

For Dry Air, Pilot Operated

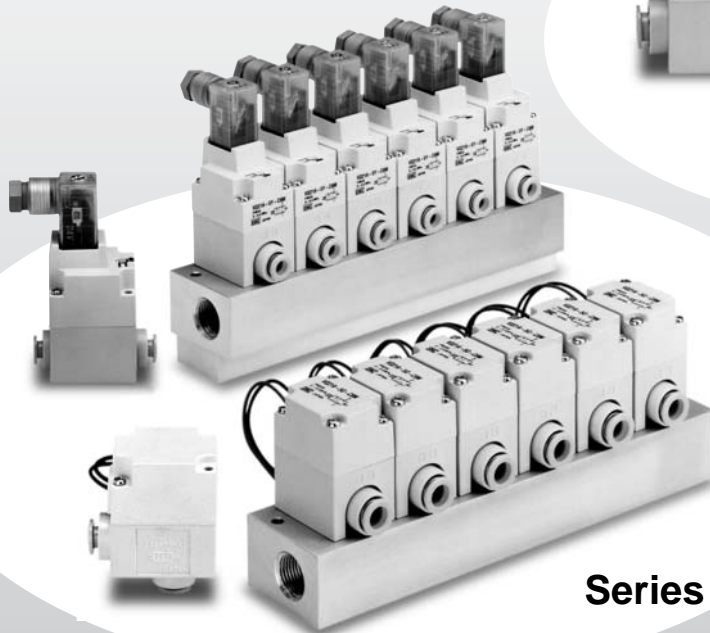
2 Port Solenoid Valve Series VQ20/30

Compact & lightweight with large flow capacity

	Weight (g)	Effective area (mm ²)
VQ20	46	9 (N _l /min 491)
VQ30	80	17.5 (N _l /min 981)



Series VQ30



Series VQ20

VX

VN□

VQ

VDW

VC

LV

PA

High frequency operation possible and long operating life

High speed response 5ms or less (VQ20), 20ms or less (VQ30)

(Without indicator light and surge voltage suppressor, at 0.5MPa of supply pressure)

20 million cycles (subject to clean and dry air)

Easy piping with built-in One-touch fittings

Dust and jet proof enclosure available with DIN connector

Applications: Air-blow, Blow-off of work piece, etc.

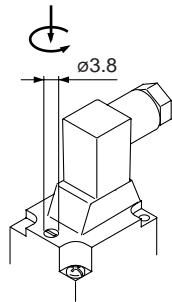
⚠️ Precautions

Be sure to read before handling. Refer to p.0-33 to 0-36 for Safety Instructions and common precautions.

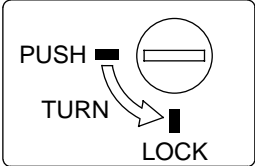
⚠️ Warning
Manual Override

Regardless of electric signals to the solenoid valve, the manual override is used for switching the main valve. (DIN connector only.)

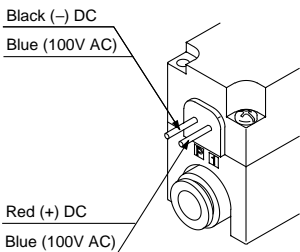
Locking slotted style



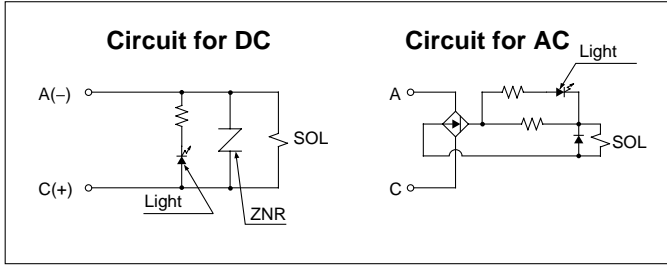
Push the manual override button with a small screw driver until it stops. Turn it in the counter-clockwise direction at 90°, and it is locked. Turn it right to release.



⚠️ Caution
Connection and Electrical Circuit



With indicator light and surge voltage suppressor



⚠️ Caution
How to Wire The DIN Connector

ISO#: Based on DIN 43650C (Pin gap 8mm) Connection

- ① Loosen the tightening screw and pull the connector off of the solenoid valve.
- ② After removing the tightening screw, divide the terminal block and housing by prying open the slot area of the lower part of the terminal block open with a screw driver.
- ③ Loosen the terminal screws of the block and insert stripped lead wires in accordance with the wiring diagram. Secure each wire by retightening the terminal screw.
- ④ Tighten the ground nut to secure the cable wire.

Change of electrical entry

Wire entry can be changed by mounting the housing in either direction (four directions at every 90°) after dividing the terminal block and the housing.

* For the indicator lighted style, be careful not to damage the light with the lead wire of the cable.

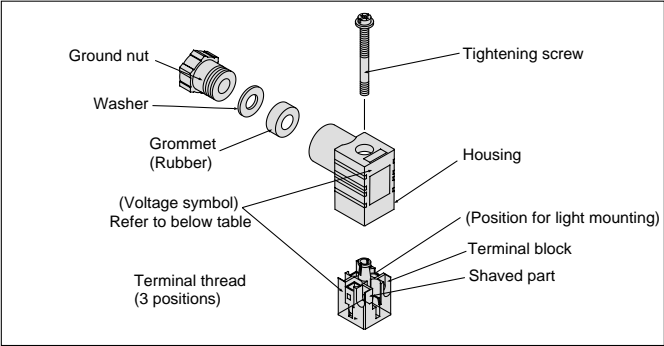
Precaution

Insert/remove the connector vertically, not at an angle.

Applicable cable

Cord O.D.: $\varnothing 3.5$ to $\varnothing 7$

(Reference) 0.5mm² 2-core and 3-core wires equivalent to JIS C 3306.



DIN connector part number (Based on DIN)

Without light	K41
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With light

Rated voltage	Voltage symbol	Part No.
24V DC	24V	K42
12V DC	12V	K42
100V AC	100V	K44

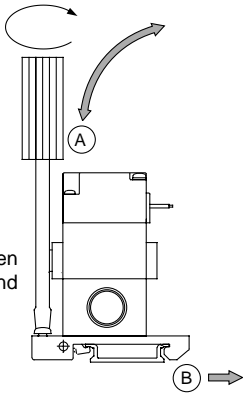
Manifold

⚠ Caution

How to Mount/Remove from DIN Rail

- To remove manifold from DIN rail:
- 1) Loosen the clamp screw on the "A" side of both ends of the manifold.
 - 2) Lift the "A" side of the manifold off the DIN rail and slide it in the direction of the "B" side.

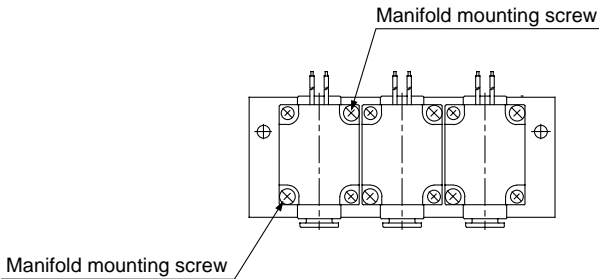
- Mounting manifold to DIN rail:
- 1) Hook the mounting hook on the "B" side of the manifold base to the DIN rail.
 - 2) Push side "A" onto the DIN rail and tighten the clamp screw on the "A" side of the end plate. (Tightening torque: 0.3 to 0.4Nm)



⚠ Caution

Valve Mounting

After confirming the gasket is correctly placed under the valve, tighten the mounting screws with the appropriate torque (0.2 to 0.23Nm).



⚠ Caution

Maximum Number of Valves for Simultaneous Operation

Series	P port one side supply	P port both side supply
VQ20	4	8
VQ30	2	4

If the max. number of valves simultaneously operated exceeds the numbers above, the effective flow rates will be reduced.

- VX
- VN□
- VQ
- VDW
- VC
- LV
- PA

For Dry Air,
Pilot
Operated

2 Port Solenoid Valve

Series VQ20/30

Single Unit

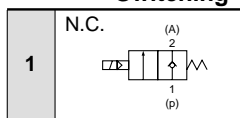
How to Order Valve

VQ 2 1 A 1 — 1 G — — C6 — Q

Series/Orifice

Symbol	Series	Effective orifice
2	VQ20	3.4mm ø
3	VQ30	4.8mm ø

Switching



Note) Consult SMC if N.O. is desired.

Body style

A: Single unit	
M: For manifold	

Coil voltage

1 *	100V AC
3 *	110V AC
5	24V DC
6	12V DC
9 *	Others (110V or less)

* DIN is only available



Contact SMC for other voltages (9)

⚠ Protective class class I (Mark:)

⚠ Protective class class III (Mark:)

Option

—: None	
F: With bracket	
L: L style (VQ20 Only)	

Note) If ordering both options, indicate "LF".

Port size

Symbol	Port size	VQ20	VQ30
C6	One-touch fitting for ø6	○	—
C8	One-touch fitting for ø8	○	—
C10	One-touch fitting for ø10	—	○
C12	One-touch fitting for ø12	—	○

Manual override

—	None
B ⁽¹⁾	Locking style (Slotted)

Note 1) Only normally closed DIN connector in-line style is possible.

Indicator light and surge voltage suppressor

—	None
S	With surge voltage suppressor
Z	With indicator light and surge voltage suppressor

Note) Coil voltage 100V AC: With surge voltage suppressor.

Note) "YOZ" is not available.

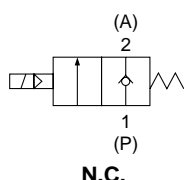
Electrical entry

G: Grommet	
Y: DIN connector	
YO: DIN terminal without connector	

Standard Specifications



Symbol



Valve	Series		VQ20		VQ30	
	Valve structure		2 port poppet pilot operated			
	Fluid		Air, Inert gas			
	Min. operating pressure		0.01MPa			
	Max. operating pressure		0.6MPa		0.5 MPa	
	Effective area (Cv/Effective orifice)		C6	7.2mm ² (Nℓ/min 393/ø3)	C10	14.4mm ² (Nℓ/min 785/ø4.3)
			C8	9mm ² (Nℓ/min 491/ø3.4)	C12	17.5 mm ² (Nℓ/min 981/ø4.8)
	Body orifice		ø6		ø13.8	
	Response time ⁽¹⁾		5ms or less		20ms or less	
	Max.operating frequency		100cps		30cps	
	Ambient and fluid temperature		-10 to 50 °C ⁽²⁾			
	Lubrication		Not required			
	Manual override		Locking style (Slotted) ⁽³⁾			
	Shock resistance/Vibration resistance		150/ 30m/s ² ⁽⁴⁾			
	Enclosure		Dust proof ⁽⁵⁾			
	Mounting position		Free			
	Weight		46g		80g	
Solenoid	Coil rated voltage		12V DC, 24V DC, 100V AC, 110V AC, 200V AC			
	Allowable voltage		± 10% of rated voltage			
	Coil insulation		Class B or equivalent			
	Power consumption (Current value)	24V DC	2.5W DC (104mA)			
		12V DC	2.5W DC (208mA)			
100V DC		Inrush: 2VA (20mA) Holding: 2VA (20 mA)				
Electrical entry		Grommet, DIN terminal				



Note 1) According to JISB8375-1981. (Supply pressure: 0.5MPa, Without light and surge voltage suppresser)

Note 2) Use dry air to prevent condensation when operating at low temperatures.

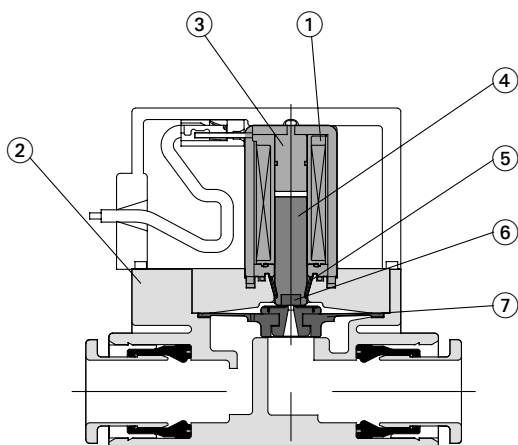
Note 3) Manual override is available only for DIN terminal style.

Note 4) Shock resistance: No malfunction resulted from the impact test using a drop impact tester. The test was performed on the axis and right angle directions of the main valve and armature, for both energized and de-energized states. (Valve in the initial stage.)

Vibration resistance: No malfunction occurred in a one-sweep test between 8.3 and 2000Hz. Test was performed at both energized and de-energized states to the axis and right angle directions of the main valve and armature. (Value in the initial stage.)

Note 5) DIN connector style: Applicable to dust and jet proof (IP65).

Construction



Component Parts

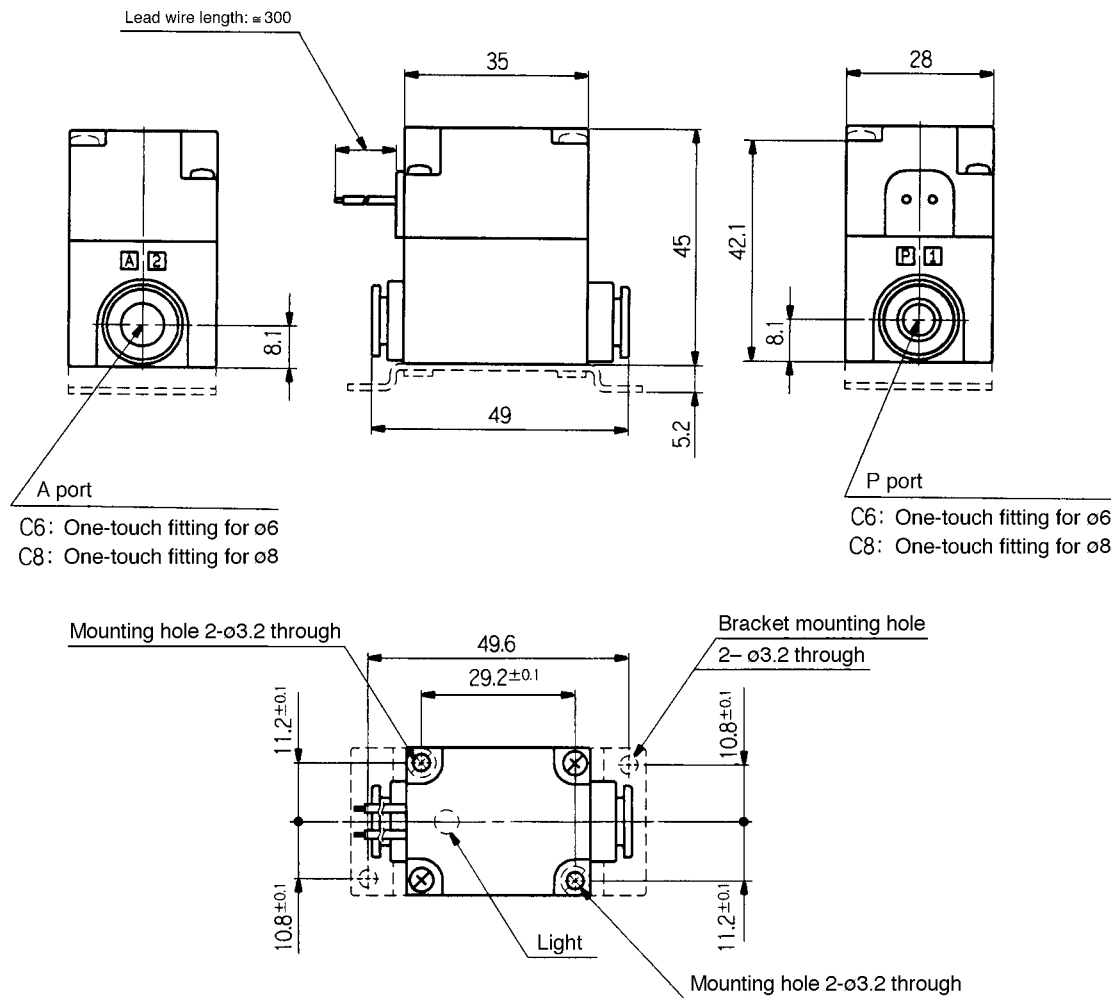
No.	Description	Material
①	Solenoid coil	—
②	Body	Resin
③	Fixed armature	Stainless Steel
④	Armature	Stainless Steel
⑤	Return spring	Stainless Steel
⑥	Poppet	NBR
⑦	Diaphragm assembly	NBR, Resin

Series VQ20/30

Dimensions/Series VQ20

In-line style/Grommet(G)

VQ21A1-□G□-□-□-□

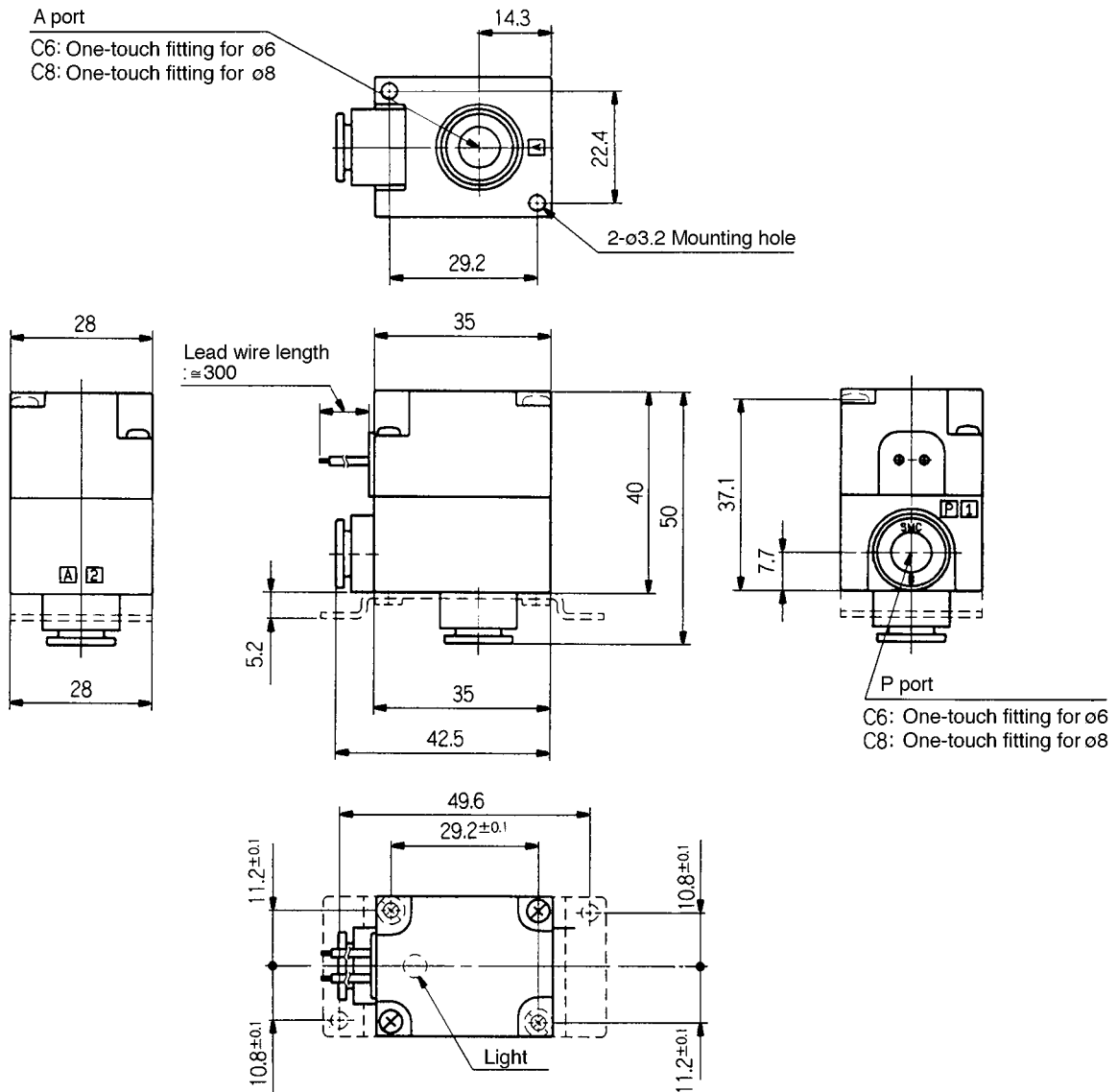


Dotted line: Bracket mounting style (-F)

Dimensions/Series VQ20

L style/Grommet (G)

VQ21A1-□G□-□-L□-Q



Dotted line: Bracket mounting style (-LF)

VX

VN□

VQ

VDW

VC

LV

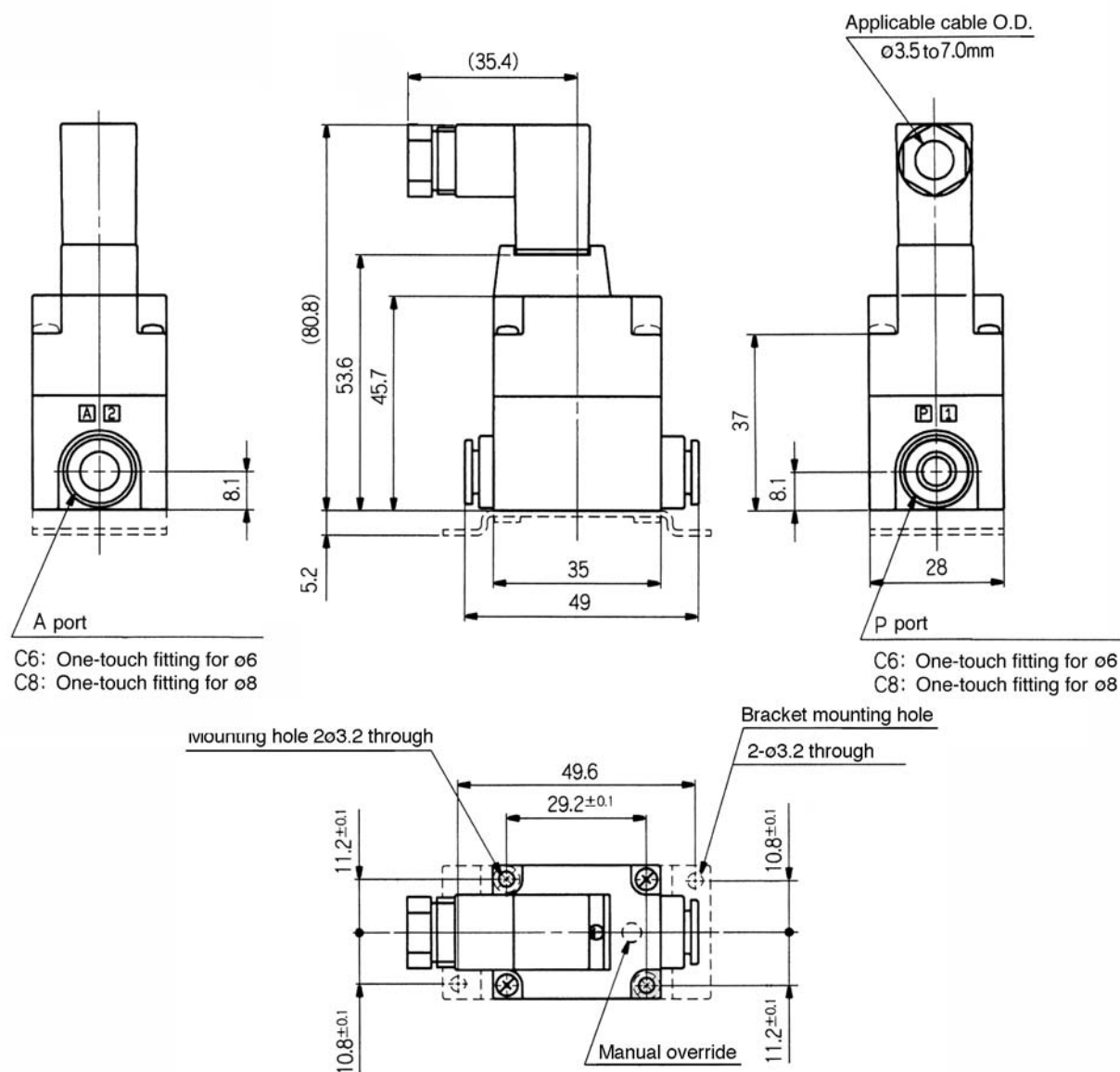
PA

Series VQ20/30

Dimensions/Series VQ20

In-line/DIN connector (Y)

VQ21A1-□Y□□-□□-□□-Q

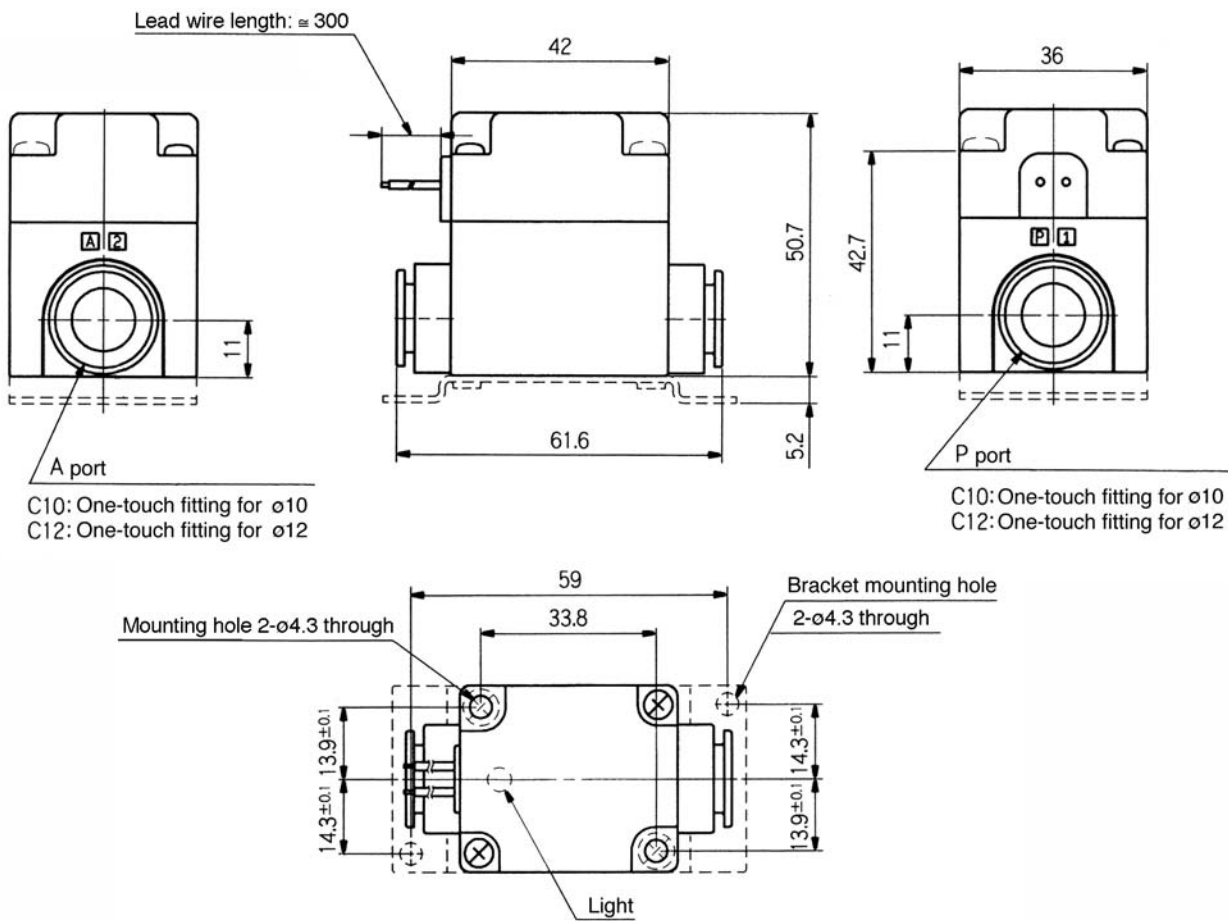


Dotted line: Bracket mounting style (-F)

Dimensions/Series VQ30

In-line/Grommet (G)

VQ31A1-□G□-□□-□-Q



VX

VN□

VQ

VDW

VC

LV

PA



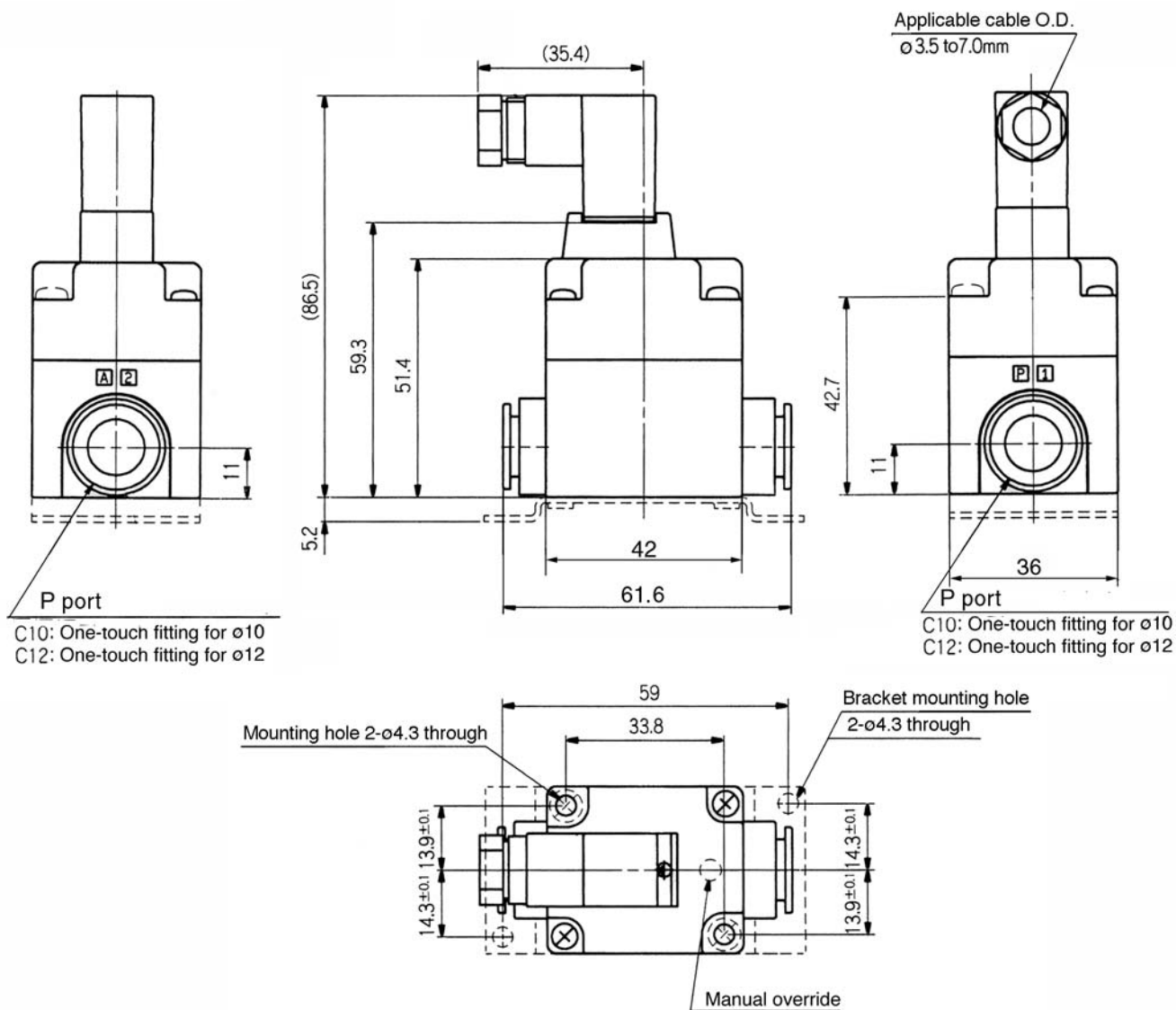
Dotted line: Bracket mounting style (-F)


Series VQ20/30

Dimensions/Series VQ30

DIN connector (Y)

VQ31A1-□Y□□-□□-□-Q



 Dotted line: Bracket mounting style (-F)

How to Order Manifold

VV2Q **2** **2** - **08** - **Q**

Series

2	VQ20
3	VQ30

Stations

02	2 stations
:	:
20	20 stations

Option

—	None
D	DIN rail mounting
DO	DIN rail mounting (Without DIN rail)

P port/Thread

—	Rc3/8
00N	NPT3/8
00T	NPTF3/8
00F	G3/8

How to Order Manifold Assembly

List valve and option part numbers under the manifold base part number.

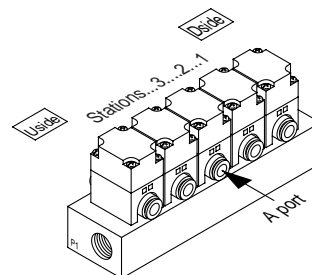
<Example>

VV2Q22-05-Q 1 set — Manifold part No.

VQ21M1-5G-C6-Q 4 sets — Valve part No.
(Stations 1 to 4)

VQ21M1-5G-C8-Q 1 set — Valve part No.
(Station 5)

Write sequentially
from the 1st station
on the D side

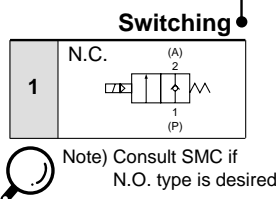


How to Order Valve

VQ **2** **1** **M** **1** - **1** **G** - **C6** - **Q**

Series/Orifice

Symbol	Series	Effective orifice
2	VQ20	3.4mm ø
3	VQ30	4.8mm ø



Valve specification

M	Manifold
---	----------

Coil voltage

1*	100V AC(50/60Hz)
3*	110V AC
5	24V DC
6	12V DC
9	Other (110V or less)

* DIN is only available

Contact SMC
for other voltages (9)

Port size

Symbol	Port size	VQ20	VQ30
C6	One-touch fitting for ø6	○	—
C8	One-touch fitting for ø8	○	—
C10	One-touch fitting for ø10	—	○
C12	One-touch fitting for ø12	—	○

Manual override

—	None
B ⁽¹⁾	Locking style (Slotted style)

Note 1) Only normally closed DIN connector in-line style is applicable.

Indicator light and surge voltage suppressor

—	None
S	With surge voltage suppressor
Z	Indicator light and surge voltage suppressor

Note) Coil voltage 100V AC: With surge voltage suppressor
Note) "YOZ" is not available

Electrical entry

G	Grommet
Y	DIN connector
YO	DIN terminal (Without connector)

Protective class
class III (Mark: ⚡)

Protective class
class I (Mark: ⚡)

VX

VN□

VQ

VDW

VC

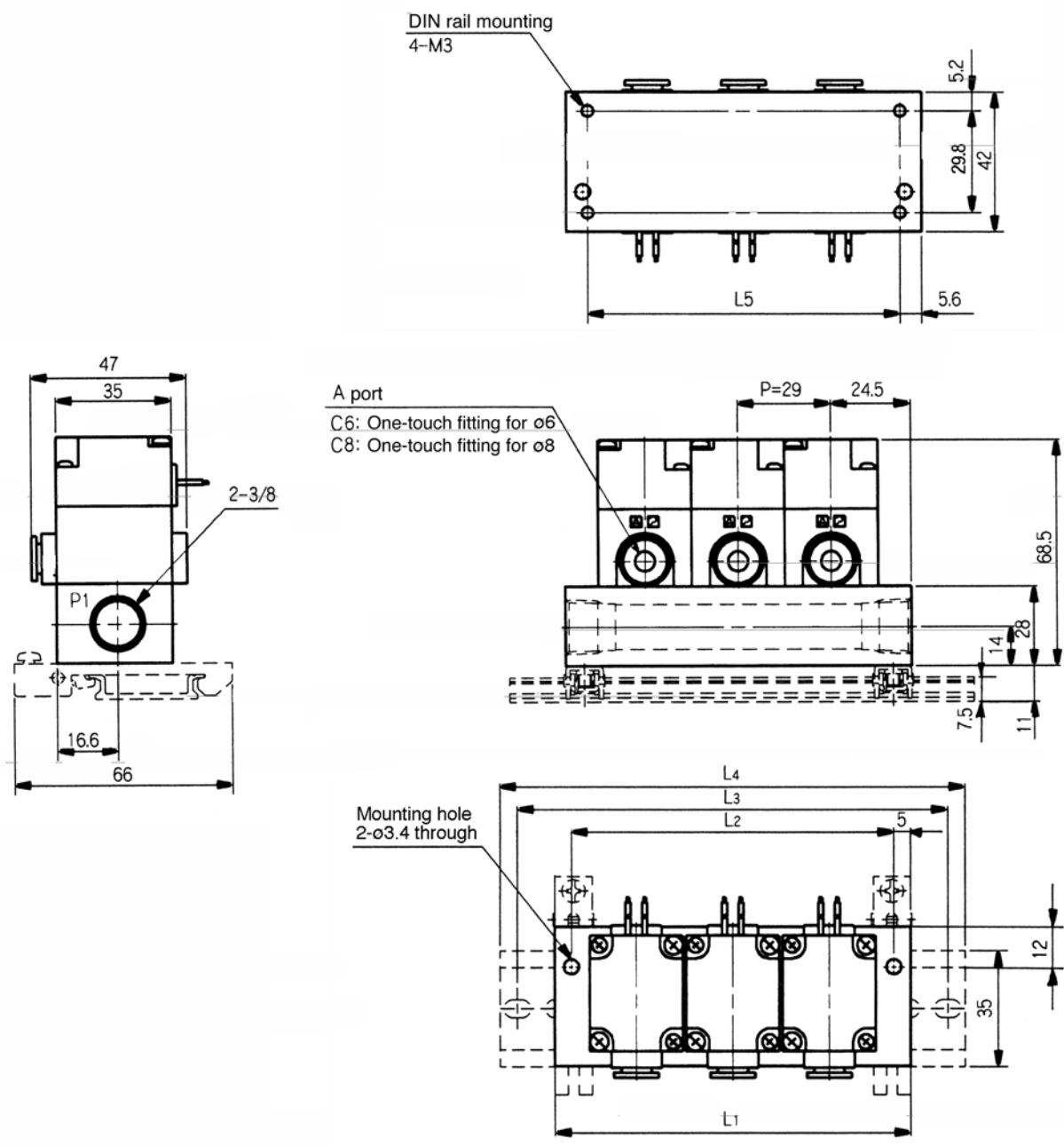
LV


PA

Series VQ20/30

Dimensions

Plug lead unit manifold (VV2Q22-□-Q)



 Dotted line: DIN rail mounting (-D)

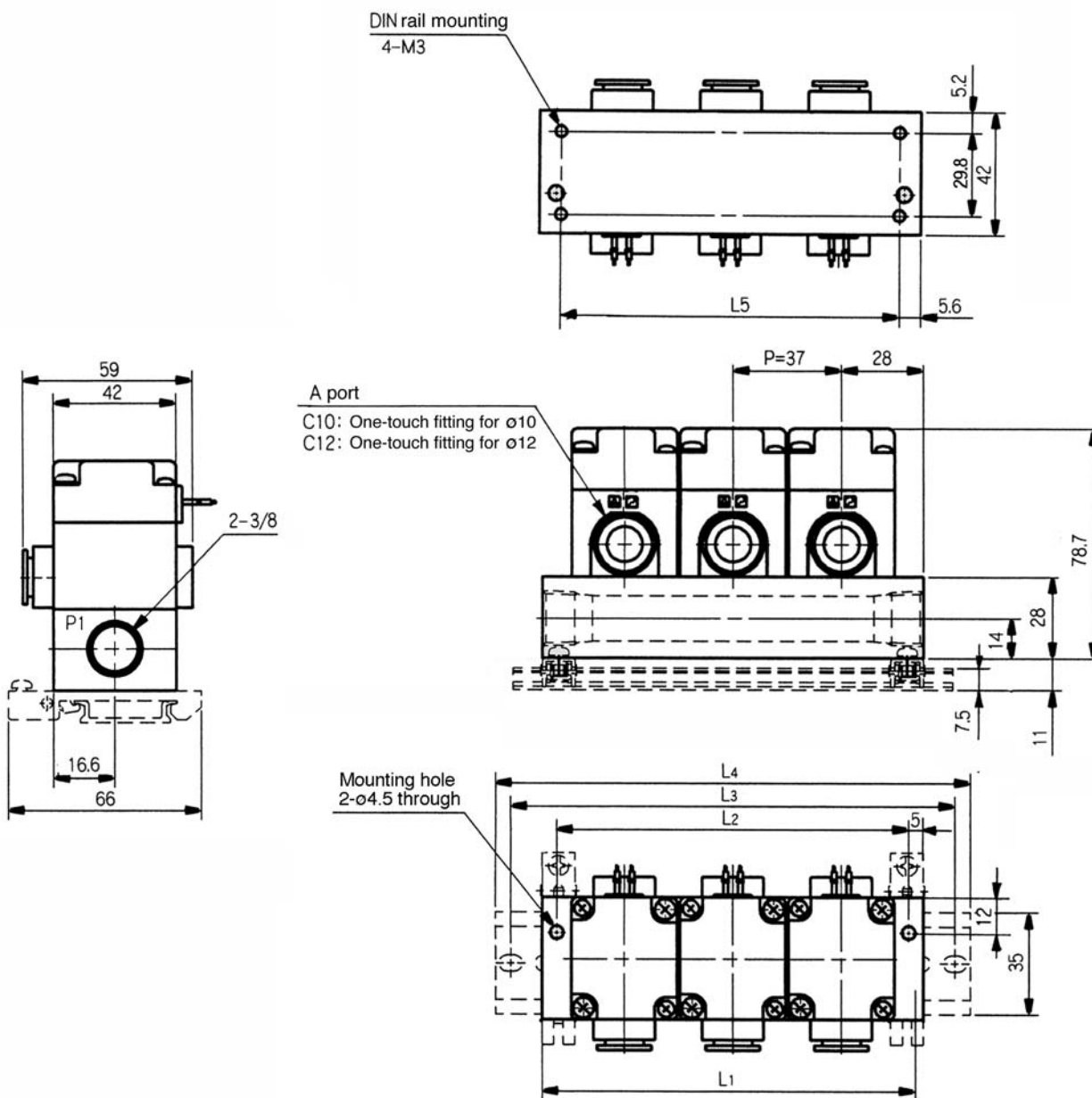
Equation $L_1 = (n-1) \times 29 + 49$
 $L_2 = L_1 - 10$
 $L_3 = L_4 - 10.5$
 $L_5 = L_1 - 11.2$

Dimensions		n: Station (Max.20)																			
L	n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1		49	78	107	136	165	194	223	252	281	310	339	368	397	426	455	484	513	542	571	600
L2		39	68	97	126	155	184	213	242	271	300	329	358	387	416	445	474	503	532	561	590
L3		75	100	137.5	162.5	187.5	212.5	250	275	300	337.5	362.5	387.5	425	450	475	500	537.5	562.5	587.5	625
L4		85.5	110.5	148	173	198	223	260.5	285.5	310.5	348	373	398	435.5	460.5	485.5	510.5	548	573	598	635.5
L5		37.8	66.8	95.8	124.8	153.8	182.8	211.8	240.8	269.8	298.8	327.8	356.8	385.8	414.8	443.8	472.8	501.8	530.8	559.8	588.8



Dimensions

Plug lead unit manifold (VV2Q32-□-Q)



VX
VN□
VQ
VDW
VC
LV
PA



Dotted line: DIN rail mounting (-D)

Equation $L_1 = (n-1) \times 37 + 56$
 $L_2 = L_1 - 10$
 $L_3 = L_4 - 10.5$
 $L_5 = L_1 - 11.2$

Dimensions

n: Station (Max. 20)

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L ₁	56	93	130	167	204	241	278	315	352	389	426	463	500	537	574	611	648	685	722	759
L ₂	46	83	120	157	194	231	268	305	342	379	416	453	490	527	564	601	638	675	712	749
L ₃	75	112.5	150	187.5	225	261.5	300	337.5	375	412.5	450	487.5	525	562.5	599.5	637	674.5	712	749.5	787
L ₄	85.5	123	160.5	198	235.5	273	310.5	348	385.5	423	460.5	498	535.5	573	610.5	648	685.5	723	760.5	798
L ₅	44.8	81.8	118.8	155.8	192.8	229.8	266.8	303.8	340.8	377.8	414.8	451.8	488.8	525.8	562.8	599.8	636.8	673.8	710.8	747.8

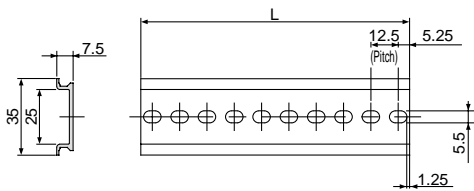
Series VQ20/30

Manifold Options

DIN rail AXT100-DR-□

*Suffix the number from DIN rail dimensions table below.
Refer to manifold dimensions drawings for L dimension.

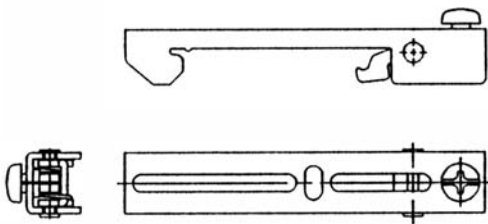
Each manifold can be mounted on a DIN rail.
Order with the option symbol “-D” to specify
DIN rail mounting style.
The DIN rail is approximately 30mm longer
than the length of manifold.



L dimensions																				L=12.5n+10.5	
Station	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
No.	6	9	12	15	18	21	24	27	30	33	36	39	42	45	47	50	53	56	59	62	
L	85.5	123	160.5	198	235.5	273	310.5	348	385.5	423	460.5	498	535.5	573	598	635.5	673	710.5	748	785.5	

DIN rail mounting bracket VVQZ100-DB-5

This bracket is used for mounting the manifold on the DIN rail.
DIN rail mounting bracket is attached on the manifold.
1 set of DIN rail mounting brackets for 1 manifold
includes 2 brakets.



Blank plate AXT835-35A(For VQ20) AXT837-35A(For VQ30)

Mount a blank plate on valve manifold when a valve is
disassembled for maintenance purpose, or when spare
valve unit is supposed to be mounted in the future.