SMC guide to ATEX compliant products

ATEX compliant products

1959-2009 50 years

SMC

SMC - provide products compliant to ATEX Directive

■ Outline of ATEX directive

Since 1st July 2003, equipment used in potentially explosive atmospheres within the EU is required to comply with the ATEX directive.

●ATEX, New Approach directives and CE marking

Directive 94/9/EC, known as ATEX directive, is one of the directives based on the New Approach towards technical harmonization and standardization.
The New Approach is a new regulatory technique and strategy laid down by the European Council Resolution of 1985, in order to allow free movement of goods within the EU market and to prevent barriers to trade.
Products in compliance with all provisions of applicable directives (such as Directive 94/9/EC for ATEX) must bear the CE marking. This is an indication that the products comply with the requirements of applicable directives and have been subjected to the conformity assessment procedure provided for in these directives.

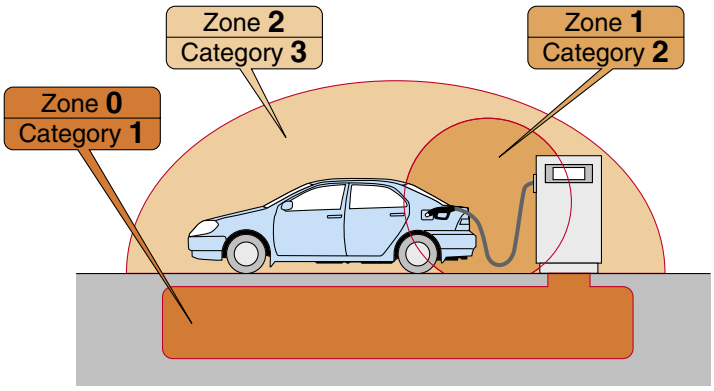
●ATEX definitions

Potentially explosive atmospheres are atmospheres likely to become explosive due to local and operational conditions.
The ATEX directive regards explosive atmospheres which are defined as *mixtures with air, under atmospheric conditions, of flammable substances in the form of gases, vapors, mists or dusts in which, after ignition has occurred, combustion spreads to the entire unburned mixture.* (Quotation from Directive 94/9/EC, Article 1.)
Certified equipment is designed to prevent the generation of ignition sources such as: Electric sparks, arcs and flashes, electrostatic discharges, electromagnetic waves, ionizing radiation, hot surfaces, flames and hot gases, mechanically generated sparks, optical radiation, chemical flame initiation, compression.

●Zone Classification

Potentially explosive environments are classified into zones in accordance with Directive 1999/92/EC.
These are:

- 0, 1, 2 for gas explosive atmospheres
- 20, 21, 22 for dust explosive atmospheres



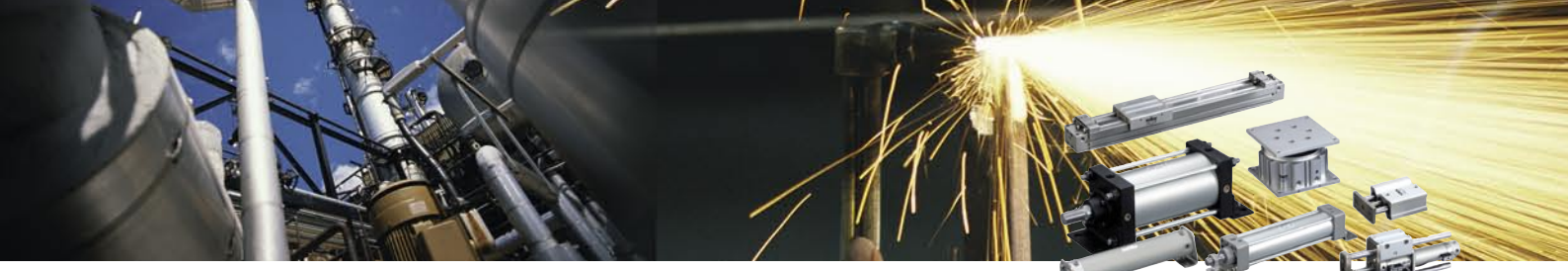
■ New elements at a glance

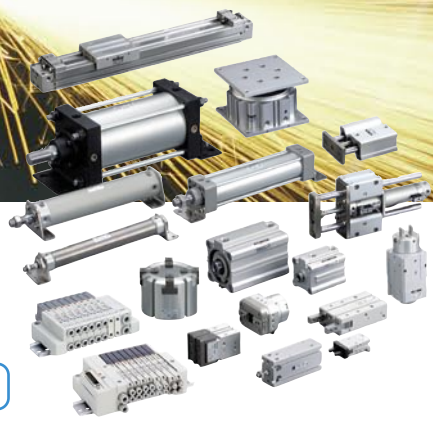
Previous legislation covered the most obvious sources of ignition generated by electrical devices.
The ATEX directive and the corresponding harmonized standards have extended the applicability of legislation to non-electrical products as well.

Pneumatic equipment used in potentially explosive atmospheres must, therefore, be assessed in line with the new directive.

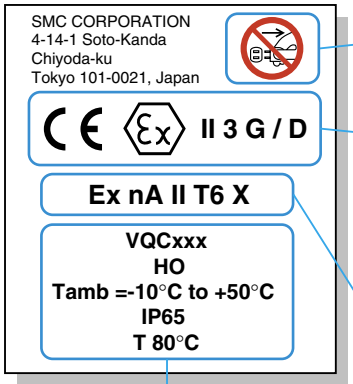
The ATEX directive defines categories of equipment and protective systems, which can be used in the corresponding zones as per the following table.

Zone		Equipment category	Presence of the explosive atmosphere
Gas	Dust		
0	20	1	Continuously or for long periods >1000 hours/year
1	21	2	Occasionally 10~1000 hours/year
2	22	3	Rarely or for short periods <10 hours/year





ATEX label example and explanation

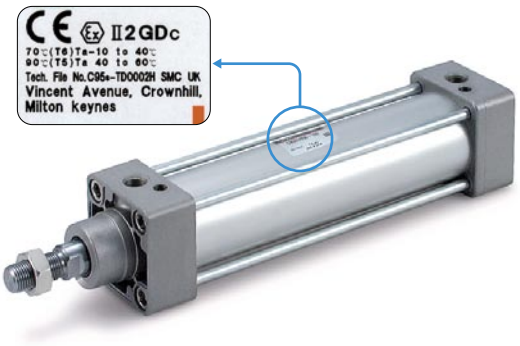


"Do not un-plug when energized"

ATEX compliance

Group	II					
Category	1		2		3	
Atmosphere*	G	D	G	D	G	D

*G=Gas D=Dust



	Max. Surface temperature
T1	450°C
T2	300°C
T3	200°C
T4	135°C
T5	100°C
T6	85°C

	Category	Standards for Electrical product	Standards for Non-electrical product
General requirements	all	EN60079-0	EN13463-1
Dust protection	all	EN61241-0	EN13463-1
Types of Protection			
Constructional safety "c"	2		EN13463-5
Types of Protection "n"	3	EN60079-15	
Increased Safety "e"	2	EN60079-7	
Encapsulation "m"	2	EN60079-18	
Flameproof Enclosure "d"	2	EN60079-1	EN13463-3
Oil Immersion "o"	2	EN60079-6	
Pressurized "p"	2	EN60079-2	EN13463-7
Powder Filling "q"	2	EN60079-5	
Intrinsically Safety "ia"	1	EN60079-11	
Intrinsically Safety "ib"	2	EN60079-11	

X = means that special conditions for use are in the installation manual e.g. protect products against impact

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ATEX Compliant

Air cylinder/ Double acting

Series 55-C76

ø32, ø40

How to order

55 - CD76 [W] [E] [32] — [50] [C] - XC6

ATEX category 2

Built-in magnet

–	None
D	Built-in magnet

Type

–	Standard
W*	Double rod
K**	Non-rotating rod

* Only with "E" option.
** Only with rubber bumper and "E" option.

Mounting

E	Double end type
F*	Front nose type
Y*	Front nose in line type

* Except for air cushion type.

Bore size

32	32mm
40	40mm

Standard Stroke

Bore size	Standard stroke (mm)
32mm	10, 25, 40, 50, 80, 100
40mm	125, 160, 200, 250, 300

Cushion

-	Rubber cushion
C	Air cushion (only "E" execution) Note1)

Note 1) Not available with "K" non rotating rod option)

Special

–	Standard
XC6A	Stainless steel piston rod and rod-end nut
XC6B	Stainless steel piston rod, rod-end nut and mounting nut
XC22	Fluoro rubber seals (Only with rubber cushion type) (Not available with "K", non rotating rod option)

Mounting Bracket Part No.

Mounting bracket \ Bore size (mm)		32	40
Mounting bracket	Flange, Foot (1pc.)	C76F32A	C76F40A
	Flange, Foot (2 pcs. with mounting nut 1 pc.)	C76F32B	C76F40B
	Trunnion	C76T32	C76T40
	Clevis	C76C32	C76C40
Accessories	Single knuckle joint	KJ10DA	KJ12DA
	Double knuckle joint	GKM10-20A	GKM12-24A
	Floating joint	JA25-10-150	JA40-12-175

For 55-CD76

When using an Auto switch, select the appropriate switch from the following table and order it separately.

Applicable auto switch specifications
Auto switch only conforms to Category 3. (II 3G Ex nA II T5 X -10°C ≤ Ta ≤ +60°C), (II 3D tD A22 IP67 T93°C X)
For detailed specifications on the D-A73(H), A80(H), F7P(V), C73, C80, and H7A2, please refer to the relevant pages in Best Pneumatics.
(Note: Reed auto switches for AC 100V and DC 100V are not within the specification.)

Type	Model No.		Electrical entry	Indicator	Wiring (Output)	Load voltage			Lead wire* (m)			Applicable load	
	Rail mounting	Band mounting				DC		AC	0.5 (—)	3 (L)	5 (Z)		
Reed auto switch	D-A73□-588	—	Grommet (Perpendicular entry)	Yes	2-wiring	24V	12V	—	●	●	●	—	Relay PLC
	D-A80□-588			No		24V or less	48V	48V or less	●	●	—	IC circuit	
	D-A73H□-588	D-C73□-588	Grommet (In-line entry)	Yes		24V	12V	—	●	●	●	—	
	D-A80H□-588	D-C80□-588		No		24V or less	48V	48V or less	●	●	—	IC circuit	
Solid state auto switch	D-F7PV□-588	—	Grommet (Perpendicular entry)	Yes	3-wiring (PNP)	24V	5V, 12V	—	●	●	○	IC circuit	
	D-F7P□-588	D-H7A2□-588	Grommet (In-line entry)						●	●	○		

• Lead wire length 0.5m --- Nil (e.g.) D-A73-588
3 m --- L (e.g.) D-A73L-588
5 m --- Z (e.g.) D-A73Z-588

Note 1) ○ solid state auto switch is available after receiving an order.

Note 2) When mounting an auto switch on a 55- series (Category 2) Model, the ATEX category of the auto switch cylinder changes to Category 3, which is the same category as the auto switch.

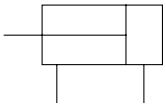
When ordering a band mounting type auto switch, also order a mounting bracket from the following list at the same time.
Auto switch mounting bracket/ Part no. (Band mounting type)

Auto switch Model	Tube I.D. (mm) 32	40
D-C73□-588 D-C80□-588 D-H7A2□-588	BM2-032	BM2-040

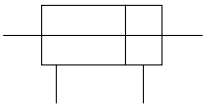
Symbol

Standard: Double Action

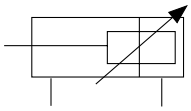
Rubber Cushion
Single Rod



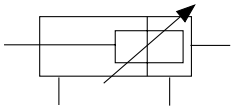
Rubber Cushion
Double Rod



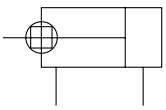
Air Cushion
Single Rod



Air Cushion
Double Rod



Non-rotating rod: Double Acting/Single Rod



Specifications

Bore size	ø32	ø40
ATEX category [1]	CE ⟨Ex⟩ II 2GDc	90°C (T5) Ta –10°C to 40°C 110°C (T4) Ta 40°C to 60°C
Action	Double acting	
Fluid	Air	
Proof pressure	1.5MPa	
Max. operating pressure	1.0MPa	
Min. operating pressure	0.05MPa	
Ambient and fluid temperature	–10 to 60°C (No freezing)	
Lubrication	Not required (Non-lube)	
Operating piston speed	50 to 1000 mm/s	
Allowable stroke tolerance	0/+1.4	
Cushion	Rubber cushion, Air cushion	
Port size	G1/8	G1/4
Mounting	Double end, Front nose, Front nose in line	

Note 1) This cylinder can be used in zones 1 and 21 and in zones 2 and 22. If the cylinder is used with SMC category 3 type auto switch, then the cylinder can only be used in zones 2 and 22 and not in zones 1 and 21.

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Simple Specials -XA (Change of rod end shape) as detailed for the equivalent standard Non-Atex range of C76 series

ATEX Compliant

ISO Cylinder/Double Acting

Series 55-C85

ø8, ø10, ø12, ø16,ø20, ø25

How to Order

Double acting Single rod

55-C D 85 K N 20 – 40 C – A –

Double acting Double rod

55-C D 85W E 20 – 40 C – B –

ATEX category 2

Magnet

—	None
D	Built-in magnet

Style

—	Standard
K	Non rotating rod (only rubber bumper)

Mounting style

Symbol	Mounting
N	Basic integrated clevis
E***	Double end type
F**	Front nose type
Y**	Front nose in line port

* Double acting/Double rod type: Only double end type (E).
** Except for air cushion type

Special

—	Standard
XC6A	Stainless steel piston rod and piston rod nut
XC6B	Stainless steel piston rod, piston rod nut and mounting nut

Auto switch mounting type

A	Rail mounting
B	Band mounting

Cushion

—	Rubber bumper (Standard)
C	Air cushion (only "N" execution, bores 10 to 25mm)

Bore size **Stroke**

Bore size (mm)	Standard stroke (mm)**
ø8*	10, 25, 40, 50, 80, 100
ø10	
ø12	10, 25, 40, 50, 80, 100, 125, 160, 200
ø16	
ø20	10, 25, 40, 50, 80, 100, 125, 160, 200, 250, 300
ø25	

* Not available with air cushion.
** Other strokes available on request.

Mounting Bracket Part No.

Bracket \ Bore (mm)	8	10	12	16	20	25
Foot (1 pc.)	C85L10A		C85L16A		C85L25A	
Foot (2 pcs. with mounting nut 1 pc.)	C85L10B		C85L16B		C85L25B	
Flange	C85F10		C85F16		C85F25	
Trunnion	C85T10		C85T16		C85T25	
Clevis	C85C10		C85C16		C85C25	
Single knuckle joint	KJ4D		KJ6D		KJ8D	KJ10D
Double knuckle joint	GKM4-8		GKM6-10		GKM8-16	GKM10-20
Floating joint	JA10-4-070		JA15-6-100		JA20 -8-125	JA30 -10-125

Note) Please order mounting brackets separately.

For 55-CD85
When using an Auto switch, select the appropriate switch from the following table and order it separately.

Applicable auto switch specifications
Auto switch only conforms to Category 3. (II 3G Ex nA II T5 X -10°C ≤ Ta ≤ +60°C), (II 3D tD A22 IP67 T93°C X)
For detailed specifications on the D-A73(H), A80(H), F7P(V), C73, C80, and H7A2, please refer to the relevant pages in Best Pneumatics.
(Note: Reed auto switches for AC 100V and DC 100V are not within the specification.)

Type	Model No.		Electrical entry	Indicator	Wiring (Output)	Load voltage			Lead wire* (m)			Applicable load	
	Rail mounting	Band mounting				DC		AC	0.5 (—)	3 (L)	5 (Z)		
Reed auto switch	D-A73□-588	—	Grommet (Perpendicular entry)	Yes	2-wiring	24V	12V	—	●	●	●	—	Relay PLC
	D-A80□-588			No		24V or less	48V	48V or less	●	●	—	IC circuit	
	D-A73H□-588	D-C73□-588	Grommet (In-line entry)	Yes		24V	12V	—	●	●	●	—	
	D-A80H□-588	D-C80□-588		No		24V or less	48V	48V or less	●	●	—	IC circuit	
Solid state auto switch	D-F7PV□-588	—	Grommet (Perpendicular entry)	Yes	3-wiring (PNP)	24V	5V, 12V	—	●	●	○	IC circuit	
	D-F7P□-588	D-H7A2□-588	Grommet (In-line entry)						●	●	○		

• Lead wire length 0.5m --- Nil (e.g.) D-A73-588
3 m --- L (e.g.) D-A73L-588
5 m --- Z (e.g.) D-A73Z-588

Note 1) ○ solid state auto switch is available after receiving an order.

Note 2) When mounting an auto switch on a 55- series (Category 2) Model, the ATEX category of the auto switch cylinder changes to Category 3, which is the same category as the auto switch.

When ordering a band mounting type auto switch, also order a mounting bracket from the following list at the same time.
Auto switch mounting bracket/ Part no. (Band mounting type)

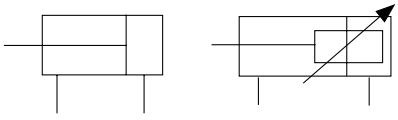
Auto switch Model	Tube I.D. (mm)					
	8	10	12	16	20	25
D-C73□-588 D-C80□-588 D-H7A2□-588	BJ2-008	BJ2-010	BJ2-012	BJ2-016	BM2-020	BM2-025

Rubber Bumper/Single Rod

Air Cushion/Single Rod

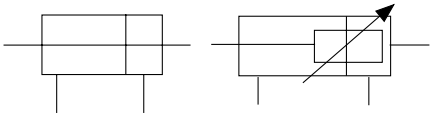
Symbol

Double Acting/Single Rod



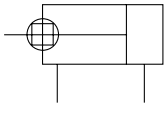
Rubber Bumper Air Cushion

Double Acting/Double Rod



Rubber Bumper Air Cushion

Non-rotating rod: Double Acting/Single Rod



Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Specifications

Bore size (mm)		8	10	12	16	20	25
ATEX category [1]		CE ⟨Ex⟩ II 2GDc			90°C (T5) Ta –10°C to 40°C 110°C (T4) Ta 40°C to 60°C		
Piston rod dia. (mm)		4	4	6	6	8	10
Piston rod thread		M4 X 0.7	M4 X 0.7	M6 X 1	M6 X 1	M8 X 1.25	M10 X 1.25
Ports		M5	M5	M5	M5	G1/8	G1/8
Action		Double acting					
Fluid		Air					
Proof pressure		1.5MPa					
Max. operating pressure		1.0MPa					
Min. operating pressure		0.1MPa	0.08MPa		0.05MPa		
Ambient and fluid temperature		–10 to 60°C (no freezing)					
Cushion		Rubber bumper, Air cushion (Except for ø8)					
Lubrication		Not required (Non lube)					
Piston speed		50 to 750mm/s Rubber bumper, 50 to 1000mm/s Air cushion					
Allowable kinetic energy	Rubber bumper	0.02J	0.03J	0.04J	0.09J	0.27J	0.4J
	Air cushion	—	0.17J	0.19J	0.4J	0.66J	0.97J
Non-rotating accuracy		±1° 30'	±1° 30'	±1°	±1°	±0° 42'	±0° 42'
Stroke tolerance (mm)		+1 / 0				+1.4 / 0	

Note 1) This cylinder can be used in zones 1 and 21 and in zones 2 and 22. If the cylinder is used with SMC category 3 type auto switch, then the cylinder can only be used in zones 2 and 22 and not in zones 1 and 21.

ATEX Compliant

ISO Cylinder/Standard/Double Acting
Series 55-C95

ø32, ø40, ø50, ø63, ø80, ø100, ø125, ø160, ø200, ø250

How to Order

55-C95SD | B | 32 | 100 | W | XC6

ATEX category 2

Piston rod type

S	Standard
K**	Non-rotating rod (32~100 only)

** Double rod and non-rotating combination available. (32 ~ 100 only)

Built-in magnet

-	None
D	Built-in magnet

Mounting

B	Basic/Without bracket
L	Axial foot
F	Front flange
G	Rear flange
C	Single rear clevis
D	Double rear clevis
T	Centre trunnion

Bore size

32	32mm
40	40mm
50	50mm
63	63mm
80	80mm
100	100mm
125	125mm
160	160mm
200	200mm
250	250mm

Stroke (mm)

Refer to standard stroke table

Rod type

-	Standard single rod
W ***	Double rod

*** Double rod and XC6 combination available. (32 ~ 100 only)

Special

-	Standard
XC6	Stainless steel rod and nut
XC14A*	Front trunnion
XC14B*	Rear trunnion

* Centre trunnion type only.

Model Selection

Execution	Model	Bore size										Adjustable Stroke End Cushioning	Piston Rod Options		
		32	40	50	63	80	100	125	160	200	250		Standard Hard Chrome	W	XC6
Standard Type	55-C95 SB	●	●	●	●	●	●	●	●	●	●	●	●	○	○
	55-C95 SDB	●	●	●	●	●	●	●	●	●	●	●	●	○	○
With Mounting Centre Trunnion	55-C95 ST	●	●	●	●	●	●	●	●	●	●	●	●	○	○
	55-C95 SDT	●	●	●	●	●	●	●	●	●	●	●	●	○	○
Non-rotating piston rod	55-C95 KB	●	●	●	●	●	●	—	—	—	—	●	Note 3	○	●
	55-C95 KDB	●	●	●	●	●	●	—	—	—	—	●	Note 3	○	●

W = Double Rod
○ Options
● Standard

Note1) 55-C95 can be used in zones 1 and 21 and in zones 2 and 22.
Note2) If the 55-C95 cylinder is used with SMC category 3 type auto switch, then the 55-C95 cylinder can only be used in zones 2 and 22 and not in zones 1 and 21.
Note3) Piston rod material is stainless steel.

For 55-C95
When using an Auto switch, select the appropriate switch from the following table and order it separately.

Applicable auto switch specifications
Auto switch only conforms to Category 3. (II 3G Ex nA II T5 X -10°C ≤ Ta ≤ +60°C), (II 3D tD A22 IP67 T93°C X)
For detailed specifications on the D-A54□, A67□, and F5P□, please refer to the relevant pages in Best Pneumatics.
(Note: Reed auto switches for AC 100V and DC 100V are not within the specification.)

Type	Model No.	Electrical entry	Indicator	Wiring (Output)	Load voltage			Lead wire* (m)			Applicable load	
					DC		AC	0.5 (—)	3 (L)	5 (Z)		
Reed auto switch	D-A54□-588	Grommet	Yes	2-wiring	24V	12V	—	●	●	●	—	Relay PLC
	D-A67□-588		No		24V or less		—	●	●	—	IC circuit	
Solid state auto switch	D-F5P□-588	Grommet	Yes	3-wiring (PNP)	24V	5V,12V	—	●	●	○	IC circuit	

• Lead wire length 0.5m --- Nil (e.g.) D-A54-588
3 m --- L (e.g.) D-A54L-588
5 m --- Z (e.g.) D-A54Z-588

Note 1) ○ solid state auto switch is available after receiving an order.

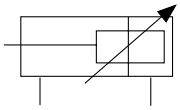
Note 2) When mounting an auto switch on a 55- series (Category 2) Model, the ATEX category of the auto switch cylinder changes to Category 3, which is the same category as the auto switch.

When ordering a tie rod mounting type auto switch, also order a mounting bracket from the following list at the same time.
Auto switch mounting bracket/ Part no. (Tie rod mounting)

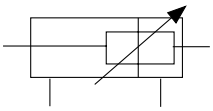
Auto switch Model	Tube I.D. (mm)						
	32,40	50,63	80,100	125	160	200	250
D-A54□-588 D-A67□-588 D-F5P□-588	BT-03	BT-05	BT-06	BT-08	BT-16	BT-16	BT-20

Symbol

Double Acting/ Single Rod

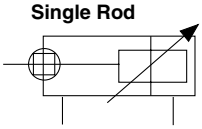


Double Acting/ Double Rod

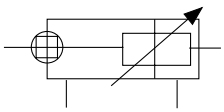


Non-rotating rod:

Double Acting/ Single Rod



Double Acting/ Double Rod



Specifications

Bore size	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160	ø200	ø250
ATEX category	CE Ⓔx II 2GDc 95°C (T5) Ta –10°C to 40°C 115°C (T4) Ta 40°C to 60°C									
Action	Double acting									
Fluid	Air									
Proof pressure	1.5MPa									
Max. operating pressure	1.0MPa									
Min. operating pressure	0.05MPa									
Ambient and fluid temperature	–10 to 60°C (No freezing)									
Lubrication	Not required (Non-lube)									
Operating piston speed	50 to 1000 mm/s						50 to 700 mm/s	50 to 500 mm/s		
Allowable stroke tolerance	to 250: $^{+1.0}_{0}$, 251 to 1000: $^{+1.4}_{0}$ 1001 to 1500: $^{+1.8}_{0}$, 1501 to 2000: $^{+2.2}_{0}$, 2001 to 2400: $^{+2.6}_{0}$									
Cushion	Both ends (Air cushion)									
Port size	G1/8	G1/4	G1/4	G3/8	G3/8	G1/2	G1/2	G3/4	G3/4	G1
Mounting	Basic, axial foot, front flange, rear flange, single rear clevis, double rear clevis, centre trunnion									

Standard Stroke

Bore size (mm)	Standard stroke (mm)
32	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500
40	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500
50	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600
63	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600
80	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600, 700, 800
100	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600, 700, 800
125	Each stroke will be made to order
160	Each stroke will be made to order
200	Each stroke will be made to order
250	Each stroke will be made to order

(*) Please consult SMC for longer stroke.

Maximum Stroke

Bore size (mm)	Standard		Non-rotating (K)		XC6		XC14
	Single rod	Double rod	Single rod	Double rod	Single rod	Double rod	Single rod
32	1000	1000	500	500	1000	1000	1000
40	1900	1000	500	500	1700	1000	1900
50	1900	1000	600	600	1700	1000	1900
63	1900	1000	600	600	1700	1000	1900
80	1900	1000	800	800	1700	1000	1900
100	1900	1000	800	800	1700	1000	1900
125	2000	1000	–	–	1600	1000	2000
160	2000	1200	–	–	1600	1200	2000
200	2000	1200	–	–	1600	1200	2000
250	2400	1200	–	–	1500	1200	2400

(*) Please consult SMC for longer stroke.

Mounting Bracket, Mounting Accessories

Description	Bore size	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160	ø200	ø250
L	**Foot**	L5032	L5040	L5050	L5063	L5080	L5100	L5125	L5160	L5200	L5250
F, G	**Flange**	F5032	F5040	F5050	F5063	F5080	F5100	F5125	F5160	F5200	F5250
C	**Single rear clevis**	C5032	C5040	C5050	C5063	C5080	C5100	C5125	C5160	C5200	C5250
D	**Double rear clevis**	D5032	D5040	D5050	D5063	D5080	D5100	D5125	D5160	D5200	D5250
DS	**Double rear clevis (for ES accessory)**	DS5032	DS5040	DS5050	DS5063	DS5080	DS5100	Note 5)			
ES	**Angled rear clevis with ball joint**	ES5032	ES5040	ES5050	ES5063	ES5080	ES5100				
E	**Angled rear clevis**	E5032	E5040	E5050	E5063	E5080	E5100				
GKM	**Rod clevis(2)**	GKM10-20	GKM12-24	GKM16-32	GKM16-32	GKM20-40	GKM20-40				
KJ	**Piston rod ball joint(3)**	KJ10D	KJ12D	KJ16D	KJ16D	KJ20D	KJ20D				
JA	**Floating joint**	JA30-10-125	JA40-12-125	JA50-16-150	JA50-16-150	JAH50-20-150	JAH50-20-150				

Note 1) Accessories for each mounting bracket are as follows.
Foot, Flange, Single clevis: Mounting bolts
Double rear clevis: (D,DS): Clevis pin
Note 2) GKM according to ISO 8140
Note 3) KJ according to ISO 8139
Note 4) Piston rod nut is standard
Note 5) Please consult SMC

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

ATEX Compliant

ISO Cylinder/Standard/Double Acting
Series 55-CP95

ø32, ø40, ø50, ø63, ø80, ø100, ø125

How to Order

55-CP95SD | B | 32 | 100 | W | XC6

ATEX category 2

Piston rod type

S	Standard
K**	Non-rotating

** Double rod and non-rotating combination available (32~100 only)

Built-in magnet

-	None
D	Built in magnet

Mounting

B	Basic/Without bracket
L	Axial foot
F	Front flange
G	Rear flange
C	Single rear clevis
D	Double rear clevis

Bore size

32	32mm
40	40mm
50	50mm
63	63mm
80	80mm
100	100mm
125	125mm

Stroke (mm)
Refer to standard stroke table following page

Rod type

-	Standard single rod
W*	Double rod

* Double rod and XC6 combination available (32~100 only)

Special

-	Standard
XC6	Stainless steel rod and nut (32~100 only)

Model Selection

Execution	Model	Bore Size							Adjustable Stroke End Cushioning	Piston Rod Options		
		32	40	50	63	80	100	125		Standard Hard Chrome	W	XC6
Standard Type	55-CP95 SB	●	●	●	●	●	●	●	●	●	○	○
	55-CP95 SDB	●	●	●	●	●	●	●	●	●	○	○
Non-rotatin	55-CP95 KB	●	●	●	●	●	●	–	●	Note 3)	○	●
piston rod	55-CP95KDB	●	●	●	●	●	●	–	●	Note 3)	○	●

W = Double Rod
○ Options
● Standard

Note1) 55-C95 can be used in zones 1 and 21 and in zones 2 and 22.
Note2) If the 55-C95 cylinder is used with SMC category 3 type auto switch, then the 55-C95 cylinder can only be used in zones 2 and 22 and not zones 1 and 21.
Note3) Piston rod material is stainless steel.

For 55-CP95
When using an Auto switch, select the appropriate switch from the following table and order it separately.

Applicable auto switch specifications
Auto switch only conforms to Category 3. (II 3G Ex nA II T5 X -10°C ≤ Ta ≤ +60°C), (II 3D tD A22 IP67 T93°C X)
For detailed specifications on the D-Z73, Z80, Y7P, and Y7PV, please refer to the relevant pages in Best Pneumatics.
(Note: Reed auto switches for AC 100V and DC 100V are not within the specification.)

Type	Model No.	Electrical entry	Indicator	Wiring (Output)	Load voltage			Lead wire* (m)			Applicable load	
					DC		AC	0.5 (—)	3 (L)	5 (Z)		
Reed auto switch	D-Z73□-588	Grommet (in-line)	Yes	2-wiring	24V	12V	—	●	●	●	—	Relay PLC
	D-Z80□-588		No		24V or less	48V	48V or less	●	●	—	IC circuit	
Solid state auto switch	D-Y7P□-588	Grommet (in-line)	Yes	3-wiring (PNP)	24V	5V,12V	—	●	●	○	IC circuit	
	D-Y7PV□-588	Grommet (Perpendicular)						●	●	○		

• Lead wire length 0.5m --- Nil (e.g.) D-Z73-588
3 m --- L (e.g.) D-Z73L-588
5 m --- Z (e.g.) D-Z73Z-588

Note 1) ○ solid state auto switch is available after receiving an order.

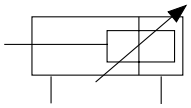
Note 2) When mounting an auto switch on a 55- series (Category 2) Model, the ATEX category of the auto switch cylinder changes to Category 3, which is the same category as the auto switch.

When ordering a direct mounting type auto switch, also order a mounting bracket from the following list at the same time.
Auto switch mounting bracket/ Part no. (Direct mounting type)

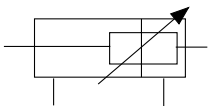
Auto switch Model	Tube I.D. (mm) 32,40,50,63,80,100,125
D-Z73□-588 D-Z80□-588 D-Y7P□-588 D-Y7PV□-588	BMP1-032

Symbol

Double Acting/ Single Rod

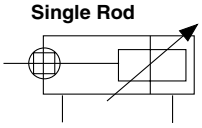


Double Acting/ Double Rod

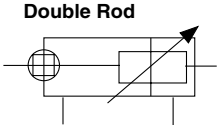


Non-rotating rod:

Double Acting/ Single Rod



Double Acting/ Double Rod



Specifications

Bore size	ø32	ø40	ø50	ø63	ø80	ø100	ø125
ATEX category [1]	CE Ex II 2GDc 95°C (T5) Ta –10°C to 40°C; 115°C (T4) Ta 40°C to 60°C						
Action	Double acting						
Fluid	Air (Non-lube)						
Proof pressure	1.5MPa						
Max. operating pressure	1.0MPa						
Min. operating pressure	0.05MPa						
Lubrication	Not required (Non-lube)						
Ambient and fluid temperature	–10 to 60°C						
Operating piston speed	50 to 1000mm/s						50 to 700 mm/s
Allowable stroke tolerance	to 250: $^{+1.0}_{0}$, 251 to 1000: $^{+1.4}_{0}$ 1001 to 1500: $^{+1.8}_{0}$, 1501 to 2000: $^{+2.2}_{0}$						
Cushion	Both ends (Air cushion)						
Port size	G1/8	G1/4	G1/4	G3/8	G3/8	G1/2	G1/2
Mounting	Basic, axial foot, front flange, rear flange, single rear clevis, double rear clevis						

Note 1) This cylinder can be used in zones 1 and 21 and in zones 2 and 22. If the cylinder is used with SMC category 3 type auto switch, then the cylinder can only be used in zones 2 and 22 and not in zones 1 and 21.

Standard Stroke

Bore size (mm)	Standard stroke (mm)
32	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500
40	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500
50	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600
63	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600
80	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600, 700, 800
100	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600, 700, 800
125	Each stroke will be made to order

(*) Intermediate strokes are available

Maximum Stroke

Bore size (mm)	Standard		Non-rotating (K)		XC6	
	Single rod	Double rod	Single rod	Double rod	Single rod	Double rod
32	1900	1000	500	500	1700	1000
40	1900	1000	500	500	1700	1000
50	1900	1000	600	600	1700	1000
63	1900	1000	600	600	1700	1000
80	1900	1000	800	800	1700	1000
100	1900	1000	800	800	1700	1000
125	2000	1000	–	–	–	–

Mounting Bracket, Mounting Accessories

Description	Bore size	ø32	ø40	ø50	ø63	ø80	ø100	ø125
L	**Foot**	L5032	L5040	L5050	L5063	L5080	L5100	L5125
F, G	**Flange**	F5032	F5040	F5050	F5063	F5080	F5100	F5125
C	**Single rear clevis**	C5032	C5040	C5050	C5063	C5080	C5100	C5125
D	**Double rear clevis**	D5032	D5040	D5050	D5063	D5080	D5100	D5125
DS	**Double rear clevis (for ES accessory)**	DS5032	DS5040	DS5050	DS5063	DS5080	DS5100	Note 5)
ES	**Angled rear clevis with ball joint**	ES5032	ES5040	ES5050	ES5063	ES5080	ES5100	
E	**Angled rear clevis**	E5032	E5040	E5050	E5063	E5080	E5100	
GKM	**Rod clevis**	GKM10-20	GKM12-24	GKM16-32	GKM16-32	GKM20-40	GKM20-40	
KJ	**Piston rod ball joint**	KJ10D	KJ12D	KJ16D	KJ16D	KJ20D	KJ20D	
JA	**Floating joint**	JA30-10-125	JA40-12-125	JA50-16-150	JA50-16-150	JAH50-20-150	JAH50-20-150	

Note 1) Accessories for each mounting bracket are as follows.
Foot, Flange, Single clevis: Mounting bolts
Double rear clevis: (D,DS): Clevis pin
Note 2) GKM according to ISO 8140
Note 3) KJ according to ISO 8139
Note 4) Piston rod nut is standard
Note 5) Please consult SMC

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

ATEX Compliant

Air Cylinder/Standard/Double Acting

Series 55-CG1

ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

How to Order

55 -C [D] G1 [W] [B] [N] [20] [TN] [ ]

ATEX category 2

Built in magnet

–	None
D	Built-in magnet

Rod

–	Single rod
W	Double rod

Mounting

B	Basic
L	Axial foot
F	Front flange
G	Rear flange
U*	Front trunnion
T*	Rear trunnion
D	Clevis

* Not available for bore sizes ø80 and ø100.

Cushion

N	Rubber bumper
A	Air cushion

Bore size

20	20mm	50	50mm
25	25mm	63	63mm
32	32mm	80	80mm
40	40mm	100	100mm

Thread type of port

Rubber bumper

–	Rc	ø20~ø100
TN	NPT	ø20~ø100
TF	G	ø32~ø100

Air cushion

–	M5x0.8	ø20~ø25
	Rc	ø32~ø100
TN	NPT	ø32~ø100
TF	M5 X 0.8	ø20~ø25
	G	ø32~ø100

Cylinder stroke (mm)

Bore size (mm)	Standard stroke (1) (mm)	Long stroke (2) (mm)
20	25, 50, 75, 100, 125, 150, 200	201 to 350
25	25, 50, 75, 100, 125, 150, 200, 250, 300	301 to 400
32		301 to 450
40		301 to 800
50/63		301 to 1200
80		301 to 1400
100		301 to 1500

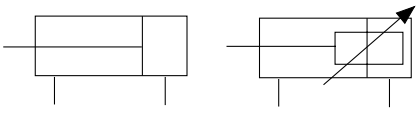
Note 1) Other intermediate strokes can be manufactured upon receipt of order. Spacers are not used for the intermediate strokes.

Note 2) Long stroke applies to the axial foot and the front flange style. If other mounting brackets are used or the length exceeds the stroke limit, the stroke should be determined based on the stroke selection table in the technical data.

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

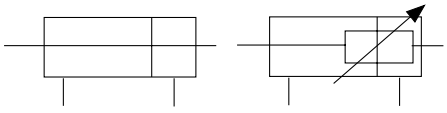
Symbol

Double Acting/Single Rod



Rubber Bumper　　Air Cushion

Double Acting/Double Rod



Rubber Bumper　　Air Cushion

Specifications

Bore size (mm)	20	25	32	40	50	63	80	100
ATEX category [1)]	CE ⟨Ex⟩ II 2GDc 95°C (T5) Ta –10°C to 40°C 115°C (T4) Ta 40°C to 60°C							
Action	Double acting/Single rod							
Lubrication	Non-lube							
Fluid	Air							
Proof pressure	1.5MPa							
Max. operating pressure	1.0MPa							
Min. operating pressure	0.05MPa							
Ambient and fluid temperature	–10 to +60°C (No freezing)							
Piston speed	50 to 1000mm/s							50 to 700mm/s
Stroke tolerance	Up to 1000 $^{+1.4}_{0}$mm, Up to 1200 $^{+1.8}_{0}$mm							Up to 1000 $^{+1.4}_{0}$mm Up to 1500 $^{+1.8}_{0}$mm
Cushion	Rubber bumper/Air cushion							
Mounting*	Basic, Axial foot, Front flange, Rear flange, Front trunnion, Rear trunnion, Clevis (Used for changing the port location by 90 degrees.)							

* Front/Rear trunnion styles are not available for bore sizes ø80 and ø100.

Note 1) This cylinder can be used in zones 1 and 21 and in zones 2 and 22. If the cylinder is used with SMC category 3 type auto switch, then the cylinder can only be used in zones 2 and 22 and not in zones 1 and 21.

Accessories

Mounting		Basic	Axial foot	Front flange	Rear flange	Front trunnion	Rear trunnion	Clevis
Standard	Rod end nut	●	●	●	●	●	●	●
	Clevis pin	—	—	—	—	—	—	●
Option	Single knuckle joint	●	●	●	●	●	●	●
	Double knuckle joint** (With pins)	●	●	●	●	●	●	●
	Pivot bracket	—	—	—	—	●*	●*	●
	Rod boot	●	●	●	●	●	●	●

* Pivot bracket is not available for bore sizes ø80 and ø100.
** Pins and snap rings for double knuckle joint are included, not mounted.

Mounting Bracket Part No.

Mounting bracket	Bore size (mm)							
	20	**25**	**32**	**40**	**50**	**63**	**80**	**100**
Axial foot*	CG-L020	CG-L025	CG-L032	CG-L040	CG-L050	CG-L063	CG-L080	CG-L100
Flange	CG-F020	CG-F025	CG-F032	CG-F040	CG-F050	CG-F063	CG-F080	CG-F100
Trunnion	CG-T020	CG-T025	CG-T032	CG-T040	CG-T050	CG-T063	—	—
Clevis**	CG-D020	CG-D025	CG-D032	CG-D040	CG-D050	CG-D063	CG-D080	CG-D100
Pivot bracket	CG-020-24A	CG-025-24A	CG-032-24A	CG-040-24A	CG-050-24A	CG-063-24A	CG-080-24A	CG-100-24A

* Order two foot brackets per cylinder.
** Clevis pins, snap rings and mounting bolts are attached for the clevis.
*** Mounting bolts are attached for the foot type and the flange type.

ATEX Compliant

Air Cylinder/Standard/Double Acting
Series 55-CS1

Non-lube: ø125, ø160, ø180, ø200, ø250, ø300

How to Order

55-CDS1 [ ] L [ ] N 160 — 300 R

ATEX category 2

Build in magnet

-	ø125~ø300	Without magnet
D	ø125~ø200	Built in magnet*

*(Aluminium tube)

Rod type

-	Single rod
W	Double rod

Mounting

B	Basic
L	Foot
F	Front flange
G	Rear flange
C	Single clevis
D	Double clevis
T	Centre trunnion

Mounting options
for W type: B, L, F, T

Non-lube

Tube material

Symbol	Bore size	Tube material
—	**ø125 to ø160**	Aluminum tube
	ø180 to ø300	Steel tube
F	**ø125 to ø160**	Steel tube

Table above applies to without magnet type

Cylinder stroke (mm)
(Refer to following page for max. stroke table.)

Rod boot/Cushion

Cushion	N	No cushion
	R	With cushion on rod side
	H	With cushion on head side
	—	With both sides cushion

Bore size

Non-lube

125	125mm
140	140mm
160	160mm
180	180mm
200	200mm
250	250mm
300	300mm

Mounting Bracket Part No.

Bore size (mm)	125	140	160	180	200	250	300
Foot*	CS1-L12	CS1-L14	CS1-L16	CS1-L18	CS1-L20	CS1-L25	CS1-L30
Flange	CS1-F12	CS1-F14	CS1-F16	CS1-F18	CS1-F20	CS1-F25	CS1-F30
Single clevis	CS1-C12	CS1-C14	CS1-C16	CS1-C18	CS1-C20	CS1-C25	CS1-C30
Double clevis**	CS1-D12	CS1-D14	CS1-D16	CS1-D18	CS1-D20	CS1-D25	CS1-D30

∗ Order 2 foot brackets for one cylinder.
∗∗ When ordering the double clevis, the clevis pin and the cotter pin (2 pcs.) are attached.

For 55-CS1
When using an Auto switch, select the appropriate switch from the following table and order it separately.

Applicable auto switch specifications
Auto switch only conforms to Category 3. (II 3G Ex nA II T5 X -10°C ≤ Ta ≤ +60°C), (II 3D tD A22 IP67 T93°C X)
For detailed specifications on the D-A54, A67, and F5P, please refer to the relevant pages in Best Pneumatics.
(Note: Reed auto switches for AC 100V and DC 100V are not within the specification.)

Type	Model No.	Electrical entry	Indicator	Wiring (Output)	Load voltage DC		Load voltage AC	Lead wire* (m) Note1) 0.5 (—)	3 (L)	5 (Z)	Applicable load	
Reed auto switch	D-A54□-588	Grommet	Yes	2-wiring	24V	12V	—	●	●	●	—	Relay PLC
	D-A67□-588		No		24V or less		—	●	●	—	IC circuit	
Solid state auto switch	D-F5P□-588	Grommet	Yes	3-wiring (PNP)	24V	5V,12V	—	●	●	○	IC circuit	

• Lead wire length 0.5m --- Nil (e.g.) D-A54-588
3 m --- L (e.g.) D-A54L-588
5 m --- Z (e.g.) D-A54Z-588

Note 1) ○ solid state auto switch is available after receiving an order.

Note 2) When mounting an auto switch on a 55- series (Category 2) Model, the ATEX category of the auto switch cylinder changes to Category 3, which is the same category as the auto switch.

When ordering a tie rod mounting type auto switch, also order a mounting bracket from the following list at the same time.
Auto switch mounting bracket/ Part no. (Tie rod mounting)

Auto switch Model	Tube I.D. (mm) 125,140	160	180	200
D-A54□-588 D-A67□-588 D-F5P□-588	BT-12	BT-16	BT-18A	BT-20

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Specifications

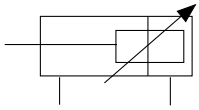
Style	Non-lube
ATEX category [1)]	CE Ex II 2GDc 95°C (T5) Ta 0°C to 40°C, 115°C (T4) Ta 40°C to 60°C
Fluid	Air (Non-lube)
Proof pressure [2)]	1.57MPa
Max. operating pressure [2)]	0.97MPa
Min. operating pressure	0.05MPa
Piston speed	50 to 500 mm/s
Cushion	None, air cushion
Ambient and fluid temperature	0 to 60°C (No freezing)
Stroke length tolerance (mm)	250 or less: $^{+1.0}_{0}$, 251 to 1,000: $^{+1.4}_{0}$, 1,001 to 1,500: $^{+1.8}_{0}$, 1501 to 2000: $^{+2.2}_{0}$
Mounting	Basic, Foot, Front flange, Rear flange, Single clevis, Double clevis, Centre trunnion

Note 1) This cylinder can be used in zones 1 and 21 and in zones 2 and 22. If the cylinder is used with SMC category 3 type auto switch, then the cylinder can only be used in zones 2 and 22 and not in zones 1 and 21.

Note 2) For the CDS1 diameter 180 and 200 the Proof pressure is 1.2MPa and the Max. operating pressure is 0.7MPa.

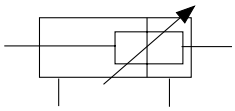
Symbol

Double Acting/Single Rod



Air Cushion

Double Acting/Double Rod



Air Cushion

Accessories

Mounting		Basic	Foot	Front flange	Rear flange	Single clevis	Double clevis	Centre trunnion
Standard	Clevis pin, Cotter pin	–	–	–	–	–	●	–
Accessory	Rod end nut	●	●	●	●	●	●	●
	Single knuckle joint	●	●	●	●	●	●	●
	Double knuckle joint (Knuckle pin, Cotter pin)	●	●	●	●	●	●	●

(mm)

Max. Stroke

Tube material	Without autoswitch				With autoswitch	
	Aluminum alloy		Carbon steel tube		Aluminium alloy	
Mounting bracket / Bore	Basic, Rear flange, Single clevis, Double clevis, Centre trunnion	Foot, Front flange	Basic, Rear flange, Single clevis, Double clevis	Foot, Front flange	B, G, C, D, T	L, F
125	1000 or less	1000 or less	1000 or less	1400 or less	1000 or less	1400 or less
140	1000 or less	1000 or less	1000 or less	1400 or less	1000 or less	1400 or less
160	1200 or less	1000 or less	1200 or less	1400 or less	1200 or less	1400 or less
180	—	—	1200 or less	1800 or less	1200 or less	1500 or less
200	—	—	1200 or less	1800 or less	998 or less	998 or less
250	—	—	1200 or less	2000 or less	-	-
300	—	—	1200 or less	2000 or less	-	-

ATEX Compliant

Compact Cylinder/Standard: Double Acting Single Rod

Series 55-CQ2

ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100, ø125, ø140, ø160, ø180, ø200

How to Order

55- [ ] CDQ2 [B] [20] — [30] [D] [ ]

ATEX category 2

Port size

—	M5 (ø12~ø25 only)
E	G port (ø32~ø200 only)

Built-in magnet

—	None
D	Built-in magnet

Mounting

B	Through -hole (Standard)	**F**	Front flange
A	Both ends tapped	**G**	Rear flange
L	Foot	**D**	Double clevis

∗Only B type (Through-hole and both ends tapped) is available for large bore cylinder ø125 to ø200.

Bore size

12	12mm	**40**	40mm	**125**	125mm
16	16mm	**50**	50mm	**140**	140mm
20	20mm	**63**	63mm	**160**	160mm
25	25mm	**80**	80mm	**180**	180mm
32	32mm	**100**	100mm	**200**	200mm

Action

D	Double acting

Body option

—	Standard (Rod end female thread)
C	With rubber bumper
M	Rod end male thread

∗ Combination of body option is possible. (CM)
Note2) All large bore cylinder ø125 to ø200 have C (rubber bumper) as standard.

Stroke (mm)

Bore size (mm)	Standard stroke (mm)	Long Stroke (mm)
12~16	5, 10, 15, 20, 25, 30	–
20, 25	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	–
32~40	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	125, 150, 175, 200, 250, 300
50~100	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	
125~200	10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300	–

∗ Long strokes are only available with rubber bumpers.

Mounting Bracket Part No.

Bore size (mm)	Foot (4)	Flange	Double clevis
12	CQ-L012	CQ-F012	CQ-D012
16	CQ-L016	CQ-F016	CQ-D016
20	CQ-L020	CQ-F020	CQ-D020
25	CQ-L025	CQ-F025	CQ-D025
32	CQ-L032	CQ-F032	CQ-D032
40	CQ-L040	CQ-F040	CQ-D040
50	CQ-L050	CQ-F050	CQ-D050
63	CQ-L063	CQ-F063	CQ-D063
80	CQ-L080	CQ-F080	CQ-D080
100	CQ-L100	CQ-F100	CQ-D100

Note 4) 2 pcs. per cylinder should be ordered when foot brackets are required.
Note 5) Each package contains the following parts.
Foot, Flange: Body mounting bolt
Double clevis: Clevis pin, C shape snap ring for axis, body mounting bolt

For 55-CDQ2
When using an Auto switch, select the appropriate switch from the following table and order it separately.

Applicable auto switch specifications
Auto switch only conforms to Category 3. (II 3G Ex nA II T5 X -10°C ≤ Ta ≤ +60°C), (II 3D tD A22 IP67 T93°C X)

For detailed specifications on the D-A73(H), A80(H), F7P(V), A93(V), A90(V), Z73, Z80, M9□(V) and Y7P(V), please refer to the relevant pages in Best Pneumatics.
(Note: Reed auto switches for AC 100V and DC 100V are not within the specification.

Type	Model No.			Electrical entry	Indicator	Wiring (Output)	Load voltage			Lead wire∗ (m)			Applicable load	
	Rail mounting ø12 to ø160	Direct mounting ø32 to ø100	Direct mounting ø125 to ø200				DC		AC	0.5 (—)	3 (L)	5 (Z)		
Reed auto switch	D-A73□-588	D-A93V□-588	—	Grommet (Perpendicular entry)	Yes	2-wiring	24V	12V	—	●	●	●	—	Relay PLC
	D-A80□-588	D-A90V□-588			No		24V or less	48V	48V or less	●	●	—	IC circuit	
	D-A73H□-588	D-A93□-588	D-Z73□-588	Grommet (In-line entry)	Yes		24V	12V	—	●	●	●	—	
	D-A80H□-588	D-A90□-588	D-Z80□-588		No		24V or less	48V	48V or less	●	●	—	IC circuit	
Solid state auto switch	D-F7PV□-588	D-M9□V-588	D-Y7PV□-588	Grommet (Perpendicular entry)	Yes	2-wire or 3-wire	24V	5V, 12V	—	●	●	○	IC circuit	
	D-F7P□-588	D-M9□-588	D-Y7P□-588	Grommet (In-line entry)						●	●	○		

• Lead wire length 0.5m --- Nil (e.g.) D-A73-588
3 m --- L (e.g.) D-A73L-588
5 m --- Z (e.g.) D-A73Z-588

Note 1) ○ solid state auto switch is available after receiving an order.

Note 2) When mounting an auto switch on a 55- series (Category 2) Model, the ATEX category of the auto switch cylinder changes to Category 3, which is the same category as the auto switch.

When ordering a rail mounting type auto switch, also order a mounting bracket from the following list at the same time.
Auto switch mounting bracket/ Part no. (Rail mounting type)

Auto switch Model	Part no.
D-A73□-588, D-A73H□-588 D-A80□-588, D-A80H□-588	BQ-2 (32~160)
D-F7P□-588, D-F7PV□-588	BQ-1 (12~25)

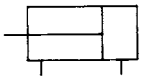
Style

	Bore size (mm)		12	16	20	25	32	40	50	63	80	100	125	140	160	180	200
Pneumatic	Mounting	Through-hole (Standard)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		Both ends tapped	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Built-in magnet		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Piping	Screw-in style	M5	M5	M5	M5	M5 (1) G1/8	G1/8	G1/4	G1/4	G3/8	G3/8	G3/8	G3/8	G3/8	G1/2	G1/2
	Rod end male thread		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	With rubber bumper		●	●	●	●	●	●	●	●	●	●	●(2)	●(2)	●(2)	●(2)	●(2)

Note 1) Among those without an auto switch, only the 5mm stroke uses M5 piping.
Note 2) Rubber bumper is standard for bore sizes over ø125.

JIS Symbol

Double Acting: Single Rod



Specifications

Bore size (mm)	12	16	20	25	32	40	50	63	80	100	125	140	160	180	200
ATEX category [1]	CE ⟨Ex⟩ II 2GDc 85°C (T6) Ta –10°C to 40°C, 105°C (T4) Ta 40°C to 60°C														
Style	Pneumatic (Non-lube)														
Fluid	Air														
Proof pressure	1.5MPa													1.05MPa	
Max. operating pressure	1.0MPa													0.7MPa	
Min. operating pressure	0.07MPa		0.05MPa												
Ambient and fluid temperature	–10°C to 60°C (No freezing)														
Cushion	None, rubber bumper										Rubber bumper				
Rod end thread	Male thread, Female thread														
Tolerance of stroke length (mm)	$^{+1.0}_{0}$										$^{+1.4}_{0}$				
Mounting	Through-hole, Both end tapped, Foot, Front flange, Rear flange, Double clevis										Through-hole both end tapped				
Piston speed	50 to 500mm/s													20 to 400 mm/s	

Note 1) This cylinder can be used in zones 1 and 21 and in zones 2 and 22. If the cylinder is used with SMC category 3 type auto switch, then the cylinder can only be used in zones 2 and 22 and not in zones 1 and 21.
Note 2) Stroke length tolerance does not include the amount of bumper compression.

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

ATEX Compliant

ISO Standards/Compact Cylinder

Series 55-C55

ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

How to Order

55—**CD55** [**B**] [**20**]—[**10**] [ ]

ATEX category 2

Built-in magnet

–	None
D	Built-in magnet

Rod end thread

–	Rod end female thread
M	Rod end male thread

Cylinder stroke (mm)
Refer to standard stroke table

Mounting style

B	Through-hole/Both ends tapped common (Standard)
L	Foot
F	Front flange
G	Rear flange
C	Single clevis

Bore size

20	20 mm
25	25 mm
32	32 mm
40	40 mm
50	50 mm
63	63 mm
80	80 mm
100	100 mm

When using an Auto switch,select the appropriate switch from the following table and order it separately.

Applicable Auto Switches

Auto switch conforms to Category 3. (II 3G Ex nA II T5 X -10°C ≤ Ta ≤ +60°C), (II 3D tD A22 IP67 T93°C X)
(Note: Reed auto switches for 100 VAC and 100 VDC are not within the specification.
For detailed specifications on the A93(V), A90(V) and M9□(V), please refer to pages 37 and 53.

Type	Model	Electrical entry direction	Indicator light	Wiring (Output)	Load voltage			Lead wire length (m) *			Applicable load	
					DC		AC	0.5(Nil)	3(L)	5(Z)		
Reed switch	**D-A93V□-588**	Grommet (Perpendicular)	Yes	2-wire	24 V	12 V	—	●	●	●	—	Relay, PLC
	D-A90V□-588		No		24 V or less	48 V	48 V or less	●	●	—	IC circuit	
	D-A93□-588	Grommet (In-line)	Yes		24 V	12 V	—	●	●	●	—	
	D-A90□-588		No		24 V or less	48 V	48 V or less	●	●	—	IC circuit	
Solid state switch	**D-M9□V-588**	Grommet (Perpendicular)	Yes	2-wire or 3-wire	24 V	5 V,12 V	—	●	●	○	IC circuit	
	D-M9□-588	Grommet (In-line)						●	●	○		

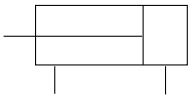
* Lead wire length symbols: 0.5 m ····· Nil (Example) D-A93-588
3 m ····· L (Example) D-A93L-588
5 m ····· Z (Example) D-A93Z-588

* ○ solid state auto switch is available after receiving an order.

Note) When mounting an auto switch on a 55-series (Category 2) model, the ATEX class of the cylinder with auto switch changes to category 3, which is the same class as the auto switch

Symbol

Double Acting/Single Rod



Specifications

Bore size (mm)	20	25	32	40	50	63	80	100
ATEX category	CE Ex II 2GDc 85°C(T6) Ta -10°C to 40°C 105°C(T4) Ta 40°C to 60°C							
Type	Pneumatic (Non-lube)							
Action	Double acting, Single rod							
Fluid	Air							
Proof pressure	1.5 MPa							
Maximum operating pressure	1.0 MPa							
Minimum operating pressure	0.05 MPa						0.03 MPa	
Ambient and fluid temperature	–10 to 60C (No freezing)							
Cushion	Rubber bumper on both end							
Stroke length tolerance	+1.0 mm 0							
Mounting	Through-hole/Both ends tapped common							
Piston speed	50 to 500 mm/s						50 to 300 mm/s	

Standard Stroke

Bore size (mm)	Standard stroke (mm)
20 to 63	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 80, 100, 125, 150
80 to 100	10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 80, 100, 125

Mounting Bracket Part No.

Bore size (mm)	Foot	Flange	Single clevis
20	C55-L020	C55-F020	C55-C020
25	C55-L025	C55-F025	C55-C025
32	C55-L032	C55-F032	C55-C032
40	C55-L040	C55-F040	C55-C040
50	C55-L050	C55-F050	C55-C050
63	C55-L063	C55-F063	C55-C063
80	C55-L080	C55-F080	C55-C080
100	C55-L100	C55-F100	C55-C100

- Order two foot brackets per cylinder.
- Parts belonging to each bracket are as follows.
  Foot, Flange, Single clevis/Body mounting bolt

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

ATEX Compliant

Dual Rod Cylinder

Series 55-CXS/W

ø6, ø10, ø15, ø20, ø25, ø32

How to Order

55-CXS **W** **M** **20** **[ ]** — **100**

ATEX category 2

Dual rod cylinder

Type

–	Single rod
W	Double rod

Bearing

M	Slide bearing
L	Ball bushing bearing

Bore size

6	6mm
10	10mm
15	15mm
20	20mm
25	25mm
32	32mm

Port thread type

Symbol	Type	Bore size
–	M thread	ø6~ø20
	Rc	ø25~ø32
TF	G	ø25~ø32

Standard Strokes

CXS (mm)

Bore size	Standard stroke
ø6	10, 20, 30, 40, 50
ø10	10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 75
ø15	10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 75, 80, 90, 100
ø20	
ø25	
ø32	

CXSW (mm)

Bore size	Standard stroke
ø6	10, 20, 30, 40, 50
ø10	10, 20, 30, 40, 50
ø15	
ø20	10, 20, 30, 40, 50, 75, 100
ø25	
ø32	

For 55-CXS
When using an Auto switch, select the appropriate switch from the following table and order it separately.

Applicable auto switch specifications
Auto switch only conforms to Category 3. (II 3G Ex nA II T5 X -10°C ≤ Ta ≤ +60°C), (II 3D tD A22 IP67 T93°C X)
For detailed specifications on the D-Z73, Z80, Y7P, and Y7PV, please refer to the relevant pages in Best Pneumatics.
(Note: Reed auto switches for AC 100V and DC 100V are not within the specification.)

Type	Model No.	Electrical entry	Indicator	Wiring (Output)	Load voltage			Lead wire* (m)			Applicable load	
					DC		AC	0.5 (—)	3 (L)	5 (Z)		
Reed auto switch	D-Z73□-588	Grommet (In-line)	Yes	2-wiring	24V	12V	—	●	●	●	—	Relay PLC
	D-Z80□-588		No		24V or less	48V	48V or less	●	●	—	IC circuit	
Solid state auto switch	D-Y7P□-588	Grommet (In-line)	Yes	3-wiring (PNP)	24V	5V,12V	—	●	●	○	IC circuit	
	D-Y7PV□-588	Grommet (Perpendicular)						●	●	○		

• Lead wire length 0.5m --- Nil (e.g.) D-Z73-588
3 m --- L (e.g.) D-Z73L-588
5 m --- Z (e.g.) D-Z73Z-588

Note 1) ○ solid state auto switch is available after receiving an order.

Note 2) When mounting an auto switch on a 55- series (Category 2) Model, the ATEX category of the auto switch cylinder changes to Category 3, which is the same category as the auto switch.

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

CXS Specifications

Bore size (mm)	6	10	15	20	25	32
ATEX category [1)]	CE Ⓔx II 2GDc 65°C (T6) Ta –10°C to 40°C 85°C (T6) Ta 40°C to 60°C					
Fluid	Air (Non-lube)					
Min. operating pressure	0.15MPa	0.1MPa		0.05MPa		
Max. operating pressure	0.7MPa					
Proof pressure	1.05MPa					
Ambient and fluid temperature	–10 to 60°C (No freezing)					
Piston speed	30 to 300 mm/s	30 to 800 mm/s	30 to 700 mm/s		30 to 600 mm/s	
Piping port	M5 X 0.8				G1/8	
Stroke adjustable range	0 to –5 mm to the standard stroke					
Bearing	Slide bearing, Ball bushing bearing (Same dimensions)					
Cushion	Rubber bumper					

CXSW Specifications

Bore size (mm)	6	10	15	20	25	32
ATEX category [1)]	CE Ⓔx II 2GDc 65°C (T6) Ta –10°C to 40°C 85°C (T6) Ta 40°C to 60°C					
Fluid	Air (Non-lube)					
Min. operating pressure	0.15MPa			0.1MPa		
Max. operating pressure	0.7MPa					
Proof pressure	1.05MPa					
Ambient and fluid temperature	–10 to 60°C (No freezing)					
Piston speed	50 to 500mm/s					
Piping port	M5 X 0.8				G1/8	
Stroke adjustable range	0 to –10mm (Extension side: 5mm, Retraction side: 5mm)					
Bearing	Slide bearing, Ball bearing (Same dimensions)					
Cushion	Rubber bumper					

Note 1) This cylinder can be used in zones 1 and 21 and in zones 2 and 22. If the cylinder is used with SMC category 3 type auto switch, then the cylinder can only be used in zones 2 and 22 and not in zones 1 and 21.

ATEX Compliant

Mechanically Jointed Rodless Cylinder

Series 55-MY1B

Basic Type/ø10, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

How to Order

Basic Type

55-MY1B 25 [ ] [ ] — 300 — XB11

- **ATEX category 2**
- **Basic type**
- **Bore size**

10	10mm
16	16mm
20	20mm
25	25mm
32	32mm
40	40mm
50	50mm
63	63mm
80	80mm
100	100mm

- **Piping thread**

Symbol	Type	Bore size
–	M thread	ø10~ø20
	Rc	ø25~ø100
TN	NPT	
TF	G	

- **Piping**

–	Standard type
G	Centralized piping type

- **Stroke**

Refer to the standard stroke table below.

- **Special**

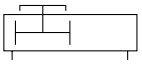
–	Standard type
XB11	Long Stroke type

Standard strokes

Bore size (mm)	Standard stroke (mm)	Max. stroke (mm)
10, 16	100, 200, 300, 400, 500, 600, 700 800, 900, 1000, 1200, 1400, 1600 1800, 2000	3000
20, 25, 32, 40, 50, 63, 80, 100		5000

(*) Strokes are manufacturable in 1mm increments, up to the maximum stroke. however, when exceeding a 2000 mm stroke,specify "-XB11" at the end of the model number.

Symbol



Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Specifications

Bore size (mm)	10	16	20	25	32	40	50	63	80	100
ATEX category [1]	CE Ex II 2Gc 75°C (T6) Ta 5 to 40°C 95°C (T5) Ta 40 to 60°C									
Fluid	Air									
Action	Double acting									
Operating pressure range	0.2 to 0.8MPa	0.1 to 0.8MPa								
Proof pressure	1.2MPa									
Ambient and fluid temperature	5 to 60°C									
Cushion	Rubber bumper	Air cushion								
Lubricaton	Non-lube									
Stroke length tolerance	1000 or less $^{+1.8}_{0}$ 1001 to 3000 $^{+2.8}_{0}$	2700 or less $^{+1.8}_{0}$, 2701 to 5000 $^{+2.8}_{0}$								
Port size **Front/Side ports**	M5 x 0.8			Rc, NPT, G 1/8		Rc, NPT, G 1/4	Rc, NPT, G 3/8		Rc, NPT, G 1/2	
Operating piston speed	100 to 500 mm/s	100 to 1000 mm/s								

Note 1) This cylinder can be used in zone 1 and 2.
If the cylinder is used with SMC category 3 type auto switch, then the cylinder can only be used in zone 2 and not in zone 1.

For 55-MY1B
When using an Auto switch, select the appropriate switch from the following table and order it separately.

Applicable auto switch specifications

Auto switch only conforms to Category 3. (II 3G Ex nA II T5 X -10°C ≤ Ta ≤ +60°C), (II 3D tD A22 IP67 T93°C X)
For detailed specifications on the D-A93(V), A90(V), Z73, Z80, M9 and Y7PV, please refer to the relevant pages in Best Pneumatics.
(Note: Reed auto switches for AC 100V and DC 100V are not within the specification.

Type	Model No. ø10 to ø20	Model No. ø25 to ø100	Electrical entry	Indicator	Wiring (Output)	Load voltage DC	Load voltage DC	Load voltage AC	Lead wire* (m) 0.5 (—)	Lead wire* (m) 3 (L)	Lead wire* (m) 5 (Z)	Applicable load	
Reed auto switch	D-A93V□-588	—	Grommet (Perpendicular entry)	Yes	2-wiring	24V	12V	—	●	●	●	—	Relay PLC
	D-A90V□-588			No		24V or less	48V	48V or less	●	●	—	IC circuit	
	D-A93□-588	D-Z73□-588	Grommet (In-line entry)	Yes		24V	12V	—	●	●	●	—	
	D-A90□-588	D-Z80□-588		No		24V or less	48V	48V or less	●	●	—	IC circuit	
Solid state auto switch	D-M9□V-588	D-Y7PV□-588	Grommet (Perpendicular entry)	Yes	2-wire or 3-wire	24V	5V, 12V	—	●	●	○	IC circuit	
	D-M9□-588	D-Y7P□-588	Grommet (In-line entry)						●	●	○		

• Lead wire length 0.5m --- Nil (e.g.) D-A93-588
3 m --- L (e.g.) D-A93L-588
5 m --- Z (e.g.) D-A93Z-588

Note 1) ○ solid state auto switch is available after receiving an order.

Note 2) When mounting an auto switch on a 55- series (Category 2) Model, the ATEX category of the auto switch cylinder changes to Category 3, which is the same category as the auto switch.

ATEX Compliant

Mechanically Jointed Rodless Cylinder

Series 55-MY1M

Slide Bearing Type/ø16, ø20, ø25, ø32, ø40, ø50, ø63

How to Order

Slide Bearing Guide Type

55-MY1M **25** □ □ — **300** — **XB11**

- **ATEX category 2**
- **Slide bearing guide type**
- **Bore size**

16	16mm
20	20mm
25	25mm
32	32mm
40	40mm
50	50mm
63	63mm

- **Piping**

–	Standard type
G	Centralized piping type

- **Port thread types**

Symbol	Type	Bore size
–	M thread	ø16~ø20
	Rc	ø25~ø63
TN	NPT	
TF	G	

- **Stroke** — Refer to the standard stroke table below.
- **Special**

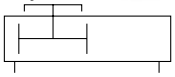
–	Standard type
XB11	Long Stroke type

Standard strokes

Bore size (mm)	Standard stroke (mm)	Max. stroke (mm)
16	100, 200, 300, 400, 500, 600, 700 800, 900, 1000, 1200, 1400, 1600 1800, 2000	3000
20, 25, 32, 40 50, 63		5000

(*) Strokes are manufacturable in 1mm increments, up to the maximum stroke. however, when exceeding a 2000 mm stroke,specify "-XB11" at the end of the model number.

Symbol



Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Specifications

Bore size (mm)		16	20	25	32	40	50	63
ATEX category [1)]		CE Ⓔx II 2Gc 75°C (T6) Ta 5°C to 40°C 95°C (T5) Ta 40°C to 60°C						
Fluid		Air						
Action		Double acting						
Operating pressure range		0.15 to 0.8MPa						
Proof pressure		1.2MPa						
Ambient and fluid temperature		5 to 60°C						
Cushion		Air cushion						
Lubrication		Non-lube						
Stroke length tolerance		1000 or less $^{+1.8}_{0}$ 1001 to 3000 $^{+2.8}_{0}$		2700 or less $^{+1.8}_{0}$, 2701 to 5000 $^{+2.8}_{0}$				
Port size	**Front/Side ports**	M5 x 0.8		Rc, NPT, G 1/8		Rc, NPT, G 1/4	Rc, NPT, G 3/8	
Operating piston speed		100 to 1000 mm/s						

Note 1) This cylinder can be used in zones 1 and 2.
If the cylinder is used with SMC category 3 type auto switch, then the cylinder can only be used in zone 2 and not in zone 1.

For 55-MY1M
When using an Auto switch, select the appropriate switch from the following table and order it separately.

Applicable auto switch specifications
Auto switch only conforms to Category 3. (II 3G Ex nA II T5 X -10°C ≤ Ta ≤ +60°C), (II 3D tD A22 IP67 T93°C X)

For detailed specifications on the D-A93(V), A90(V), Z73, Z80, M9□(V) and Y7PV, please refer to the relevant pages in Best Pneumatics.
(Note: Reed auto switches for AC 100V and DC 100V are not within the specification.

Type	Model No. ø16 to ø20	Model No. ø25 to ø63	Electrical entry	Indicator	Wiring (Output)	Load voltage DC	Load voltage DC	Load voltage AC	Lead wire* (m) 0.5 (—)	Lead wire* (m) 3 (L)	Lead wire* (m) 5 (Z)	Applicable load	
Reed auto switch	D-A93V□-588	—	Grommet (Perpendicular entry)	Yes	2-wiring	24V	12V	—	●	●	●	—	Relay PLC
	D-A90V□-588			No		24V or less	48V	48V or less	●	●	—	IC circuit	
	D-A93□-588	D-Z73□-588	Grommet (In-line entry)	Yes		24V	12V	—	●	●	●	—	
	D-A90□-588	D-Z80□-588		No		24V or less	48V	48V or less	●	●	—	IC circuit	
Solid state auto switch	D-M9□V-588	D-Y7PV□-588	Grommet (Perpendicular entry)	Yes	3-wire or 2 wire	24V	5V, 12V	—	●	●	○	IC circuit	
	D-M9□-588	D-Y7P□-588	Grommet (In-line entry)						●	●	○		

• Lead wire length 0.5m --- Nil (e.g.) D-A93-588
3 m --- L (e.g.) D-A93L-588
5 m --- Z (e.g.) D-A93Z-588

Note 1) ○ solid state auto switch is available after receiving an order.

Note 2) When mounting an auto switch on a 55- series (Category 2) Model, the ATEX category of the auto switch cylinder changes to Category 3, which is the same category as the auto switch.

ATEX Compliant

Mechanically Jointed Rodless Cylinder

Series 55-MY1H

High Precision Guide Type/ø10, ø16, ø20, ø25, ø32, ø40

How to Order

High Precision Guide Type

55-MY1H 25 ☐ ☐ – 300 – XB10

- ATEX category 2 → 55
- High precision guide type → H

Bore size

10	10mm
16	16mm
20	20mm
25	25mm
32	32mm
40	40mm

Port thread types

Symbol	Type	Bore size
–	M thread	ø10~ø20
–	Rc	ø25~ø40
TN	NPT	ø25~ø40
TF	G	ø25~ø40

Piping

–	Standard type
G	Centralized piping type

Stroke

Refer to the standard stroke table below.

Special

–	Standard type
XB10	Intermediate stroke (using exclusive body)
XB11	Long Stroke type

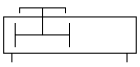
Note) Bore size 10 is only available as Standard. XB10 and XB11 is not available.

Standard strokes

Bore size (mm)	Standard stroke (mm) (*)	Max. stroke (mm)
10	50, 100, 150, 200, 250 300, 350, 400, 450, 500, 550, 600	–
16	50, 100, 150, 200, 250 300, 350, 400, 450, 500, 550, 600	1000
20		1000
25		1500
32		1500
40		1500

(*) Strokes are manufacturable in 1 mm increments, up to the maximum stroke. However, add "-XB10" to the end of the part number for nonstandard strokes from 51 to 599. Also when exceeding a 600 mm stroke specify "-XB11" at the end of the model number (except for ø10). Ø10 can only be manufactured up to 600mm stroke.

Symbol



Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Specifications

Bore size (mm)	10	16	20	25	32	40
ATEX category 1)	CE Ex II 2Gc 75°C (T6) Ta 5°C to 40°C; 95°C (T5) Ta 40°C to 60°C					
Fluid	Air					
Action	Double acting					
Operating pressure range	0.2 to 0.8MPa	0.1 to 0.8MPa				
Proof pressure	1.2MPa					
Ambient and fluid temperature	5 to 60°C					
Cushion	Rubber bumper	Air cushion				
Lubrication	Non-lube					
Stroke length tolerance	$^{+1.8}_{0}$ (mm)					
Port size **Front/Side ports**	M5 x 0.8			Rc, NPT, G 1/8		Rc, NPT, G 1/4
Operating piston speed	100 to 500 mm/s	100 to 1000 mm/s				

Note 1) This cylinder can be used in zone 1 and 2.
If the cylinder is used with SMC category 3 type auto switch, then the cylinder can only be used in zone 2 and not in zone 1.

For 55-MY1H
When using an Auto switch, select the appropriate switch from the following table and order it separately.

Applicable auto switch specifications
Auto switch only conforms to Category 3. (II 3G Ex nA II T5 X -10°C ≤ Ta ≤ +60°C), (II 3D tD A22 IP67 T93°C X)

For detailed specifications on the D-A93(V), A90(V), Z73, Z80, M9☐(V) and Y7PV, please refer to the relevant pages in Best Pneumatics.
(Note: Reed auto switches for AC 100V and DC 100V are not within the specification.

Type	Model No. ø10 to ø20	Model No. ø25 to ø40	Electrical entry	Indicator	Wiring (Output)	Load voltage DC		Load voltage AC	Lead wire* (m) 0.5 (—)	3 (L)	5 (Z)	Applicable load	
Reed auto switch	D-A93V☐-588	—	Grommet (Perpendicular entry)	Yes	2-wiring	24V	12V	—	●	●	●	—	Relay PLC
	D-A90V☐-588			No		24V or less	48V	48V or less	●	●	—	IC circuit	
	D-A93☐-588	D-Z73☐-588	Grommet (In-line entry)	Yes		24V	12V	—	●	●	●	—	
	D-A90☐-588	D-Z80☐-588		No		24V or less	48V	48V or less	●	●	—	IC circuit	
Solid state auto switch	D-M9☐V-588	D-Y7PV☐-588	Grommet (Perpendicular entry)	Yes	2-wire or 3-wire	24V	5V, 12V	—	●	●	○	IC circuit	
	D-M9☐-588	D-Y7P☐-588	Grommet (In-line entry)						●	●	○		

• Lead wire length 0.5m --- Nil (e.g.) D-A93-588
3 m --- L (e.g.) D-A93L-588
5 m --- Z (e.g.) D-A93Z-588

Note 1) ○ solid state auto switch is available after receiving an order.

Note 2) When mounting an auto switch on a 55- series (Category 2) Model, the ATEX category of the auto switch cylinder changes to Category 3, which is the same category as the auto switch.

How to Order

High Precision Guide Type

55-MY1H **25** □ □ — **300** — **X1985**

- **55**: ATEX category 2
- **MY1H**: High precision guide type
- **25**: Bore size
- □: Port thread types
- □: Piping
- **300**: Stroke — Refer to the standard stroke table below.
- **X1985**: Rust proof guide

Bore size

25	25mm
32	32mm
40	40mm

Piping

-	Standard type
G	Centralized piping type

Port thread types

Symbol	Type	Bore size
–	Rc	ø25~ø40
TN	NPT	
TF	G	

Standard strokes

Bore size (mm)	Stroke (mm) (*)
25	50, 100, 150, 200, 250 300, 350, 400, 450, 500, 550, 600, 750
32	
40	

(*) X1985 type can only be manufactured with the strokes listed in table.

ATEX Compliant

Rotary Actuator: Vane Type

Series 55-CRB1

Sizes: 50, 63, 80, 100

How to Order

55-CRB1 B W 80 — 90 S [ ] — [ ]

ATEX category 2

Mounting

B	Basic type
L*	Foot type

Refer to Table 1 below if only foot assembly is required separately.

* Foot accesory is shipped together with the actuator but not mounted on it.

Table 1: Foot assembly part no.

Model	Unit part no.
CRB1LW 50	P411020-5
CRB1LW 63	P411030-5
CRB1LW 80	P411040-5
CRB1LW100	P411050-5

Shaft type

W	Double shaft (long shaft key & four chamfers)

Size

50
63
80
100

Rotation

Classification	Symbol	Single vane	Double vane
Standard	90	90°	90°
	180	180°	—
	270	270°	—
Optional	100	100°	100°
	190	190°	—
	280	280°	—

Vane type

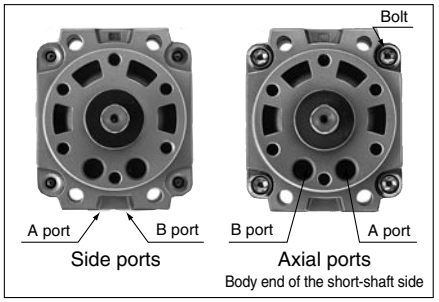
S	Single vane
D	Double vane

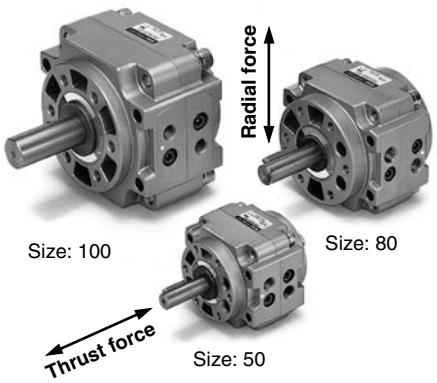
Thread Port

—	Rc(PT)
XF	G(PF)
XN	NPT

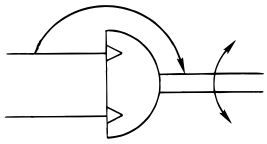
Connecting port position

-	Side ports
E	Axial ports





JIS symbol



Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Specifications

Model (Size)		CRB1BW50	CRB1BW63	CRB1BW80	CRB1BW100	CRB1BW50	CRB1BW63	CRB1BW80	CRB1BW100
Vane type		Single vane (S)				Double vane (D)			
ATEX category [1]		CE Ex II 2Gc				90°C (T5) Ta 5°C to 40°C 110°C (T4) Ta 40°C to 60°C			
Rotation	Standard	$90°^{+4}_{0}$, $180°^{+4}_{0}$, $270°^{+4}_{0}$				$90°^{+4}_{0}$			
	Optional	$100°^{+4}_{0}$, $190°^{+4}_{0}$, $280°^{+4}_{0}$				$100°^{+4}_{0}$			
Fluid		Air (non-lube)							
Proof pressure (MPa)		1.5MPa							
Ambient and fluid temperature		5° to 60°C							
Max. operating pressure (MPa)		1.0MPa							
Min. operating pressure (MPa)		0.15MPa							
Speed regulation range (sec/90°)		0.1 to 1							
Allowable kinetic energy (J)		0.082	0.12	0.398	0.6	0.112	0.16	0.54	0.811
Shaft load	Allowable radial load (N)	245	390	490	588	245	390	490	588
	Allowable thrust load (N)	196	340	490	539	196	340	490	539
Bearing type		Ball bearing							
Port position		Side ports or axial ports							
Size	Side ports	Rc, NPT, G 1/8		Rc, NPT, G 1/4		Rc, NPT, G 1/8		Rc, NPT, G 1/4	
	Axial ports	Rc, NPT, G 1/8		Rc, NPT, G 1/4		Rc, NPT, G 1/8		Rc, NPT, G 1/4	
Mounting		Basic, Foot							

Note 1) This actuator can be used in zones 1 and 2.

ATEX Compliant

Rotary Actuator: Vane Type

Series 55-CRB2

Sizes: 10, 15, 20, 30, 40

How to Order

55-CRB2 [B] [W] [ ] — [180] [S] [E]

ATEX category 2

Mounting

B	Basic type
F[1)]	Flange type

∗ When ordering "F" mounting type, flange is shipped together with the actuator, but not mounted.
∗ Flange can be mounted at 60 degrees intervals.
Note1) Not available for size 40.

Size

10
15
20
30
40

Vane type

S	Single vane
D	Double vane

Connecting port position

-	Side ports
E	Axial ports

Side ports

Axial ports

∗ Fittings are sold separately.

Standard Shaft type

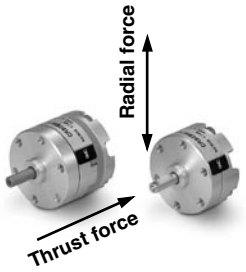
W	Double shaft with single flat (sizes 10 to 30)
	Long shaft key, Short shaft with single flat (size 40)

Rotation

Vane type	Symbol	Rotation
Single vane	**90**	90°
	180	180°
	270	270°
Double vane	**90**	90°
	100	100°

Flange Assembly Part No.

Model	Assembly part no.
CRB2FW10	P211070-2
CRB2FW15	P211090-2
CRB2FW20	P211060-2
CRB2FW30	P211080-2



Single Vane Specifications

Model (Size)		CRB2BW10-□S		CRB2BW15-□S		CRB2BW20-□S	CRB2BW30-□S	CRB2BW40-□S
Vane type		Single vane						
ATEX category [1]		CE Ex II 2Gc 130°C (T4) Ta 5°C to 40°C, 150°C (T3) Ta 40°C to 60°C						
Rotation		90°, 180°	270°	90°, 180°	270°	90°, 180°, 270°		
Fluid		Air (non-lube)						
Proof pressure (MPa)		1.05					1.5	
Ambient and fluid temperature		5° to 60°C						
Max. operating pressure (MPa)		0.7					1.0	
Min. operating pressure (MPa)		0.2		0.15				
Speed regulation range (sec/90°) Note 2)		0.03 to 0.3					0.04 to 0.3	0.07 to 0.5
Allowable kinetic energy (J)		0.00015		0.001		0.003	0.02	0.04
Shaft load	Allowable radial load (N)	15		15		25	30	60
	Allowable thrust load (N)	10		10		20	25	40
Bearing type		Ball bearing						
Port position		Side ports or axial ports						
Size	Side ports	M5	M3	M5	M3	M5		
	Axial ports	M3				M5		
Shaft type		Double shaft (with single flat on both shafts)						Double shaft (Long shaft key & single flat)
Mounting		Basic, Flange						Basic

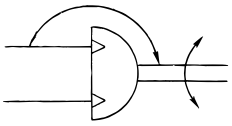
Note 1) This rotary actuator can be used in zones 1 and 2.

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Double Vane Specifications

Model (Size)		CRB2BW10-□D		CRB2BW15-□D		CRB2BW20-□D	CRB2BW30-□D	CRB2BW40-□D
Vane type		Double vane						
ATEX category [1]		CE Ex II 2Gc 130°C (T4) Ta 5°C to 40°C, 150°C (T3) Ta 40°C to 60°C						
Rotation		90°, 100°						
Fluid		Air (non-lube)						
Proof pressure (MPa)		1.05					1.5	
Ambient and fluid temperature		5° to 60°C						
Max. operating pressure (MPa)		0.7					1.0	
Min. operating pressure (MPa)		0.2		0.15				
Speed regulation range (sec/90°) Note 2)		0.03 to 0.3					0.04 to 0.3	0.07 to 0.5
Allowable kinetic energy (J)		0.0003		0.0012		0.0033	0.02	0.04
Shaft load	Allowable radial load (N)	15		15		25	30	60
	Allowable thrust load (N)	10		10		20	25	40
Bearing type		Ball bearing						
Port position		Side ports or axial ports						
Port size (Side ports, Axial ports)		M3				M5		
Shaft type		Double shaft (double shaft with single flat on both shafts)						
Mounting		Basic, Flange						Basic

JIS symbol



∗ The following notes apply to both Single and Double Vane Specification tables above.
Note 2) Make sure to operate within the speed regulation range.
Exceeding the maximum speed (0.3 sec/90°) can cause the unit to stick or not operate.

ATEX Compliant

Rotary Actuator: Free-Mounting Type

Series 55-CRBU2

Sizes: 10, 15, 20, 30, 40

How to Order

55-CRBU2 W □ 180 S E

ATEX category 2

Free-mounting

Shaft type

W	Double shaft with single flat (sizes 10 to 30)
	Long shaft key, Short shaft with single flat (size 40)

Size

10
15
20
30
40

Rotation

Vane type	Symbol	Rotation
Single vane	**90**	90°
	180	180°
	270	270°
Double vane	**90**	90°
	100	100°

Vane type

S	Single vane
D	Double vane

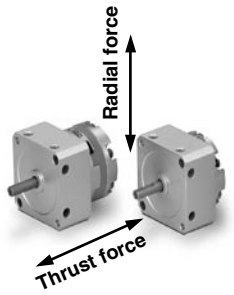
Connecting port position

-	Side ports
E	Axial ports

Axial ports

Side ports

∗ Fittings are sold separately.



Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Single Vane Specifications

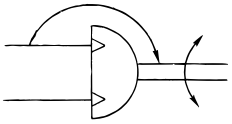
Model (Size)		CRBU2W10-□S	CRBU2W15-□S	CRBU2W20-□S	CRBU2W30-□S	CRBU2W40-□S
ATEX category [1]		CE Ex II 2Gc 130°C (T4) Ta 5°C to 40°C, 150°C (T3) Ta 40°C to 60°C				
Rotation		90°, 180°, 270°				
Fluid		Air (non-lube)				
Proof pressure (MPa)		1.05			1.5	
Ambient and fluid temperature		5° to 60°C				
Max. operating pressure (MPa)		0.7			1.0	
Min. operating pressure (MPa)		0.2	0.15			
Speed regulation range (sec/90°) Note 2)		0.03 to 0.3			0.04 to 0.3	0.07 to 0.5
Allowable kinetic energy (J)		0.00015	0.001	0.003	0.02	0.04
Shaft load	Allowable radial load (N)	15		25	30	60
	Allowable thrust load (N)	10		20	25	40
Bearing type		Ball bearing				
Port position		Side ports or axial ports				
Port size	Side ports	M5				
	Axial ports	M3		M5		
Shaft type		Double shaft (Double shaft with single flat on both shafts)				Double shaft (Long shaft key & Single flat)

Note 1) This rotary actuator can be used in zones 1 and 2.

Double Vane Specifications

Model (Size)		CRBU2W10-□D	CRBU2W15-□D	CRBU2W20-□D	CRBU2W30-□D	CRBU2W40-□D
ATEX category [1]		CE Ex II 2Gc 130°C (T4) Ta 5°C to 40°C, 150°C (T3) Ta 40°C to 60°C				
Rotation		90°, 100°				
Fluid		Air (non-lube)				
Proof pressure (MPa)		1.05			1.5	
Ambient and fluid temperature		5° to 60°C				
Max. operating pressure (MPa)		0.7			1.0	
Min. operating pressure (MPa)		0.2	0.15			
Speed regulation range (sec/90°) Note 2)		0.03 to 0.3			0.04 to 0.3	0.07 to 0.5
Allowable kinetic energy (J)		0.0003	0.0012	0.0033	0.02	0.04
Shaft load	Allowable radial load (N)	15		25	30	60
	Allowable thrust load (N)	10		20	25	40
Bearing type		Ball bearing				
Port position		Side ports or axial ports				
Port size	Side ports	M5				
	Axial ports	M3		M5		
Shaft type		Double shaft (Double shaft with single flat on both shafts)				Double shaft (Long shaft key & Single flat)

JIS symbol



∗ The following notes apply to both Single and Double Vane Specification tables above.

Note 2) Make sure to operate within the speed regulation range.
Exceeding the maximum speeds can cause the unit to stick or not operate.

ATEX Compliant

Compact Rotary Actuator: Rack-and-Pinion Type

Series 55-CRQ2

How to Order

55-CDRQ2B S 20 ☐ – 90 ☐

ATEX category 2: 55

Built-in magnet

-	None
D	Magnet

Shaft type

S	Single shaft with one chamfer	10, 15
	Single shaft with key	20~40
W	Double shaft with one chamfer	10, 15
	Double shaft with key	20~40

Size

10
15
20
30
40

Port thread type

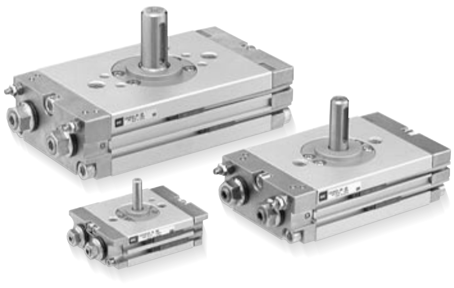
Size	Port thread	
10, 15	Nil	M5
20, 30, 40	Nil	Rc1/8
	TF	G1/8
	TN	NPT1/8
	TT	NPTF1/8

Rotation

90	80° to 100°
180	170° to 190°

Air cushion

Sizes	Air cushion	
10, 15	Without	-
20, 30, 40	Without	-
	With	C



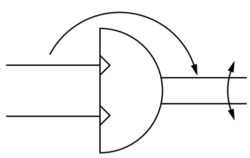
Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Specifications

Size	10	15	20	30	40
ATEX category [1]	CE Ex II 2Gc 70°C (T6) Ta 0°C to 40°C 90°C (T5) Ta 40°C to 60°C				
Fluid	Air (non-lube)				
Maximum operating pressure	0.7MPa		1MPa		
Minimum operating pressure	0.15MPa		0.1MPa		
Ambient and fluid temperature	0 to 60˚C (with no freezing)				
Cushion	Rubber bumper		Non attached, Air cushion		
Angle adjustment	Rotation end ± 5˚				
Rotation	80˚ to 100˚, 170˚ to 190˚				
Port size	M5 x 0.8		Rc, G, NPT, NPTF 1/8		
Output Nm at 0.5 MPa	0.3	0.75	1.8	3.1	5.3

Note 1) This cylinder can be used in zones 1 and 2.
If the cylinder is used with SMC category 3 type auto switch, then the cylinder can only be used in zone 2 and not in zone 1.

JIS symbol



Allowable Kinetic Energy and Rotation Time Adjustment Range

Size	Allowable kinetic energy				Stable operational rotation time adjustment range
	Allowable kinetic energy (J)			Cushion angle	
	Without cushion	Rubber bumper	With air cushion *		Rotation time (s/90˚)
10	—	0.25×10^{-3}	—	—	0.2 to 0.7
15	—	0.39×10^{-3}	—	—	0.2 to 0.7
20	0.025	—	0.12	40˚	0.2 to 1
30	0.048	—	0.25	40˚	0.2 to 1
40	0.081	—	0.40	40˚	0.2 to 1

*) Allowable kinetic energy with cushion
Maximum energy absorption with optimal adjustment of cushion needle

For 55-CRQ2
When using an Auto switch, select the appropriate switch from the following table and order it separately.

Applicable auto switch specifications
Auto switch only conforms to Category 3. (II 3G Ex nA II T5 X -10°C ≤ Ta ≤ +60°C), (II 3D tD A22 IP67 T93° C X)

For detailed specifications on the D-A93A, A90, A93V, A90V, M9□(V), please refer to the relevant pages in Best Pneumatics.
(Note: Reed auto switches for AC 100V and DC 100V are not within the specification.)

Type	Model No.	Electrical entry	Indicator	Wiring (Output)	Load voltage			Lead wire* (m)			Applicable load	
					DC		AC	0.5 (—)	3 (L)	5 (Z)		
Reed auto switch	D-A93□-588	Grommet (In-line)	Yes	2-wiring	24V	12V	—	●	●	●	—	Relay PLC
	D-A90□-588		No		24V or less	48V	48V or less	●	●	—	IC circuit	
	D-A93V□-588	Grommet (Perpendicular)	Yes		24V	12V	—	●	●	●	—	
	D-A90V□-588		No		24V or less	48V	48V or less	●	●	—	IC circuit	
Solid state auto switch	D-M9□-588	Grommet (In-line)	Yes	2-wire or 3-wire	24V	5V, 12V	—	●	●	○	IC circuit	
	D-M9□V-588	Grommet (Perpendicular)						●	●	○		

• Lead wire length 0.5m --- Nil (e.g.) D-A93-588
3 m --- L (e.g.) D-A93L-588
5 m --- Z (e.g.) D-A93Z-588

Note 1) ○ solid state auto switch is available after receiving an order.

Note 2) When mounting an auto switch on a 55- series (Category 2) Model, the ATEX category of the auto switch cylinder changes to Category 3, which is the same category as the auto switch.

ATEX Compliant

Rotary Actuator: Vane Type

Series 56-CRB1

Sizes: 50, 63, 80, 100

How to Order

56-CDRB1 B W 80 – 90 S □ – □

ATEX category 3

With auto switch unit

-	Without switch unit
D	With switch unit

Mounting

B	Basic type
L*	Foot type

Refer to Table 1 below if only foot assembly is required separately.

* Foot accesory is shipped together with the actuator but not mounted on it.

Table 1: Foot assembly part no.

Model	Unit part no.
CRB1LW 50	P411020-5
CRB1LW 63	P411030-5
CRB1LW 80	P411040-5
CRB1LW100	P411050-5

Shaft type

W	Double shaft (long shaft key & four chamfers)

Rotation

Classification	Symbol	Single vane	Double vane
Standard	90	90°	90°
	180	180°	—
	270	270°	—
Optional	100	100°	100°
	190	190°	—
	280	280°	—

Vane type

S	Single vane
D	Double vane

Size

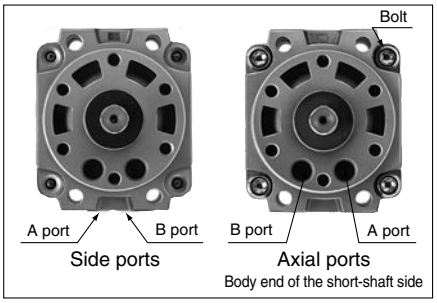
50
63
80
100

Thread Port

–	Rc(PT)
XF	G(PF)
XN	NPT

Connecting port position

–	Side ports
E	Axial ports



For 56-CDRB1
When using an Auto switch, select the appropriate switch from the following table and order it separately.

Applicable auto switch specifications
Auto switch only conforms to Category 3. (II 3G Ex nA II T5 X -10°C ≤ Ta ≤ +60°C), (II 3D tD A22 IP67 T93° C X)
For detailed specifications on the D-R73, R80, and S7P, please refer to the relevant pages in Best Pneumatics.
(Note: Reed auto switches for AC 100V and DC 100V are not within the specification.)

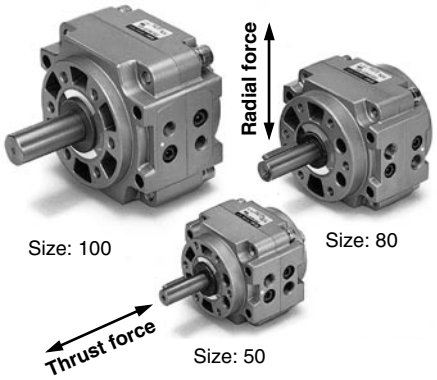
Type	Model No.	Electrical entry	Indicator	Wiring (Output)	Load voltage			Lead wire* (m)			Applicable load	
					DC		AC	0.5 (—)	3 (L)	5 (Z)		
Reed auto switch	D-R73□-588	Grommet (In-line)	Yes	2-wiring	24V	—	—	●	●	●	—	Relay PLC
	D-R80□-588		No			5V,12V	24V or less	●	●	○	IC circuit	
Solid state auto switch	D-S7P□-588	Grommet (In-line)	Yes	3-wiring (PNP)	24V	5V,12V	—	●	●	○	IC circuit	

• Lead wire length 0.5m --- Nil (e.g.) D-R73-588
3 m --- L (e.g.) D-R73L-588
5 m --- Z (e.g.) D-R73Z-588

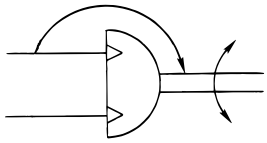
Note 1) ○ auto switch is available after receiving an order.

Note) Refer to the table below for the ATEX temperature class of a rotary actuator (56-CDRB1) with an autoswitch mounted to it.

	Rotary Actuator	Auto switch	Rotary actuator with auto switch
Normal temperature range (5°C to 40°C)	T6	T5	Equivalent to T5
Special temperature range (40°C to 60°C)	T4	T5	Equivalent to T4



JIS symbol



Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Specifications

Model (Size)		CRB1BW50	CRB1BW63	CRB1BW80	CRB1BW100	CRB1BW50	CRB1BW63	CRB1BW80	CRB1BW100
Vane type		Single vane (S)				Double vane (D)			
ATEX category [1)]		CE Ex II 3G 84°C (T6) Ta 5°C to 40°C 104°C (T4) Ta 40°C to 60°C							
Rotation	Standard	$90^{\circ}{}^{+4}_{0}$, $180^{\circ}{}^{+4}_{0}$, $270^{\circ}{}^{+4}_{0}$				$90^{\circ}{}^{+4}_{0}$			
	Optional	$100^{\circ}{}^{+4}_{0}$, $190^{\circ}{}^{+4}_{0}$, $280^{\circ}{}^{+4}_{0}$				$100^{\circ}{}^{+4}_{0}$			
Fluid		Air (non-lube)							
Proof pressure (MPa)		1.5MPa							
Ambient and fluid temperature		5° to 60°C							
Max. operating pressure (MPa)		1.0MPa							
Min. operating pressure (MPa)		0.15MPa							
Speed regulation range (sec/90°)		0.1 to 1							
Allowable kinetic energy (J)		0.082	0.12	0.398	0.6	0.112	0.16	0.54	0.811
Shaft load	Allowable radial load (N)	245	390	490	588	245	390	490	588
	Allowable thrust load (N)	196	340	490	539	196	340	490	539
Bearing type		Ball bearing							
Port position		Side ports or axial ports							
Size	Side ports	Rc, NPT, G 1/8		Rc, NPT, G 1/4		Rc, NPT, G 1/8		Rc, NPT, G 1/4	
	Axial ports	Rc, NPT, G 1/8		Rc, NPT, G 1/4		Rc, NPT, G 1/8		Rc, NPT, G 1/4	
Mounting		Basic, Foot							

Note 1) This actuator can be used in zone 2 and not in zone 1.

ATEX Compliant

Rotary Actuator: Vane Type

Series 56-CRB2

Sizes: 10, 15, 20, 30, 40

How to Order

56-CDRB2 B W ☐ — 180 S ☐

ATEX category 3

With auto switch unit

–	Without switch unit
D	With switch unit

Size

10
15
20
30
40

Connecting port position

–	Body size
E	Axial position

∗ E not possible with switch unit

Mounting

B	Basic type
F[1)]	Flange type

∗ When ordering "F" mounting type, flange is shipped together with the actuator, but not mounted.
∗ Flange can be mounted at 60 degrees intervals.
Note1) Not available for size 40.

Vane type

S	Single vane
D	Double vane

Standard Shaft type

W	Double shaft with single flat (sizes 10 to 30) Long shaft key, Short shaft with single flat (size 40)

Rotation

Vane type	Symbol	Rotation
Single vane	90	90°
	180	180°
	270	270°
Double vane	90	90°
	100	100°

Flange Assembly Part No.

Model	Assembly part no.
CRB2FW10	P211070-2
CRB2FW15	P211090-2
CRB2FW20	P211060-2
CRB2FW30	P211080-2

For 56-CDRB2

When using an Auto switch, select the appropriate switch from the following table and order it separately.

Applicable auto switch specifications
Auto switch only conforms to Category 3. (II 3G Ex nA II T5 X -10°C ≤ Ta ≤ +60°C), (II 3D tD A22 IP67 T93° C X)
For detailed specifications on the D-93A, 90A, S9P, S9PV, R73, R80, and S7P, please refer to the relevant pages in Best Pneumatics.
(Note: Reed auto switches for AC 100V and DC 100V are not within the specification.)

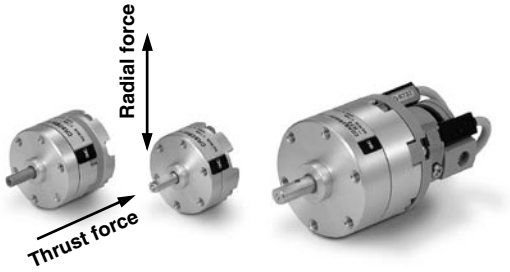
Applicable Size	Type	Model No.	Electrical entry	Indicator	Wiring (Output)	Load voltage			Lead wire∗ (m)			Applicable load	
						DC		AC	0.5 (—)	3 (L)	5 (Z)		
10, 15	Reed auto switch	D-93A☐-588	Grommet (In-line)	Yes	2-wiring	24V	-	—	●	●	●	—	Relay PLC
		D-90A☐-588		No			5V, 12V	24V or less	●	●	●	IC circuit	
	Solid state auto switch	D-S9P☐-588	Grommet (In-line)	Yes	3-wiring (PNP)	24V	5V, 12V	—	●	●	○	IC circuit	
		D-S9PV☐-588	Grommet (Perpendicular)						●	●	○	—	
20, 30, 40	Reed auto switch	D-R73☐-588	Grommet (In-line)	Yes	2-wiring	24V	—	—	●	●	●	IC circuit	
		D-R80☐-588		No			5V, 12V	24V or less	●	●	○	IC circuit	
	Solid state auto switch	D-S7P☐-588	Grommet (In-line)	Yes	3-wiring (PNP)		5V, 12V	—	●	●	○	IC circuit	

• Lead wire length 0.5m --- Nil (e.g.) D-R73-588
3 m --- L (e.g.) D-R73L-588
5 m --- Z (e.g.) D-R73Z-588

Note 1) ○ auto switch is available after receiving an order.

Note) Refer to the table below for the ATEX temperature class of a rotary actuator (56-CDRB1) with an autoswitch mounted to it.

	Rotary Actuator	Auto switch	Rotary actuator with auto switch
Normal temperature range (5°C to 40°C)	T5	T5	Equivalent to T5
Special temperature range (40°C to 60°C)	T4	T5	Equivalent to T4



Single Vane Specifications

Model (Size)		CRB2BW10-□S		CRB2BW15-□S		CRB2BW20-□S	CRB2BW30-□S	CRB2BW40-□S
Vane type		Single vane						
ATEX category [1]		CE Ⓔx II 3G 100°C (T5) Ta 5°C to 40°C, 120°C (T4) Ta 40°C to 60°C						
Rotation		90°, 180°	270°	90°, 180°	270°	90°, 180°, 270°		
Fluid		Air (non-lube)						
Proof pressure (MPa)		1.05					1.5	
Ambient and fluid temperature		5° to 60°C						
Max. operating pressure (MPa)		0.7					1.0	
Min. operating pressure (MPa)		0.2		0.15				
Speed regulation range (sec/90°) Note 2)		0.03 to 0.3					0.04 to 0.3	0.07 to 0.5
Allowable kinetic energy (J)		0.00015		0.001		0.003	0.02	0.04
Shaft load	Allowable radial load (N)	15		15		25	30	60
	Allowable thrust load (N)	10		10		20	25	40
Bearing type		Ball bearing						
Port position		Side ports or axial ports						
Size	Side ports	M5	M3	M5	M3	M5		
	Axial ports	M3				M5		
Shaft type		Double shaft (with single flat on both shafts)						Double shaft (Long shaft key & single flat)
Mounting		Basic, Flange						Basic
Auto switch		Mountable (Side ports only)						

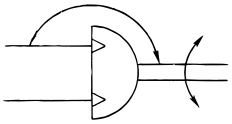
Note 1) This rotary actuator can be used in zone 2 and not in zone 1.

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Double Vane Specifications

Model (Size)		CRB2BW10-□D		CRB2BW15-□D		CRB2BW20-□D	CRB2BW30-□D	CRB2BW40-□D
Vane type		Double vane						
ATEX category [1]		CE Ⓔx II 3G 100°C (T5) Ta 5°C to 40°C, 120°C (T4) Ta 40°C to 60°C						
Rotation		90°, 100°						
Fluid		Air (non-lube)						
Proof pressure (MPa)		1.05					1.5	
Ambient and fluid temperature		5° to 60°C						
Max. operating pressure (MPa)		0.7					1.0	
Min. operating pressure (MPa)		0.2		0.15				
Speed regulation range (sec/90°) Note 2)		0.03 to 0.3					0.04 to 0.3	0.07 to 0.5
Allowable kinetic energy (J)		0.0003		0.0012		0.0033	0.02	0.04
Shaft load	Allowable radial load (N)	15		15		25	30	60
	Allowable thrust load (N)	10		10		20	25	40
Bearing type		Ball bearing						
Port position		Side ports or axial ports						
Port size (Side ports, Axial ports)		M3				M5		
Shaft type		Double shaft (double shaft with single flat on both shafts)						
Mounting		Basic, Flange						Basic
Auto switch		Mountable (Side ports only)						

JIS symbol



∗ The following notes apply to both Single and Double Vane Specification tables above.
Note 2) Make sure to operate within the speed regulation range.
Exceeding the maximum speed (0.3 sec/90°) can cause the unit to stick or not operate.

ATEX Compliant

Rotary Actuator: Free-Mounting Type

Series 56-CRBU2

Sizes: 10, 15, 20, 30, 40

How to Order

56-CDRBU2 W [ ] – **180** **S** [ ]

ATEX category 3

With auto switch unit

–	Without switch unit
D	With switch unit

Free-mounting

Shaft type

W	Double shaft with single flat (sizes 10 to 30)
	Long shaft key, Short shaft with single flat (size 40)

Size

10
15
20
30
40

Rotation

Vane type	Symbol	Rotation
Single vane	90	90°
	180	180°
	270	270°
Double vane	90	90°
	100	100°

Vane type

S	Single vane
D	Double vane

Connecting port position

–	Body size
E	Axial position

∗ E not possible with switch unit

For 56-CDRBU2

When using an Auto switch, select the appropriate switch from the following table and order it separately.

Applicable auto switch specifications

Auto switch only conforms to Category 3. (II 3G Ex nA II T5 X -10°C ≤ Ta ≤ +60°C), (II 3D tD A22 IP67 T93° C X)

For detailed specifications on the D-93A, 90A, S9P, S9PV, R73, R80, and S7P, please refer to the relevant pages in Best Pneumatics.

(Note: Reed auto switches for AC 100V and DC 100V are not within the specification.)

Applicable Size	Type	Model No.	Electrical entry	Indicator	Wiring (Output)	Load voltage			Lead wire∗ (m)			Applicable load	
						DC		AC	0.5 (—)	3 (L)	5 (Z)		
10, 15	Reed auto switch	D-93A□-588	Grommet (In-line)	Yes	2-wiring	24V	-	—	●	●	●	—	Relay PLC
		D-90A□-588		No			5V, 12V	24V or less	●	●	●	IC circuit	
	Solid state auto switch	D-S9P□-588	Grommet (In-line)	Yes	3-wiring (PNP)	24V	5V, 12V	—	●	●	○	IC circuit	
		D-S9PV□-588	Grommet (Perpendicular)						●	●	○		
20, 30, 40	Reed auto switch	D-R73□-588	Grommet (In-line)	Yes	2-wiring	24V	—	—	●	●	●	—	
		D-R80□-588		No			5V, 12V	24V or less	●	●	○	IC circuit	
	Solid state auto switch	D-S7P□-588	Grommet (In-line)	Yes	3-wiring (PNP)	24V	5V, 12V	—	●	●	○	IC circuit	

• Lead wire length 0.5m --- Nil (e.g.) D-R73-588
3 m --- L (e.g.) D-R73L-588
5 m --- Z (e.g.) D-R73Z-588

Note 1) ○ auto switch is available after receiving an order.

Note) Refer to the table below for the ATEX temperature class of a rotary actuator (56-CDRB1) with an autoswitch mounted to it.

	Rotary Actuator	Auto switch	Rotary actuator with auto switch
Normal temperature range (5°C to 40°C)	T5	T5	Equivalent to T5
Special temperature range (40°C to 60°C)	T4	T5	Equivalent to T4

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Single Vane Specifications

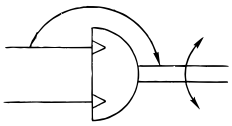
Model (Size)		CRBU2W10-□S	CRBU2W15-□S	CRBU2W20-□S	CRBU2W30-□S	CRBU2W40-□S
ATEX category [1]		CE ⟨Ex⟩ II 3G 100°C (T5) Ta 5°C to 40°C, 120°C (T4) Ta 40°C to 60°C				
Rotation		90°, 180°, 270°				
Fluid		Air (non-lube)				
Proof pressure (MPa)		1.05			1.5	
Ambient and fluid temperature		5° to 60°C				
Max. operating pressure (MPa)		0.7			1.0	
Min. operating pressure (MPa)		0.2	0.15			
Speed regulation range (sec/90°) Note 2)		0.03 to 0.3			0.04 to 0.3	0.07 to 0.5
Allowable kinetic energy (J)		0.00015	0.001	0.003	0.02	0.04
Shaft load	Allowable radial load (N)	15		25	30	60
	Allowable thrust load (N)	10		20	25	40
Bearing type		Ball bearing				
Port position		Side ports or axial ports				
Port size	Side ports	M5				
	Axial ports	M3		M5		
Shaft type		Double shaft (Double shaft with single flat on both shafts)				Double shaft (Long shaft key & Single flat)

Note 1) This rotary actuator can be used in zone 2 and not in zone 1.

Double Vane Specifications

Model (Size)		CRBU2W10-□D	CRBU2W15-□D	CRBU2W20-□D	CRBU2W30-□D	CRBU2W40-□D
ATEX category [1]		CE ⟨Ex⟩ II 3G 100°C (T5) Ta 5°C to 40°C, 120°C (T4) Ta 40°C to 60°C				
Rotation		90°, 100°				
Fluid		Air (non-lube)				
Proof pressure (MPa)		1.05			1.5	
Ambient and fluid temperature		5° to 60°C				
Max. operating pressure (MPa)		0.7			1.0	
Min. operating pressure (MPa)		0.2	0.15			
Speed regulation range (sec/90°) Note 2)		0.03 to 0.3			0.04 to 0.3	0.07 to 0.5
Allowable kinetic energy (J)		0.0003	0.0012	0.0033	0.02	0.04
Shaft load	Allowable radial load (N)	15		25	30	60
	Allowable thrust load (N)	10		20	25	40
Bearing type		Ball bearing				
Port position		Side ports or axial ports				
Port size	Side ports	M5				
	Axial ports	M3		M5		
Shaft type		Double shaft (Double shaft with single flat on both shafts)				Double shaft (Long shaft key & Single flat)

JIS symbol



∗ The following notes apply to both Single and Double Vane Specification tables above.

Note 2) Make sure to operate within the speed regulation range.
Exceeding the maximum speeds can cause the unit to stick or not operate.

ATEX Compliant Solid-state Switch / Direct Mounting

D-M9N(V)-588•D-M9P(V)-588•D-M9B(V)-588

CE Ex II 3G Ex nA II T5 X -10°C≤Ta≤+60°C
II 3D tD A22 IP67 T93°C X

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Auto Switch Specifications

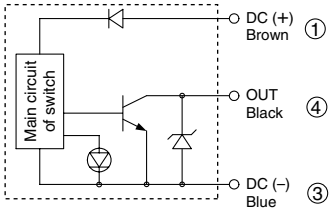
PLC: Programmable Logic Controller

D-M9□/D-M9□V (With indicator light)						
Auto switch part no.	D-M9N	D-M9NV	D-M9P	D-M9PV	D-M9B	D-M9BV
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire				2-wire	
Output type	NPN		PNP		—	
Applicable load	IC circuit, Relay, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 VDC)				—	
Current consumption	10 mA or less				—	
Load voltage	28 VDC or less		—		24 VDC (10 to 28 VDC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)				4 V or less	
Leakage current	100 μA or less at 24 VDC				0.8 mA or less	
Indicator light	Red LED illuminates when turned ON.					

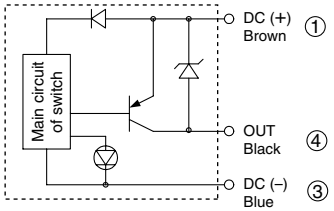
• Lead wires: Oilproof flexible heavy-duty vinyl cord: ø2.7 x 3.2 ellipse, 0.15mm², 2 cores (D-M9B(V)), 3 cores (D-M9N(V)), (D-M9P(V))
• This category 3 type autoswitch can only be used in zones 2 and 22.

Auto Switch Internal Circuit

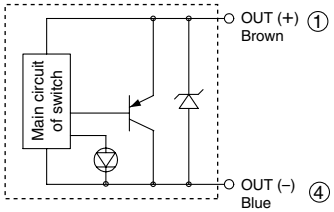
D-M9N, D-M9NV



D-M9P, D-M9PV



D-M9B, D-M9BV



How to Order

Standard Model Number

D-M9 N V L -588

Series Model Number

Wiring and output

N	3-wire NPN
P	3-wire PNP
B	2-wire

Electrical entry

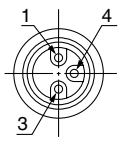
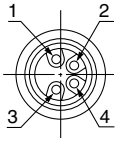
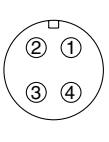
–	In-line
V	Perpendicular

Lead wire length

–	0.5 m
L	3 m
Z	5 m
SAPC	0.5 m + M8 - 3 pins pre-wired connector
MAPC	1 m + M8 - 3 pins pre-wired connector
SBPC	0.5 m + M8 - 4 pins pre-wired connector
MBPC	1 m + M8 - 4 pins pre-wired connector
SDPC	0.5 m + M12 - 4 pins pre-wired connector
MDPC	1 m + M12 - 4 pins pre-wired connector

Suffix for ATEX certified CAT.3

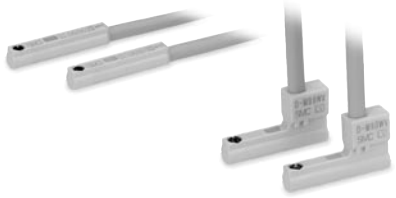
Connector Specifications

Connector type	M8-3 pins	M8-4 pins	M12-4 pins
Pin arrangement			

ATEX Compliant 2-Colour Solid State Switch: Direct Mounting

Series D-M9NW(V)/D-M9PW(V)/D-M9BW(V)-588

II 3G Ex nA II T5 X -10°C≤Ta≤+60°C
II 3D tD A22 IP67 T93°C X



Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Auto Switch Specifications

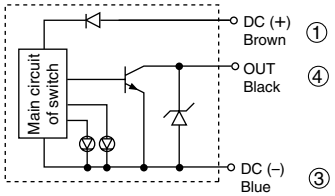
PLC: Programmable Logic Controller

D-M9□W/D-M9□WV (With 2 colour indicator light)						
Auto switch part no.	D-M9NW	D-M9NWV	D-M9PW	D-M9PWV	D-M9BW	D-M9BWV
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire				2-wire	
Output type	NPN		PNP		—	
Applicable load	IC circuit, Relay, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)				—	
Current consumption	10 mA or less				—	
Load voltage	28 VDC or less		—		24 VDC (10 to 28 VDC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)				4 V or less	
Leakage current	100 μA or less at 24 VDC				0.8 mA or less	
Indicator light	Operating position ····· Red LED illuminates. Optimum operating position ····· Green LED illuminates.					

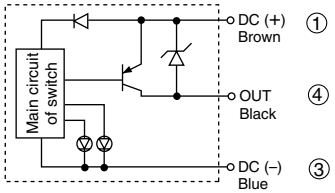
- Lead wires — Oilproof flexible heavy-duty vinyl cord: ø2.7 x 3.2 ellipse, 0.15 mm², 2 cores (D-M9BW(V)), 3 cores (D-M9NW(V), D-M9PW(V))
- This category 3 type autoswitch can only be used in zones 2 and 22.

Auto Switch Internal Circuit

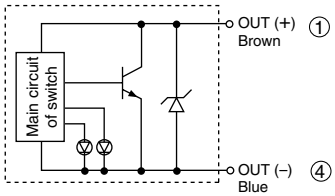
D-M9NW, D-M9NWV



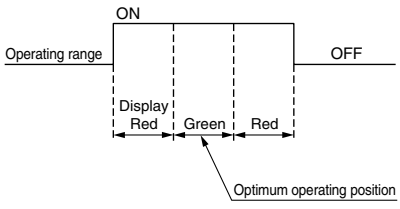
D-M9PW, D-M9PWV



D-M9BW, D-M9BWV



Indicator light / Display method



How to Order

D-M9 N W V L -588

- **Model no.**
- **Wiring/Output type**

N	3-wire NPN
P	3-wire PNP
B	2-wire

- **2 colour display**
- **Electrical entry direction**

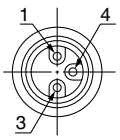
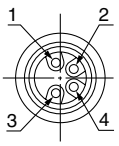
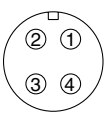
–	In-line
V	Perpendicular

- **Lead wire length**

–	0.5 m
M	1 m
L	3 m
Z	5 m
SAPC	0.5 m + M8 - 3 pins pre-wired connector
MAPC	1 m + M8 - 3 pins pre-wired connector
SBPC	0.5 m+ M8 - 4 pins pre-wired connector
MBPC	1 m + M8 - 4 pins pre-wired connector
SDPC	0.5 m+ M12 - 4 pins pre-wired connector
MDPC	1 m + M12 - 4 pins pre-wired connector

- **Suffix for ATEX certified CAT.3**

Connector Specifications

Connector type	M8-3 pins	M8-4 pins	M12-4 pins
Pin arrangement			

ATEX Compliant Solid State Switch/Band Mounting

D-H7A2-588

II 3G Ex nA II T5 X -10°C≤Ta≤+60°C
II 3D tD A22 IP67 T93°C X

Grommet

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Specifications

PLC: Programmable Logic Controller

D-H7 (With indicator light)	
Auto switch model number	**D-H7A2**
Wiring	3 wire
Output	PNP
Application	IC circuit/Relay/PLC
Power voltage	5/12/24V DC (4.5 to 28 VDC)
Current consumption	10mA or less
Load current	80mA or less
Internal voltage drop	0.8V or less
Current leakage	100μA or less at 24 VDC
Indicator light	Red LED illuminates when turned ON.

- Lead wire — Oilproof heavy-duty vinyl cord, ø3.4, 0.2mm², 3 cores (Brown, Black, Blue)
- This category 3 type autoswitch can only be used in zones 2 and 22.

How to order

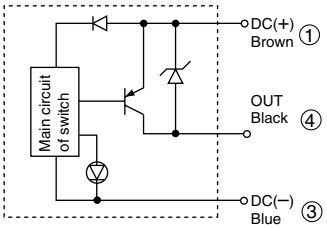
D-H7A2 □ -588

- **Suffix for ATEX certified CAT.3**
- **Switch No.**
- **Lead wire length**

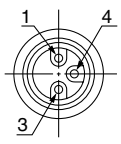
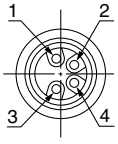
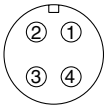
–	0.5 m
L	3 m
Z	5 m
SAPC	0.5 m + M8 - 3 pins pre-wired connector
MAPC	1 m + M8 - 3 pins pre-wired connector
SBPC	0.5 m+ M8 - 4 pins pre-wired connector
MBPC	1 m + M8 - 4 pins pre-wired connector
SDPC	0.5 m + M12 - 4 pins pre-wired connector
MDPC	1 m + M12 - 4 pins pre-wired connector

Internal Circuit

D-H7A2



Connector Specifications

Connector type	M8-3 pins	M8-4 pins	M12-4 pins
Pin arrangement			

ATEX Compliant Solid State Switch/Rail Mounting

D-F7P(V)-588

II 3G Ex nA II T5 X -10°C≤Ta≤+60°C
II 3D tD A22 IP67 T93°C X

Grommet

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Specifications

PLC: Programmable Logic Controller

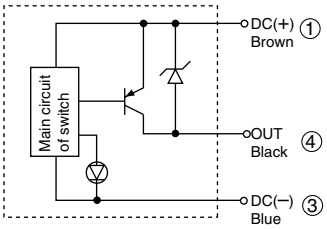
D-F7P, D-F7PV (With indicator light)

Auto switch model number	D-F7P	D-F7PV
Electrical entry	In-line	Perpendicular
Wiring	3 wire	
Output	PNP	
Application	IC circuit/Relay/PLC	
Power voltage	5/12/24V DC (4.5 to 28VDC)	
Current consumption	10mA or less	
Load current	80mA or less	
Internal voltage drop	0.8V or less	
Current leakage	100μA or less at 24VDC	
Indicator light	Red LED illuminates when turned ON	

- Lead wire —Oilproof heavy-duty vinily cord, ø3.4, 0.2mm², 3 cores (Brown, Black, Blue)
- This category 3 type autoswitch can only be used in zones 2 and 22.

Internal Circuit

D-F7P, D-F7PV



How to order

D-F7P □ □ -588

- **Switch No.**
- **Electrical entry**

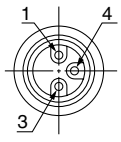
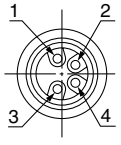
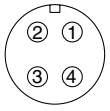
–	In Line
V	Perpendicular

- **Lead wire length**

–	0.5 m
L	3 m
Z	5 m
SAPC	0.5 m + M8 - 3 pins pre-wired connector
MAPC	1 m + M8 - 3 pins pre-wired connector
SBPC	0.5 m + M8 - 4 pins pre-wired connector
MBPC	1 m + M8 - 4 pins pre-wired connector
SDPC	0.5 m + M12 - 4 pins pre-wired connector
MDPC	1 m + M12 - 4 pins pre-wired connector

- **Suffix for ATEX certified CAT.3**

Connector Specifications

Connector type	M8-3 pins	M8-4 pins	M12-4 pins
Pin arrangement			

ATEX Compliant Solid State Switch/Tie-rod Mounting

D-F5P-588

II 3G Ex nA II T5 X -10°C≤Ta≤+60°C
II 3D tD A22 IP67 T93°C X

Grommet

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Specifications

PLC: Programmable Logic Controller

D-F5P (With indicator light)

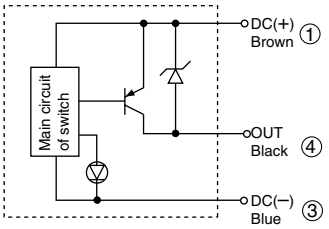
Auto switch model number	D-F5P
Wiring	3 wire
Output	PNP
Application	IC circuit/Relay/PLC
Power voltage	5/12/24V DC (4.5 to 28VDC)
Current consumption	10mA or less
Load current	80mA or less
Internal voltage drop	0.8V or less
Current leakage	100μA or less at 24VDC
Indicator light	Red LED illuminates when turned ON

● Lead wire — Oilproof heavy-duty vinyl cord, ø4, 0.3mm², 3 cores (Brown, Black, Blue)

● This category 3 type autoswitch can only be used in zones 2 and 22.

Internal Circuit

D-F5P



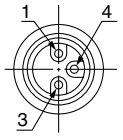
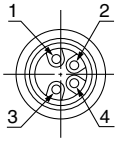
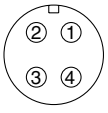
How to order

D-F5P □ **-588**

- **Suffix for ATEX certified CAT.3**
- **Switch No.**
- **Lead wire length**

–	0.5 m
L	3 m
Z	5 m
SAPC	0.5 m + M8 - 3 pins pre-wired connector
MAPC	1 m + M8 - 3 pins pre-wired connector
SBPC	0.5 m + M8 - 4 pins pre-wired connector
MBPC	1 m + M8 - 4 pins pre-wired connector
SDPC	0.5 m + M12 - 4 pins pre-wired connector
MDPC	1 m + M12 - 4 pins pre-wired connector

Connector Specifications

Connector type	M8-3 pins	M8-4 pins	M12-4 pins
Pin arrangement			

ATEX Compliant Solid State Switch/Direct Mounting

D-Y7P(V)-588

II 3G Ex nA II T5 X -10°C≤Ta≤+60°C
II 3D tD A22 IP67 T93°C X

Grommet

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Specifications

PLC: Programmable Logic Controller

D-Y7P/D-Y7PV (With indicator light)		
Auto switch model number	**D-Y7P**	**D-Y7PV**
Electrical entry	In-line	Perpendicular
Wiring	3 wire	
Output	PNP	
Application	IC circuit/Relay/PLC	
Power voltage	5/12/24V DC (4.5 to 28VDC)	
Current consumption	10mA or less	
Load current	80mA or less	
Internal voltage drop	0.8V or less	
Current leakage	100μA or less at 24VDC	
Indicator light	Red LED illuminates when turned ON	

● Lead wire — Oilproof heavy-duty vinyl cord, ø3.4, 0.15mm², 3 cores (Brown, Black, Blue)

● This category 3 type autoswitch can only be used in zones 2 and 22.

How to order

D-Y7P □ □ -588

Switch No.

Electrical entry

–	In-Line
V	Perpendicular

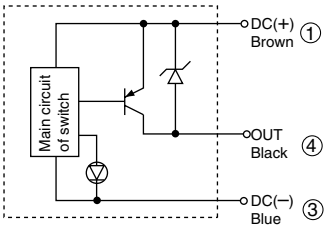
Suffix for ATEX certified CAT.3

Lead wire length

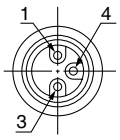
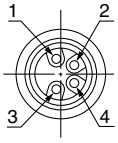
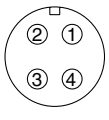
–	0.5 m
L	3 m
Z	5 m
SAPC	0.5 m + M8 - 3 pins pre-wired connector
MAPC	1 m + M8 - 3 pins pre-wired connector
SBPC	0.5 m + M8 - 4 pins pre-wired connector
MBPC	1 m + M8 - 4 pins pre-wired connector
SDPC	0.5 m + M12 - 4 pins pre-wired connector
MDPC	1 m + M12 - 4 pins pre-wired connector

Internal Circuit

D-Y7P, D-Y7PV



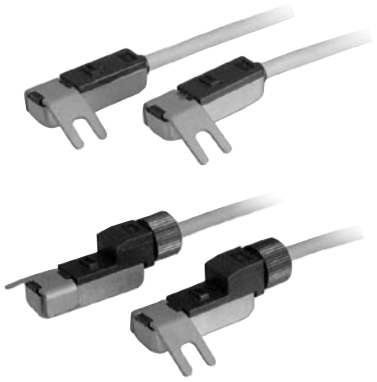
Connector Specifications

Connector type	M8-3 pins	M8-4 pins	M12-4 pins
Pin arrangement			

ATEX Compliant Solid State Switch / Direct Mounting

D-S7P-588

CE Ⓔx II 3G Ex nA II T5 X -10°C≤Ta≤+60°C
II 3D tD A22 IP67 T93°C X



Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

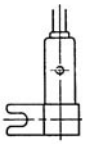
Specifications

PLC: Programmable Logic Controller

D-S7P1/D-S7P2 (With indicator light)		
Auto switch model number	**D-S7P1**	**D-S7P2**
Electrical entry	In-Line	Perpendicular
Wiring	3 wire	
Output	PNP	
Application	IC circuit/Relay/PLC	
Power voltage	5/12/24V DC (4.5 to 28VDC)	
Current consumption	10mA or less	
Load current	80mA or less	
Internal voltage drop	0.8V or less	
Current leakage	100μA or less at 24VDC	
Indicator light	Red LED illuminates when turned ON	

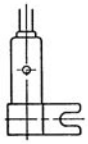
- Lead wire — Oilproof heavy-duty vinyl cord, ø3.4, 0.2mm², 3 cores (Brown, Black, Blue)
- This category 3 type autoswitch can only be used in zones 2 and 22.

D-□□□2



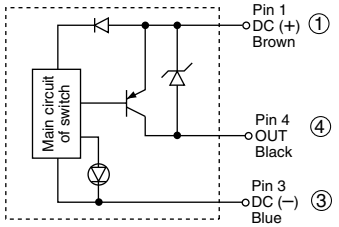
Left-hand mounting

D-□□□1



Right-hand mounting

Auto Switch Internal Circuit



How to order

D-S7P□□-588

- **Switch No.**
- **Mounting**

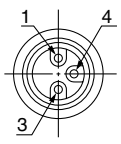
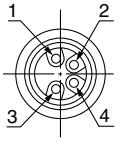
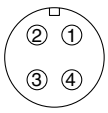
1	Right hand mounting
2	Left hand mounting

- **Lead wire length**

–	0.5 m
L	3 m
Z	5 m
SAPC	0.5 m + M8 - 3 pins pre-wired connector
MAPC	1 m + M8 - 3 pins pre-wired connector
SBPC	0.5 m + M8 - 4 pins pre-wired connector
MBPC	1 m + M8 - 4 pins pre-wired connector
SDPC	0.5 m + M12 - 4 pins pre-wired connector
MDPC	1 m + M12 - 4 pins pre-wired connector

- **Suffix for ATEX certified CAT.3**

Connector Specifications

Connector type	M8-3 pins	M8-4 pins	M12-4 pins
Pin arrangement			

SMC

ATEX Compliant Solid State Switch/Direct Mounting

D-S9P-588

CE Ⓔx II 3G Ex nA II T5 X -10°C≤Ta≤+60°C
II 3D tD A22 IP67 T93°C X

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

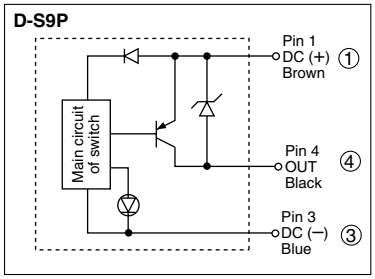
D-□□□2 **D-□□□1**

Right-hand mounting **Left-hand mounting**

D-□□□2 **D-□□□1**

Right-hand mounting **Left-hand mounting**

Internal Circuit



Specifications

PLC: Programmable Logic Controller

D-S9P/D-S9PV (With indicator light)		
Auto switch model number	**D-S9P**	**D-S9PV**
Electrical entry	In-Line	Perpendicular
Wiring	3 wire	
Output	PNP	
Application	IC circuit/Relay/PLC	
Power voltage	5/12/24V DC (4.5 to 28VDC)	
Current consumption	10mA or less	
Load current	80mA or less	
Internal voltage drop	0.8V or less	
Current leakage	100μA or less at 24VDC	
Indicator light	Red LED illuminates when turned ON	

● Lead wire — Oilproof heavy-duty vinyl cord, ø3.4, 0.2mm², 3 cores (Brown, Black, Blue)

● This category 3 type autoswitch can only be used in zones 2 and 22.

How to order

D-S9P □ □ □ **-588**

Switch No.

Electrical entry

–	In-Line
V	Perpendicular

Mounting

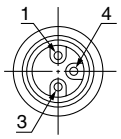
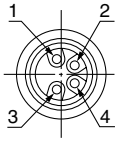
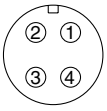
1	Right hand mounting
2	Left hand mounting

Suffix for ATEX certified CAT.3

Lead wire length

–	0.5 m
L	3 m
Z	5 m
SAPC	0.5 m + M8 - 3 pins pre-wired connector
MAPC	1 m + M8 - 3 pins pre-wired connector
SBPC	0.5 m + M8 - 4 pins pre-wired connector
MBPC	1 m + M8 - 4 pins pre-wired connector
SDPC	0.5 m + M12 - 4 pins pre-wired connector
MDPC	1 m + M12 - 4 pins pre-wired connector

Connector Specifications

Connector type	M8-3 pins	M8-4 pins	M12-4 pins
Pin arrangement			

ATEX Compliant Solid-state Switch / Direct Mounting

D-F6P-588

CE Ⓔx II 3G Ex nA II T5 X -10°C≤Ta≤+60°C
II 3D tD A22 IP67 T93°C X

Specifications

PLC: Programmable Logic Controller

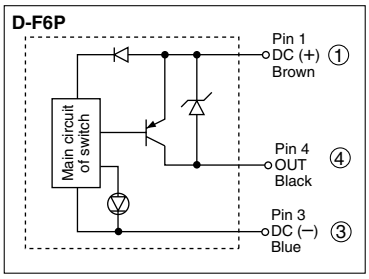
D-F6P (With indicator light)	
Auto switch part no.	**D-F6P**
Electrical entry direction	In-line
Wiring type	3-wire
Output type	PNP
Applicable load	IC circuit, relay, and PLC
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)
Current consumption	10 mA or less
Load current	40 mA or less
Internal voltage drop	0.8 V or less
Leakage current	100 μA or less at 24 V DC
Indicator light	Red LED illuminates when turned ON.

• Lead wires — Oilproof heavy-duty vinyl cord: 2.7 x 3.2 ellipse, 0.15 mm^2, 3 cores (Brown,Black,Blue)

• This category 3 type autoswitch can only be used in zones 2 and 22.

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Internal Circuit



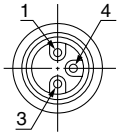
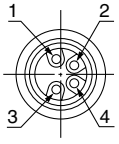
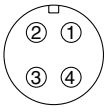
How to order

D-F6P □ **-588**

- **Switch No.**
- □ **Lead wire length**
- **Suffix for ATEX certified CAT.3**

–	0.5 m
L	3 m
Z	5 m
SAPC	0.5 m + M8 - 3 pins pre-wired connector
MAPC	1 m + M8 - 3 pins pre-wired connector
SBPC	0.5 m + M8 - 4 pins pre-wired connector
MBPC	1 m + M8 - 4 pins pre-wired connector
SDPC	0.5 m + M12 - 4 pins pre-wired connector
MDPC	1 m + M12 - 4 pins pre-wired connector

Connector Specifications

Connector type	M8-3 pins	M8-4 pins	M12-4 pins
Pin arrangement			

SMC

ATEX Compliant Reed Switch/Band Mounting

D-C73/D-C80-588

CE Ex II 3G Ex nA II T5 X -10°C≤ Ta ≤+60°C
II 3D tD A22 IP67 T93°C X

Grommet

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Specifications

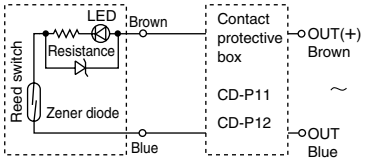
PLC: Programmable Logic Controller

D-C7 (With indicator light)		
Auto switch model number	**D-C73**	
Application	Relay/PLC	
Load voltage	24V DC	
Max. load current and range	5 to 40mA	
Contact protection circuit	None	
Internal voltage drop	≤ 2.4V	
Indicator light	Red LED illuminates when turned ON	
D-C8 (Without indicator light)		
Auto switch model number	**D-C80**	
Application	Relay/PLC/IC circuit	
Load voltage	24V AC/DC or less	48V AC/DC or less
Max. load current	50mA	40mA
Contact protection circuit	None	
Internal resistance	1Ω or less (Including 3m lead wire)	

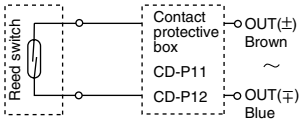
• Lead wire — Oilproof vinyl heavy insulation cable, ø3.4, 0.2mm^2, 2 cores (Brown, Blue), 0.5m
• This category 3 type autoswitch can only be used in zones 2 and 22.

Internal Circuit

D-C73



D-C80



Note) ① In the case operation load is an inductive load.
② In the case the wiring length to load is more than 5m.
Be sure to use the auto switch with the contact protection box in any case mentioned above.

How to order

D-C □□ □ -588

Suffix for ATEX certified CAT.3

Switch No.

73	With indicator lamp
80	Without indicator lamp

Lead wire length

–	0.5m
L	3m
Z	5m (Except D-C80)

ATEX Compliant Reed Switch/Rail Mounting

D-A73(H)/D-A80(H)-588

CE Ⓔx II 3G Ex nA II T5 X -10°C≤ Ta ≤+60°C
II 3D tD A22 IP67 T93°C X

Grommet

Specifications

PLC: Programmable Logic Controller

D-A73, D-A73H (With indicator light)		
Auto switch model number	**D-A73, D-A73H**	
Application	Relay/PLC	
Load voltage	24V DC	
Load current range	5 to 40mA	
Contact protection circuit	None	
Internal voltage drop	≤ 2.4V	
Indicator light	Red LED illuminates when turned ON	
D-A80, D-A80H (Without indicator light)		
Auto switch model number	**D-A80, D-A80H**	
Application	Relay/IC circuit/PLC	
Load voltage	24V AC/DC or less	48V AC/DC or less
Max. load current	50mA	40mA
Contact protection circuit	None	
Internal resistance	1Ω or less (Including 3m lead wire)	

- Lead wire — Oilproof vinyl heavy insulation cable, ø3.4, 0.2mm², 2 cores (Brown, Blue), 0.5m
- This category 3 type autoswitch can only be used in zones 2 and 22.

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

How to order

D-A □ □ □ □ -588

Suffix for ATEX certified CAT.3

Switch No.

73	With indicator lamp
80	Without indicator lamp

Lead wire length

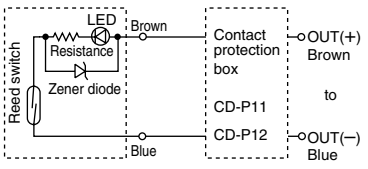
–	0.5m
L	3m
Z	5m (Except A80□)

Electrical Entry

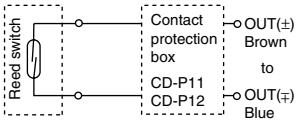
-	Perpendicular
H	In-line

Internal Circuit

D-A73, D-A73H



D-A80, D-A80H



Note) ①In the case operation load is an inductive load.
②In the case the wiring length to load is ">" 5m.
Be sure to use the auto switch with the contact protection box in any case mentioned above.

ATEX Compliant Reed Switch/Tie-rod Mounting

D-A54/D-A67-588

II 3G Ex nA II T5 X -10°C≤Ta≤+60°C
II 3D tD A22 IP67 T93°C X

Grommet

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Specifications

PLC: Programmable Logic Controllar

D-A5 (With indicator light)	
Auto switch model number	**D-A54**
Application	Relay/PLC
Load voltage	24V DC
Max. load current and range	5 to 50mA
Contact protection circuit	Built-in
Internal voltage drop	2.4V or less (~20mA) / 3.5 V or less (~50mA)
Indicator light	Red LED illuminates when turned ON

D-A6 (Without indicator light)	
Auto switch model number	**D-A67**
Application	PLC/IC circuit
Load voltage	MAX. 24V DC
Max. load current	30mA
Contact protection circuit	None
Internal resistance	1Ω or less

- Lead wire —— Oilproof vinyl heavy insulation cable, ø4, 0.3mm², 2 cores (Brown, Blue), 0.5m
- This category 3 type autoswitch can only be used in zones 2 and 22.

How to order

D-A □□ □ -588

Suffix for ATEX certified CAT.3

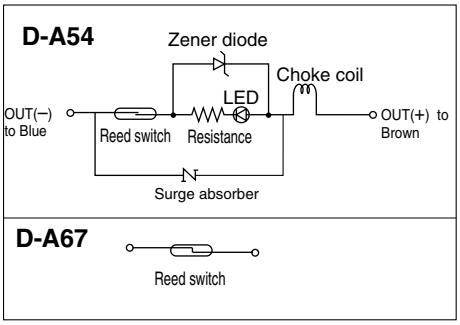
Switch No.

54	With indicator lamp
67	Without indicator lamp

Lead wire length

–	0.5m
L	3m
Z	5m (Except D-A67)

Internal Circuit



ATEX Compliant Reed Switch/Direct Mounting

D-A90(V)/D-A93(V)-588

II 3G Ex nA II T5 X -10°C≤Ta≤+60°C
II 3D tD A22 IP67 T93°C X

Grommet

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Specifications

PLC: Programmable Logic Controller

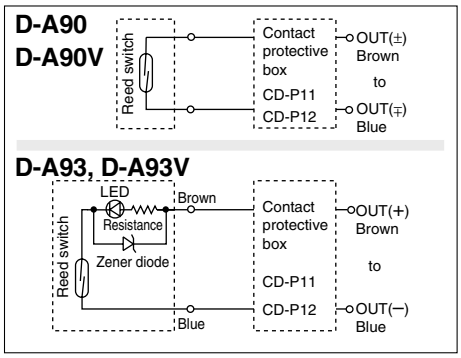
D-A90, D-A90V (Without indicator light)		
Auto swich modle number	**D-A90, D-A90V**	
Application	IC circuit/Relay/PLC	
Load voltage	24V AC/DC or less	48V AC/DC or less
Max. load current	50mA	40mA
Contact protection circuit	None	
Internal resistance	1Ω or less (Including 3m lead wire)	

D-A93, D-A93V (With indicator light)	
Auto switch model number	**D-A93, D-A93V**
Application	Relay/PLC
Load voltage	24V DC
Max. load current and load current range	5 to 40mA
Contact protection circuit	None
Internal voltage drop	≤ 2.4V (up to 20mA)/≤ 3V (up to 40mA)
Indicator light	Red LED illuminates when turned ON

● Lead wire
D-A90(V)/D-A93(V) —— Oilproof vinyl heavy insulation cable, ø2.7, 0.18mm² X 2cores (Brown, Blue)

● This category 3 type autoswitch can only be used in zones 2 and 22.

Internal Circuit



Note) ①In the case operation load is an inductive load.
②In the case the wiring length to load is ">" 5m.
Be sure to use the auto switch with the contact protection box in any case mentioned above.

Dimensions

D-A □ □ □ □ -588

Suffix for ATEX certified CAT.3

Switch No.

93	With indicator lamp
90	Without indicator lamp

Lead wire length

–	0.5m
L	3m
Z	5m (Except D-A90□)

Electrical entry

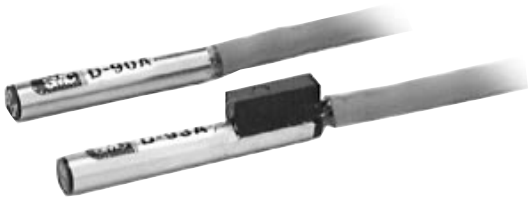
–	In line
V	Perpendicular

ATEX Compliant Reed Switch/Direct Mounting

D-90A/D-93A-588

II 3G Ex nA II T5 X -10°C≤Ta≤+60°C
II 3D tD A22 IP67 T93°C X

Grommet
Lead wire: Heavy insulation cable



Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Specifications

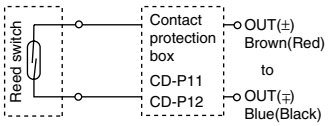
PLC: Programmable Logic Controller

D-90A (Without indicator light)	
Auto switch model number	**D-90A**
ATEX Category	II 3GD EEx nA II T5 X -10°C≤Ta≤+60°C IP67
Application	Relay/IC circuit/PLC
Load voltage	24V AC/DC or less
Max. load current	50mA
Internal resistance	1Ω or less
D-93A (With indicator light)	
Auto switch model number	**D-93A**
ATEX Category	II 3GD EEx nA II T5 X -10°C≤Ta≤+60°C IP67
Application	Relay/PLC
Load voltage	24V DC
Load current range	5 to 40mA
Internal voltage drop	≤ 2.4V
Indicator light	Red LED illuminates when turned ON

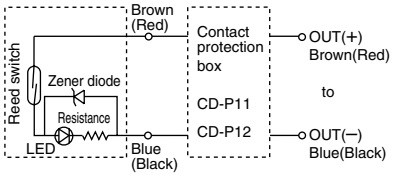
- Lead wire — Oilproof vinyl heavy insulation cable, 0.2mm², 2 cores (Brown, Blue), 0.5m
- This category 3 type autoswitch can only be used in zones 2 and 22.

Internal Circuit

D-90A



D-93A



Note) ①In the case operation load is an inductive load.
②In the case the wiring length to load is ">" 5m.
Be sure to use the auto switch with the contact protection box in any case mentioned above.

How to order

D- □□ A□ -588

Suffix for ATEX certified CAT.3

Switch No.

93	With indicator lamp
90	Without indicator lamp

Lead wire length

–	0.5m
L	3m
Z	5m

ATEX Compliant Reed Switch/Direct Mounting

D-Z73/D-Z80-588

II 3G Ex nA II T5 X -10°C≤Ta≤+60°C
II 3D tD A22 IP67 T93°C X

Grommet

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Specifications

PLC: Programmable Logic Controller

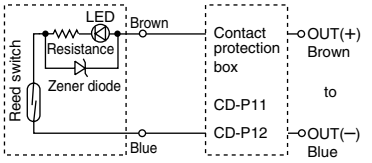
D-Z7 (With indicator light)		
Auto swich model number	**D-Z73**	
Application	Relay/PLC	
Load voltage	24V DC	
Max. load current and load current range	5 to 40mA	
Contact protection circuit	None	
Internal voltage drop	2.4V or less (20mA) / 3V or less (~40mA)	
Indicator light	Red LED illuminates when turned ON	

D-Z8 (Without indicator light)		
Auto switch model number	**D-Z80**	
Application	Relay/PLC/IC circuit	
Load voltage	24V AC/DC or less	48V AC/DC or less
Max. load current		40mA
Contact protection circuit	50mA	None
Internal resistance	1Ω or less	

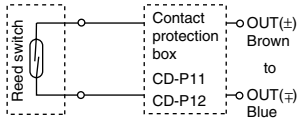
- Lead wire – Oilproof vinyl heavy insulation cable, ø3.4, 0.2mm², 3 cores , 2 cores (Brown, Blue), 0.5m (for only D-Z73 ø2.7, 0.18mm², 2 cores)
- This category 3 type autoswitch can only be used in zones 2 and 22.

Internal Circuit

D-Z73



D-Z80



Note) ①In the case operation load is an inductive load.
②In the case the wiring length to ">" 5m.
Be sure to use the auto switch with the contact protection box in any case mentioned above.

How to order

D-Z □□ □ -588

Suffix for ATEX certified CAT.3

Switch No.

73	With indicator lamp
80	Without indicator lamp

Lead wire length

–	0.5m
L	3m
Z	5m (Except D-Z80)

ATEX Compliant Reed Switch/Direct Mounting

D-E73A/D-E80A-588

II 3G Ex nA II T5 X -10°C≤Ta≤+60°C
II 3D tD A22 IP67 T93°C X

Grommet

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

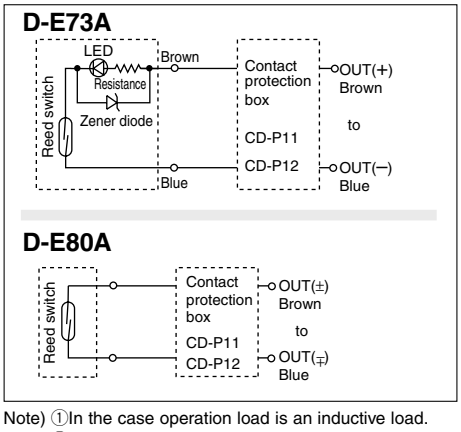
Specifications

PLC: Programmable Logic Controller

D-E73A (With indicator light)		
Auto swich model number	**D-E73A**	
Application	Relay/PLC	
Load voltage	24V DC	
Max. load current and load current range	5 to 40mA	
Contact protection circuit	None	
Internal voltage drop	2.4V or less	
Indicator light	Red LED illuminates when turned ON	
D-E80A (Without indicator light)		
Auto switch model number	**D-E80A**	
Application	Relay/PLC/IC circuit	
Load voltage	24V AC/DC or less	48V AC/DC or less
Max. load current	50mA	40mA
Contact protection circuit	None	
Internal resistance	1Ω or less	

- Lead wire — Oilproof vinyl heavy insulation cable, ø3.4, 0.2mm², Black, Blue), 2 cores (Brown, Blue), 0.5m
- This category 3 type autoswitch can only be used in zones 2 and 22.

Internal Circuit



Note) ①In the case operation load is an inductive load.
②In the case the wiring length to load is ">" 5m.
Be sure to use the auto switch with the contact protection box in any case mentioned above.

How to order

D-E □□A□ -588

Suffix for ATEX certified CAT.3

Switch No.

73	With indicator lamp
80	Without indicator lamp

Lead wire length

–	0.5m
L	3m

Note) Z (5 metres) is not available on D-E73A and D-E80A.

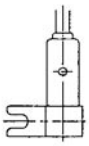
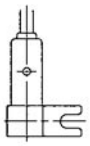
ATEX Compliant Reed Switch/Direct Mounting

D-R73/D-R80-588

II 3G Ex nA II T5 X -10°C≤Ta≤+60°C
II 3D tD A22 IP67 T93°C X

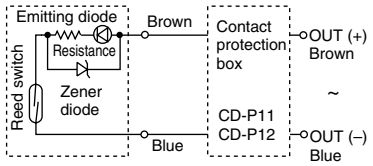
Grommet

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

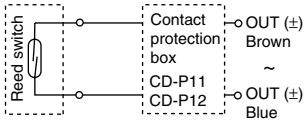
D-□□□2	D-□□□1
	
Left hand mounting	Right hand mounting

Internal circuit

D-R731/R732



D-R801/R802



Note) ①In the case operation load is an inductive load.
②In the case the wiring length to load is ">" 5m.
Be sure to use the auto switch with the contact protection box in any case mentioned above.

Specifications

PLC: Programmable Logic Controller

D-R73□ (With indicator light)	
Auto switch model no.	**D-R731/D-R732**
Applicable load	Relay, PLC
Load voltage	24V DC
Load current range	5 to 40mA
Internal voltage drop	2.4V or less
Indicator light	Red LED illuminates when turned ON
D-R80□ (Without indicator light)	
Auto switch model no.	**D-R801/D-R802**
Applicable load	Relay, IC circuit, PLC
Load voltage	24V $^{AC}_{DC}$ or less
Max. load current	50mA
Internal resistance	1Ω or less

● Lead wire ── Oil proof heavy - duty vinyl cord, ø3.4, 0.2mm², 2 cores (Brown, blue)
● This category 3 type autoswitch can only be used in zones 2 and 22.

How to order

D-R □□ □ □ -588

Suffix for ATEX certified CAT.3

Switch No.

73	With indicator light
80	Without indicator light

Lead wire length

–	0.5m
L	3m
Z	5m

Mounting

1	Right hand mounting
2	Left hand mounting

Pneumatic Cylinder Positioner

Series 56-IP200
Series 56-IP210

CE Ⓔx II 3GD c T4...T6 (See table below)

How to Order

56 - IP2 0 0 □ □

Conform to ATEX directive category 3

Stroke 25 to 300mm

Model

0	Standard
1	Movability type of outer cylinder function inner cylinder

Temperature and Material

–	Standard -5° to 60°C
T	High -5° to 100°C
L	Low -30° to 60°C
S	Feedback spring and zero adjuster screw made of stainless steel

Specifications

	Ambient temperature range		
Classification	Low temp. model 56-IP20□-□ L□-□	Standard model 56-IP20□-□-□-□	High temp. model 56-IP20□-□-T□-□
II 3GD c T4	—	—	-5°C to 100°C
II 3GD c T5	—	—	-5°C to 80°C
II 3GD c T6	-30°C to 60°C	-5°C to 60°C	-5°C to 60°C

Supply pressure	0.3~0.7MPa
Signal pressure	0.02~0.1MPa
Port size	Rc 1/4 (standard)
Pressure gauge port type	Rc1/8
Linearity	Less than +/- 2% F.S.
Hysteresis	Less than 1% F.S.
Repeatability	Less than 1% F.S.
Sensitivity	Less than ±0.5% F.S.
Air consumption	18l/min (ANR) or less (at 0.5 MPa supply)
Max. air flow	200l/min (ANR) or less (at 0.5 MPa supply)
Applicable cylinder (mm)	50 ~ 300 bore sizes / 25 ~ 300 mm stroke
Operating temperature	-5°C ~ 60°C (Standard)
	-30°C ~ 60°C (Low Temperature)
	-5°C~100°C (High Temperature)

Note) Standard air temperature: 20°, Absolute pressure: 101.3KPa.
Relative humidity: 65%

Pneumatic-Pneumatic Positioner

Series 55/56-IP5000 (Lever type)

Series 55/56-IP5100 (Rotary type)

CE Ⓔx II 2GDc T4-T6
II 3GDc T4-T6

For more details, other specifications, dimensions, see the specific catalogue.

How to Order

56 - IP5 000 — 0 1 0 □ □ — □

ATEX category

55	2
56	3

Positioner type

000	Lever type
100	Rotary type

Input pressure

0	Standard 0.02 to 0.1MPa
1	1/2 split, 0.02 to 0.06, 0.06 to 0.1MPa

Pressure gauge (SUP, OUT1)

0	Not provided
1	0.2MPa
2	0.3MPa
3	1.0MPa

Indication of opening Note 1)

0	Not indicated
1	Indicated

Note 1) 55/56-IP5000 is available only with option "0" (no indication).

Ambient temperature

–	Standard –20 to 80°C
T	High temperature –5 to 100°C
L	Low temperature –30 to 60°C

Note) Please refer to table below

Accessories Note 1)

–	Without accessory (standard)	With standard lever (10 to 85 mm stroke) for 55/56-IP5000
A	With ø0.7 output restrictor integrated pilot valve	Common to 55/56-IP5000 and 55/56-IP5100 small capacity actuators
B	With ø1.0 output restrictor integrated pilot valve	
C	With fork lever type fitting M	Only for 55/56-IP5100
D	With fork lever type fitting S	
E	With lever unit for a 35 to 100 mm stroke	Only for 55/56-IP5000 Note 2)
F	With lever unit for a 50 to 140 mm stroke	

Note 1) If multiple accessories are required, they should be indicated in alphabetical order.
Note 2) For "E" and "F", standard lever is not provided.

Pressure gauge / Air port

–	Standard Rc
N	NPT
F	G

Specifications

Classification	Ambient temperature range		
	Low temp. model 55-IP5□00-□□□L-□	Standard model 55-IP5□00-□□□-□	High temp. model 55-IP5□00-□□□T□-□
II 2GD c T4	–	–	-5°C ≤ Ta ≤ 100°C
II 2GD c T5	–	-20°C ≤ Ta ≤ 80°C	-5°C ≤ Ta ≤ 80°C
II 2GD c T6	-30°C ≤ Ta ≤ 60°C	-20°C ≤ Ta ≤ 60°C	-5°C ≤ Ta ≤ 60°C

Classification	Ambient temperature range		
	Low temp. model 56-IP5□00-□□□L-□	Standard model 56-IP5□00-□□□-□	High temp. model 56-IP5□00-□□□T□-□
II 3GD c T4	–	–	-5°C ≤ Ta ≤ 100°C
II 3GD c T5	–	-20°C ≤ Ta ≤ 80°C	-5°C ≤ Ta ≤ 80°C
II 3GD c T6	-30°C ≤ Ta ≤ 60°C	-20°C ≤ Ta ≤ 60°C	-5°C ≤ Ta ≤ 60°C

Item \ Type	55/56-IP5000		55/56-IP5100	
	Lever type lever feedback		Rotary type cam feedback	
	Single action	Double action	Single action	Double action
Supply pressure	0.14~0.7MPa			
Input pressure	0.02~0.1MPa			
Standard stroke	10~85mm		60°~100°	
Sensitivity	Within 0.1%F.S.	Within 0.5%F.S.		
Linearity	Within ±1%F.S.	Within ±2%F.S.		
Hysteresis	Within 0.75%F.S.	Within 1%F.S.		
Repeatability	Within ±0.5%F.S.			
Output flow rate	80l/min (ANR) or more (SUP.=0.14MPa)			
	200l/min (ANR) or more (SUP.=0.4MPa)			
Air consumption	Within 5l/min (ANR) (SUP.=0.14MPa)			
	Within 11l/min (ANR) (SUP.=0.4MPa)			
Ambient and using fluid Temperature	-20°C~80°C (Standard model) -30°C~60°C (Low Temp.) -5°C~100°C (High Temp.)			
Thermal coefficient	Within 0.1%F.S./°C			
Air connection port	Rc1/4 (Standard)			
Material	Aluminium diecast, Stainless steel, Brass, Nitrile rubber			
Mass	Approx. 1.4kg		Approx. 1.2kg	
Size	118 x 102 x 86 (Body)		118 x 92 x 77.5 (Body)	

Note) Standard air temperature: 20°, Absolute pressure: 101.3KPa.
Relative humidity: 65%

Electro-Pneumatic Positioner

Series IP6000 (Lever type)

Series IP6100 (Rotary type)

CE Ex II 2G Ex ib IIC T5/T6

For more details, other specifications, dimensions, see the specific catalogue.

How to Order

IP6 000 – 0 1 0 – □ – X14

ATEX category 2

Positioner type

000	Lever type
100	Rotary type

Pressure gauge (SUP, OUT1)

1	0.2MPa (R1/8)
2	0.3MPa (R1/8)
3	1.0MPa (R1/8)

Accessories Note 1)

–	Without accesory (standard)	With standard lever (10 to 85 mm stroke) for IP6000
A	With ø0.7 output restrictor integrated pilot valve	Common to IP6000 and IP6100 small capacity actuators
B	With ø1.0 output restrictor integrated pilot valve	
C	With fork lever type fitting MX	Only for IP6100
D	With fork lever type fitting SX	
E	With lever unit for a 35 to 100 mm stroke	Only for IP6000
F	With lever unit for a 50 to 140 mm stroke	
G	With compensation spring (A)	Common to IP6000 and IP6100

Note 1) If multiple accessories are required, they should be indicated in alphabetical order.

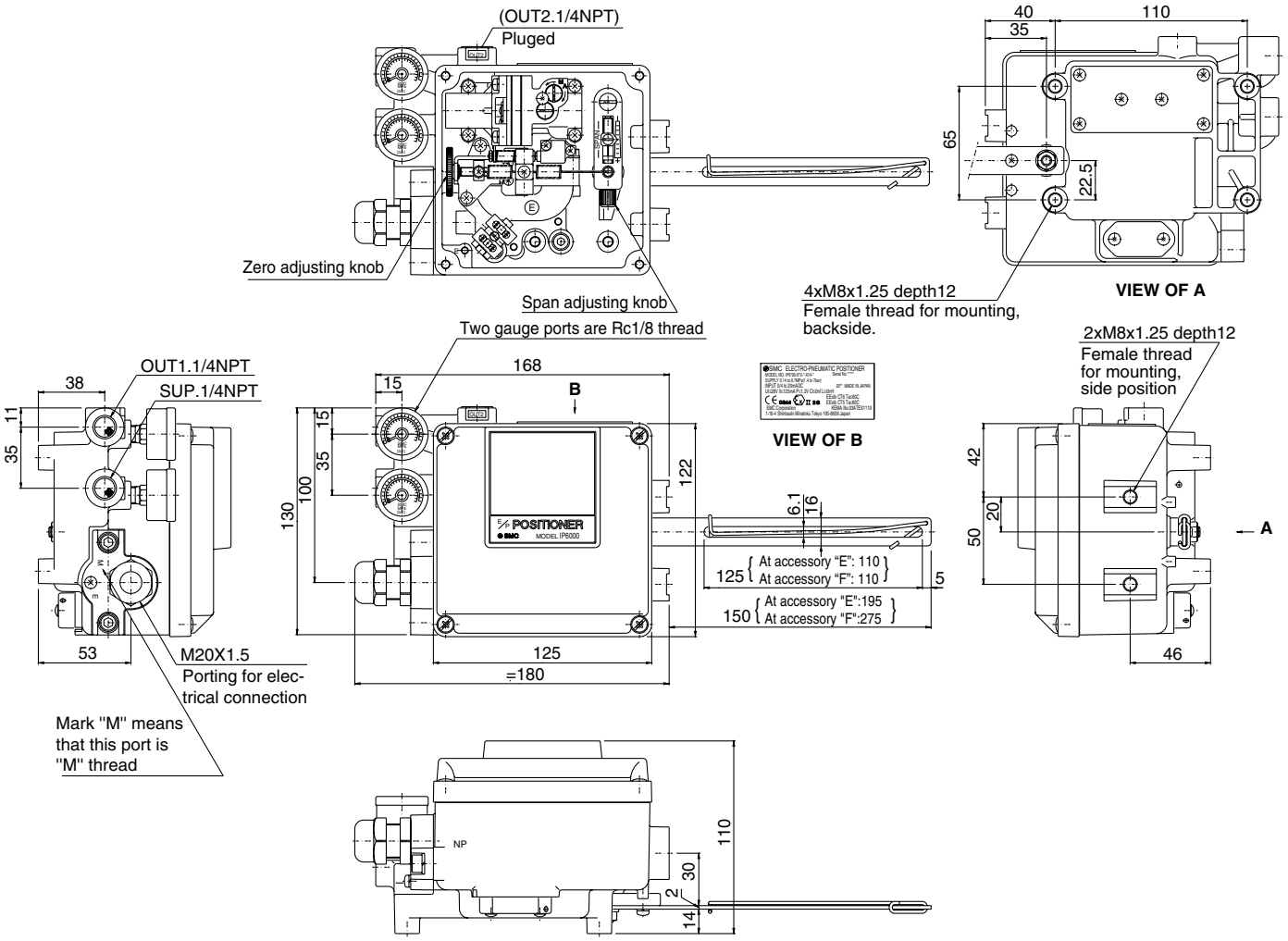
Specifications

Item \ Type	IP6000		IP6100	
	Levery type lever		Rotary type cam	
	Single action	Double action	Single action	Double action
Input current	4~20mADC (Standard) Note1			
Input resistance	235 ± 15Ω (4~20mADC)			
Supply air pressure	0.14~0.7Mpa			
Standard stroke	10~85mm (External lever allowable runout angle 10°~30°		60°~100° Note2	
Sensitivity	Within 0.1%F.S.	Within 0.5%F.S.		
Linearity	Within ±1%F.S.	Within ±2%F.S.		
Hysteresis	Within 0.75%F.S.	Within 1%F.S.		
Repeatability	Within ±0.5%F.S.			
Thermal coefficient	Within 0.1%F.S./°C			
Output flow rate	80l/min (ANR) or more (SUP.=0.14MPa) Note3			
Air consumption	Within 5l/min (ANR) (SUP.=0.4MPa)			
Ambient and using fluid Temperature	-20°C~80°C (T5)			
	-20°C~60°C (T6)			
Explosion protected Construction	Intrinsic safety type of explosion protection (CE 0344 Ex II 2G Ex ib II C T5/T6)			
	Approval No. KEMA No.03 ATEX1119			
Air connection port	1/4NPT female screw			
Electric wiring connection port	M20 x 1.5			
Material	Aluminium diecast for the body			
Mass	Approx. 2.4kg			
Classification of degree of protection	JISF8007 IP55 (Conform to IEC 60529)			
Parameters (Current circuit)	Ui ≤ 28V, Ii ≤ 125mA, Pi ≤ 1.2W, Ci ≤ OnF, Li ≤ OmH			

Note 1) 1/2 split range is possible with the standard type (by adjusting the span).
Note 2) The stroke is adjustable in 0~60 and 0~100.
Note 3) Standard air (JIS B0120): temp. 20°C, absolute press. 760mmHg, ratio humidity 65%.

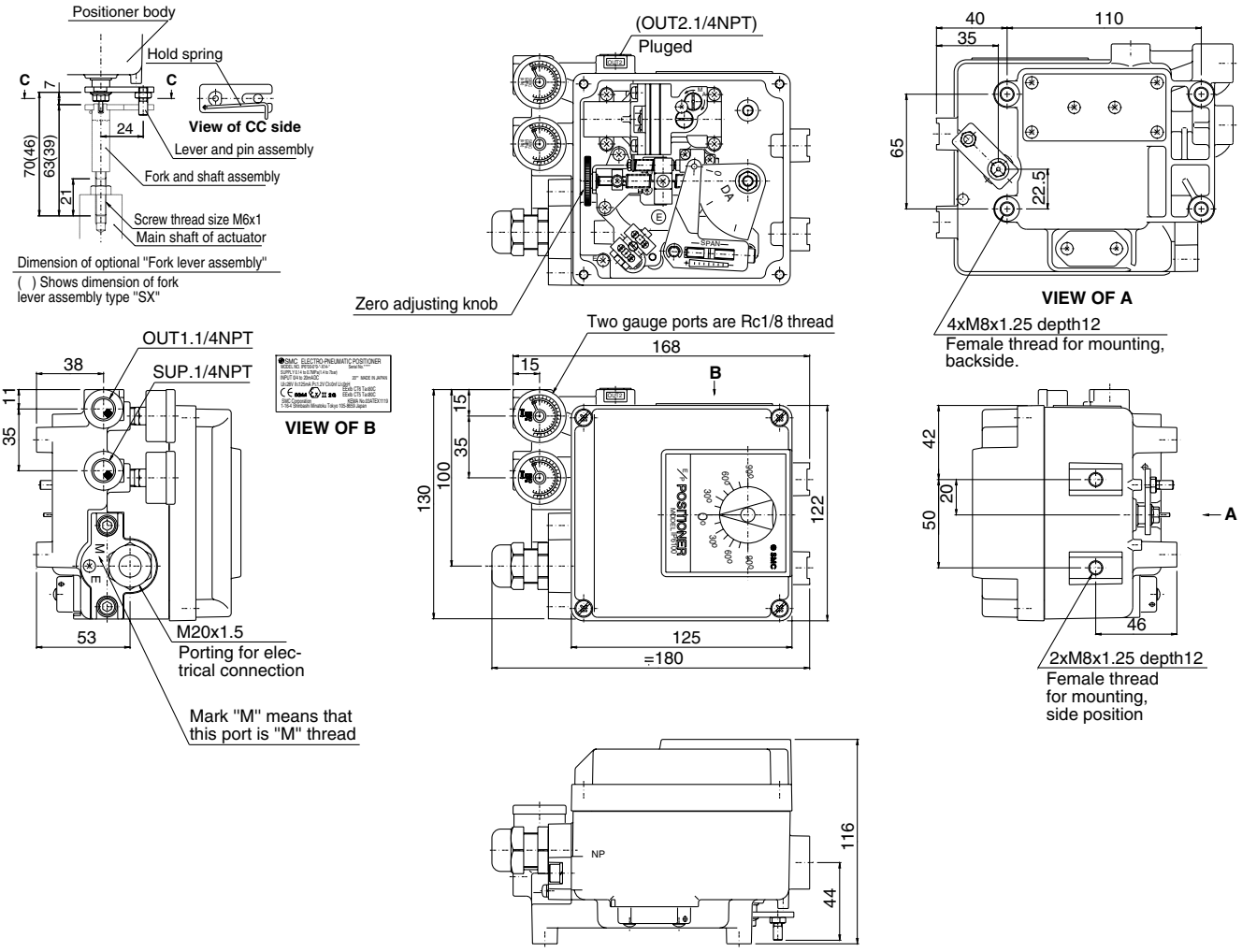
Dimensions / IP6000

IP6000-0□0-□-X14 (lever type)



Dimensions / IP6100

IP6100-0□0-□-X14 (rotary type)



Electro-Pneumatic Positioner
Series IP8000 (Lever type)
Series IP8100 (Rotary type)

CE Ⓔx II 2G Ex ib IIC T5/T6

For more details, other specifications, dimensions, see the specific catalogue.

How to Order

IP8 [000] – 0 [0] 0 – [ ] – X14 – [L]

Positioner type

000	Lever type
100	Rotary type

Pressure gauge (SUP, OUT1)

0	Not provided
1	0.2MPa (R1/8)
2	0.3MPa (R1/8)
3	1.0MPa (R1/8)

ATEX category 2

Option Note 2)

Symbol	Option
—	Standard: -20°C to 80°C
L	Low temperature (–40 to 60°C)
W	With top window (IP8100 Only)

Note 2) Combination of L and W is not available.

Accessories Note 1)

–	Without accessory (standard)	With standard lever (10 to 85 mm stroke) for IP8000
A	With ø0.7 output restrictor integrated pilot valve	Common to IP8000 and IP8100 small capacity actuators
B	With ø1.0 output restrictor integrated pilot valve	
C	With fork lever type fitting MX	Only for IP8100
D	With fork lever type fitting SX	
E	With lever unit for a 35 to 100 mm stroke	Only for IP8000
F	With lever unit for a 50 to 140 mm stroke	
G	With compensation spring (A)	Common to IP8000 and IP8100
H	With external scale plate	Only for IP8100

Note 1) If multiple accessories are required, they should be indicated in alphabetical order.

Lever type
IP8000

Rotary type
IP8100

Specifications

Item \ Type	IP8000		IP8100	
	Lever type lever feedback		Rotary type cam feedback	
	Single action	Double action	Single action	Double action
Input current	4 to 20mADC (standard) Note 1)			
Input resistance	235±15Ω (4 to 20mADC)			
Supply air pressure	0.14 to 0.7MPa			
Standard stroke	10 to 85mm (Deflection angle 10 to 30°)		60 to 100° Note 2)	
Sensitivity	Within 0.1%F.S.	Within 0.5%F.S.		
Linearity	Within ±1%F.S.	Within ±2%F.S.		
Hysteresis	Within 0.75%F.S.	Within 1%F.S.		
Repeatability	Within 0.5%F.S.			
Coefficient of temperature	Within 0.1%F.S. / °C			
Output flow rate	80ℓ/min (ANR) or more (SUP = 0.14MPa) Note 3)			
Air consumption	Within 5ℓ/min (ANR) or less (SUP = 0.14MPa)			
Ambient and using fluid temperature	Standard type: –20 to 80°C (T5) / –20 to 60°C (T6)			
	Low temperature type: –40 to 60°C (T6)			
Explosion protected construction CE Ⓔx	Intrinsic safety type of explosion protection (CE 0344 Ⓔx II 2G Ex ib IIc T5/T6)			
	Approval no. KEMA 03 ATEX1119			
Air connection port	1/4 NPT female screw			
Electrical wiring connection	M20x1.5			
Material	Aluminum diecast body			
Weight	Approx. 2.4kg			
Classification of degree of protection	JISF8007, IP65 (conforms to IEC 60529)			
Parameters	Ui ≤28 V, Ii ≤125 mA, Pi ≤ 1.2W, Ci ≤ 0nF, Li ≤ 0mH			

Note 1) 1/2 Split range is possible with the standard type (by adjusting the span).
Note 2) The stroke is adjustable in 0 to 60°C and 0 to 100°
Note 3) Standard air (JIS B0120): temp. 20°C, absolute press. 760mmHg, ratio humidity 65%.

Accessory / Option

Pilot valve with output restriction (IP8000, 8100 type)

In general, mounting on a small-size actuator may cause hunting. For prevention, a pilot valve with a built-in output restriction is available. The restriction is removable.

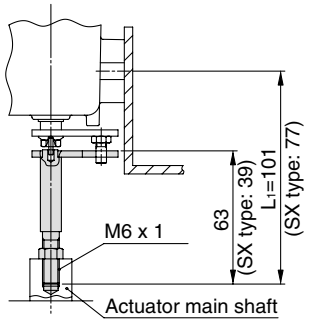
(Ambient temperature: Standard)

Actuator Capacity	Orifice size	Part number	Pilot unit part number
90cm^3	ø0.7	P36801080	P565010-18
180cm^3	ø1	P36801081	P565010-19

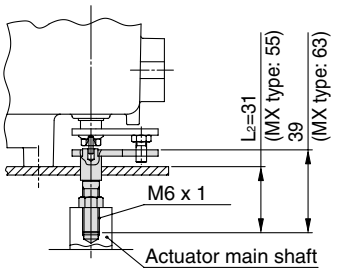
Fork lever joints (IP8100 type)

Two types of the fork lever joints are available dependent upon different mounting dimensions.
This is recommended because it can absorb off-centering, compared with direct mounting type.

Part name	Part number
Fork lever assembly MX	P368010-36
Fork lever assembly SX	P368010-37



Side mounting with the fork lever assembly MX

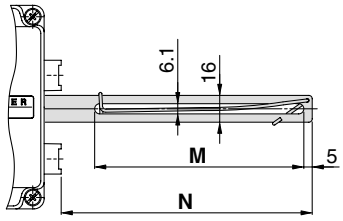


Side mounting with the fork lever assembly SX

External feedback lever (IP8000 type)

Different feedback levers are available dependent upon valve strokes. Consult with SMC in case of 10mm or less stroke.

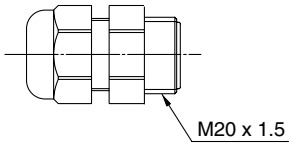
Stroke	Unit number	Size **M**	Size **N**
10 to 85mm (standard)	P368010-20	125	150
35 to 100mm (Accessory "E")	P368010-21	110	195
50 to 140mm (Accessory "F")	P368010-22	110	275



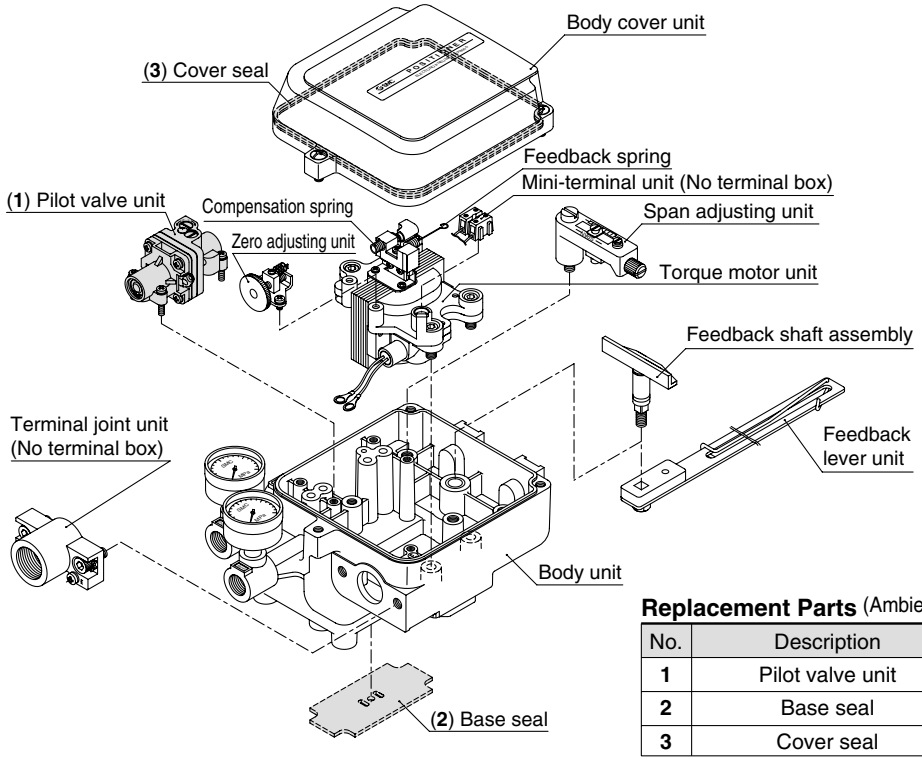
Cable gland (for -X14)

Cable gland

Description	Part number	Suited cable outer diameter
Cable gland	07-9534-1M2B	ø6 to ø12



Exploded View

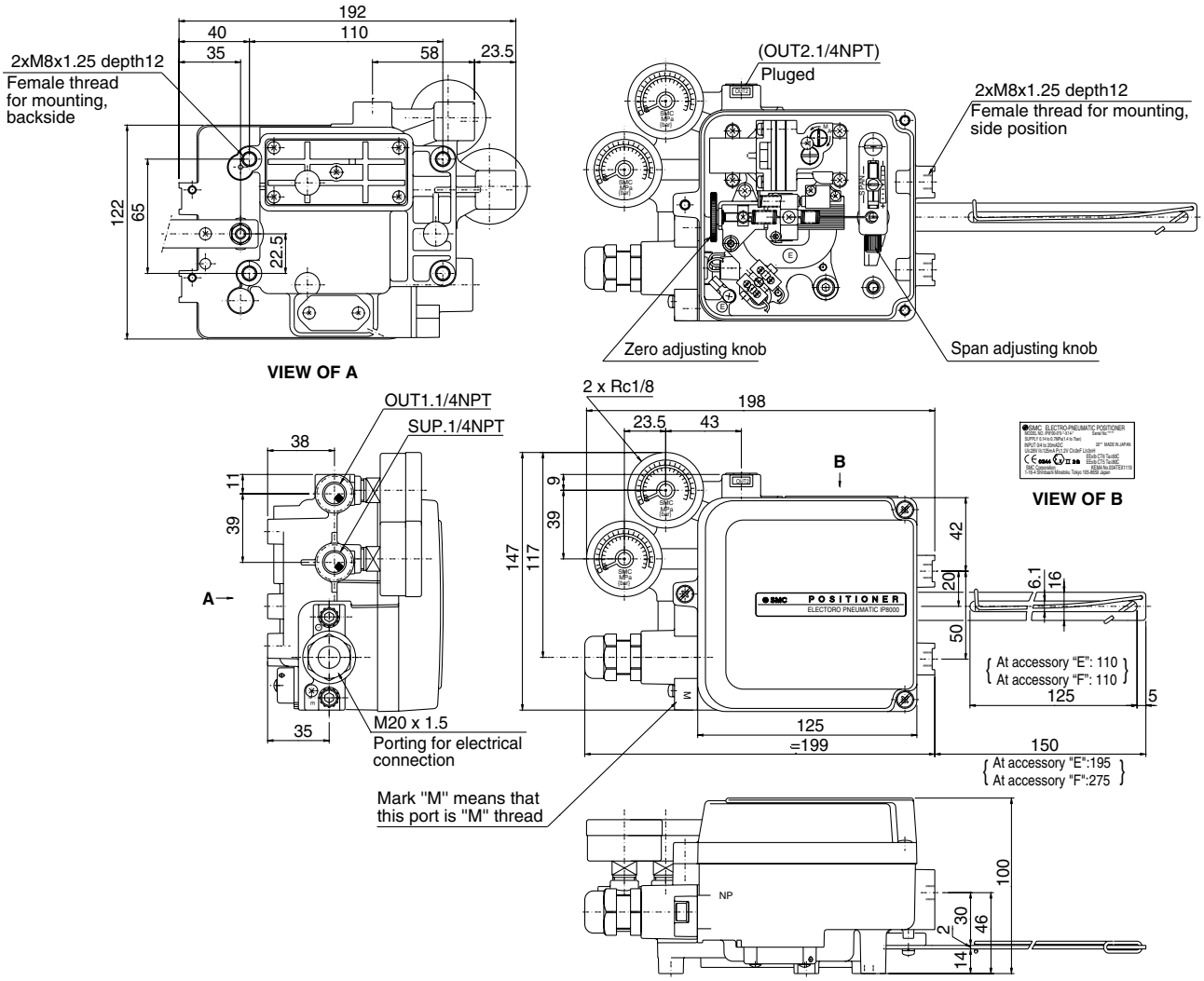


Replacement Parts (Ambient temperature: Standard)

No.	Description	Part no.	Note
1	Pilot valve unit	P565010-7	IP8000/8100
2	Base seal	P56501012-3	
3	Cover seal	P56501013	

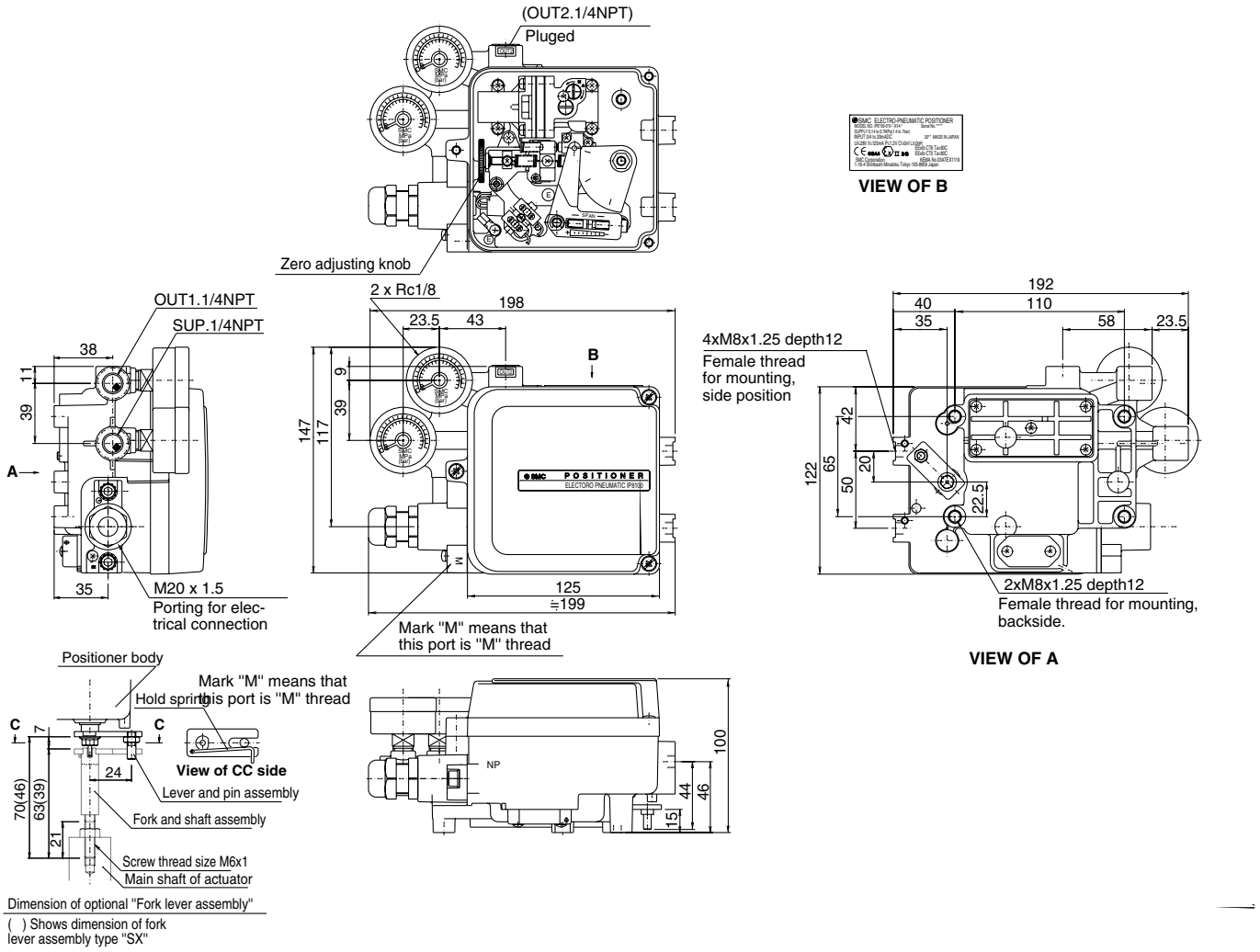
Dimensions / IP8000

IP8000-0□0-□-X14 (lever type)



Dimensions / IP8100

IP8100-0□0-□-X14 (rotary type)



Smart Positioner
(Lever type / Rotary type)
Series 52-IP8001/8101

CE Ex II 1G Ex ia IIC T4/T5/T6

How to Order

ATEX Directive Intrinsically Safe Explosion proof

52 – IP8 001 – 0 3 4 – □ – □ – □

Specifications

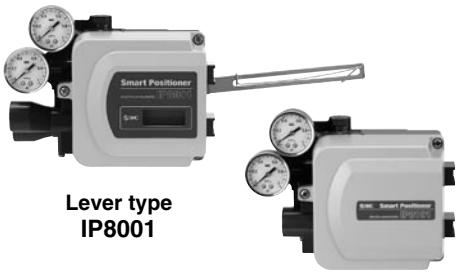
4	Intrinsically safe explosion proof (ATEX) + output function + HART communication

ATEX directive compliance

52	ATEX directive category 1 Intrinsically safe explosion-proof

ATEX temperature

Symbol	ATEX temperature	Applicable model	
		IP8001	**IP8101**
—	T4	●	●
T6	T5/T6	●	●



Lever type
IP8001

Rotary type
IP8101

Type

001	Lever type
101	Rotary type

Pressure gauge

Symbol	Pressure gauge	Applicable model	
		IP8001	**IP8101**
1	0.2 MPa	●	—
2	0.3 MPa	●	—
3	1.0 MPa	●	●

Connection

Symbol	Air	Electric
—	Rc1/4	G1/2
M Note)	Rc1/4	M20 x 1.5
N	Rc1/4	1/2NPT
1	1/4NPT	G1/2
2 Note)	1/4NPT	M20 x 1.5
3	1/4NPT	1/2NPT
4	G1/4	G1/2
5 Note)	G1/4	M20 x 1.5
6	G1/4	1/2NPT

Note) When the symbol is M, 2, or 5 for 52-ATEX directive items, a blue cable gland is included with the electrical connection.

Accessories Note 1)

Symbol	Accessories	Applicable model	
		IP8001	**IP8101**
—	None (Standard)	●	●
C	Fork lever-type fitting M	—	●
D	Fork lever-type fitting S	—	●
E	For stroke 35 to 100 mm with lever unit Note 2)	●	—
F	For stroke 50 to 140 mm with lever unit Note 2)	●	—
H	With external scale plate	—	●
W	Body with LCD window	●	●

Note 1) If two or more accessories are required, the part numbers should be given in alphabetical order. (ex. IP8101-010-CH)
Note 2) Standard lever is not attached.

Specifications Note 1)

Item \ Type	IP8001	IP8101
	Smart Positioner	
	Lever type	Rotary type
	Single action / Double action	
Input current	4 to 20 mA DC (Standard) Note 2)	
Min. operating current	3.85 mA DC or more	
Intra-terminal voltage	12 V DC (equivalent to 600 Ω input resistance, at 20 mA DC)	
Max. supplied power	1 W (Imax: 100 mA DC, Vmax: 28 V DC)	
Supply air pressure	0.14 to 0.7 MPa	0.3 to 0.7 MPa
Standard stroke	10 to 85 mm (Allowable deflection angle 10 to 30°)	60 to 100°
Sensitivity Note 3)	Within 0.2% F.S.	
Linearity Note 3)	Within ±1% F.S.	
Hysteresis Note 3)	Within 0.5% F.S.	
Repeatability Note 3)	Within ±0.5% F.S.	
Coefficient of temperature	Within 0.05% F.S./°C	
Supply pressure fluctuation	— Note 4)	
Output flow Note 5)	80 ℓ/min (ANR) or more (SUP = 0.14 MPa)	200 ℓ/min (ANR) or more (SUP = 0.4 MPa)
Air consumption Note 5)	2 ℓ/min (ANR) or less (SUP = 0.14 MPa) 4 ℓ/min (ANR) or less (SUP = 0.4 MPa)	11 ℓ/min (ANR) or less (SUP = 0.4 MPa)
Ambient and fluid temperature	–20°C to 80°C (T4/T5) –20°C to 60°C (T6)	
Explosion proof construction Note 6)	ATEX intrinsically safe explosion-proof construction (II 1G Ex ia IIC T4/T5/T6)	
ATEX intrinsically safe explosion-proof parameter (current circuit)	Ui ≤ 28 V, Ii ≤ 100 mA, Pi ≤ 0.7 W, Ci ≤ 12.5 nF, Li ≤ 1.5 mH	
Exterior covering enclosure	JISF8007, IP65 (conforms to IEC Pub.60529)	
Transmission method Note 6)	HART transmission	
Air connection port Note 7)	Rc 1/4 female thread, NPT 1/4 female thread, G 1/4 female thread	
Electrical connection port Note 7)	G 1/2 female thread, M20 x 1.5 female thread, NPT 1/2 female thread	
Material/coating	Aluminum diecast body/baking finish with denatured epoxy resin	
Weight	2.6 kg	

Note 1) Specification values are given at normal temperature (20°C).
Note 2) 1/2 Split range (Standard)
Note 3) Characteristics relating to accuracy differ depending on combination with other constituent loop equipment, such as positioners and actuators.
Note 4) While there is no output changes due to pressure fluctuations, when the pressure supply setting is changed following calibration, once again adjust balance current and perform calibration.
Note 5) (ANR) indicates JIS B0120 standard air.
Note 6) Model selection required for explosion proof construction and HART transmission.
Note 7) Thread type can be specified by model selection.

Optional Specifications

Item	Type	52-IP8□01-0□4
		Smart Positioner
Analogue output	**Wiring**	2-wire
	Output signal	4 to 20 mA DC
	Power supply voltage	10 to 28 V DC
	Load resistance	0 to 750 Ω
	Accuracy	±0.5% F.S. or less Note 1)
Alarm output 1, 2	**Wiring**	2-wire
	Applicable standards	DIN19234/NAMUR Standard
	Power supply voltage	5 to 28 V DC
	Load resistance	(Constant current output)
	Alarm ON	≥ 2.1 mA DC
	Alarm OFF (Leakage current)	≤ 1.2 mA DC
	Response time	50 msec or less

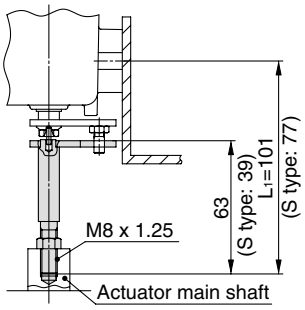
Note 1) Indicates analogue output accuracy with respect to LCD display position value (P value).

Accessory / Option

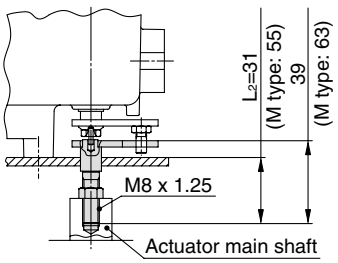
Fork lever-type fittings (8101)

2 types of rotary type IP8101 fork lever-type fittings, that differ by installation dimensions dependent on bracket installation method, and 2 types of installation portion thread sizes, are available.
When installing on the side surface, using fork lever assembly M provides interchangeability with the installation dimensions of SMC IP610 positioner. When installing on the rear surface, using fork lever assembly S also provides interchangeability with the installation dimensions of SMC IP610 positioner.

Part name	Unit number	Installation portion thread size	Model selection accessory
Fork lever assembly M	P368010-24	M8 x 1.25	C
Fork lever assembly S	P368010-25		D



Side mounting with the fork lever assembly M



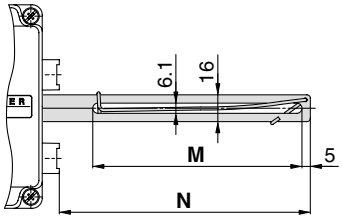
Rear mounting with the fork lever assembly S

External feedback lever (IP8001)

Different feedback levers are available dependent upon valve strokes. Order according to the valve stroke.

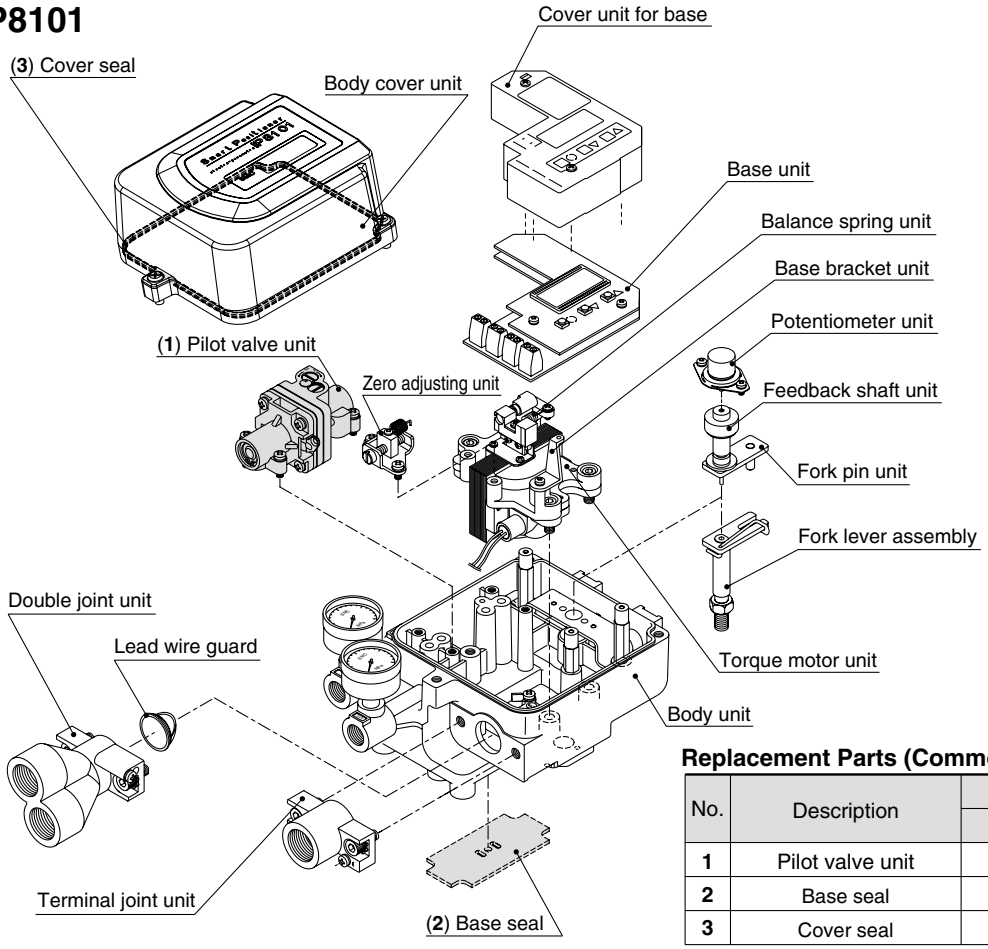
Feedback lever types

Stroke	Unit number	Size **M**	Size **N**	Model selection accessory
	IP8001			
10 to 85 mm	P565010-323	125	150	Standard accessory
35 to 100 mm	P565010-324	110	195	E
50 to 140 mm	P565010-325	110	275	F
6 to 12 mm	P565010-329	75	75	Available as special order



Exploded View

IP8101

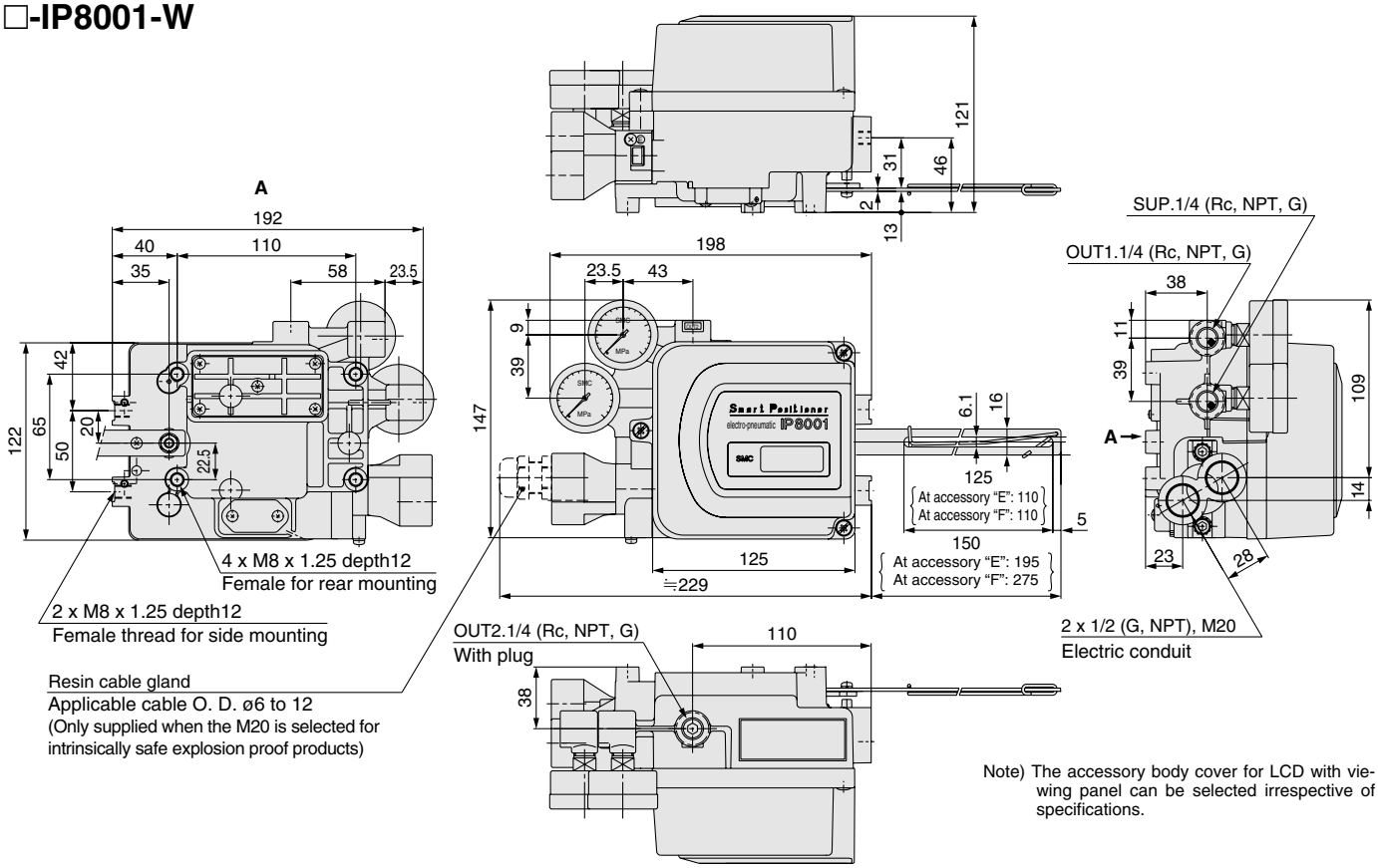


Replacement Parts (Common for IP8001/8101)

No.	Description	Part no.	
		IP8001	**IP8101**
1	Pilot valve unit	P565010-322	P565010-303
2	Base seal	P56501012-3	
3	Cover seal	P56501013	

Dimensions / IP8001 (Lever type)

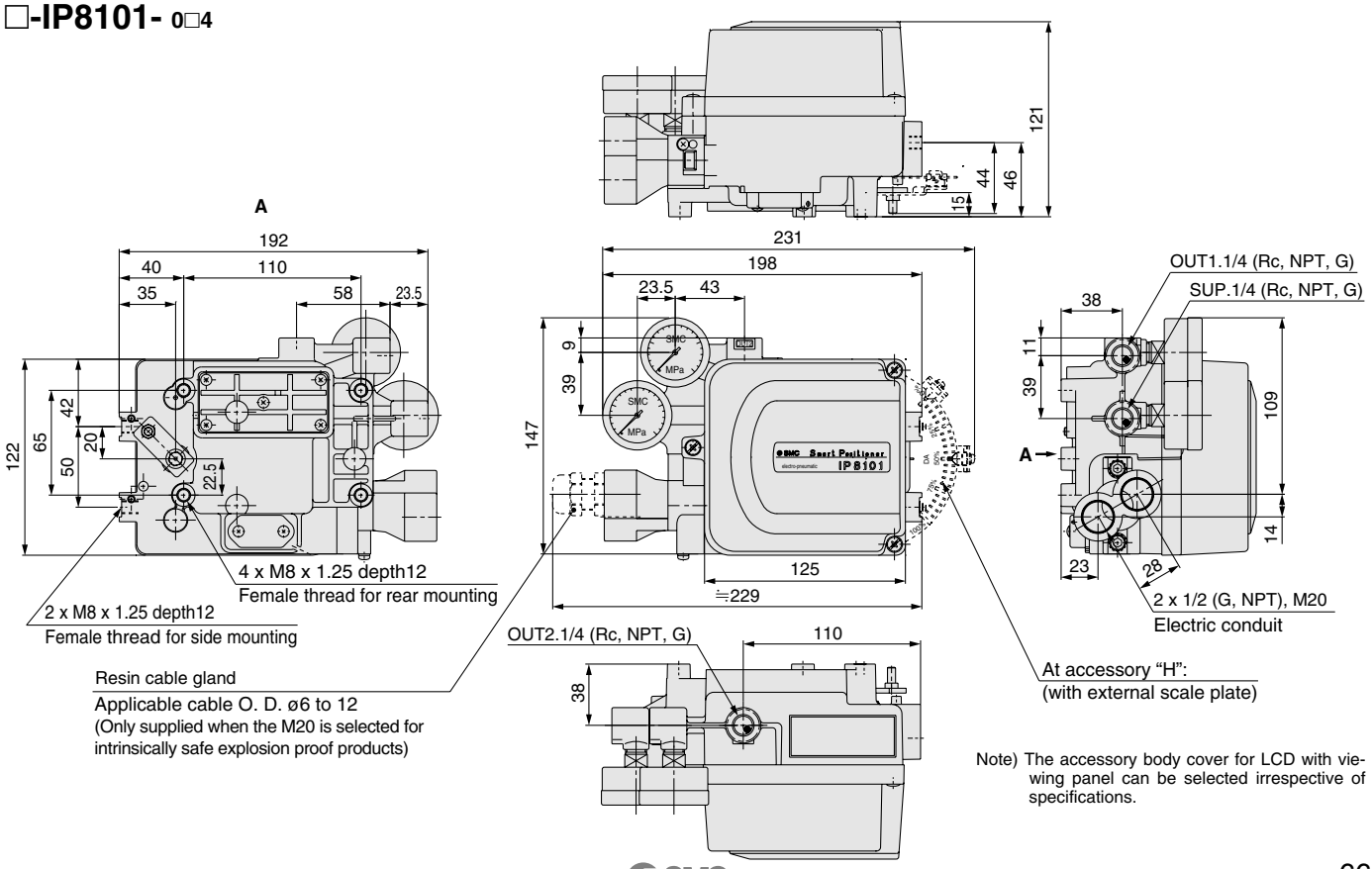
□-IP8001-W



Note) The accessory body cover for LCD with viewing panel can be selected irrespective of specifications.

Dimensions / IP8101 (Rotary type)

□-IP8101- 0□4



Note) The accessory body cover for LCD with viewing panel can be selected irrespective of specifications.

Process Pump. Automatically operated type
Air operated type
Series 56-PA3000/5000

Automatically operated type (internal switching type)
Air operated type (external switching type)

CE Ⓔx II 3 GD c T6 Ta 0°C to 60°C

For more details, other specifications, dimensions, see the specific catalogue.

How to Order

Automatically operated type (internal switching type)

PA3000

PA5000

56 – PA 3 1 1 0 – □ 03 – □

ATEX category 3

Body size

3	3/8 standard
5	1/2 standard

Liquid contact body material

1	ADC12 (Aluminum)
2	SCS14 (Stainless steel)

Diaphragm material

1	PTFE
2	NBR

Thread type

–	Rc
T*	NPTF
F*	G
N*	NPT

* T, F, N are order made specifications.

Automatically operated type

Fluid connection port size

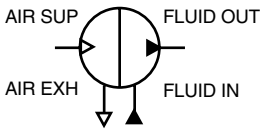
03	3/8 (10A): PA3
04	1/2 (15A): PA5
06	3/4 (20A): PA5

Option

–	Body only
N	With silencer*

* For AIR EXH: AN200-02 (NPT: AN200-N02)

Symbol



Automatically operated type

Air operated type (external switching type)

PA3000

PA5000

56 – PA 3 1 1 3 – □ 03

ATEX category 3

Body size

3	3/8 standard
5	1/2 standard

Liquid contact body material

1	ADC12 (Aluminum)
2	SCS14 (Stainless steel)

Diaphragm material

1	PTFE

Thread type

–	Rc
T*	NPTF
F*	G
N*	NPT

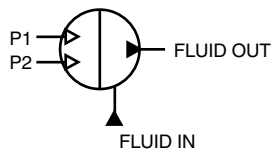
* T, F, N are order made specifications.

Air operated type

Fluid connection port size

03	3/8 (10A): PA3
04	1/2 (15A): PA5
06	3/4 (20A): PA5

Symbol



Air operated type

Process Pump. Automatically operated type
Air operated type
Series 55-PA3000/5000

Automatically operated type (internal switching type)
Air operated type (external switching type)

CE Ex **For 55-PA3□□0: II 2 GD c T6 Ta 0°C to 60°C**
For 55-PA3□□3: II 2 GD c T5 Ta 0°C to 60°C
For 55-PA5□□□: II 2 GD c T6 Ta 0°C to 60°C

For more details, other specifications, dimensions, see the specific catalogue.

How to Order

Automatically operated type (internal switching type)

PA3000

PA5000

55 — PA 3 1 1 0 — □ 03 — □

ATEX Group II category 2

Body size

3	3/8 standard
5	1/2 standard

Liquid contact body material

1	ADC12 (Aluminum)
2	SCS14 (Stainless steel)

Diaphragm material

1	PTFE
2	NBR

Thread type

–	Rc
T*	NPTF
F*	G
N*	NPT

* T, F, N are order made specifications.

Automatically operated type

Fluid connection port size

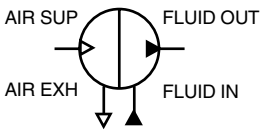
03	3/8 (10A): PA3
04	1/2 (15A): PA5
06	3/4 (20A): PA5

Option

–	Body only
N	With silencer*

* For AIR EXH: 2504-002 (NPT: 2504-N002)

Symbol



Automatically operated type

Air operated type (external switching type)

PA3000

PA5000

55 — PA 3 1 1 3 — □ 03

ATEX Group II category 2

Body size

3	3/8 standard
5	1/2 standard

Liquid contact body material

1	ADC12 (Aluminum)
2	SCS14 (Stainless steel)

Diaphragm material

1	PTFE

Air operated type

Thread type

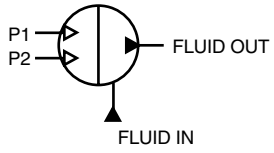
–	Rc
T*	NPTF
F*	G
N*	NPT

* T, F, N are order made specifications.

Fluid connection port size

03	3/8 (10A): PA3
04	1/2 (15A): PA5
06	3/4 (20A): PA5

Symbol



Air operated type

Booster Regulator
Series 56-VBA1100 and 20A to 43A

CE Ex II 3 GD c T6 Ta 2°C to 50°C

For more details, other specifications, dimensions, see the specific catalogue.

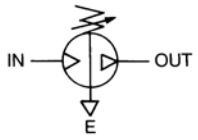
How to Order

Series VBA 10A / 2□A / 4□A

56 – VBA [40A] – [ ] [04] [GN] – [ ]

ATEX category 3

Symbol



Body size

10A	1/4, Handle-operated type
20A	3/8, Handle-operated type
40A	1/2, Handle-operated type
22A	3/8, Air-operated type
42A	1/2, Air-operated type
43A	1/2, Max. operating pressure 1.6 MPa

∗ Pressure increase ratio: Twice

Thread type Note)

Symbol	Thread type
—	Rc
F	G
N	NPT
T	NPTF

Note) Thread types apply to the IN, OUT, and EXH ports of the VBA10A and to the IN, OUT, EXH, and gauge ports of the VBA2□A and VBA4□A. The gauge ports of the VBA10A are Rc thread type regardless of the thread type indication.

Semi-standard

Symbol	Specifications
—	Pressure unit on the product name label and pressure gauge: MPa
Z Note)	Pressure unit on the product name label and pressure gauge: psi

Note) Thread type: NPT, NPTF
Under the new measurement Law, the pressure unit of "psi" on the pressure gauges cannot be used in Japan.

Option

Symbol	Option
—	None
G	Pressure gauge
N	Silencer
S	High-noise reduction silencer Note)
GN	Pressure gauge, Silencer
GS	Pressure gauge, High-noise reduction silencer Note)

Note) The high-noise reduction silencer is not available on the 56-VBA10A-N02 and 56-VBA10A-T02.

Port size

Symbol	Port size	Applicable series
02	1/4	VBA10A
03	3/8	VBA2□A
04	1/2	VBA4□A


VBA10A-02


VBA20A-03


VBA22A-03


VBA40A-04


VBA42A-04


VBA43A-04

Series VBA1111 **56 – VBA 111 1 – [ ] 02 GN**

Updated Product Coming Soon

ATEX category 3

Body size

111	1/4

∗ Pressure: 2 MPa

Pressure increase ratio

1	4 times

Thread type Note)

Symbol	Thread type
—	Rc
F	G
N	NPT
T	NPTF

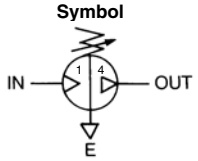
Option

Symbol	Option
—	None
G	Pressure gauge
N	Silencer
GN	Pressure gauge, Silencer

Port size

Symbol	Port size
02	1/4

Symbol




VBA1111-02

Note) Thread types apply to the IN, OUT, and EXH ports. The gauge ports are Rc thread type.
For the G thread type, add an E at the beginning of the model number (56-**E**VBA1111-F02□).
For the NPTF thread type, add an N at the beginning of the model number (56-**N**VBA1111-T02□).

Standard Specifications

Model	VBA10A-02	VBA20A-03	VBA40A-04	VBA22A-03	VBA42A-04	VBA43A-04	VBA1111-02
Fluid	Compressed air						
Pressure increase ratio	Twice					Twice	Twice to 4 times
Pressure adjustment mechanism	Handle-operated with relief mechanism Note 1)			Air-operated		Handle-operated with relief mechanism Note 1)	
Max. flow rate Note 2) **(ℓ/min (ANR))**	230	1000	1900	1000	1900	1600	60
Set pressure range (MPa)	0.2 to 2.0	0.2 to 1.0		0.2 to 1.0		0.2 to 1.6	0.2 to 2.0
Supply pressure range (MPa)	0.1 to 1.0						
Proof pressure (MPa)	3	1.5		1.5		2.4	3
Port size (IN/OUT/EXH: 3 locations) (Rc)	1/4	3/8	1/2	3/8	1/2	1/2	1/4
Pressure gauge port size (IN/OUT: 2 locations) (Rc)	1/8	1/8	1/8	1/8	1/8	1/8	1/16
Ambient and fluid temperature (°C)	2 to 50 (No freezing)						
Installation	Horizontal						
Lubrication	Grease (Non-lube)						
Weight (kg)	0.84	3.9	8.6	3.9	8.6	8.6	0.98

Note 1) If the OUT pressure is higher than the set pressure by the handle, excessive pressure is exhausted from the back of the handle.
Note 2) Flow rate at IN= OUT= 0.5 MPa. The pressure varies depending on the operating conditions.

Options/Part No.

Pressure Gauge, Silencer (When thread type is Rc or G.)

Description \ Model		VBA10A-02 VBA10A-F02	VBA20A-03 VBA20A-F03	VBA40A-04 VBA40A-F04	VBA22A-03 VBA22A-F03	VBA42A-04 VBA42A-F04	VBA43A-04 VBA43A-F04	VBA1111-02 EVBA1111-F02
Pressure gauge	G	G27-20-01	G36-10-01		KT-VBA22A-7	G36-10-01	G27-20-01	G27-20-R1
Silencer	N	AN200-02	AN300-03	AN400-04	AN300-03	AN400-04	AN400-04	AN200-02
High-noise reduction silencer	S	ANA1-02	ANA1-03	ANA1-04	ANA1-03	ANA1-04	ANA1-04	—

Note 1) In the case of option GN, two pressure gauges and one silencer are included as accessories.
Note 2) KT-VBA22A-7 is a pressure gauge with fittings. (Please order two units when using with IN and OUT.)
Note 3) Pressure unit of pressure gauge: MPa.

Pressure Gauge, Silencer (When thread type is NPT or NPTF.)

Description \ Model		VBA10A-N02∗ VBA10A-T02∗ ∗: when "-Z"	VBA20A-N03∗ VBA20A-T03∗ ∗: when "-Z"	VBA40A-N04∗ VBA40A-T04∗ ∗: when "-Z"	VBA22A-N03∗ VBA22A-T03∗ ∗: when "-Z"	VBA42A-N04∗ VBA42A-T04∗ ∗: when "-Z"	VBA43A-N04∗ VBA43A-T04∗ ∗: when "-Z"	VBA1111-N02 NVBA1111-T02
Pressure gauge ∗: no symbol Note 6)	G	G27-20-01	G36-10-N01		KT-VBA22A-7N	G36-10-N01	G27-20-N01	G27-20-R1-X214 Note 5)
Pressure gauge ∗: when "-Z" Note 4)		G27-P20-01	G36-P10-N01		KT-VBA22A-8N	G36-P10-N01	G27-P20-N01	—
Silencer	N	AN200-N02	AN300-N03	AN400-N04	AN300-N03	AN400-N04	AN400-N04	AN200-N02
High-noise reduction silencer	S	—	ANA1-N03	ANA1-N04	ANA1-N03	ANA1-N04	ANA1-N04	—

Note 1) In the case of option GN, two pressure gauges and one silencer are included as accessories.
Note 2) KT-VBA22A-7N, KT-VBA22A-8N are pressure gauges with fittings. (Please order two units when using with IN and OUT.)
Note 3) Under the new measurement law, the pressure unit of "psi" on the pressure gauges cannot be used in Japan.
Note 4) Pressure unit of pressure gauge: psi
Note 5) Pressure unit of pressure gauge: psi and MPa
Note 6) Pressure unit of pressure gauge: MPa.

Updated Product
Coming Soon

Pressure Switch: Reed Switch Type

Series 56-IS1000

CE

CE Ex II 3 GD EEx Na II T5 Ta-5°C to 60°C T90°C
IP67 / IP40

For details about certified products conforming to international standards, visit us at www.smcworld.com.

Long service life:
5 million cycles

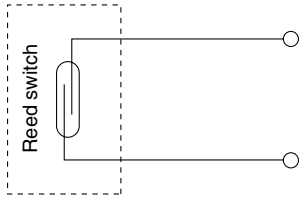
IS1000-01

Specifications

Model	IS1000-01
Fluid	Air/Inert gas
Proof pressure	1.0 MPa
Max. operating pressure	0.7 MPa
Regulating pressure range (at OFF point)	0.1 to 0.4 MPa
Hysteresis	0.08 MPa or less
Error of scale	±0.05 MPa
Repeatability	±0.05 MPa
Contacts	1a
Wiring specifications	Grommet, Lead wire length 0.5 m (Standard)
Enclosure	Equivalent to IP40
Ambient and fluid temperature	–5 to 60°C (No freezing)
Port size	R 1/8
Weight	74 g

Electrical Circuit

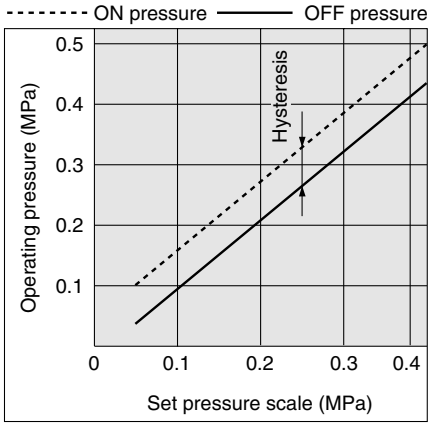
Up to 48 VAC/DC



Switch Characteristics

Max. contact capacity	AC 2 VA, 2 W DC	
Voltage	24 VAC/DC or less	48 VAC/DC
Max. operating current	50 mA	40 mA
Impact resistance	30G	

Operating Pressure Range



How to Order

56-IS1000– 01 S – – –

Atex Category 3

Port size

01	R 1/8
N01	NPT 1/8

Seal

–	None
S	With seal

Pressure display with scale plate

–	MPa
P	Both MPa and psi Note)

Note) For overseas use only.
Not for the japanese market.
According to new measurement law.

Option

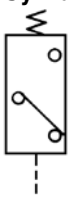
–	Lead wire length 0.5 m
X201	Lead wire length 3 m
X202	Regulating pressure range 0.1 to 0.6 MPa
X215	Lead wire length 3 m Regulating pressure range 0.1 to 0.6 MPa

SMC

Pressure Switch: (S) for integration into modular Air Preparation Units

A compact integrated pressure switch can be easily installed and facilitates the pressure detection of the line.

JIS Symbol



56-IS1000M – 30 – □

Atex Category 3

❶ ❷

❷	Symbol	Description: Lead wire length	Description: Set pressure range	Description: Pressure display	❶ Body size 20	30	40	50	60
Option	—	0.5 m	0.1 to 0.4 MPa	MPa	●	●	●	●	●
	P Note)	0.5 m	0.1 to 0.4 MPa	MPa/psi dual scale	●	●	●	●	●
	X202	0.5 m	0.1 to 0.6 MPa	MPa	●	●	●	●	●
	X202-P Note)	0.5 m	0.1 to 0.6 MPa	MPa/psi dual scale	●	●	●	●	●
	X201	3 m	0.1 to 0.4 MPa	MPa	●	●	●	●	●
	X201-P Note)	3 m	0.1 to 0.4 MPa	MPa/psi dual scale	●	●	●	●	●
	X215	3 m	0.1 to 0.6 MPa	MPa	●	●	●	●	●
	X215-P Note)	3 m	0.1 to 0.6 MPa	MPa/psi dual scale	●	●	●	●	●

Note) This product is for overseas use only according to the new Measurement Law. (The SI unit type is provided for use in Japan.)

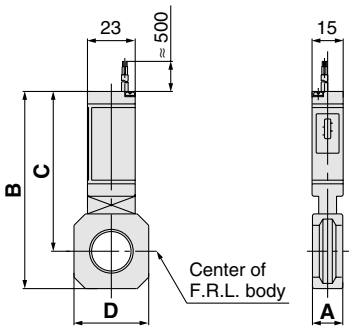
Specifications

Fluid	Air
Ambient and fluid temperature	–5°C to 60°C (with no freezing)
Proof pressure	1.0 MPa
Maximum operating pressure	0.7 MPa
Set pressure range (when OFF)	0.1 to 0.4 MPa
Hysteresis	0.08 MPa or less

Switch Characteristics

Contact point configuration	1a
Maximum contact point capacity	2 VA (AC), 2 W (DC)
Operating voltage: AC, DC	48 V or less
Maximum operating current	12 V to 24 VAC, DC: 50 mA 48 VAC, DC: 40 mA

Note) For detailed specifications, please refer to Best Pneumatics, IS1000 Series.



Model	A	B	C	D	Applicable model
56-IS1000M-20	11	76	66	28	**AC20□**
56-IS1000M-30	13	86	72	30	**AC25□, AC30□**
56-IS1000M-40	15	95	77	36	**AC40□**
56-IS1000M-50	17	99	79	44	**AC40□-06**
56-IS1000M-60	22	92.5	68.5	53	**AC50□, AC55□, AC60□**

Note) Separate spacers are required for modular unit.

Pressure Switch with Piping Adapter

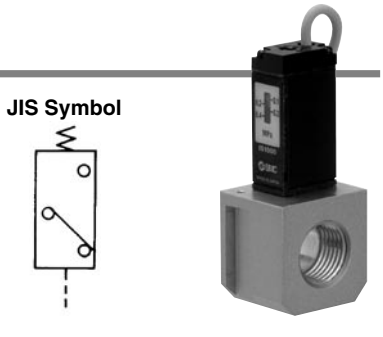
56-IS1000E – 30 ❶ ☐ ❷ 03 ❸ – ☐ ❹

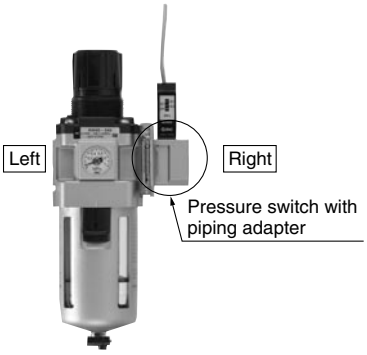
Atex Category 3

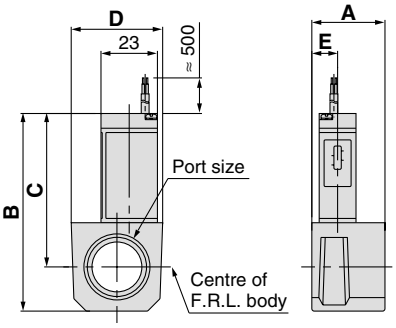
	Symbol	Description	❶ Body size 20	30	40
❷ Thread type	—	Rc	●	●	●
	N Note)	NPT	●	●	●
	F Note)	G	●	●	●
+					
❸ Port size	01	1/8	●	—	—
	02	1/4	●	●	●
	03	3/8	●	●	●
	04	1/2	—	●	●
	06	3/4	—	—	●
+					

	Symbol	Lead wire length	Regulating pressure range	Pressure display	Mounting position			
❹ Accessory	—	0.5 m	0.1 to 0.4 MPa	MPa	Right	●	●	●
	X250	0.5 m	0.1 to 0.4 MPa	MPa	Left	●	●	●
	P Note)	0.5 m	0.1 to 0.4 MPa	MPa/psi dual scale	Right	●	●	●
	X250-P Note)	0.5 m	0.1 to 0.4 MPa	MPa/psi dual scale	Left	●	●	●
	X202	0.5 m	0.1 to 0.6 MPa	MPa	Right	●	●	●
	X252	0.5 m	0.1 to 0.6 MPa	MPa	Left	●	●	●
	X202-P Note)	0.5 m	0.1 to 0.6 MPa	MPa/psi dual scale	Right	●	●	●
	X252-P Note)	0.5 m	0.1 to 0.6 MPa	MPa/psi dual scale	Left	●	●	●
	X201	3 m	0.1 to 0.4 MPa	MPa	Right	●	●	●
	X251	3 m	0.1 to 0.4 MPa	MPa	Left	●	●	●
	X201-P Note)	3 m	0.1 to 0.4 MPa	MPa/psi dual scale	Right	●	●	●
	X251-P Note)	3 m	0.1 to 0.4 MPa	MPa/psi dual scale	Left	●	●	●
	X215	3 m	0.1 to 0.6 MPa	MPa	Right	●	●	●
	X253	3 m	0.1 to 0.6 MPa	MPa	Left	●	●	●
	X215-P Note)	3 m	0.1 to 0.6 MPa	MPa/psi dual scale	Right	●	●	●
	X253-P Note)	3 m	0.1 to 0.6 MPa	MPa/psi dual scale	Left	●	●	●

Note) For thread type: NPT only. This product is for overseas use only according to the new Measurement Law. (The SI unit type is provided for use in Japan.)







Specifications

Fluid	Air
Ambient and fluid temperature	–5°C to 60°C (with no freezing)
Proof pressure	1.0 MPa
Maximum operating pressure	0.7 MPa
Set pressure range (when OFF)	0.1 to 0.4 MPa
Hysteresis	0.08 MPa or less

Switch Characteristics

Contact point configuration	1a
Maximum contact point capacity	2VA(AC), 2W(DC)
Operating voltage: AC, DC	48V or less
Maximum operating current	12V to 24V AC, DC: 50 mA 48V AC, DC: 40 mA

Model Note 1)	Port size	A	B	C	D	E	Applicable model
56-IS1000E-20☐01	1/8	30	68	57	28	16	**AC20☐** **AR20☐, AW20☐** **AWM20, AWD20**
56-IS1000E-20☐02	1/4						
56-IS1000E-20☐03	3/8						
56-IS1000E-30☐02	1/4	32	74.5	60.5	30	13	**AC25☐, AC30☐** **AR25☐, AR30☐, AW30☐** **AWM30, AWD30**
56-IS1000E-30☐03	3/8						
56-IS1000E-30☐04	1/2						
56-IS1000E-40☐02	1/4	32	80.5	62.5	37	12.5	Note 2) **AC40☐** **AR40☐, AW40☐** **AWM40, AWD40**
56-IS1000E-40☐03	3/8						
56-IS1000E-40☐04	1/2						
56-IS1000E-40☐06	3/4						

Note 1) ☐ in the model numbers indicates a thread type. No indication is necessary for Rc; however, indicate N for NPT, and F for G.
Note 2) Cannot be mounted on the AC40☐-06 and AW40☐-06.
Note 3) Separate interfaces are required for modular unit.
∗ The pressure switch on the AC40☐-06 and above and the AW40☐-06 can be mounted by screwing IS1000-01 into the piping adapter E500-☐06-X501 or E600-☐06-X501 to E600-☐10-X501 (with top-face thread Rc 1/8). Products with a premounted switch are available as a special order. Please contact SMC regarding their availability.

5 Port Solenoid Valve
Series 52-SY

CE Ex II 2G Ex ia IIB T4...T6

For more details, other specifications, dimensions, see the specific catalogue

How to Order

52 - SY 5 1 2 0 [ ] [ ] L 3 [ ] 01 F [ ]

ATEX category 2

Series

5	52-SY5000
7	52-SY7000
9	52-SY9000

Type of actuation

1	2-position single
2	2-position double
3	3-position closed centre
4	3-position exhaust centre
5	3-position pressure centre

Piping style

2	Body ported type
4	Base mounted type

Pilot

–	Internal pilot
R	External pilot*

*Only the base mounted type.

Barrier

–	Without barrier
A	Z728.H
B	MTL728P+
D	MTL5021

One per solenoid supplied.

Electrical entry

L	Plug connector type
LL	Plug connector with cover type
TT	Terminal type

Lead wire length

3	300 mm
6	600 mm
10	1000 mm
15	1500 mm
20	2000 mm
30	3000 mm
100	10000 mm (semi-standard)

L type has 300mm and 600mm only.

Manual override

–	Non locking push style
D	Push-turn locking slotted style
E	Push-turn locking lever style

Type of actuation

Sign	Port size	Compatible series
01	1/8	52-SY5000
C4	ø4 One-touch fitting	
C6	ø6 One-touch fitting	
C8	ø8 One-touch fitting	
N3	ø5/32" One-touch fitting	
N7	ø1/4" One-touch fitting	
N9	ø5/16" One-touch fitting	
02	1/4	52-SY7000
C8	ø8 One-touch fitting	
C10	ø10 One-touch fitting	
N9	ø5/16" One-touch fitting	
N11	ø3/8" One-touch fitting	
02	1/4	52-SY9000
03	3/8	
C8	ø8 One-touch fitting	
C10	ø10 One-touch fitting	
C12	ø12 One-touch fitting	
N9	ø5/16" One-touch fitting	
N11	ø3/8" One-touch fitting	

Port size (Base mounted type)

Sign	Port size	Compatible series
-	No sub-plate	
02	1/4	52-SY5000
02	1/4	52-SY7000
03	3/8	
03	3/8	52-SY9000
04	1/2	

Bracket

–	No bracket
F1	With foot bracket*
F2	With side bracket**

*Foot bracket only available for 2 position single solenoid valve 52-SY5000 and 52-SY7000.
**Side bracket only for 52-SY5000 and 52-SY7000.
***No bracket for only body ported type's 52-SY9000.

Thread style

–	Rc
F	G
N	NPT
T	NPTF

For more details, other specifications, dimensions, see the specific catalogue

Specifications

Series			52-SY5000	52-SY7000	52-SY9000
Ambient and fluid temperature	Temperature class T6		45°C		
	Temperature class T4, T5		50°C		
Coil temperature rise			40°C or less (at rated)		
Barrier input voltage (non hazardous area)			24VDC (system rated voltage) at 1.1W		
Solenoid valve input voltage (hazardous area)			12VDC at 0.52W		
Intrinsically safe			ia		
Gas group			IIB		
Electrical entry	L type	plug connector	IP30 (LL type : IP40)		
	T type	terminal box	IP65		

Note1) Impact resistance: No malfunction resulted from the impact test using a drop impact tester. The test were performed one time each in the axial and right angle directions of the main valve and armature, in both energised and de-energised states (Valve in the initial stage).
Vibration resistance: No malfunction ocurred in a one-sweep test between 8.3 and 2000Hz. The test was performed for both energised and de-energised states in the axial and right angle directions of the main valve and armature (valve in the initial stage).

Standard SY manifolds Types 20, 41, 42 are used for 52-SY valves

Safety Instructions

1) This product is not suitable for Zone 0. The suitable zones are Zones 1 and 2.
2) SMC-TAS and TAU Series, antistatic tubing, is available if required.
3) the solenoid valve has polarity (+ -). Confirm the correct polarity by referring to the colour of the lead wires. If the polarity is reversed, the barrier maybe damaged.
4) Confirm that the solenoid input voltage at the lead wires is DC 10.8V (min).
5) The product must be connected to a certified barrier or certified intrinsically safe circuit with the follow maximum Values:
Ui= 28V
Ii= 225mA (resistively limited)
Pi= 1W
Ci= 0 nF
Li= 0 mH
Note) The valve is not connected to barrier when supplied.

Response time

Configuration	Response time (ms) (0.5MPa)		
	52-SY5000	52-SY7000	52-SY9000
2-position single	26 or less	38 or less	50 or less
2-position double	22 or less	30 or less	50 or less
3-position	38 or less	56 or less	70 or less

Note1) According to dynamic performance test JIS B8375-1981.
Note2) Response time when barriers were combined with a valve.
System A: Valve + Z728.H (Pepperl + Fuchs)
B: Valve + MTL728P+
Note3) When system D is used, the ON time is delayed 17ms more than response time in table.
System D: Valve + MTL5021

Manifold specifications for 20 type

Model		SS5Y5-20	SS5Y7-20
Applicable valve		52-SY5*20	52-SY7*20
Manifold style		Single base/ B mounting	
1 (SUP)/ 3/5 (EXH)		Common SUP/ Common EXH	
Valve stations		2 to 20 (1)	
4/2 (A/B) Location		Valve	
Port size	1,3,5 (P,EA,EB) Port	1/4	
	4,2 (A,B) Port	1/8 C4 (One-touch fittings for ø4mm) C6 (One-touch fittings for ø6mm) C8 (One-touch fittings for ø8mm)	1/4 C8 (One-touch fittings for ø8mm) C10 (One-touch fittings for ø10mm)
Manifold base weight W (g) n: Station		W=36n+64	W=43n+64

Note1) For more than 10 stations (more than 5 stations in case of SS5Y7), supply pressure to P port on both sides and exhaust from EA/EB port on both side.
Note2) 52-SY9*20 valve are not available with manifold as standard. Please contact SMC if you require it:
Note3) 52-SY series are not available with resin type manifold (23 type, 20P type and 45 type).

Manifold specifications for 20 type

Model	Port size		Flow characteristics					
	1,5,3	4,2	1 > 4/2 (P>A/B)			4/2 > 5/3 (A/B > EA/EB)		
	(P,EA,EB)	(A,B)	c[dm³/(s.bar)]	b	Cv	c[dm³/(s.bar)]	b	Cv
SS5Y5-20	1/4	C8	1.90	0.28	0.48	2.20	0.20	0.53
SS5Y7-20	1/4	C10	3.60	0.93	3.60	0.93	0.27	0.88

Note) Values for 5 stations manifold with a 2 position single type valve.

Manifold specifications for 41 and 42 type

Model		SS5Y5-41	SS5Y5-42	SS5Y7-42
Applicable valve		52-SY5*40		52-SY7*40
Manifold style		Single base/ B mounting		
1 (SUP)/ 3/5 (EXH)		Common SUP/ Common EXH		
Valve stations		2 to 20 (1)		
4/2 (A/B)	Location	Base		
Porting spec.	Direction	Side		
Port size	1,3,5 (P,EA,EB) Port	1/4		1/4
	4,2 (A,B) Port	1/8 C6 (One-touch fittings for ø6mm) C8 (One-touch fittings for ø8mm)	1/4 C6 (One-touch fittings for ø6mm) C8 (One-touch fittings for ø8mm)	1/4 C10 (One-touch fittings for ø10mm)
Manifold base weight W (g) n: Station		W=61n+101	W=79n+127	W=100n+151

Note1) For more than 10 stations (more than 5 stations in case of SS5Y7), supply pressure to P port on both sides and exhaust from EA/EB port on both side.
Note2) 52-SY9*40 valve are not available with manifold as standard. Please contact SMC if you require it:
Note3) 52-SY series are not available with resin type manifold (23 type, 20P type and 45 type).

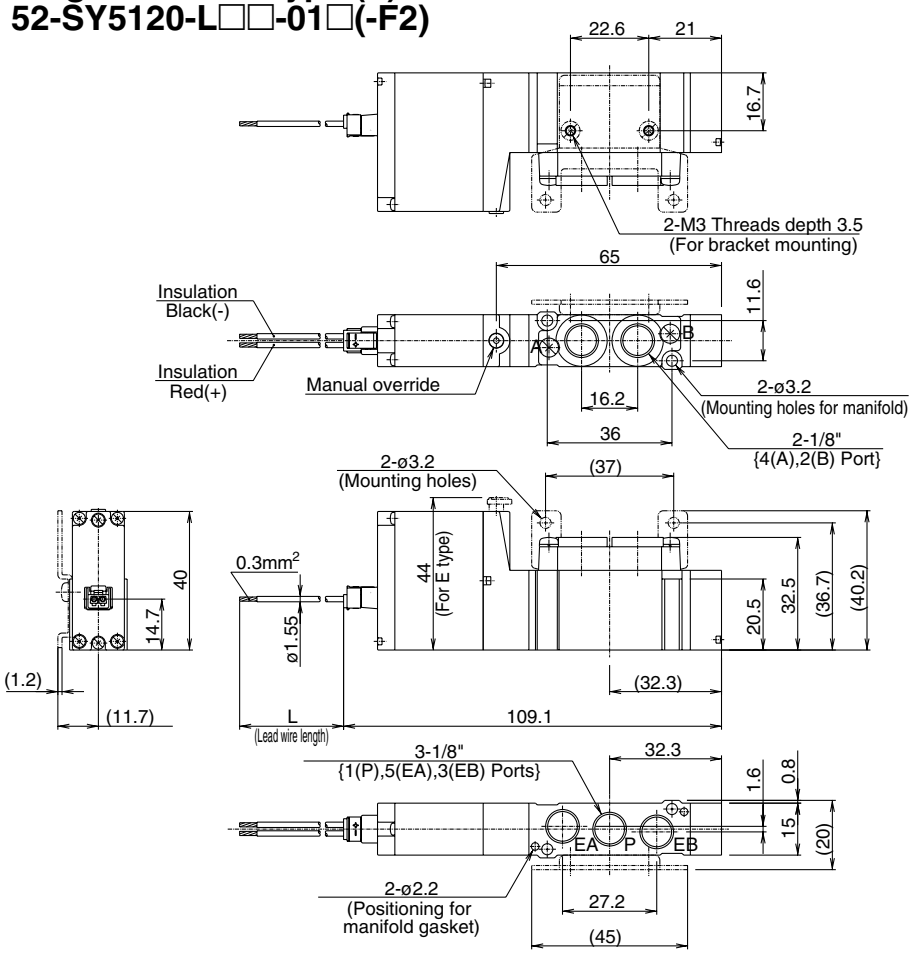
Manifold specifications for 41 and 42 type

Model	Port size		Flow characteristics					
	1,5,3	4,2	1 > 4/2 (P>A/B)			4/2 > 5/3 (A/B > EA/EB)		
	(P,EA,EB)	(A,B)	c[dm³/(s.bar)]	b	Cv	c[dm³/(s.bar)]	b	Cv
SS5Y5-41	1/4	C8	1.80	0.23	0.44	1.90	0.16	0.45
SS5Y5-42	1/4	C8	1.90	0.20	0.46	1.90	0.12	0.43
SS5Y7-42	1/4	C10	3.00	0.25	0.75	3.00	0.12	0.66

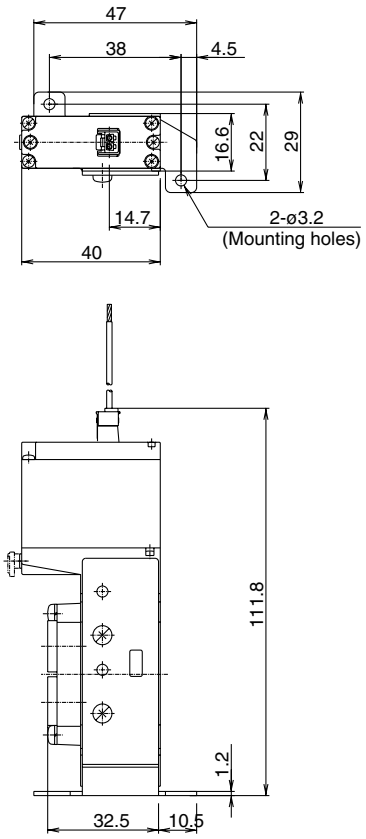
Note) Values for 5 stations manifold with a 2 position single type valve.

Dimensions

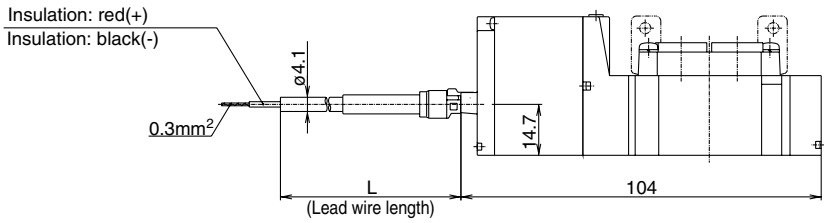
Body ported type
Dimensions/ Series 52-SY5000
2-position single
Plug connector type (L)
52-SY5120-L□□-01□(-F2)



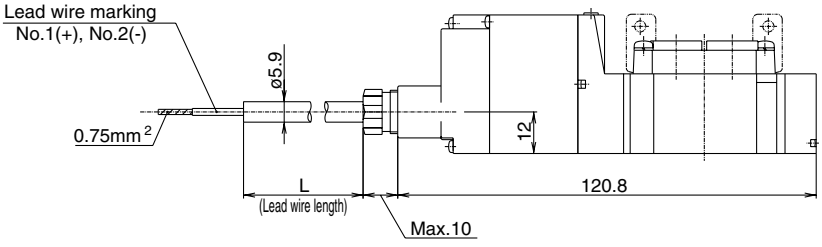
In case with foot bracket
52-SY5120-L□□-01□-F1



Plug connector with cover type (LL)
52-SY5120-LL□□-01□(-F2)

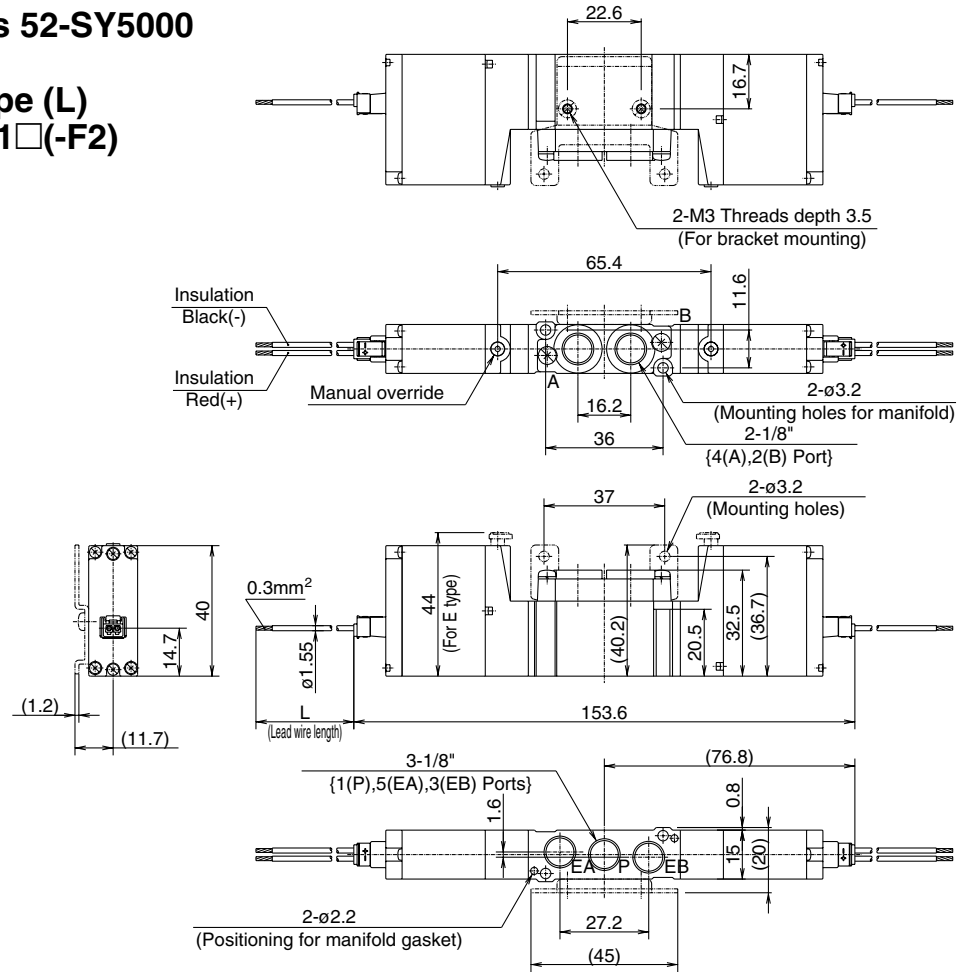


Terminal type (TT)
52-SY5120-TT□□-01□(-F2)

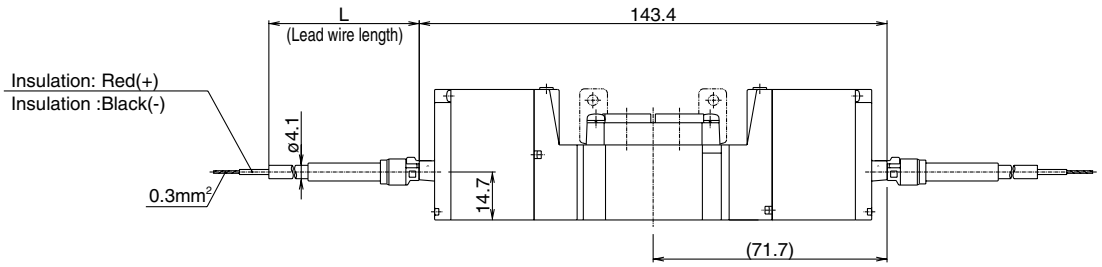


Dimensions

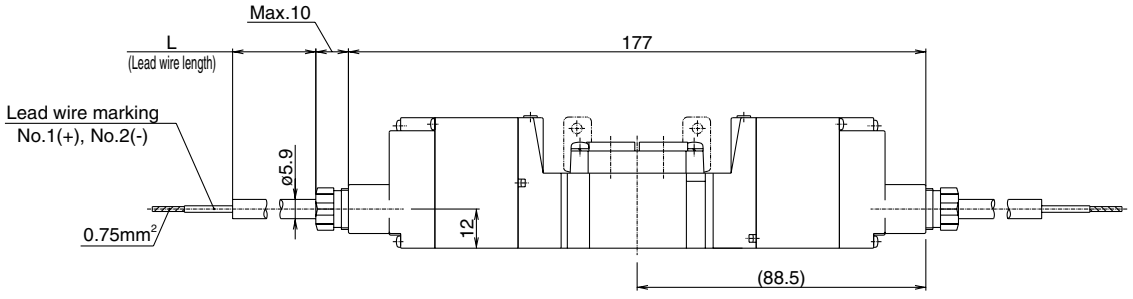
Body ported type
Dimensions/Series 52-SY5000
2-position double
Plug connector type (L)
52-SY5220-L□□-01□(-F2)



Plug connector with cover type (LL)
52-SY5220-LL□□-01□(-F2)



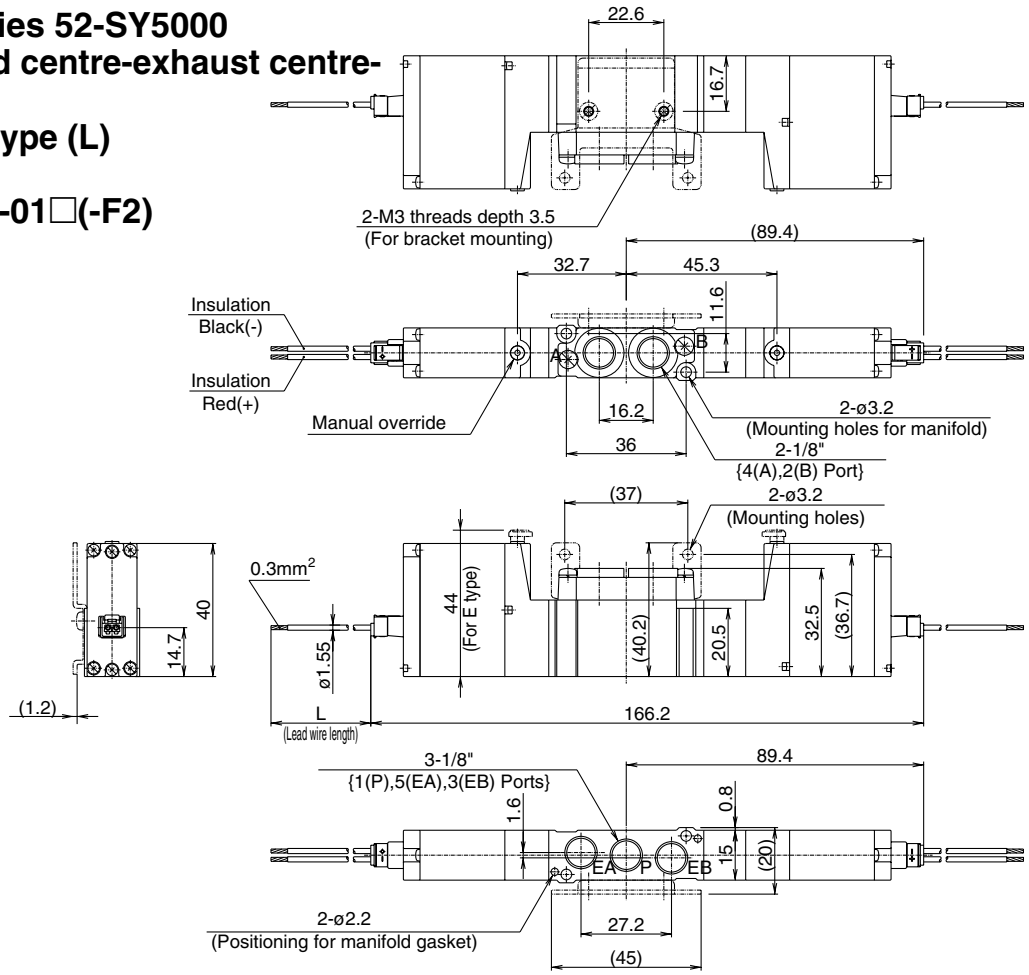
Terminal type (TT)
52-SY5220-TT□□-01□(-F2)



Dimensions

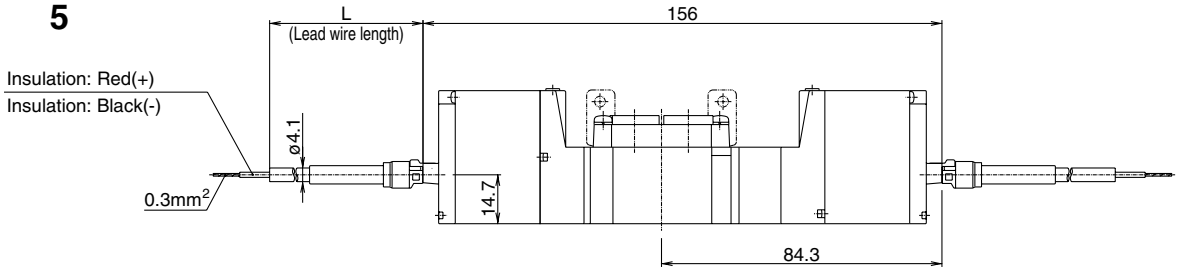
Body ported type
Dimensions/Series 52-SY5000
3-position closed centre-exhaust centre-pressure centre
Plug connector type (L)

3
52-SY5420-L□□-01□(-F2)
5



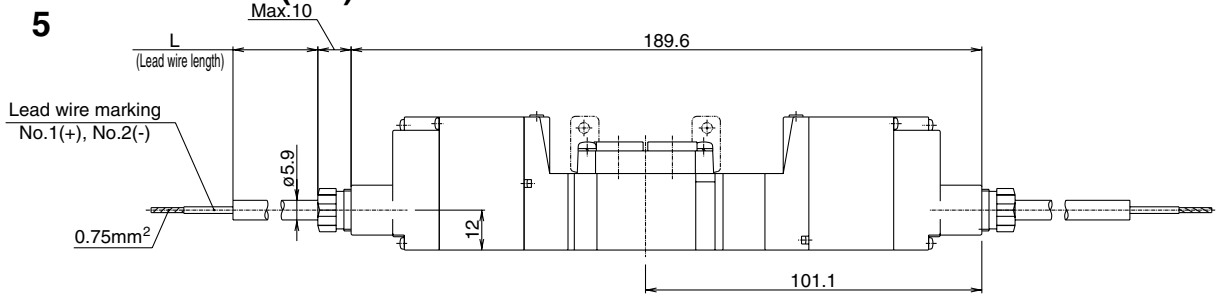
Plug connector with cover type (LL)

3
52-SY5420-LL□□-01□(-F2)
5



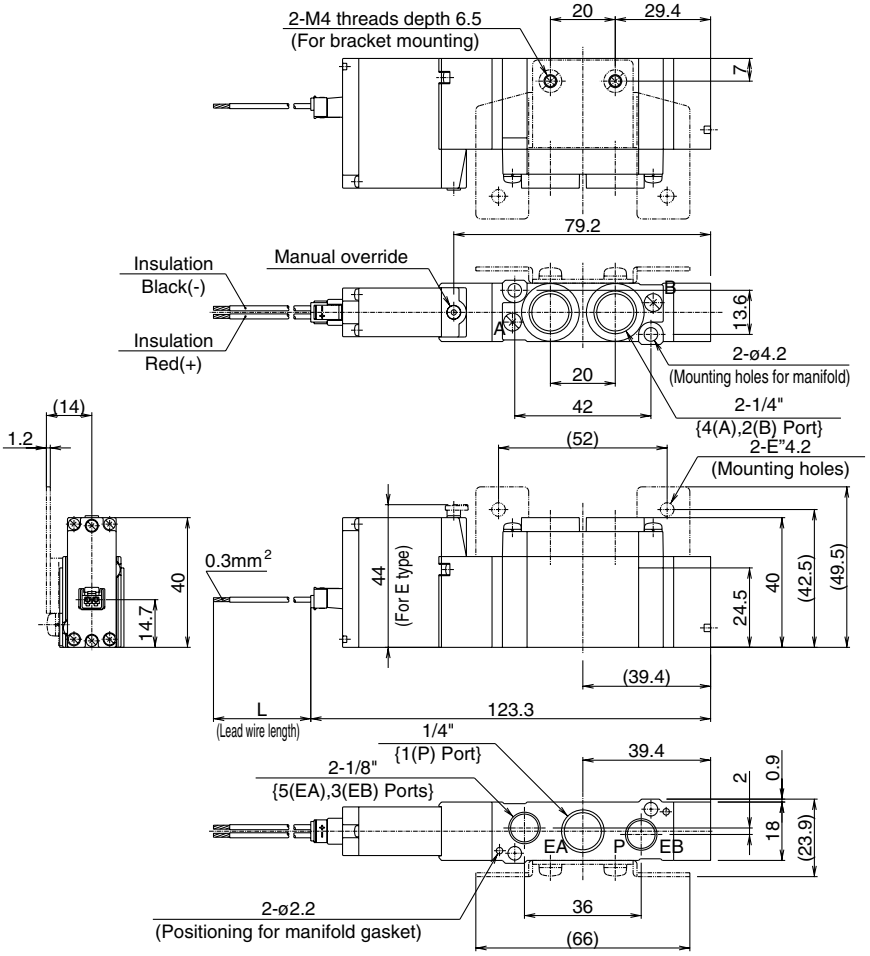
Terminal type (TT)

3
52-SY5420-TT□□-01□(-F2)
5

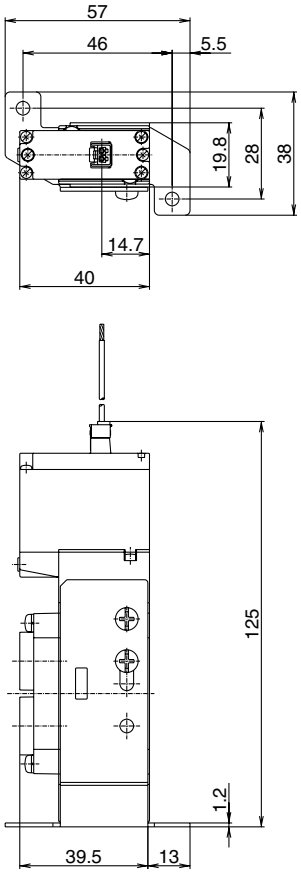


Dimensions

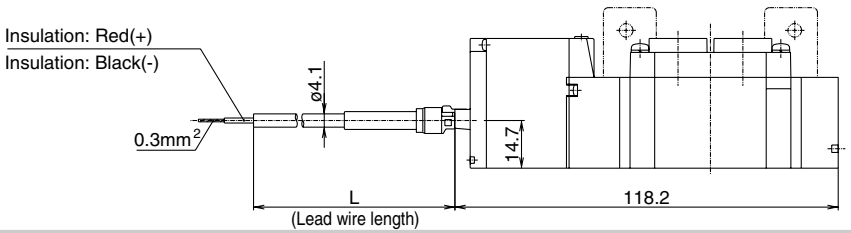
Body ported type
Dimensions/Series 52-SY7000
2-position single
Plug connector type (L)
52-SY7120-L□□-02□(-F2)



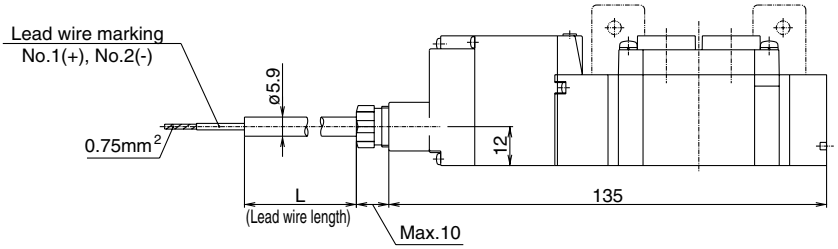
In case with foot bracket
52-SY7120-L□□-02□-(F1)



Plug connector with cover type (LL)
52-SY7120-LL□□-02□(-F2)

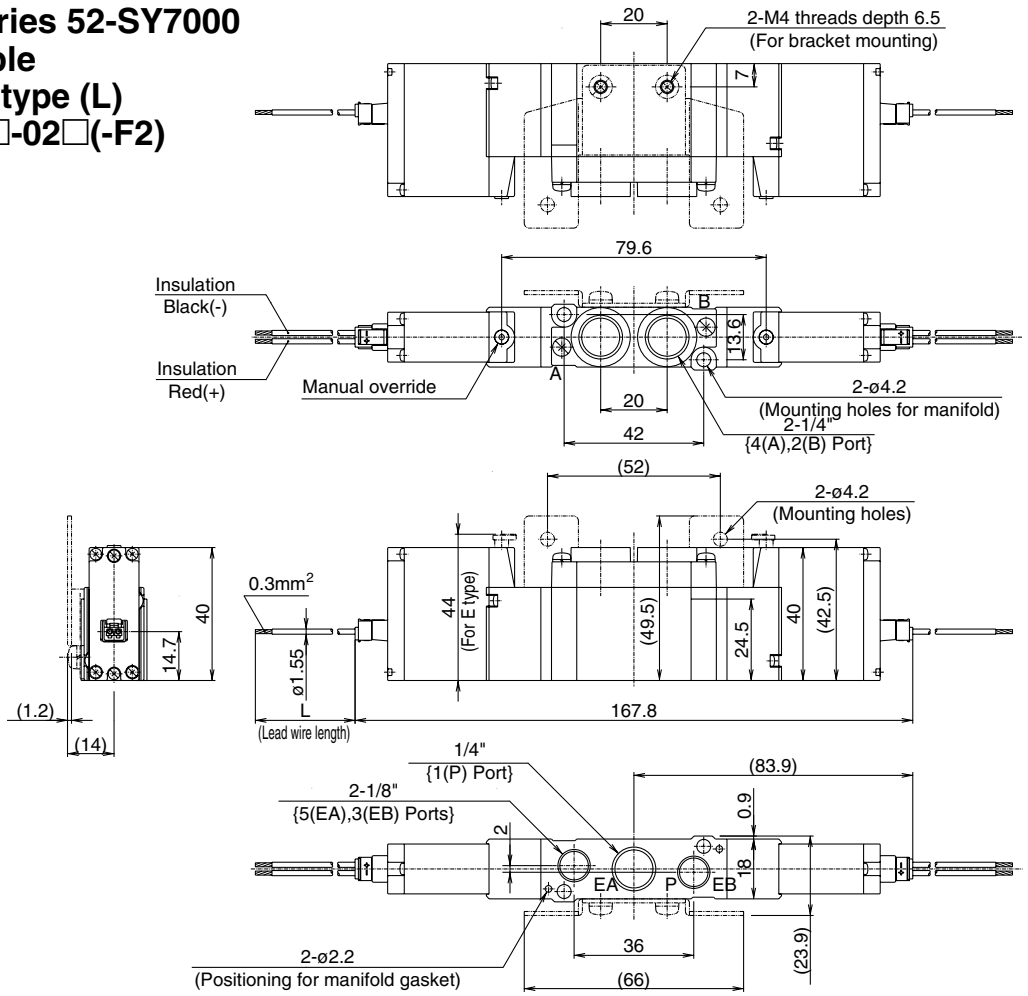


Terminal type (TT)
52-SY7120-TT□□-02□(-F2)

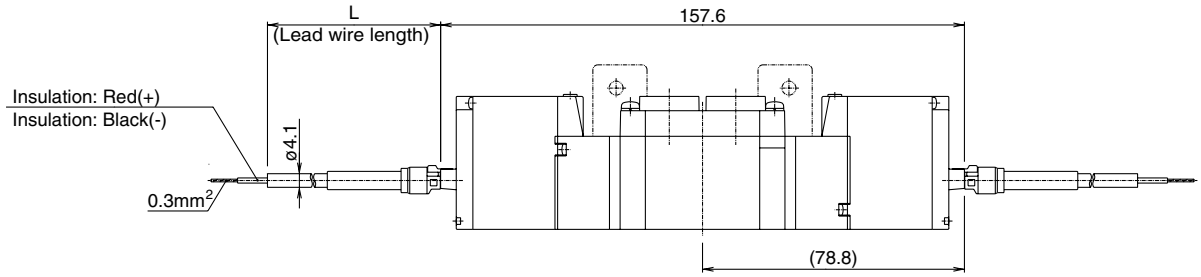


Dimensions

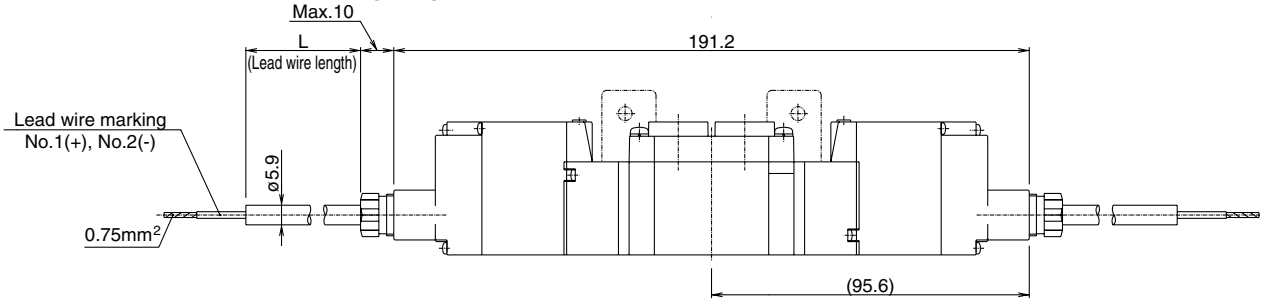
Body ported type
Dimensions/Series 52-SY7000
2-position double
Plug connector type (L)
52-SY7220-L□□-02□(-F2)



Plug connector with cover type (LL)
52-SY7220-LL□□-02□(-F2)



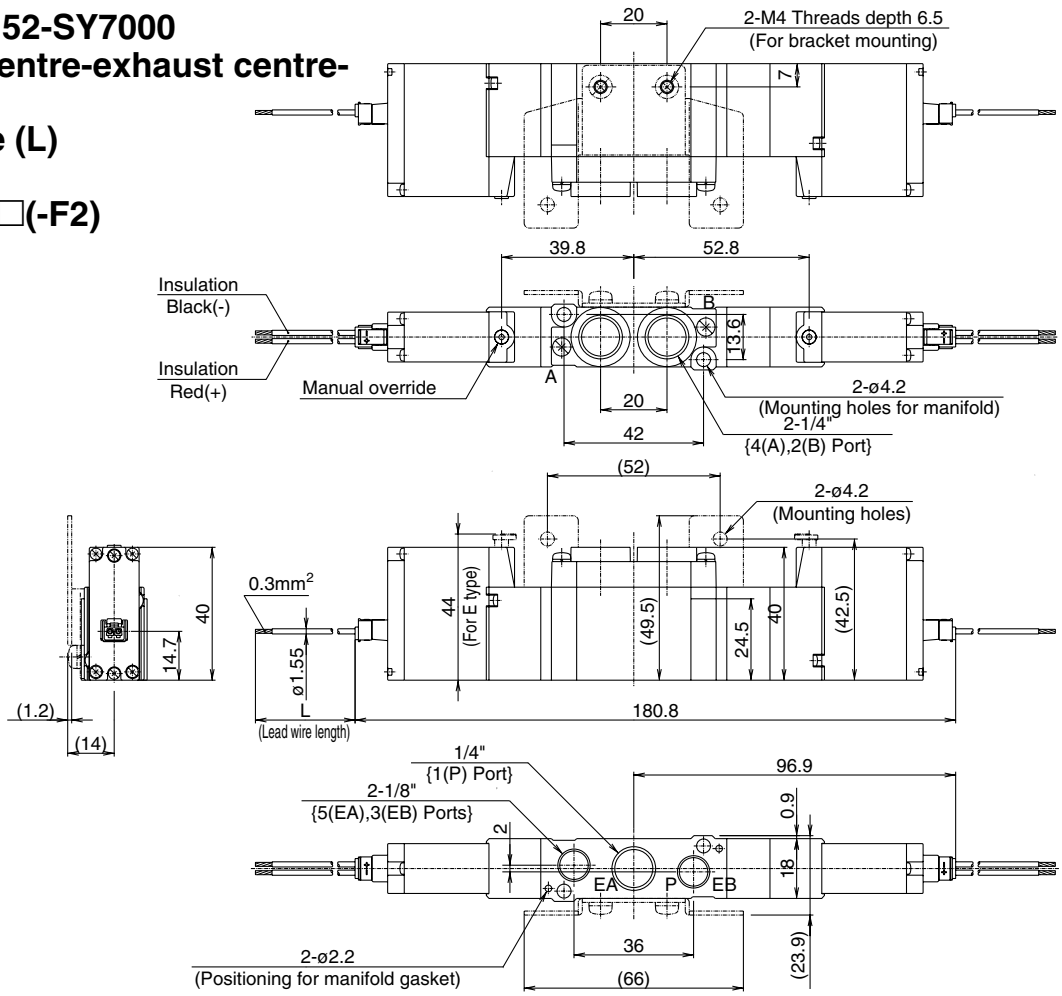
Terminal type (TT)
52-SY7220-TT□□-02□(-F2)



Dimensions

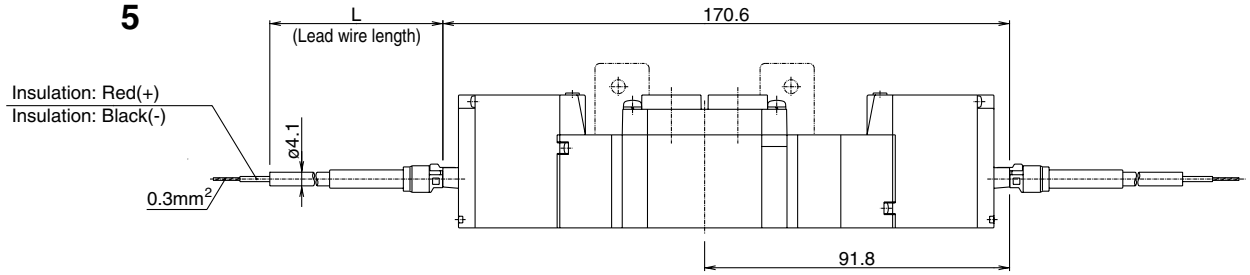
Body ported type
Dimensions/Series 52-SY7000
3-position closed centre-exhaust centre-pressure centre
Plug connector type (L)

3
52-SY7420-L□□-02□(-F2)
5



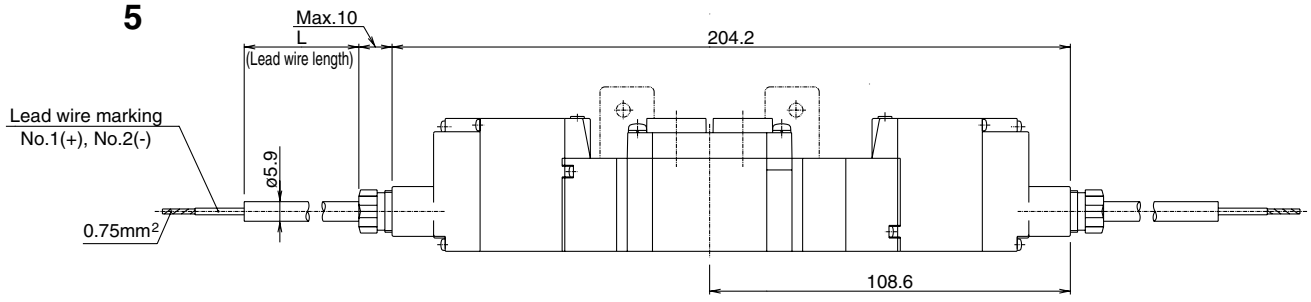
Plug connector with cover type (LL)

3
52-SY7420-LL□□-02□(-F2)
5



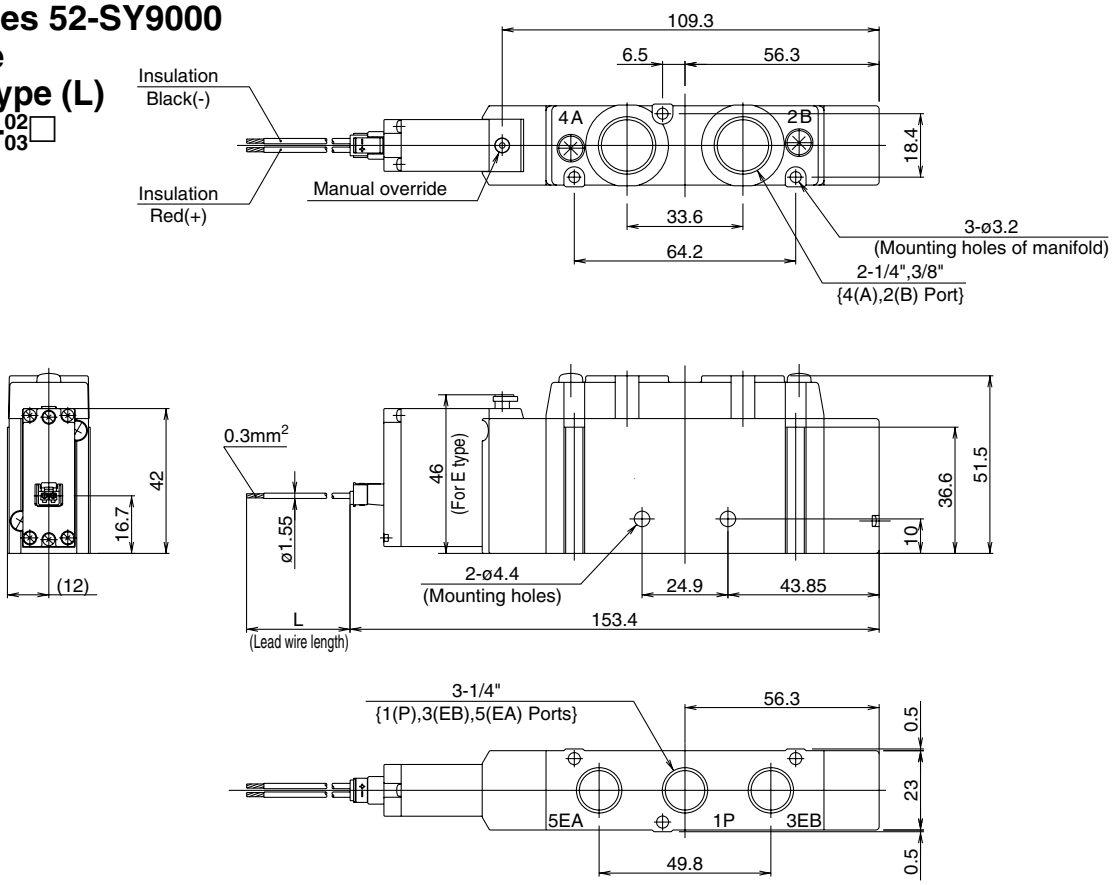
Terminal type (TT)

3
52-SY7420-TT□□-02□(-F2)
5

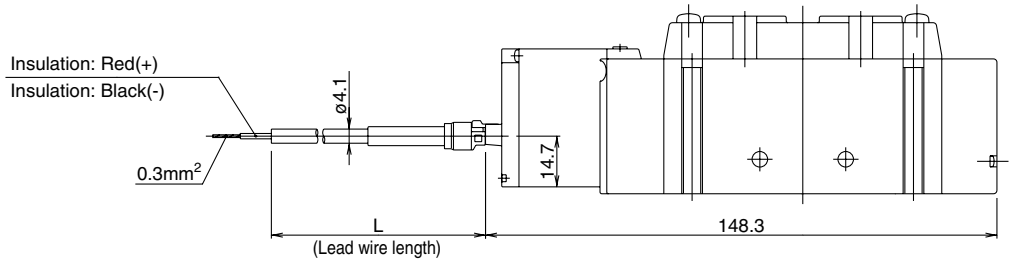


Dimensions

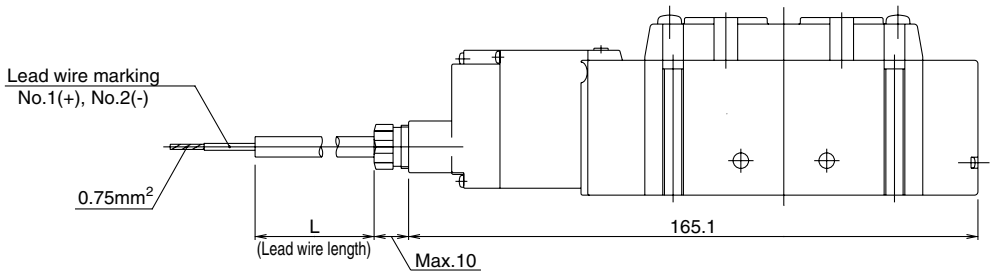
Body ported type
Dimensions/Series 52-SY9000
2-position single
Plug connector type (L)
52-SY9120-L□□-$^{02}_{03}$□



Plug connector with cover type (LL)
52-SY9120-LL□□-$^{02}_{03}$□

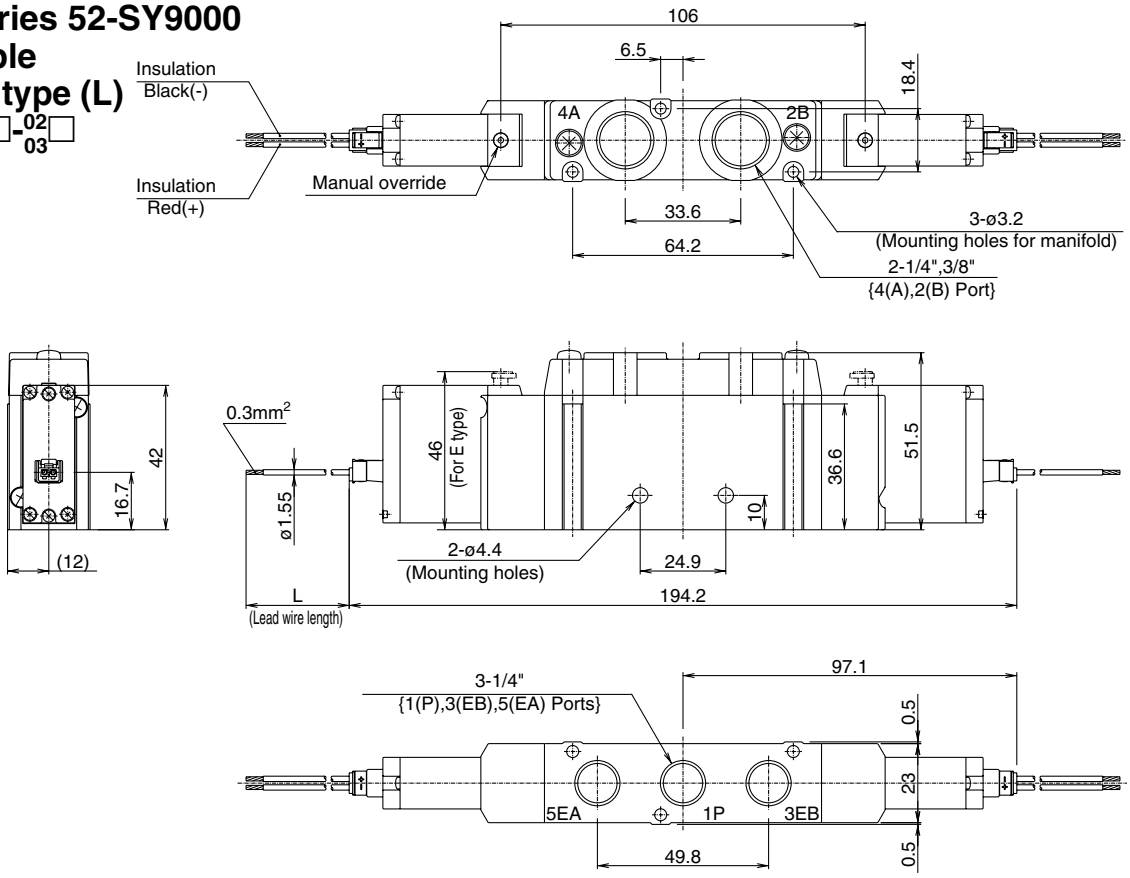


Terminal type (TT)
52-SY9120-TT□□-$^{02}_{03}$□

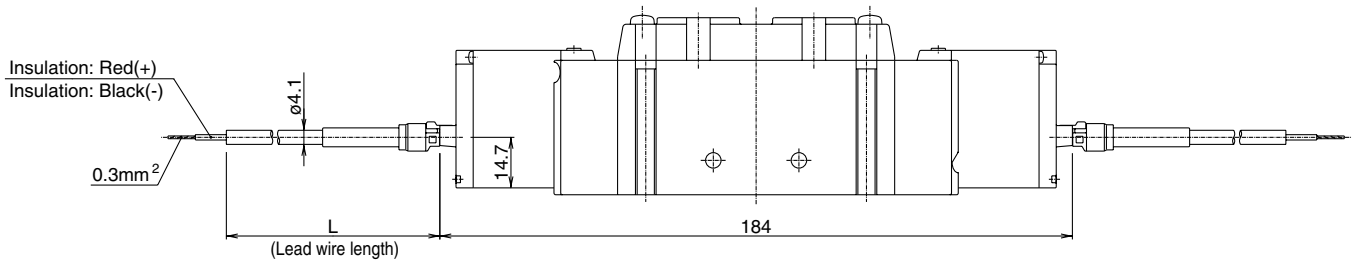


Dimensions

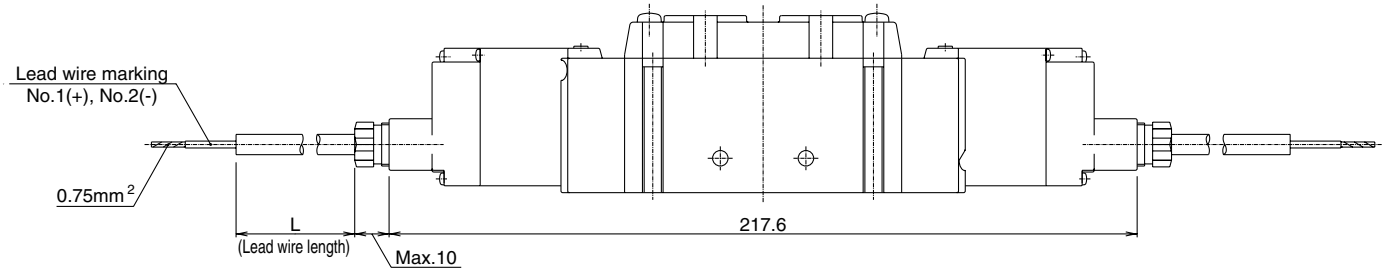
Body ported type
Dimensions/Series 52-SY9000
2-position double
Plug connector type (L)
52-SY9220-L□□-$^{02}_{03}$□



Plug connector with cover type (LL)
52-SY9220-LL□□-$^{02}_{03}$□



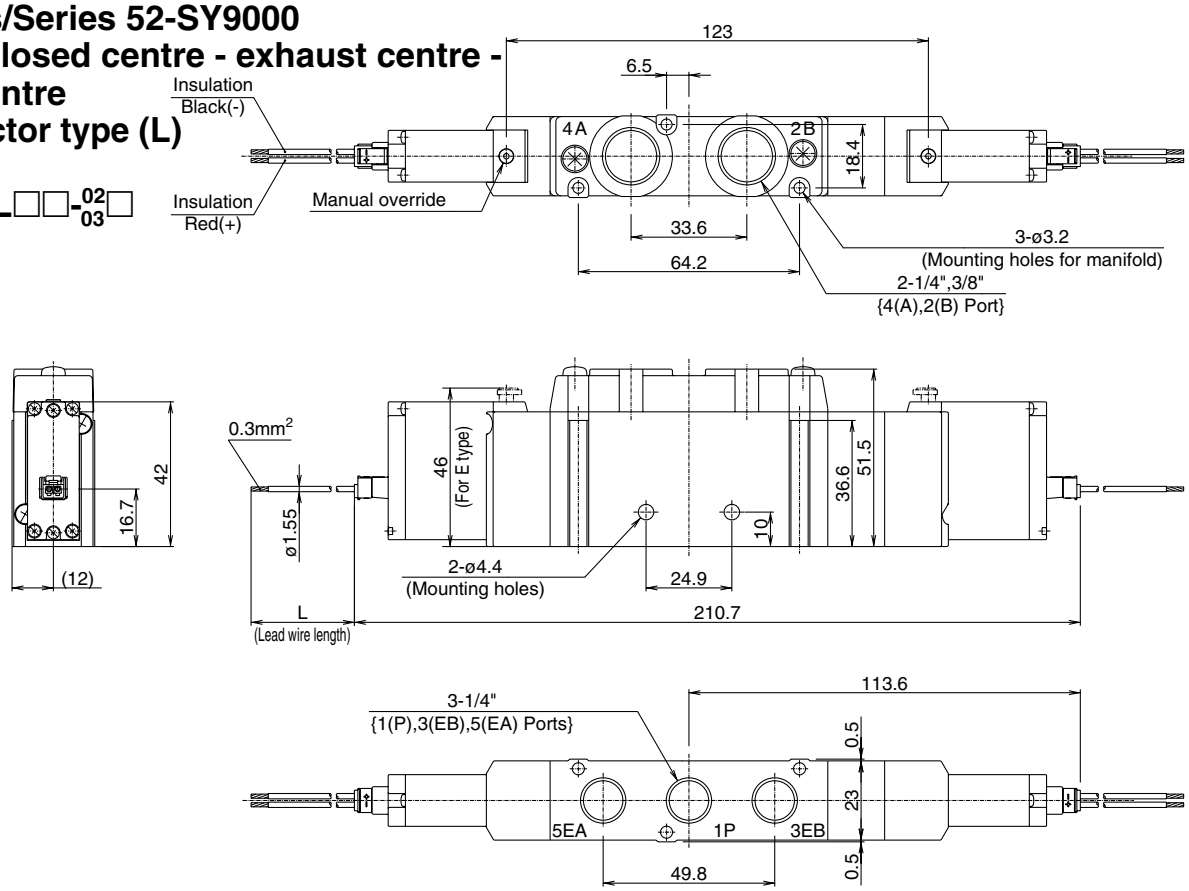
Terminal type (TT)
52-SY9220-TT□□-$^{02}_{03}$□



Dimensions

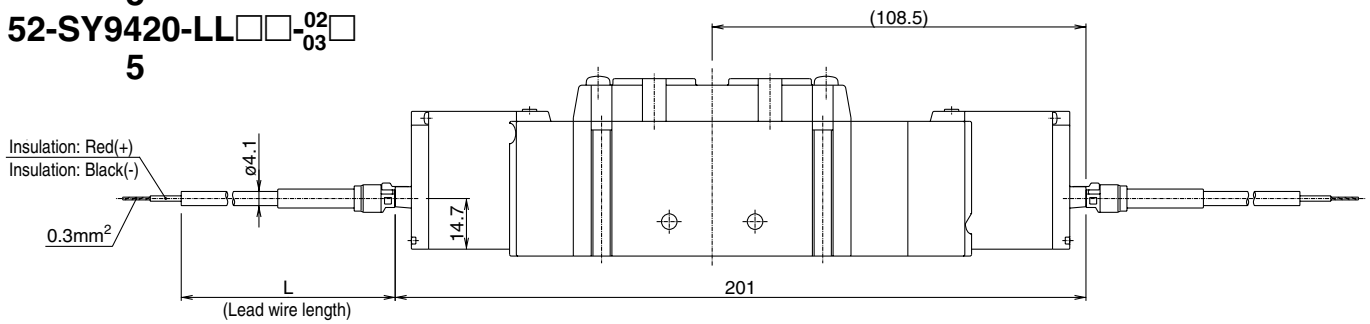
Body ported type
Dimensions/Series 52-SY9000
2-position closed centre - exhaust centre - pressure centre
Plug connector type (L)

3
52-SY9420-L□□-$^{02}_{03}$□
5



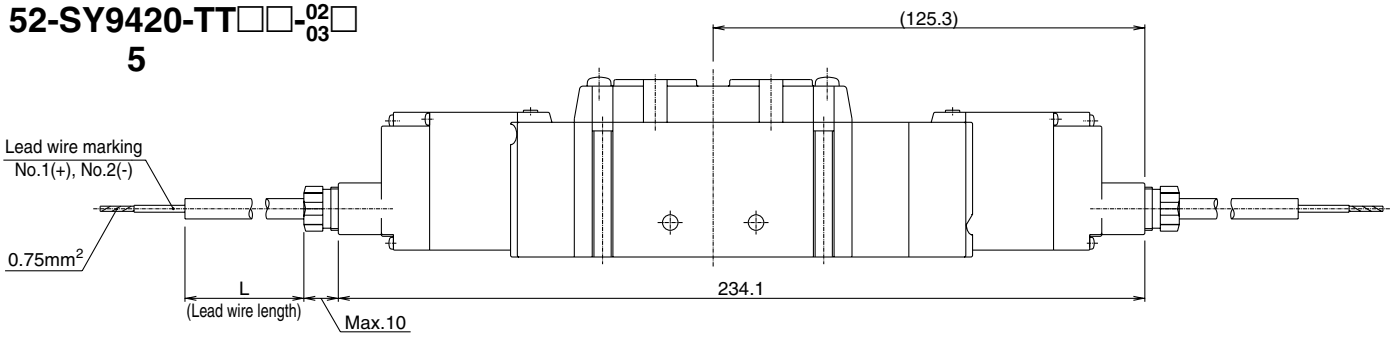
Plug connector with cover type (LL)

3
52-SY9420-LL□□-$^{02}_{03}$□
5



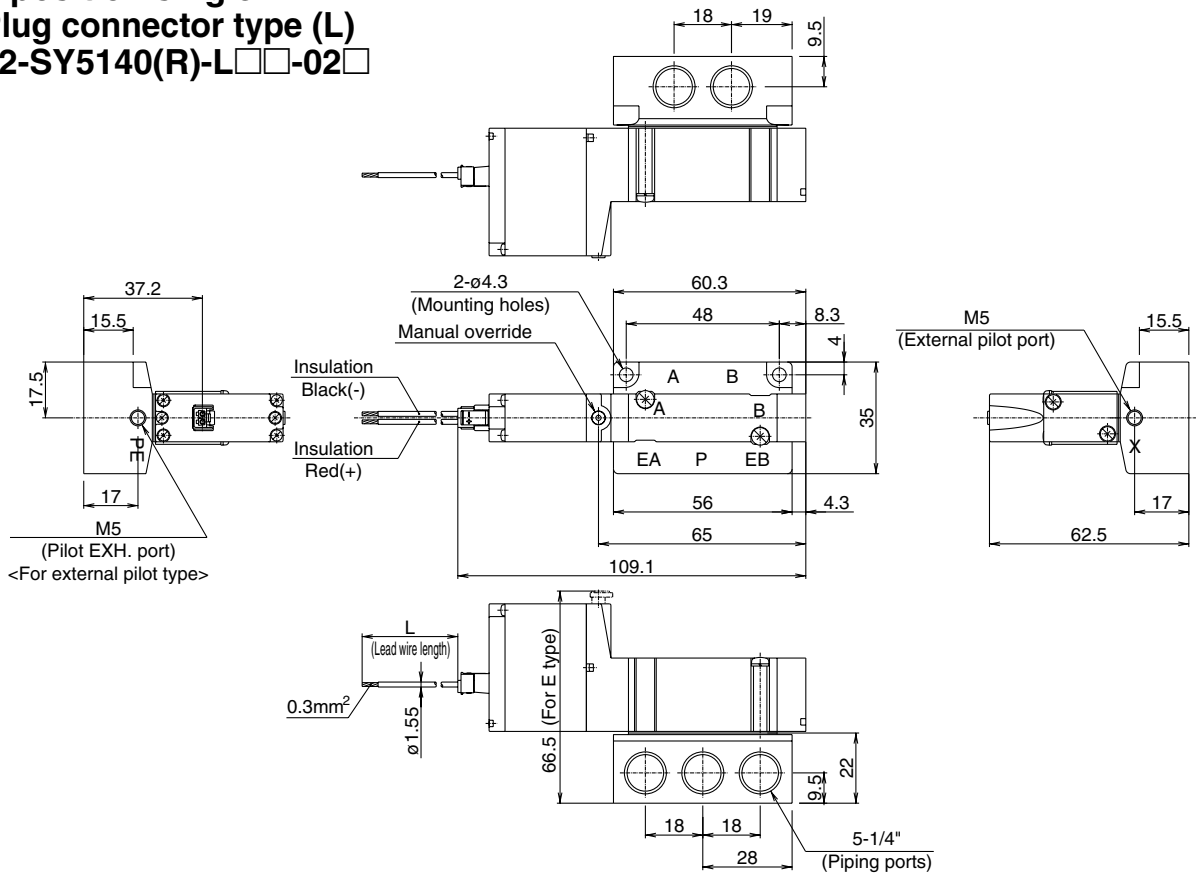
Terminal type (TT)

3
52-SY9420-TT□□-$^{02}_{03}$□
5

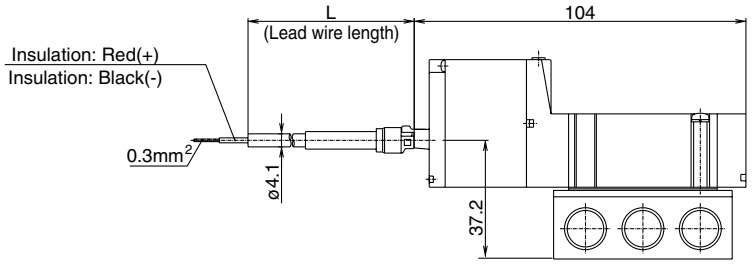


Dimensions

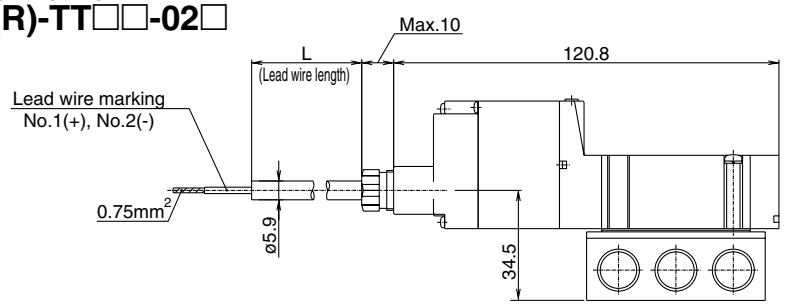
Base mounted type
Dimensions/Series 52-SY5000
2-position single
Plug connector type (L)
52-SY5140(R)-L□□-02□



Plug connector with cover type (LL)
52-SY5140(R)-LL□□-02□

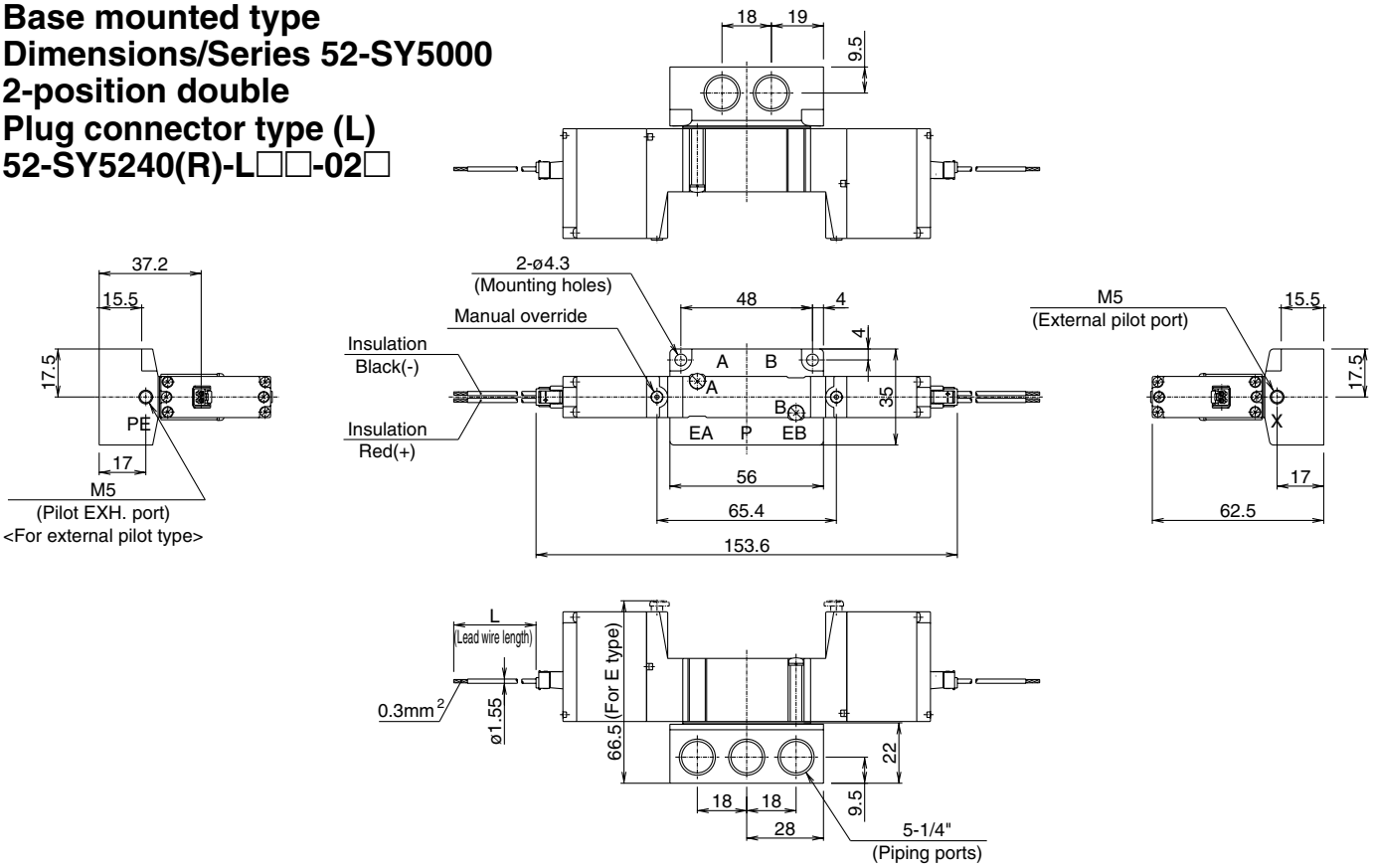


Terminal type (TT)
52-SY5140(R)-TT□□-02□

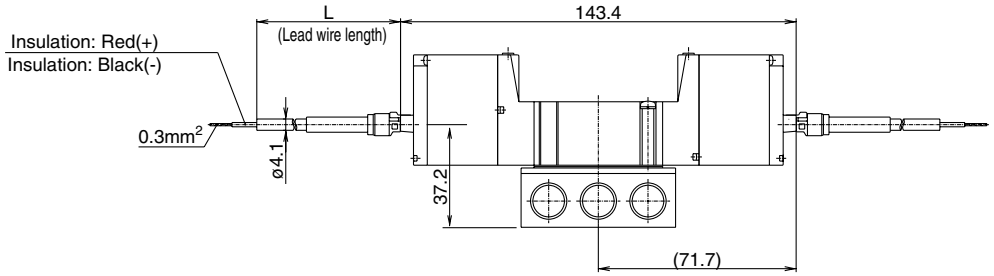


Dimensions

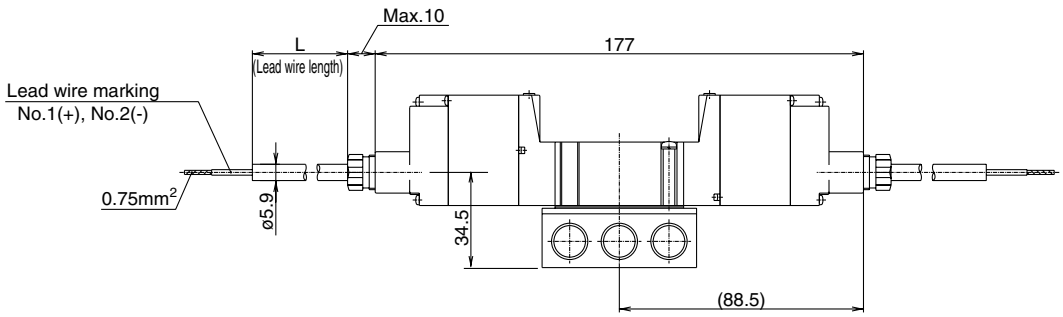
Base mounted type
Dimensions/Series 52-SY5000
2-position double
Plug connector type (L)
52-SY5240(R)-L□□-02□



Plug connector with cover type (LL)
52-SY5240(R)-LL□□-02□



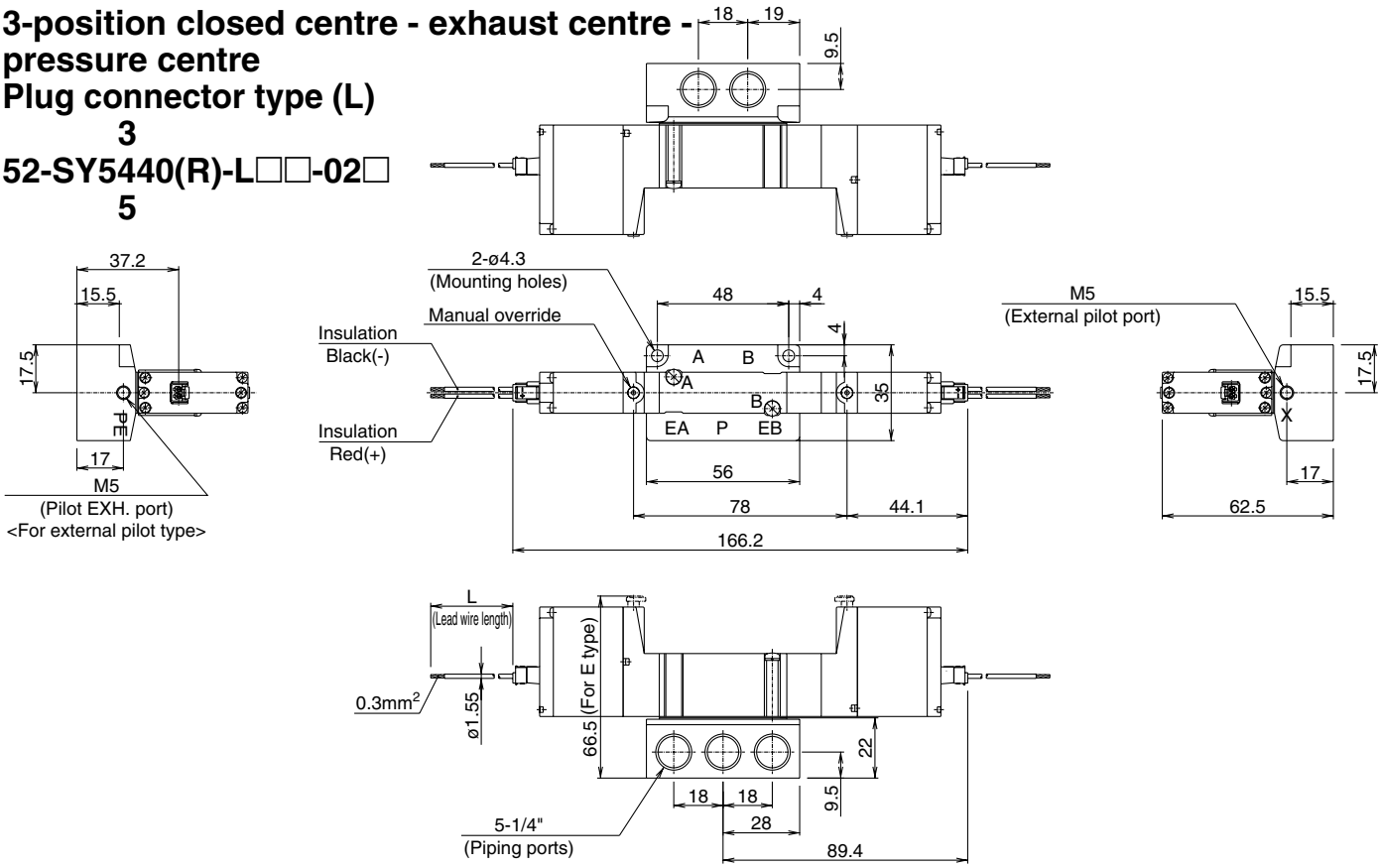
Terminal type (TT)
52-SY5240(R)-TT□□-02□



Dimensions

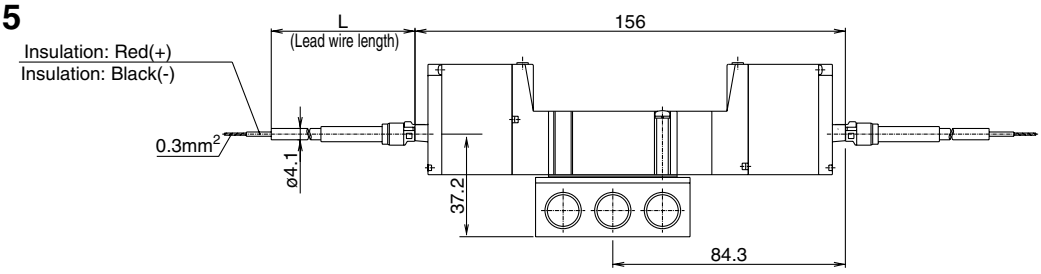
Base mounted type
Dimensions/Series 52-SY5000
3-position closed centre - exhaust centre - pressure centre
Plug connector type (L)

3
52-SY5440(R)-L□□-02□
5



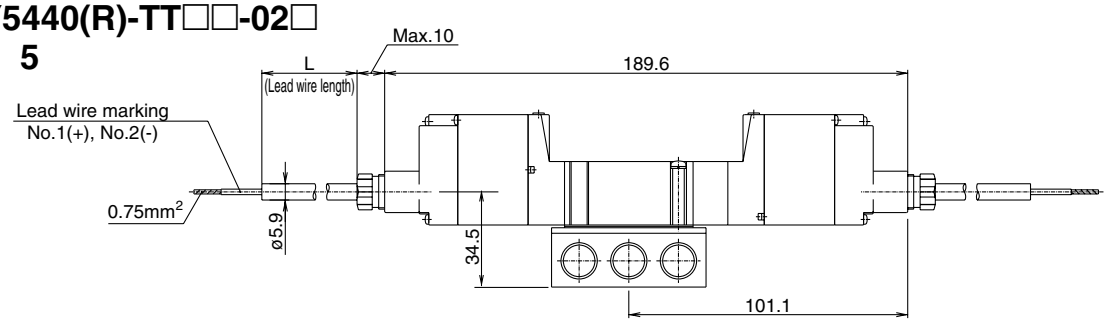
Plug connector with cover type (LL)

3
52-SY5440(R)-LL□□-02□
5



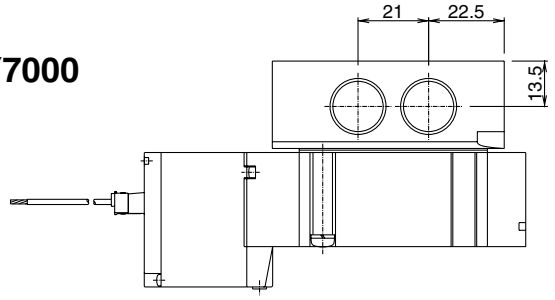
Terminal type (TT)

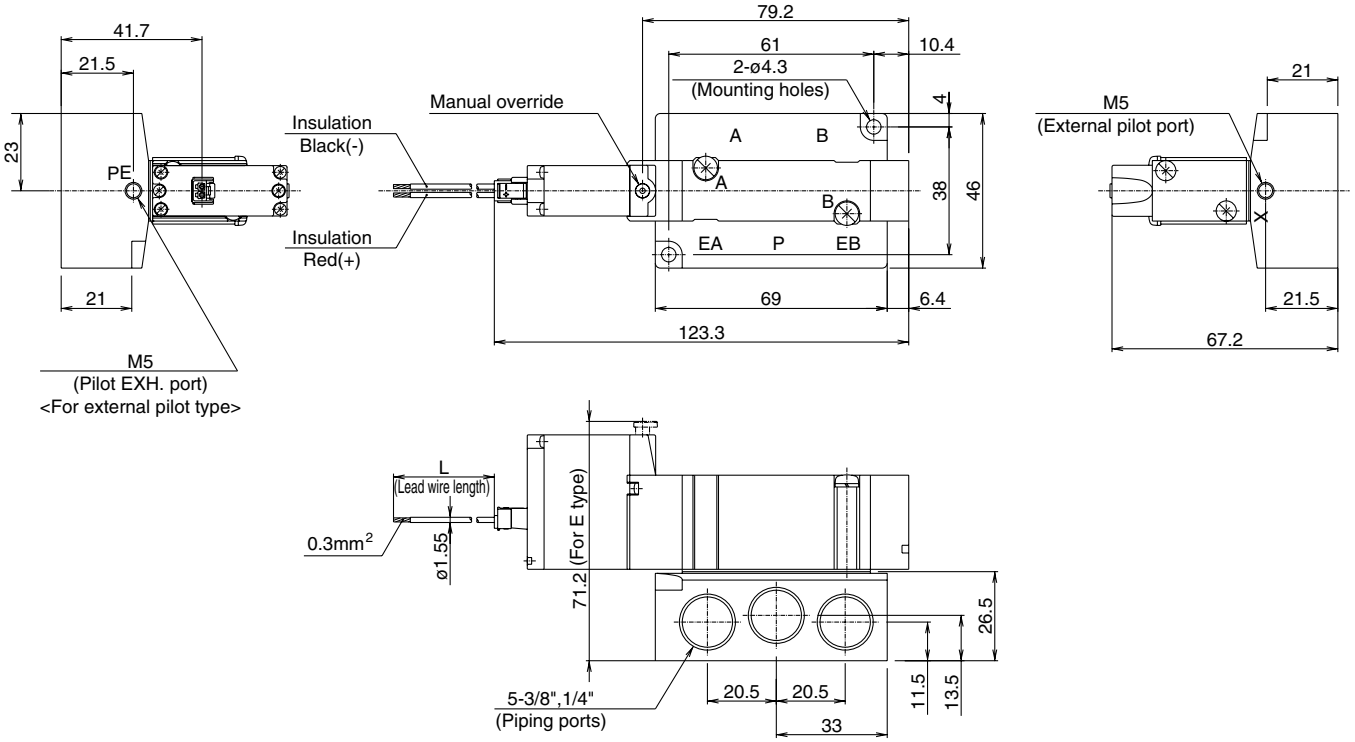
3
52-SY5440(R)-TT□□-02□
5



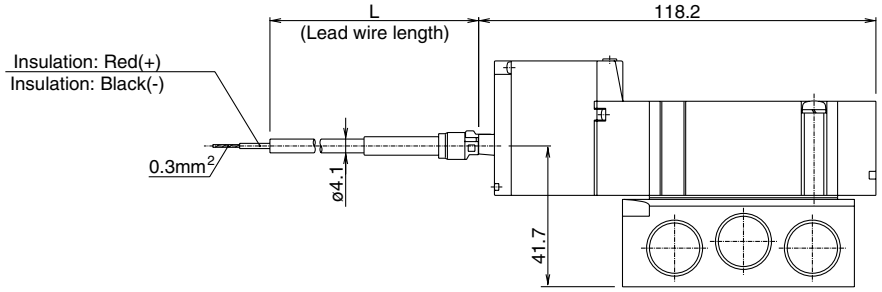
Dimensions

Base mounted type
Dimensions/Series 52-SY7000
2-position single
Plug connector type (L)
52-SY7140(R)-L□□-02□

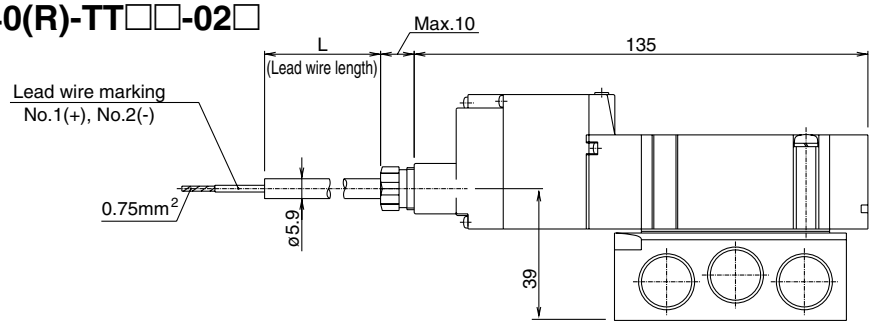




Plug connector with cover type (LL)
52-SY7140(R)-LL□□-02□

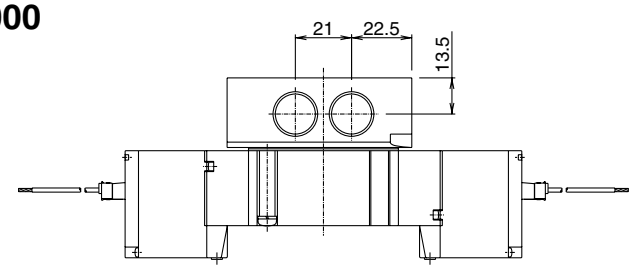


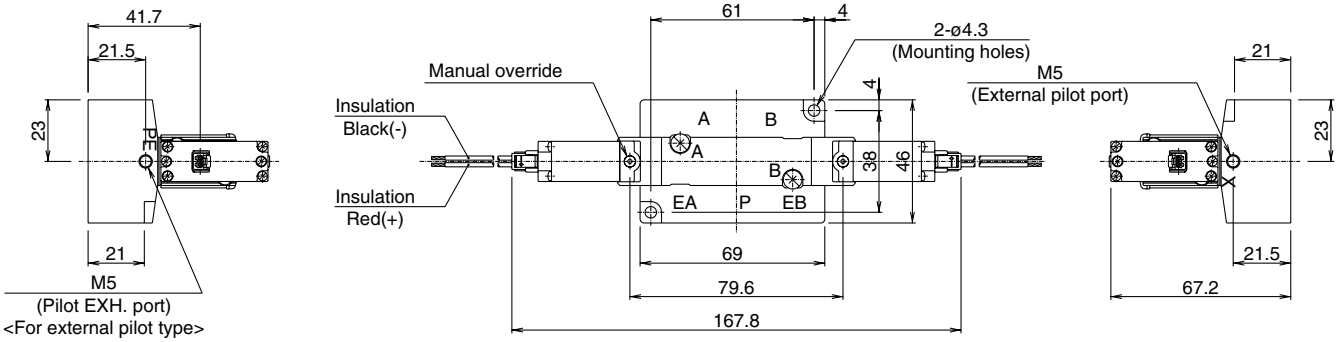
Terminal type (TT)
52-SY7140(R)-TT□□-02□

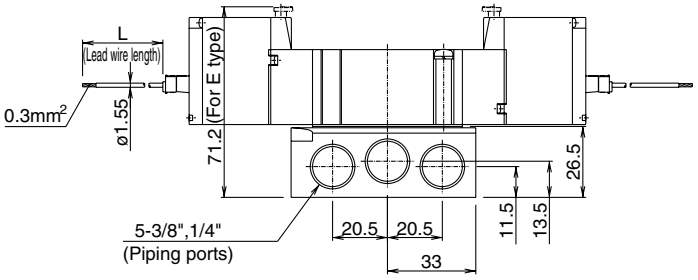


Dimensions

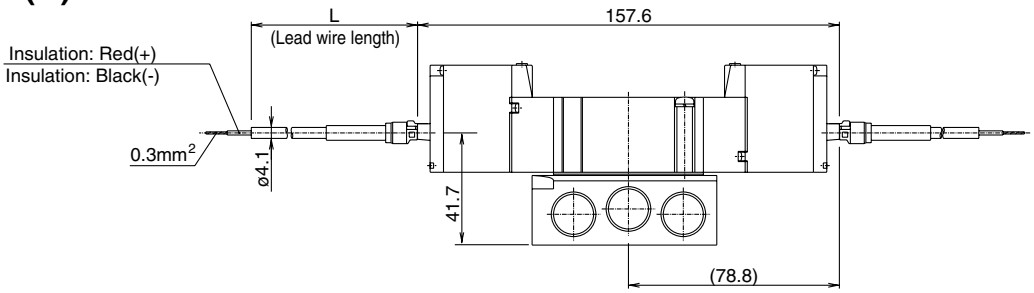
Base mounted type
Dimensions/Series 52-SY7000
2-position double
Plug connector type (L)
52-SY7240(R)-L□□-02□



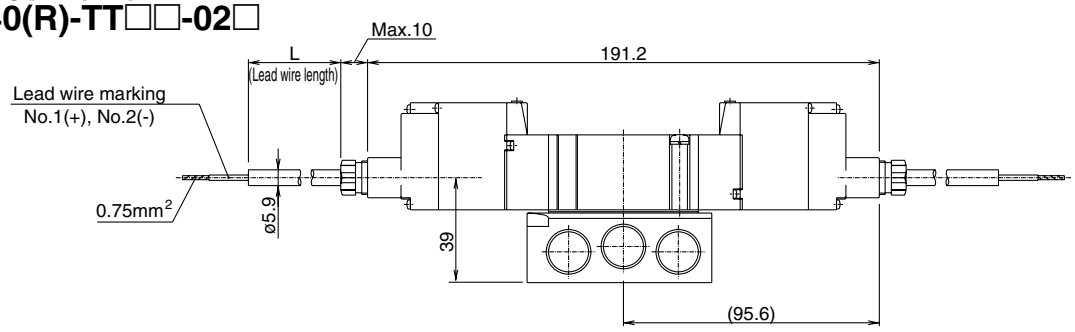




Plug connector with cover type (LL)
52-SY7240(R)-LL□□-02□



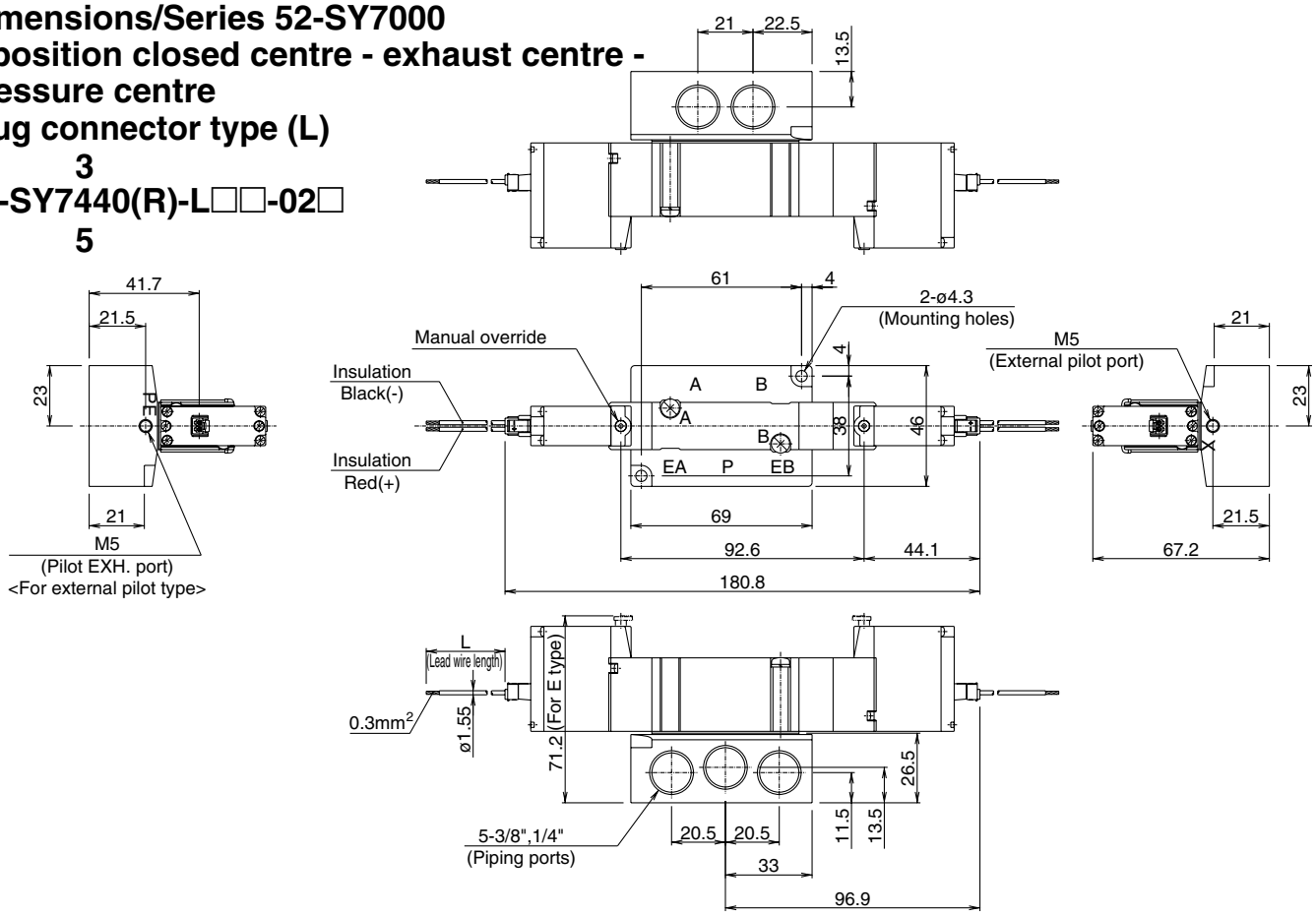
Terminal type (TT)
52-SY7240(R)-TT□□-02□



Dimensions

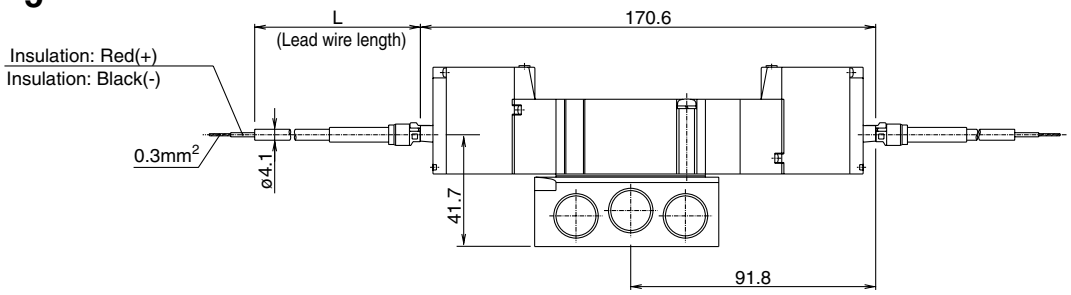
Base mounted type
Dimensions/Series 52-SY7000
3-position closed centre - exhaust centre - pressure centre
Plug connector type (L)

3
52-SY7440(R)-L□□-02□
5



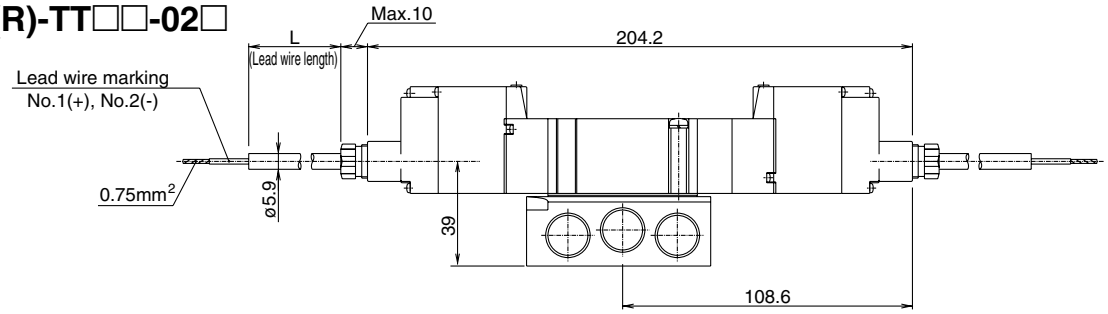
Plug connector with cover type (LL)

3
52-SY7440(R)-LL□□-02□
5



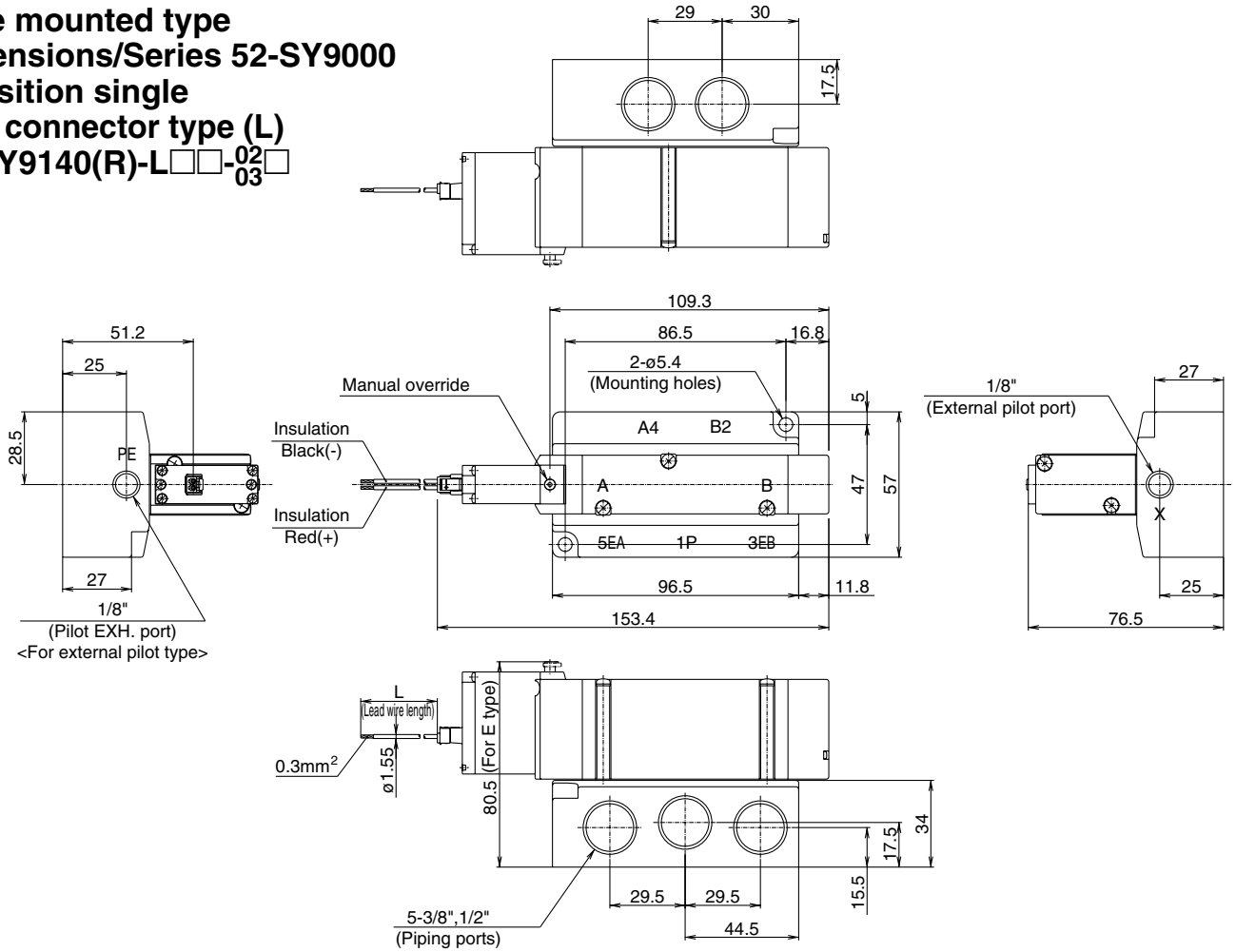
Terminal type (TT)

3
52-SY7440(R)-TT□□-02□
5

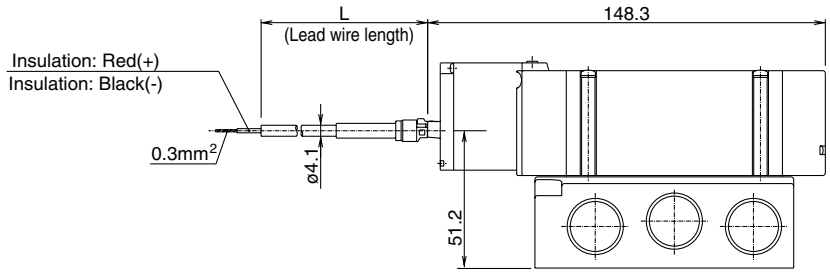


Dimensions

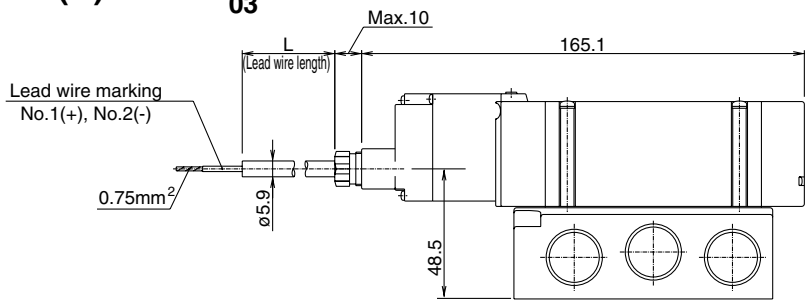
Base mounted type
Dimensions/Series 52-SY9000
2-position single
Plug connector type (L)
52-SY9140(R)-L□□-02/03□



Plug connector with cover type (LL)
52-SY9140(R)-LL□□-02/03□

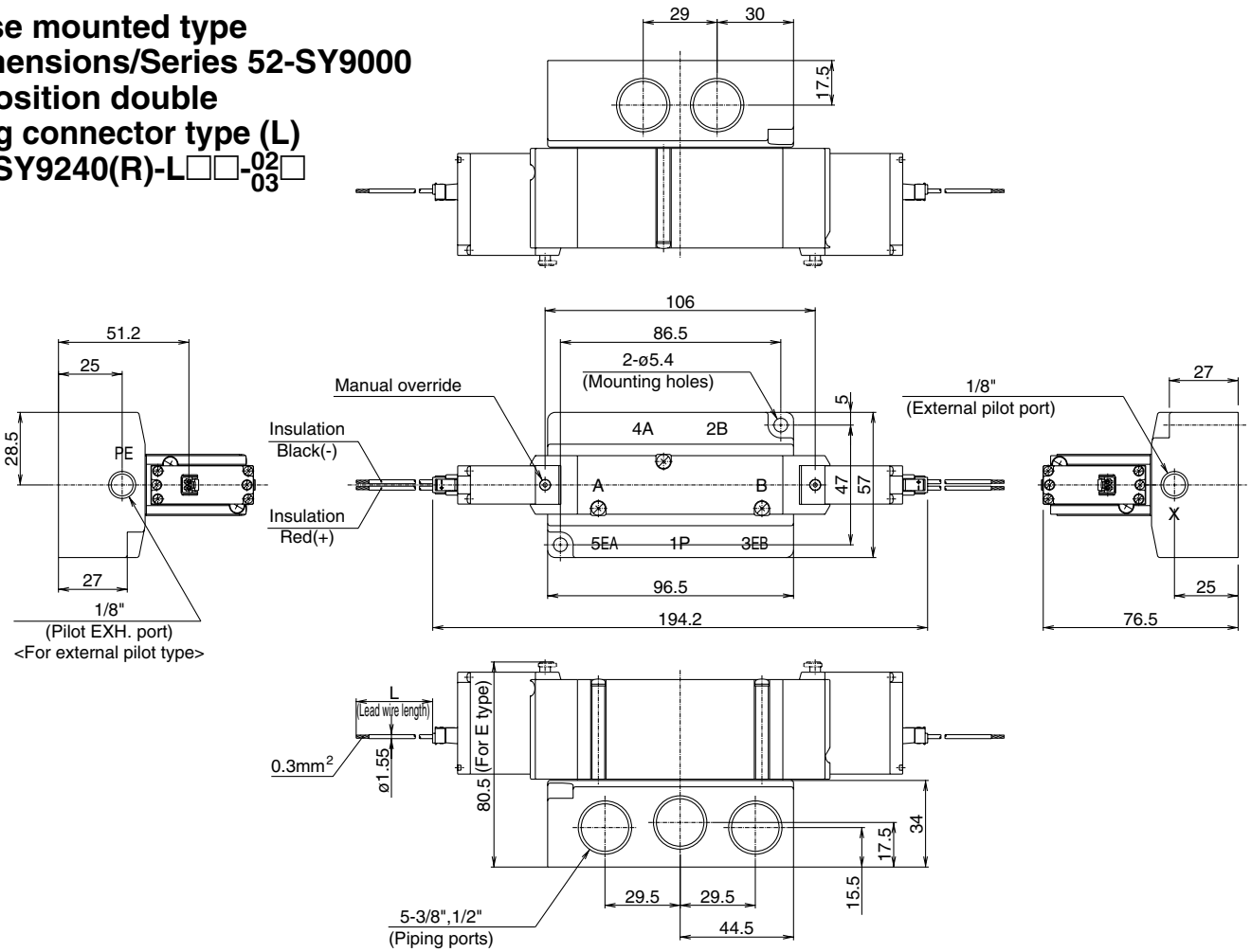


Terminal type (TT)
52-SY9140(R)-TT□□-02/03□

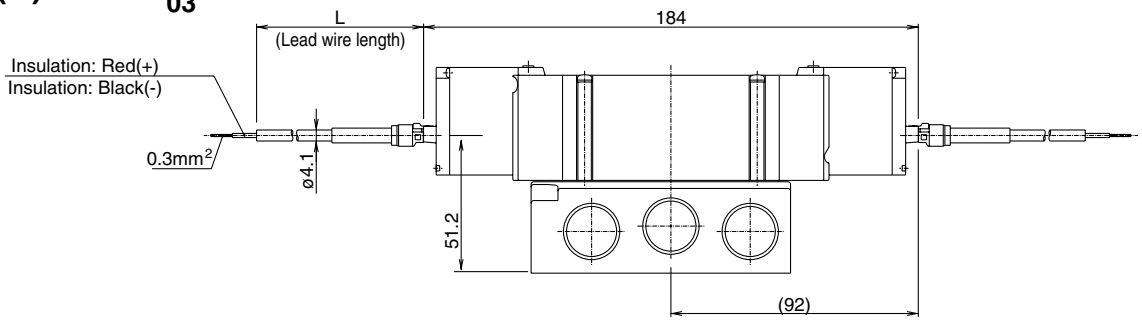


Dimensions

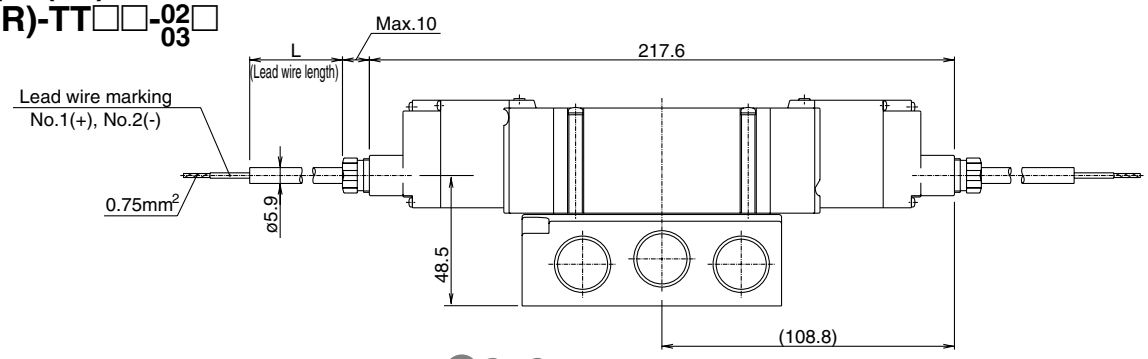
Base mounted type
Dimensions/Series 52-SY9000
2-position double
Plug connector type (L)
52-SY9240(R)-L□□-$^{02}_{03}$□



Plug connector with cover type (LL)
52-SY9240(R)-LL□□-$^{02}_{03}$□



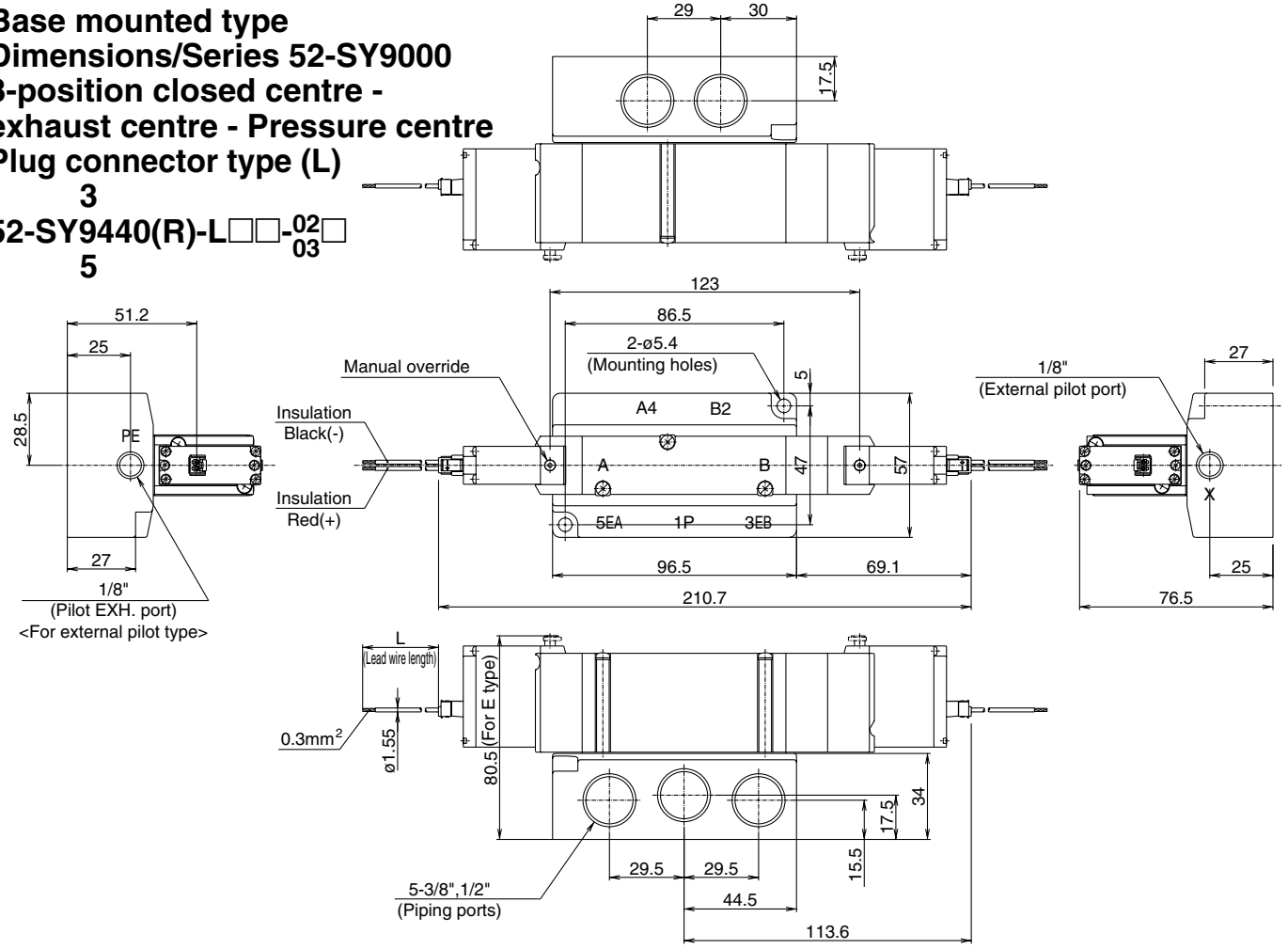
Terminal type (TT)
52-SY9240(R)-TT□□-$^{02}_{03}$□



Dimensions

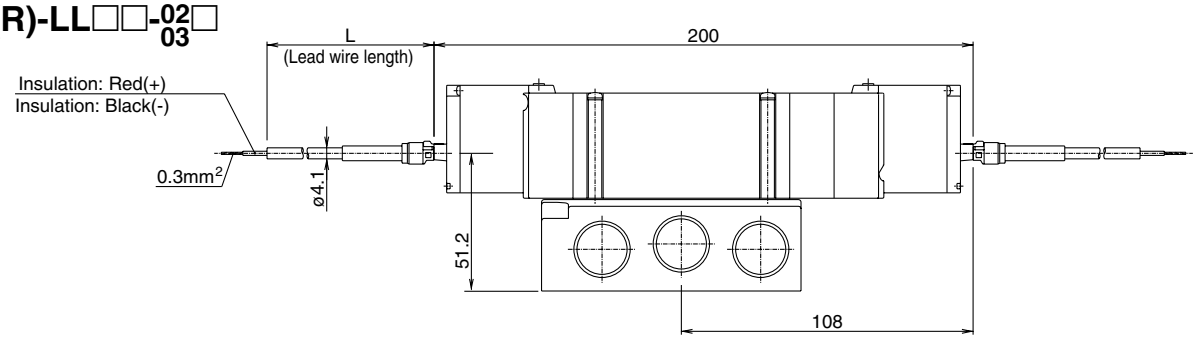
Base mounted type
Dimensions/Series 52-SY9000
3-position closed centre - exhaust centre - Pressure centre
Plug connector type (L)

3
52-SY9440(R)-L□□-02□
03
5



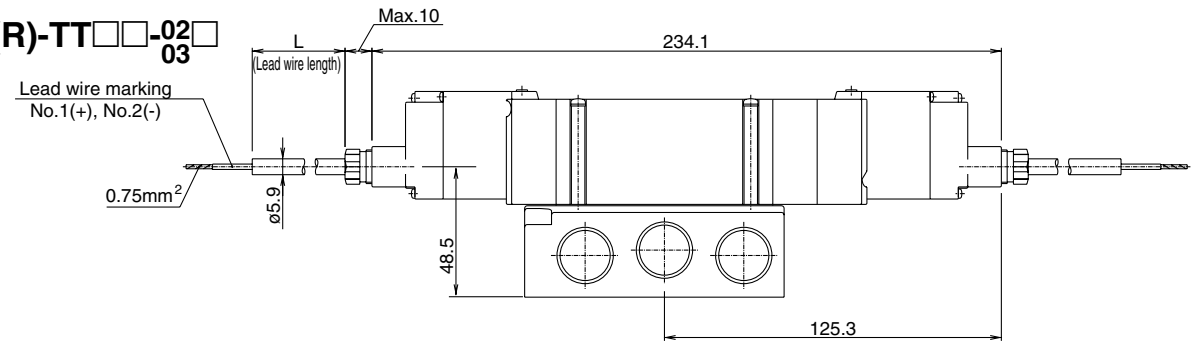
Plug connector with cover type (LL)

3
52-SY9440(R)-LL□□-02□
03
5



Terminal type (TT)

3
52-SY9440(R)-TT□□-02□
03
5



5-Port Solenoid Valve
Series 56-VQC1000

Manifold with M- or T- kit
II 3G Ex nA II T5 X -10°C ≤ Ta ≤ +50°C
II 3D Ex tD A22 IP67 T85°C X
Manifold with 56-EX500
II 3G Ex nA II T5 X +5°C ≤ Ta ≤ +45°C
II 3D Ex tD A22 IP67 T80°C X
Special condition X "Protect from Impact"

For more details, other specifications, dimensions, see the specific catalogue.

How to Order Manifolds

56 - VV5QC 1 1 – 08 C3 TD0 N – □ ..... M / T / S Kit

ATEX category 3

Series

1	56-VQC1000

Manifold model

1	Plug-in unit

Stations

01	1 station
⋮	⋮

The maximum number of stations differs depending on the electrical entry (refer to Electrical entry/Cable length).

Cylinder port size

C3	With ø3.2 One-touch fitting
C4	With ø4 One-touch fitting
C6	With ø6 One-touch fitting
M5	M5 thread
CM	Mixed sizes and with port plug
L3	Top ported elbow Wtih ø3.2 One-touch fitting
L4	Top ported elbow With ø4 One-touch fitting
L6	Top ported elbow With ø6 One-touch fitting
L5	M5 thread
LM	Elbow port, mixture sizes
B3	Bottom ported elbow With ø3.2 One-touch fitting
B4	Bottom ported elbow With ø4 One-touch fitting
B6	Bottom ported elbowWith ø6 One-touch fitting
B5	M5 thread
BM	Elbow for bottom port, mixture sizes

Options

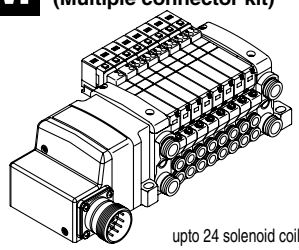
–	None
B	All stations with back pressure check valve
D	With DIN rail (rail length: standard)
D□	With DIN rail (rail length: special)
K	Special wiring specifications (except for double wiring)
N	With name plate
R	External pilot

COM.

N	Negative COM.

Kit designation/Electrical entry/Cable length

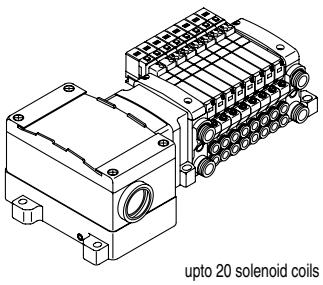
M Kit (Multiple connector kit)



upto 24 solenoid coils

MD0	Multiple connector kit (26P) without cable	1 to 12 stations (24 stations)
MD1	Multiple connector kit (26P) with 1.5m cable	
MD2	Multiple connector kit (26P) with 3.0m cable	
MD3	Multiple connector kit (26P) with 5.0m cable	

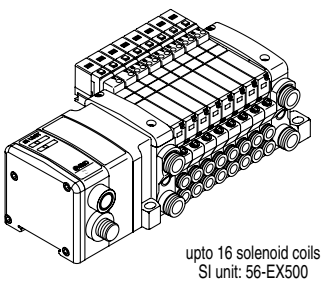
T Kit (Terminal block box kit)



upto 20 solenoid coils

TD0	Terminal block box kit	1 to 10 stations (20 stations)

S Kit (Serial output kit)



upto 16 solenoid coils
SI unit: 56-EX500

SDA2	Serial kit for PROFIBUS DP / DEVICENET ™	1 to 8 stations (16 stations)

Contact SMC for 56-EX250 with Profibus DP

How to Order Valves

56 - VQC 1 [1] 0 [0] [ ] — 5 [ ]

ATEX category 3

Series

1	56-VQC1000

Type of actuation

1	2-position single (A)(B) 4 2 / 5 1 3 (R1)(P)(R2)	A Note)	4-position dual 3-port valve (A) (A) (B) 4 2 / 5 (R1) N.C, 1 (P), 3 (R2) N.C
2	2-position double (metal) (A)(B) 4 2 / 5 1 3 (R1)(P)(R2)	B Note)	4-position dual 3-port valve (B) (A) (B) 4 2 / 5 (R1) N.O, 1 (P), 3 (R2) N.O
	2-position double (rubber) (A)(B) 4 2 / 5 1 3 (R1)(P)(R2)	C Note)	4-position dual 3-port valve (C) (A) (B) 4 2 / 5 (R1) N.C, 1 (P), 3 (R2) N.O
3	3-position closed centre (A)(B) 4 2 / 5 1 3 (R1)(P)(R2)		
4	3-position exhaust centre (A)(B) 4 2 / 5 1 3 (R1)(P)(R2)		
5	3-position pressure centre (A)(B) 4 2 / 5 1 3 (R1)(P)(R2)		

Note) For rubber seal type only.

Seal type

0	Metal seal
1	Rubber seal

Coil voltage

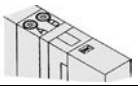
5	24VDC

Function

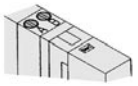
–	Standard type
R	External pilot

Manual override

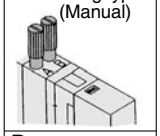
Nil: Non-locking push type



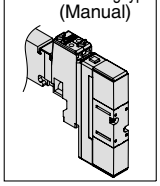
B: Locking type (Slotted)



C: Locking type (Manual)



D: Slide locking type (Manual)



Note) "56-" solenoid valve should be installed in "56-VV5QC11" manifold.
Power consumption when starting is 1W, when maintaining 0.35W.
"56-VQC" solenoid valve has no polarity

Specifications for 56-VQC 1000/2000 and 4000

Valve specifications	Valve Configuration			Metal seal	Rubber seal
	Fluid			Air/Inert gas	
	56-VQC1000/2000	Max. operating pressure		0.7MPa	
		Min. operating pressure	Single	0.1MPa	0.15MPa
			Double	0.1MPa	
			3-position	0.1MPa	0.2MPa
			4-position	—	0.15MPa
	56-VQC4000	Max. operating pressure		1.0MPa	
		Min. operating pressure	Single	0.15MPa	0.2MPa
			Double	0.15MPa	
			3-position	0.15MPa	0.2MPa
	Proof pressure			1.5MPa	
	Fluid temperature			–10 to 50°C Note 1)	
	Lubrication			Not required	
	Manual override			Push type/Locking type (tool required)/Locking type Note 2)/Slide locking type Note 2)	
	Impact resistance/Vibration resistance			150/30 m/s² Note 3)	
	Enclosure			Dust proof (conforms to IP67)	
Electrical specifications	Rated coil voltage			24VDC	
	Allowable voltage fluctuation			±10% of rated voltage	
	Coil insulation type			Equivalent to B type	
	Power consumption (Current) Note4)		24VDC	1W (42mA) for inrush / 0.35W (15mA) for holding	

Note 1) Use dry air to prevent condensation at low temperatures.

Note 2) Only for 56-VQC1000/2000.

Note 3) **Impact resistance:** No malfunction resulted from the impact test using a drop impact tester. The test was performed one time each in the axial and right angle directions of the main valve and armature, for both energized and de-energized states.
Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000Hz. Test was performed in the axial and right angle directions of the main valve and armature for both energized and de-energized states.

Note 4) The power-saving unit is included in the manifold.

5-Port Solenoid Valve
Series 56-VQC2000

Manifold with M- or T- kit
II 3G Ex nA II T5 X -10°C ≤ Ta ≤ +50°C
II 3D Ex tD A22 IP67 T85°C X
Manifold with 56-EX500
II 3G Ex nA II T5 X +5°C ≤ Ta ≤ +45°C
II 3D Ex tD A22 IP67 T80°C X
Special condition X "Protect from Impact"

For more details, other specifications, dimensions, see the specific catalogue.

How to Order Manifolds

56 - VV5QC 2 1 – 08 C4 TD0 N – □ ····· M / T / S Kit

ATEX category 3

Series

2	56-VQC2000

Manifold model

1	Plug-in unit

Stations

01	1 station
⋮	⋮

The maximum number of stations differs depending on the electrical entry (refer to Electrical entry/Cable length).

Cylinder port size

C4	With ø4 One-touch fitting
C6	With ø6 One-touch fitting
C8	With ø8 One-touch fitting
CM	Mixed sizes and with port plug
L4	Top ported elbow With ø4 One-touch fitting
L6	Top ported elbow With ø6 One-touch fitting
L8	Top ported elbow With ø8 One-touch fitting
LM	Elbow port, mixture sizes
B4	Bottom ported elbow With ø4 One-touch fitting
B6	Bottom ported elbow With ø6 One-touch fitting
B8	Bottom ported elbow With ø8 One-touch fitting
BM	Elbow for bottom port, mixture sizes

COM.

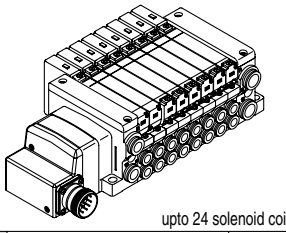
N	Negative COM.

Options

Nil	None
B	All stations with back pressure check valve
D	With DIN rail (rail length: standard)
D□	With DIN rail (rail length: special)
K	Special wiring specifications (except for double wiring)
N	With name plate
R	External pilot
T	Branched P and R ports on U side

Kit designation/Electrical entry/Cable length

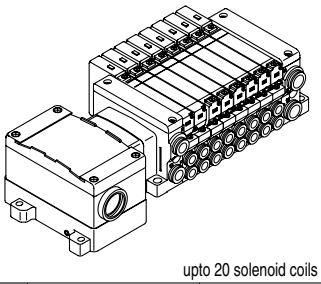
M **Kit (Multiple connector kit)**



upto 24 solenoid coils

MD0	Multiple connector kit (26P) without cable	1 to 12 stations (24 stations)
MD1	Multiple connector kit (26P) with 1.5m cable	
MD2	Multiple connector kit (26P) with 3.0m cable	
MD3	Multiple connector kit (26P) with 5.0m cable	

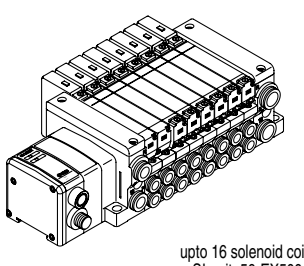
T **Kit (Terminal block box kit)**



upto 20 solenoid coils

TD0	Terminal block box kit	1 to 10 stations (20 stations)

S **Kit (Serial output kit)**



upto 16 solenoid coils
SI unit: 56-EX500

SDA2	Serial kit for PROFIBUS DP / DEVICENET ™	1 to 8 stations (16 stations)

Contact SMC for 56-EX250 with Profibus DP

How to Order Valves

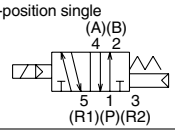
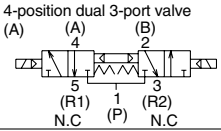
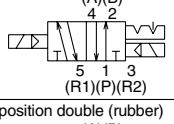
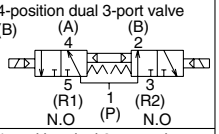
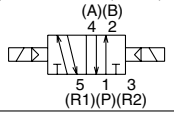
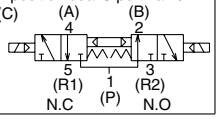
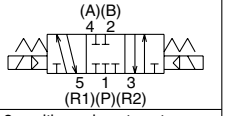
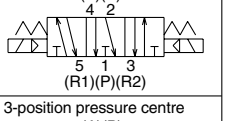
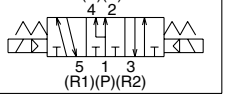
56 - VQC 2 1 0 0 — 5

ATEX category 3

Series

2	56-VQC2000

Type of actuation

1	2-position single 	**A** Note)	4-position dual 3-port valve 
2	2-position double (metal) 	**B** Note)	4-position dual 3-port valve 
	2-position double (rubber) 	**C** Note)	4-position dual 3-port valve 
3	3-position closed centre 		
4	3-position exhaust centre 		
5	3-position pressure centre 		

Note) For rubber seal type only.

Seal type

0	Metal seal
1	Rubber seal

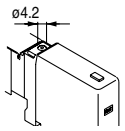
Function

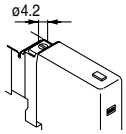
–	Standard type
R	External pilot

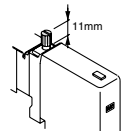
Coil voltage

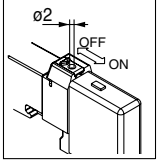
5	24VDC

Manual override

Nil: Non-locking push type


B: Locking type (Slotted)


C: Locking type (Manual)


D: Slide locking type (Manual)


Note) "56-" solenoid valve should be installed in "56-VV5QC21" manifold.
Power consumption when starting is 1W, when maintaining 0.35W.
"56-VQC" solenoid valve has no polarity

5-Port Solenoid Valve
Series 56-VQC4000

Manifold with M- or T- kit
II 3G Ex nA II T5 X -10°C ≤ Ta ≤ +50°C
II 3D Ex tD A22 IP67 T85°C X
Manifold with 56-EX500
II 3G Ex nA II T5 X +5°C ≤ Ta ≤ +45°C
II 3D Ex tD A22 IP67 T80°C X
Special condition X "Protect from Impact"

For more details, other specifications, dimensions, see the specific catalogue.

How to Order Manifolds

56 - VV5QC 4 1 – 08 02 [ ] TD0 N – [ ] ····· M / T / S Kit

ATEX category 3

Series

4	56-VQC4000

Manifold model

1	Plug-in unit

Stations

01	1 station
⋮	⋮

The maximum number of stations differs depending on the electrical entry (refer to Electrical entry/Cable length).

Cylinder port size

C8	With ø8 One-touch fitting
C10	With ø10 One-touch fitting
C12	With ø12 One-touch fitting
CM	Mixed sizes and with port plug
02	1/4 thread
03	3/8 thread
B	Bottom port 1/4

Thread type

–	Rc
F	G
N	NPT
T	NPTF

Kit designation/Electrical entry/Cable length

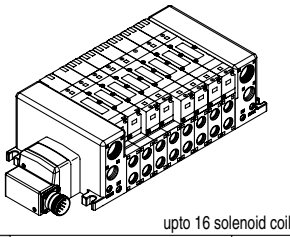
Options

–	None
K	Special wiring specifications (except for double wiring)
N	With name plate (T kit only)

COM.

N	Negative COM.

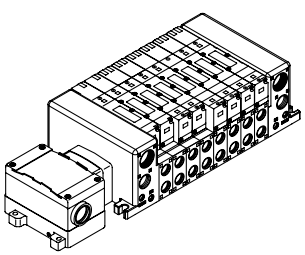
M Kit (Multiple connector kit)



upto 16 solenoid coils

MD0	Multiple connector kit (26P) without cable	1 to 12 stations (16 stations)
MD1	Multiple connector kit (26P) with 1.5m cable	
MD2	Multiple connector kit (26P) with 3.0m cable	
MD3	Multiple connector kit (26P) with 5.0m cable	

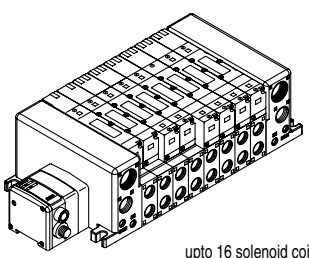
T Kit (Terminal block box kit)



upto 16 solenoid coils

TD0	Terminal block box kit	1 to 10 stations (16 stations)

S Kit (Serial output kit)



upto 16 solenoid coils
SI unit: 56-EX500

SDA2	Serial kit for PROFIBUS-DP/DEVICENET™	1 to 8 stations (16 stations)

Contact SMC for 56-EX250 with Profibus DP

How to Order Valves

56 - VQC 4 1 0 0 □ — 5 □

ATEX category 3

Series

4	56-VQC4000

Type of actuation

1	2-position single (A)(B) 4 2 / 5 1 3 (R1)(P)(R2)	**4**	3-position exhaust center (A)(B) 4 2 / 5 1 3 (R1)(P)(R2)
2	2-position double (metal) (A)(B) 4 2 / 5 1 3 (R1)(P)(R2)	**5**	3-position pressure center (A)(B) 4 2 / 5 1 3 (R1)(P)(R2)
	2-position double (rubber) (A)(B) 4 2 / 5 1 3 (R1)(P)(R2)	**6**	3-position perfect (A)(B) 4 2 / 5 1 3 (R1)(P)(R2)
3	3-position closed centre (A)(B) 4 2 / 5 1 3 (R1)(P)(R2)		

Seal type

0	Metal seal
1	Rubber seal

Function

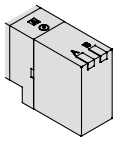
–	Standard type
R	External pilot

Coil voltage

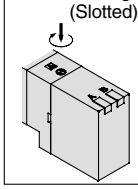
5	24VDC

Manual override

Nil: Non-locking push type



B: Locking type (Slotted)



Note) "56-" solenoid valve should be installed in "56-VV5QC41" manifold.
Power consumption when starting is 1W, when maintaining 0.35W.
"56-VQC" solenoid valve has no polarity.

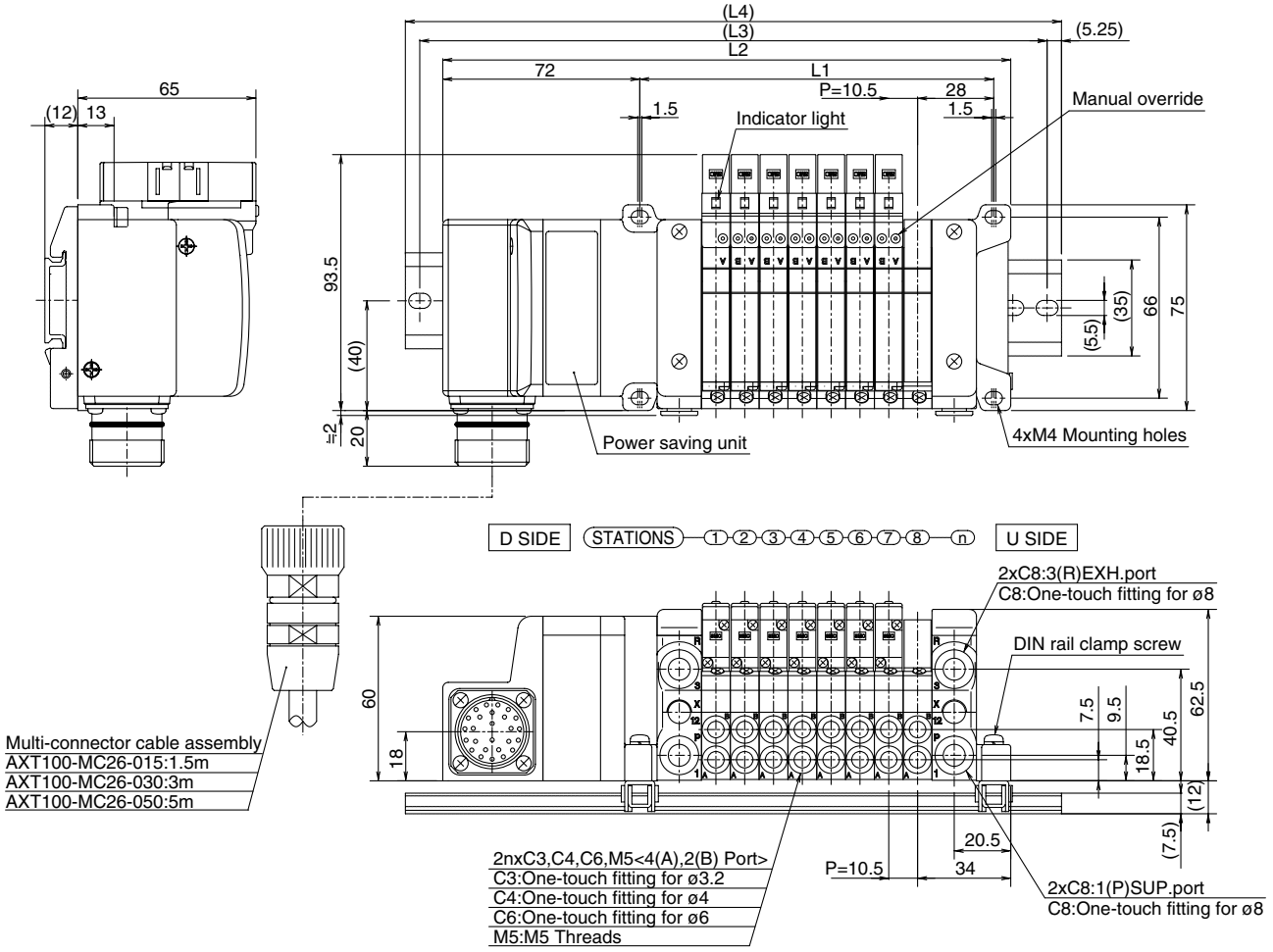
Options for 56-VQC

Name	56-VQC1000	56-VQC2000	56-VQC4000
Blanking plate assembly	VVQ1000-10A-1	VVQ2000-10A-1	VVQ4000-10A-1
Individual SUP spacer	VVQ1000-P-1-C6	VVQ2000-P-1-C8	VVQ4000-P-1-□□
Individual EXH spacer	VVQ1000-R-1-C6	VVQ2000-R-1-C8	VVQ4000-R-1-□□
SUP stop valve spacer	–	VVQ2000-24A-1	VVQ4000-37A-1
SUP block plate	VVQ1000-16A	VVQ2000-16A	VVQ4000-16A
EXH block plate	–	VVQ2000-19A	VVQ4000-16A
EXH block base assembly	VVQC1000-19A-□-□□	–	–
Back pressure check valve	VVQ1000-18A	VVQ2000-18A	–
Port plug	VVQ0000-58A	VVQ1000-58A	–
Dual flow fitting assembly	VVQ1000-52A-C8	VVQ2000-52A-C10	–
Elbow fitting assembly	VVQ1000-F-L-□	VVQ2000-F-L-□	–
Port plug	VVQ0000-58A	VVQ1000-58A	–
Blanking plug	KQ2P-□□	KQ2P-□□	KQ2P-□□
DIN rail mounting bracket	VVQ1000-57A(-S)	VVQ2000-57A(-S)	–
Name plate	VVQ1000-N-□	VVQ2000-N-□	–

Notes) □: Please refer to standard catalogues for details.
Do not use options other than specified in this table.
Only these standard parts without "56-" prefix can be used.

M 56-VQC1000
Kit (Multiple Connector Kit)

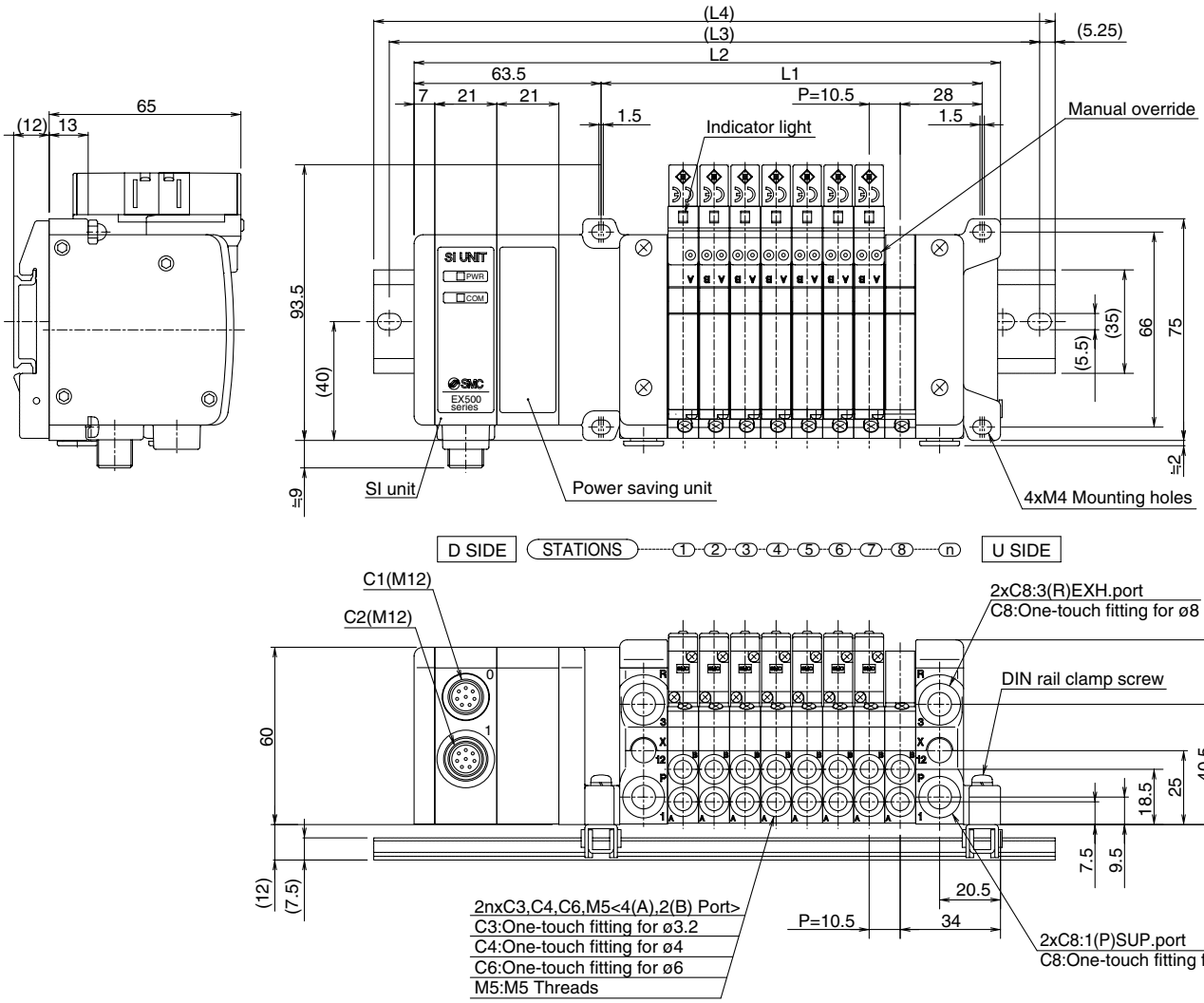
56-VV5QC11



Formulas
L1 = 10.5n + 45
L2 = 10.5n + 123 (1 power saving unit for 1 to 12 solenoids)
L2 = 10.5n + 144 (2 power saving units for 13 to 24 solenoids) n: Stations (Max. 24 single wire stations)

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
L1	55.5	66	76.5	87	97.5	108	118.5	129	139.5	150	160.5	171	181.5	192	202.5	213	223.5	234	244.5	255	265.5	276	286.5	297
L2	133.5	144	154.5	165	175.5	186	196.5	207	217.5	228	238.5	249	280.5	291	301.5	312	322.5	333	343.5	354	364.5	375	385.5	396
L3	162.5	175	175	187.5	200	212.5	225	237.5	237.5	250	262.5	275	300	312.5	325	337.5	350	362.5	375	375	387.5	400	412.5	425
L4	173	185.5	185.5	198	210.5	223	235.5	248	248	260.5	273	285.5	310.5	323	335.5	348	360.5	373	385.5	385.5	398	410.5	423	435.5

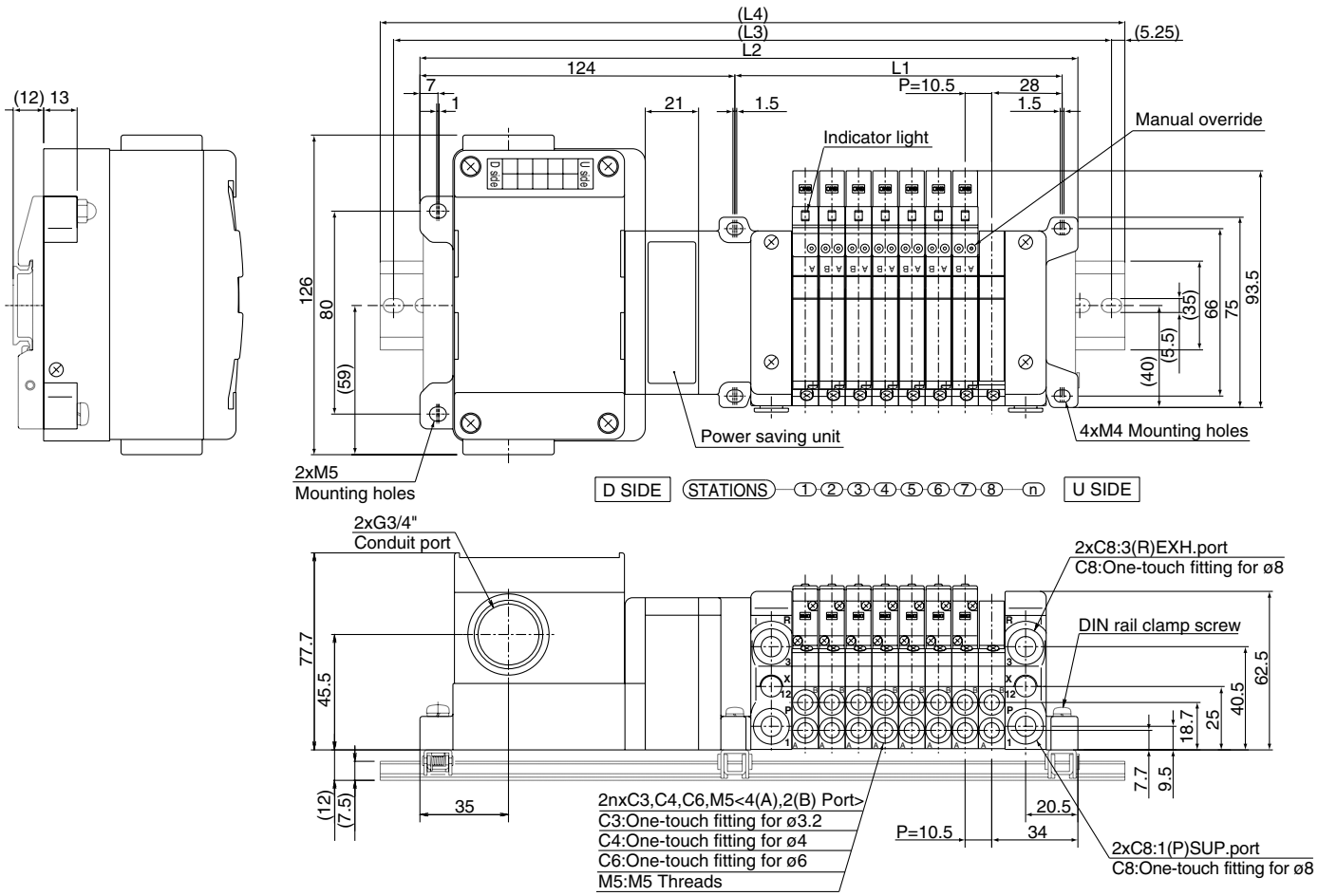
56-VV5QC11
SDA2 Kit (Serial Transmission Kit: 56-EX500)



Formulas
L1 = 10.5n + 45
L2 = 10.5n + 114.5 (1 power saving unit for 1 to 12 solenoids)
L2 = 10.5n + 135.5 (2 power saving units for 13 to 16 solenoids) n: Stations (Max. 16 single wire stations)

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	55.5	66	76.5	87	97.5	108	118.5	129	139.5	150	160.5	171	181.5	192	202.5	213
L2	125	135.5	146	156.5	167	177.5	188	198.5	230	240.5	251	261.5	272	282.5	293	303.5
L3	150	162.5	175	187.5	187.5	200	212.5	225	250	262.5	275	287.5	300	312.5	312.5	325
L4	160.5	173	185.5	198	198	210.5	223	235.5	260.5	273	285.5	298	310.5	323	323	335.5

56-VV5QC11

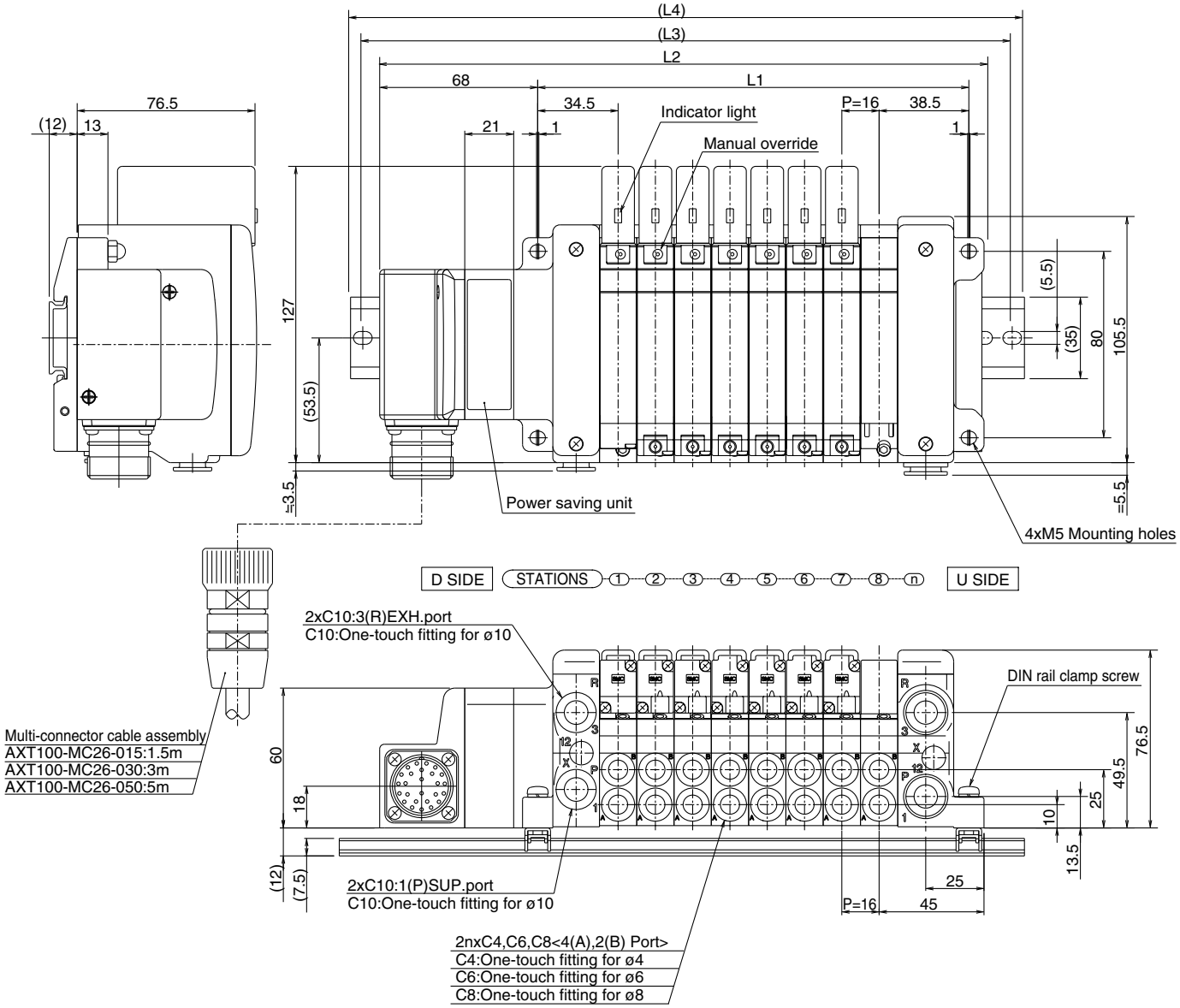


Formulas
L1 = 10.5n + 45
L2 = 10.5n + 175.5 (1 power saving unit for 1 to 12 solenoids)
L2 = 10.5n + 196.5 (2 power saving units for 13 to 20 solenoids) n: Stations (Max. 20 single wire stations)

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	55.5	66	76.5	87	97.5	108	118.5	129	139.5	150	160.5	171	181.5	192	202.5	213	223.5	234	244.5	255
L2	186	196.5	207	217.5	228	238.5	249	259.5	270	280.5	291	301.5	333	343.5	354	364.5	375	385.5	396	406.5
L3	212.5	225	237.5	237.5	250	262.5	275	287.5	300	300	312.5	325	362.5	375	375	387.5	400	412.5	425	437.5
L4	223	235.5	248	248	260.5	273	285.5	298	310.5	310.5	323	335.5	373	385.5	385.5	398	410.5	423	435.5	448

M 56-VQC2000
Kit (Multiple Connector Kit)

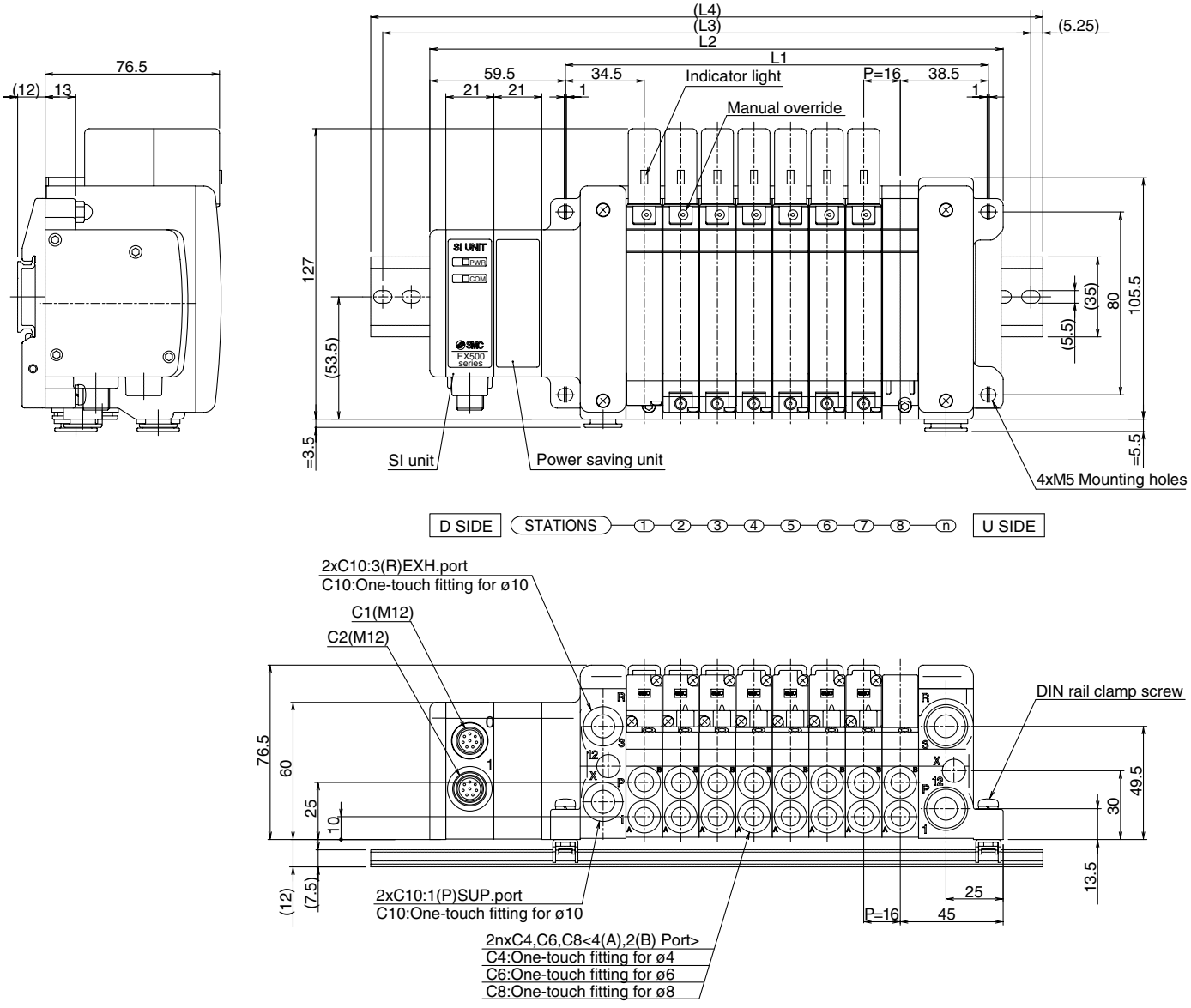
56-VV5QC21



Formulas
L1 = 16n + 57
L2 = 16n + 131.5 (1 power saving unit for 1 to 12 solenoids)
L2 = 16n + 152.5 (2 power saving units for 13 to 24 solenoids) n: Stations (Max. 24 single wire stations)

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
L1	73	89	105	121	137	153	169	185	201	217	233	249	265	281	297	313	329	345	361	377	393	409	425	441
L2	147.5	163.5	179.5	195.5	211.5	227.5	243.5	259.5	275.5	291.5	307.5	323.5	360.5	376.5	392.5	408.5	424.5	440.5	456.5	472.5	488.5	504.5	520.5	536.5
L3	175	187.5	200	225	237.5	250	275	287.5	300	312.5	337.5	350	387.5	400	412.5	437.5	450	462.5	487.5	500	512.5	525	550	562.5
L4	185.5	198	210.5	235.5	248	260.5	285.5	298	310.5	323	348	360.5	398	410.5	423	448	460.5	473	498	510.5	523	535.5	560.5	573

56-VV5QC21
SDA2 Kit (Serial Transmission Kit: 56-EX500)

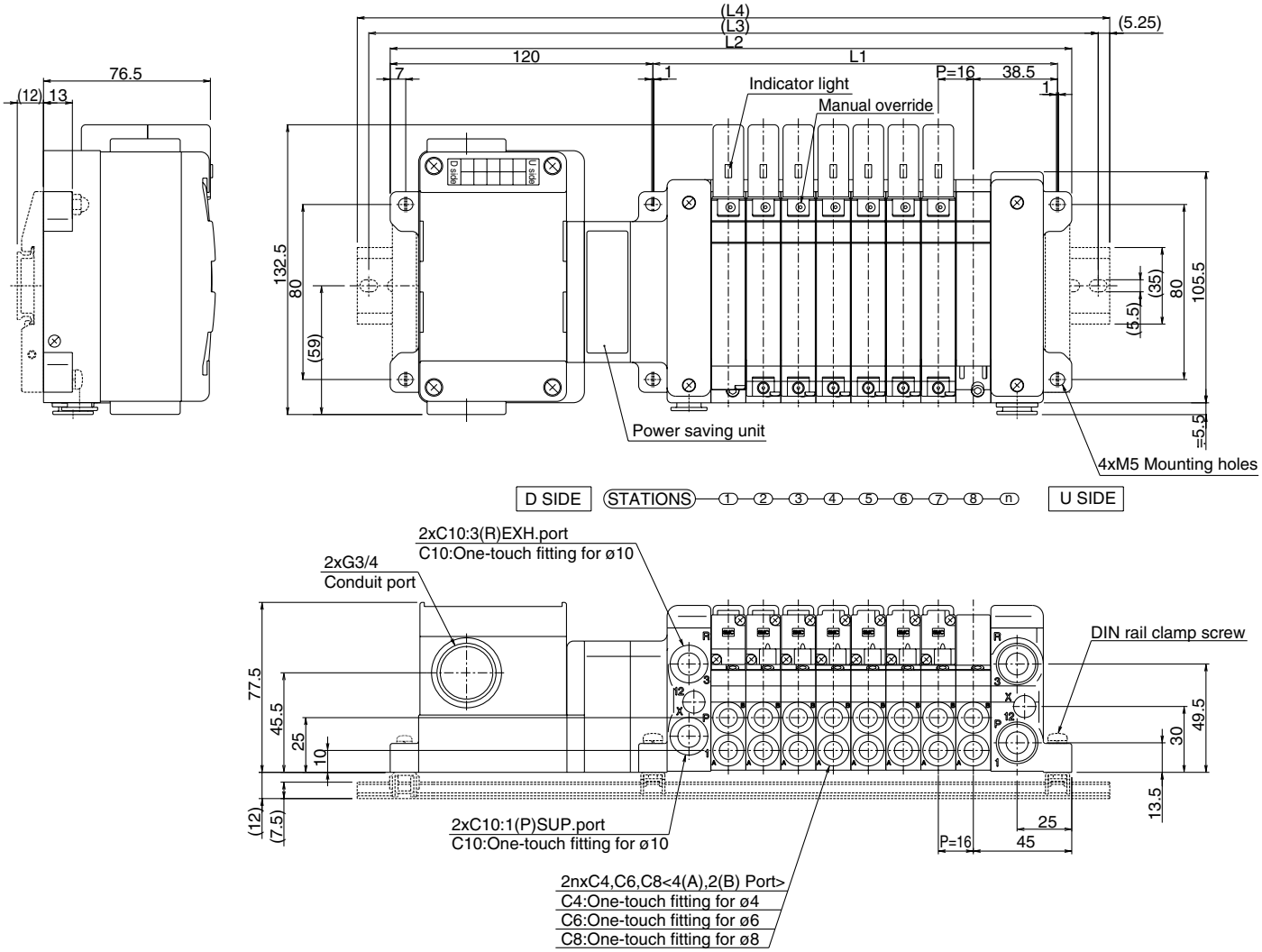


Formulas
L1 = 16n + 57
L2 = 16n + 123 (1 power saving unit for 1 to 12 solenoids)
L2 = 16n + 144 (2 power saving units for 13 to 16 solenoids) n: Stations (Max. 16 single wire stations)

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	73	89	105	121	137	153	169	185	201	217	233	249	265	281	297	313
L2	139	155	171	187	203	219	235	251	267	283	299	315	352	368	384	400
L3	162.5	175	200	212.5	225	250	262.5	275	287.5	312.5	325	337.5	375	387.5	412.5	425
L4	173	185.5	210.5	223	235.5	260.5	273	285.5	298	323	335.5	348	385.5	398	423	435.5

∗ With signal cut block, L4 is obtained by adding approximately 30 mm to L2.

56-VV5QC21

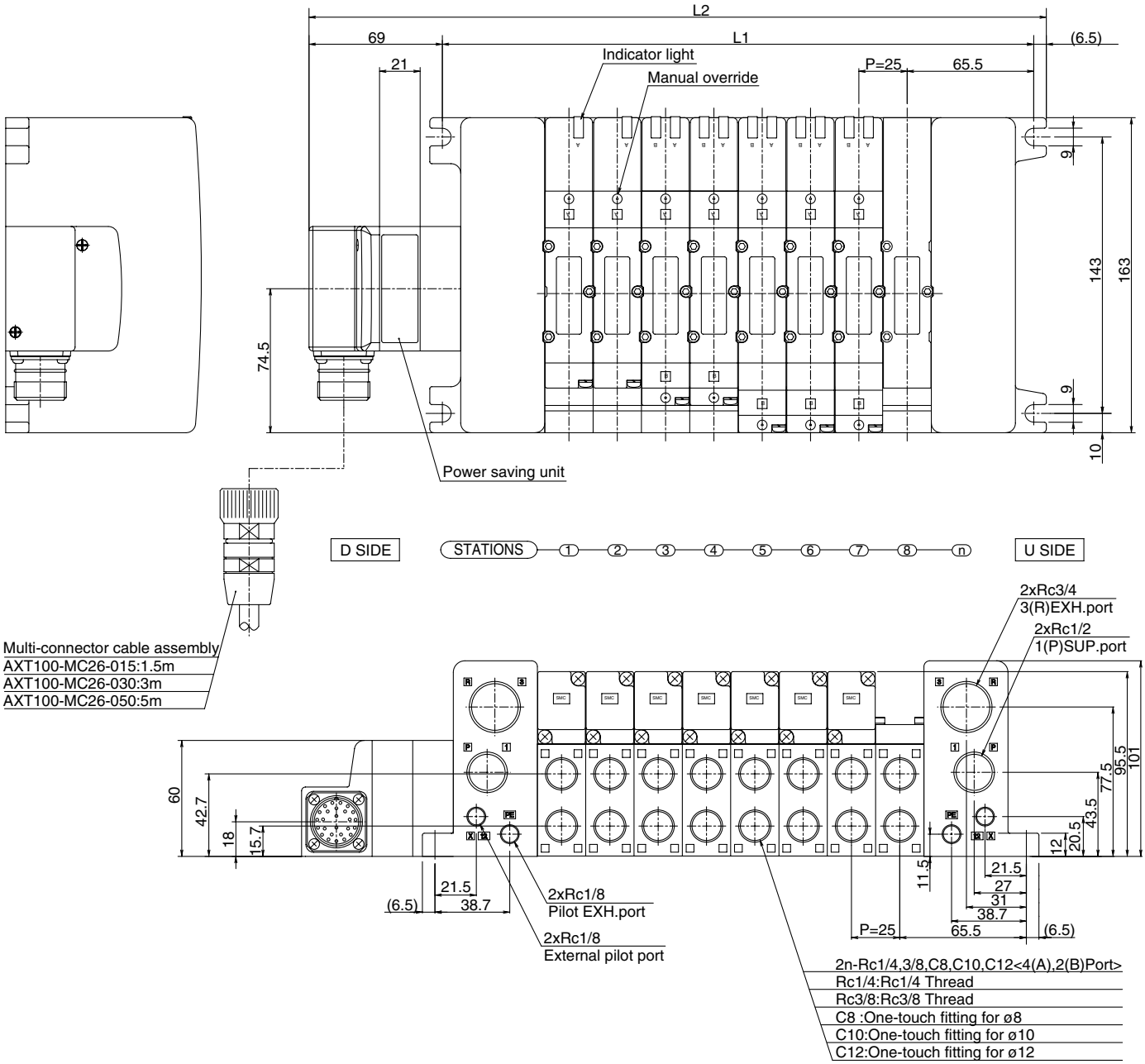


Formulas
L1 = 16n + 45
L2 = 16n + 184 (1 power saving unit for 1 to 12 solenoids)
L2 = 16n + 205 (2 power saving units for 13 to 20 solenoids) n: Stations (Max. 20 single wire stations)

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	73	89	105	121	137	153	169	185	201	217	233	249	265	281	297	313	329	345	361	377
L2	200	216	232	248	264	280	296	312	328	344	360	376	413	429	445	461	477	493	509	525
L3	225	237.5	262.5	275	287.5	300	325	337.5	350	375	387.5	400	437.5	450	475	487.5	500	512.5	537.5	550
L4	235.5	248	273	285.5	298	310.5	335.5	348	360.5	385.5	398	410.5	448	460.5	485.5	498	510.5	523	548	560.5

M 56-VQC4000
Kit (Multiple Connector Kit)

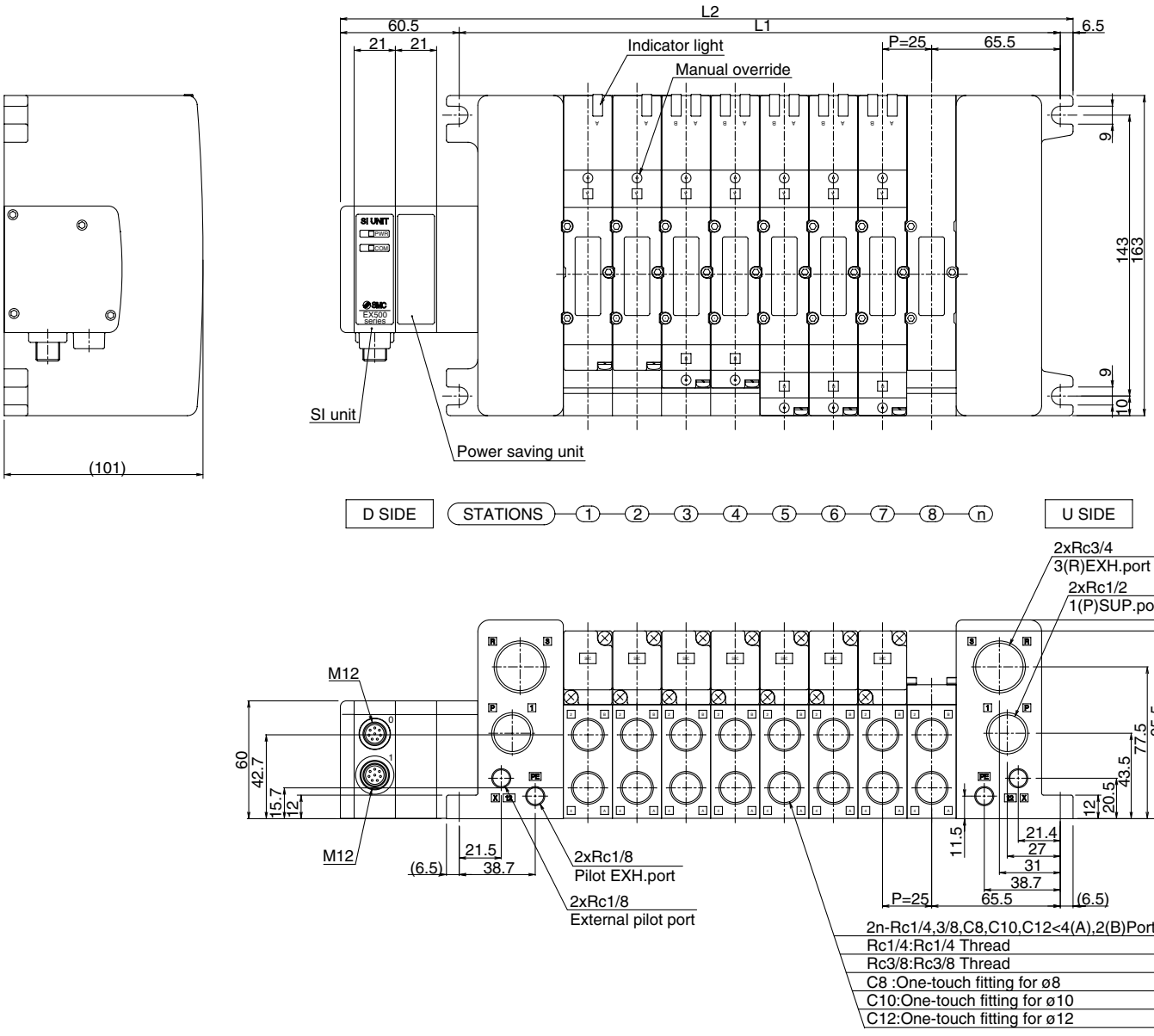
56-VV5QC41



Formulas
L1 = 25n + 106
L2 = 25n + 181.5 (1 power saving unit for 1 to 12 solenoids)
L2 = 25n + 202.5 (2 power saving units for 13 to 16 solenoids) n: Stations (Max. 16 single wire stations)

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	131	156	181	206	231	256	281	306	331	356	381	406	431	456	481	506
L2	206.5	231.5	256.5	281.5	306.5	331.5	356.5	381.5	406.5	431.5	456.5	481.5	527.5	552.5	577.5	602.5

56-VV5QC41
SDA2 Kit (Serial Transmission Kit: 56-EX500)

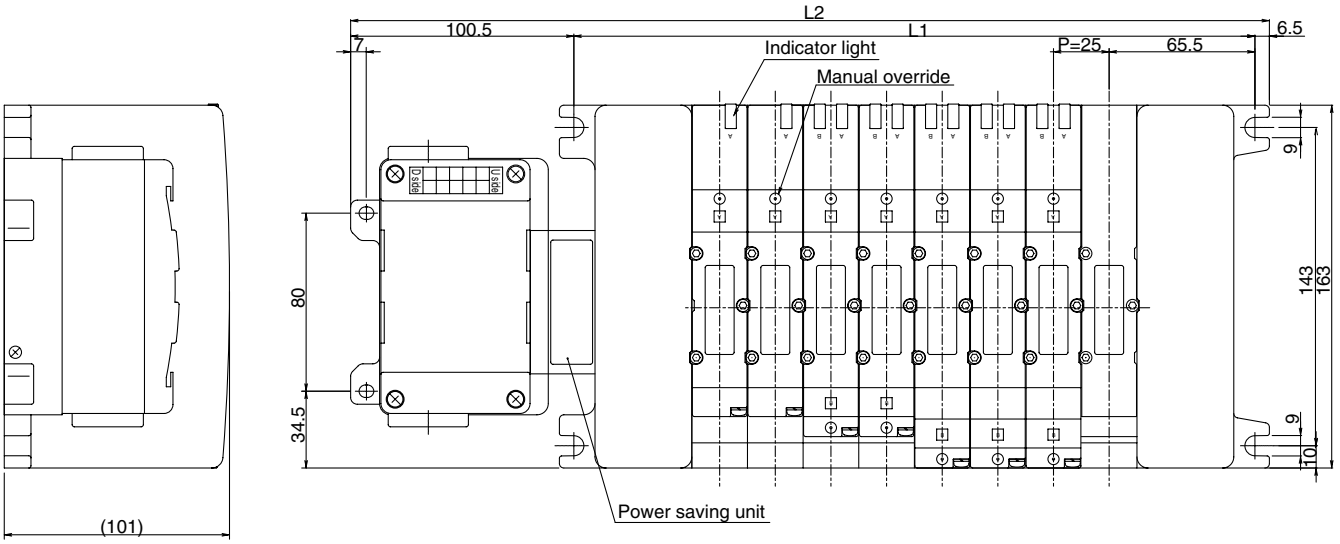


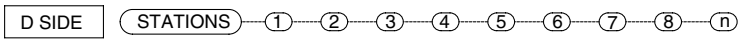
Formulas
L1 = 25n + 106
L2 = 25n + 173 (1 power saving unit for 1 to 12 solenoids)
L2 = 25n + 194 (2 power saving units for 13 to 16 solenoids) n: Stations (Max. 16 single wire stations)

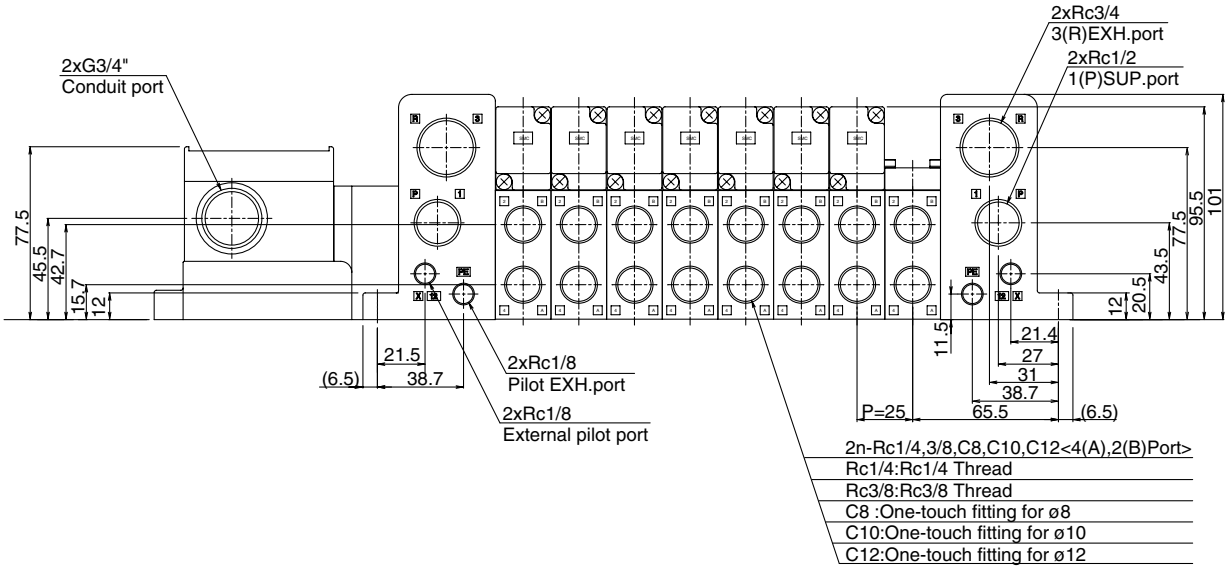
L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	131	156	181	206	231	256	281	306	331	356	381	406	431	456	481	506
L2	198	223	248	273	298	323	348	373	398	423	448	473	519	544	569	594

T 56-VQC4000
Kit (Terminal Block Box Kit)

56-VV5QC41







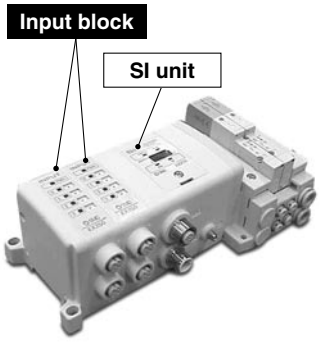
Formulas
L1 = 25n + 106
L2 = 25n + 213 (1 power saving unit for 1 to 12 solenoids)
L2 = 25n + 234 (2 power saving units for 13 to 16 solenoids) n: Stations (Max. 16 single wire stations)

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	131	156	181	206	231	256	281	306	331	356	381	406	431	456	481	506
L2	238	263	288	313	338	363	388	413	438	463	488	513	559	584	609	634

Decentralised Serial Wiring
Series 56-EX250

For more details, other specifications, dimensions, see the specific catalogue.

How to Order



56 - EX250 — S PR1 — X42

ATEX category 3

Protocol

PR1	PROFIBUS DP

II 3G Ex nA II T4 X 5°C ≤ Ta ≤ 45°C
II 3D tD A22 IP67 T66°C X

SI Unit Specifications

Model		**56-EX250-SPR1-X42**
Protocol		PROFIBUS DP-V0
Transmission speed		(9.6/19.2/45.45/93.75/187.5/500 kbps), (1.5/3/6/12 Mbps)
Output specifications	**Number of outputs**	Max. 32 points
	Output type	P-ch MOS-FET open drain type
	Connected load	Solenoid valve with protection circuit for 24 VDC and 1.5 W or less surge voltage (made by SMC)
	Power supply	22.8 to 22.4 VDC
	Solenoid valve residual voltage	0.3 VDC or less
Input specifications	**Number of inputs**	Max. 32 points
	Input type	TTL
	Connected block	56-EX250-IE2-X43
	Power supply for block	19.2 to 28.8 VDC
	Current supply for block	Max. 1 A
Current consumption		0.1A or less (inside of SI unit)
Enclosure		IP67
Weight		250 g

How to Order

Input block

56 - EX250 — IE 2 — X43

Block type

2	M12 connector, 4 inputs

ATEX category 3

II 3G Ex nA II T4 X 5°C ≤ Ta ≤ 45°C
II 3D tD A22 IP67 T77°C X

Input Block Specifications

Model	**56-EX250-IE2-X43**
Applicable sensor	Current source type (PNP output) Current sink type (NPN output) / converted by a switch
Rated voltage	24 VDC (Max. 1V of voltage effect against SI unit supply voltage)
Rated input current	8 mA typ.
Input delay time	3 msec. Typ.
Sensor supply current	Max. 30 mA/Sensor
Enclosure	IP67
Weight	90 g

Decentralised Serial Wiring
Series 56-EX500

CE Ⓔx II 3G Ex nA II T4 X 5°C ≤ Ta ≤ 45°C
II 3D tD A22 IP65 T57°C X (Gateway 56-EX500-GPR1A)

CE Ⓔx II 3G Ex nA II T4 X 5°C ≤ Ta ≤ 45°C
II 3D tD A22 IP65 T53°C X (Gateway 56-EX500-GDN1-X8)

CE Ⓔx II 3G Ex nA II T5 X 5°C ≤ Ta ≤ 45°C
II 3D tD A22 IP67 T54°C X (SI units 56-EX500-Q□01)

CE Ⓔx II 3G Ex nA II T5 X 5°C ≤ Ta ≤ 45°C
II 3D tD A22 IP67 T52°C X (SI units 56-EX500-S□01)

CE Ⓔx II 3G Ex nA II T5 X 5°C ≤ Ta ≤ 45°C
II 3D tD A22 IP65 T60°C X (Input unit 56-EX500-IB1, Input blocks 56-IE1 to 4)

CE Ⓔx II 3G Ex nA II T5 X 5°C ≤ Ta ≤ 45°C
II 3D tD A22 IP65 T66°C X (Input blocks 56-EX500-IE5 to 6)

For more details, other specifications, dimensions, see the specific catalogue.

How to Order

Gateway (GW) Unit

56 - EX500 — G PR1A

ATEX category 3

Communication Protocol

PR1A	PROFIBUS DP
DN1-X8	Device Net (TM)

Input Unit Manifold

Gateway (GW) Unit Specifications

Model	56-EX500-GDN1-X8	EX500-GPR1A
Applicable PLC/Communication protocol	DeviceNet™	PROFIBUS DP-V0
Communication speed	125/250/500 Kbps	(9,6/19,2/45,45/93,75/187,5/500 Kbps),(1,5/3/6/12 Mbps)
Rated voltage	24 V DC	
Power supply voltage range	Input and control unit power supply: 24 VDC ± 10% Solenoid valve power supply: 24 VDC + 10%/–5% (Warning of voltage drop at approx. 20 V or less)	
Current consumption	200 mA or less (single GW unit)	
Inputs/outputs points	Maximum 64 inputs/64 outputs	Maximum 32 inputs/64 outputs
Input/output branches	4 branches (16 inputs/16 outputs per branch)	4 branches (8 inputs/16 outputs per branch)
Branch cable	8 core PVC coated cable	
Branch cable length	5 m or less (Max. total length: 10 m or less)	
Communication connector	M12 connector (8 pins, socket)	
Power connector	M12 connector (5 pins, plug)	
Ambient operating temperature/humidity	+5 to +45°C at 35% to 85% RH (without condensation)	
Enclosure	IP65	
Weight	470 g	

How to Order

Input manifold

EEX500 — IB1 — E 4

Input unit specification

Connector type

E	M8 connector
T	M12 connector
M	M8 and M12 mixed

Stations

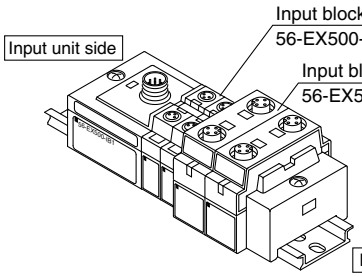
1	1 station
⋮	⋮
4	4 stations

When ordering an input block manifold, enter the Input manifold part no. + Input block part no. together.

The input block, end block and DIN rail are included in the input manifold. Refer to How to Order.

Example

M8 and M12 on a single manifold



EEX500-IB1-M4 ····· 1 set
✻ 56-EX500-IE1 ····· 2 sets
✻ 56-EX500-IE3 ····· 2 sets

Input block

56 - EX500 — IE 1

ATEX category 3

Block type

1	M8 connector, PNP specification
2	M8 connector, NPN specification
3	M12 connector, PNP specification
4	M12 connector, NPN specification
5	8-point integrated type, M8 connector, PNP specifications
6	8-point integrated type, M8 connector, NPN specifications

Input Unit Specifications

Model	56-EX500-IB1
Connected block	Current source type input block (PNP input block) or Current sink type input block (NPN input block)
Communication connector	M12 connector (8-pins, plug)
Number of connection blocks	max. 4 blocks (for 56-EX500-GPR1A)
	max. 8 blocks (for 56-EX500-GDN1-X8)
Block supply voltage	24 VDC
Block supply current	max. 0.3 A (for 56-EX500-GPR1A)
	max. 0.65 A (for 56-EX500-GDN1-X8)
Current consumption	100 mA or less (at rated voltage)
Short circuit protection	1A Typ. for each unit (shut off power supply) To restart, remove power to the GW unit once, then reapply it.
Enclosure	IP65
Weight Note)	100g (Input unit + end block)

Note) Not including the DIN rail weight.

Input Block Specifications

Model	56-EX500-IE1,3,5	56-EX500-IE2,4,6
Applicable sensor	Current source type (PNP output)	Current sink type (NPN output)
Sensor connector	M8 connector (3 pins) or, M12 connector (4 pins)	
Number of inputs	2 inputs/8 inputs (M8 only)	
Rated voltage	24 VDC	
Input delay	1 msec. or less	
Sensor supply current	Max. 30 mA/Sensor	
Enclosure	IP65	
Weight	[For M8: 20g] [For M12: 40g] [8 point integrated type, for M8: 55g]	

Valve for Water and Chemical-base Fluids (2/3 Port Air Operated Valve)

Series VCC

II 2GD c 75°C (T6X)

How to Order

Valve

VCC1 2 – 00

Passage number

2	2 port valve
3	3 port valve
2D	2 port/Diaphragm type (Applicable for 2 liquid paint)

Port size

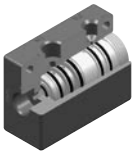
00	For manifold mounting
02	Rc1/4 (for single unit) Note)
02F	G1/4 (for single unit) Note)

Note) Part number for sub-base
For 2 port: VCC12-S-$^{02}_{02F}$ $^{[Rc1/4]}_{[G1/4]}$
For 3 port: VCC13-S-$^{02}_{02F}$ $^{[Rc1/4]}_{[G1/4]}$

VCC12(D)-00

VCC13-00

VCC12(D)-02(F)



VCC13-02(F)

Manifold

Standard **VV M CC1– 06 06 C4**

Type (Passage number)

2	2 port valve, Cleaning valve
3	3 port valve
M	2/3 port valves mixed mounting

Pilot port fitting size

C4	ø4 one-touch fitting (Antistatic)
C6	ø6 one-touch fitting (Antistatic)

2 port valve mountable number

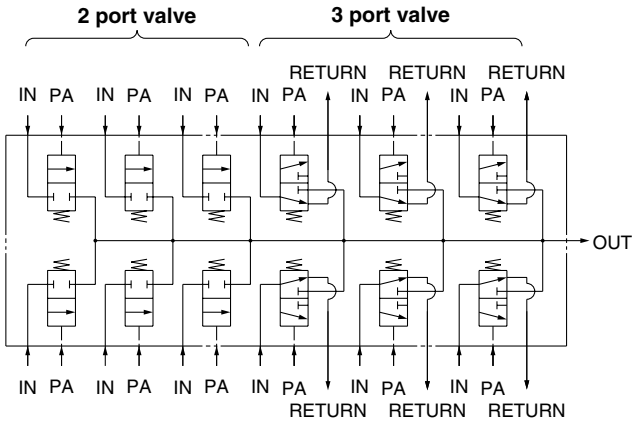
00	No 2 port valves used
02	2 pcs. (colours)
04	4 pcs. (colours)
⋮	⋮

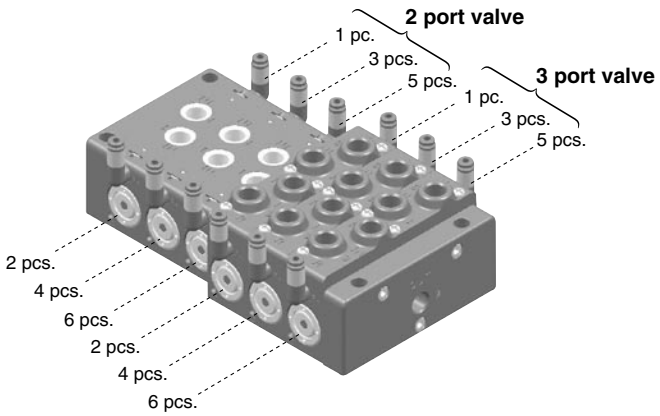
3 port valve mountable number

00	No 3 port valves used
02	2 pcs. (colours)
04	4 pcs. (colours)
⋮	⋮

Note) Maximum mountable valve number: 40 pcs.
(total of 2 port and 3 port valves)

Circuit example





How to Order

Manifold

With gate valve **VV M CC1- 06 06 C4 - G 04**

Passage number

2	2 port valve, Cleaning valve
M	2/3 port valves mixed mounting

2 port valve mountable number

00	No 2 port valves used
02	2 pcs. (colours)
04	4 pcs. (colours)
⋮	⋮

3 port valve mountable number

00	No 3 port valves used
02	2 pcs. (colours)
04	4 pcs. (colours)
⋮	⋮

Note) Maximum mountable valve number: 40 pcs. (total of 2 port, 3 port and gate valves)

Gate valve and cleaning valve mountable number

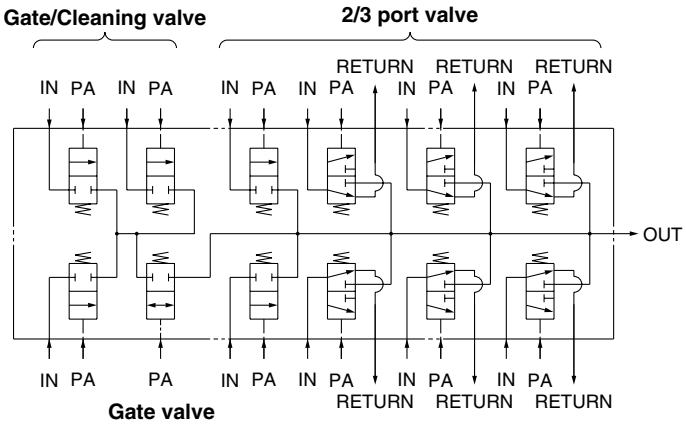
02	Cleaning valve (2 port valve): 1 pc. + Gate valve: 1 pc.
04	Cleaning valve (2 port valve): 3 pcs. + Gate valve: 1 pc.
06	Cleaning valve (2 port valve): 5 pcs. + Gate valve: 1 pc.

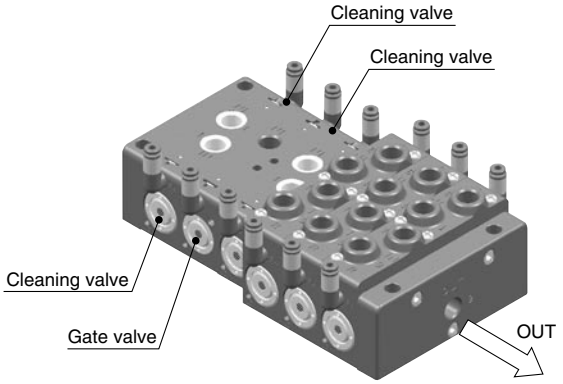
Pilot port fitting size

C4	ø4 one-touch fitting (Antistatic)
C6	ø6 one-touch fitting (Antistatic)

∗ The gate valve and cleaning valve (2 port valve) are not included. They are ordered separately. (Gate valve is equivalent to 2 port valve.)
∗ When cleaning valve number is an even number, use the blanking plug for 2 port valve.

Circuit example





SUS316L Stainless steel fitting

VCK K 0604 - 02F

Shape

H	Male connector
K	40° swivel elbow
L	90° swivel elbow

Applicable tubing (O.D. x I.D.)

0604	6 x 4
0806	8 x 6
1075	10 x 7.5
1008	10 x 8
1209	12 x 9

Port size

02F	G1/4

∗ G1/4 bottom seal has a special shape.

VCKH
Male connector

VCKK
40° swivel elbow

VCKL
90° swivel elbow

Option

Blanking Plug Assembly

Type	Model	Description	Qty.
For a 2 port valve	**VVCC12-10A-1**	Blanking plug (with O-ring)	1
		Hexagon socket head plug (R1/4)	1
For a 3 port valve	**VVCC13-10A-1**	Blanking plug (with O-ring)	1
		Hexagon socket head plug (R1/4)	2

Specifications

Model	VCC12	VCC13	VCC12D
Passage number	2 port	3 port	2 port (Diaphragm type)
Construction (Fluid contact material)	Poppet seal (PEEK resin + Stainless steel) + Special fluororesin sliding part		Poppet seal (PEEK resin + Stainless steel) + Special fluororesin diaphragm
Fluid	Water/Chemical-based paint, Ink, Cleaning solvent (Water, Butyl acetate), Air		
Operating pressure range (MPa)	0 to 1.0 (Instantaneous pulsation pressure: 1.2)		0 to 0.7 (Instantaneous pulsation pressure: 0.9)
Withstand pressure (MPa)	2		1.5
Pilot pressure (MPa)	0.4 to 0.7		
Orifice size (mm)	ø3.8		
Effective area (mm^2)	6		
Fluid temperature (°C)	5 to 50		
Ambient temperature (°C)	5 to 50		
Explosion proof construction	Explosion protection CE Ex II 2GD c 75°C (T6X)		
Lubrication	Not possible (Default lubricant: White vaseline)		
Mounting orientation	Unrestricted		
Valve leakage (cm^3/min)	1 or less (3 port valve IN → RETURN: 20 or less) Note 1)		1 or less Note 2)

Note 1) Supply pressure: Valve leakage at 1.2 MPa (for air)
Note 2) Supply pressure: Valve leakage at 0.9 MPa (for air)

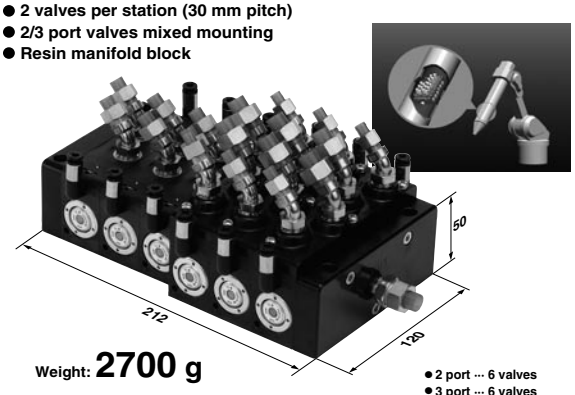
SUS316L Stainless Steel Fitting Specifications

Applicable tubing	Nylon/Fluoro tubing
Fluid	Water/Chemical-based paint, Ink, Cleaning solvent (Water, Butyl acetate), Air
Max. operating pressure (at 20°C) (MPa)	1.0
Ambient and fluid temperature (°C)	0 to 60°C

Weight

Valve	VCC12 (2 port)		37 g
	VCC13 (3 port)		48 g
Blanking plug assembly	For 2 port		29 g
	For 3 port		45 g
Manifold block ∗ Valves are not attached.	For 2 port (2 stations, one-piece style)		150 g
	For 3 port (2 stations, one-piece style)		254 g
	For gate valve		300 g
End plate	For 2 port		409 g
	For 3 port		495 g
	For 2/3 port mixed mounting		452 g
Fitting	**VCKH**	ø6	24 g
		ø8	25 g
		ø10	33 g
		ø12	36 g
	VCKK	ø6	25 g
		ø8	26 g
		ø10	32 g
		ø12	37 g
	VCKL	ø6	29 g
		ø8	30 g
		ø10	37 g
		ø12	41 g

- **2 valves per station (30 mm pitch)**
- **2/3 port valves mixed mounting**
- **Resin manifold block**



Weight: 2700 g

- **2 port ··· 6 valves**
- **3 port ··· 6 valves**
- **Fitting ··· 19 pcs.**

ATEX Explosion protection

Manifold Specifications

Series VCC

1. How to Order a Manifold

VV M CC1 – 06 10 C4 – G04

① ② ③ ④ ⑤

∗ This "How to Order" is that of the example below.

① Type (Passage number)

2	2 port valve
3	3 port valve
M	2/3 port valves mixed mounting

② 2 port valve mountable number Note 1)

00	Without 2 port valve
02	2 pcs. (colours)
04	4 pcs. (colours)
⋮	⋮
40	40 pcs. (colors) Note 2)

③ 3 port valve mountable number Note 1)

00	Without 3 port valve
02	2 pcs. (colours)
04	4 pcs. (colours)
⋮	⋮
40	40 pcs. (colors) Note 2)

④ Pilot port fitting size

C4	ø4 one-touch fitting
C6	ø6 one-touch fitting

⑤ Gate valve and cleaning valve mountable number Note 1)

–	Without gate valve Note 3)
G02	Cleaning valve: 1 pc. + Gate valve: 1 pc.
G04	Cleaning valve: 3 pcs. + Gate valve: 1 pc.
G06	Cleaning valve: 5 pcs. + Gate valve: 1 pc.

Note 1) Two valves can be installed per manifold block. Total valve number must be an even number.
Note 2) Maximum valve number is forty (40) valves (colours) by a total of ② + ③ + ⑤.
Note 3) When "Without gate valve" is selected, use 2 port valve of ② as a cleaning valve.

2. How to Order a Valve

VCC1 2 – 00

①

① Type (Passage number)

2	2 port valve
3	3 port valve
2D	2 port/Diaphragm type

3. How to Order the Blanking Plug

VVCC1 2 – 10A – 1

①

① Type (Passage number)

2	For 2 port valves
3	For 3 port valves

Used when the number of valves used on the manifold base is an odd number.

4. How to Order the SUS316L Stainless Steel Fitting

VCK K 1075 – 02F

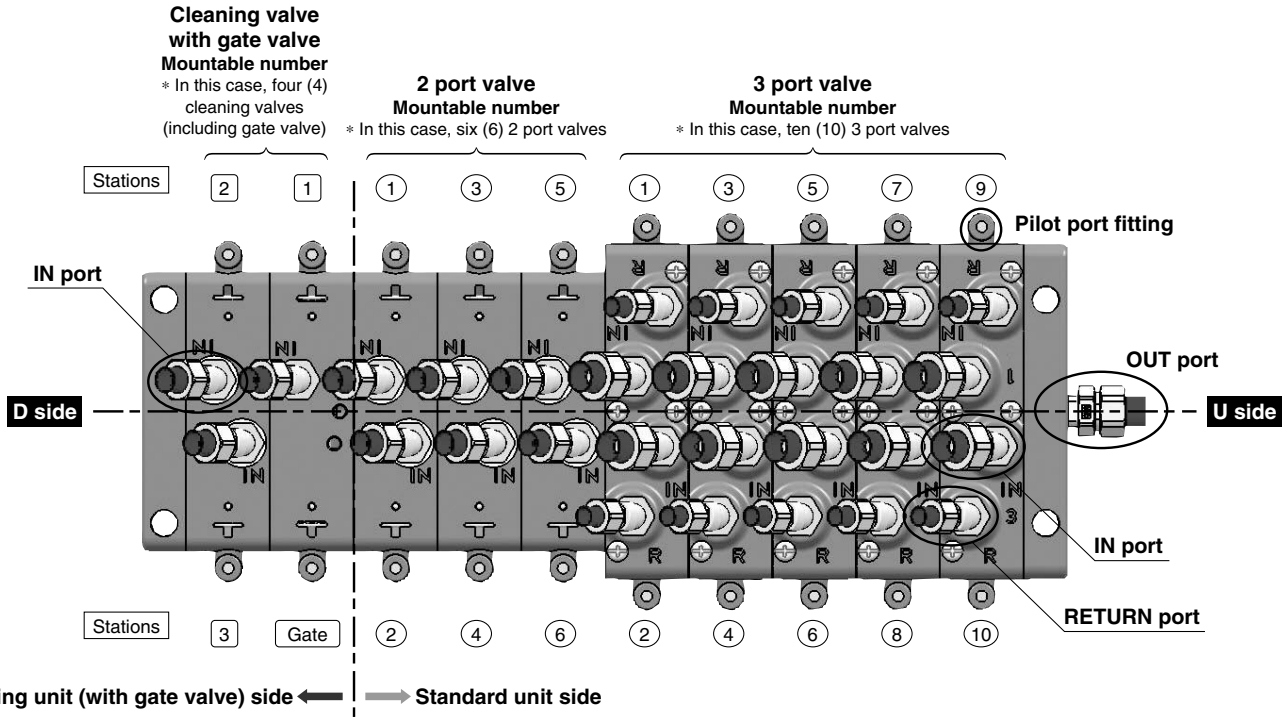
① ②

① Type (Shape)

K	40° swivel elbow
L	90° swivel elbow
H	Male connector

② Piping port

1209	Piping port for ø12 x ø9
1008	Piping port for ø10 x ø8
1075	Piping port for ø10 x ø7.5
0806	Piping port for ø8 x ø6
0604	Piping port for ø6 x ø4



SMC

SMC Corporation **Manifold Specification Sheet (Series VCC: VV□CC1)**

☐ **Fill in this format.** Date: Year _____ / Month _____ / Date _____

Company name		**Department**		**Person in charge**	
Phone		**Fax**		**Repeat**	☐ **Repeat** ☐ **Not Repeat**
Device description		**Drawing number**		**Production number**	

☐ **Ordered part number (Please order with this part number.)**

Manifold valve part no. | **SMC use**

☐ **Manifold** V V □ C C 1 — □□ □□ □□ — □□□

☐ **Valve** V C C 1 □□ — 0 0

To fill in the blanks ☐ in the manifold number, please refer to the symbols in the catalogue. Select the valve referring to the specification table.

Specification Sheet ∗ Fill in the symbol for stainless steel fitting. For others, mark necessary items with a circle.

Unit			**Cleaning unit** Note 2) **(with gate valve)**			**Standard unit**														
2 port valve	**Part number (Mountable valve number)**		**G06**	**G04**	**G02**	**02**	**04**	**06**	**08**	**10**	**12**	**14**	**16**	**18**	**20**					**40**
	Stations Note 1) / **Description/Model**		**4/5**	**2/3**	**1/Gate**	**1/2**	**3/4**	**5/6**	**7/8**	**9/10**	**11/12**	**13/14**	**15/16**	**17/18**	**19/20**					**39/40**
	Valve options	2 port valve (Sliding type) **VCC12-00**																		
		2 port valve (Diaphragm type) **VCC12D-00**																		
		Blanking plug for 2 port valve **VVCC12-10A-1**			—															
	Fitting Note 3)	Piping port **IN port**			—															

D side — **U side (OUT port side)**

3 port valve	**Part number (Mountable valve number)**		**02**	**04**	**06**	**08**	**10**	**12**	**14**	**16**	**18**	**20**					**40**
	Stations Note 1) / **Description/Model**		**1/2**	**3/4**	**5/6**	**7/8**	**9/10**	**11/12**	**13/14**	**15/16**	**17/18**	**19/20**					**39/40**
	Valve options	3 port valve (Sliding type) **VCC13-00**															
		Blanking plug for 3 port valve **VVCC13-10A-1**															
	Fitting Note 3)	Piping port **IN port**															
		Piping port **RETURN port**															

D side — **U side (OUT port side)**

☐ **Select stainless steel fitting for IN, RETURN port from the table below, and enter the symbol into the specification table.**

Symbol	Description		Part no.
A	For piping ø12 x ø9	40° swivel elbow	**VCKK1209-02F**
B	For piping ø10 x ø8	40° swivel elbow	**VCKK1008-02F**
C	For piping ø10 x ø7.5	40° swivel elbow	**VCKK1075-02F**
D	For piping ø8 x ø6	40° swivel elbow	**VCKK0806-02F**
E	For piping ø6 x ø4	40° swivel elbow	**VCKK0604-02F**

Symbol	Description		Part no.
F	For piping ø12 x ø9	Male connector	**VCKH1209-02F**
G	For piping ø10 x ø8	Male connector	**VCKH1008-02F**
H	For piping ø10 x ø7.5	Male connector	**VCKH1075-02F**
J	For piping ø8 x ø6	Male connector	**VCKH0806-02F**
K	For piping ø6 x ø4	Male connector	**VCKH0604-02F**

☐ **Fill in the model number in the table below for connecting the fitting to the OUT port. (See SUS316L stainless steel fitting type.)**
For connecting the elbow union, the piping direction is on top (IN, RETURN port side).

OUT port Stainless steel fitting	**V C K** □ □□□□ **— 0 2 F**

Note 1) Two valves can be installed per manifold block. Assign two valves in one square.
Note 2) Please order a cleaning unit when the gate valve is necessary.
Note 3) When the fitting is necessary for IN, RETURN port, please order by selecting the necessary stainless steel fitting symbol in the port of each station.
For 40° swivel elbow, the piping direction is on D side.

Serial No.

Customer/SMC use

Customer code		U/C		Department code		Code for person in charge		Registered image no.	
Fill in for faxed order	Customer's order no.			Date of delivery		SMC order no.			

Component list

	Part no.	Qty.		Part no.	Qty.		Part no.	Qty.
1			6			11		
2			7			12		
3			8			13		
4			9			14		
5			10			15		

Manifold Specifications — Example of how to fill in

	Valve type		Valve arrangement	Fitting arrangement	
Condition	2 port valve		7 pcs.	IN port	ø10 x ø8 (40° swivel elbow)
	3 port valve		24 pcs.	IN port	ø12 x ø9 (40° swivel elbow)
				RETURN port	ø6 x ø5 (Male connector)
	Cleaning unit	Gate valve	1 pc.		
		Cleaning valve	4 pcs.	IN port	ø8 x ø6 (40° swivel elbow)
				OUT port	ø10 x ø8 (90° swivel elbow)
				Pilot port	One-touch fitting for ø4

Put "M", because 2 port valves (including a cleaning unit) and 3 port valves are installed together.

Seven (7) 2 port valves are installed. Since two valves are installed per manifold base, it must be an even number, so the number of the valve that can be installed is "08". ∗ Specify four (4) stations for manifold

When twenty-four (24) 3 port valves are used, specify "24". ∗ Specify twelve (12) stations for manifold.

Specify when the gate valve is necessary for cleaning the valve. This example requires one gate valve and four cleaning valves, but specify "06" as the number of valves that can be installed, as this must be an even number.

☐ **Manifold** V V M C C 1 — 0 8 2 4 C 4 — G 0 6

☐ **Valve** V C C 1 ☐ — 0 0

Pilot port piping size

To fill in the blanks ☐ in the manifold number, please refer to the symbols in the catalogue. Select the valve referring to the specification table.

The upper table is for 2 port valves. The lower is for 3 port valves.

Order sheet ∗ Fill in the symbol for stainless steel fittings. For others, mark necessary items with a circle.

			Cleaning unit Note 2) (with gate valve)			Standard unit														
	Part number (Mountable valve number)		G06	G04	G02	02	04	06	08	10	12	14	16	18	20					40
	Stations Note 1) / Description/Model		4/5	2/3	1/Gate	1/2	3/4	5/6	7/8	9/10	11/12	13/14	15/16	17/18	19/20					39/40
2 port valve	Valve options	2 port valve (Sliding type) **VCC12-00**	○	○	○	○	○	○	○											
		2 port valve (Diaphragm type) **VCC12D-00**																		
		Blanking plug for 2 port valve **VVCC12-10A-1**	○		—				○											
	Fitting Note 3)	Piping port **IN port**			—															
	D side																			U side (OUT port side)
3 port valve	Part number (Mountable valve number)					02	04	06	08	10	12	14	16	18	20	→	24			40
	Stations Note 1) / Description/Model					1/2	3/4	5/6	7/8	9/10	11/12	13/14	15/16	17/18	19/20	→	23/24			39/40
	Valve options	3 port valve (Sliding type) **VCC13-00**				○	○	○	○	○	○	○	○	○	○	→	○			
		Blanking plug for 3 port valve **VVCC13-10A-1**																		
	Fitting	Piping port **IN port**																		
	Note 3)	Piping port **RETURN port**																		
																				U side (OUT port side)

Although eight 2 port valves can be installed, if you need only seven valves, select the blanking plug. The plug is connected to the port with the blanking plug.

When more than twenty valves are used, specify valve qty. in blank column. When the same valves and fittings are required, they can be specified by arrows.

Although six gate valves or cleaning valves can be installed, if you need only five valves, select the blanking plug. The plug is connected to the port with the blanking plug.

☐ **Select stainless steel fitting for IN, RETURN port from the table below, and enter the symbol into the specification table.**

Symbol	Description		Part no.
A	For piping ø12 x ø9	40° swivel elbow	**VCKK1209-02F**
B	For piping ø10 x ø8	40° swivel elbow	**VCKK1008-02F**
C	For piping ø10 x ø7.5	40° swivel elbow	**VCKK1075-02F**
D	For piping ø8 x ø6	40° swivel elbow	**VCKK0806-02F**
E	For piping ø6 x ø4	40° swivel elbow	**VCKK0604-02F**

Symbol	Description		Part no.
F	For piping ø12 x ø9	Male connector	**VCKH1209-02F**
G	For piping ø10 x ø8	Male connector	**VCKH1008-02F**
H	For piping ø10 x ø7.5	Male connector	**VCKH1075-02F**
J	For piping ø8 x ø6	Male connector	**VCKH0806-02F**
K	For piping ø6 x ø4	Male connector	**VCKH0604-02F**

☐ **Fill in the model number in the table below for connecting the fitting to the OUT port. (See SUS316L stainless steel fitting type.)**
For connecting the elbow union, the piping direction is on top (IN, RETURN port side).

OUT port Stainless steel fitting	V C K L 7 0 0 8 — 0 2 F

It must be specified when the fitting is connected to the OUT port.

Note 1) Two valves can be installed per manifold block. Assign two valves in one square.
Note 2) Please order a cleaning unit when the gate valve is necessary.
Note 3) When the fitting is necessary for the IN, RETURN port, please order by selecting the necessary stainless steel fitting symbol in the port of each
For 40° swivel elbow, piping direction is on D side.

Serial No.

Customer/SMC use

Customer code		U/C		Department code		Code for person in charge		Registered image no.	
Fill in for faxed order	Customer's order no.			Date of delivery		SMC order no.			

Component list

	Part no.	Qty.		Part no.	Qty.		Part no.	Qty.
1	VVMCC1-0824C4-G06	1	6	VCKK1008-02F	7	11		
2	VCC12-00	12	7	VCKK0806-02F	4	12		
3	VCC13-00	24	8	VCKH0604-02F	24	13		
4	VVCC12-10A-1	2	9	VCKL1008-02F	1	14		
5	VCKK1209-02F	24	10			15		

2 port valve is specified for the gate valve and the cleaning valve.
7 valves + 1 valve + 4 valves = 12 valves

ATEX Compliant 2 Port Steam Valve

Series 56-VND

II 3G 195°C (T3)
-5°C ≤ Ta ≤ 60°C

How to Order

Body option

–	Standard (Copper alloy)
S*	Stainless steel body

* Threaded type only

Thread type

–	Rc
F	G
N	NPT
T	NPTF

Air operated **56-VND** **2** **0** □ **D** **S** – □ **15A** – □

ATEX category 3

Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Valve size

Symbol	Orifice dia. (mm)
1	ø7
2	ø15
3	ø20
4	ø25
5	ø32
6	ø40
7	ø50

Valve type

Symbol	0 N.C.	2 N.O.	4 N.C.
1	—	●	●
	—	●	●
	—	●	●
2	●	●	—
	●	●	—
3	●	●	—
4	●	●	—
5	●	●	—
	●	●	—
6	●	●	—
	●	●	—
7	●	●	—
	●	●	—

Port size

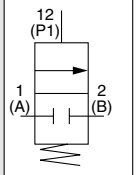
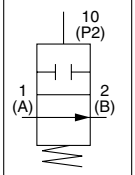
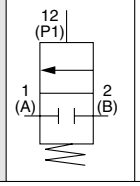
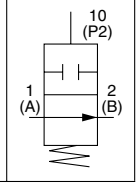
Symbol	Port size Rc
6A	1/8
8A	1/4
10A	3/8
10A	3/8
15A	1/2
20A	3/4
25A	1
32A	1 1/4
32F	1 1/4 B Flange
40A	1 1/2
40F	1 1/2 B Flange
50A	2
50F	2B Flange

Option

–	None
B*	With bracket
L	With indicator light (visual verification of operation)
BL*	With bracket and indicator light (visual verification of operation)

* Brackets (for valve size 1/2/3/4 only) will be assembled at the time of shipment.
Bracket part no.
Valve size 1: VN1-A16 (with thread)
Valve size 2 to 4: VN□-16
(□: 2 to 4)

JIS Symbol

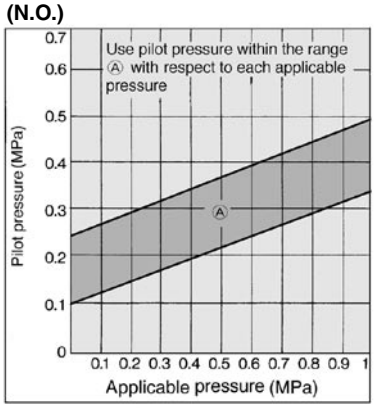
Valve type / Valve size	N.C. Normally closed	N.O. Normally open
56-VND1		
56-VND 2 3 4 5 6 7		

Model

Model	Port size Rc	Port size Flange Note)	Orifice dia. ø (mm)	Flow characteristics Av x 10^{-6} m^2	Mass (kg)
56-VND10□D-6A	1/8	–	7	26	0.3
56-VND10□D-8A	1/4	–		28	
56-VND10□D-10A	3/8	–		31	
56-VND20□D-10A		–	15	120	0.6
56-VND20□D-15A	1/2	–		130	
56-VND30□D-20A	3/4	–	20	240	0.9
56-VND40□D-25A	1	–	25	380	1.4
56-VND50□D-32A	1 1/4	–	32	440	2.3
56-VND50□D-32F	–	32			5.5
56-VND60□D-40A	1 1/2	–	40	920	3.6
56-VND60□D-40F	–	40			7.2
56-VND70□D-50A	2	–	50	1500	5.7
56-VND70□D-50F	–	50			10.8

Note) The companion flange is JIS B 2210 10K (standard) or its equivalent.

Table ① Operating pressure - Pilot pressure (N.O.)



Valve Specifications

Fluid (Main piping)			Steam
Fluid temperature			–5 to 180°C Note 1)
Ambient temperature			–5 to 60°C Note 1)
Proof pressure			1.5 MPa
Operating pressure range			0 to 0.97 MPa
External pilot air	**Pressure**	**N.C.**	0.3 to 0.7 MPa
		N.O.	0.1 + 0.25 x (Operating pressure) to 0.25 + 0.25 x (Operating pressure) MPa Refer to below "Graph (1)".
	Lubrication		Not required
	Temperature		-5°C to 60°C
ATEX Category			II 3G 195°C (T3) -5°C ≤ Ta ≤ 60°C
Seal material			PTFE

Note 1) No freezing

High Purity Chemical Valve
Series 55-LVA

55-LVA10 and 55-LVA12 **II 2G c IIB T6 X 0°C ≤ Ta ≤ +50°C** **II 2G c IIB T4 X 0°C ≤ Ta ≤ +60°C** **Special condition X "Protect for impact"**
55-LVA2□, 55-LVA3□, 55-LVA4□, 55-LVA5□, 55-LVA6□ and 55-LVA200 **II 2GD c IIB 80°C T6 X 0°C ≤ Ta ≤ +50°C** **II 2GD c IIB 130°C T4 X 0°C ≤ Ta ≤ +60°C** **Special condition X "Protect for impact"**

Note) The manifold type is not available with ATEX certification

How to Order Valves (Single Type)

55-LVA [2] [0] – [02] [ ] – [A] [ ]

Body class

Symbol	Body class	Orifice dia
1	1	ø2
2	2	ø4
3	3	ø8
4	4	ø12
5	5	ø20
6	6	ø22

Valve type

0	N.C.
1	N.O.
2	Double acting

Note) Refer to "Variations" in the table below for valve type combinations.

Port size

Symbol	Port size	Body class
01	1/8	1
02	1/4	
01	1/8	2
02	1/4	
02	1/4	3
03	3/8	
03	3/8	4
04	1/2	
04	1/2	5
06	3/4	
10	1	6

Thread type

Symbol	Thread type
–	Rc
N	NPT
F	G

Option

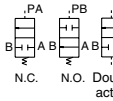
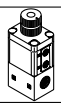
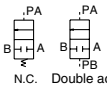
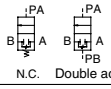
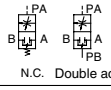
–	None
1	With flow rate adjustment
2	With by-pass
3	With flow rate adjustment & by-pass
4	With indicator

Note) Refer to "Variations" in the table below for option combinations. Options can not be combined each other.

Material

Symbol	Body	Actuator section End plate	Dia-phragm	Applicable option 1	2	3	4	Note
A	Stainless steel	PPS	PTFE	●			●	—
		—						
B	PPS	PPS	PTFE	●			●	Except 55-LVA50/60
C	PFA	PPS	PTFE	●	●	●	●	Except 55-LVA10/50/60
D	Stainless steel	PPS	NBR	●			●	Except 55-LVA60
		—						
E	Stainless steel	PPS	EPR	●			●	Except 55-LVA60
		—						
F	PFA	PVDF	PTFE					Hydrofluoric acid compatible (Only 55-LVA40)
G	PPS	PPS	NBR	●			●	Except 55-LVA50/60
H	PPS	PPS	EPR	●			●	Except 55-LVA50/60
N	PFA	PPS	PTFE	●	●	●	●	Ammonium hydroxide compatible Except 55-LVA10/50/60

Variations

Type	Symbol	Valve type	Model	55-LVA10		55-LVA20		55-LVA30		55-LVA40		55-LVA50		55-LVA60
			Orifice diameter	ø2		ø4		ø8		ø12		ø20		ø22
			Port size	1/8	1/4	1/8	1/4	1/4	3/8	3/8	1/2	1/2	3/4	1
			Body material Note 1) Stainless steel (SUS316)	○	○	○	○	○	○	○	○	○	○	○
			PPS	○	○	—	○	—	○	—	○	—	—	—
			PFA	—	—	—	○	—	○	—	○	—	—	—
Basic type		N.C.		○	○	○	○	○	○	○	○	○	○	○
		N.O.		—	—	○	○	○	○	○	○	○	○	○
		Double acting		○	○	○	○	○	○	○	○	○	○	○
With flow rate adjustment		N.C.		—	—	○	○	○	○	○	○	○	○	○
		Double acting		—	—	○	○	○	○	○	○	○	○	○
With by-pass		N.C.		—	—	—	—	—	○	—	○	—	○	—
		Double acting		—	—	—	—	—	○	—	○	—	○	—
With flow rate adjustment & by-pass		N.C.		—	—	—	—	—	○	—	○	—	○	—
		Double acting		—	—	—	—	—	○	—	○	—	○	—
With indicator		N.C.		—	—	○	○	○	○	○	○	○	○	○

Note) Refer to the "Material" table for the applicable optional body materials.

Basic type

With flow rate adjustment

Standard Specifications

Model		55-LVA10	55-LVA20	55-LVA30	55-LVA40	55-LVA50	55-LVA60
Orifice diameter		ø2	ø4	ø8	ø12	ø20	ø22
Port size		1/8, 1/4	1/8, 1/4	1/4, 3/8	3/8, 1/2	1/2, 3/4	1
Flow characteristics	Av x 10^{-6}m²	1.7	8.4	40.8	79.2	144	192
	Cv	0.07	0.35	1.7	3.3	6	8
Withstand pressure (MPa)		1					
Operating pressure (MPa)		0 to 0.5				0 to 0.4	
Back pressure (MPa)	N.C./N.O. Note 2)	0.15 or less	0.3 or less			0.2 or less	
	Double acting	0.3 or less	0.4 or less			0.3 or less	
Valve leakage (cm³/min)		0 (with water pressure)					
Pilot air pressure (MPa)		0.3 to 0.5					
Pilot port size		M5		1/8			
Fluid temperature (°C)	Temperature class T6	0 to 50					
	Temperature class T4	0 to 100 Note 1)					
Ambient temperature (°C)	Temperature class T6	0 to 50					
	Temperature class T4	0 to 60					
Weight (kg)	Stainless steel (SUS)	0.12	0.18	0.44	0.86	1.67	1.96
	PPS	0.05	0.08	0.18	0.32	—	—
	PFA	—	0.09	0.20	0.35	—	—

Note 1) 0 to 60°C when the diaphragm is NBR or EPR.
Note 2) The N.O. type is not available for 55-LVA10.
Note 3) Contact SMC if the valve will be used with vacuum and B → A flow.

Piping

⚠ Caution

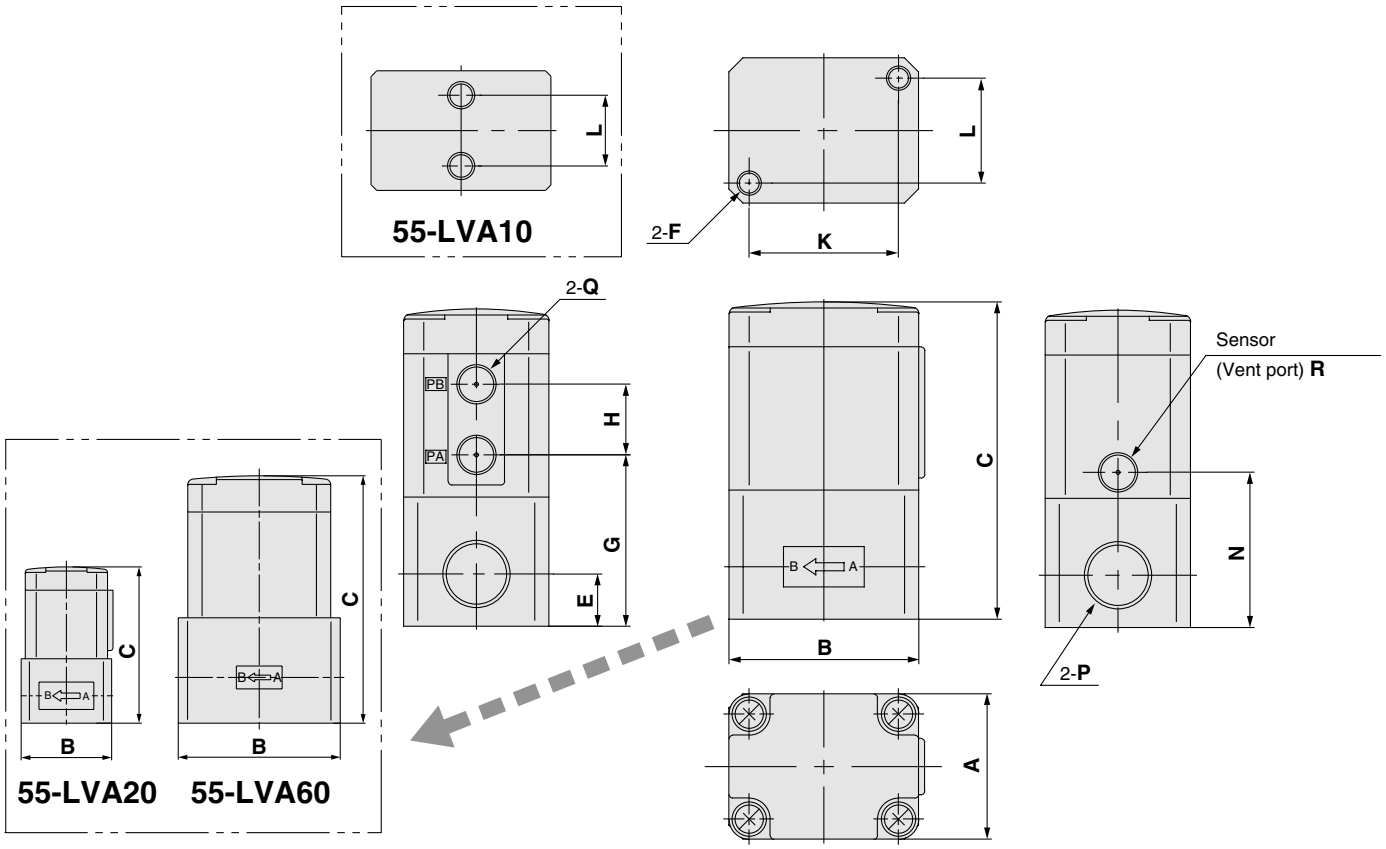
1. Avoid using metal fittings with a resin body (taper threads).

This can cause damage to the valve body.

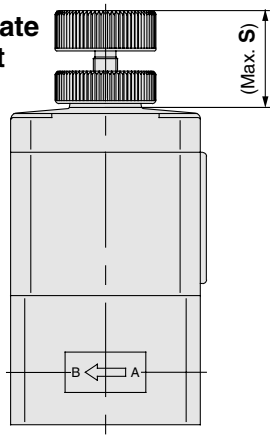
Dimensions

Body material: Stainless steel

Basic type



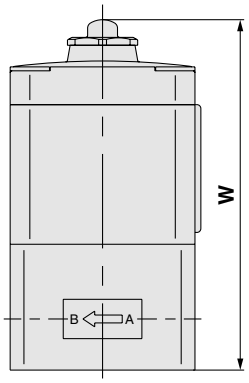
With flow rate adjustment



Dimensions (mm)

Model	S
55-LVA2□	12.5
55-LVA3□	24
55-LVA4□	29
55-LVA5□	34.5
55-LVA6□	36

With indicator



Dimensions (mm)

Model	W
55-LVA20	66.5
55-LVA30	89.5
55-LVA40	110
55-LVA50	140.5
55-LVA60	148

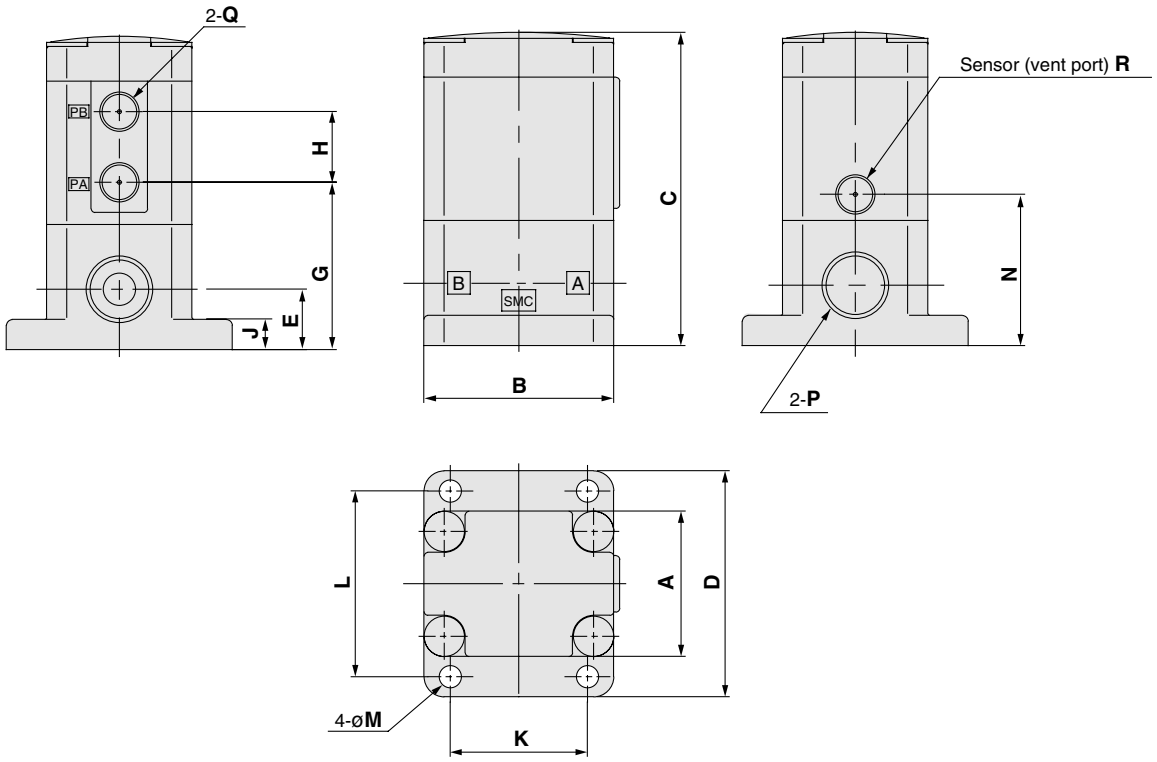
Dimensions (mm)

Model	A	B	C	E	F	G	H	K	L	N	P	Q	R
55-LVA1□	20	33	49.5	10	M5	27.5	11	—	13	27.5	Rc 1/8, 1/4 NPT 1/8, 1/4 G 1/8, 1/4	M5	4.2
55-LVA2□	30	33	57	10	M5	31	13	22	22	26			M3
55-LVA3□	36	47	78.5	13	M6	42.5	17.5	37	26	38.5	Rc 1/4, 3/8 NPT 1/4, 3/8 G 1/4, 3/8	Rc 1/8 NPT 1/8 G 1/8	Rc 1/8 NPT 1/8 G 1/8
55-LVA4□	46	60	95.5	16	M8	54.5	18	47.5	33.5	47.5	Rc 3/8, 1/2 NPT 3/8, 1/2 G 3/8, 1/2		
55-LVA5□	58	75	122.5	19	M8	61.5	27.5	60	43	55.5	Rc 1/2, 3/4 NPT 1/2, 3/4 G 1/2, 3/4		
55-LVA6□	58	85	130	24	M8	69	27.5	60	43	63	Rc 1 NPT 1 G1		

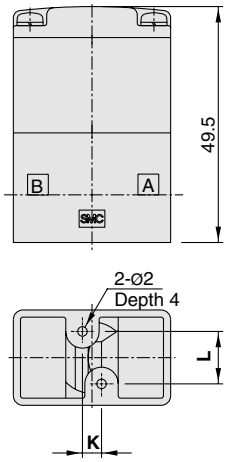
Dimensions

Body material: PPS

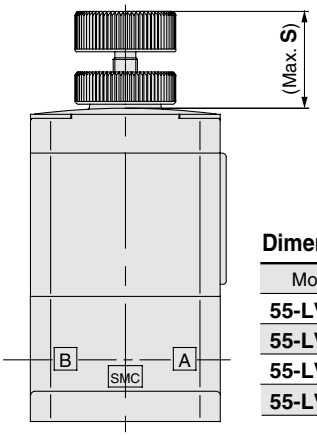
Basic type



55-LVA10



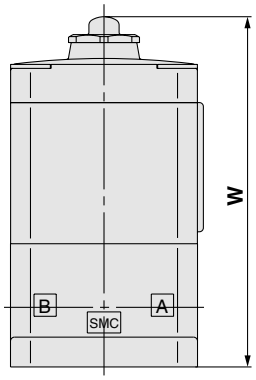
With flow rate adjustment



Dimensions (mm)

Model	S
55-LVA2□	12.5
55-LVA3□	24
55-LVA4□	29
55-LVA5□	34.5

With indicator



Dimensions (mm)

Model	W
55-LVA20	67
55-LVA30	88.5
55-LVA40	110.5
55-LVA50	147

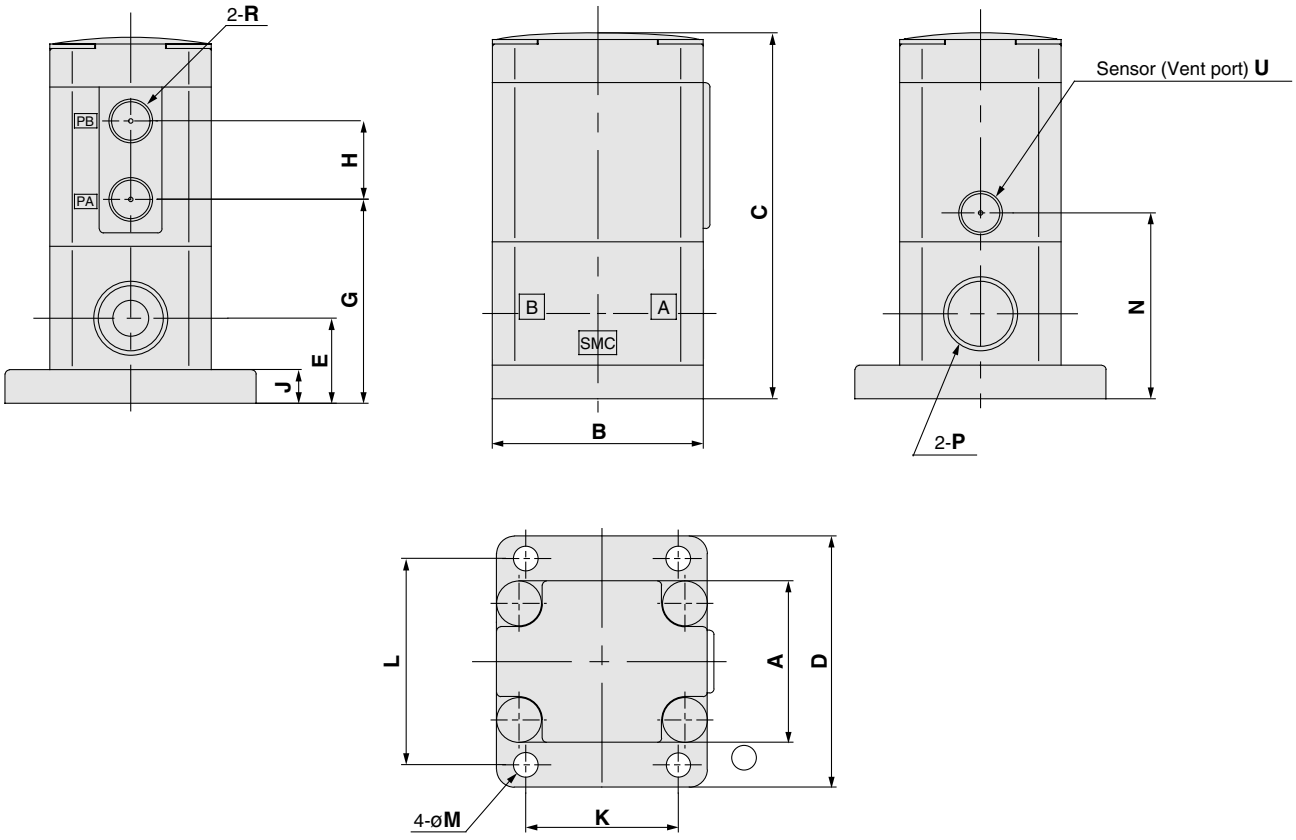
Dimensions (mm)

Model	A	B	C	D	E	G	H	J	K	L	M	N	P	Q	R
55-LVA1□	20	33	49.5	—	10	27.5	11	—	4	11	—	27.5	Rc 1/8, 1/4 NPT 1/8, 1/4 G1/8,1/4	M5	4.2
55-LVA2□	30	36	57.5	44	11	31.5	13	4	20	37	3.5	26.5	Rc 1/4 NPT 1/4 G1/4		M3
55-LVA3□	36	47	77.5	56	15	41.5	17.5	7.5	34	46	5.5	37.5	Rc 3/8 NPT 3/8 G3/8	Rc 1/8 NPT 1/8 G1/8	Rc 1/8 NPT 1/8 G1/8
55-LVA4□	46	60	96.5	68	22	55	18	8	42	57	5.5	48	Rc 1/2 NPT 1/2 G1/2		

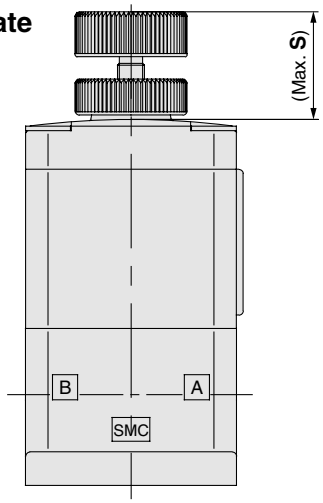
Dimensions

Body material: PFA

Basic type



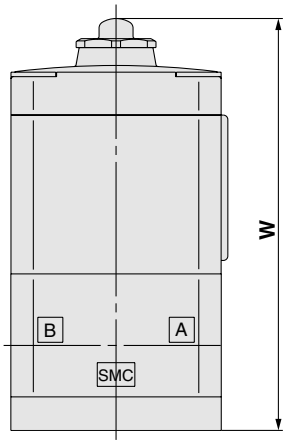
With flow rate adjustment



Dimensions (mm)

Model	S
55-LVA2□	12.5
55-LVA3□	24
55-LVA4□	29

With indicator



Dimensions (mm)

Model	W
55-LVA20	70.5
55-LVA30	92.5
55-LVA40	110.5

Dimensions (mm)

Model	A	B	C	D	E	G	H	J	K	L	M	N	P	Q	R	U
55-LVA2□	30	36	61	44	14.5	35	13	4	20	37	3.5	30	Rc 1/4 NPT 1/4 G 1/4	—	M5	M3
55-LVA3□	36	47	81.5	56	19	45.5	17.5	7.5	34	46	5.5	41.5	Rc 3/8 NPT 3/8 G 3/8	—	Rc 1/8 NPT 1/8 G 1/8	Rc 1/8 NPT 1/8 G 1/8
55-LVA4□	46	60	96	68	22	55	18	8	42	57	5.5	48	Rc 1/2 NPT 1/2 G 1/2	—		

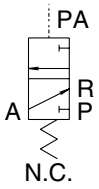
3 Port
Series 55-LVA

Standard Specifications

Model		55-LVA200
Orifice diameter		ø4
Port size		1/4
Flow characteristics	Av x 10^{-6}m²	7.2
	Cv	0.3
Withstand pressure (MPa)		1
Operating pressure (MPa)		0 to 0.5
Valve leakage (cm³/min)		0 (with water pressure)
Pilot air pressure (MPa)		0.4 to 0.5
Pilot port size		M5
Max. operating frequency		1.0
Fluid temperature (°C)	Temperature class T6	0 to 50
	Temperature class T4	0 to 100
Ambient temperature (°C)	Temperature class T6	0 to 50
	Temperature class T4	0 to 60
Weight (kg)		0.162

How to Order Valve

55-LVA 2 0 0 – 02 □ – C



Body class

Symbol	Body class	Orifice dia.
2	2	ø4

Valve type

0	N.C

Port size

Symbol	Port size
02	1/4

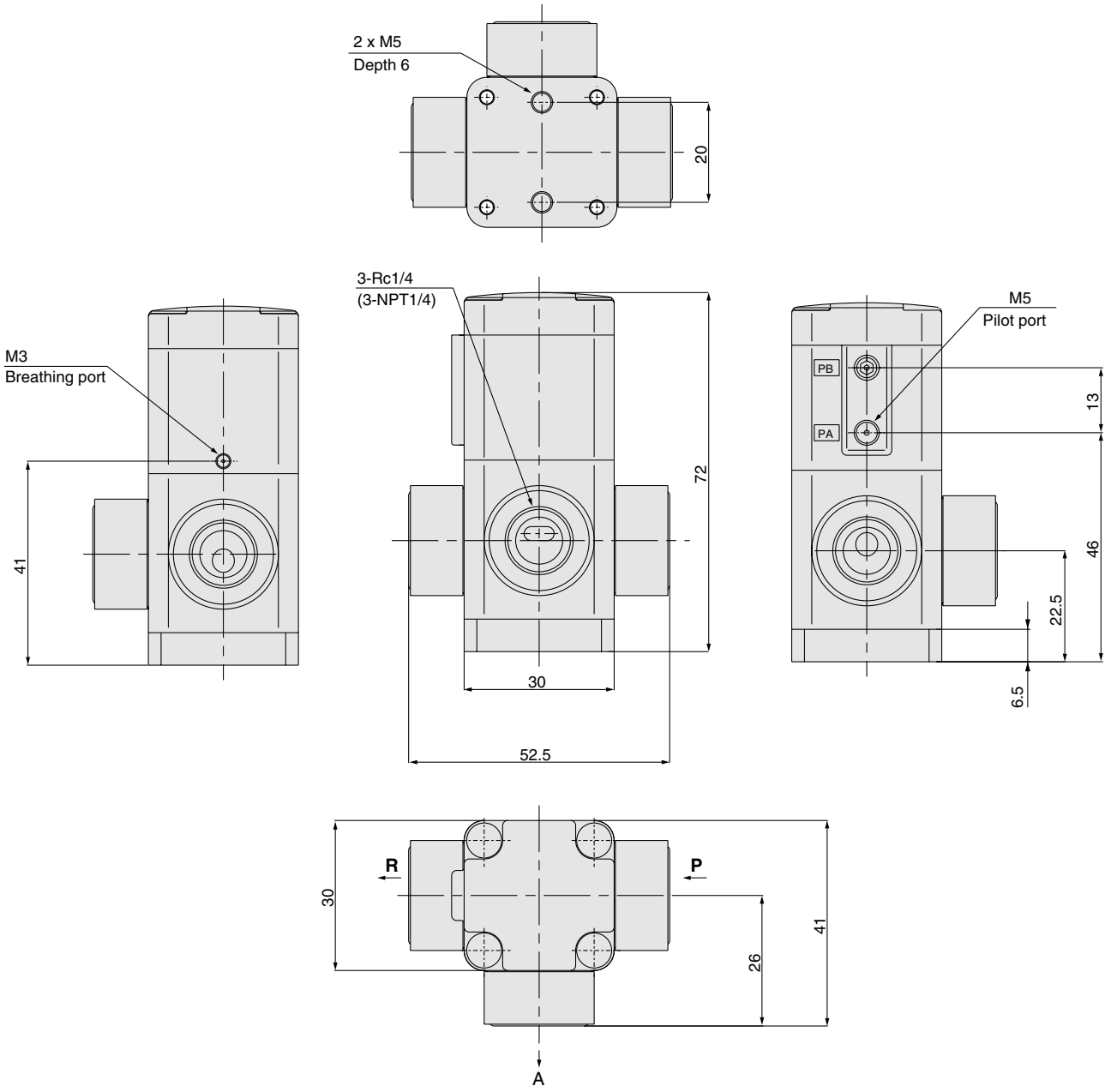
Thread type

Symbol	Thread type
–	Rc
N	NPT

Material

Symbol	Body	Actuator section	Diaphragm
C	PFA	PPS	PTFE

Dimensions


2 x M5
Depth 6
20
3-Rc1/4
(3-NPT1/4)
72
30
52.5
M3
Breathing port
41
M5
Pilot port
PB
PA
13
46
22.5
6.5
R
P
30
41
26
A

Safety Instructions

The following safety instructions are intended to prevent hazardous situations and/or equipment damage. The instructions indicate the level of potential hazard by labeling "**Caution**", "**Warning**", or "**Danger**". To ensure safety, please observe all safety practices, including ISO 4414 Note 1), JIS B8370 Note 2).

⚠Caution : Operator error could result in injury or equipment damage.

⚠Warning : Operator error could result in serious injury or loss of life.

⚠Danger : In extreme conditions, there is a possibility of serious injury or loss of life.

Note 1) ISO 4414: Pneumatic fluid power – Recommendations for the application of equipment to transmission and control systems.

Note 2) JIS B 8370: Pneumatic system axion

⚠ Warning

1. The compatibility of pneumatic equipment is the responsibility of the person who designs the pneumatic system or decides its specifications.

Since the products specified here are used in various operating conditions, their compatibility with a specific pneumatic system must be based on specifications or post analysis and/or tests to meet a specific requirement.

2.Only trained personnel should operate pneumatically machinery and equipment.

Compressed air can be dangerous if an operator is unfamiliar with it. Assembly, handling or repair of pneumatic systems should be performed by trained and experienced operators.

3. Do not service machinery/equipment or attempt to remove components until the safety of the worker is confirmed.

1. Inspection and maintenance of machinery/equipment should only be performed after confirming that all safety locked-out control positions are engaged.
2. When equipment is to be removed, confirm that all safety precautions have been followed. Cut the pressure supply for the equipment and exhaust all residual compressed air in the system.
3. Before restarting any machinery/equipment exercise caution to prevent quick extension of a cylinder piston rod, etc. (Bleed air into the system gradually to create back pressure.)

4. Contact SMC if the product will be used in any of the following conditions.

1. Conditions and environments beyond the given specifications or if product is used outdoors.
2. Installation on equipment in conjunction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverage, recreation equipment, emergency stop circuits, press applications or safety equipment.
3. An application which has the possibility of having a negative affect on people, property, or applications with special safety requirements.

Common Precautions

Be sure to read before handing.

Selection

⚠Warning

1. Confirm specifications.

Products represented in this catalogue are designed for use in compressed air applications only (including vacuum), unless otherwise indicated. Do not use the products outside of their designed parameters. Contact SMC when using the product with fluids other than compressed air (including vacuum).

Installation

⚠Warning

1. Do not install unless the safety instructions have been read and understood.

Keep this catalogue on file for future reference.

2. Maintenance

When installing the product, allow for maintenance access.

3. Tightening torque

When installing the product, follow the torque specification.

Piping

⚠Caution

1. Before piping

Before piping is connected, it should be thoroughly blown out with air (flushing) or washed to remove chips, cutting oil and other debris from inside the pipe.

2. Sealant tape

When installing piping or a fitting into a port, make sure that the sealant material does not clog the pressure port. Leave the first 1.5 to 2 thread turns exposed at the end of the pipe/ fitting when using sealant tape.

Air Supply

⚠Warning

1. Operation fluid

Consult with SMC when using the product in applications which use fluids other than compressed air (including vacuum).

Regarding products for general fluids, consult with SMC regarding applicable fluids.

2. Large amount of drainage.

Compressed air containing larger mount of drainage can cause malfunction of pneumatic equipment.

Please installation of an air dryer and mist separator (Drain Catch) before air filter.

3. Drain

If condensation in the air filter is not emptied on a regular basis, condensation that flows to the outlet side can cause a malfunction. If it is difficult to check and remove, installation of a filter with an auto-drain function is recommended. Refer to Best Pneumatics for details on compressed air quality.

4. Use clean air

Do not use compressed air which includes chemicals, synthetic oils containing organic solvents, salt, or corrosive gases, etc., as this can cause damage or malfunction.

Environment

⚠Warning

1. Do not use in an environment where the product is directly exposed to corrosive gases, chemicals, sea water, water or steam.

2. In locations which receive direct sunlight, provide a protective cover, etc.

3. Do not operate in locations where vibration or impact occurs.

4. Do not use in locations where radiated heat will be received from nearby heat sources.

5. Avoid striking the product with a metallic object.

6. Avoid using this product in a non-explosive environment which can become explosive due to air leakage.

Maintenance

⚠Warning

1. Maintenance procedures are outlined in the operation manual.

Failure to follow proper procedures can result in product malfunction and or lead to damage to the equipment or machine.

2. Maintenance

If handled improperly, compressed air can be dangerous. Assembly, handling and repair of pneumatic systems should only be performed by qualified personnel.

3. Drain

Remove condensation from the filter bowl on a regular basis.

4. Shut down before maintenance

Before attempting any kind of maintenance confirm that the supply pressure is shut off and all residual air pressure is released from the system to be worked on.

5. Start-up after maintenance

Apply operating pressure and power to the equipment, then check for proper operation and possible air leaks. If operation is abnormal, verify product set-up parameters.

6. Do not make any modification to the product.

SMC products “out of scope” of the ATEX Directive

Products that are out of scope of the ATEX Directive do not need a declaration of conformity to ATEX for use in potentially explosive atmospheres. These products can be used in ATEX zones as specified.

SMC products which are out of scope of the ATEX Directive match part of the definitions of components or equipment (see ATEX Directive Article 1(3)).
See below for definitions of components and equipment.
For “equipment out of scope” and also equipment within the scope, the user has the responsibility for hazards arising from the assembly of several products. For “components out of scope”, the user has the responsibility to assess the suitability of using these products in an explosive atmosphere and in his application.

Equipment out of scope

Equipment is defined by the ATEX Directive as *“machines, apparatus, fixed or mobile devices, control components and instrumentation thereof and detection or prevention systems which, separately or jointly, are intended for the generation, transfer, storage, measurement, control and conversion of energy and/or the processing of material and which are capable of causing an explosion through their own potential sources of ignition.”* (Article 1(3))

Out of scope
Equipment in scope of the ATEX directive has an autonomous function in a process and an ignition source of its own.
Products that fit the definition of equipment but do not have an ignition source of their own are “out of scope”.
Therefore products such as hand valves, pressure gauges, pressure regulators etc are “out of scope” if an Ignition Hazard Assessment shows that they do not have any ignition sources of their own. This does not include ignition hazards that arise from the assembly of these products in a circuit. An example for this is heat due to adiabatic compression, which can occur in a dead ended pipe when the pressure cycles but also at a closed valve or in a pressure gauge.
SMC can supply a declaration confirming that “equipment out of scope” does not have any ignition sources of their own for use in given zones. Please contact SMC if you require a declaration.

Table 1: SMC products (equipment), which are out of scope because they do not have any potential ignition source of their own.

Product description	**Series**	Out of scope for zone:	Note
Heavy duty Auto Drain	**ADH4000**	1, 2	1
Air filters	**AF10/20/30/40/50/60**	1, 2, 21, 22	1
Main line filters	**AFF2B~AFF75B**	1, 2, 21, 22	1
Mist separators	**AM150~850**	1, 2, 21, 22	1
Micro mist separators	**AMD150~850, AMD801**	1, 2, 21, 22	1
Super mist separators	**AME150~850**	1, 2, 21, 22	1
Odour removal filters	**AMF150~850, AMF801**	1, 2, 21, 22	1
Water separators	**AMG150~850**	1, 2, 21, 22	1
Micro mist separator with pre-filter	**AMH150~850**	1, 2, 21, 22	1
Clean gas filter	**SFA, SFB, SFC**	1, 2, 21, 22	1
Micro mist separator	**AFD20/30/40**	1,2, 21, 22	1
Mist separator	**AFM20/30/40**	1,2, 21, 22	1
Lubricator	**AL10/20/30/40/50/60**	1,2, 21, 22	1, 2
Large flow lubricator	**AL800/900**	1, 2, 21, 22	1, 2
MR Unit	**AMR3000~6000**	1, 2	1
Regulator	**AR10/20/25/20/30/40/50/60**	1, 2, 21, 22	1, 2
Pilot operated regulator	**AR425 bis 935**	1, 2, 21, 22	1
Miniature regulator	**ARJ**	1, 2, 21, 22	1
Manifold regulator	**ARM5, ARM10/11, ARM1000/2000/2500/3000**	1, 2, 21, 22	1, 2, 3
Precision regulator	**ARP20~40**	1, 2, 21, 22	1, 2
Regulator for 2 MPa	**ARX**	1, 2, 21, 22	1
Filter regulator	**AW10/20/30/40/60**	1, 2, 21, 22	1, 2
Clean regulator	**SRH, SRP11#1**	1, 2, 21, 22	1
Air hydro Converter	**CCT**	1, 2	1
Pressure Gauges	**G(A)14/15/27/33/36/46/46E, GZ46, GC3, GD40**	1, 2, 21, 22	1
Booster relay	**IL100**	1, 2	1
Lock up valve	**IL201/211/220**	1, 2	1
Precision regulator	**IR1000/2000/3000**	1, 2	1
Vacuum regulator	**IRV1000/2000/3000, IRV10/20**	1, 2	1
Filter regulator	**IW212~217**	1, 2	1
Hand valve	**VH200/201/400/401**	1, 2, 21, 22	1
Finger valve	**VHK2**	1, 2	1

Product description	Series	Out of scope for zone:	Note
2 Port Micro Mechanical Valve	**VM11□□-4N(U)-□□□**	1, 2, 21, 22	1, 4, 5, 6
2/3 Port Mechanical Valve	**VM12□-□□□-□□□, VM131-□□□-35□** **VM220-□02-□□□, VM230-□02-35□**	1, 2, 21, 22	1, 4, 5, 6
3 port mechanical valve	**VM430-□01-□□□, VM830-□01-□□**	1, 2, 21, 22	1, 5, 6
5 port mechanical valves	**VZM45□-□01-□□□-(F), VZM55□-□01-□□□-(F)** **VFM35□-□02-□□□-(F), VFM25□-□02-□□□-(F)**	1,2, 21, 22	1, 5, 6
3 port residual pressure release valve	**VHS20/30/40/50**	1, 2, 21, 22	1
Multistage ejector	**ZL**	1, 2	1, 2

Note 1:
- Limited to explosive atmospheres types IIA, IIB
- It is the circuit designer's responsibility to ensure significant heat generation due to compression of operating gas does not occur.
- The explosive atmosphere is not allowed to enter the pneumatic circuit, even in case of expected malfunction.
- The product is not intended for use in an environment where stray electric currents can be induced or where cathodic corrosion protection is used.
- Exhaust air or leakage should not be allowed to whirl up gathered dust and create a potentially explosive dust atmosphere.

Note 2:
Excluding options with electrical pressure/vacuum/level switch or electrical valve

Note 3:
For ARM10/11, ARM5: Excluding options with 3-way valve.

Note 4:
2 port only, 3 port excluded: for 3-positon twist selector (VM100, 200): 3 port only, 5 port excluded.

Note 5:
For types with roller, the friction between roller and its axle must be assessed with the assembly the valve is used for.

Note 6:
The valves must not be actuated beyond the total travel given in the documentation, even in the case of expected malfunction.

Note 7:
Excluding option Z: with miniature indicator.

Components

"Components" are defined by the ATEX Directive as *"any item essential to the safe functioning of equipment and protective systems but with no autonomous function."* (Article 1(3))
It is the users' responsibility to assess components when he assembles them into equipment or protective systems covered by the ATEX Directive.

Out of scope
Products that do not have an autonomous function and are not essential to the safe functioning of ATEX equipment and protective systems are out of scope of the ATEX Directive.
SMC products which are out of scope as they do not have an autonomous function and which SMC does not explicitly intend for the safe functioning of ATEX equipment and protective systems are listed in Table 2. These have to be assessed by the user, when he carries out the Ignition Hazard Assessment of his assembly.

Table 2: SMC products without autonomous function (components), which are out of scope because they are not (intended to be) essential to the safe functioning of ATEX equipment and protective systems

Product description	Series
Check valve	**AK, AKB, AKH**
Silencers	**AN□, 25□□**
Quick exhaust valve	**AQ**
Speed controller	**AS, ASP, ASD**
Multi-connector	**DM, KDM**
Self align fittings	**H, DL, L, LL**
Floating joint	**JA, JB, JS**
Insert fittings	**KF, KFG**
S Couplers	**KK, KKA, KK130**
Fittings	**KQ, KQ2, KP, KA, KG, KJ, KM, KR, KW**
Miniature fittings	**M, MS**
Tubing	**T, TS, TU, TUS, TUH, TRB, TRS, TRBU, TA, TPH, TPS**

Product description	Series
Multi holder	**TM, TMA**
Holder	**TMH**
Shuttle valve	**VR12□□, VR12□□F**
Cross interface	**Y24~Y54**
Vacuum pads	**ZP**
Valve for Water and Chemical-base Fluids, for manifold mounting	**VCC12(D)-00**
Brackets	**Mounting brackets for cylinders, FRL, valves and so on when sold on their own.**
Manifold base	**SS5Y5-20-□□-(□□□)** **SS5Y5-41-□□-□□(□)** **SS5Y5-42-□□-□□(□)** **SS5Y7-20-□□-(□□□)** **SS5Y7-42-□□-□□(□)**

Note) Out of scope for / can be used in all zones subject to assessment by user.

www.smc.eu

SMC

DKI-50185-C-UK

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