

Compact Cylinder / High Power Type **New**

Size: 20, 25, 32, 40



**Theoretical output:
1.5 times**

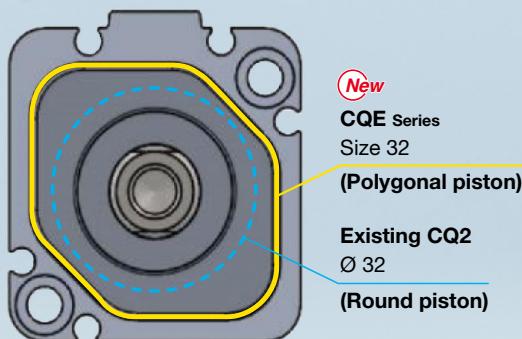
Existing CQ2	New CQE Series
402 N	603 N

* Size 32, at 0.5 MPa

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

* Sizes 20 and 25 have the same dimensions as the CQS 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**

Existing CQ2	New CQE Series
0.5 MPa	0.33 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



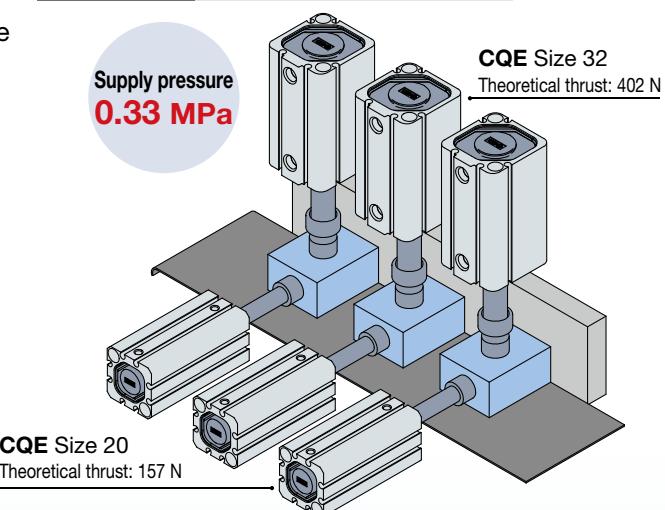
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Low pressure possible

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

Theoretical output	Existing CQ2	New CQE Series
	Operating pressure	Operating pressure
157 N	Ø 20: 0.5 MPa	Size 20: 0.32 MPa
245 N	Ø 25: 0.5 MPa	Size 25: 0.34 MPa
402 N	Ø 32: 0.5 MPa	Size 32: 0.33 MPa
628 N	Ø 40: 0.5 MPa	Size 40: 0.35 MPa

Application Clamping and Press fitting



Compact auto switch is mountable.

Solid state auto switch
D-M9

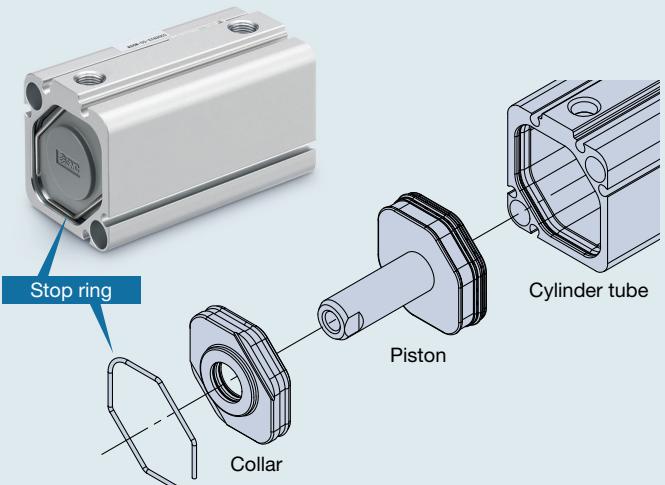


Thanks to the polygonal piston, the piston rod is not rotated during normal operation.



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

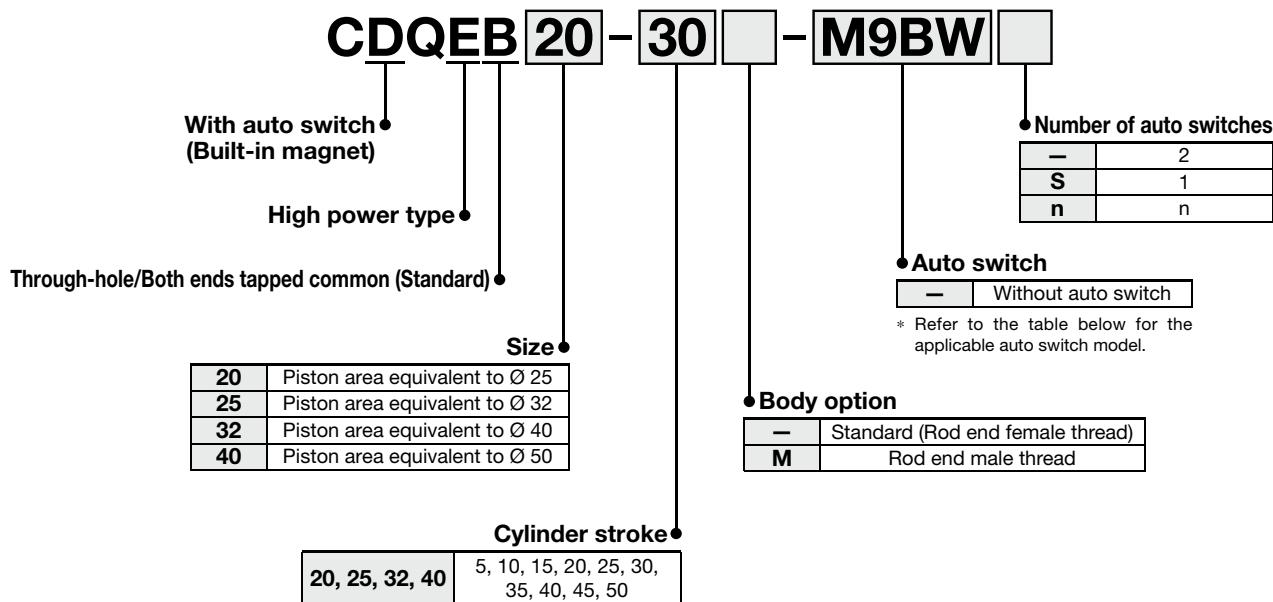
Compact Cylinder / High Power Type

CQE Series

Size: 20, 25, 32, 40



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 Catalogue 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 (—)	1 (M)	3 (L)	5 (Z)				
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9NV	M9N	●	●	●	○	○	IC circuit		
				3-wire (PNP)			M9PV	M9P	●	●	●	○	○			
				2-wire			M9BV	M9B	●	●	●	○	○	—		
	Diagnostic indication (2-colour indicator)			3-wire (NPN)	24 V	—	M9NWV	M9NW	●	●	●	○	○	IC circuit		
				3-wire (PNP)			M9PWV	M9PW	●	●	●	○	○			
				2-wire			M9BWV	M9BW	●	●	●	○	○	—		
	Water resistant (2-colour indicator)			3-wire (NPN)			M9NAV*1	M9NA*1	○	○	●	○	○	IC circuit		
				3-wire (PNP)			M9PAV*1	M9PA*1	○	○	●	○	○			
				2-wire			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.....—

1 m.....M

3 m.....L

5 m.....Z

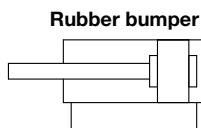
* Solid state auto switches marked with a “○” are produced upon receipt of order.

* Auto switches shipped with the cylinder

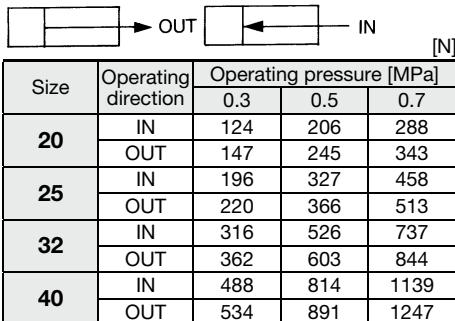
CQE Series



Symbol



Theoretical Output

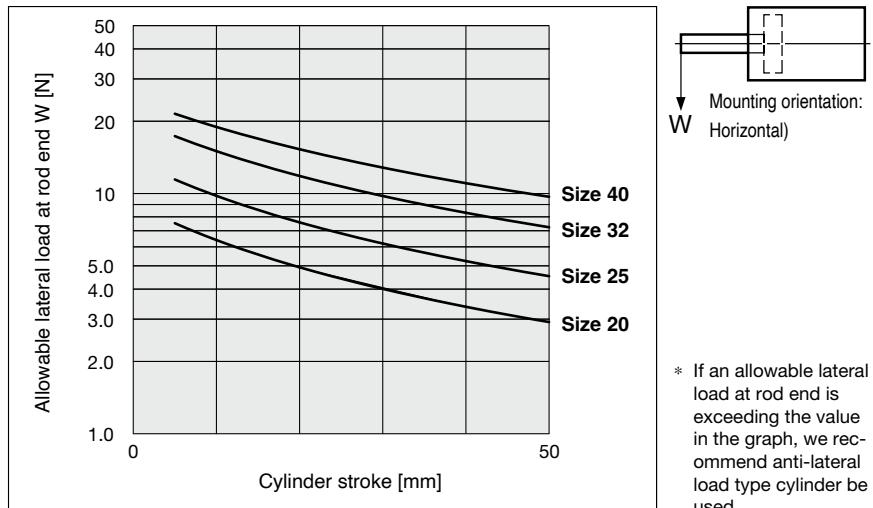


Specifications

Size	20	25	32	40
Piston area	Equivalent to Ø 25	Equivalent to Ø 32	Equivalent to Ø 40	Equivalent to Ø 50
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	0.18	0.29	0.52
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.

Allowable Lateral Load at Rod End



Weight

With Auto Switch Magnet

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
25	127	139	151	164	176	188	201	213	225	238
32	183	200	217	233	250	267	284	301	318	334
40	286	305	324	343	362	381	400	419	438	457

Additional Weight

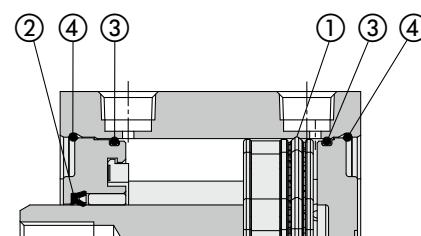
Size		20	25	32	40
Rod end	Male thread	6	12	26	27
	Nut	4	8	17	17

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

- Basic weight: CDQEB32-20 233 g
- Additional weight: Rod end male thread 43 g

OM
233 g
• 43 q

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



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	CQEB20-PS	Set of nos. ①, ②, ③, ④
25	CQEB25-PS	
32	CQEB32-PS	
40	CQEB40-PS	

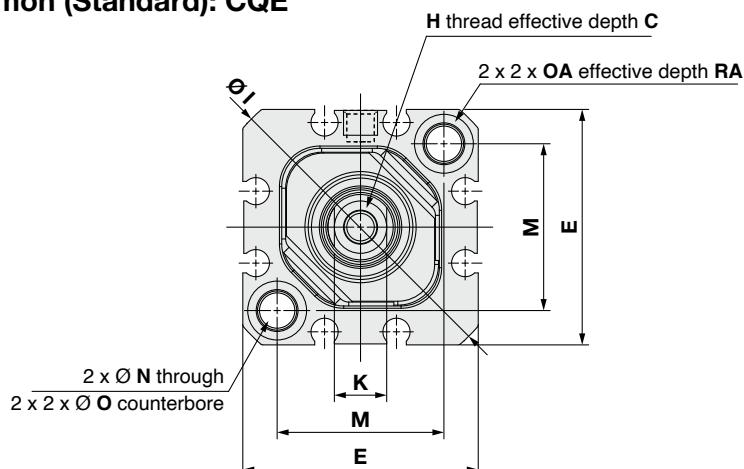
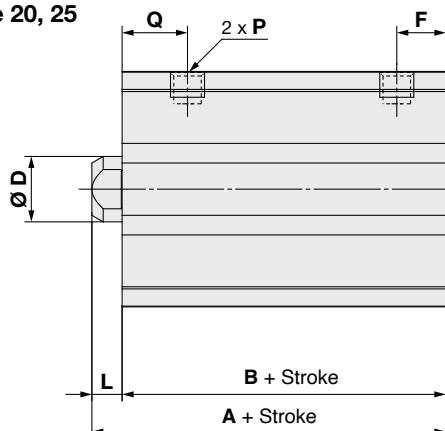
* The seal kit does not include a grease pack. Order it separately.

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

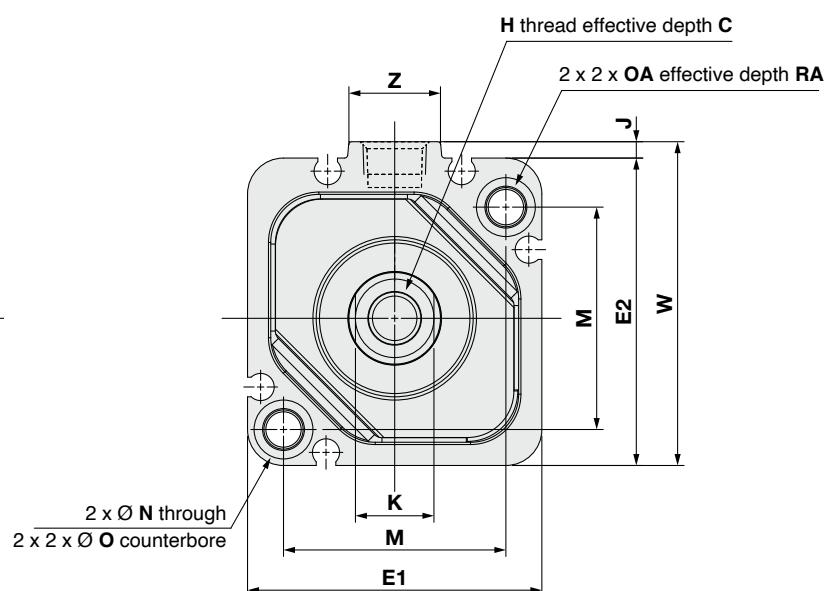
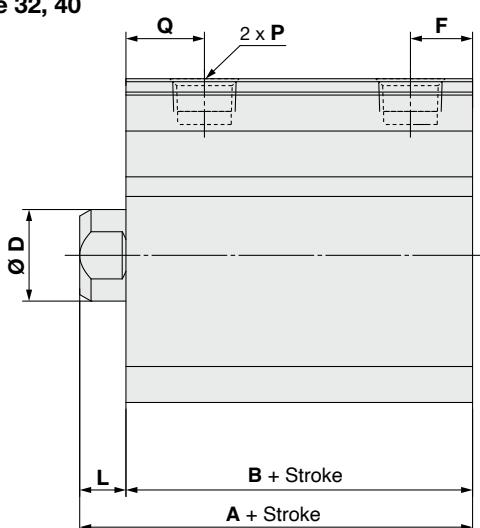
Size: 20 to 40

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

Size 20, 25



Size 32, 40

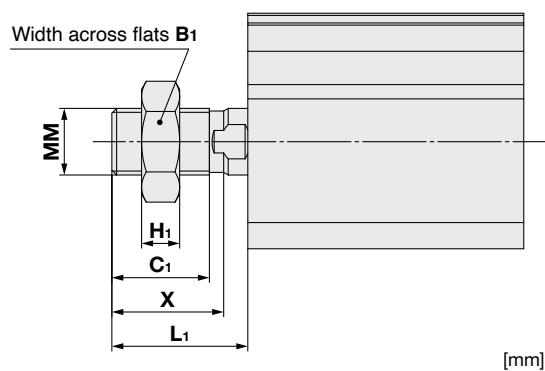


* The orientation of the flats on the piston rod has no relation to the cylinder body.

[mm]

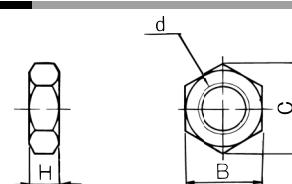
Size	A	B	C	D	E	E1	E2	F	H	I	J	K	L	M	N	O	OA	P	Q	RA	W	Z
20	34	29.5	7	10	36	—	—	7.5	M5 x 0.8	47	—	8	4.5	25.5	5.4	9 depth 7	M6 x 1.0	M5 x 0.8	10	10	—	—
25	37.5	32.5	12	10	40	—	—	7.5	M6 x 1.0	52	—	8	5	28	5.4	9 depth 7	M6 x 1.0	M5 x 0.8	12.5	10	—	—
32	40	33	13	14	—	45	47	9.5	M8 x 1.25	—	2.5	12	7	34	5.4	9 depth 7	M6 x 1.0	Rc1/8	12	10	50	14
40	46.5	39.5	13	14	—	52	55	11	M8 x 1.25	—	2	12	7	40	5.4	9 depth 7	M6 x 1.0	Rc1/8	16	10	57	14

Rod end male thread



Size	B1	C1	H1	L1	MM	X
20	13	12	5	18.5	M8 x 1.25	14
25	17	15	6	22.5	M10 x 1.25	17.5
32	22	20.5	8	28.5	M14 x 1.5	21.5
40	22	20.5	8	28.5	M14 x 1.5	21.5

Rod End Nut



Material: Carbon steel
Surface treatment: Zinc chromated

Size	Part no.	d	H	B	C	Weight [g]
20	NT-02	M8 x 1.25	5	13	15.0	4
25	NT-03	M10 x 1.25	6	17	19.6	8
32, 40	NT-04	M14 x 1.5	8	22	25.4	17

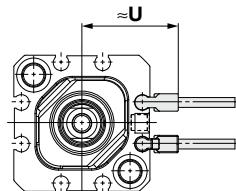
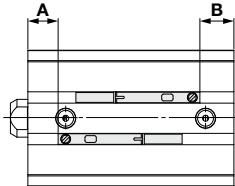
CQE Series

Auto Switch Mounting

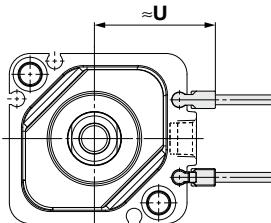
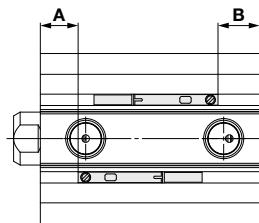
Auto Switch Proper Mounting Position (Detection at stroke end) and Mounting Height

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

Size 20, 25



Size 32, 40



Auto Switch Proper Mounting Position

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

[mm]

Auto switch model	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		
	Size	A	B
20	8	9	
25	10.5	10.5	
32	10	10.5	
40	14.5	13	

Auto Switch Mounting Height

Auto switch model	D-M9□V D-M9□WV D-M9□AV	
	Size	U
20	25.5	
25	27.5	
32	32	
40	36.5	

Minimum Stroke for Auto Switch Mounting

[mm]

Number of auto switches	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	Size			
	20	25	32	40
D-M9□(V) D-M9□W(V) D-M9□A(V)*1	3.5	3	3.5	4



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: <https://www.smc.eu>

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	25	32	40
Allowable torque for mounting workpiece	1.7 N·m	1.7 N·m	1.9 N·m	2.0 N·m

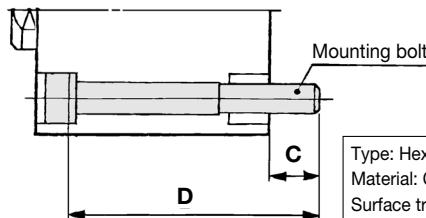
3. This product uses a stop ring for securing a collar and a bottom plate. If a large external force is applied to the stop ring during maintenance, plastic deformation may occur.

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.



Type: Hexagon socket head cap screw
Material: Chromium molybdenum steel
Surface treatment: Zinc chromated

* 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
		40	X40L
		45	X45L
		50	X50L
		55	X55L
		60	X60L
		65	X65L
		70	X70L
		75	X75L
		80	X80L
CDQEB25-5	9.5	40	CQ-M5X40L
		45	X45L
		50	X50L
		55	X55L
		60	X60L
		65	X65L
		70	X70L
		75	X75L
		80	X80L
		85	X85L
CDQEB32-5	9	40	CQ-M5X40L
		45	X45L
		50	X50L
		55	X55L
		60	X60L
		65	X65L
		70	X70L
		75	X75L
		80	X80L
		85	X85L
CDQEB40-5	7.5	45	CQ-M5X45L
		50	X50L
		55	X55L
		60	X60L
		65	X65L
		70	X70L
		75	X75L
		80	X80L
		85	X85L
		90	X90L

⚠ 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 catalogue 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 catalogues 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 catalogue 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 “Handling Precautions for SMC Products” (M-E03-3) before using.

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