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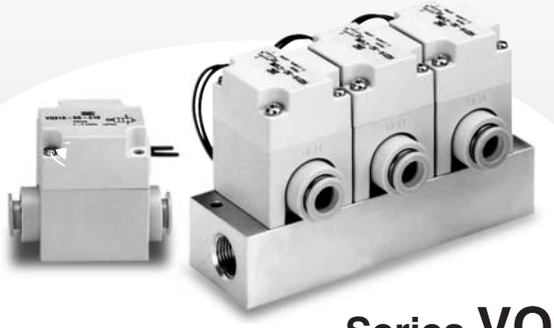
For Dry Air, Pilot Operated

2 Port Solenoid Valve

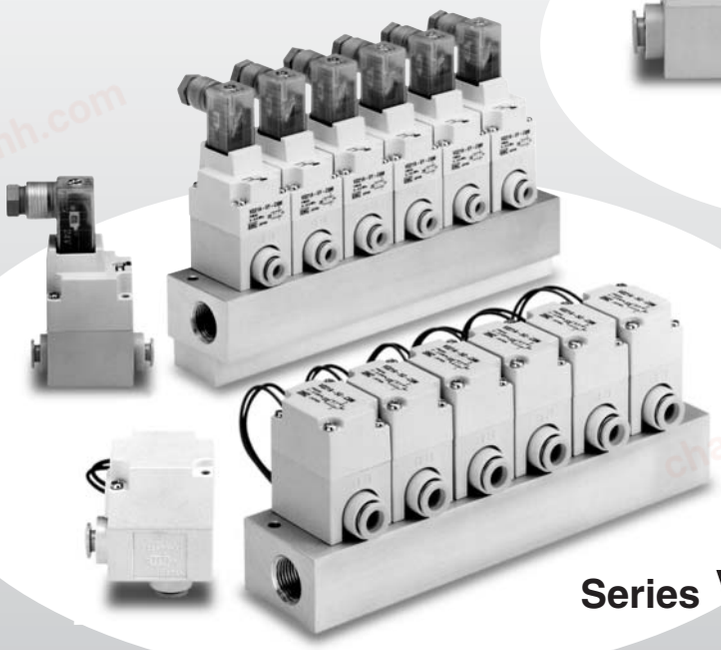
Series VQ20/30

Compact & lightweight with large flow capacity

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



Series **VQ30**



Series **VQ20**

High frequency operation possible and long operating life

High speed response 7ms or less (VQ20), 20ms or less (VQ30)
(Without indicator light and surge voltage suppressor, at 0.5MPa of supply pressure)

Easy piping with built-in One-touch fittings

Dust and jet proof enclosure (IP65) available with DIN connector

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

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Series VQ20/30

⚠ Precautions

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

⚠ Warning

Selection

1. Air quality

This product is for dry air. Drain, oil, etc. in the air may result in faulty operation. Use clean (dry) air.

2. Pressure differential

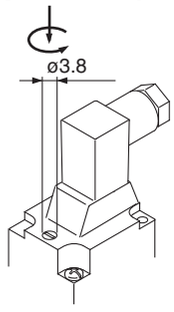
If a restrictor (nozzle, etc.) is mounted on the outlet side, the outlet side pressure differential at the inlet side is smaller.
Be sure the pressure differential when ON does not drop below 0.01 MPa.

⚠ Warning

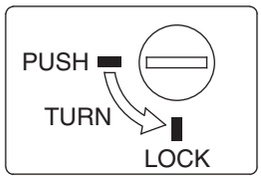
Manual Override

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

Locking slotted style

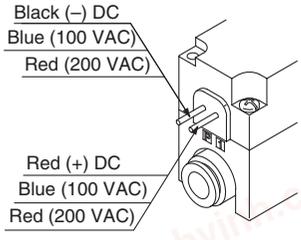


Push the manual override button with a small screw driver until it stops. Turn it in the counter-clockwise direction at 90°, and it is locked.
Turn it right to release.

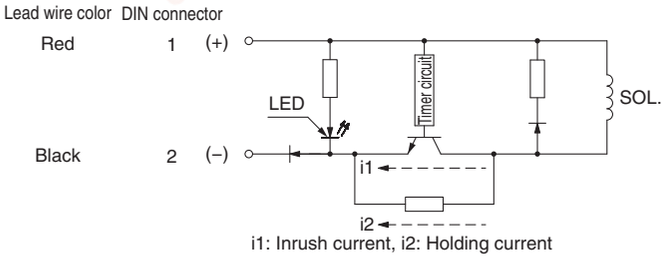


⚠ Caution

Connection and Electrical Circuit



With DC voltage power-saving circuit (with polarity)



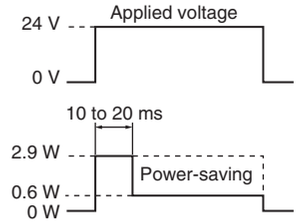
i1: Inrush current, i2: Holding current

DC (with power-saving circuit) specifications is designed to reduce the power consumption at holding to achieve power-saving by circuit shown above.
Refer to below power wave form.

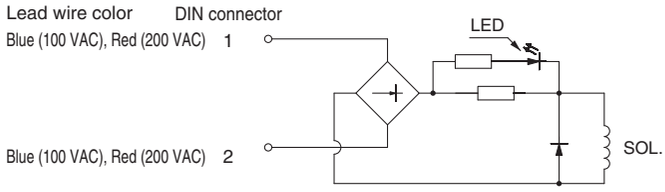
⚠ Caution

Connection and Electrical Circuit

Power wave form of power-saving type (Rated voltage at 24 VDC)



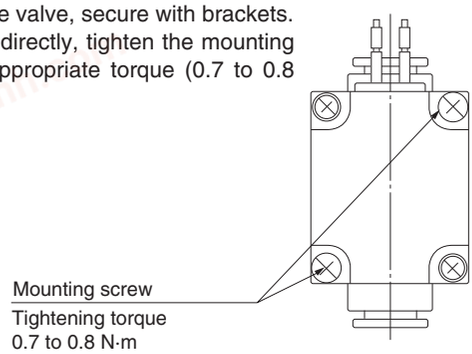
AC circuit



⚠ Caution

Valve Mounting

When mounting the valve, secure with brackets. When mounting it directly, tighten the mounting screws with the appropriate torque (0.7 to 0.8 N·m).



⚠ Caution

When Energizing Continuously for Long Period of Time

When energizing continuously, choose the option of an energy-saving circuit specifications. High speed response type (with no energy-saving circuit) cannot be energized continuously.

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⚠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.

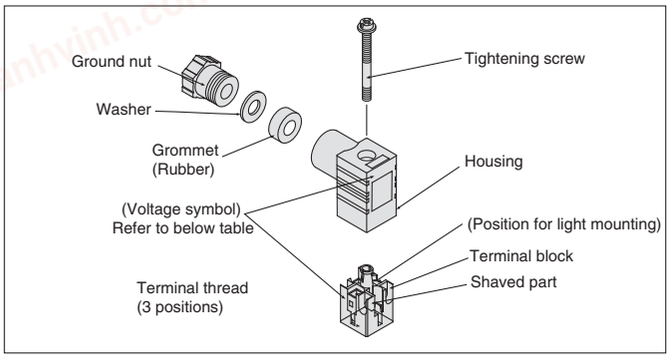
Precaution

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

Applicable cable

Cord O.D.: ø3.5 to ø7

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



DIN Terminal Part No. (Based on DIN)

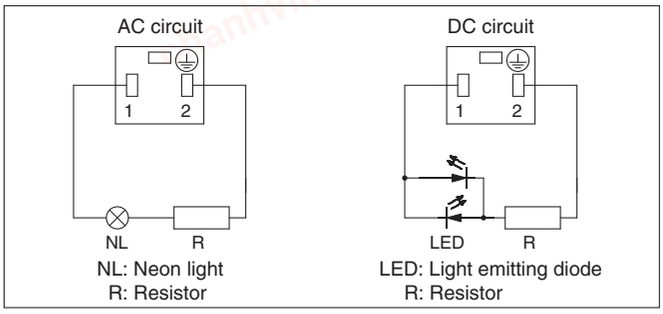
Without indicator light	SY100-82-4

With Indicator Light

Rated voltage	Voltage symbol	Part no.
24 VDC	24 V	SY100-82-3-05
12 VDC	12 V	SY100-82-3-06
100 VAC	100 V	SY100-82-2-01
200 VAC	200 V	SY100-82-2-02
110 VAC	110 V	SY100-82-2-03

How to Wire DIN Terminal

DIN Terminal Circuit with Indicator Light



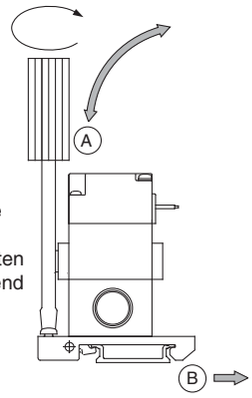
Manifold

⚠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.

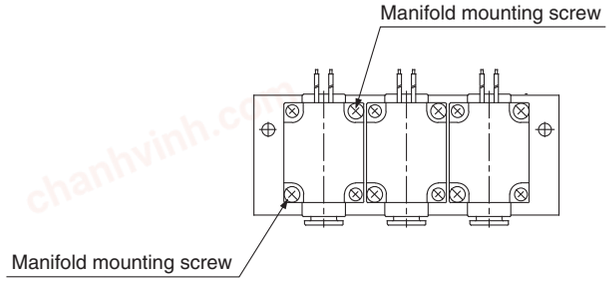
Mounting manifold to DIN rail:
1) Hook the mounting hook on the "B" side of the manifold base to the DIN rail.
2) Push side "A" onto the DIN rail and tighten the clamp screw on the "A" side of the end plate. (Tightening torque: 0.3 to 0.4Nm)



⚠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).



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For Dry Air, Pilot Operated

2 Port Solenoid Valve
Series VQ20/30
Single Unit

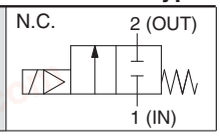
How to Order Valve

VQ 2 1 A 1 – 1 G □ □ – C6 □ □ – Q

Series/ Orifice diameter

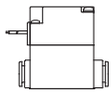
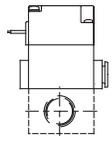
Symbol	Series
2	VQ20
3	VQ30

Valve type

1	

Note) Flow direction should be from port 1 (A) to port 2 (B) for vacuum applications.

Body style

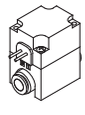
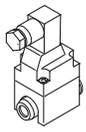
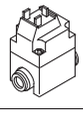
A: Single unit	
M: For manifold	

Coil voltage

1	100 VAC (50/60 Hz)
2	200 VAC (50/60 Hz)
3	110 VAC (50/60 Hz)
5	24 VDC
6	12 VDC
9 Note 1)	Other special voltage

Note 1) Please consult with SMC for special voltages.
Note 2) There is polarity for DC voltage (with power-saving circuit type).

Electrical entry

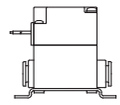
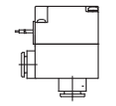
G: Grommet	
Y: DIN connector	
YO: DIN terminal without connector	

Manual override

—	None
B(1)	Locking style (Slotted)

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

Option

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

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

Made to order specifications
Refer to table below

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	—	○

Electricity circuit

Symbol	DC voltage	AC voltage
—	With power-saving circuit (With surge voltage suppressor protection circuit)	With full wave rectifier circuit (With surge voltage suppressor protection circuit)
Z	With power-saving circuit (With light/surge voltage suppressor protection circuit)	With full wave rectifier circuit (With light/surge voltage suppressor protection circuit)
H Note)	High speed response type (Without energy-saving, light/surge voltage suppressor circuit)	

Note) H is available only for DC voltage and cannot be energized continuously.

Made to Order Specifications

Please contact SMC for further specifications, delivery and price

Oil-free specifications

VQ 2/3 1 A/M 1 – □□□ – □□ – □ – X2-Q

Note) Please consult with SMC when using. Not available for manual operation

Seal material fluororubber specifications

VQ 2/3 1 A/M 1 – □□□□ – □□ – □ – X5-Q

Seal material fluororubber/oil-free specifications

VQ 2/3 1 A/M 1 – □□□ – □□ – □ – X23-Q

Note) Not available for manual operation

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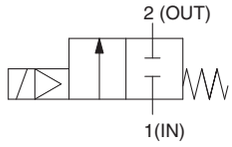


Standard Specifications

			VQ20	VQ30
Valve specifications	Series			
	Valve construction		2 port poppet pilot operated	
	Fluid		Air/Inert gas Note 1)	
	Ambient and fluid temperature		–10 to 50°C Note 2)	
	Lubrication		Not required	
	Manual override		Slotted locking type (tool required) Note 3)	
	Impact resistance/Vibration resistance		150/30 m/s² Note 4)	
	Enclosure		Dustproof Note 5)	
	Internal leakage cm³/min		15 or less	
	Exterior leakage cm³/min		15 or less	
	Mounting orientation		Unrestricted	
	Weight		46 g	80 g
Electric specifications	Coil rated voltage		12 VDC, 24 VDC, 100 VAC, 110 VAC, 200 VAC	
	Allowable voltage fluctuation		±10% of rated voltage	
	Coil insulation type		Class B or equivalent	
	Power consumption (Current value)	DC voltage (with power-saving circuit)	Inrush: 2.9 W, Holding: 0.6 W	
		DC voltage (without power-saving circuit)	2.9 W	
		AC	2 VA	
	Electrical entry		Grommet, DIN terminal	

Note 1) This product is for dry air. Use in clean air, and be sure that drain and oil content does not flow into the product.
Note 2) Use dry air to prevent condensation when operating at low temperatures.
Note 3) Manual override is available only for DIN terminal type.
Note 4) Vibration resistance: No malfunction occurred in a one-sweep test between 8.3 and 2000 Hz. Test was performed at both energized and de-energized states to the axis and right angle directions of the main valve and armature (value at the initial state).
Impact 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 (value at the initial state).
Note 5) DIN terminal type: Applicable to dusttight and low jetproof (IP65).

Symbol



N.C.

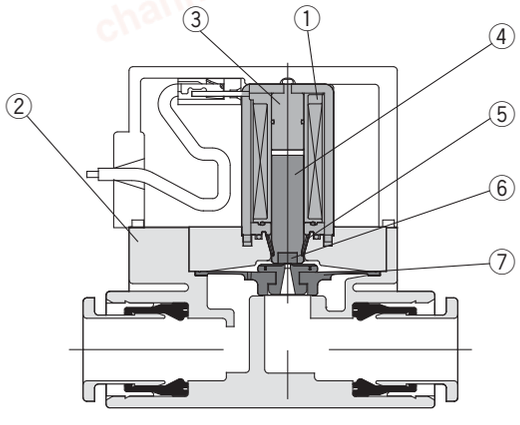
Note) Flow direction should be from port 1 (A) to port 2 (B) for vacuum applications.

Characteristic Specifications

Series		VQ20		VQ30	
Flow characteristics	Port size	ø6	ø8	ø10	ø12
	C [dm³/(s·bar)]	1.4	1.5	2.8	3.0
	b	0.23	0.42	0.42	0.37
	Cv	0.33	0.39	0.80	0.81
Min. operating pressure differential		0.01 MPa Note 3)			
Max. operating pressure differential		0.6 MPa		0.5 MPa	
Response time Note 1)	Electricity circuit	With power-saving circuit	High speed response type Note 2)	With power-saving circuit	High speed response type Note 2)
	ON	10 ms or less	7 ms or less	25 ms or less	20 ms or less
	OFF	15 ms or less	5 ms or less	15 ms or less	5 ms or less

Note 1) JIS B 8375 (value of DC voltage specifications at 0.5 MPa supply pressure)
(Value of high response time is subject to change upon pressure, quality of air.)
Note 2) It cannot be used when energized continuously.
Note 3) If a restrictor (nozzle, etc.) is mounted on the outlet side piping, the pressure differential when ON is smaller. Be sure that the pressure differential does not drop below 0.01 MPa. Additionally, take great care when used for the ejector supply, etc.

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	H NBR, Resin

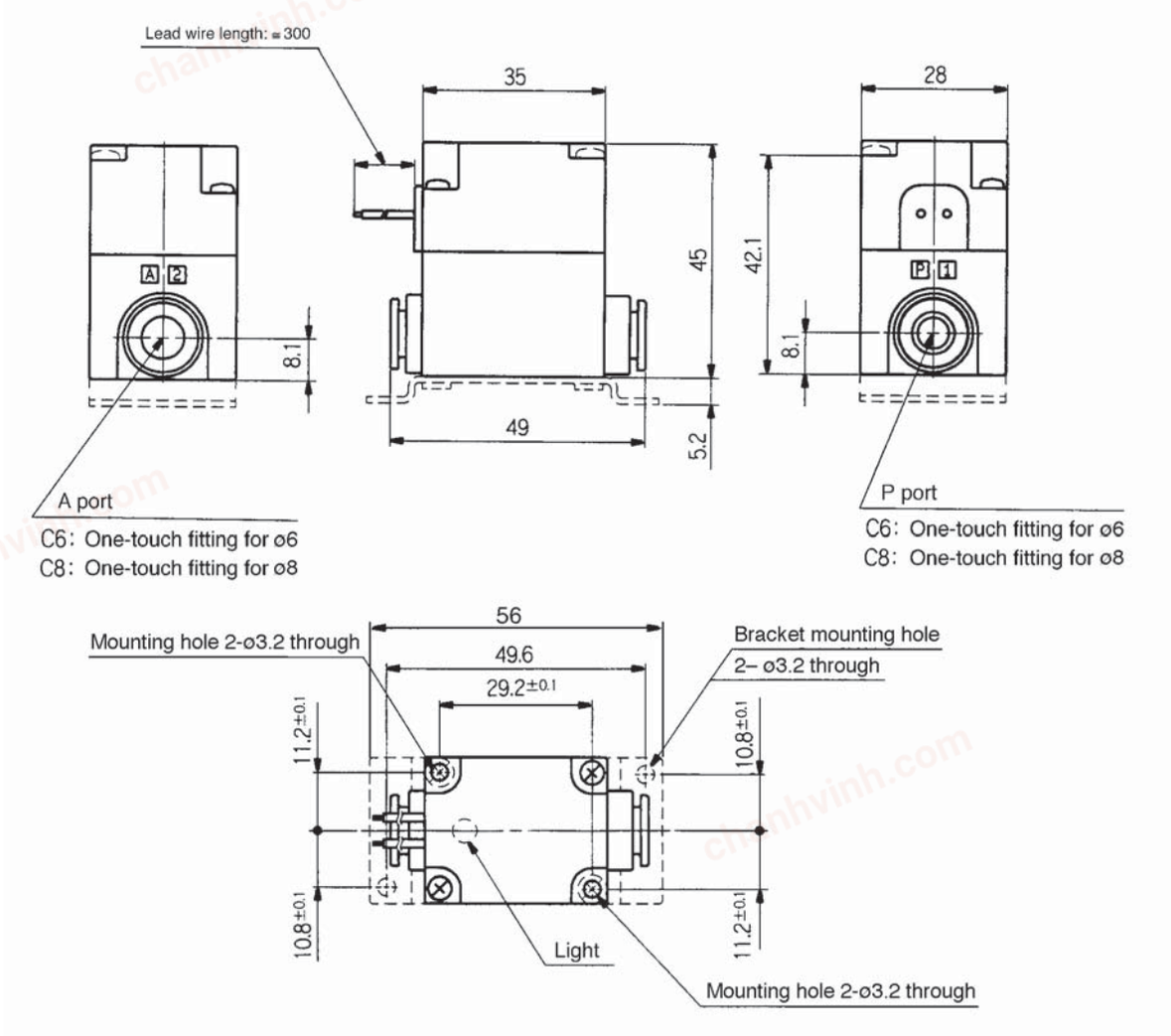
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Series VQ20/30

Dimensions/Series VQ20

In-line Type/Grommet(G)

VQ21A1-□G□-□-□Q



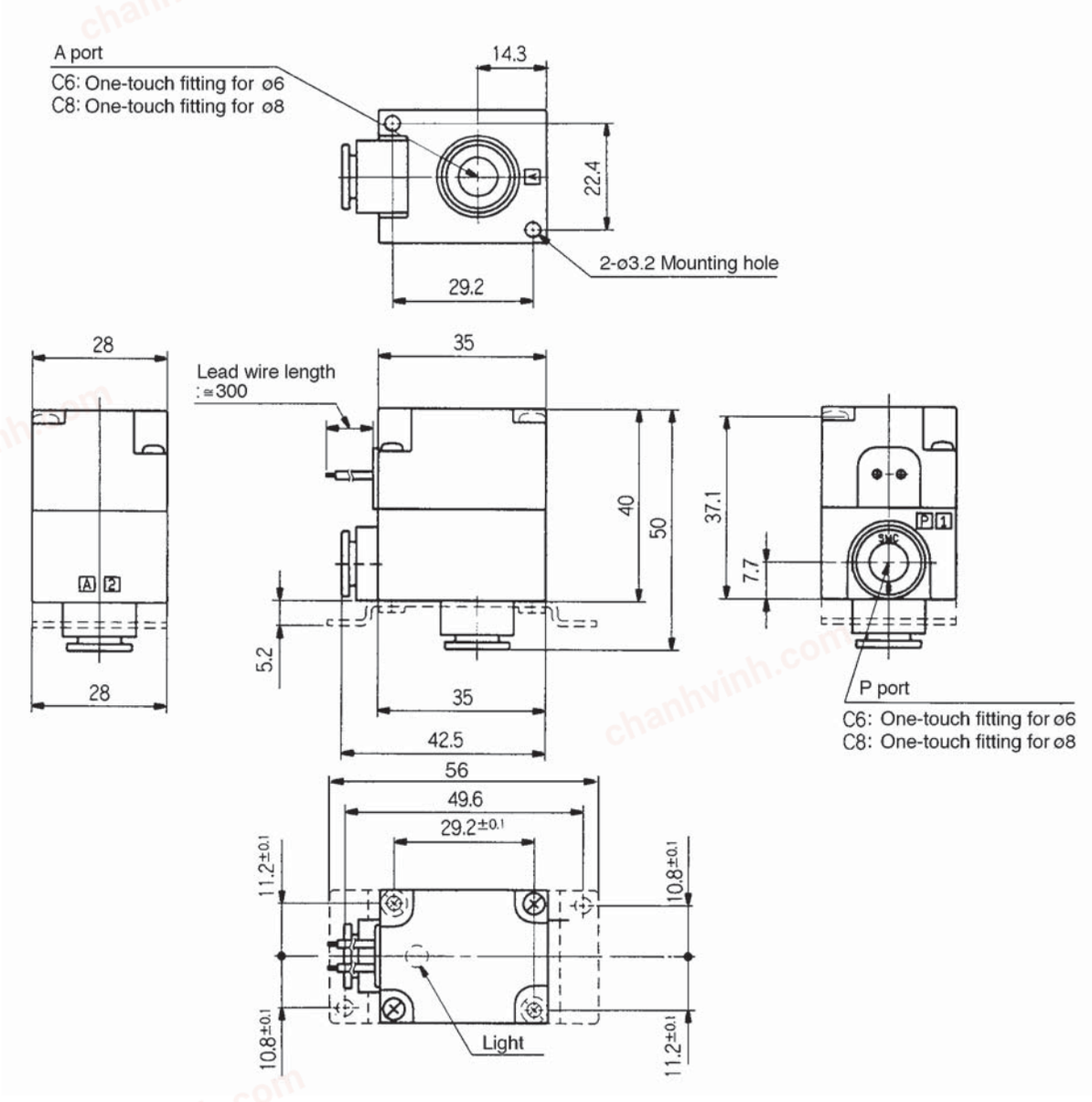
Dotted line: Bracket mounting style (-F)

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Dimensions/Series VQ20

L Type/Grommet (G)

VQ21A1-□G□-□-L□-Q



Dotted line: Bracket mounting style (-LF)

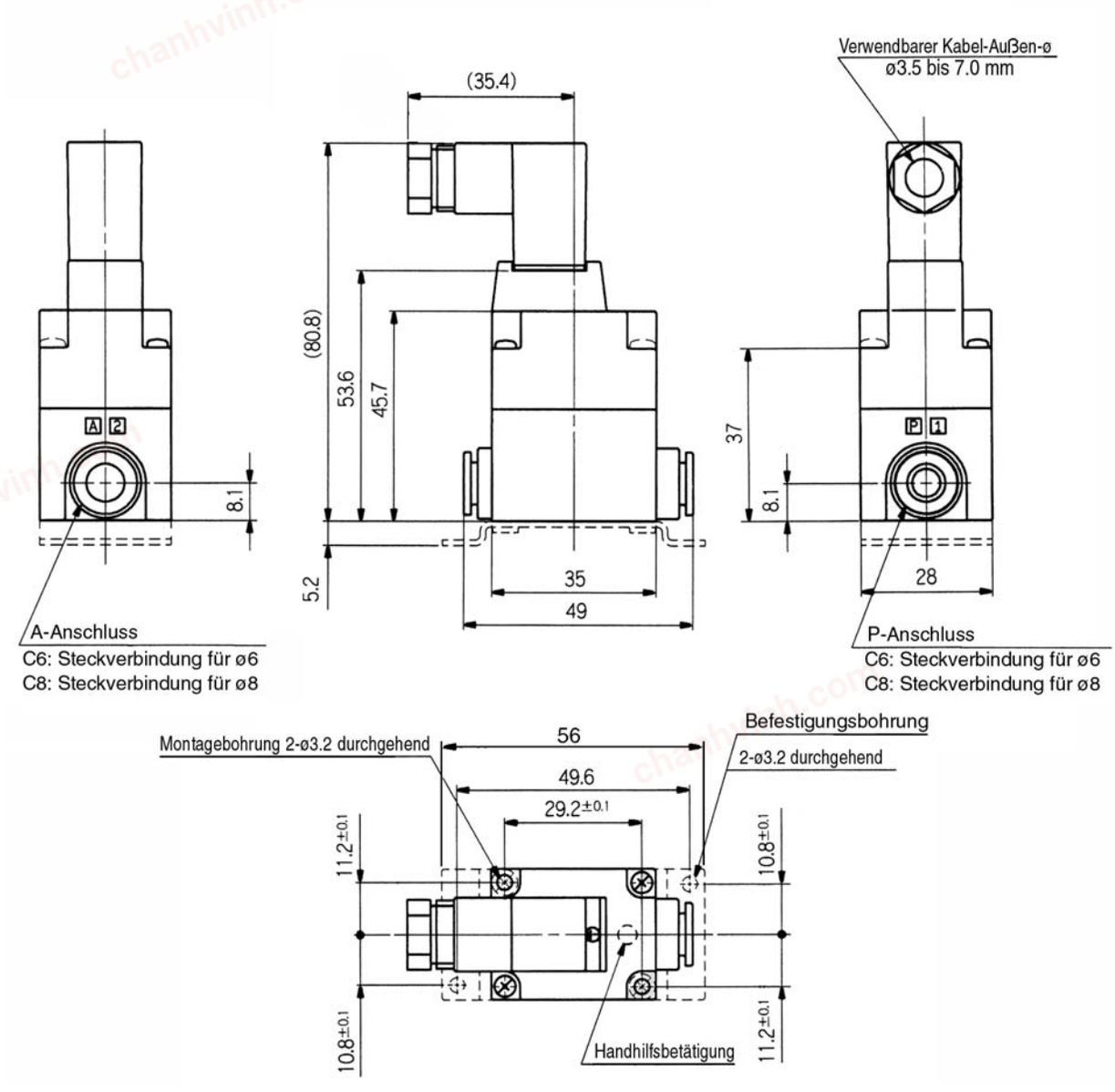
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Series VQ20/30

Dimensions/Series VQ20

In-line/DIN connector (Y)

VQ21A1-□Y□□-□□-□-Q



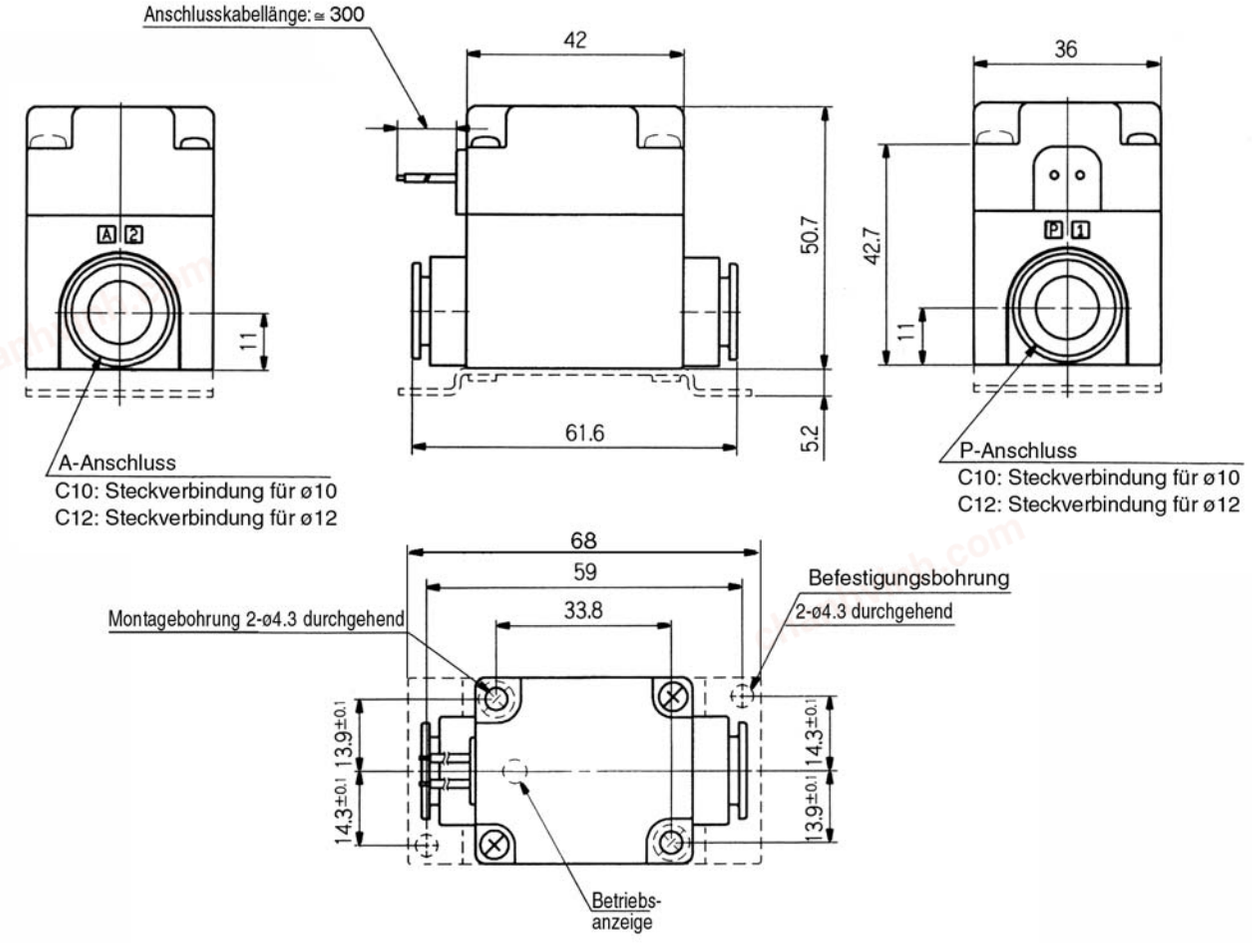
Dotted line: Bracket mounting style (-F)

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Dimensions/Series VQ30

In-line/Grommet (G)

VQ31A1-□G□-□-□-Q



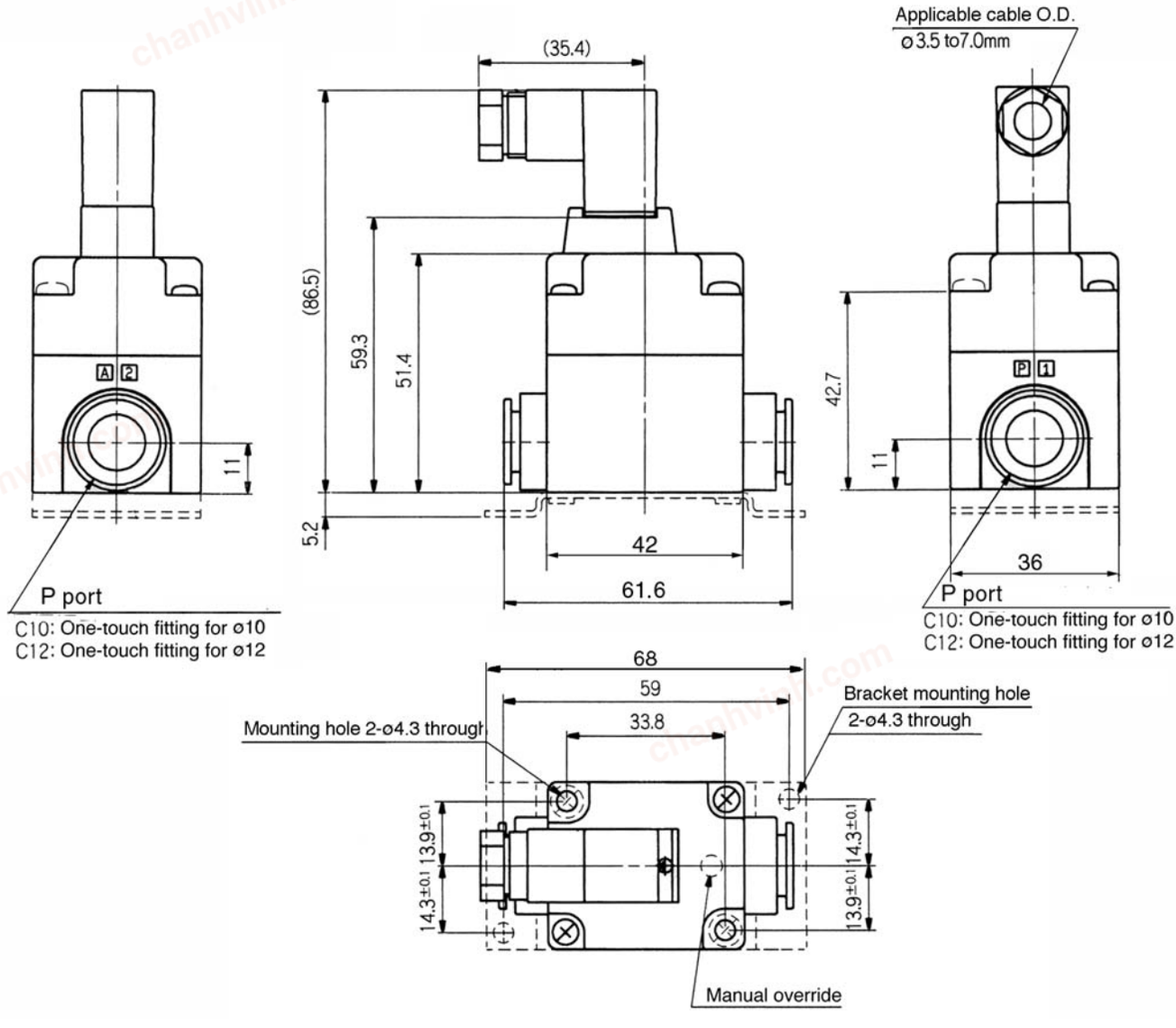
Dotted line: Bracket mounting style (-F)

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Dimensions/Series VQ30

DIN connector (Y)

VQ31A1-□Y□□-□-□-Q



Dotted line: Bracket mounting style (-F)

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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

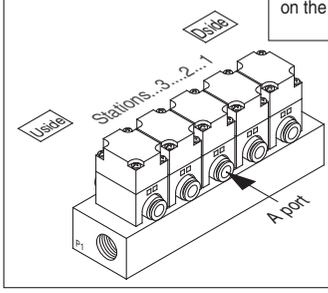
How to Order Manifold Assembly

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



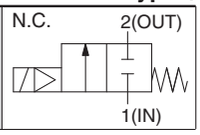
How to Order Valve

VQ 2 1 M 1 — 1 G [ ] [ ] — C6 — [ ] — Q

Series/ Orifice diameter

Symbol	Series
2	VQ20
3	VQ30

Valve Type

1	

Note) Flow direction should be from port 1 (A) to port 2 (B) for vacuum applications.

Valve specification

M	Manifold

Coil voltage

1	100 VAC (50/60 Hz)
2	200 VAC (50/60 Hz)
3	110 VAC (50/60 Hz)
5	24 VDC
6	12 VDC
9 Note 1)	Other special voltage

Note 1) Please consult with SMC for special voltages.
Note 2) There is polarity for DC voltage (with power-saving circuit type).

Manual override

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

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

Made to order specifications
Refer to table below

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	—	○

Electrical entry

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

Electricity circuit

Symbol	DC voltage	AC voltage
—	With power-saving circuit (With surge voltage suppressor protection circuit)	With full wave rectifier circuit (With surge voltage suppressor protection circuit)
Z	With power-saving circuit (With light/surge voltage suppressor protection circuit)	With full wave rectifier circuit (With light/surge voltage suppressor protection circuit)
H Note)	High speed response type (Without energy-saving, light/surge voltage suppressor circuit)	

Note) H is available only for DC voltage and cannot be energized continuously.

Made to Order Specifications

Please contact SMC for further specifications, delivery and price

Oil-free specifications

VQ 2/3 1 A/M 1 — [ ][ ][ ] — [ ] — [ ] — X2-Q

Note) Please consult with SMC when using. Not available for manual operation

Seal material fluororubber specifications

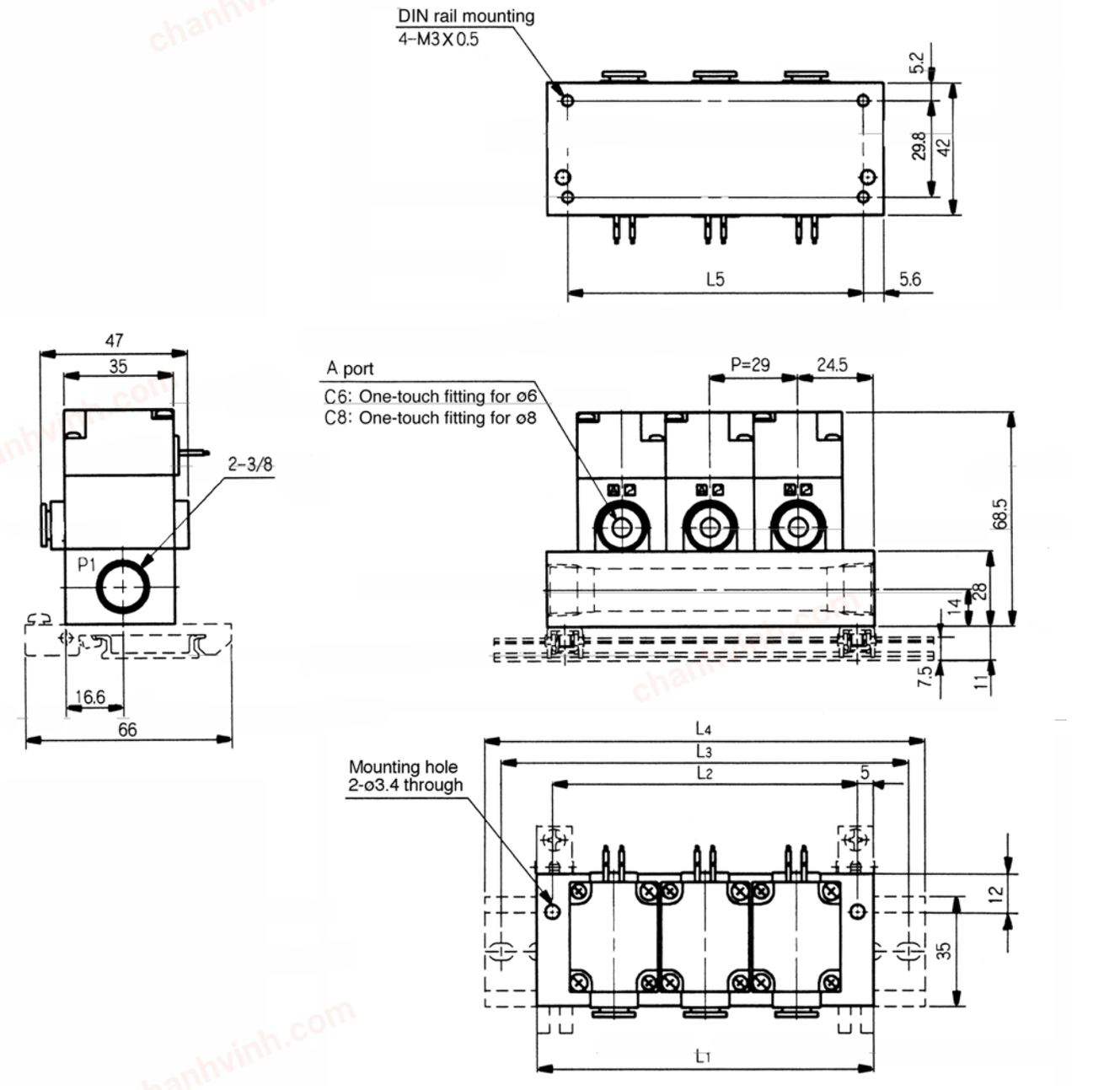
VQ 2/3 1 A/M 1 — [ ][ ][ ][ ] — [ ] — [ ] — X5-Q

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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

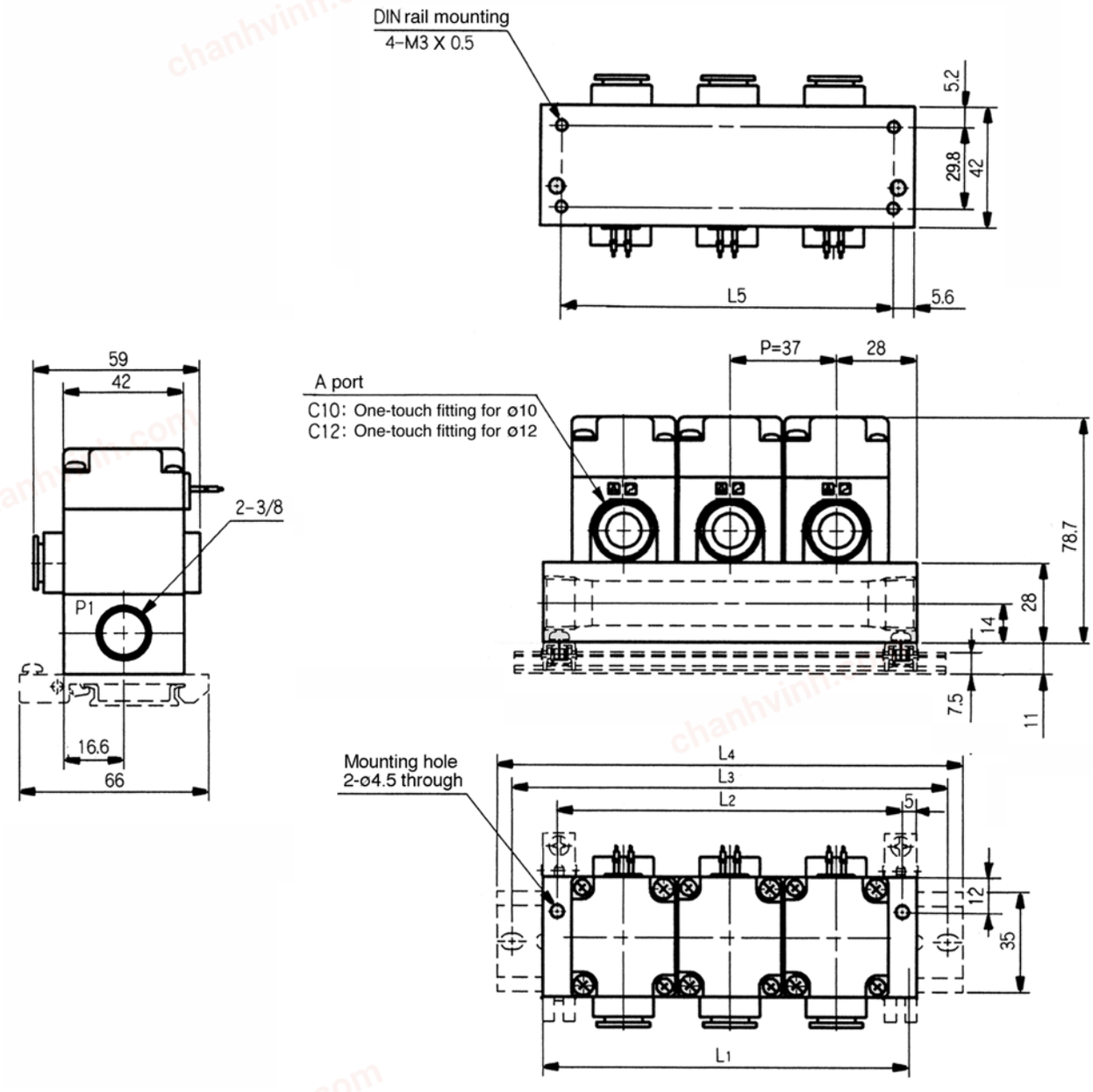
n: Station (Max.20)

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L_1	49	78	107	136	165	194	223	252	281	310	339	368	397	426	455	484	513	542	571	600
L_2	39	68	97	126	155	184	213	242	271	300	329	358	387	416	445	474	503	532	561	590
L_3	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
L_4	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
L_5	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

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Dimensions

Plug lead unit manifold (VV2Q32-□-Q)



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)

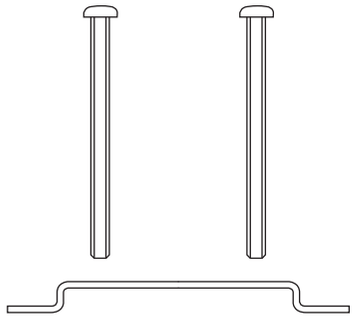
L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L_1	56	93	130	167	204	241	278	315	352	389	426	463	500	537	574	611	648	685	722	759
L_2	46	83	120	157	194	231	268	305	342	379	416	453	490	527	564	601	638	675	712	749
L_3	75	112.5	150	187.5	225	261.5	300	337.5	375	412.5	450	487.5	525	562.5	587.5	625	662.5	700	737.5	775
L_4	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
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

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Series VQ20/30

Single Unit Option

Bracket assembly (with 2 mounting screws)



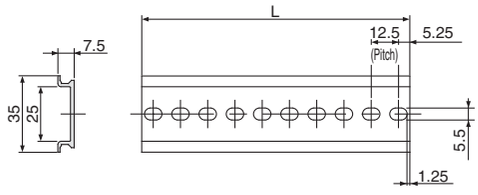
Type	Bracket assembly	(Mounting screws, 2 pcs.)
VQ20 Grommet in-line type	AXT835-13A	M3 x 45
VQ20 Grommet L type, DIN terminal type	AXT835-13A-2	M3 x 40
DIN terminal L type	AXT835-13A-3	M3 x 35
VQ30	AXT837-13A	M4 x 45

Manifold Option

DIN rail
AXT100-DR-□

* Suffix the number from DIN rail dimensions table below. Refer to the dimension drawing for each manifold 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 30 mm longer than the length of manifold.



L dimension

• Series VQ20

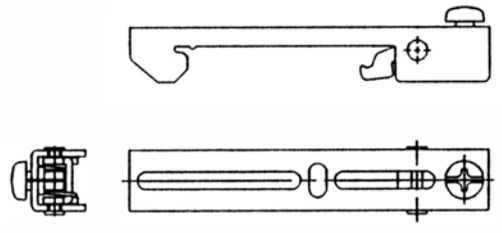
Stations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
No.	6	8	11	13	15	17	20	22	24	27	29	31	34	36	38	40	43	45	47	50
L	85.5	110.5	148	173	198	223	260.5	285.5	310.5	348	373	398	435.5	460.5	485.5	510.5	548	573	598	635.5

• Series VQ30

Stations	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

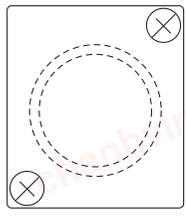
DIN rail mounting bracket
VVQZ100-DB-5

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 brackets.



Blanking plate assembly (with O-ring and 2 mounting screws)

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



Series	Blanking plate assembly	(O-ring)	(Mounting screws, 2 pcs.)
VQ20	AXT835-35A	OR-1679-100-H	M3 x 6
VQ30	AXT837-35A	OR-2400-150-H	M4 x 6