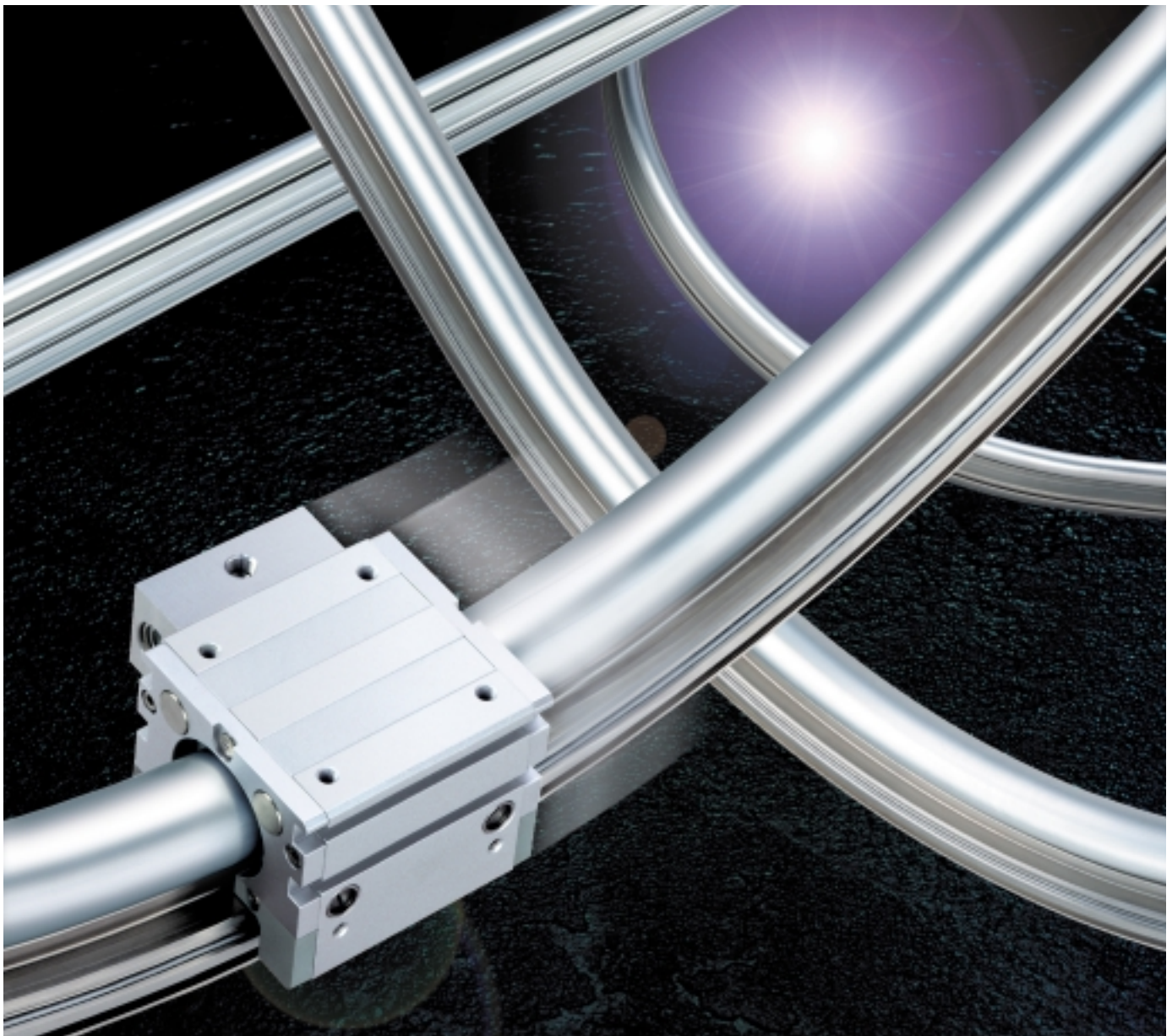




# Pneumatic Transfer System *Series MF*



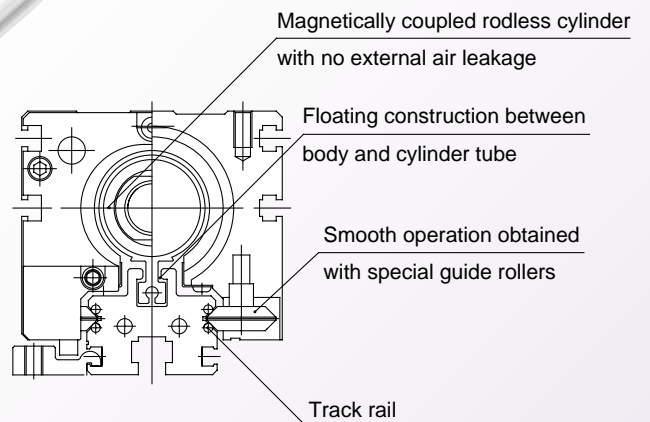
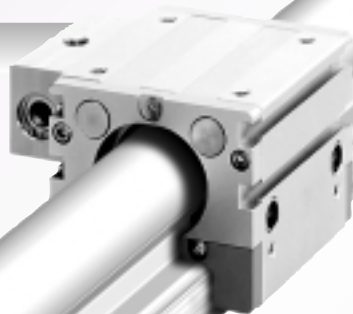
Curvilinear operation makes flexible transfer possible.

# 3-Dimensional Pneumatic Transfer System

## Series MF

### Curvilinear operation

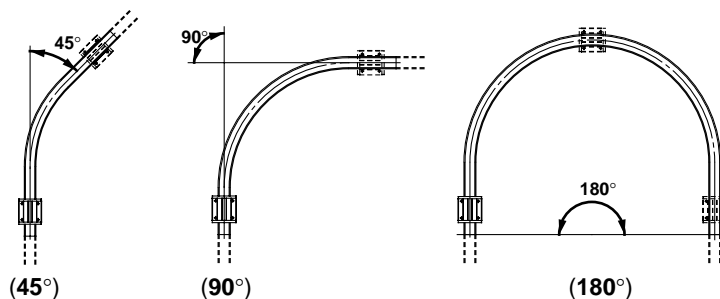
Effective utilization of space



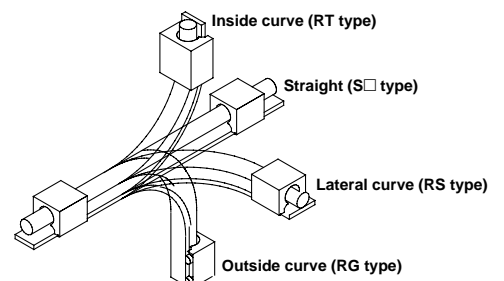
## Multiple variations for a wide range of movement possibilities

In addition to linear, 3 types of curve angles and curve directions are available

3 types of curve angles available



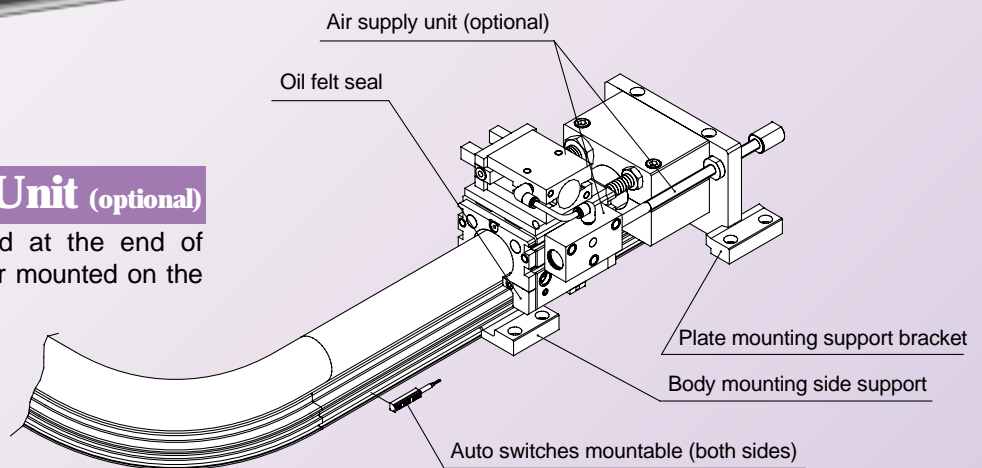
3 types of curve direction available



# ation makes flexible transfer possible.

## Air Supply Unit (optional)

Air can be supplied at the end of stroke to an actuator mounted on the slide table.



## Types of Units and Parts

Type of units and parts	Type of units		Type of parts		
Catalog pages	<b>Single units</b> P.1 to P.9	<b>Combination units</b> P.11 to P.18	<b>Set parts</b> P.11 to P.14	<b>Parts</b> P.16	<b>Spare parts</b> P.4 & 5 <b>Optional parts</b> P.2
Content	<ul style="list-style-type: none"> <li>2 types are available, curved and straight.</li> <li>Mounting and piping methods are the same as for existing products.</li> </ul>	<ul style="list-style-type: none"> <li>2 types of construction are available. 2 dimensional structures are created by combining curved and straight units, and long strokes are created by combining straight type units only.</li> </ul>	<ul style="list-style-type: none"> <li>Parts for combination units.</li> <li>These consist of combinations of cylinder tube and body parts, and "combination units" are made by linking these set parts.</li> <li>Curved units, straight units, maintenance units and end units, etc. are available.</li> <li>Set parts can also be used as service parts (for unit replacement of cylinder tubes and bodies).</li> </ul>	<ul style="list-style-type: none"> <li>Service parts.</li> <li>These are service parts for each of the cylinder tubes and bodies included in the set parts.</li> </ul>	<p>Spare parts ... Service parts consisting of various seals and wear rings, etc.</p> <p>Optional parts ... Support brackets for attaching cylinders are available as optional parts.</p> <p>[Support brackets &amp; side supports]</p>
Configuration					
Model	<b>MF</b> Bore size □ • 3-dimensional transfer: Single units	<b>MFT</b> Bore size □ • 3-dimensional transfer: Connecting units (set parts)	• 3-dimensional transfer: Parts	<b>Spare parts</b> <b>MF</b> Bore size — <b>PS</b> Spare parts ↓ • 3-dimensional transfer <b>Optional parts</b> <b>MF-S32</b> <sup>A</sup> / <sub>B</sub> (side support <sup>A</sup> / <sub>B</sub> ) <b>MY-S</b> □ <sup>A</sup> / <sub>B</sub> (support bracket <sup>A</sup> / <sub>B</sub> )	

# 3-Dimensional Transfer/Single Units Series MF

## How to Order

**Curved Type** MF 32 RS 45 Y59B

3-dimensional transfer single unit

**Bore size**

15	15mm
32	32mm

**Curved type**

RS	Lateral curve
RT	Inside curve
RG	Outside curve

**Angle**

45	45°
90	90°
180	180°

**Auto switch type**

Nil	Without auto switch
-----	---------------------

\* Refer to the table below for auto switch part numbers.

**Number of auto switches**

Nil	2pcs.
S	1pc.
n	"n" pcs.

**Air supply unit** (Note 1)

Description	Symbol	Qty.
—	Nil	None
A unit (Air system 1)	AS	1 set
	AW	2 sets

Note 1) Air supply unit, 1 set breakdown: Supply block (slide table side) 1pc.  
Supply ring (plate side) 2pcs.

**Straight Type** MF 32 SA 200 Y59B

3-dimensional transfer single unit

**Bore size**

15	15mm
32	32mm

**Straight type**

**Stroke**

200	200mm
250	250mm
300	300mm
350	350mm
400	400mm
450	450mm
500	500mm
600	600mm
1000	1000mm

The maximum produceable stroke is 5000mm.  
Long strokes exceeding a 2000mm straight type will be produced with the order made specifications (-XB11).

**Auto switch type**

Nil	Without auto switch
-----	---------------------

\* Refer to the table below for auto switch part numbers.

**Number of auto switches**

Nil	2pcs.
S	1pc.
n	"n" pcs.

**Air supply unit** (Note 1)

Description	Symbol	Qty.
—	Nil	None
A unit (Air system 1)	AS	1 set
	AW	2 sets

Note 1) Air supply unit, 1 set breakdown: Supply block (slide table side) 1pc.  
Supply ring (plate side) 2pcs.

### Applicable Auto Switches

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage		Auto switch part no.		Lead wire length (m) *			Applicable load	Detailed specifications								
					DC	AC	Electrical entry direction	0.5 (Nil)	3 (L)	5 (Z)											
Reed switch	—	Grommet	Yes	3 wire (NPN) equiv.	—	5V	—	—	Z76	●	●	—	IC circuit	Page 20							
				2 wire	24V	12V	100V	—	Z73	●	●	●	—		Relay, PLC						
					5V, 12V	100V or less	—	Z80	●	●	—	IC circuit									
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V, 12V	—	Perpendicular	Y69A	Y59A	●	●	○	IC circuit	Page 21						
				In-line				Y7PV	Y7P	●	●	○	—	Relay, PLC							
				Y69B				Y59B	●	●	○	—									
				Diagnostic indication (2 color indicator)				Grommet	Yes	3 wire (NPN)	24V	5V, 12V	—	Perpendicular	Y7NVV	Y7NW	●	●	○	IC circuit	Page 22
										In-line				Y7PWV	Y7PW	●	●	○	—		
										Y7BWW				Y7BW	●	●	○	—			

\* Lead wire length symbols 0.5m ..... Nil (Example) Y59A  
3m ..... L (Example) Y59AL  
5m ..... Z (Example) Y59AZ

\* Solid state switches marked with a "O" are produced upon receipt of order.

\* Refer to pages 20 through 24 for detailed auto switch specifications.

## Specifications



Bore size (mm)	15	32
Fluid	Air	
Proof pressure	1.05MPa	
Maximum operating pressure	0.7MPa	
Minimum operating pressure	0.18MPa	
Ambient & fluid temperature	- 10 to 60 °C	
Magnetic holding force	70N	316N
Cushion	Both sides, Shock absorber	
Lubrication	Non-lube	
Mounting orientation	Unrestricted	
Stroke length tolerance mm	0 to 250st: $^{+1.0}_0$ , 251 to 1000st: $^{+1.4}_0$ , 1001st to : $^{+1.8}_0$	
Piston speed	50 to 2000mm/s	
Options	Air supply unit	

## Weight

### 1) Weight of curved types (Unit:kg)

Bore size (mm) \ Angle	45°	90°	180°
15	2.6	3.6	4.5
32	5.3	7.1	9.1

### 2) Weight of straight types (Unit: kg)

Bore size (mm)	15	32
Basic weight (for 0 stroke)	2.3	4.0
Additional weight per 50mm of stroke	0.1	0.15

Calculation/example MF32-SA300

$$4.0 + 0.15 \times 300/50 = 4.9 \text{ (kg)}$$

(Basic weight) (50st additional weight) (Stroke)

### 3) Supply unit weight (Unit: kg/pc.)

Bore size (mm)	15	32
Weight	0.15	0.35

Note) Including plate side supply unit 0.15kg (ø32), 0.08kg (ø15)

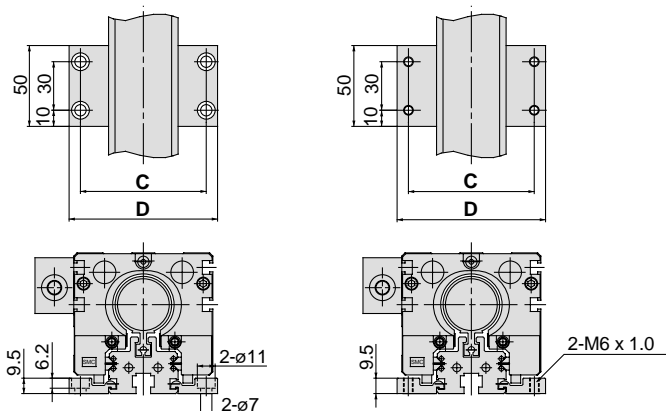
## Shock Absorber Specifications

Bore size	15	32	
Shock absorber type	RB0806	RB1412	
Energy: J	2.94	19.6	
Maximum stroke absorption: mm	6	12	
Maximum collision speed: m/sec	0.05 to 5	0.05 to 5	
Maximum operating frequency: cycle/min	80	45	
Ambient temperature range: °C	-10 to 80	-10 to 80	
Spring force: N	When expanded	1.96	6.86
	When compressed	4.22	15.98

## Option Specifications: Air supply unit (Supply Block Section) Specifications

Bore size	15, 32
Fluid	Air
Maximum operating pressure	1.0MPa
Minimum operating pressure	0.05MPa
Ambient and fluid temperature	0 to 60°C
Effective sectional area (Cv factor)	7mm <sup>2</sup> (0.38)

## Side Support Mounting Dimensions



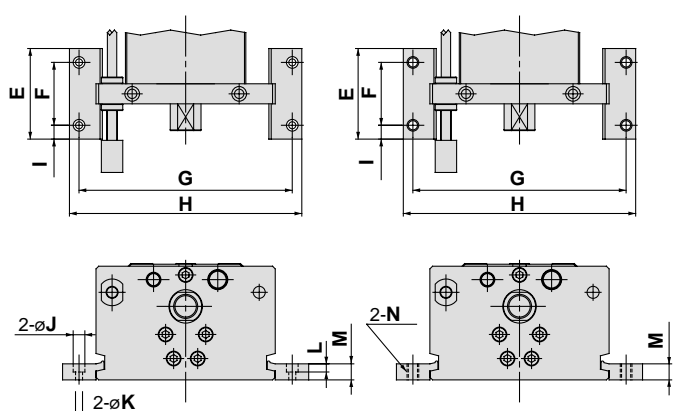
Side support A part no.: MF-S32A

Side support B part no.: MF-S32B

Part No.	Applicable cylinder	C	D
MF-S32 A B	MF15	68	82
	MF32	78	92

Note) The side supports are common to the MF15 and MF32.

## Support Bracket Mounting Dimensions

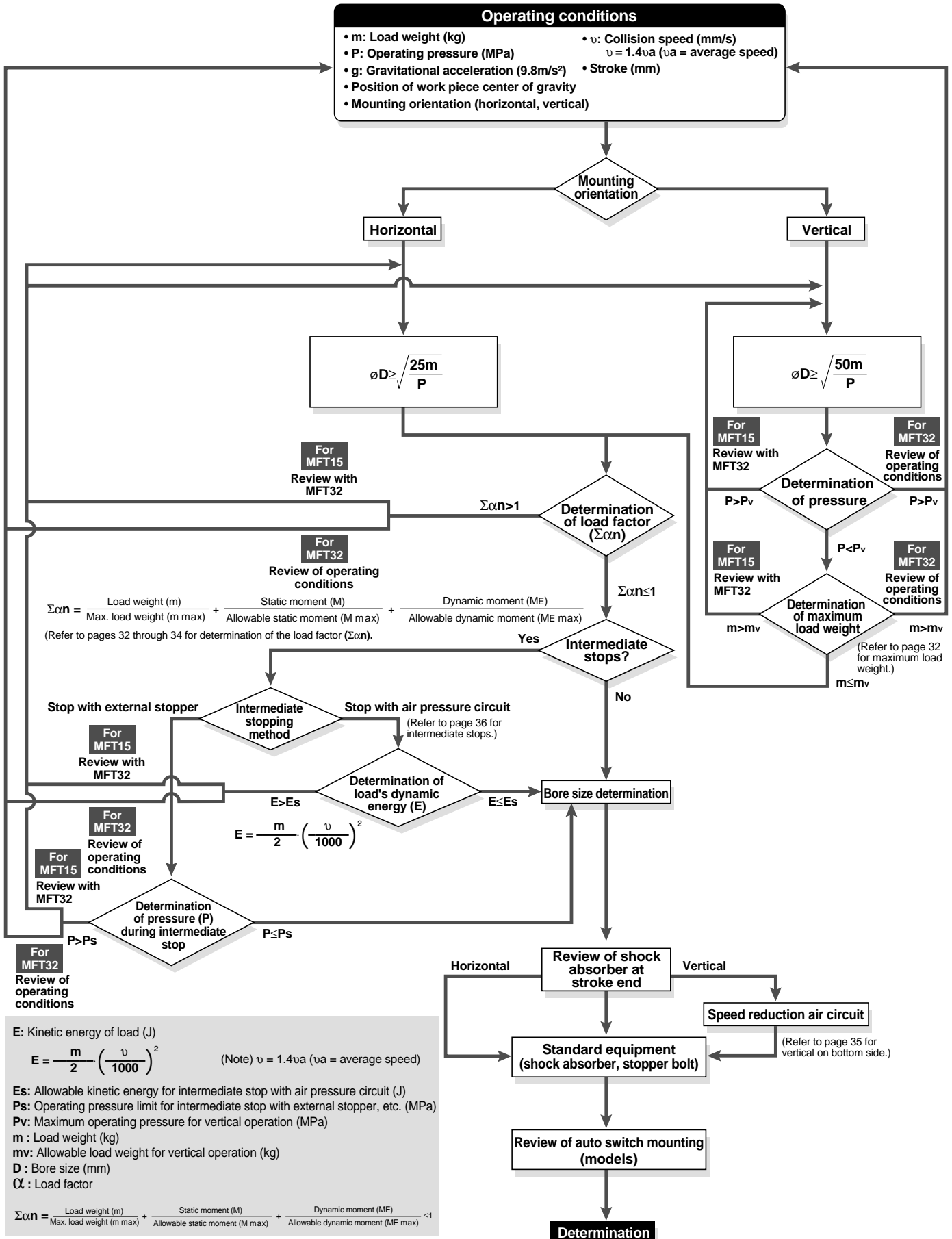


Support bracket A part no.: MY-S□A

Support bracket B part no.: MY-S□B

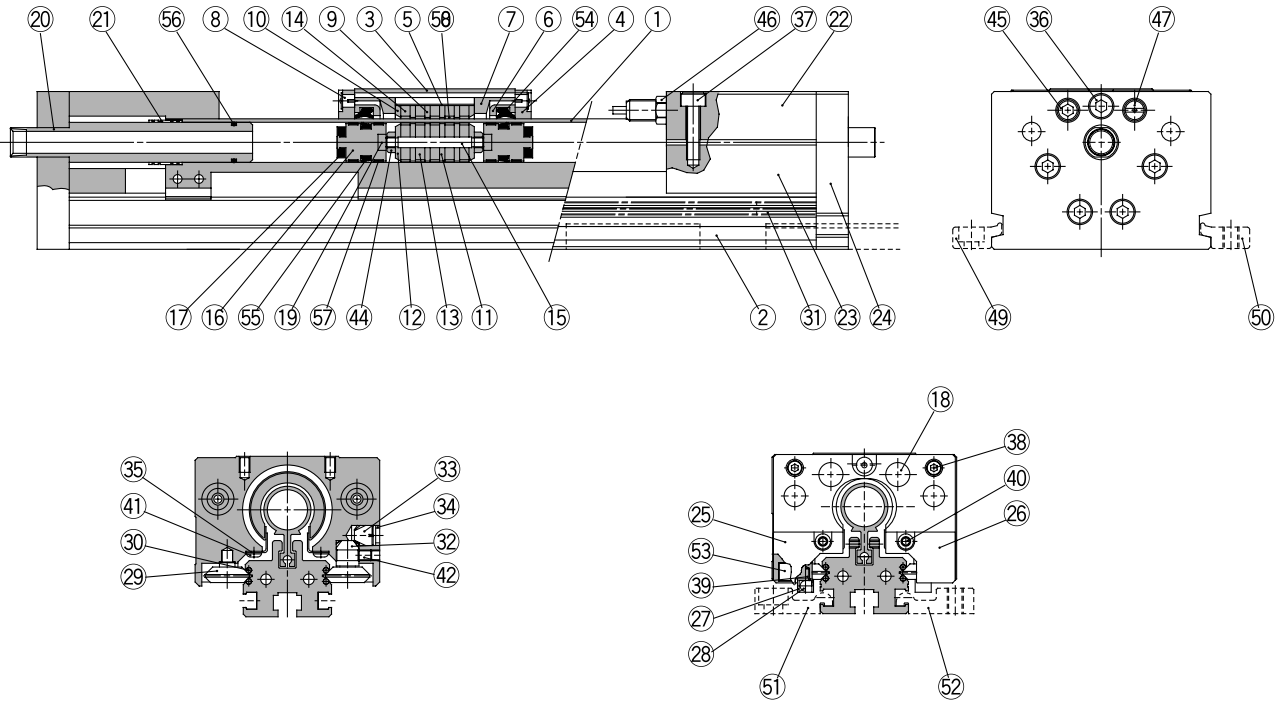
Part No.	Applicable cylinder	E	F	G	H	I	J	K	L	M	N
MY-S25 A B	MF15	50	35	97	111	7.5	9.5	5.5	5	8	M6 x 1
	MF32	64	45	154	172	9.5	11	6.6	6	11.7	M8 x 1.25

# Series MF Model Selection Method



**Construction**

**MF15**



**Parts list**

No.	Description	Material	Qty.	Note
1	Cylinder tube	Aluminum alloy	1	Hard anodized
2	Body	Aluminum alloy	1	Straight section: Hard anodized Curved section: Electroless nickel plated
3	Slide table	Aluminum alloy	1	Hard anodized
4	End plate	Aluminum alloy	2	Hard anodized
5	External slider tube	Stainless steel	1	
6	Scraper holder	Aluminum alloy	2	Anodized
7	Spacer	Aluminum alloy	2	Anodized
8	Cup with ball	Brass	2	
9	External yoke A	Rolled steel plate	4	Zinc chromated
10	External yoke B	Rolled steel plate	2	Zinc chromated
11	Piston side yoke A	Rolled steel plate	4	Zinc chromated
12	Piston side yoke B	Rolled steel plate	2	Zinc chromated
13	Magnet A	Rare earth magnet	5	
14	Magnet B	Rare earth magnet	5	
15	Shaft	Stainless steel	1	
16	Piston	Aluminum alloy	2	Chromated
17	Bumper	Urethane rubber	2	
18	Parallel pin A	Carbon steel	4	Nickel plated, quenched
19	Parallel pin	Carbon steel	2	Nickel plated, quenched
20	Head cover	Aluminum alloy	2	Hard anodized
21	Tube fitting	Stainless steel	2	
22	Plate A	Aluminum alloy	2	Hard anodized
23	Plate B	Aluminum alloy	2	Hard anodized
24	Plate C	Aluminum alloy	2	Hard anodized
25	Felt holder A	Special resin	2	
26	Felt holder B	Special resin	2	
27	Magnet holder	Special resin	2	
28	Magnet	Rare earth magnet	2	
29	V roller bearing	Carbon steel	4	

**Parts list**

No.	Description	Material	Qty.	Note
30	Track	Spring steel	4	
31	Guide spacer	Special resin	8	
32	Eccentric bearing holder	Stainless steel	2	
33	Adjustment gear	Stainless steel	2	
34	Snap ring	Stainless steel	2	
35	Detent fitting	Stainless steel	2	
36	Hexagon socket head screw	Chromium molybdenum steel	10	Nickel plated
37	Hexagon socket head screw	Chromium molybdenum steel	4	Nickel plated
38	Hexagon socket head screw	Chromium molybdenum steel	4	Nickel plated
39	Hexagon socket head screw	Chromium molybdenum steel	2	Nickel plated
40	Hexagon socket head button bolt	Chromium molybdenum steel	4	Nickel plated
41	Hexagon socket head button bolt	Chromium molybdenum steel	4	Nickel plated
42	Hexagon socket head set screw	Chromium molybdenum steel	4	Nickel plated
44	Piston nut	Carbon steel	2	Zinc chromated
45	Adjustment bolt	Chromium molybdenum steel	2	Nickel plated
46	Hexagon nut	Carbon steel	4	Nickel plated
47	Shock absorber	-	2	RB0806
* 49	Support bracket A	Aluminum alloy	-	Hard anodized
* 50	Support bracket B	Aluminum alloy	-	Hard anodized
* 51	Side support A	Aluminum alloy	-	Hard anodized
* 52	Side support B	Aluminum alloy	-	Hard anodized
53	Felt seal	Felt	4	
54	Scraper	NBR	2	
55	Piston seal	NBR	2	
56	O-ring	NBR	2	
57	Wear ring A	Special resin	9	
58	Wear ring B	Special resin	5	

Note 1) The \* symbol indicates optional parts.

**Replacement parts: Seal kits**

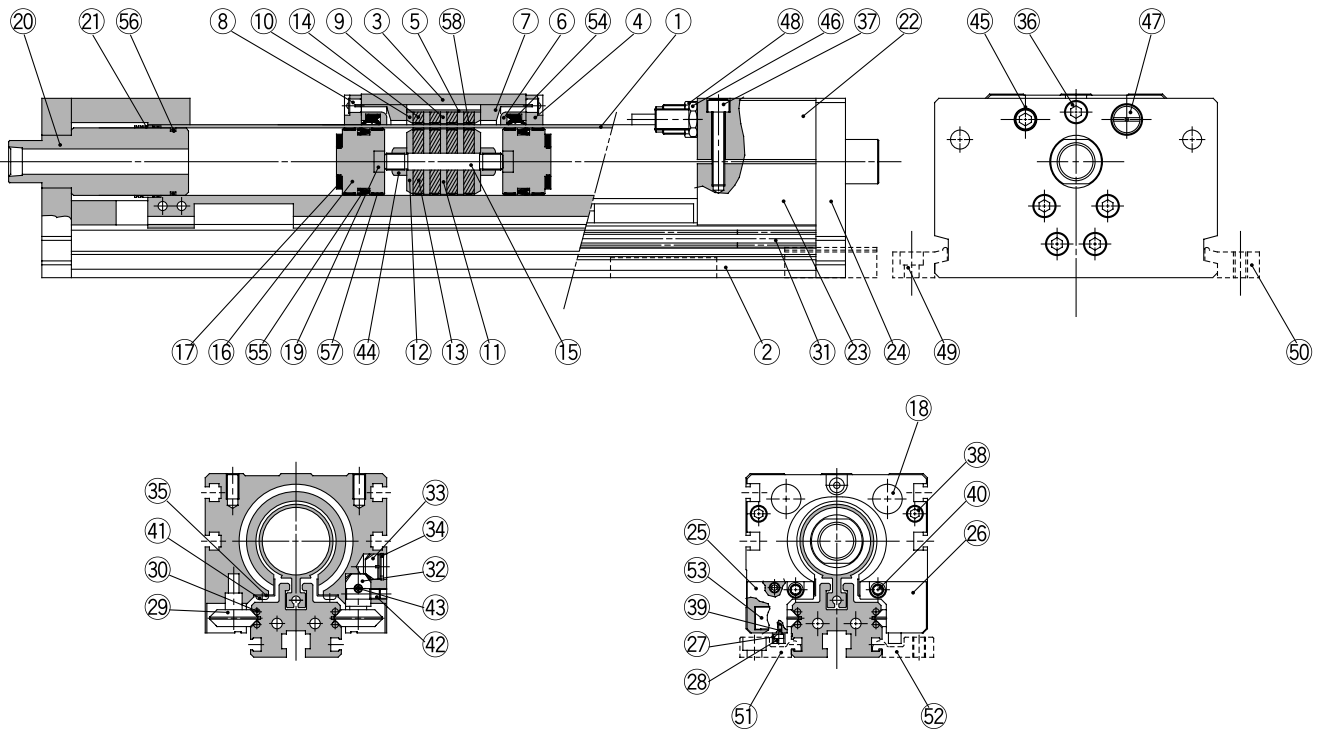
Bore size (mm)	Seal kit No.	Contents
15	MF15-PS	A set of above Nos. 53 through 58

Note 2) Seal kits are sets consisting of items 53 through 58, which can be ordered using the above seal kit number.

# Series MF

## Construction

### MF32



#### Parts list

No.	Description	Material	Qty.	Note
1	Cylinder tube	Aluminum alloy	1	Hard anodized
2	Body	Aluminum alloy	1	Straight section: Hard anodized Curved section: Electroless nickel plated
3	Slide table	Aluminum alloy	1	Hard anodized
4	End plate	Aluminum alloy	2	Hard anodized
5	External slider tube	Stainless steel	1	
6	Scraper holder	Aluminum alloy	2	Anodized
7	Spacer	Aluminum alloy	2	Anodized
8	Cup with ball	Brass	2	
9	External yoke A	Rolled steel plate	3	Zinc chromated
10	External yoke B	Rolled steel plate	2	Zinc chromated
11	Piston side yoke A	Rolled steel plate	3	Zinc chromated
12	Piston side yoke B	Rolled steel plate	2	Zinc chromated
13	Magnet A	Rare earth magnet	4	
14	Magnet B	Rare earth magnet	4	
15	Shaft	Stainless steel	1	
16	Piston	Aluminum alloy	2	Chromated
17	Bumper	Urethane rubber	2	
18	Parallel pin A	Carbon steel	4	Nickel plated, quenched
19	Parallel pin	Carbon steel	2	Nickel plated, quenched
20	Head cover	Aluminum alloy	2	Hard anodized
21	Tube fitting	Stainless steel	2	
22	Plate A	Aluminum alloy	2	Hard anodized
23	Plate B	Aluminum alloy	2	Hard anodized
24	Plate C	Aluminum alloy	2	Hard anodized
25	Felt holder A	Special resin	2	
26	Felt holder B	Special resin	2	
27	Magnet holder	Special resin	2	
28	Magnet	Rare earth magnet	2	
29	V roller bearing	Carbon steel	4	

#### Parts list

No.	Description	Material	Qty.	Note
30	Track	Spring steel	4	
31	Guide spacer	Special resin	8	
32	Eccentric bearing holder	Stainless steel	2	
33	Adjustment gear	Stainless steel	2	
34	Snap ring	Stainless steel	2	
35	Detent fitting	Stainless steel	2	
36	Hexagon socket head screw	Chromium molybdenum steel	10	Nickel plated
37	Hexagon socket head screw	Chromium molybdenum steel	4	Nickel plated
38	Hexagon socket head screw	Chromium molybdenum steel	4	Nickel plated
39	Hexagon socket head screw	Chromium molybdenum steel	2	Nickel plated
40	Hexagon socket head button bolt	Chromium molybdenum steel	4	Nickel plated
41	Hexagon socket head button bolt	Chromium molybdenum steel	4	Nickel plated
42	Hexagon socket head set screw	Chromium molybdenum steel	4	Nickel plated
43	Hexagon socket head set screw	Chromium molybdenum steel	2	Nickel plated
44	Piston nut	Carbon steel	2	Zinc chromated
45	Adjustment bolt	Chromium molybdenum steel	2	Nickel plated
46	Hexagon nut	Carbon steel	2	Nickel plated
47	Shock absorber	-	2	RB1412
48	Hexagon nut	Carbon steel	2	Nickel plated
* 49	Support bracket A	Aluminum alloy	-	Hard anodized
* 50	Support bracket B	Aluminum alloy	-	Hard anodized
* 51	Side support A	Aluminum alloy	-	Hard anodized
* 52	Side support B	Aluminum alloy	-	Hard anodized
53	Felt seal	Felt	4	
54	Scraper	NBR	2	
55	Piston seal	NBR	2	
56	O-ring	NBR	2	
57	Wear ring A	Special resin	8	
58	Wear ring B	Special resin	4	

Note 1) The \* symbol indicates optional parts.

#### Replacement parts: Seal kits

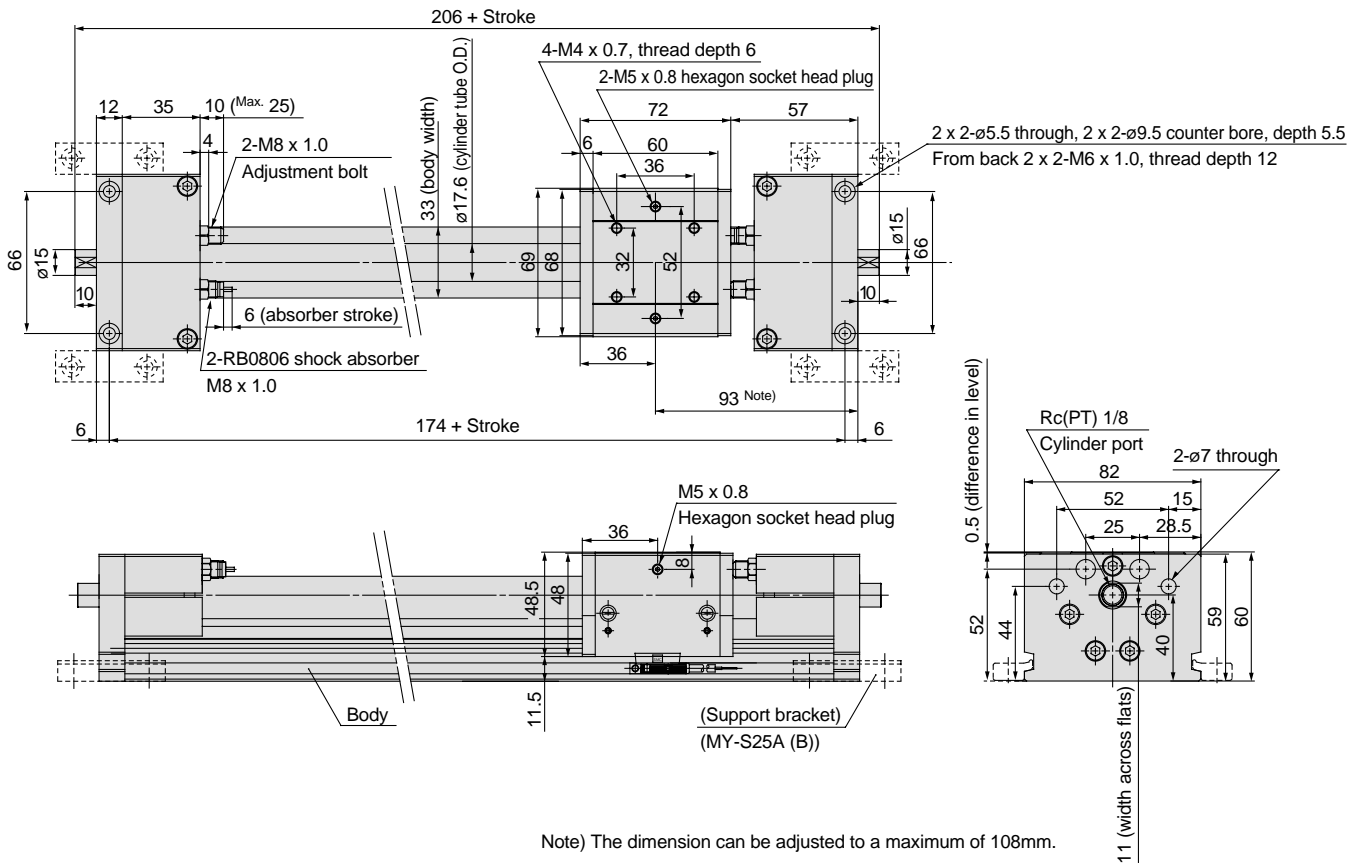
Bore size (mm)	Seal kit No.	Contents
32	MF32-PS	A set of above Nos. 53 through 58

Note 3) Seal kits are sets consisting of items 53 through 58, which can be ordered using the above seal kit number.

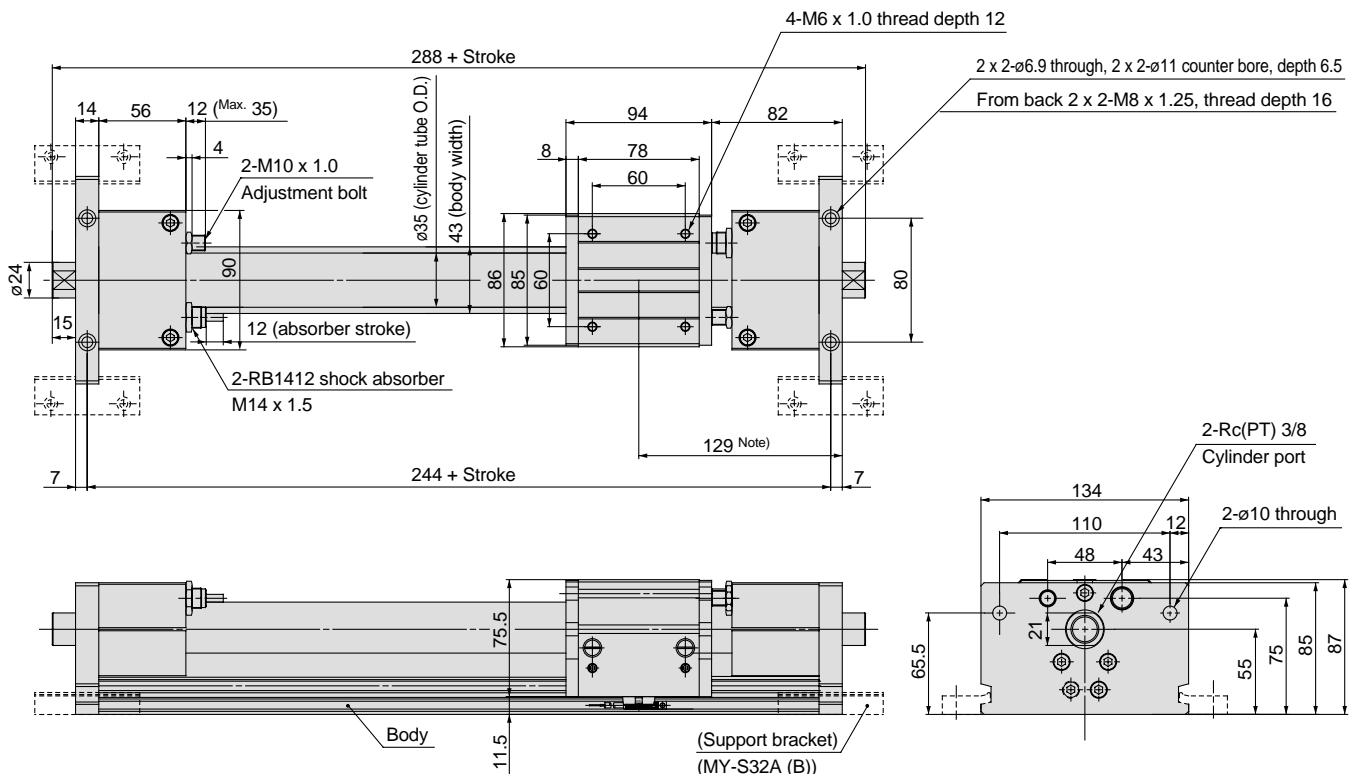


Dimensions **Straight Type**

**MF15-SA Stroke**



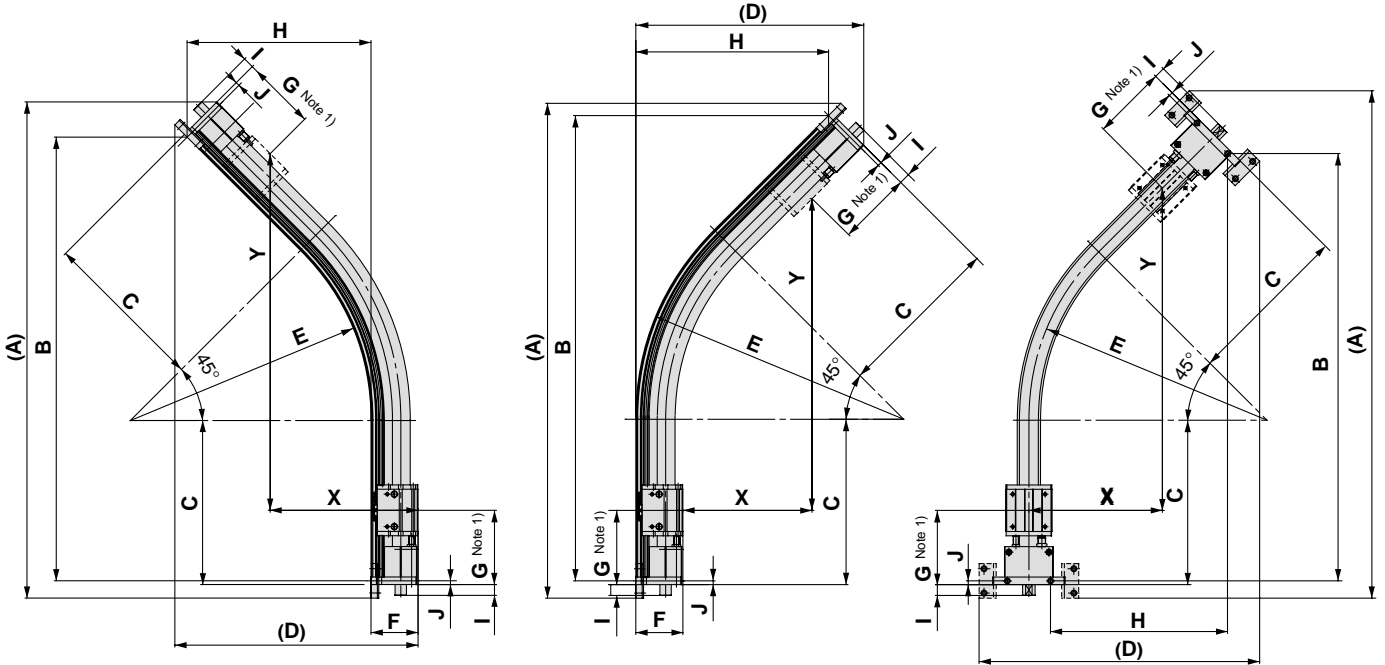
**MF32-SA Stroke**



# Series MF

## Dimensions Curved Type

MF<sup>15</sup>/<sub>32</sub>-□45



**RG**

	A	B	C	D	E	F	G
ø15	791	720	300	376	R310	60	93
ø32	916	819	303	449	R445	87	129
	H	I	J	X	Y Note 2)		
ø15	298	10	6	244 to 254	589 to 614		
ø32	339	15	7	262 to 279	633 to 673		

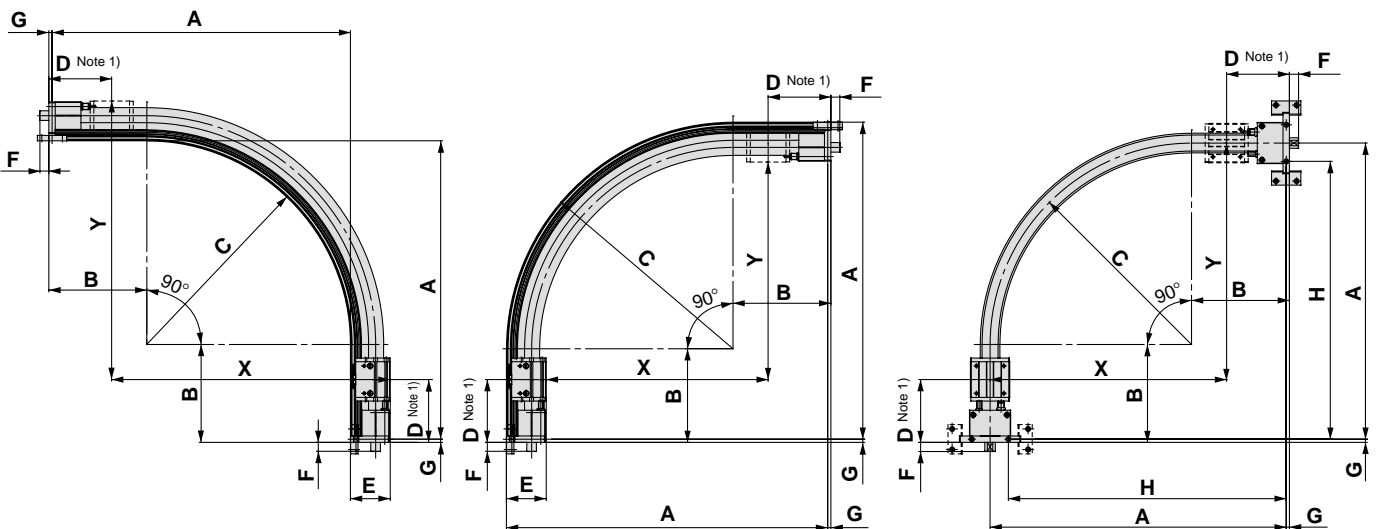
**RT**

	A	B	C	D	E	F	G
ø15	823	780	301	369	R390	60	93
ø32	906	851	300	418	R495	87	129
	H	I	J	X	Y Note 2)		
ø15	323	10	6	233 to 244	564 to 589		
ø32	352	15	7	224 to 241	542 to 581		

**RS**

	A	B	C	D	E	G	H
ø15	835	730	302	424	R350	93	302
ø32	934	790	304	508	R440	129	327
	I	J	X	Y Note 2)			
ø15	10	6	240 to 251	579 to 605			
ø32	15	7	236 to 253	571 to 610			

MF<sup>15</sup>/<sub>32</sub>-□90



**RG**

	A	B	C	D	E	F	G
ø15	600	296	R310	93	60	10	6
ø32	743	305	R445	129	87	15	7
	X	Y Note 2)					
ø15	558 to 573	558 to 573					
ø32	685 to 708	685 to 708					

**RT**

	A	B	C	D	E	F	G
ø15	680	296	R390	93	60	10	6
ø32	797	309	R495	129	87	15	7
	X	Y Note 2)					
ø15	518 to 533	518 to 533					
ø32	558 to 581	558 to 581					

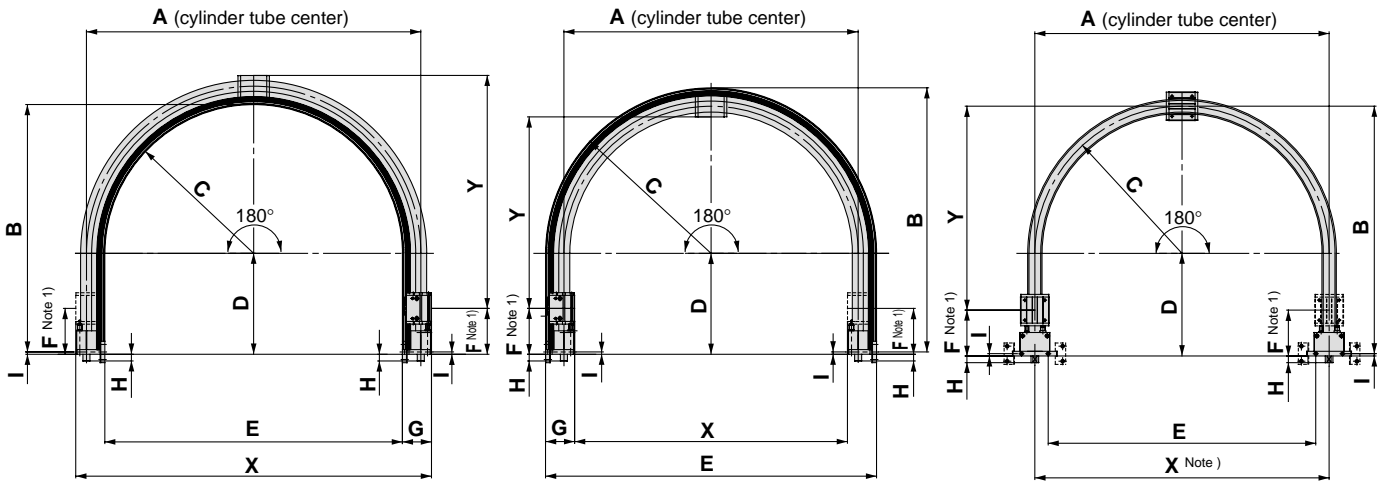
**RS**

	A	B	C	D	F	G	H
ø15	643	299	R350	93	10	6	610
ø32	740	307	R440	129	15	7	700
	X	Y Note 2)					
ø15	541 to 556	541 to 556					
ø32	595 to 618	595 to 618					

Refer to the detailed dimensions for mounting of the slide table and end unit, which are included with the SA (straight type) dimensions.

Note 1) The dimension can be adjusted to a maximum of 108mm for MF15 and 152mm for MF32.  
 Note 2) The dimension is a value based on adjustment of the adjustment bolt.

MF<sup>15</sup>/<sub>32</sub> - □180



**RG**

	A	B	C	D	E	F	G
ø15	700	600	R310	296	620	93	60
ø32	1000	740	R445	302	890	129	87
	H	I	X	Y (Note 2)			
ø15	10	6	740	558 to 573			
ø32	15	7	1064	682 to 705			

**RT**

	A	B	C	D	E	F	G
ø15	700	680	R390	296	780	93	60
ø32	880	790	R495	302	990	129	87
	H	I	X	Y (Note 2)			
ø15	10	6	660	518 to 533			
ø32	15	7	816	558 to 581			

**RS**

	A	B	C	D	E	F	H
ø15	700	640	R350	296	634	93	10
ø32	880	740	R440	307	800	129	15
	I	X	Y (Note 2)				
ø15	6	700	538 to 553				
ø32	7	880	595 to 618				

Refer to the detailed dimensions for mounting of the slide table and end unit, which are included with the SA (straight type) dimensions.

Note) The X dimension is the same as the cylinder tube center dimension.

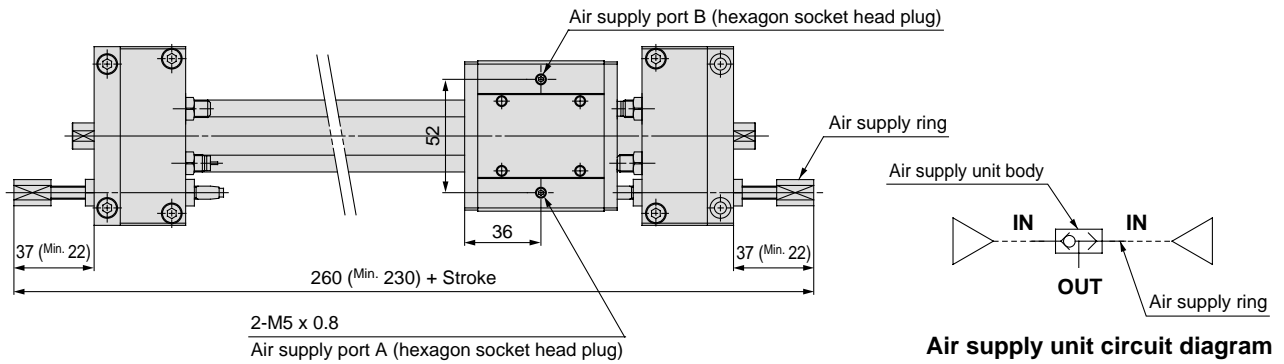
Note 1) The dimension can be adjusted to a maximum of 108mm for MF15 and 152mm for MF32.

Note 2) The dimension is a value based on adjustment of the adjustment bolt.

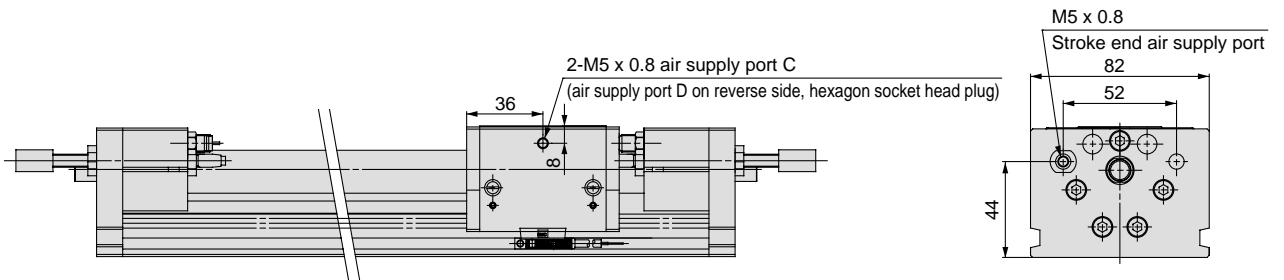
# Series MF

## Dimensions Air Supply Unit

ø15

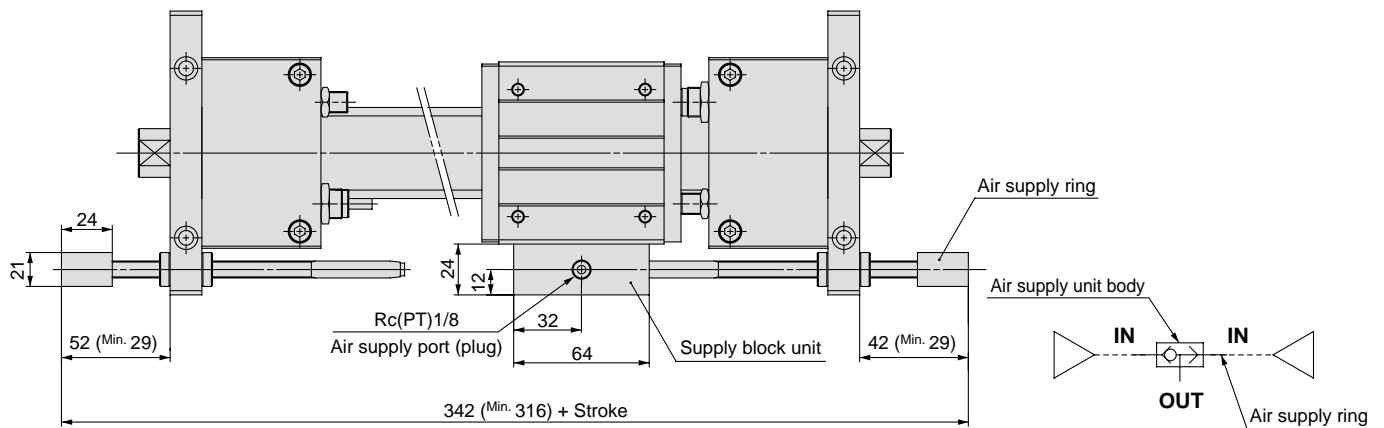


**Air supply unit circuit diagram**



\* When equipped with air supply unit system 1, there are two supply ports, A and C. When equipped with system 2, there are four supply ports, A through D.

ø32



**Air supply unit circuit diagram**

