CAT.DKI-50185-B-UK

SMC guide to ATEX compliant products

SMC Corporation

SMC - provide product

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 directive

Directive 94/9/EC
Equipment and Protective Systems intended for use in potentially **Ex**plosive **At**mospheres

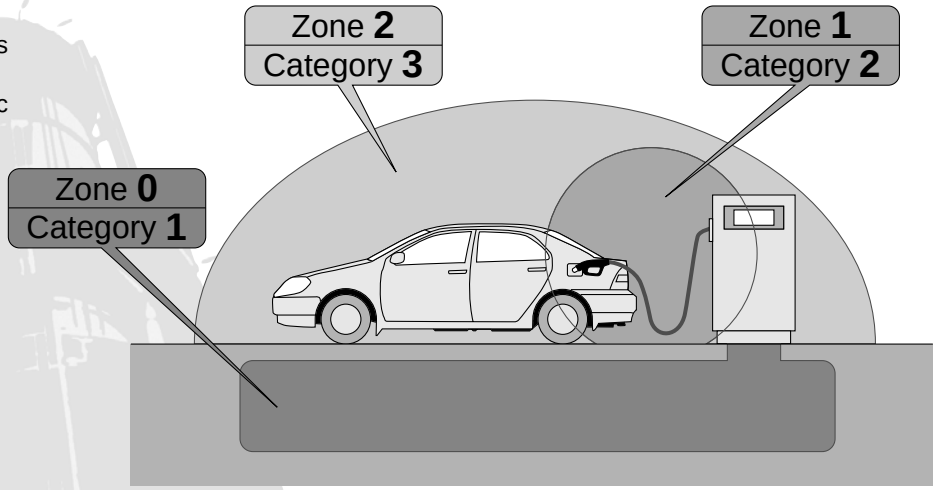
ATEX, New Approach directives and CE marking

Directive 94/9/EC, known as ATEX directive, is one of the directives based on the New Approach towards technical harmonization and standardisation.
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, vapours, mists or dusts in which, after ignition has occurred, combustion spreads to the entire unburned mixture. (Quotation from Directive 94/9/EC)
The following applications are explicitly excluded by the ATEX directive and must comply with other specific standards: medical devices, equipment or safety devices to be used with explosive or chemically unstable substances, equipment for domestic and non-commercial environments with explosive atmosphere generated by leakage of fuel gas, personal protective equipment, offshore vessels, mobile units and means of transport.
Certified equipment is designed to prevent the generation of ignition sources as defined by the standard EN1127-1:

- hot surfaces
- flames and hot gases
- mechanically generated sparks
- electrical sparks
- stray electric currents, cathodic corrosion protection
- static electricity
- lightning
- electromagnetic fields
- electromagnetic radiations
- ionising radiations
- ultrasonics
- adiabatic compression shock waves, gas flows
- chemical reactions



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

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

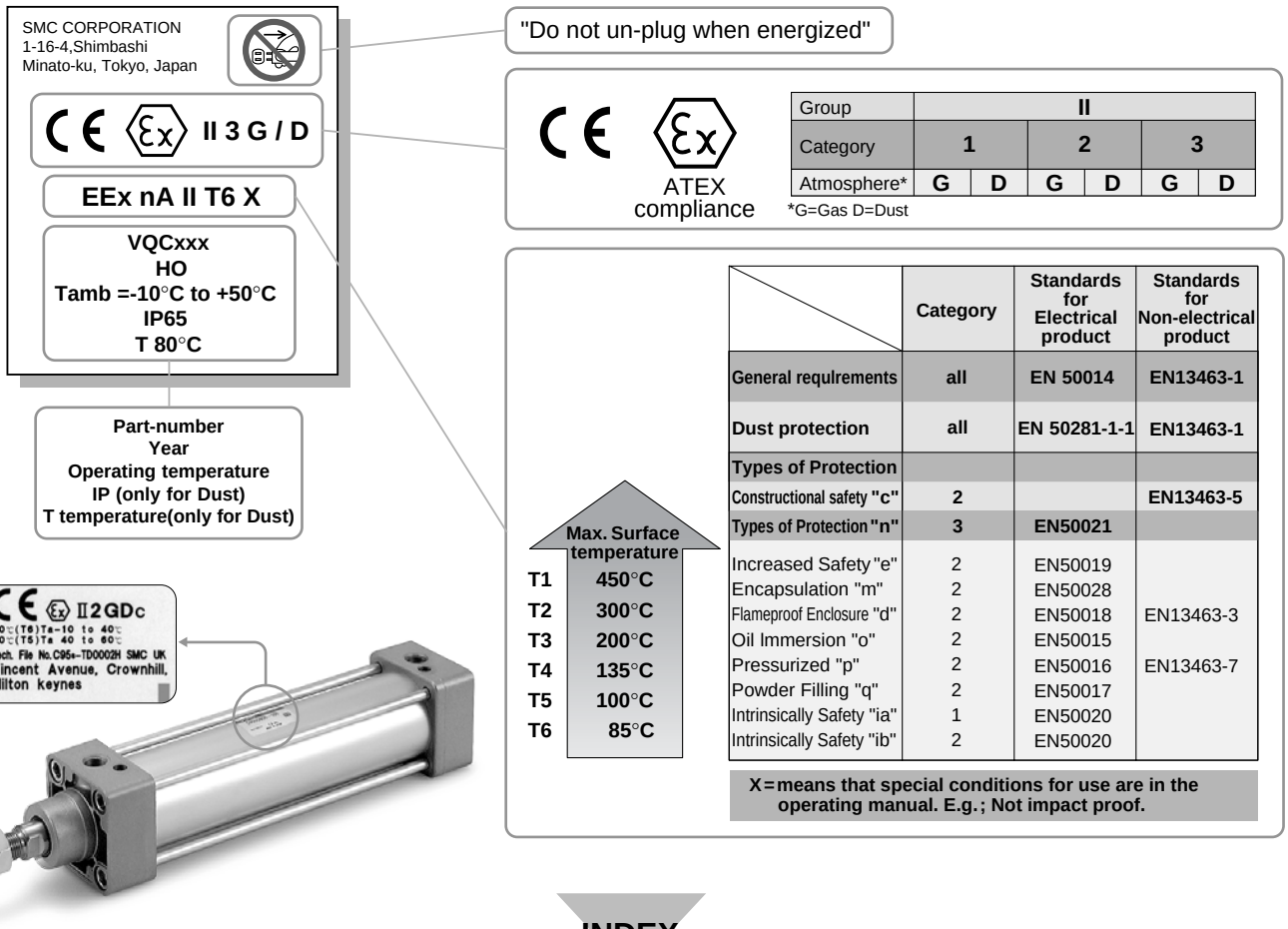
Zone		Equipment category	Presence of the explosive atmosphere
Gas	Dust		
0	**20**	**1**	Continuously or for long periods >1000 hours/year
1	**21**	**2**	Occasionally 10~1000 hours/year
2	**22**	**3**	Rarely or for short periods <10 hours/year

ts compliant to ATEX Directive

New elements at a glance

Previous legislation covered the most obvious sources of ignition generated by electrical devices.
The ATEX directive and the corresponding harmonised standards have extended the applicability of legislation to all the equipment that is intended for generation, transfer, storage, measurement, control and conversion of energy.
Pneumatic equipment used in potentially explosive atmospheres must, therefore, comply with the new legislation.
Products, which do not contain any potential ignition sources, are out of the scope of the directive.

ATEX label example and explanation



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

	Category	Standards for Electrical product	Standards for Non-electrical product
General requirements	all	EN 50014	EN13463-1
Dust protection	all	EN 50281-1-1	EN13463-1
Types of Protection			
Constructional safety "c"	2		EN13463-5
Types of Protection "n"	3	EN50021	
Increased Safety "e"	2	EN50019	
Encapsulation "m"	2	EN50028	
Flameproof Enclosure "d"	2	EN50018	EN13463-3
Oil Immersion "o"	2	EN50015	
Pressurized "p"	2	EN50016	EN13463-7
Powder Filling "q"	2	EN50017	
Intrinsically Safety "ia"	1	EN50020	
Intrinsically Safety "ib"	2	EN50020	

X=means that special conditions for use are in the operating manual. E.g.; Not impact proof.

INDEX

ATEX Compliant Air cylinder/ Double acting

Series 55-C76

ø32, ø40

How to order

55 - CD76 | E | 32 | 50 | C | A

ATEX category 2

Built-in magnet

	None
D	Built-in magnet

Mounting style

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

* Except for air cushion type.

Bore size

Stroke

Bore size (mm)	Standard stroke (mm)	Max. stroke (mm)
ø 32	10, 25, 40, 50, 80, 100	1000
ø 40	125, 160, 200, 250, 300	

Cushion

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

Auto switch mounting type

A	Rail mounting
B	Band mounting

Parts No. of Mounting Bracket

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 3GD EEx nA II T5x -10°C ≤ Ta ≤ +60°C IP67)
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

Specifications

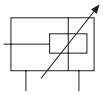
Bore size		ø32	ø40
ATEX category [1)]		CE Ex II 2GDc	90°C (T5) Ta –10 to 40°C 110°C (T4) Ta 40 to 60°C
Piston rod. dia. (mm)		12	14
Piston rod thread		M10x1.5	M12 x1.75
Ports		G1/8	G1/4
Action		Double acting	
Fluid		Air	
Proof pressure		1.5MPa	
Max. operating pressure		1.0MPa	
Min. operating pressure		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 bumper, Air cushion	
Port size		G1/8	G1/4
Mounting		Double end, Front nose, Front nose in line	
Allowable kinetic energy (J)	Rubber cushion	0,65	1.2
	Air cushion	1,07	2.35

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.

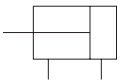
Symbol

Standard: double action

Rubber Cushion
Single rod



Air Cushion
Single rod



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

ATEX Compliant ISO Cylinder/Standard: 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** 85**W** **E** **20** – **40** **C** **B**

ATEX category 2

Magnet

—	None
D	Built-in magnet

Style

—	Standard
D	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 type

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

Bore size **Stroke**

Bore size (mm)	Standard stroke (mm)**	Max. stroke (mm)		
ø8*	10, 25, 40, 50, 80, 100	400	100	100
ø10				
ø12	10, 25, 40, 50, 80, 100, 125, 160, 200		200	200
ø16				
ø20	10, 25, 40, 50, 80, 100, 125, 160, 200, 250, 300	1000	1000	1000
ø25				

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

Cushion

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

Auto switch mounting type

A	Rail mounting
B	Band mounting

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 3GD EEx nA II T5x -10°C ≤ Ta ≤ +60°C IP67)
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

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

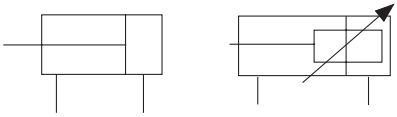
Note) Please order mounting brackets separately.

Rubber Bumper/Single Rod

Air Cushion/Single Rod

Symbol

Double Acting/Single Rod



Rubber Bumper　　Air Cushion

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 Ⓔx II 2GDc			90°C (T5) Ta –10 to 40°C 110°C (T4) Ta 40 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. If necessary turbine oil no.1 ISOVG32 is recommended					
Piston speed		50 to 1000mm/s					
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	0.64J	0.93J
Non-rotating accuracy		±1° 30'	±1° 30'	±1°	±1°	±0° 42'	±0° 42'
Stroke tolerance		0/+1				0/+1.4	

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: 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)

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 Specifications

-	Hard chromed rod as standard
W Note)	Double rod

Note) Double rod is not available for bore size diameter 125, 160, 200, 250 mm.

Special

-	Standard
XC6	Stainless steel rod and nut

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
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 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 3GD EEx nA II T5x -10°C ≤ Ta ≤ +60°C IP67)
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

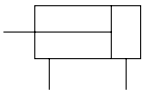
Note 1) ○ solid state auto switch is available after receiving an order.

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

ISO Symbol
Double acting



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

Specifications

Bore size	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160	ø200	ø250
ATEX category	CE Ex II 2GDc 95°C (T5) Ta –10 to 40°C 115°C (T4) Ta 40 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: $^{+1.8}_{0}$									
Cushion	Both ends (Air cushion)									
Thread tolerance	JIS class 2									
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)	(*) Max. stroke
32	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500	700
40	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500	800
50	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	1200
63	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	1200
80	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600, 700, 800	1400
100	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600, 700, 800	1500
125	Each stroke will be made to order	1600
160	Each stroke will be made to order	1600
200	Each stroke will be made to order	2000
250	Each stroke will be made to order	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**(1)	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 6)			
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) Two foot brackets required for one cylinder.
Note 2) Accessories for each mounting bracket are as follows.
Foot, Flange, Single clevis: Mounting bolts
Double rear clevis: (D,DS): Clevis pin
Note 3) GKM according to ISO 8140
Note 4) KJ according to ISO 8139
Note 5) Piston rod nut is standard (Bore size 32 to 125)
Note 6) Please consult SMC

ATEX Compliant ISO Cylinder/Standard: Double Acting

Series 55-CP95

ø32, ø40, ø50, ø63, ø80, ø100

How to Order

55-CP95SD **B** **32** — **100** **W**

ATEX category 2

Piston rod type

S	Standard
K	Non-rotating

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

Stroke (mm)

Refer to standard stroke table following page

Rod Specifications

-	Hard chromed rod as standard
W	Double rod

Model Selection

Execution	Model	Bore Size						Adjustable Stroke End Cushioning	Piston Rod Options	
		32	40	50	63	80	100		Standard Hard Chrome	W
Standard Type	55-CP95 SB	●	●	●	●	●	●	●	●	○
	55-CP95 SDB	●	●	●	●	●	●	●	●	○
Non-rotatin piston rod	55-CP95 KB	●	●	●	●	●	●	●	Note 3)	○
	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 3GD EEx nA II T5x -10°C ≤ Ta ≤ +60°C IP67)
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 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 1) ○ solid state auto switch is available after receiving an order.

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)

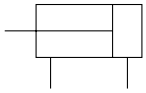
Auto switch Model	Tube I.D. (mm) 32,40,50,63,80,100
D-Z73□-588 D-Z80□-588 D-Y7P□-588 D-Y7PV□-588	BMP1-032

Specifications

Bore size	ø32	ø40	ø50	ø63	ø80	ø100
ATEX category [1]	CE Ⓔx II 2GDc 95°C (T5) Ta –10 to 40°C 115°C (T4) Ta 40 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					
Allowable stroke tolerance	to 250: $^{+1.0}_{0}$, 251 to 1000: $^{+1.4}_{0}$					
Cushion	Both ends (Air cushion)					
Thread tolerance	JIS class 2					
Port size	G1/8	G1/4	G1/4	G3/8	G3/8	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.

ISO Symbol
Double acting



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

Standard Stroke

Bore size (mm)	Standard stroke (mm)	Max. * stroke
32	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500	700
40	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500	800
50	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	1200
63	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600	1200
80	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600, 700, 800	1400
100	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500, 600, 700, 800	1500

Intermediate strokes are available.

Mounting Bracket, Mounting Accessories

Description	Bore size	ø32	ø40	ø50	ø63	ø80	ø100
L	**Foot**(1)	L5032	L5040	L5050	L5063	L5080	L5100
F, G	**Flange**	F5032	F5040	F5050	F5063	F5080	F5100
C	**Single rear clevis**	C5032	C5040	C5050	C5063	C5080	C5100
D	**Double rear clevis**	D5032	D5040	D5050	D5063	D5080	D5100
DS	**Double rear clevis (for ES accessory)**	DS5032	DS5040	DS5050	DS5063	DS5080	DS5100
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) Two foot brackets required for one cylinder.
Note 2) Accessories for each mounting bracket are as follows.
Foot, Flange, Single clevis: Mounting bolts
Double rear clevis: (D,DS): Clevis pin
Note 3) GKM according to ISO 8140
Note 4) KJ according to ISO 8139
Note 5) Piston rod nut is standard

ATEX Compliant Air cylinder/ Double acting

Series 55-CG1

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

How to Order

Standard

55 - CG1 L N 25 ☐ ☐

With auto switch

55 - CDG1 L N 25 ☐ ☐

ATEX category 2

With auto switch
(magnet)

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.
** Mounting brackets are included, not mounted.

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

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

Air cushion

Nil	M5x0.8	ø20~ø25
	Rc	ø32~ø100
TN	NPT	ø32~ø100
TF	G	ø32~ø100

Cylinder stroke (mm)

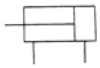
Bore size (mm)	Standard stroke (1) (mm)	Long stroke (2) (mm)	Max stroke (mm)
20	25, 50, 75, 100, 125, 150, 200	201 to 350	1500
25	25, 50, 75, 100, 125, 150, 200, 250, 300	301 to 400	
32		301 to 450	
40		301 to 800	
50/63		301 to 1200	
80		301 to 1400	
100		301 to 1500	

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.

JIS symbol

Double acting



Specifications

Bore size (mm)	20	25	32	40	50	63	80	100
ATEX category [1)]	CE Ex II 2GDc 90°C (T5) Ta –10 to 40°C 110°C (T4) Ta 40 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	Without auto switch: –10 to +70°C (No freezing)							
	With auto switch: –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 a 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

Series 55-CS1

Non-lube: ø125, ø140, 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

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

Bore size

Non-lube

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

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

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 3GD EEx nA II T5x -10°C ≤ Ta ≤ +60°C IP67)
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) Note1)			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)			
	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 –10 to 40°C, 115°C (T4) Ta 40 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)
Thread tolerance	JIS class 2
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: $^{+2.2}_{0}$, 2001 to 2400: $^{+2.6}_{0}$
Mounting	Basic, Foot, Front flange, Rear flange, Single clevis, Double clevis, Centre trunnion

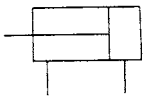
Note 1) This cylinder can be used in zones 1 and 21 and in zones 2 and 22. If the cylinder is used with SMC category 3 type auto switch, then the cylinder can only be used in zones 2 and 22 and not in zones 1 and 21.
Note 2) For the CDS1 diameter 180 and 200 the Proof pressure is 1.2MPa and the Max. operating pressure is 0.7MPa.

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)	●	●	●	●	●	●	●

Symbol

Double acting style



Max. Stroke

(mm)

Tube material	Aluminum alloy		Carbon steel tube		With auto switch	
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	1400 or less	1000 or less	1600 or less	1000 or less	1400 or less
140	1000 or less	1400 or less	1000 or less	1600 or less	1000 or less	1400 or less
160	1200 or less	1400 or less	1200 or less	1600 or less	1200 or less	1400 or less
180	—	—	1200 or less	2000 or less	1200 or less	1500 or less
200	—	—	1200 or less	2000 or less	998 or less	998 or less
250	—	—	1200 or less	2400 or less	-	-
300	—	—	1200 or less	2400 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)
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
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

Mounting Bracket Part No.

Bore size (mm)	Foot (4)	Flange	Double clevis (6)
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
Note 6) Package for double clevis contains clevis pin and snap ring.

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 3GD EEx nA II T5x -10°C ≤ Ta ≤ +60°C IP67)
For detailed specifications on the D-A73(H), A80(H), F7P(V), A93(V), A90(V), Z73, Z80, M9P(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. Also for D-M9P(V) type, see D-F9P(V) type specifications)

Type	Model No.			Electrical entry	Indicator	Wiring (Output)	Load voltage			Lead wire∗ (m)			Applicable load	
	Rail mounting ø16 to ø160	Direct mounting ø32 to ø100	Direct mounting ø25 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-M9PV□-588	D-Y7PV□-588	Grommet (Perpendicular entry)	Yes	3-wiring (PNP)	24V	5V, 12V	—	●	●	○	IC circuit	
	D-F7P□-588	D-M9P□-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.

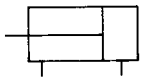
When ordering a rail mounting type auto switch, also order a mounting bracket from the following list at the same time.
Auto switch mounting bracket/ Part no. (Rail mounting type)

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	BQ1 (12~25)

Style

JIS symbol

Double acting: Single rod



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		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Note 1) Among those without an auto switch, only the 5mm stroke uses M5 piping.

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 to 40°C 105°C (T4) Ta 40 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 rod end thread	JIS class 2														
Tolerance of stroke length	$^{+1.0}_{0}$										$^{+1.4}_{0}$				
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) 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	Long stroke
ø6	10, 20, 30, 40, 50	
ø10	10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 75	80, 90, 100, 110, 120, 125, 150
ø15	10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 75, 80, 90, 100	110, 120, 125, 150
ø20		110, 120, 125, 150, 175, 200
ø25		
ø32		

CXSW (mm)

Bore size	Standard stroke	Long stroke
ø6	10, 20, 30, 40, 50	
ø10	10, 20, 30, 40, 50	75, 100, 125, 150
ø15		
ø20	10, 20, 30, 40, 50, 75, 100	125, 15, 175, 200
ø25		
ø32		

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 Ex II 2GDc			65°C (T6) Ta –10 to 40°C 85°C (T6) Ta 40 to 60°C		
Min. operating pressure	0.15MPa	0.1MPa		0.05MPa		
Max. operating pressure	0.7MPa					
Proof pressure	1.05MPa					
Fluid	Air (Non-lube)					
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				Rc, 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 Ex II 2GDc			65°C (T6) Ta –10 to 40°C 85°C (T6) Ta 40 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				Rc, G1/8	
Stroke adjustable range	0 to –10mm (Extension side: 5mm, Retraction side: 5mm)					
Bearing	Slide bearing, Ball bushing (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.

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 3GD EEx nA II T5x -10°C ≤ Ta ≤ +60°C IP67)
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)						●	●	○		

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

• 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 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-MY1B

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

How to Order

Basic Type

55-MY1B **25** [ ] [ ] — **300**

- **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

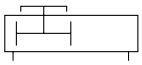
- **Stroke**

Refer to the standard stroke table below.

Standard strokes

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

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 3GD EEx nA II T5x -10°C ≤ Ta ≤ +60°C IP67)
For detailed specifications on the D-A93(V), A90(V), Z73, Z80, M9P(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. Also for D-M9P(V) type, see D-F9P(V) type specifications.)

Type	Model No. ø10 to ø20	Model No. ø25 to ø100	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-M9PV□-588	D-Y7PV□-588	Grommet (Perpendicular entry)	Yes	3-wiring (PNP)	24V	5V, 12V	—	●	●	○	IC circuit	
	D-M9P□-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**

- **55**: ATEX category 2
- **MY1M**: Slide bearing guide type
- **25**: Bore size
- □: Piping
- □: Piping
- **300**: Stroke — Refer to the standard stroke table below.

Piping

-	Standard type
G	Centralized piping type

Bore size

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

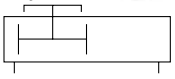
Piping

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

Standard strokes

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

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 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		0.15 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 3GD EEx nA II T5x -10°C ≤ Ta ≤ +60°C IP67)
For detailed specifications on the D-A93(V), A90(V), Z73, Z80, M9P(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. Also for D-M9P(V) type, see D-F9P(V) type specifications.)

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-M9PV□-588	D-Y7PV□-588	Grommet (Perpendicular entry)	Yes	3-wiring (PNP)	24V	5V, 12V	—	●	●	○	IC circuit	
	D-M9P□-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**

- **ATEX category 2**
- **High precision guide type**
- **Bore size**

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

- **Piping**

-	Standard type
G	Centralized piping type

- **Piping**

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

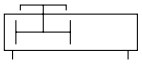
- **Stroke**

Refer to the standard stroke table below.

Standard strokes

Bore size (mm)	Standard stroke (mm)	Maximum manufacturable stroke (mm)
10, 16, 20	50, 100, 150, 200, 300, 350, 400, 450, 500, 550, 600	1000
25, 32, 40		1500

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 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				
Lubrication		Non-lube					
Stroke length tolerance		+1.8 0					
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 3GD EEx nA II T5x -10°C ≤ Ta ≤ +60°C IP67)
For detailed specifications on the D-A93(V), A90(V), Z73, Z80, M9P(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. Also for D-M9P(V) type, see D-F9P(V) type specifications.)

Type	Model No. ø10 to ø20	Model No. ø25 to ø40	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-M9PV□-588	D-Y7PV□-588	Grommet (Perpendicular entry)	Yes	3-wiring (PNP)	24V	5V, 12V	—	●	●	○	IC circuit	
	D-M9P□-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
Rotary Actuator / Rack Pinion Type
Series 56-CRQ2
Size: ø10, ø15, ø20,ø30, ø40

How to Order

Method of displaying model

56-CDRQ2 W 10 TF – 90 C

ATEX category 3

Built-in magnet

-	Without
D	Built-in magnet

Shaft type

		Size
S	Single shaft with one chamer	10-15
	Single shaft with key	20-40
W	Double shaft	10-15
	Single shaft long, wkey & chamfers	20-40

Bore size

10	10mm
15	15mm
20	20mm
30	30mm
40	40mm

Tape of port thread

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

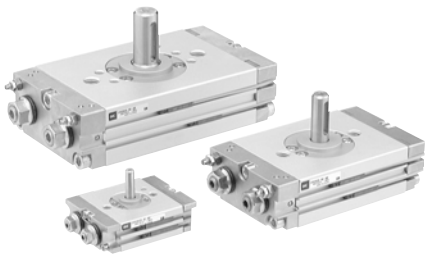
Rotation

90	80°,100°
180	170°,190°

Air cushion

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

10.15 is rubber bumper



Size	10	15	20	30	40
ATEX category	**ATEX category indication:** CE Ex II 3G		Temperature: 60°C (T6) Ta 0 to 40°C 80°C (T5) Ta 40 to 60°C		
Fluid	Air (Non-lube)				
Max. operating pressure	0.7 MPa		1 MPa		
Min. operating pressure	0.15 MPa		0.1 MPa		
Ambient and fluid temperature	0° to 60°C (No freezing)				
Cushion	Rubber bumper		Not attached, Air cushion		
Angle adjustment	Rotation end ±5°				
Rotation	80° to 100°, 170° to 190°				
Port size	M5 x 8		Rc 1/8, G 1/8, NPT 1/8, NPTF 1/8		
Output (N·m)*	0.3	0.75	1.8	3.1	5.3

* Output for an operating pressure of 0.5 MPa.

ATEX Compliant Vane Type: Rotary Actuator

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

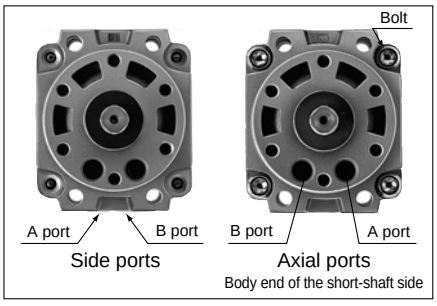
S	Single vane
D	Double vane

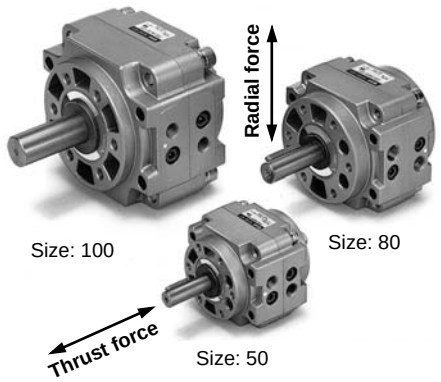
Thread Port

—	Rc(PT)
XF	G(PF)
XN	NPT

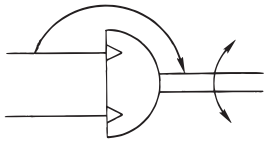
Connecting port position

-	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 2GDc 90°C (T5) Ta 5 to 40°C, 110°C (T4) Ta 40 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 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

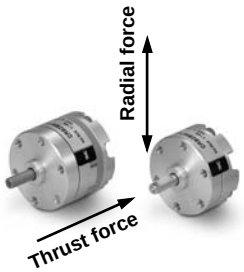
W	Double shaft with single flat (sizes 10 to 30)
	Long shaft key, Short shaft with single flat (size 40)

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 to 40°C 150°C (T3) Ta 40 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

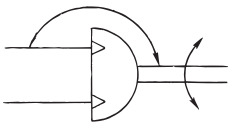
Note 1) This rotary actuator can be used in zones 1 and 2.

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 to 40°C 150°C (T3) Ta 40 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

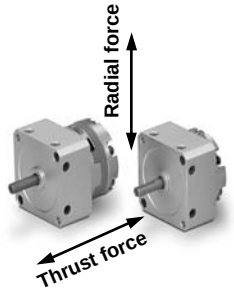
Connecting port position

-	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

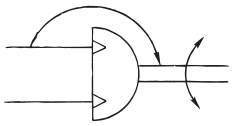
Model (Size)		CRBU2W10-□S	CRBU2W15-□S	CRBU2W20-□S	CRBU2W30-□S	CRBU2W40-□S
ATEX category [1]		CE Ex II 2Gc 130°C (T4) Ta 5 to 40°C, 150°C (T3) Ta 40 to 60°C				
Rotation		90°, 180°, 270°				
Fluid		Air (non-lube)				
Proof pressure (MPa)		1.05			1.5	
Ambient and fluid temperature		5° to 60°C				
Max. 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 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 to 40°C, 150°C (T3) Ta 40 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 & Pinion Type

Series 55-CRQ2

Size: 10, 15, 20, 30, 40

How to Order

55-CDRQ2B **S** **20** **[ ]** – **90** **[ ]**

ATEX category 2

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	10mm
15	15mm
20	20mm
30	30mm
40	40mm

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

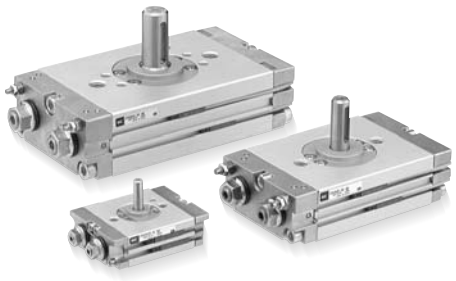
Air cushion

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

Rotation

90	80° to 100°
180	170° to 190°

Specifications

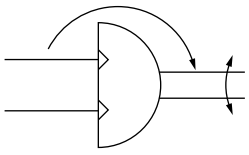


Note) All other specifications (dimensions, drawings, etc.) are the same as the non ATEX type.

Size	10	15	20	30	40
ATEX category [1]	CE Ex II 2Gc 70°C (T6) Ta 0 to 40°C 90°C (T5) Ta 40 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	± 5˚				
Rotation	80˚ to 100˚, 170˚ to 190˚				
Port size	M5 x 0.8		Rc, G, NPT, NPTF 1/8		
Mounting brackets	Basic type				
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			Cushion angle	Stable operational rotation time adjustment range
	Allowable kinetic energy (J)				
	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 3GD EEx nA II T5x -10°C ≤ Ta ≤ +60°C IP67)
For detailed specifications on the D-A93A, A90, A93V, A90V, M9P, and M9PV, 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-M9P□-588	Grommet (In-line)	Yes	3-wiring (PNP)	24V	5V, 12V	—	●	●	○	IC circuit	
	D-M9PV□-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 Vane Type: Rotary Actuator

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

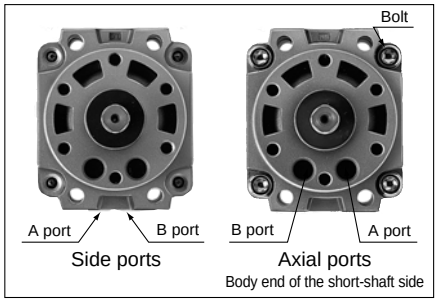
50
63
80
100

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.

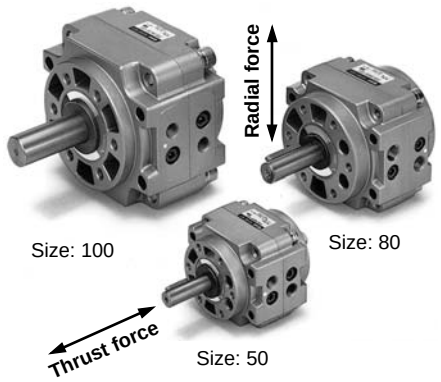
Applicable auto switch specifications
Auto switch only conforms to Category 3. (II 3GD EEx nA II T5x -10°C ≤ Ta ≤ +60°C IP67)
For detailed specifications on the D-R73, R80, and S7P, please refer to the relevant pages in Best Pneumatics.
(Note: Reed auto switches for AC 100V and DC 100V are not within 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	

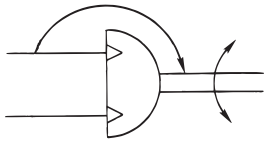
• Lead wire length 0.5m --- Nil (e.g.) D-R73-588
3 m --- L (e.g.) D-R73L-588
5 m --- Z (e.g.) D-R73Z-588

Note) 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 to 40°C 104°C (T4) Ta 40 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

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.

Standard 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

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 3GD EEx nA II T5x -10°C ≤ Ta ≤ +60°C IP67)

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

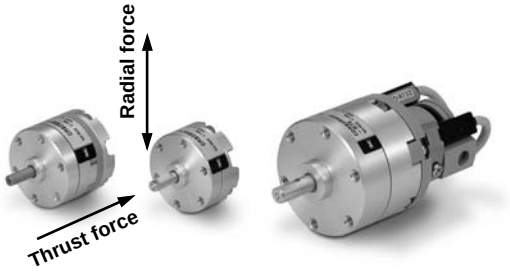
(Note: Reed auto switches for AC 100V and DC 100V are not within the specification.)

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) 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 Ex II 3G 100°C (T5) Ta 5 to 40°C 120°C (T4) Ta 40 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)						

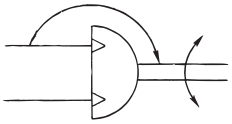
Note 1) This rotary actuator can be used in zone 2.

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 3G 100°C (T5) Ta 5 to 40°C 120°C (T4) Ta 40 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 3GD EEx nA II T5x -10°C ≤ Ta ≤ +60°C IP67)

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) 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

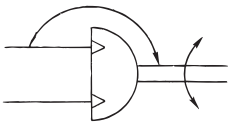
Model (Size)		CRBU2W10-□S	CRBU2W15-□S	CRBU2W20-□S	CRBU2W30-□S	CRBU2W40-□S
ATEX category [1]		CE ⟨Ex⟩ II 3G 100°C (T5) Ta 5 to 40°C, 120°C (T4) Ta 40 to 60°C				
Rotation		90°, 180°, 270°				
Fluid		Air (non-lube)				
Proof pressure (MPa)		1.05			1.5	
Ambient and fluid temperature		5° to 60°C				
Max. 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 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 to 40°C, 120°C (T4) Ta 40 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

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

Auto Switch Specifications

PLC: Programmable Logic Controller

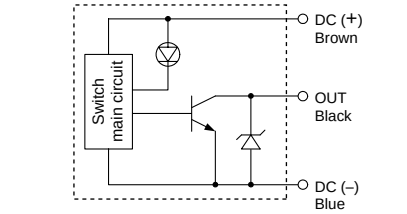
D-M9□/D-M9□V (With indicator light)						
Auto switch part no.	D-M9N	D-M9NV	D-M9P	D-M9PV	D-M9B	D-M9BV
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
ATEX Category	CE Ex II 3GD EEx nA II T5 X -10°C≤Ta≤+60°C IP67					
Wiring type	3-wire				2-wire	
Output type	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				4 V or less	
Leakage current	100 μA or less at 24 VDC				0.8 mA or less	
Indicator light	Red LED illuminates up.					

• Lead wire: oil-proof heavy-duty vinyl cord
2.7 x 3.2 elipse, 0.15 mm^2, 2 cores (D-M9B),
or 3 cores (D-M9N and D-M9P)

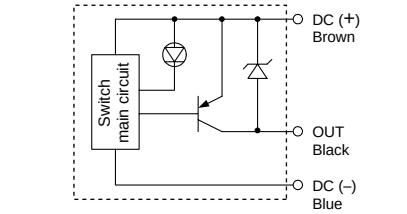
• This category 3 type autoswitch can only be used in zones 2 and 22.

Internal circuits

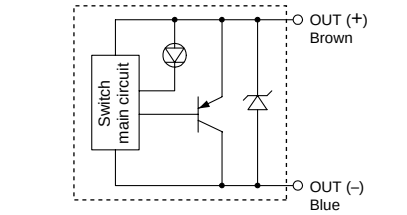
D-M9N, D-M9NV



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

Nil	In-line
V	Perpendicular

Lead wire length

Nil	0.5m
L	3m
Z	5m

Suffix for ATEX certified CAT.3

ATEX Compliant Solid State Switch/Band Mounting
D-H7A2-588

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**
ATEX Category	CE Ex II 3GD EEx nA II T5 X -10°C≤Ta≤+60°C IP67
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 voltage	—
Load current	80mA or less
Internal voltage drop	0.8V or less
Current leakage	100μA or less at 24 VDC
Indicator light	Red LED lights up

- 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

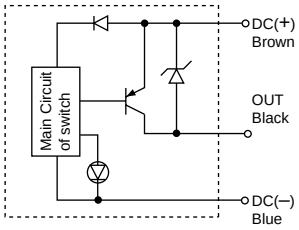
D-H7A2 □ -588

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

No number	0.5m
L	3m
Z	5m

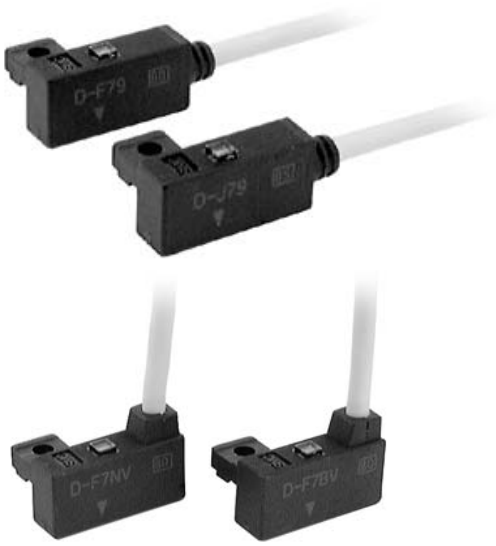
Internal Circuit

D-H7A2



ATEX Compliant Solid State Switch/Rail Mounting
D-F7P(V)-588

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**
ATEX Category	CE Ex II 3GD EEx nA II T5 X -10°C≤Ta≤+60°C IP67	
Electrical entry		
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 voltage	—	
Load current	80mA or less	
Internal voltage drop	0.8V or less	
Current leakage	100μA or less at 24VDC	
Indicator light	Red LED lights up	

- 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.

How to order

D-F7P □ □ -588

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

No number	Right arm
V	Perpendicular

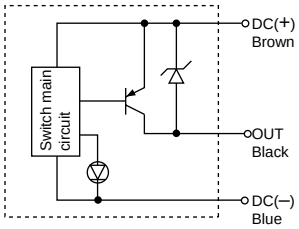
- **Lead wire length**

No number	0.5m
L	3m
Z	5m

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

Internal Circuit

D-F7P, D-F7PV



ATEX Compliant Solid State Switch/Tie-rod Mounting

D-F5P-588

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)

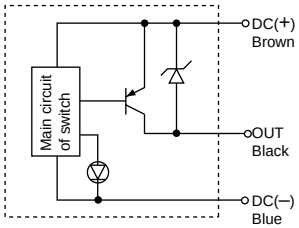
Auto switch model number	**D-F5P**
ATEX Category	CE Ex II 3GD EEx nA II T5 X -10°C≤Ta≤+60°C IP67
Wiring	3 wire
Output	PNP
Application	IC circuit/Relay/PLC
Power voltage	5/12/24V DC (4.5 to 28VDC)
Current consumption	10mA or less
Load voltage	—
Load current	80mA or less
Internal voltage drop	0.8V or less
Current leakage	≤ 100μA at 24VDC
Indicator light	Red LED lights up

● 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

No number	0.5m
L	3m
Z	5m

ATEX Compliant Solid State Switch/Direct Mounting

D-Y7P(V)-588

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**
ATEX Category	CE Ex II 3GD EEx nA II T5 X -10°C≤Ta≤+60°C IP67	
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 voltage	—	
Load current	80mA or less	
Internal voltage drop	0.8V or less	
Current leakage	100μA or less at 24VDC	
Indicator light	Red LED lights up	

- 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**

No number	Right arm
V	Perpendicular

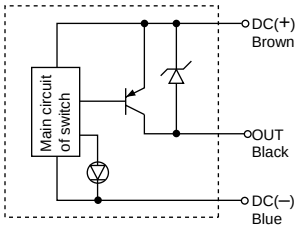
- **Lead wire length**

No number	0.5m
L	3m
Z	5m

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

Internal Circuit

D-Y7P, D-Y7PV



ATEX Compliant Reed Switch/Band Mounting
D-C73/D-C80-588

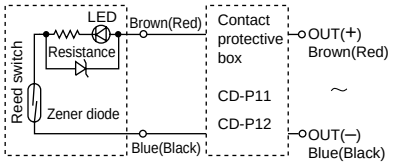
Grommet

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

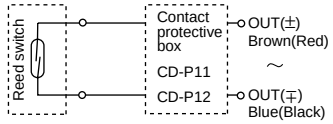
Internal Circuit

( ): If not applicable for IEC Standard

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.

Specifications

PLC: Programmable Logic Controller

D-C7 (With indicator light)		
Auto switch model number	**D-C73**	
ATEX Category	CE Ex II 3GD EEx nA II T5 X -10°C≤Ta≤+60°C IP67	
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	ON: When red light emitting diode	
D-C8 (Without indicator light)		
Auto switch model number	**D-C80**	
ATEX Category	CE Ex II 3GD EEx nA II T5 X -10°C≤Ta≤+60°C IP67	
Application	Relay/PLC/IC circuit	
Load voltage	24V AC/DC or less	48V AC/DC
Max. load current	50mA	40mA
Contact protection circuit	None	
Internal resistance	1Ω or less (Including 3m lead wire)	

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

How to order

D-C □□ □ -588

Suffix for ATEX certified CAT.3

Switch No.

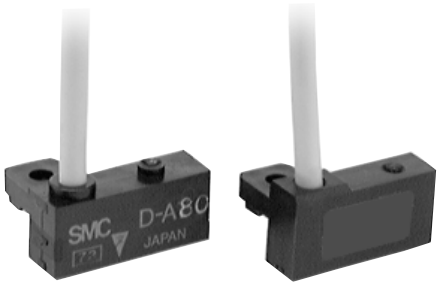
73	With indicator lamp
80	Without indicator lamp

Lead wire length

No number	0.5m
L	3m
Z	5m (Except D-C80)

ATEX Compliant Reed Switch/Rail Mounting
D-A73(H)/D-A80(H)-588

Grommet



Specifications

PLC: Programmable Logic Controller

D-A73, D-A73H (With indicator light)		
Auto switch model number	**D-A73, D-A73H**	
ATEX Category	CE Ⓔx 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	
Contact protection circuit	None	
Internal voltage drop	≤ 2.4V	
Indicator light	ON: When red light emitting diode	

D-A80, D-A80H (Without indicator light)		
Auto switch model number	**D-A80, D-A80H**	
ATEX Category	CE Ⓔx 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	48V AC/DC
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

No number	0.5m
L	3m
Z	5m (Except A80□)

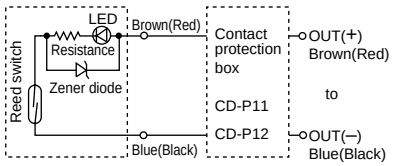
Electrical Entry

-	Perpendicular
H	In-line

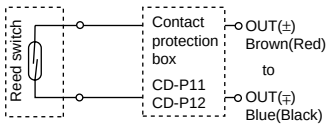
Internal Circuit

( ): If not applicable for IEC Standard

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

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**
ATEX Category	CE Ex II 3GD EEx nA II T5 X -10°C≤Ta≤+60°C IP67
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
Indicator light	ON: When red light emitting diode

D-A6 (Without indicator light)	
Auto switch model number	**D-A67**
ATEX Category	CE Ex II 3GD EEx nA II T5 X -10°C≤Ta≤+60°C IP67
Application	PLC/IC circuit
Load voltage	MAX. 24V DC
Max. load current	30mA
Contact protection circuit	None
Internal resistance	≤ 1Ω (Including 3m lead wire)

- Lead wire —— Oilproof vinyl heavy insulation cable, ø4, 0.3mm², 2 cores (Brown, Blue), 0.5m or ø4, 0.2mm², 3 cores (Brown, Black, 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.

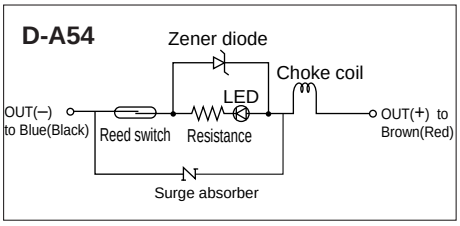
54	With indicator lamp
67	Without indicator lamp

Lead wire length

No number	0.5m
L	3m
Z	5m

Internal Circuit

( ): If not applicable for IEC Standard



ATEX Compliant Reed Switch/Direct Mounting
D-A90(V)/D-A93(V)-588

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**	
ATEX Category	⟨Ex⟩ II 3GD EEx nA II T5 X -10°C≤Ta≤+60°C IP67	
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**
ATEX Category	⟨Ex⟩ II 3GD EEx nA II T5 X -10°C≤Ta≤+60°C IP67
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	ON: When red light emitting diode

● 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.

Dimensions

D-A □□□□ -588

Suffix for ATEX certified CAT.3

Switch No.

93	With indicator lamp
90	Without indicator lamp

Lead wire length

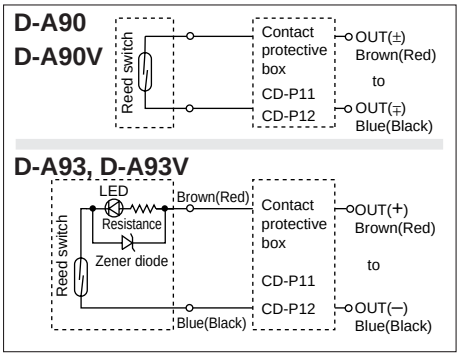
No number	0.5m
L	3m
Z	5m (Except D-A90□)

Electrical entry

No number	In line
V	Perpendicular

Internal Circuit

( ): If not applicable for IEC Standard

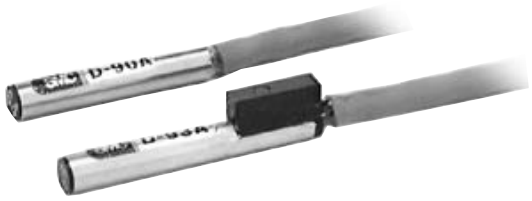


Note) ①In the case operation load is an inductive load.
②In the case the wiring length to load is "＞" 5m.
Be sure to use the auto switch with the contact protection box in any case mentioned above.

SMC

ATEX Compliant Reed Switch/Direct Mounting
D-90A/D-93A-588

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

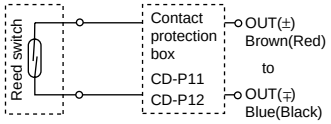
D-90A (Without indicator light)	
Auto switch model number	**D-90A**
ATEX Category	⟨Ex⟩ II 3GD EEx nA II T5 X -10°C≤Ta≤+60°C IP67
Application	Relay/IC circuit/PLC
Load voltage	24V AC/DC or less
Max. load current	50mA
Internal resistance	1Ω or less (Including 3m lead wire)
D-93A (With indicator light)	
Auto switch model number	**D-93A**
ATEX Category	⟨Ex⟩ 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	ON: When red light emitting diode

- 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.

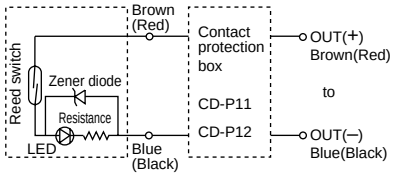
Internal Circuit

( ): If not applicable for IEC Standard

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

No number	0.5m
L	3m
Z	5m

ATEX Compliant Reed Switch/Direct Mounting
D-Z73/D-Z80-588

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**	
ATEX Category	CE Ex II 3GD EEx nA II T5 X -10°C≤Ta≤+60°C IP67	
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 30mA)	
Indicator light	ON: When red light emitting diode	
D-Z8 (Without indicator light)		
Auto switch model number	**D-Z80**	
ATEX Category	CE Ex II 3GD EEx nA II T5 X -10°C≤Ta≤+60°C IP67	
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, 0.2mm², 3 cores (Brown, Black, Blue), 2 cores (Brown, Blue), 0.5m
- This category 3 type autoswitch can only be used in zones 2 and 22.

How to order

D-Z □□ □ **-588**

Suffix for ATEX certified CAT.3

Switch No.

73	With indicator lamp
80	Without indicator lamp

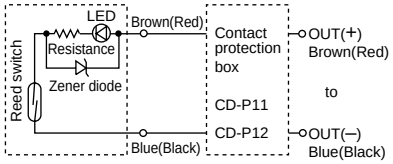
Lead wire length

No number	0.5m
L	3m
Z	5m

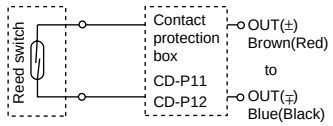
Internal Circuit

( ): If not applicable for IEC Standard

D-Z73



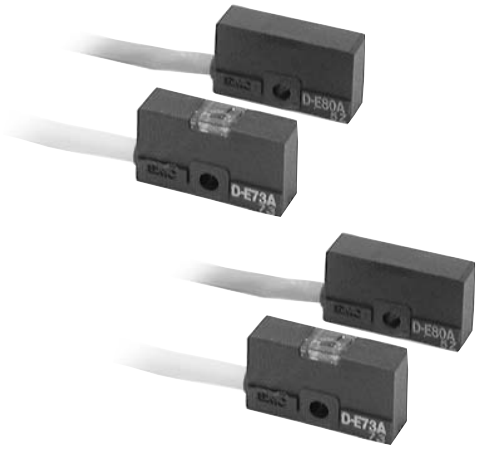
D-Z80



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.

ATEX Compliant Reed Switch/Direct Mounting
D-E73A/D-E80A-588

Grommet



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

Specifications

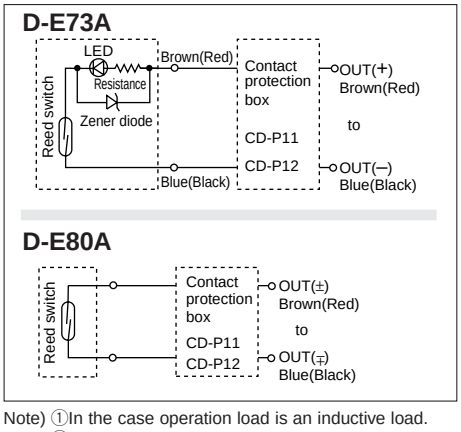
PLC: Programmable Logic Controller

D-E73A (With indicator light)		
Auto swich model number	**D-E73A**	
ATEX Category	⟨Ex⟩ II 3GD EEx nA II T5 X -10°C≤Ta≤+60°C IP67	
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	
Indicator light	ON: When red light emitting diode	
D-E80A (Without indicator light)		
Auto switch model number	**D-E80A**	
ATEX Category	⟨Ex⟩ II 3GD EEx nA II T5 X -10°C≤Ta≤+60°C IP67	
Application	Relay/PLC/IC circuit	
Load voltage	24V AC/DC or less	48V AC/DC
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, 3 cores (Brown, Black, Blue), 2 cores (Brown, Blue), 0.5m
- This category 3 type autoswitch can only be used in zones 2 and 22.

Internal Circuit

( ): If not applicable for IEC Standard



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.

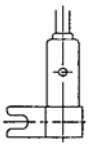
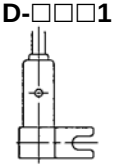
73	With indicator lamp
80	Without indicator lamp

Lead wire length

No number	0.5m
L	3m
Z	5m (Except D-E80A)

Reed Switch/Direct Mounting Type
D-R73/D-R80

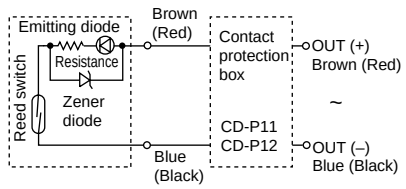
Grommet
Lead Wire: In-line

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

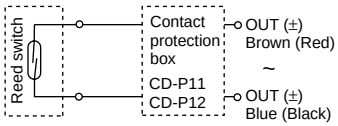
Auto switch internal circuit

( ): Before IEC standard

D-R731/R732



D-R801/R802



Applicable rotary actuator series

Series	Size
CDRB1	20, 30, 50, 80, 100
CDRBU	20, 30
MDSUB	7, 20

Auto switch specificatoins

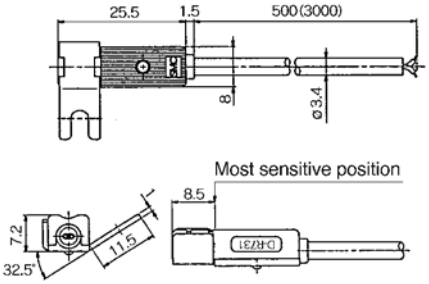
PLC: Programmable Logic Controller

D-R73□ (With indicator light)			D-R80□ (Without indicator light)		
Auto switch model no.	**D-R731/D-R732**		**D-R801/D-R802**		
Applicable load	Relay, PLC		Relay, IC circuit, PLC		
Load voltage	100V AC	24V DC	24V AC/DC or less	48V AC/DC	100V AC/DC
Max. load current and load current range	5 to 20mA	5 to 40mA	50mA	40mA	20mA
Contact protection circuit	None		None		
Internal voltage drop	2.4V or less		0		
Indicator light	ON: Red light emitting diode		None		

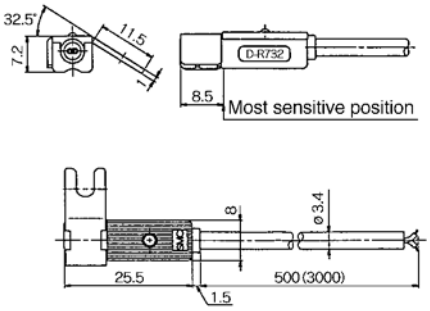
●Lead wire — Oil proof vinyl heavy insulation cable 0.2mm², X2 wire (Brown, blue) 0.5m
Note 1) Refer to p.6-18 for common specifications of reed switch.
Note 2) Refer to p.6-18 for lead wire length.

Dimensions

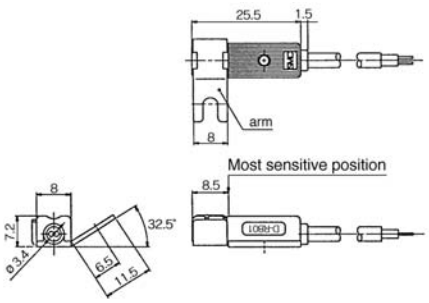
D-R731: Right hand mounting



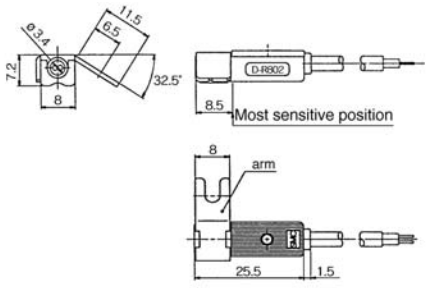
D-R732: Left hand mounting



D-R801: Right hand mounting



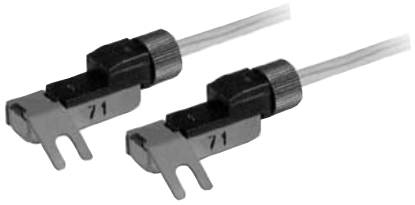
D-R802: Left hand mounting

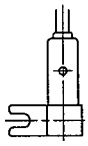
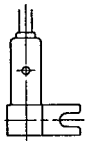


SMC

Reed Switch/Direct Mounting Type
D-R73□C/D-R80□C

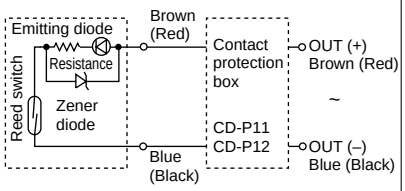
Connector
Electrical Entry: In-line



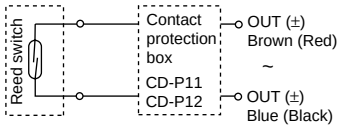
D-□□□□C	D-□□□□C
	
Left hand mounting	Right hand mounting

Auto switch internal circuit
( ): Before IEC standard

D-R731/R732



D-R801/R802



⚠ Specific product precautions

⚠ Caution
Confirm that there is no looseness after wiring.
The looseness will decrease water resistance.

Applicable rotary actuator series

Series	Size
CDRB1	20, 30, 50, 80, 100
CDRBU	20, 30
MDSUB	7, 20

Auto switch specifications

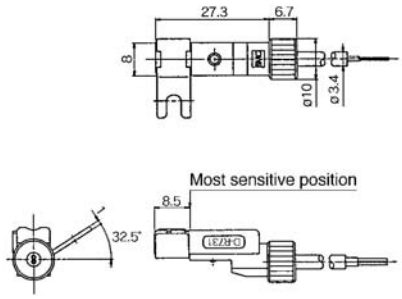
PLC: Programmable Logic Controller

D-R73□C (With indicator light)		D-R80□C (Without indicator light)
Auto switch model no.	**D-R731C/D-R732C**	**D-R801C/D-R802C**
Applicable load	Relay, PLC	Relay, PLC
Load voltage	24V DC	24V AC/DC or less
Load current range	5 to 40mA	50mA
Contact protection circuit	None	None
Internal voltage drop	2.4V or less	0
Indicator light	ON: Red light emitting diode	None

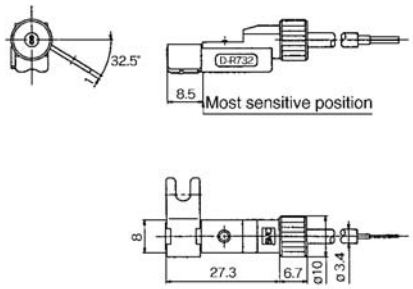
●Lead wire —— Oil proof vinyl heavy insulation cable ø3.4, 0.2mm²
Note 1) Refer to p.6-18 for common specifications of reed switch.
Note 2) Refer to p.6-18 for lead wire length.

Dimensions

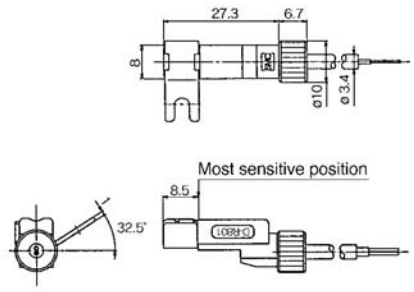
D-R731C: Right Hand Mounting



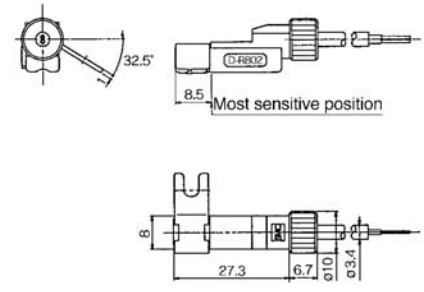
D-R732C: Left Hand Mounting



D-R801C: Right hand mounting



D-R802C: Left hand mounting



Pneumatic-Pneumatic Positioner

Series 55/56-IP5000 (Lever type)

Series 55/56-IP5100 (Rotary type)

CE (Ex) 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

Nil	Standard –20 to 80°C; T5
T	High temperature –5 to 100°C; T4
L	Low temperature –30 to 60°C; T6

Note) Please refer to page 3.

Accessories Note 1)

Nil	Without accesory (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

Nil	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) or more (SUP.=0.14MPa)			
	Within 11ℓ/min (ANR) or more (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 EEx 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)

Nil	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.

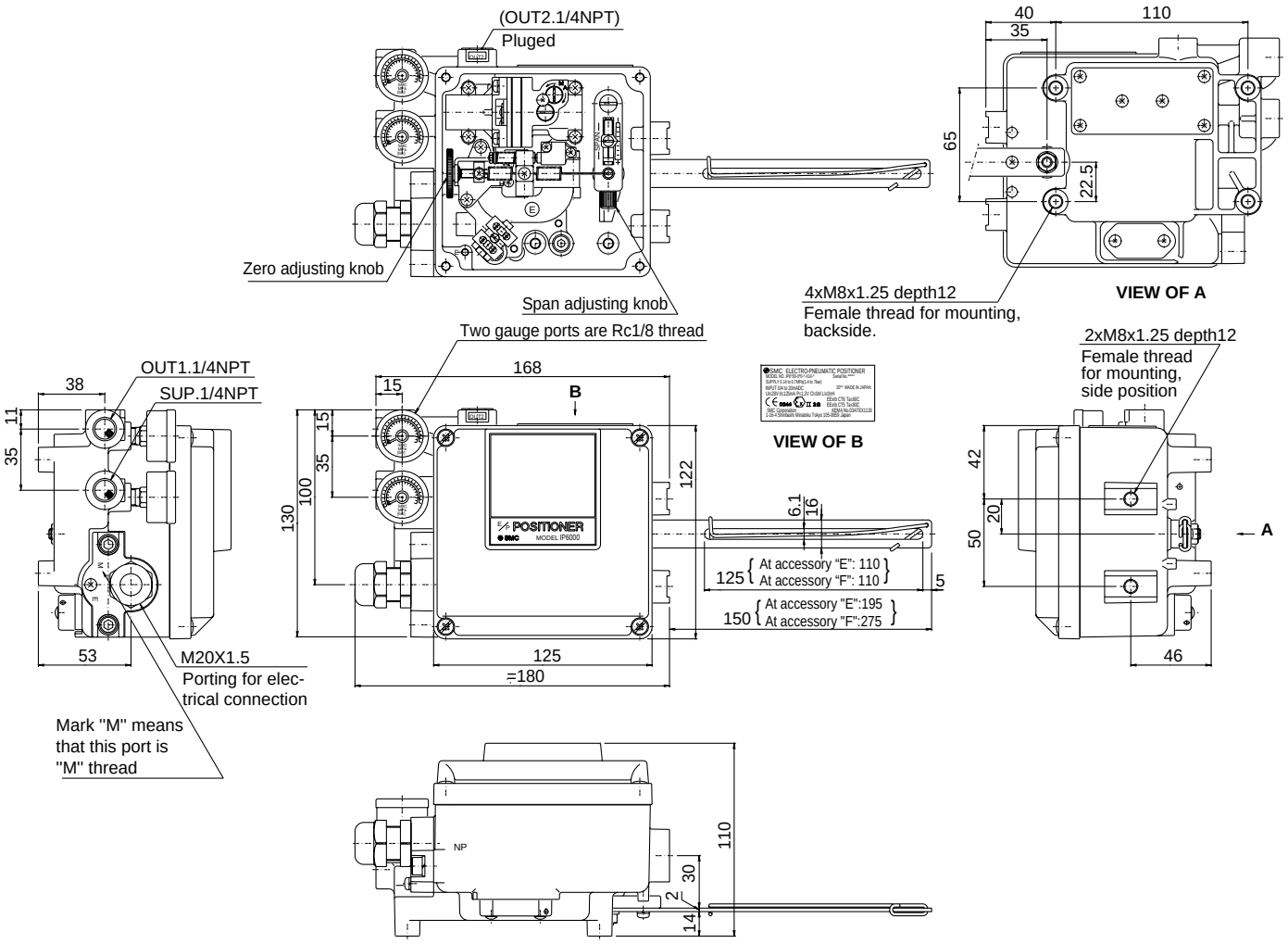
Specifications

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 EEx 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 pub.529)			
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%.

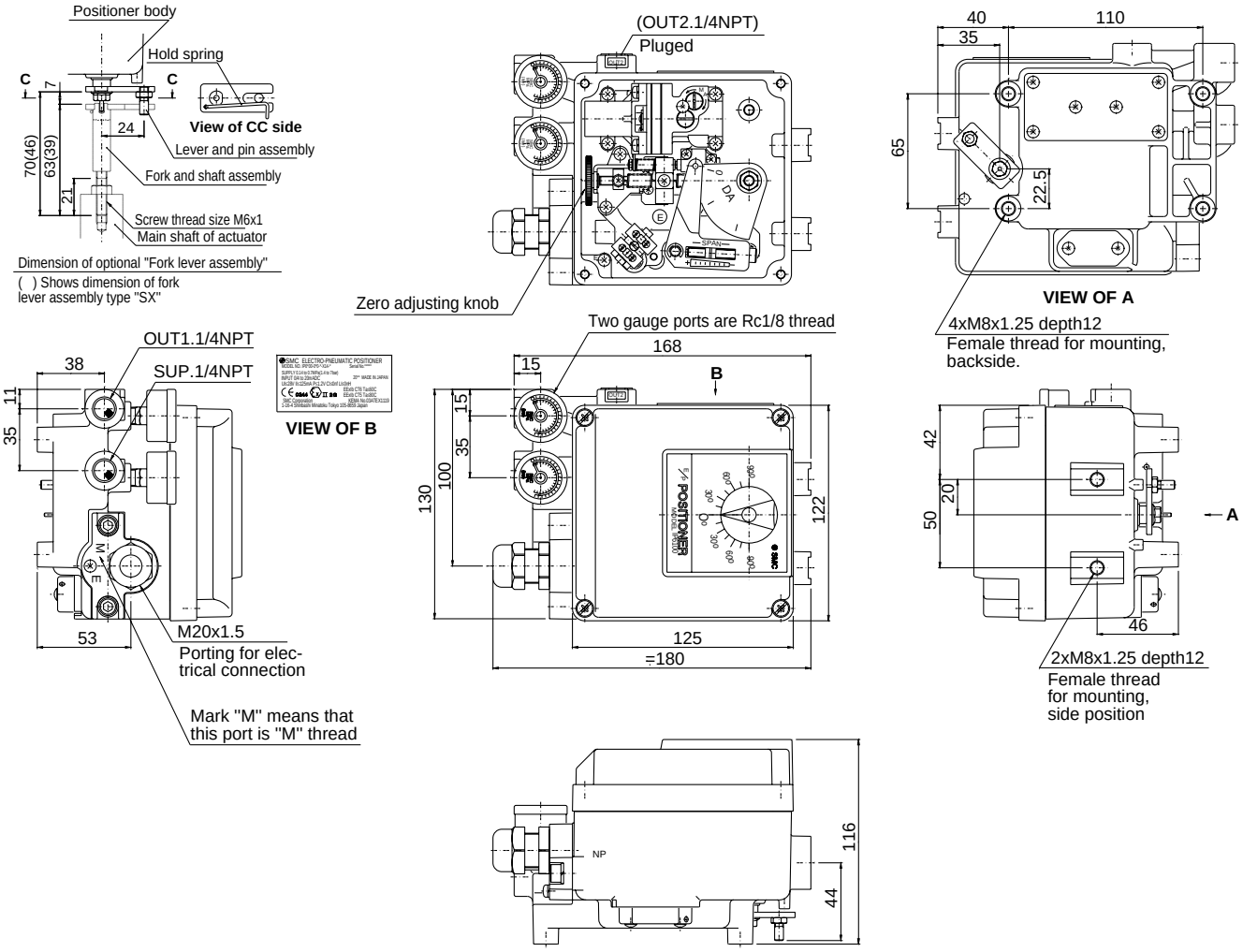
Dimensions / IP6000

IP6000-0□0-□-X14 (lever type)



Dimensions / IP6100

IP6100-0□0-□-X14 (rotary type)



Note) The certificate of IP6000/6100 Series, can be found on pages for IP8000/8100 Series

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

CE Ex II 2G EEx 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

Ambient temperature

Nil	Standar: –20 to 80°C
L	Low temperature: –40 to 60°C

Accessories Note 1)

Nil	Without accesory (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.

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 Ex	Intrinsic safety type of explosion protection (CE 0344 Ex II 2G EEx 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 Pub.529)			
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.

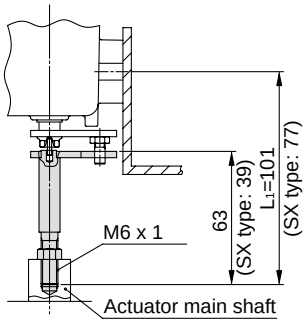
(Ambient temperature: Standard)

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

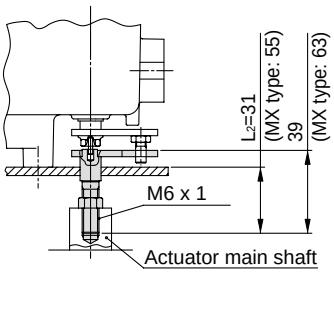
Fork lever joints (IP8100 type)

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

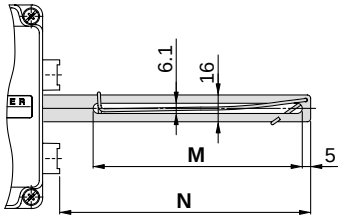


Side mounting with the fork lever assembly SX

External feedback lever (IP8000 type)

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

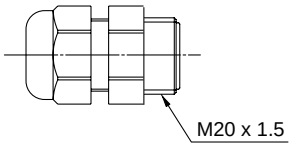
Stroke	Unit number	Size **M**	Size **N**
10 to 85mm (Accessory "Nil")	P368010-20	125	150
35 to 100mm (Accessory "E")	P368010-21	110	195
50 to 140mm (Accessory "F")	P368010-22	110	275



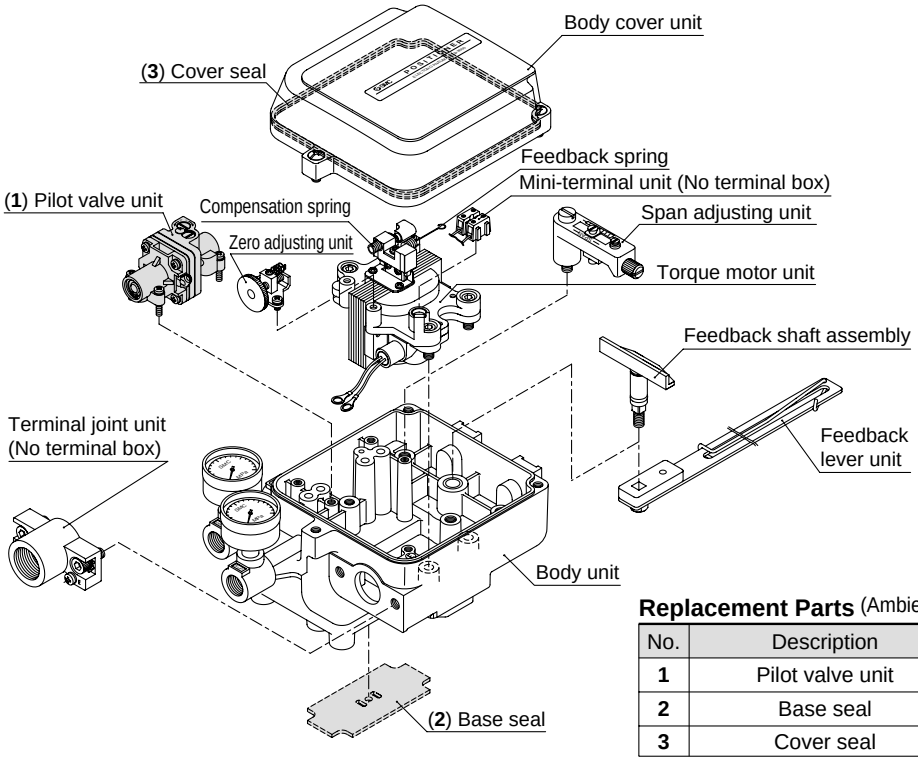
Cable gland (for -X14)

Cable gland

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



Exploded View

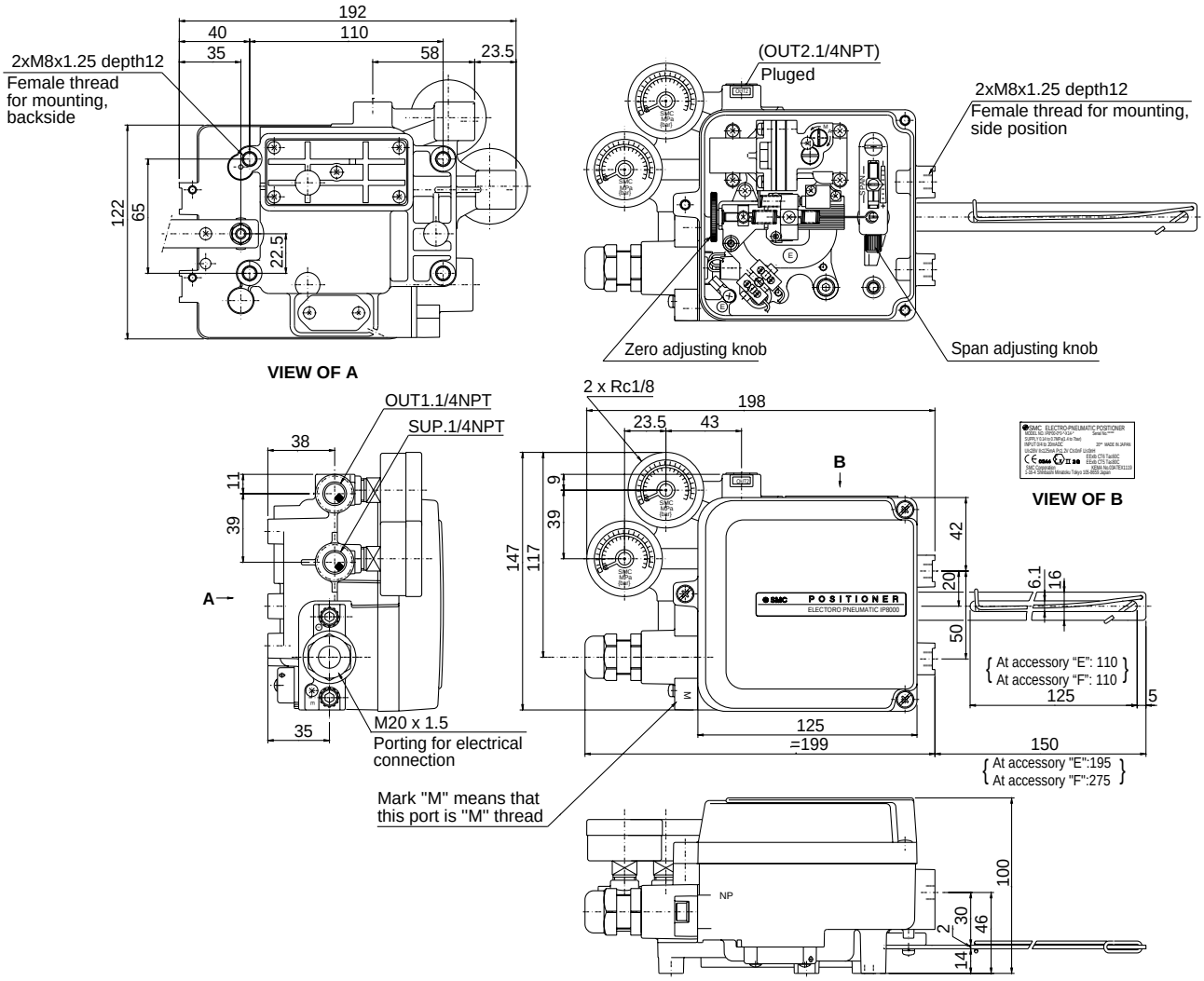


Replacement Parts (Ambient temperature: Standard)

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

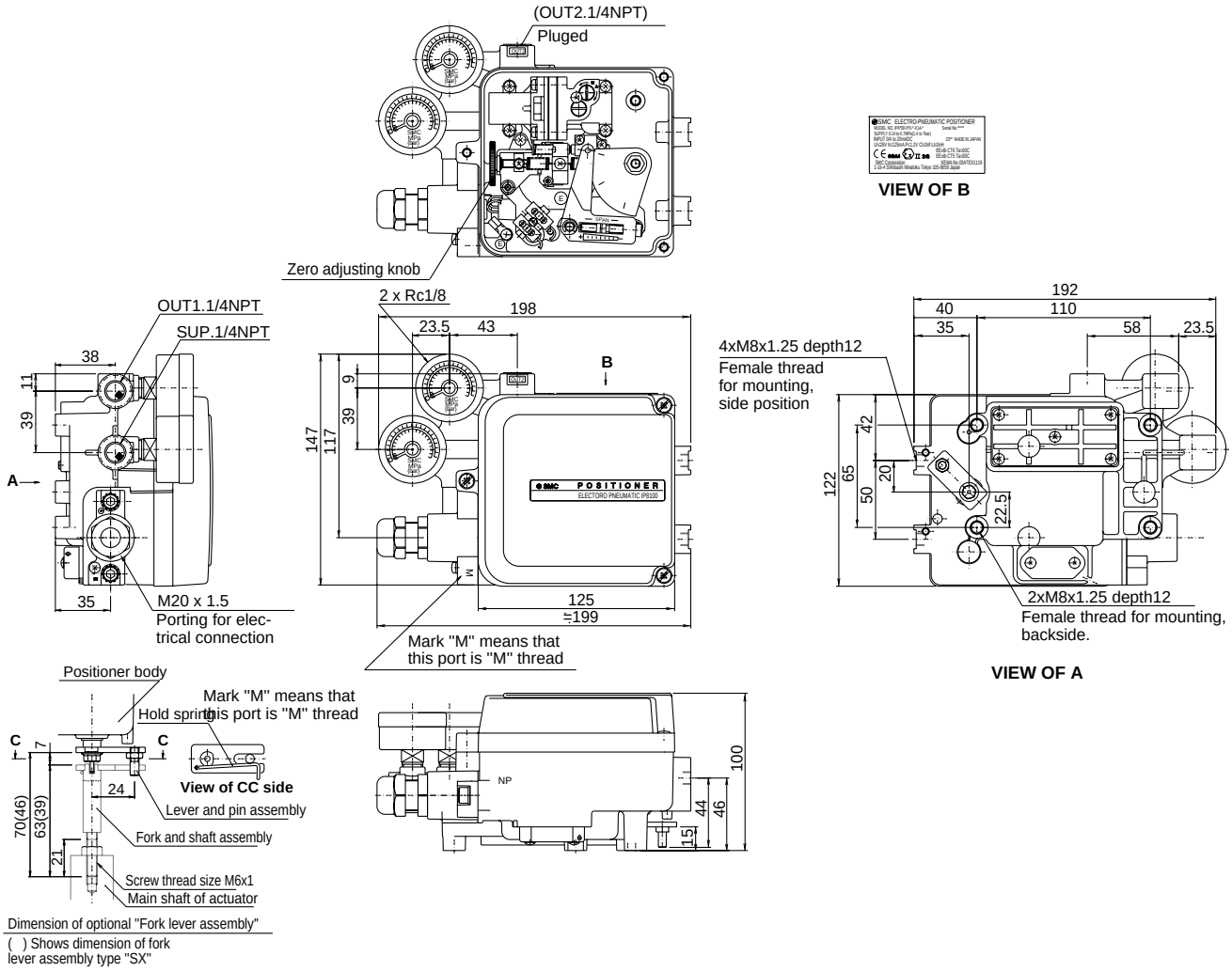
Dimensions / IP8000

IP8000-0□0-□-X14 (lever type)



Dimensions / IP8100

IP8100-0□0-□-X14 (rotary type)



KEMA

(1) EC-TYPE EXAMINATION CERTIFICATE

(2) Equipment or protective system intended for use in potentially explosive atmospheres - Directive 94/9/EC

(3) EC-Type Examination Certificate Number: **KEMA 03ATEX1119**

(4) Equipment or protective system:

IP6000-0.0-.-X14 series electro pneumatic positioner
IP6100-0.0-.-X14 series electro pneumatic positioner
IP8000-0.0-.-X14 series electro pneumatic positioner
IP8100-0.0-.-X14 series electro pneumatic positioner

(5) Manufacturer: **SMC Corporation**

(6) Address: **4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, Japan**

(7) This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) KEMA Quality B.V., notified body number 0344 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the directive.

The examination and test results are recorded in confidential report no. 2024622.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014 : 1997 EN 50020 : 2002 EN 13463-1 : 2001

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment or protective system according to the Directive 94/9/EC. Further requirements of the directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

(12) The marking of the equipment or protective system shall include the following:

II 2 G EEx ib IIC T5 ... T6

Arnhem, 6 March 2006
KEMA Quality B.V.

T. Pijpker
Certification Manager

KEMA Quality B.V.
Utrechtseweg 310, 6812 AR Arnhem, The Netherlands
P.O. Box 5185, 6802 ED Arnhem, The Netherlands
Telephone +31 26 3 56 20 08, Telefax +31 26 3 52 58 00

ACCREDITED BY THE DUTCH COUNCIL FOR ACCREDITATION

PRODUCTS RvA C 001

KEMA

(13) # SCHEDULE

(14) **to EC-Type Examination Certificate KEMA 03ATEX1119**

(15) **Description**

The IP6000-0.0-.-X14 series, IP6100-0.0-.-X14 series, IP8000-0.0-.-X14 series and IP8100-0.0-.-X14 series electro pneumatic positioners serve to operate valves by means of a pneumatic driven actuator, which is controlled by a 4-20 mA signal.

Ambient temperature range -20 °C ... +80 °C for temperature class T5.
Ambient temperature range -20 °C ... +60 °C for temperature class T6.

Electrical data

Signal circuit ..... in type of explosion protection intrinsic safety EEx ib IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:

U_i	=	28	V
I_i	=	125	mA
P_i	=	1,2	W
C_i	=	0	nF
L_i	=	0	mH

Installation instructions

The signal circuit of the IP6000-0.0-.-X14 series and the IP6100-0.0-.-X14 series shall, from a safety point of view, be considered to be connected to earth.
Observe the applicable installation requirements for earthing.

Routine tests

A routine dielectric strength test, in accordance with manufacturer's test procedure QPK-I-123, shall be conducted on each unit of the IP8000-0.0-.-X14 and the IP8100-0.0-.-X14 series.

(16) **Report**

KEMA No. 2024622

(17) **Special conditions for safe use**

None.

(18) **Essential Health and Safety Requirements**

Covered by the standards listed at (9).

(19) **Test documentation** dated

Drawing list No.	IP60-td00007	10.06.2003
Procedure No.	QPK-I-123 (3 sheets)	12.06.2003

KEMA

AMENDMENT 1

to EC-Type Examination Certificate KEMA 03ATEX1119

Manufacturer: **SMC Corporation**

Address: **1-16-4, Shimbashi, Minato-Ku, Tokyo 105-8659, Japan**

Description

The model range of the IP6000-0.0-.-X14 series, IP6100-0.0-.-X14 series, IP8000-0.0-.-X14 series and IP8100-0.0-.-X14 series electro pneumatic positioners is extended with the IP8000-0.0-.-X14-L series and IP8100-0.0-.-X14-L series.

For the IP8000-0.0-.-X14-L series and IP8100-0.0-.-X14-L series electropneumatic positioners the following ambient temperature ranges apply:

-40 °C ... +80 °C (for temperature class T5)
-40 °C ... +60 °C (for temperature class T6)

Electrical data

Unchanged.

Installation instructions

Unchanged.

Routine tests

Unchanged.

Report

KEMA No. 2086197.

Essential Health and Safety Requirements

Unchanged.

Test documentation

	dated
Drawing list IP60-TD0007-B	21.07.2005

Arnhem, 18 August 2005
KEMA Quality B.V.

C.G. van Es
Certification Manager

Smart Positioner (Rotary Type)
Series IP8101

CE Ex II 1G EEx ia IIC T4

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

Dual wire input - compatible with conventional facilities

Controllable by a conventional dual wire input signal (4 to 20 mA DC) which does not require a different power supply.

Calibration function integrated

Easier to perform zero/span adjustment than a conventional mechanical positioner.

Integrated parameter function

Numerous parameter setting functions are available.

Parameter Settings List

Function	Parameter
Standard functions	Normal/reverse run setting
	Split range setting
	Zero/span adjustment setting
	Forced fully-closed/fully-open setting
	Dead band setting
	Valve characteristic settings · Linearity chracteristics · Equal % characteristics (class 2) · Quick open characteristics (class 2) · User's point setting
	PID constant setting
	Calibration setting
Optional functions	Alarm 1 output setting
	Alarm 2 output setting
	Analog output (4 to 20 mA DC) setting

Output functions

The alarm point output function (2 points) and a continuous analog output (4 to 20 mA DC) function are available.

HART transmission mode

HART transmission mode is available.

ATEX compliant

ATEX intrinsically safe explosion protection type construction is available.

Displayable control condition

The positioning, deviation, input value are displayed on a LCD inside the body cover.

Interchangeable mountings

The dimensions for mounting the main body and the fork lever type fittings are identical to the conventional mechanical type, IP8100 electro-pneumatic positioner.

How to Order

Specifications

4	With intrinsically safe explosion protection construction + Output + HART transmission mode

Electrical connection port Note 2)

M	M20 x 1.5

Note 2) Please contact us if the NPT or G thread is required.

52 – IP8101 – 03 4 – □ – M

ATEX compliant

52	ATEX directive category 1 compliant

IP8101 – 03 0 – □ – Q

Type

101	Rotary smart type

Pressure gauge

3	1.0 MPa

Specifications

0	Basic
2	With output (Alarm output x 2 + Analog output (4 to 20 mA DC))
3	With HART transmission mode

Accessory Note 1)

Symbol	Description
-	None
C	Fork lever type fitting M
D	Fork lever type fitting S
H	With external scale

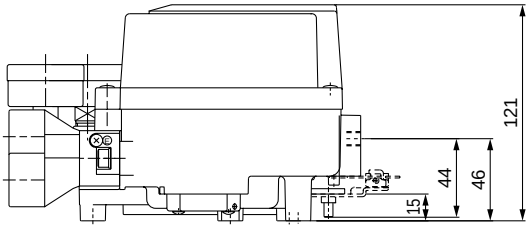
Note 1) If two or more accessories are required, the part numbers should be ordered according to alphabetical order.
Example: IP8101-030-CH

Specifications

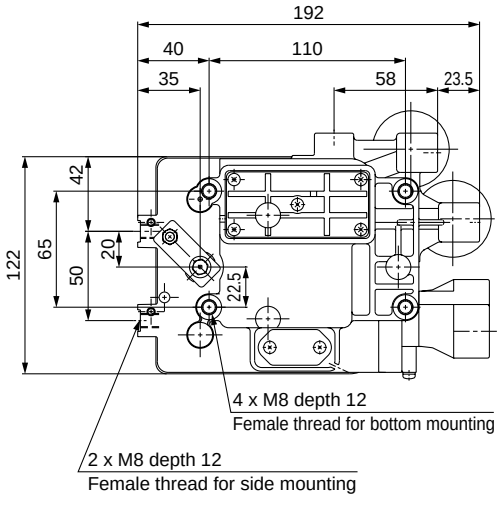
Model / Description	IP8101
	Smart positioner (Rotary type)
Input current	4 to 20 mA DC
Voltage between terminals	12 V DC (Input resistance equivalent to 600 Ω, at 20 mA DC)
Supply air pressure	0.3 to 0.7 MPa
Applicable actuator rotation angle	60 to 100°
Air consumption	11 ℓ/min (ANR) or less (SUP: at 0.4 MPa)
Linearity Note 2)	Within ±1% F.S.
Hysteresis Note 2)	Within 0.5% F.S.
Sensitivity Note 2)	Within ±0.2% F.S.
Enclosure Note 3)	ATEX intrinsically safe explosion protection construction CE Ex II1G EExia IICT4 Ta80°C II1D T83°C Ta80°C
Outer sheath protection class	JISF8007 IP65 (Conforming to IEC Pub.529)
Operating temperature range	–20 to 80°C
Transmission mode Note 3)	HART

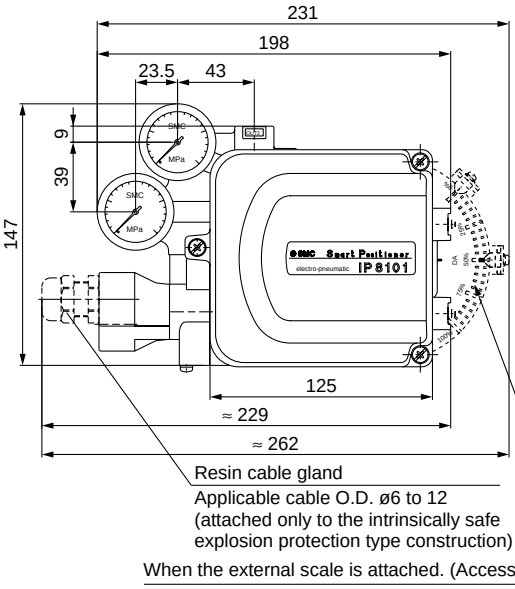
Note 1) Values in the specifications are at room temperature (20°C).
Note 2) Properties related to the precision may differ depending on the combination between a positioner and the loop components such as an actuator.
Note 3) It is required to select the model numbers for the intrinsically safe product with explosion protection type construction and the HART transmission mode.

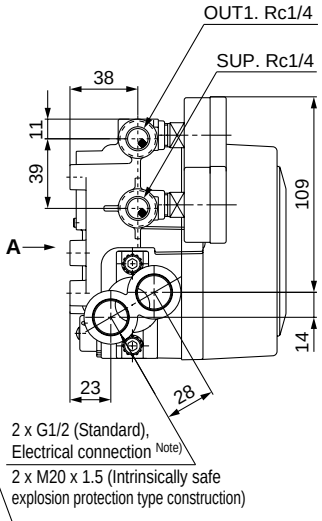
Dimensions



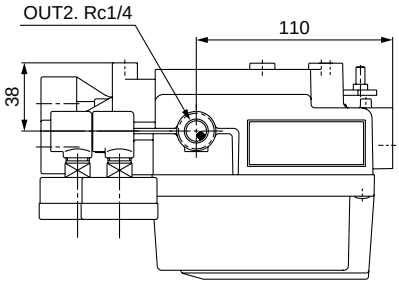
View A







Note) When either "0" or "3" is chosen in the model number, the number of the electrical connection ports will be one.



[1] EC-TYPE EXAMINATION CERTIFICATE

[2] Equipment or Protected System Intended for use in Potentially explosive atmospheres Directive 94/9/EC

[3] EC-Type Examination Certificate Number: Nemko 05ATEX1202X

[4] Equipment or Protective System: Smart Electro Pneumatic Positioner

[5] Applicant and Manufacturer: SMC Corporation

[6] Address: 1-16-4, Shimbashi,
Minato-ku, Tokyo,
105-8659, Japan

[7] This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

[8] Nemko AS, notified body number 0470 in accordance with Article 9 of Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report no. 42156

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

CENELEC EN 50014: 1997 + A1: 1999 + A2: 1999, CENELEC EN 50020: 2002,
CENELEC EN 50284: 1999, CENELEC EN 50281-1-1: 1998

[10] If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

[11] This EC-TYPE EXAMINATION CERTIFICATE relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 94/9/EC.
Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

[12] The marking of the equipment or protective system shall include the following:

II 1 G **EEx ia IIC T4 Ta 80°C**
II 1 D T63°C Ta 60°C

Oslo, 2005-12-20

Rolf Hoel
Certification Department

Postal address: P.O.Box 73 Blindern, N-0314 OSLO, NORWAY
Office address: Gaustadalléen 30, 0373 OSLO
Telephone: +47 22 96 03 30
Fax: +47 22 96 05 50
Enterprise number: NO 974404532

[13] Schedule

[14] EC-TYPE EXAMINATION CERTIFICATE No Nemko 05ATEX1202X

[15] Description of Equipment or Protective System

Smart Electro Pneumatic Valve Positioner type **52-IP8*01-**
The positioner uses Hart communication and is equipped with option for 4-20mA output and two digital alarm output for Namur switches

Type designation breakdown.

52- IP8a01-0 bc-d-e-f
Where the letters abcdef denotes:
a: Lever or Rotary type
b: Pressure Gauge
c: Digit 0..8, The digit 4 denotes intrinsically safe explosion protected(ATEX) + output functions + Hart communication
d: Mechanical Accessories
e: Electrical Connections
Additional specifications for: Output, alarm, analog. Hart communication and Intrinsically Safe / Explosion Proof.
.

Safety Data

Signal terminals.: 1-2, An.out:3-4, Out1:5-6, Out2:7-8

Maximum input voltage.	U_i:	28V
Maximum input current.	I_i:	100mA
Maximum input power.	P_i:	0,7W
Maximum internal capacitance.	C_i:	12,5nF
Maximum internal inductance.	L_i:	1,5mH

The safety barrier in the supply circuits shall have a linear resistive output characteristic.

Range of ambient temperature: -20°C ≤ Ta ≤ +80°C for category II 1 G usage.
Range of ambient temperature: -20°C ≤ Ta ≤ +60°C for category II 1 D usage.

Ingress protection IP65 according to EN 60529

[16] Report No. 42156 and documents as listed.

Postal address: **P.O.Box 73 Blindern N-0314 OSLO, NORWAY**
Office address: **Gaustadalléen 30 0373 OSLO**
Telephone: **+47 22 96 03 30**
Fax: **+47 22 96 05 50**
Enterprise number: **NO 974404532**

Descriptive documents.

Number	Rev.	Sheets	Title/Description	Sheets
52-IP8101-0*4-*-M	1	05-10-20	Smart Positioner Construction drawing	1
P565010-301	-	05-03-26	Coil case assembly	1
P5650010-27	-	02-12-25	Coil assembly	1
P56501015	-	03-05-15	Bobbin	1
P368010-75	1	05-04-11	Diode PCB assembly	1
P36801022	3	03-04-01	Diode PCB substrate	1
P368010-222	-	03-05-15	Isolation paper with terminal	1
P56501509	-	05-11-29	HART I.S. Inductor	1
P56501325	1	05-11-04	Specified Label (ATEX standard)	1
P5012-158	-	01-01-24	Potentiometer assembly	1
A-UCA-B36	9	97-04-10	CP-2UBX-13 Potentiometer	1
P56501502-0	-	05-12-12	Terminal Board (I.S.) Assembly	1
P56501502-1	-	05-12-09	Terminal Board (I.S.) Circuit diagram	1
P56501502-2	-	05-12-12	Terminal Board (I.S.) Parts List	4
P56501502-4	-	05-12-12	Terminal Board (I.S.) PCB Tracking	1
P56501507-0	-	05-12-12	Processor Board (I.S.) Assembly	1
P56501507-1	-	05-12-09	Processor Board (I.S.) Circuit diagram	1
P56501507-2	-	05-12-12	Processor Board (I.S.) Parts List	4
P56501507-4	-	05-12-12	Processor Board (I.S.) PCB Tracking	1
EUG40654-B001 B		05-07-01	52-IP8101 Smart Positioner List of Materials	3
52-IP8101-TFJ42GB-A	A	05-11-21	Installation and Maintenance manual	2

[17] Special Conditions for Safe Use

1. Impact and friction hazards need then to be considered according to EN 50284 clause 4.3.1 when the positioner is used in category II 1 G

2. The safety barriers in the supply circuits shall have linear resistive output characteristics.

[18] Essential Health and Safety Requirements
See item 9

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Office address: **Gaustadalléen 30 0373 OSLO**
Telephone: **+47 22 96 03 30**
Fax: **+47 22 96 05 50**
Enterprise number: **NO 974404532**

[13] Supplement 1 to EC-Type Examination Certificate

[14] EC-TYPE EXAMINATION CERTIFICATE No Nemko 05ATEX1202X

[15] Description

The Supplement to the certificate concerns the following changes:
1. The maximum ambient temperature for category II 1 D has been increased to Ta: 80°C.
2. Some changes of components and documents.

The marking is changed with the increased ambient temperature and temperature classification for dust:
II 1 D T83°C Ta:80°C

[16] Report No. 61224 and the listed Descriptive Documents.

Descriptive Documents, Complete list.

Number	Rev.	Date	Title/Description	Sheets
52-IP8101-0*4-*-M	1	05-10-20	Smart Positioner Construction drawing	1
P565010-301	-	05-03-26	Coil case assembly	1
P565010-27	-	02-12-25	Coil assembly	1
P56501015	-	03-05-15	Bobbin	1
P368010-75	1	05-04-11	Diode PCB assembly	1
P36801022	3	03-04-01	Diode PCB substrate	1
P368010-222	-	03-05-15	Isolation paper with terminal	1
P56501509	-	05-11-29	HART I.S. Inductor	1
P56501325	2	06-05-10	Specified Label (ATEX standard)	1
P5012-158	-	01-01-24	Potentiometer assembly	1
A-UCA-B36	9	97-04-10	CP-2UBX-13 Potentiometer	1
P56501502-0	-	05-12-12	Terminal Board (I.S.) Assembly	1
P56501502-1	1	06-01-16	Terminal Board (I.S.) Circuit diagram	1
P56501502-2	1	06-01-16	Terminal Board (I.S.) Parts List	4
P56501502-4	-	05-12-12	Terminal Board (I.S.) PCB Tracking	1
P56501507-0	1	06-01-16	Processor Board (I.S.) Assembly	1
P56501507-1	1	06-01-16	Processor Board (I.S.) Circuit diagram	1
P56501507-2	1	06-01-16	Processor Board (I.S.) Parts List	4
P56501507-4	-	05-12-12	Processor Board (I.S.) PCB Tracking	1
EUG40654-B001	B	05-07-01	52-IP8101 Smart Positioner List of Materials	3
52-IP8101-TFJ42GB-C	C	06-04-25	Installation and Maintenance manual	2

[17] Special Conditions for Safe Use
As specified in the Schedule to the Certificate

[18] Essential Health and Safety Requirements
See item 9

Oslo, 2006-05-22

p.p. Rolf Hoel
Certification Department

Postal address: **P.O.Box 73 Blindern, N-0314 OSLO, NORWAY**
Office address: **Gaustadalléen 30, 0373 OSLO**
Telephone: **+47 22 96 03 30**
Fax: **+47 22 96 05 50**
Enterprise number: **NO 974404532**

[13] Supplement 2 to EC-Type Examination Certificate

[14] EC-TYPE EXAMINATION CERTIFICATE No Nemko 05ATEX1202X

[15] Description

The Supplement to the Certificate concerns a change of the manufacturer's address **[6]**

[5] Applicant and manufacturer: **SMC Corporation**
[6] Address: **4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, Japan**

[16] Report No. 87906

[17] Special Conditions for Safe Use
As specified in the Schedule to the Certificate

[18] Essential Health and Safety Requirements
See item 9

Oslo, 2007-06-05

Rolf Hoel
Certification Manager, Ex-products

Postal address:
P.O.Box 73 Blindern
N-0314 OSLO, NORWAY

Office address:
Gaustadalléen 30
0373 OSLO

Telephone:
+47 22 96 03 30
Fax:
+47 22 96 05 50

Enterprise number:
NO 974404532

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.

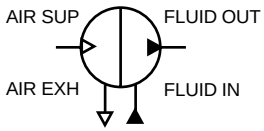
How to Order

Automatically operated type (internal switching type)

PA3000

PA5000

Symbol



Automatically operated type

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

Automatically operated type

Thread type

Nil	Rc
T*	NPTF
F*	G
N*	NPT

* T, F, N are order made specifications.

Connection port size

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

Option

Nil	Body only
N	With silencer*

* For AIR EXH: AN200-02

Made to Order

-	Standard
X43	No resin cover and no mounting foot: PA3

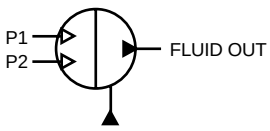
Note) Contact SMC for specifications and dimensions.

Air operated type (external switching type)

PA3000

PA5000

Symbol



Air operated type

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

Air operated type

Thread type

Nil	Rc
T*	NPTF
F*	G
N*	NPT

* T, F, N are order made specifications.

Connection port size

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

Made to Order

-	Standard
X43	No resin cover and no mounting foot: PA3

Note) Contact SMC for specifications and dimensions.

Booster Regulator

Series 56-VBA1100 to 4200

CE Ⓔx II 3 GD c T6 Ta 2°C to 50°C

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

How to Order

VBA1000

56 — VBA 1 1 1 0 — □ 02 GN

ATEX category 3

Body size

1	1/4

Pressure setting

1	Handle operated

Pressure class

1	2.0MPa

Pressure increase ratio

0	2 times
1	4 times

Thread type

Nil	Rc
F	G
N	NPT

Port size

Symbol	Port size
02	1/4

Option

Nil	–
G	Pressure Gauge (MPa)
N	Silencer
GN	Pressure Gauge (MPa), Silencer

The option becomes packing simultaneously, and is not attached

VBA1110-02

VBA1111-02

VBA2000/4000

56 — VBA 20 A — □ 03 GN

ATEX category 3

Body size Pressure Class Intensified Pressure Ratio

20	3/8 Standard Pressure class 1.0 MPa 2 times
40	1/2 Standard Pressure class 1.0 MPa 2 times

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

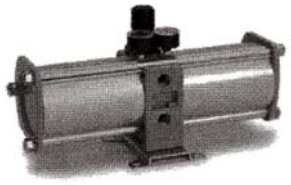
Port size

Symbol	Port size
03	3/8
04	1/2

Option

G	Pressure Gauge (MPa)
N	Silencer
S	Silencer High Noise Reduction Type
GN	Pressure Gauge (MPa),Silencer
GS	Pressure Gauge (MPa), Silencer High Noise Reduction Type

The option is delivered in the same packing but it is not mounted.



VBA1111-02

Booster Regulator

Series 56-VBA1100 to 4200

CE Ⓔx II 3 GD c T6 Ta 2°C to 50°C

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

How to Order

Note) "56-VBA2200 and 56-VBA4100-X16 will be renewed in the next January 2008".

VBA2000/4000

56 — VBA 2 2 0 0 — F 03 GN

ATEX category 3

Body size

2	3/8 Standard
4	1/2 Standard

Pressure setting

2	Air pilot operated type

Pressure class

0	1.0MPa

Pressure increase ratio

1	2 times

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

Port size

Symbol	Port size
03	3/8
04	1/2

Option

Nil	–
G	Pressure Gauge (MPa)
N	Silencer
GN	Pressure Gauge (MPa), Silencer

The option becomes packing simultaneously, and is not attached

VBA4200-04

VBA2200-03

56 — VBA 4 1 0 0 — F 03 GN —

ATEX category 3

Body size

4	1/2 Standard

Pressure setting

1	Handle operation type
2	Air pilot operated type

Intensified Pressure Ratio

1	2 times

Thread type

Nil	Rc
T	NPTF
F	G
N	NPT

Port size

Symbol	Port size
03	3/8
04	1/2

Option

Nil	–
G	Pressure Gauge (MPa)
N	Silencer
GN	Pressure Gauge (MPa), Silencer

The option becomes packing simultaneously,and is not attached

Option

Pressure setting

X16	Secondary pressure Max.1.6MPa

VBA4100-04-X16

5 Port Solenoid Valve
Series 52-SY

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

KEMA 02ATEX1099 X

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

Nil	Internal pilot
R	External pilot*

*Only the base mounted type.

Barrier

Nil	Without barrier
A	Z728.H
B	MTL728P+
C	MTL7128P+
D	MTL5021
E	KFD2-SD-Ex1.17

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

Nil	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

Nil	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

Nil	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).

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 nH
Note) The valve is not supplied with barrier.

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+
C: Valve + MTL7128P+
E: Valve + KFD2-SD-Ex1.17 (Pepperl + Fuchs)
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).

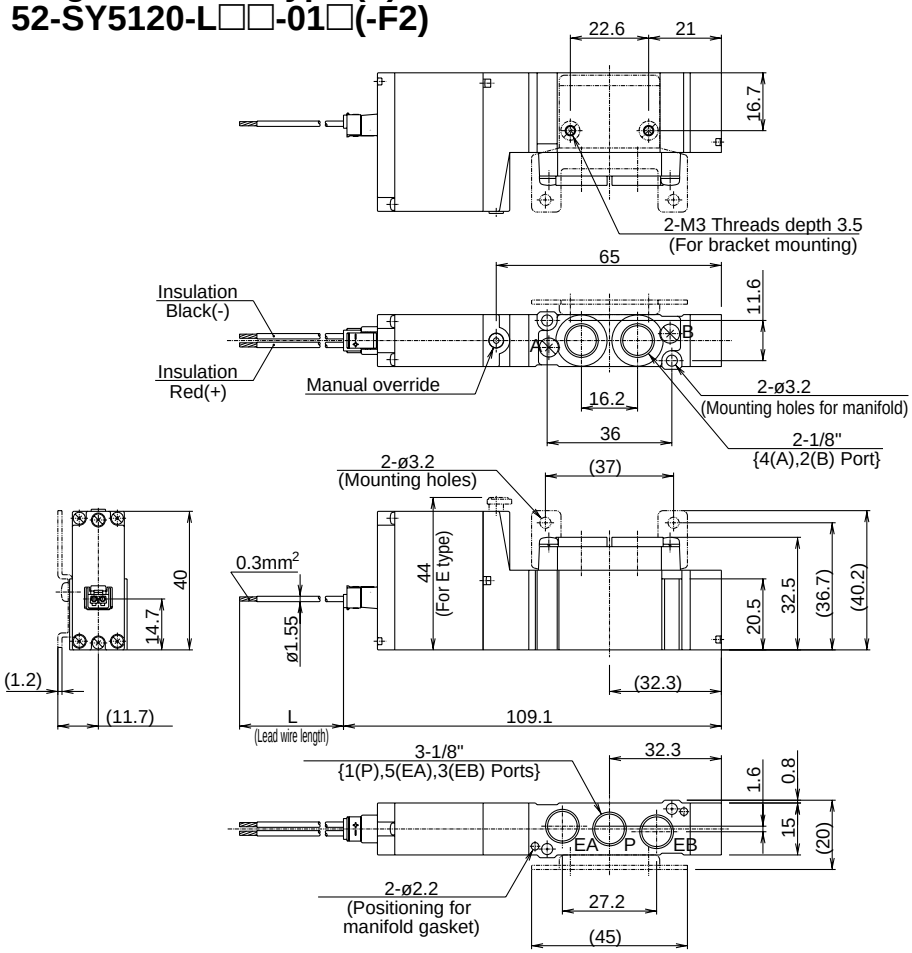
Manifold specifications for 41 and 42 type

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

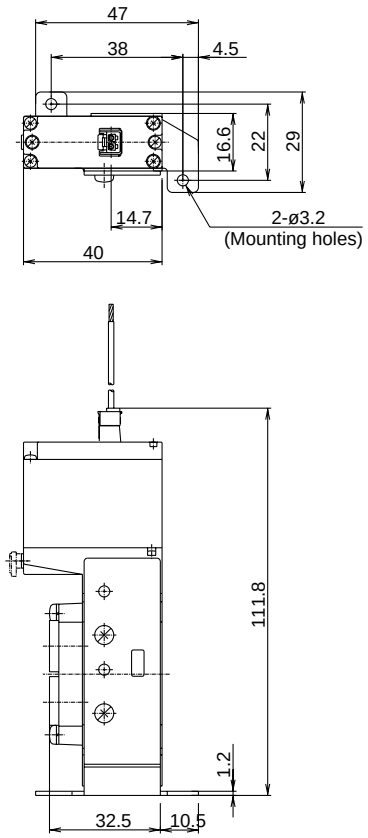
Note) Values for 5 stations manifold with a 2 position single type valve.

Dimensions

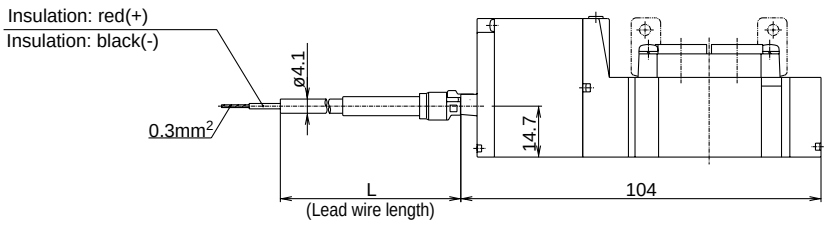
Body ported type
Dimensions/ Series 52-SY5000
2-position single
Plug connector type (L)
52-SY5120-L□□-01□(-F2)



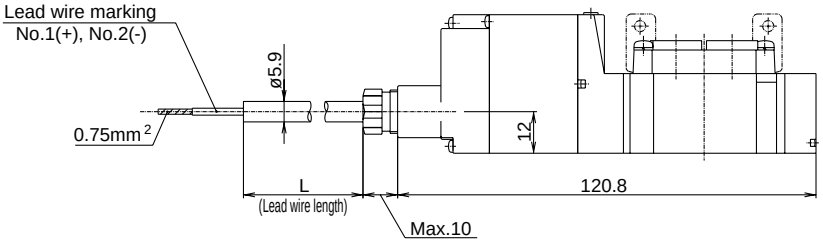
In case with foot bracket
52-SY5120-L□□-01□-F1



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

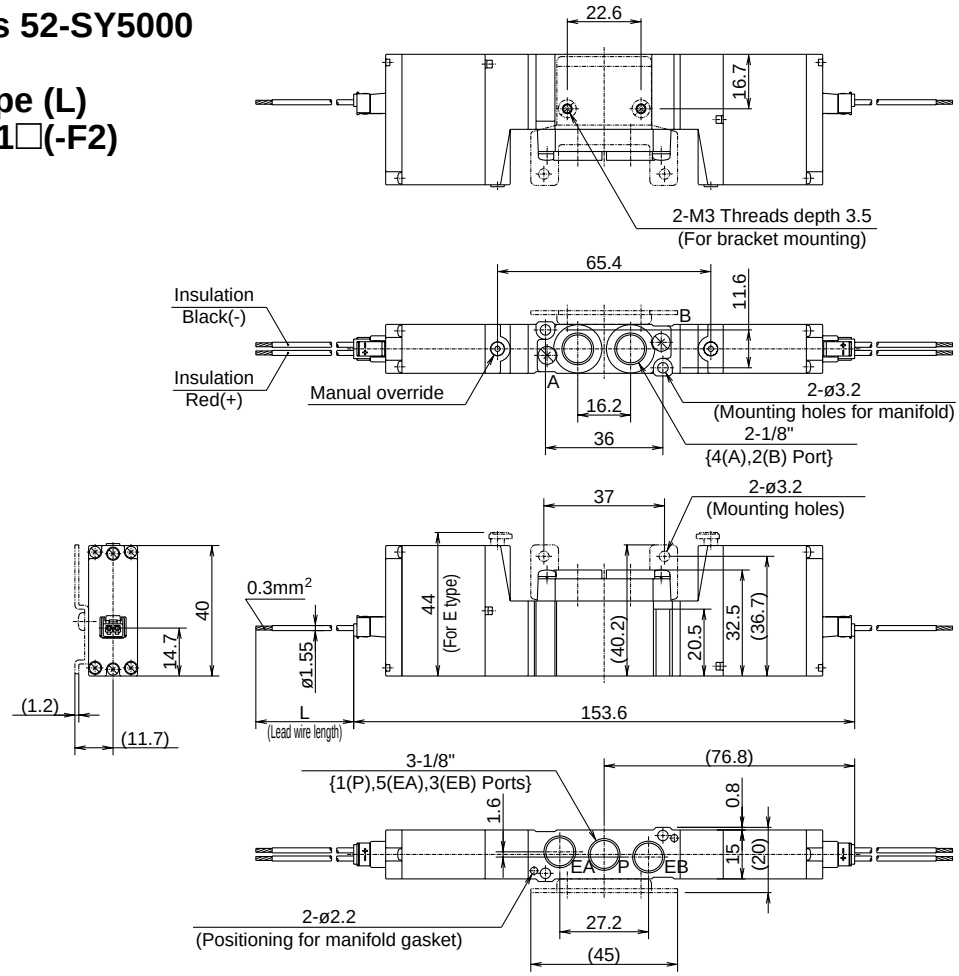


Terminal type (TT)
52-SY5120-TT□□-01□(-F2)

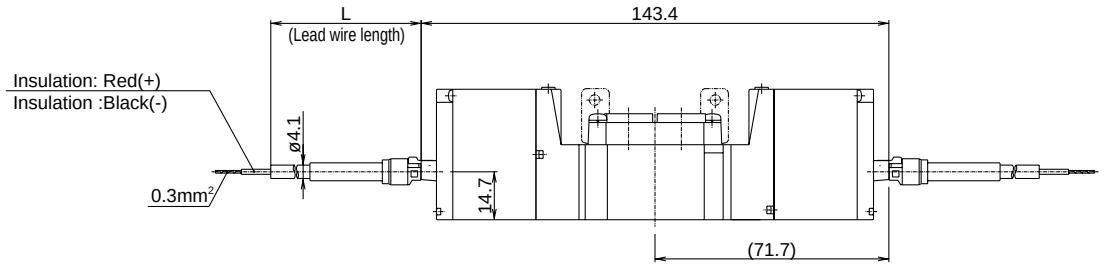


Dimensions

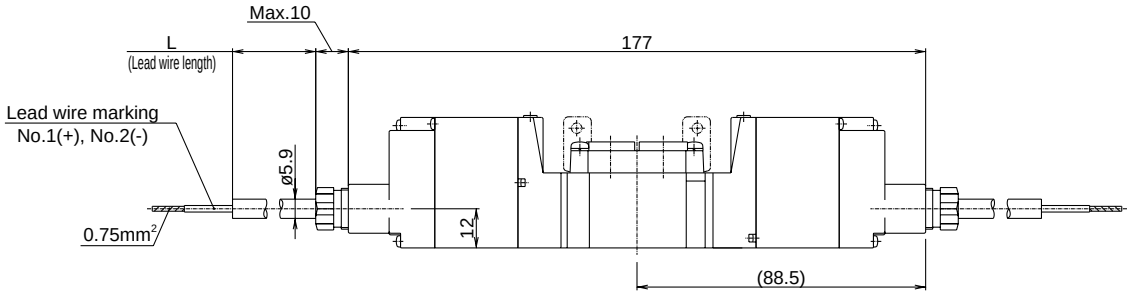
Body ported type
Dimensions/Series 52-SY5000
2-position double
Plug connector type (L)
52-SY5220-L□□-01□(-F2)



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



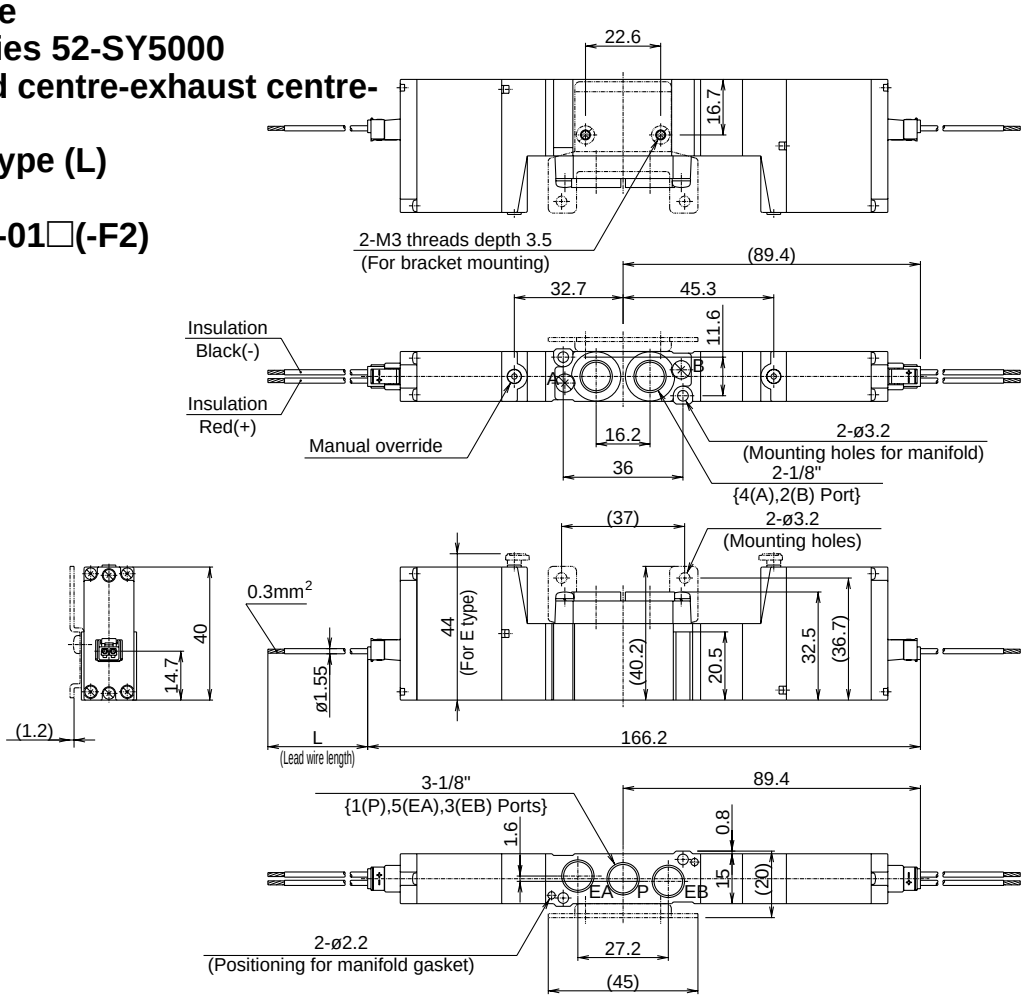
Terminal type (TT)
52-SY5220-TT□□-01□(-F2)



Dimensions

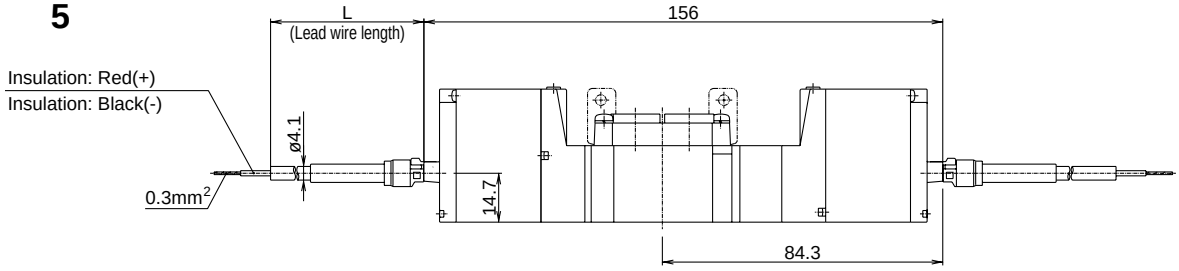
Body ported type
Dimensions/Series 52-SY5000
3-position closed centre-exhaust centre-pressure centre
Plug connector type (L)

3
52-SY5420-L□□-01□(-F2)
5



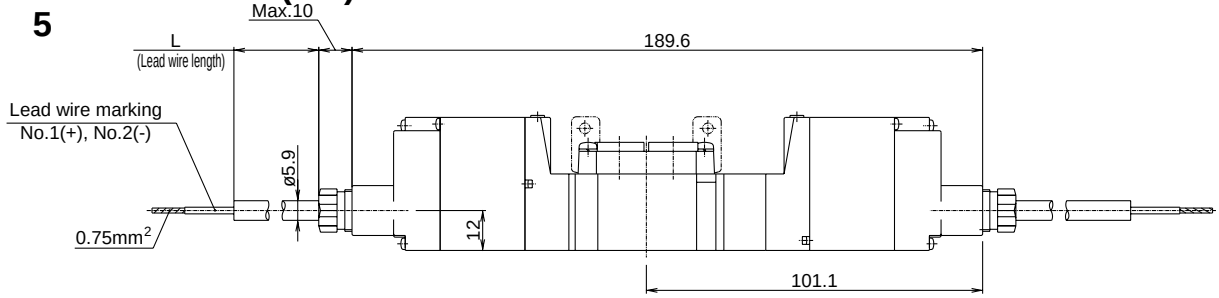
Plug connector with cover type (LL)

3
52-SY5420-LL□□-01□(-F2)
5



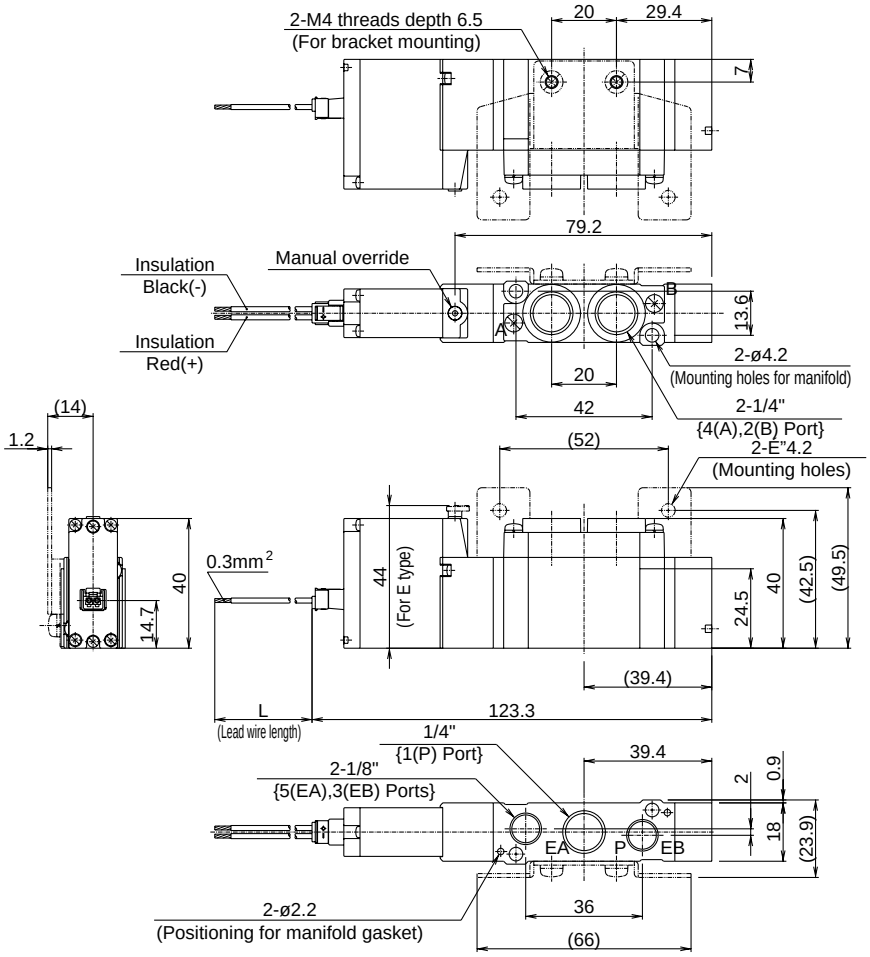
Terminal type (TT)

3
52-SY5420-TT□□-01□(-F2)
5

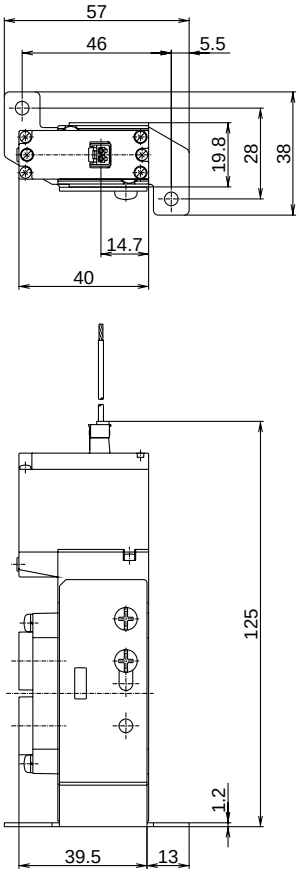


Dimensions

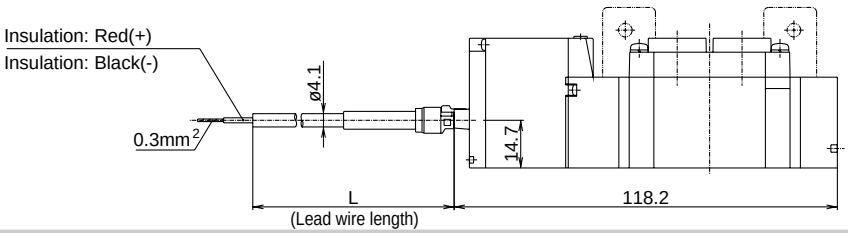
Body ported type
Dimensions/Series 52-SY7000
2-position single
Plug connector type (L)
52-SY7120-L□□-02□(-F2)



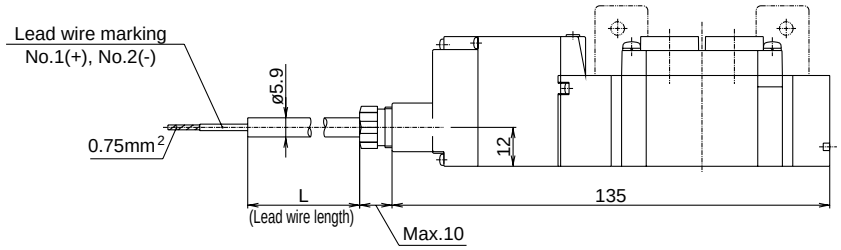
In case with foot bracket
52-SY7120-L□□-02□-(F1)



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

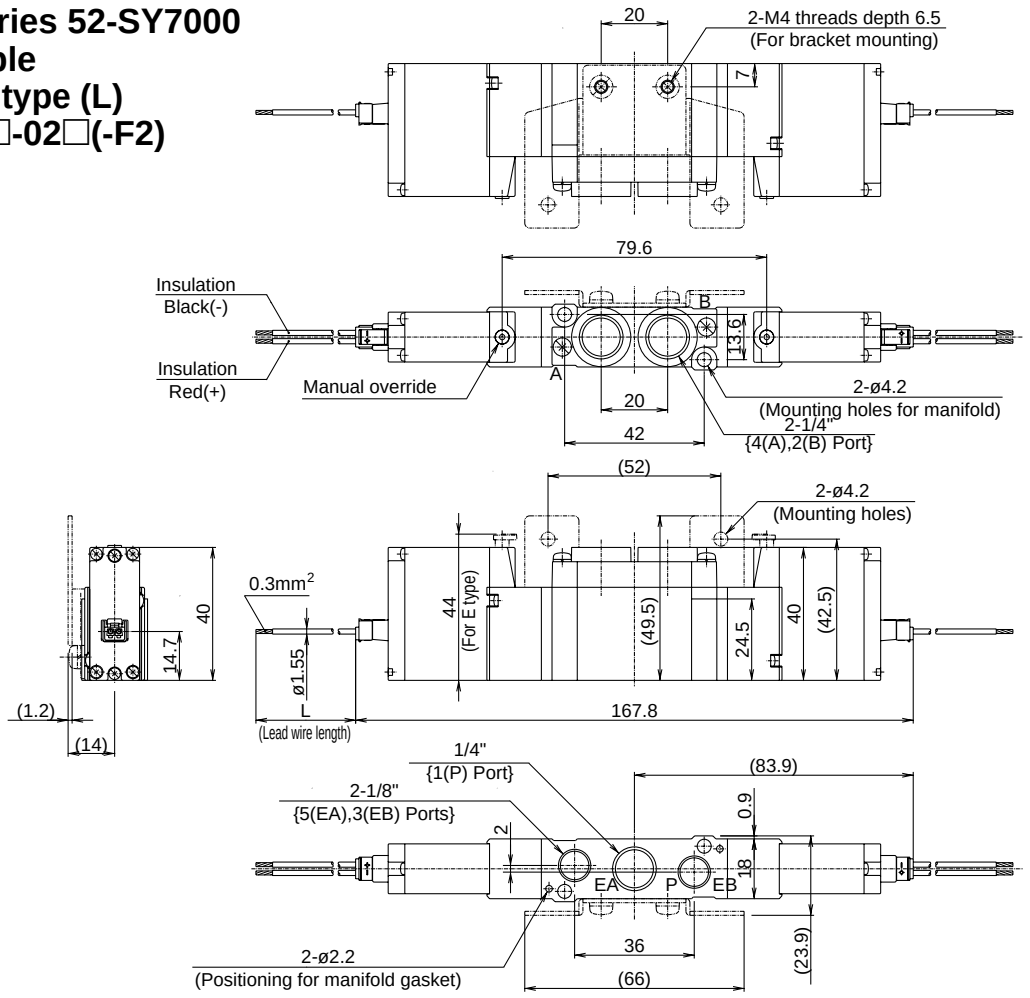


Terminal type (TT)
52-SY7120-TT□□-02□(-F2)

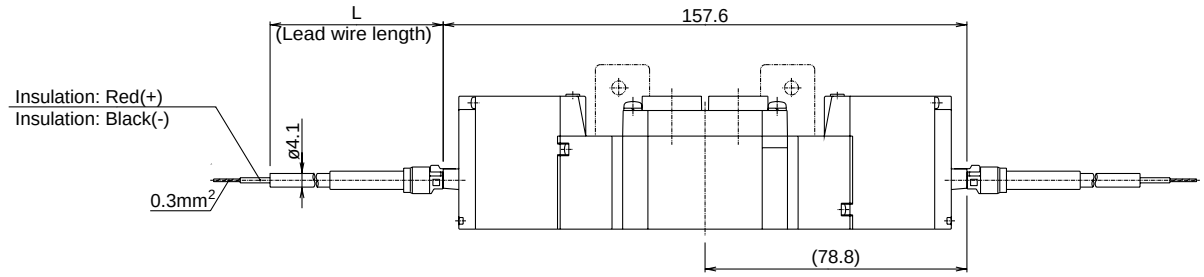


Dimensions

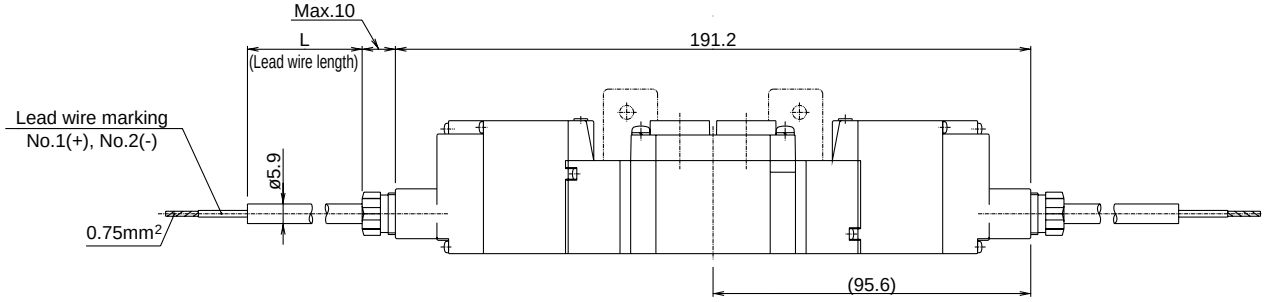
Body ported type
Dimensions/Series 52-SY7000
2-position double
Plug connector type (L)
52-SY7220-L□□-02□(-F2)



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



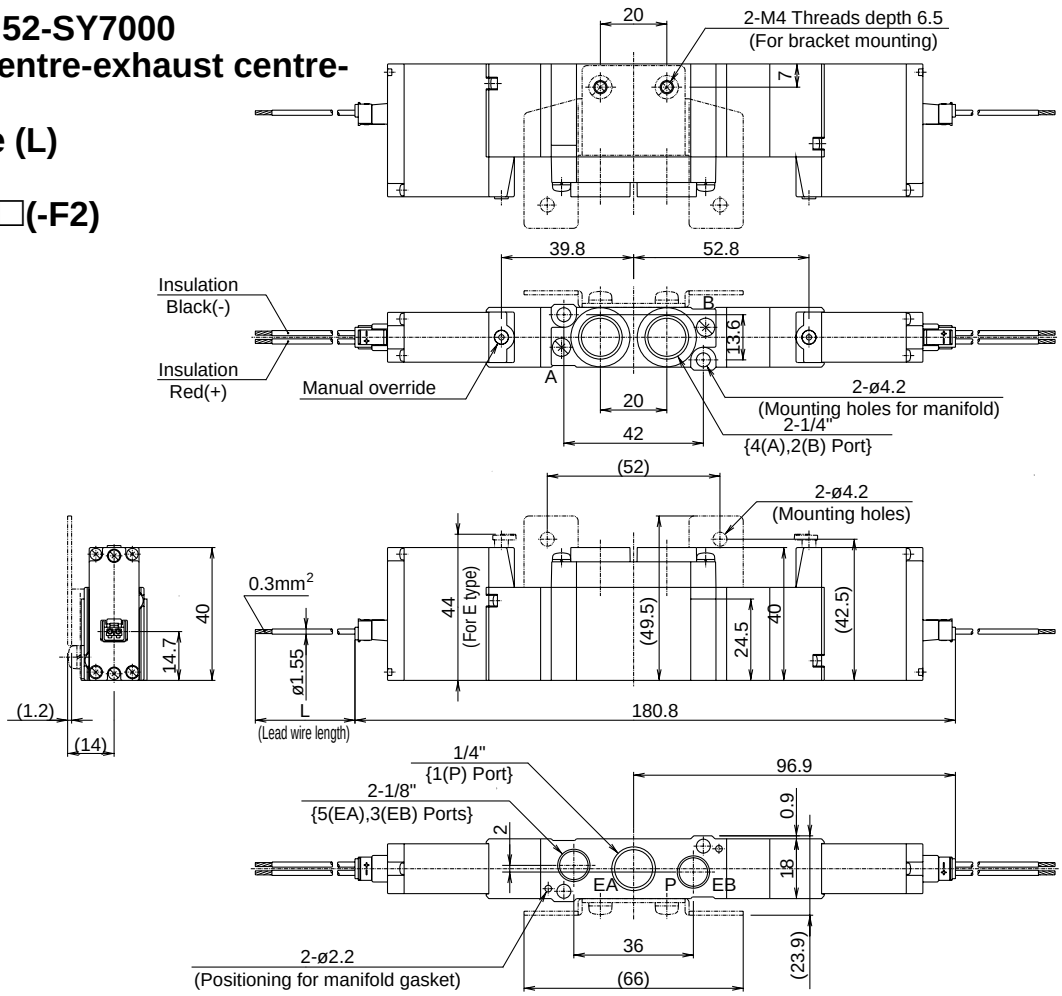
Terminal type (TT)
52-SY7220-TT□□-02□(-F2)



Dimensions

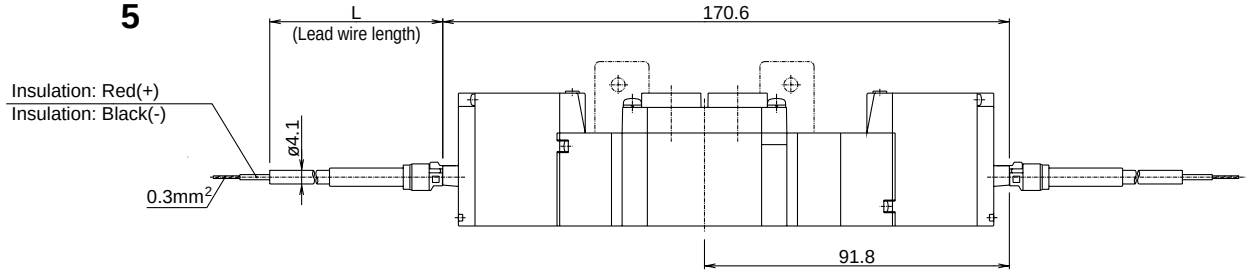
Body ported type
Dimensions/Series 52-SY7000
3-position closed centre-exhaust centre-pressure centre
Plug connector type (L)

3
52-SY7420-L□□-02□(-F2)
5



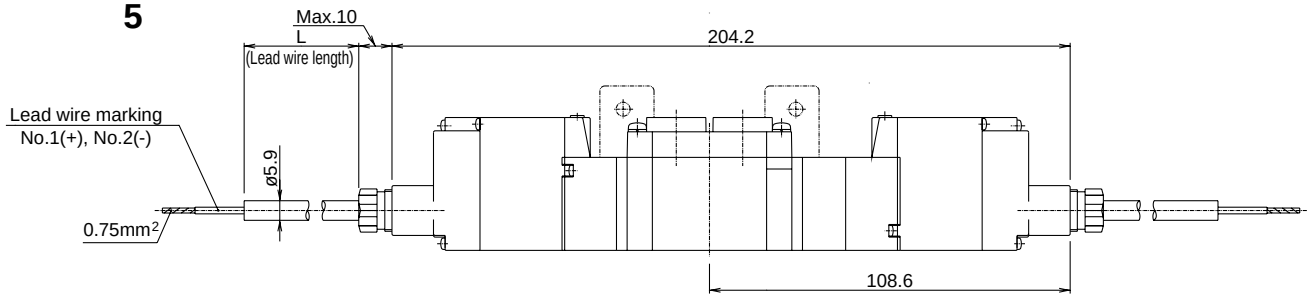
Plug connector with cover type (LL)

3
52-SY7420-LL□□-02□(-F2)
5



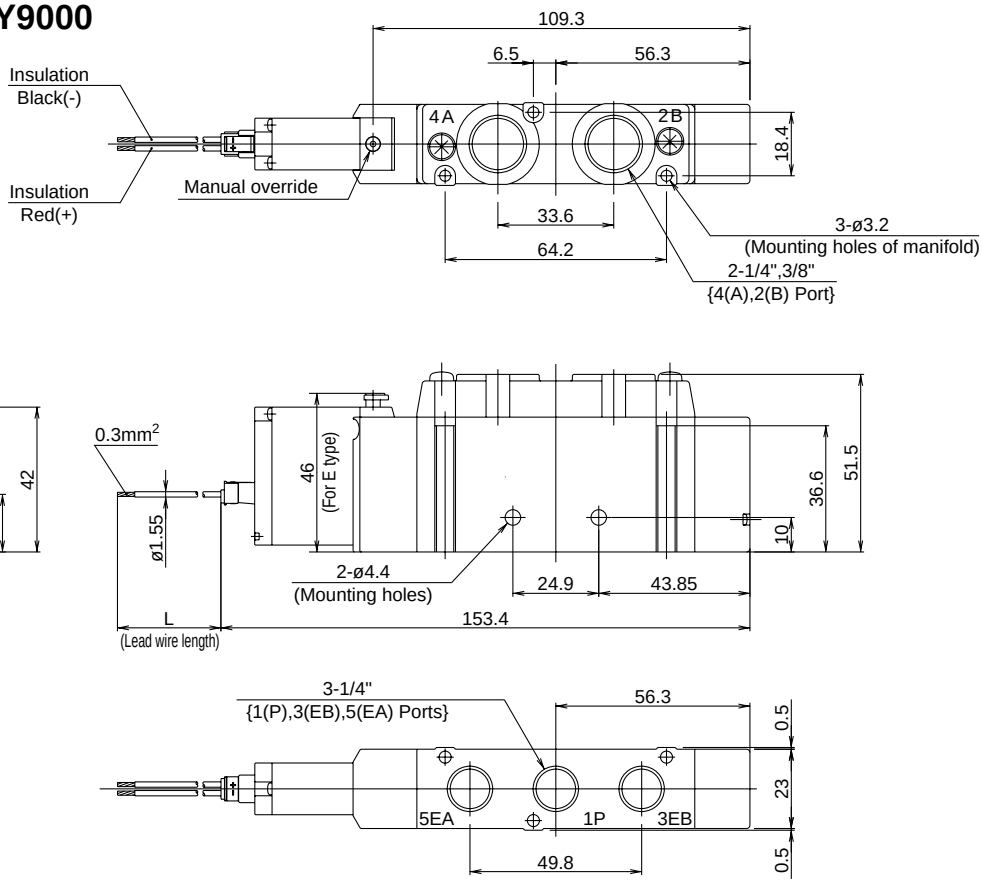
Terminal type (TT)

3
52-SY7420-TT□□-02□(-F2)
5

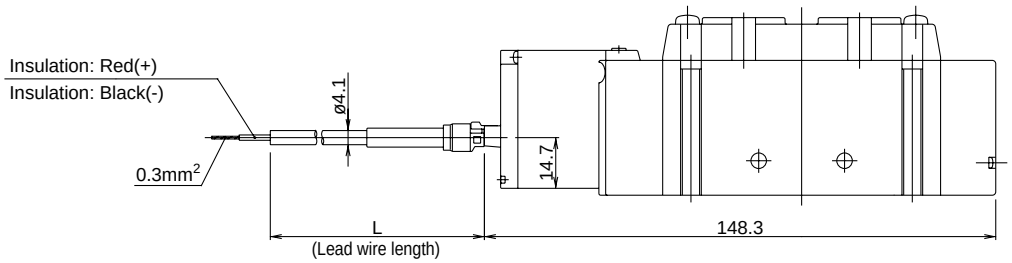


Dimensions

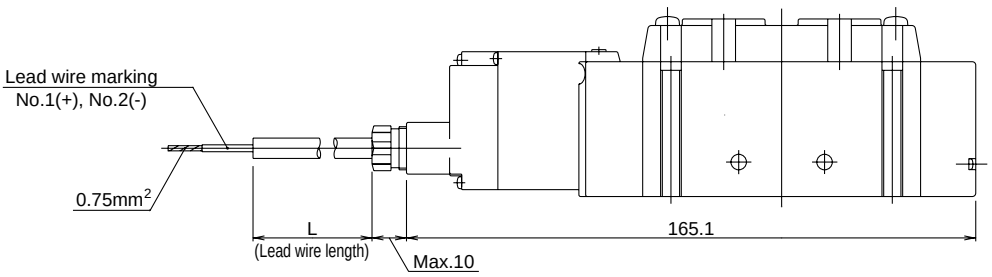
Body ported type
Dimensions/Series 52-SY9000
2-position single
Plug connector type (L)
52-SY9120-L□□-$^{02}_{03}$□



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

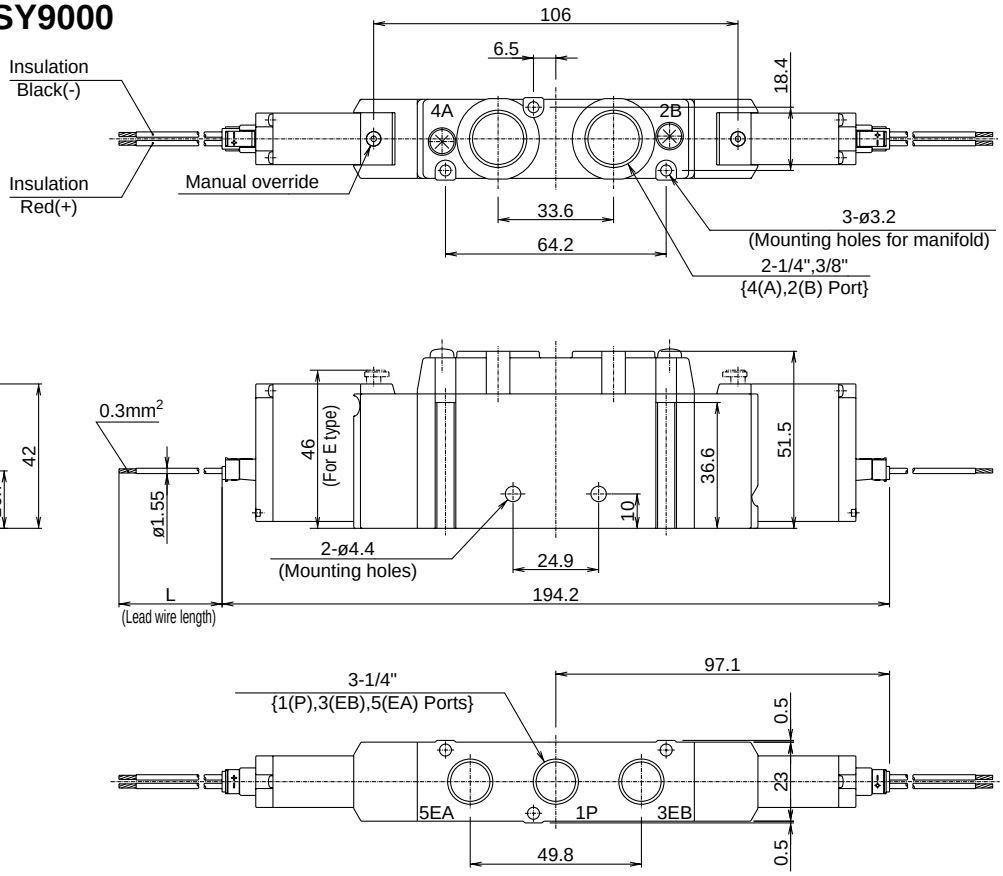


Terminal type (TT)
52-SY9120-TT□□-$^{02}_{03}$□

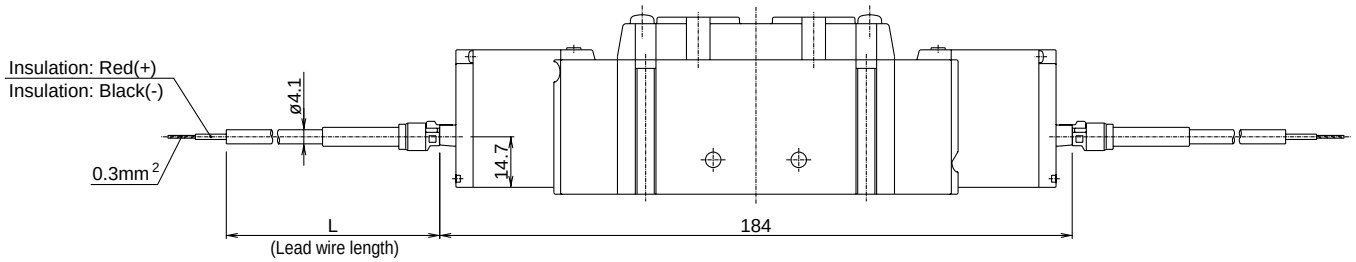


Dimensions

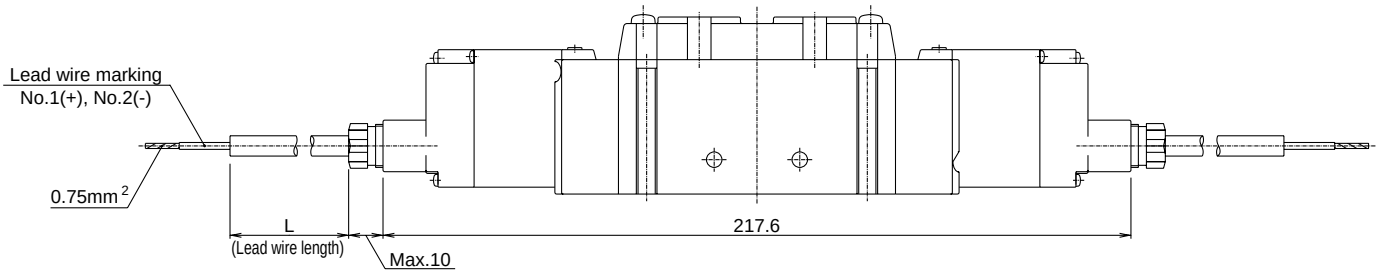
Body ported type
Dimensions/Series 52-SY9000
2-position double
Plug connector type (L)
52-SY9220-L□□-$^{02}_{03}$□



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



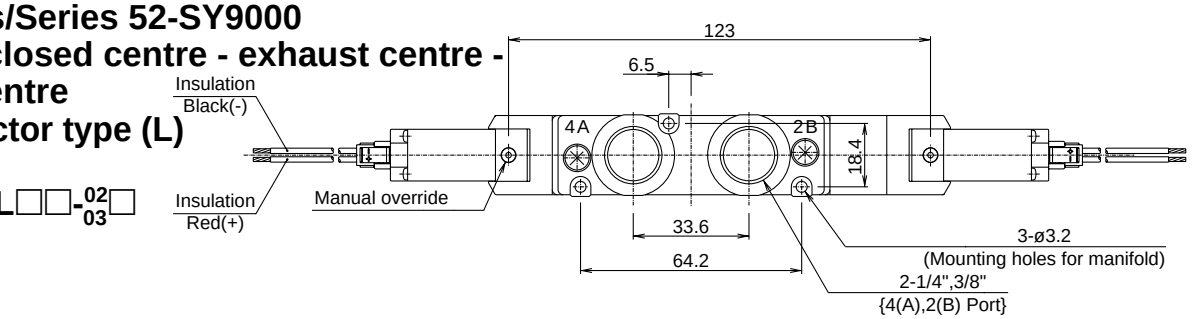
Terminal type (TT)
52-SY9220-TT□□-$^{02}_{03}$□

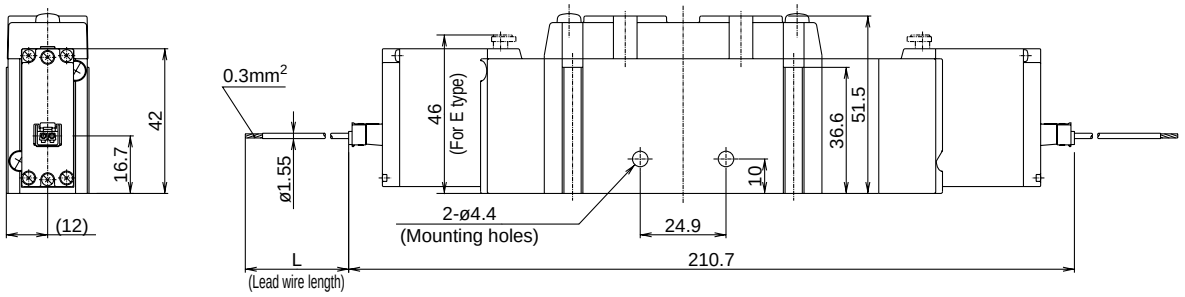


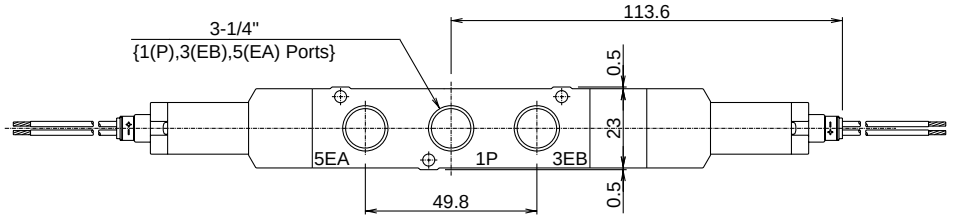
Dimensions

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

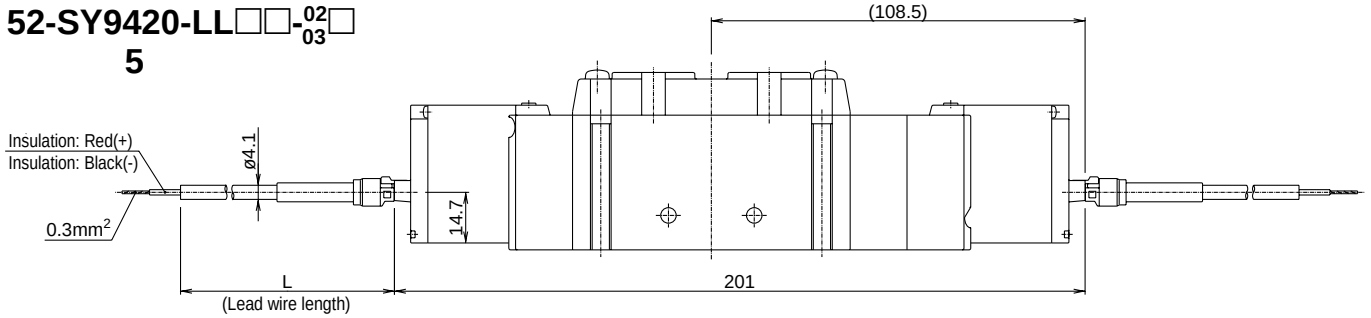






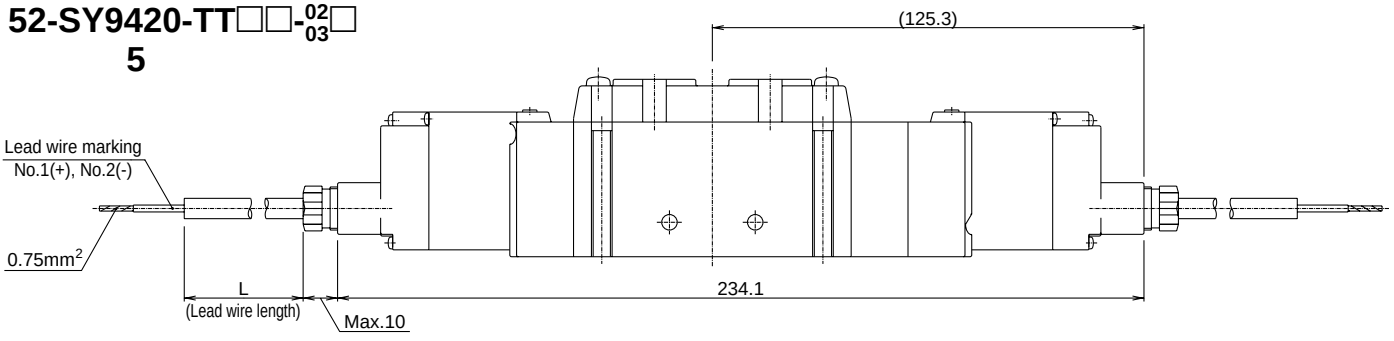
Plug connector with cover type (LL)

3
52-SY9420-LL□□-$^{02}_{03}$□
5



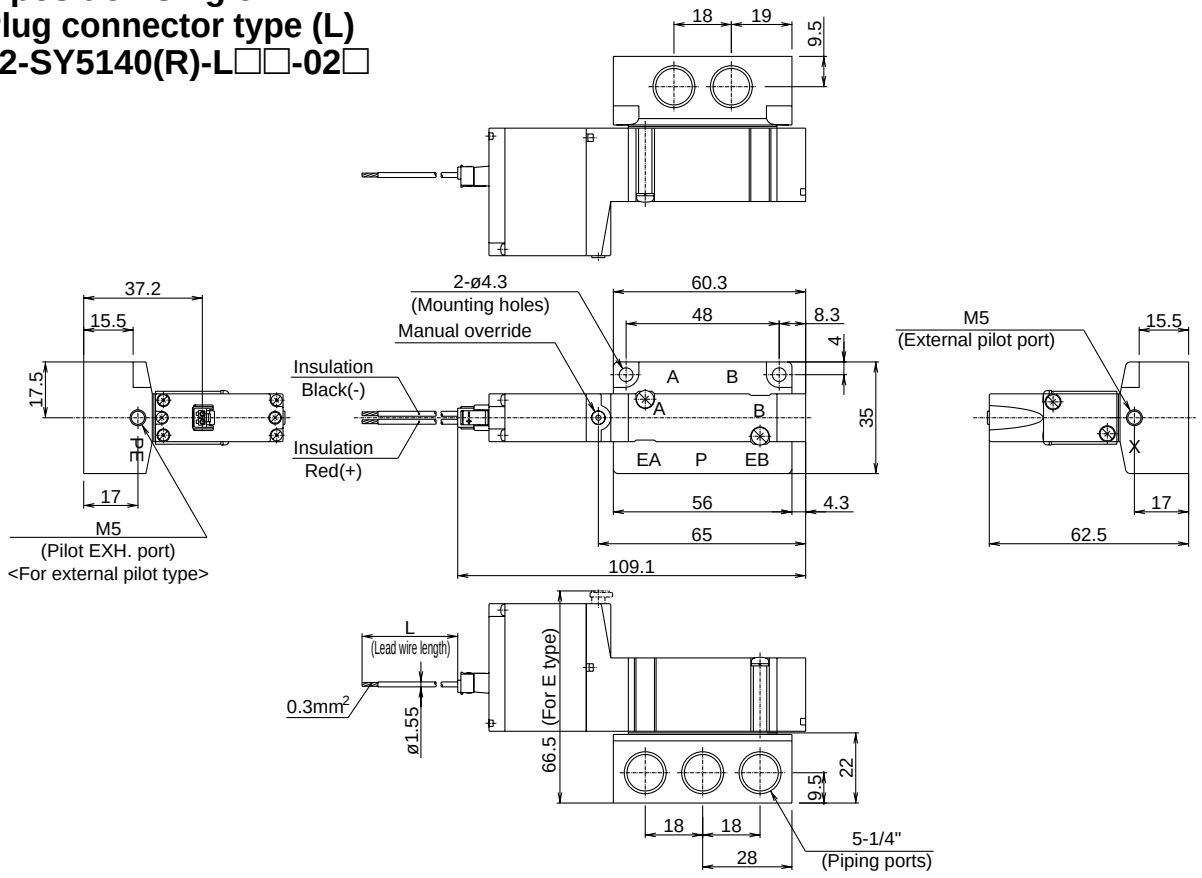
Terminal type (TT)

3
52-SY9420-TT□□-$^{02}_{03}$□
5

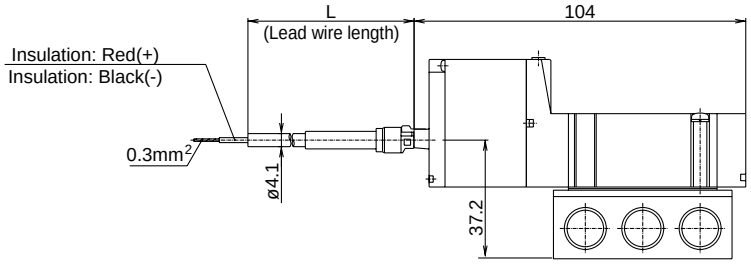


Dimensions

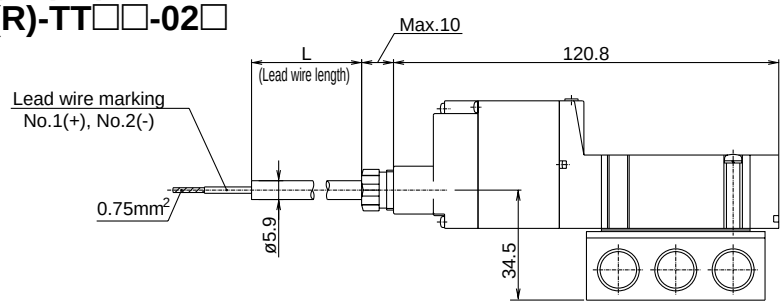
Base mounted type
Dimensions/Series 52-SY5000
2-position single
Plug connector type (L)
52-SY5140(R)-L□□-02□



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

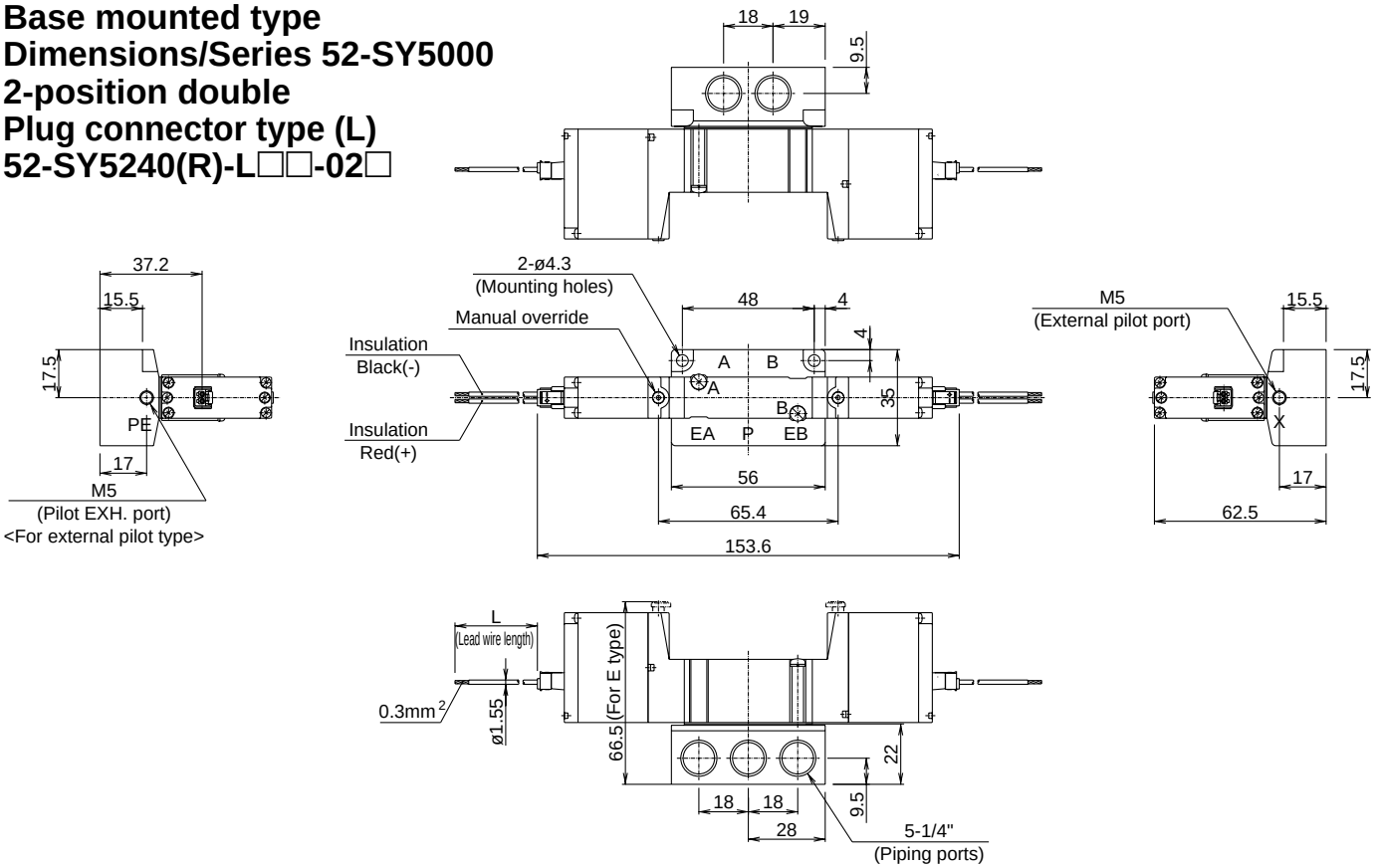


Terminal type (TT)
52-SY5140(R)-TT□□-02□

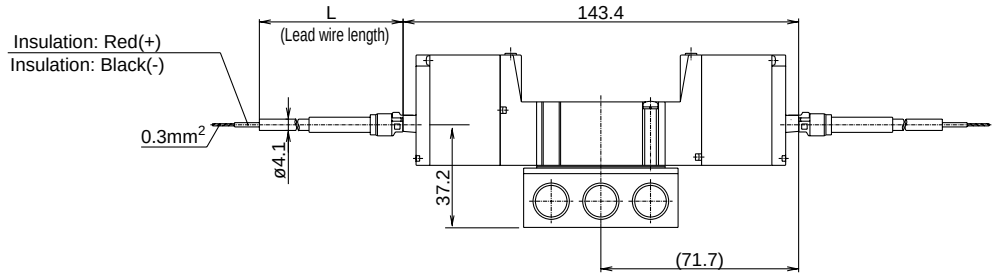


Dimensions

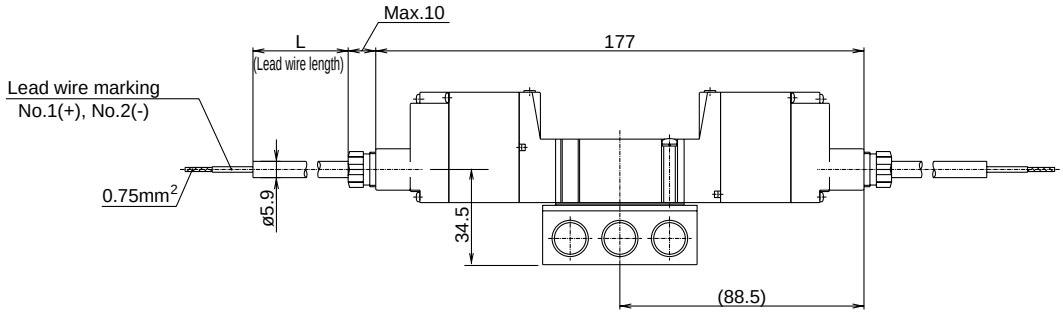
Base mounted type
Dimensions/Series 52-SY5000
2-position double
Plug connector type (L)
52-SY5240(R)-L□□-02□



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



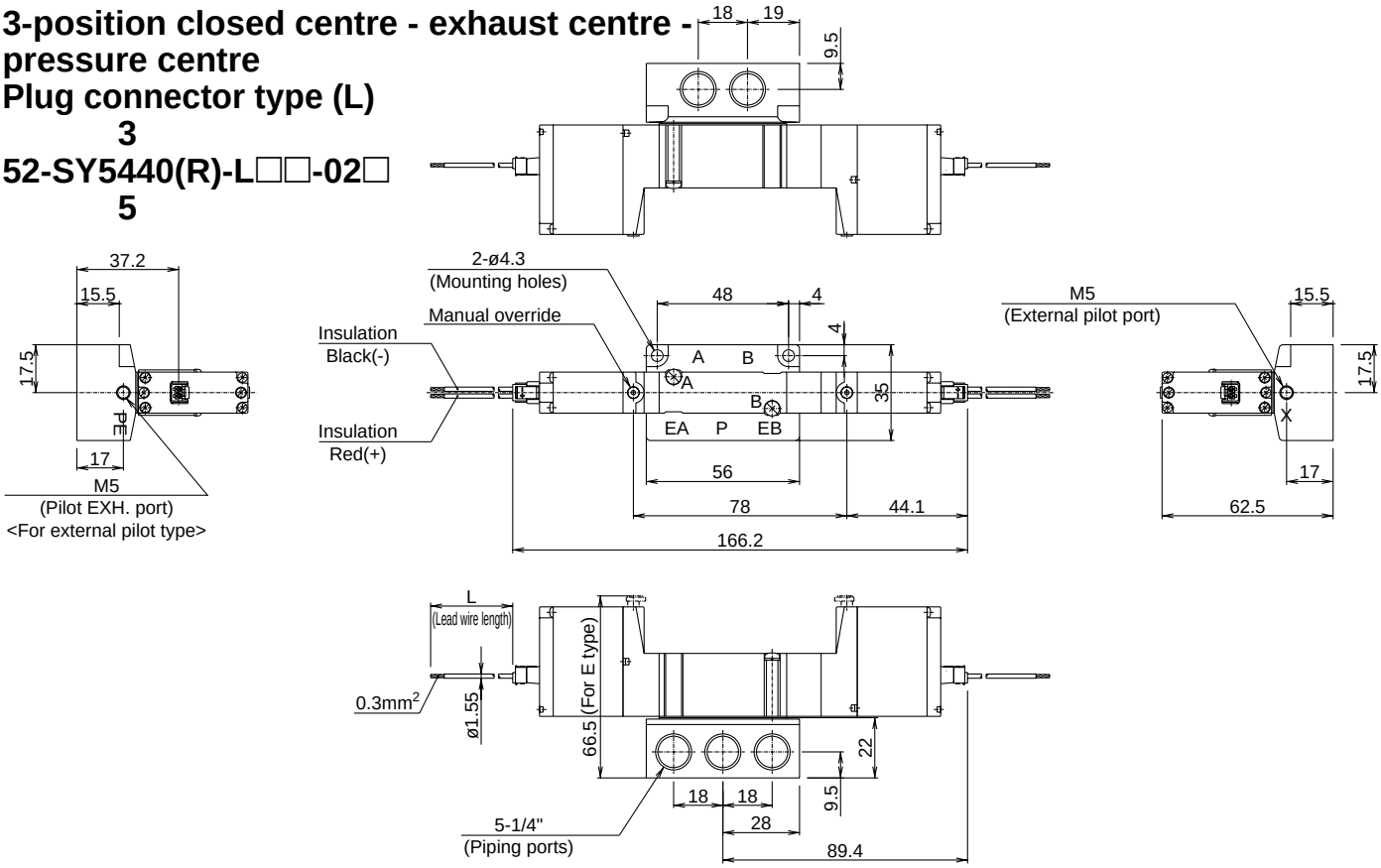
Terminal type (TT)
52-SY5240(R)-TT□□-02□



Dimensions

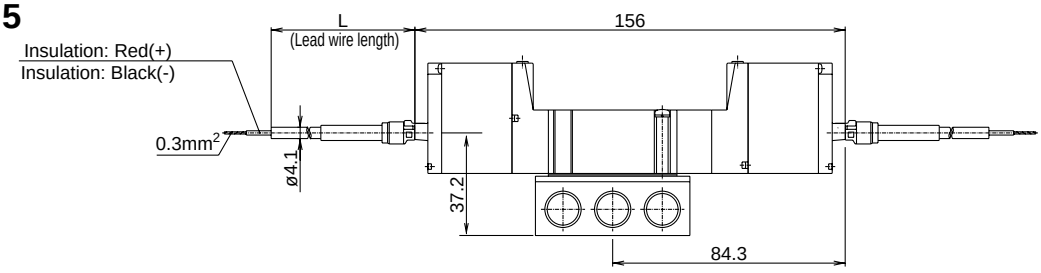
Base mounted type
Dimensions/Series 52-SY5000
3-position closed centre - exhaust centre - pressure centre
Plug connector type (L)

3
52-SY5440(R)-L□□-02□
5



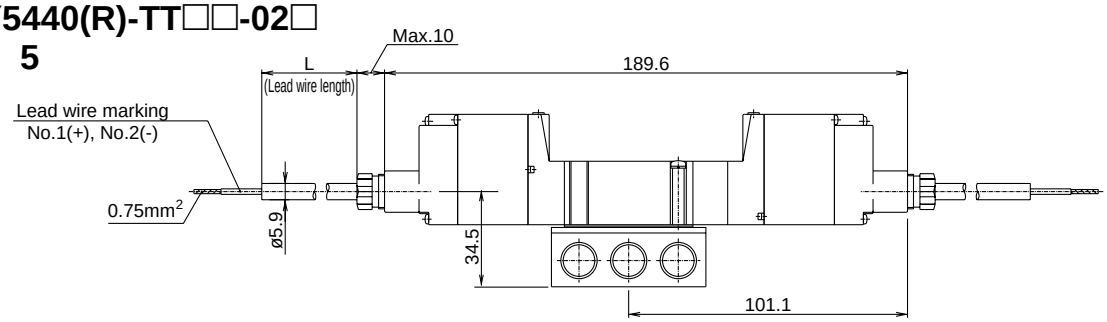
Plug connector with cover type (LL)

3
52-SY5440(R)-LL□□-02□
5



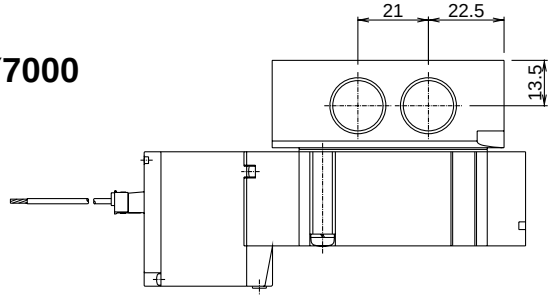
Terminal type (TT)

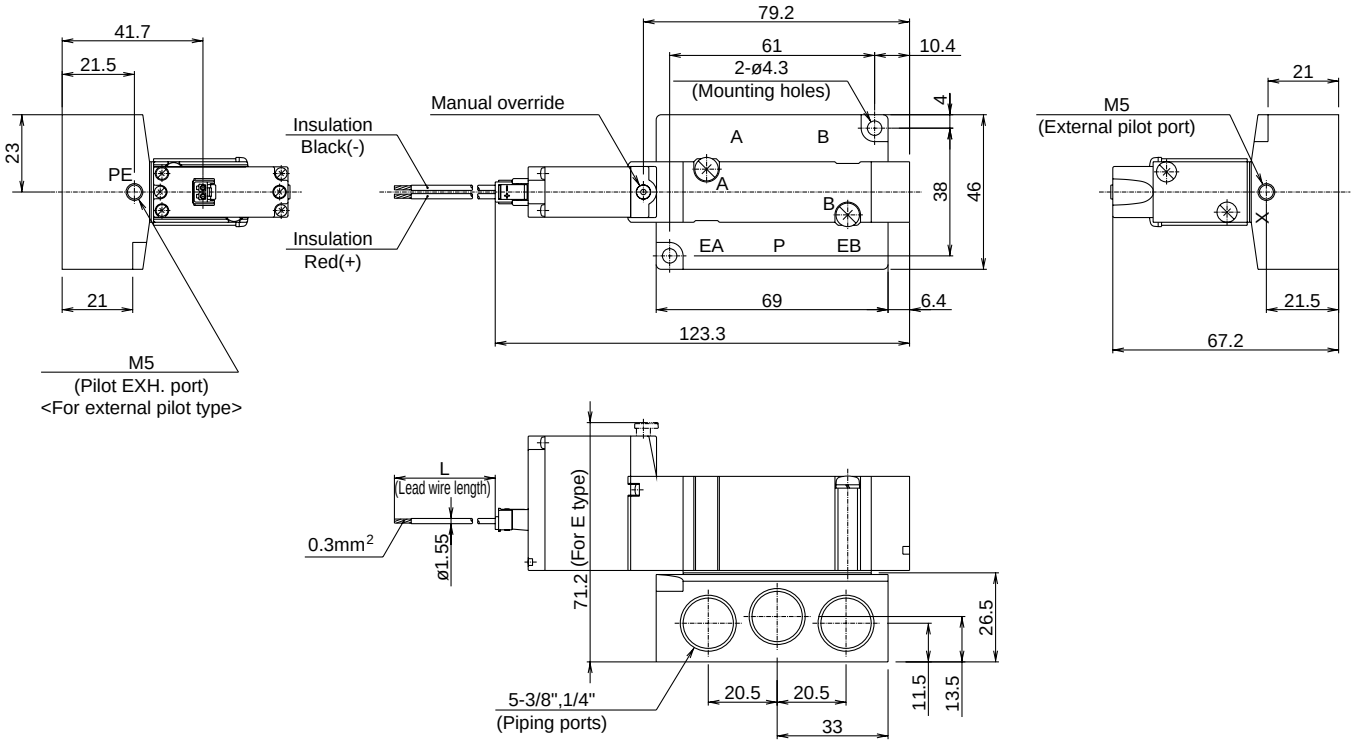
3
52-SY5440(R)-TT□□-02□
5



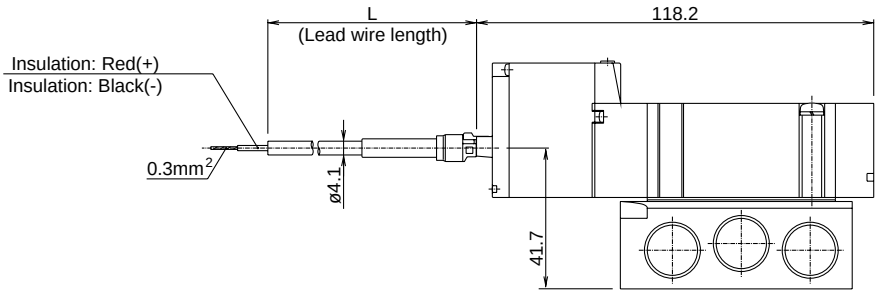
Dimensions

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

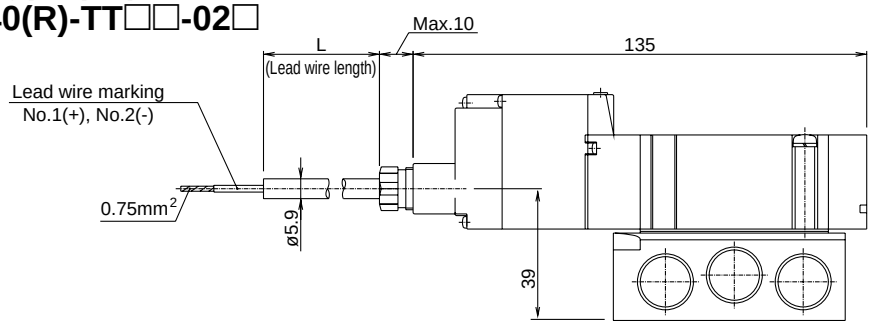




Plug connector with cover type (LL)
52-SY7140(R)-LL□□-02□

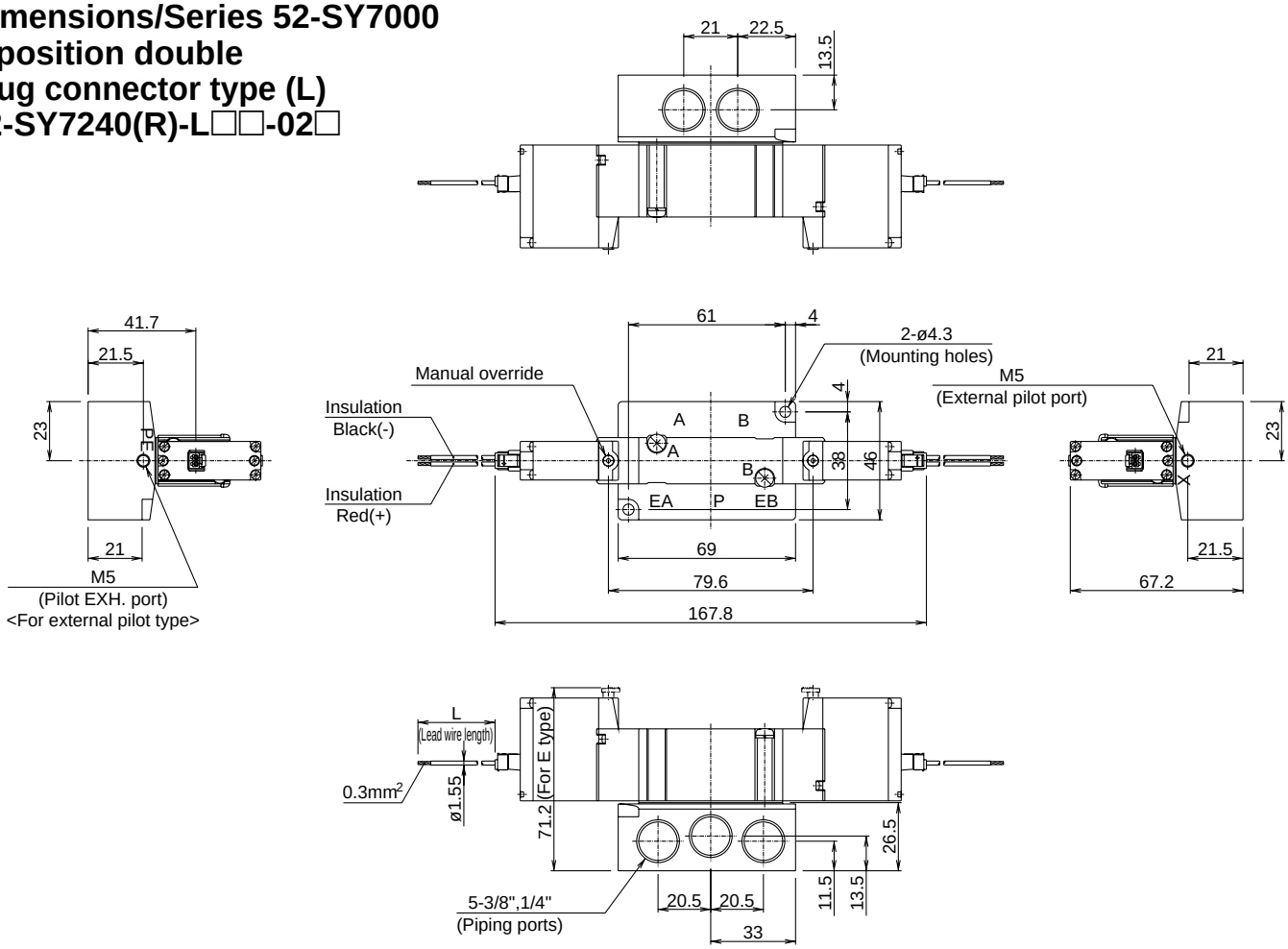


Terminal type (TT)
52-SY7140(R)-TT□□-02□

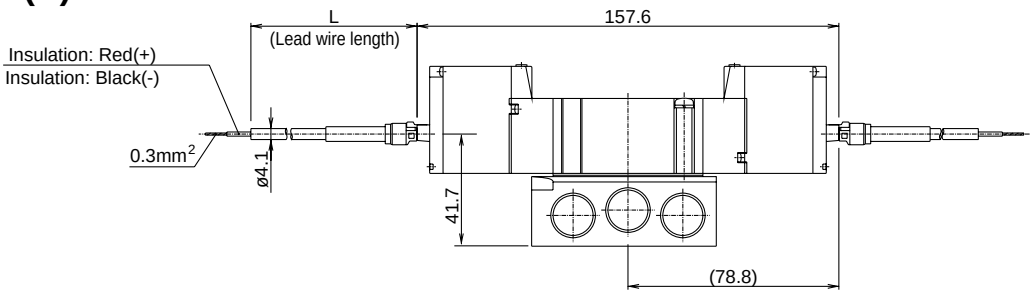


Dimensions

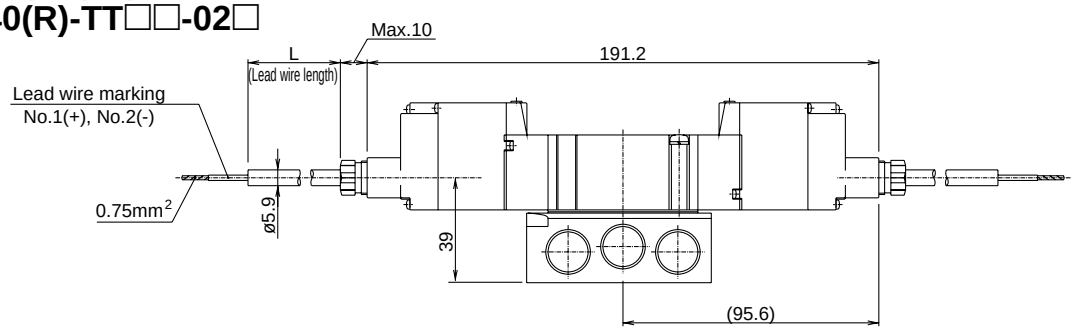
Base mounted type
Dimensions/Series 52-SY7000
2-position double
Plug connector type (L)
52-SY7240(R)-L□□-02□



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



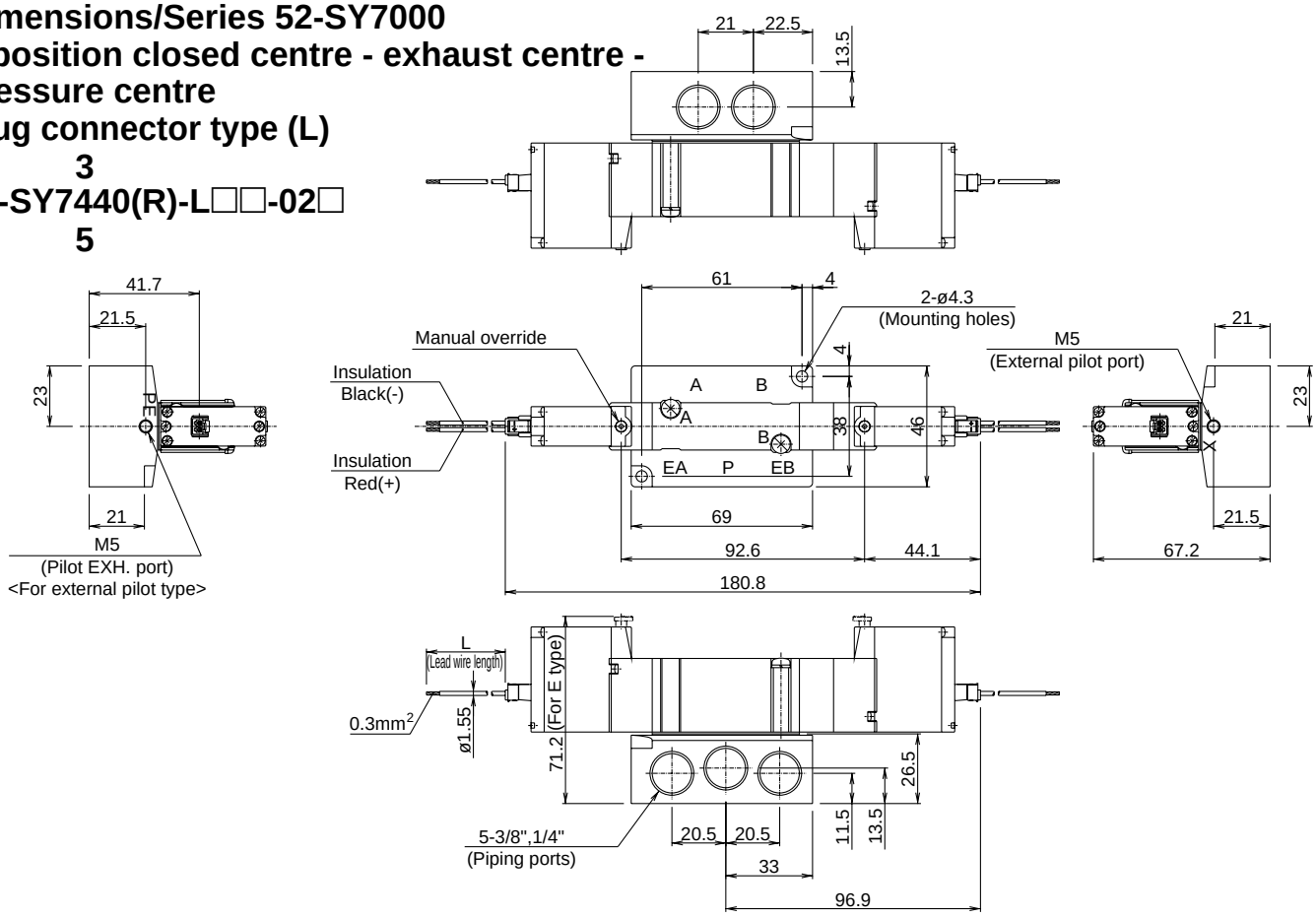
Terminal type (TT)
52-SY7240(R)-TT□□-02□



Dimensions

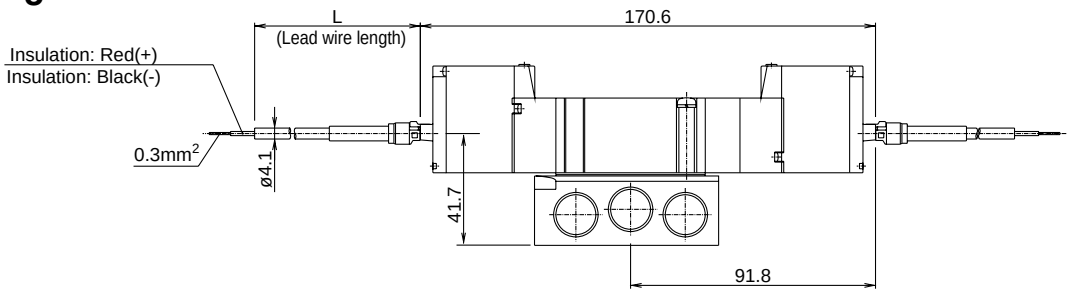
Base mounted type
Dimensions/Series 52-SY7000
3-position closed centre - exhaust centre - pressure centre
Plug connector type (L)

3
52-SY7440(R)-L□□-02□
5



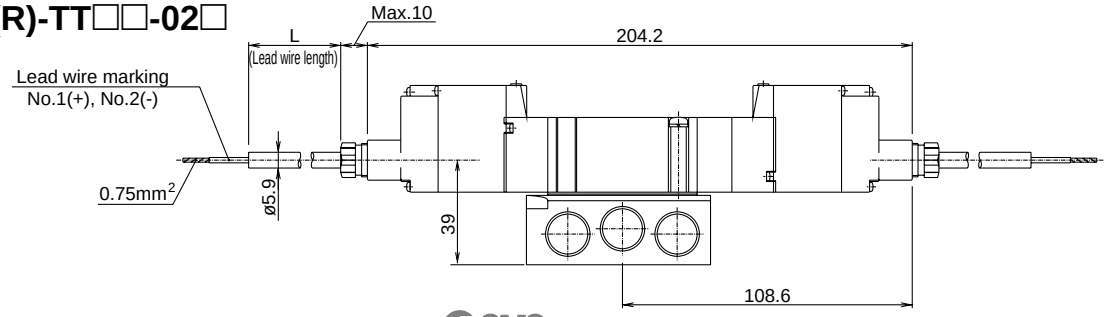
Plug connector with cover type (LL)

3
52-SY7440(R)-LL□□-02□
5



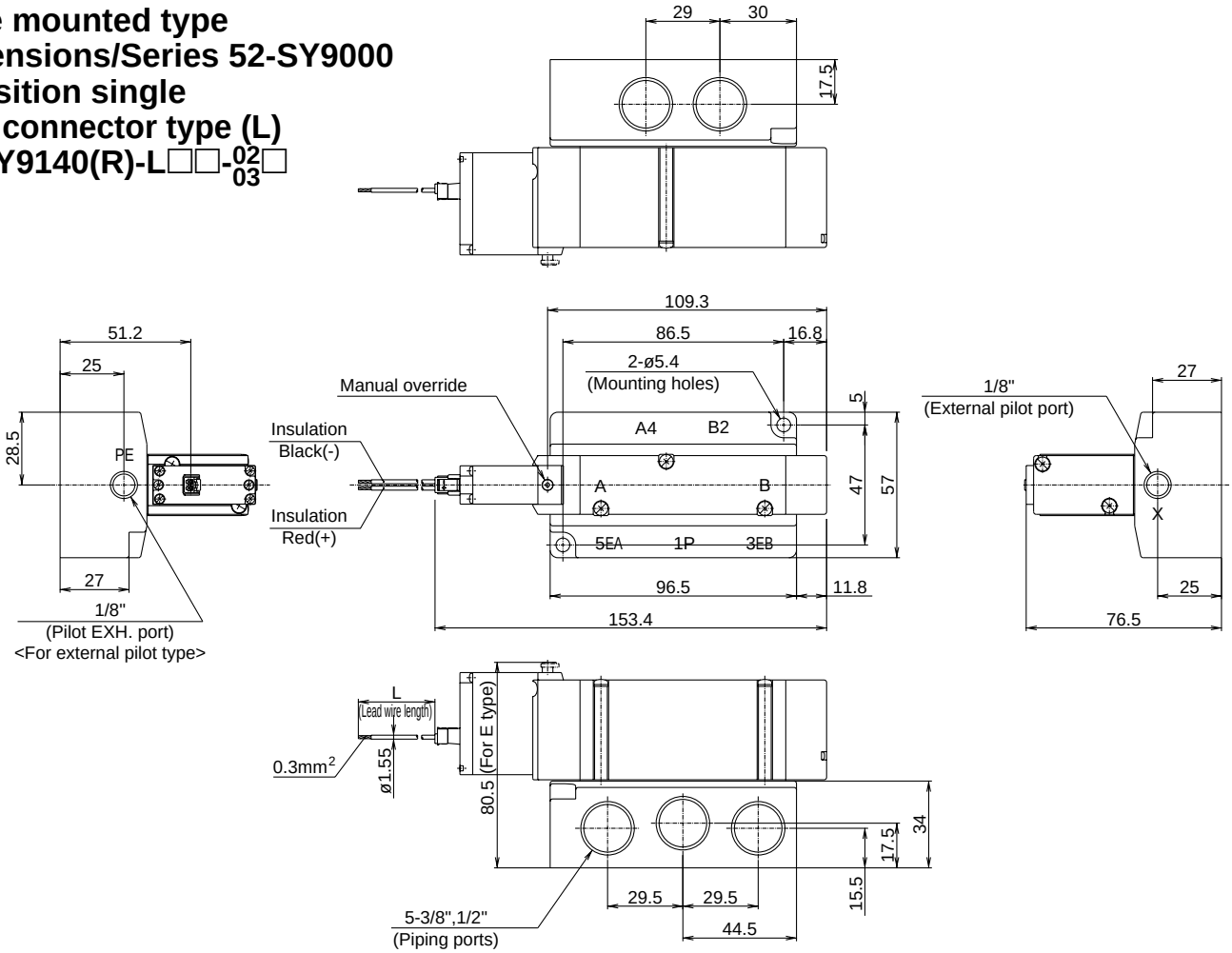
Terminal type (TT)

3
52-SY7440(R)-TT□□-02□
5

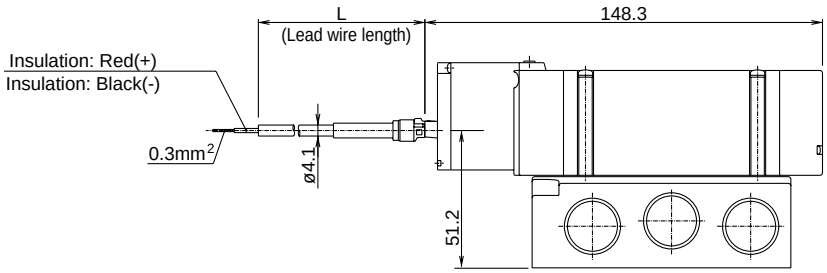


Dimensions

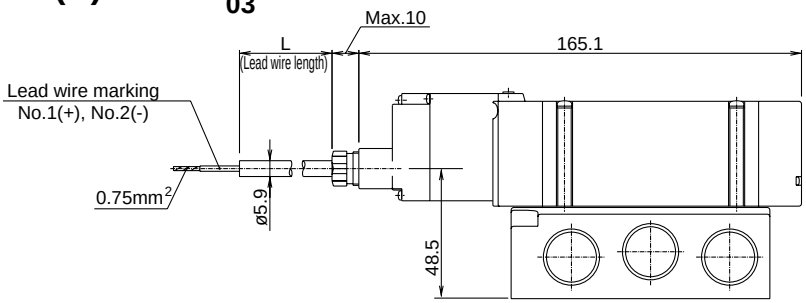
Base mounted type
Dimensions/Series 52-SY9000
2-position single
Plug connector type (L)
52-SY9140(R)-L□□-$^{02}_{03}$□



Plug connector with cover type (LL)
52-SY9140(R)-LL□□-$^{02}_{03}$□

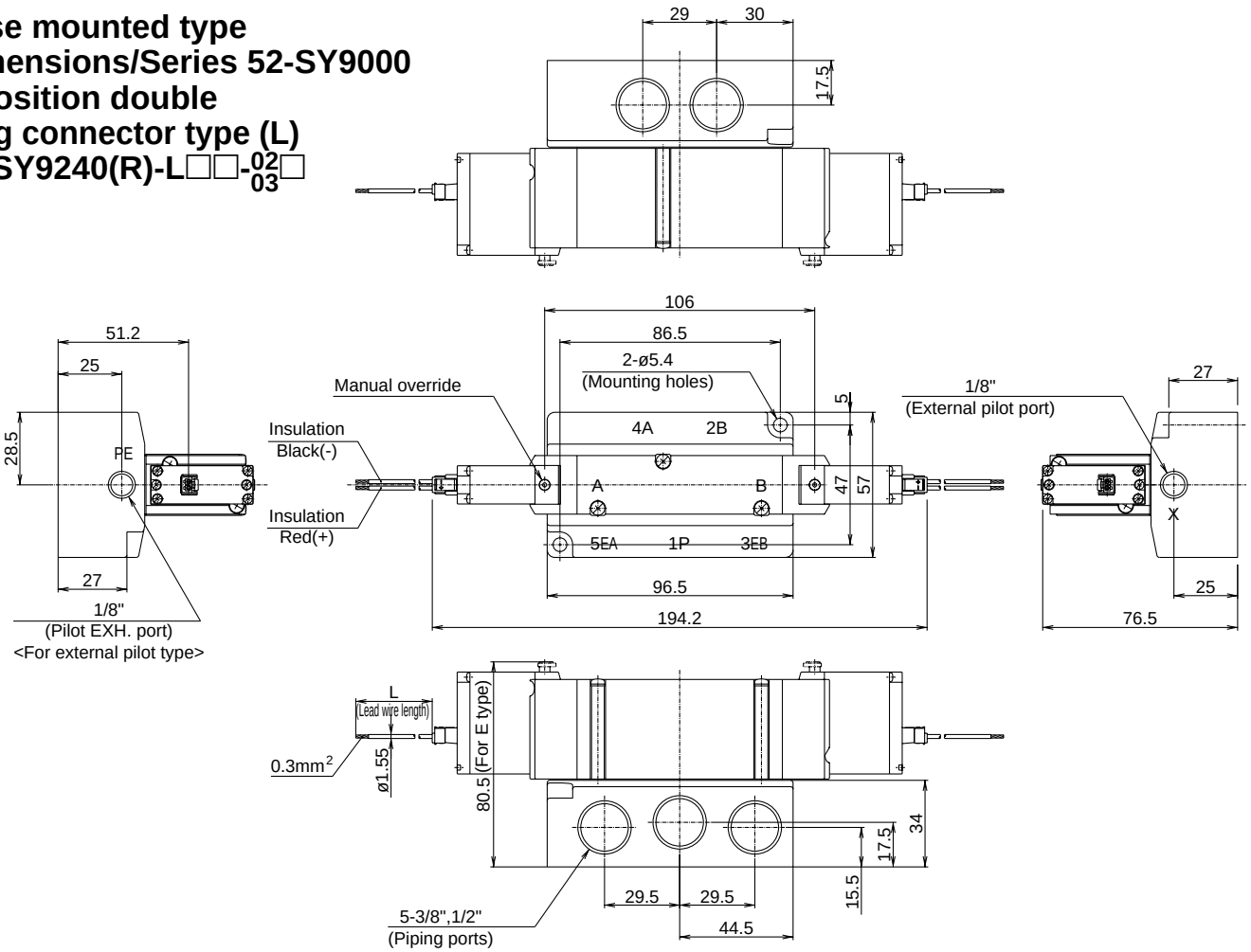


Terminal type (TT)
52-SY9140(R)-TT□□-$^{02}_{03}$□

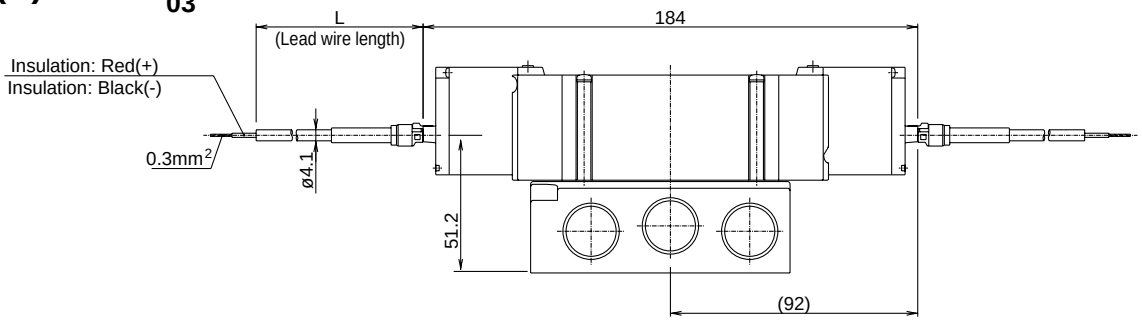


Dimensions

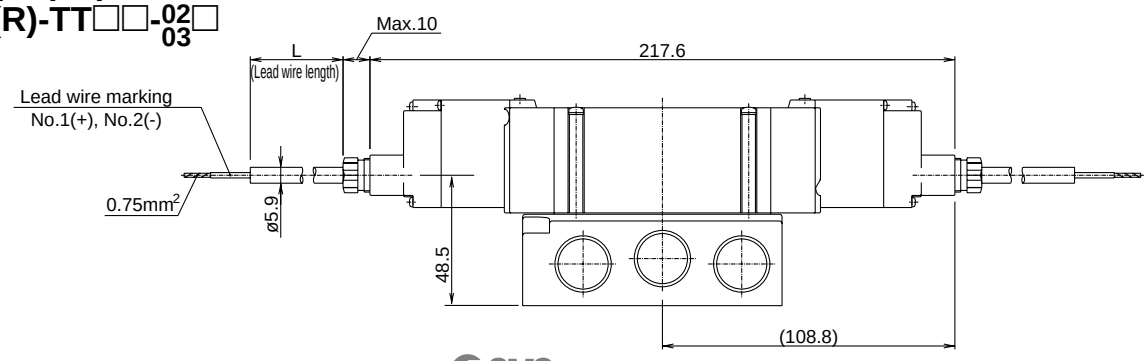
Base mounted type
Dimensions/Series 52-SY9000
2-position double
Plug connector type (L)
52-SY9240(R)-L□□-$^{02}_{03}$□



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



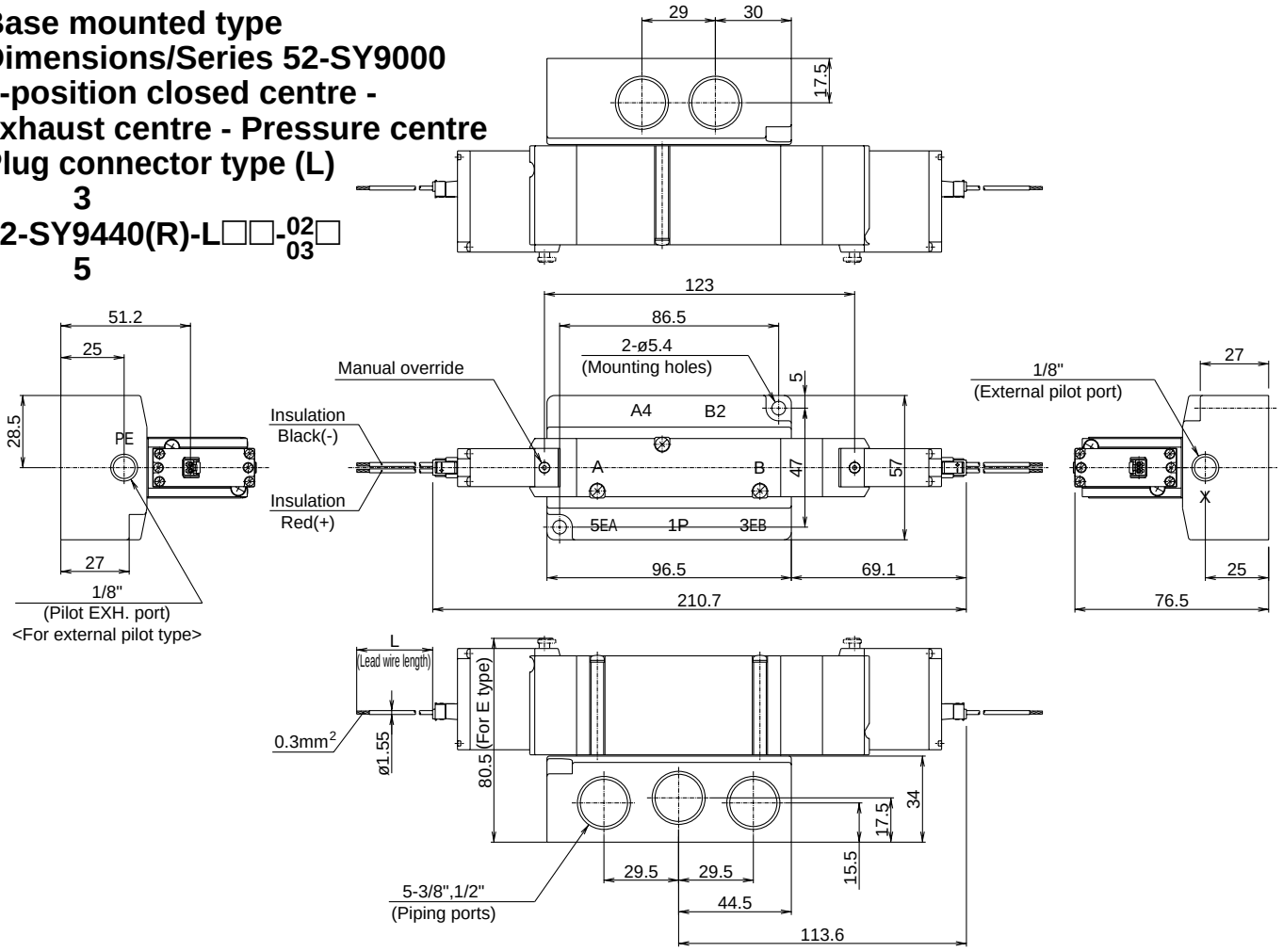
Terminal type (TT)
52-SY9240(R)-TT□□-$^{02}_{03}$□



Dimensions

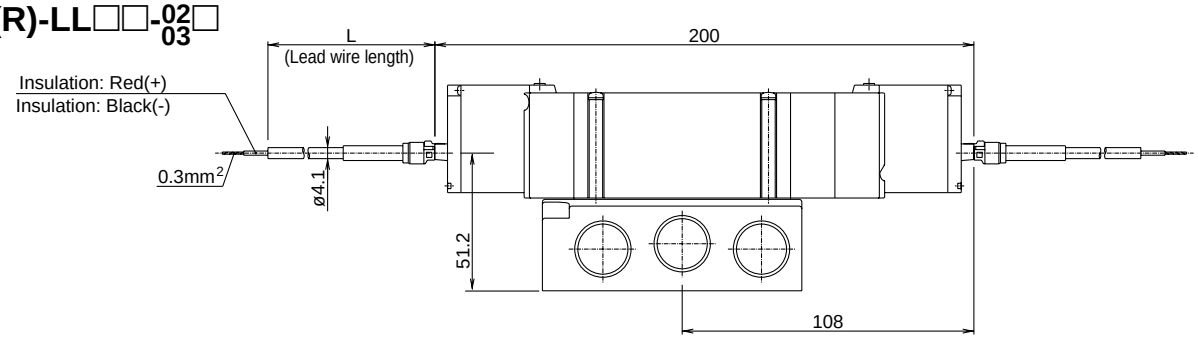
Base mounted type
Dimensions/Series 52-SY9000
3-position closed centre - exhaust centre - Pressure centre
Plug connector type (L)

3
52-SY9440(R)-L□□-02□
03
5



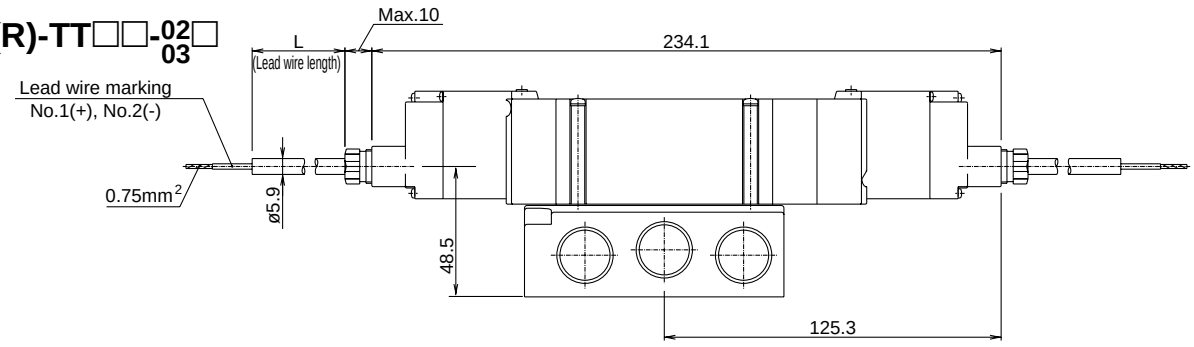
Plug connector with cover type (LL)

3
52-SY9440(R)-LL□□-02□
03
5



Terminal type (TT)

3
52-SY9440(R)-TT□□-02□
03
5



KEMA

(1) EC-TYPE EXAMINATION CERTIFICATE

(2) Equipment or protective system intended for use in potentially explosive atmospheres - Directive 94/9/EC

(3) EC-Type Examination Certificate Number: **KEMA 02ATEX1099 X**

(4) Equipment or protective system: **Solenoid valves, SY5000, SY7000, SY 9000, SYJ300, SYJ500, SYJ700, SYJ3000, SYJ5000 and SYJ7000 series,with 52-SY1.6-...-. and 52A-SY1.6-...-. series pilot valves**

(5) Manufacturer: **SMC Corporation**

(6) Address: **4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, Japan**

(7) This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) KEMA Quality B.V., notified body number 0344 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the directive.

The examination and test results are recorded in confidential report no. 2018093.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014 : 1997 **EN 50020 : 2002** **EN 50284 : 1999** **EN 13463-1 : 2001**

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment or protective system according to the Directive 94/9/EC. Further requirements of the directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

(12) The marking of the equipment or protective system shall include the following:

II 1 G EEx ia IIB T4...T6

or

II 2 G EEx ia IIB T4...T6

Arnhem, 6 March 2006
KEMA Quality B.V.

T. Pijpker
Certification Manager

KEMA Quality B.V.
Utrechtseweg 310, 6812 AR Arnhem, The Netherlands
P.O. Box 5185, 6802 ED Arnhem, The Netherlands
Telephone +31 26 3 56 20 08, Telefax +31 26 3 52 58 00

ACCREDITED BY THE DUTCH COUNCIL FOR ACCREDITATION

PRODUCTS RvA C 001

5 Port Solenoid Valve

Series 56-SV

(+COM, -COM common)

CE Ex II 3GD EEx nA II T5X T90° IP67

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

How to Order

56 - SV 1 1 0 0 [ ] [ ] — 5 F Z [ ]

ATEX category 3

Series

1	56-SV1000
2	56-SV2000
3	56-SV3000
4	56-SV4000

Configuration

1	2-position single solenoid
2	2-position double solenoid
3	3-position closed centre
4	3-position exhaust centre
5	3-position pressure centre
A	4-position dual 3 port valve: N.C./N.C.
B	4-position dual 3 port valve: N.O./N.O.
C	4-position dual 3 port valve: N.C./N.O.

* 4-position dual 3 port valve is only available in 56-SV1000 and 2000 series.

Pilot

Nil	Internal pilot
R	External pilot

* External pilot specification is not available in 4-position dual 3-port valve.

Back pressure check valve

Nil	Not built-in
K	Built-in

* Backpressure check valve type is only available in the 56-SV1000 series
* Backpressure check valve is not incorporated in the 3-position closed centre and 3-position pressure center configurations.

Rated voltage

5	24VDC
6	12VDC

* Only 24VDC is applicable to the 56-EX500 series.

Manual override

Nil	Non lock/ Push type
D	Push turn lock type Driver operation type

Indicator light and surge voltage suppressor

S	With surge voltage suppressor
Z	With indicator light/ surge voltage suppressor

Part No. for blanking plate assembly

SV [1] 000 — 67 — 1A

Series

1	56-SV1000
2	56-SV2000
3	56-SV3000
4	56-SV4000

5 Port Solenoid Valve

Series 56-SV

CE (Ex) II 3GD EEx nA II T5X T90°C IP67

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

How to Order

Applicable to Serial 56-EX500>

Manifold numbering system (Base piping type/ Tie rod base)

56 - SS5V 1 – W 10 N S A2W D – 06 U R – C6

ATEX category 3

Series

1	56-SV1000
2	56-SV2000
3	56-SV3000
4	56-SV4000

IP67 specification

Manifold base common specification

Nil	+COM
N	-COM

SI unit

A2W	Applicable to Profibus For gateway (+COM)
A2WN	Applicable to Profibus For gateway (-COM)

* Common specification for manifold and SI unit should be identical.

Manifold station

04	4 stations	Double wiring Note1)
06	6 stations	
08	8 stations	
04	4 stations	Specified layout (Possible upto 16 solenoids) Note2)
06	6 stations	
08	8 stations	
10	10 stations	

Only the manifold stations above are available.
When a valve number does not correspond to a manifold station, use a blanking plate to match both numbers.
Note1) Double wiring specification: single, double, 3-position, and 4-position solenoid valve can be used for all manifold station. When using a single solenoid, some control signals will not be counted. Therefore, specify the signal layout at the time an order is placed.
Note2) Layout specification:
Please use the Manifold Specification Sheet to provide wiring. (The double solenoid valve and 3-position or 4-position solenoid valve are not available when single wiring is specified. Please note this.)

Position of P, E port

U	U side (4 to 10 stations)
D	D side (4 to 10 stations)
B	Both sides (4 to 10 stations)

SUP/EXH block ass'y specification

Nil	Internal pilot specification
R	External pilot specification

A, B port size (mm)

Symbol	A & B port	P & E port	Series
C3	ø3.2 One-touch fitting	ø8 One-touch fitting	56-SV1000 series
C4	ø4 One-touch fitting		
C6	ø6 One-touch fitting		
C4	ø4 One-touch fitting	ø10 One-touch fitting	56-SV2000 series
C6	ø6 One-touch fitting		
C8	ø8 One-touch fitting		
C6	ø6 One-touch fitting	ø12 One-touch fitting	56-SV3000 series
C8	ø8 One-touch fitting		
C10	ø10 One-touch fitting		
C8	ø8 One-touch fitting	ø12 One-touch fitting	56-SV4000 series
C10	ø10 One-touch fitting		
C12	ø12 One-touch fitting		
02	Rc 1/4	Rc 3/8	
03	Rc 3/8		
02F	G 1/4	G 3/8	
03F	G 3/8		
M	Mixture of A and B ports		

A, B port size (inch)

Symbol	A & B port	P & E port	Series
N1	ø1/8" One-touch fitting	ø5/16" One-touch fitting	56-SV1000 series
N3	ø5/32" One-touch fitting		
N7	ø1/4" One-touch fitting		
N3	ø5/32" One-touch fitting	ø3/8" One-touch fitting	56-SV2000 series
N7	ø1/4" One-touch fitting		
N9	ø5/16" One-touch fitting		
N7	ø1/4" One-touch fitting	ø3/8" One-touch fitting	56-SV3000 series
N9	ø5/16" One-touch fitting		
N11	ø3/8" One-touch fitting		
N9	ø5/16" One-touch fitting	ø3/8" One-touch fitting	56-SV4000 series
N11	ø3/8" One-touch fitting		
02N	NPT 1/4	NPT 3/8	
03N	NPT 3/8		
02T	NPTF 1/4	NPTF 3/8	
03T	NPTF 3/8		
M	Mixture of A and B ports		

Note 1: Please complete the Manifold Specification Sheet when specifying the mixture specification (M).
Note2: For the external pilot specification (R), the X and PE port size are as follows:
- ø4mm or ø5/32" for the 56-SV1000 and 56-SV2000 series
- ø6mm or ø1/4" for the 56-SV3000 and 56-SV4000 series

5 Port Solenoid Valve

Series 56-SV

CE Ex II 3GD EEx nA II T5X T90° IP67

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

How to Order

Applicable to multi-connector>

Manifold numbering system (Base piping type/ Tie rod base)

56 - SS5V 1 – W 10 N CD – 06 U R – C6 –

ATEX category 3

Series

1	56-SV1000
2	56-SV2000
3	56-SV3000
4	56-SV4000

IP67 specification

Manifold base common specification

Nil	+COM
N	-COM

Position of P, E port

U	U side (4 to 10 stations)
D	D side (4 to 10 stations)
B	Both sides (4 to 10 stations)

SUP/EXH block assembly specification

Nil	Internal pilot specification
R	External pilot specification

Voltage specification

Nil	24VDC
12V	12VDC

* Please pay attention to the polarity because a diode for protecting against miswiring is not incorporated in the 12VDC version.

Manifold station

04	4 stations	Double wiring Note1)
06	6 stations	
08	8 stations	
10	10 stations	
04	4 stations	Specified layout Note2)
06	6 stations	
08	8 stations	
10	10 stations	

Only the manifold stations above are available.
When a valve number does not correspond to a manifold station, use a blanking plate to match both numbers.
Note1) Double wiring specification: single, double, 3-position, and 4-position solenoid valve can be used for all manifold station. When using a single solenoid, some control signals will not be counted. Therefore, specify the signal layout at the time an order is placed.
Note2) Layout specification:
Please use the Manifold Specification Sheet to provide wiring. (The double solenoid valve and 3-position or 4-position solenoid valve are not available when single wiring is specified. Please note this.)

A, B port size (mm)

Symbol	A & B port	P & E port	Series
C3	ø3.2 One-touch fitting	ø8 One-touch fitting	56-SV1000 series
C4	ø4 One-touch fitting		
C6	ø6 One-touch fitting		
C4	ø4 One-touch fitting	ø10 One-touch fitting	56-SV2000 series
C6	ø6 One-touch fitting		
C8	ø8 One-touch fitting		
C6	ø6 One-touch fitting	ø12 One-touch fitting	56-SV3000 series
C8	ø8 One-touch fitting		
C10	ø10 One-touch fitting		
C8	ø8 One-touch fitting	ø12 One-touch fitting	56-SV4000 series
C10	ø10 One-touch fitting		
C12	ø12 One-touch fitting		
02	Rc 1/4	Rc 3/8	
03	Rc 3/8		
02F	G 1/4	G 3/8	
03F	G 3/8		
M	Mixture of A and B ports		

A, B port size (inch)

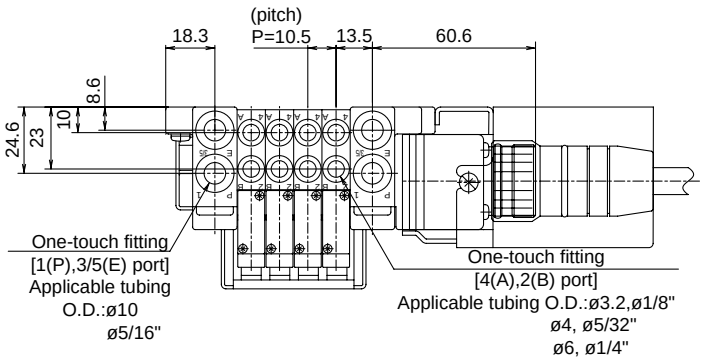
Symbol	A & B port	P & E port	Series
N1	ø1/8" One-touch fitting	ø5/16" One-touch fitting	56-SV1000 series
N3	ø5/32" One-touch fitting		
N7	ø1/4" One-touch fitting		
N3	ø5/32" One-touch fitting	ø3/8" One-touch fitting	56-SV2000 series
N7	ø1/4" One-touch fitting		
N9	ø5/16" One-touch fitting		
N7	ø1/4" One-touch fitting	ø3/8" One-touch fitting	56-SV3000 series
N9	ø5/16" One-touch fitting		
N11	ø3/8" One-touch fitting		
N9	ø5/16" One-touch fitting	ø3/8" One-touch fitting	56-SV4000 series
N11	ø3/8" One-touch fitting		
02N	NPT 1/4	NPT 3/8	
03N	NPT 3/8		
02T	NPTF 1/4	NPTF 3/8	
03T	NPTF 3/8		
M	Mixture of A and B ports		

Note 1: Please complete the Manifold Specification Sheet when specifying the mixture specification (M).
Note2: For the external pilot specification (R), the X and PE port size are as follows:
- ø4mm or ø5/32" for the 56-SV1000 and 56-SV2000 series
- ø6mm or ø1/4" for the 56-SV3000 and 56-SV4000 series

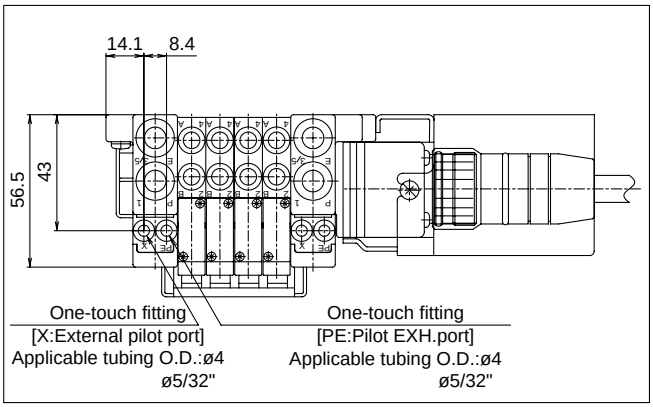
Dimensions

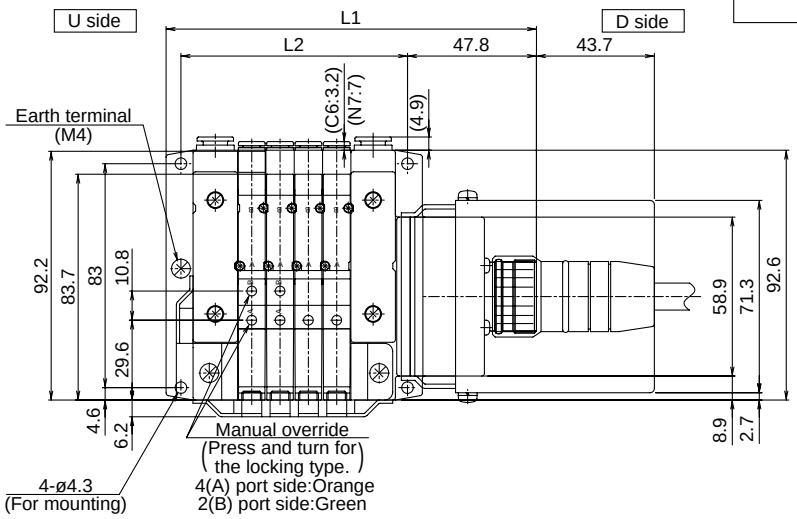
Conform to ATEX directive
Dimensions/ Series 56-SV1000
Circular Connector
Tie-rod base manifold: 56-SS5V1-W10□CD- Stations U D B (R)- C3,N1 C4,N3 C6,N7

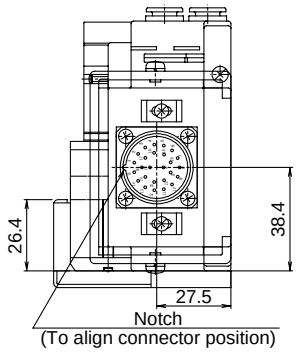
*When P,E port outlets are indicated on the U side or D side, the P,E ports on the opposite side are plugged.
*External pilot port positions are the same as P,E port outlet positions.

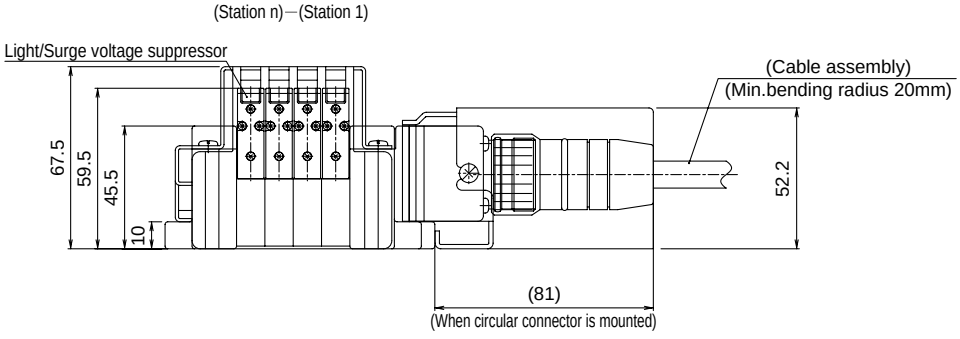


With external pilot specification









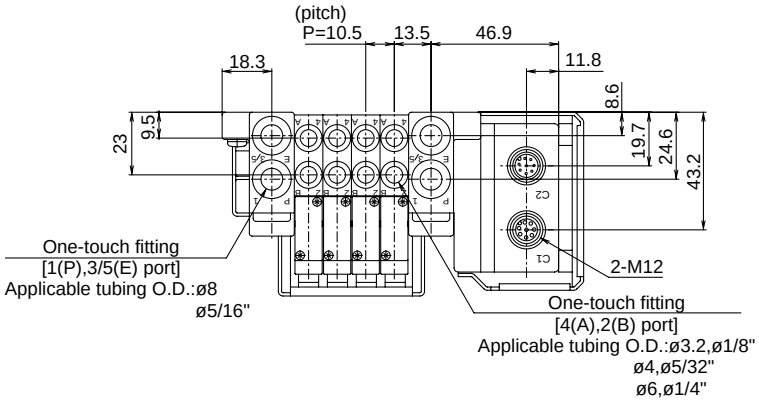
L:dimensions
n:stations

L \ n	4	6	8	10
L1	137.3	158.3	179.3	200.3
L2	84	105	126	147

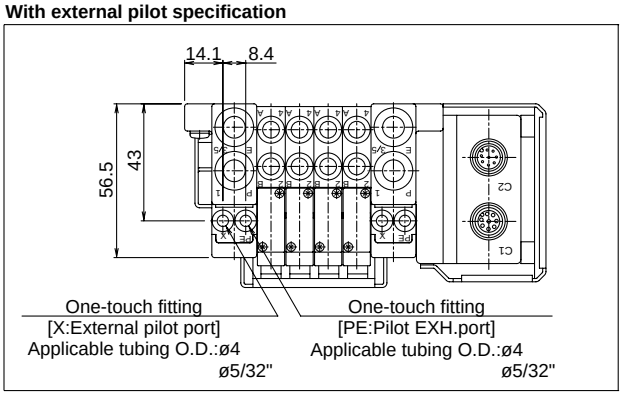
Dimensions

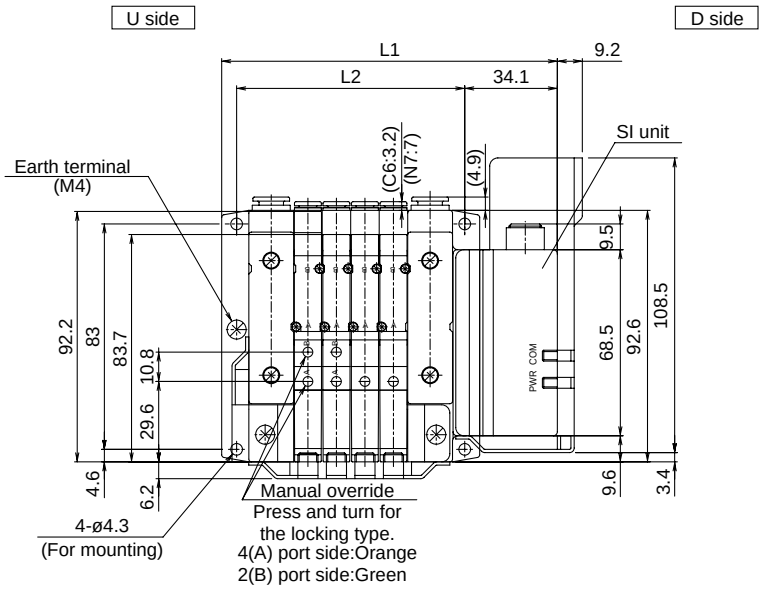
Conform to ATEX directive
Dimensions/ Series 56-SV1000
56-EX500 Decentralised Serial Wiring
Tie-rod base manifold: 56-SS5V1-W10□SA□W□D- Stations U D B (R)- C3,N1 C4,N3 C6,N7

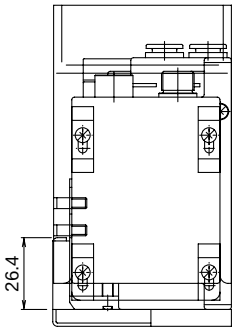
*When P,E port outlets are indicated on the U side or D side, the P,E ports on the opposite side are plugged.
*External pilot port positions are the same as P,E port outlet positions.



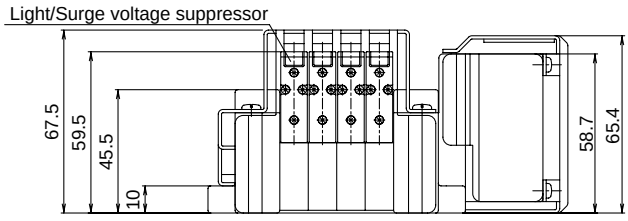
With external pilot specification







(Station n) – (Station 1)



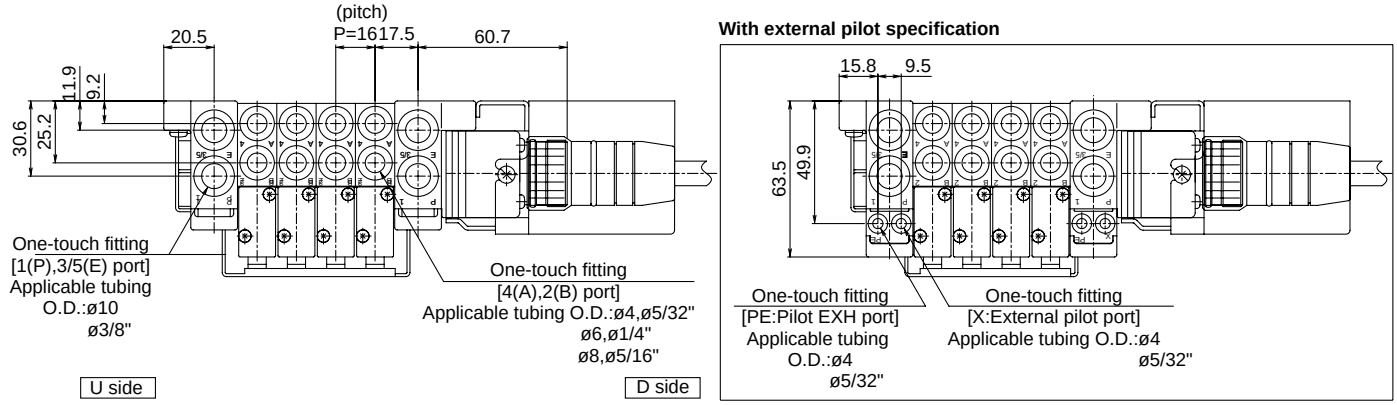
L:dimensions
n:stations

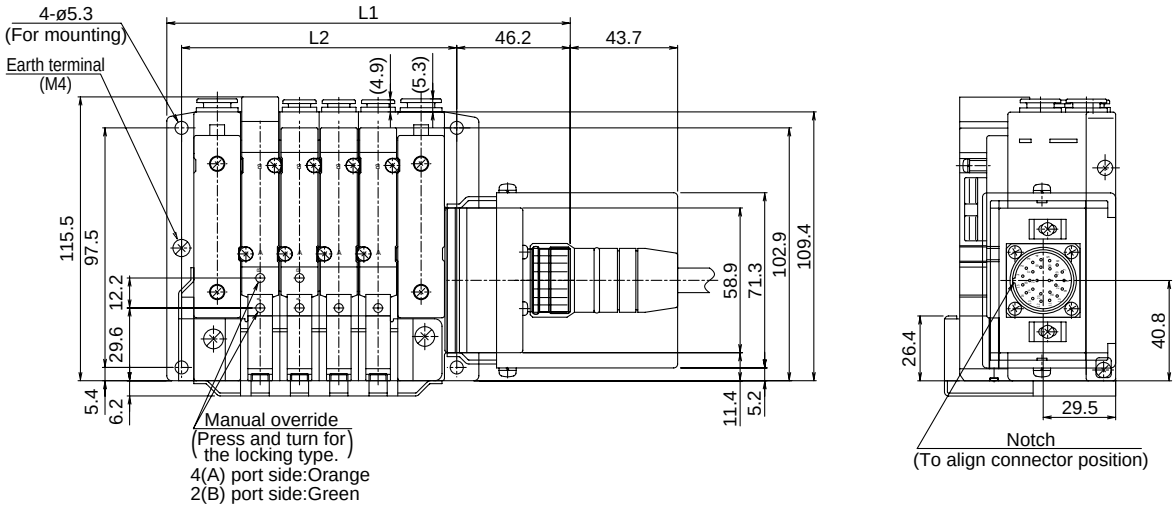
L \ n	4	6	8	10
L1	123.6	144.6	165.6	186.6
L2	84	105	126	147

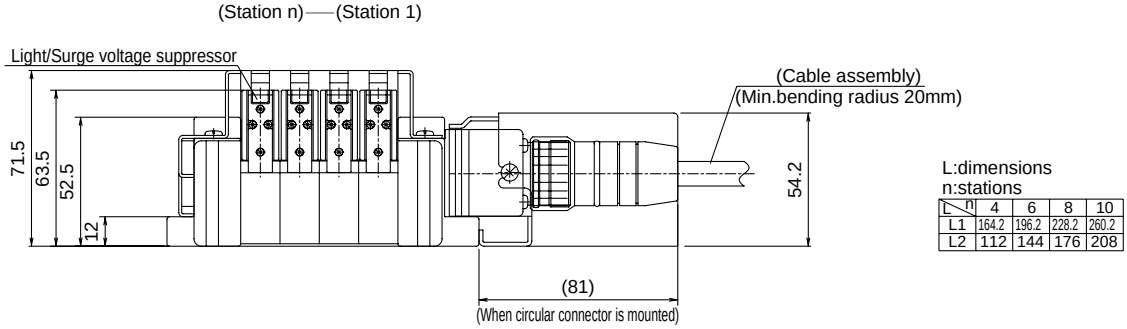
Dimensions

Conform to ATEX directive
Dimensions/ Series 56-SV2000
Circular Connector
Tie-rod base manifold: 56-SS5V2-W10□CD- Stations U/D/B (R)- C4,N3 / C6,N7 / C8,N9

*When P,E port outlets are indicated on the U side or D side, the P,E ports on the opposite side are plugged.
*External pilot port positions are the same as P,E port outlet positions.







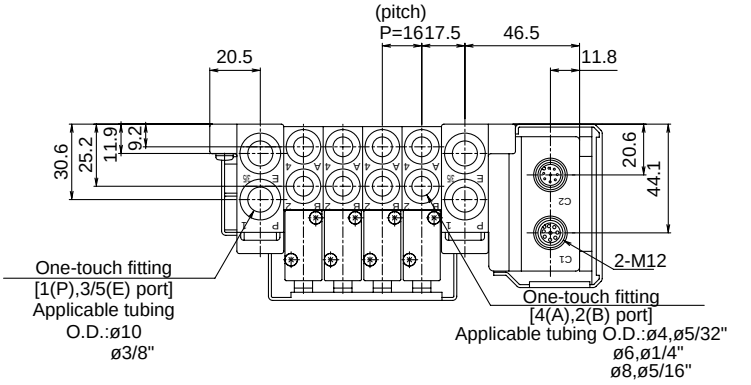
L:dimensions
n:stations

L \ n	4	6	8	10
L1	164.2	196.2	228.2	260.2
L2	112	144	176	208

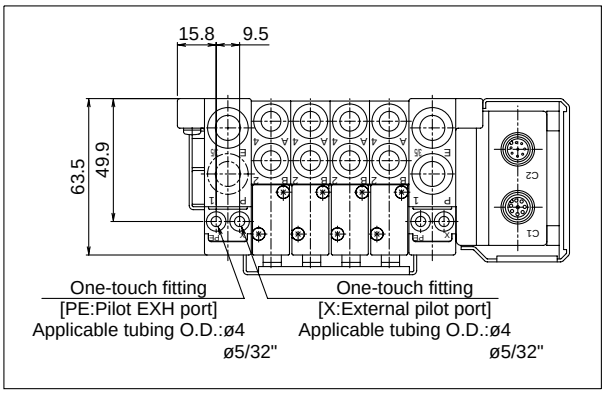
Dimensions

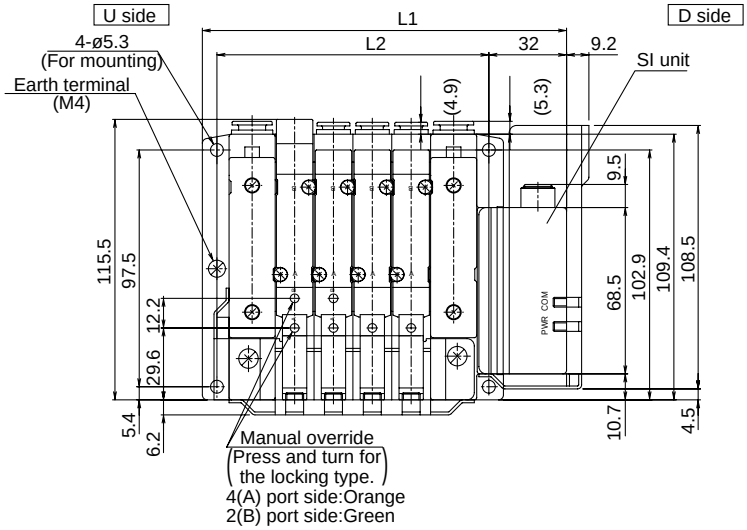
Conform to ATEX directive
Dimensions/ Series 56-SV2000
56-EX500 Decentralised Serial Wiring
Tie-rod base manifold: 56-SS5V2-W10□SA□W□D- Stations U D B (R)- C4,N3 C6,N7 C8,N9

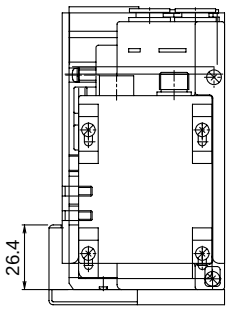
*When P,E port outlets are indicated on the U side or D side, the P,E ports on the opposite side are plugged.
*External pilot port positions are the same as P,E port outlet positions.

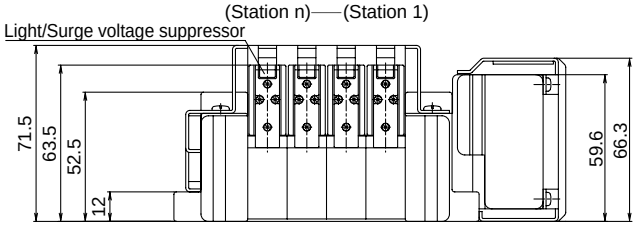


With external pilot specification









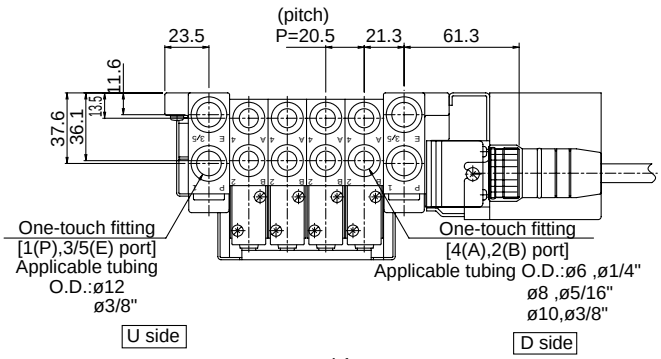
L:dimensions
n:stations

L \ n	4	6	8	10
L1	150	182	214	246
L2	112	144	176	208

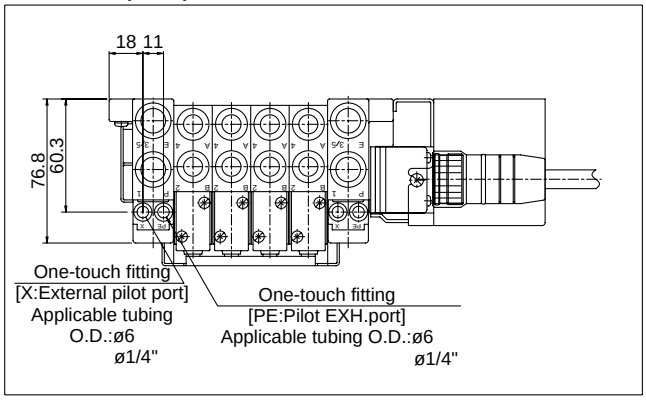
Dimensions

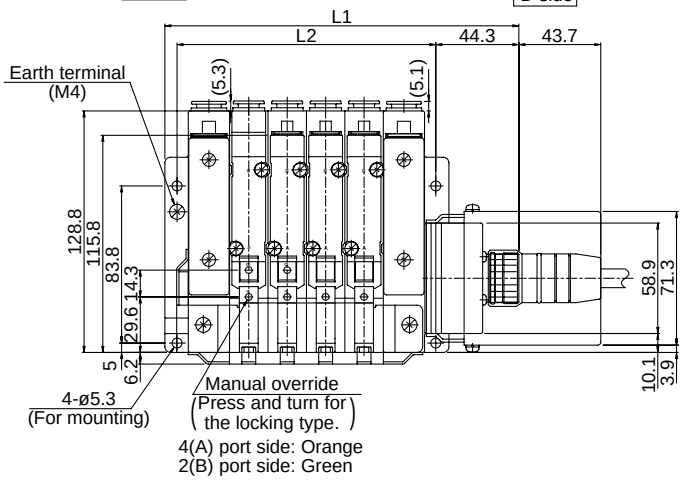
Conform to ATEX directive
Dimensions/ Series 56-SV3000
Circular Connector
Tie-rod base manifold: 56-SS5V3-W10□CD- **Stations** U D B **(R)-** C6,N7 C8,N9 C10,N11

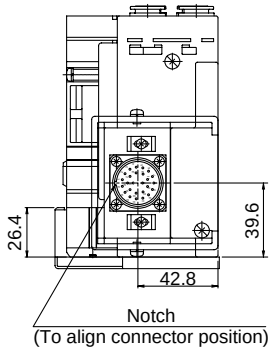
*When P,E port outlets are indicated on the U side or D side, the P,E ports on the opposite side are plugged.
*External pilot port positions are the same as P,E port outlet positions.



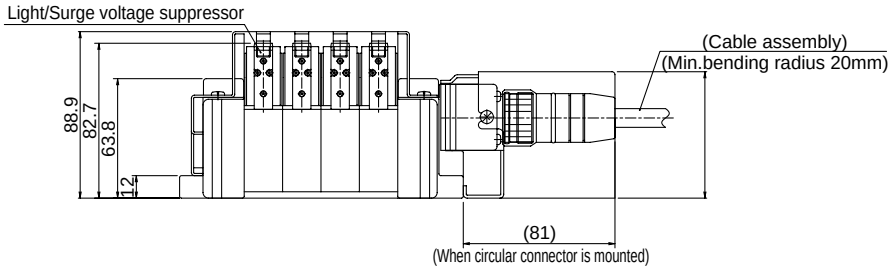
With external pilot specification







(Station n) —— (Station 1)



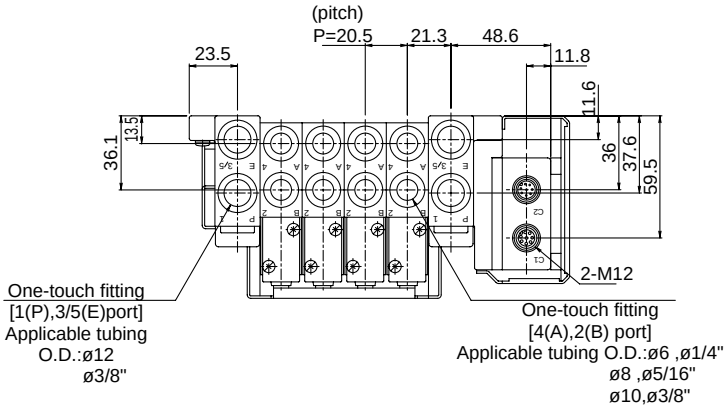
L:dimensions
n:stations

L \ n	4	6	8	10
L1	188.8	229.8	270.8	311.8
L2	138	179	220	261

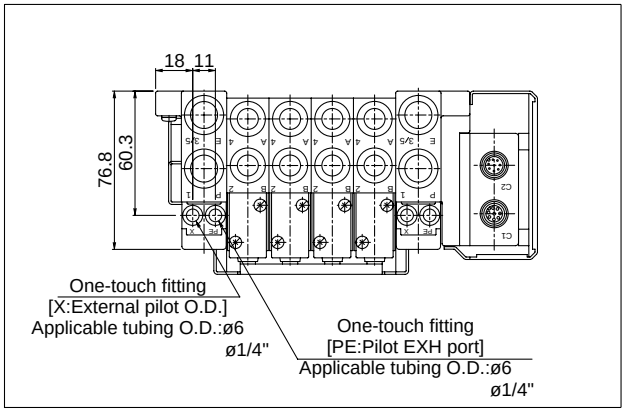
Dimensions

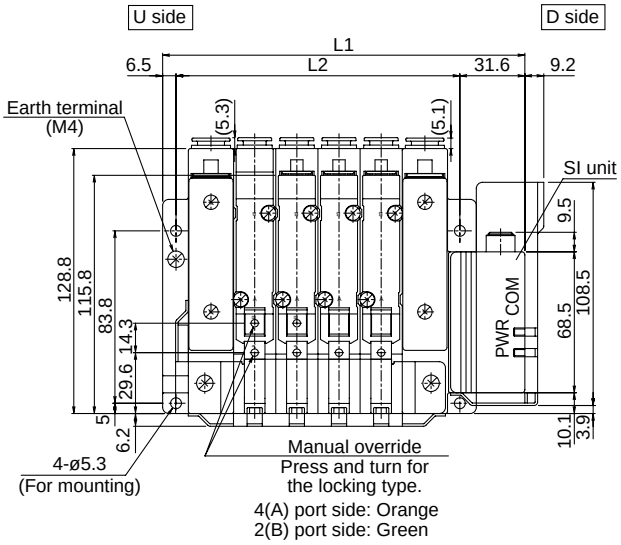
Conform to ATEX directive
Dimensions/ Series 56-SV3000
56-EX500 Decentralised Serial Wiring
Tie-rod base manifold: 56-SS5V3-W10□SA□W□D- Stations U D B (R)- C6,N7 C8,N9 C10,N11

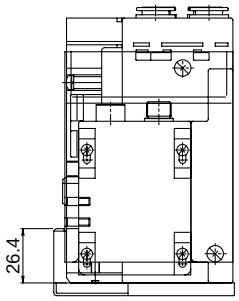
*When P,E port outlets are indicated on the U side or D side, the P,E ports on the opposite side are plugged.
*External pilot port positions are the same as P,E port outlet positions.



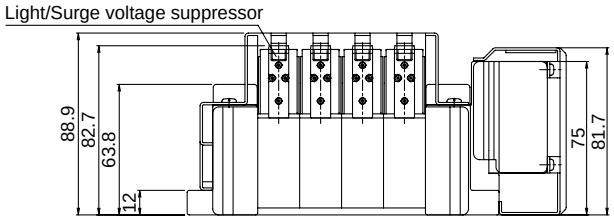
With external pilot specification







(Station n)——(Station 1)



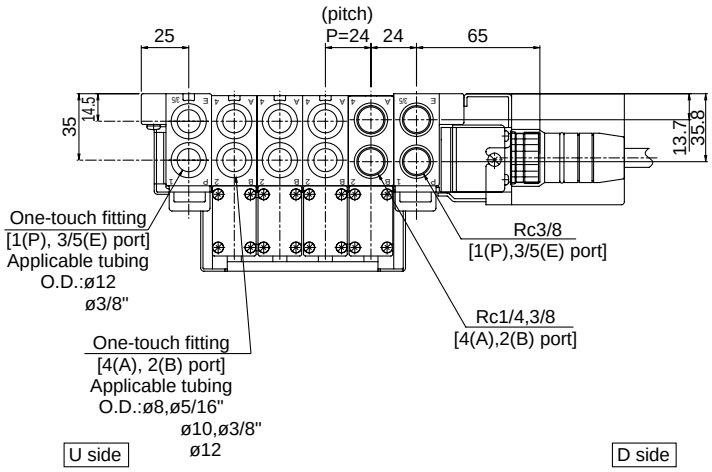
L:dimensions
n:stations

L \ n	4	6	8	10
L1	176.1	217.1	258.1	299.1
L2	138	179	220	261

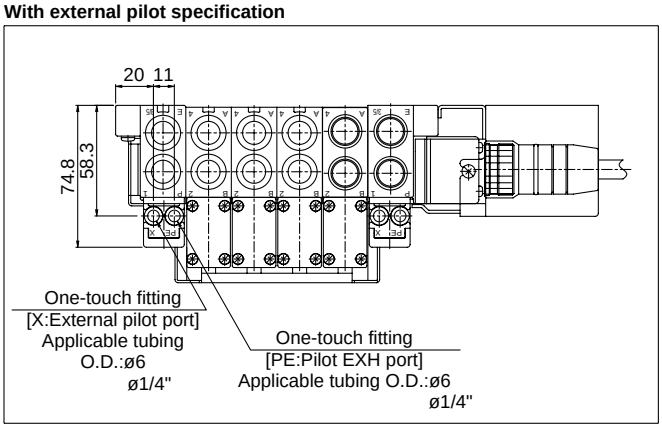
Dimensions

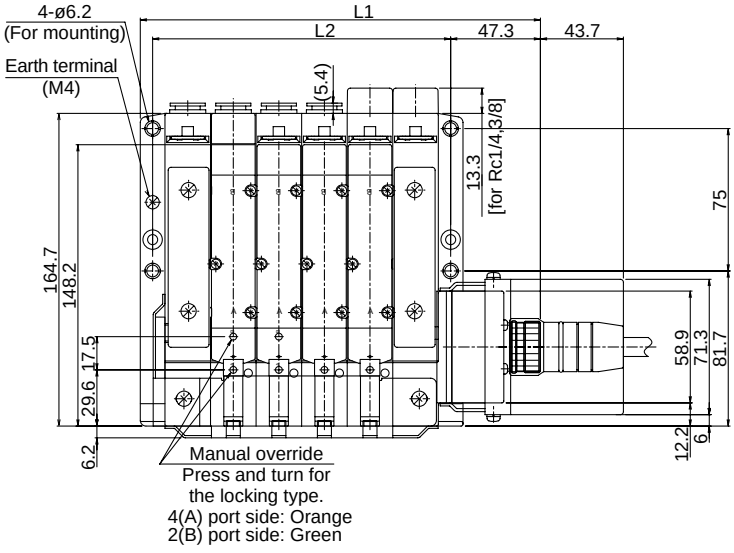
Conform to ATEX directive
Dimensions/ Series 56-SV4000
Circular Connector
Tie-rod base manifold: 56-SS5V4-W10□CD- Stations U D B (R)- 02,C8, 03,C10,N9 C12,N11

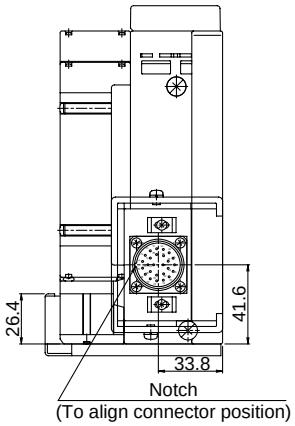
*When P,E port outlets are indicated on the U side or D side, the P,E ports on the opposite side are plugged.
*External pilot port positions are the same as P,E port outlet positions.

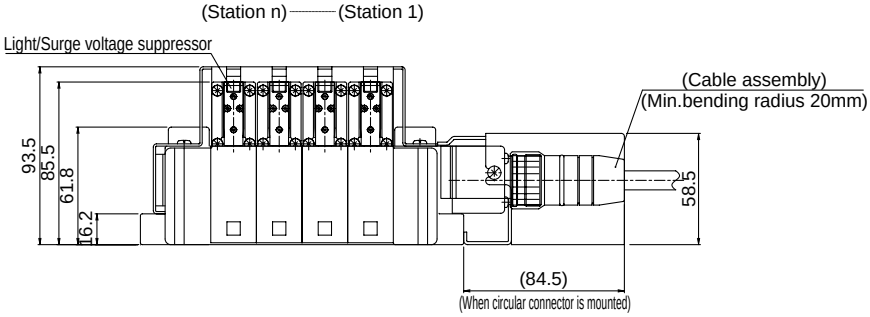


With external pilot specification









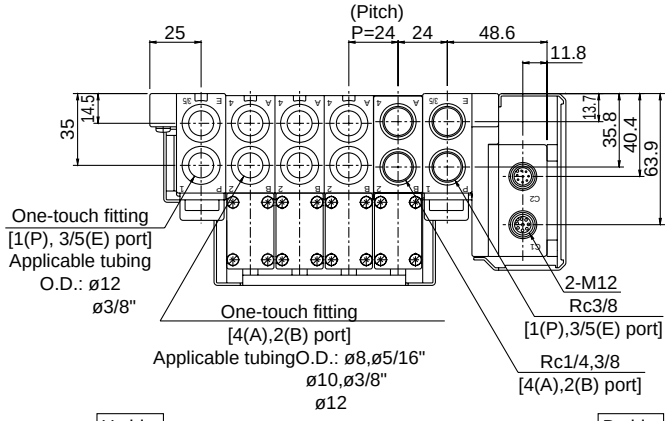
L:dimensions
n:stations

L \ n	4	6	8	10
L1	210.8	258.8	306.8	354.8
L2	157	205	253	301

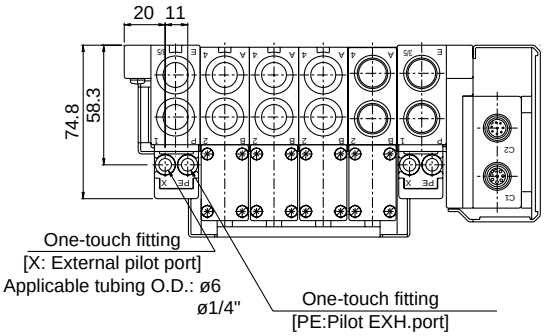
Dimensions

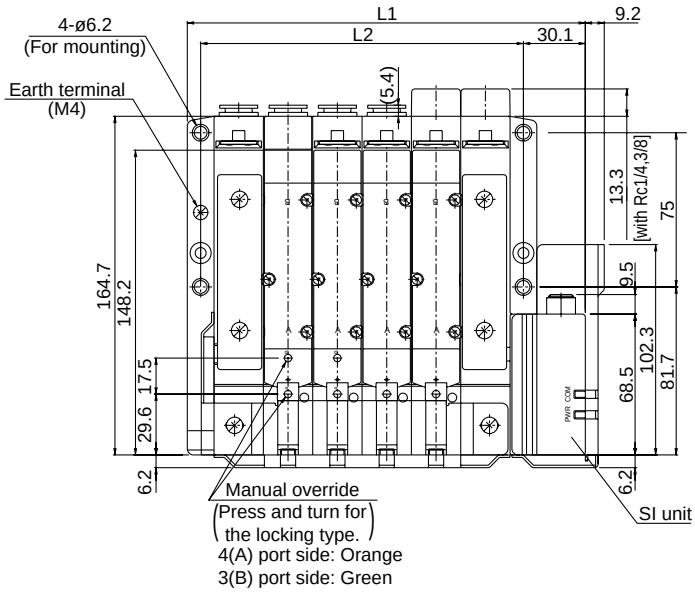
Conform to ATEX directive
Dimensions/ Series 56-SV4000
56-EX500 Decentralised Serial Wiring
Tie-rod base manifold: 56-SS5V4-W10□SA□W□D- Stations U D B (R)- 02,C8, 03,C10,N9 C12,N11

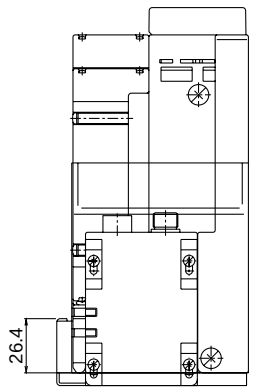
*When P,E port outlets are indicated on the U side or D side, the P,E ports on the opposite side are plugged.
*External pilot port positions are the same as P,E port outlet positions.

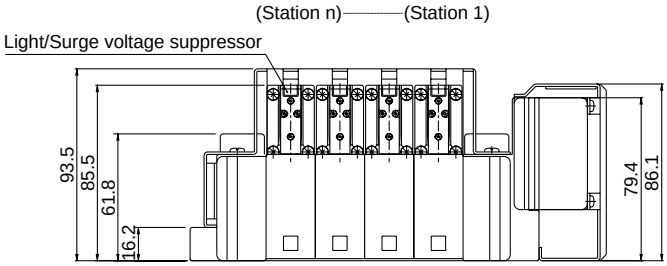


With external pilot specification









L:dimensions
n:stations

n / L	4	6	8	10
L1	193.6	241.6	289.6	337.6
L2	157	205	253	301

5-Port Solenoid Valve
Series 56-VQC1000

CE (Ex) II 3GD EEx nA II T5X T85°C IP67

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

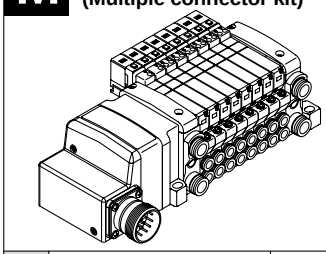
Nil	None
B	All stations with back pressure check valve
D	With DIN rail (rail length: standard)
D□	With DIN rail (rail length: special)
K	Special wiring specifications (except for double wiring)
N	With name plate
R	External pilot

COM.

N	(–) COM.

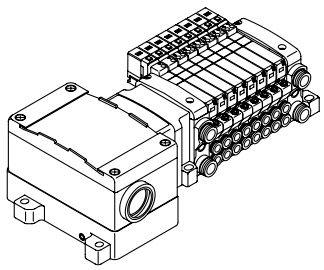
Kit designation/Electrical entry/Cable length

M **Kit (Multiple connector kit)**



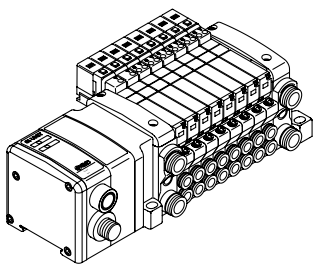
MD0	Multiple connector kit (26P) without cable	1 to 12 stations (24 stations)
MD1	Multiple connector kit (26P) with 1.5m cable	
MD2	Multiple connector kit (26P) with 3.0m cable	
MD3	Multiple connector kit (26P) with 5.0m cable	

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



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

S **Kit (Serial output kit)**



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

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

Function

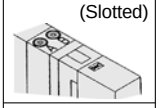
Nil	Standard type
R	External pilot

Coil voltage

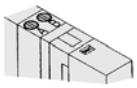
5	24VDC

Manual override

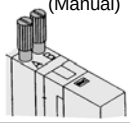
Nil: Non-locking push type (Slotted)



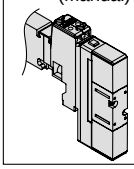
B: Locking type (Slotted)



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.

5-Port Solenoid Valve
Series 56-VQC2000

CE Ⓔx II 3GD EEx nA II T5X T85°C IP67

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

Options

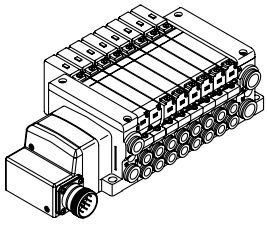
Nil	None
B	All stations with back pressure check valve
D	With DIN rail (rail length: standard)
D□	With DIN rail (rail length: special)
K	Special wiring specifications (except for double wiring)
N	With name plate
R	External pilot
T	Branched P and R ports on U side

COM.

N	(–) COM.

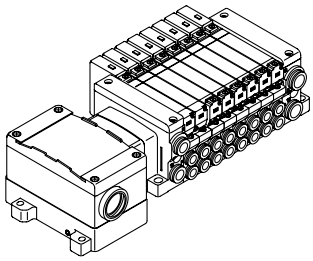
Kit designation/Electrical entry/Cable length

M **Kit (Multiple connector kit)**



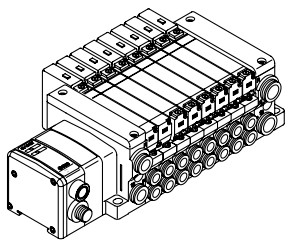
MD0	Multiple connector kit (26P) without cable	1 to 12 stations (24 stations)
MD1	Multiple connector kit (26P) with 1.5m cable	
MD2	Multiple connector kit (26P) with 3.0m cable	
MD3	Multiple connector kit (26P) with 5.0m cable	

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



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

S **Kit (Serial output kit)**



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

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)(B) 4 2 / 5 1 3 (R1)(P)(R2)	**A** Note)	4-position dual 3-port valve (A) (A) 4 (B) 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) 4 (B) 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) 4 (B) 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

Function

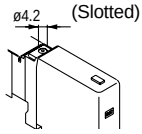
Nil	Standard type (1W)
R	External pilot

Coil voltage

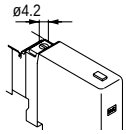
5	24VDC

Manual override

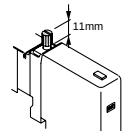
Nil: Non-locking push type (Slotted)



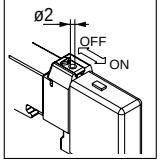
B: Locking type (Slotted)



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.

5-Port Solenoid Valve
Series 56-VQC4000

CE Ex II 3GD EEx nA II T5X T85°C IP67

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

Nil	Rc
F	G
N	NPT
T	NPTF

COM.

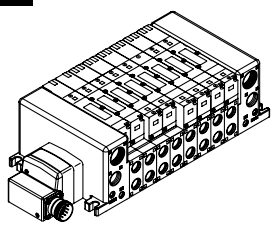
N	(–) COM.

Options

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

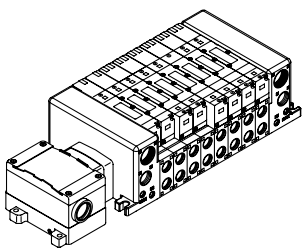
Kit designation/Electrical entry/Cable length

M Kit (Multiple connector kit)



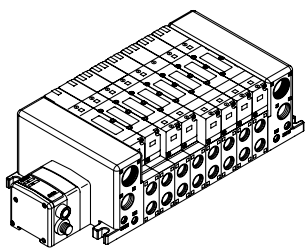
MD0	Multiple connector kit (26P) without cable	1 to 12 stations (16 stations)
MD1	Multiple connector kit (26P) with 1.5m cable	
MD2	Multiple connector kit (26P) with 3.0m cable	
MD3	Multiple connector kit (26P) with 5.0m cable	

T Kit (Terminal block box kit)



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

S Kit (Serial output kit)



Serial kit for gateway (56-EX500)

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

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

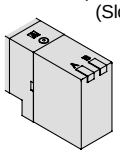
Nil	Standard type (1W)
R	External pilot

Coil voltage

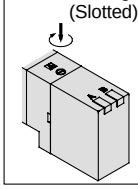
5	24VDC

Manual override

Nil: Non-locking push type (Slotted)



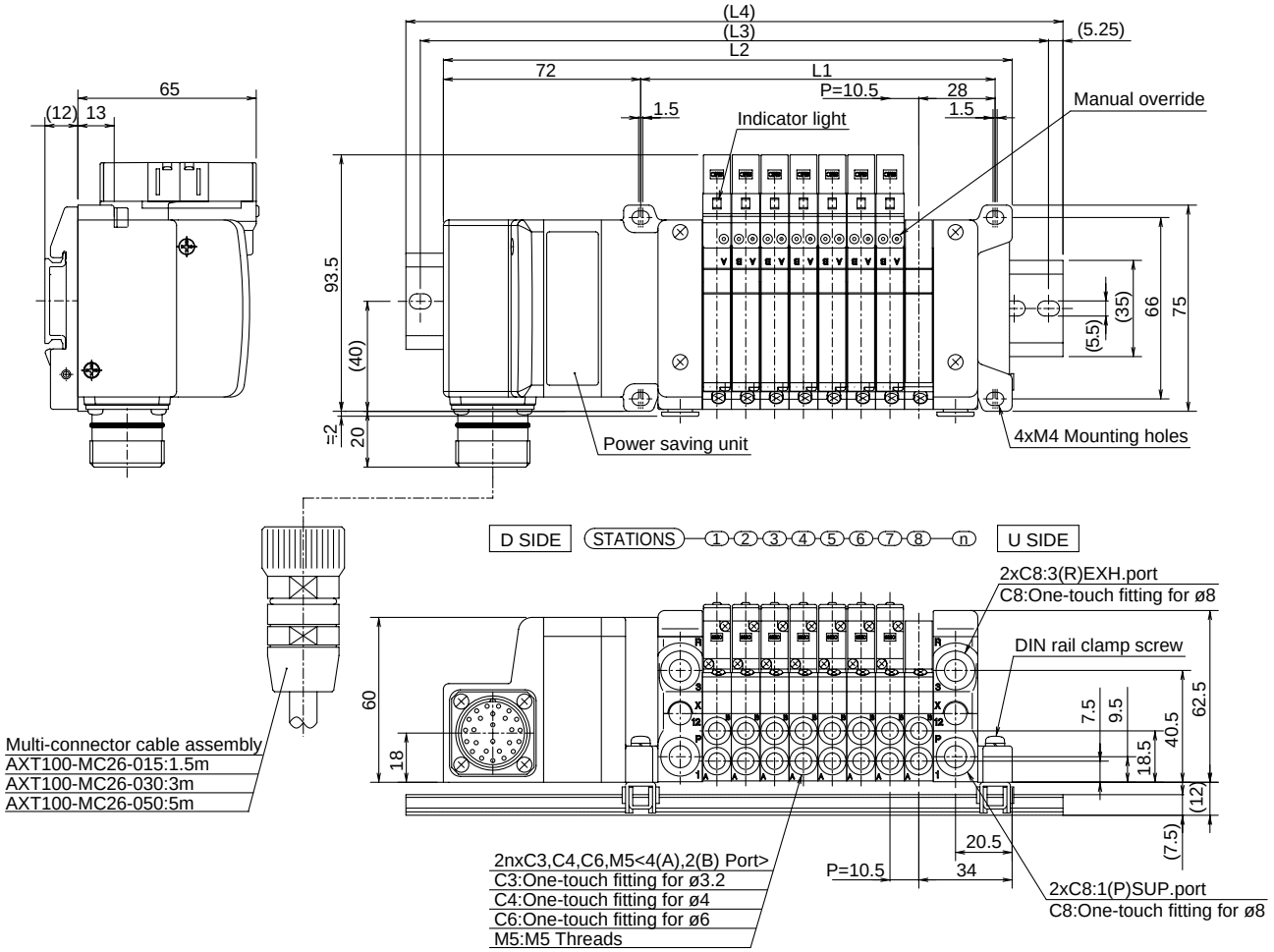
B: Locking type (Slotted)



Note) "56-" solenoid valve should be installed in "56-VV5QC41" manifold.
Power consumption when starting is 1W, when maintaining 0.35W.

M 56-VQC1000
Kit (Multiple Connector Kit)

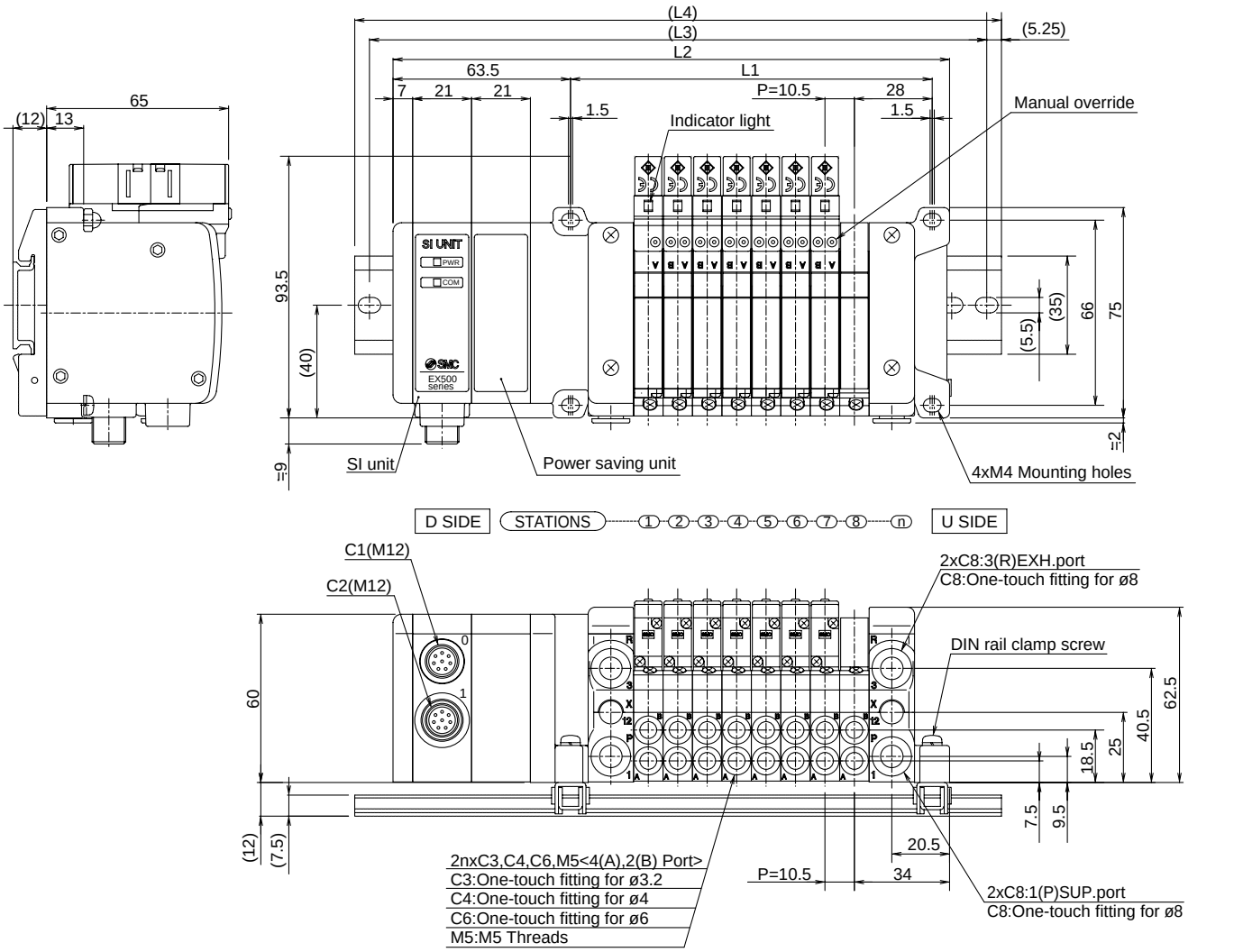
56-VV5QC11



Formulas
L1 = 10.5n + 45
L2 = 10.5n + 123 (1~12 stations w/1 power saving unit)
L2 = 10.5n + 144 (13~24 stations w/2 power saving unit)
n: Stations (Max. 24 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

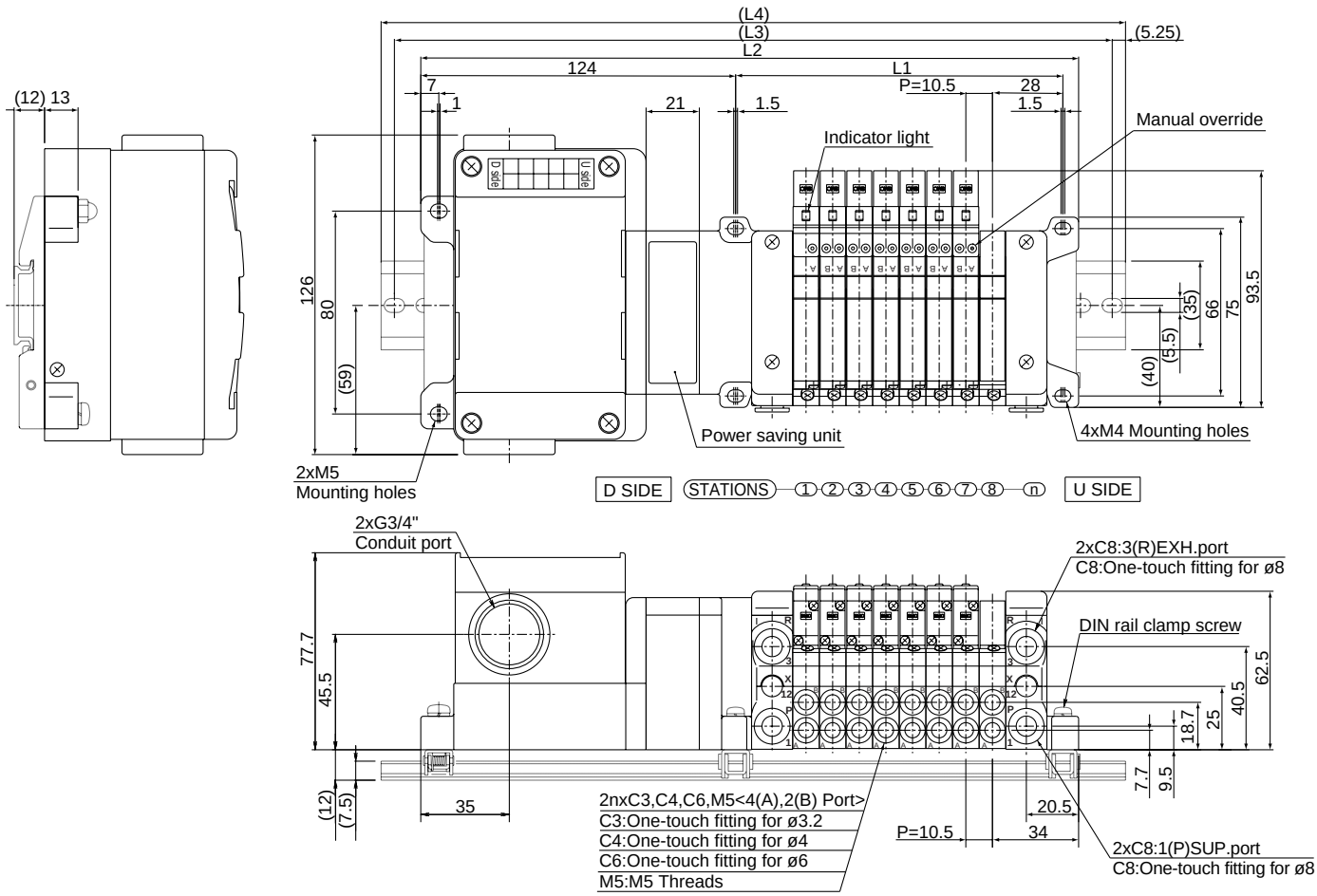
56-VV5QC11
SDA2 Kit (Serial Transmission Kit: 56-EX500)



Formulas
L1 = 10.5n + 45
L2 = 10.5n + 114.5 (1~12 stations w/1 power saving unit)
L2 = 10.5n + 135.5 (13~16 stations w/2 power saving unit)
n: Stations (Max. 16 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	209	219.5	230	240.5	272	282.5	293	303.5
L3	150	162.5	175	187.5	187.5	200	212.5	225	237.5	250	250	262.5	300	312.5	312.5	325
L4	160.5	173	185.5	198	198	210.5	223	235.5	248	260.5	260.5	273	310.5	323	323	335.5

56-VV5QC11



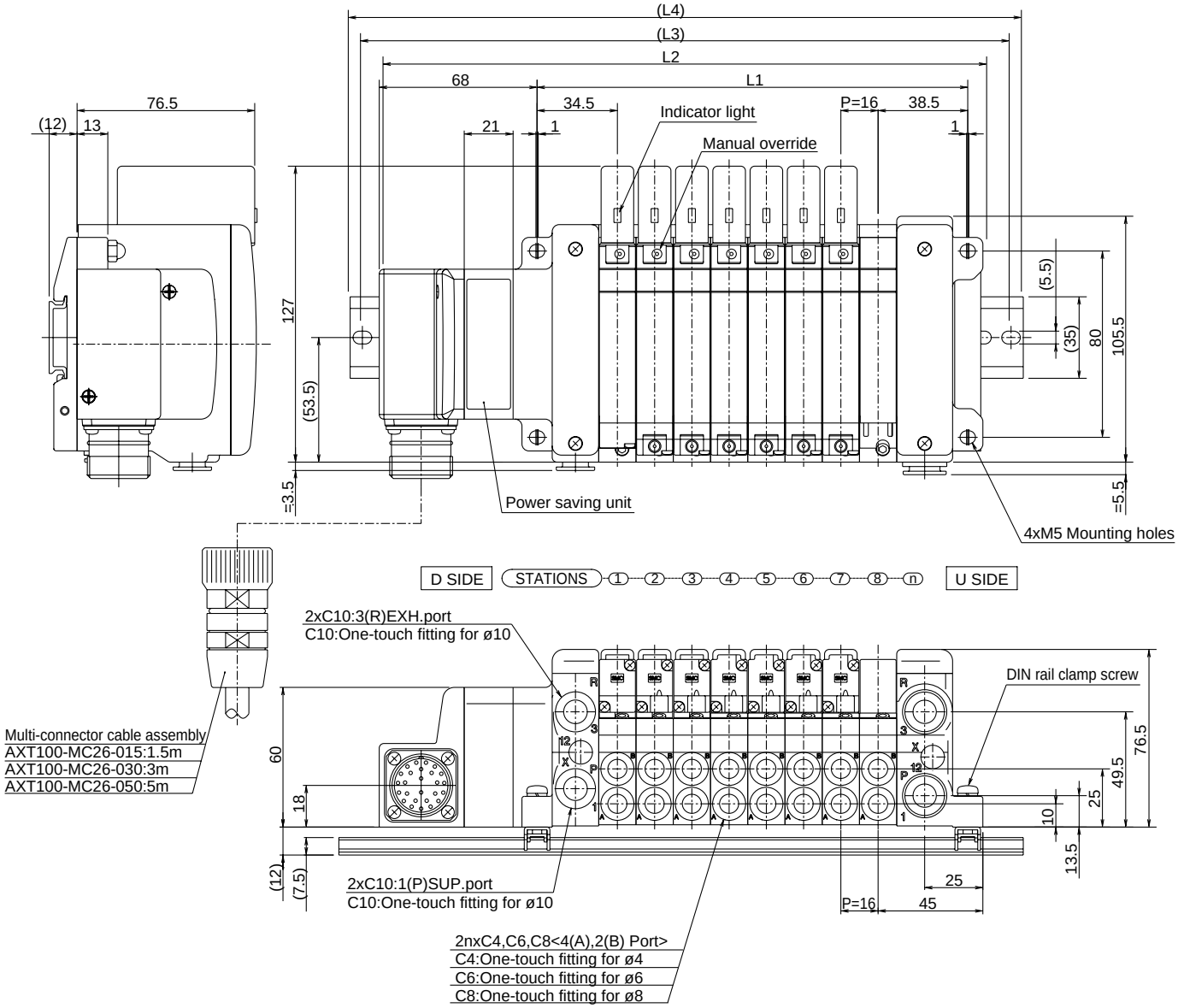
Formulas
L1 = 10.5n + 45
L2 = 10.5n + 175.5 (1~12 stations w/1 power saving unit)
L2 = 10.5n + 196.5 (13~20 stations w/2 power saving unit)

n: Stations (Max. 20 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

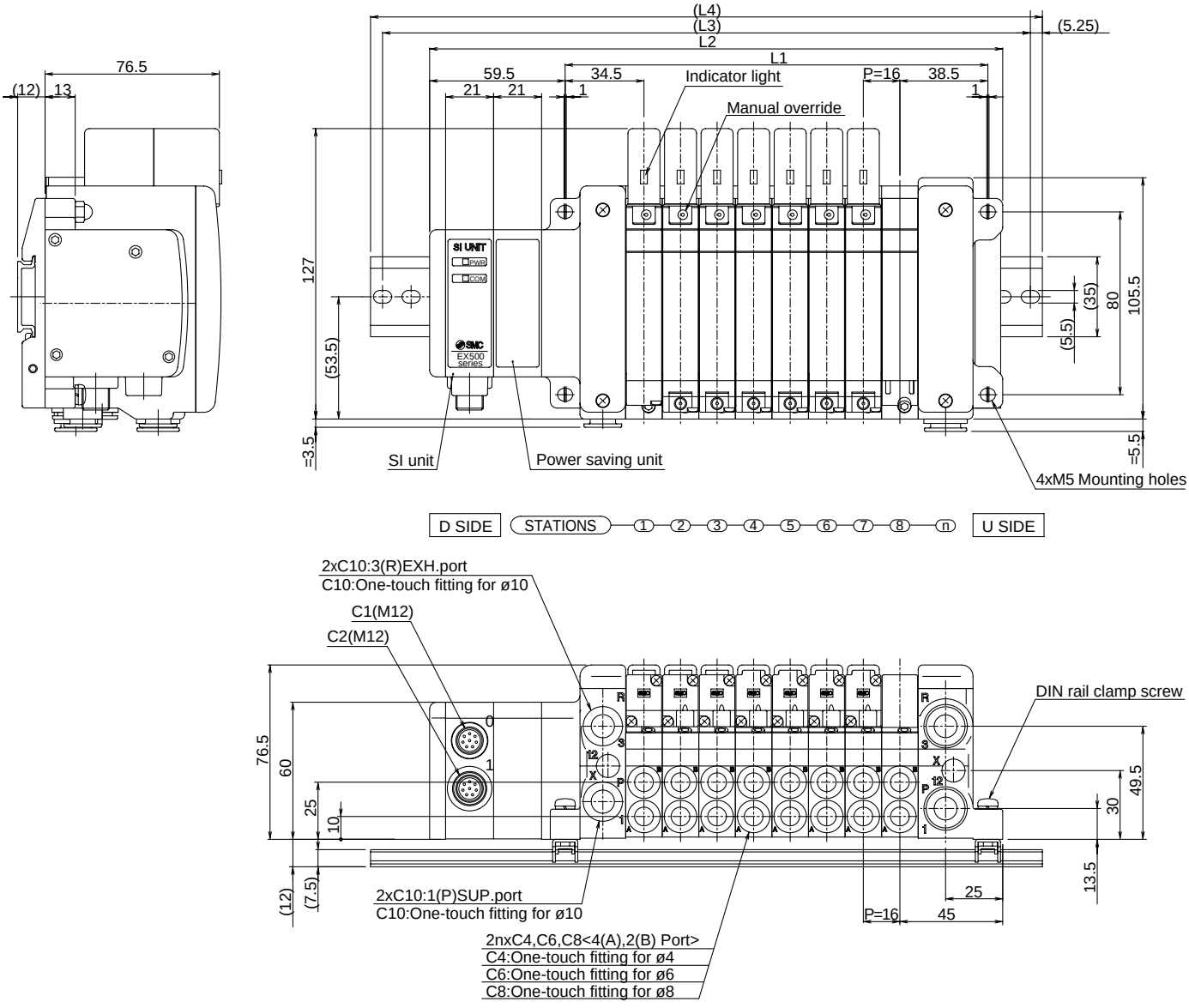


Formulas
L1 = 16n + 57
L2 = 16n + 131.5 (1~12 stations w/1 power saving unit)
L2 = 16n + 152.5 (13~24 stations w/2 power saving unit)

n: Stations (Max. 24 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)

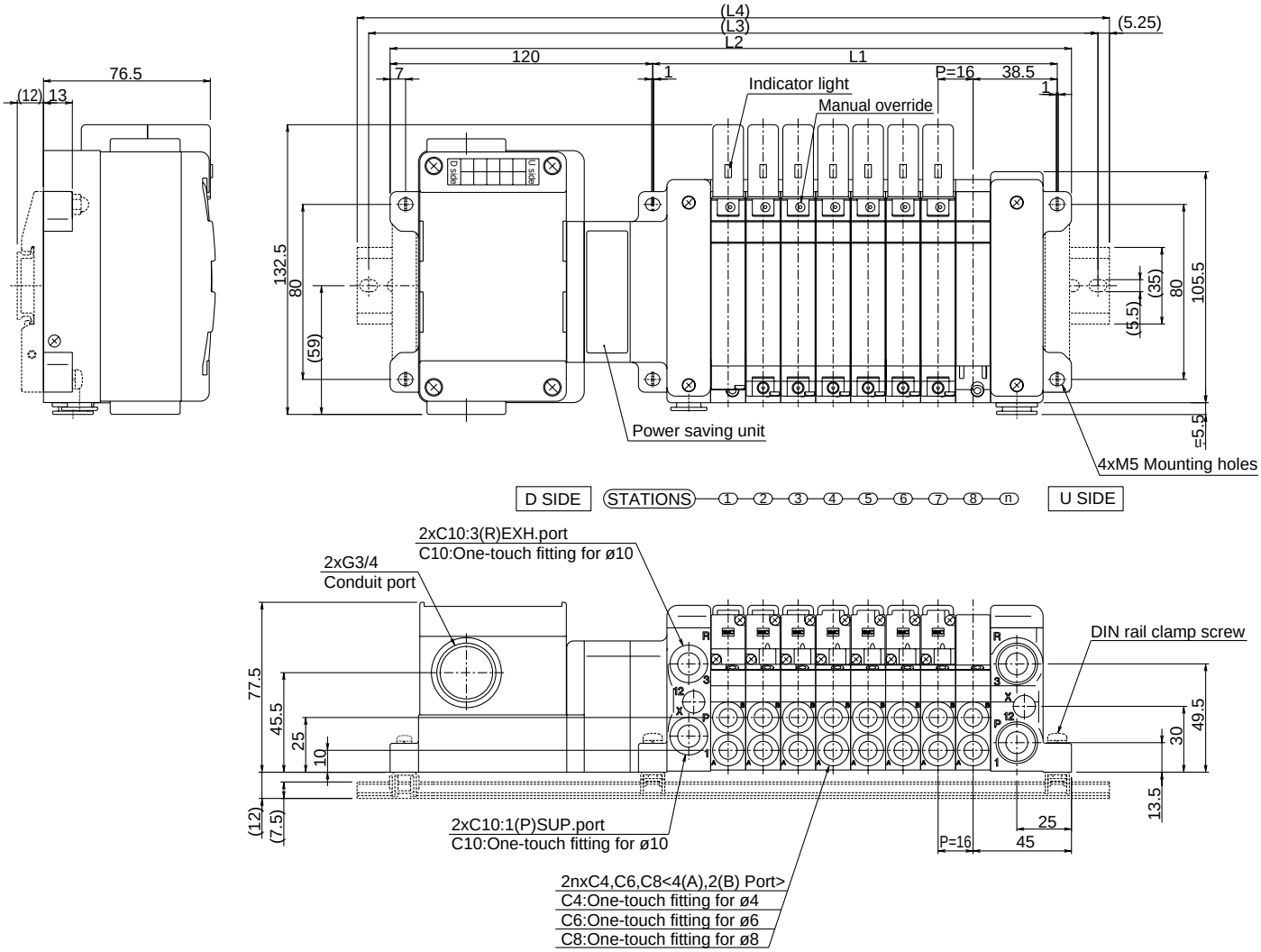


Formulas
L1 = 16n + 57
L2 = 16n + 123 (1~12 stations w/1 power saving unit)
L2 = 16n + 144 (13~16 stations w/2 power saving unit)
n: Stations (Max. 16 stations)

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



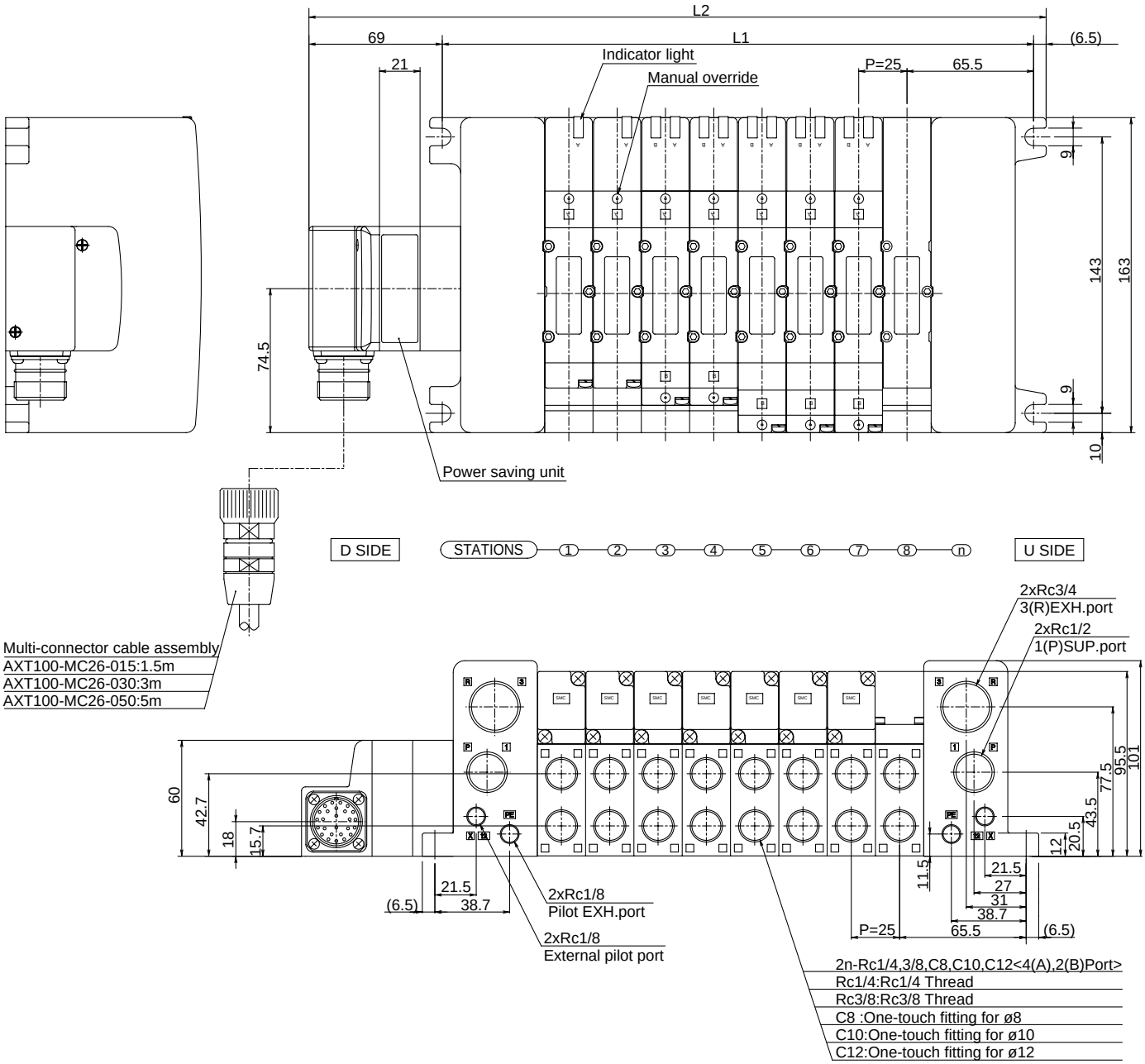
Formulas
L1 = 16n + 45
L2 = 16n + 184 (1~12 stations w/1 power saving unit)
L2 = 16n + 205 (13~20 stations w/2 power saving unit)

n: Stations (Max. 20 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

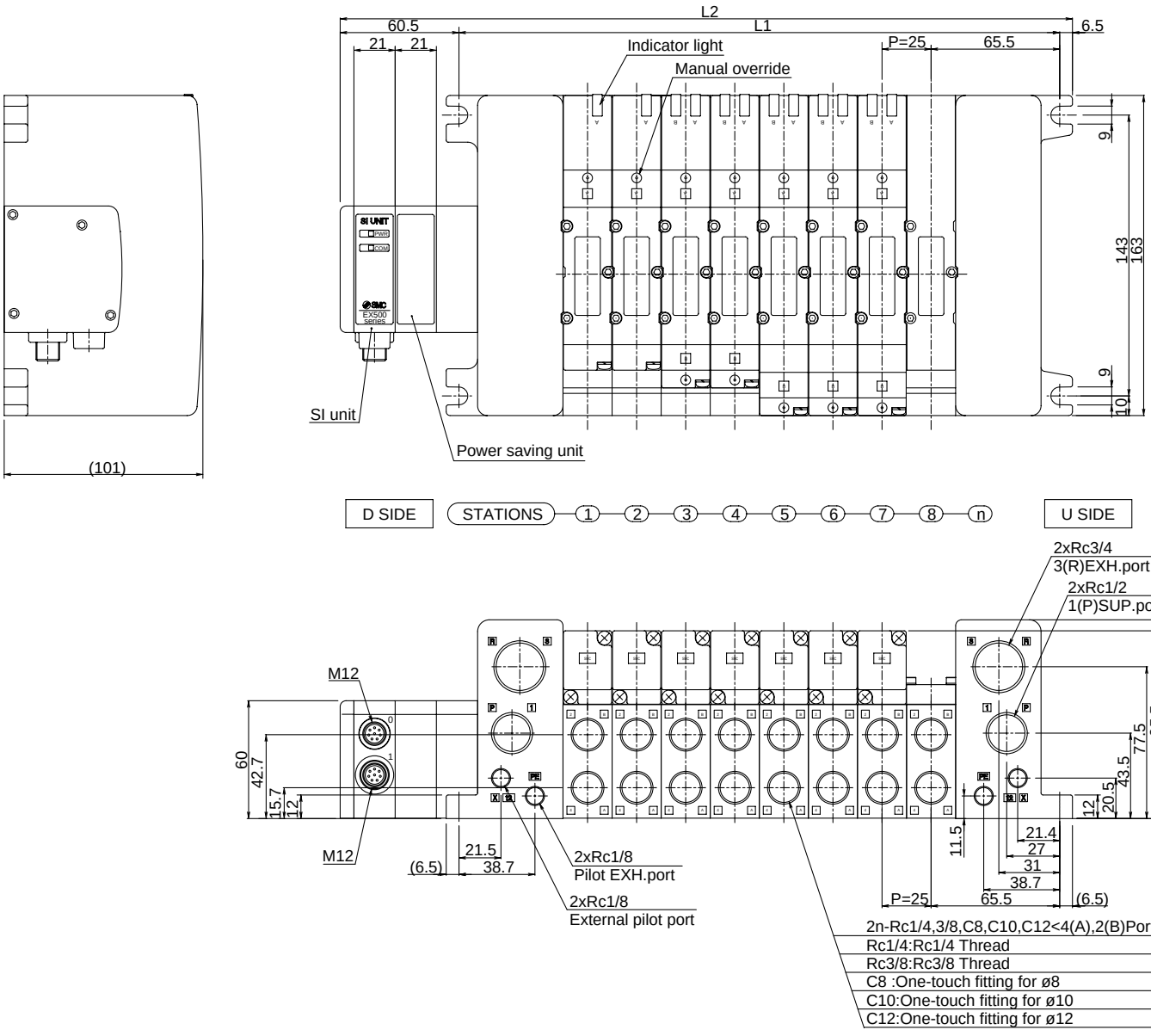


Formulas
L1 = 25n + 106
L2 = 25n + 181.5 (1~12 stations w/1 power saving unit)
L2 = 25n + 202.5 (13~16 stations w/2 power saving unit)

n: Stations (Max. 16 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)

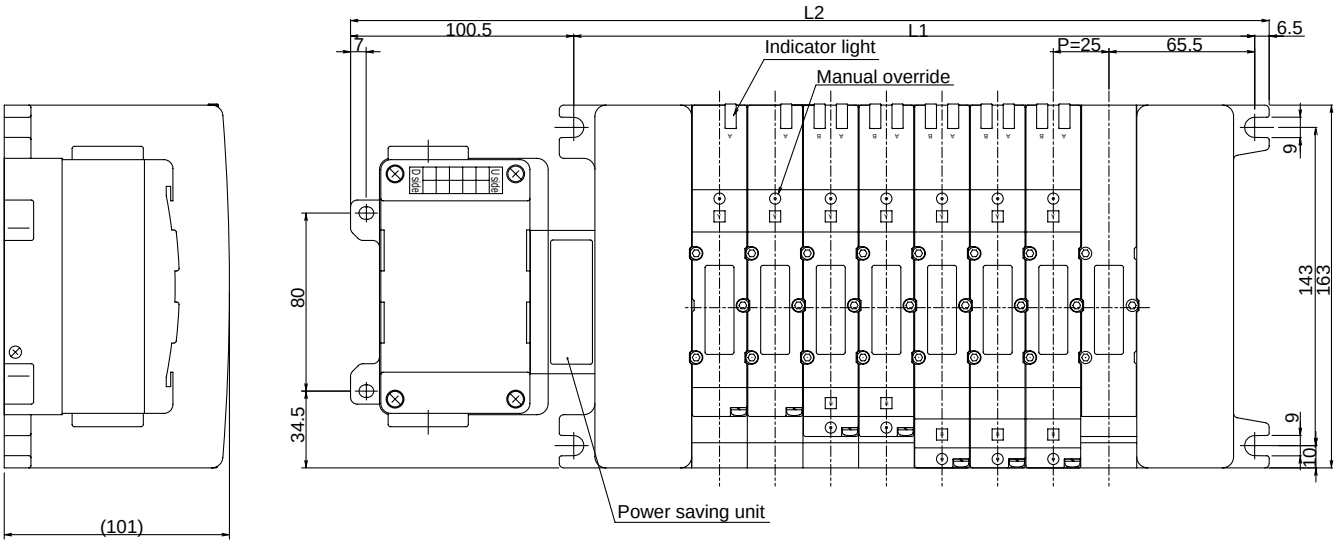


Formulas
L1 = 25n + 106
L2 = 25n + 173 (1~12 stations w/1 power saving unit)
L2 = 25n + 194 (13~16 stations w/2 power saving unit)
n: Stations (Max. 16 stations)

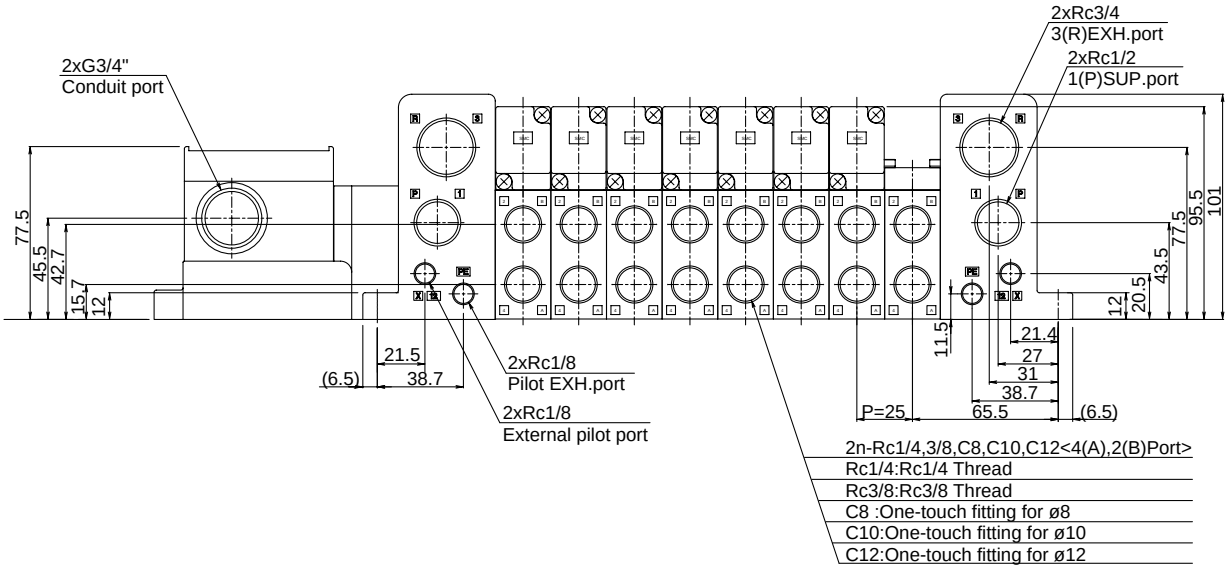
L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	131	156	181	206	231	256	281	306	331	356	381	406	431	456	481	506
L2	198	223	248	273	298	323	348	373	398	423	448	473	519	544	569	594

T 56-VQC4000
Kit (Terminal Block Box Kit)

56-VV5QC41



D SIDE — STATIONS 1 2 3 4 5 6 7 8 n — U SIDE



Formulas
L1 = 25n + 106
L2 = 25n + 213 (1~12 stations w/1 power saving unit)
L2 = 25n + 234 (13~16 stations w/2 power saving unit)
n: Stations (Max. 16 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

Direct Operated 2 Port Solenoid Valve

Series 56-VX21/22/23

CE Ex II 3GD EEx nA II T3X -20°C≤Ta≤+60°C

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

How to Order (Single Unit)

AC 56-VX21 2 0 □ □ – 01 □ – 1 G R 1 – □

DC 56-VX21 2 0 □ □ – 01 □ – 5 G 1 – □

ATEX category 3

Model
Refer to the table (1) shown below for availability.

Orifice size
Refer to the table (1) shown below for availability.

Valve/Body configuration

0	N.C. / Single unit
2	N.O. / Single unit

Solenoid valve option
Refer to the table (2) shown below for availability.

Suffix

-	—
Z	Oil-free spec.

Select "-" because the solenoid valve options "V", "M" are the oil-free treatment.

Thread type

-	Rc
T	NPTF
F	G
N	NPT

Port size
Refer to the table (1) shown below for availability.

Rated voltage

1	100 VAC 50/60 Hz	**6**	12 VDC
2	200 VAC 50/60 Hz	**7**	240 VAC 50/60 Hz
3	110 VAC 50/60 Hz	**8**	48 VAC 50/60 Hz
4	220 VAC 50/60 Hz	**J**	230 VAC 50/60 Hz
5	24 VDC		

∗ Refer to the table (3) shown below for availability.

Built-in full-wave rectifier type

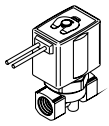
Bracket

-	None
B	With bracket

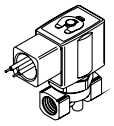
∗ Brackets VX021N-12A and VX022N-12A are packaged together with the valve.
∗ Refer to the table (4) if a bracket is ordered separately.

Electrical entry

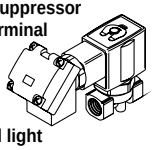
G - Grommet
GS - With grommet surge voltage suppressor



C - Conduit

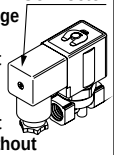


T - With conduit terminal
TS - With conduit terminal and surge voltage suppressor
TL - With conduit terminal and light
TZ - With conduit terminal, surge voltage suppressor and light



D - DIN terminal
DS - DIN terminal with surge voltage suppressor
DL - DIN terminal with light
DZ - DIN terminal with surge voltage suppressor and light
DO - For DIN terminal (without connector, gasket is included.)

Connector



∗ DIN type is available with Class B coils only.

∗ Refer to the table (3) for the available combinations between each electrical option (S, L, Z) and the rated voltage.
∗ Option "S", "Z" are not available as a surge voltage suppressor is integrated into the AC/Class B coil, as standard.

Table (1) Port/Orifice Size – Port Size

Normally Closed (N.C.)

Solenoid valve (Port size)				Orifice symbol (Diameter)					
Model	VX21	VX22	VX23	1 (2 mmø)	2 (3 mmø)	3 (4.5 mmø)	4 (6 mmø)	5 (8 mmø)	6 (10 mmø)
Port no. (Port size)	**01** (1/8)	—	—	●	●	●	—	—	—
	02 (1/4)	—	—	●	●	●	—	—	—
	—	**02** (1/4)	**02** (1/4)	—	●	●	●	●	●
	—	**03** (3/8)	**03** (3/8)	—	●	●	●	●	●
	—	**04** (1/2)	**04** (1/2)	—	—	—	—	—	●

Normally Open (N.O.)

Solenoid valve (Port size)				Orifice symbol (Diameter)			
Model	VX21	VX22	VX23	1 (2 mmø)	2 (3 mmø)	3 (4.5 mmø)	4 (6 mmø)
Port no. (Port size)	**01** (1/8)	—	—	●	●	●	—
	02 (1/4)	—	—	●	●	●	—
	—	**02** (1/4)	**02** (1/4)	—	●	●	●
	—	**03** (3/8)	**03** (3/8)	—	●	●	●

Table (2) Solenoid Valve Option

Option symbol	Seal material	Body material	Coil insulation type	Note
Nil	NBR	Brass (C37)	B	—
G		Stainless steel		
V	FKM	Brass (C37)		Non-leak (10^{-6} Pam³/sec), Oil-free, Medium vacuum (0.1 Pa.abs)
M		Stainless steel		

Please consider the VCA series when using air because it was specifically designed for it. (The VCA series is limited to air to improve its function and service life.)

Table (3) Rated Voltage – Electrical Option

Rated voltage			Class B		
			S	L	Z
AC/DC	Voltage symbol	Voltage	With surge voltage suppressor	With light	With light and surge voltage suppressor
AC	1	100 V	—	●	—
	2	200 V	—	●	—
	3	110 V	—	●	—
	4	220 V	—	●	—
	7	240 V	—	—	—
	8	48 V	—	—	—
	J	230 V	—	—	—
DC	5	24 V	●	●	●
	6	12 V	●	—	—

∗ Option "S", "Z" are not available as a surge voltage suppressor is integrated into the AC/Class B coil, as standard.

Table (4) Bracket Part No.

Model	Part no.
VX21$^{1}_{3}$**0**	VX021N-12A
VX22$^{2}_{4}$**0** **VX23**$^{2}_{4}$**0**	VX022N-12A
VX22$^{5}_{6}$**0** **VX23**$^{5}_{6}$**0**	VX023N-12A-L

⚠ When the fluid is air.

When you operate the VX series (AC spec.) with air, select the built-in full-wave rectifier type.
• The special construction of the armature reduces abrasion, resulting in a longer service life.
• Reduced buzz noise

For Air/Manifold

Direct Operated 2 Port Solenoid Valve

Series 56-VX21/22/23

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

How to Order (Solenoid Valve for Manifold)

AC 56-VX21 2 1 ☐ ☐ — 00 — 1 G R 1

DC 56-VX21 2 1 ☐ ☐ — 00 — 5 G 1

ATEX category 3

Model
Refer to the table (1) shown below for availability.

Orifice size
Refer to the table (1) shown below for availability.

Valve/Body configuration

1	N.C. (For manifold)
3	N.O. (For manifold)

Solenoid valve option
Refer to the table (2) shown below for availability.

Suffix

-	—
Z	Oil-free spec.

Select "-" because the solenoid valve options "V", "R" are the oil-free treatment.

Rated voltage

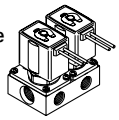
1	100 VAC 50/60 Hz	6	12 VDC
2	200 VAC 50/60 Hz	7	240 VAC 50/60 Hz
3	110 VAC 50/60 Hz	8	48 VAC 50/60 Hz
4	220 VAC 50/60 Hz	J	230 VAC 50/60 Hz
5	24 VDC		

∗ Refer to the table (3) shown below for availability.

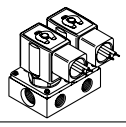
Built-in full-wave rectifier type

Electrical entry

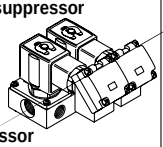
G - Grommet
GS - With grommet surge voltage suppressor



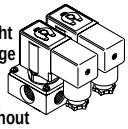
C - Conduit



T - With conduit terminal
TS - With conduit terminal and surge voltage suppressor
TL - With conduit terminal and light
TZ - With conduit terminal, surge voltage suppressor and light



D - DIN terminal
DS - DIN terminal with surge voltage suppressor
DL - DIN terminal with light
DZ - DIN terminal with surge voltage suppressor and light
DO - For DIN terminal (without connector, gasket is included.)



∗ DIN type is available with Class B coils only.

∗ Refer to the table (3) for the available combinations between each electrical option (S, L, Z) and the the rated voltage.
∗ Option "S", "Z" are not available as a surge voltage suppressor is integrated into the AC/Class coil B, as standard.

How to Order Manifold Bases

VVX21
VVX22 1 ☐ ☐ ☐ — 07 — 1
VVX23

Port size (Out port)

1	1/8
2	1/4

∗ All IN ports are 3/8.

Thread type

-	Rc
T	NPTF
F	G
N	NPT

Number of manifolds

02	2 stations
⋮	⋮
10	10 stations

Suffix

-	—
Z	Oil-free spec.

Base

-	Common SUP type
V	Individual SUP type

Manifold base

¡Blanking plate part no.

For VX21: VX011-001 ☐
For VX22/23: VX011-006 ☐

Seal material

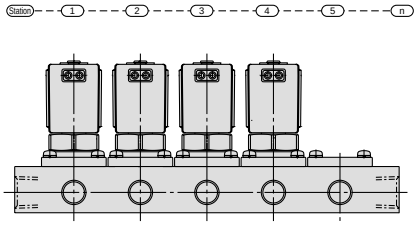
-	NBR
F	FKM

How to Order Manifold Assemblies (Example)

Enter the valve and blanking plate to be mounted under the manifold base part number.

Example
VVX211-05-1 ..... 1 set
∗ VX2111-00-1G1 ..... 4 sets
∗ VX011-001..... 1 set

"∗" is the symbol for mounting.
Add an "∗" in front of the part numbers for solenoid valves, etc. to be mounted.



Enter the product's part number in order, counting from the 1st station on the left in the manifold arrangement, when viewed with the individual ports in front.

Table (1) Port/Orifice Size

Solenoid valve	Orifice symbol (Diameter)			
	1 (2 mmø)	2 (3 mmø)	3 (4.5 mmø)	4 (6 mmø)
VX21	●	●	●	—
VX22	—	●	●	●
VX23	—	●	●	●

Table (2) Solenoid Valve Option

Option symbol	Body, Base material	Seal material	Coil insulation type	Note
-	Aluminum	NBR	B	—
V		FKM		Non-leak, Medium vacuum, Oil-free
R				Non-leak, Copper-free, Oil-free Note)

Note) The nuts (non-wetted parts), are nickel-plated brass (C37).

⚠ When the fluid is air.

When you operate the VX series (AC spec.) with air, select the built-in full-wave rectifier type.

- **The special construction of the armature reduces abrasion, resulting in a longer service life.**
- **Reduced buzz noise**
  Best suited for medical equipment, low-noise environments, etc.

Table (3) Rated Voltage – Electrical Option

Rated voltage			Class B		
			S	L	Z
AC/DC	Voltage symbol	Voltage	With surge voltage suppressor	With light	With light and surge voltage suppressor
AC	1	100 V	—	●	—
	2	200 V	—	●	—
	3	110 V	—	●	—
	4	220 V	—	●	—
	7	240 V	—	—	—
	8	48 V	—	—	—
	J	230 V	—	—	—
DC	5	24 V	●	●	●
	6	12 V	●	—	—

∗ Option "S", "Z" are not available as a surge voltage suppressor is integrated into the AC/Class B coil, as standard.

SMC

For Water/Single Unit

Direct Operated 2 Port Solenoid Valve

Series 56-VX21/22/23

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

How to Order (Single Unit)

AC 56-VX 21 2 0 □ □ – 01 □ – 1 G R 1 – □

DC 56-VX 21 2 0 □ □ – 01 □ – 5 G 1 – □

ATEX category 3

Model
Refer to the table (1) shown below for availability.

Orifice size
Refer to the table (1) shown below for availability.

Valve/Body configuration

0	N.C. / Single unit
2	N.O. / Single unit

Solenoid valve option
Refer to the table (2) shown below for availability.

Suffix

-	—
Z	Oil-free spec.

Select "-" because the solenoid valve option "L" is the oil-free treatment.
AC/Class B oil-free coils are applicable to the full-wave rectifier type only.
Select the full-wave rectifier type.

Port size
Refer to the table (1) shown below for availability.

Thread type

-	Rc
T	NPTF
F	G
N	NPT

Rated voltage

1	100 VAC 50/60 Hz	**6**	12 VDC
2	200 VAC 50/60 Hz	**7**	240 VAC 50/60 Hz
3	110 VAC 50/60 Hz	**8**	48 VAC 50/60 Hz
4	220 VAC 50/60 Hz	**J**	230 VAC 50/60 Hz
5	24 VDC		

∗ Refer to the table (3) shown below for availability.

Full-wave rectifier

-	None
R	Built-in full-wave rectifier type (Class B only)

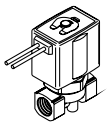
Bracket

-	None
B	With bracket

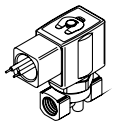
∗ Brackets VX021N-12A and VX022N-12A are packaged together with the valve.
∗ Refer to the table (4) if a bracket is ordered separately.

Electrical entry

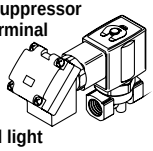
G - Grommet
GS - With grommet surge voltage suppressor



C - Conduit

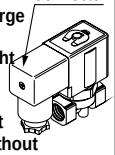


T - With conduit terminal
TS - With conduit terminal and surge voltage suppressor
TL - With conduit terminal and light
TZ - With conduit terminal, surge voltage suppressor and light



D - DIN terminal
DS - DIN terminal with surge voltage suppressor
DL - DIN terminal with light
DZ - DIN terminal with surge voltage suppressor and light
DO - For DIN terminal (without connector, gasket is included.)

Connector



∗ DIN type is available with Class B coils only.

∗ Refer to the table (3) for the available combinations between each electrical option (S, L, Z) and the rated voltage.
∗ Option "S", "Z" are not available as a surge voltage suppressor is integrated into the AC/Class B coil (Built-in full-wave rectifier type), as standard.

Table (1) Port/Orifice Size – Port Size

Normally Closed (N.C.)

Solenoid valve (Port size)				Orifice symbol (Diameter)					
Model	VX21	VX22	VX23	1 (2 mmø)	2 (3 mmø)	3 (4.5 mmø)	4 (6 mmø)	5 (8 mmø)	6 (10 mmø)
Port no. (Port size)	**01** (1/8)	—	—	●	●	●	—	—	—
	02 (1/4)	—	—	●	●	●	—	—	—
	—	**02** (1/4)	**02** (1/4)	—	●	●	●	●	●
	—	**03** (3/8)	**03** (3/8)	—	●	●	●	●	●
	—	**04** (1/2)	**04** (1/2)	—	—	—	—	—	●

Normally Open (N.O.)

Solenoid valve (Port size)				Orifice symbol (Diameter)			
Model	VX21	VX22	VX23	1 (2 mmø)	2 (3 mmø)	3 (4.5 mmø)	4 (6 mmø)
Port no. (Port size)	**01** (1/8)	—	—	●	●	●	—
	02 (1/4)	—	—	●	●	●	—
	—	**02** (1/4)	**02** (1/4)	—	●	●	●
	—	**03** (3/8)	**03** (3/8)	—	●	●	●

Table (2) Solenoid Valve Option

Option symbol	Seal material	Body/Shading coil material	Coil insulation type	Note
-	NBR	Brass (C37)/Cu	B	—
G		Stainless steel/Ag		
E	EPDM	Brass (C37)/Cu	H	Heated water (AC only)
P		Stainless steel/Ag		
L	FKM	Stainless steel/Ag	B	High corrosive, Oil-free

Table (3) Rated Voltage – Electrical Option

Rated voltage			Class B			Class H		
			S	**L**	**Z**	**S**	**L**	**Z**
AC/DC	Voltage symbol	Voltage	With surge voltage suppressor	With light	With light/ surge voltage suppressor	With surge voltage suppressor	With light	With light/ surge voltage suppressor
AC	1	100 V	●	●	●	●	●	●
	2	200 V	●	●	●	●	●	●
	3	110 V	●	●	●	●	●	●
	4	220 V	●	●	●	●	●	●
	7	240 V	●	—	—	●	—	—
	8	48 V	●	—	—	●	—	—
	J	230 V	●	—	—	●	—	—
DC	5	24 V	●	●	●	DC spec. is not available.		
	6	12 V	●	—	—			

∗ Option "S", "Z" are not available as surge voltage suppressor is integrated into the AC/Class B coil (Built-in full-wave rectifier type), as standard.

Table (4) Bracket Part No.

Model	Part no.
VX21$^{1}_{3}$**0**	VX021N-12A
VX22$^{2}_{4}$**0**	VX022N-12A
VX23$^{2}_{4}$**0**	
VX22$^{5}_{6}$**0**	VX023N-12A-L
VX23$^{5}_{6}$**0**	

For Water/Manifold

Direct Operated 2 Port Solenoid Valve

Series 56-VX21/22/23

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

How to Order (Solenoid Valve for Manifold)

ATEX category 3

AC: **56-VX21 2 1 ☐ ☐ – 1 G R 1**

DC: **56-VX21 2 1 ☐ ☐ – 5 G 1**

Model
Refer to the table (1) shown below for availability.

Orifice size
Refer to the table (1) shown below for availability.

Valve/Body configuration

1	N.C. (For manifold)
3	N.O. (For manifold)

Solenoid valve option
Refer to the table (2)-(1) shown below for availability.

Suffix

-	—
Z	Oil-free spec.

Select "-" because the solenoid valve option "L" is the oil-free treatment. AC/Class B oil-free coils are applicable to the full-wave rectifier type only. Select the full-wave rectifier type.

Rated voltage

1	100 VAC 50/60 Hz	6	12 VDC
2	200 VAC 50/60 Hz	7	240 VAC 50/60 Hz
3	110 VAC 50/60 Hz	8	48 VAC 50/60 Hz
4	220 VAC 50/60 Hz	J	230 VAC 50/60 Hz
5	24 VDC		

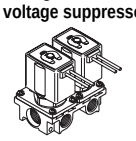
∗ Refer to the table (3) shown below for availability.

Full-wave rectifier

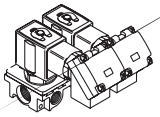
Nil	None
R	Built-in full-wave rectifier type (Class B only)

Electrical entry

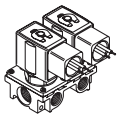
G - Grommet
GS - With grommet surge voltage suppressor



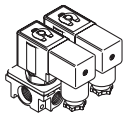
T - With conduit terminal
TS - With conduit terminal and surge voltage suppressor
TL - With conduit terminal and light
TZ - With conduit terminal, surge voltage suppressor and light



C - Conduit



D - DIN terminal
DS - DIN terminal with surge voltage suppressor
DL - DIN terminal with light
DZ - DIN terminal with surge voltage suppressor and light
DO - For DIN terminal (without connector, gasket is included.)



∗ DIN type is available with Class B coils only.

∗ Refer to the table (3) for the available combinations between each electrical option (S, L, Z) and the rated voltage.
∗ Option "S", "Z" are not available as a surge voltage suppressor is integrated into the AC/Class B coil (Built-in full-wave rectifier type), as standard.

How to Order Manifold Bases

VVX21 / VVX22 / VVX23 **1 ☐ C ☐ – 07 – 1**

Port size (OUT port)

1	1/8
2	1/4

∗ All IN ports are 3/8.

Thread type

-	Rc
T	NPTF
F	G
N	NPT

Number of manifolds

02	2 stations
⋮	⋮
10	10 stations

Suffix

-	—
Z	Oil-free spec.

Manifold base

Base, Seal material
Refer to the table (2)-(2).

Blanking plate part no.

For VX21: VVX21-3A ☐
For VX22: VVX22-3A ☐
For VX23: VVX23-3A ☐

Seal material

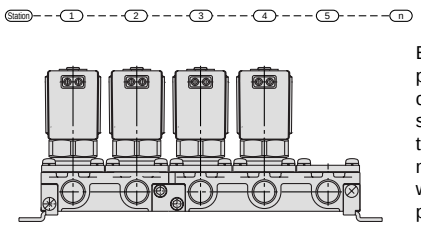
-	NBR
F	FKM
E	EPDM

How to Order Manifold Assemblies (Example)

Enter the valve and blanking plate to be mounted under the manifold base part number.

Example
VVX211C-05-1 ..... 1 set
∗ VX2111-1G1 ..... 4 sets
∗ VVX21-3A ..... 1 set

"∗" is the symbol for mounting.
Add an "∗" in front of the part numbers for solenoid valves, etc. to be mounted.



Enter the product's part number in order, counting from the 1st station on the left in the manifold arrangement, when viewed with the individual ports in front.

Table (1) Port/Orifice Size

Solenoid valve	Orifice symbol (Diameter)			
	1 (2 mmø)	2 (2 mmø)	3 (4.5 mmø)	4 (6 mmø)
VX21	●	●	●	—
VX22	—	●	●	●
VX23	—	●	●	●

Table (2) Solenoid Valve Option

Solenoid valve option symbol (1)	Base, Seal material symbol (2)	Body, Base/ Shading coil material	Seal material	Coil insulation type	Note
-	C	Brass (C37)/Cu	NBR	B	—
G	S	Stainless steel/Ag			
E	CE	Brass (C37)/Cu	EPDM	H	Heated water (AC only)
P	SE	Stainless steel/Ag			
L	SF	Stainless steel/Ag	FKM	B	High corrosive, Oil-free

Table (3) Rated Voltage – Electrical Option

Rated voltage			Class B			Class H		
			S	L	Z	S	L	Z
AC/DC	Voltage symbol	Voltage	With surge voltage suppressor	With light	With light/ surge voltage suppressor	With surge voltage suppressor	With light	With light/ surge voltage suppressor
AC	1	100 V	●	●	●	●	●	●
	2	200 V	●	●	●	●	●	●
	3	110 V	●	●	●	●	●	●
	4	220 V	●	●	●	●	●	●
	7	240 V	●	—	—	●	—	—
	8	48 V	●	—	—	●	—	—
	J	230 V	●	—	—	●	—	—
DC	5	24 V	●	●	●	DC spec. is not available.		
	6	12 V	●	—	—			

∗ Option "S", "Z" are not available as a surge voltage suppressor is integrated into the AC/Class B coil (Built-in full-wave rectifier type), as a standard.

SMC

For Oil/Single Unit

Direct Operated 2 Port Solenoid Valve

Series 56-VX21/22/23

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

How to Order (Single Unit)

ATEX category 3

AC 56-VX [21] [2] [0] [A] [ ] — [01] [ ] — [1] [G] [R] [1] — [ ]

DC 56-VX [21] [2] [0] [A] [ ] — [01] [ ] — [5] [G] [1] — [ ]

Model
Refer to the table (1) shown below for availability.

Orifice size
Refer to the table (1) shown below for availability.

Valve/Body configuration

0	N.C. / Single unit
2	N.O. / Single unit

Solenoid valve option
Refer to the table (2) shown below for availability.

Suffix

-	—
Z	Oil-free spec.

AC/Class is oil-free coils are applicable to the full-wave rectifier type only.
Select the full-wave rectifier type.

Port size
Refer to the table (1) shown below for availability.

Thread type

-	Rc
T	NPTF
F	G
N	NPT

Rated voltage

1	100 VAC 50/60 Hz	6	12 VDC
2	200 VAC 50/60 Hz	7	240 VAC 50/60 Hz
3	110 VAC 50/60 Hz	8	48 VAC 50/60 Hz
4	220 VAC 50/60 Hz	J	230 VAC 50/60 Hz
5	24 VDC		

∗ Refer to the table (3) shown below for availability.

Full-wave rectifier

Nil	None
R	Built-in full-wave rectifier type (Class B only)

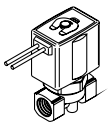
Bracket

-	None
B	With bracket

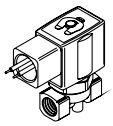
∗ Brackets VX021N-12A and VX022N-12A are together with the valve.
∗ Refer to the table (4) if a bracket is ordered separately.

Electrical entry

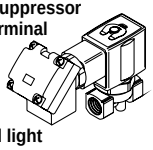
G - Grommet
GS - With grommet surge voltage suppressor



C - Conduit

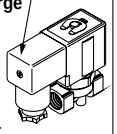


T - With conduit terminal
TS - With conduit terminal and surge voltage suppressor
TL - With conduit terminal and light
TZ - With conduit terminal, surge voltage suppressor and light



D - DIN terminal
DS - DIN terminal with surge voltage suppressor
DL - DIN terminal with light
DZ - DIN terminal with surge voltage suppressor and light
DO - For DIN terminal (without connector, gasket is included.)

Connector



∗ DIN type is available with Class B coils only.

∗ Refer to the table (3) for the available combinations between each electrical option (S, L, Z) and the rated voltage.
∗ Option "S", "Z" are not available as a surge voltage suppressor is integrated into the AC/Class B coil (built-in full-wave rectifier type), as standard.

Table (1) Port/Orifice Size

Normally Closed (N.C.)

Solenoid valve (Port size)				Orifice symbol (Diameter)					
Model	VX21	VX22	VX23	1 (2 mmø)	2 (3 mmø)	3 (4.5 mmø)	4 (6 mmø)	5 (8 mmø)	6 (10 mmø)
Port no. (Port size)	01 (1/8)	—	—	●	●	●	—	—	—
	02 (1/4)	—	—	●	●	●	—	—	—
	—	02 (1/4)	02 (1/4)	—	●	●	●	●	●
	—	03 (3/8)	03 (3/8)	—	●	●	●	●	●
	—	04 (1/2)	04 (1/2)	—	—	—	—	—	●

Normally Open (N.O.)

Solenoid valve (Port size)				Orifice symbol (Diameter)			
Model	VX21	VX22	VX23	1 (2 mmø)	2 (3 mmø)	3 (4.5 mmø)	4 (6 mmø)
Port no. (Port size)	01 (1/8)	—	—	●	●	●	—
	02 (1/4)	—	—	●	●	●	—
	—	02 (1/4)	02 (1/4)	—	●	●	●
	—	03 (3/8)	03 (3/8)	—	●	●	●

Table (2) Solenoid Valve Option

Option symbol	Seal material	Body/Shading coil material	Coil insulation type
A	FKM	Brass (C37)/Cu	B
H		Stainless steel/Ag	
D		Brass (C37)/Cu	H
N		Stainless steel/Ag	

Additives contained in oil are different depending on the type and manufacturer, therefore the durability of the seal materials may vary. For details, please consult with SMC.

Table (3) Rated Voltage – Electrical Option

Rated voltage			Class B			Class H		
			S	L	Z	S	L	Z
AC/DC	Voltage symbol	Voltage	With surge voltage suppressor	With light	With light/ surge voltage suppressor	With surge voltage suppressor	With light	With light/ surge voltage suppressor
AC	1	100 V	●	●	●	●	●	●
	2	200 V	●	●	●	●	●	●
	3	110 V	●	●	●	●	●	●
	4	220 V	●	●	●	●	●	●
	7	240 V	●	—	—	●	—	—
	8	48 V	●	—	—	●	—	—
	J	230 V	●	—	—	●	—	—
DC	5	24 V	●	●	●	DC spec. is not available.		
	6	12 V	●	—	—			

∗ Option "S", "Z" are not available as a surge voltage suppressor is integrated into the AC/Class B coil, (built-in full-wave rectifier type), as a standard.

Table (4) Bracket Part No.

Model	Part no.
VX21$\frac{1}{3}$0	VX021N-12A
VX22$\frac{2}{4}$0 VX23$\frac{2}{4}$0	VX022N-12A
VX22$\frac{5}{6}$0 VX23$\frac{5}{6}$0	VX023N-12A-L

For Oil/Manifold

Direct Operated 2 Port Solenoid Valve

Series 56-VX21/22/23

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

How to Order (Solenoid Valve for Manifold)

ATEX category 3

AC 56- VX 21 2 1 A ☐ — 1 G R 1

DC 56- VX 21 2 1 A ☐ — 5 G 1

Model
Refer to the table (1) shown below for availability.

Orifice size
Refer to the table (1) shown below for availability.

Valve/Body configuration

1	N.C. (For manifold)
3	N.O. (For manifold)

Solenoid valve option
Refer to the table (2)-(1) shown below for availability.

Suffix

-	—
Z	Oil-free spec.

AC/Class B oil-free coils are applicable to the full-wave rectifier type only. Select the full-wave rectifier type.

Rated voltage

1	100 VAC 50/60 Hz	6	12 VDC
2	200 VAC 50/60 Hz	7	240 VAC 50/60 Hz
3	110 VAC 50/60 Hz	8	48 VAC 50/60 Hz
4	220 VAC 50/60 Hz	J	230 VAC 50/60 Hz
5	24 VDC		

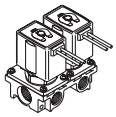
∗ Refer to the table (3) shown below for availability.

Full-wave rectifier

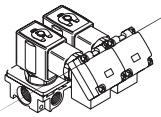
-	None
R	Built-in full-wave rectifier type (Class B only)

Electrical entry

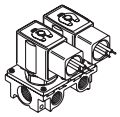
G - Grommet
GS - With grommet surge voltage suppressor



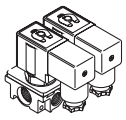
T - With conduit terminal
TS - With conduit terminal and surge voltage suppressor
TL - With conduit terminal and light
TZ - With conduit terminal, surge voltage suppressor and light



C - Conduit



D - DIN terminal
DS - DIN terminal with surge voltage suppressor
DL - DIN terminal with light
DZ - DIN terminal with surge voltage suppressor and light
DO - For DIN terminal (without connector, gasket is included.)



∗ DIN type is available with Class B coils only.

∗ Refer to the table (1) for the available combinations between each electrical option (S, L, Z) and the rated voltage.
∗ Option "S", "Z" are not available as a surge voltage suppressor is integrated into the AC/Class B coil (Built-in full-wave rectifier type), as standard.

How to Order Manifold Bases

VVX21
VVX22 1 ☐ CF ☐ — 07 — 1
VVX23

Number of manifolds

02	2 stations
⋮	⋮
10	10 stations

Port size (OUT port)

1	1/8
2	1/4

∗ All IN ports are 3/8.

Thread type

-	Rc
T	NPTF
F	G
N	NPT

Suffix

-	—
Z	Oil-free spec.

Base, Seal material
Refer to the table (2)-(2).

Manifold base

● **Blanking plate part no.**
For VX21: VVX21-3A-F
For VX22: VVX22-3A-F
For VX23: VVX23-3A-F

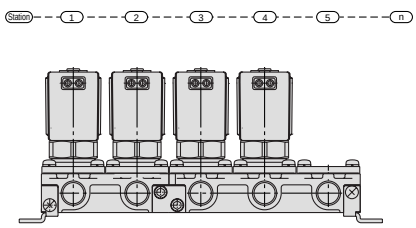
Seal material: FKM

How to Order Manifold Assemblies (Example)

Enter the valve and blanking plate to be mounted under the manifold base part number.

Example
VVX211CF-05-1..... 1 set
∗ VX2111A-1G1..... 4 sets
∗ VVX21-3A-F..... 1 set

"∗" is the symbol for mounting.
Add an "∗" in front of the part numbers for solenoid valves, etc. to be mounted.



Enter the product's part number in order, counting from the 1st station on the left in the manifold arrangement, when viewed with the individual ports in front.

Table (1) Port/Orifice Size

Solenoid valve	Orifice symbol (Diameter)			
	1 (2 mmø)	2 (3 mmø)	3 (4.5 mmø)	4 (6 mmø)
VX21	●	●	●	—
VX22	—	●	●	●
VX23	—	●	●	●

Table (2) Solenoid Valve Option

Solenoid valve option symbol (1)	Base, Seal material symbol (2)	Body, Base/ Shading coil material	Seal material	Coil insulation type	Note
A	CF	Brass (C37)/Cu	FKM	B	—
H	SF	Stainless steel/Ag			
D	CF	Brass (C37)/Cu		H	AC only
N	SF	Stainless steel/Ag			

Additives contained in oil are different depending on the type and manufacturer, therefore the durability of the seal materials may vary. For details, please consult with SMC.

Table (3) Rated Voltage – Electrical Entry – Electrical Option

Rated voltage			Class B			Class H		
			S	L	Z	S	L	Z
AC/ DC	Voltage symbol	Voltage	With surge voltage suppressor	With light	With light/ surge voltage suppressor	With surge voltage suppressor	With light	With light/ surge voltage suppressor
AC	1	100 V	●	●	●	●	●	●
	2	200 V	●	●	●	●	●	●
	3	110 V	●	●	●	●	●	●
	4	220 V	●	●	●	●	●	●
	7	240 V	●	—	—	●	—	—
	8	48 V	●	—	—	●	—	—
	J	230 V	●	—	—	●	—	—
DC	5	24 V	●	●	●	DC spec. is not available.		
	6	12 V	●	—	—			

∗ Option "S", "Z" are not available as a surge voltage suppressor is integrated into the AC/Class B coil (Built-in full-wave rectifier type), as a standard.

SMC

For Steam/Single Unit

Direct Operated 2 Port Solenoid Valve

Series 56-VX21/22/23

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

How to Order (Single Unit)

ATEX category 3

AC **56-VX** [21] [2] [0] [S] [ ] – [01] [ ] – [1] [G] [1] – [ ]

Model
Refer to the table (1) shown below for availability.

Orifice size
Refer to the table (1) shown below for availability.

Valve/Body configuration

0	N.C. / Single unit
2	N.O. / Single unit

Solenoid valve option
Refer to the table (2) shown below for availability.

Suffix

-	—
Z	Oil-free spec.

Port size
Refer to the table (1) shown below for availability.

Thread type

-	Rc
T	NPTF
F	G
N	NPT

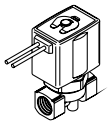
Rated voltage

1	100 VAC 50/60 Hz	7	240 VAC 50/60 Hz
2	200 VAC 50/60 Hz	8	48 VAC 50/60 Hz
3	110 VAC 50/60 Hz	J	230 VAC 50/60 Hz
4	220 VAC 50/60 Hz		

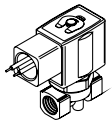
∗ Refer to the table (3) shown below for availability.

Electrical entry

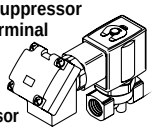
G - Grommet
GS - With grommet surge voltage suppressor



C - Conduit



T - With conduit terminal
TS - With conduit terminal and surge voltage suppressor
TL - With conduit terminal and light
TZ - With conduit terminal, surge voltage suppressor and light



∗ Refer to the table (3) for the available combinations between each electrical option (S, L, Z) and the rated voltage.

Bracket

-	None
B	With bracket

∗ Brackets VX021N-12A and VX022N-12A are packaged together with the valve.
∗ Refer to the table (4) if a bracket is ordered separately.

Table (1) Port/Orifice Size

Normally Closed (N.C.)

Solenoid valve (Port size)				Orifice symbol (Diameter)					
Model	VX21	VX22	VX23	1 (2 mmø)	2 (3 mmø)	3 (4.5 mmø)	4 (6 mmø)	5 (8 mmø)	6 (10 mmø)
Port no. (Port size)	**01** (1/8)	—	—	●	●	●	—	—	—
	02 (1/4)	—	—	●	●	●	—	—	—
	—	**02** (1/4)	**02** (1/4)	—	—	●	●	●	●
	—	**03** (3/8)	**03** (3/8)	—	● (VX22)	●	●	●	●
	—	**04** (1/2)	**04** (1/2)	—	—	—	—	—	●

Normally Open (N.O.)

Solenoid valve (Port size)				Orifice symbol (Diameter)			
Model	VX21	VX22	VX23	1 (2 mmø)	2 (3 mmø)	3 (4.5 mmø)	4 (6 mmø)
Port no. (Port size)	**01** (1/8)	—	—	●	●	●	—
	02 (1/4)	—	—	●	●	●	—
	—	**02** (1/4)	**02** (1/4)	—	●	●	●
	—	**03** (3/8)	**03** (3/8)	—	●	●	●

Table (2) Solenoid Valve Option

Option symbol	Seal material	Body/Shading coil material	Coil insulation type
S	PTFE	Brass (C37)/Cu	H
Q		Stainless steel/Ag	

Solenoid coil: AC/Class H only

Table (3) Rated Voltage – Electrical Option

Rated voltage			Class H		
			S	L	Z
AC/DC	Voltage symbol	Voltage	With surge voltage suppressor	With light	With light/surge voltage suppressor
AC	1	100 V	●	●	●
	2	200 V	●	●	●
	3	110 V	●	●	●
	4	220 V	●	●	●
	7	240 V	●	—	—
	8	48 V	●	—	—
	J	230 V	●	—	—
DC	5	24 V	DC spec. is not available.		
	6	12 V			

Table (4) Bracket Part No.

Model	Part no.
VX21$^{1}_{3}$0	VX021N-12A
VX22$^{2}_{3}$0 VX23$^{2}_{4}$0	VX022N-12A
VX22$^{5}_{6}$0 VX23$^{5}_{6}$0	VX023N-12A-L

For Steam/Manifold

Direct Operated 2 Port Solenoid Valve

Series 56-VX21/22/23

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

How to Order (Solenoid Valve for Manifold)

ATEX category 3

AC **56-VX** [21] [2] [3] [S] [ ] — [1] [G] [1]

Model
Refer to the table (1) shown below for availability.

Orifice size
Refer to the table (1) shown below for availability.

Valve type

1	N.C.
3	N.O.

Solenoid valve option
Refer to the table (2)-(1) shown below for availability.

Suffix

-	—
Z	Oil-free spec.

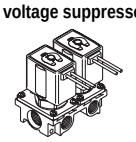
Rated voltage

1	100 VAC 50/60 Hz	7	240 VAC 50/60 Hz
2	200 VAC 50/60 Hz	8	48 VAC 50/60 Hz
3	110 VAC 50/60 Hz	J	230 VAC 50/60 Hz
4	220 VAC 50/60 Hz		

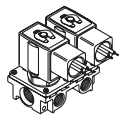
∗ Refer to the table (3) shown below for availability.

Electrical entry

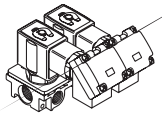
G - Grommet
GS- With grommet surge voltage suppressor



C- Conduit



T - With conduit terminal
TS - With conduit terminal and surge voltage suppressor
TL - With conduit terminal and light
TZ - With conduit terminal, surge voltage suppressor and light



∗ Refer to the table (3) for the available combinations between each electrical option (S, L, Z) and the rated voltage.

How to Order Manifold Bases

VVX21
VVX22 [1] [ ] [CP] [ ] — [07] — [1]
VVX23

Port size (OUT port)

1	1/8
2	1/4

∗ All IN ports are 3/8.

Thread type

-	Rc
T	NPTF
F	G
N	NPT

Number of manifolds

02	2 stations
⋮	⋮
10	10 stations

Suffix

-	—
Z	Oil-free spec.

Manifold base

Base, Seal material
Refer to the table (2)-(2).

Blanking plate part no.

For VX21: VVX21-3A-P
For VX22: VVX22-3A-P
For VX23: VVX23-3A-P

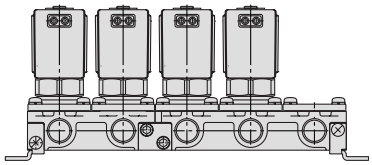
Seal material: PTFE

How to Order Manifold Assemblies (Example)

Enter the valve and blanking plate to be mounted under the manifold base part number.

Example
VVX211CP-05-1..... 1 set
∗ VX2111S-1G1 ..... 4 sets
∗ VVX21-3A-P ..... 1 set

"∗" is the symbol for mounting.
Add an "∗" in front of the part numbers for solenoid valves, etc. to be mounted.



Enter the product's part number in order, counting from the 1st station on the left in the manifold arrangement, when viewed with the individual ports in front.

Table (1) Port/Orifice Size

Solenoid valve	Orifice symbol (Diameter)			
	1 (2 mmø)	2 (3 mmø)	3 (4.5 mmø)	4 (6 mmø)
VX21	●	●	●	—
VX22	—	● (N.O.)	●	●
VX23	—	—	●	●

Table (2) Solenoid Valve Option

Solenoid valve option symbol (1)	Base, Seal material symbol (2)	Body, Base/ Shading coil material	Seal material	Coil insulation type
S	CP	Brass (C37)/Cu	PTFE	H
Q	SP	Stainless steel/Ag		

Table (3) Rated Voltage – Electrical Option

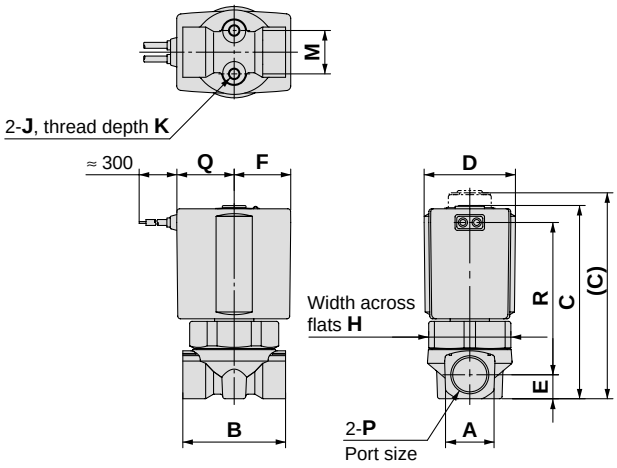
Rated voltage			Class H		
			S	L	Z
AC/ DC	Voltage symbol	Voltage	With surge voltage suppressor	With light	With light/ surge voltage suppressor
AC	1	100 V	●	●	●
	2	200 V	●	●	●
	3	110 V	●	●	●
	4	220 V	●	●	●
	7	240 V	●	—	—
	8	48 V	●	—	—
	J	230 V	●	—	—
DC	5	24 V	DC spec. is not available.		
	6	12 V			

SMC

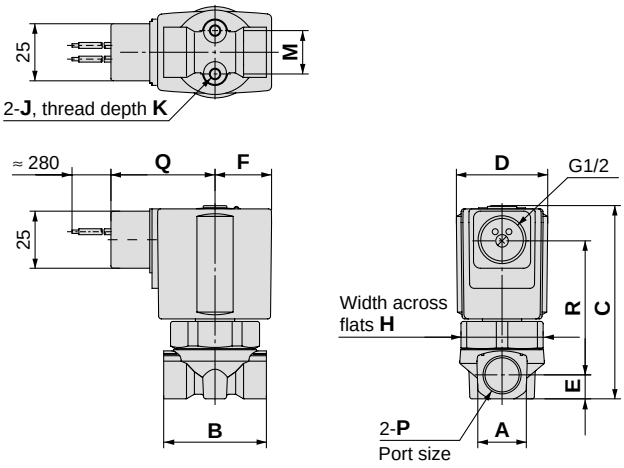
Dimensions: Single Unit/Body Material: Brass, Stainless Steel

Normally closed (N.C.): 56-VX21□0/56-VX22□0/56-VX23□0
Normally open (N.O.): 56-VX21□2/56-VX22□2/56-VX23□2

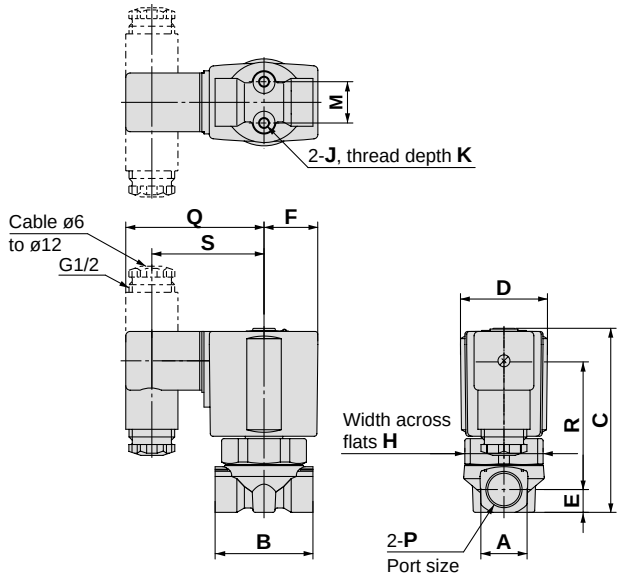
Grommet: G



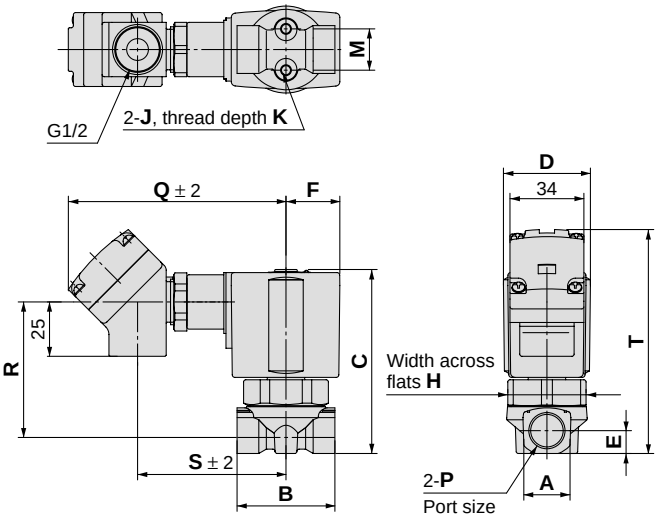
Conduit: C



DIN terminal: D



Conduit terminal: T



(mm)

Model		Orifice size	Port size P	A	B	C		D	E	F	H	Bracket mounting		
N.C.	N.O.						Note 1)					J	K	M
VX21□0	**VX21□2**	ø2, ø3, ø4.5	1/8, 1/4	18	40	68	(76)	30	9	19.5	27	M4	6	12.8
VX22□0	**VX22□2**	ø3, ø4.5, ø6	1/4, 3/8	22	45	78	(86)	35	10.5	22.5	32	M5	8	19
VX22□0	**—**	ø8, ø10	1/4, 3/8, 1/2	30	50	85	—		14			M5	8	23
VX23□0	**VX23□2**	ø3, ø4.5, ø6	1/4, 3/8	22	45	85.5	(93)	40	10.5	25	36	M5	8	19
VX23□0	**—**	ø8, ø10	1/4, 3/8, 1/2	30	50	92	—		14			M5	8	23

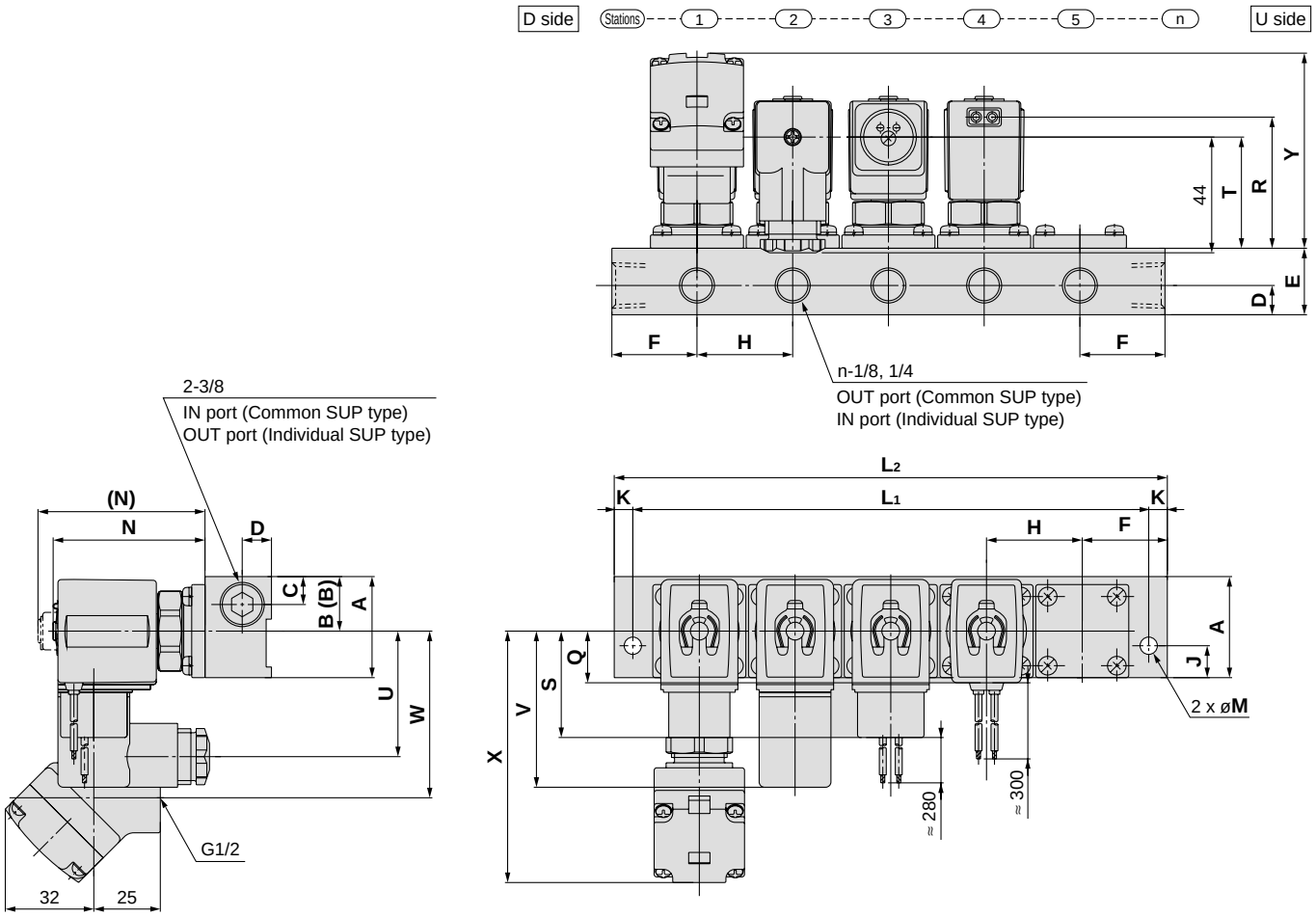
(mm)

Model		Orifice size	Port size P	Electrical entry Note 2)											Electrical entry (Built-in full-wave rectifier type) Note 2)										
				Grommet		Conduit		DIN terminal			Conduit terminal				Grommet		Conduit		DIN terminal			Conduit terminal			
N.C.	N.O.			Q	R	Q	R	Q	R	S	Q	R	S	T	Q	R	Q	R	Q	R	S	Q	R	S	T
VX21□0	**VX21□2**	ø2, ø3, ø4.5	1/8, 1/4	19.5	50	40	42.5	58.5	42	46.5	92	42.5	61	83.5	30	46	48.5	41	65.5	42	53.5	100.5	41	69.5	82
VX22□0	**VX22□2**	ø3, ø4.5, ø6	1/4, 3/8	22.5	60	43	52.5	61.5	52	49.5	95	52.5	64	95	33	56	51.5	51	68.5	52	56.5	103.5	51	72.5	93.5
VX22□0	**—**	ø8, ø10	1/4, 3/8, 1/2		63		55.5		55			55.5		101.5	33	59	51.5	54	68.5	55	56.5	103.5	54	72.5	100
VX23□0	**VX23□2**	ø3, ø4.5, ø6	1/4, 3/8	25.5	66	46	58.5	64	58	52	98	58.5	66.5	101	36	62	54	57	71	58	59	106	57	75	99.5
VX23□0	**—**	ø8, ø10	1/4, 3/8, 1/2		69		61.5		61			61.5		107.5	36	65	54	60	71	61	59	106	60	75	106

Note 1) The figures in parentheses are the normally open (N.O.) type dimensions.
Note 2) Add 1.5 mm to "R" and "T" dimensions for the N.O. spec.

Dimensions: Manifold/Base Material: Aluminum

Normally closed (N.C.)
Normally open (N.O.): 56-VVX21/56-VVX22/56-VVX23



(mm)

Model	Dimension	n (Stations)								
		2	3	4	5	6	7	8	9	10
VVX21	L_1	86	122	158	194	230	266	302	338	374
	L_2	100	136	172	208	244	280	316	352	388
VVX22	L_1	108	154	200	246	292	338	384	430	476
VVX23	L_2	126	172	218	264	310	356	402	448	494

(mm)

Model	A	B	(B) Individual SUP type	C	D	E	F	H	J	K	M	N	Note 1)
VVX21	38	20.5	17.5	10.5	11	25	32	36	12	7	6.5	57.5	(65.5)
VVX22	49	26.5	22.5	13	13	30	40	46	15	9	8.5	66.5	(74.5)
VVX23	49	26.5	22.5	13	13	30	40	46	15	9	8.5	71.5	(80)

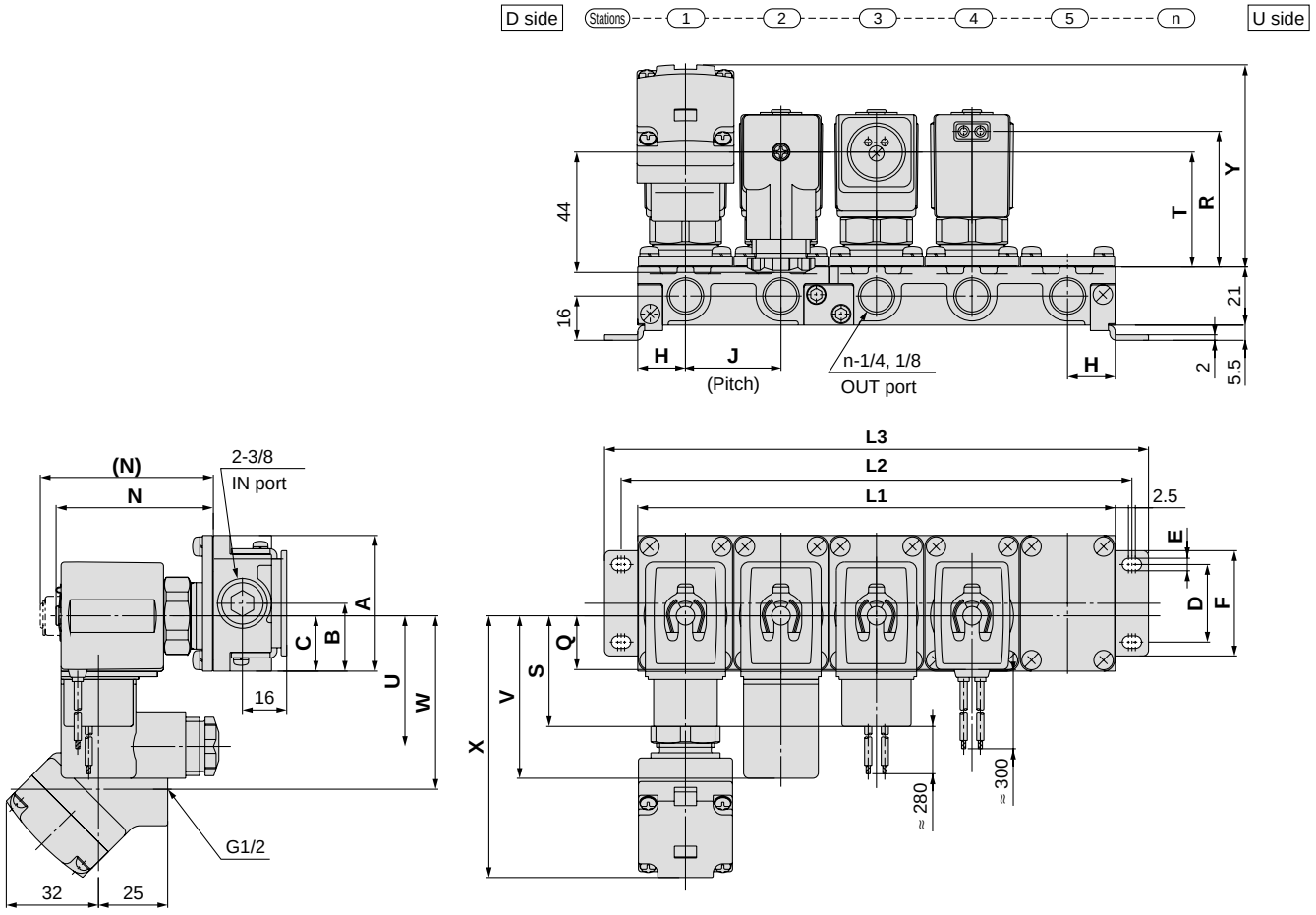
(mm)

Model	Electrical entry										Electrical entry (Built-in full-wave rectifier type) Note 2)									
	Grommet		Conduit		DIN terminal			Conduit terminal			Grommet		Conduit		DIN terminal			Conduit terminal		
	Q	R	S	T	U	V	T	W	X	Y	Q	R	S	T	U	V	T	W	X	Y
VVX21	19.5	48.5	40	41	46.5	58.5	40.5	61	92	73	30	44.5	48.5	40	53.5	65.5	41	69.5	100.5	72
VVX22	22.5	58.5	43	51	49.5	61.5	50.5	64	95	83	33	54.5	51.5	50	56.5	68.5	51	72.5	103.5	82
VVX23	25.5	63	46	55.5	52	64	55	66.5	98	87.5	36	59	54	54	59	71	55	75	106	86

Note 1) The figures in parentheses are the normally open (N.O.) type dimensions.
Note 2) Add 1.5 mm to “R”, “T” and “Y” dimensions for the N.O. spec.

Dimensions: Manifold/Base Material: Brass, Stainless Steel

Normally closed (N.C.)
Normally open (N.O.): 56-VVX21/56-VVX22/56-VVX23



(mm)

Model	Dimension	n (Stations)								
		2	3	4	5	6	7	8	9	10
VVX21	L_1	69	103.5	138	172.5	207	241.5	276	310.5	345
	L_2	81	115.5	150	184.5	219	253.5	288	322.5	357
	L_3	93	127.5	162	196.5	231	265.5	300	334.5	369
VVX22	L_1	77	115.5	154	192.5	231	269.5	308	346.5	385
	L_2	89	127.5	166	204.5	243	281.5	320	358.5	397
	L_3	101	139.5	178	216.5	255	293.5	332	370.5	409
VVX23	L_1	83	124.5	166	207.5	249	290.5	332	373.5	415
	L_2	95	136.5	178	219.5	261	302.5	344	385.5	427
	L_3	107	148.5	190	231.5	273	314.5	356	397.5	439
Manifold composition		2 stns. x 1	3 stns. x 1	2 stns. x 2	2 stns. + 3 stns.	3 stns. x 2	2 stns. x 2 + 3 stns.	2 stns. + 3 stns. x 2	3 stns. x 3	2 stns. x 2 + 3 stns. x 2

(mm)

Model	A	B	C	D	E	F	H	J	N	Note 1)
VVX21	49	24.5	20	28	4.5	38	17.3	34.5	56	(64)
VVX22	57	28.5	25.5	30	5.5	42	19.3	38.5	64.5	(72.5)
VVX23	57	28.5	25.5	30	5.5	42	20.8	41.5	72.5	(81)

(mm)

Model	Electrical entry Note 2)										Electrical entry (Built-in full-wave rectifier type) Note 2)									
	Grommet		Conduit		DIN terminal			Conduit terminal			Grommet		Conduit		DIN terminal			Conduit terminal		
	Q	R	S	T	U	V	T	W	X	Y	Q	R	S	T	U	V	T	W	X	Y
VVX21	19.5	47	40	39.5	46.5	58.5	39	61	92	71.5	30	43	48.5	38	53.5	65.5	39	69.5	100.5	70
VVX22	22.5	56.5	43	49	49.5	61.5	48.5	64	95	81	33	52.5	51.5	47.5	56.5	68.5	48.5	72.5	103.5	80
VVX23	25.5	64	46	56.5	52	64	56	66.5	98	88.5	36	60	54	55	59	71	56	75	106	87

Note 1) The figures in parentheses are the normally open (N.O.) type dimensions.
Note 2) Add 1.5 mm to “R”, “T” and “Y” dimensions for the N.O. spec.

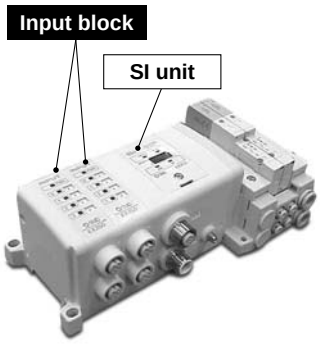
Decentralised Serial Wiring

Series 56-EX250

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

CE Ex II 3GD EEx nA II T5 X 5°C ≤ Ta ≤ 45°C IP67

How to Order



56 - EX250 — S PR1 — X42

ATEX category 3

Communication protocol

PR1	PROFIBUS-DP

SI Unit Specifications

Model		**56-EX250-SPR1-X42**
Applicable PLC/Communication protocol		PROFIBUS-DP
Communication speed		(9.6/19.2/45.45/93.75/187.5/500 kbit/sec), (1.5/3/6/12 Mbit/sec)
Output specifications	**Output point**	Max. 32 points
	Output style	P-ch MOS-FET open drain type
	Connection load	Solenoid valve with protection circuit for 24 VDC and 1.5 W or less surge voltage (made by SMC)
	Power supply for block	24 VDC + 10%/–5%
	Residual voltage	0.3 VDC or less
Input specifications	**Input point**	Max. 32 points
	Input style	TTL
	Connection block	56-EX250-IE2-X43
	Power supply for block	24 VDC ± 20%
	Current supply for block	Max. 1 A
Current consumption		0.1A or less (inside o SI unit)
Protection structure		IP67
Weight (g)		250

How to Order

Input block

56 - EX250 — IE 2 — X43

ATEX category 3

Block type

2	M12 connector, 4 inputs

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 Ve	24 VDC (Max. 1V of voltage effect against SI unit supply voltage)
Logical "1" input voltage VH	+11 to 30 VDC
Logical "0" input voltage VL	-3 to +5 VDC
Logical "1" input current IH	8 mA Min.
Logical "0" input current IL	2.5 mA Max.
2 wire type sensor connection	Possible
Input delay time	3 m sec. Typ.
Sensor supply current	Maximum 30 mA/Sensor
Protection structure	IP67
Weight (g)	90 g

Decentralised Serial Wiring
Series 56-EX500

CE Ⓔx II 3GD EEx nA II T4 X 5°C ≤ Ta ≤ 45°C IP65 (Gateway 56-EX500-GPR1A)

CE Ⓔx II 3GD EEx nA II T5 X 5°C ≤ Ta ≤ 45°C IP67 (SI Unit 56-EX500-Q□01, 56-EX500-S□01)

CE Ⓔx II 3GD EEx nA II T5 X 5°C ≤ Ta ≤ 45°C IP65 (Input Unit 56-EX500-IB1, Input Block 56-EX500-IE)

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

Input Unit Manifold

Gateway (GW) Unit Specifications

Model	EX500-GPR1A
Applicable PLC/Communication protocol	PROFIBUS-DP (EN50170)
Communication speed	(9.6/19.2/45.45/93.75/187.5/500 kbit/sec), (1.5/3/6/12 Mbit/sec)
Rated voltage	24 VDC
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 32 inputs/64 outputs
Input/output branches	4 branches (8 inputs/16 outputs per 1 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)
Protection structure	IP65
Weight (g)	470

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

Input block

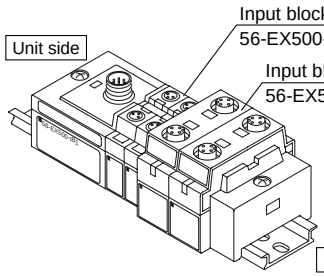
56 - EX500 — IE 1

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

Example
M8 and M12 on a single manifold



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

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 below.

Input Unit Specifications

Connection 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	Maximum 4 blocks
Block supply voltage	24 VDC
Block supply current	0.3 A maximum
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 (g) Note)	100 (Input unit + end block)

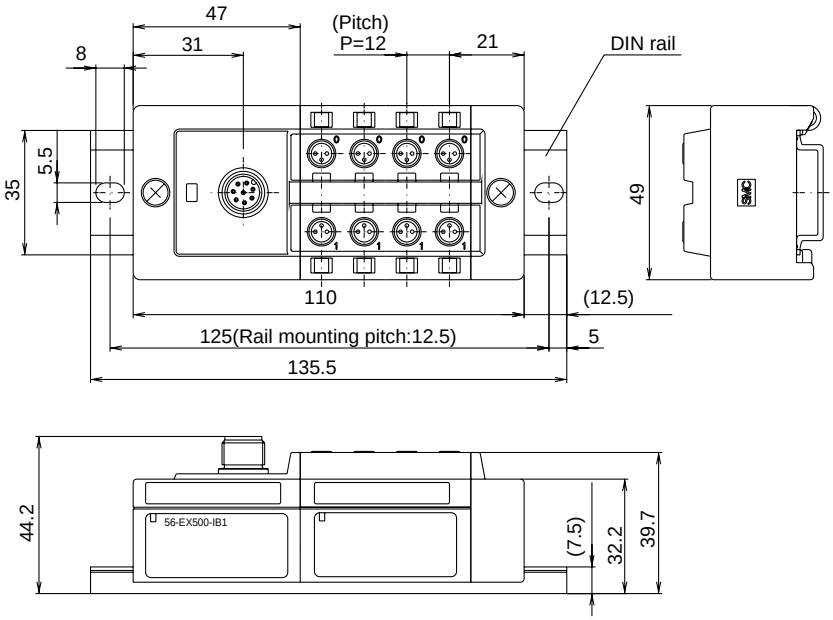
Note) Not including the DIN rail weight.

Input Block Specifications

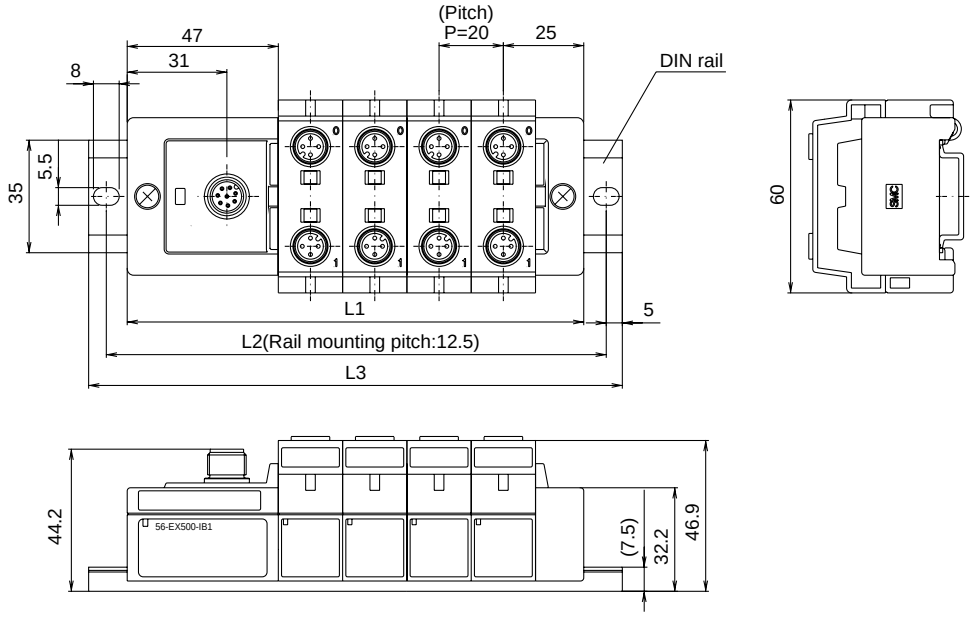
Applicable sensor	Current source type (PNP output)	Current sink type (NPN output)
Sensor connector	M8 connector (3 pins) or, M12 connector (4 pins)	
Number of inputs	2 inputs/8 inputs (M8 only)	
Rated voltage	24 VDC	
Logical "1" input voltage	15 V to 26.4 V	0 V to 8 V
Logical "0" input voltage	0 V to 5 V	19 V to 26.4 V
Logical "1" input current	5 mA Typ.	–5 mA Typ.
Logical "0" allowable current	1.5 mA	–1.5 mA
Input delay	1 m sec. or less	
Indicator	Green LED	
Insulation	Not provided	
Sensor supply current	Maximum 30 mA/Sensor	
Ambient operating temperature/humidity	+5 to +45°C at 35% to 85% RH (without condensation)	
Enclosure	IP65	
Weight (g)	[For M8: 20] [For M12: 40] [8 point integrated type, for M8: 55]	

Dimensions

8 point integrated type Input Block



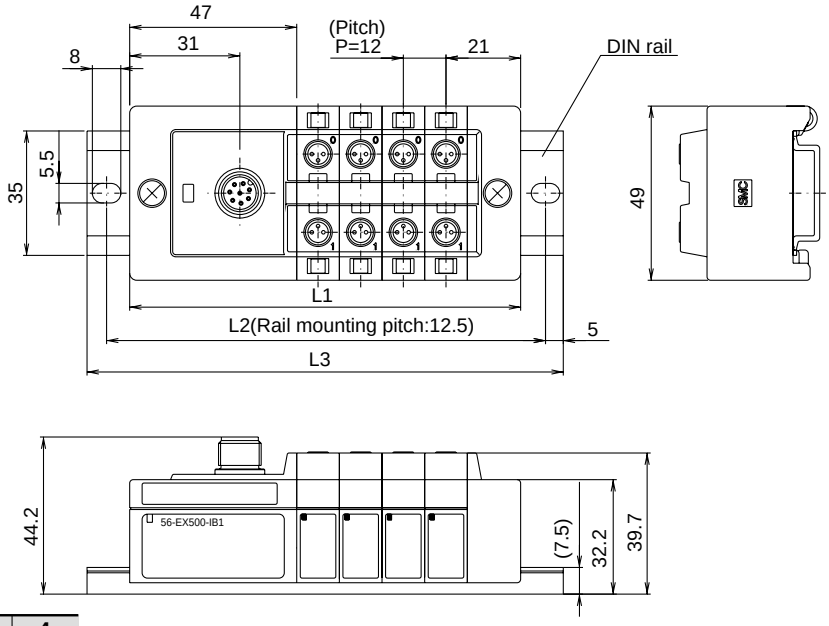
M12 Input Block



Stations	1	2	3	4
L1	82	102	122	142
L2	100	112.5	137.5	162.5
L3	110.5	123	148	173

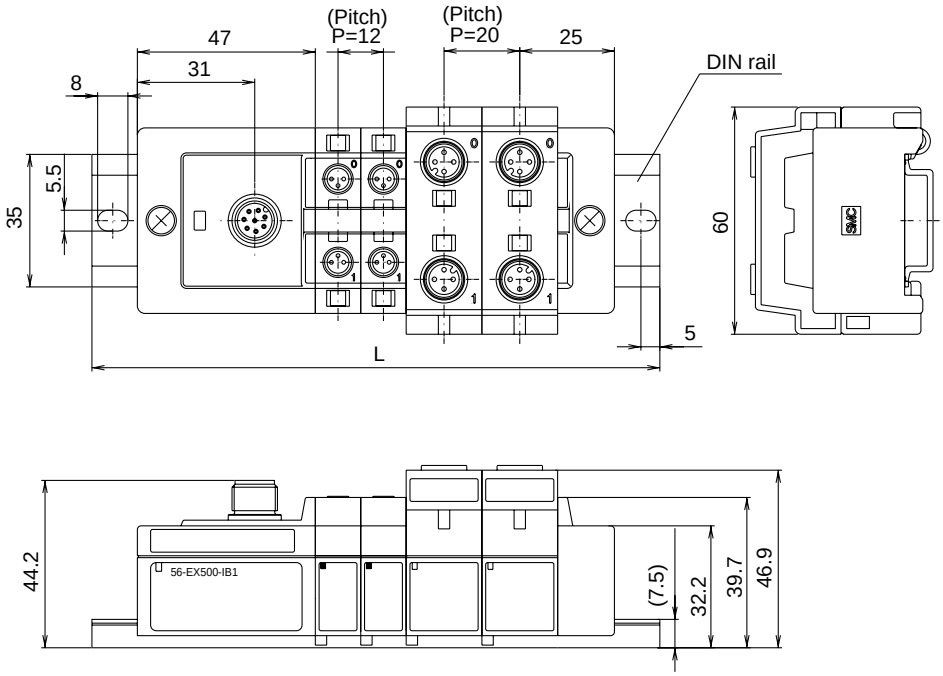
Dimensions

8 Input Block



Stations	1	2	3	4
L1	74	86	98	110
L2	87.5	100	112.5	125
L3	98	110.5	123	135.5

M8 and M12 mixed Input Block



Stations	M8 input block(m)				
	0	**1**	**2**	**3**	**4**
M12 Input Block(n) **0**		0	1	2	3
1	1	2	3	4	
2	2	3	4		
3	4	5			
4	6				

Connector type: For M12 Input Block (n=1 to 4)

Connector type: For M8 Input Block (n=1 to 4)

Connector type: For M8 and M12 mixed (m+n=2 to 4)

L dimension

No.	L	No.	L
0	98	**4**	148
1	110.5	**5**	160.5
2	123	**6**	173
3	135.5		

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 product information

Product		Series	Category
Others	Hand valve	**VH200/201/400/401**	Out of scope [1)]
	Regulator	**AR10/20/25/30/40/50/60**	
	Manifold regulator	**ARM2500/3000**	
	Air filter	**AF10/20/30/40/50/60**	
	Mist separator	**AFM20/30/40**	
	Micro mist separator	**AFD20/30/40**	
	Filter regulator	**AW10/20/30/40**	
	Lubricator	**AL10/20/30/40/50/60**	
	Finger valve	**VHK2/3**	
	3 port residual pressure realase valve	**VHS20/30/40/50**	
	Cross interface	**Y24~54**	
	Speed controller	**AS**	
	Check valve	**AK,AKH**	
	Shuttle valve	**VR12**	
	Quick exhaust valve	**AQ**	
	Fitting	**KQ**	
	One-touch fittings	**KA, KAB, KC, KEC, KG, KJ, KM, KP*, KQ*, KR*, KS, KW, KX**	
	Multi-connector	**DM*, KDM**	
	Insert fittings	**KF***	
	Self-align fittings	**H, DL, L, LL**	
	Miniature fittings	**M, MS**	
	S Couplers	**KK***	
	Tube	**T, TS, TU**	
	Booster relay	**IL100**	
	Lock up valve	**IL201/211/220**	
	Precision regulator	**IR1000~3000**	
	Vacuum Regulator	**IRV1000~3000**	
	Filter Regulator	**IW212~217**	
	Air-hydro Converter	**CCT**	
	Heavy duty Auto Drain	**ADH4000**	
	Main line Filter	**AFF2B~AFF75B**	
	Mist Separator	**AM150~850**	
	Micro mist Separator	**AMD150~850, AMD800~1000**	
	Super mist Separator	**AME150~850**	
	Odour Removal Filter	**AMF150~1000**	
	Water Separator	**AMG150~850**	
	Micro mist Separator with Prefilter	**AMH150~850**	
	MR unit	**AMR3000~6000**	
	Silencer	**AN200-900, AN103**	

Note 1) An "Out of scope" product is one that can be used without certification in Zone 1, 2 (gas) or Zone 21, 22 (dust).

Consult SMC for individual part numbers and details of compliant models.

EUROPEAN SUBSIDIARIES:

Austria
SMC Pneumatik GmbH (Austria).
Girakstrasse 8, A-2100 Korneuburg
Phone: +43 2262-62280, Fax: +43 2262-62285
E-mail: office@smc.at
http://www.smc.at

Belgium
SMC Pneumatics N.V./S.A.
Nijverheidsstraat 20, B-2160 Wommelgem
Phone: +32 (0)3-355-1464, Fax: +32 (0)3-355-1466
E-mail: post@smcpneumatics.be
http://www.smcpneumatics.be

Bulgaria
SMC Industrial Automation Bulgaria EOOD
16 kliment Ohridski Blvd., fl.13 BG-1756 Sofia
Phone:+359 2 9744492, Fax:+359 2 9744519
E-mail: office@smc.bg
http://www.smc.bg

Croatia
SMC Industrijska automatika d.o.o.
Crnomerec 12, 10000 ZAGREB
Phone: +385 1 377 66 74, Fax: +385 1 377 66 74
E-mail: office@smc.hr
http://www.smc.hr

Czech Republic
SMC Industrial Automation CZ s.r.o.
Hudcova 78a, CZ-61200 Brno
Phone: +420 5 414 24611, Fax: +420 5 412 18034
E-mail: office@smc.cz
http://www.smc.cz

Denmark
SMC Pneumatik A/S
Knudsminde 4B, DK-8300 Odder
Phone: +45 70252900, Fax: +45 70252901
E-mail: smc@smc-pneumatik.dk
http://www.smcdk.com

Estonia
SMC Pneumatics Estonia OÜ
Laki 12, 106 21 Tallinn
Phone: +372 6510370, Fax: +372 65110371
E-mail: smc@smcpneumatics.ee
http://www.smcpneumatics.ee

Finland
SMC Pneumatics Finland Oy
PL72, Tiistinniityntie 4, SF-02231 ESPOO
Phone: +358 207 513513, Fax: +358 207 513595
E-mail: smcfi@smc.fi
http://www.smc.fi

France
SMC Pneumatique, S.A.
1, Boulevard de Strasbourg, Parc Gustave Eiffel
Bussy Saint Georges F-77607 Marne La Vallee Cedex 3
Phone: +33 (0)1-6476 1000, Fax: +33 (0)1-6476 1010
E-mail: contact@smc-france.fr
http://www.smc-france.fr

Germany
SMC Pneumatik GmbH
Boschring 13-15, D-63329 Egelsbach
Phone: +49 (0)6103-4020, Fax: +49 (0)6103-402139
E-mail: info@smc-pneumatik.de
http://www.smc-pneumatik.de

Greece
SMC Hellas EPE
Anagenniseos 7-9 - P.C. 14342. N. Philadelphia, Athens
Phone: +30-210-2717265, Fax: +30-210-2717766
E-mail: sales@smchellas.gr
http://www.smchellas.gr

Hungary
SMC Hungary Ipari Automatizálási Kft.
Budafoki ut 107-113, H-1117 Budapest
Phone: +36 1 371 1343, Fax: +36 1 371 1344
E-mail: office@smc.hu
http://www.smc.hu

Ireland
SMC Pneumatics (Ireland) Ltd.
2002 Citywest Business Campus, Naas Road, Saggart, Co. Dublin
Phone: +353 (0)1-403 9000, Fax: +353 (0)1-464-0500
E-mail: sales@smcpneumatics.ie
http://www.smcpneumatics.ie

Italy
SMC Italia S.p.A
Via Garibaldi 62, I-20061Carugate, (Milano)
Phone: +39 (0)2-92711, Fax: +39 (0)2-9271365
E-mail: mailbox@smcitalia.it
http://www.smcitalia.it

Latvia
SMC Pneumatics Latvia SIA
Smerla 1-705, Riga LV-1006
Phone: +371 781-77-00, Fax: +371 781-77-01
E-mail: info@smclv.lv
http://www.smclv.lv

Lithuania
SMC Pneumatics Lietuva, UAB
Oslo g.1, LT-04123 Vilnius
Phone: +370 5 264 81 26, Fax: +370 5 264 81 26

Netherlands
SMC Pneumatics BV
De Ruyterkade 120, NL-1011 AB Amsterdam
Phone: +31 (0)20-5318888, Fax: +31 (0)20-5318880
E-mail: info@smcpneumatics.nl
http://www.smcpneumatics.nl

Norway
SMC Pneumatics Norway A/S
Vollsveien 13 C, Granfos Næringspark N-1366 Lysaker
Tel: +47 67 12 90 20, Fax: +47 67 12 90 21
E-mail: post@smc-norge.no
http://www.smc-norge.no

Poland
SMC Industrial Automation Polska Sp.z.o.o.
ul. Poloneza 89, PL-02-826 Warszawa,
Phone: +48 22 211 9600, Fax: +48 22 211 9617
E-mail: office@smc.pl
http://www.smc.pl

Portugal
SMC Sucursal Portugal, S.A.
Rua de Engº Ferreira Dias 452, 4100-246 Porto
Phone: +351 22-610-89-22, Fax: +351 22-610-89-36
E-mail: postpt@smc.smces.es
http://www.smces.es

Romania
SMC Romania srl
Str Frunzei 29, Sector 2, Bucharest
Phone: +40 213205111, Fax: +40 213261489
E-mail: smcromania@smcromania.ro
http://www.smcromania.ro

Russia
SMC Pneumatik LLC.
4B Sverdlovskaja nab, St. Petersburg 195009
Phone.:+7 812 718 5445, Fax:+7 812 718 5449
E-mail: info@smc-pneumatik.ru
http://www.smc-pneumatik.ru

Slovakia
SMC Priemyselná Automatizáciá, s.r.o.
Námestie Matina Benku 10, SK-81107 Bratislava
Phone: +421 2 444 56725, Fax: +421 2 444 56028
E-mail: office@smc.sk
http://www.smc.sk

Slovenia
SMC industrijska Avtomatika d.o.o.
Mirnska cesta 7, SLO-8210 Trebnje
Phone: +386 7 3885412 Fax: +386 7 3885435
E-mail: office@smc.si
http://www.smc.si

Spain
SMC España, S.A.
Zuazobidea 14, 01015 Vitoria
Phone: +34 945-184 100, Fax: +34 945-184 124
E-mail: post@smc.smces.es
http://www.smces.es

Sweden
SMC Pneumatics Sweden AB
Ekhagsvägen 29-31, S-141 71 Huddinge
Phone: +46 (0)8-603 12 00, Fax: +46 (0)8-603 12 90
E-mail: post@smcpneumatics.se
http://www.smc.nu

Switzerland
SMC Pneumatik AG
Dorfstrasse 7, CH-8484 Weisslingen
Phone: +41 (0)52-396-3131, Fax: +41 (0)52-396-3191
E-mail: info@smc.ch
http://www.smc.ch

Turkey
Entek Pnömatik San. ve Tic Ltd. Sti.
Perpa Tic. Merkezi Kat: 11 No: 1625, TR-80270 Okmeydani Istanbul
Phone: +90 (0)212-221-1512, Fax: +90 (0)212-221-1519
E-mail: smc-entek@entek.com.tr
http://www.entek.com.tr

UK
SMC Pneumatics (UK) Ltd
Vincent Avenue, Crownhill, Milton Keynes, MK8 0AN
Phone: +44 (0)800 1382930 Fax: +44 (0)1908-555064
E-mail: sales@smcpneumatics.co.uk
http://www.smcpneumatics.co.uk

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SMC CORPORATION Akihabara UDX 15F, 4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, JAPAN Phone: 03-5207-8249 FAX: 03-5298-5362

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