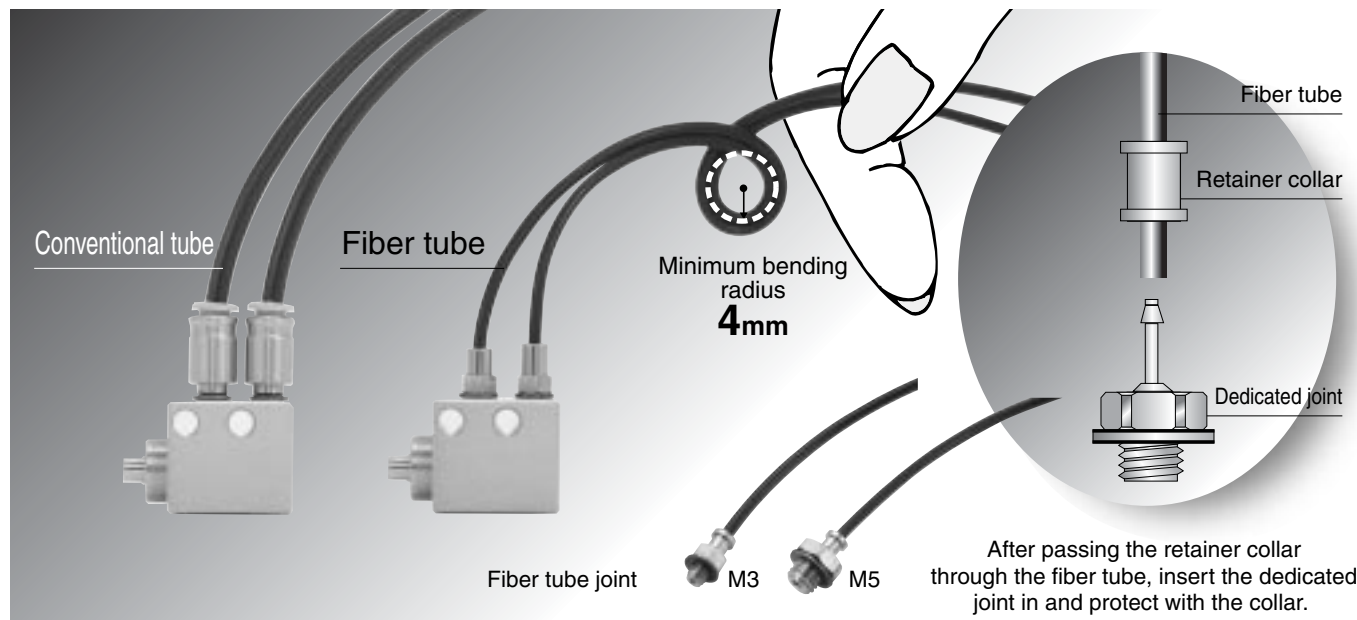


# Fiber tube antistatic type

- Outer diameter: 1.8mm

RoHS



## Introducing an easy-to-pipe ultra-thin tube.

An ultra-thin fiber tube with a  $\phi 1.8\text{mm}$  outer diameter and 4mm minimum bending radius is now available.

Short distances are laid easily and stress applied on the laid tube greatly reduced.

The fiber tube is an extremely fine air tube as thin and flexible as a lead wire. This tube is laid easily in difficult areas such as narrow spaces and for short distance. The resistance applied on the laid tube (tube stress) is extremely small compared to conventional types, so adverse effects on the device accuracy can be eliminated. This fiber tube is suitable for small bore air cylinder piping, and contributes to device downsizing.

### Main features

Appropriate for air cylinder piping of small bore size

- Semiconductor related small part transfer unit
- Suitable for stable control of fine speed cylinder speed  
(Since there is little piping loss, the fine speed cylinder's speed is stable.)
- Piping tube to small part vacuum pad

### ● Eliminate adverse effect onto device accuracy

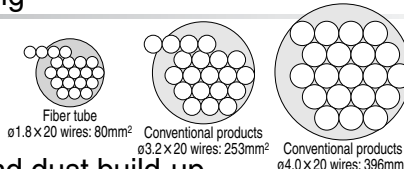
Stress applied to the tube by piping is greatly reduced. The bounce is equivalent to a lead wire, so adverse effects on device accuracy are minimized.

### ● Easy piping

The fiber tube is extremely flexible, and the minimum bending radius is a mere 4mm. In piping, the tube is easily laid in difficult areas such as small spaces and for short distances of only 200 to 300mm.

### ● Energy saving and space saving

This 1.8 x 1.0 diameter tube is extremely thin, making it possible to greatly reduce piping space. The tube piping volume is also small, thereby saving energy.



### ● Resistant to static electricity and dust build-up

The fiber tube's volume resistivity is approx.  $1 \times 10^8 \Omega \cdot \text{cm}$ . (Black) Superior antistatic measures are taken to prevent static electricity and dust gathering.

### ● Dedicated joint available

The dedicated joint is provided with a retainer collar, and is available in three screw sizes: M3, M5, and R1/8 (only straight). This joint is available in the straight, elbow, or barbed nipple type.

### ● Seven tube colors

Tubing is available in black, white, clear, clear blue, clear green, yellow, or red.

Refrigerating type dryer
Desiccant type dryer
High polymer membrane type dryer
Air filter
Auto. drain / others
F.R.L. (Module unit)
F.R.L. (Separate)
Compact F.R.
Precise regulator
F.R.L. (Related products)
Clean F.R.
Electro pneumatic regulator
Air booster
Speed control valve
Silencer
Check valve / others
Joint / tube
Vacuum filter
Vacuum regulator
Suction plate
Magnetic spring buffer
Mechanical pressure SW
Electronic pressure SW
Contact / close contact cont. SW
Air sensor
Pressure SW for coolant
Small flow sensor
Small flow controller
Flow sensor for air
Flow sensor for water
Total air system
Total air system (Gamma)
Ending

Fiber tube antistatic type  
Joint / tube

# Fiber tube

Refrigerating type dryer
Desiccant type dryer
High polymer membrane type dryer
Air filter
Auto. drain / others
F.R.L. (Module unit)
F.R.L. (Separate)
Compact F.R.
Precise regulator
F.R.L. (Related products)
Clean F.R.
Electro pneumatic regulator
Air booster
Speed control valve
Silencer
Check valve / others
Joint / tube
Vacuum filter
Vacuum regulator
Suction plate
Magnetic spring buffer
Mechanical pressure SW
Electronic pressure SW
Contact / close contact conf. SW
Air sensor
Pressure SW for coolant
Small flow sensor
Small flow controller
Flow sensor for air
Flow sensor for water
Total air system
Total air system (Gamma)
Ending

## Specifications

### ● Tube

Descriptions	UP-9102-20-*-F1
Working fluid	Compressed air
Working pressure range (20°C) (Note1)	-100kPa to 0.7MPa
Ambient temperature range °C	-10 to 60 (no freezing)
O.D. × I.D. mm	1.8 × 1.0
Bore size precision	±0.1
Outer diameter precision	±0.1
Min. bending radius (JIS B 8381) mm	2
Min. installation radius mm	4
Burst pressure (20°C) MPa	2.1 (reference value)
Volume resistance ratio Ω·cm	1 × 10 <sup>8</sup> or less (black) 1 × 10 <sup>12</sup> or less (other than black)
Material	Conductive urethane
Color	Black, white, clear, clear blue, clear green, yellow (Note2), red (Note2)
Applicable joint	PTN* Series (barbed type) (Note5)

### ● Dedicated joint

Descriptions	PTN*
Port size	M3, M5, R 1/8, ø3.2 (Note 4), ø4 (Note 4), ø6 (Note 4)
Working fluid	Compressed air
Working pressure range	-100kPa to 0.7MPa
Ambient temperature range °C	-10 to 60 (no freezing)
Applicable tube	UP-9102-20-*-F1 (Note 6)
Effective sectional area mm <sup>2</sup>	Straight, Barbed nipple:0.3 elbow: 0.2
Flow (Note 3) ℓ/min. (ANR)	Straight, Barbed nipple:20 elbow: 13

Note 1 Refer to the graph of "Relevant of working temperature and pressure (constant vacuum break)" for details on working pressure range.

Note 2 Custom order.

Note 3 Flow rate is the atmospheric pressure conversion value at pressure 0.5MPa.

Note 4 Applicable tube: Soft nylon tube (Model no. FH-3224, F-1504, F-1506)  
Urethane tube (Model no. U-9504, U-9506)

Note 5 Not available for PG, CG, RG Series (push-in type).

Note 6 Fiber tube for push-in joint (UP-9402, EH-5802) is not available.

## How to order

### ● Tube

UP-9102-20-W-F1

Tube size  
ø1.8 × ø1.0  
(O.D. × I.D.)

Length per roll  
20m roll

Antistatic

A Tube color

Blank	Black
W	White
C	Clear
CB	Clear blue
CG	Clear green
Y	Yellow (Note)
R	Red (Note)

Note: Custom order.

## Clean room specifications (catalog No. CB-033SA)

PTN2—P80

UP-91—P80

### ● Dedicated joint Sales unit 10 pcs./set

<Straight>

PTN2 - M3

PTNL2 - M3

A Port size

M3	M3 × 0.5
M5	M5 × 0.8
6	R 1/8

A Port size

M3	M3 × 0.5
M5	M5 × 0.8

<Barbed nipple>

PTN2 4 - 0

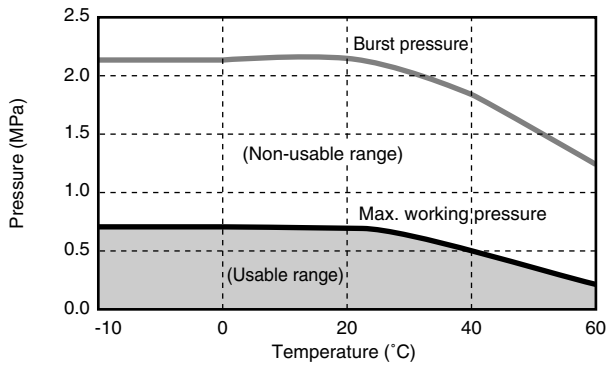
A Applicable tube O.D. (Note)

4	ø3.2, ø4
6	ø6

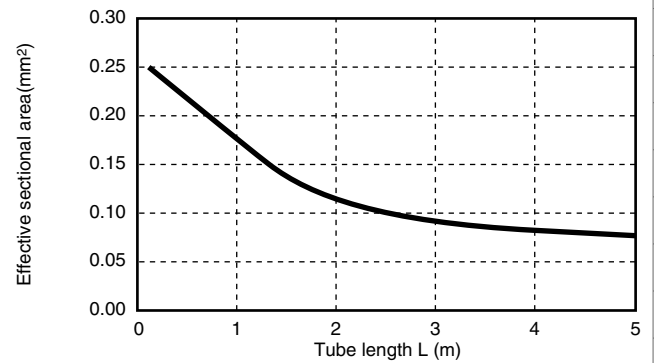
Note: Applicable tube  
Soft nylon tube (Model no. FH-3224, F-1504, F-1506)  
Urethane tube (Model no. U-9504, U-9506)

### Characteristics graph

#### ● Relevant of working temperature and pressure (normal destruction)

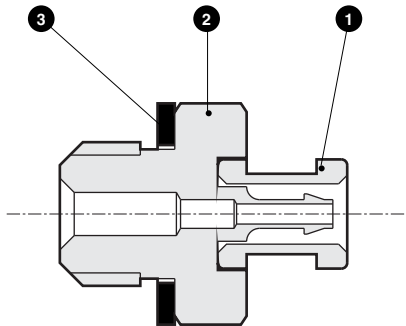


#### ● Relevant of tube length and effective sectional area

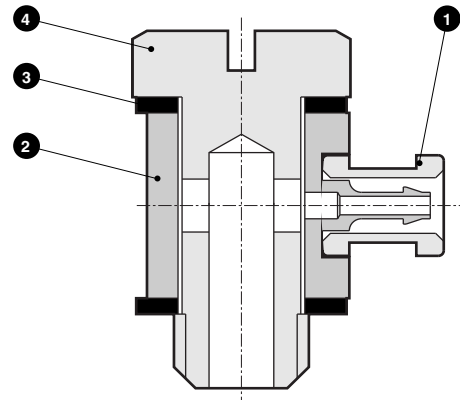


### Internal structure and parts list

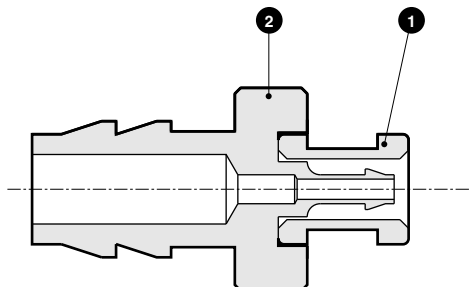
#### ● Straight



#### ● Elbow



#### ● Barbed nipple



#### ● Parts list

No.	Name	Material
1	Collar	Brass (with electroless nickeling)
2	Body	Brass (with electroless nickeling)
3	Gasket	Stainless steel + Nitrile rubber
4	Shaft	Brass (with electroless nickeling)

Refrigerating type dryer
Desiccant type dryer
High polymer membrane type dryer
Air filter
Auto. drain / others
F.R.L. (Module unit)
F.R.L. (Separate)
Compact F.R.
Precise regulator
F.R.L. (Related products)
Clean F.R.
Electro pneumatic regulator
Air booster
Speed control valve
Silencer
Check valve / others
Joint / tube
Vacuum filter
Vacuum regulator
Suction plate
Magnetic spring buffer
Mechanical pressure SW
Electronic pressure SW
Contact / close contact cont. SW
Air sensor
Pressure SW for coolant
Small flow sensor
Small flow controller
Flow sensor for air
Flow sensor for water
Total air system
Total air system (Gamma)

Ending

Fiber tube antistatic type  
Joint / tube

# Fiber tube

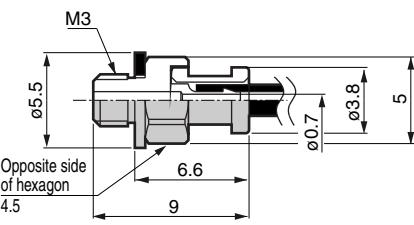
Refrigerating type dryer
Desiccant type dryer
High polymer membrane type dryer
Air filter
Auto. drain / others
F.R.L. (Module unit)
F.R.L. (Separate)
Compact F.R.
Precise regulator
F.R.L. (Related products)
Clean F.R.
Electro pneumatic regulator
Air booster
Speed control valve
Silencer
Check valve / others
Joint / tube
Vacuum filter
Vacuum regulator
Suction plate
Magnetic spring buffer
Mechanical pressure SW
Electronic pressure SW
Contact / close contact conf. SW
Air sensor
Pressure SW for coolant
Small flow sensor
Small flow controller
Flow sensor for air
Flow sensor for water
Total air system
Total air system (Gamma)
Ending

## Dimensions



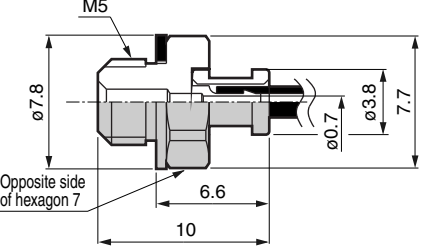
### ● Straight

<PTN2-M3>



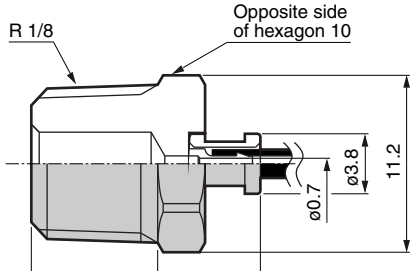
Weight/0.7g

<PTN2-M5>



Weight/1.6g

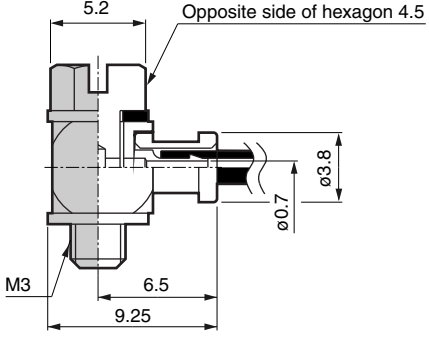
<PTN2-6>



Weight/5.8g

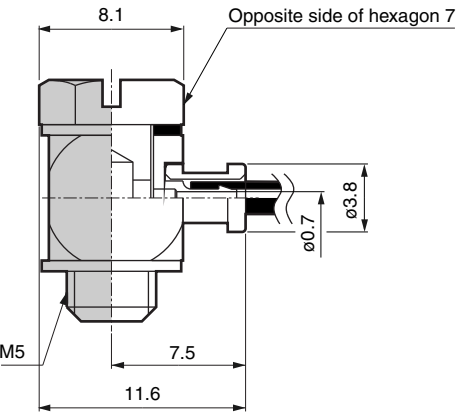
### ● Elbow

<PTNL2-M3>



Weight/1.7g

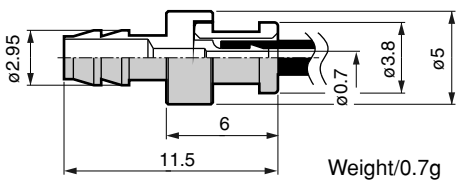
<PTNL2-M5>



Weight/4.2g

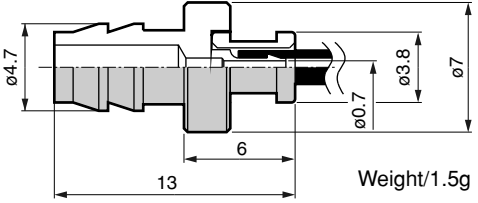
### ● Barbed nipple

<PTN24-0>



Weight/0.7g

<PTN26-0>



Weight/1.5g

### Safety precautions

#### ■ Design & Selection

- This is an extremely fine tube, so the effective sectional area is extremely small. Use with a standard cylinder may cause problems such as failure to obtain set speed, delayed response, or knocking.  
The piping length should be at 1m or less and fine speed cylinder (catalog no. CC-N-360) used.
- Fiber tubing is thin, so vacuum in the vacuum device increases and delays the response of the vacuum switch during vacuum break.

#### ■ Installation & Adjustment (piping)

- Apply adequate torque when connecting pipes.  
To prevent air leak and to protect thread. Tighten by hand at first so that threads are not damaged, then use a tool. Use a tool with a suitable hexagon face and wrench size.  
(Reference value)

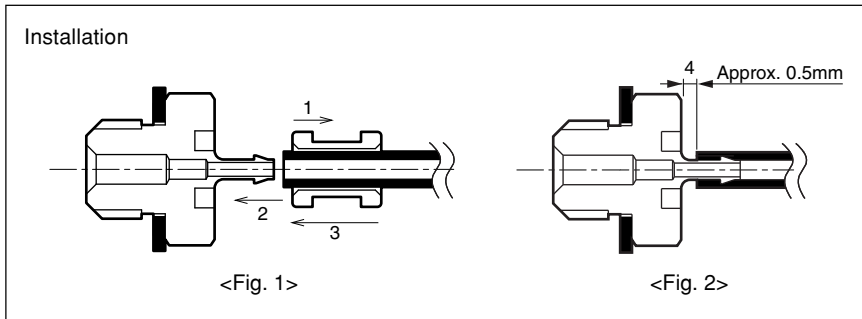
Port thread	Tightening torque N·m
M3	0.3 to 0.5
M5	1 to 1.5
R 1/8	3 to 5

\* The M3 screw could be damaged by excessive tightening torque.

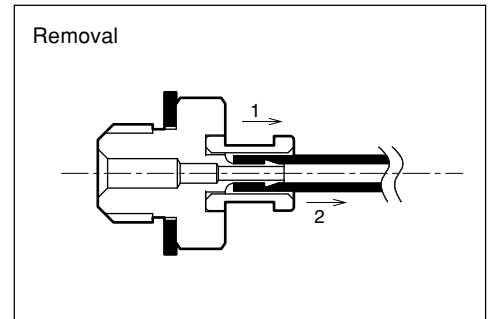
- On devices requiring antistatic measures, ground the member to which the joint is connected.  
Electrostatic discharge could build up in tubing if the member is not grounded.
- The elbow can be rotated randomly and installed, but cannot be rotated after assembly.
- R1/8 does not have sealing material. Prepare sealing tape, etc., separately.

#### ■ During Use & Maintenance

- Mounting and removal

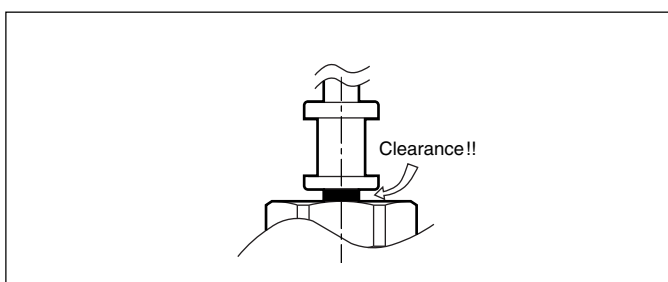


- (1) Insert the collar into the tube. (Fig. 1)
  - (2) Insert the tube to position 4. (Fig. 2)
  - (3) Insert the collar into the joint. (Fig. 1)
  - (4) Check that the tube is not dislocated from the joint.
- Note: Do not incline the tube when inserting it into the bottom of the joint.  
The barbed joint is thin, and could be damaged by a lateral load.

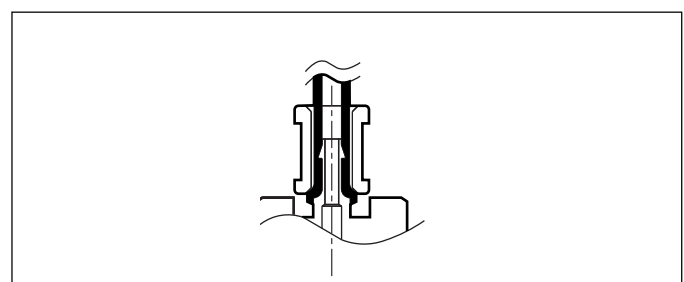


- (1) Pull the collar out with a pair of needle-nosed pliers, etc.
  - (2) Pull out the tube.
  - (3) When reusing the tube, cut the end off 10mm and over.
- Note: If the tube is pulled forcefully while the collar is attached, the tube could be deformed, the flow obstructed, or the tube dislocated during use.

- Precautions after mounting



- (1) Check that there is no gap between the collar and joint.  
(The joint could break or the tube could be dislocated.)



- (2) If the collar does not go in, the tube may rid up on it as shown above.  
Follow mounting and removal procedures and assemble the collar at a position 0.5mm from the tube.

Refrigerating type dryer
Desiccant type dryer
High polymer membrane type dryer
Air filter
Auto. drain / others
F.R.L. (Module unit)
F.R.L. (Separate)
Compact F.R.
Precise regulator
F.R.L. (Related products)
Clean F.R.
Electro pneumatic regulator
Air booster
Speed control valve
Silencer
Check valve / others
Joint / tube
Vacuum filter
Vacuum regulator
Suction plate
Magnetic spring buffer
Mechanical pressure SW
Electronic pressure SW
Contact / close contact cont. SW
Air sensor
Pressure SW for coolant
Small flow sensor
Small flow controller
Flow sensor for air
Flow sensor for water
Total air system
Total air system (Gamma)
Ending

Fiber tube antistatic type  
Joint / tube








Refrigerating type dryer
Desiccant type dryer
High polymer membrane type dryer
Air filter
Auto. drain / others
F.R.L. (Module unit)
F.R.L. (Separate)
Compact F.R.
Precise regulator
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Vacuum regulator
Suction plate
Magnetic spring buffer
Mechanical pressure SW
Electronic pressure SW
Contact / close contact conf. SW
Air sensor
Pressure SW for coolant
Small flow sensor
Small flow controller
Flow sensor for air
Flow sensor for water
Total air system
Total air system (Gamma)
Ending

# UP.F.U.NU.KX.SR Tube

O.D. 1.8, 3.2, 4, 6, 8, 10, 12, 15mm

- Wide tube variation
 

A great variety of tube is available according to purpose and applications.  
High reliable, and meeting needs of space saving and complex piping etc.

Antistatic tube	Soft nylon tube	Urethane tube	Urethane tube	Coiling tube
<div>  </div> <div>           O.D. x I.D. (mm)            3.2×1.8            4×2.5            6×4            8×5            10×6.5            12×8         </div> <div>           • Page : 1009         </div>	<div>  </div> <div>           Manufacturer of colors other than white: Aoi Co., Ltd.            O.D. x I.D. (mm)            3.2×2.0            3.2×2.4            4×2.5            6×4            8×5.7            10×7.2            12×8.9            15×11.5            16×12         </div> <div>           • Page : 1012         </div>	<div>  </div> <div>           O.D. x I.D. (mm)            4×2.5            6×4.5            8×6            10×7.5            12×9         </div> <div>           • Page : 1013         </div>	<div>  </div> <div>           AOI Co., Ltd.            O.D. x I.D. (mm)            3.2×1.8            4×2            6×4            8×5            10×6.5            12×8         </div> <div>           • Page : 1014         </div>	<div>  </div> <div>           AOI Co., Ltd.            O.D. x I.D. (mm)            6×4            8×6            10×7.5            12×9.2         </div> <div>           • Page : 1014         </div>
Flame resistant tube	Tube knife			
<div>  </div> <div>           AOI Co., Ltd.            O.D. x I.D. (mm)            4×2.3            6×3.8            8×5.5            10×7            12×8.5         </div> <div>           • Page : 1015         </div>	<div>  </div> <div>           AOI Co., Ltd.         </div>			

## Tube knife

AOI Co., Ltd.  
AZ-1200

- Feature
- (1) Preventing cutting plane from air trouble by right angle cut.
  - (2) Extremely light weight and compact.
  - (3) Easy edge replacing.
- Applicable material
- Nylon tube
  - Urethane tube
  - PTFE tube
  - Other plastic tubes

## Shape knife

