Proposal for CO_2 Emission-reducing Products

An introduction to products that can contribute to energy saving and CO_2 emission-reduction through centralized control, air saving, compactness, and weight reduction

CO_2 emission reduction

By using compact, lightweight products, you can **minimize the size and weight of devices!**

By using compact products, you can **make efficient use** of factory space!

By using lightweight products, you can reduce tact time and **improve productivity!**

Improved energy utilization efficiency by saving air leads to **compressor optimization**

Centralized Control

1 2 Wireless System Base/Compact Remote

3 Monitoring of pressure fluctuations

4 Monitoring of the operating pressure

5 Monitoring of air consumption

Air Saving/Compact/Lightweight

6 Air-saving Booster Regulator

7 Air-saving Type

8 Polygonal Piston Type

9 Air-saving Type Polygonal Piston Type

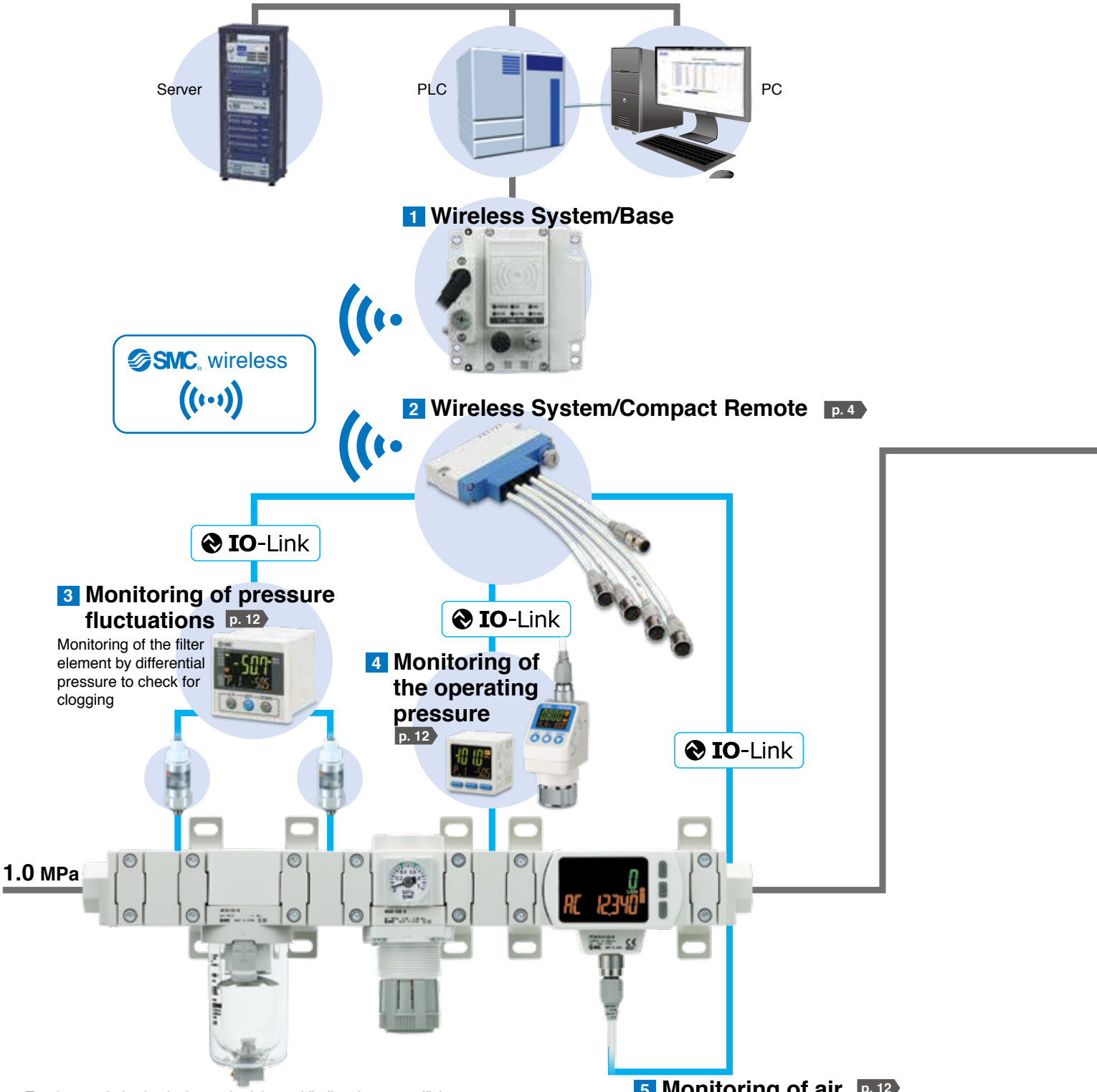
10 Intermediary Bore Size

NC467A
(P-E20-25)

By using topology optimization*1 in the designing process, energy saving, compactness, and weight reduction can be achieved. In addition, visualization allows for optimization via centralized control.

Centralized data control of line pressure and equipment air consumption

In order to calculate the amount of air being consumed by an air pressure system and to measure the effectiveness of energy-saving measures, the flow rate and pressure must be controlled. To maintain and monitor the effectiveness of these measures, it is recommended that the flow rate and pressure measurement data of each device be centrally controlled.



*1 Topology optimization is the methodology of finding the most efficient design for an object on a mathematical and mechanical basis.

SMC offers a lineup of products which can aid you in eliminating partial losses of thrust and in reducing air consumption.

An effective way to reduce air consumption is to lower the supply pressure of a compressor, called pressure reduction. While this approach is both easy and immediate, from the customer's perspective, a partial loss of supply pressure to machine equipment could interfere with production.

Current situation

The cylinder thrust is sufficient even at 0.4 MPa.

0.4 MPa

e.g.) Cylinder currently in use:

ø32 (322 N)

Measures to prevent thrust loss

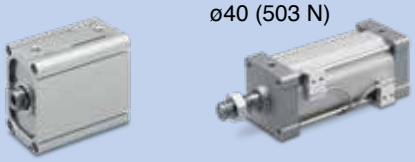
Increase output without taking up more space!

0.4 MPa

8 Polygonal Piston Type p. 18 and on

Double Force Cylinder
ø32 x 2 (644 N)

ø40 (503 N)



A compact cylinder is about the same size as a regular cylinder of one size smaller. Therefore, you can increase the cylinder size without taking up more space.
* The double force cylinder has the same width but has a greater height dimension.

High pressure and high thrust are available to the line that requires them!

6 Air-saving Booster Regulator p. 13

0.68 MPa

e.g.) Cylinder currently in use:

ø32 (547 N)

Allows for high pressure to be supplied only to the line that requires it. The required output can be maintained even when the cylinder is in use.

Measures to prevent thrust loss + Air saving

Increase output without taking up more space!
Save more air!
Air consumption reduced by max. 46%

Only the push side requires output.

0.4 MPa

9 Air-saving Type Polygonal Piston Type p. 37 and on

ø40 (503 N)

Double Force Cylinder
ø32 x 2 (644 N)

Features a built-in exhaust return circuit but is the same size as the polygonal piston type. The cylinder size can be increased without taking up more space. You can further reduce air consumption by 46%.
* The double force cylinder has the same width but has a greater height dimension.

Air saving

Save even more air!
Air consumption reduced by 46%

The cylinder thrust is sufficient even at 0.4 MPa. Only the push side requires output.

0.4 MPa

7 Air-saving Type (Built-in exhaust return circuit) p. 15

ø32 (322 N)

Exhaust return circuit use reduces air consumption by 46%.
* The size cannot be increased.

Appropriate size

Save air by selecting an appropriate bore size!

Even at 0.4 MPa, there is sufficient room for cylinder thrust.

0.4 MPa

10 Intermediary Bore Size Cylinder p. 46

If adequate cylinder thrust can be obtained after switching to a lower pressure, air consumption can be reduced by selecting a bore size according to the required thrust.

Bore size [mm]	ø40	ø45	ø50	ø56	ø63	ø67	ø80	ø85	ø100
Air consumption L (ANR)	1.4	1.8	2.2	2.8	3.6	4.1	5.8	6.6	9.1

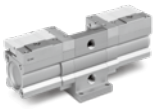
Conditions/Supply pressure: 0.5 MPa,
Load factor: 50%, 100 mm stroke

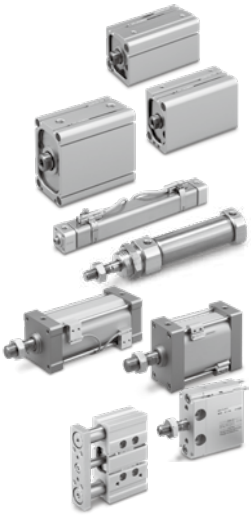
18% reduction　22% reduction　29% reduction　27% reduction

CONTENTS

Centralized Control

Air Saving/Compact/Lightweight





Compact Remote

CE RoHS

Compact **Lightweight**

Area Approx. **61%** reduction*1

59.8 cm² ⬅ 155 cm²

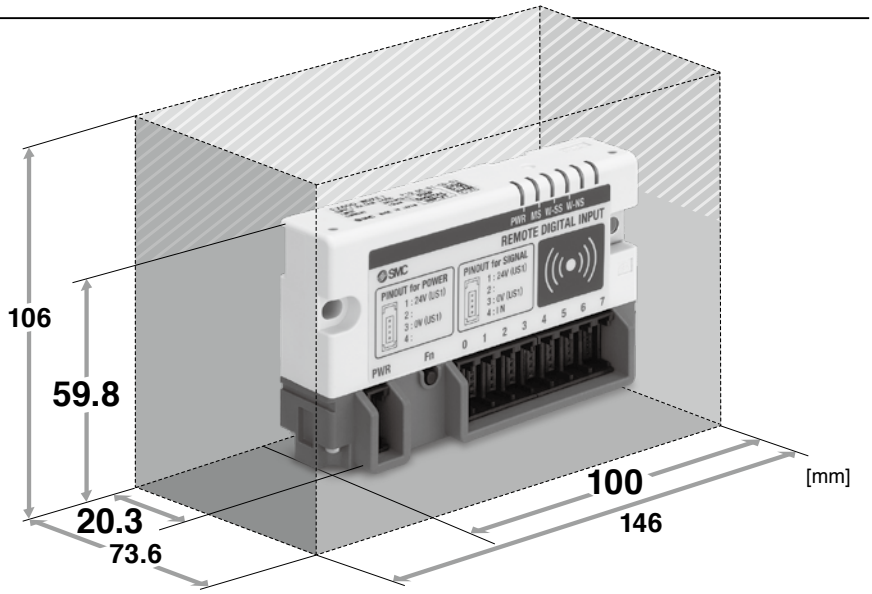
Volume Approx. **86%** reduction*1

159 cm³ ⬅ 1,139 cm³

Weight Approx. **87%** reduction*1

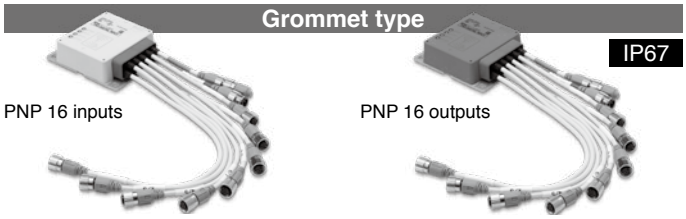
130 g ⬅ 965 g

*1 For the e-CON type
Compared with the existing remote, M8 connector/digital 8 inputs specification



Variations

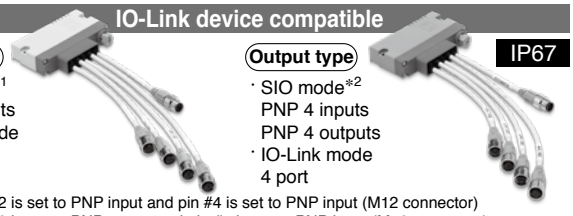
Grommet type IP67



IO-Link device compatible IP67

Input type
- SIO mode*1
  PNP 8 inputs
- IO-Link mode
  4 port

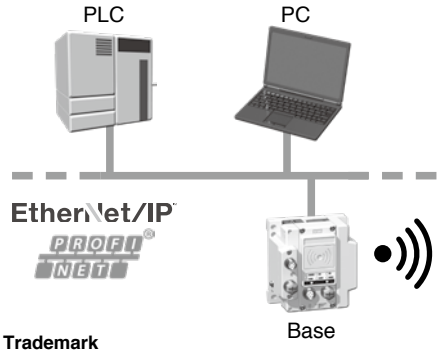
Output type
- SIO mode*2
  PNP 4 inputs
  PNP 4 outputs
- IO-Link mode
  4 port



*1 When pin #2 is set to PNP input and pin #4 is set to PNP input (M12 connector)
*2 When pin #2 is set to PNP output and pin #4 is set to PNP input (M12 connector)

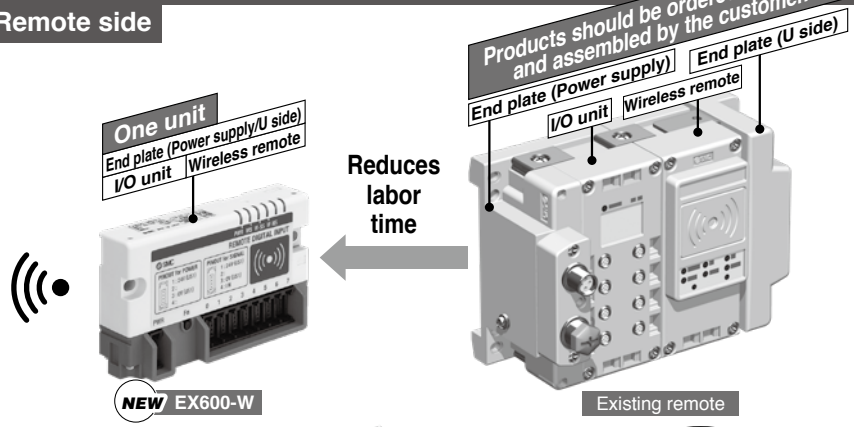
Applicable to existing wireless systems

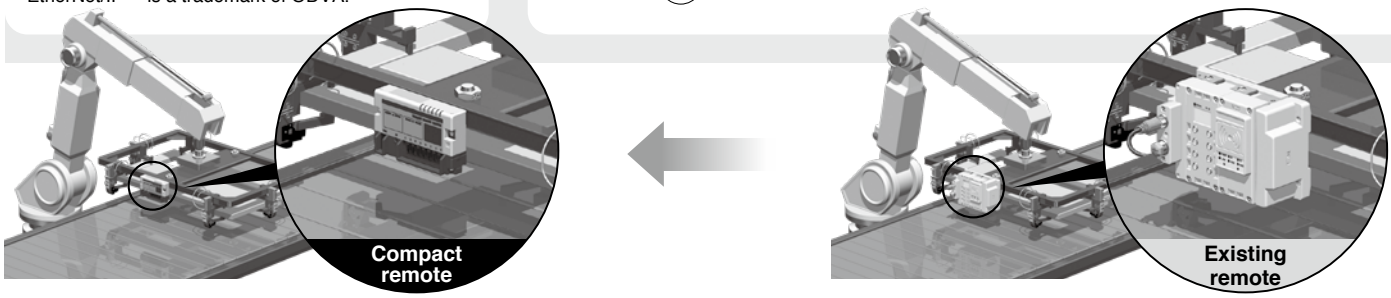
Base side



Trademark
EtherNet/IP™ is a trademark of ODVA.

Remote side





EX600-W Series

**This product is only compliant with the Japanese Radio Law.
Note that this product cannot be used outside Japan.**

Specifications

Wireless Communication Specifications

Protocol	SMC original protocol
Radio wave type	Frequency Hopping Spread Spectrum (FHSS)
Frequency	2.4 GHz (2403 to 2481 MHz)
Number of frequency channels	79 ch (Bandwidth: 1.0 MHz)
Communication speed	250 kbps
Communication distance	10 m (Depending on the operating environment)
Radio Law certificate	Japanese Radio Law (Japan)

IO-Link Communication Specifications*1

Communication speed	COM1 (4.8 kBaud) COM2 (38.4 kBaud) COM3 (230.4 kBaud) Automatically switched according to the device to be connected
Ports for IO-Link devices	4*2

*1 Parameter setting for IO-Link devices is not supported. Set using the dedicated tool before connecting the product.
*2 Only process data can be sent and received.

General Specifications

Type		e-CON type		Grommet type		IO-Link device compatible	
		PNP input **EX600-WDXE1**	PNP output **EX600-WDYE1**	PNP input **EX600-WDXA1**	PNP output **EX600-WDYA1**	PNP input **EX600-WLXB1**	PNP output **EX600-WLYB1**
Power supply for control and input (US1)	**Power supply voltage**	24 VDC ±10%					
	Current consumption*1	100 mA or less	50 mA or less	100 mA or less	50 mA or less	100 mA or less	100 mA or less
Power supply for output (US2)	**Power supply voltage**	—	24 VDC ±10%	—	24 VDC ±10%	—	24 VDC ±10%
	Max. load current (per unit)		800 mA		2 A*2		2 A*2
	Max. load current (per output)		100 mA (per output)		100 mA (per output)		100 mA (per output)
Electrical specifications (Common)	**Number of points**	8 inputs (1 input/connector)	8 outputs (1 output/connector)	16 inputs (2 inputs/connector)	16 outputs (2 outputs/connector)	8 inputs (2 inputs/connector)*3	4 outputs (1 output/connector)*3
	Type	PNP (-COM)					
	Connector type	e-CON (4-pin)		M12 5-pin socket (Female)			
	Max. sensor supply current	2 A/unit, 0.3 A/connector		2 A/unit, 0.3 A/connector		1 A/unit, 0.3 A/connector	
Input	**Input resistance**	1.5 kΩ	—	1.5 kΩ	—	—	—
	Rated input current	5 mA or less		5 mA or less		2.5 mA or less (Pin #2) 5.5 mA or less (Pin #4)	5.5 mA or less (Pin #4)
	Signal OFF-judgement	5 VDC/2 mA or less		5 VDC/2 mA or less		5 VDC/2 mA or less	—
	Signal ON-judgement	15 VDC/5 mA or more		15 VDC/5 mA or more		15 VDC/5 mA or more	—
	Protection	Short-circuit protection		Short-circuit protection		Short-circuit protection	
Output	**Max. load current**	—	100 mA (per output)	—	100 mA (per output)	—	100 mA (per output)
	Protection	—	Short-circuit protection	—	Short-circuit protection	—	Short-circuit protection
Cable tensile strength		10 N		100 N			
Operating ambient temperature		0 to +50°C					
Storage ambient temperature		−10 to +60°C					
Ambient humidity		35 to 85%RH					
Withstand voltage		10 MΩ or more (500 VDC between external terminals and metallic parts)					
Insulation resistance		500 VAC for 1 minute between external terminals and metallic parts					
Vibration resistance		Compliant with EN61131-2, 5 ≤ f < 8.4 Hz 3.5 mm, 8.4 ≤ f < 150 Hz 9.8 m/s^2					
Impact resistance		Compliant with EN61131-2, 147 m/s^2, 11 ms					
Enclosure		IP20		IP67			
Mounting		M4 screw through hole 2 locations		M5 screw through hole 4 locations		M4 screw through hole 2 locations	
Weight		130 g		480 g		230 g	

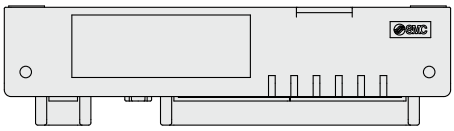
*1 When an external device is not connected (Body only)
*2 (Per unit) See the output specifications for the load current for each signal.
*3 Max. number of points when set to SIO-mode
* Number of connections when the setting enabling IO-Link devices is selected

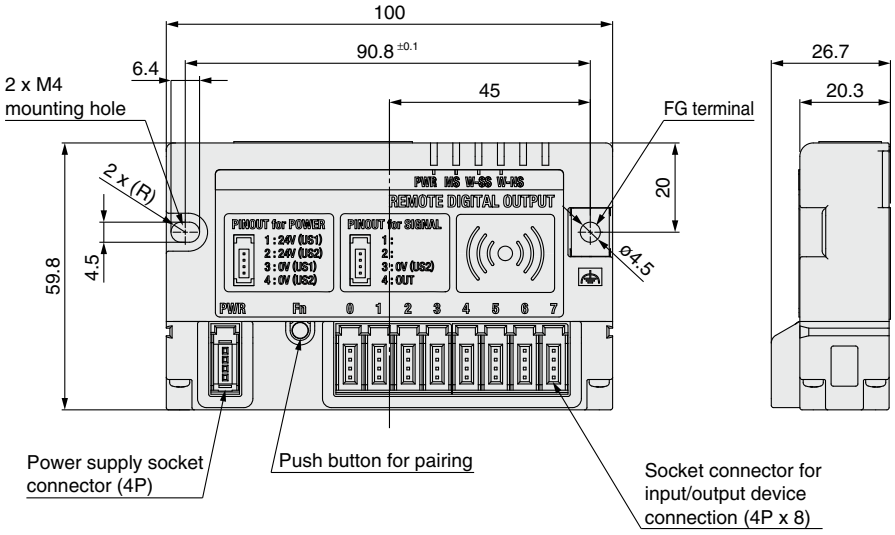
Wireless remote/
Input

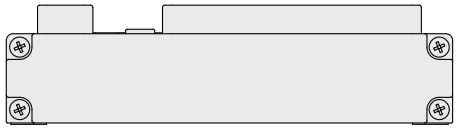
Wireless remote/
Output

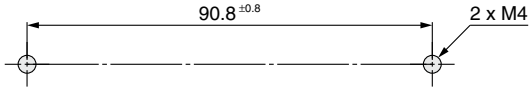
Dimensions

e-CON Type









Recommended screw tightening torque:
1.35 to 1.65 N·m

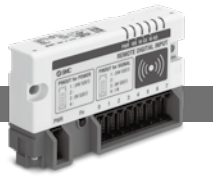
Recommended mounting thread hole dimension

Applicable Connectors for Connection

Part no.	AWG No.	Conductor area [mm SQ]	Finished outside diameter [mm]	Cover color
ZS-28-C-1	24 to 26	0.14 to 0.2	ø1.0 to ø1.2	Yellow
ZS-28-C-2			ø1.2 to ø1.6	Orange
ZS-28-C-3	22 to 20	0.3 to 0.5	ø1.0 to ø1.2	Green
ZS-28-C-4			ø1.2 to ø1.6	Blue
ZS-28-C-5			ø1.6 to ø2.0	Gray
ZS-28-CA-1	—	0.1 to 0.5	ø0.6 to ø0.9	Orange
ZS-28-CA-2			ø0.9 to ø1.0	Red
ZS-28-CA-3			ø1.0 to ø1.15	Yellow
ZS-28-CA-4			ø1.15 to ø1.35	Blue
ZS-28-CA-5			ø1.35 to ø1.6	Green

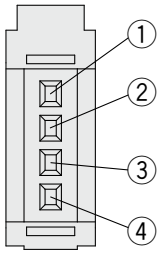
e-CON Type/Connector Specifications (Input/Output)

Input



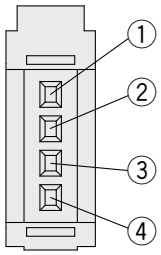
Wireless remote/Input

Power supply socket connector wiring specifications



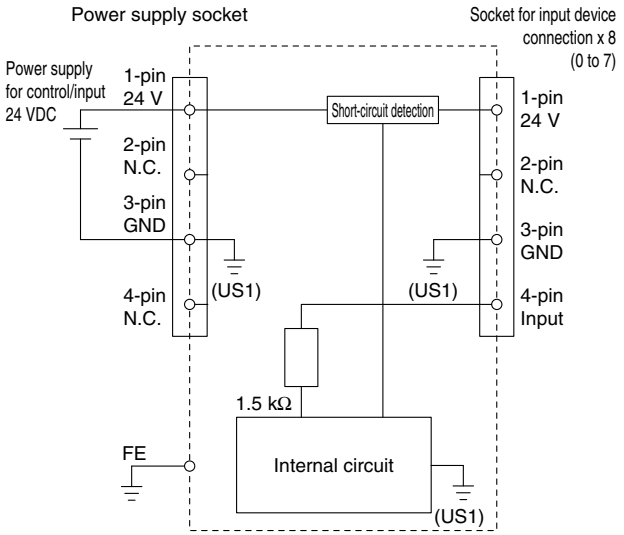
Pin no.	Terminal name
1	24 V (For control/input)
2	N.C.
3	0 V (For control/input)
4	N.C.

Socket connector for input device connection wiring specifications



Pin no.	Terminal name
1	24 V (For control/input)
2	N.C.
3	0 V (For control/input)
4	IN

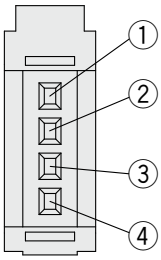
Socket for input device connection x 8 (0 to 7)



Output

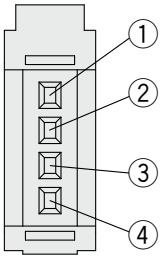
Wireless remote/Output

Power supply socket connector wiring specifications



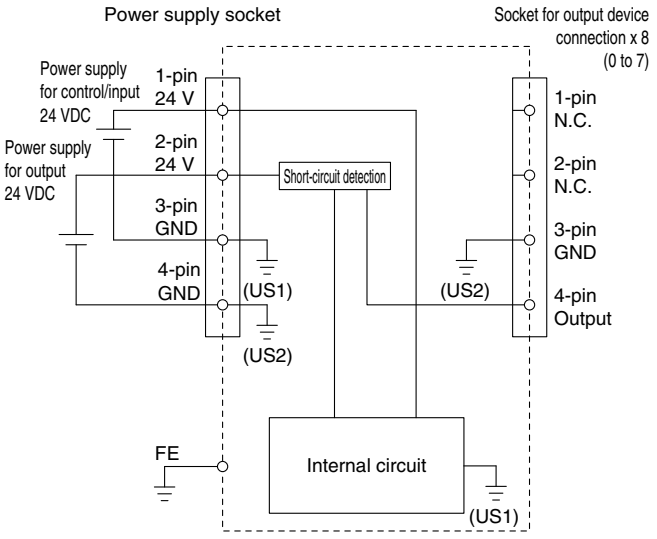
Pin no.	Terminal name
1	24 V (For control/input)
2	24 V (For output)
3	0 V (For control/input)
4	0 V (For output)

Socket connector for output device connection wiring specifications



Pin no.	Terminal name
1	N.C.
2	N.C.
3	0 V (For output)
4	OUT

Socket for output device connection x 8 (0 to 7)

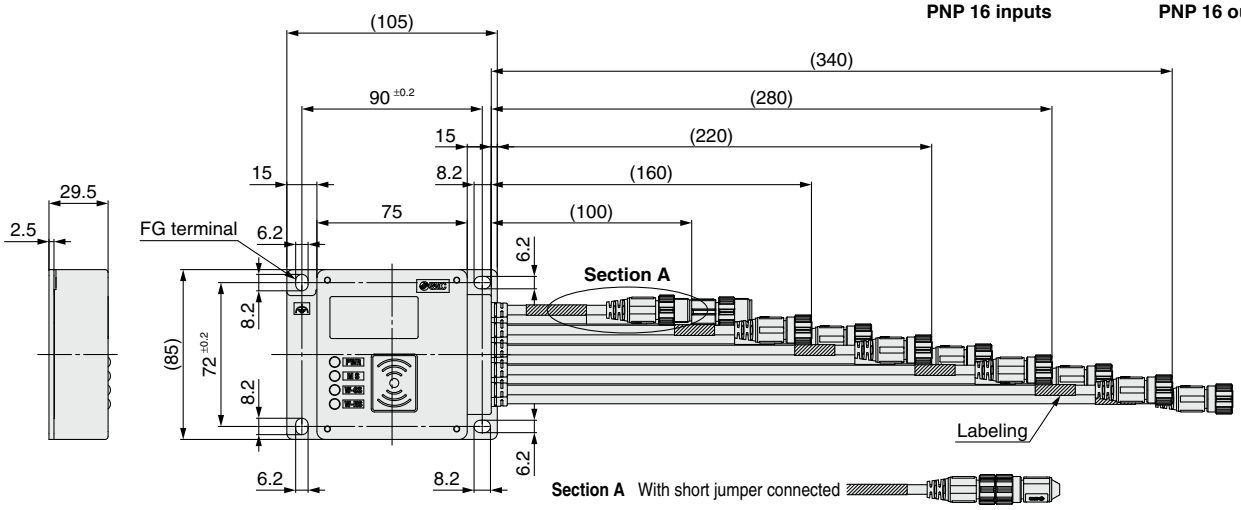


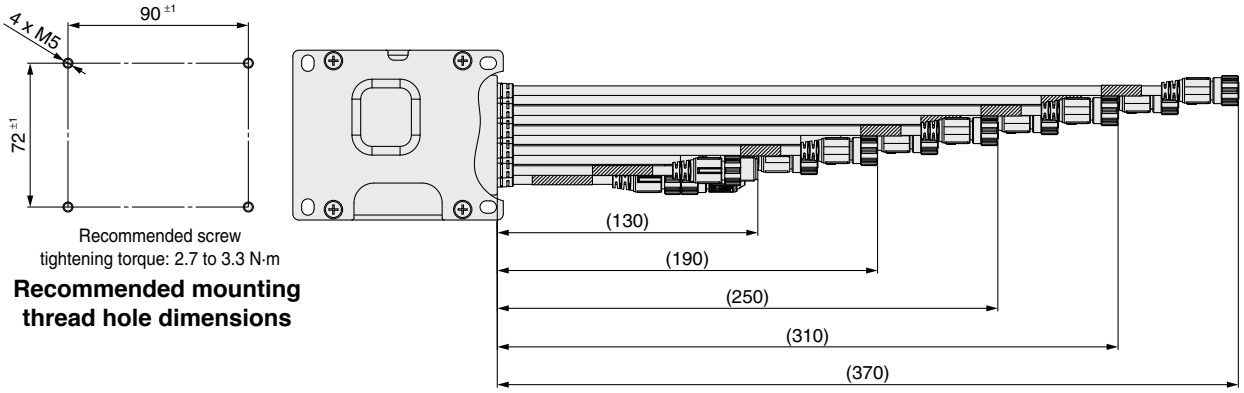
PNP 16 inputs

PNP 16 outputs

Dimensions

Grommet Type

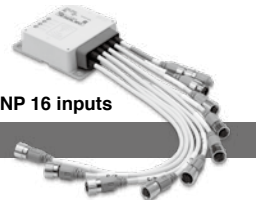




Recommended screw
tightening torque: 2.7 to 3.3 N·m

Recommended mounting thread hole dimensions

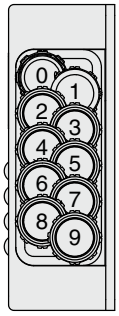
Grommet Type/Connector Specifications (Input/Output)


PNP 16 inputs

Input

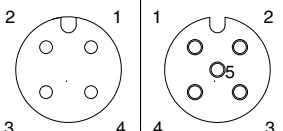
Connector Arrangement Specifications

No.	Description	Cable length [mm]	Labeling	Cable with M12 connector
0	Pairing line	100	PAIRING	M12, 4-pin, plug (Male)
1	Power supply line	130	POWER	
2	Input E/F	160	E/F	M12, 5-pin, socket (Female)
3	Input C/D	190	C/D	
4	Input A/B	220	A/B	
5	Input 8/9	250	8/9	
6	Input 6/7	280	6/7	
7	Input 4/5	310	4/5	
8	Input 2/3	340	2/3	
9	Input 0/1	370	0/1	

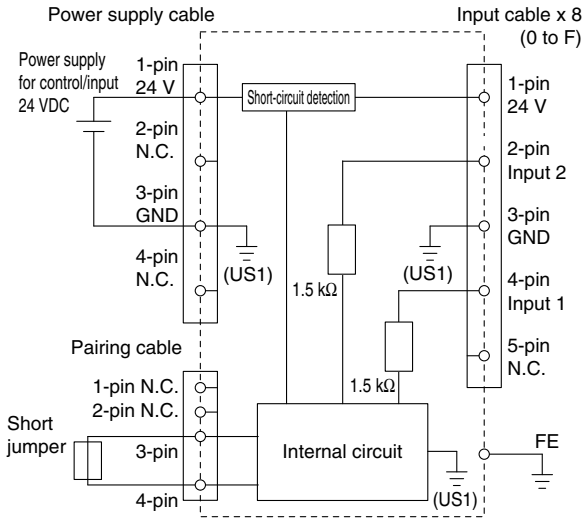


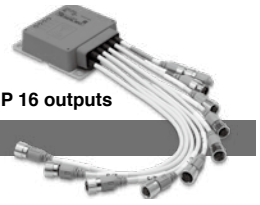
Connector Specifications

Labeling	PAIRING	POWER	0/1 to E/F	M12, 4-pin plug	M12, 5-pin socket
Pin no.	Description				
1	Short jumper Connected: Normal mode (3-pin to 4-pin short) Not connected: Pairing mode	Power supply for control: + (COM)	Power supply for control: + (COM)		
2		N.C.	Input n + 1		
3		Power supply for control: − (COM)	Power supply for control: − (COM)		
4		N.C.	Input n		
5	—	—	N.C.		



Input cable x 8 (0 to F)

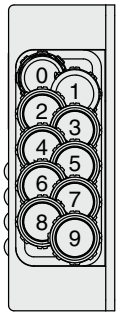



PNP 16 outputs

Output

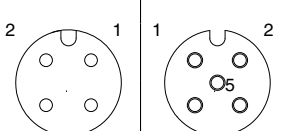
Connector Arrangement Specifications

No.	Description	Cable length [mm]	Labeling	Cable with M12 connector
0	Pairing line	100	PAIRING	M12, 4-pin, plug (Male)
1	Power supply line	130	POWER	
2	Output E/F	160	E/F	M12, 5-pin, socket (Female)
3	Output C/D	190	C/D	
4	Output A/B	220	A/B	
5	Output 8/9	250	8/9	
6	Output 6/7	280	6/7	
7	Output 4/5	310	4/5	
8	Output 2/3	340	2/3	
9	Output 0/1	370	0/1	

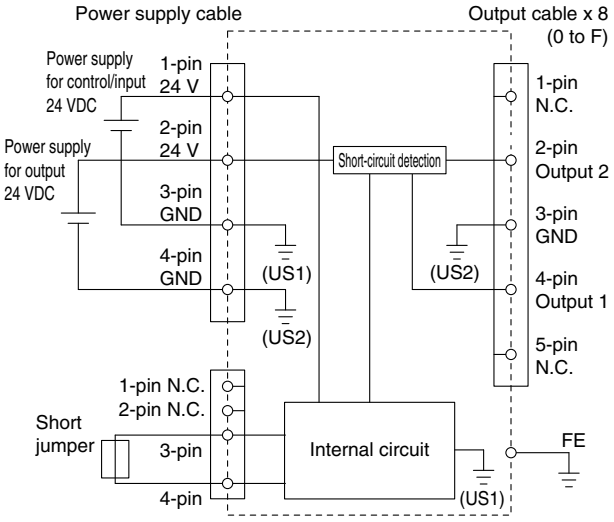


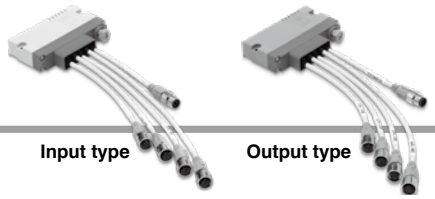
Connector Specifications

Labeling	PAIRING	POWER	0/1 to E/F	M12, 4-pin plug	M12, 5-pin socket
Pin no.	Description				
1	Short jumper Connected: Normal mode (3-pin to 4-pin short) Not connected: Pairing mode	Power supply for control: + (COM)	N.C.		
2		Power supply for output: + (COM)	Output n + 1		
3		Power supply for control: − (COM)	Power supply for output: − (COM)		
4		Power supply for output: − (COM)	Output n		
5	—	—	N.C.		



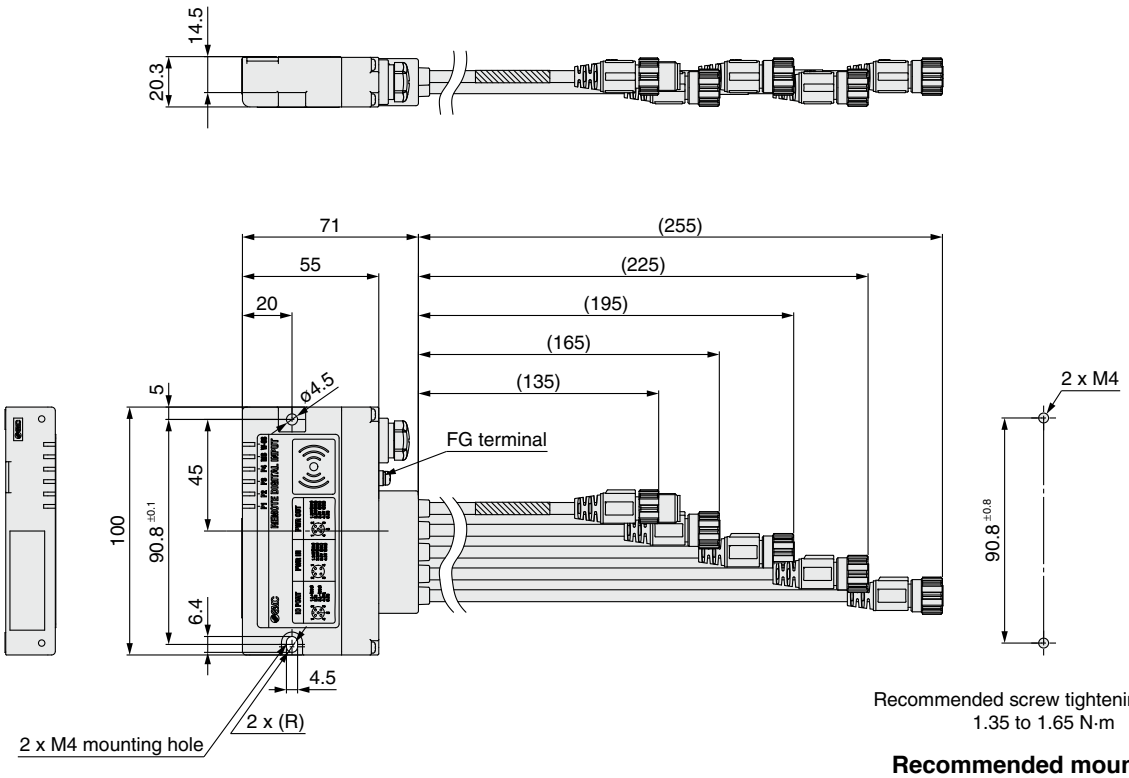
Output cable x 8 (0 to F)





Dimensions

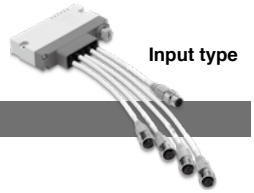
Grommet Type for IO-Link Device



Recommended screw tightening torque:
1.35 to 1.65 N·m

Recommended mounting thread hole dimensions

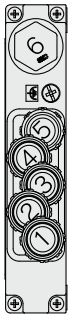
Grommet Type for IO-Link Device/Connector Specifications



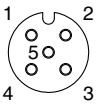
Input

Connector Arrangement Specifications

No.	Description	Cable length [mm]	Labeling	Type
1	PORT1	255	—	M12, 5-pin, socket, A-coded
2	PORT2	225	—	
3	PORT3	195	—	
4	PORT4	165	—	
5	Power supply IN connector	135	POWER	M12, 4-pin, plug, A-coded
6	Power supply OUT connector	—	—	M12, 5-pin, socket, A-coded

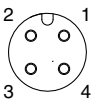


IO Connector

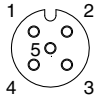
Pin no.	Description	M12, 5-pin, socket, A-coded
1	L+ (US1)	
2	DI (Digital input)	
3	L– (US1)	
4	CQ (IO-Link)*1	
5	Not used	

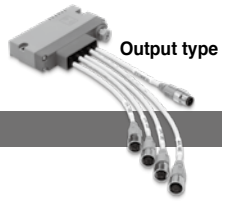
*1 Switchable to IO-Link/digital input (PNP input)

Power Supply IN Connector

Pin no.	Description	M12, 4-pin, plug, A-coded
1	24 V (US1)	
2	24 V (US2)	
3	0 V (US1)	
4	0 V (US2)	

Power Supply OUT Connector

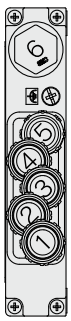
Pin no.	Description	M12, 5-pin, socket, A-coded
1	24 V (US1)	
2	24 V (US2)	
3	0 V (US1)	
4	0 V (US2)	
5	Not used	



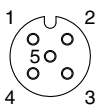
Output

Connector Arrangement Specifications

No.	Description	Cable length [mm]	Labeling	Type
1	PORT1	255	—	M12, 5-pin, socket, A-coded
2	PORT2	225	—	
3	PORT3	195	—	
4	PORT4	165	—	
5	Power supply IN connector	135	POWER	M12, 4-pin, plug, A-coded
6	Power supply OUT connector	—	—	M12, 5-pin, socket, A-coded

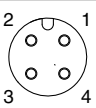


IO Connector

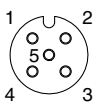
Pin no.	Description	M12, 5-pin, socket, A-coded
1	L+ (US1)	
2	DO (Digital output)	
3	L– (US1)	
4	CQ (IO-Link)*1	
5	0 V (US2)	

∴*1 Switchable to IO-Link/digital input (PNP input)

Power Supply IN Connector

Pin no.	Description	M12, 4-pin, plug, A-coded
1	24 V (US1)	
2	24 V (US2)	
3	0 V (US1)	
4	0 V (US2)	

Power Supply OUT Connector

Pin no.	Description	M12, 5-pin, socket, A-coded
1	24 V (US1)	
2	24 V (US2)	
3	0 V (US1)	
4	0 V (US2)	
5	Not used	

High-Precision Digital Pressure Switch ZSE20B(F)-L/ISE20B-L

IP65

- IO-Link version: V1.1
- Process data length: 2-byte input
- Transmission speed: COM2 (38.4 kbps)
- Minimum cycle time: 2.3 ms

Series	Applicable fluid	Type	Rated pressure range
ZSE20BF-L	Air	Compound pressure	–100 to 100 kPa
ZSE20B-L	Air	Vacuum pressure	0 to –100 kPa
ISE20B-L	Air	Positive pressure	0 to 1 MPa

High-Precision Digital Pressure Switch ISE7□/7□G

IP67

- IO-Link version: V1.1
- Process data length: 2-byte input
- Transmission speed: COM2 (38.4 kbps)
- Minimum cycle time: 2.3 ms
- IO-Link port type: Class A

Series	Applicable fluid	Type	Rated pressure range
ISE70	Air	Positive pressure	0 to 1 MPa
ISE71	Air	Positive pressure	0 to 1.6 MPa
ISE70G	Air General fluids	Positive pressure	0 to 1 MPa
ISE75G	Air General fluids	Positive pressure	0 to 2 MPa
ISE76G	Air General fluids	Positive pressure	0 to 5 MPa
ISE77G	Air General fluids	Positive pressure	0 to 10 MPa

3-Screen Display Multi-channel Digital Sensor Monitor PSE200A

- Up to 4 pressure sensors can be connected! Centralized control saves installation space. A single monitor various applications
- It is possible to change the settings while checking the measured value.
- IO-Link compatible

Series	Rated pressure range	Applicable SMC pressure sensor
PSE200A	–0.2 to 2.1 kPa	PSE550
	10 to –105 kPa	PSE531/PSE541/PSE561
	–105 to 105 kPa	PSE533/PSE543/PSE563/PSE573
	–10 to 105 kPa	PSE532
	–50 to 525 kPa	PSE564/PSE574
	–0.105 to 1.05 MPa	PSE530/PSE540/PSE560/PSE570
	–0.105 to 2.1 MPa	PSE575
	–0.25 to 5.25 MPa	PSE576
	–0.5 to 10.5 MPa	PSE577

3-Color Display Digital Flow Switch for Large Flow PF3A7□H-L

- Applicable fluid: Air, N_2
- Flow range: Max. 12000 L/min
- Flow ratio 100:1
  Wide range of flow measurement with one product
- Improved drainage and resistance to foreign matter
- Pressure loss: 75% reduction (20 kPa → 5 kPa)
- Through bore construction
- IO-Link compatible

Series	Rated flow range [L/min]
PF3A7□H-L	10 to 1000 20 to 2000 30 to 3000 60 to 6000 120 to 12000

∗ For the modular type, only 1000 or 2000 L/min can be selected.

2-Color Display Digital Flow Switch PF2M7-L

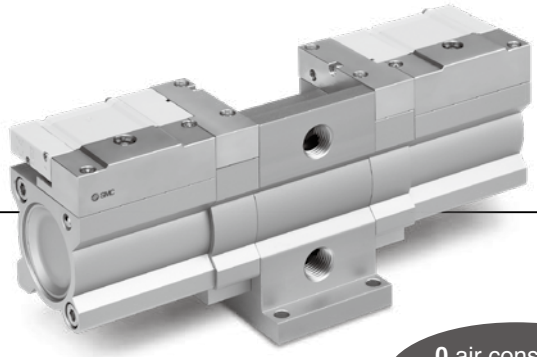
- Dry air, N_2, Ar, CO_2
- A wide range of flow measurement is possible with 1 product.
  Flow ratio: 100 : 1,
  Smallest settable increment: 0.01 L/min
- Improved drainage and resistance to foreign matter
- Compact, Lightweight
  Weight: 27.3% lighter (55 g → 40 g)
- Low current consumption: 35 mA or less
- Grease-free
- IO-Link compatible

Series	Rated flow range [L/min]
PF2M7-L	0.1 to 10 (0.1 to 5) 0.3 to 25 (0.3 to 12.5) 0.5 to 50 (0.5 to 25) 1 to 100 (1 to 50)

( ): For CO_2

Booster Regulator

RoHS

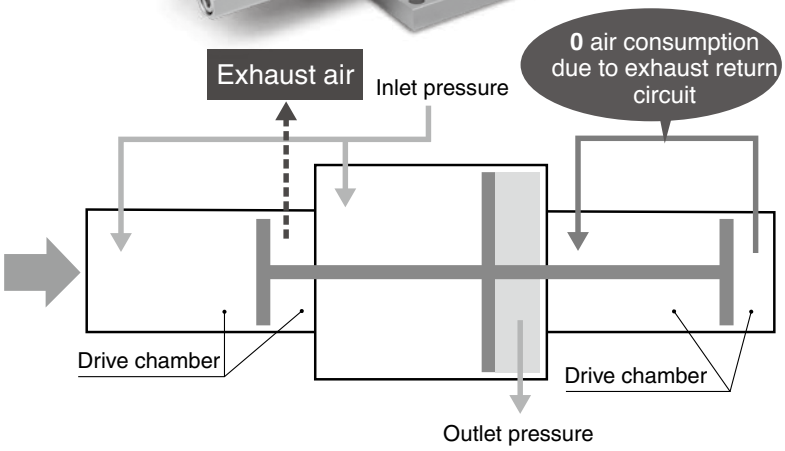


Size: 10A

Air consumption 40% reduction*1

- 3 piston construction
- The drive chamber on one side can be operated by the exhaust return circuit.

*1 Based on SMC's measuring conditions



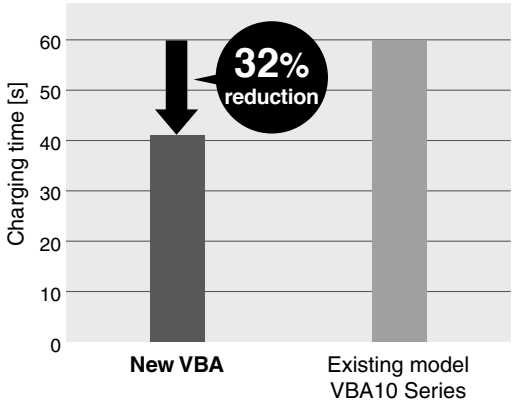
Operation noise: 65 dB(A)*1

*1 Based on SMC's measuring conditions

15 dB (A) reduction compared with the existing model (VBA series)

- Exhaust noise: Reduced noise due to exhaust of reused low-pressure air
- Metal noise: Reduced noise due to the adoption of a construction in which the internal switching part doesn't come into contact with any metal parts

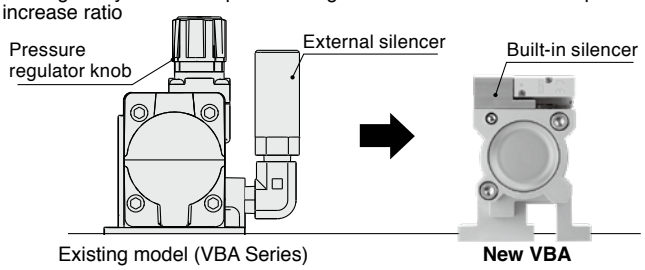
Charging time: 32% shorter



* Inlet pressure: 0.4 MPa, Air tank: 10 L

Simple, compact shape

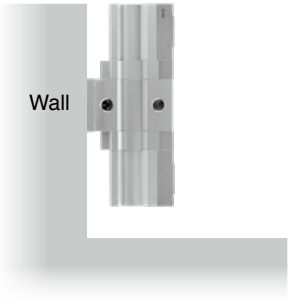
- Built-in silencer
- No longer any need for a pressure regulator knob due to the fixed pressure increase ratio



Mounting compatibility with the existing model (VBA series)

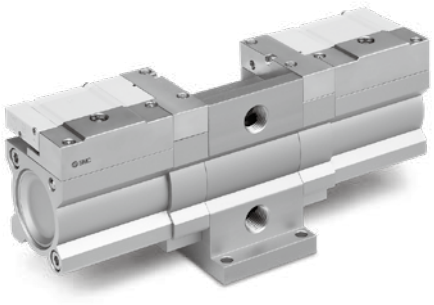
- Can be mounted on an air tank (VBAT series)
  (The air tank must be ordered separately.)

Can be mounted vertically



VBA-X3145

SMC



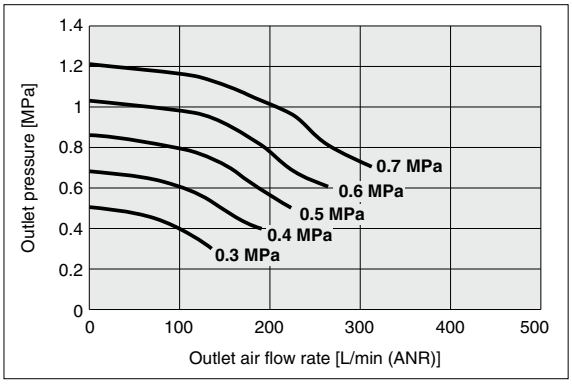
Specifications

Model		VBA-X3145
Fluid		Compressed air
Pressure increase ratio		1.7 times (Fixed)
Pressure adjustment mechanism		None
Max. flow rate∗1	**L/min (ANR)**	230
Outlet pressure range	**MPa**	0.3 to 1.2
Inlet pressure range	**MPa**	0.2 to 0.7
Proof pressure	**MPa**	1.8
Port size (IN, OUT)		Rc1/4
Tank connection port (with plug)		Rc1/4
Ambient and fluid temperatures	**°C**	2 to 50 (No freezing)
Installation		Horizontal, Vertical
Lubrication		Grease (Non-lube)
Weight	**kg**	1.2

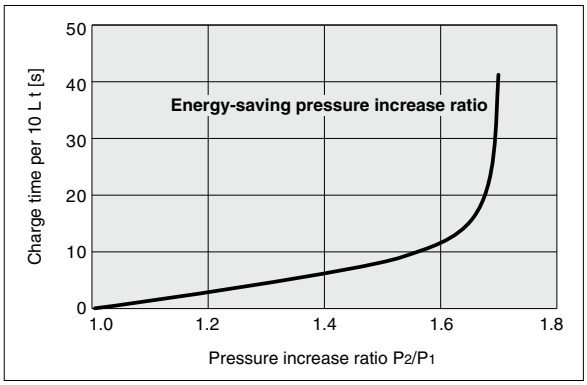
∗1 Flow rate at IN = OUT = 0.5 MPa.

Flow Rate Characteristics/Charge Characteristics

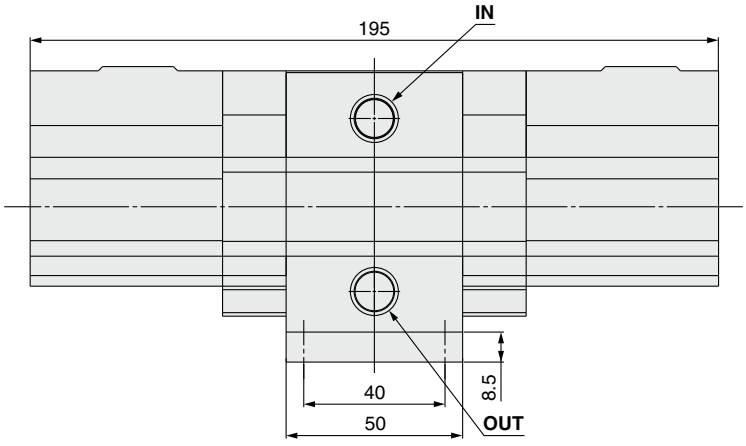
Flow rate characteristics

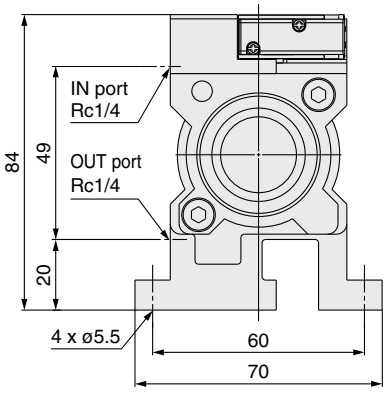


Charge characteristics



Dimensions



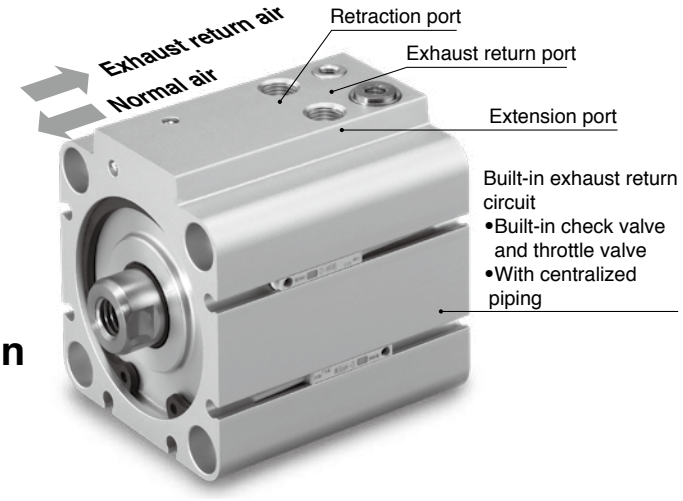


Compact Cylinder/Air-saving Type RoHS

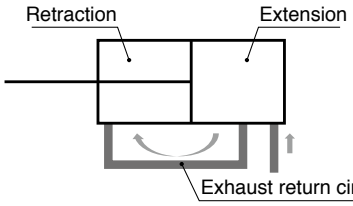
ø32, ø40, ø50

Air consumption

Max. 46% reduction

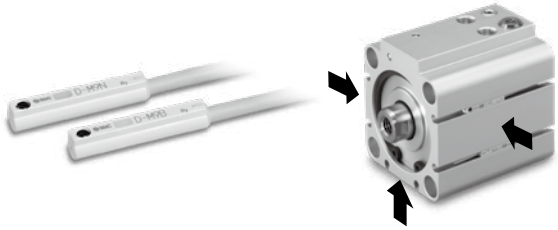


- **Uses the air exhausted from the extension side to supply the retraction side, thus reusing the air (Built-in exhaust return circuit)**
- **Reduce air consumption just by piping to the product**



- **The dimensions and mounting dimensions are the same as those of the existing CDQ2 series model.**
  - For the through-hole mounting type only

- **With rubber bumper**
- **Small auto switches can be mounted on 3 surfaces.**
  Applicable auto switch: D-M9□



Specifications

Bore size [mm]		32	40	50
Action		Double acting, Single rod		
Fluid		Air		
Proof pressure		1.0 MPa		
Max. operating pressure		0.7 MPa		
Min. operating pressure		0.4 MPa		
Ambient and fluid temperatures		With auto switch: –10 to 60°C (No freezing)		
Lubrication		Not required (Non-lube)		
Piston speed	**Extending operation**	50 to 500 mm/s		50 to 300 mm/s
	Retracting operation	50 to 300 mm/s		
Stroke length tolerance		0 to +1.0 mm*1		
Cushion		Rubber bumper		
Port size	**Retraction port**	M5 x 0.8		Rc1/8
	Extension port	M5 x 0.8		Rc1/8
	Exhaust return port	M5 x 0.8		
Mounting orientation		Horizontal lateral, Vertical upward		
Min. theoretical output*2	**Retracting operation**	32 N	55 N	85 N
Allowable kinetic energy		0.29 J	0.52 J	0.91 J
Allowable lateral load at rod end (At 30 stroke)		7.6 N	10.9 N	15.8 N
Mounting		Basic type (Through-hole)		

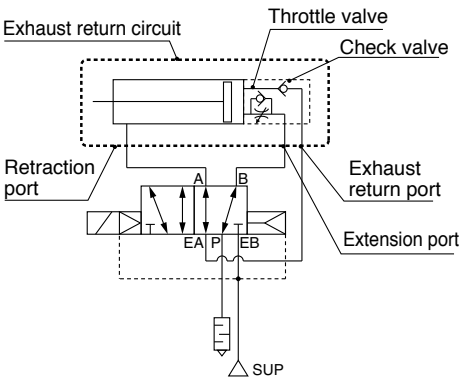
*1 Stroke length tolerance does not include the amount of bumper change.
*2 Be aware that the cylinder output is reduced during the retraction operation.
The cylinder output values in the table above are the min. values. Therefore, depending on the operating conditions, the output may be greater.
Please contact your local sales representative for more details.

Standard Strokes

[mm]

Bore size	Standard stroke
32, 40	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100
50	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100

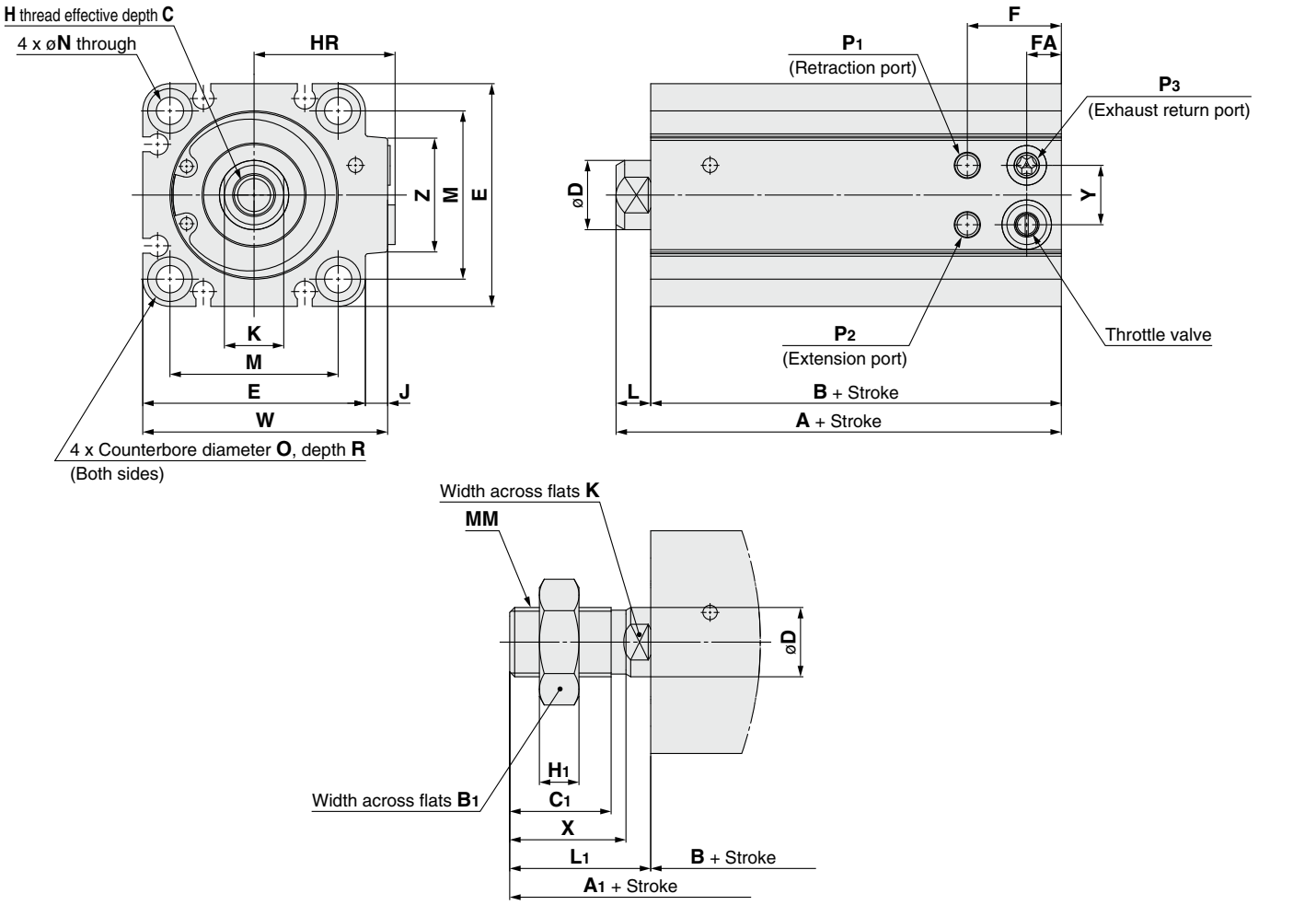
Circuit Diagram



CDQ2B-X3150

SMC

Dimensions Bore size ø32, ø40, ø50



Rod end male threaded

[mm]

Bore size	Standard stroke	A	B	C	D	E	F	FA	H	HR	J	K	L	M	N
32	5, 10, 15, 20, 25, 30, 35, 40,	40	33	13	14	45	19	7	M8 x 1.25	28	4.5	12	7	34	5.5
40	45, 50, 75, 100	46.5	39.5	13	14	52	20.5	9	M8 x 1.25	32	5	12	7	40	5.5
50	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	48.5	40.5	15	18	64	24	9.5	M10 x 1.5	41	7	16	8	50	6.6

[mm]

Bore size	O	P1	P2	P3	R	W	Y	Z	A1	B1	C1	H1	L1	MM	X
32	9	M5 x 0.8	M5 x 0.8	M5 x 0.8	7	49.5	12	23	61.5	22	20.5	8	28.5	M14 x 1.5	23.5
40	9	M5 x 0.8	M5 x 0.8	M5 x 0.8	7	57	12	23	68	22	20.5	8	28.5	M14 x 1.5	23.5
50	11	Rc1/8	Rc1/8	M5 x 0.8	8	71	18	33	74	27	26	11	33.5	M18 x 1.5	28.5

Handling

⚠Warning

1. Residual pressure will remain in the exhaust return piping of this circuit.

To completely exhaust all of the residual pressure, install a 3 -port valve for residual pressure exhaust in the exhaust return piping.

2. The adjustment range for the throttle valve for retraction operation speed adjustment is, starting from the fully closed position, within the number of rotations shown in the table below.

Bore size [mm]	Number of rotations
32, 40	3.5 rotations or less
50	4.5 rotations or less

To adjust the throttle valve, use a 3 mm flat head watchmaker's screwdriver.

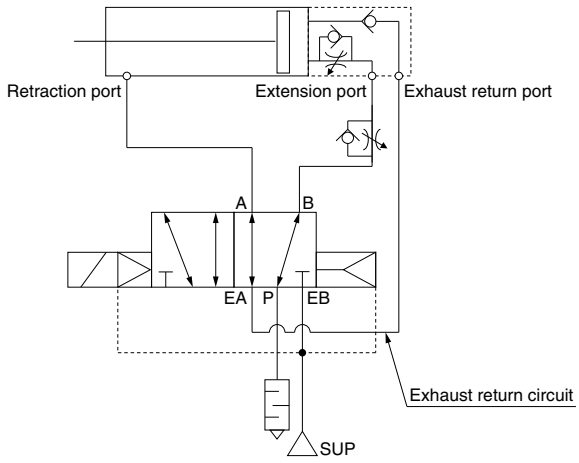
The adjustment range for the throttle valve is, between the fully closed position and the open position, within the range indicated in the table above.

A retaining mechanism prevents the throttle valve from slipping out; however, it may spring out during operation if it is rotated beyond the range shown above.

⚠Caution

1. Pipe according to the circuit diagram shown below when using this cylinder.

Circuit diagram



2. For exhaust return, the selection and installation of suitable fittings, tubes, and devices is required. Please contact your local sales representative for more details.

3. For the solenoid valve, select a single unit (body ported or base ported) external pilot type.

4. Follow the instructions below to adjust the speed of this cylinder.

Extending operation: Use the speed controller (meter-in) installed between the extension port and the solenoid valve.

Retracting operation: Use the built-in throttle valve on the cylinder.

5. As the retracting operation of this cylinder is performed with low pressure and low thrust, refrain from applying more external force than necessary.

6. Pivot brackets cannot be used.

UNIT CONVERSIONS

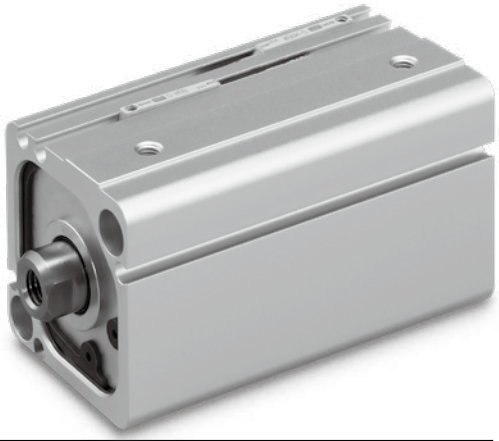
	unit	conversion	result
length	m	x 3.28	ft
	mm	x 0.04	in
mass	g	x 0.04	oz
volume	cm^3	÷ 16.387	in^3
	L	x 61.024	in^3
speed	mm/s	÷ 25.4	in/s
pressure	MPa	x 145	psi
	kPa	÷ 6.895	psi
temperature	°C	x1.8 then add 32	°F
torque	N·m	x 0.738	ft-lb
force	N	÷ 4.448	lbf
flow	L/min	÷ 28.317	cfm

Compact Cylinder/ Polygonal Piston Square Type

RoHS

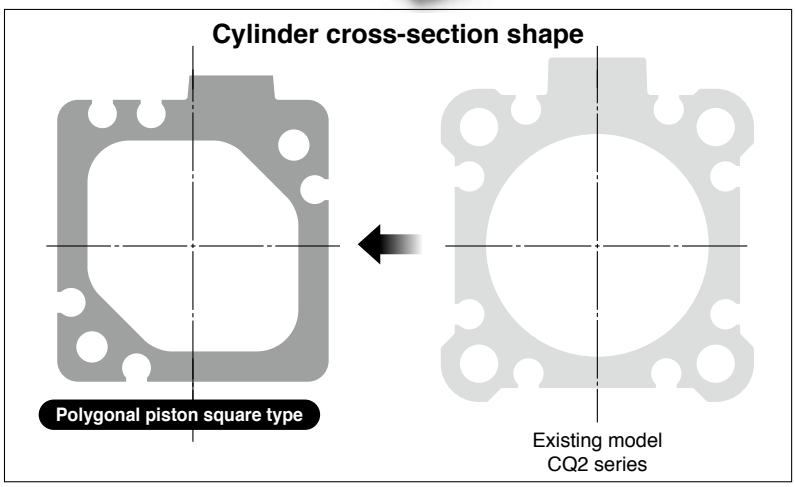
Size: 32, 40, 50

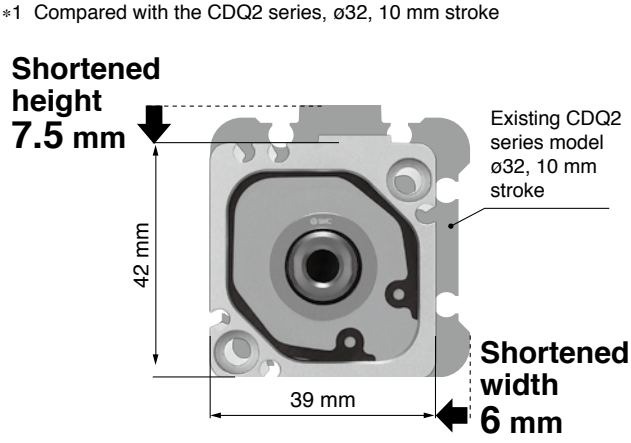
Now, more compact and lightweight due to the adoption of a polygonal piston!

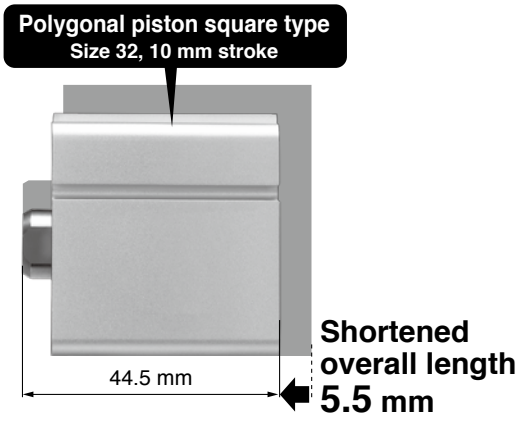


Weight	**30%** *1 **reduction** 199 g a **139 g**
Height	**15%** *1 **reduction** 49.5 mm a **42 mm**
Width	**13%** *1 **reduction** 45 mm a **39 mm**
Overall length	**11%** *1 **reduction** 50 mm a **44.5 mm**

∗1 Compared with the CDQ2 series, ø32, 10 mm stroke

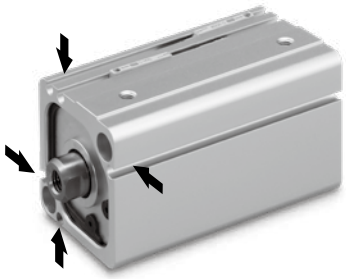






Small auto switches can be mounted on 4 surfaces.

Applicable auto switch: D-M9□



CDQ2B-X3162

SMC

Specifications

Size	**32** (Equiv. ø32 piston area)	**40** (Equiv. ø40 piston area)	**50** (Equiv. ø50 piston area)
Action	Double acting		
Fluid	Air		
Proof pressure	1.0 MPa		
Max. operating pressure	0.7 MPa*2		
Min. operating pressure	0.05 MPa		
Ambient and fluid temperatures	5 to 60°C		
Piston speed	50 to 500 mm/s	50 to 300 mm/s*2	
Cushion	Rubber bumper		
Lubrication	Not required (Non-lube)		
Stroke length tolerance	$^{+1.3}_{0}$ mm*1		
Allowable kinetic energy	0.15 J	0.26 J	0.46 J

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

Depending on the system configuration selected, the specified speed may not be satisfied.

*2 Maximum operating pressure and piston speed are different from the existing product (CQ2 series).

Standard Strokes

[mm]

Size	Standard stroke
32	10, 20, 30, 40, 50
40	
50	

Theoretical Output

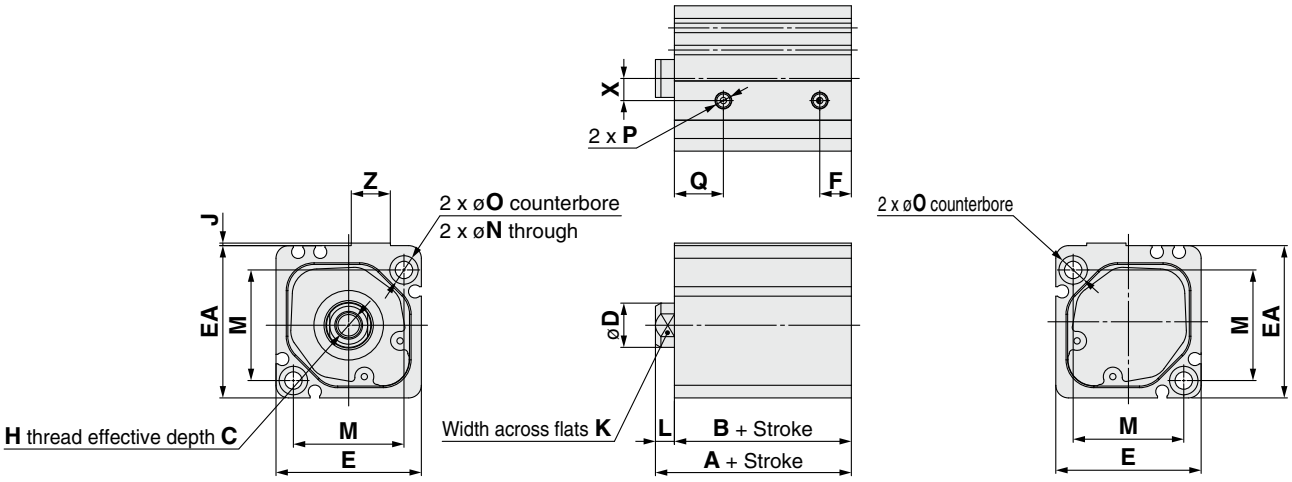
OUT IN

[N]

Size	Rod operating direction	Piston area [mm²]	Operating air pressure [MPa]					
			0.2	0.3	0.4	0.5	0.6	0.7
32	IN	691	138	207	276	345	415	484
	OUT	804	161	241	322	402	482	563
40	IN	1102	220	331	441	551	661	771
	OUT	1256	251	377	502	628	754	879
50	IN	1709	342	512	683	854	1025	1196
	OUT	1963	393	589	785	982	1178	1374

* Theoretical output [N] = Pressure [MPa] x Piston area [mm²]

Dimensions



[mm]

Size	A	B	C	D	E	EA	F	H	J	K	L	M	N	O	P	Q	X	Z
32	34.5	29.5	12	12	39	40.5	8.5	M6 x 1.0	1.5	10	5	29	4.5	8 depth 6	M5 x 0.8	10	5.5	12.4
40	42	36	13	14	46	48.2	10	M8 x 1.25	0.8	12	6	35	5.5	9 depth 7	M5 x 0.8	15.5	7	12.4
50	49.5	41.5	15	18	55	58.2	11.5	M10 x 1.5	2.3	16	8	42	6.6	11 depth 8	Rc1/8	17.5	10	15

Compact Cylinder/ Polygonal Piston Rectangle Type

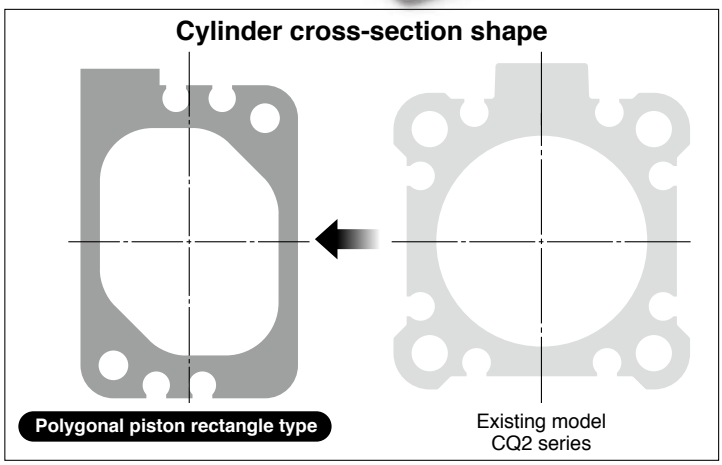
RoHS

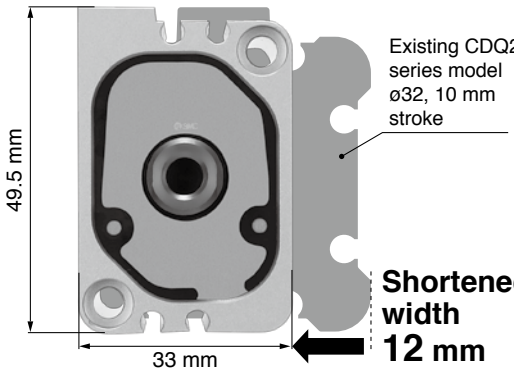
Size: 32, 40, 50

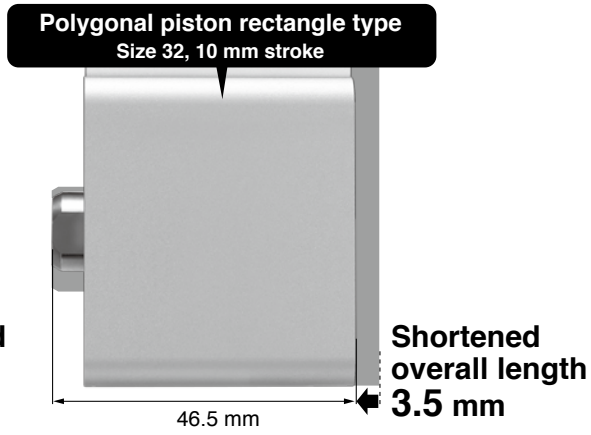
Now, more compact and lightweight due to the adoption of a polygonal piston!
The same height as the existing model but with reduced width and overall length

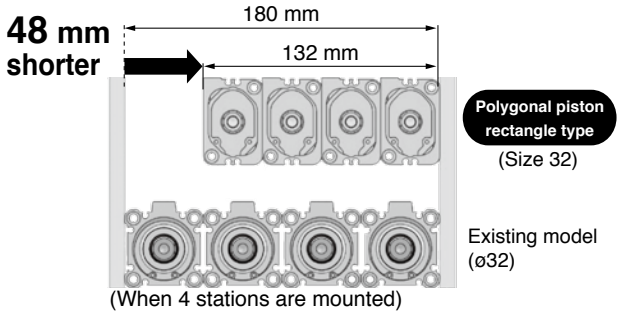
Weight	**28%**[*1] **reduction** 278 g → **200 g**
Width	**27%**[*2] **reduction** 45 mm → **33 mm**
Overall length	**7%**[*2] **reduction** 50 mm → **46.5 mm**

∗1 Compared with the CDQ2 series, ø32, 30 mm stroke
∗2 Compared with the CDQ2 series, ø32, 10 mm stroke



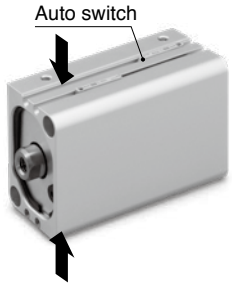






Small auto switches can be mounted on 2 surfaces.

Applicable auto switch: D-M9□



CDQ2B-X3164

SMC

Specifications

Size	**32** (Equiv. ø32 piston area)	**40** (Equiv. ø40 piston area)	**50** (Equiv. ø50 piston area)
Action	Double acting		
Fluid	Air		
Proof pressure	1.0 MPa		
Max. operating pressure	0.7 MPa*2		
Min. operating pressure	0.05 MPa		
Ambient and fluid temperatures	5 to 60°C		
Piston speed	50 to 500 mm/s	50 to 300 mm/s*2	
Cushion	Rubber bumper		
Lubrication	Not required (Non-lube)		
Stroke length tolerance	$^{+1.3}_{0}$ mm*1		
Allowable kinetic energy	0.15 J	0.26 J	0.46 J

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

Depending on the system configuration selected, the specified speed may not be satisfied.
*2 Maximum operating pressure and piston speed are different from the existing product (CQ2 series).

Standard Strokes

[mm]

Size	Standard stroke
32	10, 20, 30, 40, 50
40	
50	

Theoretical Output

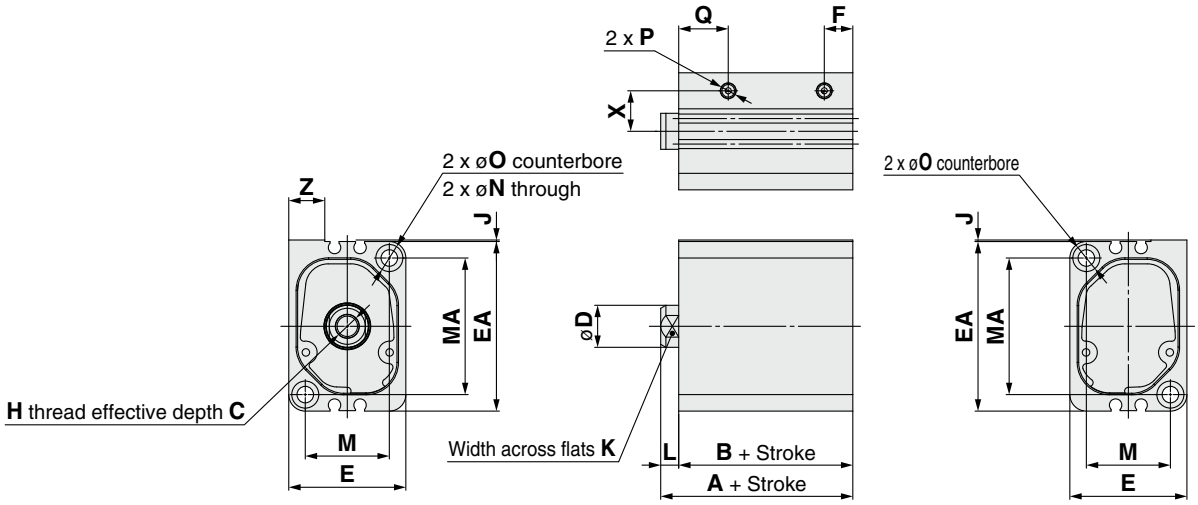
OUT IN

[N]

Size	Rod operating direction	Piston area [mm²]	Operating air pressure [MPa]					
			0.2	0.3	0.4	0.5	0.6	0.7
32	IN	693	139	208	277	346	416	485
	OUT	806	161	242	322	403	484	564
40	IN	1104	221	331	442	552	662	773
	OUT	1258	252	377	503	629	755	881
50	IN	1707	341	512	683	853	1024	1195
	OUT	1961	392	588	784	981	1177	1373

* Theoretical output [N] = Pressure [MPa] x Piston area [mm²]

Dimensions



[mm]

Size	A	B	C	D	E	EA	F	H	J	K	L	M	MA	N	O	P	Q	X	Z
32	36.5	31.5	12	12	33	47.5	8.5	M6 x 1.0	2	10	5	23	37.5	4.5	8 depth 6	M5 x 0.8	12.5	10.3	12
40	44	38	13	14	39	56.5	9.5	M8 x 1.25	0.5	12	6	28	45.5	5.5	9 depth 7	M5 x 0.8	16.5	13.5	12
50	51.5	43.5	15	18	48	68.5	11.5	M10 x 1.5	2.5	16	8	35	55.5	6.6	11 depth 8	Rc1/8	19.5	16.5	15

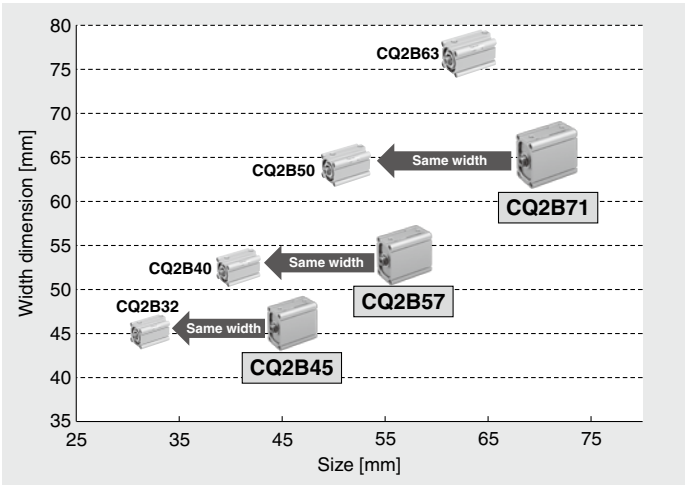
Compact Cylinder/Double Force Type

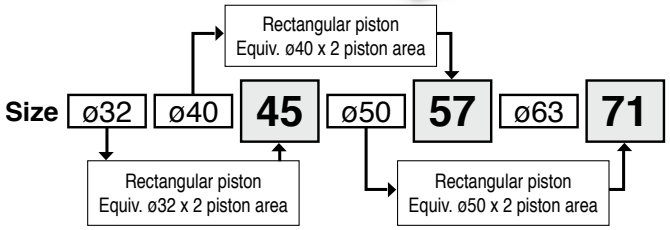
RoHS

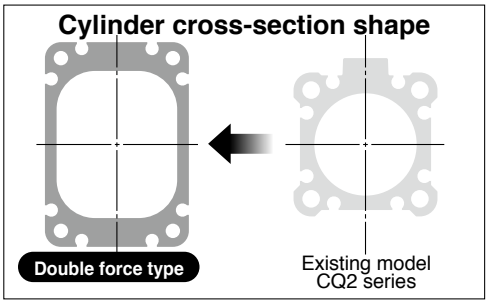
Size: 45, 57, 71

This product is capable of providing double the force of the CQ2 series, without changing the width, due to the adoption of a rectangular piston.

∗ Comparison with dual stroke cylinders satisfying the following conditions: a cylinder of the same width with double the theoretical output.
∗ The width of the CQ2 standard model and the CQ2 dual stroke cylinder are the same.





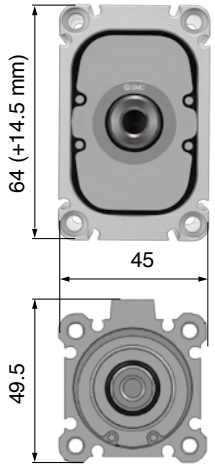


Weight **51%** ∗1 **reduction**
648 g ➡ **317 g**

Overall length **50%** ∗1 **reduction**
130.5 mm ➡ **65 mm**

∗1 Comparison with the existing model (CDQ2B32-25+0DCZ-XC11 Dual stroke cylinder)

Width comparison

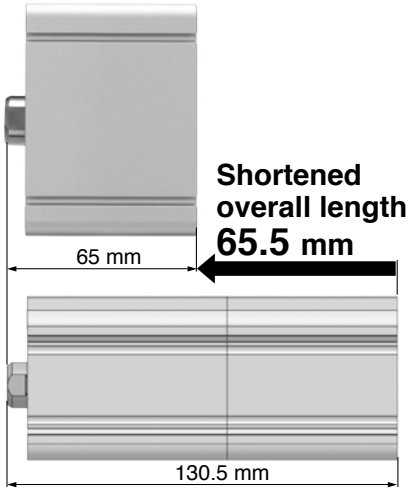


Double force type
Size 45 (ø32 x 2),
25 mm stroke

Same width

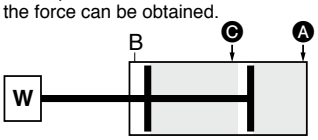
Existing model
Dual stroke cylinder
(Double force)
ø32, 25 mm stroke

Overall length comparison



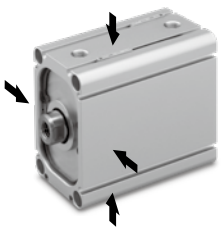
Shortened overall length
65.5 mm

Dual stroke cylinder/
Double force
When air pressure is supplied to the A and C ports at the same time, double the force can be obtained.



Small auto switches can be mounted on 4 surfaces.

Applicable auto switch: D-M9□



CDQ2B-X3166

SMC

Specifications

Size	**45** (Equiv. ø32 x 2 piston area)	**57** (Equiv. ø40 x 2 piston area)	**71** (Equiv. ø50 x 2 piston area)
Action	Double acting		
Fluid	Air		
Proof pressure	1.0 MPa		
Max. operating pressure	0.7 MPa*2		
Min. operating pressure	0.05 MPa		
Ambient and fluid temperatures	5 to 60°C		
Piston speed	50 to 300 mm/s*2		
Cushion	Rubber bumper		
Lubrication	Not required (Non-lube)		
Stroke length tolerance	$^{+1.3}_{0}$ mm*1		
Allowable kinetic energy	0.26 J	0.46 J	0.77 J

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

Depending on the system configuration selected, the specified speed may not be satisfied.
*2 Maximum operating pressure and piston speed are different from the existing product (CQ2 series).

Standard Strokes

[mm]

Size	Standard stroke
45	25, 50
57	
71	

Theoretical Output

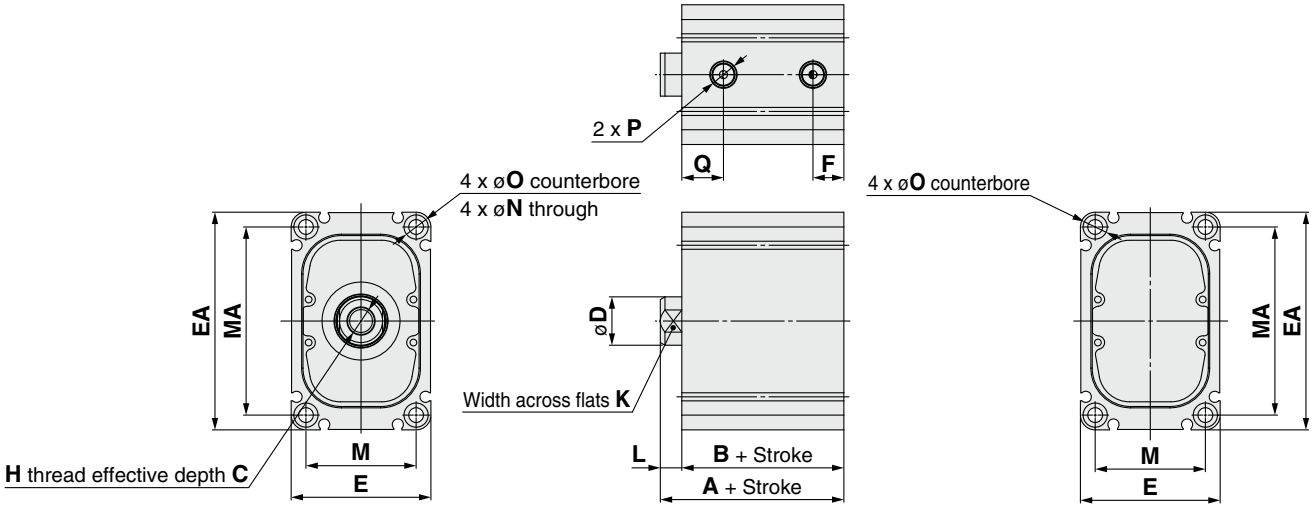
OUT IN

[N]

Size	Piston area [mm²]	Rod operating direction	Operating air pressure [MPa]					
			0.2	0.3	0.4	0.5	0.6	0.7
45	1457	IN	291	437	583	729	874	1020
	1611	OUT	322	483	644	806	967	1128
57	2262	IN	452	678	905	1131	1357	1583
	2516	OUT	503	755	1006	1258	1510	1761
71	3548	IN	710	1064	1419	1774	2129	2484
	3928	OUT	786	1178	1571	1964	2357	2750

* Theoretical output [N] = Pressure [MPa] x Piston area [mm²]

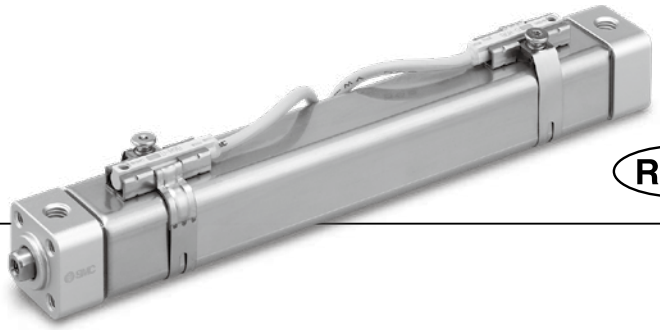
Dimensions



[mm]

Size	A	B	C	D	E	EA	F	H	K	L	M	MA	N	O	P	Q
45	40.3	34.3	13	14	45	64	10	M8 x 1.25	12	6	35	54	4.5	8 depth 6	Rc1/8	12.5
57	48.3	40.3	15	18	52	81	11.5	M10 x 1.5	16	8	41	70	5.5	9 depth 7	Rc1/8	15.5
71	53.6	44.6	21	22	64	97	14.5	M14 x 2.0	19	9	51	84	6.6	11 depth 8	Rc1/8	17

Square Shape Compact Cylinder



RoHS

Size 20

Now, more compact and lightweight due to the adoption of a square shape piston!

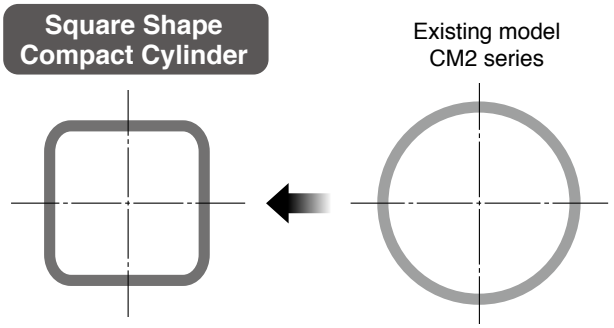
Weight **59% reduction** 170 g → **70 g**

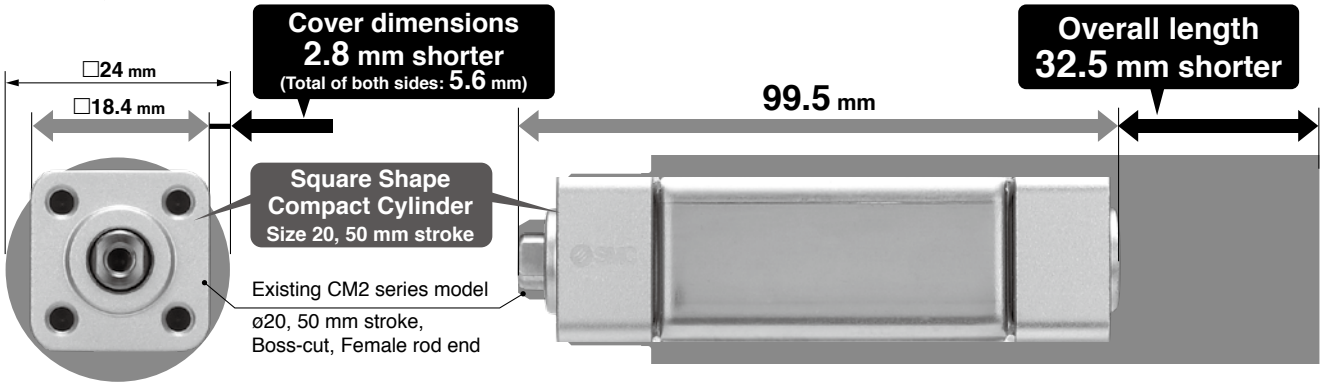
Overall length **25% reduction** 132 mm → **99.5 mm**

Width Height **23% reduction** 24 mm → **18.4 mm**

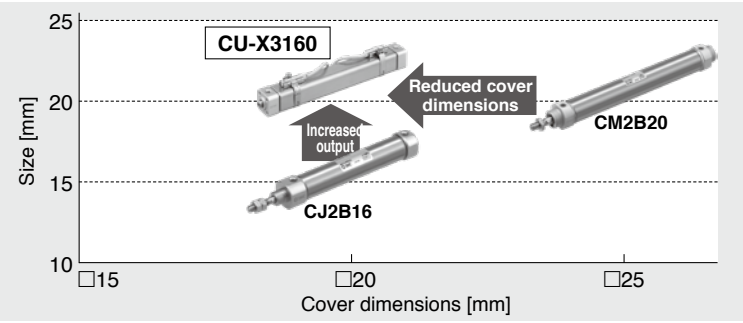
∗ Compared with the existing CM2 series model, ø20, 50 mm stroke, Boss-cut, Female rod end

Cylinder cross-section shape



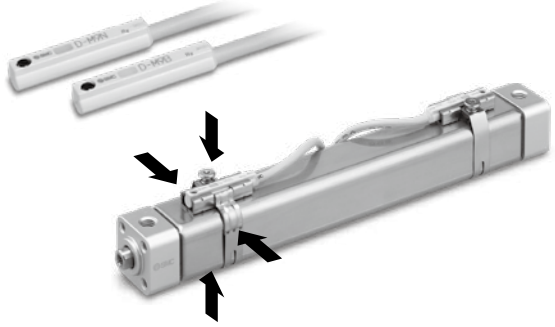


Reduced cover dimensions (1 size smaller than the existing model) but with increased output



Small auto switches can be mounted on 4 surfaces.

Applicable auto switch: D-M9□



CU-X3160

SMC

Specifications

Size	**20** (Equiv. ø20 piston area)
Action	Double acting, Single rod
Fluid	Air
Proof pressure	1.0 MPa
Max. operating pressure	0.7 MPa
Min. operating pressure	0.05 MPa
Ambient and fluid temperatures	Without auto switch: 5 to 70°C With auto switch : 5 to 60°C (No freezing)
Lubrication	Not required (Non-lube)
Piston speed	50 to 500 mm/s
Stroke length tolerance	$^{+2.0}_{0}$ ∗1
Cushion	Rubber bumper
Allowable kinetic energy	0.11 J
Port size	M5
Mounting	Basic (Female threads on both covers)

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

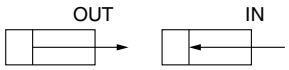
Depending on the system configuration selected, the specified speed may not be satisfied.

Standard Strokes

[mm]

Size	Standard stroke
20	25, 50, 75, 100, 125, 150

Theoretical Output

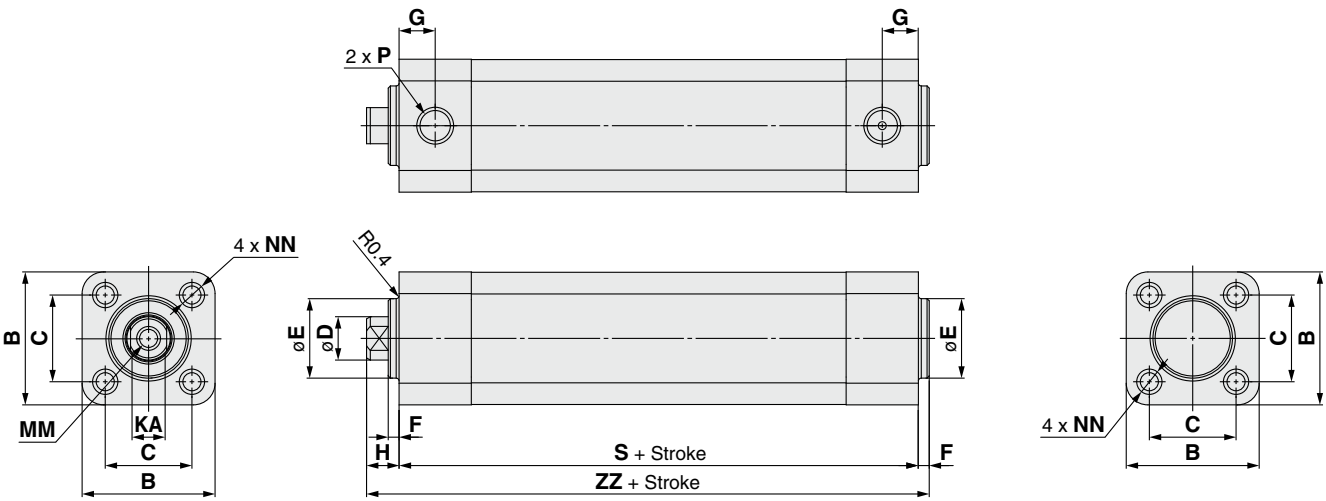


[N]

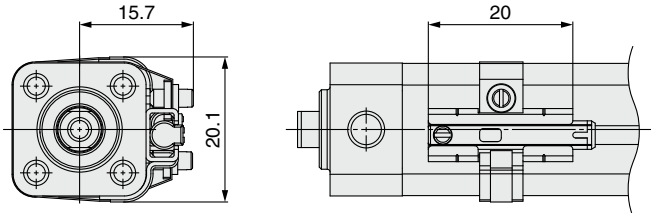
Size	Rod operating direction	Piston area [mm²]	Operating air pressure [MPa]					
			0.2	0.3	0.4	0.5	0.6	0.7
20	IN	257	51	77	103	128	154	179
	OUT	285	57	85	114	142	171	199

∗ Theoretical output [N] = Pressure [MPa] x Piston area [mm²]

Dimensions



Auto switch bracket dimensions



[mm]

Size	B	C	D	E	F	G	H	KA	NN	MM	P	S	ZZ
20	18.4	12	6	11	1.5	5	4.5	5	M3 x 0.5 depth 5	M3 x 0.5 depth 6	M5 x 0.8	43.5	49.5

Air Cylinder CJ2 Compact Type

RoHS

ø10, ø16

Compact

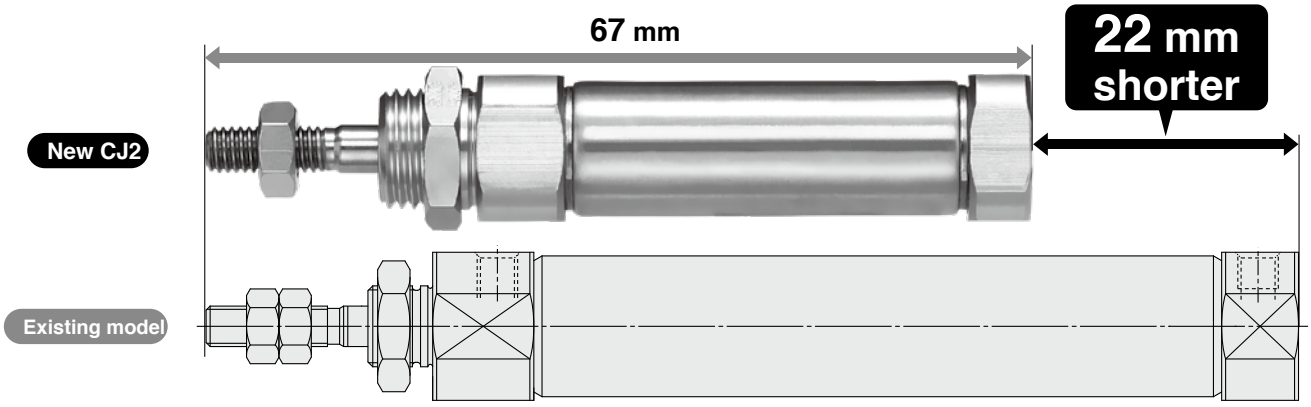
Lightweight

Overall length

Max. 25% reduction

Overall length comparison (15 mm stroke, Without auto switch magnet) [mm]

Bore size	New CJ2	Existing model CJ2	Reduction	Reduction rate [%]
10	**67**	89	22	25
16	**69.5**	90	20.5	23



Weight

Max. 27% reduction

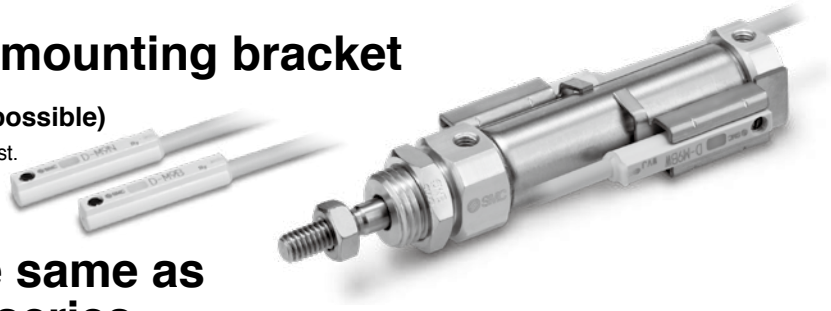
Weight comparison (15 mm stroke, Without auto switch magnet) [g]

Bore size	New CJ2	Existing model CJ2	Reduction	Reduction rate [%]
10	**19**	26	7	27
16	**41**	54	13	24

New rail type auto switch mounting bracket

Applicable to the D-M9□ (Direct mounting possible)

* An auto switch with a reduced overall length is available upon request.
  (Produced upon receipt of order)
  Please contact your local sales representative for more details.



The specifications are the same as those of the existing CJ2 series.

CJ2-X3175

Specifications

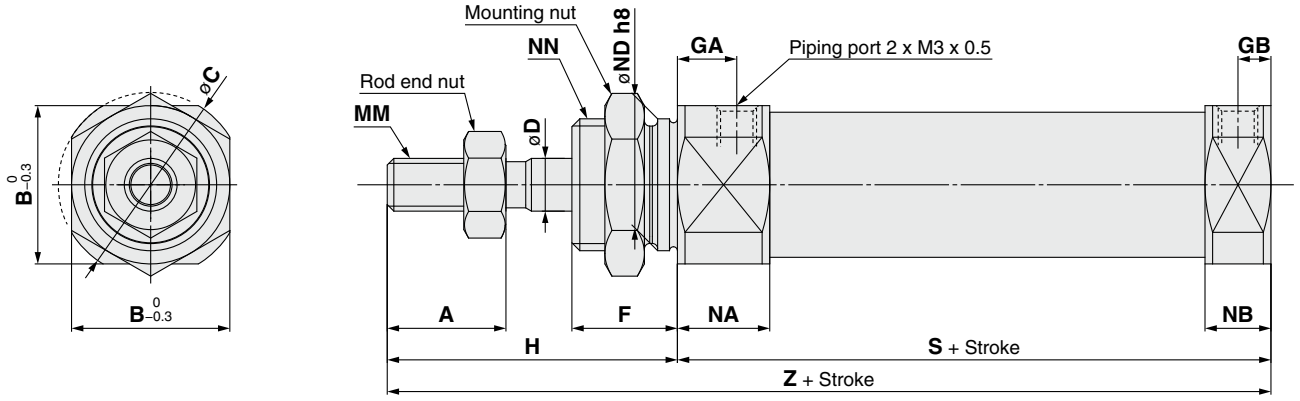
Bore size [mm]	10	16
Action	Double acting, Single rod	
Fluid	Air	
Proof pressure	1 MPa	
Max. operating pressure	0.7 MPa	
Min. operating pressure	0.06 MPa	
Ambient and fluid temperatures	Without auto switch: –10°C to 70°C With auto switch : –10°C to 60°C (No freezing)	
Cushion	Rubber bumper	
Lubrication	Not required (Non-lube)	
Piston speed	50 to 750 mm/s	
Allowable kinetic energy	0.035 J	0.090 J
Stroke length tolerance	$^{+1.0}_{0}$	

Standard Strokes

[mm]

Bore size	Standard stroke
10, 16	15, 30, 45, 60, 75, 100

Dimensions



[mm]

Bore size	A	B	C	D	F	GA	GB	H	MM	NA	NB	ND h8	NN	Without auto switch		With auto switch	
														S	Z	S	Z
10	9	12	14	4	8	4.5	2.5	22	M4 x 0.7	7	5	$10^{0}_{-0.022}$	M10 x 1.0	30	52	34	56
16	11	18.3	20	5	8	4.5	2.5	24	M5 x 0.8	7	5	$12^{0}_{-0.027}$	M12 x 1.0	30.5	54.5	35.5	59.5

∗ The rod end nut and mounting nut come with the product.
If they are required separately, order according to the details below.
Rod end nut: ø10: **NTJ-010C**, ø16: **NTJ-015C**
Mounting nut: ø10: **SNPS-006**, ø16: **SNKJ-016C**

⚠ Specific Product Precautions

⚠ Caution

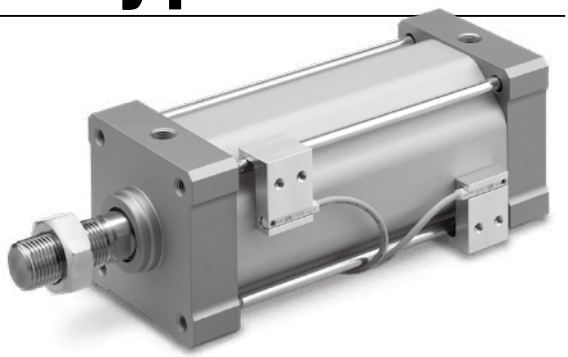
1. Do not apply external force to the auto switch mounting rail.

Doing so may cause the rail to become deformed, resulting in auto switch malfunction. In addition, repeatedly bending or stretching the lead wires may also result in malfunction.

Air Cylinder/Compact Type

RoHS

Size: 40, 63

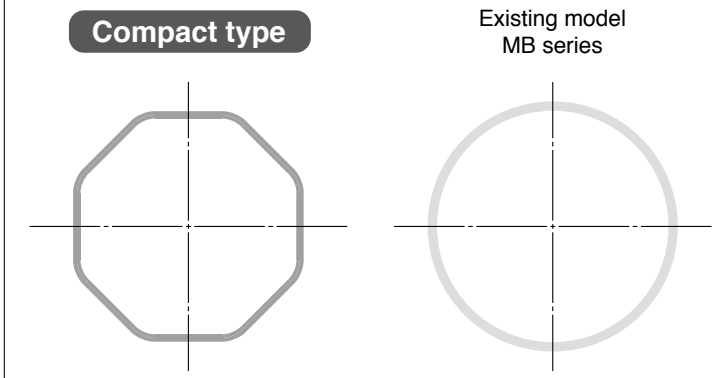


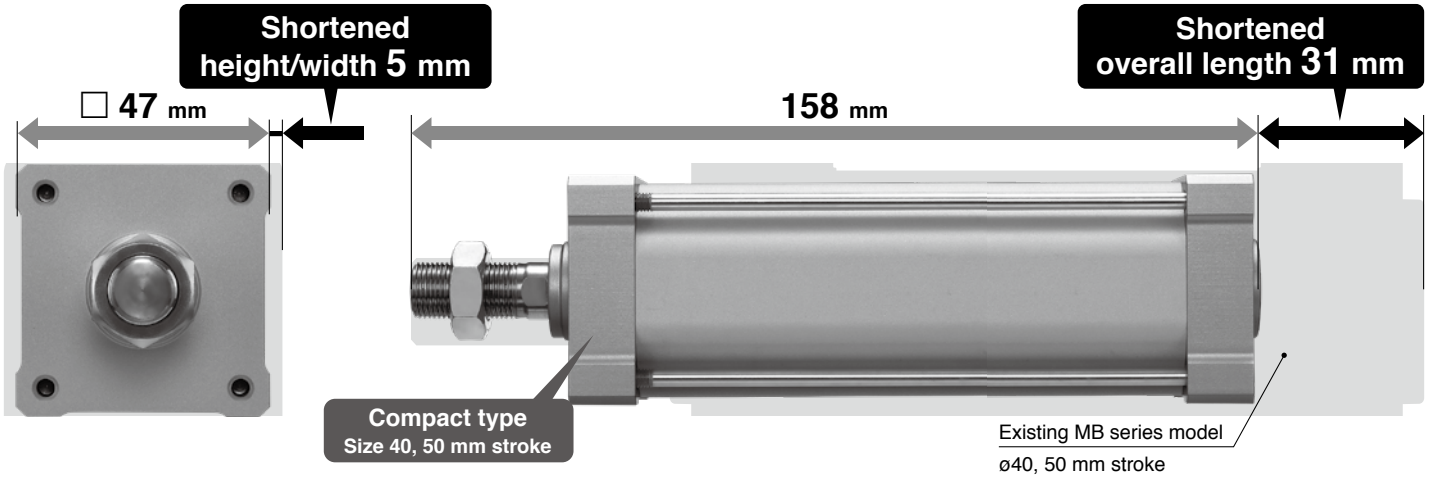
Now, more compact and lightweight due to the adoption of a octagonal piston!

Weight	**35% reduction** 750 g➞**487 g**
Overall length	**16% reduction** 189 mm➞**158 mm**
Height Width	**10% reduction** 52 mm➞**47 mm**

∗ Compared with the MB series, ø40, 50 mm stroke

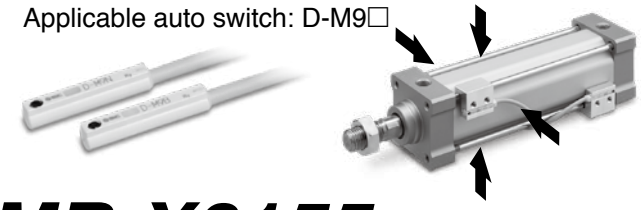
Cylinder cross-section shape





Small auto switches can be mounted on 4 surfaces. (Tie-rod mounting)

Applicable auto switch: D-M9□



Air cushion adjustment is not required due to the non-adjustable air cushion.

The built-in rubber bumper reduces the metal noise that occurs when the piston stops.

Cover shape that prevents foreign matter accumulation

MB-X3155

SMC

Specifications

Size	**40** (Equiv. ø40 piston area)	**63** (Equiv. ø63 piston area)
Action	Double acting, Single rod	
Proof pressure	1.0 MPa	
Max. operating pressure	0.7 MPa∗1	
Min. operating pressure	0.05 MPa	
Ambient and fluid temperatures	5 to 60°C	
Lubrication	Not required (Non-lube)	
Piston speed	50 to 500 mm/s∗1	
Stroke length tolerance	$^{+2.0}_{0}$ mm	
Cushion	Non-adjustable air cushion + rubber bumper	
Port size	Rc1/8	
Stroke	50 to 250 mm (25 mm increments)	
Mounting	None (Basic type only)	
Allowable kinetic energy	1.2 J	3.4 J

Depending on the system configuration selected, the specified speed may not be satisfied.

∗1 Maximum operating pressure and piston speed are different from the existing product (MB series).

Standard Strokes

[mm]

Size	Standard stroke
40	50, 75, 100, 125, 150, 175, 200, 225, 250
63	

Theoretical Output

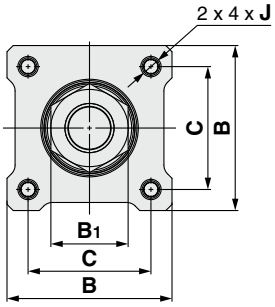
OUT IN

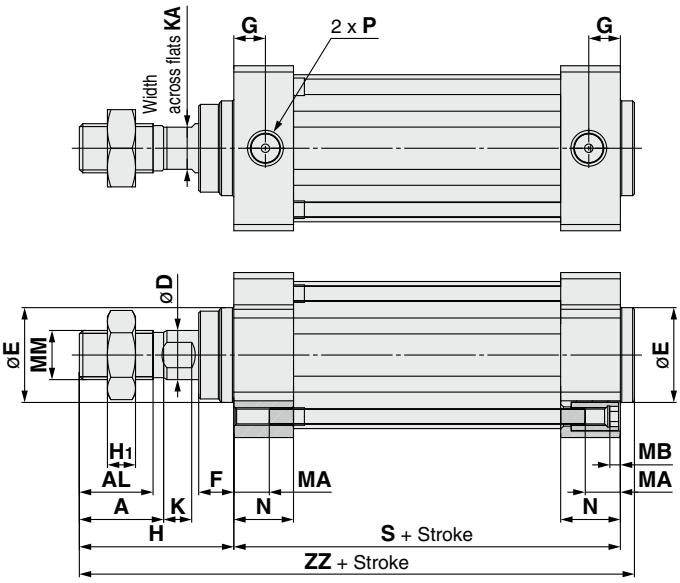
[N]

Size	Rod operating direction	Piston area [mm²]	Operating pressure [MPa]					
			0.2	0.3	0.4	0.5	0.6	0.7
40	IN	1108	222	332	443	554	665	776
	OUT	1262	252	379	505	631	757	884
63	IN	2858	572	857	1143	1429	1715	2000
	OUT	3112	622	934	1245	1556	1867	2178

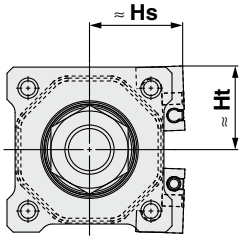
∗ Theoretical output [N] = Pressure [MPa] x Piston area [mm²]

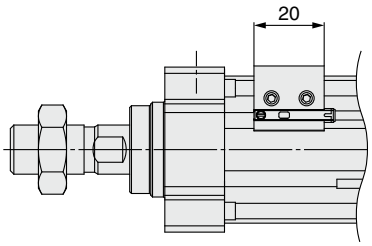
Dimensions





Auto switch bracket dimensions





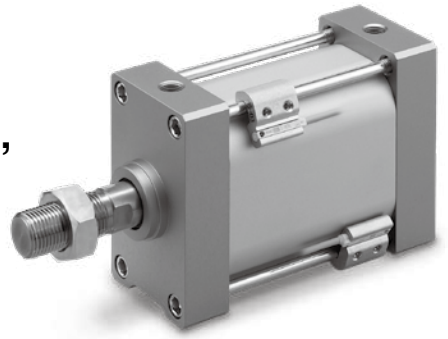
[mm]

Size	A	AL	B	B1	C	D	E	F	G	H	H1	J	K	KA	MA	MB	MM	N	P	S	ZZ	Hs	Ht
40	24	21	47	22	35	14	27	10	9	44	8	M5 x 0.8	8	12	9	3	M14 x 1.5	17	Rc1/8	60	108	26.5	23.8
63	35	32	69	27	53	18	31	8	11	51	11	M6 x 1.0	7	16	10	3.5	M18 x 1.5	20	Rc1/8	67	122	40.4	32.5

Air Cylinder/Double Force Type

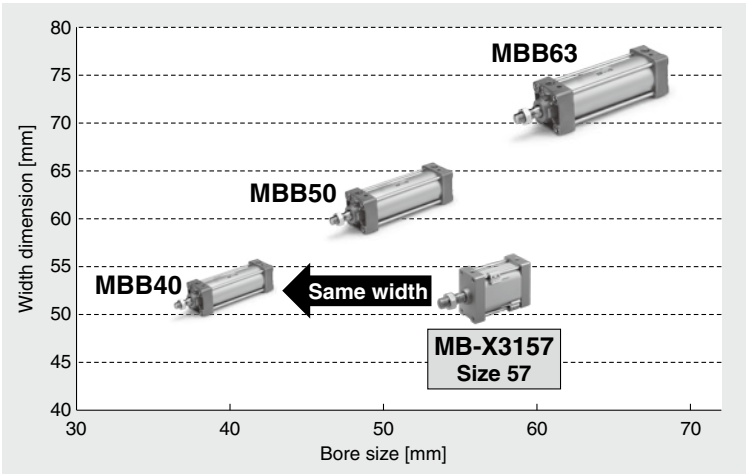
RoHS

Size: 57



This product is capable of providing double the force of the MB series, without changing the width, due to the adoption of a rectangular piston.

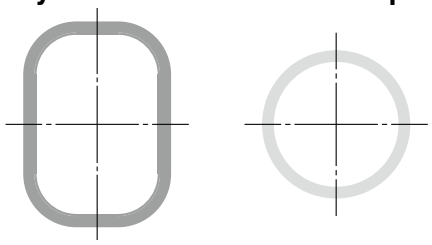
* Comparison with tandem cylinders satisfying the following conditions: a cylinder of the same width with double the theoretical output.
* The width of the MB standard model and the MB tandem cylinder are the same.



Size ø40 ø50 **57** ø63

Rectangular piston
Equiv. ø40 x 2 piston area

Cylinder cross-section shape



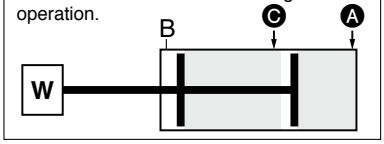
Overall length 47%*1 reduction 335 mm ➡ 179 mm

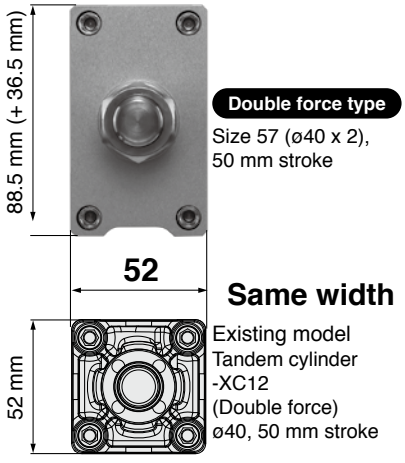
Weight 20%*1 reduction 1500 g ➡ 1200 g

*1 Compared with the existing tandem type cylinder -XC12 (double force), ø40, 50 mm stroke

Tandem cylinder (-XC12)/Double force

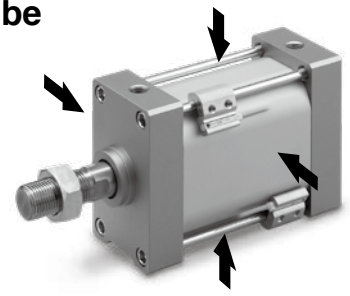
When air pressure is supplied to the A and C ports at the same time, double the force can be obtained for the extending operation.





Small auto switches can be mounted on 4 surfaces. (Tie-rod mounting)

Applicable auto switch: D-M9□



Air cushion adjustment is not required due to the non-adjustable air cushion.

The built-in rubber bumper reduces the metal noise that occurs when the piston stops.

Cover shape that prevents foreign matter accumulation

MB-X3157

SMC

Specifications

Size	**57** (Equiv. ø40 x 2 piston area)
Action	Double acting, Single rod
Proof pressure	1.0 MPa
Max. operating pressure	0.7 MPa*1
Min. operating pressure	0.05 MPa
Ambient and fluid temperatures	5 to 60°C
Lubrication	Not required (Non-lube)
Piston speed	50 to 500 mm/s*1
Stroke length tolerance	$^{+2.0}_{0}$ mm
Cushion	Non-adjustable air cushion + rubber bumper
Port size	Rc1/8
Stroke	50 to 250 mm (25 mm increments)
Mounting	None (Basic type only)
Allowable kinetic energy	2.0 J

Depending on the system configuration selected, the specified speed may not be satisfied.

*1 Maximum operating pressure and piston speed are different from the existing product (MB series).

Standard Strokes

[mm]

Size	Standard stroke
57	50, 75, 100, 125, 150, 175, 200, 225, 250

Theoretical Output

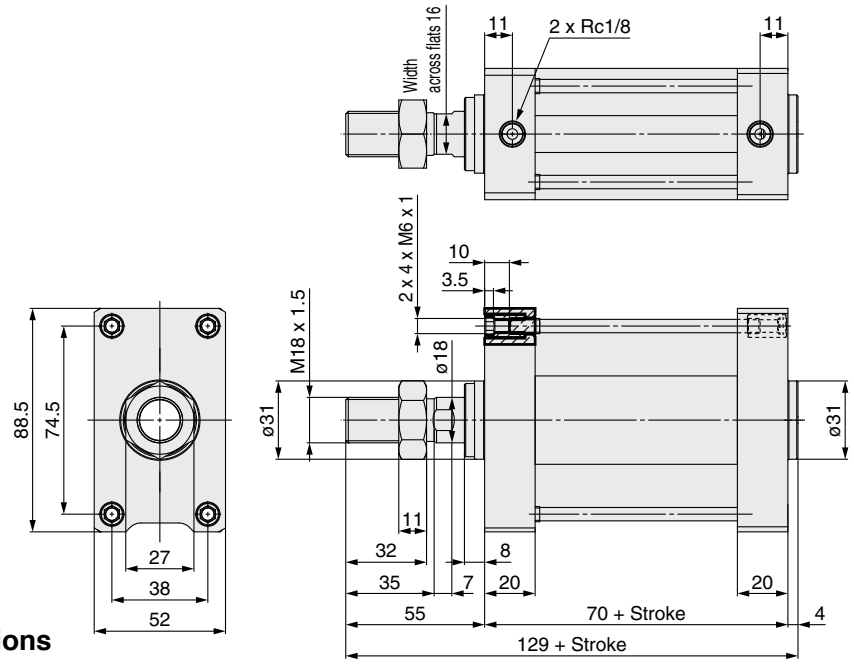
OUT IN

[N]

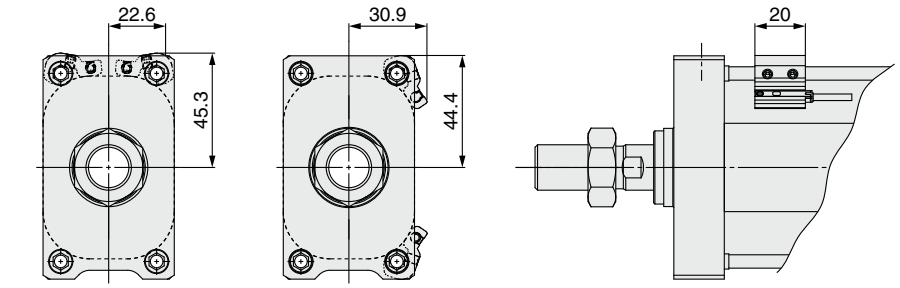
Size	Rod operating direction	Piston area [mm²]	Operating air pressure [MPa]					
			0.2	0.3	0.4	0.5	0.6	0.7
57	IN	2262	452	678	905	1131	1357	1583
	OUT	2516	503	755	1006	1258	1510	1761

* Theoretical output [N] = Pressure [MPa] x Piston area [mm²]

Dimensions



Auto switch bracket dimensions



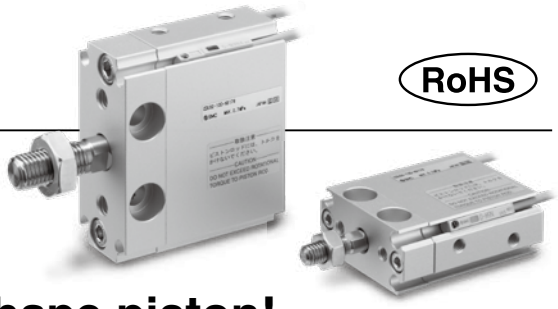
Auto switch mounting position: Port surface

Auto switch mounting position: Side surface

Free Mount Cylinder

Compact Type

RoHS



Size: 20, 32

Now, more compact and lightweight due to the adoption of a rectangular shape piston!

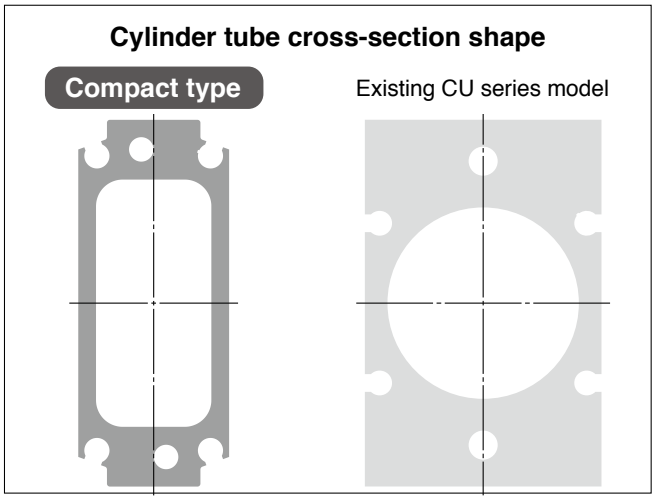
Weight **49% reduction**
389 g→197 g

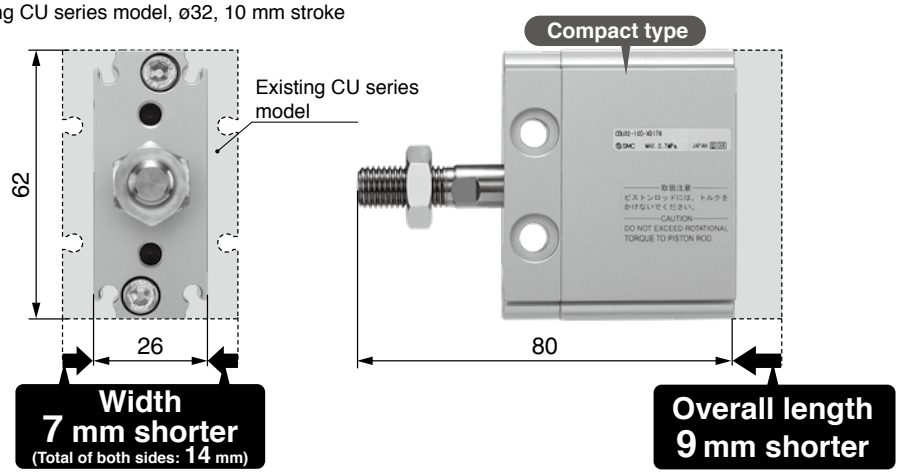
Width **35% reduction**
40 mm→26 mm

Overall length **10% reduction**
89 mm→80 mm

∗ Compared with the existing CU series model, ø32, 10 mm stroke

Cylinder tube cross-section shape

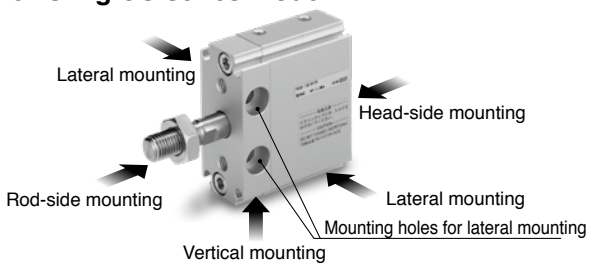




Mounting is possible from 5 directions.

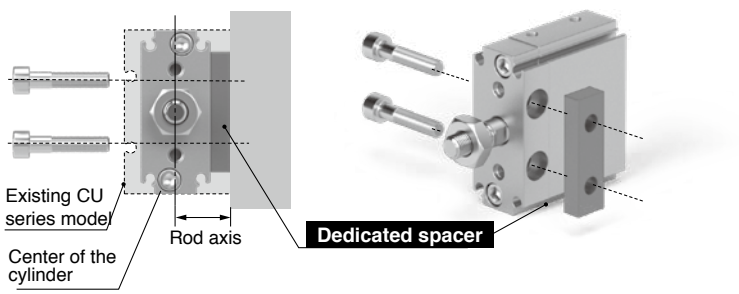
(The same as the existing CU series model)

The pitch and diameter of the mounting holes for lateral mounting are the same as those of the existing CU series model.



The dedicated spacer allows for interchangeable height when laterally mounted.

When the dedicated spacer is used, the distance to the rod axis is the same as that on the existing model.



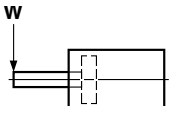
CDU-X3178

SMC

Specifications

Size	20 (Equiv. ø20 piston area)	32 (Equiv. ø32 piston area)
Fluid	Air	
Proof pressure	1.05 MPa	
Max. operating pressure	0.7 MPa	
Min. operating pressure	0.05 MPa	
Ambient and fluid temperatures	–10 to 60°C (No freezing)	
Lubrication	Non-lube	
Piston speed	50 to 500 mm/s	
Cushion	Rubber bumper	
Rod end thread	Male thread	
Stroke length tolerance	$^{+1.0}_{0}$ mm	
Rod non-rotating accuracy	±1°	±0.8°

∗ This is a non-rotating rod type cylinder.

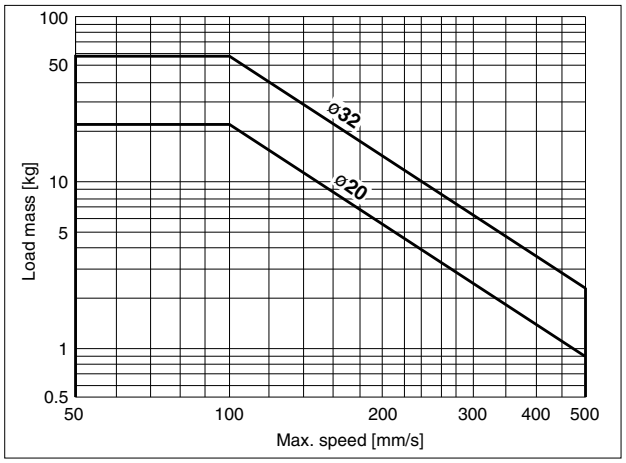


Allowable Lateral Load at Rod End

[N]

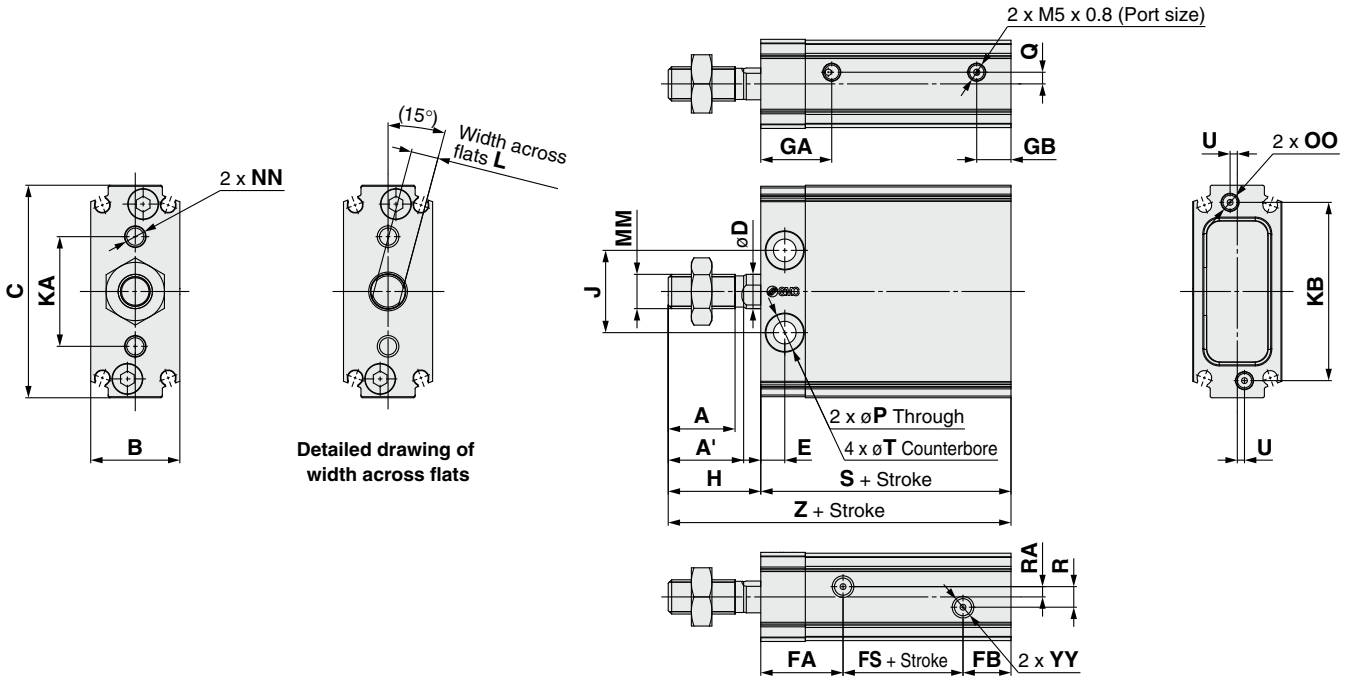
Size	Stroke [mm]							
	5	**10**	**15**	**20**	**25**	**30**	**40**	**50**
20	3.0	2.7	2.5	2.3	2.1	2.0	1.8	1.6
32	7.1	6.6	6.1	5.7	5.4	5.1	4.6	4.1

Operating Speed



Be sure to connect a speed controller to the cylinder and adjust its speed to 5 0 0 mm/s or less. If a load is to be attached to the end of the rod, adjust the speed to the max. speed shown in the graph above or less, in accordance with the load mass.

Dimensions



Size	A	A'	B	C	D	E	FA	FB	FS	GA	GB	H	J	KA	KB	L	MM
20	12	14	19	40	6	5.3	18.6	10.5	9	18	9.8	19	16	20.2	32.5	5	M6 x 1.0
32	19.5	22	26	62	10	7	24	14	5	20.7	10	27	24	32	52	8	M10 x 1.25

Size	NN	OO	P	Q	R	RA	T	U	YY	S	Z
20	M4 x 0.7 Depth 8	M4 x 0.7 Depth 5	5.5	1	3	1.5	9.3 Depth 5.4	1.3	M4 x 0.7 Depth 5	38	57
32	M6 x 1.0 Depth 12.5	M5 x 0.8 Depth 8	6.6	3.4	6	3	11 Depth 6.5	2.1	M6 x 1 Depth 6	43	70

⚠ Caution

When securing a workpiece to the end of the piston rod, ensure that the piston rod is fully retracted, and place a wrench on the portion of the rod that protrudes. Then, tighten without applying tightening torque to the piston rod.

Compact Guide Cylinder/ Rectangular Piston Type

RoHS

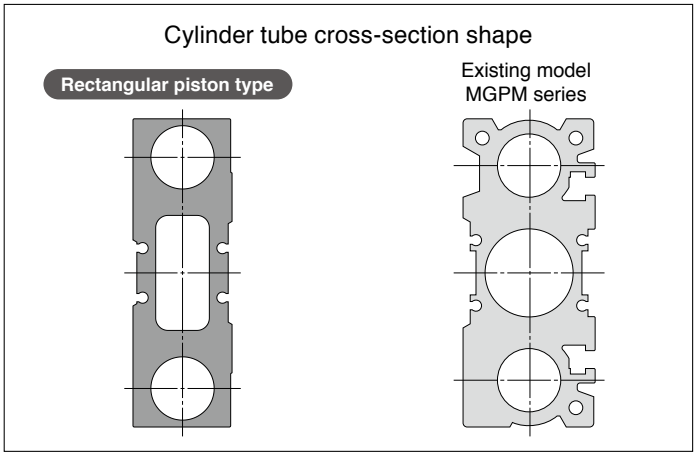
Size: 25, 32

Now more lightweight and compact due to the adoption of a rectangular piston

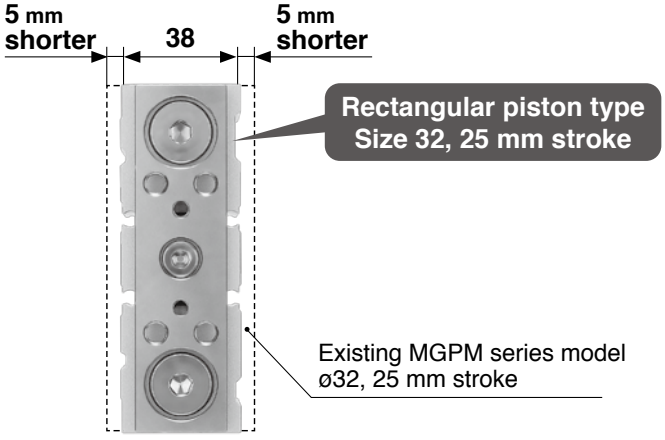
Width	21%*1 reduction 48 mm → 38 mm
Weight	37%*2 reduction 3.29 kg → 2.07 kg
Overall length	7%*1 reduction 100 mm → 93 mm

*1 Compared with the existing MGPM series model, ø32, 25 mm stroke
*2 Compared with the existing MGPM series model, ø32, 150 mm stroke

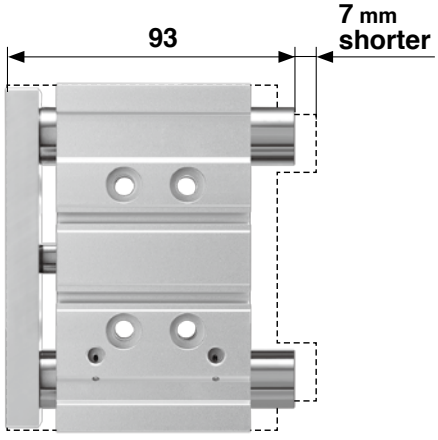
The allowable lateral load and the allowable kinetic energy are the same as those of the existing MGP series model.



Shortened width

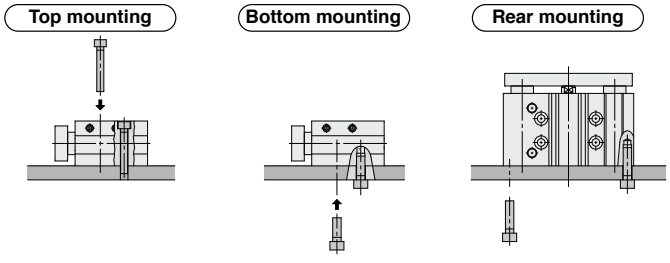


Shortened overall length



The allowable rotational torque of the plate and the non-rotating accuracy are the same as those of the existing MGP series model.

Mounting is possible from 3 directions.



MGPM-X3159

SMC

Specifications

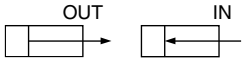
Size	**25** (Equiv. ø**25** piston area)	**32** (Equiv. ø**32** piston area)
Action	Double acting	
Fluid	Air	
Proof pressure	1.05 MPa	
Max. operating pressure	0.7 MPa	
Min. operating pressure	0.1 MPa	
Ambient and fluid temperatures	5 to 60°C	
Piston speed	50 to 500 mm/s	
Cushion	Rubber bumper on both ends	
Lubrication	Not required (Non-lube)	
Stroke length tolerance	$^{+1.5}_{0}$ mm	
Allowable kinetic energy	0.18 J	0.29 J
Allowable lateral load (at 50 stroke)	5.0 kg	16.7 kg

Standard Strokes

[mm]

Size	Standard stroke
25	20, 30, 50, 100, 150
32	25, 50, 75, 100, 150

Theoretical Output

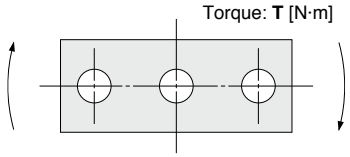


[N]

Size	Rod size [mm]	Operating direction	Piston area [mm^2]	Operating pressure [MPa]								
				0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
25	10	OUT	491	98	147	196	245	295	344	393	442	491
		IN	412	82	124	165	206	247	289	330	371	412
32	14	OUT	804	161	241	322	402	483	563	643	724	804
		IN	650	130	195	260	325	390	455	520	585	650

∗ Theoretical output [N] = Pressure [MPa] x Piston area [mm^2]

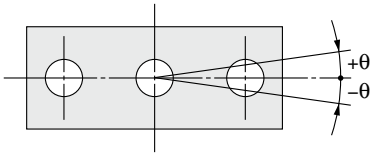
Allowable Rotational Torque of Plate



[N·m]

Size	Stroke [mm]						
	20	25	30	50	75	100	150
25	1.76	—	1.55	1.25	—	2.57	2.02
32	—	6.35	—	5.13	5.69	4.97	3.98

Non-rotating Accuracy of Plate

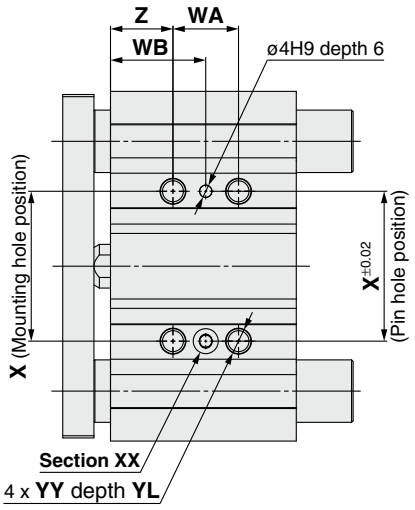


Non-rotating accuracy θ when retracted and when no load is applied should be not more than the values shown in the table.

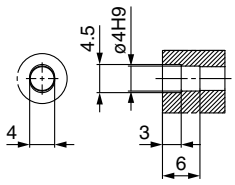
Size	Non-rotating accuracy θ
25	±0.06°
32	±0.05°

Dimensions

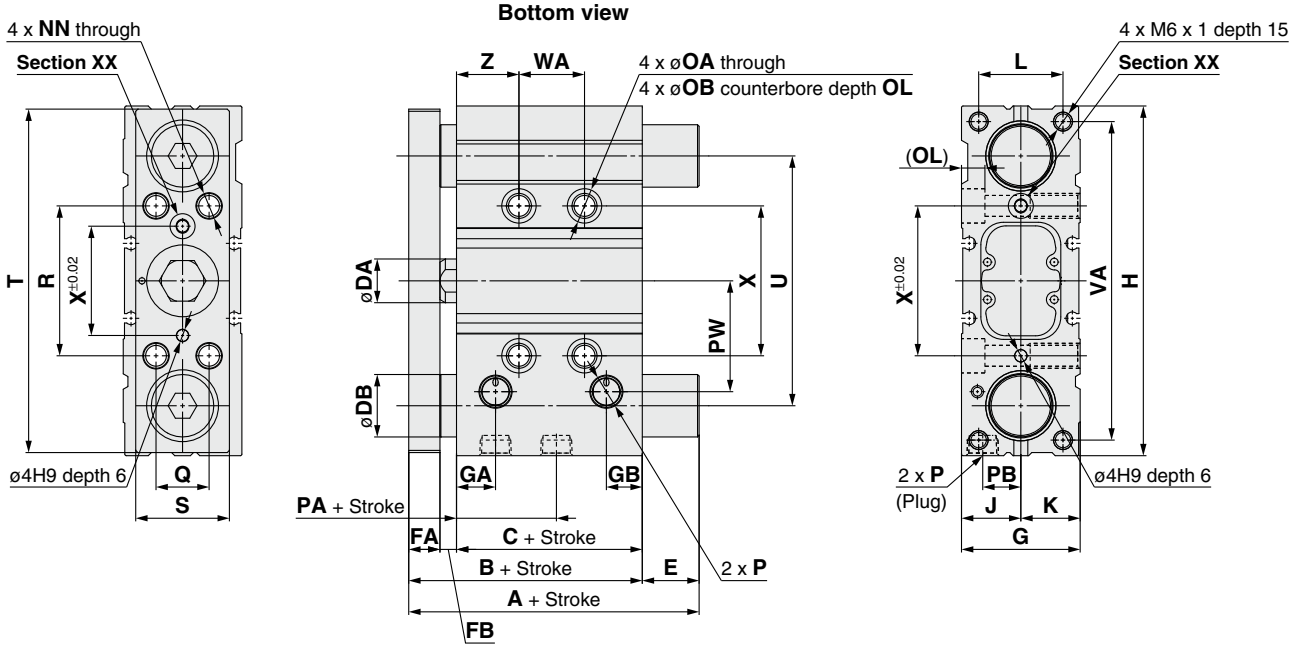
MGPM□-□-X3159



Bottom view



Detailed figure of XX section



[mm]

Size	Standard stroke	A		B	C	DA	DB	E		FA	FB	G	GA	GB	H	J	K
		50 st or less	Over 50 st 150 st or less					50 st or less	Over 50 st 150 st or less								
25	20, 30, 50, 100, 150	46	75.5	46	31.7	10	16	0	29.5	9	5.3	32	10.5	9.2	93	16	16
32	25, 50, 75, 100, 150	68	86.5	49.8	34.5	14	20	18.2	36.7	10	5.3	38	12.5	11.5	112	19	19

Size	L	NN	OA	OB	OL	P	PA	PB	PW	Q	R	S	T	U	VA	X	YY	YL	Z
25	22	M6 x 1	5.4	9.5	5.5	M5 x 0.8	9	11	26	13	39	25	91	66	84	39	M6 x 1	12	18
32	27	M8 x 1.25	6.7	11	7.5	Rc1/8	7	12	35.5	17	48	30	110	80	102	48	M8 x 1.25	16	20

Size	WA			WB		
	30 st or less	Over 30 st 100 st or less	Over 100 st 150 st or less	30 st or less	Over 30 st 100 st or less	Over 100 st 150 st or less
25	17	37	113	26.5	36.5	74.5

Size	WA				WB			
	25 st or less	Over 25 st 50 st or less	Over 50 st 100 st or less	Over 100 st 150 st or less	25 st or less	Over 25 st 50 st or less	Over 50 st 100 st or less	Over 100 st 150 st or less
32	21	45	49	125	30.5	42	44	82

UNIT CONVERSIONS

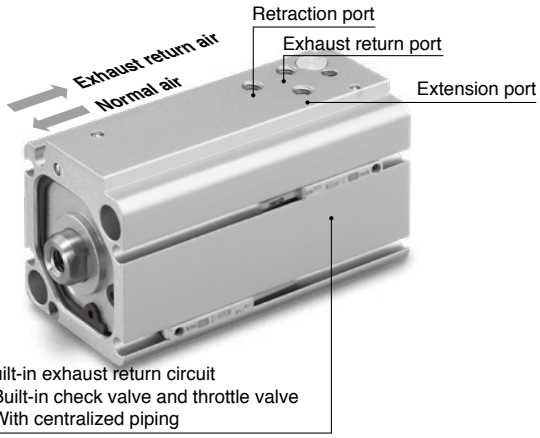
	unit	conversion	result
length	m	x 3.28	ft
	mm	x 0.04	in
mass	g	x 0.04	oz
volume	cm^3	÷ 16.387	in^3
	L	x 61.024	in^3
speed	mm/s	÷ 25.4	in/s
pressure	MPa	x 145	psi
	kPa	÷ 6.895	psi
temperature	°C	x1.8 then add 32	°F
torque	N·m	x 0.738	ft-lb
force	N	÷ 4.448	lbf
flow	L/min	÷ 28.317	cfm

Compact Cylinder Air-saving Type/ Polygonal Piston Square Type

RoHS

Size: 32, 40, 50

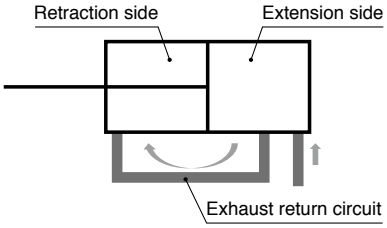
Air saving and more compact!
Improvements due to the adoption of a built-in exhaust return circuit and a polygonal piston

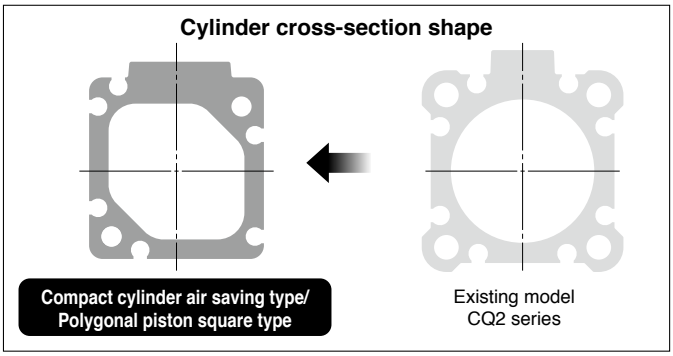


Air saving (Built-in exhaust return circuit)

Air consumption
Max. 46% reduction

- **Uses the air exhausted from the extension side to supply the retraction side, thus reusing the air (Built-in exhaust return circuit)**
- **Reduce air consumption just by piping to the product**

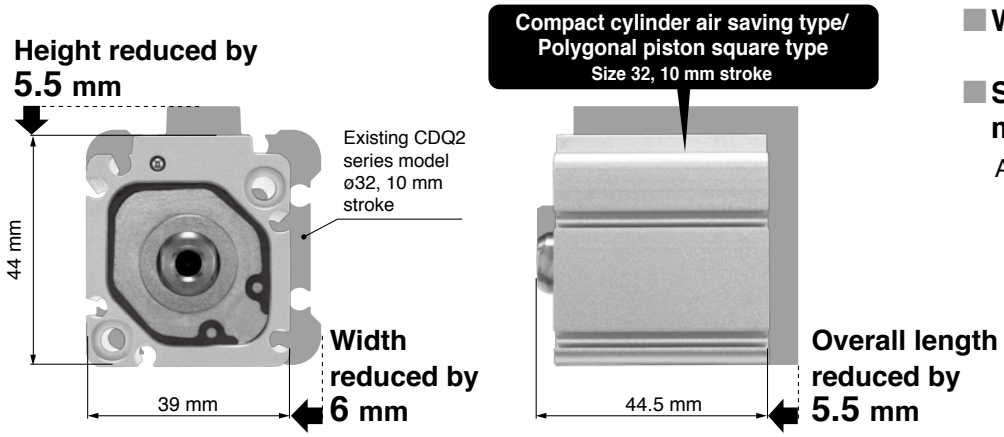




Compact (Now with a polygonal piston)

Width	Height	Overall length
13%*1 reduction	11%*1 reduction	11%*1 reduction
45 mm ➡ 39 mm	49.5 mm ➡ 44 mm	50 mm ➡ 44.5 mm

*1 Compared with the CDQ2 series, ø32, 10 mm stroke
The overall length of size 50 is 1 mm longer than that of the existing CQ2 model.



- **With rubber bumper**
- **Small auto switches can be mounted on 4 surfaces.**
  Applicable auto switch: **D-M9□**

CDQ2B-X3205

SMC

Specifications

Size		32 (Equiv. ø32 piston area)	40 (Equiv. ø40 piston area)	50 (Equiv. ø50 piston area)
Action		Double acting, Single rod		
Fluid		Air		
Proof pressure		1.0 MPa		
Max. operating pressure		0.7 MPa*3		
Min. operating pressure		0.4 MPa		
Ambient and fluid temperatures		5 to 60°C (No freezing)		
Lubrication		Not required (Non-lube)		
Piston speed	Extending operation	50 to 500 mm/s	50 to 300 mm/s*3	
	Retracting operation	50 to 300 mm/s	50 to 200 mm/s*3	
Cushion		Rubber bumper		
Stroke length tolerance		0 to +1.3 mm*1		
Port size	Extension port	M5 x 0.8		Rc1/8
	Retraction port	M5 x 0.8		Rc1/8
	Exhaust return port	M5 x 0.8		
Mounting orientation		Horizontal lateral, Vertical upward		
Min. theoretical output*2	Retracting operation	35 N	55 N	85 N
Allowable kinetic energy		0.15 J	0.26 J	0.46 J
Allowable lateral load at rod end (At 30 st)		5.1 N	10.2 N	17.3 N
Mounting		Basic type (Through-hole)		

*1 Stroke length tolerance does not include the amount of bumper change.
*2 Be aware that the cylinder output is reduced during the retraction operation.
The cylinder output values in the table above are the min. values. Therefore, depending on the operating conditions, the output may be greater.
Please contact your local sales representative for more details.

Depending on the system configuration selected, the specified speed may not be satisfied.
*3 Maximum operating pressure and piston speed are different from the existing product (CQ2 series).

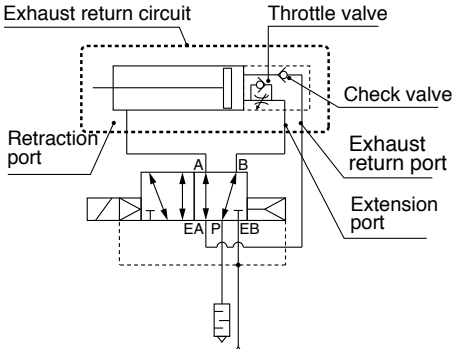
For sizes 32 and 40, the positions of the switch mounting grooves vary slightly from those of the polygonal piston standard type.

Standard Strokes

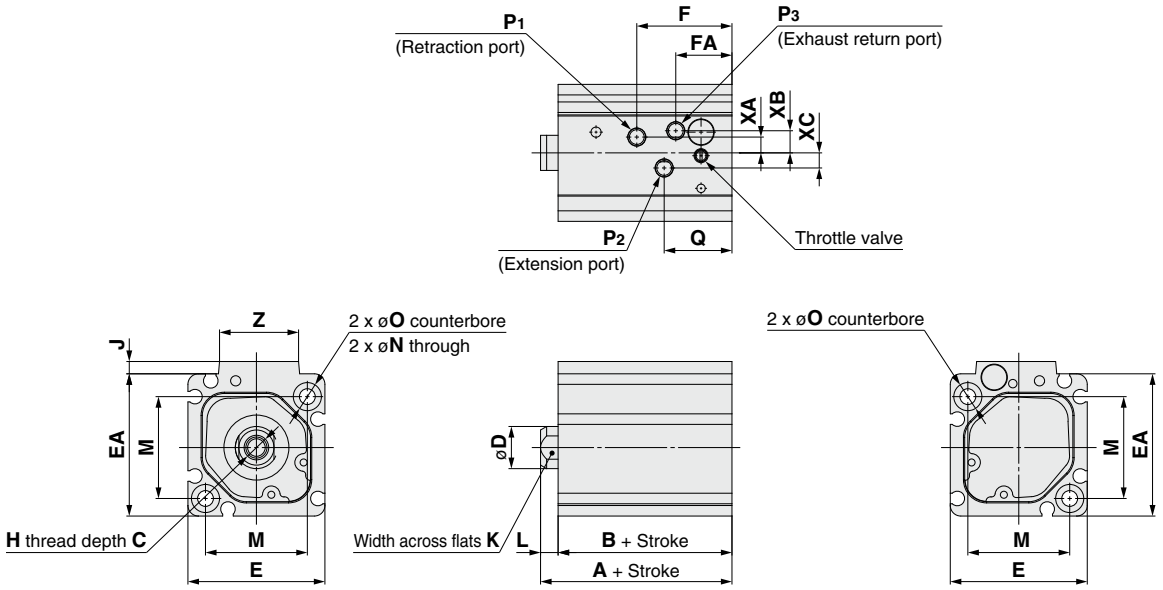
[mm]

Size	Standard stroke
32	10, 20, 30, 40, 50
40	
50	

Circuit Diagram



Dimensions



[mm]

Size	A	B	C	D	E	EA	F		FA	H	J	K	L	M	N	O
							10 mm stroke	20 to 50 mm stroke								
32	34.5	29.5	12	12	39	40.5	28.7	27.1	16	M6 x 1.0	3.5	10	5	29	4.5	8 depth 6
40	42	36	13	14	46	48.2	30.8	27.9	16.9	M8 x 1.25	2.8	12	6	35	5.5	9 depth 7
50	49.5	41.5	15	18	55	58.2	33.6	33.2	18.7	M10 x 1.5	2.3	16	8	42	6.6	11 depth 8

Size	P1	P2	P3	Q	XA		XB	XC	Z
					10 mm stroke	20 to 50 mm stroke			
32	M5 x 0.8	M5 x 0.8	M5 x 0.8	19.3	5.9	4.5	6.3	4.3	22.5
40	M5 x 0.8	M5 x 0.8	M5 x 0.8	20.2	5.2	4.6	5.6	5.4	23.5
50	Rc1/8	Rc1/8	M5 x 0.8	21.2	1.2	3	5	10.5	28

Handling

⚠Warning

1. Residual pressure will remain in the exhaust return piping of this circuit.

To completely exhaust all of the residual pressure, install a 3 -port valve for residual pressure exhaust in the exhaust return piping.

2. The adjustment range for the throttle valve for retraction operation speed adjustment is, starting from the fully closed position, within the number of rotations shown in the table below.

Bore size [mm]	Number of rotations
32, 40	4.5 rotations or less
50	3 rotations or less

To adjust the throttle valve, use a 3 mm flat head watchmaker's screwdriver.

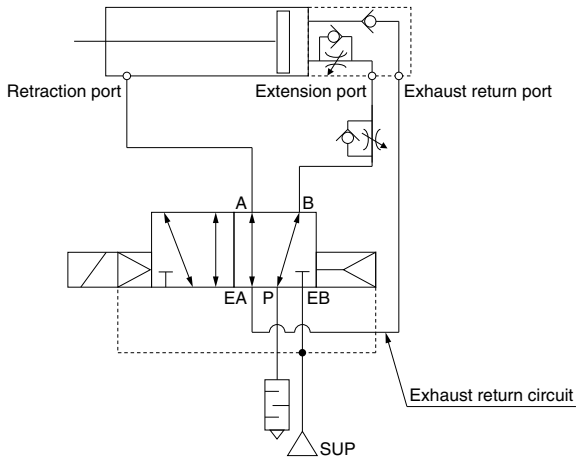
The adjustment range for the throttle valve is, between the fully closed position and the open position, within the range indicated in the table above.

A retaining mechanism prevents the throttle valve from slipping out; however, it may spring out during operation if it is rotated beyond the range shown above.

⚠Caution

1. Pipe according to the circuit diagram shown below when using this cylinder.

Circuit diagram



2. For exhaust return, the selection and installation of suitable fittings, tubes, and devices is required. Please contact your local sales representative for more details.

3. For the solenoid valve, select a single unit (body ported or base ported) external pilot type.

4. Follow the instructions below to adjust the speed of this cylinder.

Extending operation: Use the speed controller (meter-in) installed between the extension port and the solenoid valve.

Retracting operation: Use the built-in throttle valve on the cylinder.

5. As the retracting operation of this cylinder is performed with low pressure and low thrust, refrain from applying more external force than necessary.

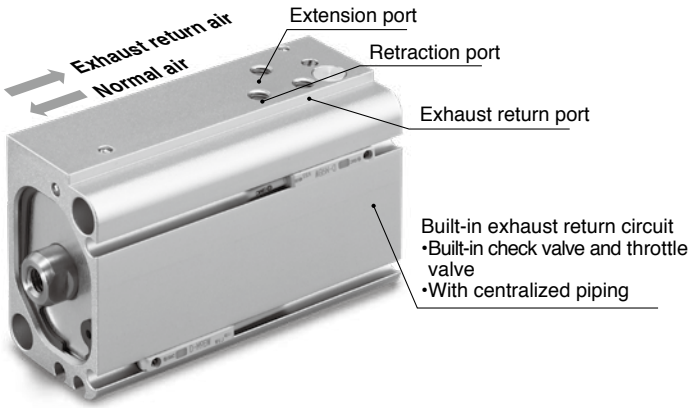
6. Pivot brackets cannot be used.

Compact Cylinder Air-saving Type/ Polygonal Piston Rectangle Type

RoHS

Size: 32, 40, 50

Air saving and more compact! Improvements due to the adoption of a built-in exhaust return circuit and a polygonal piston

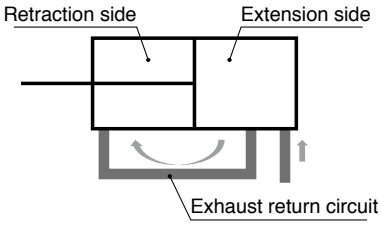


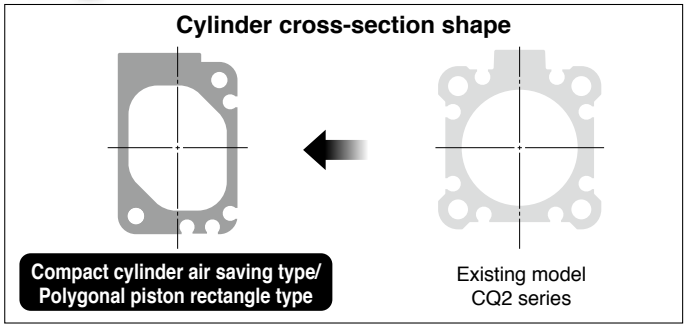
Air saving (Built-in exhaust return circuit)

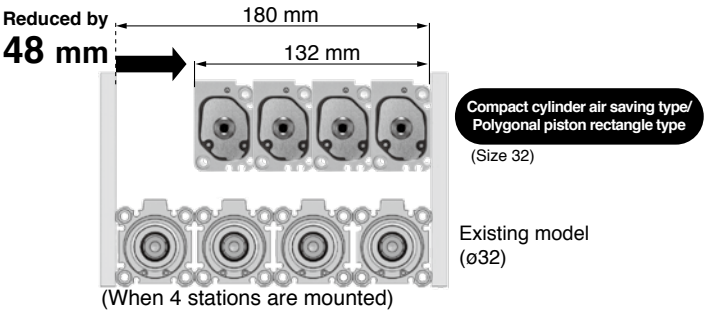
Air consumption

Max. 46% reduction

- **Uses the air exhausted from the extension side to supply the retraction side, thus reusing the air (Built-in exhaust return circuit)**
- **Reduce air consumption just by piping to the product**



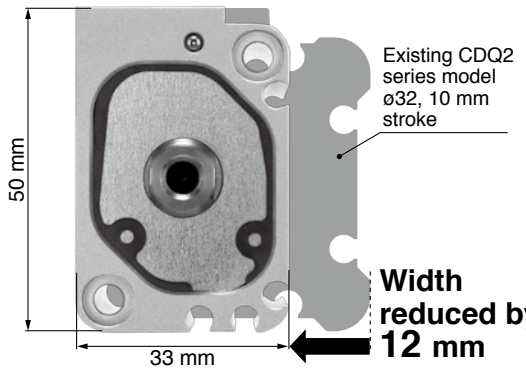


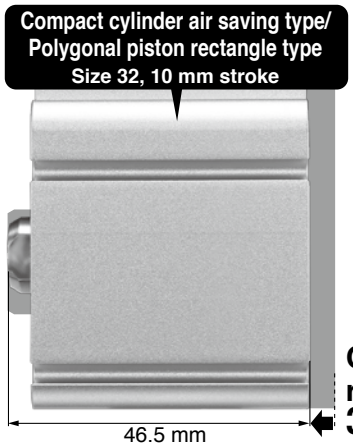


Compact (Now with a polygonal piston)

Width	Overall length
27%*1 reduction	7%*1 reduction
45 mm → 33 mm	50 mm → 46.5 mm

*1 Compared with the CDQ2 series, ø32, 10 mm stroke
The overall length of size 50 is 3 mm longer than that of the existing CQ2 model.





- **With rubber bumper**
- **Small auto switches can be mounted.**

  Applicable auto switch: **D-M9□**
  Sizes 32, 40: Mounting on 2 surfaces
  Size 50: Mounting on 3 surfaces
  (For details, refer to the dimensions.)

CDQ2B-X3206

SMC

Specifications

Size		32 (Equiv. ø32 piston area)	40 (Equiv. ø40 piston area)	50 (Equiv. ø50 piston area)
Action		Double acting, Single rod		
Fluid		Air		
Proof pressure		1.0 MPa		
Max. operating pressure		0.7 MPa*3		
Min. operating pressure		0.4 MPa		
Ambient and fluid temperatures		5 to 60°C (No freezing)		
Lubrication		Not required (Non-lube)		
Piston speed	Extending operation	50 to 500 mm/s	50 to 300 mm/s*3	
	Retracting operation	50 to 300 mm/s	50 to 200 mm/s*3	
Cushion		Rubber bumper		
Stroke length tolerance		0 to +1.3 mm*1		
Port size	Extension port	M5 x 0.8		Rc1/8
	Retraction port	M5 x 0.8		Rc1/8
	Exhaust return port	M5 x 0.8		
Mounting orientation		Horizontal lateral, Vertical upward		
Min. theoretical output*2	Retracting operation	35 N	55 N	85 N
Allowable kinetic energy		0.15 J	0.26 J	0.46 J
Allowable lateral load at rod end (At 30 st)		4.9 N	9.9 N	16.7 N
Mounting		Basic type (Through-hole)		

*1 Stroke length tolerance does not include the amount of bumper change.
*2 Be aware that the cylinder output is reduced during the retraction operation.
The cylinder output values in the table above are the min. values. Therefore, depending on the operating conditions, the output may be greater.
Please contact your local sales representative for more details.

Depending on the system configuration selected, the specified speed may not be satisfied.
*3 Maximum operating pressure and piston speed are different from the existing product (CQ2 series).

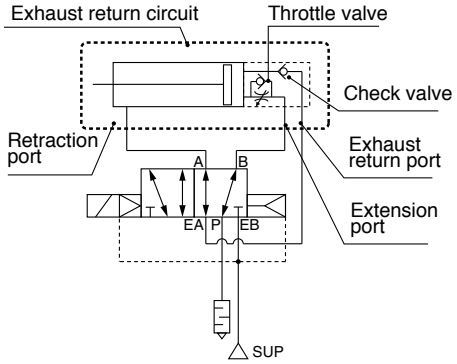
For all bore sizes, the positions of the switch mounting grooves vary slightly from those of the polygonal piston standard type.

Standard Strokes

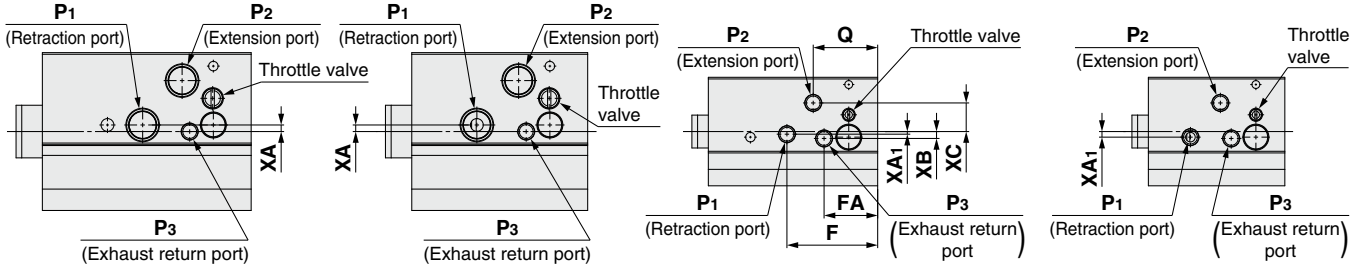
[mm]

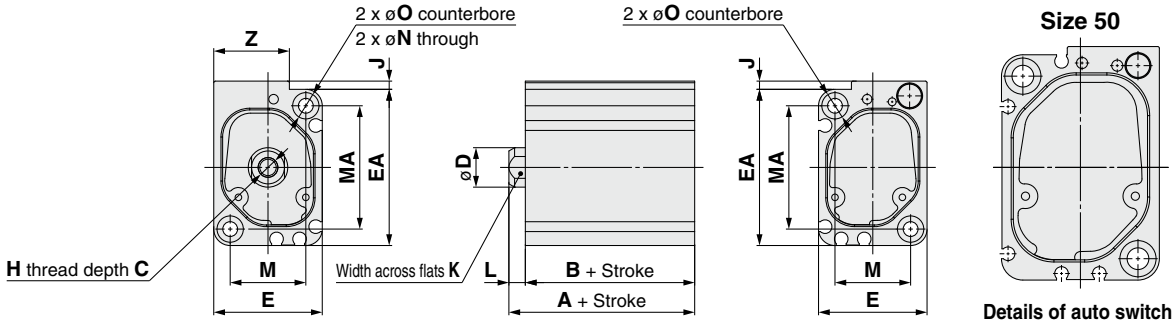
Size	Standard stroke
32	10, 20, 30, 40, 50
40	
50	

Circuit Diagram



Dimensions





[mm]

Size	A	B	C	D	E	EA	F		FA	H	J	K	L	M	MA	N
							10 mm stroke	20 to 50 mm stroke								
32	36.5	31.5	12	12	33	47.5	28.7	27.6	16.3	M6 x 1.0	2.5	10	5	23	37.5	4.5
40	44	38	13	14	39	56.5	31	27.9	16.9	M8 x 1.25	3	12	6	28	45.5	5.5
50	51.5	43.5	15	18	48	68.5	33.7	33	18.7	M10 x 1.5	2.5	16	8	35	55.5	6.6

Size	O	P1	P2	P3	Q	XA		XA1		XB	XC	Z
						10 mm stroke	20 to 50 mm stroke	10 mm stroke	20 to 50 mm stroke			
32	8 depth 6	M5 x 0.8	M5 x 0.8	M5 x 0.8	19.6	—	—	1.7	0.8	2.1	8.7	23
40	9 depth 7	M5 x 0.8	M5 x 0.8	M5 x 0.8	20.2	—	—	0.5	0	0.9	10.3	25
50	11 depth 8	Rc1/8	Rc1/8	M5 x 0.8	21	2	2	—	—	0	15.5	28

Handling

⚠Warning

1. Residual pressure will remain in the exhaust return piping of this circuit.

To completely exhaust all of the residual pressure, install a 3 -port valve for residual pressure exhaust in the exhaust return piping.

2. The adjustment range for the throttle valve for retraction operation speed adjustment is, starting from the fully closed position, within the number of rotations shown in the table below.

Bore size [mm]	Number of rotations
32, 40	4.5 rotations or less
50	3 rotations or less

To adjust the throttle valve, use a 3 mm flat head watchmaker's screwdriver.

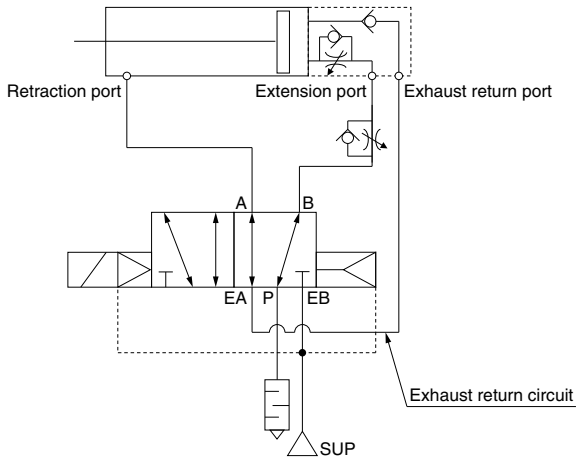
The adjustment range for the throttle valve is, between the fully closed position and the open position, within the range indicated in the table above.

A retaining mechanism prevents the throttle valve from slipping out; however, it may spring out during operation if it is rotated beyond the range shown above.

⚠Caution

1. Pipe according to the circuit diagram shown below when using this cylinder.

Circuit diagram



2. For exhaust return, the selection and installation of suitable fittings, tubes, and devices is required. Please contact your local sales representative for more details.

3. For the solenoid valve, select a single unit (body ported or base ported) external pilot type.

4. Follow the instructions below to adjust the speed of this cylinder.

Extending operation: Use the speed controller (meter-in) installed between the extension port and the solenoid valve.

Retracting operation: Use the built-in throttle valve on the cylinder.

5. As the retracting operation of this cylinder is performed with low pressure and low thrust, refrain from applying more external force than necessary.

6. Pivot brackets cannot be used.

UNIT CONVERSIONS

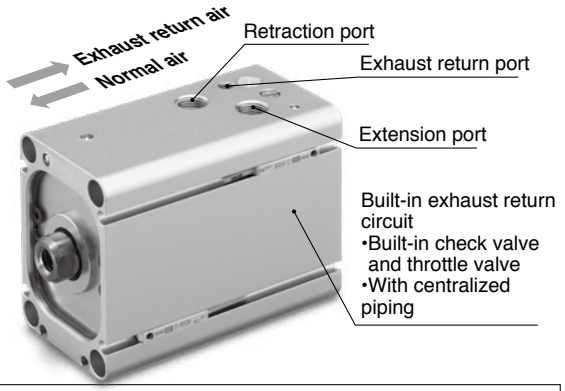
	unit	conversion	result
length	m	x 3.28	ft
	mm	x 0.04	in
mass	g	x 0.04	oz
volume	cm^3	÷ 16.387	in^3
	L	x 61.024	in^3
speed	mm/s	÷ 25.4	in/s
pressure	MPa	x 145	psi
	kPa	÷ 6.895	psi
temperature	°C	x1.8 then add 32	°F
torque	N·m	x 0.738	ft-lb
force	N	÷ 4.448	lbf
flow	L/min	÷ 28.317	cfm

Compact Cylinder Air-saving Type/ Double Force Type

RoHS

Size: 45, 57, 71

Air saving and more compact! Improvements due to the adoption of a built-in exhaust return circuit and a polygonal piston (new size)

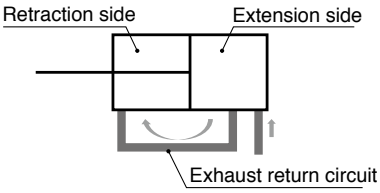


Air saving (Built-in exhaust return circuit)

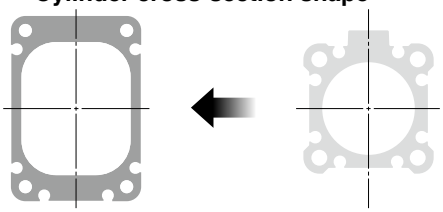
Air consumption

Max. 46% reduction

- **Uses the air exhausted from the extension side to supply the retraction side, thus reusing the air (Built-in exhaust return circuit)**
- **Reduce air consumption just by piping to the product**

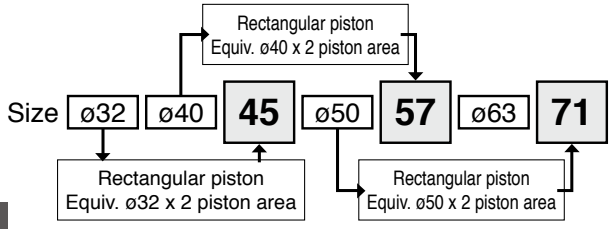


Cylinder cross-section shape



Compact cylinder air saving type/ Double force type

Existing model CQ2 series



Compact (Now with a polygonal piston)

This product is capable of providing double the force of the CQ2 series without changing the width.

Overall length

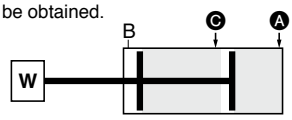
50% *1 **reduction**

130.5 mm ➞ **65.3 mm**

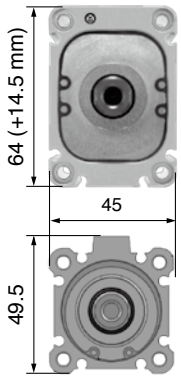
*1 Compared with the existing model (CDQ2B32-25+0DCZ-XC11 Dual stroke cylinder)

Dual stroke cylinder/ Double force

When air pressure is supplied to the A and C ports at the same time, double the force can be obtained.



Width comparison



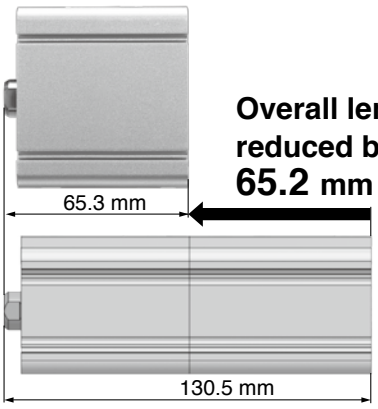
Compact cylinder air saving type/ Double force type

Size 45 (ø32 x 2), 25 mm stroke

Same width

Existing model
Dual stroke cylinder (Double force)
ø32, 25 mm stroke

Overall length comparison



Overall length reduced by 65.2 mm

- **With rubber bumper**
- **Small auto switches can be mounted.**

Applicable auto switch: **D-M9□**

Size 45: Mounting on 3 surfaces

Sizes 57, 71: Mounting on 4 surfaces

(For details, refer to the dimensions.)

CDQ2B-X3207

SMC

Specifications

Size		45 (Equiv. ø32 x 2 piston area)	57 (Equiv. ø40 x 2 piston area)	71 (Equiv. ø50 x 2 piston area)
Action		Double acting, Single rod		
Fluid		Air		
Proof pressure		1.0 MPa		
Max. operating pressure		0.7 MPa		
Min. operating pressure		0.4 MPa		
Ambient and fluid temperatures		5 to 60°C (No freezing)		
Lubrication		Not required (Non-lube)		
Piston speed	**Extending operation**	50 to 300 mm/s*3		
	Retracting operation	50 to 200 mm/s*3		
Cushion		Rubber bumper		
Stroke length tolerance		0 to +1.3 mm*1		
Port size	**Extension port**	Rc1/8		
	Retraction port	Rc1/8		
	Exhaust return port	M5 x 0.8	Rc1/8	
Mounting orientation		Horizontal lateral, Vertical upward		
Min. theoretical output*2	**Retracting operation**	73 N	113 N	177 N
Allowable kinetic energy		0.26 J	0.46 J	0.77 J
Allowable lateral load at rod end (At 25 st)		12.6 N	22.3 N	35.8 N
Mounting		Basic type (Through-hole)		

*1 Stroke length tolerance does not include the amount of bumper change.
*2 Be aware that the cylinder output is reduced during the retraction operation.
The cylinder output values in the table above are the min. values. Therefore, depending on the operating conditions, the output may be greater.
Please contact your local sales representative for more details.

Depending on the system configuration selected, the specified speed may not be satisfied.
*3 Maximum operating pressure and piston speed are different from the existing product (CQ2 series).

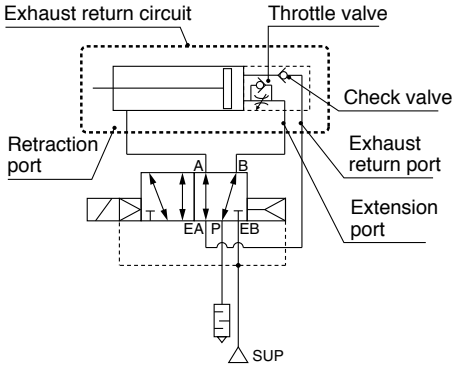
For sizes 45 and 57, the positions of the switch mounting grooves vary slightly from those of the polygonal piston standard type.

Standard Strokes

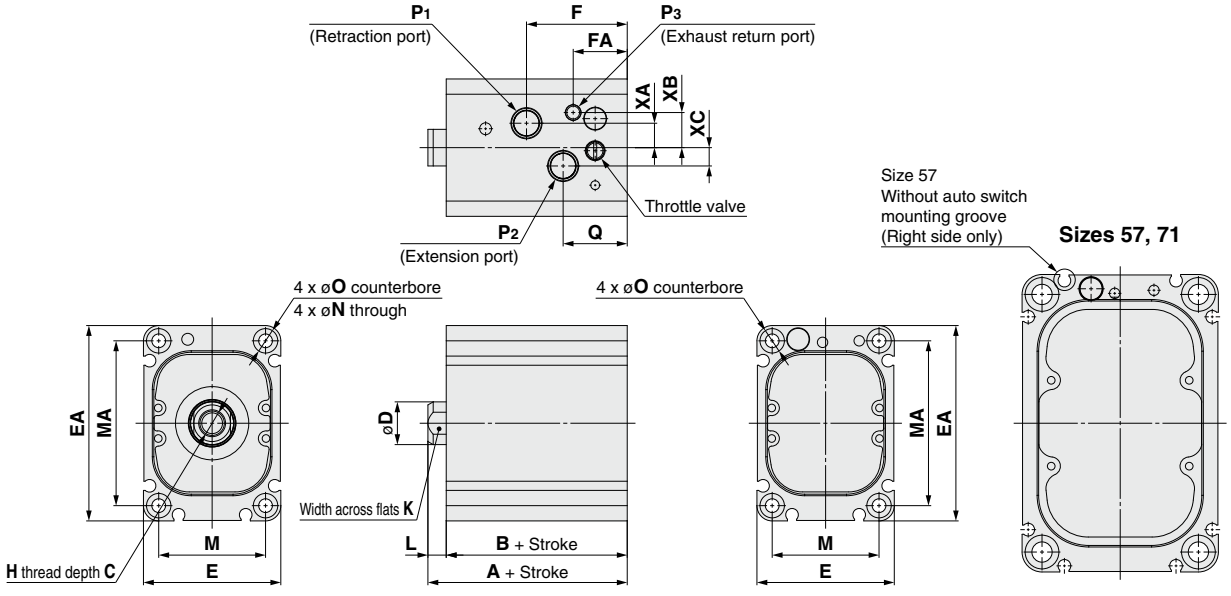
[mm]

Size	Standard stroke
45	25, 50
57	
71	

Circuit Diagram



Dimensions



Details of auto switch mounting grooves

[mm]

Size	A	B	C	D	E	EA	F		FA	H	K	L	M	MA	N	O
							25 mm stroke	50 mm stroke								
45	40.3	34.3	13	14	45	64	—	33	17.7	M8 x 1.25	12	6	35	54	4.5	8 depth 6
57	48.3	40.3	15	18	52	81	49.7	46.1	22.6	M10 x 1.5	16	8	41	70	5.5	9 depth 7
71	53.6	44.6	21	22	64	97	52.7	45.3	24.8	M14 x 2.0	19	9	51	84	6.6	11 depth 8

Size	P1	P2	P3	Q	XA		XB	XC
					25 mm stroke	50 mm stroke		
45	Rc1/8	Rc1/8	M5 x 0.8	21	—	8	11.5	6
57	Rc1/8	Rc1/8	Rc1/8	34.1	5	5	5.5	9.3
71	Rc1/8	Rc1/8	Rc1/8	34.3	9	9	10	6

Handling

⚠Warning

1. Residual pressure will remain in the exhaust return piping of this circuit.

To completely exhaust all of the residual pressure, install a 3 -port valve for residual pressure exhaust in the exhaust return piping.

2. The adjustment range for the throttle valve for retraction operation speed adjustment is, starting from the fully closed position, within the number of rotations shown in the table below.

Bore size [mm]	Number of rotations
45, 57, 71	3 rotations

To adjust the throttle valve, use a 3 mm flat head watchmaker's screwdriver.

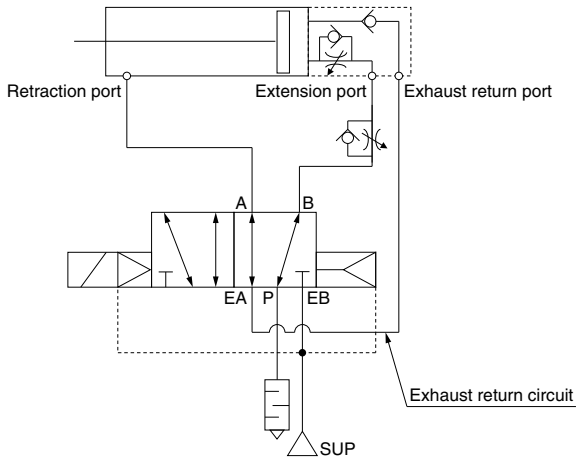
The adjustment range for the throttle valve is, between the fully closed position and the open position, within the range indicated in the table above.

A retaining mechanism prevents the throttle valve from slipping out; however, it may spring out during operation if it is rotated beyond the range shown above.

⚠Caution

1. Pipe according to the circuit diagram shown below when using this cylinder.

Circuit diagram



2. For exhaust return, the selection and installation of suitable fittings, tubes, and devices is required. Please contact your local sales representative for more details.

3. For the solenoid valve, select a single unit (body ported or base ported) external pilot type.

4. Follow the instructions below to adjust the speed of this cylinder.

Extending operation: Use the speed controller (meter-in) installed between the extension port and the solenoid valve.

Retracting operation: Use the built-in throttle valve on the cylinder.

5. As the retracting operation of this cylinder is performed with low pressure and low thrust, refrain from applying more external force than necessary.

6. Pivot brackets cannot be used.

Air Cylinder

ø32, ø40, ø45, ø50, ø56, ø63, ø67, ø80, ø85, ø100 RoHS

New **Port thread types NPT, G added.**

Intermediary Bore Sizes

◎ **Air saving**
◎ **Space saving**

ø40*1 — ø45 — ø50*1 — ø56 — ø63*1 — ø67 — ø80*1 — ø85 — ø100*1

*1 Existing product

Same external dimensions | Same external dimensions | Same external dimensions | Same external dimensions

JMB ø45
ø40 = ø45 (Existing product)
Same dimension as ø40
Existing product ø40
ø45
Existing product ø50
Theoretical output ø45/ø40 = 1.27 times

JMB ø56
ø50 = ø56 (Existing product)
Same dimension as ø50
Existing product ø50
ø56
Existing product ø63
Theoretical output ø56/ø50 = 1.25 times

JMB ø67
ø63 = ø67 (Existing product)
Same dimension as ø63
Existing product ø63
ø67
Existing product ø80
Theoretical output ø67/ø63 = 1.13 times

JMB ø85
ø80 = ø85 (Existing product)
Same dimension as ø80
Existing product ø80
ø85
Existing product ø100
Theoretical output ø85/ø80 = 1.13 times

Overall length shortened

Max.
Weight **36% lighter**
1.56 kg → 1.00 kg
(Compared with the existing MB series, ø50, 100 mm stroke)

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