE3-50A-35	Rc 2	28.5 or equiv.	26	31	27				22.7	22.8
CVE3/CVSE3-10A-70	Rc 3/8	5.8 or equiv.	4.5	1.3	1		0 to 7.0	14	1.4	1.5
CVE3/CVSE3-15A-70	Rc 1/2	7.1 or equiv.	6	2.2	1.8				2.4	2.5
CVE3/CVSE3-20A-70	Rc 3/4	8.9 or equiv.	8	3.6	3				3.9	3.9
CVE3/CVSE3-25A-70	Rc 1	10.7 or equiv.	9	4.9	3.8				6.1	6.1

How to order

● Air operated

CVE3 - 20A - 70 - 0 B

● With solenoid valve

CVSE3 - 15A - 35 - 0 2G S - - 1

A Port size

F Assembly direction

*8

*10

Model No.	
Air operated(3-port)	CVE3
With solenoid valve (3-port)	CVSE3

B Working pressure

C Body/sealant combination

[Example of model No.]

CVSE3-15A-35-02GS-1

Model: CVSE3 : With solenoid valve (3-port)

A Port size : Rc1 / 2

B Working pressure : 0 to 3.5 MPa

C Body/sealant combination : Body - cast iron (plating), sealant - nitrile rubber

D Coil : With DIN terminal box (Pg9)

E Other options : With surge suppressor

F Assembly direction: No option

G Voltage : 100 VAC (50/60 Hz), 110 VAC (60 Hz)

D Coil

*1

*2

E Other options

*3*4

*5*6

*7*10

*1 : Surge suppressor is not available for Item D 2J.

*2 : Item D 2K is available only for the type with surge suppressor and should be specified as 2KS.

*3 : The mounting plate (E Item B) is attached and can be assembled to port sizes 10A, 15A, 20A and 25A only.

*4 : Top mounted solenoid valve (E Item T) is available only when the combination of Item A and Item B codes is 10A-35, 10A-70, or 15A-35.

*5 : To add both the surge suppressor and mounting plate options, indicate SB in Item. For a solenoid valve mounted on top, indicate as STB.

*6 : The surge suppressor is mounted in the terminal box.

*7 : A manual override (non-locking) is provided as standard for the solenoid valve mounted.

*8 : Assembly direction option cannot be selected for the air operated and 32A to 50A.

*9 : Clockwise angle when viewed from above with the IN port on the right.

*10 : Assembly direction option cannot be selected for the type with top mounted solenoid valve (F Item T).

F Item Assembly direction

CVSE3 [With solenoid valve] *9

Code	Blank (standard)	X	Y	Z	R
Direction	No rotation	Cylinder cover rotated 90°	Cylinder cover rotated 180°	Cylinder cover rotated 270°	Coil reversed
Layout					

		Model No.			
		CVE3		CVSE3	
Code	Description	Medium pressure (3.5 MPa)	High pressure (7.0 MPa)	Medium pressure (3.5 MPa)	High pressure (7.0 MPa)
A Port size					
10A	Rc 3/8	●	●	●	●
15A	Rc 1/2	●	●	●	●
20A	Rc 3/4	●	●	●	●
25A	Rc 1	●	●	●	●
32A	Rc 1 1/4	●	●	●	●
40A	Rc 1 1/2	●	●	●	●
50A	Rc 2	●	●	●	●
B Working pressure					
35	0 to 3.5 MPa	●	●	●	●
70	0 to 7.0 MPa	●	●	●	●
C Body/sealant combination					
	Body	Seal			
0	Standard	Cast iron (plating)	Nitrile rubber	●	●
B	Option	Cast iron (plating)	Fluoro rubber	●	●
D Coil					
2G	With DIN terminal box (Pg9)			●	●
2H	DIN terminal box with lamp (Pg9)			●	●
2J	DIN terminal box (M12-4P connector)			●	●
2K	DIN terminal box with lamp (M12-4P connector)			●	●
3T	With T type terminal box (G1/2)			●	●
3R	T type terminal box with lamp (G1/2)			●	●
E Other options					
Blank	No option	●	●	●	●
S	With surge suppressor			●	●
T	Top mounted solenoid valve			●	●
B	Mounting plate	●	●	●	●
F Assembly direction					
Blank	No option	●	●	●	●
X	Cylinder cover rotated 90°			●	●
Y	Cylinder cover rotated 180°			●	●
Z	Cylinder cover rotated 270°			●	●
R	Coil reversed 180° [With solenoid valve]			●	●
Refer to the figure below for the layout drawing.					
G Voltage					
1	100 VAC(50/60 Hz), 110 VAC(60 Hz)			●	●
2	200 VAC(50/60 Hz), 220 VAC(60 Hz)			●	●
3	24 VDC			●	●

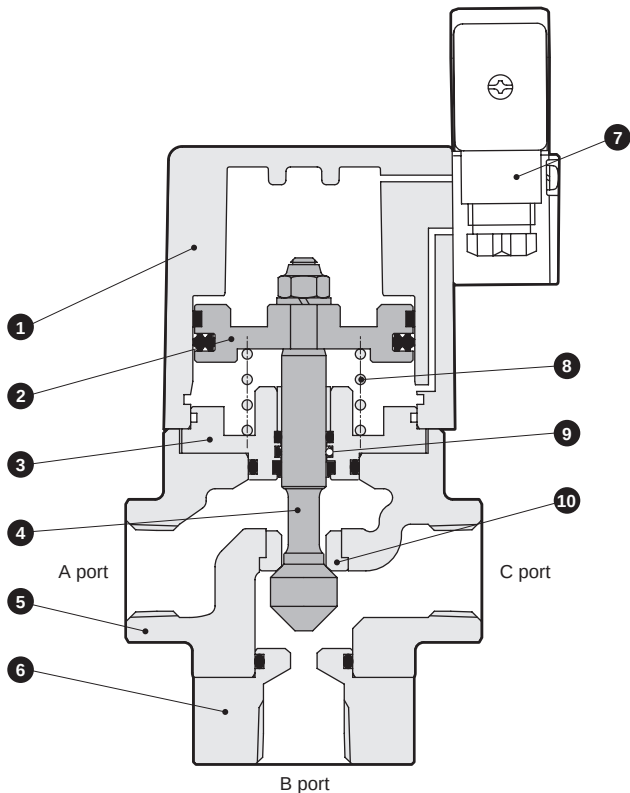
G Voltage

CVSE3-35/70 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

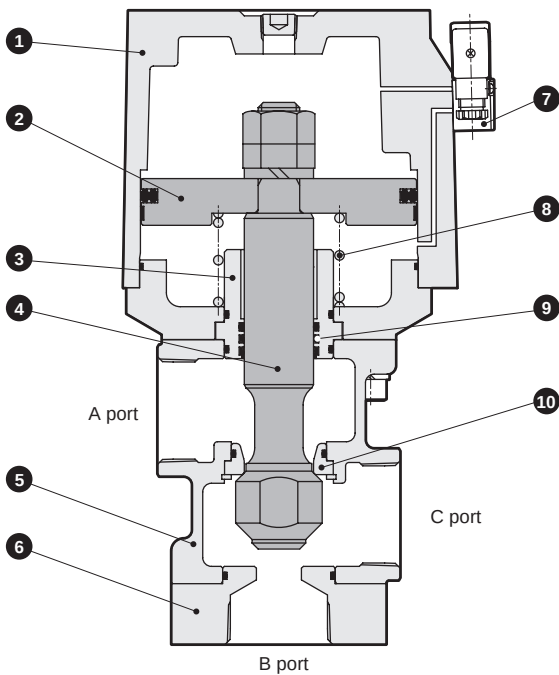
Internal structure and parts list

● CVSE3-10A to 25A-35



No.	Part name	Material	
1	Cylinder guard	ADC12	Aluminum die-casting
2	Piston	A2017	Aluminum
3	Adaptor	SUS303	Stainless steel
4	Valve stem	SUS420J2	Stainless steel
5	Body	FCD450	Cast iron (plating)
6	NO body	SUS303	Stainless steel
7	Pilot solenoid valve	-	-
8	Spring	SWP	Piano wire
9	Rod packing	NBR(FKM)	Nitrile rubber (fluoro rubber)
10	NC valve seat	SUS303	Stainless steel

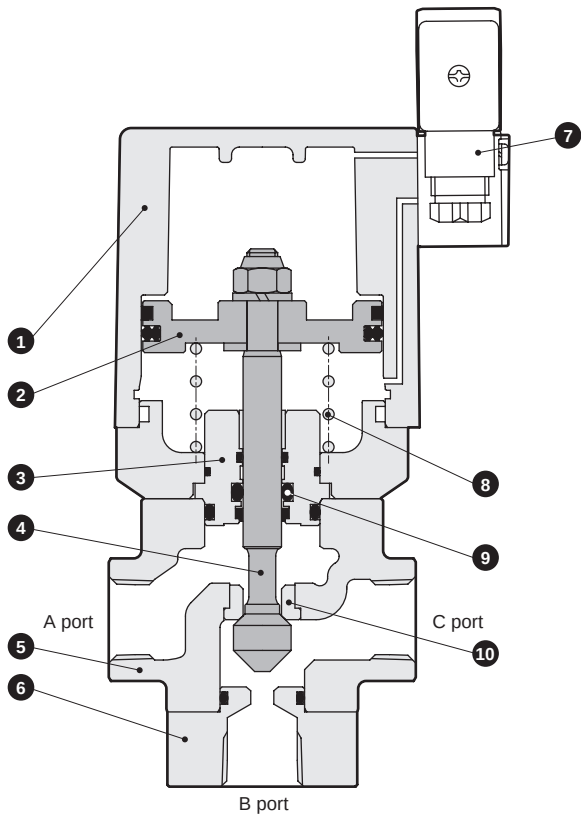
● CVSE3-32A/40A/50A-35



No.	Part name	Material	
1	Cylinder guard	AC7A	Aluminum casting
2	Piston	A2017	Aluminum
3	Adaptor	SUS303	Stainless steel
4	Valve stem	SUS420J2	Stainless steel
5	Body	FCD450	Cast iron (plating)
6	NO body	SUS303	Stainless steel
7	Pilot solenoid valve	-	-
8	Spring	SWP	Piano wire
9	Rod packing	NBR(FKM)	Nitrile rubber (fluoro rubber)
10	NC valve seat	SUS303	Stainless steel

Internal structure and parts list

● CVSE3-10A to 25A-70



No.	Part name	Material	
1	Cylinder guard	ADC12	Aluminum die-casting
2	Piston	A2017	Aluminum
3	Adaptor	SUS303	Stainless steel
4	Valve stem	SUS420J2	Stainless steel
5	Body	FCD450	Cast iron (plating)
6	NO body	SUS303	Stainless steel
7	Pilot solenoid valve	-	-
8	Spring	SWP	Piano wire
9	Rod packing	NBR(FKM)	Nitrile rubber (fluoro rubber)
10	NC valve seat	SUS303	Stainless steel

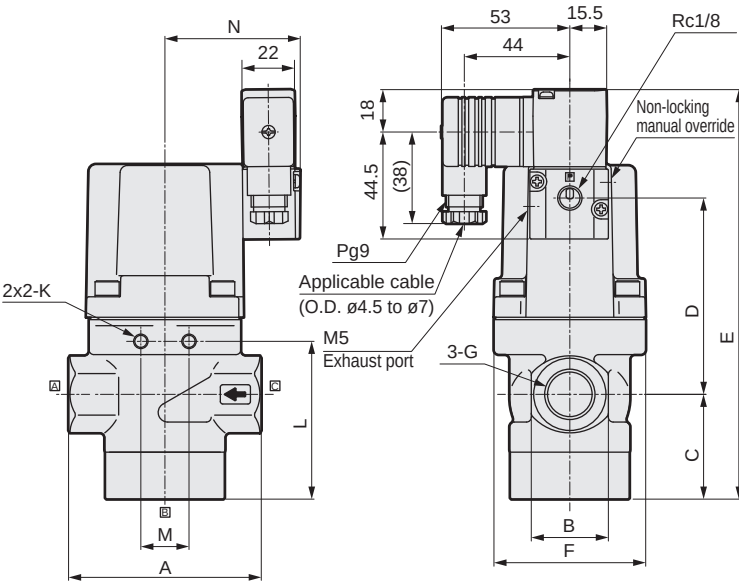
EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
S ◇ B/ NAB
LAD/ NAD
Water- Rela
NP/NAP/ NVP
SNP
CHB/G
MXB/G
Other valves
SWD/ MWD
DustColl
CVE/ CVSE
CCH/ CPE/D
LifeSci
Gas- Combus
Auto- Water
Outdoor
SpecFld
Custom
Ending

CVSE3-35/70 Series

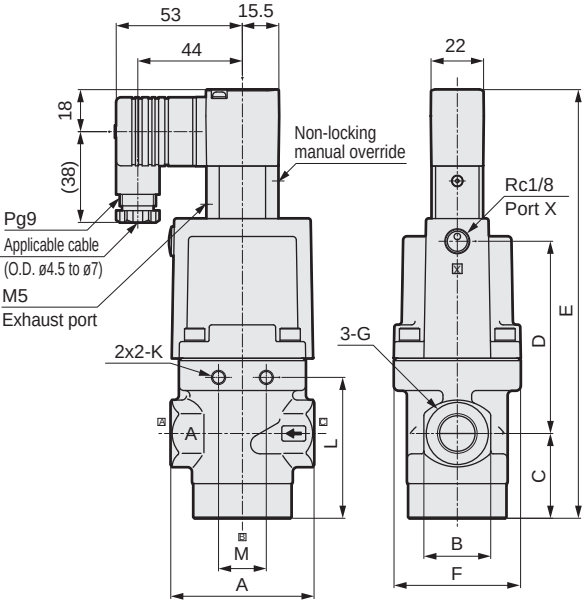


Dimensions

● With DIN terminal box (Pg9)
CVSE3-10A to 25A-35-*2G



● With DIN terminal box (Pg9)
CVSE3-10A/15A-35-*2GT

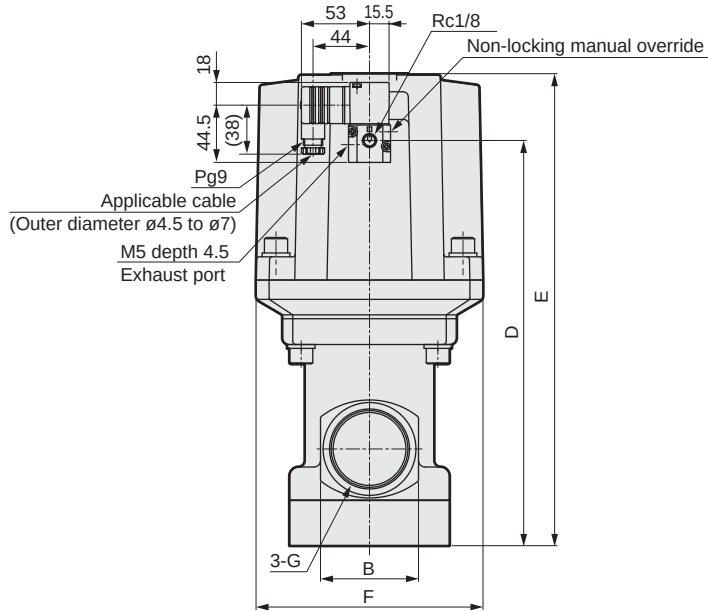
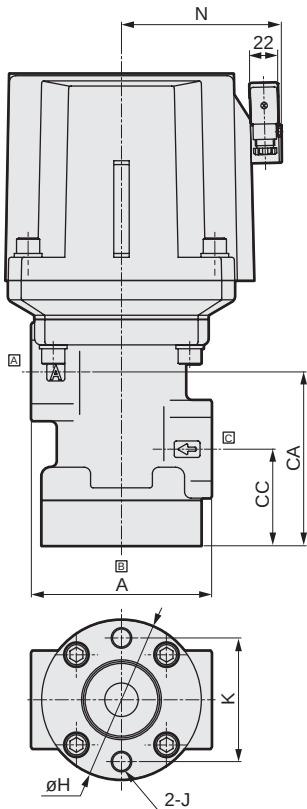


* The figure shows the unit with no assembly direction option selected.

Model No.	A	B	C	D	E	F	G	K	L	M	N
CVSE3-10A-35-*2G	60	28	35.5	69	149.5	53	Rc3/8	M6 thread depth 9	59	20	53
CVSE3-15A-35-*2G	80	32	43.5	81.5	170	63	Rc1/2	M6 thread depth 9	65.5	20	57.5
CVSE3-20A-35-*2G	90	40	52	102	199	77	Rc3/4	M8 thread depth 10	79.5	25	64.5
CVSE3-25A-35-*2G	110	48	61	122.5	228.5	95	Rc1	M8 thread depth 10	91	25	72.5

Model No.	D	E
CVSE3-10A-35-*2GT	80.5	179.5
CVSE3-15A-35-*2GT	92.5	199.5

● With DIN terminal box (Pg9)
CVSE3-32A/40A/50A-35-*2G

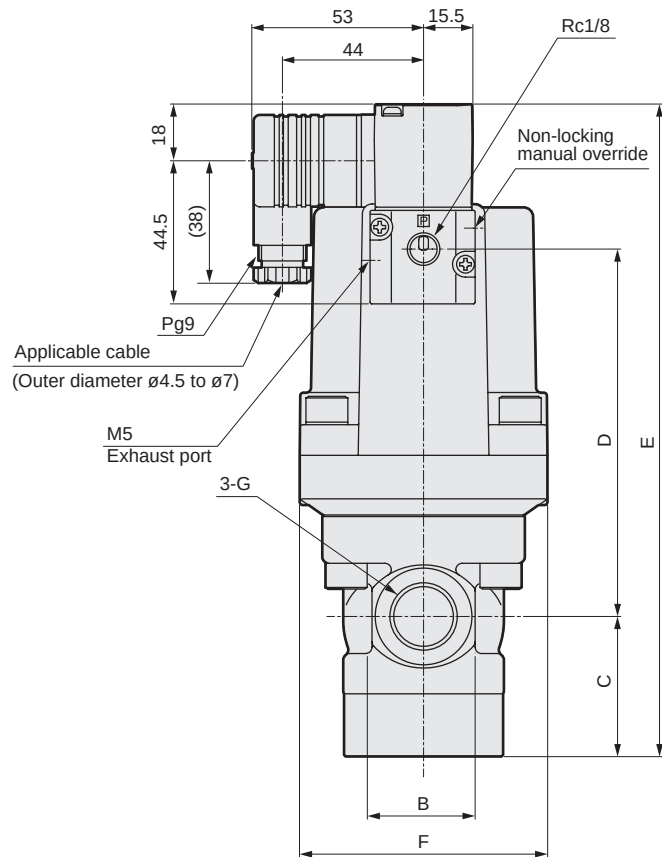
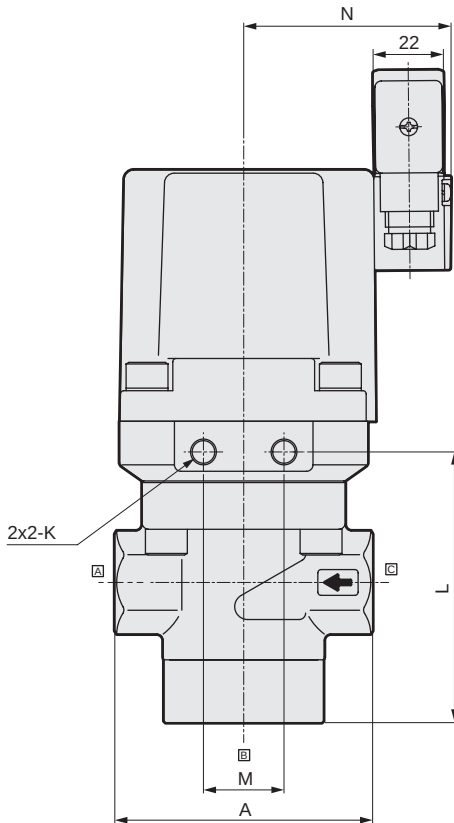


Model No.	A	B	CA	CC	D	E	F	G	H	J	K	N
CVSE3-32A-35-*2G	120	61	118	63	264.5	309.5	145	Rc1 1/4	ø109	M12 depth 30	90	103
CVSE3-40A-35-*2G	120	61	118	63	264.5	309.5	145	Rc1 1/2	ø109	M12 depth 30	90	103
CVSE3-50A-35-*2G	140	76	135	75	314	366	176	Rc2	ø124	M16 depth 35	96	123

Dimensions



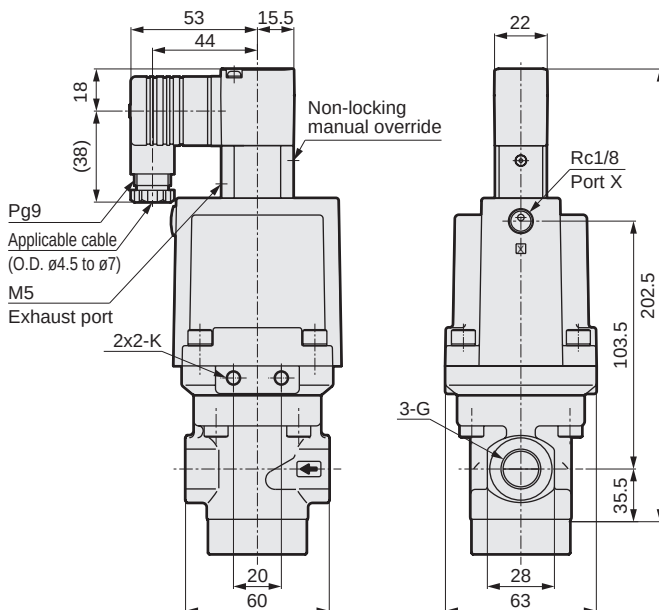
- With DIN terminal box (Pg9)
CVSE3-10A to 25A-70-*2G



* The figure shows the unit with no assembly direction option selected.

Model No.	A	B	C	D	E	F	G	K	L	M	N
CVSE3-10A-70-*2G	60	28	35.5	92.5	173	63	Rc3/8	M6 thread depth 9	73.5	20	57.5
CVSE3-15A-70-*2G	80	32	43.5	114	202.5	77	Rc1/2	M8 thread depth 10	84	25	64.5
CVSE3-20A-70-*2G	90	40	52	136.5	233.5	95	Rc3/4	M8 thread depth 10	97.5	25	72.5
CVSE3-25A-70-*2G	110	48	61	149.5	255.5	113	Rc1	M12 thread depth 14	110	45	82.5

- With DIN terminal box (Pg9)
CVSE3-10A-70-*2GT



Optional dimensions

Refer to page 890 for coil options and mounting plates.

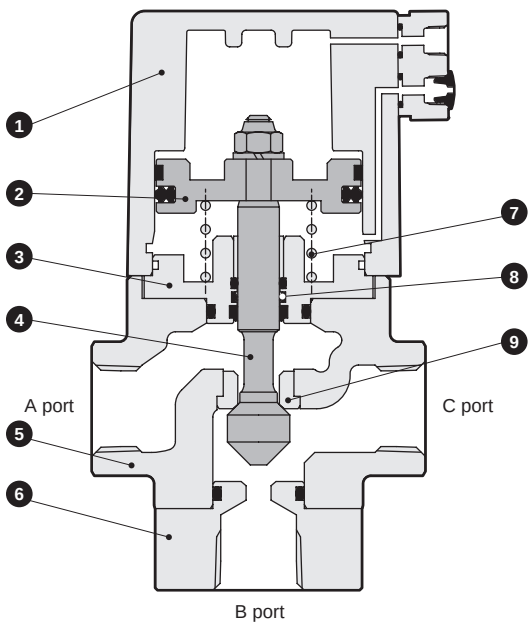
EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
S $\diamond$ B/ NAB
LAD/ NAD
Water- Rela
NP/NAP/ NVP
SNP
CHB/G
MXB/G
Other valves
SWD/ MWD
DustColl
CVE/ CVSE
CCH/ CPE/D
LifeSci
Gas- Combus
Auto- Water
Outdoor
SpecFld
Custom
Ending

CVE3-35/70 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
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CHB/G
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CVE/ CVSE
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LifeSci
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Outdoor
SpecFld
Custom
Ending

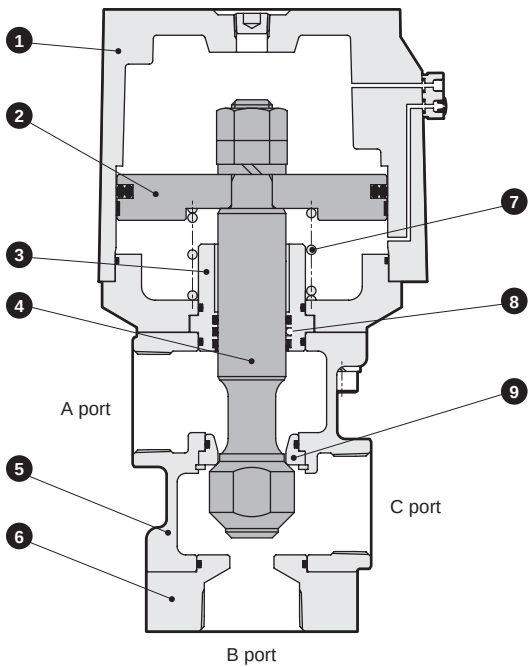
Internal structure and parts list

● CVE3-10A to 25A-35



No.	Part name	Material	
1	Cylinder guard	ADC12	Aluminum die-casting
2	Piston	A2017	Aluminum
3	Adaptor	SUS303	Stainless steel
4	Valve stem	SUS420J2	Stainless steel
5	Body	FCD450	Cast iron (plating)
6	NO body	SUS303	Stainless steel
7	Spring	SWP	Piano wire
8	Rod packing	NBR(FKM)	Nitrile rubber (fluoro rubber)
9	NC valve seat	SUS303	Stainless steel

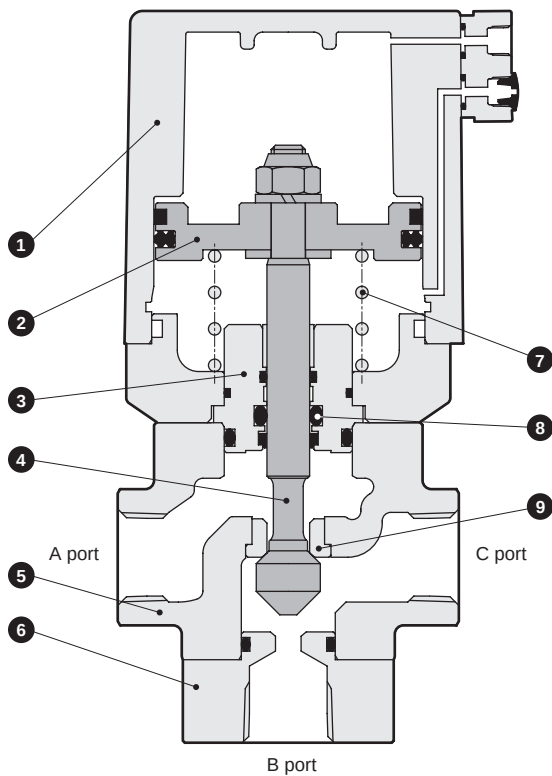
● CVE3-32A/40A/50A-35



No.	Part name	Material	
1	Cylinder guard	AC7A	Aluminum casting
2	Piston	A2017	Aluminum
3	Adaptor	SUS303	Stainless steel
4	Valve stem	SUS420J2	Stainless steel
5	Body	FCD450	Cast iron
6	NO body	SUS303	Stainless steel
7	Spring	SWP	Piano wire
8	Rod packing	NBR(FKM)	Nitrile rubber (fluoro rubber)
9	NC valve seat	SUS303	Stainless steel

Internal structure and parts list

● CVE3-10A to 25A-70



No.	Part name	Material	
1	Cylinder guard	ADC12	Aluminum die-casting
2	Piston	A2017	Aluminum
3	Adaptor	SUS303	Stainless steel
4	Valve stem	SUS420J2	Stainless steel
5	Body	FCD450	Cast iron
6	NO body	SUS303	Stainless steel
7	Spring	SWP	Piano wire
8	Rod packing	NBR(FKM)	Nitrile rubber (fluoro rubber)
9	NC valve seat	SUS303	Stainless steel

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

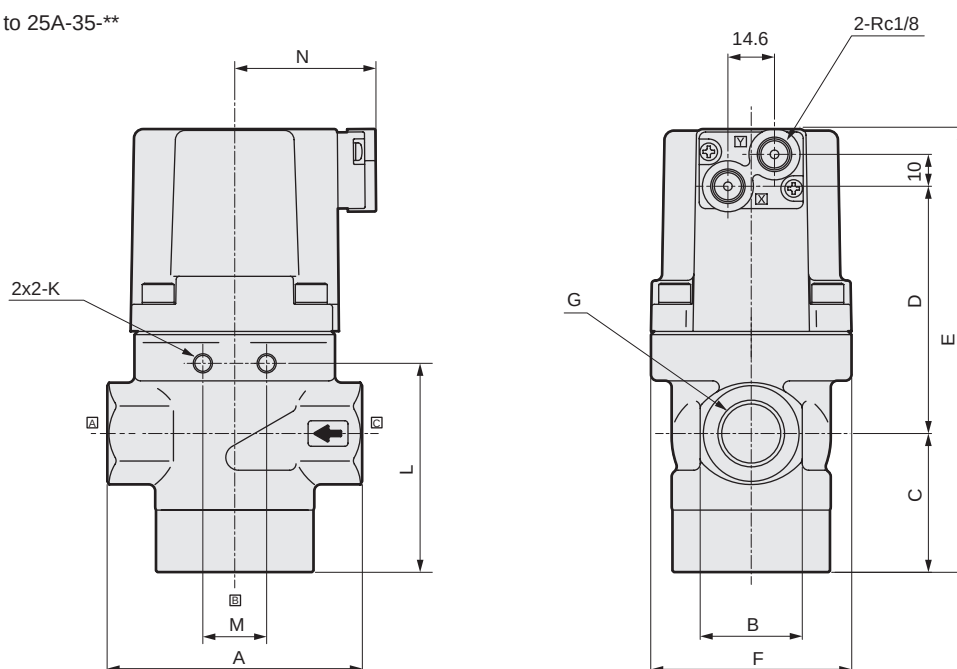
CVE3-35/70 Series

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 ^Δ 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
Outdoor
SpecFld
Custom
Ending

Dimensions



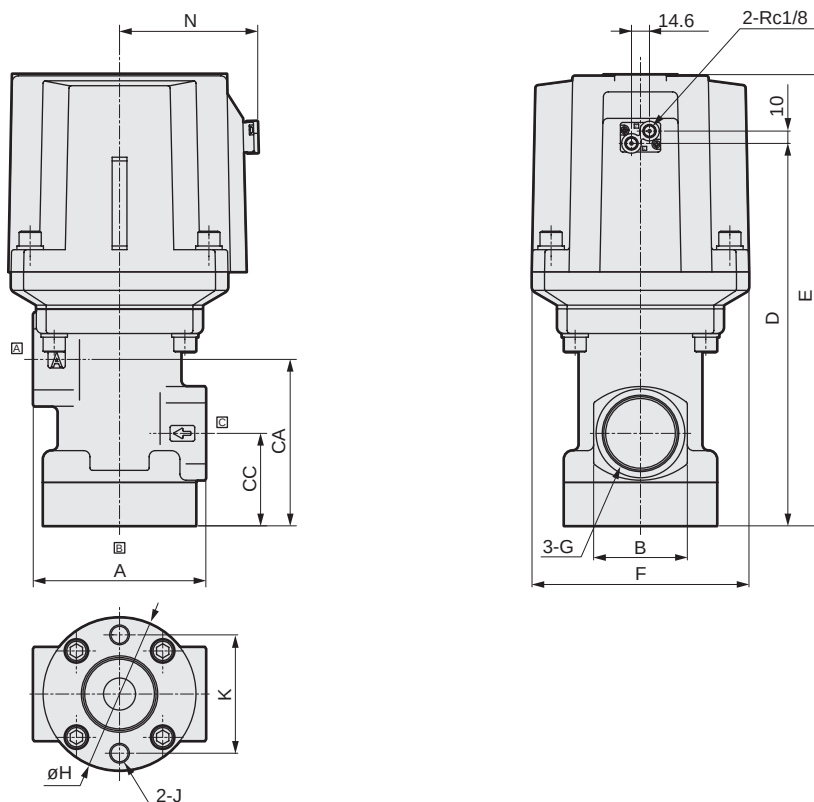
● CVE3-10A to 25A-35-**



* The flow path becomes $\boxed{\text{C}} \rightarrow \boxed{\text{A}}$ when port Y is pressurized.

Model No.	A	B	C	D	E	F	G	K	L	M	N
CVE3-10A-35-*	60	28	35.5	65	118.5	53	Rc3/8	M6 thread depth 9	59	20	41.5
CVE3-15A-35-*	80	32	43.5	77.5	139	63	Rc1/2	M6 thread depth 9	65.5	20	46
CVE3-20A-35-*	90	40	52	98	168	77	Rc3/4	M8 thread depth 10	79.5	25	53
CVE3-25A-35-*	110	48	61	118.5	197.5	95	Rc1	M8 thread depth 10	91	25	61

● CVE3-32A/40A/50A-35-**



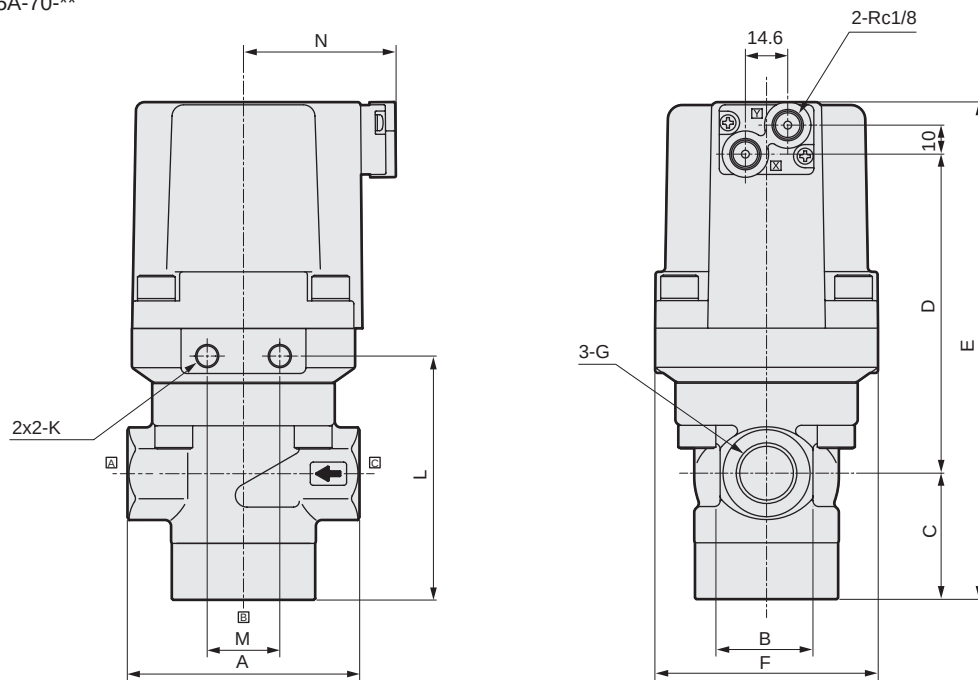
* The flow path becomes $\boxed{\text{C}} \rightarrow \boxed{\text{A}}$ when port Y is pressurized.

Model No.	A	B	CA	CC	D	E	F	G	H	J	K	N
CVE3-32A-35-*	120	61	118	63	260.5	301	145	Rc1 ¹ / ₄	ø109	M12 depth 30	90	91
CVE3-40A-35-*	120	61	118	63	260.5	301	145	Rc1 ¹ / ₂	ø109	M12 depth 30	90	91
CVE3-50A-35-*	140	76	135	75	310	366	176	Rc2	ø124	M16 depth 35	96	111

Dimensions



● CVE3-10A to 25A-70-**



* The flow path becomes $\boxed{C} \rightarrow \boxed{A}$ when port Y is pressurized.

Model No.	A	B	C	D	E	F	G	K	L	M	N
CVE3-10A-70-*	60	28	35.5	88.5	142	63	Rc3/8	M6 thread depth 9	73.5	20	46
CVE3-15A-70-*	80	32	43.5	110	171.5	77	Rc1/2	M8 thread depth 10	84	25	53
CVE3-20A-70-*	90	40	52	132.5	202.5	95	Rc3/4	M8 thread depth 10	97.5	25	61
CVE3-25A-70-*	110	48	61	145.5	224.5	113	Rc1	M12 thread depth 14	110	45	71

Optional dimensions

Refer to page 890 for mounting plates.

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

CVE3/CVSE3-35/70 Series

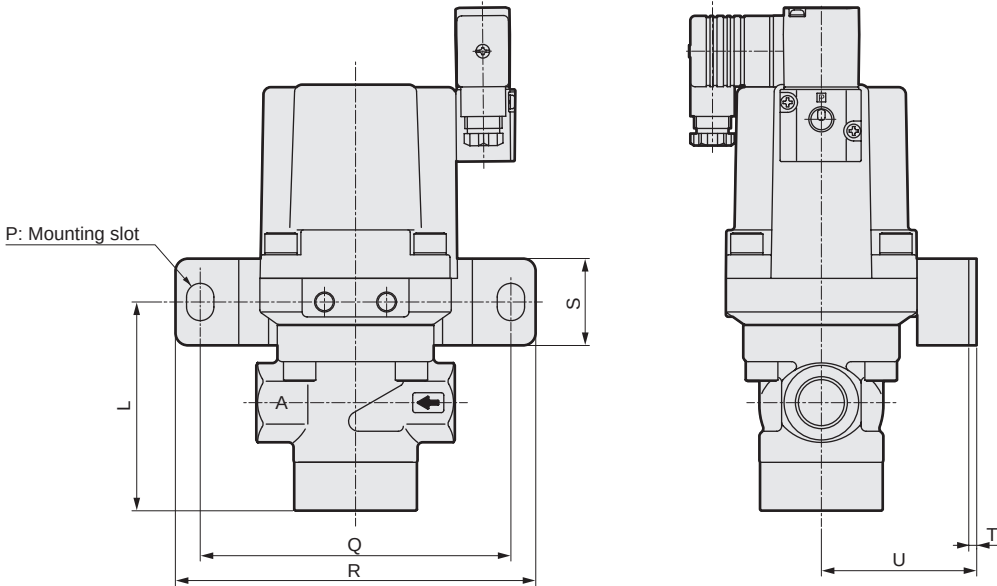
EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/ AD
APK/ ADK
DryAir
EX- XPLNprf
XPLNprf
HVB/ HVL
S $\diamond$ B/ NAB
LAD/ NAD
Water- Rela
NPN/NP/ NVP
SNP
CHB/G
MXB/G
Other valves
SWD/ MWD
DustColl
CVE/ CVSE
CCH/ CPE/D
LifeSci
Gas- Combus
Auto- Water
Outdoor
SpecFld
Custom
Ending

Optional dimensions



- Mounting plate
CVE3/CVSE3-10A to 25A-35/70-****B**/**B-R**/**B-Y**

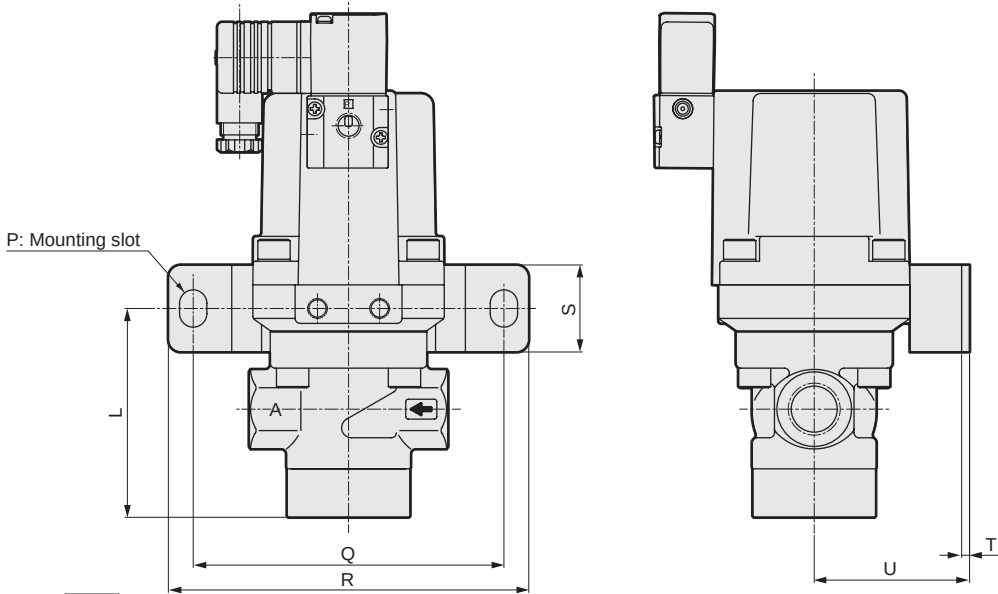
Material: Steel
Zinc plated



* The figure shows **B**

- Mounting plate
CVE3/CVSE3-10A to 25A-35/70-****B-X**/**B-Z**

Material: Steel
Zinc plated



* The figure shows **B-X**

Model No.	L	P	Q	R	S	T	U
CV*E3-10A-35-*B	59	9 x 12	85	100	25	3.2	40
CV*E3-15A-35-*B	65.5	9 x 12	85	100	25	3.2	45
CV*E3-20A-35-*B	79.5	11 x 15	125	145	35	3.2	62.5
CV*E3-25A-35-*B	91	11 x 15	125	145	35	3.2	71.5
CV*E3-10A-70-*B	73.5	9 x 12	85	100	25	3.2	45
CV*E3-15A-70-*B	84	11 x 15	125	145	35	3.2	62.5
CV*E3-20A-70-*B	97.5	11 x 15	125	145	35	3.2	71.5
CV*E3-25A-70-*B	110	14 x 20	160	190	40	4	84

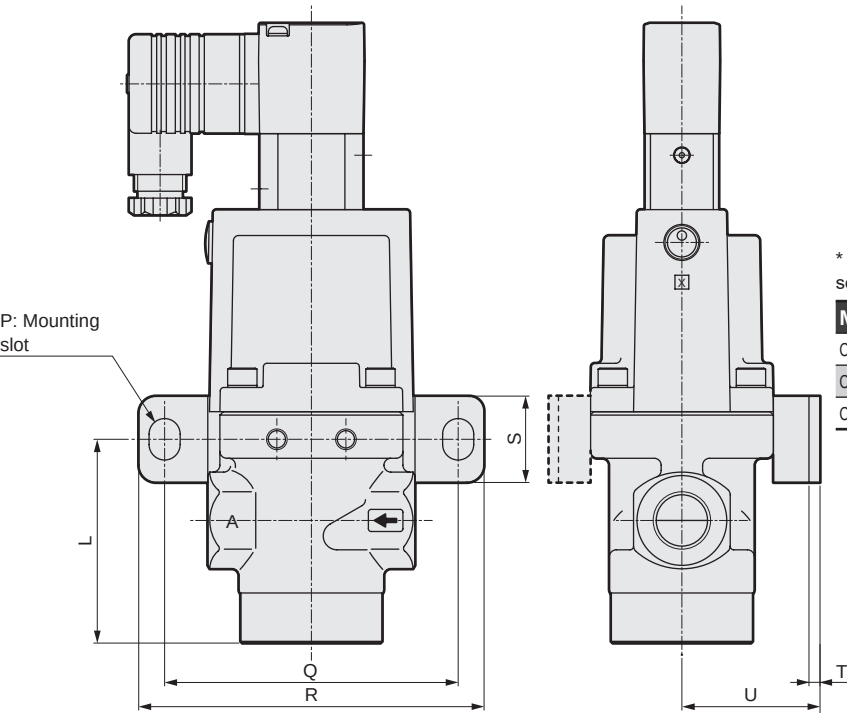
- With T type terminal box (G1/2)
T type terminal box with lamp (G1/2)
CVSE3-*35/70-***3T**
3R

Refer to page 879 for the optional dimensions.

Optional dimensions: Top mounted solenoid valve

● Mounting plate CVSE3-10A/15A-35-**TB CVSE3-10A-70-**TB

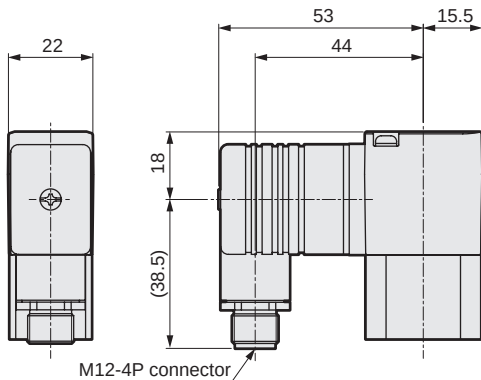
Material:Steel
Zinc plated



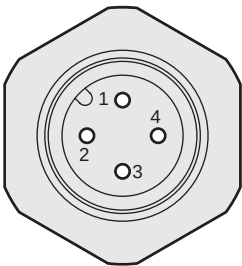
* Mounting plate is attached. Attach it to the position of the solid line or dotted line in the figure.

Model No.	L	P	Q	R	S	T	U
CVSE3-10A-35-**TB	59	9 x 12	85	100	25	3.2	40
CVSE3-15A-35-**TB	65.5	9 x 12	85	100	25	3.2	45
CVSE3-10A-70-**TB	73.5	9 x 12	85	100	25	3.2	45

● DIN terminal box (M12-4P connector) DIN terminal box with lamp/
surge suppressor (M12-4P connector)
CVSE3-*-35/70-* 2J T
2KS



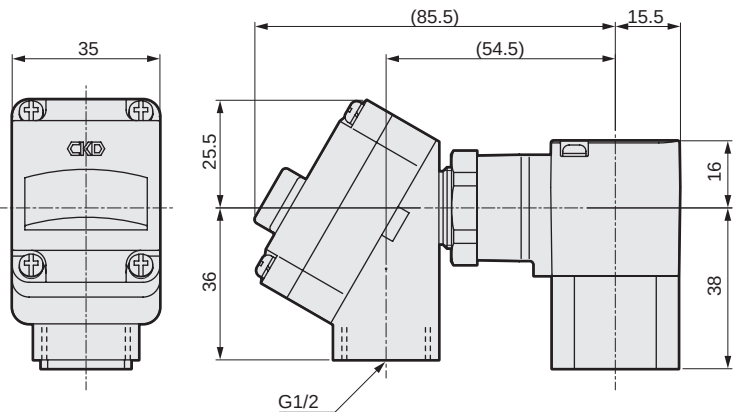
Connector pin array



PIN No.	Applications
1PIN	Ground
2PIN	(Not used)
3PIN	Power supply -
4PIN	Power supply +

*The connector pin position differs depending on the product as it is screwed in.

● T type terminal box (G1/2) T type terminal box with lamp (G1/2)
CVSE3-*-35/70-* 3T T
3R



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
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Ending