

# Light weight Parts

Lineup of parts with further weight reduction.  
Thanks to the combination of these lightweight parts, Chuck Plate becomes lighter, and the stopping accuracy of the robot improves, too.





# POWER REDUCTION

## 8% reduction in electricity consumption

Examples of Lightweight parts application

Jungle gym series

520×840mm

Aluminum plate

**11 kg**



510×810mm

**4.8 kg**



**56%**  
Weight  
reduction

If the robot hand is 50% lighter, the power used by the robot can be reduced by "8%".

*Contribution to  
carbon neutrality*



## *Reduced workload*



*Lightweight,  
Easy and  
safe !*

**Heavy Chuck-plates are risky**



Heavy Chuck-plates reduce work efficiency as well as the risk of falls and back pain.

*Ensure worker safety and  
improve efficiency*



## *Reduce robot load*



- **Cycle up**

Smooth robot motion with light chuck plate

- **High life expectancy due to load reduction**

Light chuck plate reduces load on the robot

- **Controls arm tip shake**

Light chuck plate reduces vibration at the end of the arm

***Maximize  
robot performance !***



## 【Introduction of lightweight parts】

Resin suction stem

Resin mini cylinder

Cylinder Accessories

Piping Accessories

Frame (CFRP Pipe)





## Resin suction stem



For jungle gym attachment  
(for pipe)



For nut mounting  
(for aluminum plate)

◇ Resin suction stem (small)

### ■ Features

- Resin body for weight reduction
- Better sliding properties and less wear than existing products
- Built-in spring absorbs shock
- Easy to install adsorption pads

### ■ Dimensions and weight

#### 【Dimensions】

jungle gym mounting type : same as existing machines  
nut mounting type : Max. 5mm longer

#### 【Weight】

jungle gym mounting type : Max. 10g (55.5%) lighter  
nut mounting type : Max. 5 g (35.5%) lighter

material	Code No.	type	Overall length	weight	Weight ratio
Resin	211094	VFILP-S-20-P12	70	8 g	<b>10g (55.5%) weight reduction</b>
Aluminum	211010	VFIL1-S-20-P12	70	18 g	



## Resin suction stem

***Outstanding durability!***

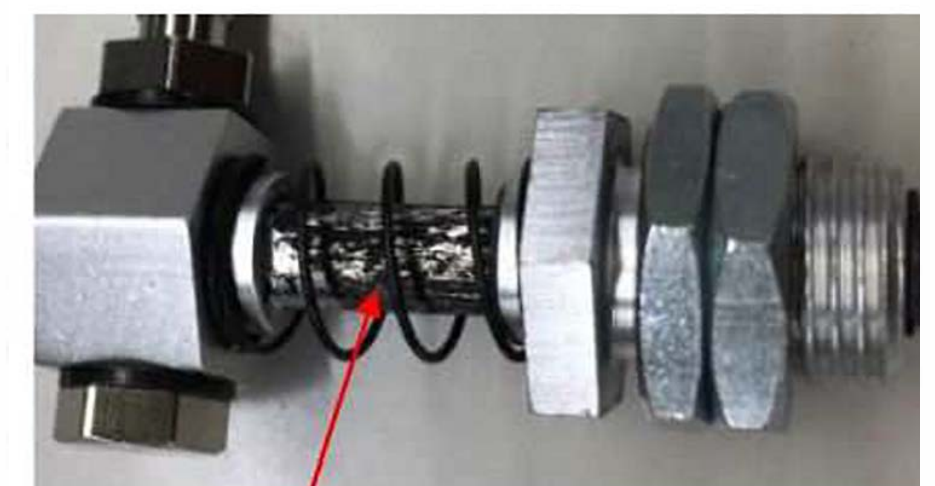
### ■ Endurance test

• Tested “shaft wear” and “operating conditions” by performing 1 million operations on both resin suction stems / aluminum suction stems.

Code No	type	stroke	Amount of wear(mm)	Remarks
211092	VFILP-S-5-P12	5st	0.17	Sliding is possible even after 1 million operations
211093	VFILP-S-10-P12	10st	0.16	Same as above
211094	VFILP-S-20-P12	20st	0.18	Same as above
211095	VFILP-S-30-P12	30st	0.18	Same as above
Code No	type	stroke	Amount of wear(mm)	Remarks
210974	VFIL-S-5A	5st	—	Inoperable after 130,000 cycles
210975	VFIL-S-10A	10st	0.18	Sliding resistance due to wear powder
210976	VFIL-S-20A	20st	0.2	Sliding resistance due to wear powder
210977	VFIL-S-30A	30st	—	Inoperable after 250,000 cycles



**No visible wear powder**



**Wear powder**



# Resin mini cylinder



Made of aluminum



Made of resin

## ■ Features

- Resin body for weight reduction
- Ideal for chucking small molded products
- With rod turn-around stop mechanism

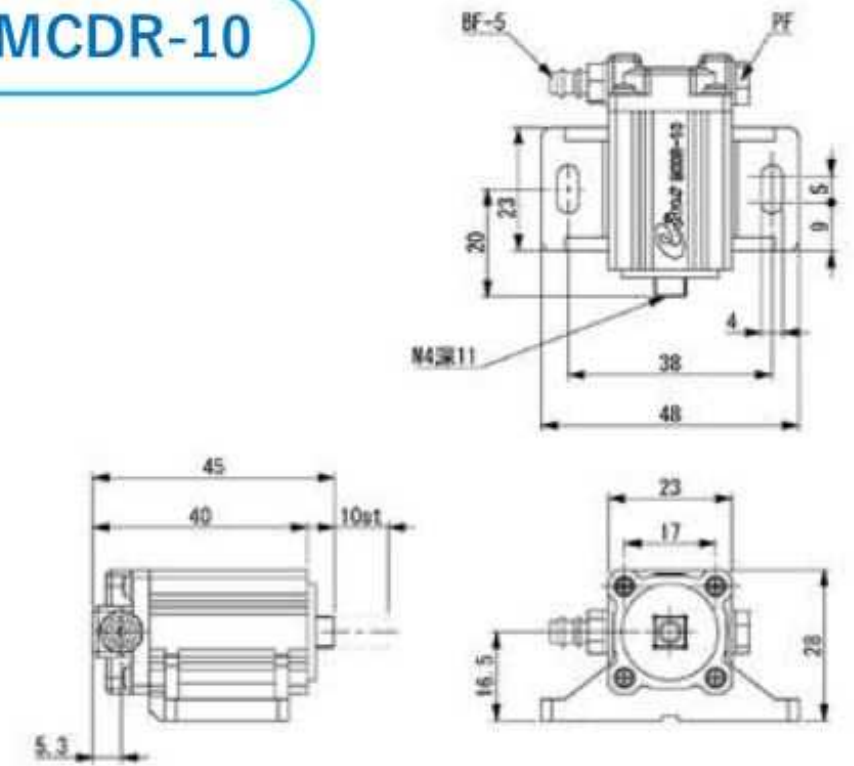
### ◇cylinder stroke 10st

material	Code No	type	A	B	C	D	weight	Weight ratio
resin	123691	MCDR-10	45 mm	28 mm	48 mm	16.5mm ※ 1	40 g	<b>25g(38.5%) lighter</b>
aluminum	123219	MCD1-10	45 mm	28 mm	48 mm	15.5mm	65 g	

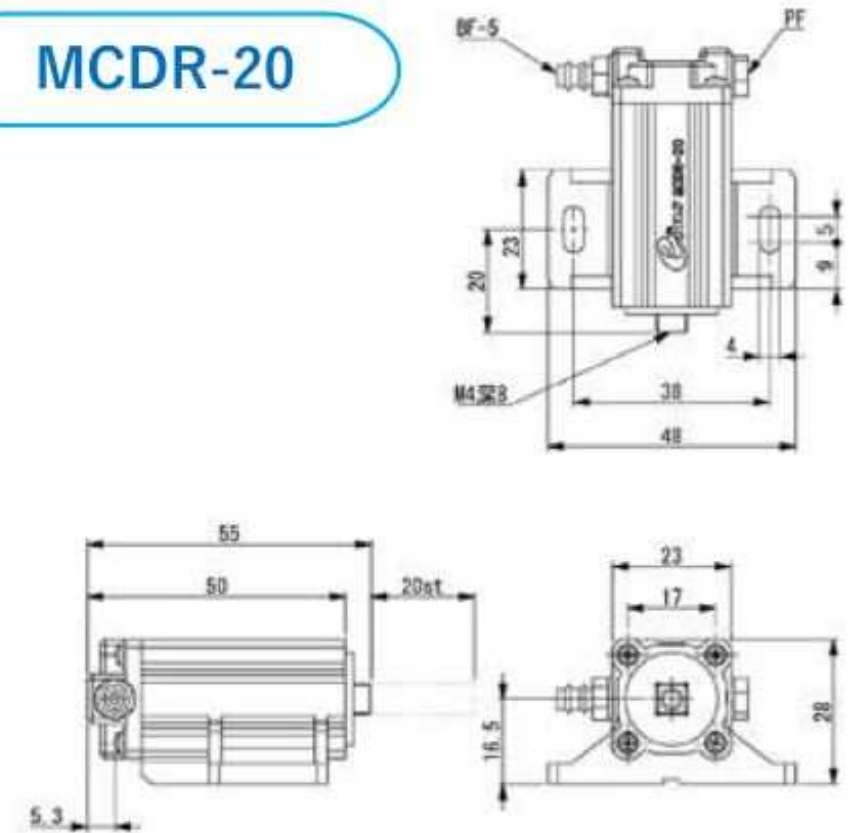
### ◇cylinder stroke 20st

material	Code No	type	A	B	C	D	weight	Weight ratio
resin	123692	MCDR-20	55 mm	28 mm	48 mm	16.5mm ※ 1	48 g	<b>32g(40.0%) lighter</b>
aluminum	123220	MCD1-20	55 mm	28 mm	48 mm	15.5mm	80 g	

MCDR-10



MCDR-20



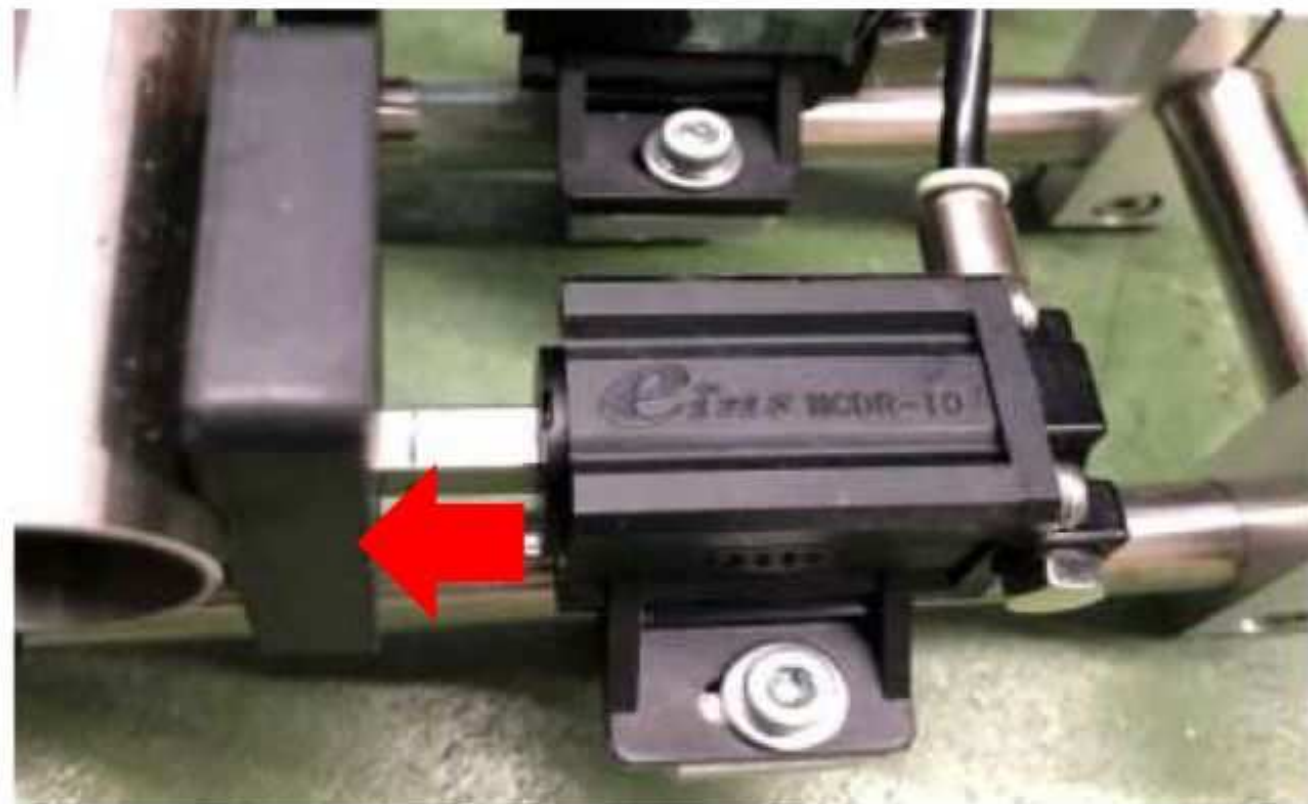


## Resin mini cylinder

*Outstanding durability!*

### ■ Evaluation test

- 1,000,000 operations were performed together with the existing product.  
Minimum operating pressure set at 0.25 MPa



O-ring is placed on the end face of the cylinder and secured with a screw to prevent air leakage.



O-ring



Screw fixing

### 【Result】

- Air leakage volume: Allowable for both aluminum and plastic (10mL/min or less)
- If 1 million cycles are calculated under the condition of a molding cycle of 30 seconds, that equals 1,041 days (equivalent to 2.85 years), assuming 8 hours of work per day



## Cylinder Accessories

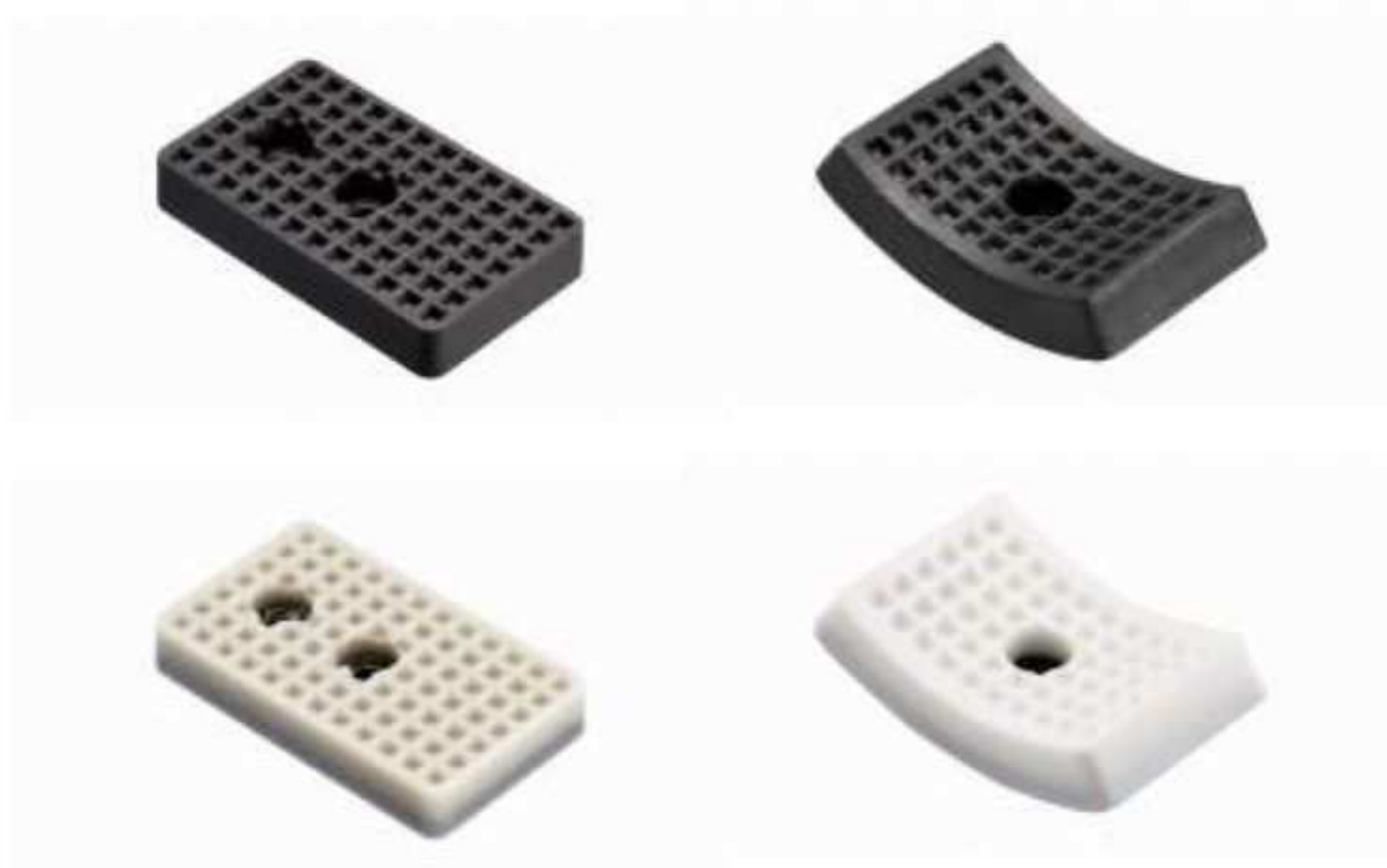


Plate for mini cylinder  
(square shape)

Plate for mini cylinder  
(R shape)

shape	Code No.	type	Iron inside	Aluminum inside	Weight ratio
Square(black)	023336	CPL-060	4 3 g	2 3 g	<b>20g(46.5%) lighter</b>
R shaped(black)	023359	CPL-018	4 4 g	1 9 g	<b>25g(56.8%) lighter</b>

### ■ Features

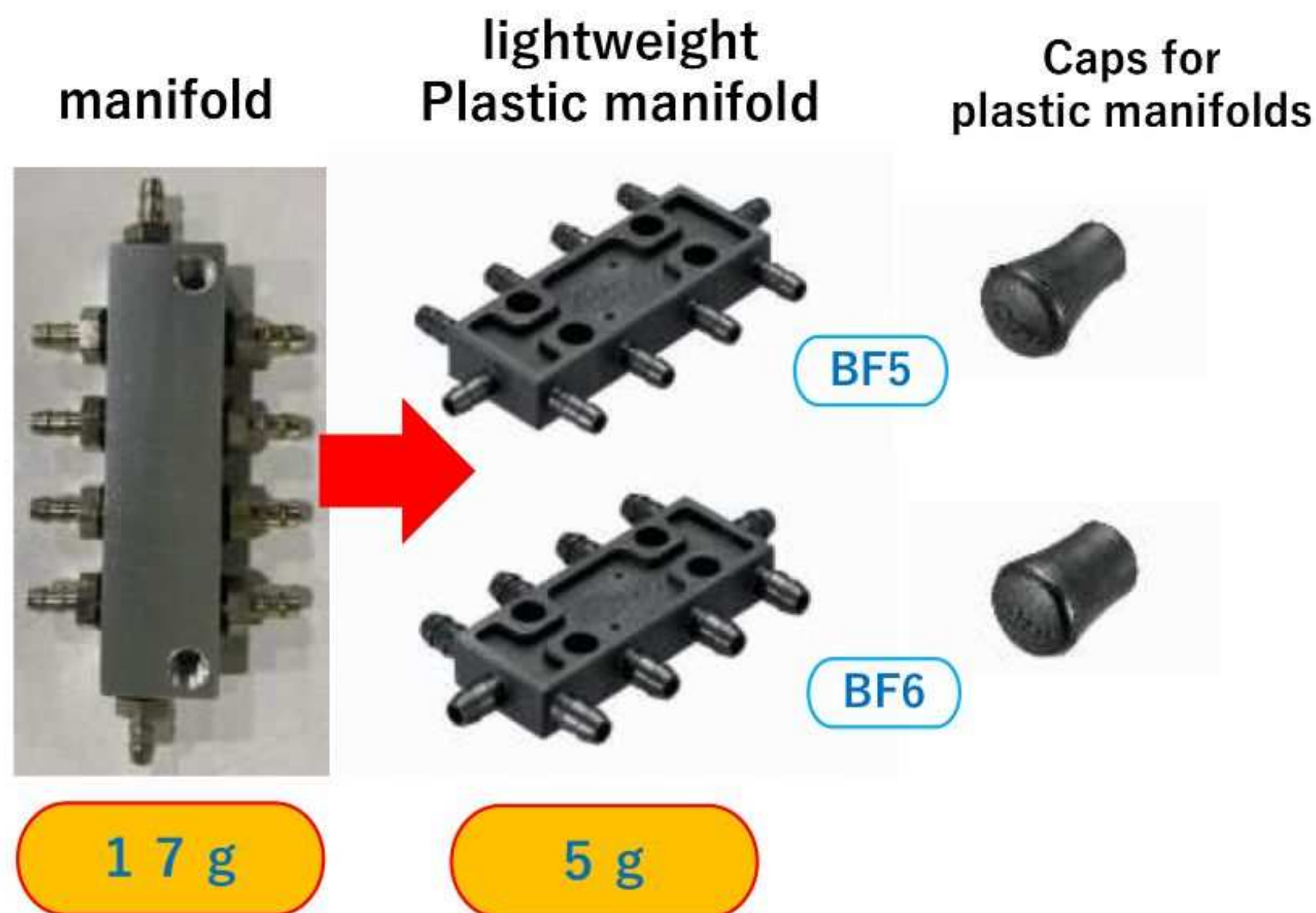
- Weight reduction by changing the material inside the body from steel to aluminum

### ■ Material

Black: Cylinder for Chlorobrene rubber  
White: Cylinder for silicone rubber



## Piping Accessories



**71% weight reduction**

### ■ Features

- Weight reduction by changing the material inside the body to plastic
- Multiple air circuit branches

### Plastic fixture



### 【example of use】



### ■ Features

- Ideal for organizing robot hand's wiring / piping
- Jungle Gym Series