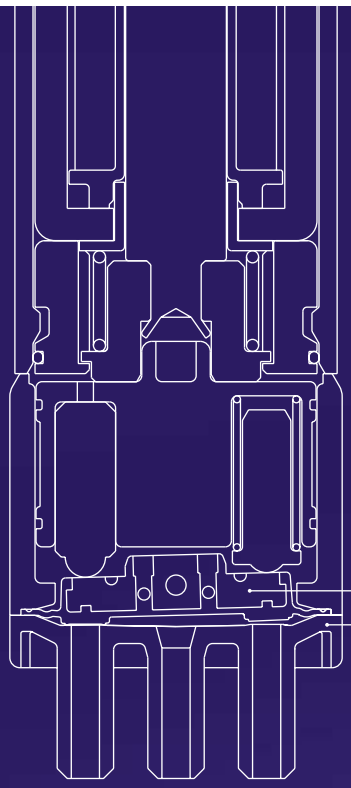
SMC

CE

Diaphragm Type Direct Acting
2/3 Port Solenoid Valve for Chemicals



Wetted part material

Body and plate

Choice of

PFA or PEEK

Diaphragm

Choice of

EPDM, FKM or Kalrez® Note)

Service life: **10 million cycles** or more

Based on SMC test conditions.



Series LVM10/100

(2 port) (3 port)

Note) Kalrez® is a registered trademark of DuPont Dow Elastomers.

Meeting the most advanced needs of process control

Diaphragm Type Direct Acting 2/3 Port Solenoid Valve for

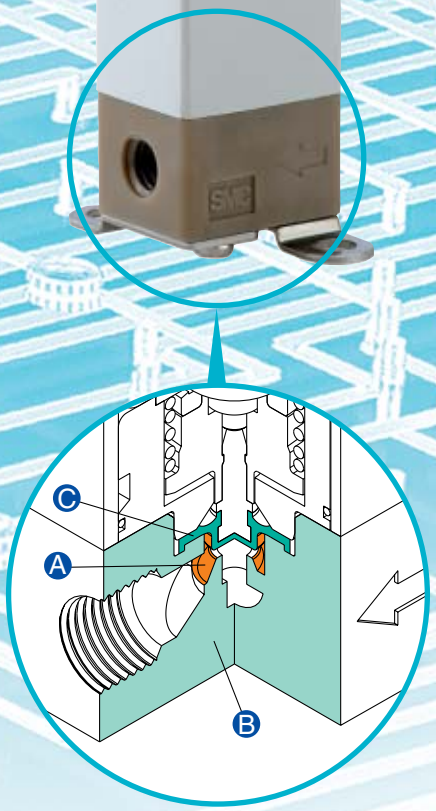
Valve chamber volume of 20 μℓ or less

Body designed for smooth flow with minimal internal dead volume and superior elimination of residual liquid.

Dead volume — LVM11: 11 μℓ or less
LVM1□R, LVM11□: 20 μℓ or less

∗ The dead volume enclosed by the body and the diaphragm





Valve width (2 port / 3 port): 13 mm

Valve width 9.5 mm (LVM090), 20 mm (LVM200) are also available.

Series LVM090
Valve width: 9.5 mm

Series LVM200
Valve width: 20 mm





Specifications

Series	LVM090	LVM100	LVM200
Max. operating pressure	0.2 MPa	0.25 MPa	0.3 MPa
Orifice diameter	1.1 mm	1.4 mm	2 mm
Flow characteristics (Cv factor)	0.018	0.03	0.065

∗ LVM090 and 200 are rocker type 2/3 port valves.

For detailed dimensions, specifications, and delivery, please contact SMC.

Lightweight: 30 g(LVM11)/34 g(LVM1□R/LVM11□)

Weight savings by adopting resin as a standard

Power consumption: 1 W(LVM11)/1.5 W(LVM1□R/LVM11□)

LVM11

Applications: Various analytical and inspection equipment

Analytical instruments for blood, urine, immune system, etc.

Chemicals

Series LVM10/100

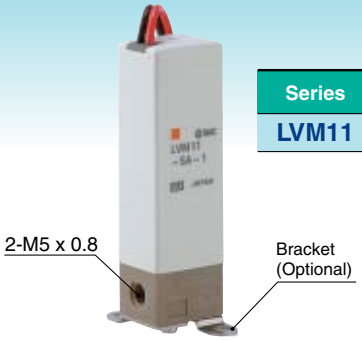


LVM1□□
(Rocker type)

- A **Dead volume**
- B **Body and plate material: PEEK**
- C **Diaphragm material: EPDM, FKM or Kalrez®**

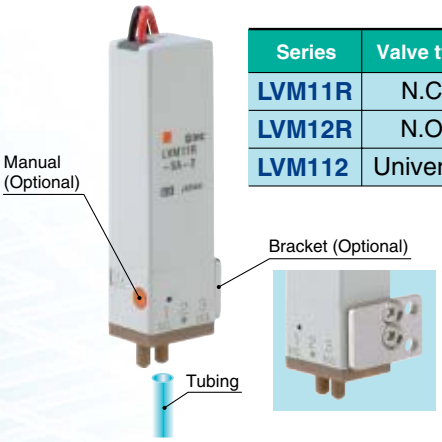
Variations

Body ported type



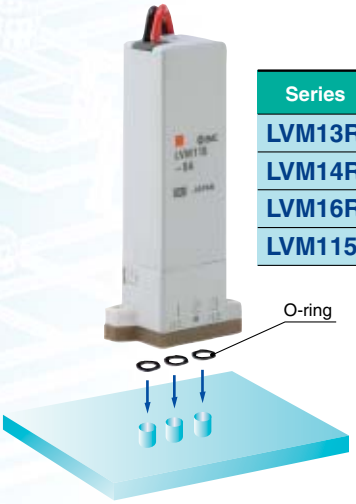
Series	Valve type	Port	Orifice diameter	Cv factor
LVM11	N.C.	2 port	1.5 mm	0.04

Tubing type



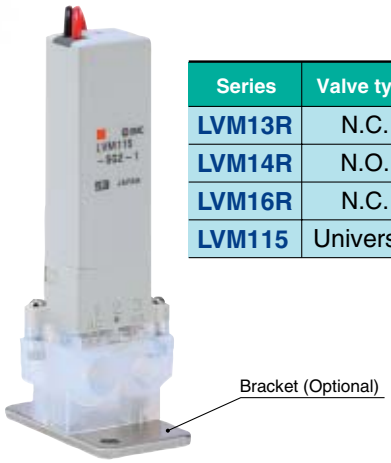
Series	Valve type	Port	Orifice diameter	Cv factor
LVM11R	N.C.	2 port	1.4 mm	0.03
LVM12R	N.O.			
LVM112	Universal	3 port		

Base mounted type (Without sub-plate)



Series	Valve type	Port	Orifice diameter	Cv factor
LVM13R	N.C.	2 port	1.4 mm	0.03
LVM14R	N.O.			
LVM16R	N.C.			
LVM115	Universal	3 port		

Base mounted type (With sub-plate)

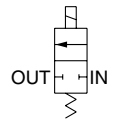
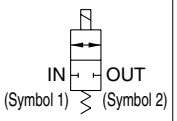
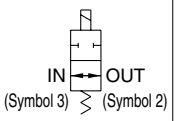
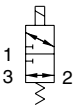


Series	Valve type	Port	Orifice diameter	Cv factor
LVM13R	N.C.	2 port	1.4 mm	0.03
LVM14R	N.O.			
LVM16R	N.C.			
LVM115	Universal	3 port		

Diaphragm Type Direct Acting
2/3 Port Solenoid Valve for Chemicals
Series LVM10/100

How to Order

Series

Symbol	Number of ports	Valve type		Connection
11	2	N.C.		M5 thread
11R		N.C.		Tubing type
12R		N.O.		
112	3	Universal		

Wetted part material

Symbol	Plate	Diaphragm
A	PEEK	EPDM
B	PEEK	FKM
C	PEEK	Kalrez®

Option

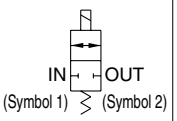
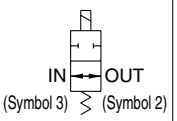
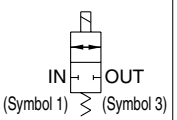
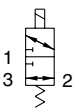
Nil	Nil
1	Bracket
2	Manual override
3	Bracket, Manual override

∗ LVM11: Only option 1 is available

Body Ported Type **LVM** **11** **5** **A** □

Base Mouned Type **LVM** **13R** **5** **A** **2** □

Series

Symbol	Number of ports	Valve type		
13R	2	N.C.		
14R		N.O.		
16R		N.C.		
115	3	Universal		

Coil voltage

5	24 VDC
6	12 VDC

Option

Nil	Nil
1	Bracket
2	Manual override
3	Bracket, Manual override

∗ Bracket can not be attached to the model without a sub-plate.

Sub-plate material/Port size

Nil	Without sub-plate	
2	PFA	M6
2U	PFA	1/4-28 UNF

Wetted part material

Symbol	Plate	Diaphragm
A	PEEK	EPDM
B	PEEK	FKM
C	PEEK	Kalrez®
E	PFA	EPDM
F	PFA	FKM
G	PFA	Kalrez®



Body ported type



Body ported type (Tubing type)



Base mounted type (Without sub-plate)



Base mounted type (With sub-plate)

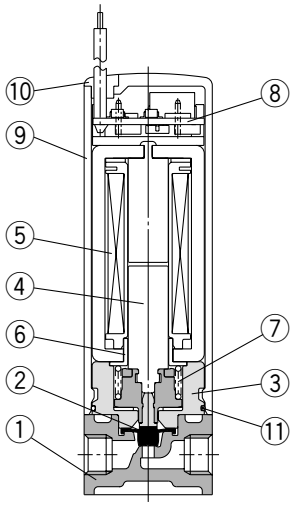
Specifications

Model	Body ported type	Body ported type (Tubing type)			Base mounted type			
	LVM11	**LVM11R**	**LVM12R**	**LVM112**	**LVM13R**	**LVM14R**	**LVM16R**	**LVM115**
Valve construction	Diaphragm type direct operated poppet	Diaphragm type direct operated poppet (Rocker type)						
Valve type	N.C.	N.C.	N.O.	Universal	N.C.	N.O.	N.C.	Universal
Number of ports	2	2		3	2			3
Fluid Note 1)	Air, Water, Pure water, Diluent, Cleaning solvent							
Operating pressure range	0 to 0.25 MPa	–75 KPa to 0.25 MPa						
Orifice diameter	1.5 mm	1.4 mm						
Flow characteristics (Cv factor)	0.04	0.03						
Response time	10 ms or less							
Leakage	Zero leakage, either external or internal (at hydraulic pressure)							
Proof pressure Note 2)	0.38 MPa							
Ambient temperature	0 to 50°C							
Fluid temperature	0 to 50°C (with no condenssation)							
Note 3) **Volume of valve chamber**	11 μℓ	20 μℓ						
Note 4) **Mounting orientation**	Free							
Enclosure	IP40 or equivalent							
Weight	30 g	34 g (Without sub-plate), 42 g (With sub-plate)						
Rated voltage	12, 24 VDC							
Allowable voltage fluctuation Note 5)	±10% of rated voltage							
Type of coil insulation	Class B							
Power consumption	2.5 W at inrush, 1 W at holding (with built-in power saving circuit)	1.5 W						
Note 6) **Coil switching noise**	50 dB							

Note 1) Select an appropriate material for the wetted part when fluid such as a cleaning solvent is used. Also, be sure to confirm the fluid compatibility in advance.
Note 2) Indicates the pressure which does not generate breakage, cracks or external leakage after a one-minute airtight test.
Note 3) Indicates the volume of clearance inside the valve chamber after the volume of the diaphragm is subracted.
Note 4) Since the body (orifice shape) is designed to eliminate residual liquid, mounting in a vertical direction with the coil at the top is recommended. When residual liquid is not considered, any mounting style is available.
Note 5) When the response speed is regarded as important, prevent negative fluctuation of the voltage by adequate regulation.
Note 6) The value is based on SMC's measurement conditions. The noise level will vary with conditions.

Construction/Body Ported Type

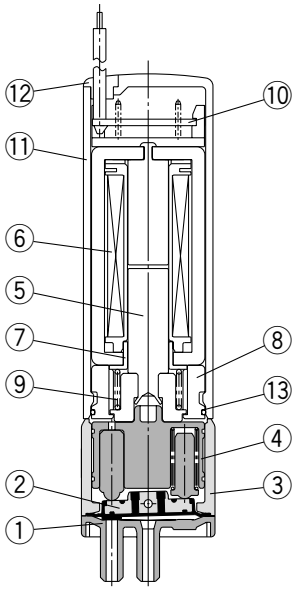
LVM11



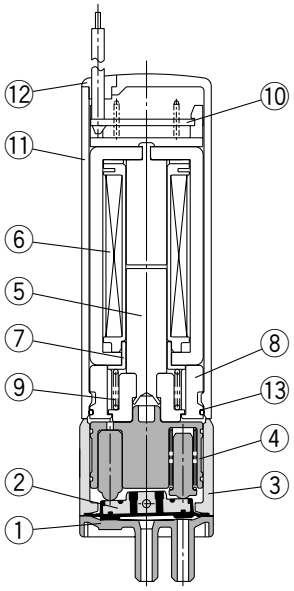
Part list/LVM11

No.	Description	Material
1	**Body**	PEEK
2	**Diaphragm assembly**	EPDM/FKM/Kalrez®
3	**Spacer**	PBT
4	**Armature assembly**	Stainless steel/POM
5	**Coil assembly**	—
6	**Sleeve**	Iron
7	**Return spring**	Stainless steel
8	**Board assembly**	—
9	**Casing**	PBT
10	**Plug**	NBR
11	**O-ring**	NBR

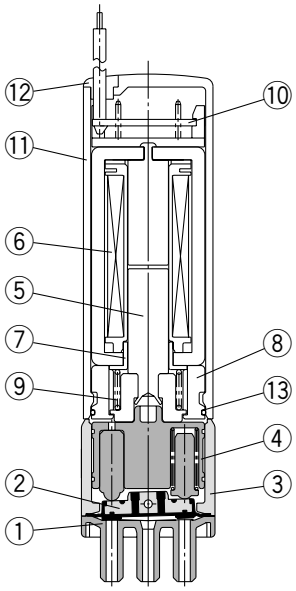
LVM11R



LVM12R



LVM112

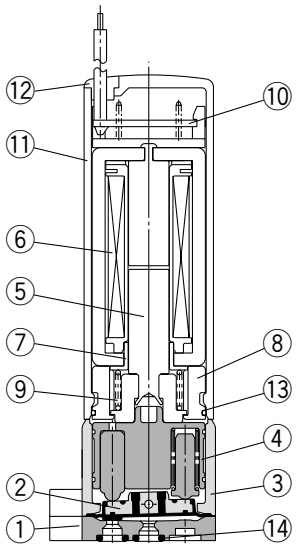


Part list/LVM11R, 12R, 112

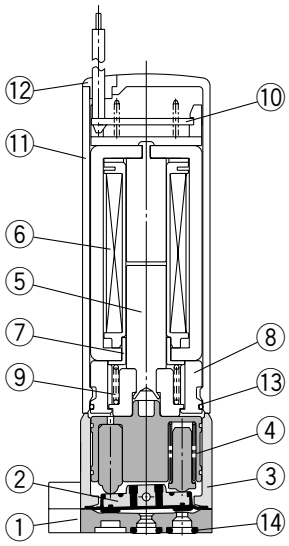
No.	Description	Material
1	**Plate**	PEEK
2	**Diaphragm assembly**	EPDM/FKM/Kalrez®
3	**Body**	PBT
4	**Slide bush assembly**	POM/Stainless steel
5	**Armature assembly**	Stainless steel/PBT
6	**Coil assembly**	—
7	**Sleeve**	Iron
8	**Spacer**	PBT
9	**Return spring**	Stainless steel
10	**Board assembly**	—
11	**Casing**	PBT
12	**Plug**	NBR
13	**O-ring**	NBR

Construction/Base Mounted Type

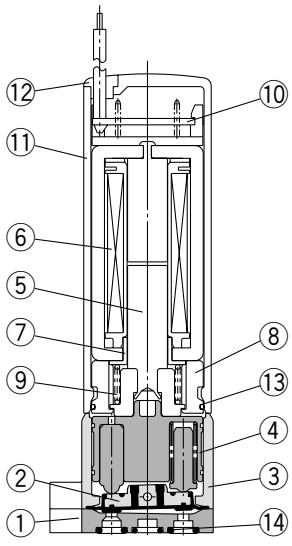
LVM13R



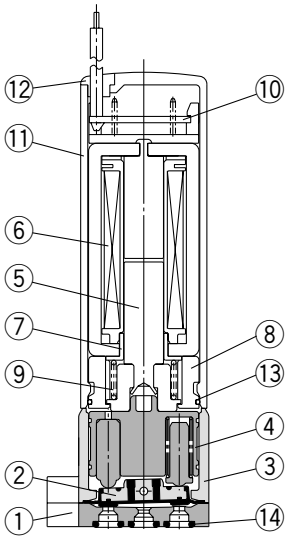
LVM14R



LVM16R



LVM115

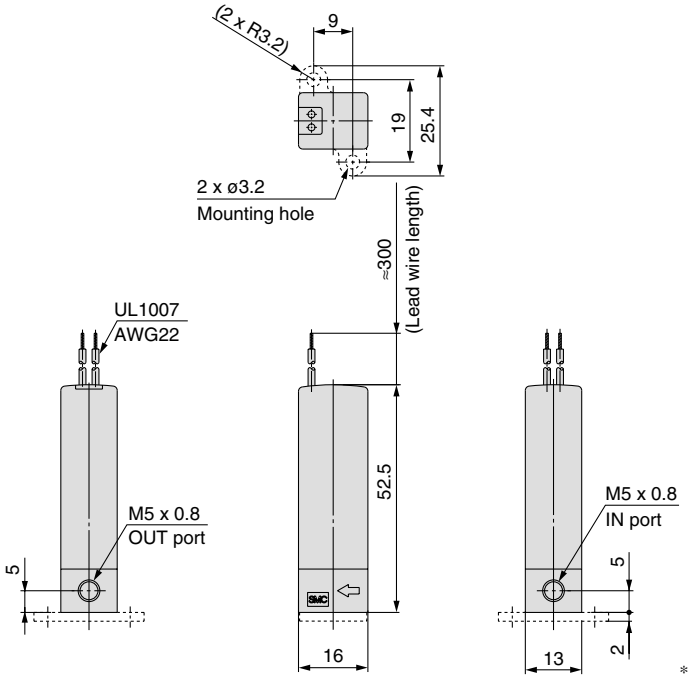


Part list/LVM13R, 14R, 16R, 115

No.	Description	Material
1	**Plate**	PEEK/PFA
2	**Diaphragm assembly**	EPDM/FKM/Kalrez®
3	**Body**	PBT
4	**Slide bush assembly**	POM/Stainless steel
5	**Armature assembly**	Stainless steel/PBT
6	**Coil assembly**	—
7	**Sleeve**	Iron
8	**Spacer**	PBT
9	**Return spring**	Stainless steel
10	**Board assembly**	—
11	**Casing**	PBT
12	**Plug**	NBR
13	**O-ring**	NBR
14	**O-ring**	EPDM/FKM/Kalrez®

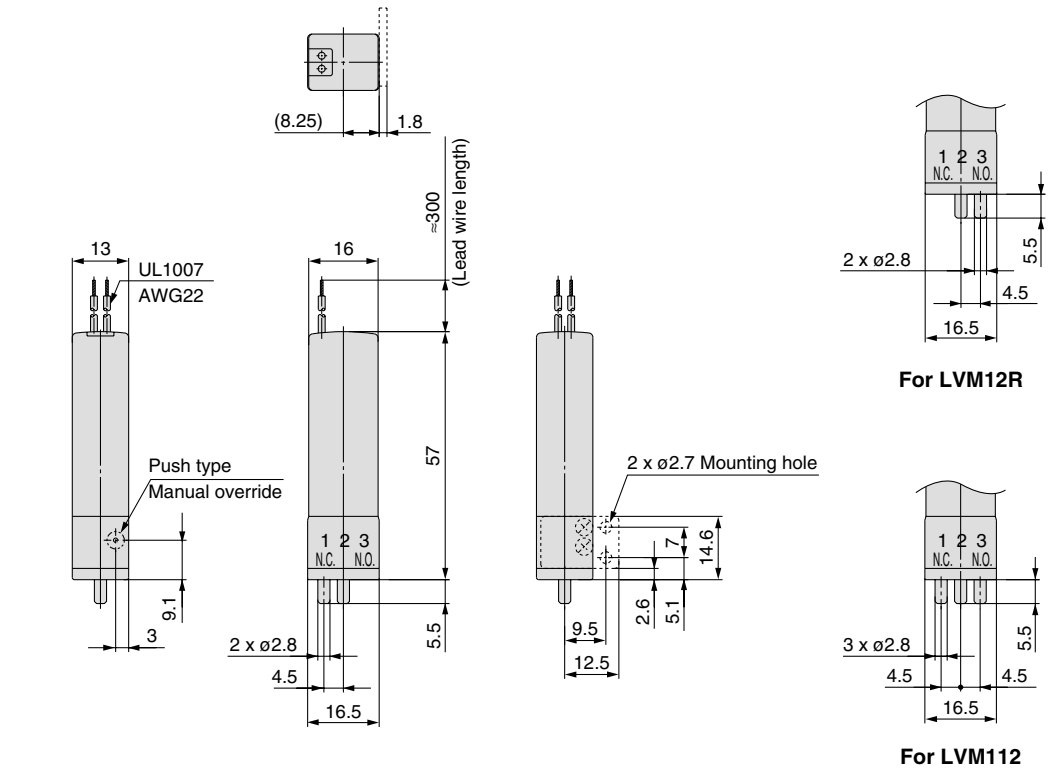
Dimensions/Body Pored Type

LVM11-□□-□ (N.C.)



∗ The broken lines indicate the bracket type.

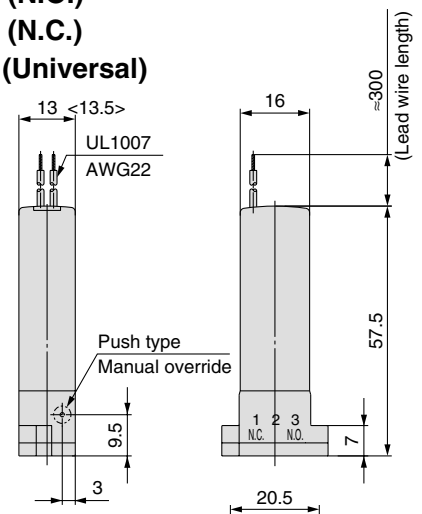
LVM11R-□□-□ (N.C.)
LVM12R-□□-□ (N.O.)
LVM112-□□-□ (Universal)

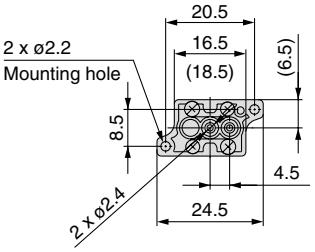


∗ The broken lines indicate the bracket type.

Dimensions/Base Mounted Type

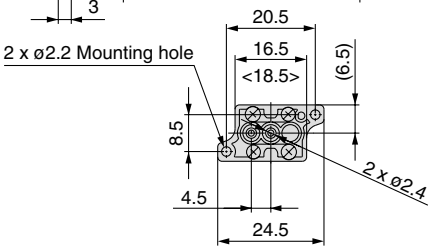
LVM13R-□□-□ (N.C.)
LVM14R-□□-□ (N.O.)
LVM16R-□□-□ (N.C.)
LVM115-□□-□ (Universal)

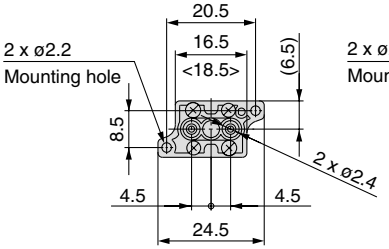




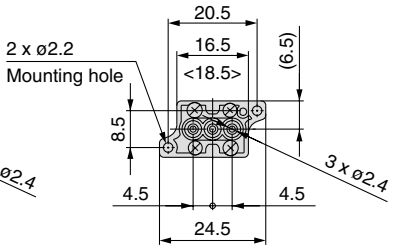
For LVM14R

∗ Dimensions in parentheses indicate when wetted material “E, F, G”.



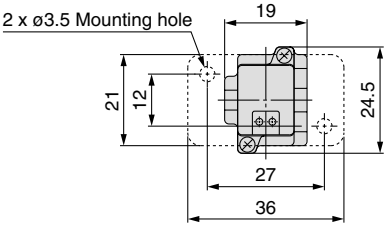


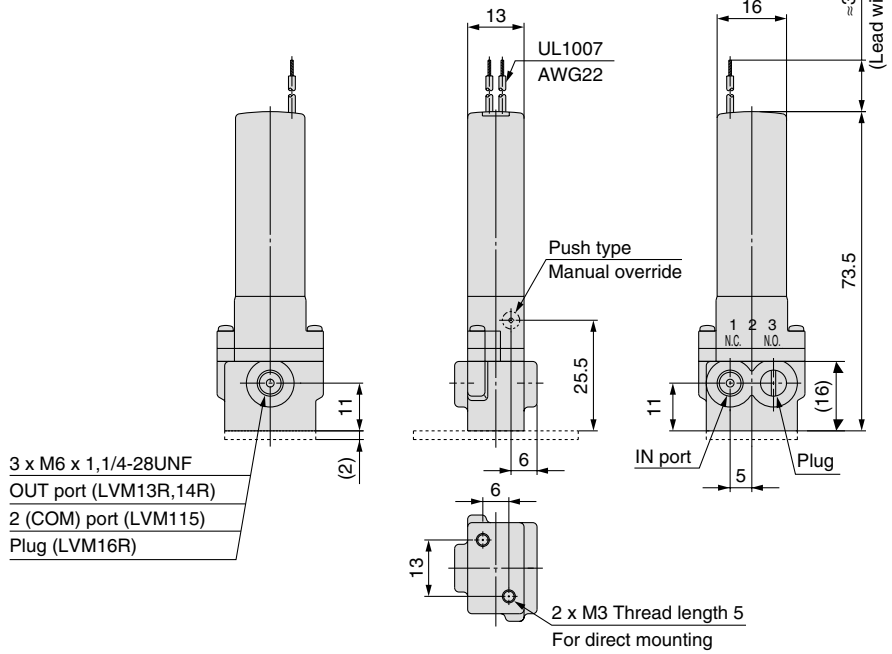
For LVM16R

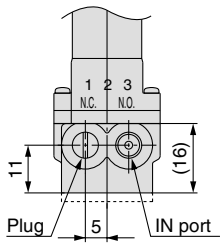


For LVM115

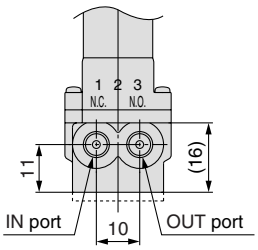
LVM13R-□□□-□ (N.C.)
LVM14R-□□□-□ (N.O.)
LVM16R-□□□-□ (N.C.)
LVM115-□□□-□ (Universal)



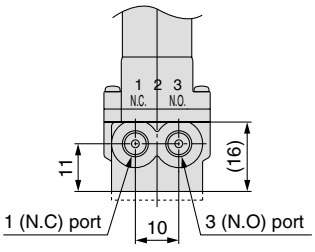




For LVM14R



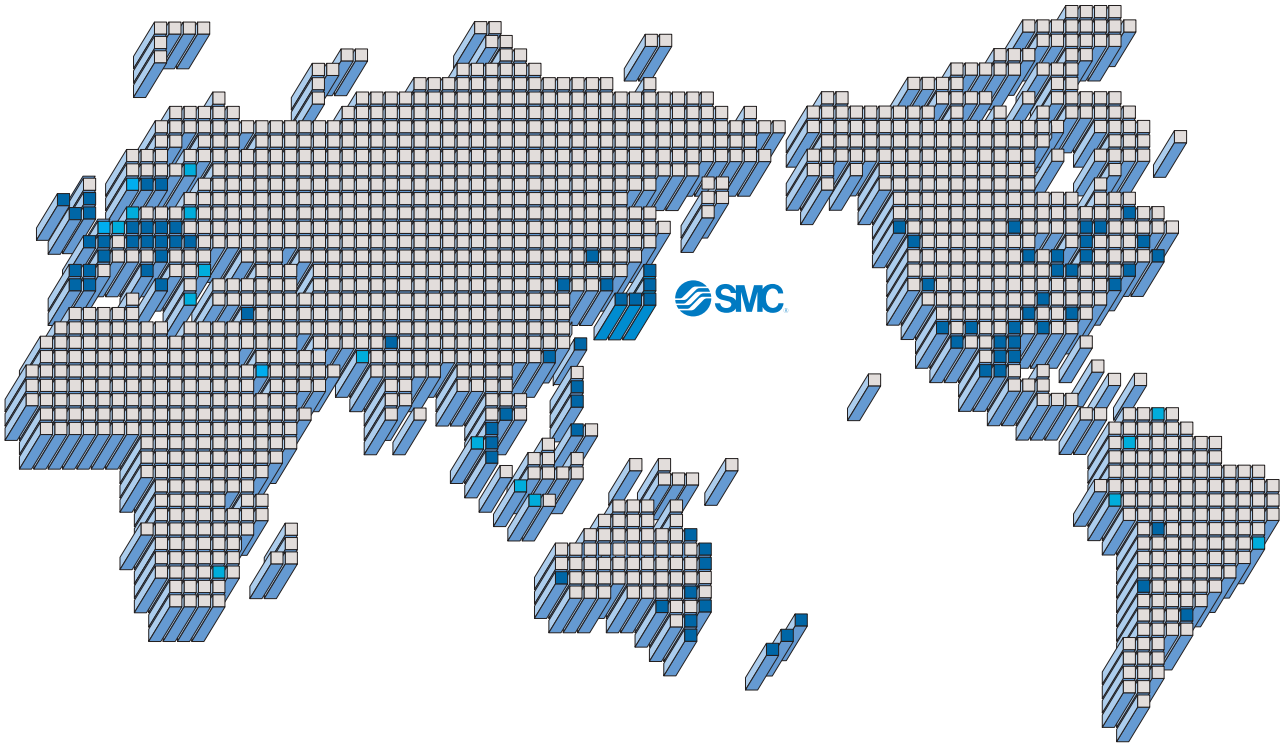
For LVM16R



For LVM115

∗ The broken lines indicate the bracket type.

SMC'S GLOBAL MANUFACTURING, DISTRIBUTION AND SERVICE NETWORK



EUROPE

AUSTRIA
SMC Pneumatik GmbH

CZECH
SMC Industrial Automation CZ s.r.o.

DENMARK
SMC Pneumatik A/S

FINLAND
SMC Pneumatics Finland Oy

FRANCE
SMC Pneumatique SA

GERMANY
SMC Pneumatik GmbH

HUNGARY
SMC Hungary Ipari Automatizálási Kft.

IRELAND
SMC Pneumatics (Ireland) Ltd.

ITALY
SMC Italia S.p.A.

NETHERLANDS
SMC Pnuematics BV.

NORWAY
SMC Pneumatics Norway A/S

POLAND
SMC Industrial Automation Polska Sp.z.o.o.

ROMANIA
SMC Romania s.r.l.

RUSSIA
SMC Pneumatik LLC.

SLOVAKIA
SMC Priemyselná automatizáciá, s.r.o.

EUROPE

SLOVENIA
SMC Industrijska Avtomatika d.o.o.

SPAIN/PORTUGAL
SMC España, S.A.

SWEDEN
SMC Pneumatics Sweden AB

SWITZERLAND
SMC Pneumatik AG.

UK
SMC Pneumatics (U.K.) Ltd.

ASIA

CHINA
SMC (China) Co., Ltd.

HONG KONG
SMC Pneumatics (Hong Kong) Ltd.

INDIA
SMC Pneumatics (India) Pvt. Ltd.

MALAYSIA
SMC Malaysia (S.E.A.) Sdn. Bhd.

PHILIPPINES
SMC Pneumatics (Philippines), Inc.

SINGAPORE
SMC Pneumatics (S.E.A.) Pte. Ltd.

SOUTH KOREA
SMC Pneumatics Korea Co., Ltd.

TAIWAN
SMC Pneumatics (Taiwan) Co., Ltd.

THAILAND
SMC Thailand Ltd.

NORTH AMERICA

CANADA
SMC Pneumatics (Canada) Ltd.

MEXICO
SMC Corporation (Mexico) S.A. de C.V.

USA
SMC Corporation of America

SOUTH AMERICA

ARGENTINA
SMC Argentina S.A.

BOLIVIA
SMC Pneumatics Bolivia S.R.L.

BRAZIL
SMC Pneumaticos Do Brazil Ltda.

CHILE
SMC Pneumatics (Chile) S.A.

VENEZUELA
SMC Neumatica Venezuela S.A.

OCEANIA

AUSTRALIA
SMC Pneumatics (Australia) Pty. Ltd.

NEW ZEALAND
SMC Pneumatics (N.Z.) Ltd.

SMC Corporation

1-16-4 Shimbashi, Minato-ku, Tokyo 105-0004, JAPAN
Tel: 03-3502-2740 Fax: 03-3508-2480
URL http://www.smcworld.com

© 2003 SMC CORPORATION All Rights Reserved

1st printing August, 2003 D-YGA P-120 (YG)
This catalog is printed on recycled paper with concern for the global environment.

All specifications in this catalog are subject to change without notice.
Printed in Japan.