

Compact Cylinder / High Power Type

Size: 20, 32

New

RoHS

Theoretical output:

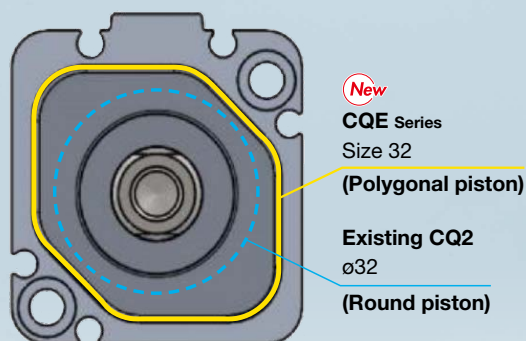
1.5 times

New CQE Series	Existing CQ2
603 N	402 N

* Size 32, at 0.5 MPa

This is done even with the same external dimensions of the CQ2 series.

The theoretical output of the next larger bore sized cylinder is made possible with the polygonal piston shape.



Contributes to a lower pressure air line Supply pressure decreased by 0.17 MPa

New CQE Series	Existing CQ2
0.33 MPa	0.5 MPa

* Size 32, for a theoretical output of 400 N

The same theoretical output is available even when the supply pressure to the cylinder is decreased.

CQE Series



CAT.ES20-309A

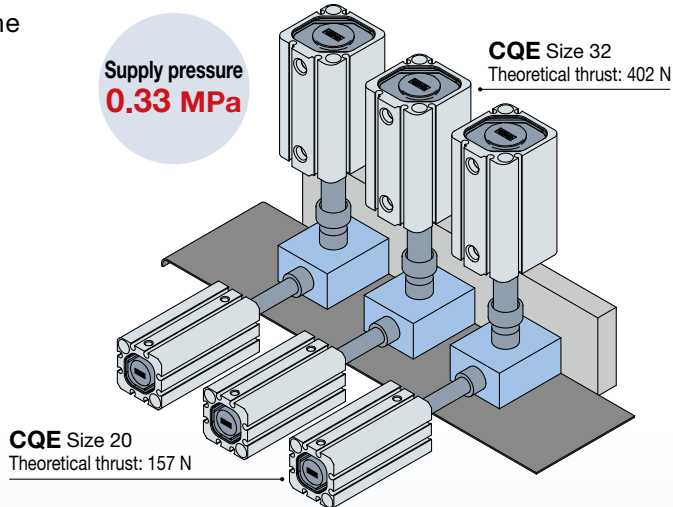
Low pressure possible

The same theoretical output is available even when the supply pressure to the cylinder is decreased.

Theoretical output	New CQE Series		Existing CQ2
	Operating pressure		Operating pressure
157 N	Size 20: 0.33 MPa		ø20: 0.5 MPa
402 N	Size 32: 0.33 MPa		ø32: 0.5 MPa



Application Clamping and Press fitting



Compact auto switch is mountable.

Solid state auto switch
D-M9□

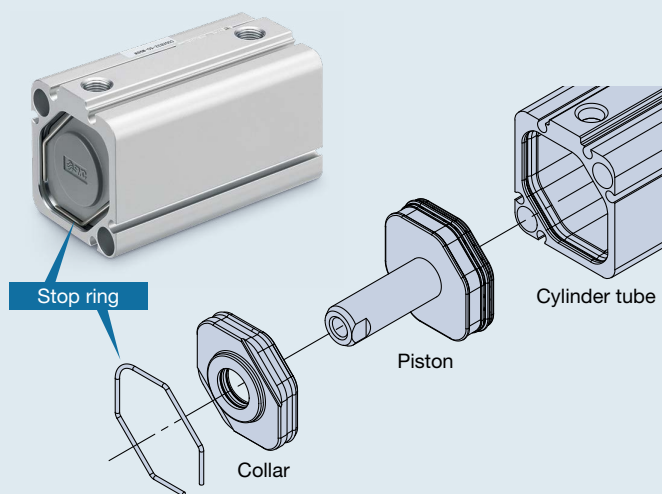


Thanks to the polygonal piston, the piston rod is not rotated during normal operation.



Less time spent replacing seals
No special tools required

The stop ring can be removed with a watchmaker's screwdriver, etc.



CONTENTS

How to Order	p. 2	Auto Switch Mounting	p. 5
Specifications	p. 3	Specific Product Precautions.....	p. 6
Dimensions	p. 4	Safety Instructions	Back cover

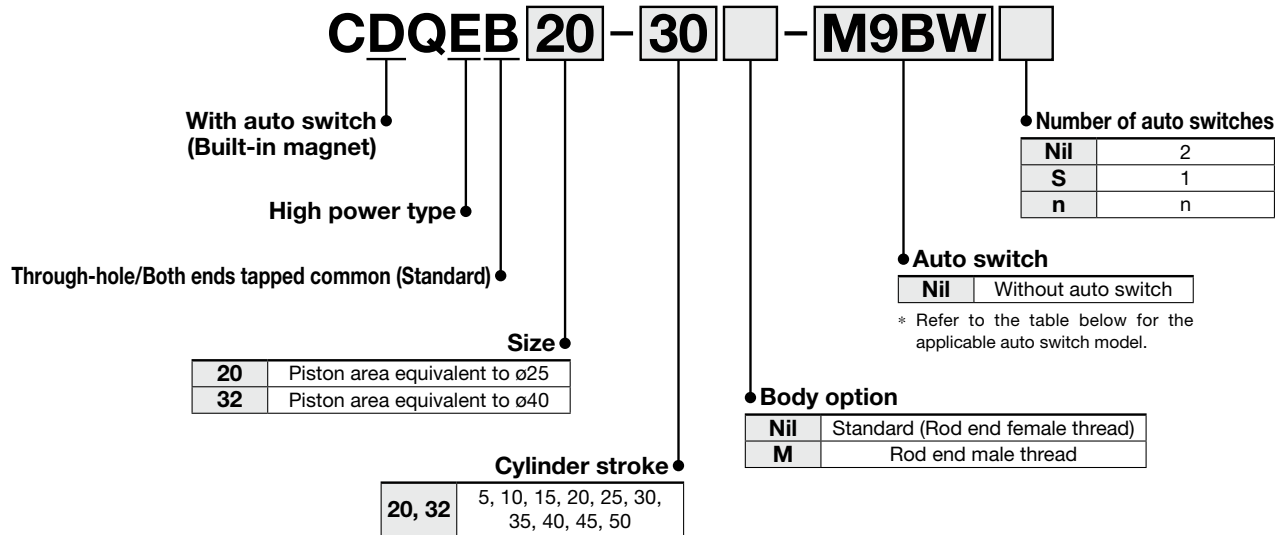
Compact Cylinder / High Power Type

CQE Series

Size: 20, 32



How to Order



* Through-hole mounting bolts are available separately. Refer to page 6 for details.

For details on auto switch mounting ⇒ p. 5

- Auto Switch Proper Mounting Position (Detection at stroke end) and Mounting Height
- Minimum Stroke for Auto Switch Mounting
- Operating Range

Applicable Auto Switches / Refer to the Web Catalog for further information on auto switches.

Type	Special function	Electrical entry	Indicator/light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length [m]*2				Pre-wired connector	Applicable load	
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)			
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	○	IC circuit Relay, PLC
				3-wire (PNP)				M9PV	M9P	●	●	●	○	○	
	2-wire					●	●	●	○	○	○				
	3-wire (NPN)			5 V, 12 V	M9NWV	M9NW	●	●	●	○	○				
	3-wire (PNP)				M9PWV	M9PW	●	●	●	○	○				
	2-wire			12 V	M9BWV	M9BW	●	●	●	○	○				
	3-wire (NPN)			5 V, 12 V	M9NAV *1	M9NA *1	○	○	●	○	○				
	3-wire (PNP)				M9PAV *1	M9PA *1	○	○	●	○	○				
	2-wire			12 V	M9BAV *1	M9BA *1	○	○	●	○	○				

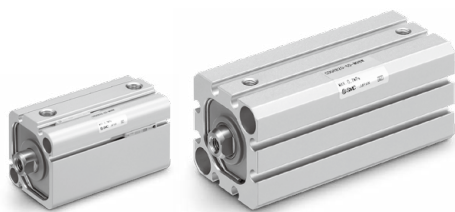
*1 Water-resistant type auto switches can be mounted on the above models, but SMC cannot guarantee water resistance.

*2 Lead wire length symbols: 0.5 m..... Nil
1 m..... M
3 m..... L
5 m..... Z

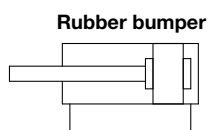
* Solid state auto switches marked with a "○" are produced upon receipt of order.

* Auto switches shipped with the cylinder

CQE Series



Symbol

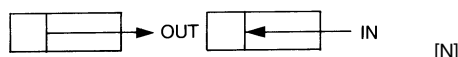


Specifications

Size	20	32
Piston area	Equivalent to $\phi 25$	Equivalent to $\phi 40$
Action	Double acting, Single rod	
Fluid	Air	
Standard stroke	5 to 50 mm	
Max. operating pressure	0.7 MPa	
Min. operating pressure	0.05 MPa	
Ambient and fluid temperatures	-10 to 60°C (With auto switch)	
Lubrication	Not required (Non-lube)	
Piston speed	50 to 500 mm/s	
Cushion	Rubber bumper	
Allowable kinetic energy [J]	0.11	0.29
Mounting	Through-hole/Both ends tapped common (Standard)	
Stroke length tolerance	0 to +1.0 mm* ¹	

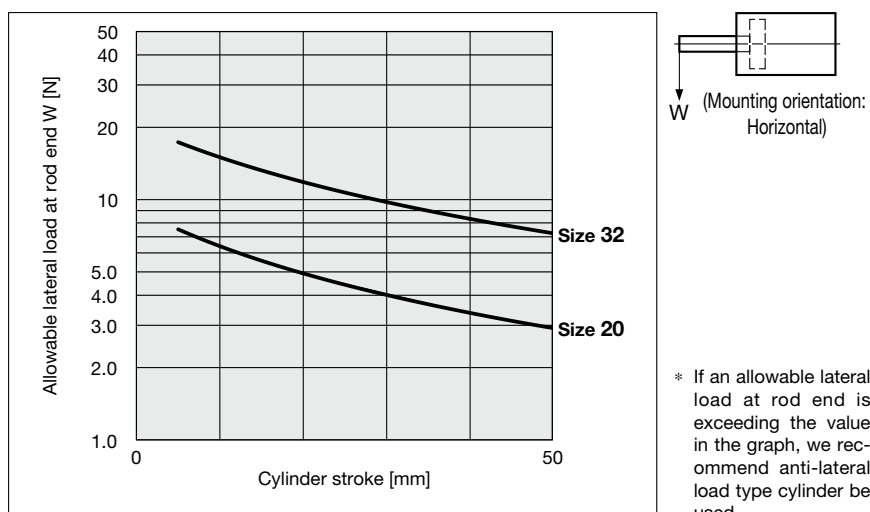
*1 Stroke length tolerance does not include the amount of bumper change.

Theoretical Output



Size	Operating direction	Operating pressure [MPa]		
		0.3	0.5	0.7
20	IN	124	206	288
	OUT	147	245	343
32	IN	316	526	737
	OUT	362	603	844

Allowable Lateral Load at Rod End



Weight

With Auto Switch Magnet [g]

Size	Cylinder stroke [mm]									
	5	10	15	20	25	30	35	40	45	50
20	96	108	120	131	143	154	166	177	189	201
32	183	200	217	233	250	267	284	301	318	334

Additional Weight [g]

Size	20	32
Rod end male thread	6	26
Nut	4	17

Calculation: (Example) **CDQEB32-20M**

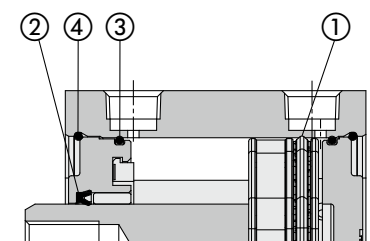
• Basic weight: CDQEB32-20 233 g

• Additional weight: Rod end male thread 43 g

276 g

Add each weight of auto switches when auto switches are mounted.

Replacement Parts



No.	Description	Material	Note
1	Piston seal	NBR	
2	Rod seal	NBR	
3	Tube gasket	NBR	
4	Stop ring	Stainless steel	

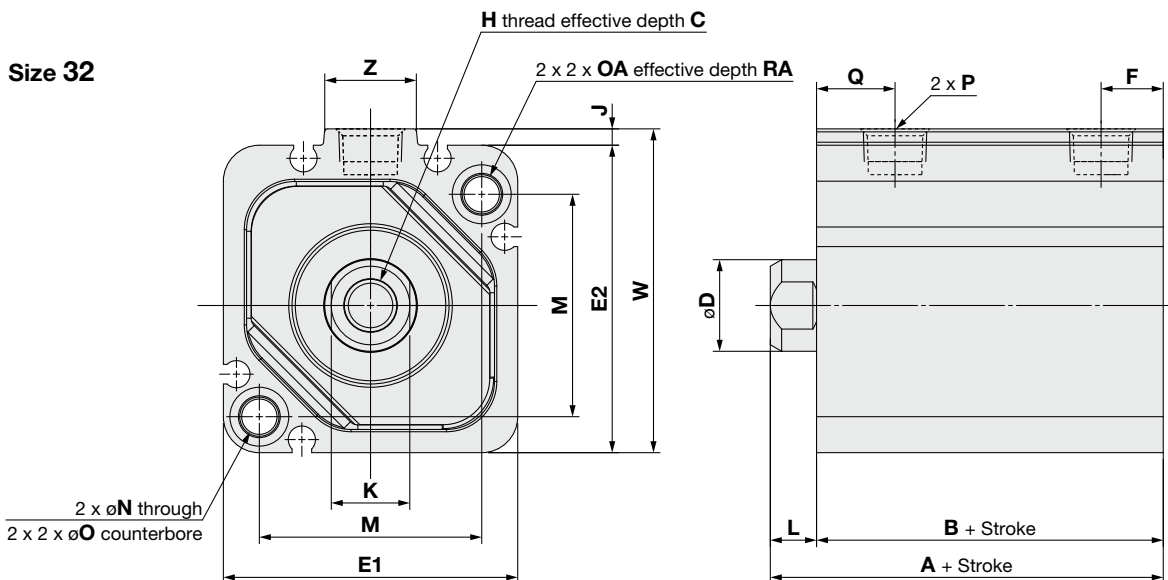
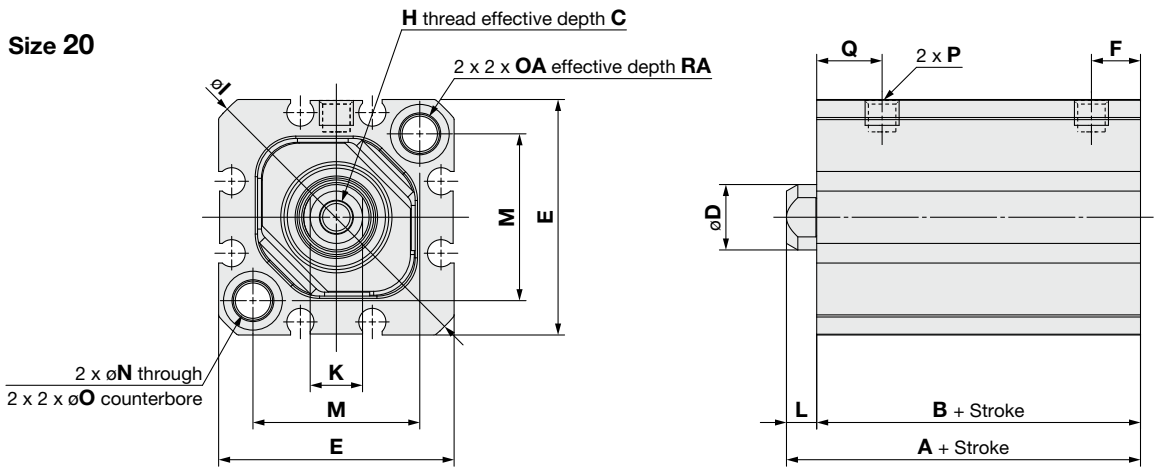
Size	Kit no.	Contents
20	CQE20-PS	Set of nos. ①, ②, ③, ④
32	CQE32-PS	

* The seal kit does not include a grease pack. Order it separately.

Grease pack part no.: GR-S-010 (10 g)

Size: 20, 32

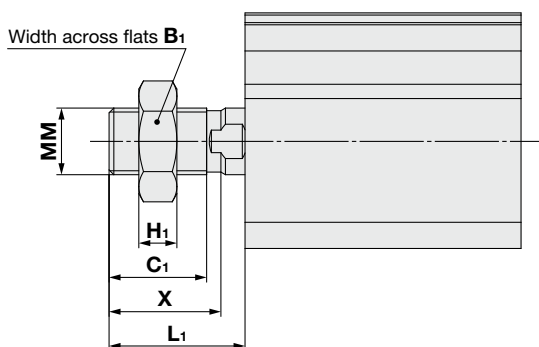
Through-hole/Both ends tapped common (Standard): CQE



* The orientation of the flats on the piston rod has no relation to the cylinder body.

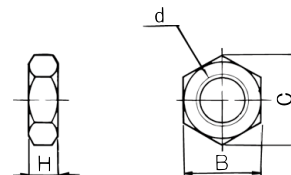
Size	A	B	C	D	E	E1	E2	F	H	I	J	K	L	M	N	O	OA	P	Q	RA	W	Z
20	34	29.5	7	10	36	—	—	7.5	M5 x 0.8	47	—	8	4.5	25.5	5.4	9 depth 7	M6 x 1.0	M5 x 0.8	10	10	—	—
32	40	33	13	14	—	45	47	9.5	M8 x 1.25	—	2.5	12	7	34	5.4	9 depth 7	M6 x 1.0	Rc1/8	12	10	49.5	14

Rod end male thread



Size	B ₁	C ₁	H ₁	L ₁	MM	X
20	13	12	5	18.5	M8 x 1.25	14
32	22	20.5	8	28.5	M14 x 1.5	23.5

Rod End Nut



Material: Carbon steel
Surface treatment: Zinc chromated [mm]

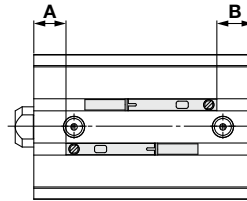
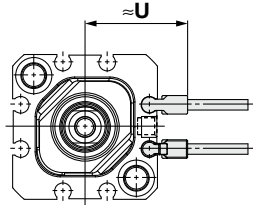
Size	Part no.	d	H	B	C	Weight [g]
20	NT-02	M8 x 1.25	5	13	15.0	4
32	NT-04	M14 x 1.5	8	22	25.4	17

CQE Series Auto Switch Mounting

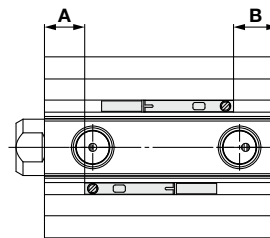
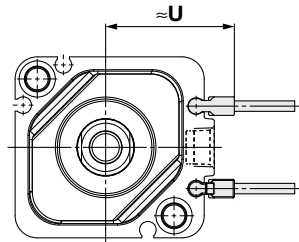
Auto Switch Proper Mounting Position (Detection at stroke end) and Mounting Height

D-M9□
D-M9□V
D-M9□W
D-M9□WV
D-M9□A
D-M9□AV

Size 20



Size 32



Auto Switch Proper Mounting Position

* Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto switch model		
Size	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV	
	A	B
20	8	9
32	10	10.5

Auto Switch Mounting Height

Auto switch model		[mm]
Size	D-M9□V D-M9□WV D-M9□AV	U
	20	25.5
32	32	

Minimum Stroke for Auto Switch Mounting

Number of auto switches	[mm]	
	D-M9□(V)	D-M9□W(V) D-M9□A(V)
1	5	5
2	5	10

* If the stroke is short, be careful to ensure sufficient space for a lead wire.

* Refer to the operation manual for auto switch installation instructions and tightening torques.

Operating Range

Auto switch model	[mm]	
	20	32
D-M9□(V) D-M9□W(V) D-M9□A(V)*1	3.5	4

*1 Values which include hysteresis are for reference purposes only. They are not a guarantee (assuming approximately ±30% dispersion) and may change substantially depending on the ambient environment.



CQE Series Specific Product Precautions

Be sure to read this before handling the products. For safety instructions, actuator, and auto switch precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website.

Handling

Caution

1. Operate the cylinder in such a way that the load to the piston rod is always applied in the axial direction.
2. Make sure that the piston rod is fully retracted when securing a workpiece on the rod end. Make use of the flats on the rod end and tighten it without applying a rotational torque to the piston rod.
 - In cases where a rotational torque is unavoidable, tighten a workpiece within the allowable mounting torque range.
 - When installing a cylinder, centering should be required accurately.

Bore size [mm]	20	32
Allowable torque for mounting workpiece	1.7 N·m	1.9 N·m

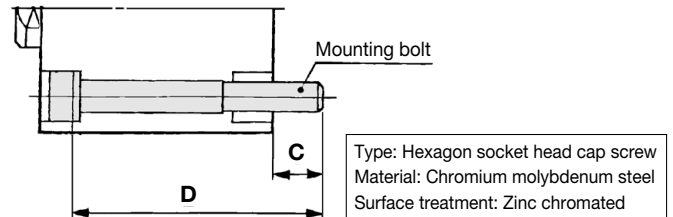
3. This product uses a stop ring for securing a collar and a bottom plate. If a large external force is applied to the stop ring during maintenance, plastic deformation may occur.

Mounting Bolt for the CDQE

Mounting bolt for the through-hole mounting of the CDQEB is available as an option.

Refer to the following for ordering procedures.
Order the actual number of bolts that will be used.

Example) CQ-M5X35L 2 pcs.





* Be sure to use the supplied flat washers when mounting a cylinder via the through holes.


Cylinder model	C	D	Mounting bolt part no.
CDQEB20-5	6.5	35	CQ-M5X35L
-10		40	X40L
-15		45	X45L
-20		50	X50L
-25		55	X55L
-30		60	X60L
-35		65	X65L
-40		70	X70L
-45		75	X75L
-50		80	X80L
CDQEB32-5		9	40
-10	45		X45L
-15	50		X50L
-20	55		X55L
-25	60		X60L
-30	65		X65L
-35	70		X70L
-40	75		X75L
-45	80		X80L
-50	85		X85L

Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “**Caution**,” “**Warning**” or “**Danger**.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)*1), and other safety regulations.

 **Danger :** **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

 **Warning:** **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

 **Caution:** **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

*1) ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components
ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components
IEC 60204-1: Safety of machinery - Electrical equipment of machines - Part 1: General requirements
ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots etc.

Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Our products cannot be used beyond their specifications. Our products are not developed, designed, and manufactured to be used under the following conditions or environments. Use under such conditions or environments is not covered.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, fuel equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogs and operation manuals.
3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.

Caution

We develop, design, and manufacture our products to be used for automatic control equipment, and provide them for peaceful use in manufacturing industries.

Use in non-manufacturing industries is not covered.

Products we manufacture and sell cannot be used for the purpose of transactions or certification specified in the Measurement Act.

The new Measurement Act prohibits use of any unit other than SI units in Japan.

Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.

Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.*2)
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided. This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

*2) **Vacuum pads are excluded from this 1 year warranty.**

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.

Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

Safety Instructions

Be sure to read the “Handling Precautions for SMC Products” (M-E03-3) and “Operation Manual” before use.

SMC Corporation