Proposal for Space-saving, Lightweight Next Generation Machinery

Compact

Air Cylinder

1/3
the overall length

Rotary Actuator

Overall length:
44% reduction

Speed Controller with One-touch Fitting
(Push-lock/Compact Type)

Height:
9.7 mm shorter

Lightweight

Compact 5-Port Solenoid Valve
Plug-in Type

Weight:
59% reduction

Rotary Actuator

Weight:
48% reduction

Compact Guide Cylinder

Weight:
69% reduction

Body Ported Type Vacuum Ejector

Weight:
74% reduction

SMC

CONTENTS

SMC

Plug-in Type Compact 5-Port Solenoid Valve
JSY Series

Compact/ Lightweight Products

Weight

Max. 59%*1 reduction

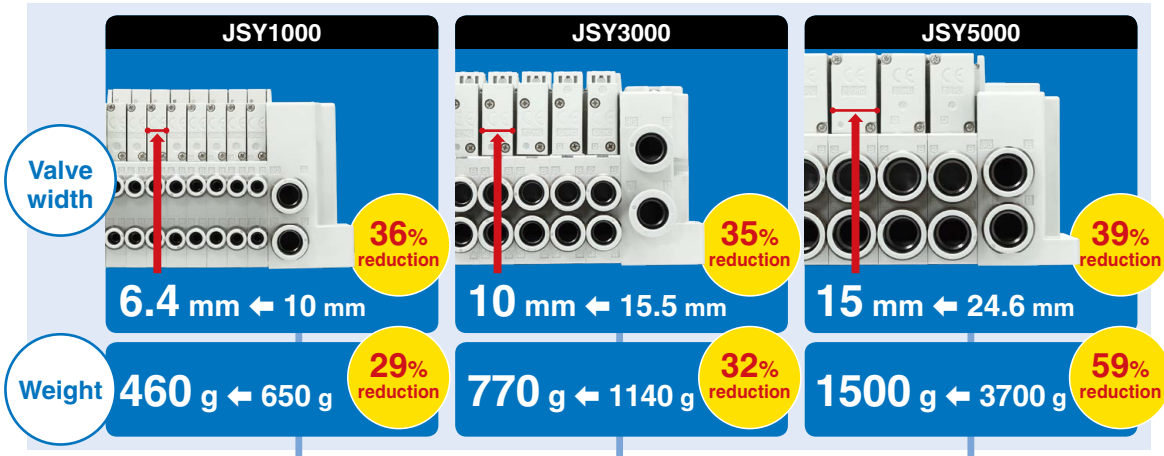
3700 g ➡ 1500 g

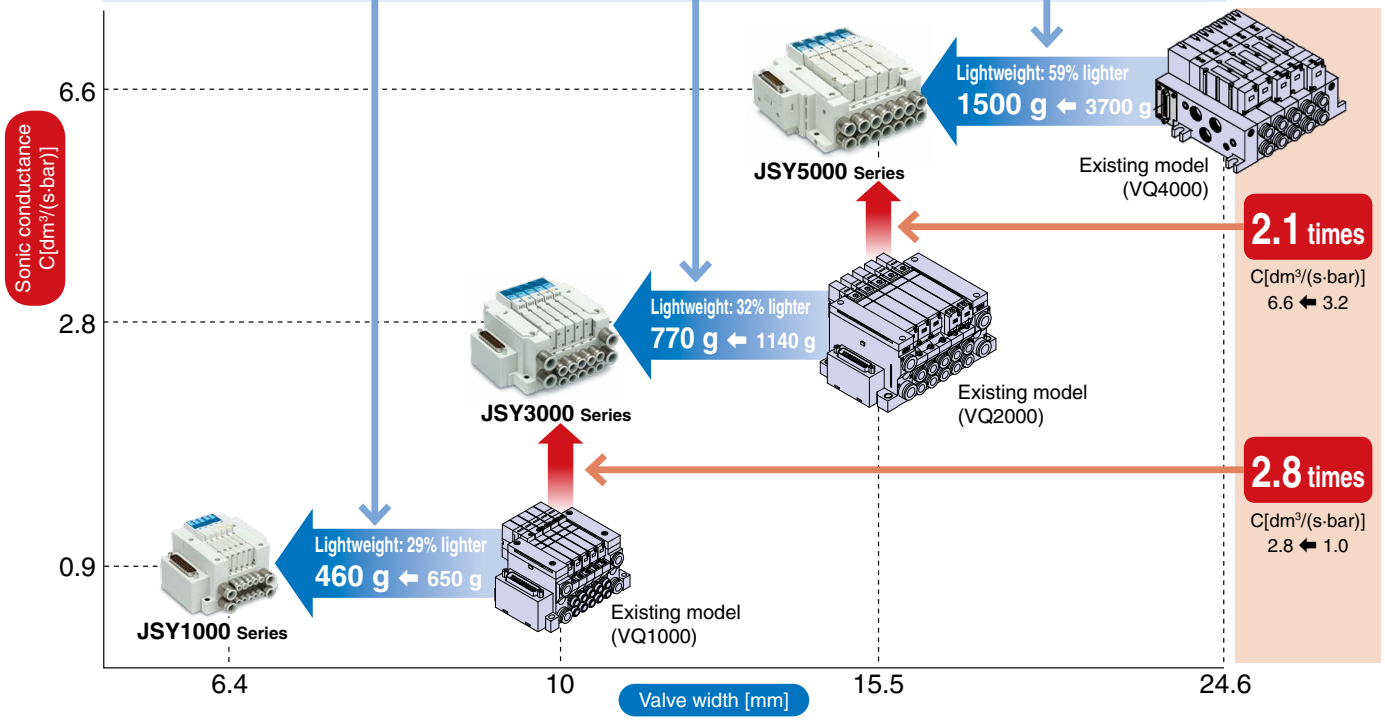
Valve width

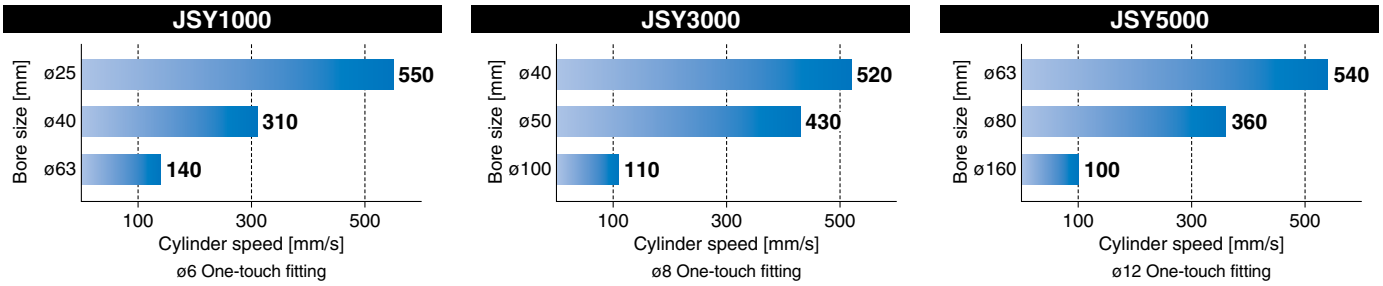
Max. 39%*1 reduction

24.6 mm ➡ 15 mm

*1 Compared with the existing VQ4000 series







Non Plug-in Type Compact 5-Port Solenoid Valve
JSY Series

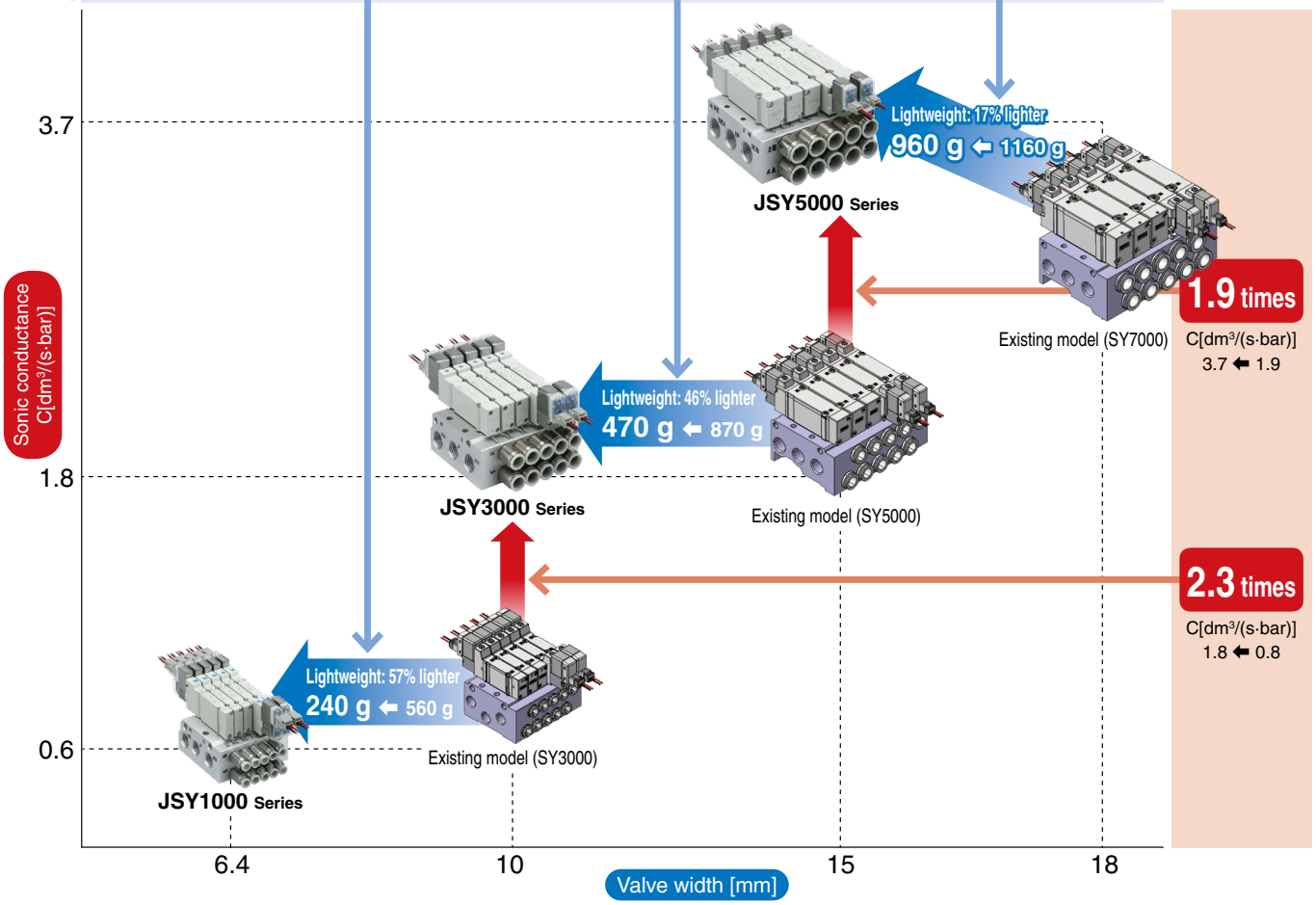
Compact/ Lightweight Products

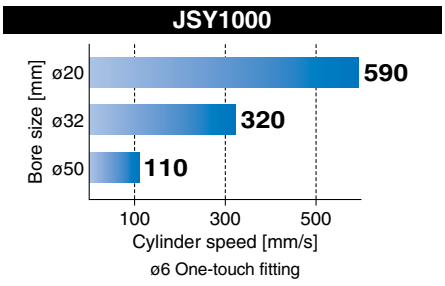
Weight
Max. 57%*1 reduction
560 g ➡ 240 g

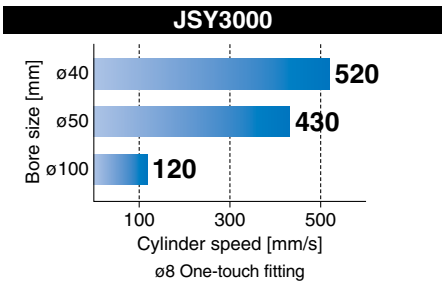
Valve width
Max. 36%*1 reduction
10 mm ➡ 6.4 mm

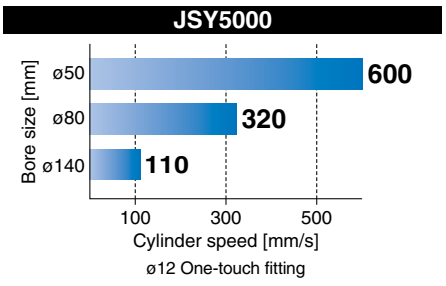
*1 Compared with the existing SY3000 series

Valve width	6.4 mm ⬅ 10 mm (36% reduction)	10 mm ⬅ 15 mm (33% reduction)	15 mm ⬅ 18 mm (17% reduction)
Weight	240 g ⬅ 560 g (57% reduction)	470 g ⬅ 870 g (46% reduction)	960 g ⬅ 1160 g (17% reduction)









Air Cylinder *JCM* Series

ø20, ø25, ø32, ø40

Compact/ Lightweight Products

Weight

Max. **54%** *1 reduction

0.69 kg ➡ **0.32 kg**

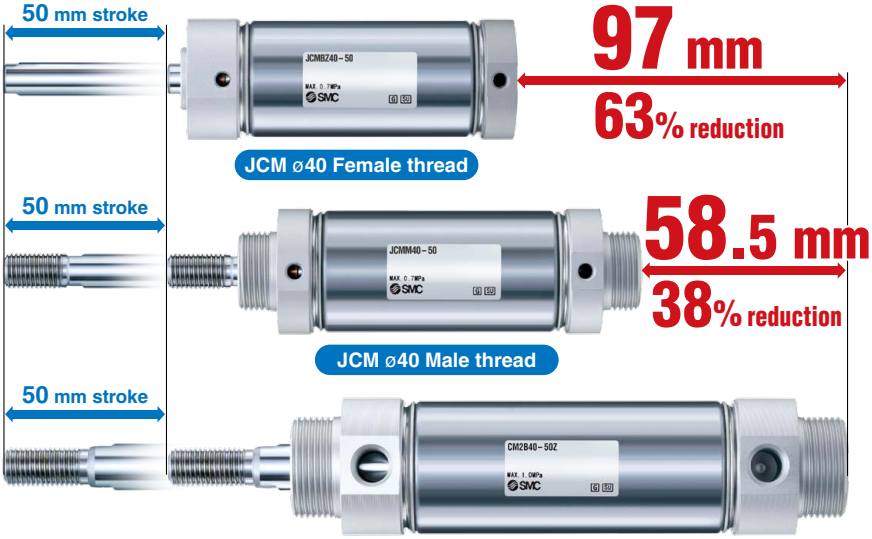
Overall length

Approx. **1/3** *1

154 mm ➡ **57 mm**

*1 Compared with the existing CM2B series, ø40, 50 mm stroke

Overall length shortened



Existing model ø40 (CM2 series)

Shortened height

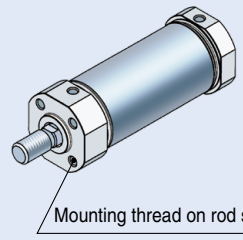
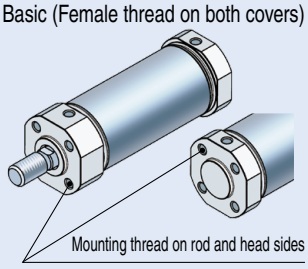
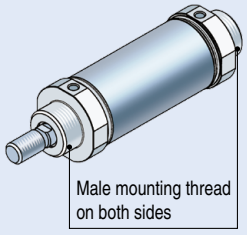
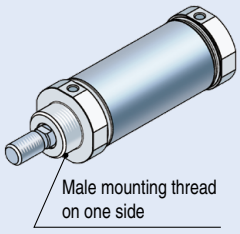
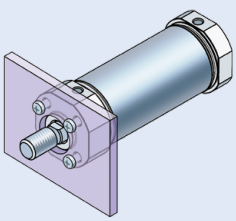
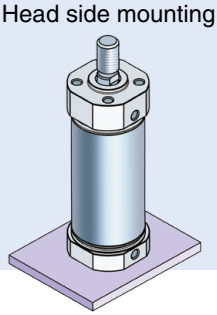
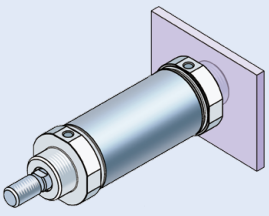
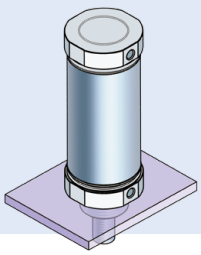
New mounting band for auto switch

Mounting height

Approx. 8 mm shorter

Various cover types available

Direct mounting is possible.

Basic (Female thread on rod cover)	Basic (Female thread on both covers)	Male thread on both covers	Male thread on rod cover
 Mounting thread on rod side	 Mounting thread on rod and head sides	 Male mounting thread on both sides	 Male mounting thread on one side
Examples			
Rod side mounting 	Head side mounting 	Head side mounting 	Rod side mounting 

Air Cylinder *JMB* Series

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

Compact/ Lightweight Products

Weight

Max. **36%***1 **reduction**

1.56 kg ➡ **1.00 kg**

Overall length

Max. **11%***1 **reduction**

256 mm ➡ **229 mm**

*1 Compared with the existing MB series, ø50, 100 mm stroke

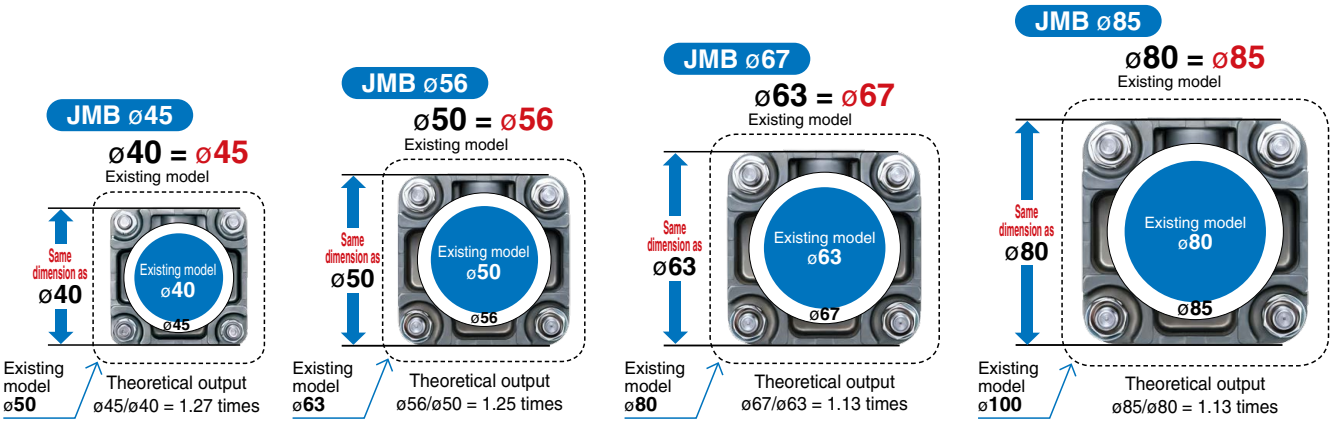
Overall length shortened

Intermediary bore sizes ◎Air saving ◎Space saving

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

*1 Existing model

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



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Mini Free Mount Cylinder *CUJ* Series

ø4, ø6, ø8, ø10, ø12, ø16, ø20

Compact/ Lightweight Products

Miniature body

Overall length

Max. 20%*1 reduction

29.5 mm ➡ **23.5 mm**

Volume

Max. 45%*1 reduction

382 cm³ ➡ **211 cm³**

*1 Compared with the CQS series cylinders, ø20

Overall length

Max. 64%*2 reduction

36 mm ➡ **13 mm**

Volume

Max. 70%*2 reduction

129 cm³ ➡ **38.6 cm³**

*2 Compared with the CU series cylinders, ø10

Dimensions (With Magnet) [mm]

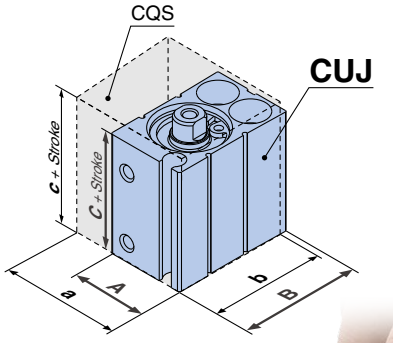
Bore size	A(a)	B(b)	C(c)
12	17(25)	26.5(25)	19.5(22)
16	21(29)	29.5(29)	21(22)
20	25(36)	36(36)	23.5(29.5)

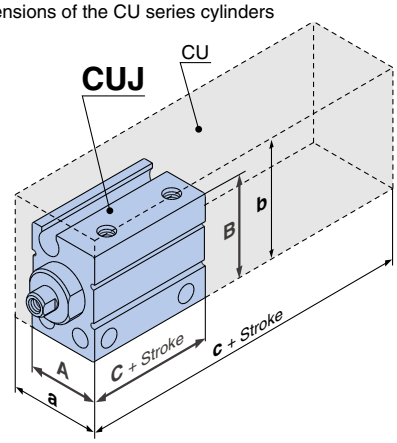
( ): Dimensions of the CQS series cylinders

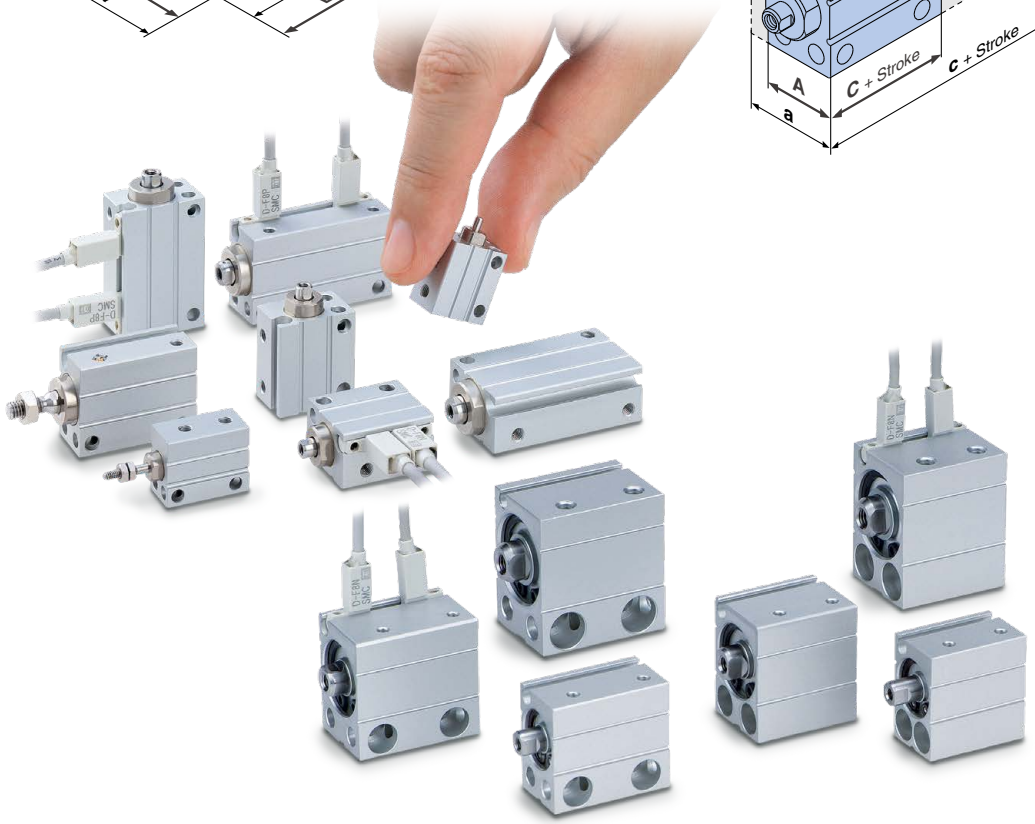
Dimensions (Without Magnet) [mm]

Bore size	A(a)	B(b)	C(c)
4	10(—)	15(—)	13(—)
6	13(13)	19(22)	13(33)
8	13(—)	21(—)	13(—)
10	13.5(15)	22(24)	13(36)
12	17(—)	26.5(—)	15.5(—)
16	21(20)	29.5(32)	16.5(30)
20	25(26)	36(40)	19.5(36)

( ): Dimensions of the CU series cylinders







Compact Air Cylinder *JCQ* Series

ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

Compact/ Lightweight Products

Weight

Max. **45%***1 reduction

150 g ➡ **82 g**

Volume

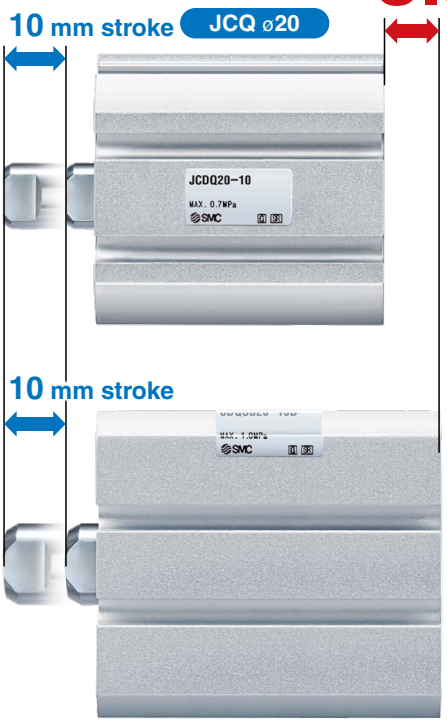
Max. **37%***1 reduction

76 cm³ ➡ **48 cm³**

*1 Compared with the existing CDQS series, ø25, 10 mm stroke

Overall length shortened

6.5 mm



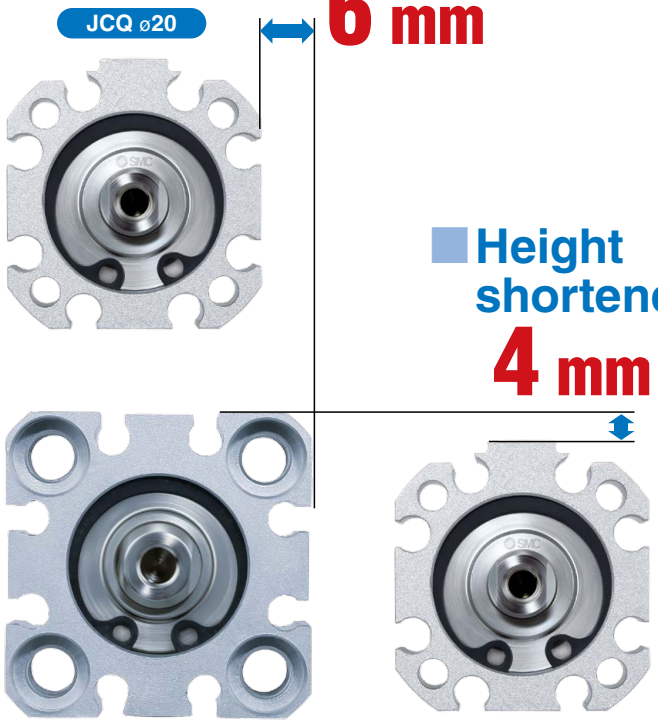
Existing model ø20 (CDQS series)

Width shortened

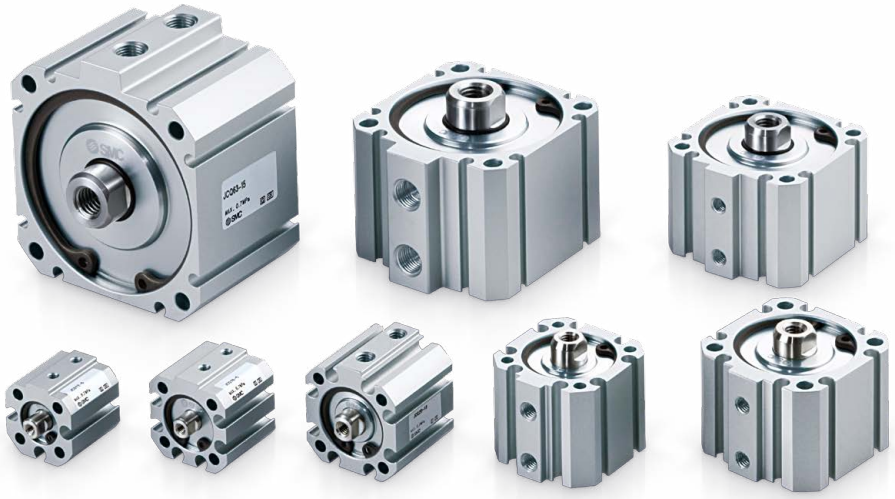
6 mm

Height shortened

4 mm



Existing model ø20 (CDQS series)



SMC

Floating Joint *JT Series*

20, 32, 40

Compact/ Lightweight Products

Weight

Max. 56% reduction

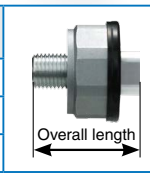
50 g ➡ 22 g

Compared with the existing JA20

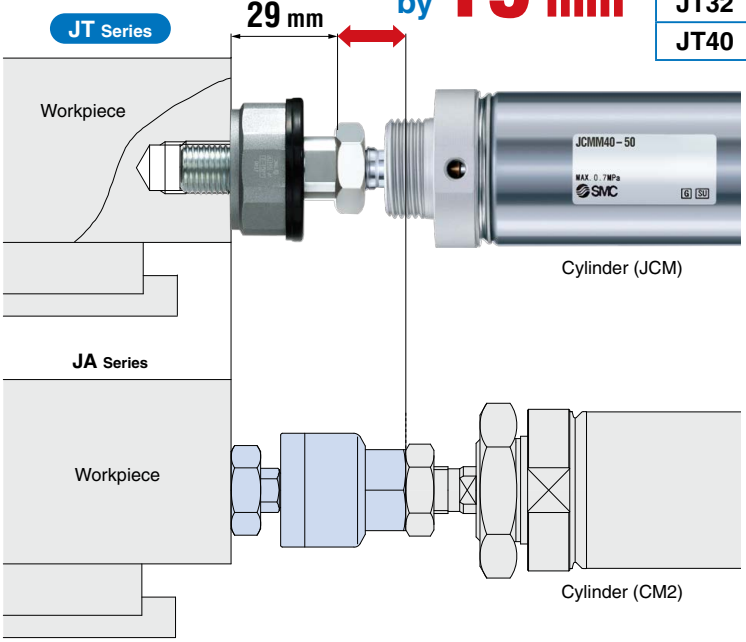
Overall Length Comparison

Model	Connection thread	Shortened dimensions
JT20	M8 x 1.25	12.3 mm
JT32	M10 x 1.25	13.0 mm
JT40	M14 x 1.5	19 mm

Overall length
27.2 mm
33.0 mm
43.0 mm



Reduced by **19 mm**



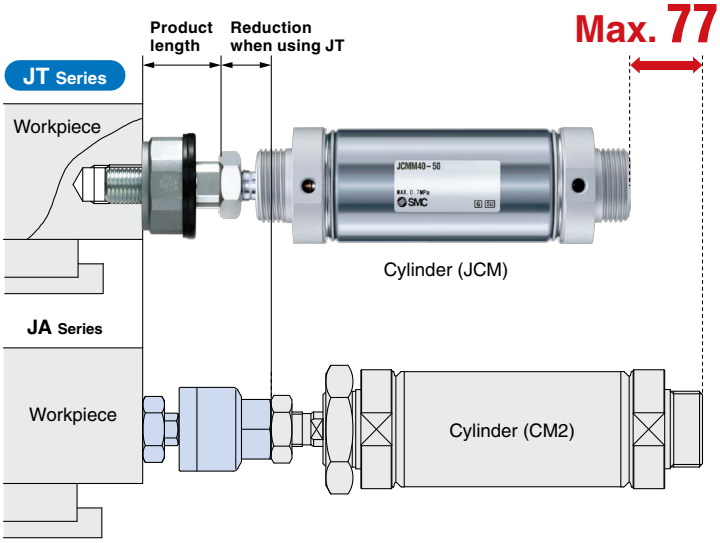
Weight Comparison

Model	JA Series	JT Series	Reduction rate
JT20	50 g	22 g	56%
JT32	70 g	38 g	46%
JT40	160 g	98 g	39%

More compact and lightweight combination are available by using the JT series with a JCM series cylinder.

Reduction of length when using JT and JCM

Max. 77 mm



Overall Length Comparison

Model	JA + CM2 Series	JT + JCM Series	Reduction rate
JT20	139.5 mm	90.2 mm	35%
JT32	149.0 mm	96.0 mm	36%
JT40	189.0 mm	112.0 mm	41%

Weight Comparison

Model	JA + CM2 Series	JT + JCM Series	Reduction rate
JT20	190 g	102 g	46%
JT32	350 g	188 g	46%
JT40	720 g	378 g	48%

Compact Slide *MXH* Series

ø6, ø10, ø16, ø20

Compact/ Lightweight Products

Weight

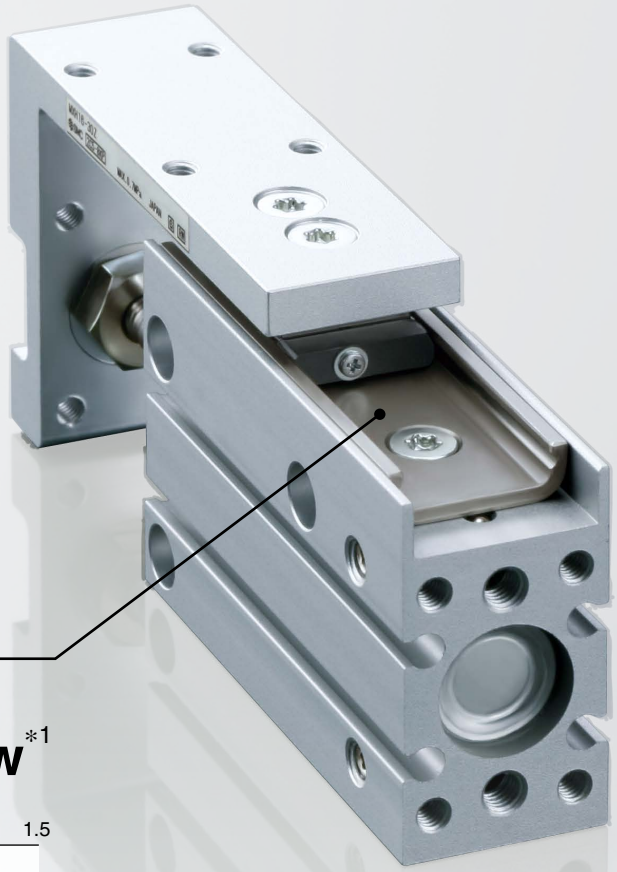
Max. 19% reduction

455 g ➡ 369 g

(Existing MXH series, ø20-10 mm stroke)

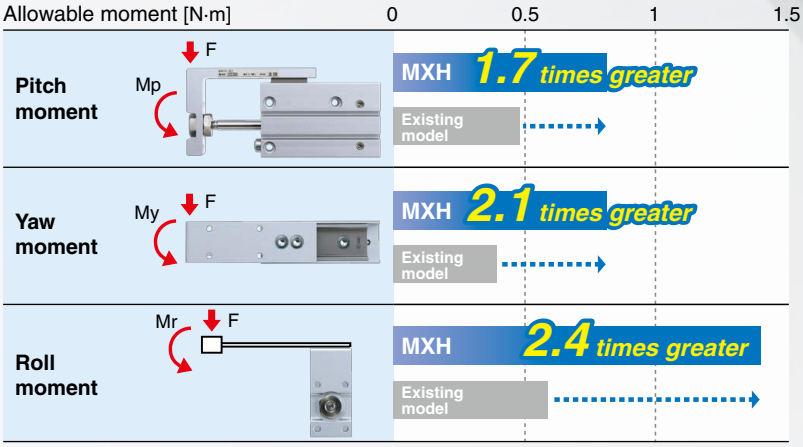
Allowable moment

Improved by up to 240%

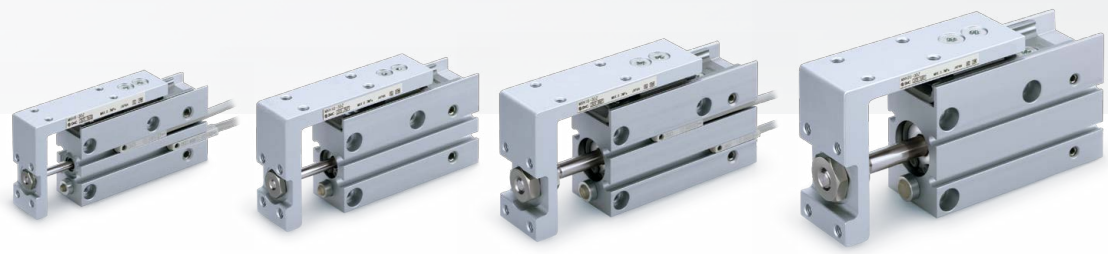


With new high rigidity linear guide

Allowable moment improvement illustrated below*1



*1 Allowable moment caused by static load
(The above graph is a comparison between the new MXH and the existing MXH6.)



Air Slide Table *MXQ* Series

ø6, ø8, ø12, ø16, ø20, ø25

Compact/ Lightweight Products

Reduced in height and weight with thinner table

Height

Max. 10%*1 reduction

30 mm ➡ 27 mm

Weight

Max. 22%*1 reduction

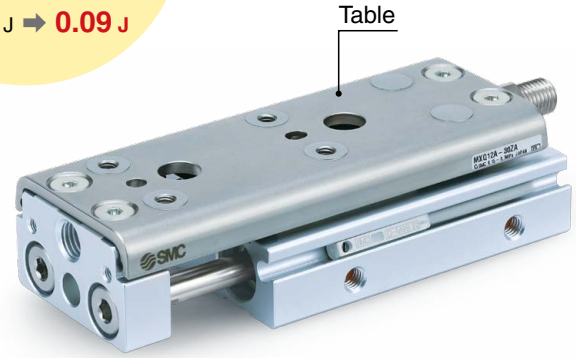
380 g ➡ 298 g

Allowable kinetic energy

Max. 64%*1 increase

0.055 J ➡ 0.09 J

*1 Compared between the double-ported type and the existing MXQ12-30



Guide Size and Cylinder Bore Size Combination Chart

Guide size	Max. load mass	Double-ported type MXQ□A	Low thrust with high rigidity type MXQ□B	Single side-ported type MXQ□C	Height interchangeable type MXQ□
Small guide ↓ Large guide		■Height reduced by 10% of the existing model 30 mm → 27 mm ■Weight reduced by 22% 380 g → 298 g (For MXQ12A-30ZN) ■A piping port and auto switch mounting groove are provided on both sides.	Guide rigidity according to thrust improved ■Guide rigidity improved by 50% (For MXQ8B and MXQ8A) ■Cylinder can be downsized when load is light! ・Reduced in height ・Reduced in air consumption ・Lightweight	■Compact body with good switch visibility (Applicable to ø8 and ø12 only) ■Compact design, Two auto switch mounting grooves on one side	■Same height as the existing model ■Visibility of auto switches improved ■Interchangeable in mounting with the existing model
32 mm	0.6 kg	ø6	—	ø6 Not available Use the MXQ□, height interchangeable type.	ø6 20 mm Standard/Symmetric type (Figure shows standard model)
32 mm	1 kg	ø8 23 mm	ø6 20 mm Standard/Symmetric type (Figure shows standard model)	ø8 21 mm Standard/Symmetric type (Figure shows standard model)	ø8 23 mm Standard/Symmetric type (Figure shows standard model)
40 mm	2 kg	ø12 27 mm	ø8 23 mm Standard/Symmetric type (Figure shows standard model)	ø12 27 mm Standard/Symmetric type (Figure shows standard model)	ø12 30 mm Standard/Symmetric type (Figure shows standard model)
50 mm	4 kg	ø16 35 mm	ø12 30 mm Standard/Symmetric type (Figure shows standard model)	ø16	ø16 37 mm
60 mm	6 kg	ø20 43 mm	ø16 37 mm	ø20 Not available Use the MXQ□A, double-ported type.	ø20 46 mm
70 mm	9 kg	ø25 52 mm	ø20 46 mm	ø25	ø25 55 mm

Purpose of usage ❶: Guide rigidity and a large table surface are necessary but thrust is not needed. Application examples: ・Horizontal transfer of workpieces, transfer of tools, low thrust clamping

Purpose of usage ❷: A guide with higher rigidity is necessary without changing the thrust from the existing model. Application examples: ・Transfer of workpieces with increased overhang ・High-accuracy and high-thrust clamping

When the height needs to be the same as the existing model, choose the MXQ□, height interchangeable type.

Improved visibility: Pilot port (For ø16); Two auto switch mounting grooves

Size ø16, ø20, and ø25 have two auto switch mounting grooves on both sides.

Size ø16 and ø20 have two auto switch mounting grooves on both sides.

Size ø16, ø20, and ø25 have two auto switch mounting grooves on both sides.

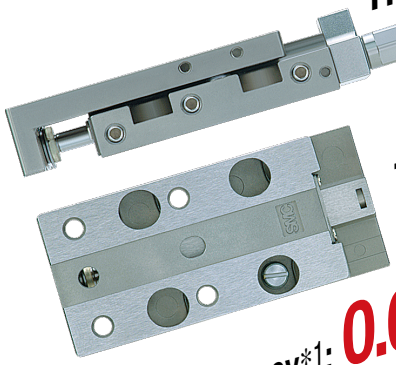
Air Slide Table *MXJ* Series

ø4, ø6, ø8, ø12, ø16

Compact/ Lightweight Products

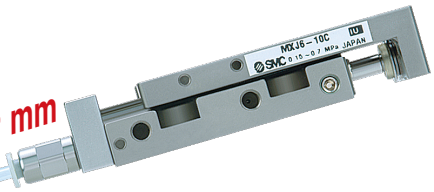
Compact

Height: 10 mm/Width: 20 mm/Length: 43 mm (MXJ4)

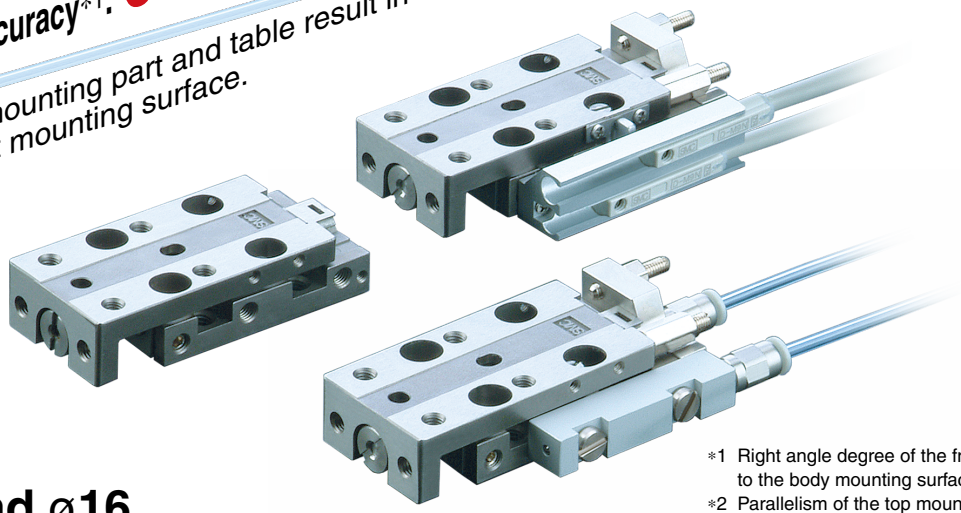


Traveling parallelism: 0.005 mm

Front mounting accuracy*1: 0.01 mm/Top mounting accuracy*2: 0.03 mm



Integrated front mounting part and table result in a highly accurate and rigid top and front mounting surface.



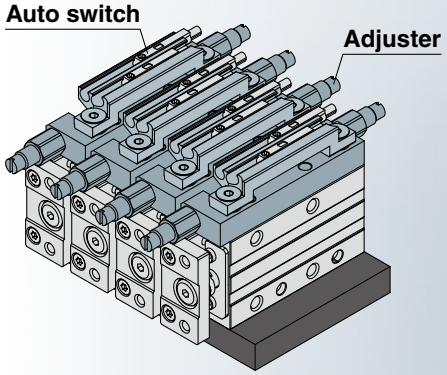
*1 Right angle degree of the front mounting surface to the body mounting surface

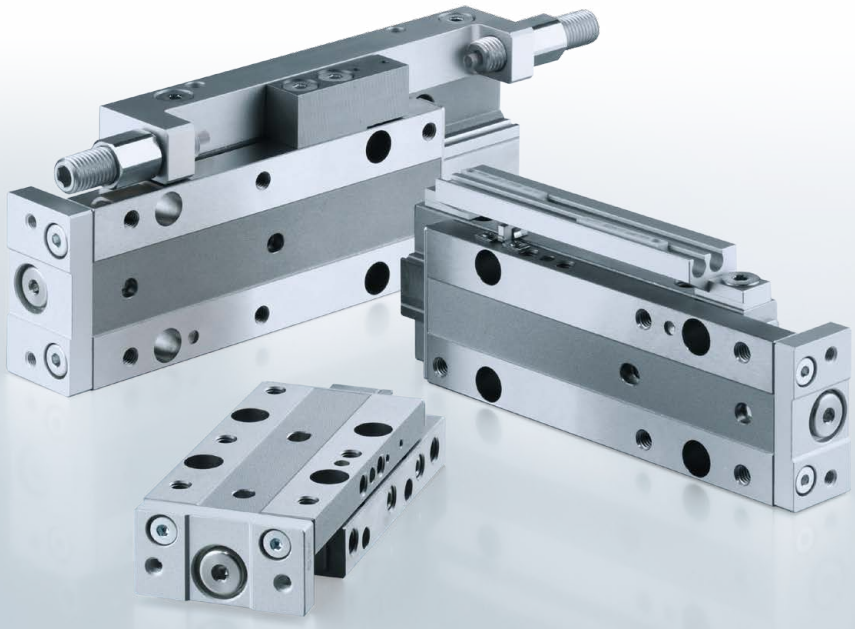
*2 Parallelism of the top mounting surface to the body mounting surface

For ø12 and ø16

Auto switch and adjuster **can be mounted on the same side.**

Short pitch mounting is possible.





Compact Guide Cylinder *JMGP* Series

ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

Compact/ Lightweight Products

Weight

Max. 69%*1 reduction

0.32 kg ➡ 0.1 kg

Overall length

Max. 31%*2 reduction

100 mm ➡ 69.5 mm

Height

33%*2 reduction

48 mm ➡ 32 mm

*1 Compared with the existing MGP-Z series, ø16, 10 mm stroke *2 Compared with the existing MGP-Z series, ø32, 25 mm stroke

Overall length shortened

Existing model ø32

Height shortened

Existing model ø32

Suitable for pushing, lifting, or clamping in a transport line

Micro Clamp Cylinder *CKZM16* *-X2800* (Base Type) *-X2900* (Tandem Type)

Compact/ Lightweight Products

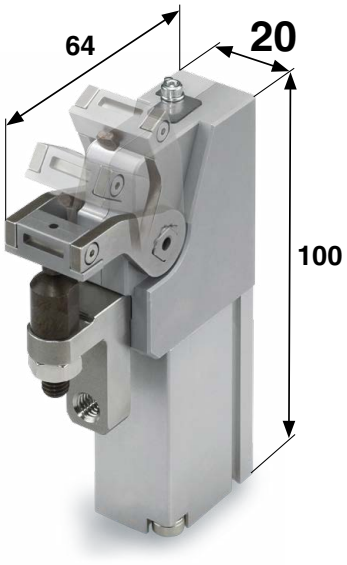
Compact | **Lightweight** | **High clamping force** | **High holding force**

Width
20 mm
Base type,
Tandem type

Weight
250 g
Base type

Max. clamping force: 200 N
(Tandem type)
* Operating pressure: 0.6 MPa

Max. holding force: 300 N
(Base type, Tandem type)
* When operating pressure of 0.2 to 0.6 MPa is applied

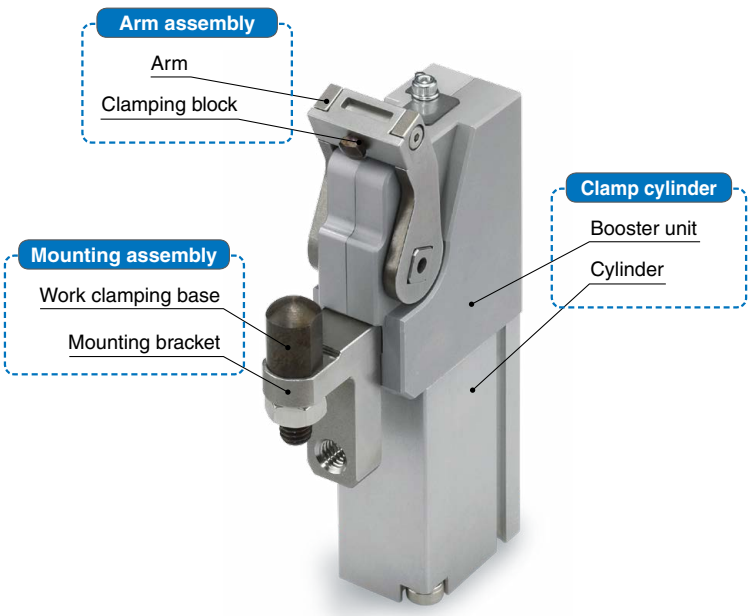


Base type: X2800

Tandem type: X2900

Reduction of design assembly labor by unitization

Arm assembly | **Mounting assembly**
added to clamp cylinder



Rotary Actuator/Vane Type *CRB* Series
Size: 10, 15, 20, 30, 40

Compact/ Lightweight Products

Overall length

Max. 44%*1 reduction

100 mm ➡ 55.6 mm

*1 Compared with the existing CDRB2□WU, Size 20

Weight

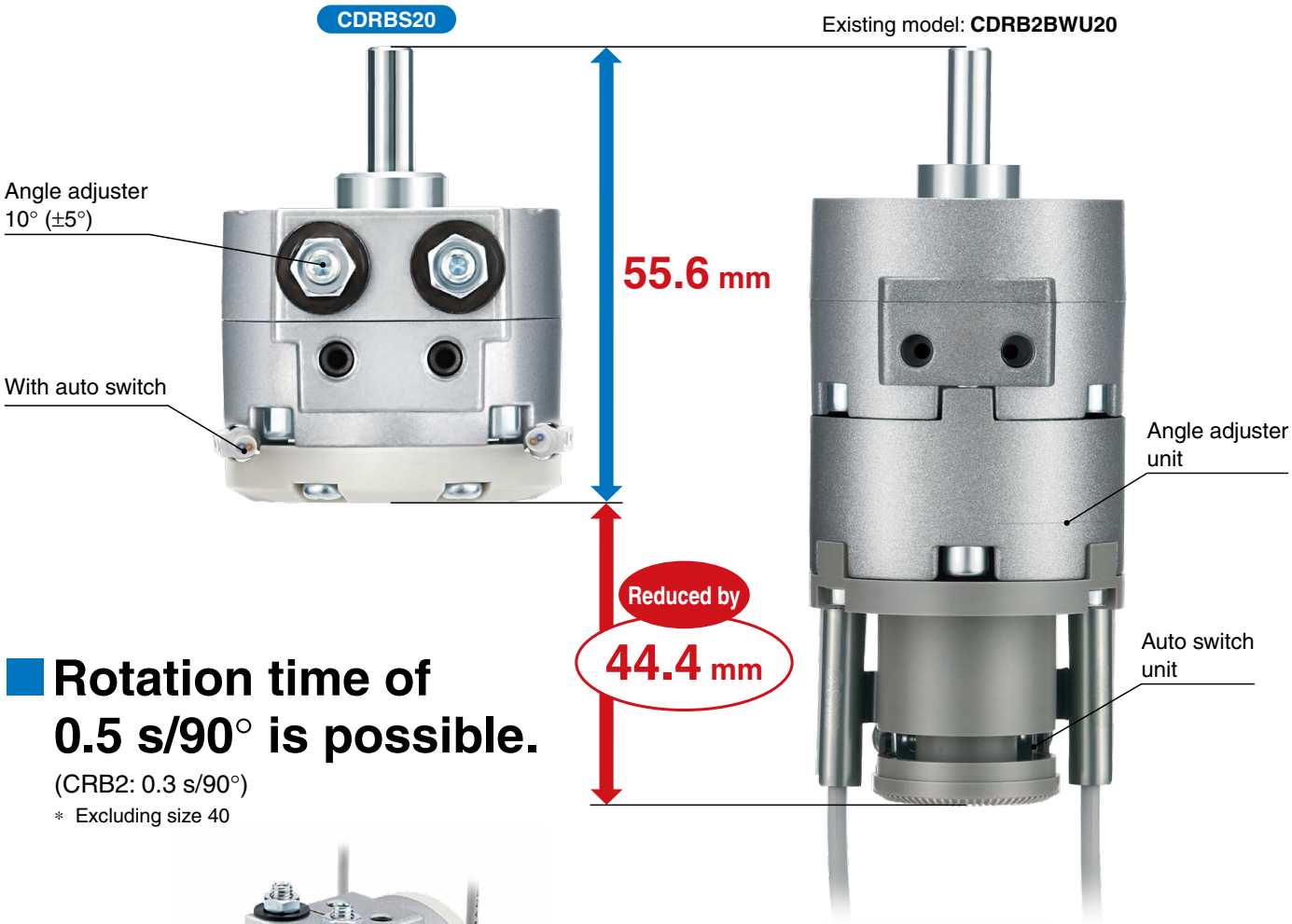
Max. 48%*2 reduction

222 g ➡ 115 g

*2 Compared with the existing CDRB2□WU, Size 20, Rotating angle 90°

Features a compact body with a built-in angle adjuster unit and auto switch unit

(Size: 20, 30, 40)



Rotation time of 0.5 s/90° is possible.

(CRB2: 0.3 s/90°)

* Excluding size 40

Body Ported Type Vacuum Ejector *ZH* Series

Compact/ Lightweight Products

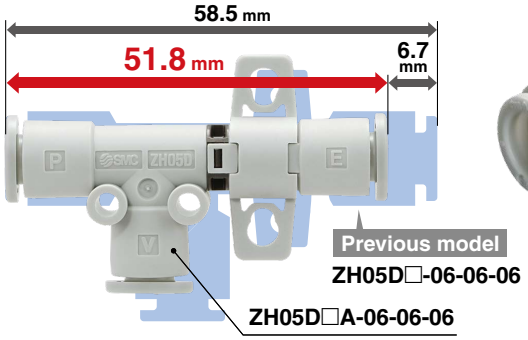
Compact and lightweight

Overall length

Max. 11% reduction

58.5 mm ➡ **51.8 mm**

Compared with the previous ZH05D□

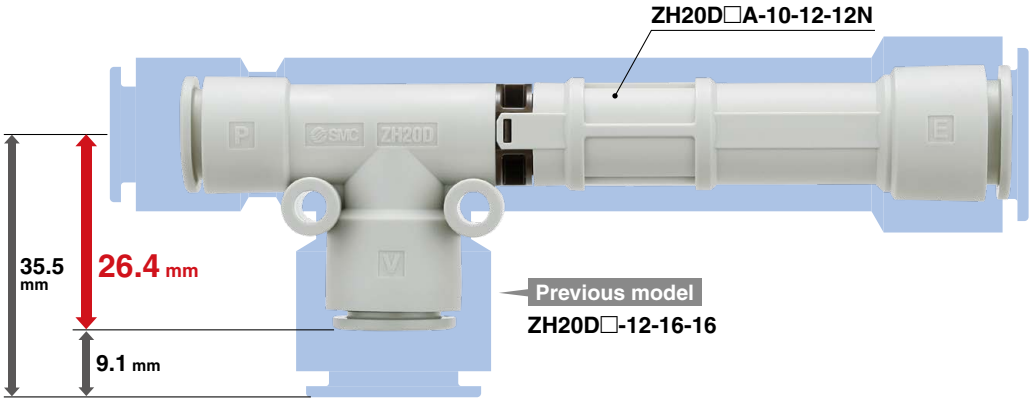


Port height

Max. 25% reduction

35.5 mm ➡ **26.4 mm**

Compared with the previous ZH20D□

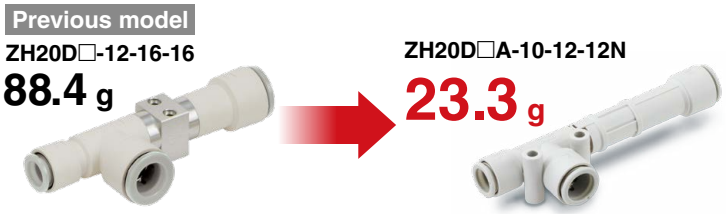


Weight

Max. 74% reduction

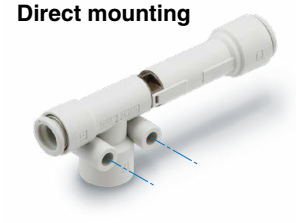
88.4 g ➡ **23.3 g**

Compared with the previous ZH20D□



4 mounting types

Direct mounting



Standard bracket mounting

L-bracket mounting

DIN rail mounting

Variations

Model	Nozzle nominal size [mm]	Ultimate vacuum pressure*1 [kPa]		Max. suction flow rate [L/min (ANR)]		Air consumption [L/min (ANR)]
		Type S	Type L	Type S	Type L	
ZH05D□A	0.5	−90	−48	6	13	13
ZH07D□A	0.7			12	28	27
ZH10D□A	1.0			26	52	52
ZH13D□A	1.3			40	78	84
ZH15D□A	1.5		−66	58	78	113
ZH18D□A	1.8			76	128	162
ZH20D□A	2.0			90	155	196

*1 Supply pressure: 0.45 MPa

In-line Type Vacuum Ejector ZU□A Series

Compact/ Lightweight Products

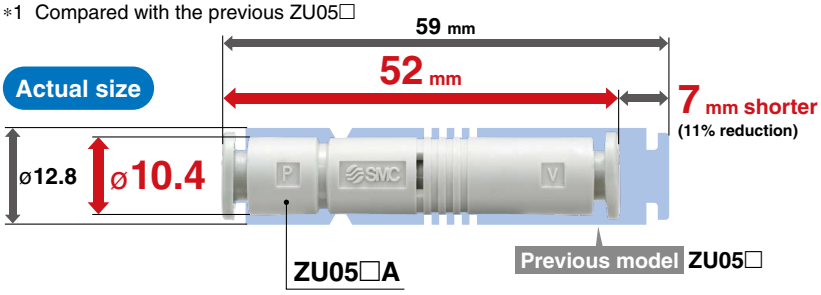
Compact and lightweight

O.D.
ø10.4 *1 mm
Previous model: ø12.8 mm

Weight
3.9 *1 g
Previous model: 6.5 g

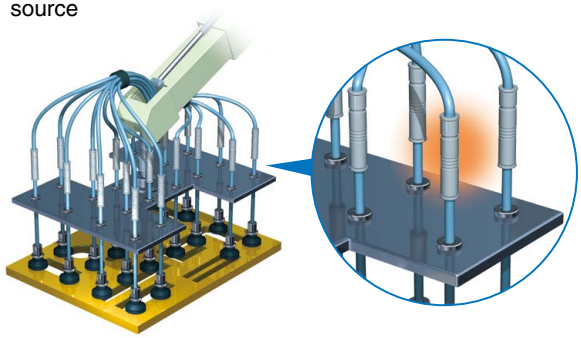
Overall length
52 *1 mm
Previous model: 59 mm

*1 Compared with the previous ZU05□



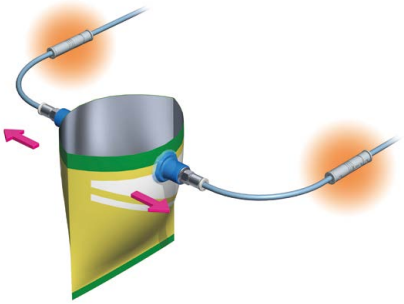
Application Examples

For preventing pad adsorption failures from the vacuum source

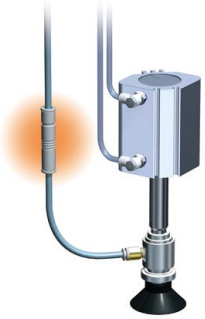


Numerous pads can be used to adsorb workpieces with holes.

For improving responsiveness by installing on flexible parts



Can be used to open and close plastic bags



For mounting on the end of a Z-axis air cylinder

Variations

Model	Nozzle size [mm]	Standard supply pressure [MPa]	Ultimate vacuum pressure [kPa]		Max. suction flow rate [L/min (ANR)]		Air consumption [L/min (ANR)]	Port size
			Type S	Type L	Type S	Type L		
ZU03SA	0.3	0.35	–85	—	1.8	—	3.7	ø4 One-touch fitting ø5/32"
ZU04SA	0.4		–87		3.2		7.4	
ZU05□A	0.5	0.45	–90	–48	7	13	14	ø6 One-touch fitting Rc1/8
ZU07□A	0.7				11	16	28	

Vacuum Pad *ZP3* Series

ø1.5, ø2, ø3.5, ø4, ø6, ø8, ø10, ø13, ø16

Overall length shortened

Overall length

Max. 9 *1 mm shorter

12 mm ➡ 3 mm

* Pad unit

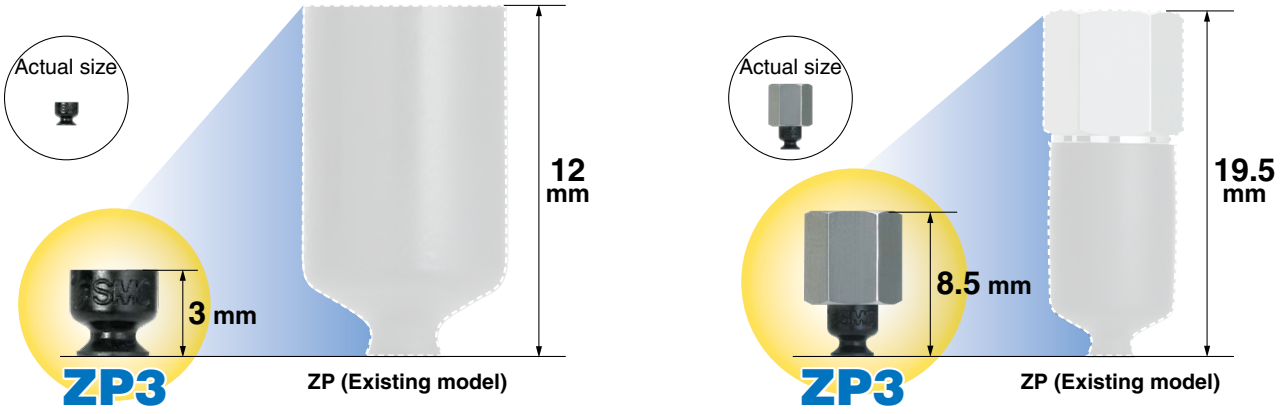
Overall length

Max. 11 *1 mm shorter

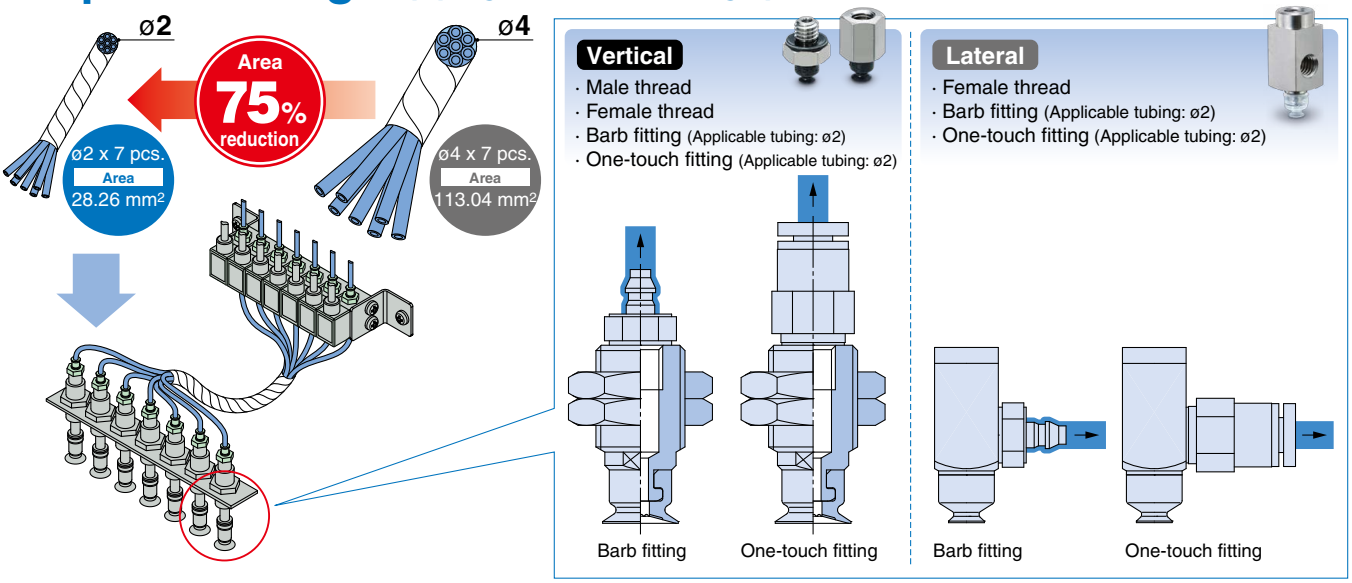
19.5 mm ➡ 8.5 mm

* With adapter

*1 For the flat type (Pad diameter: ø2)



Space saving ø2 piping reduces working space!



Variations

Form	Pad diameter								
	ø1.5	ø2	ø3.5	ø4	ø6	ø8	ø10	ø13	ø16
Flat type	●	●	●						
Flat type with groove				●	●	●	●	●	●
Bellows type				●	●	●	●	●	●

One-touch Fittings *KQ2* Series

Compact/ Lightweight Products

Weight
Max. 57% *1 reduction
12 g ➡ 5.2 g

Height
Max. 24% *1 reduction
25.5 mm ➡ 19.4 mm

Length
Max. 23% *1 reduction
20 mm ➡ 15.5 mm

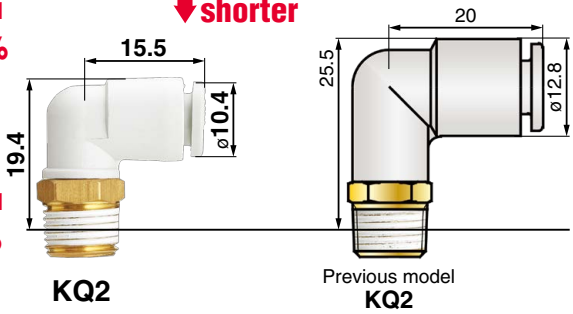
*1 Compared with the previous KQ2 series model: Male elbow, applicable tubing O.D. ø6, connection thread R1/8

Compact and lightweight

Dimensions Height
24% *1 shorter

Dimensions Length
23% *1 shorter

Weight
57% *1 lighter



*1 Compared with the previous KQ2 series model:
Male elbow, applicable tubing O.D. ø6, connection thread R1/8

Improved tube insertion/removal

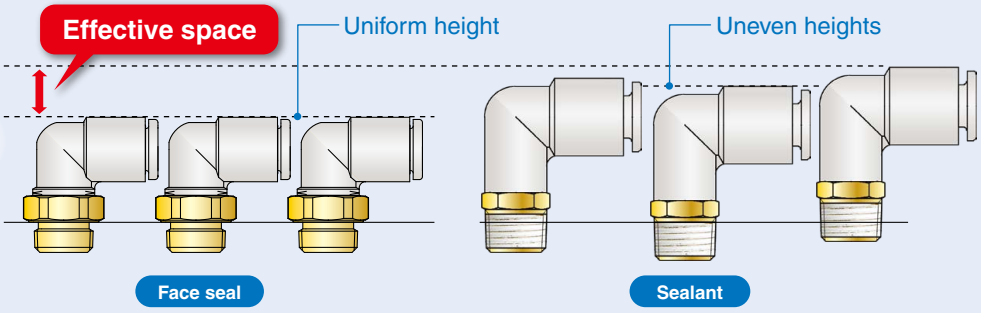
*1 Tube removal strength is ensured to be equivalent to previous model.

Face seal adopted for threading

Improved installability (Reduction in amount of tool-tightening required after hand-tightening)

Uniform height when using multiple fittings

Provides effective space above fittings



Speed Controller with One-touch Fitting (Push-lock Type)
AS Series

Compact/ Lightweight Products

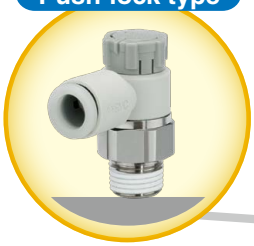
Reduced labor time and weight!

Weight

Max. 46%*1 reduction

*1 Compared with the existing AS22□1F, ø12

Push-lock type



Existing model

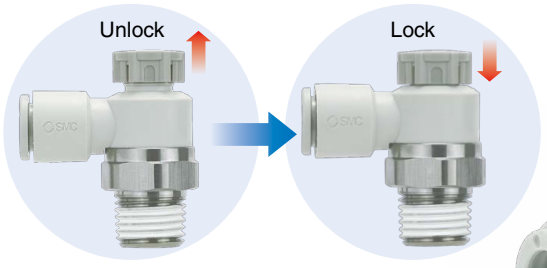
Tubing O.D.	Thread	Part no.	Weight
ø6	1/4	AS22□1F-02-06A	18 g
ø12	1/2	AS42□1F-04-12A	56 g

Tubing O.D.	Thread	Part no.	Weight
ø6	1/4	AS22□1F-02-06	32 g
ø12	1/2	AS42□1F-04-12	101 g

Easy to use

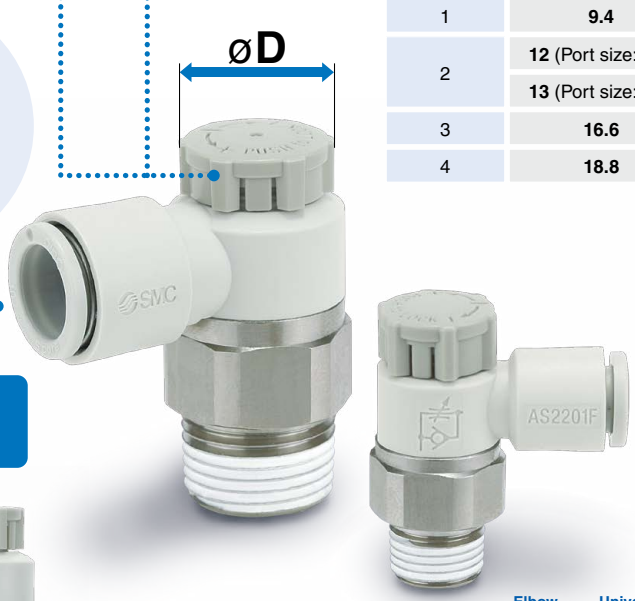
Push-lock type

- Easy to lock



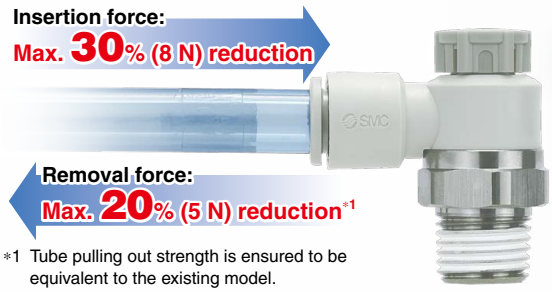
Larger knob

Body size	øD [mm]
1	9.4
2	12 (Port size: 1/8)
	13 (Port size: 1/4)
3	16.6
4	18.8



Improved tube insertion/removal

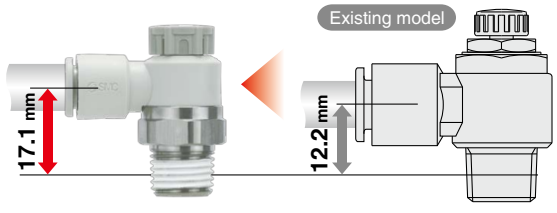
Insertion force:
Max. 30% (8 N) reduction



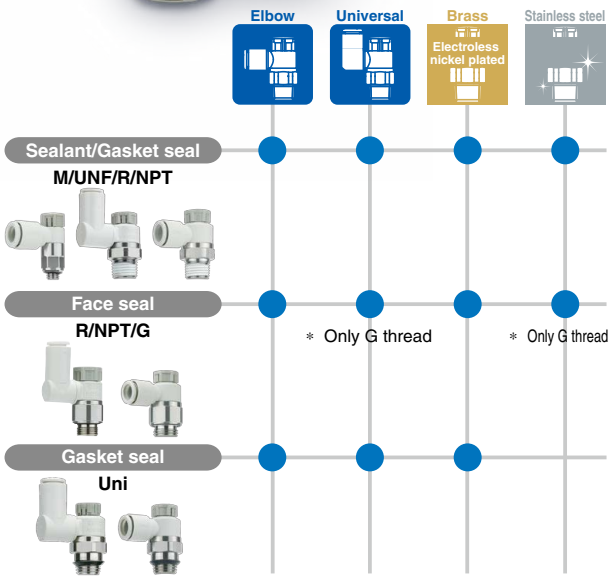
Removal force:
Max. 20% (5 N) reduction*1

*1 Tube pulling out strength is ensured to be equivalent to the existing model.

More space beneath the tube. Easier installation/removal of the tube.



AS22□1F-02-□SA　　AS22□1F-02-□



SMC

Speed Controller with One-touch Fitting (Push-lock/Compact Type)
JAS Series

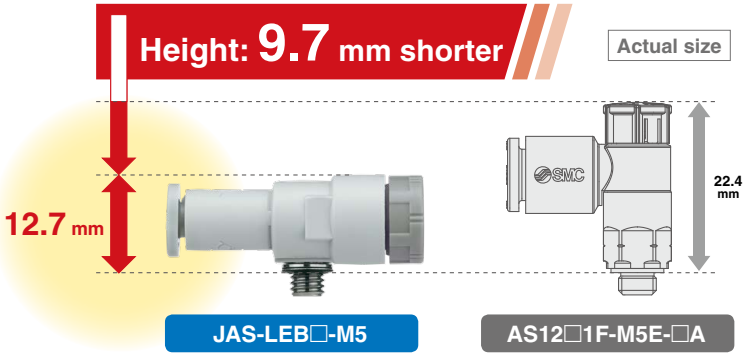
Compact/ Lightweight Products

Height

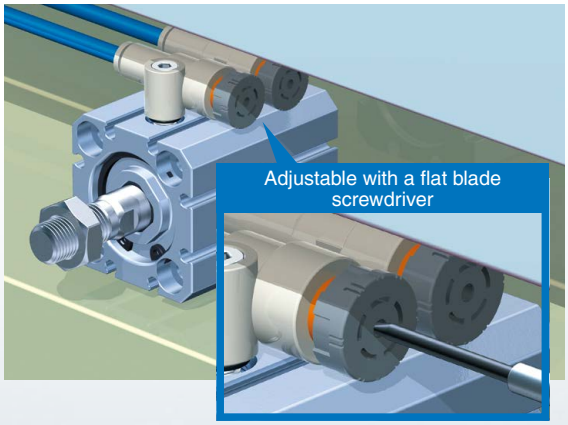
9.7[*1] **mm shorter**

22.4 mm ➡ 12.7 mm

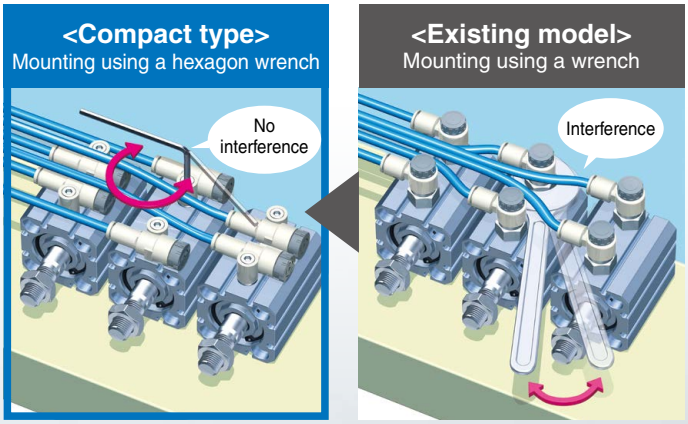
*1 Compared with the existing AS12□1F, M5



Possible to adjust flow rate even in a narrow space



Easily mounted using a hexagon wrench



Minimum operating pressure: 0.05 MPa

Digital Flow Switch *PFM□ Series*

Compact/ Lightweight Products

Volume

Max. 81% *1 **reduction**

287.9 cm³ ➡ **55.4 cm³**

*1 Compared with the existing PF2A series, 200 L type

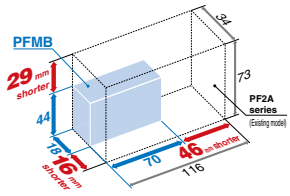
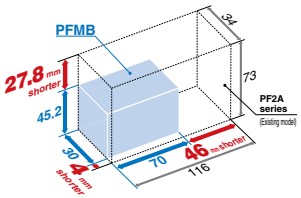
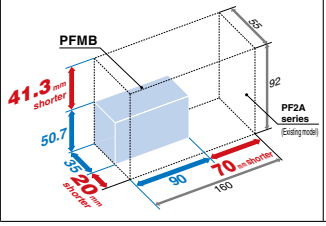
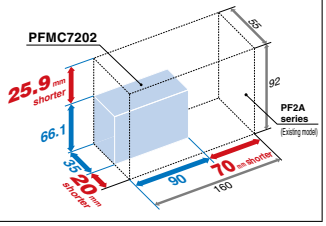
Weight

Max. 86% *2 **reduction**

1100 g ➡ **155 g**

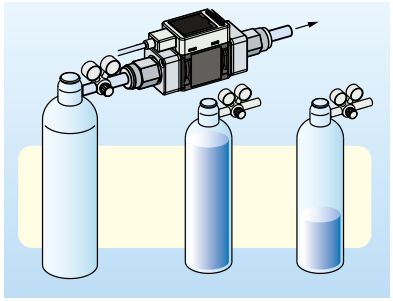
*2 Compared with the existing PF2A series, 2000 L type

Compared with the Existing PF2A

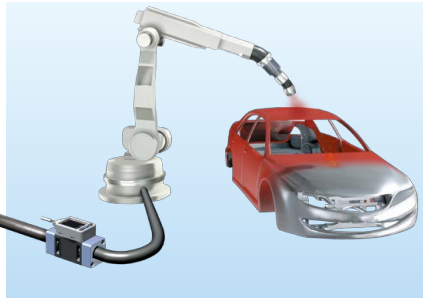
Series	PFMB			PFMC
	200 L type	500 L type	2000 L type	2000 L type
				
Weight	**76%** reduction 290 g ➡ **70 g**	**66%** reduction 290 g ➡ **100 g**	**86%** reduction*1 1100 g ➡ **155 g**	**78%** reduction 1100 g ➡ **240 g**
Volume	**81%** reduction 287.9 cm³ ➡ **55.4 cm³** 	**67%** reduction 287.9 cm³ ➡ **94.9 cm³** 	**80%** reduction 809.6 cm³ ➡ **159.7 cm³** 	**74%** reduction 809.6 cm³ ➡ **208.2 cm³** 

*1 Compared with the rated flow rate of 3000 L

Applications

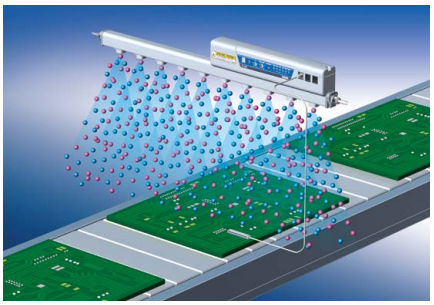


Accumulated indication shows the operating flow rate or residual amount (of N_2, etc.) in a gas cylinder.

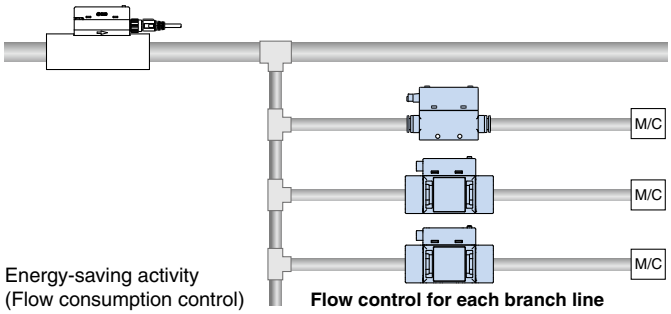


Flow control of the air for spray painting

* The product is not designed to be explosion proof.



Control of purge air flow of ionizer



Energy-saving activity
(Flow consumption control)

Flow control for each branch line

SMC

Proposal for Space-saving, Lightweight Next Generation Machinery

SMC Corporation
Akihabara UDX 15F,
4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, JAPAN
Phone: 03-5207-8249 Fax: 03-5298-5362
https://www.smcworld.com

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and any obligation on the part of the manufacturer.

D-G

1st printing XV printing XV 9270KY Printed in Japan.