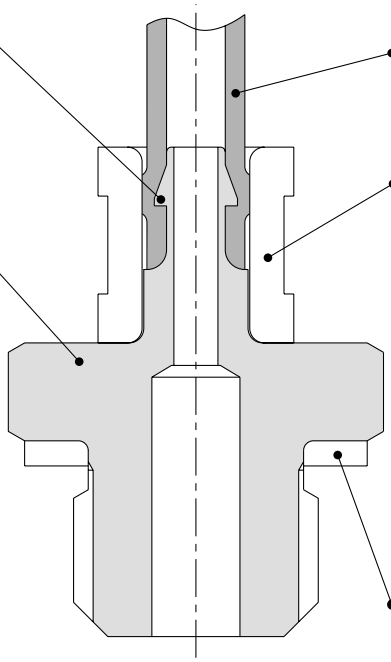
Miniature Fittings
(For exclucive Miniature Tubing)
Series M

Barb

Easy tube insertion
High retaining force

Body

Electroless nickel plated



Tubing

Sleeve

Attaching the sleeve achieves a large retaining force.
Detaching it allows easy removal of the tube.
Electroless nickel plated.

Gasket

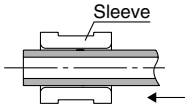
Low clamping torque

Tubing Connection and Removal

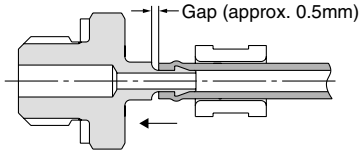
Installing of tube

1. Cut the tubing perpendicularly allowing additional length.

2. Insert the tubing into the sleeve.

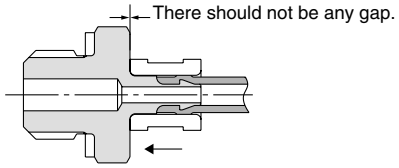


3. Insert the tubing slowly into the fittings. Make sure to secure a gap of approx. 0.5mm between the tubing end and the barb end.



4. Insert the sleeve slowly. Make sure not to allow any gap between the sleeve end side and the body end side. (Please refer to the illustration below.)
If you feel any strong resistance and cannot push the sleeve completely to the end side, this may be caused due to jamming. Remove and repeat again by starting from step **1** making sure to secure a gap in the step **3**.

Note) When installing the tubing, the sleeve must be attached. Operation without attaching the sleeve may cause tubing disconnection.



Removing of tube

Withdraw the sleeve straight along the tubing. Use a tool such as long-nose pliers if it is difficult to pull out by hand.

1. Withdraw the tubing straight.

2. When reusing the tubing, cut off the previously installed portion of the tubing to avoid possible leakage and/or disconnection of the tubing.

Specifications

Applicable tube material	Polyurethane
Applicable tube dia.	ø2/ø1.2
Max. operating pressure (at 20°C)	1MPa
Port size	M3, M5, ø3.2, ø4
Thread	JIS B0209 Class 2 (Metric coarse thread)

How to Order

M – 5 AU – 2

Miniature fittings

Application tubing (O.D. / I.D.)

2	ø2/ø1.2

Model

AU	Barb fitting	M3, M5
ALU	Barb elbow	M3
ALHU		M5
F	Barb one-touch	ø3.2, ø4
R	Reducer	

Port size

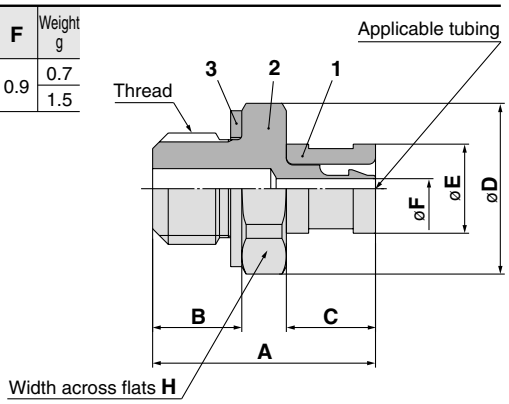
3	M3 x 0.5
5	M5 x 0.8
32	ø3.2
04	ø4

Barb fitting: M-3AU-2, M-5AU-2

Applicable tubing O.D. x I.D. (mm)	Thread	Model	H	A	B	C	D	E	F	Weight g
ø2 x ø1.2	M3 x 0.5	M-3AU-2	4.5	9	3	4	5	4	0.9	0.7
	M5 x 0.8	M-5AU-2	7	10	4		7.7			1.5

Component Parts

No.	Description	Material	Note
1	Sleeve	Brass	Electroless nickel plated
2	Barb fitting	Brass	Electroless nickel plated
3	Gasket	NBR, Stainless steel	–

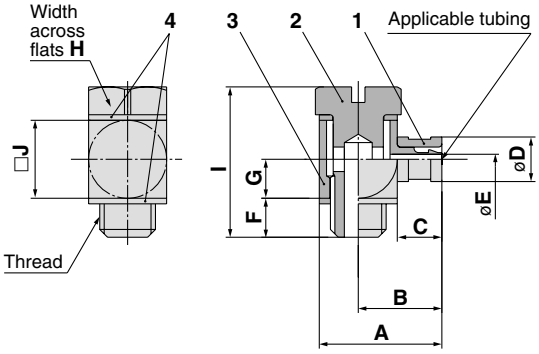


Barb elbow: M-3ALU-2, M-5ALHU-2

Applicable tubing O.D. x I.D. (mm)	Thread	Model	H	A	B	C	D	E	F	G	I	J	Weight g
ø2 x ø1.2	M3 x 0.5	M-3ALU-2	5	9	6.5	4	4	0.9	2.5	2.5	9.4	5	1.6
	M5 x 0.8	M-5ALHU-2	7	11	7.5				3	3.5	13.5	7	3.5

Component Parts

No.	Description	Material	Note
1	Sleeve	Brass	Electroless nickel plated
2	Stud	Brass	Electroless nickel plated
3	Barb elbow	Brass	Electroless nickel plated
4	Gasket	NBR, Stainless steel	–

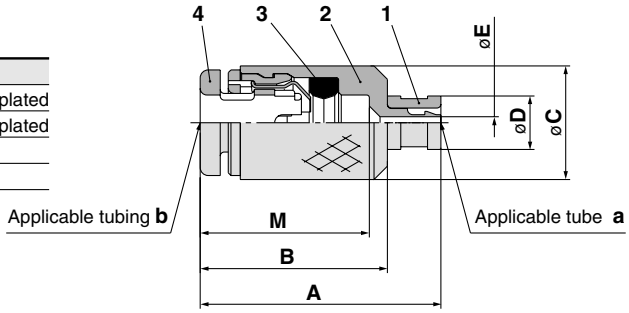


Barb one-touch: M-32F-2, M-04F-2

Applicable tubing (mm)		Model	A	B	C	D	E	M	Weight g
a (O.D. x I.D.)	**b** (O.D.)								
ø2 x ø1.2	ø3.2	M-32F-2	17.7	13.7	7.5	4	0.9	12.7	2.4
	ø4	M-04F-2	18	14	8.5				2.9

Component Parts

No.	Description	Material	Note
1	Sleeve	Brass	Electroless nickel plated
2	Body	Brass	Electroless nickel plated
3	Seal	NBR	–
4	Cassette	POM, Stainless steel	–

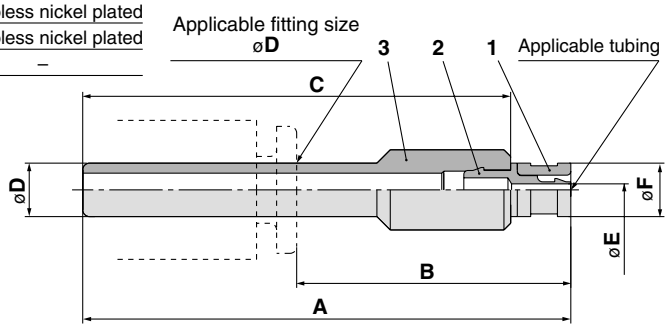


Reducer: M-32R-2, M-04R-2

Applicable tubing O.D. x I.D. (mm)	Fitting size ø**D**	Model	A	B	C	E	F	Weight g
ø2 x ø1.2	ø3.2	M-32R-2	36	20.5	31.5	0.9	4	0.7
	ø4	M-04R-2	36.5		32			0.8

Component Parts

No.	Description	Material	Note
1	Sleeve	Brass	Electroless nickel plated
2	Studded body	Brass	Electroless nickel plated
3	Stem	PP	–



Miniature Tubing and Miniature Fittings
Specific Product Precautions

Be sure to read before handling.

Selection

⚠ Caution

1. Do not use in locations where the connected tubing will slide or rotate. This may result in damage of the fittings.
2. The tube bending radius in the vicinity of the fitting should be at least the minimum bending radius of the tubing. If bent more than the min. bending radius, tubing may fail or be crushed.
3. Do not use with fluids other than those shown in the applicable specifications. The tubing is applicable for air and general industrial water. Please consult with SMC when using with other fluids.
4. When using water, be careful than the surge pressure dose not cause the tubing to burst.

Mounting

⚠ Caution

1. Before mounting confirm the model and size, etc. Also, confirm that there are no blemishes, nicks or cracks in the product.
2. Mount so than the tubing and fittings are not subjected to twisting, pulling or moment loads, allowing sufficient leeway in the tubing length. Failure to consider this factor, can cause damage to the fittings and flattening, bursting or disconnection of the tubing.
3. All tubing is specified as immovable piping, except in the case of the coil tubing. For example, if tubing is used inside the cable carrier, any piping movement may result in increased frictional abrasion, tensile expansion, or tubing disconnection from the fittings. Please check carefully when piping.

Operating Environment

⚠ Warning

1. Do not use in locations where static electric charges will be a problem. Please consult with SMC regarding use in this kind of environment.
2. Do not use in locations where spatter occurs.

   There is a danger of spatter causing a fire.
3. Do not use in environments where there is direct contact with liquids such as cutting oil, lubricating oil or coolant oil, etc. Please contact SMC regarding use in environments where there will be direct contact with cutting oil, lubricating oil or coolant oil, etc.

Maintenance

⚠ Caution

1. Check for the following during regular maintenance, and replace components as necessary.

a) Scratches, gouges, abrasion, corrosion

b) Leakage

c) Twisting, flattening or distortion of tubing

d) Hardening, deterioration or softness of tubing

2. Do not repair or patch the replaced tubing or fittings for reuse.

Handling of One-touch Fittings

⚠ Caution

1. Tubing attachment/detachment for One-touch fittings

   1) Attaching of tube

   1. Take a tubing having no flaws on its periphery and cut it off at a right angle. When cutting the tubing, use tubing cutters TK-1, 2 or 3. Do not use pinchers, nippers or scissors, etc. If cutting is done with tools other than tubing cutters, the tubing may be cut diagonally or become flattened, etc. This can make a secure installation impossible, and cause problems such as the tubing pulling out after installation or air leakage. Allow some extra length in the tubing.
   2. The polyurethane tubing with internal pressure expands its O.D. This may result in failure of reconnection to One-touch fittings. Examine the tubing and do not cut the tubing but reconnect to the One-touch fittings when its O.D. accuracy is +0.15 or more. Make sure the tubing goes through the release bushing smoothly when reconnecting it to the One-touch fittings.
   3. Grasp the tubing and push it in slowly, inserting it securely all the way into the fitting.
   4. After inserting the tubing, pull on it lightly to confirm that it will not come out. If it is not installed securely all the way into the fitting, this can cause problems such as air leakage or the tubing pulling out.

   2) Detaching of tube

   1. Push in the release bushing sufficiently. When doing this, push the collar evenly.
   2. Pull out the tubing while holding down the release bushing so that it does not come out. If the release bushing is not pressed down sufficiently, there will be increased bite on the tubing and it will become more difficult to pull it out.
   3. When the removed tubing is to be used again, cut off the portion which has been chewed before reusing it. If the chewed portion of the tubing is used as is, this can case trouble such as air leakage or difficulty in removing the tubing.

2. Tightening of M3 and M5 screws

   1) M3

   1. After tightening by hand, the barb fitting type should be tightened by an additional 1/4 rotation using an appropriate wrench.
   2. After tightening by hand, the barb elbow type should be tightened by an additional 1/2 rotation using an appropriate wrench.

   2) M5

   1. After tightening by hand, the barb fitting type should be tightened by an additional 1/6 rotation using a suitable tool.
   2. After tightening by hand, the barb elbow type should be tighten an additional 1/3 rotation using an appropriate wrench.

   Over tightening can cause air leakage due to damage to the threads and/or deformation of the gasket. Under tightening can cause loose threads and air leakage, etc.