Invention & Innovation
NITTA

B-TU-19-E

General Catalog of Pneumatic/
Fluid Transport Tubing

Tubing, Fitting and CHEMIFIT™

NITTA CORPORATION

Common handling instructions for products in catalog

⚠ Safety Note

This Safety Note provides indications on the correct use of the product in order to prevent harm to people and property. The indications are classified into three categories, “danger”, “warning”, and “caution”, depending on the level of potential harm due to improper use. Each category contains important instructions on safety that should be followed in addition to the latest ISO 4414(*1), JIS B 8370(*2), ISO 4413 (*3), and JIS B 8361 (*4).

(*1) ISO 4414 Pneumatic fluid power…Recommendations for the application of equipment to transmission and control systems.
(*2) JIS B 8370 Pneumatic System General Rules
(*3) ISO 4413 Hydraulic fluid power…General rules for the application of equipment to transmission and control systems.
(*4) JIS B 8361 Hydraulic System General Rules

⚠ DANGER
Where inappropriate use of this equipment may cause death or severe injury and where immediate warning of a dangerous situation is mandated.

⚠ WARNING
Where inappropriate use of this equipment may cause death or severe injury.

⚠ CAUTION
Where inappropriate use of this equipment may cause minor injury.

For more safety information, please read the handling instructions carefully. A safety note for each product is also given on its product page and instruction page.

Exclusion of Liability

① Nitta Corporation is not liable for damage caused intentionally and unintentionally by customers, damage due to products other than Nitta’s including software failure, and damage due to natural disasters.
② Nitta Corporation is not liable for damage due to usage that is not explained or specified in this catalog and instruction manual.
③ Nitta Corporation is not liable for damage without any clear record of its liability even if the damage occurred after the customer contacts Nitta.
④ Nitta Corporation is not liable for collateral damage such as loss of business income and business termination due to using Nitta’s products or due to inability to use our products.

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Tubing

Polyurethane Tubing

For general air pressure
- Well balanced between flexibility and pressure-resistance performance

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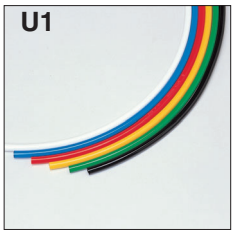

For general air pressure
- Usable in higher air pressure range than U2

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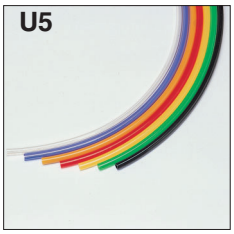

For general air pressure (Ultra flexible)
- High workability with low bending stress

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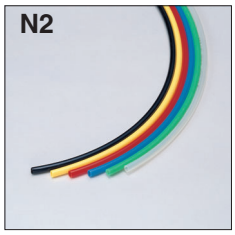
Nylon Tubing



For multi purpose piping
- High oil resistance and chemical resistance

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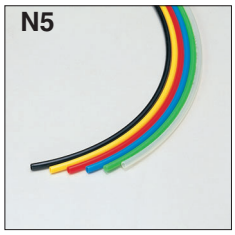

Soft nylon
- High workability with low bending stress

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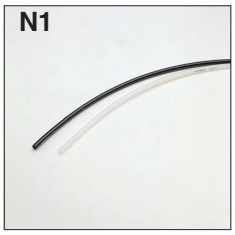

Hard (unplasticized) nylon
- Unplasticized nylon

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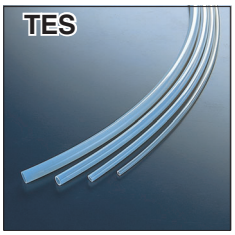
Flexible Fluorocarbon Resin Bilayer Tubing



For coating (flexible)
- Bilayer structure of inner (special fluorocarbon resin) and outer (special nylon resin) layers
- High flexibility

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Flame-resistant Tubing

For spot welding piping (flexible)
- High flame resistance
- Improves work efficiency with excellent flexibility, abrasion resistance, and sliding properties while requiring no peeling during pipe installation

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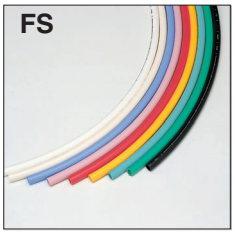
Flame-resistant Tubing



For spot welding piping
- High flame resistance
- High flexibility

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For spot welding piping (bilayer)
- High flame resistance
- Bilayer structure with flame-resistant resin inner and outer layers

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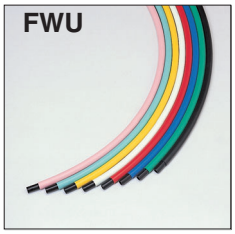

For spot welding piping (flexible)
- High flame resistance
- Bilayer structure with polyurethane tubing inner layer, high flexibility

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Antistatic Tubing

For general air pressure (electrically conductive)
- Conductive polyurethane elastomer for spark prevention

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Shape-keeping Tubing

For retaining shape
- Piping shape is kept
- Easy construction compared to copper

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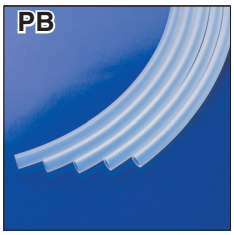
Polybutene Tubing



For food processing machines
- Suitable for high temperature antimicrobial cleaning of food processing machines
- Compliant with the 370th notification of Ministry of Health and Welfare, Japan

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Clean Tubing

Clean, Antistatic Tubing

For clean piping

- Surface resistivity of $10^{11}\Omega$/sp or lower Does not allow dust to gather
- No contamination with particles
- Can be used with clean air and fluorine-based refrigerants

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Polyolefin Resin Tubing

For clean piping

- Suitable for fluids such as clean air, N2 gas, pure water and various chemical liquids
- Environment-friendly eco tubing
- Produced, end-sealed, heat-sealed for shipping in a cleanroom

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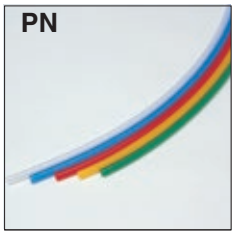

For clean piping (flexible)

- Suitable for fluids such as clean air, N2 gas, pure water and various chemical liquids
- Environment-friendly eco tubing
- Produced, end-sealed, heat-sealed for shipping in a cleanroom
- High workability with low bending stress

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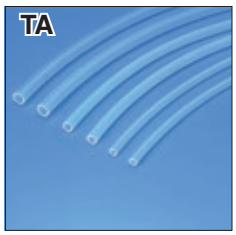
Fluorocarbon Resin Tubing



For clean, heat-resistant, cold-resistant, chemical-resistant use

- PFA resin tubing with high chemical resistance
- Produced, end-sealed, heat-sealed for shipping in a cleanroom

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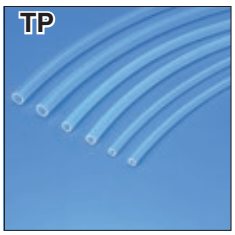

For clean, heat-resistant, cold-resistant, chemical-resistant use

- FEP resin tubing with high chemical resistance
- Produced, end-sealed, heat-sealed for shipping in a cleanroom

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Processed Tubing

Polyurethane Coil Tubing

Polyurethane coil

- Coil tubing for general air pressure

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Multi-line Tubing

Polyurethane multi-line

- Multi-core welding tubing for general air pressure

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Nylon Coil Tubing

Nylon coil

- Single core nylon coil tubing with strong elasticity

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Multi-pack Tubing

Bundled tubing

- Processed tubing for multi piping (Made to order)

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PushOne™ Series

PushOne™ A Series

For general air pressure
- PushOne connection
- High flame resistance (Compliant with V-0 of UL94 standard)
- Electroless nickel plated

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For general air pressure
- PushOne connection
- Compact
- Electroless nickel plated

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PushOne™ E Series

For general air pressure
- PushOne connection
- Flame retardance (Compliant with V-0 of UL94 standard)
- Electroless nickel plated

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For general air pressure
- PushOne connection
- Electrically conductive if combined with UE tubing
- High flame resistance (Compliant with V-0 of UL94 standard)

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QuickSeal Series

QuickSeal Series

For multi-purpose piping
- Screw-in type
- High sealing performance
- Only connector is sealed

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For multi-purpose piping
- Screw-in type
- High sealing performance
- Made of SUS304

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For general air pressure
- Screw-in type
- For large flow volume

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QuickSeal Series

For general air pressure
- Screw-in type

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For general air pressure
- Screw-in type

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Chemifit™ Series

Chemifit™ C1 Series

For clean air, pure water, chemical liquid piping

- Made in oil-free process
- PushOne connection
- Nonmetal liquid-contact surface
- High performance, free of dust and contamination
- Double clean package

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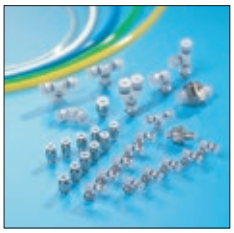
Chemifit™ C1S Series



For clean air, pure water, chemical liquid piping

- Made in oil-free process
- PushOne connection
- SUS304 screw
- Double clean package
- High performance, free of dust and contamination

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Chemifit™ CSE Series

For clean air, pure water, chemical liquid piping

- Screw-in type fitting made of SUS316
- High workability of tubing with assembly nut
- Uniform workability for connecting tubing
- No rotation of tubing when tightening nut
- Made in oil-free process
- High sealing performance
- No need for additional tightening of assembly nut

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Chemifit™ CP Series

For clean air, pure water, chemical liquid piping

- Threaded fitting made of polypropylene resin
- Made in oil-free process
- Highly smooth inner surface
- High performance, free of dust and contamination

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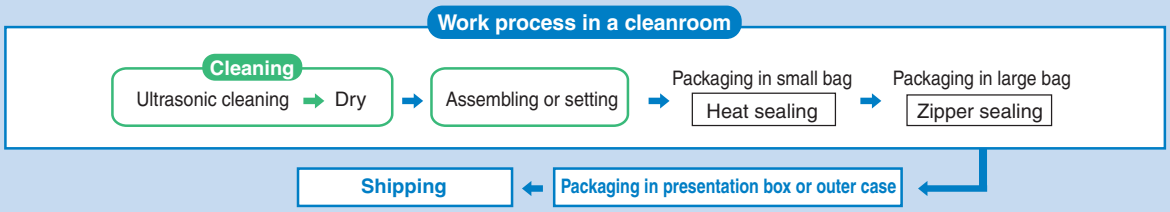
Oil-free processing, clean wrapping and clean package

●Ultrasonic cleaning with no oil and fat used for assembling in a cleanroom.



Bamboo-shoot Series

Bamboo-shoot Series

Bamboo-shoot fitting

- Bamboo-shoot type
- Sealing-processed R thread
- Various shape combinations available

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Control Switch and Detachable Series

Control Series
Chemifit™ C1 Speed Controller

- Suitable for environment (atmosphere) that requires chemical resistance
- PushOne connection
- Inline type (ESU) allows central control on piping line

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Control Series
Compact Speed Controller

- Smaller than the conventional model
- PushOne connection
- Electroless nickel plated
- Sealing-processed R thread

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Control Series
Speed Controller

- PushOne connection
- Inline type (ASU) allows central control on piping line
- Electroless nickel plated

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Switch Series
Ball Valve

- Enables compact piping
- PushOne connection
- Position of handle can be changed
- Nickel plated

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Control Series
Throttle Valve

- Fine control of flow rate
- Inline type (ANU) allows central control on piping line
- PushOne connection
- Electroless nickel plated

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Miniature Valve

- Easy flow rate control
- PushOne connection for millimeter size type (quick seal type for inch size type)

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Detachable Series
Valve Built-in Connector

- Opening/Closing inside valbe by detaching tubing
- PushOne connection
- Electroless nickel plated

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Detachable Series
Q.D.C 101

Compact coupler for air pressure

- Push-To-Connect type
- Automatic opening/closing valve inside the coupler
- PushOne fitting integrated types available

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Q.D.C 103

Micro coupler for air and oil pressure

- Push-To-Connect type
- Automatic opening/closing valve inside the coupler
- Smaller than 101 series
- Electroless nickel plated

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Jigs, Tools and Accessories

Tube Cutter

- Compact, handy-to-carry, lightweight tube cutter
- The blade is replaceable. It comes with three spare blades
- Can cut tubes of up to 16mm diameter

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- Highly durable nipper-type tube cutter
- Can cut tubes of up to 13mm diameter

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Hose Cutter

- Highly durable nipper-type tube cutter
- Can cut tubes of up to 20mm diameter

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FW/FWU Tubing Outer Cover Peeling Cutter

- Easy peeling of FW tubing outer cover

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- Easy peeling of FWU tubing outer cover

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Spatter Cap

- Protects PushOne connecting part from spatter (hot wasted metal), etc
- CCP can be attached after connecting tubing

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Off Tool

- Easy removal of PushOne fitting from tubing

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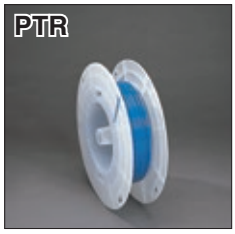
Tube Reel



- Easy handling
- Recycled polypropylene resin used

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Combination List of Tubing and Fitting (Working temperature range)

- See “Chemical resistance specification table” at the end of this catalog if a chemical is contained in fluid or atmosphere. Proper usage should be judged based on your use condition data.
- Before using the tubing and fitting in combination, read the handling instructions of each product carefully.

Tubing type / Fitting type			Series	PushOne series				QuickSeal series						Bamboo-shoot series
			Product	A series		E series		Insertion type (brass)		Insertion type (SUS304)	Insertless type	DK fittings	Nylon coil fittings	Barb type
			Fluid		mini type		Brass body type	Nylon sleeve	Brass sleeve					
Tubing	Polyurethane tubing	U2	Air	−20~+80	−20~+80	−20~+80	−20~+80	−40~+80		−40~+80				
			Water	0~+40		0~+40		0~+50		0~+50				
		U1	Air	−20~+80	−20~+80	−20~+80	−20~+80	−40~+80		−40~+80				
			Water	0~+40		0~+40		0~+50		0~+50				
		U5	Air	−20~+80		−20~+80	−20~+80	−40~+80		−40~+80				−40~+80
	Nylon tubing	N5	Air	−20~+80	−20~+80	−20~+80	−20~+80	−40~+80	−40~+100	−40~+80	−40~+100			
			Water	0~+40		0~+40		0~+50		0~+50				
			General operating oil					−40~+80	−40~+100	−40~+80				
		N2	Air	−20~+80	−20~+80	−20~+80	−20~+80	−40~+80	−40~+100	−40~+80	−40~+100			
			Water	0~+40		0~+40		0~+70		0~+70				
			General operating oil					−40~+80	−40~+100	−40~+80				
		N1	Air	−20~+80	−20~+80	−20~+80	−20~+80	−40~+80	−40~+100	−40~+80	−40~+100			
			Water	0~+40		0~+40		0~+70		0~+70				
			General operating oil					−40~+80	−40~+100	−40~+80				
	Flexible fluorocarbon resin tubing	TES	Air					−40~+80		−40~+80				
			Water					0~+70		0~+70				
			Water-based paint (*4)					0~+40		0~+40				
	Shape-keeping tubing	DK	Air									−40~+60		
	Polybutene tubing	PB	Air					−10~+80	−10~+90	−10~+80				
			Water					0~+70	0~+90	0~+70				
	Flame-resistant tubing	FUK	Air	−20~+80		−20~+80	−20~+80		−40~+80(*1)	−40~+80				
			Water	0~+40		0~+40			0~+60(*1)	0~+60				
		FS	Air	−20~+80		−20~+80	−20~+80		−40~+100(*1)	−40~+80				
			Water	0~+40		0~+40			0~+70(*1)	0~+70				
		FW	Air	−20~+80		−20~+80	−20~+80		−40~+80(*1)	−40~+80				
			Water	0~+40		0~+40			−0~+70(*1)	0~+70				
		FWU	Air	−20~+80		−20~+80	−20~+80		−40~+80(*1)	−40~+80				
			Water	0~+40		0~+40			−0~+50(*1)	0~+50				
	Antistatic tubing	UE	Air	−20~+80(*3)	−20~+80(*3)	−20~+80(*3)	−20~+80(*3)	−40~+80		−40~+80				
		ES	Air (Clean air)							−40~+80(*2)				
			Fluorine-based inert fluid							−40~+50(*2)				
Clean tubing	Polyolefin resin tubing	PL	Air (Clean air)	−20~+80(*2)	−20~+80(*2)	−20~+80(*2)		−40~+80(*2)		−40~+80(*2)				
			Water (pure water)	0~+40(*2)		0~+40(*2)		0~+70(*2)		0~+70(*2)				
		PN	Air (Clean air)	−20~+80(*2)	−20~+80(*2)	−20~+80(*2)		−40~+80(*2)		−40~+80(*2)				
			Water (pure water)	0~+40(*2)		0~+40(*2)		0~+70(*2)	0~+80(*2)	0~+70(*2)				
	Fluorocarbon resin tubing	TA	Air (Clean air)	−20~+80(*2)	−20~+80(*2)	−20~+80(*2)	−20~+80(*2)	−40~+80(*2)	−40~+100(*2)	−40~+80(*2)				
			Water (pure water)	0~+40(*2)		0~+40(*2)		0~+70(*2)	0~+100(*2)	0~+70(*2)				
		TP	Air (Clean air)	−20~+80(*2)	−20~+80(*2)	−20~+80(*2)	−20~+80(*2)	−40~+80(*2)		−40~+80(*2)				
			Water (pure water)	0~+40(*2)		0~+40(*2)		0~+70(*2)		0~+70(*2)				
Processed tubing	Polyurethane processed tubing	UC	Air					−40~+80		−40~+80				
		USC	Air					−40~+80		−40~+80				
		UMC	Air					−40~+80		−40~+80				
		UML	Air					−40~+80		−40~+80				
	Nylon coil tubing	S	Air										−40~+100	

(*1) If spatter (hot wasted metal) is likely to cling to the connection part of tubing, use a brass tubing instead of a nylon one.
(*2) This is a combination of clean and general types.
When using them together in a clean environment, be aware of how this could lower the clearliness level.
(*3) Use a brass body type of connector and internal connector to keep fittings and the tubing electrically conductive.
(*4) Use water-based paint, or aliphatic or aromatic carbon hydride solvent. Contact us for other types of fluid.

	Clean fitting, Chemifit series				Control switch, detachable series							Series	Fitting type
	C1 series	C1S series	CSE series	CP series	Compact speed controller	Chemifit C1 speed controller	Speed controller	Ball valve	Throttle valve	Miniature valve		Product / Fluid	Tubing type
										PushOne type	QuickSeal type		
	–20~+80(*2)	–20~+80(*2)	–40~+80(*2)		+5~+60	+5~+60	+5~+60	–20~+80	–20~+80	–20~+80	–20~+80	Air	U2
	0~+50(*2)	0~+50(*2)	0~+50(*2)					0~+40	0~+40	0~+40	0~+40	Water	
	–20~+80(*2)	–20~+80(*2)	–40~+80(*2)		+5~+60	+5~+60	+5~+60	–20~+80	–20~+80	–20~+80		Air	U1
	0~+50(*2)	0~+50(*2)	0~+50(*2)					0~+40	0~+40	0~+40		Water	
			–40~+60(*2)				+5~+60	–20~+80	–20~+80	–20~+80		Air	U5
					+5~+60		+5~+60	–20~+80	–20~+80	–20~+80	–20~+80	Air	N5
								0~+40	0~+40	0~+40	0~+40	Water	
												General operating oil	
					+5~+60		+5~+60	–20~+80	–20~+80	–20~+80	–20~+80	Air	N2
								0~+40	0~+40	0~+40	0~+40	Water	
												General operating oil	
					+5~+60		+5~+60	–20~+80	–20~+80	–20~+80	–20~+80	Air	N1
								0~+40	0~+40	0~+40	0~+40	Water	
												General operating oil	
			–40~+100(*2)									Air	TES
			0~+70(*2)									Water	
			0~+40(*2)									Water-based paint (*4)	
												Air	DK
			–10~+90(*2)								–10~+80	Air	PB
			0~+90(*2)								0~+40	Water	
			–40~+80(*2)		+5~+60		+5~+60	–20~+80	–20~+80	–20~+80		Air	FUK
			0~+60(*2)					0~+40	0~+40	0~+40		Water	
					+5~+60		+5~+60	–20~+80	–20~+80	–20~+80		Air	FS
								0~+40	0~+40	0~+40		Water	
					+5~+60		+5~+60	–20~+80	–20~+80	–20~+80		Air	FW
								0~+40	0~+40	0~+40		Water	
					+5~+60		+5~+60	–20~+80	–20~+80	–20~+80		Air	FWU
								0~+40	0~+40	0~+40		Water	
			–40~+60(*2)									Air	UE
			–50~+80									Air (Clean air)	ES
			–50~+50									Fluorine-based inert fluid	
	–20~+80	–20~+80	–60~+80	–20~+80	+5~+60(*2)	+5~+60	+5~+60(*2)	–20~+80(*2)	–20~+80(*2)	–20~+80(*2)	–20~+80(*2)	Air (Clean air)	PL
	0~+80	0~+80	0~+80	0~+80				–0~+40(*2)	–0~+40(*2)	–0~+40(*2)	–0~+40(*2)	Water (pure water)	
	–20~+80	–20~+80	–60~+80		+5~+60(*2)	+5~+60	+5~+60(*2)	–20~+80(*2)	–20~+80(*2)	–20~+80(*2)		Air (Clean air)	PN
	0~+80	0~+80	0~+80					–0~+40(*2)	–0~+40(*2)	–0~+40(*2)		Water (pure water)	
	–20~+80	–20~+80	–65~+260	–20~+80	+5~+60(*2)	+5~+60	+5~+60(*2)	–20~+80(*2)	–20~+80(*2)	–20~+80(*2)	–20~+80(*2)	Air (Clean air)	TA
	0~+80	0~+80	0~+100					–0~+40(*2)	–0~+40(*2)	–0~+40(*2)	–0~+40(*2)	Water (pure water)	
	–20~+80	–20~+80		–20~+80	+5~+60(*2)	+5~+60	+5~+60(*2)	–20~+80(*2)	–20~+80(*2)	–20~+80(*2)	–20~+80(*2)	Air (Clean air)	TP
	0~+80	0~+80		0~+80				–0~+40(*2)	–0~+40(*2)	–0~+40(*2)	–0~+40(*2)	Water (pure water)	
			–40~+80(*2)									Air	UC
			–40~+80(*2)									Air	USC
			–40~+80(*2)									Air	UMC
			–40~+80(*2)									Air	UML
												Air	S

Tubing

Handling instructions for tubing products

⚠ Safety Note

This Safety Note provides indications on the correct use of the product in order to prevent harm to people and property. The indications are classified into three categories, “danger”, “warning”, and “caution”, depending on the level of potential harm due to improper use. Each category contains important instructions on safety that should be followed in addition to the latest ISO 4414(*1), JIS B 8370(*2), ISO 4413 (*3), and JIS B 8361 (*4).

(*1) ISO 4414 Pneumatic fluid power…Recommendations for the application of equipment to transmission and control systems.
(*2) JIS B 8370 Pneumatic System General Rules
(*3) ISO 4413 Hydraulic fluid power…General rules for the application of equipment to transmission and control systems.
(*4) JIS B 8361 Hydraulic System General Rules

⚠ DANGER
Where inappropriate use of this equipment may cause death or severe injury and where immediate warning of a dangerous situation is mandated.

⚠ WARNING
Where inappropriate use of this equipment may cause death or severe injury.

⚠ CAUTION
Where inappropriate use of this equipment may cause minor injury.

⚠ Before Selection

⚠ DANGER

•Cannot use for machines or equipment for life support.
•To use for machines or equipment that require extremely high safety, measures have to be taken to prevent danger with in the event tubes pulls out, bursts or leaks.

⚠ WARNING

•Please contact us before using our products under conditions other than those specified in the catalog.
•Please contact us before using our products for equipment, machines, various types of vehicles, and passenger aircraft, for leisure equipment passenger transport, for medical equipment that would cause human harm in case the specifications are not properly followed, and for machines in contact with food or drinking water.

⚠ Selection

⚠ WARNING

•Please check that our products are used under the “**use conditions**” **specified in the catalog.**
•Do not use our products when a caustic or flammable gas is used as the fluid or is in the environment.

⚠ CAUTION

•Do not use our products in places where excessive vibration or impact may occur.
•If use conditions differ between the tubing and the fitting, use them under the lower specified conditions.
•For Nitta’s tubing products, use fitting products that Nitta specifies or JIS B 8381-1995 on-spec products.
•When water is used as the operating fluid, the tubing material might degrade depending on the additive. Contact us for details.
•The ultraviolet rays in direct sunlight and fluorescent light could enhance degradation and shorten the life of the tubing.
•When a chemical is used in fluid or the environment, see “Chemical resistance specification table”.
•When spatter (hot wasted metal) is likely to stick to the tubing, use flame-resistant products only. Otherwise the spatter may cause a fire.
•The maximum working pressure of a tubing varies with working temperature. See “Relation between the working temperature and the maximum working pressure.”

⚠ Installation

⚠ WARNING

•Fix tubes in place when installing them in a situation where unexpected disconnection of the tubing and connector could cause harm to people or property.

⚠ CAUTION

•Instructions for connecting tubes are provided in a separate document. Please read it and follow the installation instructions.
•Nitta only guarantees products fabricated by designated companies.
•Prevent damage to tubes, e.g. entanglement or abrasion. It could cause flattening, destruction, and disconnection.
•Install tubes so as to prevent loads such as tension, torsion, rotation, and bending with a radius smaller than the minimum bending radius.
•Do not bend a tubing, which might cause “fatigue destruction” at the break point even below the maximum working pressure.
•When the connection part of a tubing is dirty, clean the surface.
•Do not use tubes if they are dented or damaged.
•Check for any changes in the outer and inner diameters of tubes due to inner pressure or heat before you re-connect them to fittings. Replace any tubes that are affected.

⚠ Usage

⚠ WARNING

•Nitta’s products should be handled only by designers who have sufficient knowledge of equipment, instruments and systems in which our products are to be installed, or by persons responsible for determining specifications. Test and analysis should be conducted if necessary. The designers or the responsible persons are liable for the performance and the safety of the equipment, instruments and systems.

⚠ CAUTION

•When water is used as fluid, do not allow it to freeze.
•Do not touch a tubing at pressurization. Improperly treating or touching a tubing at pressurization may lead to danger from unexpected breakage or leakage of fluid.
•Do not touch a tubing when the operating fluid is hot. Doing so may cause burns.

⚠ Storage

⚠ CAUTION

•When storing unused products, make sure to keep them in a clean place to prevent dust. When fine particles such as dust enter the inside of tubing products or the connected equipment, they may cause problems.
•Keep products in a dry place below 40°C avoiding direct sunlight. In particular, if nylon tubes and flame-resistant tubes are stored for a long period in a high-temperature high-humidity environment, white powder extract sometimes appears through the plasticizer on their surface, although it does not affect tubing performance.
•Do not use tubing products that have been stored for more than one year after production.
•The packaging of clean tubes should be opened just before use. Store the tubes in a box in a clean place in a dust-free environment.

⚠ Maintenance and Inspection

⚠ CAUTION

•Before handling or removing Nitta’s products, be sure to check the safety by shutting off the power supply, stopping the pressure supply, evacuating pressurized air in the pipe, and terminating the operation of equipment, instruments, and systems.
•Please be sure to make periodic inspections. Confirm that there is no degradation such as outer damage, corrosion, and abrasion and replace any damaged piping.

⚠ Disposal

⚠ CAUTION

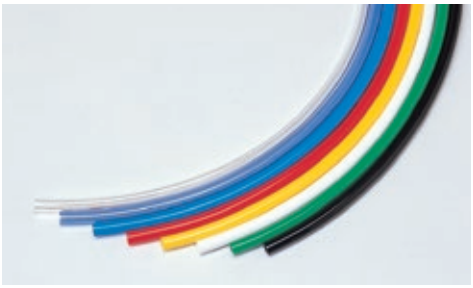
•Dispose of unnecessary products as industrial waste or have them disposed of by a waste disposal firm. In particular, incineration of products containing fluorocarbon may generate a toxic pyrolysis gas.

Tubing INDEX

Polyurethane Tubing

U2

For general air pressure



Features

- Well balanced between flexibility and pressure-resistant performance, and high workability. Most suitable for general air pressure piping usage.
- Ether polyurethane resin is used to prevent degradation by water or mold under high temperature and high humidity.
- Coil processing and welding can be performed on request.

Product number table

Millimeter size type (Group 4)

Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol)							
					Black	White	Yellow	Blue	Green	Red	Clear	Clear blue
					BK	WH	YL	BU	GN	RE	CL	CBU
U2-4-3×2	3×2	(Air) 0.8 (Water) 0.6	10	5	●	—	—	—	—	—	—	—
U2-4-4×2.5	4×2.5		10	9	●	○	●	●	●	●	○	○
U2-4-6×4	6×4		15	19	●	○	●	●	●	●	○	○
U2-4-8×5	8×5		23	35	●	○	●	●	●	●	○	○
U2-4-10×6.5	10×6.5		30	52	●	○	●	●	●	●	○	○
U2-4-12×8	12×8		35	72	●	○	●	●	●	●	○	○
U2-4-16×12	16×12		50	103	●	—	—	—	—	—	—	—

Inch size type (Group 1)

Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol)					
					Black	Yellow	Blue	Green	Red	Clear
					BK	YL	BU	GN	RE	CL
U2-1-3/16	4.76×3.48	(Air) 0.6 (Water) 0.4	13	10	●	●	●	●	●	○
U2-1-1/4	6.35×4.57		20	18	●	●	●	●	●	○
U2-1-5/16	7.94×5.90		27	26	●	●	●	●	●	○
U2-1-3/8	9.53×6.99		28	39	●	●	●	●	●	○
U2-1-1/2	12.70×9.56		35	65	●	●	●	●	●	○

Standard length

20M, 100M ☞U2-4-16×12: 50M only

Product number example

U2 – 4 – 6×4 – BK – 100M

- 100M: Standard length (20M, 50M, 100M)
- BK: Tubing color symbol
- 6×4: Size (millimeter: outer × inner, inch: outer)
- 4: Group (4: millimeter, 1: inch)
- U2: Tubing name

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	−40°C~+80°C
Water	0°C~+50°C

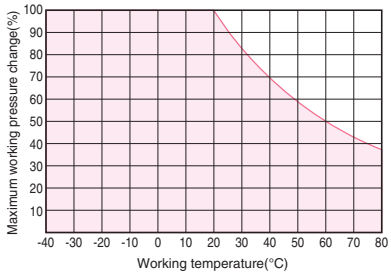
Negative pressure performance

−101.294kPa

Relation between the working temperature and the maximum working pressure

The maximum working pressure varies with the working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep the pressure within the indicated range.

⚠Caution: Using tubes at a pressure outside the range may cause accidents or damage, for which Nitta is not liable.



Handling instructions

⚠Caution: When water is used as the operating fluid, the tubing material might degrade depending on the additive. Contact us for details.

⚠Caution: When water is used as the operating fluid, keep the surge pressure below the maximum working pressure. Also, do not allow the water to freeze.

☞ See page 10 for common instructions for tubing products.

Applicable fittings

PushOne A series

PushOne A series Mini type

PushOne E series

PushOne E series Brass body type

QuickSeal series Insertion type (brass)

QuickSeal series Insertion type (stainless)

Chemifit C1 series

Chemifit C1S series

Applicable fittings

Chemifit CSE series

Related products and product introduction

Various processed tubes

Compact Speed controller

Ball valve

Q.D.C. 101 series

Reference

Chemical resistance specification table ·····P.198
Effective sectional area ···P.168
Negative-pressure performance list ·····P.169

(*1) Combinatory use of U2 tubing and Chemifit series mixes general and clean type performances.
When using them together in a clean environment, be aware of how this could lower the cleanliness level.

U1

For general air pressure (high pressure type)

Features

- Usable in higher air-pressure range than U2 tubing.
- Ether polyurethane resin is used to prevent degradation by water or mold under high temperature and high humidity.
- Coil processing and welding can be performed on request.

Product number table

Millimeter size type (Group 4)

Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol)					
					Black	White	Yellow	Blue	Green	Red
					BK	WH	YL	BU	GN	RE
U1-4-4×2.5	4×2.5	(Air) 1.2 (Water) 0.9	10	9	●	○	●	●	●	●
U1-4-6×4	6×4		15	19	●	○	●	●	●	●
U1-4-8×5	8×5		23	36	●	○	●	●	●	●
U1-4-10×6.5	10×6.5		30	53	●	—	—	—	—	—
U1-4-12×8	12×8		35	73	●	—	—	—	—	—

Standard length

20M, 100M

Product number example

U1 – 4 – 6×4 – BK – 100M

- 100M: Standard length (20M, 100M)
- BK: Tubing color symbol
- 6×4: Size (millimeter: outer × inner)
- 4: Group (4: millimeter)
- U1: Tubing name

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	−40°C~+80°C
Water	0°C~+50°C

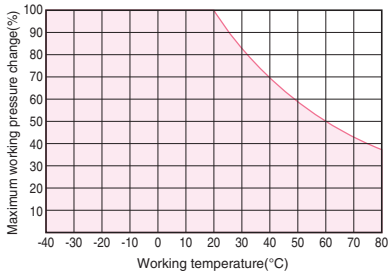
Negative pressure performance

−101.294kPa

Relation between the working temperature and the maximum working pressure

The maximum working pressure varies with the working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep the pressure within the indicated range.

⚠ Caution: Using tubes at a pressure outside the range may cause accidents or damage, for which Nitta is not liable.



Handling instructions

⚠ Caution: When water is used as the operating fluid, the tubing material might degrade depending on the additive. Contact us for details.

⚠ Caution: When water is used as the operating fluid, keep the surge pressure below the maximum working pressure. Also, do not allow the water to freeze.

☞ See page 10 for common instructions for tubing products.

Applicable fittings

PushOne A series

PushOne A series Mini type

PushOne E series

PushOne E series Brass body type

QuickSeal series Insertion type (brass)

QuickSeal series Insertion type (stainless)

Chemifit C1 series

Chemifit C1S series

Applicable fittings

Chemifit CSE series

Related products and product introduction

Compact Speed controller

Ball valve

Q.D.C. 101 series

Reference

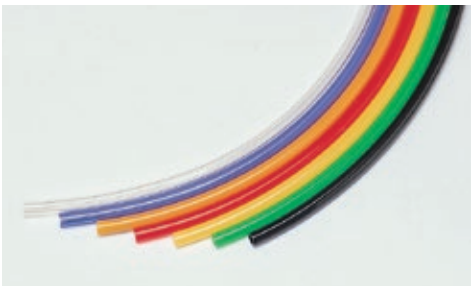
Chemical resistance specification table ·····P.198
Effective sectional area ···P.168
Negative-pressure performance list ·····P.169

(*1) Combinatory use of U1 tubing and Chemifit series mixes general and clean type performances. When using them together in a clean environment, be aware of how this could lower the cleanliness level.

Polyurethane Tubing

U5

For general air pressure (ultra flexible)



Features

- The lowest bending stress among polyurethane tubes ensures high workability.
- Ether polyurethane resin is used to prevent degradation by water or mold under high temperature and high humidity.
- Usable for barb fittings (bamboo-shoot fittings).

Product number table

Millimeter size type (Group 4)

Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol)						
					Black	Yellow brown	Clear	Clear blue	Clear green	Clear red	Clear yellow
					BK	BYL	CL	CBU	CGN	CRE	CYL
U5-4-3.5×2	3.5×2	0.4	7	8	●	○	○	○	○	○	○
U5-4-4×2.5	4×2.5		10	9	●	○	○	○	○	○	○
U5-4-6×4	6×4		15	19	●	○	○	○	○	○	○

Standard length

20M, 100M

Product number example

U5 – 4 – 6×4 – BK – 100M

- 100M: Standard length (20M, 100M)
- BK: Tubing color symbol
- 6×4: Size (millimeter: outer × inner)
- 4: Group (4: millimeter)
- U5: Tubing name

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	−40°C~+80°C

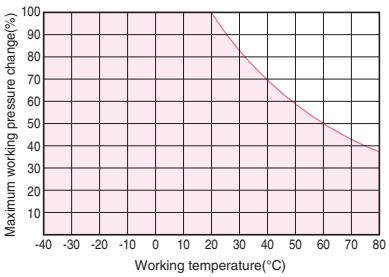
Negative pressure performance

−101.294kPa

Relation between the working temperature and the maximum working pressure

The maximum working pressure varies with the working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep the pressure within the indicated range.

⚠ Caution: Using tubes at a pressure outside the range may cause accidents or damage, for which Nitta is not liable.



Handling instructions

⚠ Caution: Water should not be used for operating fluid because of possible hydrolysis.

☞ See page 10 for common instructions for tubing products.

Applicable fittings

Bamboo-shoot fitting series Barb type

PushOne A series

PushOne E series

PushOne E series Brass body type

QuickSeal series Insertion type (brass)

QuickSeal series Insertion type (stainless)

Chemifit CSE series

(*1) Combinatory use of U5 tubing and Chemifit series mixes general and clean type performances.
When using them together in a clean environment, be aware of how this could lower the cleanliness level.

Related products and product introduction

Compact Speed controller

Ball valve

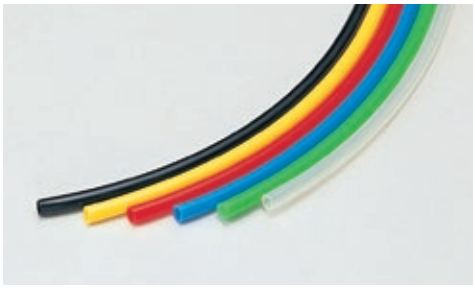
Q.D.C. 101 series

Reference

Chemical resistance specification table ·····P.198
Effective sectional area ···P.168
Negative-pressure performance list ·····P.169

N2

For multi-purpose piping



Features

- High oil resistance and chemical resistance.
- Group 2 type endures up to 4.8MPa (at 20°C).
- High abrasion resistance.

Product number table

Millimeter size type (Group 4)

Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol)					
					Black	Milky white	Yellow	Blue	Green	Red
					BK	MW	YL	BU	GN	RE
N2-4-4×2	4×2	5.0	10	11	●	○	●	●	●	●
N2-4-4×2.5	4×2.5	3.3	15	8	●	○	●	●	●	●
N2-4-4×3	4×3	2.0	20	6	●	○	—	—	—	—
N2-4-6×4	6×4	3.0		17	●	○	●	●	●	●
N2-4-6×4.5	6×4.5	2.0		13	●	○	●	●	●	●
N2-4-8×6	8×6		35	23	●	○	●	●	●	●
N2-4-10×7.5	10×7.5			35	●	○	—	—	—	—
N2-4-10×8	10×8	1.6	45	29	●	○	●	●	●	●
N2-4-12×9	12×9	2.0		51	●	○	●	●	●	●
N2-4-16×13	16×13	1.6	100	70	●	○	—	—	—	—

Inch size type (Group 1)

Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol)					
					Black	Milky white	Yellow	Blue	Green	Red
					BK	MW	YL	BU	GN	RE
N2-1-1/8	3.18×2.25	2.3	13	4	●	○	—	—	—	—
N2-1-3/16	4.76×3.48		16	9	●	○	●	●	●	●
N2-1-1/4	6.35×4.57		23	16	●	○	●	●	●	●
N2-1-5/16	7.94×5.90		29	23	●	○	●	●	●	●
N2-1-3/8	9.53×6.99			35	●	○	●	●	●	●
N2-1-1/2	12.70×9.56		45	58	●	○	●	●	●	●
N2-1-5/8	15.88×11.10		140	107	●	—	—	—	—	—

Inch size type (Group 2) –High pressure type–

Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol)	
					Black	Milkywhite
					BK	MW
N2-2-1/8	3.18×1.60	4.8	7	6	●	○
N2-2-3/16	4.76×2.42		12	14	●	○
N2-2-1/4	6.35×3.21		13	25	●	○
N2-2-5/16	7.94×4.02			39	●	○
N2-2-3/8	9.53×4.81		19	56	●	○
N2-2-1/2	12.70×6.40		26	99	●	○

☞ Use fittings of insertion type (Group 2) in QuickSeal series.

Standard length

20M, 100M

Product number example

N2 – 4 – 6×4 – BK – 100M

- 100M: Standard length (20M, 100M)
- BK: Tubing color symbol
- 6×4: Size (millimeter: outer × inner, inch: outer)
- 4: Group (4: millimeter, 1: inch, 2: inch [high pressure type])
- N2: Tubing name

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	–40°C~+100°C
Water	0°C~+70°C
General operating oil	–40°C~+100°C

☞ Contact us for other operating fluids.

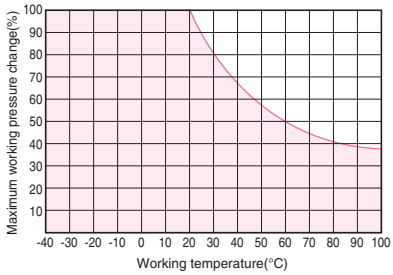
Negative pressure performance

–101.294kPa

Relation between the working temperature and the maximum working pressure

The maximum working pressure varies with the working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep the pressure within the indicated range.

⚠ Caution: Using tubes at a pressure outside the range may cause accidents or damage, for which Nitta is not liable.



Handling instructions

⚠ Caution: When water is used as the operating fluid, the tubing material might degrade depending on the additive. Contact us for details.

⚠ Caution: When water is used as the operating fluid, keep the surge pressure below the maximum working pressure. Also, do not allow the water to freeze.

☞ See page 10 for common instructions for tubing products.

Applicable fittings

PushOne A series

PushOne A series Mini type

PushOne E series

PushOne E series Brass body type

QuickSeal series Insertion type (brass)

QuickSeal series Insertion type (stainless)

QuickSeal series Insertless type

Related products and product introduction

Compact Speed controller

Ball valve

Q.D.C. 101 series

Flexible fluorocarbon resin bilayer tubing

Nylon coil tubing

Multi-pack tubing

Reference

Chemical resistance specification table ·····P.198
Effective sectional area ···P.168
Negative-pressure performance list ·····P.169

Nylon Tubing

N5

Soft nylon

Features

- Most flexible nylon tubing.
- High abrasion resistance.
- High oil resistance and chemical resistance.

Product number table

Millimeter size type (Group 4)

Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol)					
					Black	Milky white	Yellow	Blue	Green	Red
					BK	MW	YL	BU	GN	RE
N5-4-4×2	4×2	1.8	10	11	●	○	●	●	●	●
N5-4-4×2.5	4×2.5	1.2	15	8	●	○	—	—	—	—
N5-4-4×3	4×3	0.7	20	6	●	○	●	●	●	●
N5-4-6×4	6×4	1.1		17	●	○	●	●	●	●
N5-4-6×4.5	6×4.5	0.7		13	●	○	●	●	●	●
N5-4-8×6	8×6		35	23	●	○	●	●	●	●
N5-4-10×7.5	10×7.5			35	●	○	●	●	●	●
N5-4-10×8	10×8	0.6	45	29	●	○	●	●	●	●
N5-4-12×9	12×9	0.7		51	●	○	●	●	●	●
N5-4-16×13	16×13	0.6	100	70	●	○	—	—	—	—

Inch size type (Group 1)

Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol)	
					Black	Milky white
					BK	MW
N5-1-3/16	4.76×3.48	0.8	16.0	9.0	●	○
N5-1-1/4	6.35×4.57		23.0	16.0	●	○
N5-1-5/16	7.94×5.90		29.0	23.0	●	○
N5-1-3/8	9.53×6.99			35.0	●	○
N5-1-1/2	12.70×9.56		45.0	58.0	●	○

Standard length

20M, 100M

Product number example

N5 – 4 – 6×4 – BK – 100M

- 100M: Standard length (20M, 100M)
- BK: Tubing color symbol
- 6×4: Size (millimeter: outer × inner, inch: outer)
- 4: Group (4: millimeter, 1: inch)
- N5: Tubing name

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	–40°C~+100°C
Water	0°C~+50°C
General operating oil	–40°C~+100°C

Contact us for other operating fluids.

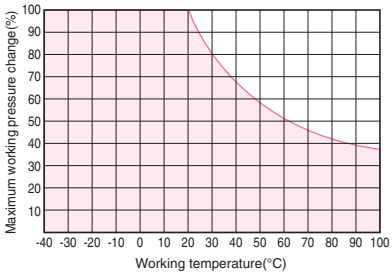
Negative pressure performance

–101.294kPa

Relation between the working temperature and the maximum working pressure

The maximum working pressure varies with the working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep the pressure within the indicated range.

⚠ Caution: Using tubes at a pressure outside the range may cause accidents or damage, for which Nitta is not liable.



Handling instructions

⚠ Caution: When water is used as the operating fluid, the tubing material might degrade depending on the additive. Contact us for details.

⚠ Caution: When water is used as the operating fluid, keep the surge pressure below the maximum working pressure. Also, do not allow the water to freeze.

See page 10 for common instructions for tubing products.

Applicable fittings

PushOne A series

PushOne A series Mini type

PushOne E series

PushOne E series Brass body type

QuickSeal series Insertion type (brass)

QuickSeal series Insertion type (stainless)

QuickSeal series Insertless type

Related products and product introduction

Compact Speed controller

Ball valve

Q.D.C. 101 series

Multi-pack tubing

Reference

Chemical resistance specification table ·····P.198
Effective sectional area ···P.168
Negative-pressure performance list ·····P.169

N1

Hard (unplasticized) nylon

Features

- 100% unplasticized nylon resin tubing.
- Suitable for high pressure application.
- Usable at a high temperature (up to 120°C).

Product number table

Millimeter size type (Group 4)

Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol)	
					Black	Milky white
					BK	MW
N1-4-6×4	6×4	5.0	20.0	17.0	●	○
N1-4-8×6	8×6	3.3	30.0	23.0	●	○

Inch size type (Group 1)

Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol)	
					Black	Milky white
					BK	MW
N1-1-1/4	6.35×4.57	4.0	23.0	16.0	●	○

Standard length

20M, 100M

Product number example

N1 – 4 – 6×4 – BK – 100M

- Standard length (20M, 100M)
- Tubing color symbol
- Size (millimeter: outer × inner, inch: outer)
- Group (4: millimeter, 1: inch)
- Tubing name

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	–40°C~+120°C
Water	0°C~+70°C
General operating oil	–40°C~+120°C

Contact us for other operating fluids.

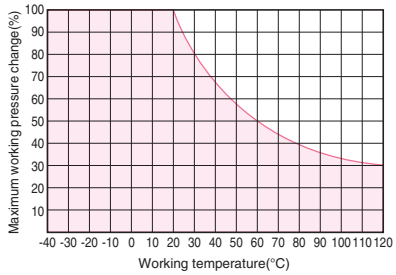
Negative pressure performance

–101.294kPa

Relation between the working temperature and the maximum working pressure

The maximum working pressure varies with the working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep the pressure within the indicated range.

⚠ Caution: Using tubes at a pressure outside the range may cause accidents or damage, for which Nitta is not liable.



Handling instructions

⚠ Caution: When water is used as the operating fluid, the tubing material might degrade depending on the additive. Contact us for details.

⚠ Caution: When water is used as the operating fluid, keep the surge pressure below the maximum working pressure. Also, do not allow the water to freeze.

See page 10 for common instructions for tubing products.

Applicable fittings

PushOne A series

PushOne A series Mini type

PushOne E series

PushOne E series Brass body type

QuickSeal series Insertion type (brass)

QuickSeal series Insertion type (stainless)

QuickSeal series Insertless type

Related products and product introduction

Various bending processing

Contact us for 2- and 3-dimensional bending processing.

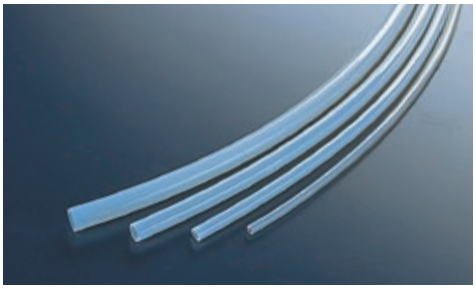
Reference

Chemical resistance specification table ·····P.198
Effective sectional area ···P.168
Negative-pressure performance list ·····P.169

Flexible Fluorocarbon Resin Bilayer Tubing

TES

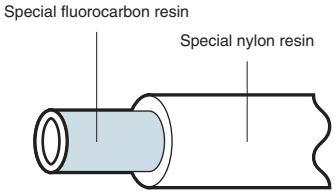
For coating (flexible, abrasion resistant)



Features

- Bilayer structure of inner (special fluorocarbon resin) and outer (special nylon resin) layers.
- Super flexible and suitable for movable piping for robots.
- Highly smooth and highly chemical resistant inner surface, and highly abrasion resistant outer surface.
- The translucent tubing enables the fluid to be seen.

Structure diagram



Product number table

Millimeter size type (Group 4)

Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol) Translucent CWH
TES-4-4×2.5	4×2.5	1.8	15	9	○
TES-4-6×4	6×4	1.8	20	18	○
TES-4-8×6	8×6	1.5	35	26	○
TES-4-10×8	10×8	1.1	50	33	○

Inch size type (Group 1)

	Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol) Translucent CWH
*	TES-1-1/4	06.35×4.57	1.4	25	18	○
*	TES-1-3/8	9.53×6.99		40	37	○
*	TES-1-1/2	12.70×9.56		55	61	○

* Made to Order

Standard length

20M, 100M

Product number example

TES – 4 – 6×4 – CWH – 100M

- 100M: Standard length (20M, 100M)
- CWH: Tubing color symbol
- 6×4: Size (millimeter: outer × inner, inch: outer)
- 4: Group (4:millimeter, 1: inch)
- TES: Tubing name

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	−40°C~+100°C
Water	0°C~+70°C
Water-based paint (*)	0°C~+40°C

(*) Water-based paint, or aliphatic or aromatic carbon hydride solvent.
Contact us for other operating fluids.

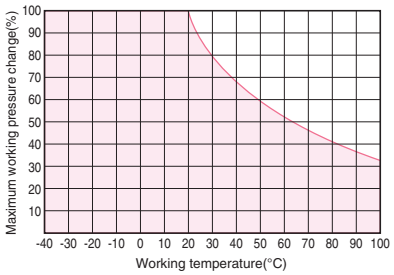
Negative pressure performance

−101.294kPa

Relation between the working temperature and the maximum working pressure

The maximum working pressure varies with the working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep the pressure within the indicated range.

⚠ Caution: Using tubes at a pressure outside the range may cause accidents or damage, for which Nitta is not liable.



Handling instructions

⚠ Caution: When water is used as the operating fluid, the tubing material might degrade depending on the additive. Contact us for details.

⚠ Caution: When water is used as the operating fluid, keep the surge pressure below the maximum working pressure. Also, do not allow the water to freeze.

See page 10 for common instructions for tubing products.

Applicable fittings

QuickSeal series Insertion type (brass)

QuickSeal series Insertion type (stainless)

Chemifit CSE series

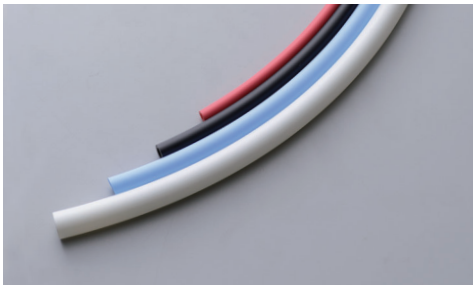
(*1) Combinatory use of TES tubing and Chemifit series mixes general and clean type performances. When using them together in a clean environment, be aware of how this could lower the cleanliness level.

Reference

TES Tubing
Technology Data ·····P.189
Chemical resistance specification table ·····P.189
Effective sectional area ·····P.168
Negative-pressure performance list ·····P.169

FUK

For spot welding piping (flexible)



Features

- A double-layer structure which adopts a flame-retardant resin for the outer layer and an ether-based polyurethane resin for the inner layer.
- Excellent in flexibility, abrasion resistance and sliding properties.
- With no need to peel off the outer layer, it requires less effort in pipe installation.
- Our line-up of products with increased inner diameters contributes to the increase in flow volume.

Product number table

- Millimeter size type (Group 4)

	Type	Outer diameter × Inner diameter (mm)	Max. working pressure (Mpa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol)							
						Black	White	Yellow	Blue	Green	Red	Light green	Pink
						BK	WH	YL	BU	GN	RE	LGN	PK
	FUK-4-6×4	6×4	(Air)0.8	20	19	●	○	●	●	●	●	–	–
	FUK-4-8×5	8×5	(Water)0.7	20	37	●	○	●	●	●	●	–	–
	FUK-4-10×6.5	10×6.5		25	54	●	○	●	●	●	●	–	–
*1	FUK-4-10×7	10×7	(Air)0.7(Water)0.6	35	48	●	○	●	●	●	●	●	●
	FUK-4-12×8	12×8	(Air)0.8(Water)0.7	35	74	●	○	●	●	●	●	●	●
*1	FUK-4-12×8.5	12×8.5	(Air)0.7(Water)0.6	40	67	●	○	●	●	●	●	●	●

*1 The applicable fittings are only the ones in PushOne series.

Standard length

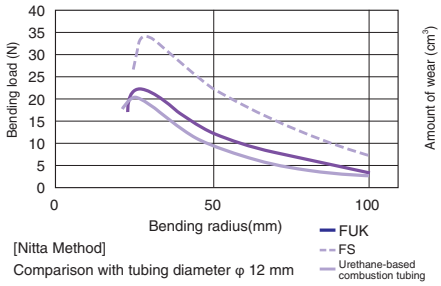
20M, 100M

Product number example

FUK – 4 – 12×8 – WH – 100M

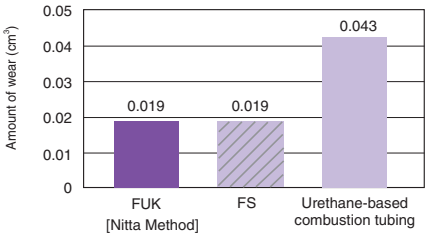
- Standard length (20M,100M)
- Tubing color symbol
- Size(millimeter : outer × inner)
- Group (4:millimeter)
- Tubing name

Flexibility data



[Nitta Method]
Comparison with tubing diameter φ 12 mm

Abrasion resistance



[Nitta Method]

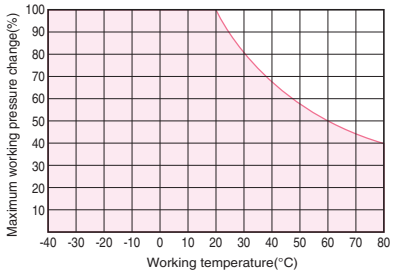
Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	–40°C~+80°C
Water	0°C~+60°C

Relation between the working temperature and the maximum working pressure

The maximum working pressure varies with the working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep the pressure with in the indicated range.

⚠ Caution: Using tubes at a pressure outside the range may cause accidents or damage, for which Nitta is not liable.



Handing instructions

⚠ Caution: When water is used as the operating fluid, the tubing material might degrade depending on the additive. Contact us for details.

⚠ Caution: When water is used as the operating fluid, keep the surge pressure below the maximum working pressure. Also, do not allow the water to freeze.

See page 10 for common Instructions for tubing products.

Applicable fittings

PushOne A series

PushOne E series

QuickSeal series Insertion type(brass)

Chemifit CSE series

(*1) When QuickSeal series fittings are used on a spatter-resistant line, replace the nylon sleeve with a brass sleeve.
(*2) Combinatory use of FUK tubing and Chemifit series mixes general and clean type performances.
When using them together in a clean environment, be aware of how this could lower the cleanliness level.

Related products and product introduction

Spatter Cap

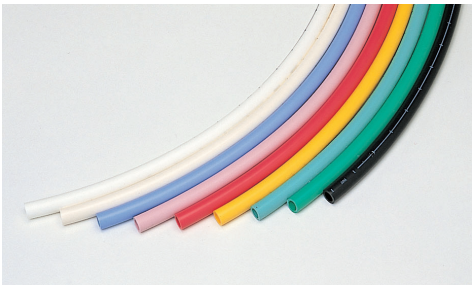
Reference

Effective sectional area ⋯P.168

Flame-resistant Tubing

FS

For spot welding piping



Features

- Tubes which utilize a flame-retardant resin.
- Our line-up of products with increased inner diameters contributes to the increase in flow volume.
- Markings along the tubing as an insertion length indicator.

Product number table

Millimeter size type (Group 4)

	Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol)								
						Black	White	Yellow	Blue	Green	Red	Light cream	Light green	Pink
						BK	WH	YL	BU	GN	RE	LCM	LGN	PK
	FS-4-4×2.5	4×2.5	1.0	10	10	●	○	●	●	●	●	—	—	—
	FS-4-6×4	6×4		15	21	●	○	●	●	●	●	○	—	—
	FS-4-8×5	8×5	1.2	15	40	●	○	●	●	●	●	—	—	—
*1	FS-4-8×5.5	8×5.5	0.9	20	36	●	○	●	●	●	●	○	—	—
	FS-4-10×6.5	10×6.5	1.0	20	60	●	○	●	●	●	●	—	—	—
*1	FS-4-10×7	10×7	0.9	25	55	●	○	●	●	●	●	○	○*2	●*2
	FS-4-12×8	12×8	1.0	30	82	●	○	●	●	●	●	—	—	—
*1	FS-4-12×8.5	12×8.5	0.9	30	77	●	○	●	●	●	●	○	○*2	●*2
	FS-4-16×12	16×12	0.7	80	106	—	—	—	●*2	—	—	—	—	—

*1 Insertion type fittings of QuickSeal series cannot be used for FS tubing because of different inner diameters.
*2 Made to Order

Standard length

20M, 100M ☞ FS-4-16x12: 50M only

Product number example

FS – 4 – 6x4 – BK – 100M

- FS: Tubing name
- 4: Group (4: millimeter)
- 6x4: Size (millimeter: outer × inner)
- BK: Tubing color symbol
- 100M: Standard length (20M, 50M, 100M)

Insertion length markings

Markings along the tubing as an insertion length indicator.

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	−40°C~+100°C
Water	0°C~+70°C

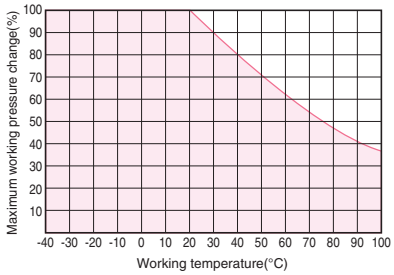
Negative pressure performance

−101.294kPa

Relation between the working temperature and the maximum working pressure

The maximum working pressure varies with the working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep the pressure within the indicated range.

⚠ Caution: Using tubes at a pressure outside the range may cause accidents or damage, for which Nitta is not liable.



Handling instructions

⚠ Caution: When water is used as the operating fluid, the tubing material might degrade depending on the additive. Contact us for details.

⚠ Caution: When water is used as the operating fluid, keep the surge pressure below the maximum working pressure. Also, do not allow the water to freeze.

☞ See page 10 for common instructions for tubing products.

Applicable fittings

PushOne A series

PushOne E series

PushOne E series Brass body type

QuickSeal series Insertion type (brass)

(*1) When QuickSeal series fittings are used on a spatter-resistant line, replace the nylon sleeve with a brass sleeve.

Related products and product introduction

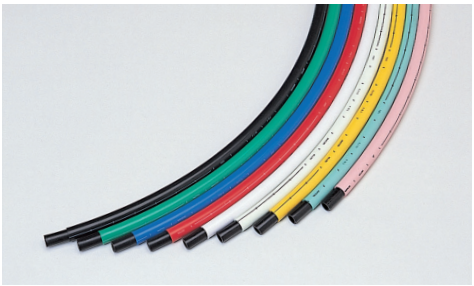
Spatter cap

Reference

Flame test of UL-94 standard ·····P.195
Effective sectional area ···P.168
Negative-pressure performance list ·····P.169

FW

For spot welding piping (bilayer)



Features

- A double-layer structure with a flame-retardant resin for inner and outer layers.
- Markings along the tubing as an insertion length indicator.

Product number table

Millimeter size type (Group 4)

Type	Inner tubing: Outer diameter × Inner diameter (mm)	Outer cover: Cover thickness	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol): Inner tubing	Outer cover: Black BK	White WH	Yellow YL	Blue BU	Green GN	Red RE	Light green LGN	Pink PK	Greenish white GWH
FW-4-6×4	6×4	1.0	1.0	14	49	Black	●	○	○	○	○	○	—	—	○
FW-4-8×6	8×6	1.0	0.8	23	65		●	○	○	○	○	○	—	—	○
FW-4-10×7.5	10×7.5	1.0		27	89		●	○	○	○	○	○	○	○	○
FW-4-12×9	12×9	1.0		31	116		●	○	—	○	○	○	○	○	○

⚠ Caution: Before using FW tubes, peel off outer covers.
Use Nitta's special cutter (TC02, TC03) to peel off covers.

Standard length

20M, 100M ☞ FW-4-12x9: 50M only

Product number example

FW – 4 – 6×4 – BK – 100M

- 100M: Standard length (20M, 50M, 100M)
- BK: Tubing color symbol
- 6×4: Size (millimeter: outer × inner)
- 4: Group (4: millimeter)
- FW: Tubing name

Insertion length markings

Markings along the tubing as an insertion length indicator.

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	−40°C~+80°C
Water	0°C~+70°C

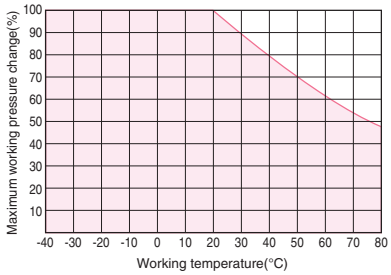
Negative pressure performance

−101.294kPa

Relation between the working temperature and the maximum working pressure

The maximum working pressure varies with the working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep the pressure within the indicated range.

⚠ Caution: Using tubes at a pressure outside the range may cause accidents or damage, for which Nitta is not liable.



Handling instructions

⚠ Caution: When water is used as the operating fluid, the tubing material might degrade depending on the additive. Contact us for details.

⚠ Caution: When water is used as the operating fluid, keep the surge pressure below the maximum working pressure. Also, do not allow the water to freeze.

☞ See page 10 for common instructions for tubing products.

Applicable fittings

PushOne A series

PushOne E series

PushOne E series Brass body type

QuickSeal series Insertion type (brass)

(*1) When QuickSeal series fittings are used on a spatter-resistant line, replace the nylon sleeve with a brass sleeve.

Related products and product introduction

Outer cover peeling cutter

Spatter cap

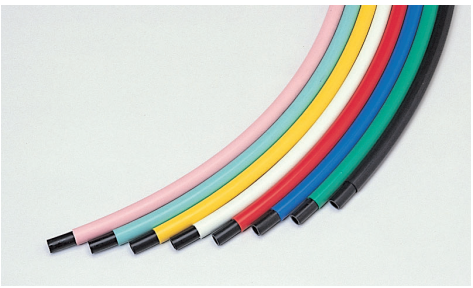
Reference

UL-94 standard flame test ·····P.195
Effective sectional area ···P.168
Negative-pressure performance list·····P.169

Flame-resistant Tubing

FWU

For spot welding piping (flexible)



Features

- Tubes with higher flexibility than FW, with a double-layer structure which utilizes a flame-retardant resin for the outer layer and an ether-based polyurethane resin for the inner layer.
- Markings along the tubing as an insertion length indicator.

Product number table

● **Millimeter size type (Group 4)**

Type	Inner tubing: Outer diameter × Inner diameter (mm)	Outer cover: Cover thickness	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol): Inner tubing	Outer cover: Black BK	Red RE	Blue BU	Green GN	Yellow YL	Light green LGN	Pink PK	Greenish white GWH
FWU-4-6×4	6×4	1.0	0.9	14	50	Black	●	—	—	—	—	—	—	—
FWU-4-8×5	8×5	1.0		20	73		●	—	—	—	—	—	—	—
FWU-4-10×6.5	10×6.5	1.0	0.6	30	98		●	●	●	—	—	○	●	○
FWU-4-12×8	12×8	1.0		35	126		●	●	●	●	●	○	●	○

⚠ Caution Before using FWU tubes, peel off outer covers.
Use Nitta's special cutter (TC02, TC03) to peel off covers.

Standard length

20M, 100M ☞ FWU-4-12x8: 50M only

Product number example

FWU – 4 – 6×4 – BK – 100M

- FWU: Tubing name
- 4: Group (4: millimeter)
- 6×4: Size (millimeter: outer × inner)
- BK: Tubing color symbol
- 100M: Standardt length (20M, 50M, 100M)

Insertion length markings

Markings along the tubing as an insertion length indicator.

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	–40°C~+80°C
Water	0°C~+50°C

Negative pressure performance

–101.294kPa

Relation between the working temperature and the maximum working pressure

The maximum working pressure varies with the working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep the pressure within the indicated range.

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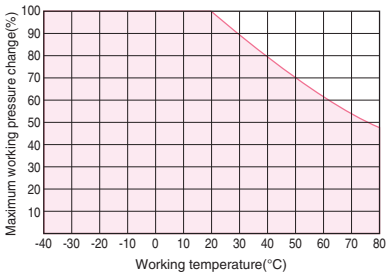


Handling instructions

⚠ Caution: When water is used as the operating fluid, the tubing material might degrade depending on the additive. Contact us for details.

⚠ Caution: When water is used as the operating fluid, keep the surge pressure below the maximum working pressure. Also, do not allow the water to freeze.

☞ See page 10 for common instructions for tubing products.

Applicable fittings

PushOne A series

PushOne E series

PushOne E series Brass body type

QuickSeal series Insertion type (brass)

(*1) When QuickSeal series fittings are used on a spatter-resistant line, replace the nylon sleeve with a brass sleeve.

Related products and product introduction

Outer cover peeling cutter

Spatter cap

Reference

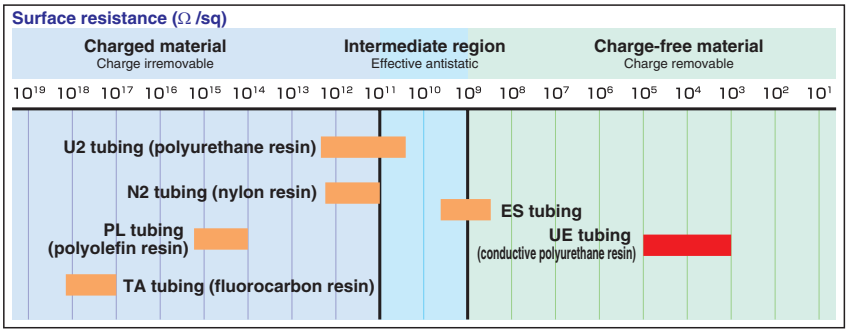
UL-94 standard flame test ·····P.195
Effective sectional area····P.168
Negative-pressure performance list·····P.169

UE

For general air pressure (electrically conductive)

Features

- Conductive polyurethane elastomer is used to prevent build-up of electrostatic charge that could result in sparks. (Surface resistance 10^5-$10^3\Omega$)
- Super flexible.



Product number table

● **Millimeter size type (Group 4)**

Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol) Black BK
UE-4-4×2.5	4×2.5	0.8	10	10	●
UE-4-6×4	6×4		15	20	●
UE-4-8×5	8×5		23	39	●
UE-4-10×6.5	10×6.5		30	57	●
UE-4-12×8	12×8		35	79	●

Standard length

20M, 100M

Product number example

UE – 4 – 6×4 – BK – 100M

- Standard length (20M, 100M)
- Tubing color symbol
- Size (millimeter: outer × inner)
- Group (4: millimeter)
- Tubing name

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	–40°C~+80°C

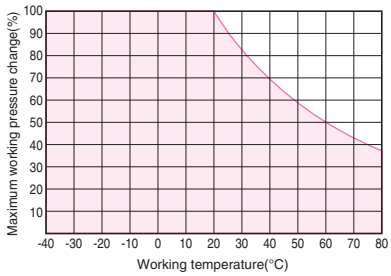
Negative pressure performance

–101.294kPa

Relation between the working temperature and the maximum working pressure

The maximum working pressure varies with the working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep the pressure within the indicated range.

⚠ Caution: Using tubes at a pressure outside the range may cause accidents or damage, for which Nitta is not liable.



Handling instructions

⚠ Caution: When the PushOne series is used with a UE tubing, choose a metal type of body including a connector and an internal connector or a brass body type from the PushOne E series to maintain electric conductivity between the tubing and the fittings.

See page 10 for common instructions for tubing products.

Applicable fittings

PushOne A series *1

PushOne A series Mini type *1

PushOne E series *1

PushOne E series Brass body type

QuickSeal series Insertion type (brass)

QuickSeal series Insertion type (stainless)

Chemifit CSE series *2

(*1) When a PushOne series is used with a UE tubing, choose a metal type of body including a connector and an internal connector or a brass body type from the PushOne E series to maintain electric conductivity between the tubing and the fittings.
(*2) Combinatory use of UE tubing and Chemifit series mixes general and clean type performances. When using them together in a clean environment, be aware of how this could lower the cleanliness level.

Reference

Effective sectional area····P.168
Negative-pressure performance list·····P.169

Shape-keeping Tubing

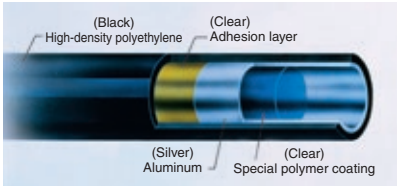
DK

For retaining shape and fixed piping in absence of clamp

Features

- Aluminum is used for the inner layer for maintaining the shape. Suitable for fixed piping.
- Better workability compared to copper piping if DK fittings are used. Tubing end processing is not necessary.

Structure diagram



Product number example

1300 – 6 – BK – 100M

- 100M: Standard length (20M, 100M)
- BK: Tubing color symbol
- 6: Size (millimeter: outer)
- 1300: Tubing name

Product number table

● **Millimeter size type (Group 4)**

Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol) Black BK
1300-6	6×4	1.0	20	21	●
1300-10	10×6.8		40	47	●

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	–40°C~+60°C

Negative pressure performance

–101.294kPa

Relation between the working temperature and the maximum working pressure

The maximum working pressure of DK tubing does not decrease by temperature as far as within the working temperature (environment temperature) range.

Handling instructions

⚠ Caution: DK tubing cannot be used for movable applications.

☞ See page 10 for common instructions for tubing products.

Applicable fittings

QuickSeal series DK tubing dedicated type ····P.98

Reference

Effective cross area ····· P.168
Negative-pressure performance list ···· P.169

Polybutene Tubing

PB

For food processing machines

Features

- Suitable for piping that requires high temperature antimicrobial cleaning of food processing machines.
- Compliant with the MHLW Ministerial Notification No.201(2006), MHW Ministerial Notification No.370(1959), Japan.

Product number table

● **Inch size type (Group 1)**

	Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol) Milky white MW
*	PB-1-1/4	6.35×4.57	1.1	25	14	○
*	PB-1-3/8	9.53×6.99		30	30	○
*	PB-1-1/2	12.70×9.56		40	50	○

* Made to Order

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	–10°C~+90°C
Water	0°C~+90°C

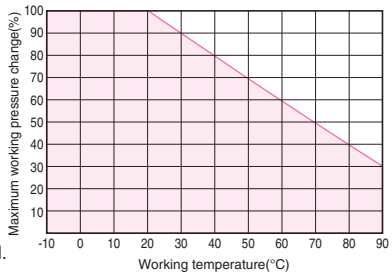
Negative pressure performance

–101.294kPa

Relation between the working temperature and the maximum working pressure

The maximum working pressure varies with the working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep the pressure within the indicated range.

⚠ Caution: Using tubes at a pressure outside the range may cause accidents or damage, for which Nitta is not liable.



Product number example

PB – 1 – 1/4 – MW – 100M

- 100M: Standard length (20M, 100M)
- MW: Tubing color symbol
- 1/4: Size (inch: outer)
- 1: Group (1: inch)
- PB: Tubing name

Handling instructions

⚠ Caution: When water is used as the operating fluid, the tubing material might degrade depending on the additive. Contact us for details.

⚠ Caution: When water is used as the operating fluid, keep the surge pressure below the maximum working pressure. Also, do not allow the water to freeze.

☞ See page 10 for common instructions for tubing products.

Applicable fittings

QuickSeal series Insertion type (brass), QuickSeal series Insertion type (stainless) Chemifit CSE series.*1

(*1) Combinatory use of PB tubing and Chemifit series mixes general and clean type performances. When using them together in a clean environment, be aware of how this could lower the cleanliness level.

Reference

Chemical resistance specification table ····P.198 Effective sectional area ····P.168 Negative-pressure performance list ····P.169

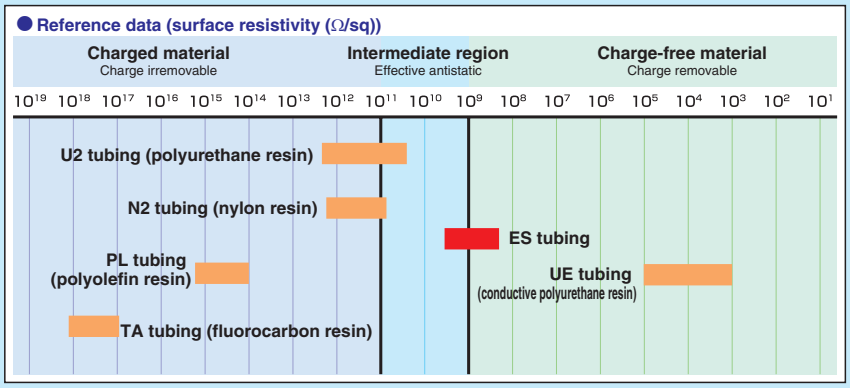
Clean-conscious product

ES

Prevention of dielectric breakdown

Features

- With antistatic performance of surface resistivity 10^{11} Ω/sq or lower, it does not allow dust to gather.
- There is no bleed-out of conductive agent, and no environmental pollution with particles and other debris.
- Excellent resistance to fluorine-based inert fluids.



Product number table

● Millimeter size type (Group 4) ● Inch size type (Group 1)

Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol) White WH
ES-4-4×2.5	4×2.5	0.7	15	10	○
ES-4-6×4	6×4		25	19	○
ES-4-8×6	8×6	0.5	35	26	○
ES-4-10×8	10×8		60	33	○
ES-4-12×9	12×9	0.6	50	60	○
ES-1-1/2	12.70×9.56	0.5		66	○

*Please contact us for other sizes.

Standard length

20M

Product number example

ES–4–6×4–WH–20M

- Standard Length (20M)
- Tubing color symbol
- Size (millimeter: outer x inner, inch: outer)
- Group (4:millimeter, 1: inch)
- Tubing name

*Only 20 m products are available.

Operating fluid, working temperature range

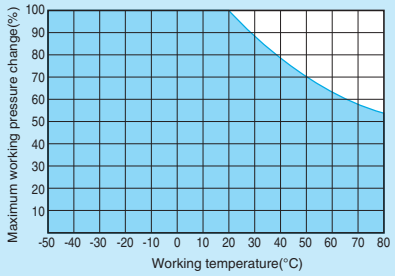
Operating fluid	Working temperature range
Air (clean air)	–50°C~+80°C
Fluorine-based inert fluid	–50°C~+50°C

☞Contact us for various chemical liquids.
☞See "Combination List of Tubing and Fitting" on page 8.

Relation between the working temperature and the maximum working pressure

The maximum working pressure varies with the working temperature (environmental temperature).For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep the pressure with in the indicated range.

⚠Caution: Using tubes at a pressure outside the range may cause accidents or damage, for which Nitta is not liable.



Handing instructions

⚠Caution: When water is used as the operating fluid, keep the surge pressure below the maximum working pressure. Also, do not allow the water to freeze.

☞ See page 10 for common Instructions for tubing products.

Applicable fittings

QuickSeal series Insertion type(stainless) *1

Chemifit CSE series

(*1) Combinatory use of ES tubing and QuickSeal series mixes general and clean type performances. When using them together in a clean environment, be aware of how this could lower the cleanliness level.

Reference

Chemical resistance specification table ·····P.198
Effective sectional area ···P.168

Polyolefin Resin Tubing

Clean-conscious product

PL

For clean piping (flexible)

Features

- A clean tubing suitable for equipment and applications with fluids such as clean air, N2 gas, pure water and various chemical liquids.
- Environment-friendly eco tubing. When burned at 750°C, PL tubing generates only carbon dioxide gas, no nitrogen oxides (NOx), no sulfur oxides (SOx), and absolutely no dioxin.
- Produced, end-sealed, heat-sealed for shipping in a cleanroom.
- Made of special polyolefin resin with high water barrier performance and flexibility
- Low cost compared to fluorocarbon resin tubes.
- Compliant with the MHLW Ministerial Notification No.201(2006), MHW Ministerial Notification No.370(1959), Japan.

Product number table

Millimeter size type (Group 4)

Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol)					
					Black	Milky white	Red	Blue	Yellow	Green
					BK	MW	RE	BU	YL	GN
PL-4-4×2	4×2	1.5	15	10	●	○	●	●	●	●
PL-4-6×4	6×4	1.0	25	15	●	○	●	●	●	●
PL-4-8×6	8×6	0.7	35	20	●	○	●	●	●	●
PL-4-10×7.5	10×7.5		45	30	—	○	—	—	—	—
PL-4-10×8	10×8	0.5		25	●	○	●	●	●	●
PL-4-12×9	12×9	0.7	55	45	●	○	●	●	●	●

Inch size type (Group 1)

Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol)					
					Black	Milky white	Red	Blue	Yellow	Green
					BK	MW	RE	BU	YL	GN
PL-1-1/4	6.35×4.57	0.7	30	14	●	○	●	●	●	●
PL-1-3/8	9.53×6.99		40	30	●	○	●	●	●	●
PL-1-1/2	12.70×9.56		55	50	●	○	●	●	●	●

Inch size type (Group 5)

Type	Outer diameter × Inner diameter (mm)	Outer diameter	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol)
						Milky white
						MW
PL-5-3.18×2	3.18×2	1/8	0.9	7	4	○

☞ Applicable fittings for Group 5 are Chemifit C1 series and Chemifit C1S series with the same outer diameter.

Product number example

PL – 4 – 6×4 – BK – 100M

- PL: Tubing name
- 4: Group (4: millimeter, 1: inch, 5: inch)
- 6×4: Size (millimeter: outer x inner, inch: outer)
- BK: Tubing color symbol
- 100M: Standard length (20M, 100M)

Standard length

20M, 100M

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air (clean air)	−60°C~+80°C
Water (pure water)	0°C~+80°C

☞ Contact us for various chemical liquids.
☞ See "Combination List of Tubing and Fitting" on page 8.

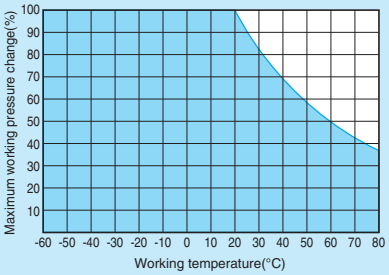
Negative pressure performance

−101.294kPa

Relation between the working temperature and the maximum working pressure

The maximum working pressure varies with the working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep the pressure within the indicated range.

⚠ Caution: Using tubes at a pressure outside the range may cause accidents or damage, for which Nitta is not liable.



Handling instructions

⚠ Caution: When water is used as the operating fluid, the tubing material might degrade depending on the additive. Contact us for details.

⚠ Caution: When water is used as the operating fluid, keep the surge pressure below the maximum working pressure. Also, do not allow the water to freeze.

☞ See page 10 for common instructions for tubing products.

Applicable fittings

Chemifit C1 series

Chemifit C1S series

Chemifit CSE series

Chemifit CP series

PushOne A series

PushOne A series Mini type

PushOne E series

QuickSeal series Insertion type (brass)

Applicable fittings

QuickSeal series Insertion type (stainless)

Related products and product introduction

Chemifit C1 Speed controller

Reference

Chemical resistance specification table ·····P.198
Effective sectional area ···P.168
Negative-pressure performance list ·····P.169

(*1) Combinatory use of PL tubing and PushOne series / QuickSeal series mixes general and clean type performances. When using them together in a clean environment, be aware of how this could lower the cleanliness level.

Clean-conscious product

PN

For clean piping (Super flexible)

Features

- A clean tubing suitable for equipment and applications with fluids such as clean air, N2 gas, pure water and various chemical liquids.
- Environment-friendly eco tubing. When burned at 750°C, PL tubing generates only carbon dioxide gas, no nitrogen oxides (NOx), no sulfur oxides (SOx), and absolutely no dioxin.
- Produced, end-sealed, heat-sealed for shipping in a cleanroom.
- Made of special polyolefin resin with high water barrier performance and higher flexibility than PL tubes.
- Low cost compared to fluorocarbon resin tubes.
- Compliant with the MHLW Ministerial Notification No.201(2006), MHW Ministerial Notification No.370(1959), Japan.

Product number table

Millimeter size type (Group 4)

Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol)					
					Black	Milky white	Clear red	Clear blue	Clear yellow	Clear green
					BK	MW	CRE	CBU	CYL	CGN
PN-4-3×2	3×2	0.7	7	4	●*	○	●*	●*	●*	●*
PN-4-4×2.5	4×2.5		10	7	●	○	●	●	●	●
PN-4-6×4	6×4		20	14	●	○	●	●	●	●
PN-4-8×5	8×5			28	●	○	●	●	●	●
PN-4-10×6.5	10×6.5		30	41	●*	○	●*	●	●	●
PN-4-12×8	12×8		40	57	●*	○	●*	●	●*	●*

* Made to Order

Inch size type (Group 1)

Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol)					
					Black	Milky white	Clear red	Clear blue	Clear yellow	Clear green
					BK	MW	CRE	CBU	CYL	CGN
PN-1-1/4	6.35×4.57	0.5	20	14	●*	○*	●*	●*	●*	●*
PN-1-3/8	9.53×6.99		30	30	●*	○*	●*	●*	●*	●*
PN-1-1/2	12.70×9.56		50	50	●*	○*	●*	●*	●*	●*

* Made to Order

Standard length

20M, 100M

Product number example

PN – 4 – 6×4 – MW – 100M

- Standard length (20M, 100M)
- Tubing color symbol
- Size (millimeter: outer x inner, inch: outer)
- Group (4: millimeter, 1: inch)
- Tubing name

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air (clean air)	–60°C~+80°C
Water (pure water)	0°C~+80°C

Contact us for various chemical liquids.
See "Combination List of Tubing and Fitting" on page 8.

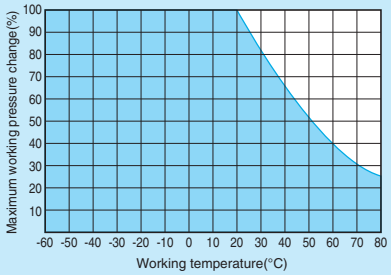
Negative pressure performance

–101.294kPa

Relation between the working temperature and the maximum working pressure

The maximum working pressure varies with the working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep the pressure within the indicated range.

⚠ Caution: Using tubes at a pressure outside the range may cause accidents or damage, for which Nitta is not liable.



Handling instructions

⚠ Caution: When water is used as the operating fluid, the tubing material might degrade depending on the additive. Contact us for details.

⚠ Caution: When water is used as the operating fluid, keep the surge pressure below the maximum working pressure. Also, do not allow the water to freeze.

See page 10 for common instructions for tubing products.

Applicable fittings

Chemifit C1 series

Chemifit C1S series

Chemifit CSE series

Chemifit CP series

PushOne A series

PushOne A series Mini type

PushOne E series

QuickSeal series Insertion type (brass)

Applicable fittings

QuickSeal series Insertion type (stainless)

Related products and product introduction

Chemifit C1 Speed controller

Reference

Chemical resistance specification table ·····P.198
Effective sectional area ···P.168
Negative-pressure performance list ·····P.169

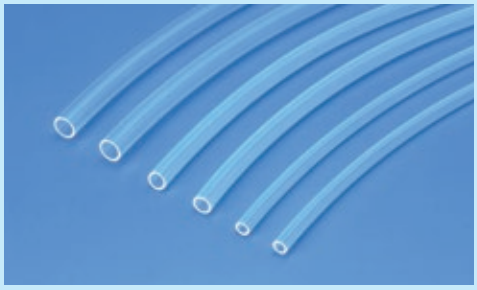
(*1) Combinatory use of PN tubing and PushOne series / QuickSeal series mixes general and clean type performances. When using them together in a clean environment, be aware of how this could lower the cleanliness level.

Fluorocarbon Resin Tubing

Clean-conscious product

TA

For clean, heat-resistant, cold-resistant, chemical-resistant use



Features

- PFA (copolymer of tetrafluoroethylene – perfluoroalkyl vinyl ether) resin tubing with high chemical resistance.
- Produced, end-sealed, heat-sealed for shipping in a cleanroom.
- Easy cleaning with little remaining fluid inside.
- Less aged deterioration and high weather resistance.
- Usable in ozone environment.
- Usable for clean fittings of Chemifit CSE series.
- Compliant with the MHLW Ministerial Notification No.201(2006), MHW Ministerial Notification No.370(1959), Japan.

Product number table

Millimeter size type (Group 4)

	Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol) Translucent CWH
	TA-4-3×2	3×2	1.5	20	8.5	○
	TA-4-4×2	4×2	2.5	25	20	○
	TA-4-4×3	4×3	0.9	30	12	○
	TA-4-6×4	6×4	1.6	30	34	○
	TA-4-8×6	8×6	1.1	50	47	○
	TA-4-10×8	10×8	0.8	70	61	○
	TA-4-12×9	12×9	1.1	70	106	○
	TA-4-12×10	12×10	0.7	100	74	○
*	TA-4-14×12	14×12	0.6	150	89	○
*	TA-4-17×14	17×14	0.7	300	159	○
	TA-4-19×16	19×16	0.6	400	179	○
*	TA-4-24×20	24×20		500	300	○
*	TA-4-25×22	25×22	0.5	600	240	○

*Made to Order

Inch size type (Group 1)

Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol) Translucent CWH
TA-1-1/4	6.35×4.57	1.1	30	33	○
TA-1-3/8	9.53×6.99	1.1	50	71	○
TA-1-1/2	12.70×9.56	1.1	60	118	○

Inch size type (Group 5) Different inner diameter from Group 1

	Type	Outer diameter × Inner diameter (mm)	Outer diameter	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol) Translucent CWH
	TA-5-3.18×2	3.18×2	1/8	1.5	7	10	○
	TA-5-6.35×3.96	6.35×3.96	1/4	1.7	45	42	○
	TA-5-9.53×6.35	9.53×6.35	3/8	1.5	60	86	○
	TA-5-12.7×9.53	12.70×9.53	1/2	1.1	90	120	○
*	TA-5-19.1×15.9	19.10×15.9	3/4	0.6	400	186	○
*	TA-5-25.4×22.2	25.40×22.2	1	0.5	600	240	○

☞ Applicable fittings for Group 5 are Chemifit C1 series and Chemifit C1S series with the same outer diameter.
*Made to Order

Product number example

TA – 4 – 6×4 – CWH – 100M

- TA: Tubing name
- 4: Group (4: millimeter, 1: inch, 5: inch)
- 6×4: Size (millimeter: outer × inner, inch: outer)
- CWH: Tubing color symbol
- 100M: Standard length (20M, 100M)

Standard length

20M, 100M

☞ TA-4- 14×12, 17×14, 19×16, 24×20, 25×22 and
TA-5- 19.1×15.9, 25.4×22.2: 20M only

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air (clean air)	–65°C~+260°C
Water (pure water)	0°C~+100°C

☞ Contact us for various chemical liquids.
☞ See "Combination List of Tubing and Fitting" on page 8.

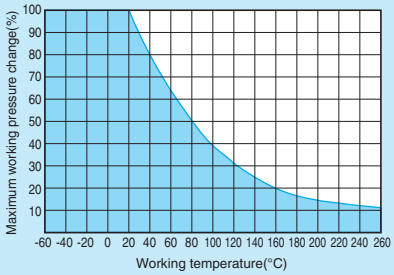
Negative pressure performance

–101.294kPa

Relation between the working temperature and the maximum working pressure

The maximum working pressure varies with the working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep the pressure within the indicated range.

⚠ Caution: Using tubes at a pressure outside the range may cause accidents or damage, for which Nitta is not liable.



Handling instructions

⚠ Caution: When water is used as the operating fluid, keep the surge pressure below the maximum working pressure. Also, do not allow the water to freeze.

☞ See page 10 for common instructions for tubing products.

Applicable fittings

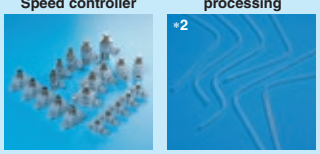
Chemifit C1 series | Chemifit C1S series | Chemifit CSE series | Chemifit CP series | PushOne A series | PushOne A series Mini type | PushOne E series | PushOne E series Brass body type

Applicable fittings

QuickSeal series Insertion type (brass) | QuickSeal series Insertion type (stainless)

Related products and product introduction

Chemifit C1 Speed controller | Various bending processing



Products with high-graded PFA material are available on request. Contact us for details.

Reference

Chemical resistance specification table ·····P.198
Effective sectional area ···P.168
Negative-pressure performance list ·····P.169

(*1) Combinatory use of TA tubing and PushOne series / QuickSeal series mixes general and clean type performances. When using them together in a clean environment, be aware of how this could lower the cleanliness level.
(*2) Contact us for specifications.

Clean-conscious product

TP

For clean, heat-resistant, cold-resistant, chemical-resistant use

Features

- FEP (copolymer of tetrafluoroethylene – hexafluoropropylene) resin tubing with high chemical resistance.
- Produced, end-sealed, heat-sealed for shipping in a cleanroom.
- Easy cleaning with extremely little remaining fluid inside.
- Usable for clean fittings of Chemifit C1 series.
- Less aged deterioration and high weather resistance.
- Usable in ozone environment.
- Compliant with the MHLW Ministerial Notification No.201(2006), MHW Ministerial Notification No.370(1959), Japan.

Product number table

Millimeter size type (Group 4)

	Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol) Translucent CWH
	TP-4-4×2	4×2	2.5	15	20	○
	TP-4-4×2.5	4×2.5	1.7	30	17	○
	TP-4-6×4	6×4	1.6	25	34	○
	TP-4-8×6	8×6	1.1	40	47	○
	TP-4-10×8	10×8	0.8	60	61	○
	TP-4-12×9	12×9	1.1		106	○
	TP-4-12×10	12×10	0.7	90	74	○
*	TP-4-14×12	14×12	0.6	150	89	○
*	TP-4-21×18	21×18	0.6	500	200	○

*Made to Order

Inch size type (Group 1)

Type	Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius (mm)	Weight (g/m)	Standard color (color symbol) Translucent CWH
TP-1-3/16	4.76×3.48	1.1	20	18	○
TP-1-1/4	6.35×4.57		30	33	○
TP-1-5/16	7.94×5.90		40	48	○
TP-1-3/8	9.53×6.99		50	71	○
TP-1-1/2	12.70×9.56		60	118	○

Product number example

TP – 4 – 6×4 – CWH – 100M

- TP: Tubing name
- 4: Group (4: millimeter, 1: inch)
- 6×4: Size (millimeter: outer × inner, inch: outer)
- CWH: Tubing color symbol
- 100M: Standard length (20M, 100M)

Standard length

20M, 100M

☞ TP-4-14×12, TP-4-21×18: 20M only

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air (clean air)	–65°C~+200°C
Water (pure water)	0°C~+100°C

☞ Contact us for various chemical liquids.
☞ See "Combination List of Tubing and Fitting" on page 8.

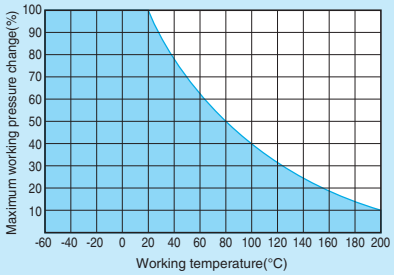
Negative pressure performance

–101.294kPa

Relation between the working temperature and the maximum working pressure

The maximum working pressure varies with the working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep the pressure within the indicated range.

⚠ Caution: Using tubes at a pressure outside the range may cause accidents or damage, for which Nitta is not liable.



Handling instructions

⚠ Caution: When water is used as the operating fluid, keep the surge pressure below the maximum working pressure. Also, do not allow the water to freeze.

☞ See page 10 for common instructions for tubing products.

Applicable fittings

Chemifit C1 series

Chemifit C1S series

Chemifit CP series

PushOne A series

PushOne A series Mini type

PushOne E series

PushOne E series Brass body type

QuickSeal series Insertion type (brass)

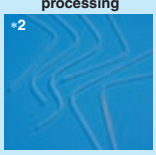
Applicable fittings

QuickSeal series Insertion type (stainless)

Related products and product introduction

Chemifit C1 Speed controller

Various bending processing



Flexible fluorocarbon resin bilayer tubing

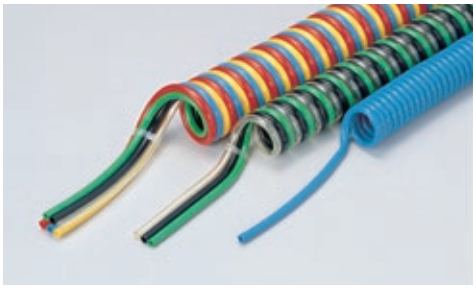
Reference

Chemical resistance specification table ·····P.198
Effective sectional area ···P.168
Negative-pressure performance list ·····P.169

(*1) Combinatory use of TP tubing and PushOne series / QuickSeal series mixes general and clean type performances. When using them together in a clean environment, be aware of how this could lower the cleanliness level.
(*2) Contact us for specifications.

Polyurethane Coil Tubing

UC/USC/UMC



Features

- Polyurethane tubes of type U2 in coiled form.
- USC has a smaller coil diameter than UC.
- UMC is a coil tubing with multiple tubes welded for multi piping.

Standard products

UC

Product number	Outer diameter × Inner diameter (mm)	Coil size (mm) A	B	C	Max. working pressure (MPa at 20°C)	Max. stretchable length (m)	Weight (g/m)	Coiling direction	Standard color Blue
UC-6	6×4	240	200	35	0.8	2.5	80	Right	●
UC-8	8×5	300		42			170		●
UC-10	10×6.5			52			240		●

☞Other tubing colors are available on request.

USC (small coil diameter type)

Product number	Outer diameter × Inner diameter (mm)	Coil size (mm) A	B	C	Max. working pressure (MPa at 20°C)	Max. stretchable length (m)	Weight (g/m)	Coiling direction	Standard color Blue
USC-4	4×2.5	230	100	18	0.8	1.5	24	Left	●
USC-6	6×4	360		24		2.0	54		●
USC-8	8×5			31			106		●
USC-10	10×6.5			40			172		●

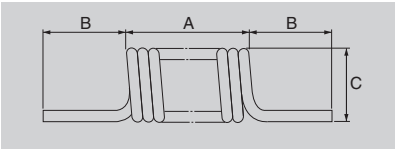
☞Other tubing colors are available on request.

UMC (multi-coil type)

Product number		Number of tubes	Outer diameter × Inner diameter (mm)	Coil size (mm) A	B	C	Max. working pressure (MPa at 20°C)	Max. stretchable length (m)	Weight (g/m)	Standard color combination
UMC602	A	2	6×4	350	100	40	0.8	1.5	114	●●
	B									●●
UMC603	A	3						1.0	120	●●●
	B									●●○
UMC604		4				49		1.5	260	●●●●
UMC606		6						1.0	270	●●●●●●
UMC802	A	2	8×5			56		1.5	230	●●
	B									●●
UMC803	A	3						1.0	245	●●●
	B									●●○

☞Other tubing colors are available on request.

Nominal lengths



A: Total length of coiled part
B: Length of straight part
C: Outer coil diameter

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	−40°C~+80°C

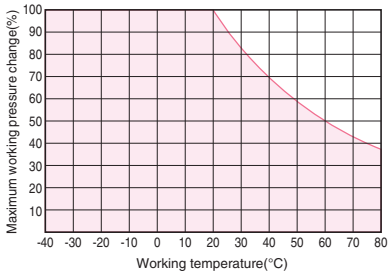
Negative pressure performance

−101.294kPa

Relation between the working temperature and the maximum working pressure

The maximum working pressure varies with the working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep the pressure within the indicated range.

⚠Caution: Using tubes at a pressure outside the range may cause accidents or damage, for which Nitta is not liable.



☞ See page 10 for common instructions for tubing products.

Applicable fittings

QuickSeal series Insertion type (brass)

QuickSeal series Insertion type (stainless)

Chemifit CSE series

(*1) Combinatory use of polyurethane coil tubing and Chemifit series mixes general and clean type performances. When using them together in a clean environment, be aware of how this could lower the cleanliness level.

Related products and product introduction

Tool balancer

UML

Features

- Multiple Polyurethane tubes of type U2 are welded together.

Product number table

Millimeter size type

Product number		Outer diameter × Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Min. bending radius	Weight (g/m)	Standard color combination
UML-402	A	4×2.5	0.8	10	18	
	B					
UML-403	A				27	
	B					
UML-404				15	36	
UML-406					54	
UML-602	A	6×4			38	
	B					
UML-603	A				57	
	B					
UML-604				25	76	
UML-606					114	
UML-802	A	8×5		23	70	
	B					
UML-803	A				105	
	B					

Standard length

5M

Applicable fittings

QuickSeal series Insertion type (brass)

QuickSeal series Insertion type (stainless)

Chemifit CSE series

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	−40°C~+80°C

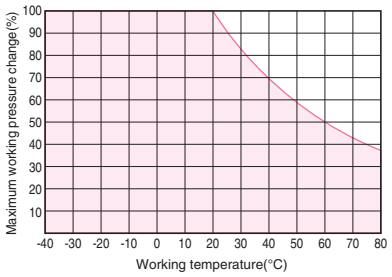
Negative pressure performance

−101.294kPa

Relation between the working temperature and the maximum working pressure

The maximum working pressure varies with the working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep the pressure within the indicated range.

⚠ Caution: Using tubes at a pressure outside the range may cause accidents or damage, for which Nitta is not liable.



See page 10 for common instructions for tubing products.

(*1) Combinatory use of polyurethane multiline tubing and Chemifit series mixes general and clean type performances. When using them together in a clean environment, be aware of how this could lower the cleanliness level.

Nylon Coil Tubing

S

Features

- Coil tubing with strong elasticity easily returns from stretched form.
- High pressure resistance and heat resistance.

Nylon coil tubing with dedicated fittings attached

Standard products

Original length of tubing is 30M before being coiled.

Product number	Outer diameter x Inner diameter (mm)	Max. working pressure (MPa at 20°C)	Length of coil part	Max. stretchable length (mm)	Outer coil diameter (mm)	Weight (g/m)	Standard color (color symbol) Orange(OR)
S3/16-OR-30M	5.95×4.76	1.2	1170	21	55	0.38	●
S1/4-OR-30M	7.85×6.35		1120	20	75	0.60	●
S3/8-OR-30M	11.80×9.53		1210	19	105	1.25	●
S1/2-OR-30M	15.87×12.70		1090	18	155	2.55	●
S3/4-OR-30M	22.80×19.05		690	19.5	360	3.80	●

Product number example

S1/4-OR-30M

- S1/4 — Tubing name
- OR — Tubing color symbol
- 30M — Standard length (30M tubing coiled)

Applicable fittings

QuickSeal series Nylon coil tubing dedicated type

Related products and product introduction

Q.D.C. 101 series

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	−40°C~+100°C

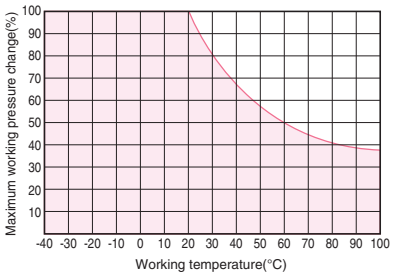
Negative pressure performance

−101.294kPa

Relation between the working temperature and the maximum working pressure

The maximum working pressure varies with the working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep the pressure within the indicated range.

⚠ Caution: Using tubes at a pressure outside the range may cause accidents or damage, for which Nitta is not liable.



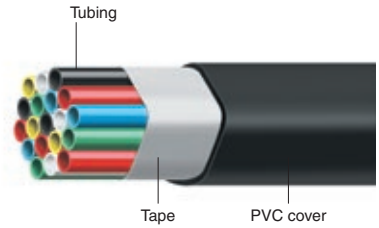
See page 10 for common instructions for tubing products.

1213 (Made to order)

Features

- Processed tubing for multi piping of up to 19 nylon tubes (N2 tubes) of ϕ6 bundled together.

Structure diagram



Product number table (Made to order)

- **N2-4-6×4 (Color: Choose from standard colors of N2 tubing)**

Product number	Number of tubes	Max. outer diameter (mm)	Cover thickness (mm)	Max. working pressure (MPa at20°C)	Min. bending radius (mm)	Max. allowable tensile strength (N)	Max. bundle sectional area (mm2)	Weight (g/m)
1213-0602	2	16	1.6	3.0	40	400	122	130
1213-0603	3	16			40	500	165	173
1213-0604	4	20			60	600	208	194
1213-0605	5	22			60	750	251	230
1213-0607	7	22			75	850	326	267
1213-0608	8	25			95	1050	369	298
1213-0610	10	28			100	1150	443	348
1213-0612	12	28			110	1350	518	390
1213-0614	14	31			130	1500	592	443
1213-0619	19	34			150	1900	765	567

Minimum length for order

95M

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	–40°C~+100°C

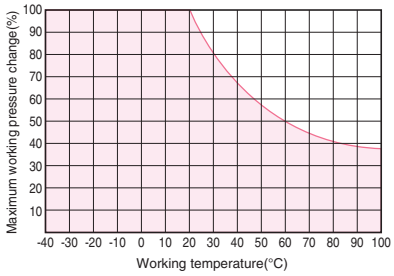
Negative pressure performance

–101.294kPa

Relation between the working temperature and the maximum working pressure

The maximum working pressure varies with the working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep the pressure within the indicated range.

⚠ Caution: Using tubes at a pressure outside the range may cause accidents or damage, for which Nitta is not liable.



See page 10 for common instructions for tubing products.

Applicable fittings

PushOne A series

PushOne A series Mini type

PushOne E series

PushOne E series Brass body type

QuickSeal series Insertion type (brass)

QuickSeal series Insertion type (stainless)

QuickSeal series Insertless type

FITTING

Handling instructions for fitting products

⚠ Safety Note

This Safety Note provides indications on the correct use of the product in order to prevent harm to people and property. The indications are classified into three categories, “danger”, “warning”, and “caution”, depending on the level of potential harm due to improper use. Each category contains important instructions on safety that should be followed in addition to the latest ISO 4414(*1), JIS B 8370(*2), ISO 4413 (*3), and JIS B 8361 (*4).

(*1) ISO 4414 Pneumatic fluid power…Recommendations for the application of equipment to transmission and control systems.
(*2) JIS B 8370 Pneumatic System General Rules
(*3) ISO 4413 Hydraulic fluid power…General rules for the application of equipment to transmission and control systems.
(*4) JIS B 8361 Hydraulic System General Rules

⚠ DANGER
Where inappropriate use of this equipment may cause death or severe injury and where immediate warning of a dangerous situation is mandated.

⚠ WARNING
Where inappropriate use of this equipment may cause death or severe injury.

⚠ CAUTION
Where inappropriate use of this equipment may cause minor injury.

⚠ Before Selection

⚠ DANGER

•Cannot use for machines or equipment for life support.
•To use for machines or equipment that require extremely high safety, measures have to be taken to prevent danger in the event tubing pulls out, bursts or leaks.

⚠ WARNING

•Please contact us before using our products under conditions other than those specified in the catalog.
•Please contact us when using our products for equipment, machines, various types of vehicles, and passenger aircraft, for leisure machines or passenger transport, for medical equipment that would cause human harm in case the specifications are not properly followed, and for machines in contact with food or drinking water.

⚠ When Selecting

⚠ WARNING

•Please check that our products are used under the “use conditions” specified in the catalog.
•Do not use our products when a caustic or flammable gas is used as the fluid or is in the environment.

⚠ CAUTION

•Do not use our products in places where excessive vibration or impact may occur.
•If use conditions differ between tubing and fittings, use them under the lower specified conditions.
•For Nitta’s fitting products, use tubing products that Nitta specifies or JIS B 8381-1995 on-spec products.
•When a chemical is used in fluid or the environment, see “Chemical resistance specification table”. Contact us for chemical resistance of plating.
•When spatter (hot wasted metal) is likely to cling to fittings, use flame-resistant products only. Otherwise spatter may cause fire.
•The maximum operating pressure varies for Chemifit C1 series, Chemifit C1S series and Chemifit CP series depending on the operating temperature. See "Relation between the working temperature and the maximum working pressure" when selecting.

⚠ Installation

⚠ WARNING

•Fix tubes in place when installing them in a situation where unexpected disconnection of the tubing and connector could cause harm to people or property.

⚠ CAUTION

•Instruction for connecting fittings provide in a separate document. Please read it and follow the instructions to install.
•Do not throw or drop fittings. The impact may cause internal damage even if no outer damage is found.
•Because the connection part of the fitting may swell or crack depending on the material, check the strength of the part when connecting.
•Fittings with a sealing processed thread may swell due to the action of an operating fluid such as organic solvent, allowing fluid leakage from the thread part.
•Avoid sharply bending the piping near the tubing insertion port of fittings. Keep the tubing straight for twice as long as the tubing diameter from the insertion port.
•Do not use a fitting with a damaged thread or a damaged tubing insertion port. Before using re-usable products, always check that they are undamaged.
•Nitta only guarantees products fabricated by designated companies.
•Please do not install with tension applied on the tubing or a torsional or bending load applied on the fittings.
•When using water as the operating fluid for PushOne series, Chemifit C1 series and Chemifit C1S series, avoid installing to a place where assembly could be moved.
•You cannot re-use sleeves of the QuickSeal series. Replace them with new sleeves each time you detach.
•You cannot re-use the sleeve and the nut of the Chemifit CP series. Replace them with a new sleeve each time you detach.
•Please do not use the product in an environment where foreign materials may enter the product or come into contact with its internal parts. Doing so may result in damage or leakage.
•Please do not use the products in a manner where the screw side or the tubing insertion opening side is rotated or oscillated repeatedly.

⚠ Usage

⚠ WARNING

•Nitta’s products should be handled only by designers who have sufficient knowledge of equipment, instruments and systems in which our products are to be installed, or by persons responsible for determining specifications. Test and analysis should be conducted if necessary. The designers or the responsible persons are liable for the performance and the safety of the equipment, instruments and systems.

⚠ CAUTION

•When water is used as fluid, do not allow it to freeze.
•Do not touch a tubing at pressurization. Improperly treating or touching a tubing at pressurization may lead to danger from unexpected breakage or leakage of fluid.
•Do not touch a tubing when the operating fluid is hot. Doing so may cause burns.

⚠ Storage

⚠ CAUTION

•When storing unused products, make sure to keep them in a clean place to prevent dust. When fine particles such as dust enter the inside of tubing products or the connected equipment, they may cause problems.
•Keep tubing products in a dry place below 40°C avoiding direct sunlight.
•Do not use tubing products that have been stored for more than one year after production.
•The packaging of clean tubes should be opened just before use. Store the tubes in a box in a clean place in a dust-free environment.

⚠ Maintenance and Inspection

⚠ CAUTION

•Before handling or removing Nitta’s products, be sure to check the safety by shutting off power supply, stopping pressure supply, evacuating pressurized air in the pipe, and terminating the operation of equipment, instruments, and systems.
•Please be sure to make periodic inspections. Confirm that there is no degradation such as outer damage, corrosion, and abrasion and replace any damaged piping.
•When using QuickSeal and Chemifit CP series continuously for a long time, or when using them continuously at a high temperature within the working temperature range, tighten their nuts periodically. Also if using a fitting with a resin thread, tighten the thread periodically.

⚠ Disposal

⚠ CAUTION

•Dispose of unnecessary products as industrial waste or have them disposed of by a waste disposal firm. In particular, incineration of products containing fluorocarbon may generate a toxic pyrolysis gas.

FITTING INDEX

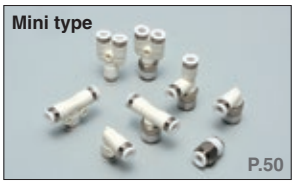
PushOne™ A Series

For general air pressure

P.36

For general air pressure

Mini type



P.50

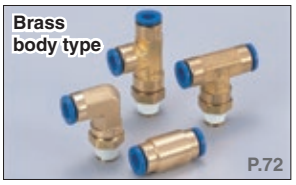
PushOne™ E Series

For general air pressure

P.56

For general air pressure

Brass body type



P.72

QuickSeal Series

For multi-purpose piping

Insertion type (brass)

P.76

For multi-purpose piping

Insertion type (stainless)

P.88

For general air pressure

Insertless type

P.94

QuickSeal Series

For general air pressure

DK tubing dedicated type

P.98

For general air pressure

Nylon coil tubing dedicated type

P.102

Chemifit™ C1 Series

For clean air, pure water, chemical liquid piping

P.104

Chemifit™ C1S Series

For clean air, pure water, chemical liquid piping

P.112

Chemifit™ CSE Series

For clean air, pure water, chemical liquid piping

P.118

Chemifit™ CP Series

For clean air, pure water, chemical liquid piping

P.126

Bamboo-shoot Series

Bamboo-shoot fitting

Barb type

P.132

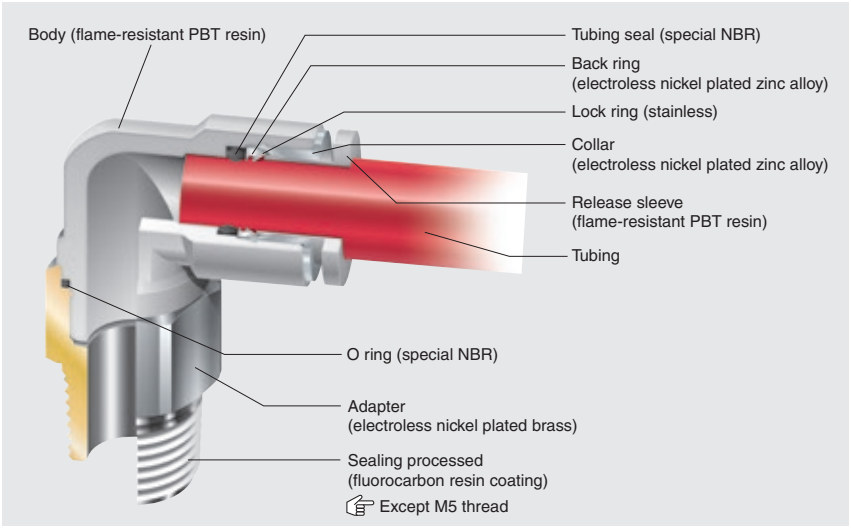
PushOne™ A Series

PushOne™ fittings for general air pressure (flame-resistant)

Features

- PushOne™ connection of tubing
  The tubes can be connected without using a jig or tools.
- Electroless nickel plated
  Prevents degradation of surface and dissolution of copper ions in fluid.
- White body illuminative to working environment
- Flame-resistant resin (compliant with V-0 of UL94 standard)
  Made of flame-resistant resin PBT. High self-extinguishing performance is compliant with V-0 of UL94 standard. Usable under an environment with spatters.
- Sealing-processed R thread
  Sealing tape is not required.

Cross-sectional structure diagram



Product number example

AL 6 – R1/8

- R1/8: Thread size
- 6: Applicable tube outer diameter
- AL: Shape

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	–20°C~+80°C
Water	0°C~+40°C

See "Combination List of Tubing and Fitting" on page 8.

Pressure condition

Maximum working pressure: 1.0MPa
Negative pressure performance:
–99.975kPa

Handling instructions

⚠ Caution: When the working conditions of tubes and fittings differ, use them under the lower specified conditions.

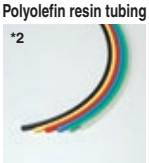
⚠ Caution: When water is used as the operating fluid, confirm that there is no water leakage damage to equipment and instruments due to construction failure.

⚠ Caution: When water is used as the operating fluid, do not allow it to freeze.

⚠ Caution: Do not bend the pipe sharply near the tubing insertion port of the fitting. Keep the tubing straight for twice as long as the tubing diameter from the insertion port.

See page 34 for the common handling instructions for fittings.

Applicable tubing

Polyurethane tubing	Nylon tubing	Flame-resistant tubing	Antistatic tubing	Polyolefin resin tubing	Fluorocarbon resin tubing
			 *1	 *2	 *2
U2 U1 U5	N2 N5 N1	FS FW FWU FUK	UE	PL PN	TA TP

(*1) When the PushOne A series is used with a UE tubing, choose a metal body type including a connector and a hexagonal socket to maintain conductivity between the tubing and the fittings.
(*2) Combinatory use of PL, PN, TA or TP tubing and PushOne A series mixes general and clean type performances. When using them together in a clean environment, be aware of how this could lower the cleanliness level.

Related products and product introduction

Speed controller	Ball valve	Miniature valve	Valve built-in connector	Q.D.C 101 series	Spatter cap
					

Reference

PushOne™ A Series

Shape list

Connector
AC

Hexagon socket connector
AC*-*A

Internal connector
AFC

90 degree elbow
AL

90 degree internal elbow
AFL

90 degree long elbow
ALL

45 degree elbow
A45L

Universal elbow
ALB

90 degree branch elbow
ALY

Universal branch elbow
ALYB

Double universal elbow
ALWB

Triple universal elbow
ALTB

Tee
AT

Service tee
AST

Y joint
AY

Union connector
AUC

90 degree union elbow
AUL

90 degree branch union elbow
AULY

Union tee
AUT

Y union
AYB

Double Y union
AUWY

Panel touch connector
APC

Internal panel touch connector
APFC

90 degree panel touch elbow
APL

Reducer
AR

Adapter elbow
AAL

Y plug
AYA

Manifold A type
AMA

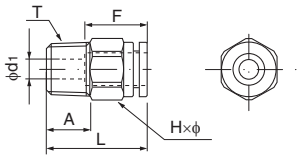
Manifold B type
AMB

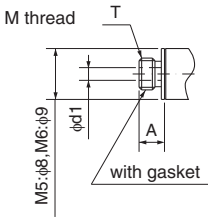
Tubing cap
ACC

Blank plug
BC

Nipple
EN

Connector



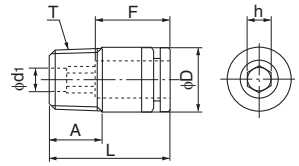


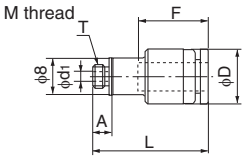
●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (M,R)	L (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	d_1 (mm)	Effective sectional area (mm^2)	Weight (g)
AC4-M5	4	M5×0.8	22.4	4.0	13	10.0×11.0	2.0	3.0	6.0
AC4-R1/8	4	R1/8	19.4	8.0	13	10.0×11.0	2.5	4.0	7.0
AC4-R1/4	4	R1/4	22.4	11.0	13	14.0×15.4	2.5	4.0	17.0
AC6-M5	6	M5×0.8	24.2	4.0	15	12.0×13.0	2.0	3.5	9.0
AC6-M6	6	M6×1.0	25.2	5.0	15	12.0×13.0	3.0	4.5	10.0
AC6-R1/8	6	R1/8	21.2	8.0	15	12.0×13.0	4.0	10.5	9.0
AC6-R1/4	6	R1/4	24.2	11.0	15	14.0×15.4	4.0	10.5	18.0
AC6-R3/8	6	R3/8	25.2	12.0	15	17.0×18.5	4.0	10.5	32.0
AC8-R1/8	8	R1/8	26.2	8.0	16	14.0×15.4	5.0	20.0	14.0
AC8-R1/4	8	R1/4	25.2	11.0	16	14.0×15.4	6.0	25.0	16.0
AC8-R3/8	8	R3/8	26.2	12.0	16	17.0×18.5	6.0	26.0	29.0
AC10-R1/8	10	R1/8	30.1	8.0	19	17.0×18.5	5.0	25.0	24.0
AC10-R1/4	10	R1/4	28.1	11.0	19	17.0×18.5	8.0	40.0	21.0
AC10-R3/8	10	R3/8	29.1	12.0	19	17.0×18.5	8.0	40.0	29.0
AC10-R1/2	10	R1/2	32.1	15.0	19	22.0×24.5	8.0	40.0	61.0
AC12-R1/4	12	R1/4	34.0	11.0	20	19.0×21.0	8.0	45.0	32.0
AC12-R3/8	12	R3/8	30.0	12.0	20	19.0×21.0	10.0	50.0	31.0
AC12-R1/2	12	R1/2	33.0	15.0	20	22.0×24.5	10.0	50.0	58.0
AC16-R3/8	16	R3/8	41.6	12.0	27	24.0×26.5	10.0	77.0	68.0
AC16-R1/2	16	R1/2	43.6	15.0	27	24.0×26.5	12.0	110.5	83.0

*Made to order

Hexagon socket connector

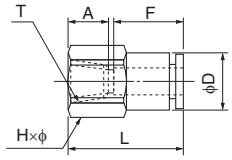




●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (M,R)	L (mm)	A (mm)	F Tubing insertion length (mm)	h Width across flat (mm)	D (mm)	d_1 (mm)	Effective sectional area (mm^2)	Weight (g)
AC4-M5A	4	M5×0.8	19.4	4.0	13	2.0	9.8	2.0	—	5.0
AC4-R1/8A	4	R1/8	19.4	8.0	13	2.5	9.8	2.5	—	7.0
AC6-M5A	6	M5×0.8	24.2	4.0	15	4.0	11.8	2.0	—	18.0
AC6-R1/8A	6	R1/8	21.2	8.0	15	4.0	11.8	4.0	—	8.0
AC6-R1/4A	6	R1/4	24.2	11.0	15	4.0	13.8	4.0	—	17.0
AC8-R1/8A	8	R1/8	26.2	8.0	16	5.0	13.8	5.0	—	12.0
AC8-R1/4A	8	R1/4	25.2	11.0	16	5.0	13.8	5.0	—	15.0
AC10-R1/4A	10	R1/4	28.1	11.0	19	6.0	16.8	6.0	—	19.0
AC10-R3/8A	10	R3/8	29.1	12.0	19	6.0	16.8	6.0	—	28.0

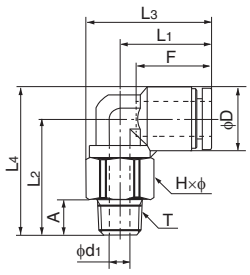
Internal connector



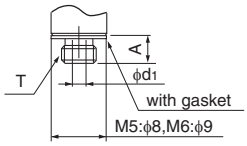
●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (RC)	L (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	Min. inner diameter (mm)	Effective sectional area (mm^2)	Weight (g)
AFC4-R1/8	4	RC1/8	23.9	8.7	13	14.0×15.4	10.0	3.0	4.0	16.0
AFC6-R1/8	6	RC1/8	24.8	8.7	15	14.0×15.4	12.0	5.0	10.5	17.0
AFC6-R1/4	6	RC1/4	29.3	13.0	15	17.0×18.5	12.0	5.0	10.5	26.0
AFC8-R1/4	8	RC1/4	30.9	13.0	16	17.0×18.5	13.9	7.0	25.0	28.0
AFC8-R3/8	8	RC3/8	31.4	13.5	16	22.0×24.5	13.9	7.0	26.0	45.0
AFC10-R1/4	10	RC1/4	33.9	13.0	19	17.0×18.5	16.9	9.0	40.0	34.0
AFC10-R3/8	10	RC3/8	34.4	13.5	19	22.0×24.5	16.9	9.0	40.0	50.0
AFC10-R1/2	10	RC1/2	38.4	17.5	19	24.0×26.5	16.9	9.0	40.0	56.0
AFC12-R1/4	12	RC1/4	34.8	13.0	20	19.0×21.0	19.0	10.0	45.0	43.0
AFC12-R3/8	12	RC3/8	35.3	13.5	20	22.0×24.5	19.0	11.0	50.0	50.0
AFC12-R1/2	12	RC1/2	39.3	17.5	20	24.0×26.5	19.0	11.0	50.0	58.0

90 degree elbow



M thread

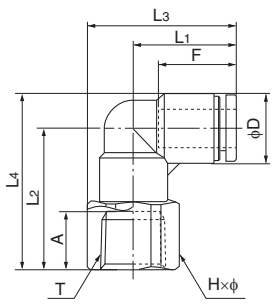


●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (M,R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
AL4-M5-Z2	4	M5×0.8	17.2	18.3	22.7	23.2	4.0	13	10.0×11.0	9.8	2.0	2.0	3.0	6.0
AL4-R1/8-Z2	4	R1/8	17.2	22.7	22.7	27.6	8.0	13	10.0×11.0	9.8	5.0	3.0	4.0	10.0
AL4-R1/4-Z2	4	R1/4	17.2	24.4	24.9	29.3	12.0	13	14.0×15.4	9.8	5.0	3.0	4.0	19.0
AL6-M5-Z2	6	M5×0.8	18.5	22.2	25.0	28.5	4.0	15	12.0×13.0	12.6	2.0	2.0	3.5	10.0
* AL6-M6	6	M6×1.0	18.5	22.7	25.0	29.0	5.0	15	12.0×13.0	12.6	3.0	3.0	4.5	11.0
AL6-R1/8-Z2	6	R1/8	18.5	25.2	25.0	31.5	8.0	15	12.0×13.0	12.6	5.0	5.0	12.0	12.0
AL6-R1/4-Z2	6	R1/4	18.5	25.8	26.2	32.1	12.0	15	14.0×15.4	12.6	7.0	5.0	12.0	17.0
AL6-R3/8-Z2	6	R3/8	18.5	26.8	27.8	33.1	12.0	15	17.0×18.5	12.6	11.0	5.0	12.0	27.0
AL8-R1/8-Z2	8	R1/8	20.7	26.2	28.4	33.5	8.0	16	14.0×15.4	14.6	5.0	5.0	18.5	16.0
AL8-R1/4-Z2	8	R1/4	20.7	30.2	28.4	37.5	12.0	16	14.0×15.4	14.6	8.0	7.0	23.0	19.0
AL8-R3/8-Z2	8	R3/8	20.7	27.8	30.0	35.1	12.0	16	17.0×18.5	14.6	9.0	7.0	23.0	28.0
AL10-R1/8-Z2	10	R1/8	24.7	29.2	33.9	38.0	8.0	19	17.0×18.5	17.5	5.0	5.0	22.0	23.0
AL10-R1/4-Z2	10	R1/4	24.7	32.4	33.9	41.1	12.0	19	17.0×18.5	17.5	8.0	8.0	38.0	25.0
AL10-R3/8-Z2	10	R3/8	24.7	34.2	33.9	43.0	12.0	19	17.0×18.5	17.5	11.0	9.0	37.0	30.0
AL10-R1/2-Z2	10	R1/2	24.7	34.3	36.9	43.0	16.0	19	22.0×24.5	17.5	12.0	9.0	37.0	53.0
AL12-R1/4-Z2	12	R1/4	26.3	35.0	36.8	45.0	12.0	20	19.0×21.0	20.0	8.0	8.0	42.0	31.0
AL12-R3/8-Z2	12	R3/8	26.3	33.5	36.8	43.5	12.0	20	19.0×21.0	20.0	11.0	11.0	46.0	32.0
AL12-R1/2-Z2	12	R1/2	26.3	36.5	38.6	46.5	16.0	20	22.0×24.5	20.0	12.0	11.0	46.0	53.0
AL16-R3/8	16	R3/8	34.9	45.0	48.4	59.0	12.0	27	24.0×27.0	28.0	11.0	11.0	70.0	70.0
AL16-R1/2	16	R1/2	34.9	48.0	48.4	62.0	15.0	27	24.0×27.0	28.0	12.0	12.0	93.0	84.0

*Made to order

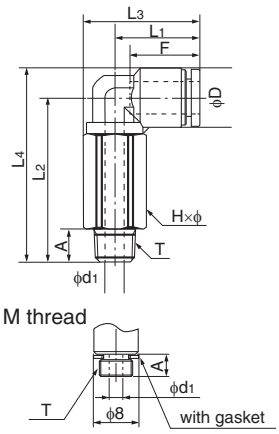
90 degree internal elbow



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (RC)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
AFL4-R1/8	4	RC1/8	17.2	21.7	24.9	26.6	8.0	13	14.0×15.4	9.8	3.0	—	13.0
AFL6-R1/8	6	RC1/8	18.5	24.2	26.2	30.5	8.0	15	14.0×15.4	12.6	5.0	—	15.0
AFL6-R1/4	6	RC1/4	18.5	28.2	27.8	34.5	12.0	15	17.0×18.5	12.6	5.0	—	23.0
AFL6-R3/8	6	RC3/8	18.5	28.7	30.8	35.0	12.5	15	22.0×24.5	12.6	5.0	—	37.0
AFL8-R1/8	8	RC1/8	20.7	25.2	28.4	32.5	8.0	16	14.0×15.4	14.6	7.0	—	17.0
AFL8-R1/4	8	RC1/4	20.7	29.2	30.0	36.5	12.0	16	17.0×18.5	14.6	7.0	—	25.0
AFL8-R3/8	8	RC3/8	20.7	29.7	33.0	37.0	12.5	16	22.0×24.5	14.6	7.0	—	38.0
AFL10-R1/4	10	RC1/4	24.7	32.2	33.9	41.0	12.0	19	17.0×18.5	17.5	9.0	—	29.0
AFL10-R3/8	10	RC3/8	24.7	33.7	36.9	42.5	12.5	19	22.0×24.5	17.5	9.0	—	45.0
AFL12-R3/8	12	RC3/8	26.3	36.2	38.6	46.2	12.5	20	22.0×24.5	20.0	10.0	—	49.0
AFL12-R1/2	12	RC1/2	26.3	39.2	39.6	49.2	15.5	20	24.0×26.5	20.0	10.0	—	54.0

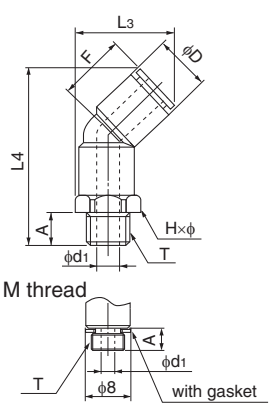
90 degree long elbow



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (M,R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
ALL4-M5-Z2	4	M5×0.8	17.2	29.9	22.7	34.8	4.0	13	10.0×11.0	9.8	2.0	2.0	3.0	14.0
ALL4-R1/8-Z2	4	R1/8	17.2	32.4	22.7	37.3	8.0	13	10.0×11.0	9.8	5.0	3.0	4.0	15.0
ALL4-R1/4-Z2	4	R1/4	17.2	36.4	24.9	41.3	12.0	13	14.0×15.4	9.8	5.0	3.0	4.0	34.0
ALL6-M5-Z2	6	M5×0.8	18.5	34.7	25.0	41.0	4.0	15	12.0×13.0	12.6	2.0	2.0	3.5	23.0
ALL6-R1/8-Z2	6	R1/8	18.5	37.2	25.0	43.5	8.0	15	12.0×13.0	12.6	5.0	5.0	12.0	23.0
ALL6-R1/4-Z2	6	R1/4	18.5	41.2	26.2	47.5	12.0	15	14.0×15.4	12.6	7.0	5.0	12.0	34.0
ALL6-R3/8-Z2	6	R3/8	18.5	42.2	27.8	48.5	12.0	15	17.0×18.5	12.6	11.0	5.0	12.0	54.0
ALL8-R1/8-Z2	8	R1/8	20.7	40.2	28.4	47.5	8.0	16	14.0×15.4	14.6	5.0	5.0	18.5	33.0
ALL8-R1/4-Z2	8	R1/4	20.7	44.2	28.4	51.5	12.0	16	14.0×15.4	14.6	8.0	7.0	23.0	33.0
ALL8-R3/8-Z2	8	R3/8	20.7	45.2	30.0	52.5	12.0	16	17.0×18.5	14.6	9.0	7.0	23.0	55.0
ALL10-R1/8-Z2	10	R1/8	24.7	46.2	33.9	55.0	8.0	19	17.0×18.5	17.5	5.0	5.0	22.0	55.0
ALL10-R1/4-Z2	10	R1/4	24.7	50.2	33.9	59.0	12.0	19	17.0×18.5	17.5	8.0	8.0	38.0	55.0
ALL10-R3/8-Z2	10	R3/8	24.7	51.2	33.9	60.0	12.0	19	17.0×18.5	17.5	11.0	9.0	37.0	52.0
ALL10-R1/2-Z2	10	R1/2	24.7	55.2	36.9	64.0	16.0	19	22.0×24.5	17.5	12.0	9.0	37.0	106.0
ALL12-R1/4-Z2	12	R1/4	26.3	55.2	36.8	65.2	12.0	20	19.0×21.0	20.0	8.0	8.0	42.0	75.0
ALL12-R3/8-Z2	12	R3/8	26.3	56.2	36.8	66.2	12.0	20	19.0×21.0	20.0	11.0	11.0	46.0	73.0
ALL12-R1/2-Z2	12	R1/2	26.3	60.2	38.6	70.2	16.0	20	22.0×24.5	20.0	12.0	11.0	46.0	114.0

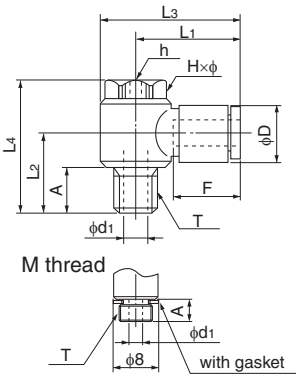
45 degree elbow



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (M,R)	L3 (mm)	L4 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
A45L4-M5	4	M5×0.8	19.7	34.4	4.0	13	10.0×11.0	9.8	2.0	2.0	3.0	7.0
A45L4-R1/8	4	R1/8	19.7	36.9	8.0	13	10.0×11.0	9.8	5.0	3.0	4.0	9.0
A45L4-R1/4	4	R1/4	21.9	40.9	11.0	13	14.0×15.4	9.8	7.0	3.0	4.0	16.0
A45L6-M5	6	M5×0.8	22.4	38.6	4.0	15	12.0×13.0	12.6	2.0	2.0	3.5	10.0
A45L6-R1/8	6	R1/8	22.4	41.1	8.0	15	12.0×13.0	12.6	5.0	5.0	12.0	12.0
A45L6-R1/4	6	R1/4	23.6	45.1	11.0	15	14.0×15.4	12.6	7.0	5.0	12.0	18.0
A45L6-R3/8	6	R3/8	25.2	46.1	12.0	15	17.0×18.5	12.6	9.0	5.0	12.0	26.0
A45L8-R1/8	8	R1/8	25.5	44.0	8.0	16	14.0×15.4	14.6	5.0	5.0	18.5	15.0
A45L8-R1/4	8	R1/4	25.5	48.0	11.0	16	14.0×15.4	14.6	7.0	7.0	23.0	20.0
A45L8-R3/8	8	R3/8	27.0	49.0	12.0	16	17.0×18.5	14.6	9.0	7.0	23.0	28.0
A45L10-R1/8	10	R1/8	30.0	50.0	8.0	19	17.0×18.5	17.5	5.0	5.0	22.0	22.0
A45L10-R1/4	10	R1/4	30.0	54.0	11.0	19	17.0×18.5	17.5	7.0	7.0	34.5	27.0
A45L10-R3/8	10	R3/8	30.0	55.0	12.0	19	17.0×18.5	17.5	9.0	9.0	37.0	33.0
A45L10-R1/2	10	R1/2	33.0	59.0	15.0	19	22.0×24.5	17.5	12.0	9.0	38.5	52.0
A45L12-R1/4	12	R1/4	33.5	58.7	11.0	20	19.0×21.0	20.0	7.0	7.0	43.0	34.0
A45L12-R3/8	12	R3/8	33.5	59.7	12.0	20	19.0×21.0	20.0	9.0	9.0	47.0	40.0
A45L12-R1/2	12	R1/2	35.3	63.7	15.0	20	22.0×24.5	20.0	12.0	10.0	47.0	57.0

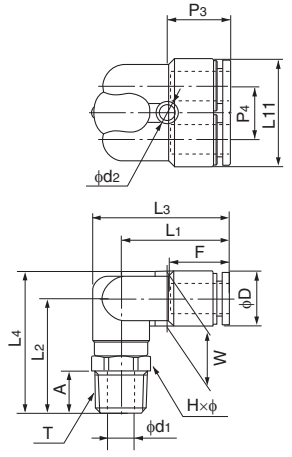
Universal elbow



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (M,R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	h (mm)	D (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
ALB4-M5	4	M5×0.8	20.4	11.5	25.3	21.0	4.0	13	8.0×9.0	3.0	9.8	2.0	2.0	3.0	10.0
ALB4-R1/8	4	R1/8	23.4	17.5	30.4	30.0	9.5	13	13.0×14.0	5.0	9.8	5.0	3.0	4.0	20.0
ALB6-M5	6	M5×0.8	20.8	11.5	25.6	21.0	4.0	15	8.0×9.0	3.0	12.6	2.0	2.0	3.5	10.0
ALB6-R1/8	6	R1/8	22.8	17.5	29.8	30.0	9.5	15	13.0×14.0	5.0	12.6	5.0	3.2	8.0	21.0
ALB6-R1/4	6	R1/4	24.8	22.9	34.5	37.5	13.4	15	17.0×18.3	6.0	12.6	7.0	4.2	9.0	43.0
ALB8-R1/8	8	R1/8	24.4	17.5	31.4	30.0	9.5	16	13.0×14.0	5.0	14.6	5.0	3.2	9.0	41.0
ALB8-R1/4	8	R1/4	26.4	22.9	36.1	37.5	13.4	16	17.0×18.3	6.0	14.6	7.0	4.2	14.5	44.0
ALB8-R3/8	8	R3/8	28.4	24.4	40.4	40.5	13.9	16	21.0×22.6	8.0	14.6	9.0	6.0	19.0	69.0
ALB10-R1/4	10	R1/4	29.4	22.9	39.1	37.5	13.4	19	17.0×18.3	6.0	17.5	7.0	4.2	15.5	74.0
ALB10-R3/8	10	R3/8	31.4	24.4	43.4	40.5	13.9	19	21.0×22.6	8.0	17.5	9.0	6.0	23.0	74.0
ALB12-R3/8	12	R3/8	34.3	24.3	48.3	40.5	13.8	20	24.0×26.0	8.0	20.0	10.0	8.0	25.5	92.0
ALB12-R1/2	12	R1/2	34.3	27.3	48.3	43.5	16.8	20	24.0×26.0	8.0	20.0	12.0	8.0	25.5	100.0

90 degree branch elbow



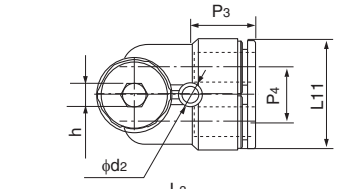
●Millimeter size type

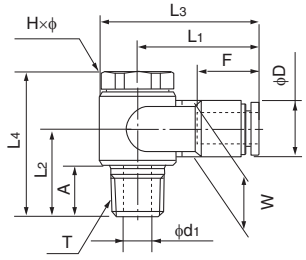
Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L11 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	P3 (mm)	P4 (mm)	W (mm)	D (mm)	d1 (mm)	d2 (mm)	Effective sectional area (mm²)	Weight (g)
ALY6-R1/8	6	R1/8	25.6	25.2	32.1	31.5	24.8	8.0	15	12.0×13.0	14.8	12.2	12.6	12.6	5.0	4.2	—	16.0
ALY6-R1/4	6	R1/4	25.6	29.2	33.3	35.5	24.8	11.0	15	14.0×15.4	14.8	12.2	12.6	12.6	7.0	4.2	—	23.0
ALY8-R1/8	8	R1/8	28.2	26.2	35.9	33.5	28.8	8.0	16	14.0×15.4	16.4	14.2	14.6	14.6	5.0	4.2	—	21.0
ALY8-R1/4	8	R1/4	28.2	30.2	35.9	37.5	28.8	11.0	16	14.0×15.4	16.4	14.2	14.6	14.6	7.0	4.2	—	27.0
ALY8-R3/8	8	R3/8	28.2	31.2	37.5	38.5	28.8	12.0	16	17.0×18.5	16.4	14.2	14.6	14.6	9.0	4.2	—	35.0
ALY10-R1/4	10	R1/4	31.3	33.2	40.5	42.0	35.0	11.0	19	17.0×18.5	18.4	17.5	17.5	17.5	7.0	4.2	—	37.0
ALY10-R3/8	10	R3/8	31.3	34.2	40.5	43.0	35.0	12.0	19	17.0×18.5	18.4	17.5	17.5	17.5	9.0	4.2	—	43.0

Universal branch elbow

●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L11 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	h Width across flat (mm)	P3 (mm)	P4 (mm)	W (mm)	D (mm)	d1 (mm)	d2 (mm)	Effective sectional area (mm²)	Weight (g)
ALYB6-R1/8	6	R1/8	26.1	17.5	33.1	30.0	24.8	9.5	15	13.0x14.0	5.0	14.8	12.2	12.6	12.6	5.0	4.2	—	25.0
ALYB6-R1/4	6	R1/4	29.0	22.9	38.7	37.5	24.8	13.4	15	17.0x18.3	6.0	14.8	12.2	12.6	12.6	7.0	4.2	—	46.0
ALYB8-R1/4	8	R1/4	30.6	22.9	40.3	37.5	28.8	13.4	16	17.0x18.3	6.0	16.4	14.2	14.6	14.6	7.0	4.2	—	49.0
ALYB8-R3/8	8	R3/8	32.9	24.4	44.9	40.5	28.8	13.9	16	21.0x22.6	8.0	16.4	14.2	14.6	14.6	9.0	4.2	—	58.0
ALYB10-R1/4	10	R1/4	34.9	23.4	46.9	39.5	35.0	12.9	19	21.0x22.6	8.0	18.4	17.5	17.5	17.5	7.0	4.2	—	78.0
ALYB10-R3/8	10	R3/8	34.9	24.4	46.9	40.5	35.0	13.9	19	21.0x22.6	8.0	18.4	17.5	17.5	17.5	9.0	4.2	—	80.0

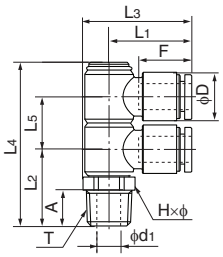




Double universal elbow

●Millimeter size type

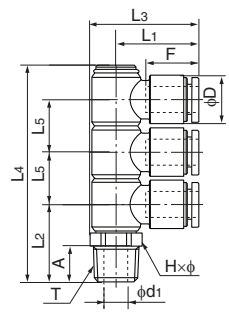
Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d1 (mm)	Effective sectional area (mm²)	Weight (g)
ALWB6-R1/8	6	R1/8	22.8	18.8	30.5	42.3	13.5	8.0	15	14.0x15.4	12.6	5.0	—	33.0
ALWB6-R1/4	6	R1/4	22.8	21.8	30.5	45.3	13.5	11.0	15	14.0x15.4	12.6	7.0	—	35.0
ALWB8-R1/4	8	R1/4	24.4	23.0	32.1	50.0	16.0	11.0	16	14.0x15.4	14.6	7.0	—	39.0
ALWB8-R3/8	8	R3/8	24.4	24.0	33.7	51.0	16.0	12.0	16	17.0x18.5	14.6	9.0	—	47.0
ALWB10-R1/4	10	R1/4	29.4	24.5	39.1	56.0	19.0	11.0	19	17.0x18.5	17.5	7.0	—	72.0
ALWB10-R3/8	10	R3/8	29.4	25.5	39.1	57.0	19.0	12.0	19	17.0x18.5	17.5	9.0	—	70.0



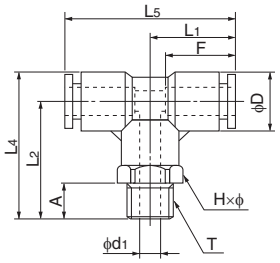
Triple universal elbow

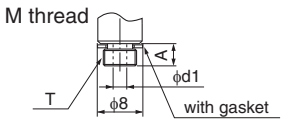
●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d1 (mm)	Effective sectional area (mm²)	Weight (g)
ALTB6-R1/8	6	R1/8	22.8	18.8	30.5	55.5	13.5	8.0	15	14.0x15.4	12.6	5.0	—	43.0
ALTB6-R1/4	6	R1/4	22.8	21.8	30.5	58.5	13.5	11.0	15	14.0x15.4	12.6	7.0	—	45.0
ALTB8-R1/4	8	R1/4	24.4	23.0	32.1	66.0	16.0	11.0	16	14.0x15.4	14.6	7.0	—	51.0
ALTB8-R3/8	8	R3/8	24.4	24.0	33.7	67.0	16.0	12.0	16	17.0x18.5	14.6	9.0	—	59.0
ALTB10-R1/4	10	R1/4	29.4	24.5	39.1	75.5	19.0	11.0	19	17.0x18.5	17.5	7.0	—	98.0
ALTB10-R3/8	10	R3/8	29.4	25.5	39.1	76.5	19.0	12.0	19	17.0x18.5	17.5	9.0	—	92.0



Tee

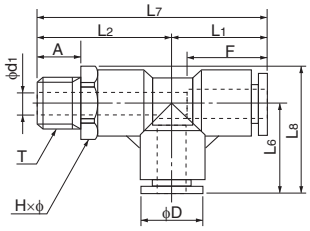


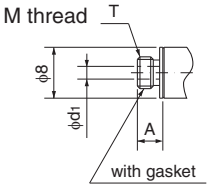


●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (M,R)	L1 (mm)	L2 (mm)	L4 (mm)	L5 (mm)	A (mm)	F Tubing insertion length (mm)	H×φ Width across flat (mm)	D (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
AT4-M5	4	M5×0.8	17.2	20.2	25.1	34.4	4.0	13	10.0×11.0	9.8	2.0	2.0	3.0	8.0
AT4-R1/8	4	R1/8	17.2	22.7	27.6	34.4	8.0	13	10.0×11.0	9.8	5.0	3.0	4.0	10.0
AT4-R1/4	4	R1/4	17.2	26.7	31.6	34.4	11.0	13	14.0×15.4	9.8	7.0	3.0	4.0	17.0
AT6-M5	6	M5×0.8	18.5	22.7	29.0	37.0	4.0	15	12.0×13.0	12.6	2.0	2.0	3.5	12.0
AT6-R1/8	6	R1/8	18.5	25.2	31.5	37.0	8.0	15	12.0×13.0	12.6	5.0	4.6	12.0	14.0
AT6-R1/4	6	R1/4	18.5	29.2	35.5	37.0	11.0	15	14.0×15.4	12.6	7.0	4.6	12.0	21.0
AT6-R3/8	6	R3/8	18.5	30.2	36.5	37.0	12.0	15	17.0×18.5	12.6	9.0	4.6	12.0	29.0
AT8-R1/8	8	R1/8	20.7	26.2	33.5	41.4	8.0	16	14.0×15.4	14.6	5.0	5.0	18.5	18.0
AT8-R1/4	8	R1/4	20.7	30.2	37.5	41.4	11.0	16	14.0×15.4	14.6	7.0	7.0	23.0	24.0
AT8-R3/8	8	R3/8	20.7	31.2	38.5	41.4	12.0	16	17.0×18.5	14.6	9.0	7.0	23.0	32.0
AT10-R1/8	10	R1/8	24.7	29.2	38.0	49.3	8.0	19	17.0×18.5	17.5	5.0	5.0	22.0	28.0
AT10-R1/4	10	R1/4	24.7	33.2	42.0	49.3	11.0	19	17.0×18.5	17.5	7.0	7.0	34.5	34.0
AT10-R3/8	10	R3/8	24.7	34.2	43.0	49.3	12.0	19	17.0×18.5	17.5	9.0	9.0	37.0	39.0
AT10-R1/2	10	R1/2	24.7	38.2	47.0	49.3	15.0	19	22.0×24.5	17.5	12.0	9.0	37.0	58.0
AT12-R1/4	12	R1/4	26.3	35.7	45.7	52.6	11.0	20	19.0×21.0	20.0	7.0	7.0	36.0	43.0
AT12-R3/8	12	R3/8	26.3	36.7	46.7	52.6	12.0	20	19.0×21.0	20.0	9.0	9.0	43.0	48.0
AT12-R1/2	12	R1/2	26.3	40.7	50.7	52.6	15.0	20	22.0×24.5	20.0	12.0	10.0	43.0	65.0
AT16-R3/8	16	R3/8	34.9	45.0	59.0	69.8	12.0	27	24.0×27.0	28.0	11.0	11.0	70.0	92.0
AT16-R1/2	16	R1/2	34.9	48.0	62.0	69.8	15.0	27	24.0×27.0	28.0	12.0	12.0	93.0	106.0

Service tee

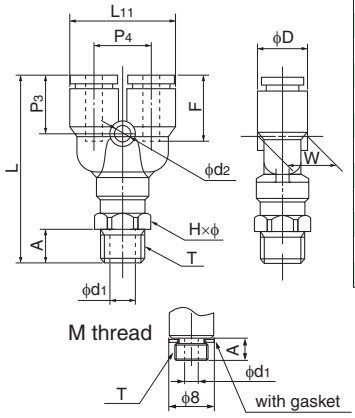




●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (M,R)	L1 (mm)	L2 (mm)	L6 (mm)	L7 (mm)	L8 (mm)	A (mm)	F Tubing insertion length (mm)	H×φ Width across flat (mm)	D (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
AST4-M5	4	M5×0.8	17.2	20.2	17.2	37.4	22.7	4.0	13	10.0×11.0	9.8	2.0	2.0	3.0	8.0
AST4-R1/8	4	R1/8	17.2	22.7	17.2	39.9	22.7	8.0	13	10.0×11.0	9.8	5.0	3.0	4.0	10.0
AST4-R1/4	4	R1/4	17.2	26.7	17.2	43.9	24.9	11.0	13	14.0×15.4	9.8	7.0	3.0	4.0	18.0
AST6-M5	6	M5×0.8	18.5	22.7	18.5	41.2	25.0	4.0	15	12.0×13.0	12.6	2.0	2.0	3.5	12.0
AST6-R1/8	6	R1/8	18.5	25.2	18.5	43.7	25.0	8.0	15	12.0×13.0	12.6	5.0	5.0	12.0	14.0
AST6-R1/4	6	R1/4	18.5	29.2	18.5	47.7	26.2	11.0	15	14.0×15.4	12.6	7.0	5.0	12.0	21.0
AST6-R3/8	6	R3/8	18.5	30.2	18.5	48.7	27.8	12.0	15	17.0×18.5	12.6	9.0	5.0	12.0	29.0
AST8-R1/8	8	R1/8	20.7	26.2	20.7	46.9	28.4	8.0	16	14.0×15.4	14.6	5.0	5.0	18.5	18.0
AST8-R1/4	8	R1/4	20.7	30.2	20.7	50.9	28.4	11.0	16	14.0×15.4	14.6	7.0	7.0	23.0	24.0
AST8-R3/8	8	R3/8	20.7	31.2	20.7	51.9	30.0	12.0	16	17.0×18.5	14.6	9.0	7.0	23.0	32.0
AST10-R1/8	10	R1/8	24.7	29.2	24.7	53.9	33.9	8.0	19	17.0×18.5	17.5	5.0	5.0	22.0	28.0
AST10-R1/4	10	R1/4	24.7	33.2	24.7	57.9	33.9	11.0	19	17.0×18.5	17.5	7.0	7.0	34.5	34.0
AST10-R3/8	10	R3/8	24.7	34.2	24.7	58.9	33.9	12.0	19	17.0×18.5	17.5	9.0	9.0	37.0	40.0
AST10-R1/2	10	R1/2	24.7	38.2	24.7	62.9	36.9	15.0	19	22.0×24.5	17.5	12.0	9.0	37.0	58.0
AST12-R1/4	12	R1/4	26.3	35.7	26.3	62.0	36.8	11.0	20	19.0×21.0	20.0	7.0	7.0	36.0	43.0
AST12-R3/8	12	R3/8	26.3	36.7	26.3	63.0	36.8	12.0	20	19.0×21.0	20.0	9.0	9.0	43.0	48.0
AST12-R1/2	12	R1/2	26.3	40.7	26.3	67.0	38.6	15.0	20	22.0×24.5	20.0	12.0	10.0	43.0	65.0
AST16-R3/8	16	R3/8	34.9	45.0	34.9	79.9	48.4	12.0	27	24.0×27.0	28.0	11.0	11.0	70.0	92.0
AST16-R1/2	16	R1/2	34.9	48.0	34.9	82.9	48.4	15.0	27	24.0×27.0	28.0	12.0	12.0	93.0	106.0

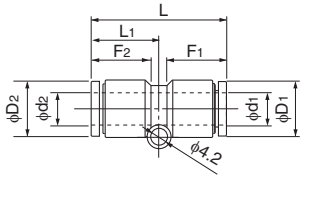
Y joint

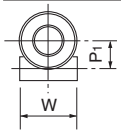


●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (M,R)	L (mm)	L11 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	P3 (mm)	P4 (mm)	W (mm)	D (mm)	d1 (mm)	d2 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
AY4-M5	4	M5×0.8	37.9	20.8	4.0	13	10.0×11.0	13.4	11.0	9.8	9.8	2.0	3.2	2.0	2.5	9.0
AY4-R1/8	4	R1/8	40.4	20.8	8.0	13	10.0×11.0	13.4	11.0	9.8	9.8	5.0	3.2	3.0	3.5	11.0
AY4-R1/4	4	R1/4	44.4	20.8	11.0	13	14.0×15.4	13.4	11.0	9.8	9.8	7.0	3.2	3.0	3.5	18.0
AY6-M5	6	M5×0.8	41.3	24.8	4.0	15	12.0×13.0	14.8	12.2	12.5	12.6	2.0	4.2	2.0	2.5	13.0
AY6-R1/8	6	R1/8	43.8	24.8	8.0	15	12.0×13.0	14.8	12.2	12.5	12.6	5.0	4.2	5.0	9.0	15.0
AY6-R1/4	6	R1/4	47.8	24.8	11.0	15	14.0×15.4	14.8	12.2	12.5	12.6	7.0	4.2	5.0	9.0	22.0
AY6-R3/8	6	R3/8	48.8	24.8	12.0	15	17.0×18.5	14.8	12.2	12.5	12.6	9.0	4.2	5.0	9.0	30.0
AY8-R1/8	8	R1/8	46.9	28.8	8.0	16	14.0×15.4	16.4	14.2	14.6	14.6	5.0	4.2	5.0	17.5	20.0
AY8-R1/4	8	R1/4	50.9	28.8	11.0	16	14.0×15.4	16.4	14.2	14.6	14.6	7.0	4.2	7.0	20.0	25.0
AY8-R3/8	8	R3/8	51.9	28.8	12.0	16	17.0×18.5	16.4	14.2	14.6	14.6	9.0	4.2	7.0	20.0	33.0
AY10-R1/4	10	R1/4	55.9	35.0	11.0	19	17.0×18.5	18.4	17.5	17.5	17.5	7.0	4.2	7.0	27.5	33.0
AY10-R3/8	10	R3/8	56.9	35.0	12.0	19	17.0×18.5	18.4	17.5	17.5	17.5	9.0	4.2	9.0	28.0	41.0
AY10-R1/2	10	R1/2	60.9	35.0	15.0	19	22.0×24.5	18.4	17.5	17.5	17.5	12.0	4.2	9.0	28.0	60.0
AY12-R1/4	12	R1/4	60.8	40.0	11.0	20	19.0×21.0	20.3	20.0	20.0	20.0	7.0	4.2	7.0	34.5	47.0
AY12-R3/8	12	R3/8	61.8	40.0	12.0	20	19.0×21.0	20.3	20.0	20.0	20.0	9.0	4.2	9.0	40.0	52.0
AY12-R1/2	12	R1/2	65.8	40.0	15.0	20	22.0×24.5	20.3	20.0	20.0	20.0	12.0	4.2	10.0	40.0	70.0
AY16-R3/8	16	R3/8	78.6	55.5	12.0	27	24.0×27.0	26.6	27.5	27.5	28.0	11.0	4.2	11.0	70.0	103.0
AY16-R1/2	16	R1/2	81.6	55.5	15.0	27	24.0×27.0	26.6	27.5	27.5	28.0	12.0	4.2	12.0	71.0	117.0

Union connector

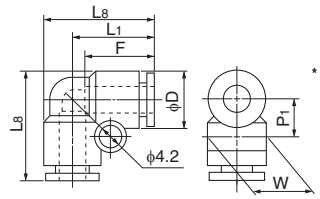




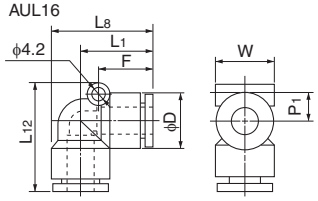
●Millimeter size type

Product number	d1 Applicable tubing outer diameter (mm)	d2 Applicable tubing outer diameter (mm)	L (mm)	L1 (mm)	P1 (mm)	F1 Tubing insertion length (mm)	F2 Tubing insertion length (mm)	D1 (mm)	D2 (mm)	W (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
AUC4	4	4	31.8	15.9	5.0	13	13	9.8	9.8	9.7	3.0	3.5	4.0
AUC4-6	4	6	32.7	16.8	6.0	13	15	9.8	12.6	12.5	3.0	3.5	5.0
AUC6	6	6	33.6	16.8	6.0	15	15	12.6	12.6	12.5	5.0	12.5	6.0
AUC6-8	6	8	34.7	17.9	7.0	15	16	12.6	14.6	14.5	5.0	11.5	7.0
AUC8	8	8	35.8	17.9	7.0	16	16	14.6	14.6	14.5	7.0	28.0	8.0
AUC8-10	8	10	38.8	20.9	8.5	16	19	14.6	17.5	17.5	7.0	31.5	11.0
AUC10	10	10	41.7	20.9	8.5	19	19	17.5	17.5	17.5	9.0	45.0	14.0
AUC10-12	10	12	42.7	21.8	9.8	19	20	17.5	20.0	20.0	9.0	53.0	17.0
AUC12	12	12	43.6	21.8	9.8	20	20	20.0	20.0	20.0	11.0	67.0	19.0
AUC16	16	16	56.2	28.1	13.8	27	27	28.0	28.0	27.5	13.0	110.0	48.0

90 degree union elbow



AUL16



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	L1 (mm)	L8 (mm)	P1 (mm)	F Tubing insertion length (mm)	D (mm)	W (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
AUL4	4	17.2	22.1	6.9	13	9.8	9.7	3.0	3.5	4.0
AUL6	6	18.5	24.8	8.3	15	12.6	12.5	5.0	9.5	6.0
AUL8	8	20.7	28.0	9.3	16	14.6	14.5	7.0	19.5	9.0
AUL10	10	24.7	33.4	10.8	19	17.5	17.5	9.0	32.5	15.0
AUL12	12	26.3	36.3	12.1	20	20.0	20.0	11.0	45.5	20.0

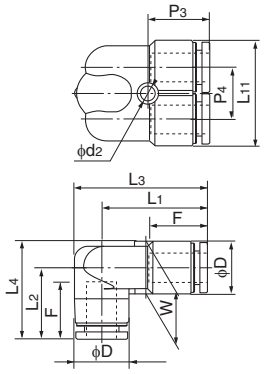
Product number	Applicable tubing outer diameter (mm)	L1 (mm)	L8 (mm)	L12 (mm)	P1 (mm)	F Tubing insertion length (mm)	D (mm)	W (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
* AUL16	16	34.9	48.9	50.8	12.9	27	28.0	27.5	13.0	97.5	50.0

*AUL16 has a different screw hole position.

90 degree branch union elbow

●Millimeter size type

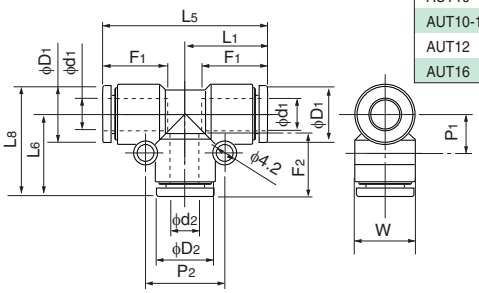
Product number	Applicable tubing outer diameter (mm)	L_1 (mm)	L_2 (mm)	L_3 (mm)	L_4 (mm)	L_{11} (mm)	F Tubing insertion length (mm)	P_3 (mm)	P_4 (mm)	W (mm)	D (mm)	d_2 (mm)	Min. inner diameter (mm)	Effective sectional area (mm^2)	Weight (g)
AULY6	6	25.6	18.0	31.9	24.3	24.8	15	14.8	12.2	12.6	12.6	4.2	5.0	—	10.0
AULY8	8	28.2	19.6	35.5	26.9	28.8	16	16.4	14.2	14.6	14.6	4.2	7.0	—	14.0
AULY10	10	31.3	22.6	40.0	31.3	35.0	19	18.4	17.5	17.5	17.5	4.2	9.0	—	23.0



Union tee

●Millimeter size type

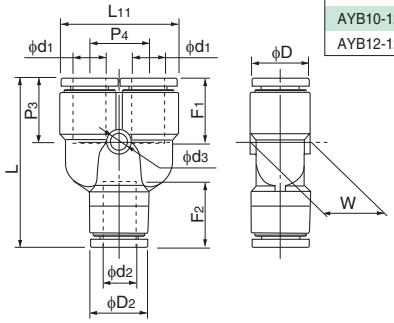
Product number	d_1 Applicable tubing outer diameter (mm)	d_2 Applicable tubing outer diameter (mm)	L_1 (mm)	L_5 (mm)	L_6 (mm)	L_8 (mm)	F_1 Tubing insertion length (mm)	F_2 Tubing insertion length (mm)	P_1 (mm)	P_2 (mm)	D_1 (mm)	D_2 (mm)	W (mm)	Min. inner diameter (mm)	Effective sectional area (mm^2)	Weight (g)
AUT4	4	4	17.2	34.4	17.2	22.1	13	13	6.9	14.0	9.8	9.8	9.7	3.0	3.5	6.0
AUT4-6	4	6	17.7	35.4	18.0	22.9	13	15	6.8	17.0	9.8	12.6	12.5	3.0	2.5	8.0
AUT6	6	6	18.5	37.0	18.5	24.8	15	15	8.3	17.0	12.6	12.6	12.5	5.0	4.5	9.0
AUT6-8	6	8	19.5	39.0	20.4	26.7	15	16	8.2	19.0	12.6	14.6	14.5	5.0	15.5	11.0
AUT8	8	8	20.7	41.4	20.7	28.0	16	16	9.3	19.0	14.6	14.6	14.5	7.0	19.5	13.0
AUT8-10	8	10	21.7	43.4	24.4	31.7	16	19	9.2	22.0	14.6	17.5	17.5	7.0	21.0	18.0
AUT10	10	10	24.7	49.3	24.7	33.4	19	19	10.8	22.0	17.5	17.5	17.5	9.0	32.5	22.0
AUT10-12	10	12	25.6	51.1	26.3	35.1	19	20	10.8	24.0	17.5	20.0	20.0	9.0	27.0	26.0
AUT12	12	12	26.3	52.6	26.3	36.3	20	20	12.1	24.0	20.0	20.0	20.0	11.0	45.5	29.0
AUT16	16	16	34.9	69.8	34.9	48.9	27	27	15.9	31.7	28.0	28.0	27.5	13.0	97.0	73.0



Y union

●Millimeter size type

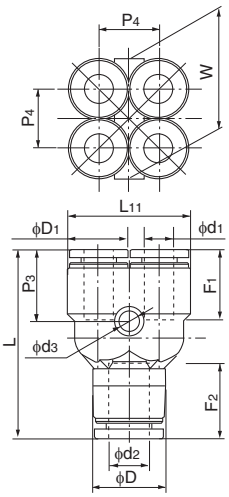
Product number	d_1 Applicable tubing outer diameter (mm)	d_2 Applicable tubing outer diameter (mm)	L (mm)	L_{11} (mm)	F_1 Tubing insertion length (mm)	F_2 Tubing insertion length (mm)	P_3 (mm)	P_4 (mm)	W (mm)	D_1 (mm)	D_2 (mm)	d_3 (mm)	Min. inner diameter (mm)	Effective sectional area (mm^2)	Weight (g)
AYB4-4	4	4	33.8	20.8	13	13	13.4	11.0	9.8	9.8	9.8	3.2	3.0	3.0	6.0
AYB4-6	4	6	34.2	20.8	13	15	13.4	11.0	12.5	9.8	12.6	3.2	3.0	2.5	8.0
AYB6-6	6	6	37.5	24.8	15	15	14.8	12.2	12.5	12.6	12.6	4.2	5.0	8.0	10.0
AYB6-8	6	8	39.2	24.8	15	16	14.8	12.2	14.5	12.6	14.6	4.2	5.0	17.0	12.0
AYB8-8	8	8	42.9	28.8	16	16	16.4	14.2	14.6	14.6	14.6	4.2	7.0	18.0	14.0
AYB8-10	8	10	44.8	28.8	16	19	16.4	14.2	17.5	14.6	17.5	4.2	7.0	22.5	19.0
AYB10-10	10	10	48.3	35.0	19	19	18.4	17.5	17.5	17.5	17.5	4.2	9.0	27.0	24.0
AYB10-12	10	12	49.4	35.0	19	20	18.4	17.5	20.0	17.5	20.0	4.2	9.0	30.0	29.0
AYB12-12	12	12	54.0	40.0	20	20	20.3	20.0	20.0	20.0	20.0	4.2	11.0	38.5	33.0



Double Y union

●Millimeter size type

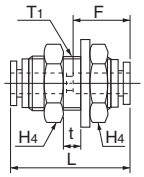
Product number	d1 Applicable tubing outer diameter (mm)	d2 Applicable tubing outer diameter (mm)	L (mm)	L11 (mm)	F1 Tubing insertion length (mm)	F2 Tubing insertion length (mm)	P3 (mm)	P4 (mm)	W (mm)	D1 (mm)	D (mm)	d3 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
AUWY4-6	4	6	34.2	19.8	13	15	13.4	10.0	19.8	9.8	12.6	3.2	3.5	—	10.0
AUWY6-8	6	8	39.2	24.8	15	16	14.8	12.2	24.8	12.6	14.6	4.2	5.0	—	16.0



Panel touch connector

●Millimeter size type

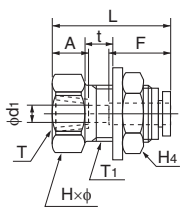
Product number	Applicable tubing outer diameter (mm)	L (mm)	F Tubing insertion length (mm)	t Max. panel thickness (mm)	H4 (mm)	T1 Recommended panel hole diameter (mm)	Washer outer diameter (mm)	Washer thickness (mm)	Thread length (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
APC4	4	31.8	13	8.0	17.0	13	20	2.0	20	3.0	3.5	5.0
APC6	6	33.6	15	9.5	19.0	15	24	2.5	22	5.0	12.5	7.0
APC8	8	35.8	16	10.5	22.0	17	28	2.5	23	7.0	28.0	9.0
APC10	10	41.7	19	14.0	27.0	21	34	3.0	27	9.0	45.0	16.0
APC12	12	43.6	20	16.0	30.0	23	37	3.0	29	11.0	67.0	67.0



Internal panel touch connector

●Millimeter size type

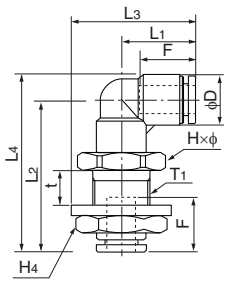
Product number	Applicable tubing outer diameter (mm)	T Thread size (RC)	L (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	H4 (mm)	t Max. panel thickness (mm)	T1 Recommended panel hole diameter (mm)	d1 (mm)	Washer outer diameter (mm)	Washer thickness (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
APFC4-R1/8	4	RC1/8	27.9	8.7	13	17.0×18.5	17.0	8.0	13	3.0	20	2.0	3.0	4.0	22.0
APFC6-R1/8	6	RC1/8	29.8	8.7	15	19.0×21.0	19.0	9.0	15	5.0	24	2.5	5.0	10.5	44.0
APFC6-R1/4	6	RC1/4	35.3	13.0	15	19.0×21.0	19.0	9.0	15	5.0	24	2.5	5.0	10.5	50.0
APFC8-R1/4	8	RC1/4	34.4	13.0	16	22.0×24.5	22.0	10.5	17	7.0	28	2.5	7.0	25.0	64.0
APFC8-R3/8	8	RC3/8	38.4	13.5	16	22.0×24.5	22.0	10.5	17	7.0	28	2.5	7.0	26.0	68.0
APFC10-R1/4	10	RC1/4	40.4	13.0	19	27.0×30.0	27.0	14.0	21	9.0	34	3.0	9.0	40.0	117.0
APFC10-R3/8	10	RC3/8	40.4	13.5	19	27.0×30.0	27.0	14.0	21	9.0	34	3.0	9.0	40.0	107.0
APFC12-R1/4	12	RC1/4	42.3	13.0	20	30.0×33.5	30.0	16.0	23	10.5	37	3.0	10.5	45.0	147.0
APFC12-R3/8	12	RC3/8	42.3	13.5	20	30.0×33.5	30.0	16.0	23	11.0	37	3.0	11.0	50.0	138.0



90 degree panel touch elbow

●Millimeter size type

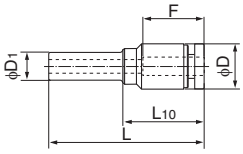
Product number	Applicable tubing outer diameter (mm)	L_1 (mm)	L_2 (mm)	L_3 (mm)	L_4 (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	H_4 Width across flat (mm)	t Max. panel thickness (mm)	T_1 Recommended panel hole diameter (mm)	D (mm)	Washer outer diameter (mm)	Washer thickness (mm)	Min. inner diameter (mm)	Effective sectional area (mm^2)	Weight (g)
APL4	4	17.2	35.6	27.7	40.5	13	17.0×18.5	17.0	7.5	13	9.8	21	2.5	3.0	—	32.0
APL6	6	18.5	40.0	30.5	46.3	15	19.0×21.0	19.0	9.0	15	12.6	24	2.5	5.0	—	43.0
APL8	8	20.7	43.6	34.7	50.9	16	22.0×24.5	22.0	10.0	17	14.6	28	3.0	7.0	—	62.0
APL10	10	24.7	51.6	41.7	60.3	19	27.0×30.0	27.0	14.0	21	17.5	34	3.0	9.0	—	101.0
APL12	12	26.3	56.0	44.8	66.0	20	30.0×33.5	30.0	16.0	23	20.0	37	3.0	10.0	—	126.0



Reducer

●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	D_1 Insertion part diameter (mm)	L (mm)	L_{10} (mm)	F Tubing insertion length (mm)	D (mm)	Min. inner diameter (mm)	Effective sectional area (mm^2)	Weight (g)
AR4-6-Z2	4	6	34.0	17.5	13	9.8	3.0	3.5	3.0
AR4-8-Z2	4	8	31.5	18.5	13	9.8	3.0	3.5	3.0
AR6-8-Z2	6	8	34.3	17.3	15	12.6	5.0	10.5	4.0
AR6-10-Z2	6	10	35.2	20.2	15	12.6	5.0	10.5	4.0
AR6-12-Z2	6	12	36.7	20.9	15	12.6	5.0	10.5	5.0
AR8-10-Z2	8	10	39.0	18.5	16	14.6	7.0	28.0	5.0
AR8-12-Z2	8	12	37.9	15.8	16	14.6	7.0	28.0	5.0
AR10-12-Z2	10	12	42.5	20.5	19	17.5	9.0	45.0	8.0

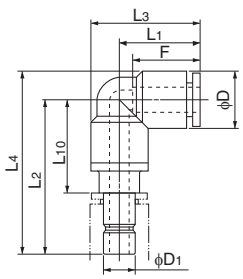


Adapter elbow

●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	D_1 Insertion part diameter (mm)	L_1 (mm)	L_2 (mm)	L_3 (mm)	L_4 (mm)	L_{10} (mm)	F Tubing insertion length (mm)	D (mm)	Min. inner diameter (mm)	Effective sectional area (mm^2)	Weight (g)
AAL4	4	4	17.2	30.7	22.1	35.6	14.7	13	9.8	3.0	4.0	6.0
AAL6	6	6	18.5	34.2	24.4	40.5	17.7	15	12.6	4.5	12.0	10.0
AAL8	8	8	20.7	35.7	27.6	43.0	18.7	16	14.6	6.0	20.0	14.0
AAL10	10	10	24.7	41.2	33.0	50.0	22.7	19	17.5	8.0	35.0	22.0
AAL12	12	12	26.3	45.2	35.7	55.2	25.2	20	20.0	10.0	43.0	30.0

⚠Caution: Once an adapter elbow is inserted into a PushOne part, the part cannot be used to connect a tubing.

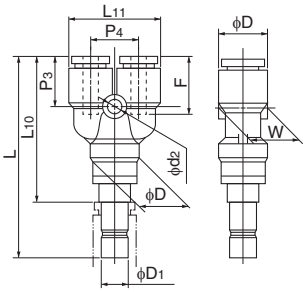


Y plug

●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	D1 Insertion part diameter (mm)	L (mm)	L10 (mm)	L11 (mm)	F Tubing insertion length (mm)	P3 (mm)	P4 (mm)	W (mm)	D (mm)	d2 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
AYA4-4	4	4	48.4	32.4	20.8	13	13.4	11.0	9.8	9.8	3.2	3.0	3.5	8.0
AYA6-6	6	6	52.8	36.3	24.8	15	14.8	12.2	12.5	12.6	4.2	4.5	9.0	14.0
AYA8-8	8	8	56.4	39.4	28.8	16	16.4	14.2	14.6	14.6	4.2	6.0	18.0	19.0
AYA10-10	10	10	63.9	45.4	35.0	19	18.4	17.5	17.5	17.5	4.2	8.0	28.0	31.0
AYA12-12	12	12	70.3	50.3	40.0	20	20.3	20.0	20.0	20.0	4.2	10.0	40.0	42.0

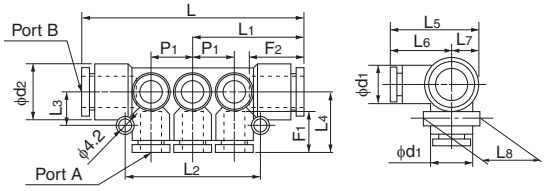
⚠ Caution: Once a Y plug elbow is inserted into a PushOne part, the part cannot be used to connect a tubing.



Manifold A type

●Millimeter size type

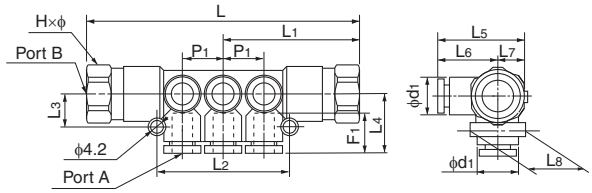
Product number	Applicable tubing outer diameter (mm)		A Number of ports	L	L1	L2	L3	L4	L5	L6	L7	L8	F1 Tubing insertion length (mm)	F2 Tubing insertion length (mm)	P1	d1	d2	Effective sectional area (mm²)	Weight
	Port A	Port B		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)		(g)
AMA4-8-6	4	8	6	62.8	31.4	36.0	10.0	19.5	28.8	19.5	9.3	18.5	13	16	10.6	9.8	14.6	—	20.0
AMA4-8-10	4	8	10	84.3	42.2	57.2	10.0	19.8	29.1	19.8	9.3	18.5	13	16	10.6	9.8	14.6	—	33.0
AMA6-10-6	6	10	6	74.7	37.4	44.0	11.5	20.8	30.1	20.8	9.3	18.5	15	19	13.0	12.6	17.5	—	37.0
AMA6-10-10	6	10	10	100.7	50.4	70.0	11.5	21.1	30.4	21.1	9.3	18.5	15	19	13.0	12.6	17.5	—	54.0
AMA8-12-6	8	12	6	84.2	42.1	51.0	12.5	23.0	33.5	23.0	10.5	21.0	16	20	15.5	14.6	20.0	—	50.0
AMA8-12-10	8	12	10	115.1	57.6	82.0	12.5	23.0	33.5	23.0	10.5	21.0	16	20	15.5	14.6	20.0	—	68.0



Manifold B type

●Millimeter size type

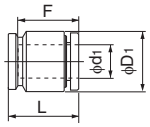
Product number	Applicable tubing outer diameter (mm)		Thread size (RC)	A Number of ports	L	L1	L2	L3	L4	L5	L6	L7	L8	F1 Tubing insertion length (mm)	P1	d1	H×ϕ Width across flat (mm)	Effective sectional area (mm²)	Weight
	Port A	Port B			(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)			(g)
AMB4-1/4-6	4	RC1/4		6	84.0	42.0	36.0	10.0	19.5	28.8	19.5	9.3	18.5	13	10.6	9.8	17.0x18.5	—	58.0
AMB4-1/4-10	4	RC1/4		10	105.5	52.8	57.2	10.0	19.8	29.1	19.8	9.3	18.5	13	10.6	9.8	17.0x18.5	—	67.0
AMB6-1/4-6	6	RC1/4		6	96.0	48.0	44.0	11.5	20.8	30.1	20.8	9.3	18.5	15	13.0	12.6	17.0x18.5	—	79.0
AMB6-1/4-10	6	RC1/4		10	122.0	61.0	70.0	11.5	21.1	30.4	21.1	9.3	18.5	15	13.0	12.6	17.0x18.5	—	96.0
AMB8-3/8-6	8	RC3/8		6	105.6	52.8	51.0	12.5	23.0	33.5	23.0	10.5	21.0	16	15.5	14.6	19.0x21.0	—	92.0
AMB8-3/8-10	8	RC3/8		10	136.5	68.3	82.0	12.5	23.0	33.5	23.0	10.5	21.0	16	15.5	14.6	19.0x21.0	—	117.0



Tubing cap

●Millimeter size type

Product number	d_1 Applicable tubing outer diameter (mm)	D_1 (mm)	F Tubing insertion length (mm)	L (mm)	Weight (g)
ACC4	4	9.8	13	15.0	2.0
ACC6	6	12.6	15	16.9	3.0
ACC8	8	14.6	16	17.9	4.0
ACC10	10	17.5	19	21.7	6.0
ACC12	12	20.0	20	22.6	8.0

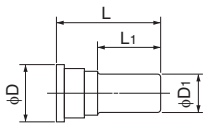


Blank plug

●Millimeter size type

Product number	D_1 Insertion part diameter (mm)	L (mm)	L_1 (mm)	D (mm)	Weight (g)
BC4	4	28.0	15.5	7.7	0.8
BC6	6	28.0	16.0	9.7	1.2
BC8	8	29.0	16.0	11.7	1.7
BC10	10	32.0	17.7	14.0	2.5
BC12	12	34.0	20.4	16.0	3.8

⚠ Caution：Material：POM (not flame-retardant resin)

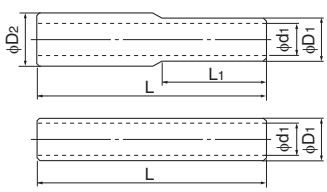


Nipple

●Millimeter size type

Product number	D_1 Insertion part diameter (mm)	D_2 Insertion part diameter (mm)	d_1 (mm)	L (mm)	L_1 (mm)	Weight (g)
EN4	4	—	2.5	37.0	—	1.0
EN4-6	4	6	2.5	38.0	18.5	1.0
EN6	6	—	4.0	39.0	—	1.0
EN6-8	6	8	4.0	41.0	19.5	1.0
EN8	8	—	6.0	43.0	—	1.0
EN8-10	8	10	6.0	46.0	21.5	2.0
EN10	10	—	7.5	49.0	—	2.0
EN10-12	10	12	7.5	50.5	24.5	3.0
EN12	12	—	9.0	52.0	—	3.0

⚠ Caution：Material：POM (not flame-retardant resin)



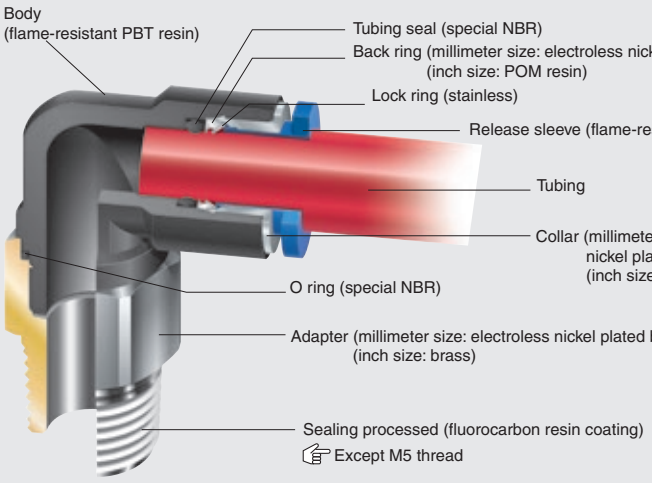
PushOne™E Series

PushOne™ fittings for general air pressure (flame-resistant)

Features

- **PushOne connection of tubing**
  The tubes can be connected without using a jig or tools.
- **Electroless nickel plated**
  Prevents degradation of surface and dissolution of copper ions in fluid.
- **Flame-resistant resin (compliant with V-0 of UL94 standard)**
  Made of flame-resistant resin PBT. High self-extinguishing performance is compliant with V-0 of UL94 standard. Usable under an environment with spatters.
- **Sealing-processed R thread**
  Sealing tape is not required.

Cross-sectional structure diagram



☞ The inch size type is not plated.

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	–20°C~+80°C
Water	0°C~+40°C

☞ See "Combination List of Tubing and Fitting" on page 8.

Pressure condition

Maximum working pressure: 1.0MPa
Negative pressure performance:
–99.975kPa

Handling instructions

⚠Caution: When the working conditions of tubes and fittings differ, use them under the lower specified conditions.

⚠Caution: When water is used as the operating fluid, confirm that there is no water leakage damage to equipment and instruments due to construction failure.

⚠Caution: When water is used as the operating fluid, do not allow it to freeze.

⚠Caution: Do not bend the pipe sharply near the tubing insertion port of the fitting. Keep the tubing straight for twice as long as the tubing diameter from the insertion port.

☞ See page 34 for the common handling instructions for fittings.

Product number example

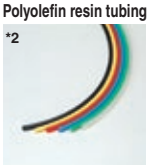
EL 6 – PT1/8

- PT1/8 — Thread size
- 6 — Applicable tubing outer diameter
- EL — Shape

Distinction of millimeter/inch sizes

The inch size type has a white release sleeve.

Applicable tubing

Polyurethane tubing	Nylon tubing	Flame-resistant tubing	Antistatic tubing	Polyolefin resin tubing	Fluorocarbon resin tubing
			 *1	 *2	 *2
U2 U1 U5	N2 N5 N1	FS FW FWU FUK	UE	PL PN	TA TP

(*1) When the PushOne E series is used with a UE tubing, choose a metal body type including a connector and a hexagonal socket to maintain conductivity between the tubing and the fittings.
(*2) Combinatory use of PL, PN, TA or TP tubing and PushOne E series mixes general and clean type performances. When using them together in a clean environment, be aware of how this could lower the cleanliness level.

Related products and product introduction

Speed controller	Ball valve	Miniature valve	Valve built-in connector	Q.D.C 101 series	Spatter cap
					

Reference

PushOne™E Series

Shape list

Connector
EC

Hexagon socket connector
EC✱-✱A

Internal connector
EFC

90 degree elbow
EL

90 degree internal elbow
EFL

90 degree long elbow
ELL

45 degree elbow
E45L

Universal elbow
ELB

90 degree branch elbow
ELY

Universal branch elbow
ELYB

Double universal elbow
ELWB

Triple universal elbow
ELTB

Tee
ET

Service tee
EST

Y joint
EY

Union connector
EUC

90 degree union elbow
EUL

90 degree branch union elbow
EULY

Union tee
EUT

Y union
EYB

Double Y union
EUWY

Panel touch connector
EPC

Internal panel touch connector
EPFC

90 degree panel touch elbow
EPL

Reducer
ER

Adapter elbow
EAL

Y plug
EYA

Manifold A type
EMA

Manifold B type
EMB

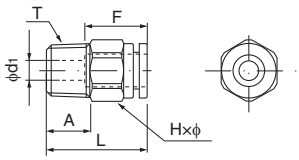
Tubing cap
ECC

Blank plug
BC

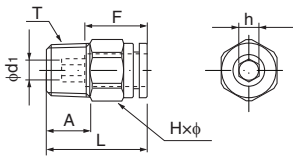
Nipple
EN

Connector

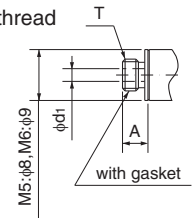
Millimeter size type



Inch size type



M thread



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (M,R)	L (mm)	A (mm)	F Tubing insertion length (mm)	Hxϕ Width across flat (mm)	d1 (mm)	Effective sectional area (mm²)	Weight (g)
EC4-M5	4	M5x0.8	22.4	4.0	13	10.0x11.0	2.0	3.0	6.0
EC4-PT1/8	4	R1/8	19.4	8.0	13	10.0x11.0	2.5	4.0	7.0
EC4-PT1/4	4	R1/4	22.4	11.0	13	14.0x15.4	2.5	4.0	17.0
EC6-M5	6	M5x0.8	24.2	4.0	15	12.0x13.0	2.0	3.5	9.0
EC6-M6	6	M6x1.0	25.2	5.0	15	12.0x13.0	3.0	4.5	10.0
EC6-PT1/8	6	R1/8	21.2	8.0	15	12.0x13.0	4.0	10.5	9.0
EC6-PT1/4	6	R1/4	24.2	11.0	15	14.0x15.4	4.0	10.5	18.0
EC6-PT3/8	6	R3/8	25.2	12.0	15	17.0x18.5	4.0	10.5	32.0
EC8-PT1/8	8	R1/8	26.2	8.0	16	14.0x15.4	5.0	20.0	14.0
EC8-PT1/4	8	R1/4	25.2	11.0	16	14.0x15.4	6.0	25.0	16.0
EC8-PT3/8	8	R3/8	26.2	12.0	16	17.0x18.5	6.0	26.0	29.0
EC10-PT1/8	10	R1/8	30.1	8.0	19	17.0x18.5	5.0	25.0	24.0
EC10-PT1/4	10	R1/4	28.1	11.0	19	17.0x18.5	8.0	40.0	21.0
EC10-PT3/8	10	R3/8	29.1	12.0	19	17.0x18.5	8.0	40.0	29.0
EC10-PT1/2	10	R1/2	32.1	15.0	19	22.0x24.5	8.0	40.0	61.0
EC12-PT1/4	12	R1/4	34.0	11.0	20	19.0x21.0	8.0	45.0	32.0
EC12-PT3/8	12	R3/8	30.0	12.0	20	19.0x21.0	10.0	50.0	31.0
EC12-PT1/2	12	R1/2	33.0	15.0	20	22.0x24.5	10.0	50.0	58.0
EC16-PT3/8	16	R3/8	41.6	12.0	27	24.0x26.5	10.0	77.0	68.0
EC16-PT1/2	16	R1/2	43.6	15.0	27	24.0x26.5	12.0	110.5	83.0

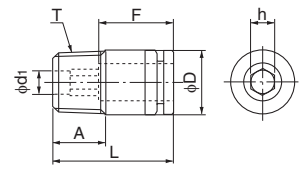
*Made to order

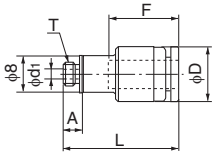
●Inch size type

Product number	Applicable tubing outer diameter (inch)	T Thread size (M,R)	L (mm)	A (mm)	F Tubing insertion length (mm)	Hxϕ Width across flat (mm)	h Width across flat (mm)	d1 (mm)	Effective sectional area (mm²)	Weight (g)
EC1/4-M5	1/4	M5x0.8	24.4	4.0	15	12.0x13.0	4.0	2.0	3.5	9.0
EC1/4-PT1/8	1/4	R1/8	21.4	8.0	15	12.0x13.0	4.0	4.0	12.0	9.0
EC1/4-PT1/4	1/4	R1/4	24.4	11.0	15	14.0x15.4	4.0	4.0	12.0	18.0
EC1/4-PT3/8	1/4	R3/8	25.4	12.0	15	17.0x18.5	4.0	4.0	12.0	32.0
EC5/16-PT1/8	5/16	R1/8	25.9	8.0	16	14.0x15.4	5.0	5.0	20.0	14.0
EC5/16-PT1/4	5/16	R1/4	24.9	11.0	16	14.0x15.4	6.0	6.0	25.0	16.0
EC5/16-PT3/8	5/16	R3/8	25.9	12.0	16	17.0x18.5	6.0	6.0	26.0	29.0
EC3/8-PT1/8	3/8	R1/8	29.7	8.0	19	17.0x18.5	—	5.0	20.0	24.0
EC3/8-PT1/4	3/8	R1/4	27.7	11.0	19	17.0x18.5	—	8.0	35.0	21.0
EC3/8-PT3/8	3/8	R3/8	28.7	12.0	19	17.0x18.5	—	8.0	35.0	29.0
EC3/8-PT1/2	3/8	R1/2	31.7	15.0	19	22.0x24.5	—	8.0	35.0	61.0
EC1/2-PT1/4	1/2	R1/4	34.0	11.0	21	19.0x21.0	—	8.0	48.0	32.0
EC1/2-PT3/8	1/2	R3/8	30.0	12.0	21	19.0x21.0	—	10.0	66.5	31.0
EC1/2-PT1/2	1/2	R1/2	33.0	15.0	21	22.0x24.5	—	10.0	66.5	58.0

The inch size type is not plated.

Hexagon socket connector

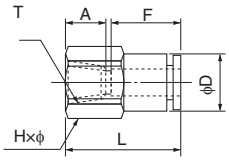




●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (M,R)	L (mm)	A (mm)	F Tubing insertion length (mm)	h Width across flat (mm)	D (mm)	d1 (mm)	Effective sectional area (mm²)	Weight (g)
EC4-M5A	4	M5x0.8	19.4	4.0	13	2.0	9.8	2.0	—	5.0
EC4-PT1/8A	4	R1/8	19.4	8.0	13	2.5	9.8	2.5	—	7.0
EC6-M5A	6	M5x0.8	24.2	4.0	15	4.0	11.8	2.0	—	18.0
EC6-PT1/8A	6	R1/8	21.2	8.0	15	4.0	11.8	4.0	—	8.0
EC6-PT1/4A	6	R1/4	24.2	11.0	15	4.0	13.8	4.0	—	17.0
EC8-PT1/8A	8	R1/8	26.2	8.0	16	5.0	13.8	5.0	—	12.0
EC8-PT1/4A	8	R1/4	25.2	11.0	16	5.0	13.8	5.0	—	15.0
EC10-PT1/4A	10	R1/4	28.1	11.0	19	6.0	16.8	6.0	—	19.0
EC10-PT3/8A	10	R3/8	29.1	12.0	19	6.0	16.8	6.0	—	28.0

Internal connector



●Millimeter size type

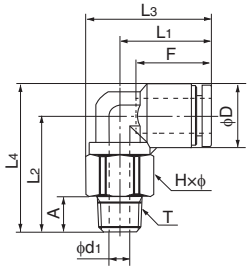
Product number	Applicable tubing outer diameter (mm)	T Thread size (RC)	L (mm)	A (mm)	F Tubing insertion length (mm)	Hxϕ Width across flat (mm)	D (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EFC4-PT1/8	4	RC1/8	23.9	8.7	13	14.0×15.4	10.0	3.0	4.0	16.0
EFC6-PT1/8	6	RC1/8	24.8	8.7	15	14.0×15.4	12.0	5.0	10.5	17.0
EFC6-PT1/4	6	RC1/4	29.3	13.0	15	17.0×18.5	12.0	5.0	10.5	26.0
EFC8-PT1/4	8	RC1/4	30.9	13.0	16	17.0×18.5	13.9	7.0	25.0	28.0
EFC8-PT3/8	8	RC3/8	31.4	13.5	16	22.0×24.5	13.9	7.0	26.0	45.0
EFC10-PT1/4	10	RC1/4	33.9	13.0	19	17.0×18.5	16.9	9.0	40.0	34.0
EFC10-PT3/8	10	RC3/8	34.4	13.5	19	22.0×24.5	16.9	9.0	40.0	50.0
EFC10-PT1/2	10	RC1/2	38.4	17.5	19	24.0×26.5	16.9	9.0	40.0	56.0
EFC12-PT1/4	12	RC1/4	34.8	13.0	20	19.0×21.0	19.0	10.0	45.0	43.0
EFC12-PT3/8	12	RC3/8	35.3	13.5	20	22.0×24.5	19.0	11.0	50.0	50.0
EFC12-PT1/2	12	RC1/2	39.3	17.5	20	24.0×26.5	19.0	11.0	50.0	58.0

●Inch size type

Product number	Applicable tubing outer diameter (inch)	T Thread size (RC)	L (mm)	A (mm)	F Tubing insertion length (mm)	Hxϕ ϕWidth across flat (mm)	D (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EFC1/4-PT1/8	1/4	RC1/8	25.0	8.7	15	14.0×15.4	12.0	5.0	12.0	17.0
EFC1/4-PT1/4	1/4	RC1/4	29.5	13.0	15	17.0×18.5	12.0	5.0	12.0	26.0
EFC5/16-PT1/4	5/16	RC1/4	30.6	13.0	16	17.0×18.5	13.9	7.0	25.0	28.0
EFC5/16-PT3/8	5/16	RC3/8	31.1	13.5	16	22.0×24.5	13.9	7.0	26.0	45.0
EFC3/8-PT1/4	3/8	RC1/4	33.5	13.0	19	17.0×18.5	16.9	9.0	35.0	34.0
EFC3/8-PT3/8	3/8	RC3/8	34.0	13.5	19	22.0×24.5	16.9	9.0	35.0	50.0
EFC3/8-PT1/2	3/8	RC1/2	38.0	17.5	19	24.0×26.5	16.9	9.0	35.0	56.0
EFC1/2-PT1/4	1/2	RC1/4	35.3	13.0	21	22.0×24.5	20.0	10.0	48.0	43.0
EFC1/2-PT3/8	1/2	RC3/8	35.3	13.5	21	22.0×24.5	20.0	11.0	66.5	50.0
EFC1/2-PT1/2	1/2	RC1/2	39.3	17.5	21	24.0×26.5	20.0	11.0	66.5	58.0

The inch size type is not plated.

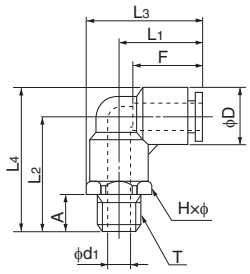
90 degree elbow



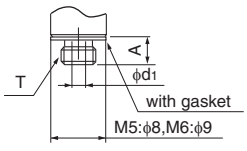
●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (M,R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	A (mm)	F Tubing insertion length (mm)	Hxϕ Width across flat (mm)	D (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EL4-M5-Z2	4	M5×0.8	17.2	18.3	22.7	23.2	4.0	13	10.0×11.0	9.8	2.0	2.0	3.0	6.0
EL4-PT1/8-Z2	4	R1/8	17.2	22.7	22.7	27.6	8.0	13	10.0×11.0	9.8	5.0	3.0	4.0	10.0
EL4-PT1/4-Z2	4	R1/4	17.2	24.4	24.9	29.3	12.0	13	14.0×15.4	9.8	5.0	3.0	4.0	19.0
EL6-M5-Z2	6	M5×0.8	18.5	22.2	25.0	28.5	4.0	15	12.0×13.0	12.6	2.0	2.0	3.5	10.0
* EL6-M6	6	M6×1.0	18.5	22.7	25.0	29.0	5.0	15	12.0×13.0	12.6	3.0	3.0	4.5	11.0
EL6-PT1/8-Z2	6	R1/8	18.5	25.2	25.0	31.5	8.0	15	12.0×13.0	12.6	5.0	5.0	12.0	12.0
EL6-PT1/4-Z2	6	R1/4	18.5	25.8	26.2	32.1	12.0	15	14.0×15.4	12.6	7.0	5.0	12.0	17.0
EL6-PT3/8-Z2	6	R3/8	18.5	26.8	27.8	33.1	12.0	15	17.0×18.5	12.6	11.0	5.0	12.0	27.0
EL8-PT1/8-Z2	8	R1/8	20.7	26.2	28.4	33.5	8.0	16	14.0×15.4	14.6	5.0	5.0	18.5	16.0
EL8-PT1/4-Z2	8	R1/4	20.7	30.2	28.4	37.5	12.0	16	14.0×15.4	14.6	8.0	7.0	23.0	19.0
EL8-PT3/8-Z2	8	R3/8	20.7	27.8	30.0	35.1	12.0	16	17.0×18.5	14.6	9.0	7.0	23.0	28.0
EL10-PT1/8-Z2	10	R1/8	24.7	29.2	33.9	38.0	8.0	19	17.0×18.5	17.5	5.0	5.0	22.0	23.0
EL10-PT1/4-Z2	10	R1/4	24.7	32.4	33.9	41.1	12.0	19	17.0×18.5	17.5	8.0	8.0	38.0	25.0
EL10-PT3/8-Z2	10	R3/8	24.7	34.2	33.9	43.0	12.0	19	17.0×18.5	17.5	11.0	9.0	37.0	30.0
EL10-PT1/2-Z2	10	R1/2	24.7	34.3	36.9	43.0	16.0	19	22.0×24.5	17.5	12.0	9.0	37.0	53.0
EL12-PT1/4-Z2	12	R1/4	26.3	35.0	36.8	45.0	12.0	20	19.0×21.0	20.0	8.0	8.0	42.0	31.0
EL12-PT3/8-Z2	12	R3/8	26.3	33.5	36.8	43.5	12.0	20	19.0×21.0	20.0	11.0	11.0	46.0	32.0
EL12-PT1/2-Z2	12	R1/2	26.3	36.5	38.6	46.5	16.0	20	22.0×24.5	20.0	12.0	11.0	46.0	53.0
EL16-PT3/8	16	R3/8	34.9	45.0	48.4	59.0	12.0	27	24.0×27.0	28.0	11.0	11.0	70.0	70.0
EL16-PT1/2	16	R1/2	34.9	48.0	48.4	62.0	15.0	27	24.0×27.0	28.0	12.0	12.0	93.0	84.0

*Made to order



M thread

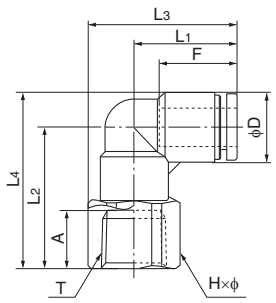


●Inch size type

Product number	Applicable tubing outer diameter (inch)	T Thread size (M,R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	A (mm)	F Tubing insertion length (mm)	Hxϕ Width across flat (mm)	D (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EL1/4-M5	1/4	M5×0.8	18.1	22.7	24.6	29.2	4.0	15	12.0×13.0	13.0	2.0	2.0	3.0	10.0
EL1/4-PT1/8	1/4	R1/8	18.1	25.2	24.6	31.7	8.0	15	12.0×13.0	13.0	5.0	5.0	13.0	18.0
EL1/4-PT1/4	1/4	R1/4	18.1	29.2	25.8	35.7	11.0	15	14.0×15.4	13.0	7.0	5.0	13.0	18.0
EL1/4-PT3/8	1/4	R3/8	18.1	30.2	27.4	36.7	12.0	15	17.0×18.5	13.0	9.0	5.0	13.0	26.0
EL5/16-PT1/8	5/16	R1/8	20.6	26.2	28.3	33.7	8.0	16	14.0×15.4	15.0	5.0	5.0	18.5	15.0
EL5/16-PT1/4	5/16	R1/4	20.6	30.2	28.3	37.7	11.0	16	14.0×15.4	15.0	7.0	7.0	23.0	20.0
EL5/16-PT3/8	5/16	R3/8	20.6	31.2	29.9	38.7	12.0	16	17.0×18.5	15.0	9.0	7.0	23.0	28.0
EL3/8-PT1/8	3/8	R1/8	24.4	29.2	33.7	38.2	8.0	19	17.0×18.5	18.0	5.0	5.0	19.0	22.0
EL3/8-PT1/4	3/8	R1/4	24.4	33.2	33.7	42.2	11.0	19	17.0×18.5	18.0	7.0	7.0	30.0	27.0
EL3/8-PT3/8	3/8	R3/8	24.4	34.2	33.7	43.2	12.0	19	17.0×18.5	18.0	9.0	9.0	32.0	33.0
EL3/8-PT1/2	3/8	R1/2	24.4	38.2	36.7	47.2	15.0	19	22.0×24.5	18.0	12.0	9.0	32.0	52.0
EL1/2-PT1/4	1/2	R1/4	26.5	35.7	37.0	46.5	11.0	21	19.0×21.0	21.5	7.0	7.0	37.0	34.0
EL1/2-PT3/8	1/2	R3/8	26.5	36.7	37.0	47.5	12.0	21	19.0×21.0	21.5	9.0	9.0	53.0	39.0
EL1/2-PT1/2	1/2	R1/2	26.5	40.7	38.7	51.5	15.0	21	22.0×24.5	21.5	12.0	10.0	55.5	56.0

The inch size type is not plated.

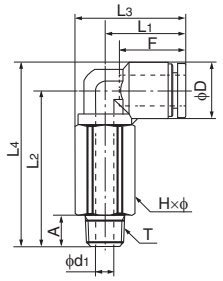
90 degree internal elbow

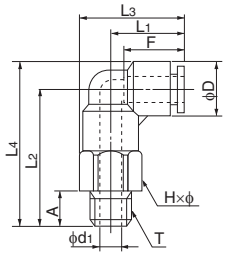


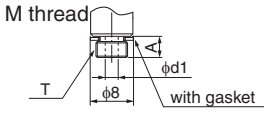
●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (RC)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EFL4-PT1/8	4	RC1/8	17.2	21.7	24.9	26.6	8.0	13	14.0×15.4	9.8	3.0	—	13.0
EFL6-PT1/8	6	RC1/8	18.5	24.2	26.2	30.5	8.0	15	14.0×15.4	12.6	5.0	—	15.0
EFL6-PT1/4	6	RC1/4	18.5	28.2	27.8	34.5	12.0	15	17.0×18.5	12.6	5.0	—	23.0
EFL6-PT3/8	6	RC3/8	18.5	28.7	30.8	35.0	12.5	15	22.0×24.5	12.6	5.0	—	37.0
EFL8-PT1/8	8	RC1/8	20.7	25.2	28.4	32.5	8.0	16	14.0×15.4	14.6	7.0	—	17.0
EFL8-PT1/4	8	RC1/4	20.7	29.2	30.0	36.5	12.0	16	17.0×18.5	14.6	7.0	—	25.0
EFL8-PT3/8	8	RC3/8	20.7	29.7	33.0	37.0	12.5	16	22.0×24.5	14.6	7.0	—	38.0
EFL10-PT1/4	10	RC1/4	24.7	32.2	33.9	41.0	12.0	19	17.0×18.5	17.5	9.0	—	29.0
EFL10-PT3/8	10	RC3/8	24.7	33.7	36.9	42.5	12.5	19	22.0×24.5	17.5	9.0	—	45.0
EFL12-PT3/8	12	RC3/8	26.3	36.2	38.6	46.2	12.5	20	22.0×24.5	20.0	10.0	—	49.0
EFL12-PT1/2	12	RC1/2	26.3	39.2	39.6	49.2	15.5	20	24.0×26.5	20.0	10.0	—	54.0

90 degree long elbow







●Millimeter size type

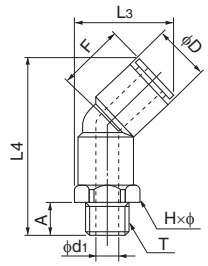
Product number	Applicable tubing outer diameter (mm)	T Thread size (M,R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
ELL4-M5-Z2	4	M5×0.8	17.2	29.9	22.7	34.8	4.0	13	10.0×11.0	9.8	2.0	2.0	3.0	14.0
ELL4-PT1/8-Z2	4	R1/8	17.2	32.4	22.7	37.3	8.0	13	10.0×11.0	9.8	5.0	3.0	4.0	15.0
ELL4-PT1/4-Z2	4	R1/4	17.2	36.4	24.9	41.3	12.0	13	14.0×15.4	9.8	5.0	3.0	4.0	34.0
ELL6-M5-Z2	6	M5×0.8	18.5	34.7	25.0	41.0	4.0	15	12.0×13.0	12.6	2.0	2.0	3.5	23.0
ELL6-PT1/8-Z2	6	R1/8	18.5	37.2	25.0	43.5	8.0	15	12.0×13.0	12.6	5.0	5.0	12.0	23.0
ELL6-PT1/4-Z2	6	R1/4	18.5	41.2	26.2	47.5	12.0	15	14.0×15.4	12.6	7.0	5.0	12.0	34.0
ELL6-PT3/8-Z2	6	R3/8	18.5	42.2	27.8	48.5	12.0	15	17.0×18.5	12.6	11.0	5.0	12.0	54.0
ELL8-PT1/8-Z2	8	R1/8	20.7	40.2	28.4	47.5	8.0	16	14.0×15.4	14.6	5.0	5.0	18.5	33.0
ELL8-PT1/4-Z2	8	R1/4	20.7	44.2	28.4	51.5	12.0	16	14.0×15.4	14.6	8.0	7.0	23.0	33.0
ELL8-PT3/8-Z2	8	R3/8	20.7	45.2	30.0	52.5	12.0	16	17.0×18.5	14.6	9.0	7.0	23.0	55.0
ELL10-PT1/8-Z2	10	R1/8	24.7	46.2	33.9	55.0	8.0	19	17.0×18.5	17.5	5.0	5.0	22.0	55.0
ELL10-PT1/4-Z2	10	R1/4	24.7	50.2	33.9	59.0	12.0	19	17.0×18.5	17.5	8.0	8.0	38.0	55.0
ELL10-PT3/8-Z2	10	R3/8	24.7	51.2	33.9	60.0	12.0	19	17.0×18.5	17.5	11.0	9.0	37.0	52.0
ELL10-PT1/2-Z2	10	R1/2	24.7	55.2	36.9	64.0	16.0	19	22.0×24.5	17.5	12.0	9.0	37.0	106.0
ELL12-PT1/4-Z2	12	R1/4	26.3	55.2	36.8	65.2	12.0	20	19.0×21.0	20.0	8.0	8.0	42.0	75.0
ELL12-PT3/8-Z2	12	R3/8	26.3	56.2	36.8	66.2	12.0	20	19.0×21.0	20.0	11.0	11.0	46.0	73.0
ELL12-PT1/2-Z2	12	R1/2	26.3	60.2	38.6	70.2	16.0	20	22.0×24.5	20.0	12.0	11.0	46.0	114.0

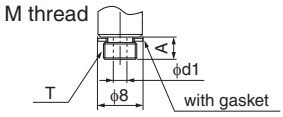
●Inch size type

Product number	Applicable tubing outer diameter (inch)	T Thread size (M,R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
ELL1/4-M5	1/4	M5×0.8	18.1	34.7	24.6	41.2	4.0	15	12.0×13.0	13.0	2.0	2.0	3.0	20.0
ELL1/4-PT1/8	1/4	R1/8	18.1	37.2	24.6	43.7	8.0	15	12.0×13.0	13.0	5.0	5.0	13.0	22.0
ELL1/4-PT1/4	1/4	R1/4	18.1	41.2	25.8	47.7	11.0	15	14.0×15.4	13.0	7.0	5.0	13.0	31.0
ELL5/16-PT1/8	5/16	R1/8	20.6	40.2	28.3	47.7	8.0	16	14.0×15.4	15.0	5.0	5.0	18.5	30.0
ELL5/16-PT1/4	5/16	R1/4	20.6	44.2	28.3	51.7	11.0	16	14.0×15.4	15.0	7.0	7.0	23.0	35.0
ELL5/16-PT3/8	5/16	R3/8	20.6	45.2	29.9	52.7	12.0	16	17.0×18.5	15.0	9.0	7.0	—	—
ELL3/8-PT1/4	3/8	R1/4	24.4	50.2	33.7	59.2	11.0	19	17.0×18.5	18.0	7.0	7.0	30.0	53.0
ELL3/8-PT3/8	3/8	R3/8	24.4	51.2	33.7	60.2	12.0	19	17.0×18.5	18.0	9.0	9.0	32.0	59.0
ELL1/2-PT1/4	1/2	R1/4	26.5	55.2	37.0	66.0	11.0	21	19.0×21.0	21.5	7.0	7.0	37.0	72.0
ELL1/2-PT3/8	1/2	R3/8	26.5	56.2	37.0	67.0	12.0	21	19.0×21.0	21.5	9.0	9.0	53.0	78.0
ELL1/2-PT1/2	1/2	R1/2	26.5	60.2	38.7	71.0	15.0	21	22.0×24.5	21.5	12.0	10.0	55.5	105.0

☞The inch size type is not plated.

45 degree elbow

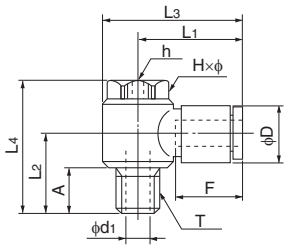


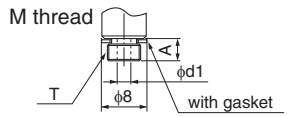


●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (M,R)	L_3 (mm)	L_4 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d_1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm^2)	Weight (g)
E45L4-M5	4	M5×0.8	19.7	34.4	4.0	13	10.0×11.0	9.8	2.0	2.0	3.0	7.0
E45L4-PT1/8	4	R1/8	19.7	36.9	8.0	13	10.0×11.0	9.8	5.0	3.0	4.0	9.0
E45L4-PT1/4	4	R1/4	21.9	40.9	11.0	13	14.0×15.4	9.8	7.0	3.0	4.0	16.0
E45L6-M5	6	M5×0.8	22.4	38.6	4.0	15	12.0×13.0	12.6	2.0	2.0	3.5	10.0
E45L6-PT1/8	6	R1/8	22.4	41.1	8.0	15	12.0×13.0	12.6	5.0	5.0	12.0	12.0
E45L6-PT1/4	6	R1/4	23.6	45.1	11.0	15	14.0×15.4	12.6	7.0	5.0	12.0	18.0
E45L6-PT3/8	6	R3/8	25.2	46.1	12.0	15	17.0×18.5	12.6	9.0	5.0	12.0	26.0
E45L8-PT1/8	8	R1/8	25.5	44.0	8.0	16	14.0×15.4	14.6	5.0	5.0	18.5	15.0
E45L8-PT1/4	8	R1/4	25.5	48.0	11.0	16	14.0×15.4	14.6	7.0	7.0	23.0	20.0
E45L8-PT3/8	8	R3/8	27.0	49.0	12.0	16	17.0×18.5	14.6	9.0	7.0	23.0	28.0
E45L10-PT1/8	10	R1/8	30.0	50.0	8.0	19	17.0×18.5	17.5	5.0	5.0	22.0	22.0
E45L10-PT1/4	10	R1/4	30.0	54.0	11.0	19	17.0×18.5	17.5	7.0	7.0	34.5	27.0
E45L10-PT3/8	10	R3/8	30.0	55.0	12.0	19	17.0×18.5	17.5	9.0	9.0	37.0	33.0
E45L10-PT1/2	10	R1/2	33.0	59.0	15.0	19	22.0×24.5	17.5	12.0	9.0	38.5	52.0
E45L12-PT1/4	12	R1/4	33.5	58.7	11.0	20	19.0×21.0	20.0	7.0	7.0	43.0	34.0
E45L12-PT3/8	12	R3/8	33.5	59.7	12.0	20	19.0×21.0	20.0	9.0	9.0	47.0	40.0
E45L12-PT1/2	12	R1/2	35.3	63.7	15.0	20	22.0×24.5	20.0	12.0	10.0	47.0	57.0

Universal elbow

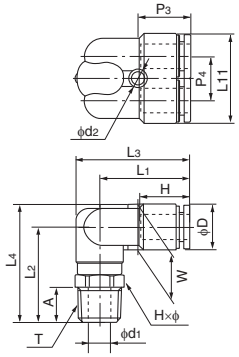




●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (M,R)	L_1 (mm)	L_2 (mm)	L_3 (mm)	L_4 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	h (mm)	D (mm)	d_1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm^2)	Weight (g)
ELB4-M5	4	M5×0.8	20.4	11.5	25.3	21.0	4.0	13	8.0×9.0	3.0	9.8	2.0	2.0	3.0	10.0
ELB4-PT1/8	4	R1/8	23.4	17.5	30.4	30.0	9.5	13	13.0×14.0	5.0	9.8	5.0	3.0	4.0	20.0
ELB6-M5	6	M5×0.8	20.8	11.5	25.6	21.0	4.0	15	8.0×9.0	3.0	12.6	2.0	2.0	3.5	10.0
ELB6-PT1/8	6	R1/8	22.8	17.5	29.8	30.0	9.5	15	13.0×14.0	5.0	12.6	5.0	3.2	8.0	21.0
ELB6-PT1/4	6	R1/4	24.8	22.9	34.5	37.5	13.4	15	17.0×18.3	6.0	12.6	7.0	4.2	9.0	43.0
ELB8-PT1/8	8	R1/8	24.4	17.5	31.4	30.0	9.5	16	13.0×14.0	5.0	14.6	5.0	3.2	9.0	41.0
ELB8-PT1/4	8	R1/4	26.4	22.9	36.1	37.5	13.4	16	17.0×18.3	6.0	14.6	7.0	4.2	14.5	44.0
ELB8-PT3/8	8	R3/8	28.4	24.4	40.4	40.5	13.9	16	21.0×22.6	8.0	14.6	9.0	6.0	19.0	69.0
ELB10-PT1/4	10	R1/4	29.4	22.9	39.1	37.5	13.4	19	17.0×18.3	6.0	17.5	7.0	4.2	15.5	74.0
ELB10-PT3/8	10	R3/8	31.4	24.4	43.4	40.5	13.9	19	21.0×22.6	8.0	17.5	9.0	6.0	23.0	74.0
ELB12-PT3/8	12	R3/8	34.3	24.3	48.3	40.5	13.8	20	24.0×26.0	8.0	20.0	10.0	8.0	25.5	92.0
ELB12-PT1/2	12	R1/2	34.3	27.3	48.3	43.5	16.8	20	24.0×26.0	8.0	20.0	12.0	8.0	25.5	100.0

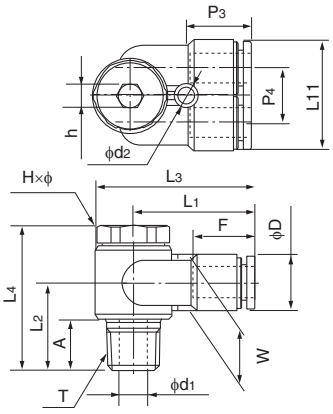
90 degree branch elbow



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L11 (mm)	A (mm)	F Tubing inser tion length (mm)	H×ϕ Width across flat (mm)	P3 (mm)	P4 (mm)	W (mm)	D (mm)	d1 (mm)	d2 (mm)	Effective sectional area (mm²)	Weight (g)
ELY6-PT1/8	6	R1/8	25.6	25.2	32.1	31.5	24.8	8.0	15	12.0×13.0	14.8	12.2	12.6	12.6	5.0	4.2	—	16.0
ELY6-PT1/4	6	R1/4	25.6	29.2	33.3	35.5	24.8	11.0	15	14.0×15.4	14.8	12.2	12.6	12.6	7.0	4.2	—	23.0
ELY8-PT1/8	8	R1/8	28.2	26.2	35.9	33.5	28.8	8.0	16	14.0×15.4	16.4	14.2	14.6	14.6	5.0	4.2	—	21.0
ELY8-PT1/4	8	R1/4	28.2	30.2	35.9	37.5	28.8	11.0	16	14.0×15.4	16.4	14.2	14.6	14.6	7.0	4.2	—	27.0
ELY8-PT3/8	8	R3/8	28.2	31.2	37.5	38.5	28.8	12.0	16	17.0×18.5	16.4	14.2	14.6	14.6	9.0	4.2	—	35.0
ELY10-PT1/4	10	R1/4	31.3	33.2	40.5	42.0	35.0	11.0	19	17.0×18.5	18.4	17.5	17.5	17.5	7.0	4.2	—	37.0
ELY10-PT3/8	10	R3/8	31.3	34.2	40.5	43.0	35.0	12.0	19	17.0×18.5	18.4	17.5	17.5	17.5	9.0	4.2	—	43.0

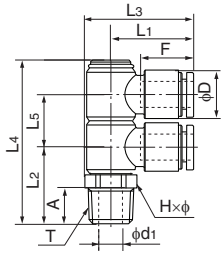
Universal branch elbow



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L11 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	h Width across flat (mm)	P3 (mm)	P4 (mm)	W (mm)	D (mm)	d1 (mm)	d2 (mm)	Effective sectional area (mm²)	Weight (g)
ELYB6-PT1/8	6	R1/8	26.1	17.5	33.1	30.0	24.8	9.5	15	13.0×14.0	5.0	14.8	12.2	12.6	12.6	5.0	4.2	—	25.0
ELYB6-PT1/4	6	R1/4	29.0	22.9	38.7	37.5	24.8	13.4	15	17.0×18.3	6.0	14.8	12.2	12.6	12.6	7.0	4.2	—	46.0
ELYB8-PT1/4	8	R1/4	30.6	22.9	40.3	37.5	28.8	13.4	16	17.0×18.3	6.0	16.4	14.2	14.6	14.6	7.0	4.2	—	49.0
ELYB8-PT3/8	8	R3/8	32.9	24.4	44.9	40.5	28.8	13.9	16	21.0×22.6	8.0	16.4	14.2	14.6	14.6	9.0	4.2	—	58.0
ELYB10-PT1/4	10	R1/4	34.9	23.4	46.9	39.5	35.0	12.9	19	21.0×22.6	8.0	18.4	17.5	17.5	17.5	7.0	4.2	—	78.0
ELYB10-PT3/8	10	R3/8	34.9	24.4	46.9	40.5	35.0	13.9	19	21.0×22.6	8.0	18.4	17.5	17.5	17.5	9.0	4.2	—	80.0

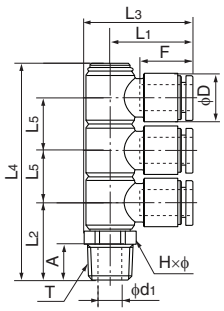
Double universal elbow



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d1 (mm)	Effective sectional area (mm²)	Weight (g)
ELWB6-PT1/8	6	R1/8	22.8	18.8	30.5	42.3	13.5	8.0	15	14.0×15.4	12.6	5.0	—	33.0
ELWB6-PT1/4	6	R1/4	22.8	21.8	30.5	45.3	13.5	11.0	15	14.0×15.4	12.6	7.0	—	35.0
ELWB8-PT1/4	8	R1/4	24.4	23.0	32.1	50.0	16.0	11.0	16	14.0×15.4	14.6	7.0	—	39.0
ELWB8-PT3/8	8	R3/8	24.4	24.0	33.7	51.0	16.0	12.0	16	17.0×18.5	14.6	9.0	—	47.0
ELWB10-PT1/4	10	R1/4	29.4	24.5	39.1	56.0	19.0	11.0	19	17.0×18.5	17.5	7.0	—	72.0
ELWB10-PT3/8	10	R3/8	29.4	25.5	39.1	57.0	19.0	12.0	19	17.0×18.5	17.5	9.0	—	70.0

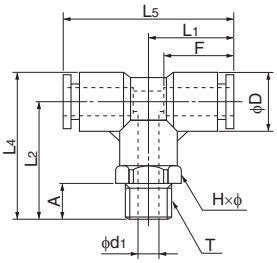
Triple universal elbow

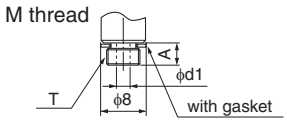


●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d1 (mm)	Effective sectional area (mm²)	Weight (g)
ELTB6-PT1/8	6	R1/8	22.8	18.8	30.5	55.5	13.5	8.0	15	14.0x15.4	12.6	5.0	—	43.0
ELTB6-PT1/4	6	R1/4	22.8	21.8	30.5	58.5	13.5	11.0	15	14.0x15.4	12.6	7.0	—	45.0
ELTB8-PT1/4	8	R1/4	24.4	23.0	32.1	66.0	16.0	11.0	16	14.0x15.4	14.6	7.0	—	51.0
ELTB8-PT3/8	8	R3/8	24.4	24.0	33.7	67.0	16.0	12.0	16	17.0x18.5	14.6	9.0	—	59.0
ELTB10-PT1/4	10	R1/4	29.4	24.5	39.1	75.5	19.0	11.0	19	17.0x18.5	17.5	7.0	—	98.0
ELTB10-PT3/8	10	R3/8	29.4	25.5	39.1	76.5	19.0	12.0	19	17.0x18.5	17.5	9.0	—	92.0

Tee





●Millimeter size type

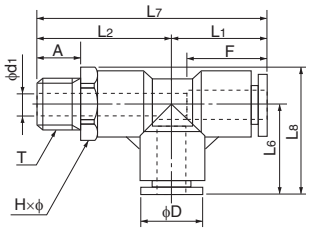
Product number	Applicable tubing outer diameter (mm)	T Thread size (M,R)	L1 (mm)	L2 (mm)	L4 (mm)	L5 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
ET4-M5	4	M5x0.8	17.2	20.2	25.1	34.4	4.0	13	10.0x11.0	9.8	2.0	2.0	3.0	8.0
ET4-PT1/8	4	R1/8	17.2	22.7	27.6	34.4	8.0	13	10.0x11.0	9.8	5.0	3.0	4.0	10.0
ET4-PT1/4	4	R1/4	17.2	26.7	31.6	34.4	11.0	13	14.0x15.4	9.8	7.0	3.0	4.0	17.0
ET6-M5	6	M5x0.8	18.5	22.7	29.0	37.0	4.0	15	12.0x13.0	12.6	2.0	2.0	3.5	12.0
ET6-PT1/8	6	R1/8	18.5	25.2	31.5	37.0	8.0	15	12.0x13.0	12.6	5.0	4.6	12.0	14.0
ET6-PT1/4	6	R1/4	18.5	29.2	35.5	37.0	11.0	15	14.0x15.4	12.6	7.0	4.6	12.0	21.0
ET6-PT3/8	6	R3/8	18.5	30.2	36.5	37.0	12.0	15	17.0x18.5	12.6	9.0	4.6	12.0	29.0
ET8-PT1/8	8	R1/8	20.7	26.2	33.5	41.4	8.0	16	14.0x15.4	14.6	5.0	5.0	18.5	18.0
ET8-PT1/4	8	R1/4	20.7	30.2	37.5	41.4	11.0	16	14.0x15.4	14.6	7.0	7.0	23.0	24.0
ET8-PT3/8	8	R3/8	20.7	31.2	38.5	41.4	12.0	16	17.0x18.5	14.6	9.0	7.0	23.0	32.0
ET10-PT1/8	10	R1/8	24.7	29.2	38.0	49.3	8.0	19	17.0x18.5	17.5	5.0	5.0	22.0	28.0
ET10-PT1/4	10	R1/4	24.7	33.2	42.0	49.3	11.0	19	17.0x18.5	17.5	7.0	7.0	34.5	34.0
ET10-PT3/8	10	R3/8	24.7	34.2	43.0	49.3	12.0	19	17.0x18.5	17.5	9.0	9.0	37.0	39.0
ET10-PT1/2	10	R1/2	24.7	38.2	47.0	49.3	15.0	19	22.0x24.5	17.5	12.0	9.0	37.0	58.0
ET12-PT1/4	12	R1/4	26.3	35.7	45.7	52.6	11.0	20	19.0x21.0	20.0	7.0	7.0	36.0	43.0
ET12-PT3/8	12	R3/8	26.3	36.7	46.7	52.6	12.0	20	19.0x21.0	20.0	9.0	9.0	43.0	48.0
ET12-PT1/2	12	R1/2	26.3	40.7	50.7	52.6	15.0	20	22.0x24.5	20.0	12.0	10.0	43.0	65.0
ET16-PT3/8	16	R3/8	34.9	45.0	59.0	69.8	12.0	27	24.0x27.0	28.0	11.0	11.0	70.0	92.0
ET16-PT1/2	16	R1/2	34.9	48.0	62.0	69.8	15.0	27	24.0x27.0	28.0	12.0	12.0	93.0	106.0

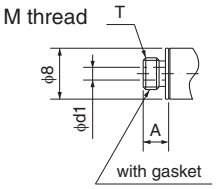
●Inch size type

Product number	Applicable tubing outer diameter (inch)	T Thread size (M,R)	L1 (mm)	L2 (mm)	L4 (mm)	L5 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
ET1/4-PT1/8	1/4	R1/8	18.1	25.2	31.7	36.2	8.0	15	12.0x13.0	13.0	5.0	4.6	13.0	14.0
ET1/4-PT1/4	1/4	R1/4	18.1	29.2	35.7	36.2	11.0	15	14.0x15.4	13.0	7.0	4.6	13.0	21.0
ET5/16-PT1/8	5/16	R1/8	20.6	26.2	33.7	41.2	8.0	16	14.0x15.4	15.0	5.0	5.0	18.5	18.0
ET5/16-PT1/4	5/16	R1/4	20.6	30.2	37.7	41.2	11.0	16	14.0x15.4	15.0	7.0	7.0	23.0	24.0
ET5/16-PT3/8	5/16	R3/8	20.6	31.2	38.7	41.2	12.0	16	17.0x18.5	15.0	9.0	7.0	—	—
ET3/8-PT1/4	3/8	R1/4	24.4	33.2	42.2	48.8	11.0	19	17.0x18.5	18.0	7.0	7.0	30.0	34.0
ET3/8-PT3/8	3/8	R3/8	24.4	34.2	43.2	48.8	12.0	19	17.0x18.5	18.0	9.0	9.0	32.0	39.0
ET3/8-PT1/2	3/8	R1/2	24.4	38.2	47.2	48.8	15.0	19	22.0x24.5	18.0	12.0	9.0	32.0	58.0
ET1/2-PT3/8	1/2	R3/8	27.5	37.0	47.8	54.9	12.0	21	19.0x21.0	21.5	9.0	9.0	53.0	48.0
ET1/2-PT1/2	1/2	R1/2	27.5	41.0	51.8	54.9	15.0	21	22.0x24.5	21.5	12.0	10.0	55.5	65.0

The inch size type is not plated.

Service tee





●Millimeter size type

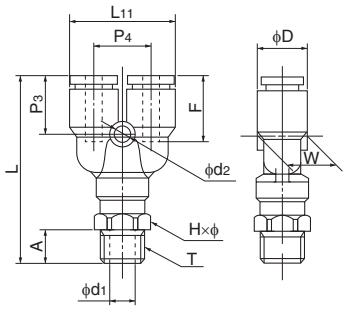
Product number	Applicable tubing outer diameter (mm)	T Thread size (M,R)	L_1 (mm)	L_2 (mm)	L_6 (mm)	L_7 (mm)	L_8 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d_1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm^2)	Weight (g)
EST4-M5	4	M5×0.8	17.2	20.2	17.2	37.4	22.7	4.0	13	10.0×11.0	9.8	2.0	2.0	3.0	8.0
EST4-PT1/8	4	R1/8	17.2	22.7	17.2	39.9	22.7	8.0	13	10.0×11.0	9.8	5.0	3.0	4.0	10.0
EST4-PT1/4	4	R1/4	17.2	26.7	17.2	43.9	24.9	11.0	13	14.0×15.4	9.8	7.0	3.0	4.0	18.0
EST6-M5	6	M5×0.8	18.5	22.7	18.5	41.2	25.0	4.0	15	12.0×13.0	12.6	2.0	2.0	3.5	12.0
EST6-PT1/8	6	R1/8	18.5	25.2	18.5	43.7	25.0	8.0	15	12.0×13.0	12.6	5.0	5.0	12.0	14.0
EST6-PT1/4	6	R1/4	18.5	29.2	18.5	47.7	26.2	11.0	15	14.0×15.4	12.6	7.0	5.0	12.0	21.0
EST6-PT3/8	6	R3/8	18.5	30.2	18.5	48.7	27.8	12.0	15	17.0×18.5	12.6	9.0	5.0	12.0	29.0
EST8-PT1/8	8	R1/8	20.7	26.2	20.7	46.9	28.4	8.0	16	14.0×15.4	14.6	5.0	5.0	18.5	18.0
EST8-PT1/4	8	R1/4	20.7	30.2	20.7	50.9	28.4	11.0	16	14.0×15.4	14.6	7.0	7.0	23.0	24.0
EST8-PT3/8	8	R3/8	20.7	31.2	20.7	51.9	30.0	12.0	16	17.0×18.5	14.6	9.0	7.0	23.0	32.0
EST10-PT1/8	10	R1/8	24.7	29.2	24.7	53.9	33.9	8.0	19	17.0×18.5	17.5	5.0	5.0	22.0	28.0
EST10-PT1/4	10	R1/4	24.7	33.2	24.7	57.9	33.9	11.0	19	17.0×18.5	17.5	7.0	7.0	34.5	34.0
EST10-PT3/8	10	R3/8	24.7	34.2	24.7	58.9	33.9	12.0	19	17.0×18.5	17.5	9.0	9.0	37.0	40.0
EST10-PT1/2	10	R1/2	24.7	38.2	24.7	62.9	36.9	15.0	19	22.0×24.5	17.5	12.0	9.0	37.0	58.0
EST12-PT1/4	12	R1/4	26.3	35.7	26.3	62.0	36.8	11.0	20	19.0×21.0	20.0	7.0	7.0	36.0	43.0
EST12-PT3/8	12	R3/8	26.3	36.7	26.3	63.0	36.8	12.0	20	19.0×21.0	20.0	9.0	9.0	43.0	48.0
EST12-PT1/2	12	R1/2	26.3	40.7	26.3	67.0	38.6	15.0	20	22.0×24.5	20.0	12.0	10.0	43.0	65.0
EST16-PT3/8	16	R3/8	34.9	45.0	34.9	79.9	48.4	12.0	27	24.0×27.0	28.0	11.0	11.0	70.0	92.0
EST16-PT1/2	16	R1/2	34.9	48.0	34.9	82.9	48.4	15.0	27	24.0×27.0	28.0	12.0	12.0	93.0	106.0

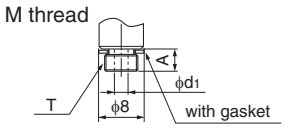
●Inch size type

Product number	Applicable tubing outer diameter (inch)	T Thread size (R)	L_1 (mm)	L_2 (mm)	L_6 (mm)	L_7 (mm)	L_8 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d_1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm^2)	Weight (g)
EST1/4-PT1/8	1/4	R1/8	18.1	25.2	18.1	43.3	24.6	8.0	15	12.0×13.0	13.0	5.0	5.0	13.0	14.0
EST1/4-PT1/4	1/4	R1/4	18.1	29.2	18.1	47.3	25.8	11.0	15	14.0×15.4	13.0	7.0	5.0	13.0	21.0
EST5/16-PT1/8	5/16	R1/8	20.6	26.2	20.6	46.8	28.3	8.0	16	14.0×15.4	15.0	5.0	5.0	18.5	18.0
EST5/16-PT1/4	5/16	R1/4	20.6	30.2	20.6	50.8	28.3	11.0	16	14.0×15.4	15.0	7.0	7.0	23.0	24.0
EST5/16-PT3/8	5/16	R3/8	20.6	31.2	20.6	51.8	29.9	12.0	16	17.0×18.5	15.0	9.0	7.0	—	—
EST3/8-PT1/4	3/8	R1/4	24.4	33.2	24.4	57.6	33.7	11.0	19	17.0×18.5	18.0	7.0	7.0	30.0	34.0
EST3/8-PT3/8	3/8	R3/8	24.4	34.2	24.4	58.6	33.7	12.0	19	17.0×18.5	18.0	9.0	9.0	32.0	40.0
EST3/8-PT1/2	3/8	R1/2	24.4	38.2	24.4	62.6	36.7	15.0	19	22.0×24.5	18.0	12.0	9.0	32.0	58.0
EST1/2-PT3/8	1/2	R3/8	27.5	37.0	27.5	64.5	38.0	12.0	21	19.0×21.0	21.5	9.0	9.0	53.0	48.0
EST1/2-PT1/2	1/2	R1/2	27.5	41.0	27.5	68.5	39.7	15.0	21	22.0×24.5	21.5	12.0	10.0	55.5	65.0

☞The inch size type is not plated.

Y joint





●Millimeter size type

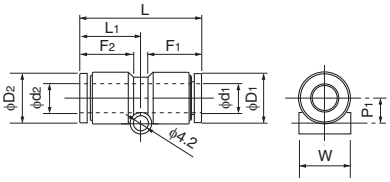
Product number	Applicable tubing outer diameter (mm)	T Thread size (M,R)	L (mm)	L11 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	P3 (mm)	P4 (mm)	W (mm)	D (mm)	d1 (mm)	d2 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EY4-M5	4	M5×0.8	37.9	20.8	4.0	13	10.0×11.0	13.4	11.0	9.8	9.8	2.0	3.2	2.0	2.5	9.0
EY4-PT1/8	4	R1/8	40.4	20.8	8.0	13	10.0×11.0	13.4	11.0	9.8	9.8	5.0	3.2	3.0	3.5	11.0
EY4-PT1/4	4	R1/4	44.4	20.8	11.0	13	14.0×15.4	13.4	11.0	9.8	9.8	7.0	3.2	3.0	3.5	18.0
EY6-M5	6	M5×0.8	41.3	24.8	4.0	15	12.0×13.0	14.8	12.2	12.5	12.6	2.0	4.2	2.0	2.5	13.0
EY6-PT1/8	6	R1/8	43.8	24.8	8.0	15	12.0×13.0	14.8	12.2	12.5	12.6	5.0	4.2	5.0	9.0	15.0
EY6-PT1/4	6	R1/4	47.8	24.8	11.0	15	14.0×15.4	14.8	12.2	12.5	12.6	7.0	4.2	5.0	9.0	22.0
EY6-PT3/8	6	R3/8	48.8	24.8	12.0	15	17.0×18.5	14.8	12.2	12.5	12.6	9.0	4.2	5.0	9.0	30.0
EY8-PT1/8	8	R1/8	46.9	28.8	8.0	16	14.0×15.4	16.4	14.2	14.6	14.6	5.0	4.2	5.0	17.5	20.0
EY8-PT1/4	8	R1/4	50.9	28.8	11.0	16	14.0×15.4	16.4	14.2	14.6	14.6	7.0	4.2	7.0	20.0	25.0
EY8-PT3/8	8	R3/8	51.9	28.8	12.0	16	17.0×18.5	16.4	14.2	14.6	14.6	9.0	4.2	7.0	20.0	33.0
EY10-PT1/4	10	R1/4	55.9	35.0	11.0	19	17.0×18.5	18.4	17.5	17.5	17.5	7.0	4.2	7.0	27.5	33.0
EY10-PT3/8	10	R3/8	56.9	35.0	12.0	19	17.0×18.5	18.4	17.5	17.5	17.5	9.0	4.2	9.0	28.0	41.0
EY10-PT1/2	10	R1/2	60.9	35.0	15.0	19	22.0×24.5	18.4	17.5	17.5	17.5	12.0	4.2	9.0	28.0	60.0
EY12-PT1/4	12	R1/4	60.8	40.0	11.0	20	19.0×21.0	20.3	20.0	20.0	20.0	7.0	4.2	7.0	34.5	47.0
EY12-PT3/8	12	R3/8	61.8	40.0	12.0	20	19.0×21.0	20.3	20.0	20.0	20.0	9.0	4.2	9.0	40.0	52.0
EY12-PT1/2	12	R1/2	65.8	40.0	15.0	20	22.0×24.5	20.3	20.0	20.0	20.0	12.0	4.2	10.0	40.0	70.0
EY16-PT3/8	16	R3/8	78.6	55.5	12.0	27	24.0×27.0	26.6	27.5	27.5	28.0	11.0	4.2	11.0	70.0	103.0
EY16-PT1/2	16	R1/2	81.6	55.5	15.0	27	24.0×27.0	26.6	27.5	27.5	28.0	12.0	4.2	12.0	71.0	117.0

●Inch size type

Product number	Applicable tubing outer diameter (inch)	T Thread size (R)	L (mm)	L11 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	P3 (mm)	P4 (mm)	W (mm)	D (mm)	d1 (mm)	d2 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EY1/4-PT1/8	1/4	R1/8	43.4	25.2	8.0	15	12.0×13.0	14.4	12.2	12.5	13.0	5.0	4.2	5.0	10.5	15.0
EY1/4-PT1/4	1/4	R1/4	47.4	25.2	11.0	15	14.0×15.4	14.4	12.2	12.5	13.0	7.0	4.2	5.0	10.5	22.0
EY5/16-PT1/8	5/16	R1/8	46.8	29.2	8.0	16	14.0×15.4	16.3	14.2	14.5	15.0	5.0	4.2	5.0	17.5	20.0
EY5/16-PT1/4	5/16	R1/4	50.8	29.2	11.0	16	14.0×15.4	16.3	14.2	14.5	15.0	7.0	4.2	7.0	20.0	25.0
EY5/16-PT3/8	5/16	R3/8	51.8	29.2	12.0	16	17.0×18.5	16.3	14.2	14.5	15.0	9.0	4.2	7.0	—	—
EY3/8-PT1/4	3/8	R1/4	55.6	35.5	11.0	19	17.0×18.5	18.1	17.5	17.5	18.0	7.0	4.2	7.0	26.0	33.0
EY3/8-PT3/8	3/8	R3/8	56.6	35.5	12.0	19	17.0×18.5	18.1	17.5	17.5	18.0	9.0	4.2	9.0	26.0	41.0
EY1/2-PT1/4	1/2	R1/4	62.5	42.5	11.0	21	19.0×21.0	20.5	21.0	21.0	21.5	7.0	4.2	7.0	37.0	47.0
EY1/2-PT3/8	1/2	R3/8	63.5	42.5	12.0	21	19.0×21.0	20.5	21.0	21.0	21.5	9.0	4.2	9.0	48.0	52.0
EY1/2-PT1/2	1/2	R1/2	67.5	42.5	15.0	21	22.0×24.5	20.5	21.0	21.0	21.5	12.0	4.2	11.0	48.0	70.0

☞The inch size type is not plated.

Union connector



●Millimeter size type

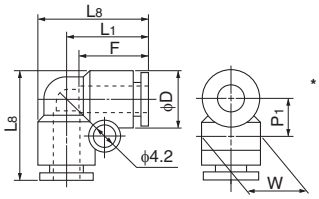
Product number	d1 Applicable tubing outer diameter (mm)	d2 Applicable tubing outer diameter (mm)	L (mm)	L1 (mm)	P1 (mm)	F1 Tubing insertion length (mm)	F2 Tubing insertion length (mm)	D1 (mm)	D2 (mm)	W (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EUC4	4	4	31.8	15.9	5.0	13	13	9.8	9.8	9.7	3.0	3.5	4.0
EUC4-6	4	6	32.7	16.8	6.0	13	15	9.8	12.6	12.5	3.0	3.5	5.0
EUC6	6	6	33.6	16.8	6.0	15	15	12.6	12.6	12.5	5.0	12.5	6.0
EUC6-8	6	8	34.7	17.9	7.0	15	16	12.6	14.6	14.5	5.0	11.5	7.0
EUC8	8	8	35.8	17.9	7.0	16	16	14.6	14.6	14.5	7.0	28.0	8.0
EUC8-10	8	10	38.8	20.9	8.5	16	19	14.6	17.5	17.5	7.0	31.5	11.0
EUC10	10	10	41.7	20.9	8.5	19	19	17.5	17.5	17.5	9.0	45.0	14.0
EUC10-12	10	12	42.7	21.8	9.8	19	20	17.5	20.0	20.0	9.0	53.0	17.0
EUC12	12	12	43.6	21.8	9.8	20	20	20.0	20.0	20.0	11.0	67.0	19.0
EUC16	16	16	56.2	28.1	13.8	27	27	28.0	28.0	27.5	13.0	110.0	48.0

●Inch size type

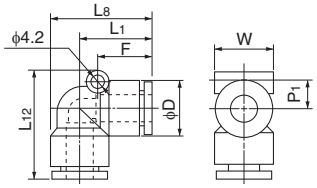
Product number	d1 Applicable tubing outer diameter (inch)	d2 Applicable tubing outer diameter (inch)	L (mm)	L1 (mm)	P1 (mm)	F1 Tubing insertion length (mm)	F2 Tubing insertion length (mm)	D1 (mm)	D2 (mm)	W (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EUC1/4	1/4	1/4	32.8	16.4	6.0	15	15	13.0	13.0	12.5	5.0	12.5	6.0
EUC5/16	5/16	5/16	35.6	17.8	7.0	16	16	15.0	15.0	14.5	7.0	28.0	8.0
EUC3/8	3/8	3/8	41.2	20.6	8.5	19	19	18.0	18.0	17.5	9.0	35.0	14.0
EUC1/2	1/2	1/2	43.9	22.0	10.3	21	21	21.5	21.5	21.0	11.0	65.0	19.0

☞The inch size type is not plated.

90 degree union elbow



EUL16, EULL16



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	L1 (mm)	L8 (mm)	P1 (mm)	F Tubing insertion length (mm)	D (mm)	W (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EUL4	4	17.2	22.1	6.9	13	9.8	9.7	3.0	3.5	4.0
EUL6	6	18.5	24.8	8.3	15	12.6	12.5	5.0	9.5	6.0
EUL8	8	20.7	28.0	9.3	16	14.6	14.5	7.0	19.5	9.0
EUL10	10	24.7	33.4	10.8	19	17.5	17.5	9.0	32.5	15.0
EUL12	12	26.3	36.3	12.1	20	20.0	20.0	11.0	45.5	20.0

Product number	Applicable tubing outer diameter (mm)	L1 (mm)	L8 (mm)	L12 (mm)	P1 (mm)	F Tubing insertion length (mm)	D (mm)	W (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EUL16	16	34.9	48.9	50.8	12.9	27	28.0	27.5	13.0	97.5	50.0
*EULL16	16	34.9	48.9	61.5	12.9	27	28.0	27.5	13.0	96.5	56.0

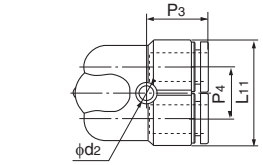
*EUL16 and EULL16 have a different screw hole position.
*EULL16 is made to order.

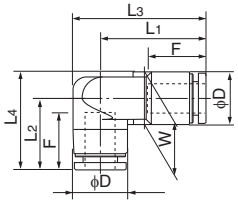
●Inch size type

Product number	Applicable tubing outer diameter (inch)	L1 (mm)	L8 (mm)	P1 (mm)	F Tubing insertion length (mm)	D (mm)	W (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EUL1/4	1/4	18.1	24.6	8.3	15	13.0	12.5	5.0	12.0	6.0
EUL5/16	5/16	20.6	28.1	9.3	16	15.0	14.5	7.0	20.0	9.0
EUL3/8	3/8	24.4	33.4	10.8	19	18.0	17.5	9.0	27.0	15.0
EUL1/2	1/2	27.5	38.2	12.6	21	21.5	21.0	11.0	54.5	20.0

The inch size type is not plated.

90 degree branch union elbow

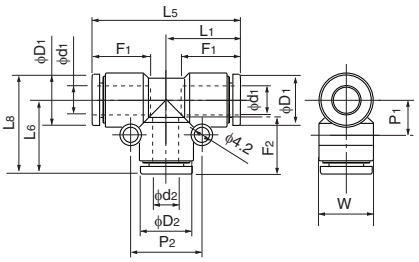




●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L11 (mm)	F Tubing insertion length (mm)	P3 (mm)	P4 (mm)	W (mm)	D (mm)	d2 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EULY6	6	25.6	18.0	31.9	24.3	24.8	15	14.8	12.2	12.6	12.6	4.2	5.0	—	10.0
EULY8	8	28.2	19.6	35.5	26.9	28.8	16	16.4	14.2	14.6	14.6	4.2	7.0	—	14.0
EULY10	10	31.3	22.6	40.0	31.3	35.0	19	18.4	17.5	17.5	17.5	4.2	9.0	—	23.0

Union tee



●Millimeter size type

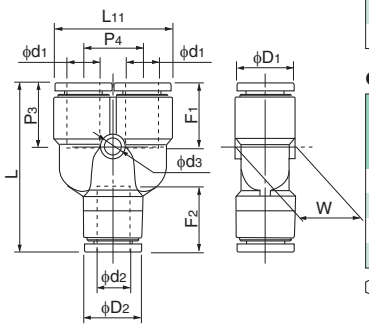
Product number	d1 Applicable tubing outer diameter (mm)	d2 Applicable tubing outer diameter (inch)	L1 (mm)	L5 (mm)	L6 (mm)	L8 (mm)	F1 Tubing insertion length (mm)	F2 Tubing insertion length (mm)	P1 (mm)	P2 (mm)	D1 (mm)	D2 (mm)	W (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EUT4	4	4	17.2	34.4	17.2	22.1	13	13	6.9	14.0	9.8	9.8	9.7	3.0	3.5	6.0
EUT4-6	4	6	17.7	35.4	18.0	22.9	13	15	6.8	17.0	9.8	12.6	12.5	3.0	2.5	8.0
EUT6	6	6	18.5	37.0	18.5	24.8	15	15	8.3	17.0	12.6	12.6	12.5	5.0	4.5	9.0
EUT6-8	6	8	19.5	39.0	20.4	26.7	15	16	8.2	19.0	12.6	14.6	14.5	5.0	15.5	11.0
EUT8	8	8	20.7	41.4	20.7	28.0	16	16	9.3	19.0	14.6	14.6	14.5	7.0	19.5	13.0
EUT8-10	8	10	21.7	43.4	24.4	31.7	16	19	9.2	22.0	14.6	17.5	17.5	7.0	21.0	18.0
EUT10	10	10	24.7	49.3	24.7	33.4	19	19	10.8	22.0	17.5	17.5	17.5	9.0	32.5	22.0
EUT10-12	10	12	25.6	51.1	26.3	35.1	19	20	10.8	24.0	17.5	20.0	20.0	9.0	27.0	26.0
EUT12	12	12	26.3	52.6	26.3	36.3	20	20	12.1	24.0	20.0	20.0	20.0	11.0	45.5	29.0
EUT16	16	16	34.9	69.8	34.9	48.9	27	27	15.9	31.7	28.0	28.0	27.5	13.0	97.0	73.0

●Inch size type

Product number	d1 Applicable tubing outer diameter (mm)	d2 Applicable tubing outer diameter (inch)	L1 (mm)	L5 (mm)	L6 (mm)	L8 (mm)	F1 Tubing insertion length (mm)	F2 Tubing insertion length (mm)	P1 (mm)	P2 (mm)	D1 (mm)	D2 (mm)	W (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EUT1/4	1/4	1/4	18.1	36.2	18.1	24.6	15	15	8.3	17.0	13.0	13.0	12.5	5.0	12.0	9.0
EUT5/16	5/16	5/16	20.6	41.2	20.6	28.1	16	16	9.3	19.0	15.0	15.0	14.5	7.0	20.0	13.0
EUT3/8	3/8	3/8	24.4	48.8	24.4	33.4	19	19	10.8	22.0	18.0	18.0	17.5	9.0	27.0	22.0
EUT1/2	1/2	1/2	27.5	54.9	27.5	38.2	21	21	12.6	25.0	21.5	21.5	21.0	11.0	54.5	29.0

☞The inch size type is not plated.

Y union



●Millimeter size type

Product number	d1 Applicable tubing outer diameter (mm)	d2 Applicable tubing outer diameter (inch)	L (mm)	L11 (mm)	F1 Tubing insertion length (mm)	F2 Tubing insertion length (mm)	P3 (mm)	P4 (mm)	W (mm)	D1 (mm)	D2 (mm)	d3 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EYB4-4	4	4	33.8	20.8	13	13	13.4	11.0	9.8	9.8	9.8	3.2	3.0	3.0	6.0
EYB4-6	4	6	34.2	20.8	13	15	13.4	11.0	12.5	9.8	12.6	3.2	3.0	2.5	8.0
EYB6-6	6	6	37.5	24.8	15	15	14.8	12.2	12.5	12.6	12.6	4.2	5.0	8.0	10.0
EYB6-8	6	8	39.2	24.8	15	16	14.8	12.2	14.5	12.6	14.6	4.2	5.0	17.0	12.0
EYB8-8	8	8	42.9	28.8	16	16	16.4	14.2	14.6	14.6	14.6	4.2	7.0	18.0	14.0
EYB8-10	8	10	44.8	28.8	16	19	16.4	14.2	17.5	14.6	17.5	4.2	7.0	22.5	19.0
EYB10-10	10	10	48.3	35.0	19	19	18.4	17.5	17.5	17.5	17.5	4.2	9.0	27.0	24.0
EYB10-12	10	12	49.4	35.0	19	20	18.4	17.5	20.0	17.5	20.0	4.2	9.0	30.0	29.0
EYB12-12	12	12	54.0	40.0	20	20	20.3	20.0	20.0	20.0	20.0	4.2	11.0	38.5	33.0

●Inch size type

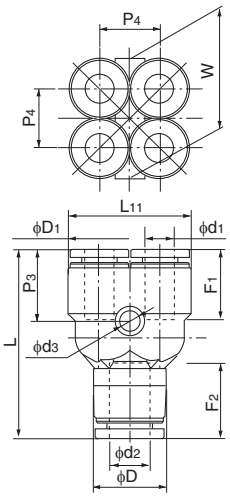
Product number	d1 Applicable tubing outer diameter (mm)	d2 Applicable tubing outer diameter (inch)	L (mm)	L11 (mm)	F1 Tubing insertion length (mm)	F2 Tubing insertion length (mm)	P3 (mm)	P4 (mm)	W (mm)	D1 (mm)	D2 (mm)	d3 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EYB1/4	1/4	1/4	36.7	25.2	15	15	14.4	12.2	12.5	13.0	13.0	4.2	5.0	10.5	10.0
EYB5/16	5/16	5/16	42.7	29.2	16	16	16.3	14.2	14.5	15.0	15.0	4.2	7.0	19.5	14.0
EYB3/8	3/8	3/8	47.8	35.5	19	19	18.1	17.5	17.5	18.0	18.0	4.2	9.0	24.0	24.0
EYB1/2	1/2	1/2	55.8	42.5	21	21	20.5	21.0	21.0	21.5	21.5	4.2	11.0	46.5	33.0

☞The inch size type is not plated.

Double Y union

●Millimeter size type

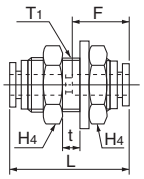
Product number	d_1 Applicable tubing outer diameter (mm)	d_2 Applicable tubing outer diameter (mm)	L (mm)	L_{11} (mm)	F_1 Tubing insertion length (mm)	F_2 Tubing insertion length (mm)	P_3 (mm)	P_4 (mm)	W (mm)	D_1 (mm)	D (mm)	d_3 (mm)	Min. inner diameter (mm)	Effective sectional area (mm^2)	Weight (g)
EUWY4-6	4	6	34.2	19.8	13	15	13.4	10.0	19.8	9.8	12.6	3.2	3.5	—	10.0
EUWY6-8	6	8	39.2	24.8	15	16	14.8	12.2	24.8	12.6	14.6	4.2	5.0	—	16.0



Panel touch connector

●Millimeter size type

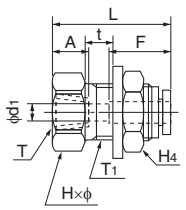
Product number	Applicable tubing outer diameter (mm)	L (mm)	F Tubing insertion length (mm)	t Max. panel thickness (mm)	H_4 (mm)	T_1 Recommended panel hole diameter (mm)	Washer outer diameter (mm)	Washer thickness (mm)	Thread length (mm)	Min. inner diameter (mm)	Effective sectional area (mm^2)	Weight (g)
EPC4	4	31.8	13	8.0	17.0	13	20	2.0	20	3.0	3.5	5.0
EPC6	6	33.6	15	9.5	19.0	15	24	2.5	22	5.0	12.5	7.0
EPC8	8	35.8	16	10.5	22.0	17	28	2.5	23	7.0	28.0	9.0
EPC10	10	41.7	19	14.0	27.0	21	34	3.0	27	9.0	45.0	16.0
EPC12	12	43.6	20	16.0	30.0	23	37	3.0	29	11.0	67.0	67.0



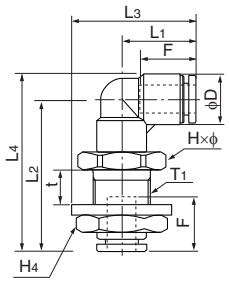
Internal panel touch connector

●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (RC)	L (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	H_4 (mm)	t Max. panel thickness (mm)	T_1 Recommended panel hole diameter (mm)	d_1 (mm)	Washer outer diameter (mm)	Washer thickness (mm)	Min. inner diameter (mm)	Effective sectional area (mm^2)	Weight (g)
EPFC4-PT1/8	4	RC1/8	27.9	8.7	13	17.0×18.5	17.0	8.0	13	3.0	20	2.0	3.0	4.0	22.0
EPFC6-PT1/8	6	RC1/8	29.8	8.7	15	19.0×21.0	19.0	9.0	15	5.0	24	2.5	5.0	10.5	44.0
EPFC6-PT1/4	6	RC1/4	35.3	13.0	15	19.0×21.0	19.0	9.0	15	5.0	24	2.5	5.0	10.5	50.0
EPFC8-PT1/4	8	RC1/4	34.4	13.0	16	22.0×24.5	22.0	10.5	17	7.0	28	2.5	7.0	25.0	64.0
EPFC8-PT3/8	8	RC3/8	38.4	13.5	16	22.0×24.5	22.0	10.5	17	7.0	28	2.5	7.0	26.0	68.0
EPFC10-PT1/4	10	RC1/4	40.4	13.0	19	27.0×30.0	27.0	14.0	21	9.0	34	3.0	9.0	40.0	117.0
EPFC10-PT3/8	10	RC3/8	40.4	13.5	19	27.0×30.0	27.0	14.0	21	9.0	34	3.0	9.0	40.0	107.0
EPFC12-PT1/4	12	RC1/4	42.3	13.0	20	30.0×33.5	30.0	16.0	23	10.5	37	3.0	10.5	45.0	147.0
EPFC12-PT3/8	12	RC3/8	42.3	13.5	20	30.0×33.5	30.0	16.0	23	11.0	37	3.0	11.0	50.0	138.0



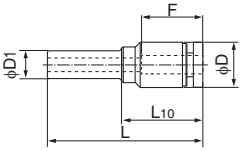
90 degree panel touch elbow



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	F Tubing insertion length (mm)	H×φ Width across flat (mm)	H4 Width across flat (mm)	t Max. panel thickness (mm)	T1 Recommended panel hole diameter (mm)	D (mm)	Washer outer diameter (mm)	Washer thickness (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EPL4	4	17.2	35.6	27.7	40.5	13	17.0×18.5	17.0	7.5	13	9.8	21	2.5	3.0	—	32.0
EPL6	6	18.5	40.0	30.5	46.3	15	19.0×21.0	19.0	9.0	15	12.6	24	2.5	5.0	—	43.0
EPL8	8	20.7	43.6	34.7	50.9	16	22.0×24.5	22.0	10.0	17	14.6	28	3.0	7.0	—	62.0
EPL10	10	24.7	51.6	41.7	60.3	19	27.0×30.0	27.0	14.0	21	17.5	34	3.0	9.0	—	101.0
EPL12	12	26.3	56.0	44.8	66.0	20	30.0×33.5	30.0	16.0	23	20.0	37	3.0	10.0	—	126.0

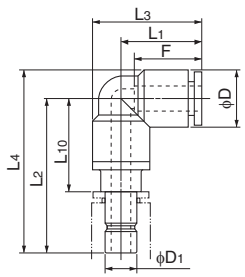
Reducer



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	D1 Insertion part diameter (mm)	L (mm)	L10 (mm)	F Tubing insertion length (mm)	D (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
ER4-6-Z2	4	6	34.0	17.5	13	9.8	3.0	3.5	3.0
ER4-8-Z2	4	8	31.5	18.5	13	9.8	3.0	3.5	3.0
ER6-8-Z2	6	8	34.3	17.3	15	12.6	5.0	10.5	4.0
ER6-10-Z2	6	10	35.2	20.2	15	12.6	5.0	10.5	4.0
ER6-12-Z2	6	12	36.7	20.9	15	12.6	5.0	10.5	5.0
ER8-10-Z2	8	10	39.0	18.5	16	14.6	7.0	28.0	5.0
ER8-12-Z2	8	12	37.9	15.8	16	14.6	7.0	28.0	5.0
ER10-12-Z2	10	12	42.5	20.5	19	17.5	9.0	45.0	8.0

Adapter elbow



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	D1 Insertion part diameter (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L10 (mm)	F Tubing insertion length (mm)	D (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EAL4	4	4	17.2	30.7	22.1	35.6	14.7	13	9.8	3.0	4.0	6.0
EAL6	6	6	18.5	34.2	24.4	40.5	17.7	15	12.6	4.5	12.0	10.0
EAL8	8	8	20.7	35.7	27.6	43.0	18.7	16	14.6	6.0	20.0	14.0
EAL10	10	10	24.7	41.2	33.0	50.0	22.7	19	17.5	8.0	35.0	22.0
EAL12	12	12	26.3	45.2	35.7	55.2	25.2	20	20.0	10.0	43.0	30.0

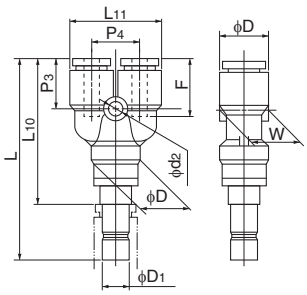
⚠ Caution: Once an adapter elbow is inserted into a PushOne part, the part cannot be used to connect a tubing.

Y plug

●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	D1 Insertion part diameter (mm)	L (mm)	L10 (mm)	L11 (mm)	F Tubing insertion length (mm)	P3 (mm)	P4 (mm)	W (mm)	D (mm)	d2 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EYA4-4	4	4	48.4	32.4	20.8	13	13.4	11.0	9.8	9.8	3.2	3.0	3.5	8.0
EYA6-6	6	6	52.8	36.3	24.8	15	14.8	12.2	12.5	12.6	4.2	4.5	9.0	14.0
EYA8-8	8	8	56.4	39.4	28.8	16	16.4	14.2	14.6	14.6	4.2	6.0	18.0	19.0
EYA10-10	10	10	63.9	45.4	35.0	19	18.4	17.5	17.5	17.5	4.2	8.0	28.0	31.0
EYA12-12	12	12	70.3	50.3	40.0	20	20.3	20.0	20.0	20.0	4.2	10.0	40.0	42.0

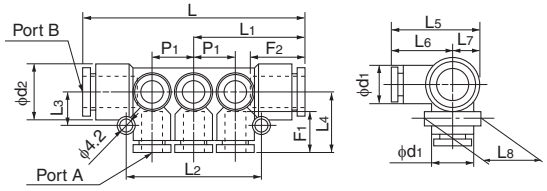
⚠ Caution: Once a Y plug elbow is inserted into a PushOne part, the part cannot be used to connect a tubing.



Manifold A type

●Millimeter size type

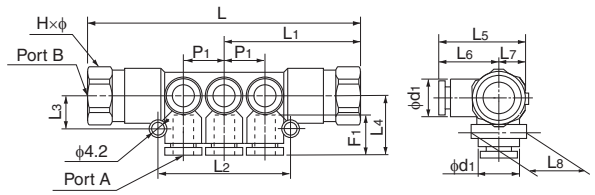
Product number	Applicable tubing outer diameter (mm)		A Number of ports	L (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	L7 (mm)	L8 (mm)	F1 Tubing insertion length (mm)	F2 Tubing insertion length (mm)	P1 (mm)	d1 (mm)	d2 (mm)	Effective sectional area (mm²)	Weight (g)
	Port A	Port B																	
EMA4-8-6	4	8	6	62.8	31.4	36.0	10.0	19.5	28.8	19.5	9.3	18.5	13	16	10.6	9.8	14.6	—	20.0
EMA4-8-10	4	8	10	84.3	42.2	57.2	10.0	19.8	29.1	19.8	9.3	18.5	13	16	10.6	9.8	14.6	—	33.0
EMA6-10-6	6	10	6	74.7	37.4	44.0	11.5	20.8	30.1	20.8	9.3	18.5	15	19	13.0	12.6	17.5	—	37.0
EMA6-10-10	6	10	10	100.7	50.4	70.0	11.5	21.1	30.4	21.1	9.3	18.5	15	19	13.0	12.6	17.5	—	54.0
EMA8-12-6	8	12	6	84.2	42.1	51.0	12.5	23.0	33.5	23.0	10.5	21.0	16	20	15.5	14.6	20.0	—	50.0
EMA8-12-10	8	12	10	115.1	57.6	82.0	12.5	23.0	33.5	23.0	10.5	21.0	16	20	15.5	14.6	20.0	—	68.0



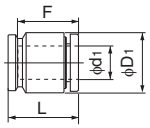
Manifold B type

●Millimeter size type

Product number	Applicable tubing outer diameter (mm)		Thread size (RC)	A Number of ports	L (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	L7 (mm)	L8 (mm)	F1 Tubing insertion length (mm)	P1 (mm)	d1 (mm)	H×ϕ Width across flat (mm)	Effective sectional area (mm²)	Weight (g)
	Port A	Port B																	
EMB4-1/4-6	4	RC1/4	6	84.0	42.0	36.0	10.0	19.5	28.8	19.5	9.3	18.5	13	10.6	9.8	17.0x18.5	—	58.0
EMB4-1/4-10	4	RC1/4	10	105.5	52.8	57.2	10.0	19.8	29.1	19.8	9.3	18.5	13	10.6	9.8	17.0x18.5	—	67.0
EMB6-1/4-6	6	RC1/4	6	96.0	48.0	44.0	11.5	20.8	30.1	20.8	9.3	18.5	15	13.0	12.6	17.0x18.5	—	79.0
EMB6-1/4-10	6	RC1/4	10	122.0	61.0	70.0	11.5	21.1	30.4	21.1	9.3	18.5	15	13.0	12.6	17.0x18.5	—	96.0
EMB8-3/8-6	8	RC3/8	6	105.6	52.8	51.0	12.5	23.0	33.5	23.0	10.5	21.0	16	15.5	14.6	19.0x21.0	—	92.0
EMB8-3/8-10	8	RC3/8	10	136.5	68.3	82.0	12.5	23.0	33.5	23.0	10.5	21.0	16	15.5	14.6	19.0x21.0	—	117.0



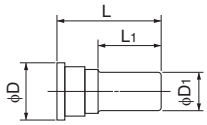
Tubing cap



●Millimeter size type

Product number	d1 Applicable tubing outer diameter (mm)	D1 (mm)	F Tubing insertion length (mm)	L (mm)	Weight (g)
ECC4	4	9.8	13	15.0	2.0
ECC6	6	12.6	15	16.9	3.0
ECC8	8	14.6	16	17.9	4.0
ECC10	10	17.5	19	21.7	6.0
ECC12	12	20.0	20	22.6	8.0

Blank plug



●Millimeter size type

Product number	D1 Insertion part diameter (mm)	L (mm)	L1 (mm)	D (mm)	Weight (g)
BC3	3	22.0	11.5	5.0	0.5
BC4	4	28.0	15.5	7.7	0.8
BC6	6	28.0	16.0	9.7	1.2
BC8	8	29.0	16.0	11.7	1.7
BC10	10	32.0	17.7	14.0	2.5
BC12	12	34.0	20.4	16.0	3.8

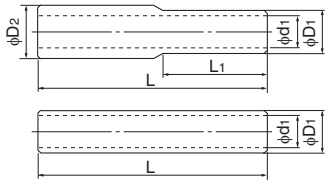
●Inch size type

Product number	D1 Insertion part diameter (inch)	L (mm)	L1 (mm)	D (mm)	Weight (g)
BC1/4	1/4	28.0	16.0	9.7	1.2
BC3/8	3/8	32.0	17.7	14.0	2.5
BC1/2	1/2	34.0	20.4	16.0	3.8

⚠ Caution：Material：POM (Not flame-retardant vesin)

☞ Size 5/16 is shared with BC8.

Nipple



●Millimeter size type

Product number	D1 Insertion part diameter (mm)	D2 Insertion part diameter (mm)	d1 (mm)	L (mm)	L1 (mm)	Weight (g)
EN4	4	—	2.5	37.0	—	1.0
EN4-6	4	6	2.5	38.0	18.5	1.0
EN6	6	—	4.0	39.0	—	1.0
EN6-8	6	8	4.0	41.0	19.5	1.0
EN8	8	—	6.0	43.0	—	1.0
EN8-10	8	10	6.0	46.0	21.5	2.0
EN10	10	—	7.5	49.0	—	2.0
EN10-12	10	12	7.5	50.5	24.5	3.0
EN12	12	—	9.0	52.0	—	3.0

⚠ Caution：Material：POM (Not flame-retardant vesin)

QuickSeal Series

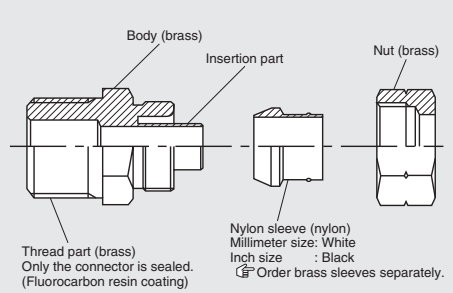
Insertion Type (brass)

Screw-in type for multi-purpose piping

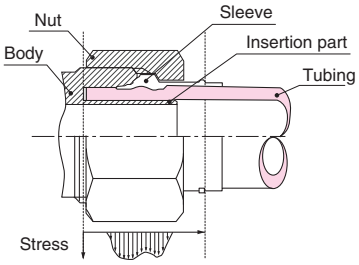
Features

- **Screw-in type**
  Consisting of three parts: fitting body, nut and sleeve.
- **High sealing performance**
  The insertion part is integrated with a fitting body with high negative-pressure performance.
- **Only the connector is sealed**
  Sealing tape is not required.
- **JIS B 8381-1995 (fittings for pneumatic flexible pipes) compliant**

Cross-sectional structure diagram



Sealing mechanism



Operating fluid, working temperature range

Operating fluid		Working temperature range
Air	Nylon sleeve	−40°C~+80°C
	Brass sleeve	−40°C~+100°C
Water	Nylon sleeve	0°C~+70°C
	Brass sleeve	0°C~+100°C
General operating oil	Nylon sleeve	−40°C~+80°C
	Brass sleeve	−40°C~+100°C

☞ Contact us for various chemical liquids.
☞ See “Combination List of Tubing and Fitting” on page 8.

Pressure condition

Maximum working pressure: 5.0MPa
Negative pressure performance: −101.294kPa

Product number example

C4N 6×4 – PT1/8

- PT1/8 — Thread size
- 6×4 — Applicable tubing outer diameter
- C4N — Shape, group

Distinction of millimeter/inch sizes

The inch size type has a black sleeve.
The millimeter size type has a cut at the hexagonal nut.

Handling instructions

⚠ **Caution:** When the working conditions of tubes and fittings differ, use them under the lower specified conditions.

⚠ **Caution:** For use at a high temperature within the working temperature range, tighten nut periodically. If the nut cannot be tightened further, cut the tubing end and insert the tubing again with a new sleeve.

⚠ **Caution:** When water is used as the operating fluid, do not allow it to freeze.

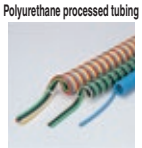
⚠ **Caution:** Do not bend the pipe sharply near the tubing insertion port (sleeve end) of the fitting. Keep the tubing straight for twice as long as the tubing diameter from the insertion port.

⚠ **Caution:** The brass sleeve cannot be used for a fluorocarbon resin TP tubing. Choose the nylon sleeve instead.

⚠ **Caution:** The outer and the inner diameters of the fitting have to be the same as those of the tubing used.

☞ See page 34 for the common handling instructions for fittings.

Applicable tubing

Polyurethane tubing	Nylon tubing	Flexible fluorocarbon resin bilayer tubing	Polybutene tubing	Flame-resistant tubing	Antistatic tubing	Polyolefin resin tubing	Fluorocarbon resin tubing	Polyurethane processed tubing
				 *1		 *2	 *2 *3	
U2 U1 U5	N2 N5 N1	TES	PB	FS FW FWU FUK	UE	PL PN	TA TP	UC USC UMC UML

(*1) When QuickSeal series fittings are used on a spatter-resistant line, replace the nylon sleeve with the brass one.
(*2) Combinatory use of PL, PN, TA or TP tubing and QuickSeal series of insertion type (brass) mixes general and clean type performances. When using them together in a clean environment, be aware of how this could lower the cleanliness level.
(*3) The brass sleeve cannot be used for a fluorocarbon resin TP tubing. Choose the nylon sleeve instead.

Related products and product introduction

Miniature valve	Q.D.C 101 series
	

Reference

QuickSeal Series Insertion Type (brass)

Shape list

Connector
C*N

90 degree elbow
L*N

Tee
T*N

Service tee
ST*N

Internal connector
FC*N

Union connector
UC*N

90 degree union elbow
UL*N

Union tee
UT*N

Swivel nut internal connector
SC*N

Panel touch connector
UCT*N

Brass nut
N

Nylon sleeve
SN

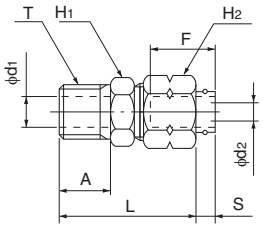
Brass sleeve
MSN

Inch Size NPT Type (Made to order)

Connector
C*N

90 degree elbow
L*N

Connector



●Millimeter size type (Group 4)

Product number	Applicable tubing outer diameter×inner diameter (mm)	T Thread size (R)	L (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
C4N4×2-PT1/8	4×2	R1/8	28.0	11.0	4.7	15	10.0	10.0	5.0	0.9	0.7	13.0
C4N4×2-PT1/4	4×2	R1/4	30.0	12.0	4.7	15	14.0	10.0	7.0	0.9	0.7	20.0
C4N4×2.5-PT1/8	4×2.5	R1/8	28.0	11.0	4.7	15	10.0	10.0	5.0	1.3	1.5	13.0
C4N4×3-PT1/8	4×3	R1/8	28.0	11.0	4.7	15	10.0	10.0	5.0	2.0	3.0	13.0
C4N6×4-PT1/8	6×4	R1/8	28.0	11.0	4.6	15	10.0	12.0	5.0	2.7	5.0	15.0
C4N6×4-PT1/4	6×4	R1/4	30.0	12.0	4.6	15	14.0	12.0	7.0	2.7	5.0	22.0
C4N6×4-PT3/8	6×4	R3/8	31.0	13.0	4.6	15	17.0	12.0	9.0	2.7	5.5	32.0
C4N6×4.5-PT1/8	6×4.5	R1/8	28.0	11.0	4.6	15	10.0	12.0	5.0	3.2	7.5	15.0
C4N6×4.5-PT1/4	6×4.5	R1/4	30.0	12.0	4.6	15	14.0	12.0	7.0	3.2	7.5	23.0
*C4N6×4.5-PT3/8	6×4.5	R3/8	31.0	13.0	4.6	15	17.0	12.0	9.0	3.2	7.5	32.0
C4N8×5-PT1/8	8×5	R1/8	27.9	11.0	4.6	16	12.0	14.0	5.0	3.7	10.0	18.0
C4N8×5-PT1/4	8×5	R1/4	29.9	12.0	4.6	16	14.0	14.0	7.0	3.7	10.0	24.0
C4N8×6-PT1/8	8×6	R1/8	27.9	11.0	4.6	16	12.0	14.0	5.0	4.7	16.0	17.0
C4N8×6-PT1/4	8×6	R1/4	29.9	12.0	4.6	16	14.0	14.0	7.0	4.7	16.0	24.0
C4N8×6-PT3/8	8×6	R3/8	30.9	13.0	4.6	16	17.0	14.0	9.0	4.7	17.0	33.0
C4N10×6.5-PT1/4	10×6.5	R1/4	31.1	12.0	4.2	17	17.0	17.0	7.0	5.2	20.5	32.0
C4N10×6.5-PT3/8	10×6.5	R3/8	32.1	13.0	4.2	17	17.0	17.0	9.0	5.2	20.5	38.0
C4N10×7.5-PT1/4	10×7.5	R1/4	31.1	12.0	4.2	17	17.0	17.0	7.0	6.2	30.0	32.0
C4N10×7.5-PT3/8	10×7.5	R3/8	32.1	13.0	4.2	17	17.0	17.0	9.0	6.2	30.0	37.0
C4N10×7.5-PT1/2	10×7.5	R1/2	40.1	18.0	4.2	17	22.0	17.0	12.0	6.2	30.0	68.5
C4N10×8-PT1/4	10×8	R1/4	31.1	12.0	4.2	17	15.0	17.0	7.0	6.7	32.0	29.0
C4N10×8-PT3/8	10×8	R3/8	32.1	13.0	4.2	17	17.0	17.0	9.0	6.7	32.0	37.0
C4N10×8-PT1/2	10×8	R1/2	40.1	18.0	4.2	17	22.0	17.0	12.0	6.7	33.5	80.0
C4N12×8-PT3/8	12×8	R3/8	35.6	13.0	4.8	18	17.0	19.0	9.0	6.6	32.0	47.0
C4N12×8-PT1/2	12×8	R1/2	40.6	18.0	4.8	18	23.0	19.0	12.0	6.6	33.5	75.0
C4N12×9-PT1/4	12×9	R1/4	31.6	12.0	4.8	18	17.0	19.0	7.6	7.6	40.0	34.0
C4N12×9-PT3/8	12×9	R3/8	35.6	13.0	4.8	18	17.0	19.0	9.0	7.6	40.0	40.5
C4N12×9-PT1/2	12×9	R1/2	40.6	18.0	4.8	18	23.0	19.0	12.0	7.6	40.0	74.0
C4N16×13-PT1/2	16×13	R1/2	46.7	18.0	5.1	23	24.0	27.0	12.0	11.0	90.0	108.0

*Made to order

☞Only the connector is sealed.

●Inch size type (Group 1)

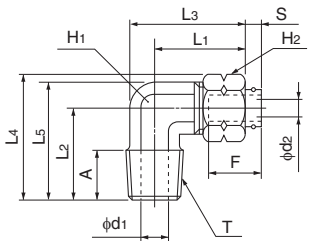
Product number	Applicable tubing outer diameter (inch)	T Thread size (R)	L (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
C1N1/8-PT1/8	1/8	R1/8	28.0	11.0	4.6	15	10.0	8.0	5.0	1.4	1.5	11.0
C1N3/16-PT1/8	3/16	R1/8	28.1	11.0	4.6	15	10.0	10.0	5.0	2.4	4.0	13.0
C1N3/16-PT1/4	3/16	R1/4	30.1	12.0	4.6	15	14.0	10.0	7.0	2.4	4.0	20.0
C1N1/4-PT1/8	1/4	R1/8	28.0	11.0	4.6	15	10.0	12.0	5.0	3.4	8.5	14.0
C1N1/4-PT1/4	1/4	R1/4	30.0	12.0	4.6	15	14.0	12.0	7.0	3.4	8.5	22.0
C1N1/4-PT3/8	1/4	R3/8	31.0	13.0	4.6	15	17.0	12.0	9.0	3.4	8.5	31.0
C1N5/16-PT1/8	5/16	R1/8	27.8	11.0	4.6	16	12.0	14.0	5.0	4.7	16.0	17.0
C1N5/16-PT1/4	5/16	R1/4	29.8	12.0	4.6	16	14.0	14.0	7.0	4.7	16.0	24.0
C1N5/16-PT3/8	5/16	R3/8	30.8	13.0	4.6	16	17.0	14.0	9.0	4.7	17.0	33.0
C1N3/8-PT1/8	3/8	R1/8	28.7	11.0	4.6	17	14.0	17.0	5.7	5.7	22.5	23.0
C1N3/8-PT1/4	3/8	R1/4	30.7	12.0	4.6	17	14.0	17.0	7.5	5.7	22.5	28.0
C1N3/8-PT3/8	3/8	R3/8	31.7	13.0	4.6	17	17.0	17.0	9.0	5.7	22.5	39.0
C1N3/8-PT1/2	3/8	R1/2	39.7	18.0	4.6	17	23.0	17.0	12.0	5.7	24.5	68.0
C1N1/2-PT1/4	1/2	R1/4	31.8	12.0	4.6	18	17.0	19.0	8.2	8.2	45.0	33.0
C1N1/2-PT3/8	1/2	R3/8	32.8	13.0	4.6	18	17.0	19.0	9.0	8.2	45.0	40.0
C1N1/2-PT1/2	1/2	R1/2	40.8	18.0	4.6	18	23.0	19.0	12.0	8.2	45.0	72.0
C1N5/8-PT3/8	5/8	R3/8	41.7	13.0	5.1	23	23.0	27.0	9.3	9.3	62.0	85.0
C1N5/8-PT1/2	5/8	R1/2	46.7	18.0	5.1	23	23.0	27.0	12.0	9.3	62.0	100.0

●Inch size type (Group 2)

Product number	Applicable tubing outer diameter (inch)	T Thread size (R)	L (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
☆C2N1/8-PT1/8	1/8	R1/8	28.0	11.0	4.6	21	10.0	8.0	5.0	3.0	1.0	11.0
C2N3/16-PT1/8	3/16	R1/8	28.1	11.0	4.6	15	10.0	10.0	5.0	1.4	1.5	12.0
C2N3/16-PT1/4	3/16	R1/4	30.1	12.0	4.6	15	14.0	10.0	7.0	1.4	1.5	20.0
C2N1/4-PT1/8	1/4	R1/8	28.0	11.0	4.6	15	10.0	12.0	5.0	2.2	3.5	14.5
C2N1/4-PT1/4	1/4	R1/4	30.0	12.0	4.6	15	14.0	12.0	7.0	2.2	3.5	22.0
C2N5/16-PT1/8	5/16	R1/8	27.8	11.0	4.6	16	12.0	14.0	5.0	2.9	6.0	18.0
C2N5/16-PT1/4	5/16	R1/4	29.8	12.0	4.6	16	14.0	14.0	7.0	2.9	6.0	24.0
C2N3/8-PT1/8	3/8	R1/8	28.7	11.0	4.6	17	14.0	17.0	5.0	3.5	8.0	24.0
C2N3/8-PT1/4	3/8	R1/4	30.7	12.0	4.6	17	14.0	17.0	7.0	3.5	8.0	29.0
C2N3/8-PT3/8	3/8	R3/8	31.7	13.0	4.6	17	17.0	17.0	9.0	3.5	8.0	38.0
C2N1/2-PT1/4	1/2	R1/4	31.8	12.0	4.6	18	17.0	19.0	7.0	5.2	20.5	35.0
C2N1/2-PT3/8	1/2	R3/8	32.8	13.0	4.6	18	17.0	19.0	9.0	5.2	20.5	40.0
C2N1/2-PT1/2	1/2	R1/2	40.8	18.0	4.6	18	23.0	19.0	12.0	5.2	20.5	74.0

☆C2N1/8-PT1/8 is of insertless type.

90 degree elbow



●Millimeter size type (Group 4)

Product number	Applicable tubing outer diameter×inner diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
L4N4×2-PT1/8	4×2	R1/8	20.5	18.5	26.2	24.3	24.3	11.0	4.7	15	10.0	10.0	5.0	0.9	0.5	19.0
L4N4×2-PT1/4	4×2	R1/4	20.5	22.0	27.4	27.8	28.9	12.0	4.7	15	12.0	10.0	7.0	0.9	0.5	28.0
L4N4×2.5-PT1/8	4×2.5	R1/8	20.5	18.5	26.2	24.3	24.3	11.0	4.7	15	10.0	10.0	5.0	1.3	1.5	19.0
L4N4×3-PT1/8	4×3	R1/8	20.5	18.5	26.2	24.3	24.3	11.0	4.7	15	10.0	10.0	5.0	2.0	2.5	19.0
L4N6×4-PT1/8	6×4	R1/8	20.5	18.5	26.3	25.4	24.3	11.0	4.6	15	10.0	12.0	5.0	2.7	4.5	21.0
L4N6×4-PT1/4	6×4	R1/4	23.0	22.0	29.9	28.9	28.9	12.0	4.6	15	12.0	12.0	7.0	2.7	4.5	32.0
L4N6×4.5-PT1/8	6×4.5	R1/8	20.5	18.5	26.3	25.4	24.3	11.0	4.6	15	10.0	12.0	5.0	3.2	7.0	21.0
L4N6×4.5-PT1/4	6×4.5	R1/4	23.0	22.0	29.9	28.9	28.9	12.0	4.6	15	12.0	12.0	7.0	3.2	7.0	32.0
L4N8×5-PT1/8	8×5	R1/8	22.9	21.0	29.8	29.1	27.9	11.0	4.6	16	12.0	14.0	5.0	3.7	9.0	31.0
L4N8×5-PT1/4	8×5	R1/4	22.9	22.0	29.8	30.1	28.9	12.0	4.6	16	12.0	14.0	7.0	3.7	9.0	32.5
L4N8×6-PT1/8	8×6	R1/8	22.9	21.0	29.8	29.1	27.9	11.0	4.6	16	12.0	14.0	5.0	4.7	14.0	31.0
L4N8×6-PT1/4	8×6	R1/4	22.9	22.0	29.8	30.1	28.9	12.0	4.6	16	12.0	14.0	7.0	4.7	15.0	32.5
L4N8×6-PT3/8	8×6	R3/8	22.9	26.0	31.0	34.1	34.1	13.0	4.6	16	14.0	14.0	9.0	4.7	15.0	45.0
L4N10×6.5-PT1/4	10×6.5	R1/4	27.1	25.0	35.2	34.8	33.1	13.5	4.2	17	14.0	17.0	7.0	5.2	18.0	47.0
L4N10×6.5-PT3/8	10×6.5	R3/8	27.1	26.0	35.2	35.8	34.1	13.0	4.2	17	14.0	17.0	9.0	5.2	18.0	50.0
L4N10×7.5-PT1/4	10×7.5	R1/4	27.1	25.0	35.2	34.8	33.1	13.5	4.2	17	14.0	17.0	7.0	6.2	24.0	48.0
L4N10×7.5-PT3/8	10×7.5	R3/8	27.1	26.0	35.2	35.8	34.1	13.0	4.2	17	14.0	17.0	9.0	6.2	26.0	51.0
L4N10×7.5-PT1/2	10×7.5	R1/2	27.1	33.0	35.2	42.8	41.1	18.0	4.2	17	14.0	17.0	10.0	6.2	26.0	83.0
L4N10×8-PT1/4	10×8	R1/4	27.1	25.0	35.2	34.8	33.1	13.5	4.2	17	14.0	17.0	7.0	6.7	25.0	48.0
L4N10×8-PT3/8	10×8	R3/8	27.1	26.0	35.2	35.8	34.1	13.0	4.2	17	14.0	17.0	9.0	6.7	25.0	51.0
L4N10×8-PT1/2	10×8	R1/2	27.1	33.0	35.2	42.8	41.1	18.0	4.2	17	14.0	17.0	10.0	6.7	30.0	83.0
L4N12×8-PT3/8	12×8	R3/8	27.6	26.0	35.7	37.0	34.1	13.0	4.8	18	14.0	19.0	9.0	6.6	25.0	53.0
L4N12×8-PT1/2	12×8	R1/2	30.1	33.0	38.2	44.0	41.1	18.0	4.8	18	14.0	19.0	10.0	6.6	30.0	90.0
L4N12×9-PT1/4	12×9	R1/4	27.6	25.0	35.7	36.0	33.1	13.5	4.8	18	14.0	19.0	7.0	7.6	33.0	50.0
L4N12×9-PT3/8	12×9	R3/8	27.6	26.0	35.7	37.0	34.1	13.0	4.8	18	14.0	19.0	9.0	7.6	33.0	54.0
L4N12×9-PT1/2	12×9	R1/2	30.6	33.0	38.7	44.0	41.1	18.0	4.8	18	14.0	19.0	10.0	7.6	33.0	91.0
L4N16×13-PT1/2	16×13	R1/2	36.7	33.0	47.1	48.6	43.4	18.0	5.1	23	18.0	27.0	12.0	11.0	72.0	120.0

●Inch size type (Group 1)

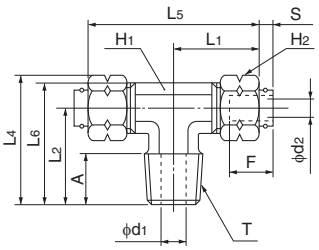
Product number	Applicable tubing outer diameter×inner diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
L1N1/8-PT1/8	1/8	R1/8	20.5	18.5	26.3	23.1	24.3	11.0	4.6	15	10.0	8.0	5.0	1.4	1.5	15.0
L1N3/16-PT1/8	3/16	R1/8	20.6	18.5	26.3	24.3	24.3	11.0	4.6	15	10.0	10.0	5.0	2.4	4.0	18.0
L1N3/16-PT1/4	3/16	R1/4	23.1	22.0	30.0	27.8	28.9	12.0	4.6	15	12.0	10.0	7.0	2.4	4.0	28.0
L1N1/4-PT1/8	1/4	R1/8	20.5	18.5	26.3	25.4	24.3	11.0	4.6	15	10.0	12.0	5.0	3.4	8.0	20.0
L1N1/4-PT1/4	1/4	R1/4	23.0	22.0	29.8	28.9	27.8	12.0	4.6	15	10.0	12.0	7.0	3.4	8.0	26.0
L1N1/4-PT3/8	1/4	R3/8	26.0	26.0	34.6	32.9	34.1	13.0	4.6	15	14.0	12.0	9.0	3.4	8.0	44.0
L1N5/16-PT1/8	5/16	R1/8	22.8	21.0	29.8	29.1	27.9	11.0	4.6	16	12.0	14.0	5.0	4.7	15.0	30.0
L1N5/16-PT1/4	5/16	R1/4	22.8	22.0	29.8	30.1	28.9	12.0	4.6	16	12.0	14.0	7.0	4.7	15.0	32.0
L1N5/16-PT3/8	5/16	R3/8	25.8	26.0	34.4	34.1	34.1	13.0	4.6	16	14.0	14.0	9.0	4.7	15.0	48.0
L1N3/8-PT1/8	3/8	R1/8	23.7	21.0	30.6	30.8	27.9	11.0	4.6	17	12.0	17.0	5.0	5.7	15.0	35.0
L1N3/8-PT1/4	3/8	R1/4	23.7	22.0	30.6	31.8	28.9	12.0	4.6	17	12.0	17.0	7.0	5.7	19.0	50.0
L1N3/8-PT3/8	3/8	R3/8	26.7	26.0	35.2	35.8	32.9	13.0	4.6	17	12.0	17.0	7.0	5.7	19.0	50.0
L1N3/8-PT1/2	3/8	R1/2	26.7	33.0	37.5	42.8	41.1	18.0	4.6	17	14.0	17.0	10.0	5.7	22.5	84.0
L1N1/2-PT1/4	1/2	R1/4	27.8	25.0	35.9	36.0	33.1	13.5	4.6	18	14.0	19.0	7.0	8.2	32.0	50.0
L1N1/2-PT3/8	1/2	R3/8	27.8	26.0	36.3	37.0	34.1	13.0	4.6	18	14.0	19.0	9.0	8.2	32.0	53.0
L1N1/2-PT1/2	1/2	R1/2	30.8	33.0	41.6	44.0	41.1	18.0	4.6	18	14.0	19.0	10.0	8.2	32.0	76.0
L1N5/8-PT3/8	5/8	R3/8	36.7	28.0	47.1	43.6	38.4	15.0	5.1	23	18.0	27.0	9.0	9.3	48.0	107.0
L1N5/8-PT1/2	5/8	R1/2	36.7	33.0	47.5	48.6	43.4	18.0	5.1	23	18.0	27.0	12.0	9.3	53.0	117.0

●Inch size type (Group 2)

Product number	Applicable tubing outer diameter×inner diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
☆ L2N1/8-PT1/8	1/8	R1/8	20.5	18.5	26.3	23.1	24.3	11.0	4.6	21	10.0	8.0	5.0	3.0	1.5	16.0
L2N3/16-PT1/8	3/16	R1/8	20.6	18.5	26.3	24.3	24.3	11.0	4.6	15	10.0	10.0	5.0	1.4	1.5	19.0
L2N1/4-PT1/8	1/4	R1/8	20.5	18.5	26.3	25.4	24.3	11.0	4.6	15	10.0	12.0	5.0	2.2	3.5	21.0
L2N1/4-PT1/4	1/4	R1/4	23.0	22.0	28.8	28.9	27.8	12.0	4.6	15	10.0	12.0	7.0	2.2	3.5	31.0
L2N5/16-PT1/8	5/16	R1/8	22.8	21.0	29.8	29.1	27.9	11.0	4.6	16	12.0	14.0	5.0	2.9	5.0	31.0
L2N5/16-PT1/4	5/16	R1/4	22.8	22.0	29.8	30.1	28.9	12.0	4.6	16	12.0	14.0	7.0	2.9	5.0	33.0
L2N3/8-PT1/4	3/8	R1/4	23.7	22.0	30.6	31.8	28.9	12.0	4.6	17	12.0	17.0	7.0	3.5	7.5	37.0
L2N3/8-PT3/8	3/8	R3/8	26.7	26.0	35.2	35.8	32.9	13.0	4.6	17	12.0	17.0	7.0	3.5	7.5	55.0
L2N1/2-PT1/4	1/2	R1/4	27.8	25.0	35.9	36.0	33.1	13.5	4.6	18	14.0	19.0	7.0	5.2	18.0	54.0
L2N1/2-PT3/8	1/2	R3/8	27.8	26.0	36.3	37.0	34.1	13.0	4.6	18	14.0	19.0	9.0	5.2	18.0	57.0
L2N1/2-PT1/2	1/2	R1/2	30.3	33.0	41.1	44.0	43.4	18.0	4.6	18	18.0	19.0	12.0	5.2	18.0	89.0

☆L2N1/8-PT1/8 is of insertless type.

Tee



●Millimeter size type (Group 4)

Product number	Applicable tubing outer diameter×inner diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
T4N4×2-PT1/8	4×2	R1/8	20.5	18.5	24.3	40.9	24.3	11.0	4.7	15	10.0	10.0	5.0	0.9	0.5	25.0
T4N4×2.5-PT1/8	4×2.5	R1/8	20.5	18.5	24.3	40.9	24.3	11.0	4.7	15	10.0	10.0	5.0	1.3	1.5	25.0
* T4N4×3-PT1/8	4×3	R1/8	20.5	18.5	24.3	40.9	24.3	11.0	4.7	15	10.0	10.0	5.0	2.0	2.5	25.0
T4N6×4-PT1/8	6×4	R1/8	20.5	18.5	25.4	41.0	24.3	11.0	4.6	15	10.0	12.0	5.0	2.7	4.5	30.0
T4N6×4-PT1/4	6×4	R1/4	23.0	22.0	28.9	46.0	28.9	12.0	4.6	15	12.0	12.0	7.0	2.7	4.5	43.0
T4N6×4.5-PT1/8	6×4.5	R1/8	20.5	18.5	25.4	41.0	24.3	11.0	4.6	15	10.0	12.0	5.0	3.2	7.0	31.0
T4N6×4.5-PT1/4	6×4.5	R1/4	23.0	22.0	28.9	46.0	28.9	12.0	4.6	15	12.0	12.0	7.0	3.2	7.0	43.0
T4N8×5-PT1/8	8×5	R1/8	22.9	21.0	29.1	45.8	27.9	11.0	4.6	16	12.0	14.0	5.0	3.7	9.0	43.0
T4N8×5-PT1/4	8×5	R1/4	22.9	22.0	30.1	45.8	28.9	12.0	4.6	16	12.0	14.0	7.0	3.7	9.0	45.0
T4N8×6-PT1/8	8×6	R1/8	22.9	21.0	29.1	45.8	27.9	11.0	4.6	16	12.0	14.0	5.0	4.7	14.0	42.0
T4N8×6-PT1/4	8×6	R1/4	22.9	22.0	30.1	45.8	28.9	12.0	4.6	16	12.0	14.0	7.0	4.7	15.0	44.0
T4N8×6-PT3/8	8×6	R3/8	22.9	26.0	34.1	45.8	34.1	13.0	4.6	16	14.0	14.0	9.0	4.7	15.0	58.0
T4N10×6.5-PT1/4	10×6.5	R1/4	27.1	25.0	34.8	54.2	33.1	12.0	4.2	17	14.0	17.0	7.0	5.2	18.0	73.0
T4N10×6.5-PT3/8	10×6.5	R3/8	28.1	26.0	35.8	56.2	34.1	13.0	4.2	17	14.0	17.0	9.0	5.2	18.0	78.0
T4N10×7.5-PT1/4	10×7.5	R1/4	27.1	25.0	34.8	54.2	33.1	12.0	4.2	17	14.0	17.0	7.0	6.2	24.0	70.0
T4N10×7.5-PT3/8	10×7.5	R3/8	27.1	26.0	35.8	54.2	34.1	13.0	4.2	17	14.0	17.0	9.0	6.2	26.0	76.0
T4N10×7.5-PT1/2	10×7.5	R1/2	27.1	33.0	42.8	54.2	43.4	18.0	4.2	17	18.0	17.0	12.0	6.2	26.0	110.0
T4N10×8-PT1/4	10×8	R1/4	27.1	25.0	34.8	54.2	33.1	12.0	4.2	17	14.0	17.0	7.0	6.7	25.0	69.0
T4N10×8-PT3/8	10×8	R3/8	27.1	26.0	35.8	54.2	34.1	13.0	4.2	17	14.0	17.0	9.0	6.7	25.0	75.0
T4N10×8-PT1/2	10×8	R1/2	27.1	33.0	42.8	54.2	43.4	18.0	4.2	17	18.0	17.0	12.0	6.7	30.0	109.0
T4N12×8-PT3/8	12×8	R3/8	27.6	25.0	36.0	55.3	33.1	13.0	4.8	18	14.0	19.0	9.0	6.6	25.0	82.0
T4N12×8-PT1/2	12×8	R1/2	30.6	33.0	44.0	61.3	43.4	18.0	4.8	18	18.0	19.0	12.0	6.6	30.0	128.0
T4N12×9-PT1/4	12×9	R1/4	27.6	25.0	36.0	55.3	33.1	12.0	4.8	18	14.0	19.0	7.0	7.6	33.0	75.0
T4N12×9-PT3/8	12×9	R3/8	27.6	26.0	37.0	55.3	34.1	13.0	4.8	18	14.0	19.0	9.0	7.6	33.0	82.0
T4N12×9-PT1/2	12×9	R1/2	30.6	33.0	44.0	61.3	43.4	18.0	4.8	18	18.0	19.0	12.0	7.6	33.0	128.0
T4N16×13-PT1/2	16×13	R1/2	36.7	33.0	48.6	73.4	43.4	18.0	5.1	23	18.0	27.0	12.0	11.0	72.0	165.0

*Made to order

●Inch size type (Group 1)

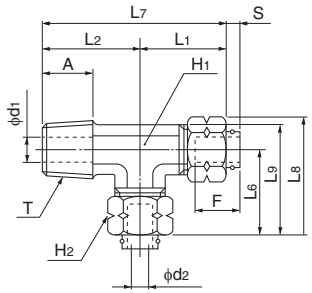
Product number	Applicable tubing outer diameter×inner diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
T1N1/8-PT1/8	1/8	R1/8	20.5	18.5	23.1	41.1	24.3	11.0	4.6	15	10.0	8.0	5.0	1.4	1.5	21.0
T1N3/16-PT1/8	3/16	R1/8	20.6	18.5	24.3	41.1	24.3	11.0	4.6	15	10.0	10.0	5.0	2.4	4.0	26.0
T1N1/4-PT1/8	1/4	R1/8	20.5	18.5	25.4	41.1	24.3	11.0	4.6	15	10.0	12.0	5.0	3.4	8.0	29.0
T1N1/4-PT1/4	1/4	R1/4	23.0	22.0	28.9	46.1	28.9	12.0	4.6	15	12.0	12.0	7.0	3.4	8.0	42.0
T1N5/16-PT1/8	5/16	R1/8	22.8	21.0	29.1	45.7	27.9	11.0	4.6	16	12.0	14.0	5.0	4.7	15.0	42.0
T1N5/16-PT1/4	5/16	R1/4	22.8	22.0	30.1	45.7	28.9	12.0	4.6	16	12.0	14.0	7.0	4.7	15.0	45.0
T1N5/16-PT3/8	5/16	R3/8	25.8	26.0	34.1	51.7	34.1	13.0	4.6	16	14.0	14.0	9.0	4.7	15.0	66.0
T1N3/8-PT1/4	3/8	R1/4	23.7	22.0	31.8	47.4	28.9	12.0	4.6	17	12.0	17.0	7.0	5.7	19.0	55.0
T1N3/8-PT3/8	3/8	R3/8	26.7	26.0	35.8	53.4	34.1	13.0	4.6	17	14.0	17.0	9.0	5.7	19.0	77.0
T1N3/8-PT1/2	3/8	R1/2	29.7	33.0	42.8	59.4	43.4	18.0	4.6	17	18.0	17.0	12.0	5.7	22.5	122.0
T1N1/2-PT3/8	1/2	R3/8	27.8	26.0	37.0	55.6	34.1	13.0	4.6	18	14.0	19.0	9.0	8.2	32.0	79.0
T1N1/2-PT1/2	1/2	R1/2	30.8	33.0	44.0	61.6	43.4	18.0	4.6	18	18.0	19.0	12.0	8.2	32.0	119.0
T1N5/8-PT3/8	5/8	R3/8	36.7	28.0	43.6	73.3	38.4	13.0	5.1	23	18.0	27.0	9.0	9.3	48.0	130.0
T1N5/8-PT1/2	5/8	R1/2	36.7	33.0	48.6	73.3	43.4	18.0	5.1	23	18.0	27.0	12.0	9.3	53.0	172.0

●Inch size type (Group 2)

Product number	Applicable tubing outer diameter×inner diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
☆ T2N1/8-PT1/8	1/8	R1/8	20.5	18.5	23.1	41.1	24.3	11.0	4.6	21	10.0	8.0	5.0	3.0	1.5	20.5
T2N3/16-PT1/8	3/16	R1/8	20.6	18.5	24.3	41.1	24.3	11.0	4.6	15	10.0	10.0	5.0	1.4	1.5	25.0
T2N1/4-PT1/8	1/4	R1/8	20.5	18.5	25.4	41.1	24.3	11.0	4.6	15	10.0	12.0	5.0	2.2	3.5	30.0
T2N1/4-PT1/4	1/4	R1/4	23.0	22.0	28.9	46.1	28.9	12.0	4.6	15	12.0	12.0	7.0	2.2	3.5	43.0
T2N5/16-PT1/8	5/16	R1/8	22.8	21.0	29.1	45.7	27.9	11.0	4.6	16	12.0	14.0	5.0	2.9	5.0	45.0
T2N5/16-PT1/4	5/16	R1/4	22.8	22.0	30.1	45.7	28.9	12.0	4.6	16	12.0	14.0	7.0	2.9	5.0	43.0
T2N3/8-PT1/4	3/8	R1/4	23.7	22.0	31.8	47.4	28.9	12.0	4.6	17	12.0	17.0	7.0	3.5	7.5	57.0
T2N3/8-PT3/8	3/8	R3/8	26.7	26.0	35.8	53.4	34.1	13.0	4.6	17	14.0	17.0	9.0	3.5	7.5	78.0
T2N1/2-PT3/8	1/2	R3/8	27.8	26.0	37.0	55.6	34.1	13.0	4.6	18	14.0	19.0	9.0	5.2	18.0	80.0

☆C2N1/8-PT1/8 is of insertless type.

Service tee



●Millimeter size type (Group 4)

	Product number	Applicable tubing outer diameter×inner diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L6 (mm)	L7 (mm)	L8 (mm)	L9 (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
	ST4N4×2-PT1/8	4×2	R1/8	20.5	18.5	20.5	39.0	26.2	26.2	11.0	4.7	15	10.0	10.0	5.0	0.9	0.5	26.0
	ST4N4×2.5-PT1/8	4×2.5	R1/8	20.5	18.5	20.5	39.0	26.2	26.2	11.0	4.7	15	10.0	10.0	5.0	1.3	1.5	26.0
*	ST4N4×3-PT1/8	4×3	R1/8	20.5	18.5	20.5	39.0	26.2	26.2	11.0	4.7	15	10.0	10.0	5.0	2.0	2.5	26.0
	ST4N6×4-PT1/8	6×4	R1/8	20.5	18.5	20.5	39.0	27.4	26.3	11.0	4.6	15	10.0	12.0	5.0	2.7	4.5	41.0
	ST4N6×4-PT1/4	6×4	R1/4	23.0	22.0	23.0	45.0	29.9	29.9	12.0	4.6	15	12.0	12.0	7.0	2.7	4.5	30.0
	ST4N6×4.5-PT1/8	6×4.5	R1/8	20.5	18.5	20.5	39.0	27.4	26.3	11.0	4.6	15	10.0	12.0	5.0	3.2	7.0	41.0
	ST4N6×4.5-PT1/4	6×4.5	R1/4	23.0	22.0	23.0	45.0	29.9	29.9	12.0	4.6	15	12.0	12.0	7.0	3.2	7.0	43.0
	ST4N8×5-PT1/8	8×5	R1/8	22.9	21.0	22.9	43.9	31.0	29.8	11.0	4.6	16	12.0	14.0	5.0	3.7	9.0	43.0
	ST4N8×5-PT1/4	8×5	R1/4	22.9	22.0	22.9	44.9	31.0	29.8	12.0	4.6	16	12.0	14.0	7.0	3.7	9.0	43.0
	ST4N8×6-PT1/8	8×6	R1/8	22.9	21.0	22.9	43.9	31.0	29.8	11.0	4.6	16	12.0	14.0	5.0	4.7	14.0	45.0
	ST4N8×6-PT1/4	8×6	R1/4	22.9	22.0	22.9	44.9	31.0	29.8	12.0	4.6	16	12.0	14.0	7.0	4.7	15.0	46.0
	ST4N8×6-PT3/8	8×6	R3/8	22.9	26.0	22.9	48.9	31.0	31.0	13.0	4.6	16	14.0	14.0	9.0	4.7	15.0	60.0
	ST4N10×6.5-PT1/4	10×6.5	R1/4	27.1	25.0	27.1	52.1	36.9	35.2	12.0	4.2	17	14.0	17.0	7.0	5.2	18.0	72.0
*	ST4N10×6.5-PT3/8	10×6.5	R3/8	27.1	26.0	27.1	53.1	36.9	35.2	13.0	4.2	17	14.0	17.0	9.0	5.2	18.0	70.0
	ST4N10×7.5-PT1/4	10×7.5	R1/4	27.1	25.0	27.1	52.1	36.9	35.2	12.0	4.2	17	14.0	17.0	7.0	6.2	24.0	70.0
	ST4N10×7.5-PT3/8	10×7.5	R3/8	27.1	26.0	27.1	53.1	36.9	35.2	13.0	4.2	17	14.0	17.0	9.0	6.2	26.0	76.0
*	ST4N10×7.5-PT1/2	10×7.5	R1/2	27.1	35.5	27.1	62.6	36.9	37.5	18.0	4.2	17	18.0	17.0	12.0	6.2	26.0	74.0
	ST4N10×8-PT1/4	10×8	R1/4	27.1	25.0	27.1	52.1	36.9	35.2	12.0	4.2	17	14.0	17.0	7.0	6.7	25.0	76.0
	ST4N10×8-PT3/8	10×8	R3/8	27.1	26.0	27.1	53.1	36.9	35.2	13.0	4.2	17	14.0	17.0	9.0	6.7	25.0	113.0
	ST4N10×8-PT1/2	10×8	R1/2	27.1	35.5	27.1	62.6	36.9	37.5	18.0	4.2	17	18.0	17.0	12.0	6.7	30.0	125.0
	ST4N12×8-PT3/8	12×8	R3/8	27.6	26.0	27.6	53.6	38.6	35.7	13.0	4.8	18	14.0	19.0	9.0	6.6	25.0	81.0
*	ST4N12×8-PT1/2	12×8	R1/2	30.1	35.5	30.1	65.6	41.1	40.5	18.0	4.8	18	18.0	19.0	12.0	6.6	30.0	82.0
	ST4N12×9-PT3/8	12×9	R3/8	27.6	26.0	27.6	53.6	38.6	35.7	13.0	4.8	18	14.0	19.0	9.0	7.6	33.0	130.0
	ST4N12×9-PT1/2	12×9	R1/2	30.1	35.5	30.1	65.6	41.1	40.5	18.0	4.8	18	18.0	19.0	12.0	7.6	33.0	128.0

*Made to order

●Inch size type (Group 1)

	Product number	Applicable tubing outer diameter×inner diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L6 (mm)	L7 (mm)	L8 (mm)	L9 (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
	ST1N1/8-PT1/8	1/8	R1/8	20.5	18.5	20.5	39.0	25.2	26.3	11.0	4.6	15	10.0	8.0	5.0	1.4	1.5	22.0
	ST1N3/16-PT1/8	3/16	R1/8	20.6	18.5	20.6	39.1	26.3	26.3	11.0	4.6	15	10.0	10.0	5.0	2.4	4.0	25.0
*	ST1N3/16-PT1/4	3/16	R1/4	23.1	22.0	23.1	45.1	28.8	30.0	12.0	4.6	15	12.0	10.0	7.0	2.4	4.0	37.0
	ST1N1/4-PT1/8	1/4	R1/8	20.5	18.5	20.5	39.0	27.5	26.3	11.0	4.6	15	10.0	12.0	5.0	3.4	8.0	29.0
	ST1N1/4-PT1/4	1/4	R1/4	23.0	22.0	23.0	45.0	30.0	30.0	12.0	4.6	15	12.0	12.0	7.0	3.4	8.0	41.0
	ST1N5/16-PT1/8	5/16	R1/8	22.8	21.0	22.8	43.8	30.9	29.8	11.0	4.6	16	12.0	14.0	5.0	4.7	15.0	44.0
	ST1N5/16-PT1/4	5/16	R1/4	22.8	22.0	22.8	44.8	30.9	29.8	12.0	4.6	16	12.0	14.0	7.0	4.7	15.0	45.0
	ST1N3/8-PT1/4	3/8	R1/4	23.7	22.0	23.7	45.7	33.5	30.6	12.0	4.6	17	12.0	17.0	7.0	5.7	19.0	56.0
	ST1N3/8-PT3/8	3/8	R3/8	26.7	26.0	26.7	52.7	36.5	34.8	13.0	4.6	17	14.0	17.0	9.0	5.7	19.0	77.0
	ST1N3/8-PT1/2	3/8	R1/2	29.2	35.5	29.2	64.7	39.0	39.6	18.0	4.6	17	18.0	17.0	12.0	5.7	22.5	124.0
	ST1N1/2-PT3/8	1/2	R3/8	27.8	26.0	27.8	53.8	38.8	35.9	13.0	4.6	18	14.0	19.0	9.0	8.2	32.0	81.0
	ST1N1/2-PT1/2	1/2	R1/2	30.3	35.5	30.3	65.8	41.3	40.7	18.0	4.6	18	18.0	19.0	12.0	8.2	32.0	122.0
	ST1N5/8-PT1/2	5/8	R1/2	36.7	35.5	34.2	72.2	49.8	44.6	18.0	5.1	23	18.0	27.0	12.0	9.3	53.0	179.0

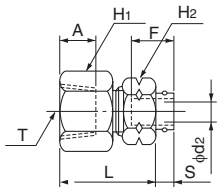
*Made to order

●Inch size type (Group 2)

	Product number	Applicable tubing outer diameter×inner diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L6 (mm)	L7 (mm)	L8 (mm)	L9 (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
☆	ST2N1/8-PT1/8	1/8	R1/8	20.5	18.5	20.5	39.0	25.2	26.3	11.0	4.6	21	10.0	8.0	5.0	3.0	1.5	21.0
	ST2N3/16-PT1/8	3/16	R1/8	20.6	18.5	20.6	39.1	26.3	26.3	11.0	4.6	15	10.0	10.0	5.0	1.4	1.5	25.0
	ST2N1/4-PT1/8	1/4	R1/8	20.5	18.5	20.5	39.0	27.5	26.3	11.0	4.6	15	10.0	12.0	5.0	2.2	3.5	30.0
	ST2N1/4-PT1/4	1/4	R1/4	23.0	22.0	23.0	45.0	30.0	30.0	12.0	4.6	15	12.0	12.0	7.0	2.2	3.5	43.0
	ST2N5/16-PT1/8	5/16	R1/8	22.8	21.0	22.8	43.8	30.9	29.8	11.0	4.6	16	12.0	14.0	5.0	2.9	5.0	45.0
	ST2N5/16-PT1/4	5/16	R1/4	22.8	22.0	22.8	44.8	30.9	29.8	12.0	4.6	16	12.0	14.0	7.0	2.9	5.0	47.0
*	ST2N3/8-PT1/4	3/8	R1/4	23.7	22.0	23.7	45.7	33.5	30.6	12.0	4.6	17	12.0	17.0	7.0	3.5	7.5	58.0
	ST2N3/8-PT3/8	3/8	R3/8	26.7	26.0	26.7	52.7	36.5	34.8	13.0	4.6	17	14.0	17.0	9.0	3.5	7.5	77.0
	ST2N1/2-PT3/8	1/2	R3/8	27.8	26.0	27.8	53.8	38.8	35.9	13.0	4.6	18	14.0	19.0	9.0	5.2	18.0	78.0

☆C2N1/8-PT1/8 is of insertless type.
*Made to order

Internal connector



●Millimeter size type (Group 4)

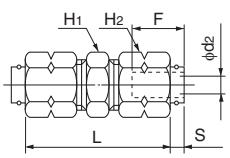
	Product number	Applicable tubing outer diameter×inner diameter (mm)	T Thread size (RC)	L (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
	FC4N4×2-PT1/8	4×2	RC1/8	25.0	8.7	4.7	15	14.0	10.0	0.9	0.5	18.0
*	FC4N4×3-PT1/8	4×3	RC1/8	25.0	8.7	4.7	15	14.0	10.0	2.0	3.0	18.0
	FC4N6×4-PT1/8	6×4	RC1/8	25.0	8.7	4.6	15	14.0	12.0	2.7	5.0	20.0
	FC4N6×4-PT1/4	6×4	RC1/4	29.0	13.0	4.6	15	17.0	12.0	2.7	5.0	29.0
	FC4N6×4-PT3/8	6×4	RC3/8	30.0	13.5	4.6	15	22.0	12.0	2.7	5.0	43.0
	FC4N6×4.5-PT1/8	6×4.5	RC1/8	25.0	8.7	4.6	15	14.0	12.0	3.2	7.5	20.0
	FC4N6×4.5-PT1/4	6×4.5	RC1/4	29.0	13.0	4.6	15	17.0	12.0	3.2	7.5	29.0
	FC4N8×6-PT1/8	8×6	RC1/8	24.9	8.7	4.6	16	14.0	14.0	4.7	16.0	22.0
	FC4N8×6-PT1/4	8×6	RC1/4	28.9	13.0	4.6	16	17.0	14.0	4.7	16.0	31.0
	FC4N8×6-PT3/8	8×6	RC3/8	29.9	13.5	4.6	16	22.0	14.0	4.7	16.0	48.0
	FC4N10×7.5-PT1/4	10×7.5	RC1/4	30.1	13.0	4.2	17	17.0	17.0	6.2	30.0	35.0
	FC4N10×7.5-PT3/8	10×7.5	RC3/8	31.1	13.5	4.2	17	22.0	17.0	6.2	30.0	51.0
*	FC4N10×7.5-PT1/2	10×7.5	RC1/2	35.1	17.5	4.2	17	24.0	17.0	6.2	30.0	59.0
	FC4N10×8-PT1/4	10×8	RC1/4	30.1	13.0	4.2	17	17.0	17.0	6.7	32.0	35.0
	FC4N10×8-PT3/8	10×8	RC3/8	31.1	13.5	4.2	17	22.0	17.0	6.7	32.0	51.0
	FC4N10×8-PT1/2	10×8	RC1/2	35.1	17.5	4.2	17	24.0	17.0	6.7	32.0	58.0
	FC4N12×9-PT3/8	12×9	RC3/8	31.6	13.5	4.8	18	22.0	19.0	7.6	40.0	55.0
	FC4N12×9-PT1/2	12×9	RC1/2	35.6	17.5	4.8	18	24.0	19.0	7.6	40.0	62.0

*Made to order

●Inch size type (Group 1)

Product number	Applicable tubing outer diameter (inch)	T Thread size (RC)	L (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
FC1N3/16-PT1/8	3/16	RC1/8	25.1	8.7	4.6	15	14.0	10.0	2.4	4.0	17.0
FC1N1/4-PT1/8	1/4	RC1/8	25.0	8.7	4.6	15	14.0	12.0	3.4	8.5	19.0
FC1N1/4-PT1/4	1/4	RC1/4	29.0	13.0	4.6	15	17.0	12.0	3.4	8.5	29.0
FC1N5/16-PT1/8	5/16	RC1/8	24.8	8.7	4.6	16	14.0	14.0	4.7	16.0	22.0
FC1N5/16-PT1/4	5/16	RC1/4	28.8	13.0	4.6	16	17.0	14.0	4.7	16.0	30.0
FC1N5/16-PT3/8	5/16	RC3/8	29.8	13.5	4.6	16	22.0	14.0	4.7	16.0	45.0
FC1N3/8-PT1/4	3/8	RC1/4	29.7	13.0	4.6	17	17.0	17.0	5.7	22.5	35.0
FC1N3/8-PT3/8	3/8	RC3/8	30.7	13.5	4.6	17	22.0	17.0	5.7	22.5	52.0
FC1N3/8-PT1/2	3/8	RC1/2	34.7	17.5	4.6	17	24.0	17.0	5.7	22.5	60.0
FC1N1/2-PT3/8	1/2	RC3/8	31.8	13.5	4.6	18	22.0	19.0	8.2	45.0	54.0
FC1N1/2-PT1/2	1/2	RC1/2	35.8	17.5	4.6	18	24.0	19.0	8.2	45.0	61.0

Union connector



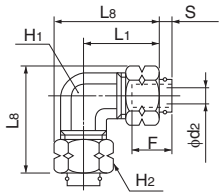
●Millimeter size type (Group 4)

Product number	Applicable tubing outer diameter×inner diameter (mm)	L (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
UC4N4×2	4×2	32.9	4.7	15	10.0	10.0	0.9	0.5	16.0
UC4N4×2.5	4×2.5	32.9	4.7	15	10.0	10.0	1.3	1.5	16.0
UC4N4×3	4×3	32.9	4.7	15	10.0	10.0	2.0	3.0	16.0
UC4N6×4	6×4	33.0	4.6	15	10.0	12.0	2.7	5.0	20.0
UC4N6×4.5	6×4.5	33.0	4.6	15	10.0	12.0	3.2	7.5	20.0
UC4N8×5	8×5	32.8	4.6	16	12.0	14.0	3.7	10.0	28.0
UC4N8×6	8×6	32.8	4.6	16	12.0	14.0	4.7	16.0	25.0
UC4N10×6.5	10×6.5	36.2	4.2	17	17.0	17.0	5.2	20.5	44.0
UC4N10×7.5	10×7.5	36.2	4.2	17	17.0	17.0	6.2	30.0	45.0
UC4N10×8	10×8	36.2	4.2	17	17.0	17.0	6.7	32.0	44.0
UC4N12×8	12×8	37.3	4.8	18	17.0	19.0	6.6	32.0	49.0
UC4N12×9	12×9	37.3	4.8	18	17.0	19.0	7.6	40.0	51.0

●Inch size type (Group 1)

Product number	Applicable tubing outer diameter (inch)	L (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
UC1N1/8	1/8	33.1	4.6	15	10.0	8.0	1.4	1.5	13.0
UC1N3/16	3/16	33.1	4.6	15	10.0	10.0	2.4	4.0	16.0
UC1N1/4	1/4	33.1	4.6	15	10.0	12.0	3.4	8.5	20.0
UC1N5/16	5/16	32.7	4.6	16	12.0	14.0	4.7	16.0	25.0
UC1N3/8	3/8	35.4	4.6	17	14.0	17.0	5.7	22.5	40.0
UC1N1/2	1/2	37.6	4.6	18	17.0	19.0	8.2	45.0	47.0

90 degree union elbow



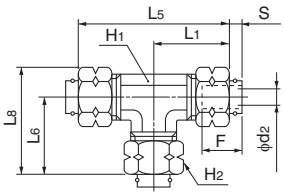
●Millimeter size type (Group 4)

Product number	Applicable tubing outer diameter×inner diameter (mm)	L1 (mm)	L8 (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
UL4N4×2	4×2	20.5	26.2	4.7	15	10.0	10.0	0.9	0.6	20.0
UL4N4×2.5	4×2.5	20.5	26.2	4.7	15	10.0	10.0	1.3	1.0	20.0
UL4N4×3	4×3	20.5	26.2	4.7	15	10.0	10.0	2.0	2.0	20.0
UL4N6×4	6×4	20.5	27.4	4.6	15	10.0	12.0	2.7	4.0	25.0
UL4N6×4.5	6×4.5	20.5	27.4	4.6	15	10.0	12.0	3.2	5.5	25.0
UL4N8×5	8×5	22.9	31.0	4.6	16	12.0	14.0	3.7	7.5	37.0
UL4N8×6	8×6	22.9	31.0	4.6	16	12.0	14.0	4.7	12.5	36.0
UL4N10×6.5	10×6.5	27.1	36.9	4.2	17	14.0	17.0	5.2	15.5	59.0
UL4N10×7.5	10×7.5	27.1	36.9	4.2	17	14.0	17.0	6.2	22.0	56.0
UL4N10×8	10×8	27.1	36.9	4.2	17	14.0	17.0	6.7	25.0	57.0
UL4N12×8	12×8	27.6	38.6	4.8	18	14.0	19.0	6.6	25.0	63.0
UL4N12×9	12×9	27.6	38.6	4.8	18	14.0	19.0	7.6	25.0	60.0

●Inch size type (Group 1)

Product number	Applicable tubing outer diameter (inch)	L1 (mm)	L8 (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
UL1N1/8	1/8	20.5	26.3	4.6	15	10.0	8.0	1.4	1.0	17.0
UL1N3/16	3/16	20.6	26.3	4.6	15	10.0	10.0	2.4	3.0	20.0
UL1N1/4	1/4	20.5	27.5	4.6	15	10.0	12.0	3.4	6.5	25.0
UL1N5/16	5/16	22.8	30.9	4.6	16	12.0	14.0	4.7	12.5	37.0
UL1N3/8	3/8	23.7	33.5	4.6	17	12.0	17.0	5.7	18.5	47.0
UL1N1/2	1/2	27.8	38.8	4.6	18	14.0	19.0	8.2	30.0	58.0

Union tee



●Millimeter size type (Group 4)

Product number	Applicable tubing outer diameter×inner diameter (mm)	L1 (mm)	L5 (mm)	L6 (mm)	L8 (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
UT4N4×2	4×2	20.5	40.9	20.5	26.2	4.7	15	10.0	10.0	0.9	0.6	27.0
UT4N4×2.5	4×2.5	20.5	40.9	20.5	26.2	4.7	15	10.0	10.0	1.3	1.0	28.0
UT4N4×3	4×3	20.5	40.9	20.5	26.2	4.7	15	10.0	10.0	2.0	2.0	26.0
UT4N6×4	6×4	20.5	41.0	20.5	27.4	4.6	15	10.0	12.0	2.7	4.0	35.0
UT4N6×4.5	6×4.5	20.5	41.0	20.5	27.4	4.6	15	10.0	12.0	3.2	5.5	35.0
UT4N8×5	8×5	22.9	45.8	22.9	31.0	4.6	16	12.0	14.0	3.7	7.5	49.0
UT4N8×6	8×6	22.9	45.8	22.9	31.0	4.6	16	12.0	14.0	4.7	12.5	48.0
UT4N10×6.5	10×6.5	27.1	54.2	27.1	36.9	4.2	17	14.0	17.0	5.2	15.5	82.0
UT4N10×7.5	10×7.5	27.1	54.2	27.1	36.9	4.2	17	14.0	17.0	6.2	22.0	80.0
UT4N10×8	10×8	27.1	54.2	27.1	36.9	4.2	17	14.0	17.0	6.7	25.0	77.0
UT4N12×8	12×8	27.6	55.3	28.6	39.6	4.8	18	14.0	19.0	6.6	25.0	90.0
UT4N12×9	12×9	27.6	55.3	28.6	39.6	4.8	18	14.0	19.0	7.6	25.0	85.0

●Inch size type (Group 1)

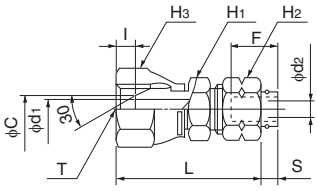
Product number	Applicable tubing outer diameter (inch)	L1 (mm)	L5 (mm)	L6 (mm)	L8 (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
UT1N1/8	1/8	20.5	41.1	20.5	26.3	4.6	15	10.0	8.0	1.4	1.0	22.0
UT1N3/16	3/16	20.6	41.1	20.6	26.3	4.6	15	10.0	10.0	2.4	3.0	28.0
UT1N1/4	1/4	20.5	41.1	20.5	27.5	4.6	15	10.0	12.0	3.4	6.5	34.0
UT1N5/16	5/16	22.8	45.7	22.8	30.9	4.6	16	12.0	14.0	4.7	12.5	49.0
UT1N3/8	3/8	23.7	47.4	23.7	33.5	4.6	17	12.0	17.0	5.7	18.5	64.0
UT1N1/2	1/2	27.8	55.6	27.8	38.8	4.6	18	14.0	19.0	8.2	30.0	84.0
UT1N5/8	5/8	36.7	73.3	35.5	51.1	5.1	23	18.0	27.0	9.3	45.0	189.0

●Inch size type (Group 2)

Product number	Applicable tubing outer diameter (inch)	L1 (mm)	L5 (mm)	L6 (mm)	L8 (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
☆UT2N1/8	1/8	20.5	41.1	20.5	26.3	4.6	21	10.0	8.0	3.0	1.0	21.0
UT2N3/16	3/16	20.6	41.1	20.6	26.3	4.6	15	10.0	10.0	1.4	1.0	27.0
UT2N1/4	1/4	20.5	41.1	20.5	27.5	4.6	15	10.0	12.0	2.2	2.5	34.0
UT2N5/16	5/16	22.8	45.7	22.8	30.9	4.6	16	12.0	14.0	2.9	4.5	52.0
UT2N3/8	3/8	23.7	47.4	23.7	33.5	4.6	17	12.0	17.0	3.5	7.0	67.0
UT2N1/2	1/2	27.8	55.6	27.8	38.8	4.6	18	14.0	19.0	5.2	16.0	92.0

☆UT2N1/8 is of insertless type.

Swivel nut internal connector



●Millimeter size type (Group 4)

Product number	Applicable tubing outer diameter×inner diameter (mm)	T Thread size (G)	L (mm)	S (mm)	I (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	H3 Width across flat (mm)	C (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
SC4N4×2-PF1/8	4×2	G1/8	33.0	4.7	4.0	15	12.0	10.0	14.0	5.0	2.8	0.9	1.0	24.0
SC4N6×4-PF1/8	6×4	G1/8	33.0	4.6	4.0	15	12.0	12.0	14.0	5.0	2.7	2.7	5.0	26.0
SC4N6×4-PF1/4	6×4	G1/4	34.7	4.6	5.7	15	17.0	12.0	19.0	7.0	5.0	2.7	5.5	44.0
* SC4N6×4.5-PF1/8	6×4.5	G1/8	33.0	4.6	4.0	15	12.0	12.0	14.0	5.0	3.2	3.2	6.5	26.0
SC4N6×4.5-PF1/4	6×4.5	G1/4	34.7	4.6	5.7	15	17.0	12.0	19.0	7.0	5.0	3.2	7.5	44.0
SC4N8×6-PF1/4	8×6	G1/4	34.6	4.6	5.7	16	17.0	14.0	19.0	7.0	5.0	4.7	17.0	46.0
SC4N10×7.5-PF1/4	10×7.5	G1/4	38.8	4.2	5.7	17	17.0	17.0	19.0	7.0	5.0	6.2	19.0	56.0
SC4N10×7.5-PF3/8	10×7.5	G3/8	40.9	4.2	6.8	17	19.0	17.0	22.0	10.0	6.2	6.2	19.0	71.0
SC4N10×8-PF1/4	10×8	G1/4	38.8	4.2	5.7	17	17.0	17.0	19.0	7.0	5.0	6.7	19.0	56.0
SC4N10×8-PF3/8	10×8	G3/8	40.9	4.2	6.8	17	19.0	17.0	22.0	10.0	6.7	6.7	34.0	71.0
SC4N12×9-PF3/8	12×9	G3/8	41.4	4.8	6.8	18	19.0	19.0	22.0	10.0	7.6	7.6	44.5	54.0
SC4N12×9-PF1/2	12×9	G1/2	46.1	4.8	9.5	18	22.0	19.0	27.0	14.0	10.0	7.6	44.5	116.0

*Made to order

●Inch size type (Group 1)

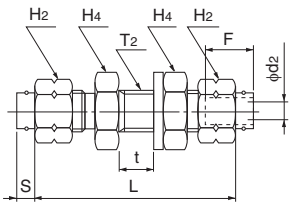
Product number	Applicable tubing outer diameter (inch)	T Thread size (G)	L (mm)	S (mm)	I (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	H3 Width across flat (mm)	C (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
* SC1N1/8-PF1/8	1/8	G1/8	33.0	4.6	4.0	15	12.0	8.0	14.0	5.0	1.4	1.4	1.5	22.0
* SC1N3/16-PF1/8	3/16	G1/8	33.1	4.6	4.0	15	12.0	10.0	14.0	5.0	2.4	2.4	4.0	24.0
SC1N1/4-PF1/8	1/4	G1/8	33.0	4.6	4.0	15	12.0	12.0	14.0	5.0	3.4	3.4	6.5	25.0
SC1N1/4-PF1/4	1/4	G1/4	34.7	4.6	5.7	15	17.0	12.0	19.0	7.0	5.0	3.4	8.5	44.0
SC1N5/16-PF1/4	5/16	G1/4	34.5	4.6	5.7	16	17.0	14.0	19.0	7.0	5.0	4.7	16.5	45.0
SC1N3/8-PF1/4	3/8	G1/4	38.4	4.6	5.7	17	17.0	17.0	19.0	7.0	5.7	5.7	24.0	55.0
SC1N3/8-PF3/8	3/8	G3/8	40.5	4.6	6.8	17	19.0	17.0	22.0	10.0	5.7	5.7	24.0	72.0
SC1N1/2-PF3/8	1/2	G3/8	41.6	4.6	6.8	18	19.0	19.0	22.0	10.0	8.2	8.2	47.0	70.0
SC1N1/2-PF1/2	1/2	G1/2	46.3	4.6	9.5	18	22.0	19.0	27.0	14.0	10.0	8.2	49.0	104.0
* SC1N5/8-PF1/2	5/8	G1/2	52.2	5.1	9.5	23	23.0	27.0	27.0	14.0	10.0	9.3	63.0	145.0

*Made to order

●Inch size type (Group 2)

Product number	Applicable tubing outer diameter (inch)	T Thread size (G)	L (mm)	S (mm)	I (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	H3 Width across flat (mm)	C (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
SC2N1/4-PF1/8	1/4	G1/8	33.0	4.6	4.0	15	12.0	12.0	14.0	5.0	2.2	2.2	3.5	25.5
SC2N1/4-PF1/4	1/4	G1/4	34.7	4.6	5.7	15	17.0	12.0	19.0	7.0	5.0	2.2	3.5	44.0
SC2N5/16-PF1/4	5/16	G1/4	34.5	4.6	5.7	16	17.0	14.0	19.0	7.0	5.0	2.9	6.0	45.0
SC2N3/8-PF3/8	3/8	G3/8	40.5	4.6	6.8	17	19.0	17.0	22.0	10.0	5.7	3.5	7.0	72.0
SC2N1/2-PF3/8	1/2	G3/8	41.6	4.6	6.8	18	19.0	19.0	22.0	10.0	5.7	5.2	20.5	70.0

Panel touch connector



●Millimeter size type (Group 4)

Product number	Applicable tubing outer diameter×inner diameter (mm)	L (mm)	S (mm)	F Tubing insertion length (mm)	t Max. panel thickness (mm)	H2 Width across flat (mm)	H4 Width across flat (mm)	d2 Min. inner diameter (mm)	T2 Recommended panel hole diameter (mm)	Washer outer diameter (mm)	Washer thickness (mm)	Effective sectional area (mm²)	Weight (g)
UCT4N4×2	4×2	41.5	4.7	15	8.0	10.0	12.0	0.9	9	15	1.6	0.7	25.0
* UCT4N4×3	4×3	41.5	4.7	15	8.0	10.0	12.0	2.0	9	15	1.6	3.0	25.0
UCT4N6×4	6×4	42.0	4.6	15	8.4	12.0	14.0	2.7	11	18	1.6	5.0	33.0
UCT4N6×4.5	6×4.5	42.0	4.6	15	8.4	12.0	14.0	3.2	11	18	1.6	7.5	33.0
UCT4N8×6	8×6	43.3	4.6	16	8.4	14.0	17.0	4.7	13	20	2.0	16.0	48.0
UCT4N10×7.5	10×7.5	45.7	4.2	17	8.1	17.0	19.0	6.2	16	24	2.5	30.0	67.0
UCT4N10×8	10×8	45.7	4.2	17	8.1	17.0	19.0	6.7	16	24	2.5	32.0	67.0
UCT4N12×9	12×9	47.3	4.8	18	8.1	19.0	22.0	7.6	18	28	2.5	40.0	87.0

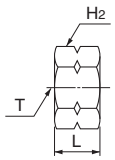
*Made to order

●Inch size type (Group 1)

Product number	Applicable tubing outer diameter (inch)	L (mm)	S (mm)	F Tubing insertion length (mm)	t Max. panel thickness (mm)	H2 Width across flat (mm)	H4 Width across flat (mm)	d2 Min. inner diameter (mm)	T2 Recommended panel hole diameter (mm)	Washer outer diameter (mm)	Washer thickness (mm)	Effective sectional area (mm²)	Weight (g)
* UCT1N1/8	1/8	39.7	4.6	15	8.0	8.0	10.0	1.4	7	11	1.6	1.5	14.5
UCT1N3/16	3/16	41.7	4.6	15	8.0	10.0	12.0	2.4	9	15	1.6	4.0	25.0
UCT1N1/4	1/4	42.1	4.6	15	8.4	12.0	14.0	3.4	11	18	1.6	8.5	32.0
UCT1N5/16	5/16	43.2	4.6	16	8.3	14.0	17.0	4.7	13	20	2.0	16.0	49.0
UCT1N3/8	3/8	44.9	4.6	17	7.7	17.0	19.0	5.7	15	24	2.5	22.5	67.0
UCT1N1/2	1/2	47.6	4.6	18	7.8	19.0	22.0	8.2	18	28	2.5	45.0	86.0

*Made to order

Brass nut



*The inch size type has no cut.

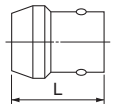
●Millimeter size type (Group 4)

Product number	Applicable tubing outer diameter (mm)	T Thread size (M)	L (mm)	H2 Width across flat (mm)	Weight (g)
N4	4	M8×0.75	9.0	10.0	4.0
N6	6	M10×1.0	9.0	12.0	5.0
N8	8	M12×1.0	9.0	14.0	6.0
N10	10	M15×1.0	10.0	17.0	9.0
N12	12	M17×1.0	11.0	19.0	11.0
N16	16	M22×1.0	13.0	27.0	33.0

●Inch size type (Group 1)

Product number	Applicable tubing outer diameter (inch)	T Thread size (M)	L (mm)	H2 Width across flat (mm)	Weight (g)
N1/8	1/8	M6×0.75	9.0	8.0	3.0
N3/16	3/16	M8×0.75	9.0	10.0	4.0
N1/4	1/4	M10×1.0	9.0	12.0	5.0
N5/16	5/16	M12×1.0	9.0	14.0	6.0
N3/8	3/8	M14×1.0	10.0	17.0	10.0
N1/2	1/2	M17×1.0	11.5	19.0	11.0
N5/8	5/8	M22×1.0	13.0	27.0	33.0

Nylon sleeve



●Millimeter size type (Color: milky white)

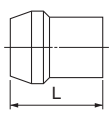
Product number	Applicable tubing outer diameter (inch)	L (mm)	Weight (g)
SN4	4	11.0	0.2
SN6	6	11.0	0.2
SN8	8	11.0	0.3
SN10	10	12.0	0.4
SN12	12	13.0	0.5
SN16	16	17.0	1.1

●Inch size type (Color: black)

Product number	Applicable tubing outer diameter (inch)	L (mm)	Weight (g)
SN1/8	1/8	11.0	0.1
SN3/16	3/16	11.0	0.2
SN1/4	1/4	11.0	0.2
SN5/16	5/16	11.0	0.3
SN3/8	3/8	12.0	0.4
SN1/2	1/2	13.0	0.5
SN5/8	5/8	17.0	1.1

⚠ Caution: Nylon sleeves that have been used once cannot be reused.

Brass sleeve



●Millimeter size type

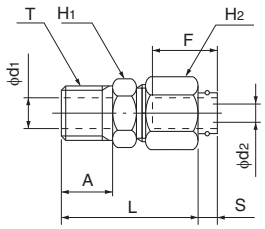
Product number	Applicable tubing outer diameter (inch)	L (mm)	Weight (g)
MSN4	4	9.0	0.7
MSN6	6	9.0	1.0
MSN8	8	9.0	1.3
MSN10	10	10.0	2.1
MSN12	12	11.3	2.8
MSN16	16	17.0	6.7

●Inch size type

Product number	Applicable tubing outer diameter (inch)	L (mm)	Weight (g)
MSN1/8	1/8	11.0	0.6
MSN3/16	3/16	11.0	0.9
MSN1/4	1/4	11.0	1.2
MSN5/16	5/16	11.0	1.7
MSN3/8	3/8	12.0	2.4
MSN1/2	1/2	13.0	3.4

⚠ Caution: Brass sleeves that have been used once cannot be reused.

Connector (NPT thread)



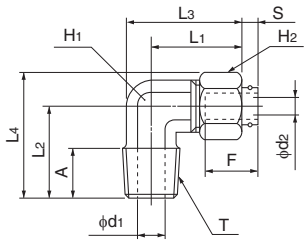
●Inch size type (Group 1) NPT thread

	Product number	Applicable tubing outer diameter (inch)	T Thread size (NPT)	L (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
*	C1N1/8-NPT1/8	1/8	NPT1/8	28.0	11.0	4.6	15	12.0	8.0	5.0	1.4	1.5	11.0
*	C1N3/16-NPT1/8	3/16	NPT1/8	28.1	11.0	4.6	15	12.0	10.0	5.0	2.4	4.0	13.0
*	C1N1/4-NPT1/8	1/4	NPT1/8	28.0	11.0	4.6	15	12.0	12.0	5.0	3.4	8.5	14.0
*	C1N1/4-NPT1/4	1/4	NPT1/4	30.0	12.0	4.6	15	14.0	12.0	7.0	3.4	8.5	22.0
*	C1N5/16-NPT1/8	5/16	NPT1/8	28.8	11.0	4.6	16	14.0	14.0	5.0	4.7	16.0	17.0
*	C1N5/16-NPT1/4	5/16	NPT1/4	29.8	12.0	4.6	16	14.0	14.0	7.0	4.7	16.0	24.0
*	C1N3/8-NPT1/4	3/8	NPT1/4	30.7	12.0	4.6	17	14.0	17.0	7.5	5.7	22.5	28.0
*	C1N3/8-NPT3/8	3/8	NPT3/8	31.7	13.0	4.6	17	17.0	17.0	9.0	5.7	22.5	39.0
*	C1N1/2-NPT1/4	1/2	NPT1/4	31.8	12.0	4.6	18	17.0	19.0	8.2	8.2	45.0	33.0
*	C1N1/2-NPT3/8	1/2	NPT3/8	32.8	13.0	4.6	18	17.0	19.0	9.0	8.2	45.0	40.0
*	C1N1/2-NPT1/2	1/2	NPT1/2	40.8	18.0	4.6	18	23.0	19.0	12.0	8.2	45.0	72.0

*Made to order

☞Connector (NPT thread) is not sealed.

90 degree elbow (NPT thread)



●Inch size type (Group 1) NPT thread

	Product number	Applicable tubing outer diameter (inch)	T Thread size (NPT)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
*	L1N3/16-NPT1/8	3/16	NPT1/8	20.6	18.5	26.3	24.3	11.0	4.6	15	10.0	10.0	5.0	2.4	4.0	18.0
*	L1N1/4-NPT1/8	1/4	NPT1/8	20.5	18.5	26.3	25.4	11.0	4.6	15	10.0	12.0	5.0	3.4	8.0	20.0
*	L1N1/4-NPT1/4	1/4	NPT1/4	23.0	22.0	28.8	28.9	12.0	4.6	15	10.0	12.0	7.0	3.4	8.0	26.0
*	L1N5/16-NPT1/8	5/16	NPT1/8	22.8	21.0	29.8	29.1	11.0	4.6	16	12.0	14.0	5.0	4.7	15.0	30.0
*	L1N5/16-NPT1/4	5/16	NPT1/4	22.8	22.0	29.8	30.1	12.0	4.6	16	12.0	14.0	7.0	4.7	15.0	32.0
*	L1N3/8-NPT1/4	3/8	NPT1/4	23.7	22.0	30.6	31.8	12.0	4.6	17	12.0	17.0	7.0	5.7	19.0	50.0
*	L1N3/8-NPT3/8	3/8	NPT3/8	26.7	26.0	33.6	35.8	13.0	4.6	17	12.0	17.0	7.0	5.7	19.0	50.0
*	L1N1/2-NPT1/4	1/2	NPT1/4	27.8	25.0	35.9	36.0	12.0	4.6	18	14.0	19.0	7.0	8.2	32.0	50.0
*	L1N1/2-NPT3/8	1/2	NPT3/8	27.8	26.0	35.9	37.0	13.0	4.6	18	14.0	19.0	9.0	8.2	32.0	53.0
*	L1N1/2-NPT1/2	1/2	NPT1/2	30.3	33.0	38.4	44.0	18.0	4.6	18	14.0	19.0	10.0	8.2	32.0	76.0

*Made to order

QuickSeal Series

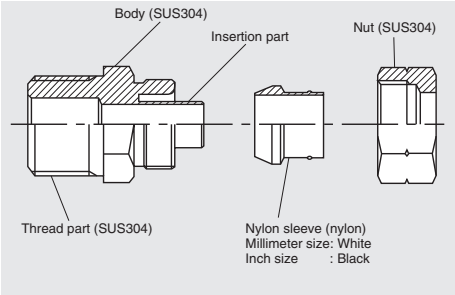
Insertion Type (stainless)

Screw-in type for multi-purpose piping (made of SUS304)

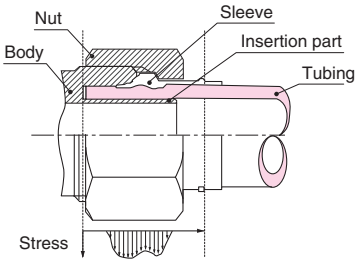
Features

- Screw-in type
  Consisting of three parts: fitting body, nut and sleeve.
- High sealing performance
  The insertion part is integrated with a fitting body with high negative-pressure performance.
- Made of SUS304 with high corrosion resistance
- JIS B 8381-1995 (fittings for pneumatic flexible pipes) compliant

Cross-sectional structure diagram



Sealing mechanism



Operating fluid, working temperature range

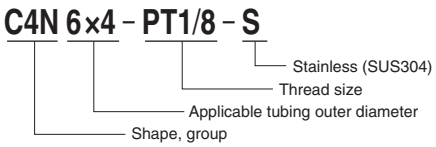
Operating fluid		Working temperature range
Air	Nylon sleeve	−40°C~+80°C
Water	Nylon sleeve	0°C~+70°C
General operating oil	Nylon sleeve	−40°C~+80°C

☞ Contact us for various chemical liquids.
☞ See “Combination List of Tubing and Fitting” on page 8.

Pressure condition

Maximum working pressure:5.0MPa
Negative pressure performance:
−101.294kPa

Product number example



Distinction of millimeter/inch sizes

The inch size type has a black sleeve.
The millimeter size type has a cut at the hexagonal nut.

Handling instructions

⚠ **Caution:** When the working conditions of tubes and fittings differ, use them under the lower specified conditions.

⚠ **Caution:** For use at a high temperature within the working temperature range, tighten the nut periodically. If the nut cannot be tightened further, cut the tubing end and insert the tubing again with a new sleeve.

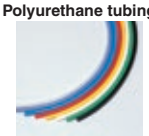
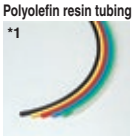
⚠ **Caution:** When water is used as the operating fluid, do not allow it to freeze.

⚠ **Caution:** Do not bend the pipe sharply near the tubing insertion port (sleeve end) of the fitting. Keep the tubing straight for twice as long as the tubing diameter from the insertion port.

⚠ **Caution:** The outer and the inner diameters of the fitting have to be the same as those of the tubing used.

☞ See page 34 for the common handling instructions for fittings.

Applicable tubing

Polyurethane tubing	Nylon tubing	Flexible fluorocarbon resin bilayer tubing	Polybutene tubing	Antistatic tubing	Polyolefin resin tubing	Fluorocarbon resin tubing	Polyurethane processed tubing	Clean, Antistatic tubing
					 *1	 *1		
U2 U1 U5	N2 N5 N1	TES	PB	UE	PL PN	TA TP	UC USC UMC UML	ES

(*1) Combinatory use of PL, PN, TA, TP or ES tubing and QuickSeal series of insertion type (stainless) mixes general and clean type performances. When using them together in a clean environment, be aware of how this could lower the cleanliness level.

Related products and product introduction

Miniature valve

Q.D.C 101 series

Reference

Instruction manual ·····P.172
Chemical resistance specification table ·····P.198
Effective sectional area ··P.168
Negative-pressure performance list ·····P.169

QuickSeal Series Insertion Type (stainless)

Shape list

Connector
C*N-S

90 degree elbow
L*N-S

Tee
T*N-S

Service tee
ST*N-S

Union connector
UC*N-S

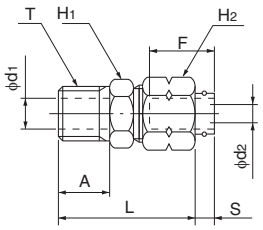
90 degree union elbow
UL*N-S

Union tee
UT*N-S

Stainless nut
N*-S

Nylon sleeve
SN

Connector



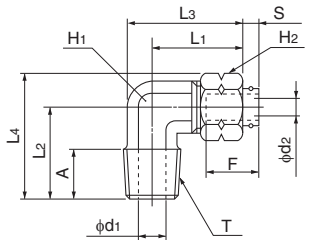
●Millimeter size type (Group 4)

Product number	Applicable tubing outer diameter×inner diameter (mm)	T Thread size (R)	L (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
C4N6×4-PT1/8-S	6×4	R1/8	28.0	11.0	4.6	15	10.0	12.0	5.0	2.7	5.0	15.0
C4N6×4-PT1/4-S	6×4	R1/4	30.0	12.0	4.6	15	14.0	12.0	7.0	2.7	5.0	22.0
C4N8×5-PT1/8-S	8×5	R1/8	27.9	11.0	4.6	16	12.0	14.0	5.0	3.7	10.0	18.0
C4N8×5-PT1/4-S	8×5	R1/4	29.9	12.0	4.6	16	14.0	14.0	7.0	3.7	10.0	24.0
C4N8×6-PT1/8-S	8×6	R1/8	27.9	11.0	4.6	16	12.0	14.0	5.0	4.7	16.0	17.0
C4N8×6-PT1/4-S	8×6	R1/4	29.9	12.0	4.6	16	14.0	14.0	7.0	4.7	16.0	24.0
C4N10×6.5-PT1/4-S	10×6.5	R1/4	31.1	12.0	4.2	17	17.0	17.0	7.0	5.2	20.5	32.0
C4N10×6.5-PT3/8-S	10×6.5	R3/8	32.1	13.0	4.2	17	17.0	17.0	9.0	5.2	20.5	38.0
C4N10×8-PT1/4-S	10×8	R1/4	31.1	12.0	4.2	17	17.0	17.0	7.0	6.7	32.0	29.0
C4N10×8-PT3/8-S	10×8	R3/8	32.1	13.0	4.2	17	17.0	17.0	9.0	6.7	32.0	37.0
C4N12×8-PT3/8-S	12×8	R3/8	35.6	13.0	4.8	18	17.0	19.0	9.0	6.6	32.0	47.0
C4N12×8-PT1/2-S	12×8	R1/2	40.6	18.0	4.8	18	23.0	19.0	12.0	6.6	33.5	75.0
C4N12×9-PT3/8-S	12×9	R3/8	35.6	13.0	4.8	18	17.0	19.0	9.0	7.6	40.0	40.5
C4N12×9-PT1/2-S	12×9	R1/2	40.6	18.0	4.8	18	23.0	19.0	12.0	7.6	40.0	74.0

●Inch size type (Group 1)

Product number	Applicable tubing outer diameter (inch)	T Thread size (R)	L (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
C1N1/4-PT1/8-S	1/4	R1/8	28.0	11.0	4.6	15	10.0	12.0	5.0	3.4	8.5	14.0
C1N1/4-PT1/4-S	1/4	R1/4	30.0	12.0	4.6	15	14.0	12.0	7.0	3.4	8.5	22.0
C1N5/16-PT1/8-S	5/16	R1/8	27.8	11.0	4.6	16	12.0	14.0	5.0	4.7	16.0	17.0
C1N5/16-PT1/4-S	5/16	R1/4	29.8	12.0	4.6	16	14.0	14.0	7.0	4.7	16.0	24.0
C1N3/8-PT1/8-S	3/8	R1/8	28.7	11.0	4.6	17	14.0	17.0	5.7	5.7	22.5	23.0
C1N3/8-PT1/4-S	3/8	R1/4	30.7	12.0	4.6	17	14.0	17.0	7.5	5.7	22.5	28.0
C1N3/8-PT3/8-S	3/8	R3/8	31.7	13.0	4.6	17	17.0	17.0	9.0	5.7	22.5	39.0
C1N1/2-PT1/4-S	1/2	R1/4	31.8	12.0	4.6	18	17.0	19.0	8.2	8.2	45.0	33.0
C1N1/2-PT3/8-S	1/2	R3/8	32.8	13.0	4.6	18	17.0	19.0	9.0	8.2	45.0	40.0
C1N1/2-PT1/2-S	1/2	R1/2	40.8	18.0	4.6	18	23.0	19.0	12.0	8.2	45.0	72.0

90 degree elbow



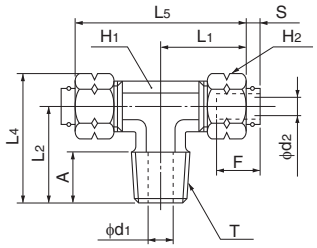
●Millimeter size type (Group 4)

Product number	Applicable tubing outer diameter×inner diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
L4N6×4-PT1/8-S	6×4	R1/8	20.5	18.5	26.3	25.4	11.0	4.6	15	10.0	12.0	5.0	2.7	4.5	21.0
L4N6×4-PT1/4-S	6×4	R1/4	23.0	22.0	29.9	28.9	12.0	4.6	15	12.0	12.0	7.0	2.7	4.5	32.0
L4N8×5-PT1/8-S	8×5	R1/8	22.9	21.0	29.8	29.1	11.0	4.6	16	12.0	14.0	5.0	3.7	9.0	31.0
L4N8×5-PT1/4-S	8×5	R1/4	22.9	22.0	29.8	30.1	12.0	4.6	16	12.0	14.0	7.0	3.7	9.0	32.5
L4N8×6-PT1/8-S	8×6	R1/8	22.9	21.0	29.8	29.1	11.0	4.6	16	12.0	14.0	5.0	4.7	14.0	31.0
L4N8×6-PT1/4-S	8×6	R1/4	22.9	22.0	29.8	30.1	12.0	4.6	16	12.0	14.0	7.0	4.7	15.0	32.5
L4N10×6.5-PT1/4-S	10×6.5	R1/4	27.1	25.0	35.2	34.8	12.0	4.2	17	14.0	17.0	7.0	5.2	18.0	47.0
L4N10×6.5-PT3/8-S	10×6.5	R3/8	27.1	26.0	35.2	35.8	13.0	4.2	17	14.0	17.0	9.0	5.2	18.0	50.0
L4N10×8-PT1/4-S	10×8	R1/4	27.1	25.0	35.2	34.8	12.0	4.2	17	14.0	17.0	7.0	6.7	25.0	48.0
L4N10×8-PT3/8-S	10×8	R3/8	27.1	26.0	35.2	35.8	13.0	4.2	17	14.0	17.0	9.0	6.7	25.0	51.0
L4N12×8-PT3/8-S	12×8	R3/8	27.6	26.0	35.7	37.0	13.0	4.8	18	14.0	19.0	9.0	6.6	25.0	53.0
L4N12×8-PT1/2-S	12×8	R1/2	30.1	33.0	40.5	44.0	18.0	4.8	18	18.0	19.0	10.0	6.6	30.0	90.0
L4N12×9-PT3/8-S	12×9	R3/8	27.6	26.0	35.7	37.0	13.0	4.8	18	14.0	19.0	9.0	7.6	33.0	54.0
L4N12×9-PT1/2-S	12×9	R1/2	30.1	33.0	40.5	44.0	18.0	4.8	18	18.0	19.0	10.0	7.6	33.0	91.0

●Inch size type (Group 1)

Product number	Applicable tubing outer diameter (inch)	T Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
L1N1/4-PT1/8-S	1/4	R1/8	20.5	18.5	26.3	25.4	11.0	4.6	15	10.0	12.0	5.0	3.4	8.0	20.0
L1N1/4-PT1/4-S	1/4	R1/4	23.0	22.0	30.0	28.9	12.0	4.6	15	12.0	12.0	7.0	3.4	8.0	26.0
L1N5/16-PT1/8-S	5/16	R1/8	22.8	21.0	29.8	29.1	11.0	4.6	16	12.0	14.0	5.0	4.7	15.0	30.0
L1N5/16-PT1/4-S	5/16	R1/4	22.8	22.0	29.8	30.1	12.0	4.6	16	12.0	14.0	7.0	4.7	15.0	32.0
L1N3/8-PT1/8-S	3/8	R1/8	23.7	21.0	30.6	30.8	11.0	4.6	17	12.0	17.0	5.0	5.7	15.0	35.0
L1N3/8-PT1/4-S	3/8	R1/4	23.7	22.0	30.6	31.8	12.0	4.6	17	12.0	17.0	7.0	5.7	19.0	50.0
L1N3/8-PT3/8-S	3/8	R3/8	26.7	26.0	35.2	35.8	13.0	4.6	17	14.0	17.0	9.0	5.7	19.0	50.0
L1N1/2-PT1/4-S	1/2	R1/4	27.8	25.0	35.9	36.0	12.0	4.6	18	14.0	19.0	7.0	8.2	32.0	50.0
L1N1/2-PT3/8-S	1/2	R3/8	27.8	26.0	36.3	37.0	13.0	4.6	18	14.0	19.0	9.0	8.2	32.0	53.0
L1N1/2-PT1/2-S	1/2	R1/2	30.8	33.0	41.6	44.0	18.0	4.6	18	18.0	19.0	12.0	8.2	32.0	76.0

Tee



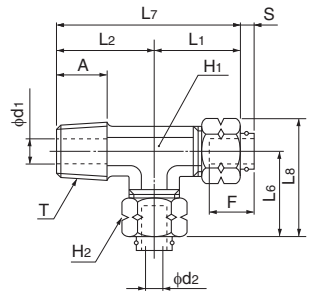
●Millimeter size type (Group 4)

Product number	Applicable tubing outer diameter×inner diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L4 (mm)	L5 (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
T4N6x4-PT1/8-S	6x4	R1/8	20.5	18.5	25.4	41.0	11.0	4.6	15	10.0	12.0	5.0	2.7	4.5	30.0
T4N6x4-PT1/4-S	6x4	R1/4	23.0	22.0	28.9	46.0	12.0	4.6	15	12.0	12.0	7.0	2.7	4.5	43.0
T4N8x5-PT1/8-S	8x5	R1/8	22.9	21.0	29.1	45.8	11.0	4.6	16	12.0	14.0	5.0	3.7	9.0	43.0
T4N8x5-PT1/4-S	8x5	R1/4	22.9	22.0	30.1	45.8	12.0	4.6	16	12.0	14.0	7.0	3.7	9.0	45.0
T4N8x6-PT1/8-S	8x6	R1/8	22.9	21.0	29.1	45.8	11.0	4.6	16	12.0	14.0	5.0	4.7	14.0	42.0
T4N8x6-PT1/4-S	8x6	R1/4	22.9	22.0	30.1	45.8	12.0	4.6	16	12.0	14.0	7.0	4.7	15.0	44.0
T4N10x6.5-PT1/4-S	10x6.5	R1/4	27.1	25.0	34.8	54.2	12.0	4.2	17	14.0	17.0	7.0	5.2	18.0	73.0
T4N10x6.5-PT3/8-S	10x6.5	R3/8	27.1	26.0	35.8	54.2	13.0	4.2	17	14.0	17.0	9.0	5.2	18.0	78.0
T4N10x8-PT1/4-S	10x8	R1/4	27.1	25.0	34.8	54.2	12.0	4.2	17	14.0	17.0	7.0	6.7	25.0	69.0
T4N10x8-PT3/8-S	10x8	R3/8	27.1	26.0	35.8	54.2	13.0	4.2	17	14.0	17.0	9.0	6.7	25.0	75.0
T4N12x8-PT3/8-S	12x8	R3/8	27.6	25.0	36.0	55.3	13.0	4.8	18	14.0	19.0	9.0	6.6	25.0	82.0
T4N12x9-PT3/8-S	12x9	R3/8	27.6	26.0	37.0	55.3	13.0	4.8	18	14.0	19.0	9.0	7.6	33.0	82.0

●Inch size type (Group 1)

Product number	Applicable tubing outer diameter (inch)	T Thread size (R)	L1 (mm)	L2 (mm)	L4 (mm)	L5 (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
T1N1/4-PT1/8-S	1/4	R1/8	20.5	18.5	25.4	41.1	11.0	4.6	15	10.0	12.0	5.0	3.4	8.0	29.0
T1N1/4-PT1/4-S	1/4	R1/4	23.0	22.0	28.9	46.1	12.0	4.6	15	12.0	12.0	7.0	3.4	8.0	42.0
T1N3/8-PT1/4-S	3/8	R1/4	23.7	22.0	31.8	47.4	12.0	4.6	17	12.0	17.0	7.0	5.7	19.0	55.0

Service tee



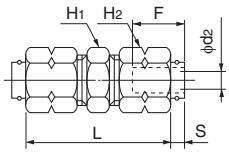
●Millimeter size type (Group 4)

Product number	Applicable tubing outer diameter×inner diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L6 (mm)	L7 (mm)	L8 (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
ST4N6x4-PT1/8-S	6x4	R1/8	20.5	18.5	20.5	39.0	27.4	11.0	4.6	15	10.0	12.0	5.0	2.7	4.5	41.0
ST4N6x4-PT1/4-S	6x4	R1/4	23.0	22.0	23.0	45.0	29.9	12.0	4.6	15	12.0	12.0	7.0	2.7	4.5	30.0
ST4N8x5-PT1/8-S	8x5	R1/8	22.9	21.0	22.9	43.9	31.0	11.0	4.6	16	12.0	14.0	5.0	3.7	9.0	43.0
ST4N8x5-PT1/4-S	8x5	R1/4	22.9	22.0	22.9	44.9	31.0	12.0	4.6	16	12.0	14.0	7.0	3.7	9.0	43.0
ST4N8x6-PT1/8-S	8x6	R1/8	22.9	21.0	22.9	43.9	31.0	11.0	4.6	16	12.0	14.0	5.0	4.7	14.0	45.0
ST4N8x6-PT1/4-S	8x6	R1/4	22.9	22.0	22.9	44.9	31.0	12.0	4.6	16	12.0	14.0	7.0	4.7	15.0	46.0
ST4N10x6.5-PT1/4-S	10x6.5	R1/4	27.1	25.0	27.1	52.1	36.9	12.0	4.2	17	14.0	17.0	7.0	5.2	18.0	72.0
ST4N10x6.5-PT3/8-S	10x6.5	R3/8	27.1	26.0	27.1	53.1	36.9	13.0	4.2	17	14.0	17.0	9.0	5.2	18.0	70.0
ST4N10x8-PT1/4-S	10x8	R1/4	27.1	25.0	27.1	52.1	36.9	12.0	4.2	17	14.0	17.0	7.0	6.7	25.0	76.0
ST4N10x8-PT3/8-S	10x8	R3/8	27.1	26.0	27.1	53.1	36.9	13.0	4.2	17	14.0	17.0	9.0	6.7	25.0	113.0
ST4N12x8-PT3/8-S	12x8	R3/8	27.6	26.0	27.6	53.6	38.6	13.0	4.8	18	14.0	19.0	9.0	6.6	25.0	81.0
ST4N12x9-PT3/8-S	12x9	R3/8	27.6	26.0	27.6	53.6	38.6	13.0	4.8	18	14.0	19.0	9.0	7.6	33.0	130.0

●Inch size type (Group 1)

Product number	Applicable tubing outer diameter (inch)	T Thread size (R)	L1 (mm)	L2 (mm)	L6 (mm)	L7 (mm)	L8 (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
ST1N1/4-PT1/8-S	1/4	R1/8	20.5	18.5	20.5	39.0	27.5	11.0	4.6	15	10.0	12.0	5.0	3.4	8.0	29.0

Union connector



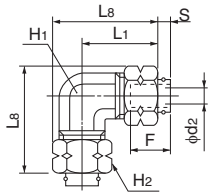
●Millimeter size type (Group 4)

Product number	Applicable tubing outer diameter×inner diameter (mm)	L (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
UC4N6×4-S	6×4	33.0	4.6	15	10.0	12.0	2.7	5.0	20.0
UC4N8×5-S	8×5	32.8	4.6	16	12.0	14.0	3.7	10.0	28.0
UC4N8×6-S	8×6	32.8	4.6	16	12.0	14.0	4.7	16.0	25.0
UC4N10×6.5-S	10×6.5	36.2	4.2	17	17.0	17.0	5.2	20.5	44.0
UC4N10×8-S	10×8	36.2	4.2	17	17.0	17.0	6.7	32.0	44.0
UC4N12×8-S	12×8	37.3	4.8	18	17.0	19.0	6.6	32.0	49.0
UC4N12×9-S	12×9	37.3	4.8	18	17.0	19.0	7.6	40.0	51.0

●Inch size type (Group 1)

Product number	Applicable tubing outer diameter (inch)	L (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
UC1N1/4-S	1/4	33.1	4.6	15	10.0	12.0	3.4	8.5	20.0
UC1N5/16-S	5/16	32.7	4.6	16	12.0	14.0	4.7	16.0	25.0
UC1N3/8-S	3/8	35.4	4.6	17	14.0	17.0	5.7	22.5	40.0
UC1N1/2-S	1/2	37.6	4.6	18	17.0	19.0	8.2	45.0	47.0

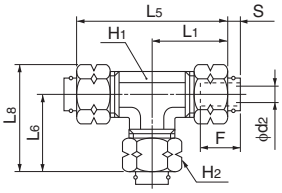
90 degree union elbow



●Millimeter size type (Group 4)

Product number	Applicable tubing outer diameter×inner diameter (mm)	L1 (mm)	L8 (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
UL4N6×4-S	6×4	20.5	27.4	4.6	15	10.0	12.0	2.7	4.0	25.0
UL4N8×5-S	8×5	22.9	31.0	4.6	16	12.0	14.0	3.7	7.5	37.0
UL4N8×6-S	8×6	22.9	31.0	4.6	16	12.0	14.0	4.7	12.5	36.0
UL4N10×6.5-S	10×6.5	27.1	36.9	4.2	17	14.0	17.0	5.2	15.5	59.0
UL4N10×8-S	10×8	27.1	36.9	4.2	17	14.0	17.0	6.7	25.0	57.0
UL4N12×8-S	12×8	27.6	38.6	4.8	18	14.0	19.0	6.6	25.0	63.0
UL4N12×9-S	12×9	27.6	38.6	4.8	18	14.0	19.0	7.6	25.0	60.0

Union tee



●Millimeter size type (Group 4)

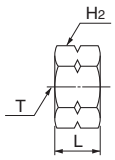
Product number	Applicable tubing outer diameter×inner diameter (mm)	L1 (mm)	L5 (mm)	L6 (mm)	L8 (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
UT4N6×4-S	6×4	20.5	41.0	20.5	27.4	4.6	15	10.0	12.0	2.7	4.0	35.0
UT4N8×5-S	8×5	22.9	45.8	22.9	31.0	4.6	16	12.0	14.0	3.7	7.5	49.0
UT4N8×6-S	8×6	22.9	45.8	22.9	31.0	4.6	16	12.0	14.0	4.7	12.5	48.0
UT4N10×6.5-S	10×6.5	27.1	54.2	27.1	36.9	4.2	17	14.0	17.0	5.2	15.5	82.0
UT4N10×8-S	10×8	27.1	54.2	27.1	36.9	4.2	17	14.0	17.0	6.7	25.0	77.0
UT4N12×8-S	12×8	27.6	55.3	28.6	39.6	4.8	18	14.0	19.0	6.6	25.0	90.0
UT4N12×9-S	12×9	27.6	55.3	28.6	39.6	4.8	18	14.0	19.0	7.6	25.0	85.0

●Inch size type (Group 1)

Product number	Applicable tubing outer diameter (inch)	L1 (mm)	L5 (mm)	L6 (mm)	L8 (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d2 Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
UT1N1/4-S	1/4	20.5	41.1	20.5	27.5	4.6	15	10.0	12.0	3.4	6.5	34.0
UT1N5/16-S	5/16	22.8	45.7	22.8	30.9	4.6	16	12.0	14.0	4.7	12.5	49.0
UT1N3/8-S	3/8	23.7	47.4	23.7	33.5	4.6	17	12.0	17.0	5.7	18.5	64.0
* UT1N1/2-S	1/2	27.8	55.6	27.8	38.8	4.6	18	14.0	19.0	8.2	30.0	84.0

*Made to order

Stainless nut



*The inch size type has no cut.

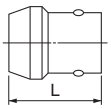
●Millimeter size type (Group 4)

Product number	Applicable tubing outer diameter (mm)	T Thread size (M)	L (mm)	H2 Width across flat (mm)	Weight (g)
N6-S	6	M10×1.0	9.0	12.0	5.0
N8-S	8	M12×1.0	9.0	14.0	6.0
N10-S	10	M15×1.0	10.0	17.0	9.0
N12-S	12	M17×1.0	11.0	19.0	11.0

●Inch size type (Group 1)

Product number	Applicable tubing outer diameter (inch)	T Thread size (M)	L (mm)	H2 Width across flat (mm)	Weight (g)
N1/4-S	1/4	M10×1.0	9.0	12.0	5.0
N5/16-S	5/16	M12×1.0	9.0	14.0	6.0
N3/8-S	3/8	M14×1.0	10.0	17.0	10.0
N1/2-S	1/2	M17×1.0	11.5	19.0	11.0

Nylon sleeve



●Millimeter size type (Color: milky white)

Product number	Applicable tubing outer diameter (mm)	L (mm)	Weight (g)
SN6	6	11.0	0.2
SN8	8	11.0	0.3
SN10	10	12.0	0.4
SN12	12	13.0	0.5

●Inch size type (Color: black)

Product number	Applicable tubing outer diameter (inch)	L (mm)	Weight (g)
SN1/4	1/4	11.0	0.2
SN5/16	5/16	11.0	0.3
SN3/8	3/8	12.0	0.4
SN1/2	1/2	13.0	0.5

⚠ Caution: Nylon sleeves that have been used once cannot be reused.

QuickSeal Series

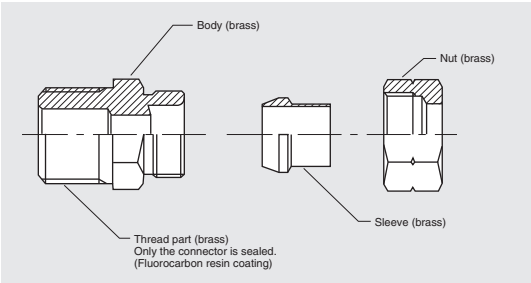
Insertless Type

Screw-in type for general pneumatic piping

Features

- **Screw-in type**
  Consisting of three parts: fitting body, nut and sleeve.
- **Large flow volume**
  Large effective sectional area due to lack of an insertion part.
- **Only the connector is sealed**
  Sealing tape is not required.

Cross-sectional structure diagram



Product number example

4A01 – 2402

- 4A01: Shape
- 2402: Applicable tubing diameter and thread size

Applicable tubing

Nylon tubing

N2 N5 N1

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	–40°C~+100°C

See "Combination List of Tubing and Fitting" on page 8.

Pressure condition

Maximum working pressure: 1.0MPa
Negative pressure performance:
–99.975kPa

Handling instructions

Caution: When the working conditions of tubes and fittings differ, use them under the lower specified conditions.

Caution: For use at a high temperature within the working temperature range, tighten the nut periodically. If the nut cannot be tightened further, cut the tubing end and insert the tubing again with a new sleeve.

Caution: Do not bend the pipe sharply near the tubing insertion port (sleeve end) of the fitting. Keep the tubing straight for twice as long as the tubing diameter from the insertion port.

See page 34 for the common handling instructions for fittings.

Reference

QuickSeal Series Insertless type (brass)

Shape list

Connector 4A01

90 degree elbow 4A02

Tee 4A03

Service tee 4A04

Union tee 4A05

Swivel nut internal connector 4A06

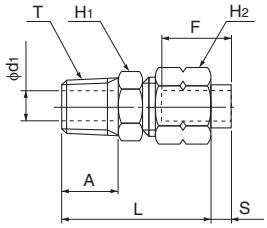
Union connector 4A07

90 degree union elbow 4A08

Brass nut N

Brass sleeve MSN

Connector

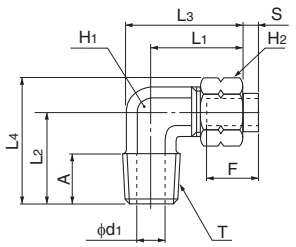


●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
4A01-2402	4	R1/8	27.9	11.0	2.7	14	10.0	10.0	5.0	2.0	3.0	13.0
4A01-2602	6	R1/8	27.9	11.0	2.6	14	10.0	12.0	5.0	4.0	10.0	15.0
4A01-2604	6	R1/4	29.9	12.0	2.6	14	14.0	12.0	7.0	4.0	10.0	23.0
4A01-2802	8	R1/8	27.8	11.0	2.6	15	12.0	14.0	5.0	5.0	18.0	17.0
4A01-2804	8	R1/4	29.8	12.0	2.6	15	14.0	14.0	7.0	6.0	25.0	24.0
4A01-3004	10	R1/4	31.0	12.0	2.3	18	17.0	17.0	7.5	7.5	39.0	31.0
4A01-3006	10	R3/8	32.0	13.0	2.3	18	17.0	17.0	9.0	7.5	39.0	38.0
4A01-3206	12	R3/8	32.5	13.0	3.1	19	17.0	19.0	9.0	8.0	45.0	40.0
4A01-3208	12	R1/2	40.5	18.0	3.1	19	24.0	19.0	12.0	8.0	45.0	71.0

Only the connector is sealed.

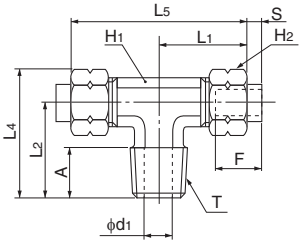
90 degree elbow



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
4A02-2402	4	R1/8	20.4	18.5	26.2	24.3	11.0	2.7	14	10.0	10.0	5.0	2.0	3.0	19.0
4A02-2602	6	R1/8	20.4	18.5	26.2	25.4	11.0	2.6	14	10.0	12.0	5.0	4.0	9.0	20.0
4A02-2604	6	R1/4	22.9	22.0	29.9	28.9	12.0	2.6	14	12.0	12.0	7.0	4.0	10.0	30.0
4A02-2802	8	R1/8	22.8	21.0	29.8	29.1	11.0	2.6	15	12.0	14.0	5.0	5.0	16.0	29.0
4A02-2804	8	R1/4	22.8	22.0	29.8	30.1	12.0	2.6	15	12.0	14.0	7.0	6.0	22.0	32.0
4A02-3004	10	R1/4	27.0	25.0	35.1	34.8	13.5	2.3	18	14.0	17.0	7.0	7.0	30.0	46.0
4A02-3006	10	R3/8	27.0	26.0	35.5	35.8	13.0	2.3	18	14.0	17.0	9.0	7.5	35.0	82.0
4A02-3206	12	R3/8	27.5	26.0	36.0	37.0	13.0	3.1	19	14.0	19.0	9.0	8.0	40.0	53.0
4A02-3208	12	R1/2	30.0	33.0	40.8	44.0	18.0	3.1	19	14.0	19.0	10.0	8.0	40.0	90.0

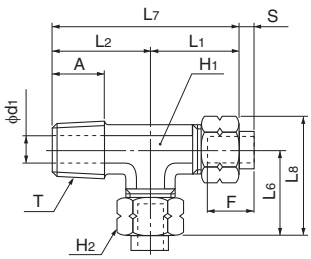
Tee



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L4 (mm)	L5 (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
4A03-2402	4	R1/8	20.4	18.5	24.3	40.8	11.0	2.7	14	10.0	10.0	5.0	2.0	3.0	27.0
4A03-2602	6	R1/8	20.4	18.5	25.4	40.8	11.0	2.6	14	10.0	12.0	5.0	4.0	9.0	29.0
4A03-2604	6	R1/4	22.9	22.0	28.9	45.8	12.0	2.6	14	12.0	12.0	7.0	4.0	10.0	43.0
4A03-2802	8	R1/8	22.8	21.0	29.1	45.7	11.0	2.6	15	12.0	14.0	5.0	5.0	16.0	42.0
4A03-2804	8	R1/4	22.8	22.0	30.1	45.7	12.0	2.6	15	12.0	14.0	7.0	6.0	22.0	43.0
4A03-3004	10	R1/4	27.0	25.0	34.8	53.9	12.0	2.3	18	14.0	17.0	7.0	7.0	30.0	69.0
4A03-3006	10	R3/8	27.0	26.0	35.8	53.9	13.0	2.3	18	14.0	17.0	9.0	7.5	35.0	73.0
4A03-3206	12	R3/8	27.5	26.0	37.0	54.9	13.0	3.1	19	14.0	19.0	9.0	8.0	40.0	79.0
4A03-3208	12	R1/2	30.5	33.0	44.0	60.9	18.0	3.1	19	18.0	19.0	12.0	8.0	40.0	125.0

Service tee

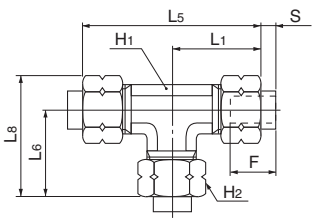


●Millimeter size type

	Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L6 (mm)	L7 (mm)	L8 (mm)	A (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
*	4A04-2402	4	R1/8	20.4	18.5	20.4	38.9	26.2	11.0	2.7	14	10.0	10.0	5.0	2.0	3.0	27.0
	4A04-2602	6	R1/8	20.4	18.5	20.4	38.9	27.4	11.0	2.6	14	10.0	12.0	5.0	4.0	9.0	29.0
	4A04-2604	6	R1/4	22.9	22.0	22.9	44.9	29.9	12.0	2.6	14	12.0	12.0	7.0	4.0	10.0	37.0
	4A04-2802	8	R1/8	22.8	21.0	22.8	43.8	30.9	12.0	2.6	15	12.0	14.0	5.0	5.0	16.0	41.0
	4A04-2804	8	R1/4	22.8	22.0	22.8	44.8	30.9	12.0	2.6	15	12.0	14.0	7.0	6.0	22.0	43.0
*	4A04-3004	10	R1/4	27.0	25.0	27.0	52.0	36.8	12.0	2.3	18	14.0	17.0	7.0	7.0	30.0	70.0
*	4A04-3006	10	R3/8	27.0	26.0	27.0	53.0	36.8	13.0	2.3	18	14.0	17.0	9.0	7.5	35.0	73.0
*	4A04-3206	12	R3/8	27.5	26.0	27.5	53.5	38.4	13.0	3.1	19	14.0	19.0	9.0	8.0	40.0	80.0
*	4A04-3208	12	R1/2	30.5	35.5	30.5	66.0	41.4	18.0	3.1	19	18.0	19.0	12.0	8.0	40.0	127.0

*Made to order

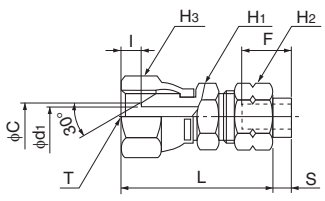
Union tee



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	L1 (mm)	L5 (mm)	L6 (mm)	L8 (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
4A05-2400	4	20.4	40.8	20.4	26.2	2.7	14	10.0	10.0	2.0	3.0	30.0
4A05-2600	6	20.4	40.8	20.4	27.4	2.6	14	10.0	12.0	4.0	8.0	34.0
4A05-2800	8	22.8	45.7	22.8	30.9	2.6	15	12.0	14.0	6.0	20.0	45.0
4A05-3000	10	27.0	53.9	27.0	36.8	2.3	18	14.0	17.0	7.5	31.0	74.0
4A05-3200	12	27.5	54.9	27.5	38.4	3.1	19	14.0	19.0	8.0	37.0	85.0

Swivel nut internal connector



●Millimeter size type

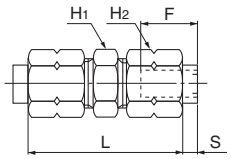
	Product number	Applicable tubing outer diameter (mm)	T Thread size (G)	L (mm)	S (mm)	I (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	H3 Width across flat (mm)	C (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
*	4A06-2402	4	G1/8	32.9	2.7	4.0	14	12.0	10.0	14.0	5.0	3.0	3.0	3.5	24.0
*	4A06-2602	6	G1/8	32.9	2.6	4.0	14	12.0	12.0	14.0	5.0	3.0	3.0	6.5	25.0
	4A06-2604	6	G1/4	34.6	2.6	5.7	14	17.0	12.0	19.0	7.0	5.0	5.0	10.0	43.0
	4A06-2804	8	G1/4	34.5	2.6	5.7	15	17.0	14.0	19.0	7.0	5.0	5.0	18.0	45.0
*	4A06-3006	10	G3/8	40.8	2.3	6.8	18	19.0	17.0	22.0	10.0	8.0	8.0	42.0	75.0
*	4A06-3206	12	G3/8	41.3	3.1	6.8	19	19.0	19.0	22.0	10.0	8.0	8.0	45.0	67.0
*	4A06-3208	12	G1/2	51.0	3.1	9.5	19	22.0	19.0	27.0	14.0	10.0	10.0	54.0	115.0

*Made to order

Union connector

●Millimeter size type

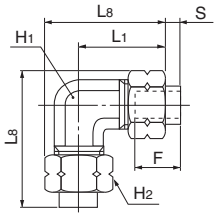
Product number	Applicable tubing outer diameter (mm)	L (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	Min. inner diameter (mm)	Effective sectional area (mm^2)	Weight (g)
4A07-2400	4	32.8	2.7	14	8.0	10.0	2.0	3.0	15.0
4A07-2600	6	32.8	2.6	14	10.0	12.0	4.0	10.0	20.0
4A07-2800	8	32.7	2.6	15	14.0	14.0	6.0	25.0	27.0
4A07-3000	10	35.9	2.3	18	17.0	17.0	7.5	39.0	42.0
4A07-3200	12	36.9	3.1	19	17.0	19.0	8.0	45.0	48.0



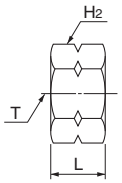
90 degree union elbow

●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	L1 (mm)	L8 (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	Min. inner diameter (mm)	Effective sectional area (mm^2)	Weight (g)
4A08-2400	4	20.4	26.2	2.7	14	10.0	10.0	2.0	2.0	22.0
4A08-2600	6	20.4	27.4	2.6	14	10.0	12.0	4.0	8.0	25.0
4A08-2800	8	22.8	30.9	2.6	15	12.0	14.0	6.0	20.0	33.0
4A08-3000	10	27.0	36.8	2.3	18	14.0	17.0	7.5	31.0	52.0
4A08-3200	12	27.5	38.4	3.1	19	14.0	19.0	8.0	37.0	59.0



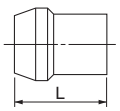
Brass nut



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (M)	L (mm)	H2 Width across flat (mm)	Weight (g)
N4	4	M8×0.75	9.0	10.0	4.0
N6	6	M10×1.0	9.0	12.0	5.0
N8	8	M12×1.0	9.0	14.0	6.0
N10	10	M15×1.0	10.0	17.0	9.0
N12	12	M17×1.0	11.0	19.0	11.0

Brass sleeve



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	L (mm)	Weight (g)
MSN4	4	9.0	0.7
MSN6	6	9.0	1.0
MSN8	8	9.0	1.3
MSN10	10	10.0	2.1
MSN12	12	11.3	2.8

☞Insertless type requires a brass sleeve.

⚠ Caution: Brass sleeves that have been used once cannot be reused.

QuickSeal Series

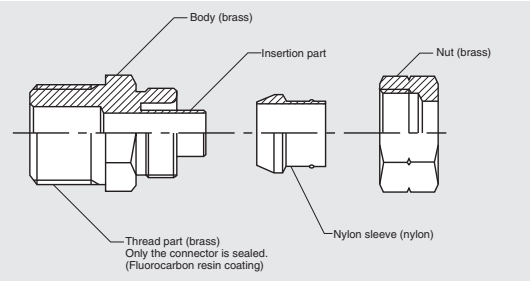
DK Tubing Dedicated Type

Screw-in type fitting dedicated for DK tubing

Features

- **Screw-in type**
  Consisting of three parts: fitting body, nut and sleeve. Special fittings for DK tubes.
- **Only the connector is sealed**
  Sealing tape is not required.

Cross-sectional structure diagram



Product number example

DC 6 – PT1/8

- PT1/8: Thread size
- 6: Applicable tubing outer diameter
- DC: Shape

Applicable tubing

Shape-keeping DK tubing

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	–40°C~+60°C

Pressure condition

Maximum working pressure: 1.0MPa
Negative pressure performance: –101.294kPa

Handling instructions

⚠ **Caution:** This is dedicated for DK tubing. Cannot be connected to other tubes.

⚠ **Caution:** For use at a high temperature within the working temperature range, tighten the nut periodically. If the nut cannot be tightened further, cut the tubing end and insert the tubing again with a new sleeve.

⚠ **Caution:** Do not bend the pipe sharply near the tubing insertion port (sleeve end) of the fitting. Keep the tubing straight for twice as long as the tubing diameter from the insertion port.

See page 34 for the common handling instructions for fittings.

Reference

Instruction manual·····P.172
Effective sectional area·····P.168

DK Tubing Dedicated Type

Shape list

Connector
DC

90 degree elbow
DL

Tee
DT

Union connector
UDC

Union tee
UDT

Panel touch connector
DUT

(Nickel plated)

Panel touch connector for copper pipe
DUP

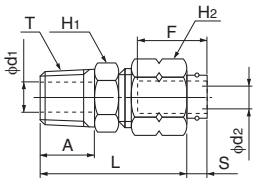
(Nickel plated)

Brass nut
N

Nylon sleeve
SN

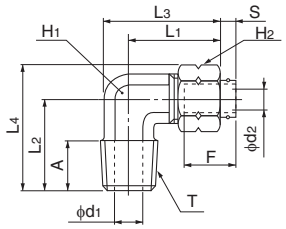
Connector

Product number	Applicable DK tubing size (mm)	T Thread size (R)	L (mm)	A (mm)	F Tubing insertion length (mm)	H_1 Width across flat (mm)	H_2 Width across flat (mm)	S (mm)	d_1 (mm)	d_2 (mm)	Effective sectional area (mm^2)	Weight (g)
DC6-PT1/8	6	R1/8	28.0	11.0	15	10.0	12.0	4.6	5.0	2.8	6.0	14.5
DC6-PT1/4	6	R1/4	30.0	12.0	15	14.0	12.0	4.6	7.0	2.8	6.0	22.0
DC10-PT1/8	10	R1/8	30.1	11.0	17	17.0	17.0	4.2	5.0	5.7	18.0	28.0
DC10-PT1/4	10	R1/4	31.1	12.0	17	17.0	17.0	4.2	7.0	5.7	23.0	32.0
DC10-PT3/8	10	R3/8	32.1	13.0	17	17.0	17.0	4.2	9.0	5.7	23.0	38.0



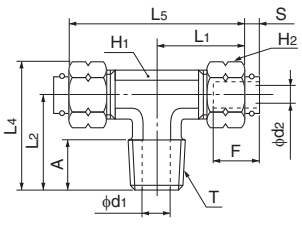
90 degree elbow

Product number	Applicable DK tubing size (mm)	T Thread size (R)	L_1 (mm)	L_2 (mm)	L_3 (mm)	L_4 (mm)	A (mm)	F Tubing insertion length (mm)	H_1 Width across flat (mm)	H_2 Width across flat (mm)	S (mm)	d_1 (mm)	d_2 (mm)	Effective sectional area (mm^2)	Weight (g)
DL6-PT1/8	6	R1/8	20.5	18.5	26.2	25.4	11.0	15	10.0	12.0	4.6	5.0	2.8	5.0	21.0
DL6-PT1/4	6	R1/4	23.0	22.0	29.9	28.9	12.0	15	12.0	12.0	4.6	7.0	2.8	5.0	31.0
DL10-PT1/8	10	R1/8	27.1	22.0	35.2	31.8	11.0	17	14.0	17.0	4.2	5.0	5.7	16.0	42.0
DL10-PT1/4	10	R1/4	27.1	25.0	35.2	34.8	13.5	17	14.0	17.0	4.2	7.0	5.7	22.0	50.0
DL10-PT3/8	10	R3/8	27.1	26.0	35.7	35.8	13.0	17	14.0	17.0	4.2	9.0	5.7	22.0	53.0

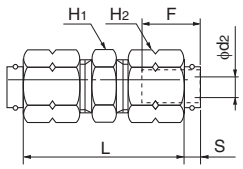


Tee

Product number	Applicable DK tubing size (mm)	T Thread size (R)	L_1 (mm)	L_2 (mm)	L_4 (mm)	L_5 (mm)	A (mm)	F Tubing insertion length (mm)	H_1 Width across flat (mm)	H_2 Width across flat (mm)	S (mm)	d_1 (mm)	d_2 (mm)	Effective sectional area (mm^2)	Weight (g)
DT6-PT1/8	6	R1/8	20.5	18.5	25.4	40.9	11.0	15	10.0	12.0	4.6	5.0	2.8	5.0	30.0
DT6-PT1/4	6	R1/4	23.0	22.0	28.9	45.9	12.0	15	12.0	12.0	4.6	7.0	2.8	5.0	43.0
DT10-PT1/4	10	R1/4	27.1	25.0	34.8	54.2	12.0	17	14.0	17.0	4.2	7.0	5.7	22.0	71.0
DT10-PT3/8	10	R3/8	27.1	26.0	35.8	54.2	13.0	17	14.0	17.0	4.2	9.0	5.7	22.0	71.0

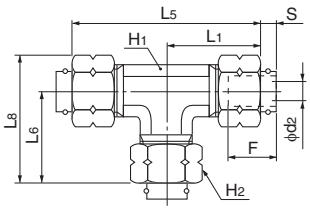


Union connector



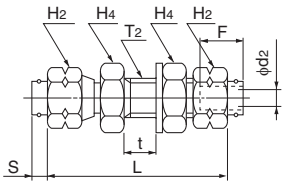
Product number	Applicable DK tubing size (mm)	L (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	S (mm)	d2 (mm)	Effective sectional area (mm²)	Weight (g)
UDC6	6	32.9	15	10.0	12.0	4.6	2.8	6.0	20.0
UDC10	10	36.2	17	15.0	17.0	4.2	5.7	23.0	39.0

Union tee



Product number	Applicable DK tubing size (mm)	L1 (mm)	L5 (mm)	L6 (mm)	L8 (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	S (mm)	d2 (mm)	Effective sectional area (mm²)	Weight (g)
UDT6	6	20.5	40.9	20.5	27.4	15	10.0	12.0	4.6	2.8	4.0	35.0
UDT10	10	27.1	54.2	27.1	36.9	17	14.0	17.0	4.2	5.7	18.5	81.5

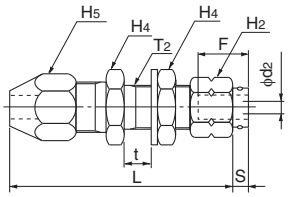
Panel touch connector (nickel plated)



Product number	Applicable DK tubing size (mm)	L (mm)	F Tubing insertion length (mm)	t Max. panel thickness (mm)	H2 Width across flat (mm)	H4 Width across flat (mm)	S (mm)	d2 (mm)	T2 Recommended panel hole diameter (mm)	Washer outer diameter (mm)	Washer thickness (mm)	Effective sectional area (mm²)	Weight (g)
DUT6	6	44.9	15	10	12.0	17.0	4.6	2.8	11	18	2.0	5.5	45.0
DUT10	10	51.2	17	7.1	17.0	24.0	4.2	5.7	16	28	3.0	21.5	104.0

Panel touch connector for copper pipe (nickel plated)

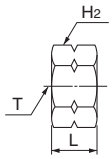
Product number	Applicable DK tubing size (mm)	Applicable copper pipe (mm)	L (mm)	F Tubing insertion length (mm)	t Max. panel thickness (mm)	H_2 Width across flat (mm)	H_4 Width across flat (mm)	H_5 Width across flat (mm)	S (mm)	d_2 (mm)	T_2 Recommended panel hole diameter (mm)	Washer outer diameter (mm)	Washer thickness (mm)	Effective sectional area (mm^2)	Weight (g)
DUP6	6	6.0	51.0	15	10.0	12.0	17.0	14.0	4.6	2.8	11	18	2.0	5.5	49.0
DUP10	10	10.0	61.8	17	7.1	17.0	24.0	17.0	4.2	5.7	16	28	3.0	21.5	133.0



*Fitting part for connecting DK tubing and copper pipe by panel touch method.

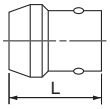
Brass nut

Product number	Applicable DK tubing size (mm)	T Thread size (mm)	L (mm)	H_2 (mm)	Weight (g)
N6	6	M10×1	9.0	12.0	5.0
N10	10	M15×1	10.0	17.0	9.0



Nylon sleeve

Product number	Applicable DK tubing size (mm)	L (mm)	Weight (g)
SN6	6	11.0	0.2
SN10	10	12.0	0.4



⚠ Caution: Nylon sleeves that have been used once cannot be reused.

QuickSeal Series

Nylon Coil Tubing Dedicated Type

Screw-in type fitting dedicated for nylon coil tubing

Features

● Screw-in type

Dedicated use for nylon coil tubing. Consisting of three parts: fitting body, nut and sleeve.

Product number example

S1/4 – M1/4

- M1/4: Thread size
- S1/4: Product number of applicable nylon coil tubing

Applicable tubing

Nylon Coil Tubing

Reference

Instruction manual·····P.172
Effective sectional area ·····P.168

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	–40°C~+100°C

Pressure condition

Maximum working pressure: 1.2MPa
Negative pressure performance: –101.294kPa

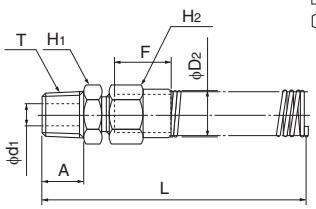
Handling instructions

⚠ **Caution:** Dedicated for nylon coil tubing. Cannot be used for connecting other types of tubing.

⚠ **Caution:** For use at a high temperature within the working temperature range, tighten the nut periodically. If the nut cannot be tightened further, cut the tubing end and insert the tubing again with a new sleeve.

☞ See page 34 for the common handling instructions for fittings.

Connector

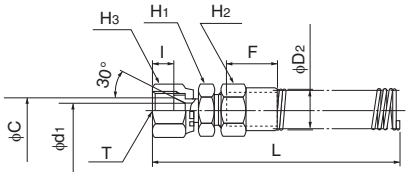


Product number	Applicable nylon coil tubing outer diameter	T Thread size (R)	L (mm)	A (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	D2 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
S3/16-M1/8	S3/16	R1/8	115.2	11.0	16	10.0	12.0	5.0	8.5	3.4	8.5	24.0
S1/4-M1/8	S1/4	R1/8	114.3	9.0	18	12.0	14.0	5.4	11.2	5.4	22.0	31.0
S1/4-M1/4	S1/4	R1/4	118.3	12.0	18	14.0	14.0	7.0	11.2	5.4	22.0	36.0
S3/8-M3/8	S3/8	R3/8	120.2	13.0	22	17.0	22.0	9.0	15.6	8.2	50.0	72.0
S1/2-M3/8	S1/2	R3/8	178.5	13.0	29	24.0	27.0	10.2	19.8	10.2	78.0	139.0
S1/2-M1/2	S1/2	R1/2	182.5	17.0	29	24.0	27.0	12.0	19.8	10.2	80.0	160.0
S3/4-M3/4	S3/4	R3/4	—	19.0	31	32.0	35.0	18.0	—	18.0	231.0	—

☞ S3/4 has no spring.

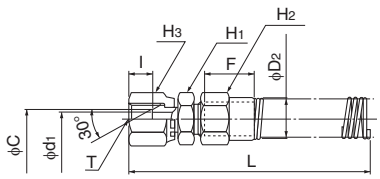
ES swivel nut internal connector

Product number	Applicable nylon coil tubing outer diameter	T Thread size (G)	L (mm)	l (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	H3 Width across flat (mm)	C (mm)	d1 (mm)	D2 (mm)	Effective sectional area (mm²)	Weight (g)
S1/4-ES1/4	S1/4	G1/4	123.3	8.5	18	14.0	14.0	19.0	9.0	5.0	11.2	18.5	53.0
S3/8-ES3/8	S3/8	G3/8	129.0	10.0	22	19.0	22.0	22.0	13.0	8.0	15.6	46.5	97.0
S1/2-ES1/2	S1/2	G1/2	189.0	13.0	29	24.0	27.0	27.0	16.0	10.2	19.8	80.0	186.0

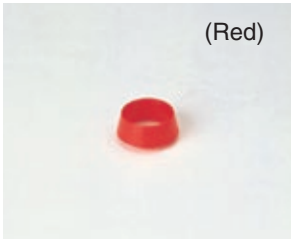


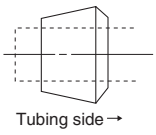
FS swivel nut internal connector

Product number	Applicable nylon coil tubing outer diameter	T Thread size (G)	L (mm)	l (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	H3 Width across flat (mm)	C (mm)	d1 (mm)	D2 (mm)	Effective sectional area (mm²)	Weight (g)
S1/4-FS1/4	S1/4	G1/4	123.3	5.7	18	14.0	14.0	19.0	7.0	5.0	11.2	18.5	55.0
S3/8-FS3/8	S3/8	G3/8	129.0	6.8	22	19.0	22.0	22.0	10.0	8.0	15.6	46.5	102.0
S1/2-FS1/2	S1/2	G1/2	189.0	9.5	29	24.0	27.0	27.0	14.0	10.2	19.8	80.0	193.0



Nylon sleeve (dedicated for nylon coil tubing)





⚠ Caution
Pay attention to the directions when attaching the sleeve.

Product number	Applicable nylon coil tubing outer diameter
SS3/16	S3/16
SS1/4	S1/4
SS3/8	S3/8
SS1/2	S1/2

⚠ Caution: Nylon sleeves that have been used once cannot be reused.

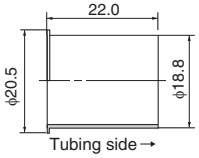
Brass sleeve (dedicated for nylon coil tubing)

Product number	Applicable nylon coil tubing outer diameter
SI3/4	S3/4

⚠ Caution: Nylon sleeves that have been used once cannot be reused.

Insertion part for S3/4

Product number	Applicable nylon coil tubing outer diameter
SI3/4	S3/4



Chemifit™Series

Chemifit™ C1 Series

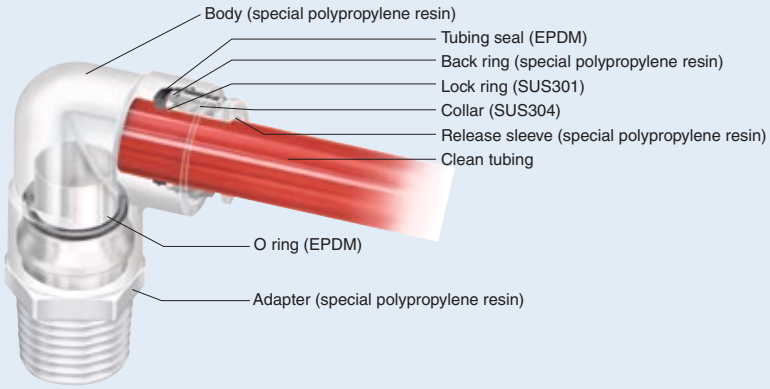
Clean-conscious product

PushOne™ fitting for clean air, pure water and chemical liquids

Features

- **Made in oil-free process**
  Assembled after cleaning each part in a clean room. No oil or fat is used in the sealing materials.
- **PushOne connection of tubing**
  The tubes can be connected without using a jig or tools.
- **Nonmetal liquid-contact surface**
  No contact of liquid and metal, preventing the metal ions from dissolving.
- **High performance, free of dust and contamination**
  Made of special polypropylene resin.
- **Highly smooth inner surface**
  Smooth inner surface due to ejection forming.
- **Double clean package**
  Each fitting is packed in a clean room and put in a zipper sealed bag.
- **Easy directional setting of tubing**
  The body can rotate freely even after tightening up the thread part. Good for piping of Elbow and Tee.
- **Compliant with the MHLW Ministerial Notification No.201(2006), MHW Ministerial Notification No.370(1959), Japan**

Cross-sectional structure diagram



Product number example

EL 6 – R1/8 – C1

- C1 — Chemifit C1 series
- R1/8 — Thread size
- 6 — Applicable tubing outer diameter
- EL — Shape

Distinction of millimeter/inch sizes

- The tubing size is shown on the release sleeve.

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air (clean air)	–20°C~+80°C
Water (pure water)	0°C~+80°C

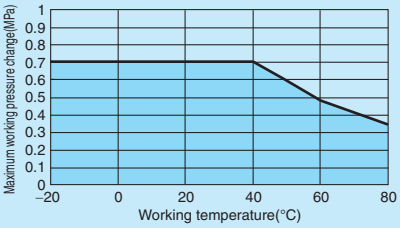
☞ Contact us for various chemical liquids.
☞ See "Combination List of Tubing and Fitting" on page 8.

Pressure condition

Maximum working pressure: 0.7MPa(at20°C)
Negative pressure performance: –99.975kPa

Relation between the working temperature and the maximum working pressure

The maximum working pressure varies with the working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep the pressure within the range.



Handling instructions

⚠ **Caution:** When the working conditions of tubes and fittings differ, use them under the lower specified conditions.

⚠ **Caution:** Stress relaxation occurs more readily with resin thread than with metal thread. The relaxation is prominent at a high temperature. Tighten the thread periodically.

⚠ **Caution:** When water is used as the operating fluid, confirm that there is no water leakage damage to equipment and instruments due to construction failure.

⚠ **Caution:** When water is used as the operating fluid, do not allow it to freeze.

⚠ **Caution:** Do not bend the pipe sharply near the tubing insertion port (sleeve end) of the fitting. Keep the tubing straight for twice as long as the tubing diameter from the insertion port.

☞ See page 34 for the common handling instructions for fittings.

Applicable tubing

Polyolefin resin tubing

PL PN

Fluorocarbon resin tubing

TA TP

Polyurethane tubing *1

U2 U1

Related products and product introduction

Chemifit C1 speed controller

Off tool

Reference

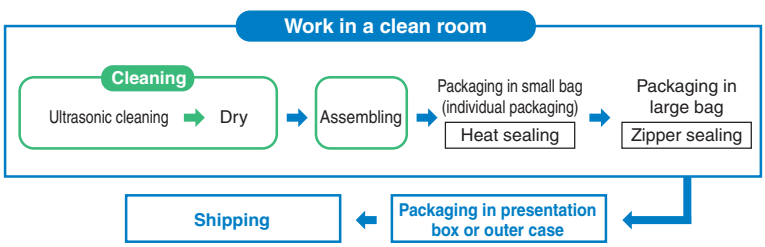
(*1) Combinatory use of U2 or U1 tubing and Chemifit C1 series mixes general and clean type performances. When using them together in a clean environment, be aware of how this could lower the cleanliness level.

Chemifit™ C1 Series

Shape list

Oil-free processing, Clean wrapping and packaging

● **Ultrasonic cleaning with no oil or fat used for assembling in a clean room.**



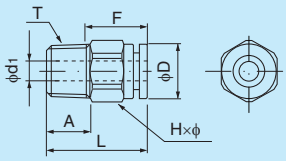
● **High-barrier sheet packaging available**

What is high-barrier sheet packaging?

In order to maintain the cleanliness of our products, no space for oxygen, water, or corrosive gas is allowed inside the package so a packaging bag with a high gas barrier is needed for protecting the content from these gases. To meet this requirement, Nitta provides high-barrier bags with a high gas barrier performance also for nitrogen sealing or atmospheric sealing.

- The packaging bags that Nitta uses have the highest gas barrier performance among clear bags.
- The bags do not contain halogen, etc., for safe burning.

Connector



●Millimeter size type

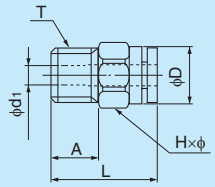
Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d1 (mm)	Effective sectional area (mm²)	Weight (g)
EC4-R1/8-C1	4	R1/8	21.9	9.0	14	12.0×13.0	10.0	2.5	4.0	2.0
EC4-R1/4-C1	4	R1/4	24.9	12.0	14	14.0×15.4	10.0	2.5	4.0	2.0
EC6-R1/8-C1	6	R1/8	23.6	9.0	15	14.0×15.4	13.0	4.0	10.5	2.0
EC6-R1/4-C1	6	R1/4	26.6	12.0	15	14.0×15.4	13.0	4.0	10.5	3.0
EC8-R1/8-C1	8	R1/8	28.6	9.0	16	17.0×18.5	15.0	6.0	20.0	4.0
EC8-R1/4-C1	8	R1/4	27.6	12.0	16	17.0×18.5	15.0	6.0	25.0	4.0
EC10-R1/4-C1	10	R1/4	33.2	12.0	19	19.0×21.0	18.0	8.0	40.0	7.0
EC10-R3/8-C1	10	R3/8	32.4	14.0	19	19.0×21.0	18.0	8.0	40.0	7.0
EC10-R1/2-C1	10	R1/2	35.4	16.0	19	22.0×24.5	18.0	10.0	—	—
EC12-R3/8-C1	12	R3/8	33.4	14.0	20	22.0×24.5	21.0	10.0	50.0	9.0
EC12-R1/2-C1	12	R1/2	35.4	16.0	20	22.0×24.5	21.0	10.0	50.0	11.0
EC6-N1/8-C1	6	NPT1/8	23.6	9.0	15	14.0×15.4	13.0	4.0	10.5	2.0
EC6-N1/4-C1	6	NPT1/4	26.6	12.0	15	14.0×15.4	13.0	4.0	10.5	3.0
EC10-N1/4-C1	10	NPT1/4	33.2	12.0	19	19.0×21.0	18.0	8.0	40.0	7.0

●Inch size type

Product number	Applicable tubing outer diameter (inch)	T Thread size (R)	L (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d1 (mm)	Effective sectional area (mm²)	Weight (g)
EC1/4-R1/8-C1	1/4	R1/8	24.6	9.0	16	14.0×15.4	13.0	4.0	12.0	2.0
EC1/4-R1/4-C1	1/4	R1/4	27.6	12.0	16	14.0×15.4	13.0	4.0	12.0	3.0
EC3/8-R1/4-C1	3/8	R1/4	34.0	12.0	20	19.0×21.0	18.0	8.0	35.0	7.0
EC3/8-R3/8-C1	3/8	R3/8	33.2	14.0	20	19.0×21.0	18.0	8.0	35.0	7.0
EC1/2-R3/8-C1	1/2	R3/8	35.4	14.0	23	22.0×24.5	21.5	10.0	66.5	9.0
EC1/2-R1/2-C1	1/2	R1/2	37.4	16.0	23	22.0×24.5	21.5	10.0	66.5	10.0

Through connector

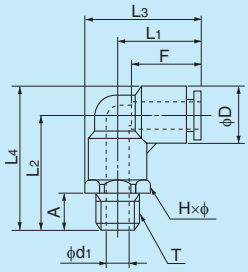
☞ A tubing can be inserted completely through the connector.



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L (mm)	A (mm)	H×ϕ Width across flat (mm)	D (mm)	d1 (mm)	Weight (g)
ETC4-R1/8-C1	4	R1/8	21.9	9.0	12.0×13.0	10.0	4.2	2.0
ETC4-R1/4-C1	4	R1/4	24.9	12.0	14.0×15.4	10.0	4.2	2.0
ETC6-R1/4-C1	6	R1/4	26.6	12.0	14.0×15.4	13.0	6.5	3.0
ETC8-R1/4-C1	8	R1/4	27.6	12.0	17.0×18.5	15.0	8.2	4.0
ETC10-R3/8-C1	10	R3/8	32.4	14.0	19.0×21.0	18.0	10.2	7.0
ETC12-R1/2-C1	12	R1/2	35.4	16.0	22.0×24.5	21.0	12.3	10.0

90 degree elbow



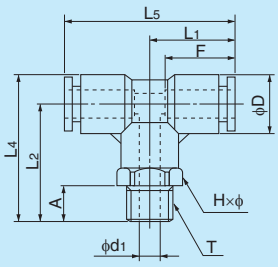
●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	A (mm)	F Tubing insertion length (mm)	H×φ Width across flat (mm)	D (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EL4-R1/8-C1	4	R1/8	17.7	23.7	23.2	28.7	9.0	14	10.0x11.0	10.0	5.0	3.0	4.0	2.0
EL4-R1/4-C1	4	R1/4	17.7	27.7	25.4	32.7	12.0	14	14.0x15.4	10.0	7.0	3.0	4.0	3.0
EL6-R1/8-C1	6	R1/8	18.9	26.2	25.4	32.7	9.0	15	12.0x13.0	13.0	4.5	4.5	12.0	4.0
EL6-R1/4-C1	6	R1/4	18.9	30.2	26.6	36.7	12.0	15	14.0x15.4	13.0	7.0	4.5	12.0	4.0
EL8-R1/8-C1	8	R1/8	21.1	29.2	28.8	36.7	9.0	16	14.0x15.4	15.0	6.0	6.0	18.5	5.0
EL8-R1/4-C1	8	R1/4	21.1	31.2	28.8	38.9	12.0	16	14.0x15.4	15.0	6.5	6.5	23.0	6.0
EL10-R1/4-C1	10	R1/4	25.0	37.2	34.3	46.2	12.0	19	17.0x18.5	18.0	8.0	8.0	34.5	9.0
EL10-R3/8-C1	10	R3/8	25.0	37.2	34.3	46.2	14.0	19	17.0x18.5	18.0	9.0	8.0	37.0	11.0
EL12-R3/8-C1	12	R3/8	26.7	38.7	37.2	49.0	14.0	20	19.0x21.0	20.5	10.0	10.0	43.0	13.0
EL12-R1/2-C1	12	R1/2	26.7	41.7	38.7	52.0	16.0	20	22.0x24.0	20.5	12.0	9.5	43.0	15.0
EL6-N1/8-C1	6	NPT1/8	18.9	26.2	25.4	32.7	9.0	15	12.0x13.0	13.0	4.5	4.5	12.0	4.0
EL6-N1/4-C1	6	NPT1/4	18.9	30.2	26.6	36.7	12.0	15	14.0x15.4	13.0	7.0	4.5	12.0	4.0

●Inch size type

Product number	Applicable tubing outer diameter (inch)	T Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	A (mm)	F Tubing insertion length (mm)	H×φ Width across flat (mm)	D (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EL1/4-R1/8-C1	1/4	R1/8	19.9	26.2	26.4	32.7	9.0	16	12.0x13.0	13.0	4.5	4.5	13.0	4.0
EL1/4-R1/4-C1	1/4	R1/4	19.9	30.2	27.6	36.7	12.0	16	14.0x15.4	13.0	7.0	4.5	13.0	4.0
EL3/8-R1/4-C1	3/8	R1/4	25.8	37.2	35.1	46.2	12.0	20	17.0x18.5	18.0	8.0	8.0	30.0	9.0
EL3/8-R3/8-C1	3/8	R3/8	25.8	37.2	35.1	46.2	14.0	20	17.0x18.5	18.0	9.0	8.0	32.0	11.0
EL1/2-R3/8-C1	1/2	R3/8	28.7	38.7	39.2	49.5	14.0	23	19.0x21.0	21.5	10.0	10.0	53.0	13.0
EL1/2-R1/2-C1	1/2	R1/2	28.7	41.7	40.7	52.5	16.0	23	22.0x24.0	21.5	12.0	9.5	55.5	15.0

Tee



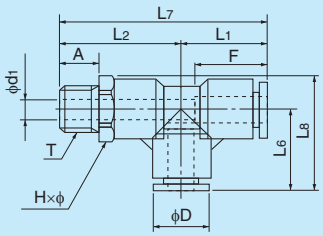
●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L4 (mm)	L5 (mm)	A (mm)	F Tubing insertion length (mm)	H×φ Width across flat (mm)	D (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
ET4-R1/8-C1	4	R1/8	17.7	23.7	28.7	35.3	9.0	14	10.0x11.0	10.0	5.0	3.0	4.0	3.0
ET4-R1/4-C1	4	R1/4	17.7	27.7	32.7	35.3	12.0	14	14.0x15.4	10.0	7.0	3.0	4.0	4.0
ET6-R1/8-C1	6	R1/8	18.9	26.2	32.7	37.9	9.0	15	12.0x13.0	13.0	4.5	4.5	12.0	5.0
ET6-R1/4-C1	6	R1/4	18.9	30.2	36.7	37.9	12.0	15	14.0x15.4	13.0	7.0	4.5	12.0	6.0
ET8-R1/8-C1	8	R1/8	21.1	29.2	36.7	42.2	9.0	16	14.0x15.4	15.0	6.0	6.0	18.5	7.0
ET8-R1/4-C1	8	R1/4	21.1	31.2	38.7	42.2	12.0	16	14.0x15.4	15.0	6.5	6.5	23.0	8.0
ET10-R1/4-C1	10	R1/4	25.0	37.2	46.2	50.0	12.0	19	17.0x18.5	18.0	8.0	8.0	34.5	14.0
ET10-R3/8-C1	10	R3/8	25.0	37.2	46.2	50.0	14.0	19	17.0x18.5	18.0	9.0	8.0	37.0	16.0
ET12-R3/8-C1	12	R3/8	26.7	38.7	49.0	53.4	14.0	20	19.0x21.0	20.5	10.0	10.0	43.0	19.0
ET12-R1/2-C1	12	R1/2	26.7	41.7	52.0	53.4	16.0	20	22.0x24.0	20.5	12.0	9.5	43.0	21.0
ET6-N1/8-C1	6	NPT1/8	18.9	26.2	32.7	37.9	9.0	15	12.0x13.0	13.0	4.5	4.5	12.0	5.0
ET6-N1/4-C1	6	NPT1/4	18.9	30.2	36.7	37.9	12.0	15	14.0x15.4	13.0	7.0	4.5	12.0	6.0

●Inch size type

Product number	Applicable tubing outer diameter (inch)	T Thread size (R)	L1 (mm)	L2 (mm)	L4 (mm)	L5 (mm)	A (mm)	F Tubing insertion length (mm)	H×φ Width across flat (mm)	D (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
ET1/4-R1/8-C1	1/4	R1/8	19.9	26.2	32.7	39.8	9.0	16	12.0x13.0	13.0	4.5	4.5	13.0	5.0
ET1/4-R1/4-C1	1/4	R1/4	19.9	30.2	36.7	39.8	12.0	16	14.0x15.4	13.0	7.0	4.5	13.0	6.0
ET3/8-R1/4-C1	3/8	R1/4	25.8	37.2	46.2	51.6	12.0	20	17.0x18.5	18.0	8.0	8.0	30.0	14.0
ET3/8-R3/8-C1	3/8	R3/8	25.8	37.2	46.2	51.6	14.0	20	17.0x18.5	18.0	9.0	8.0	32.0	16.0
ET1/2-R3/8-C1	1/2	R3/8	29.7	39.0	49.8	59.5	14.0	23	19.0x21.0	21.5	10.0	10.0	53.0	19.0
ET1/2-R1/2-C1	1/2	R1/2	29.7	42.0	52.8	59.5	16.0	23	22.0x24.0	21.5	12.0	9.5	55.5	21.0

Service tee



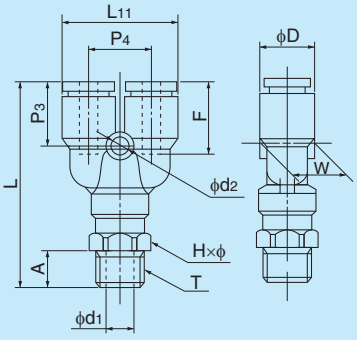
●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L6 (mm)	L7 (mm)	L8 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EST4-R1/8-C1	4	R1/8	17.7	23.7	17.7	41.4	23.2	9.0	14	10.0x11.0	10.0	5.0	3.0	4.0	3.0
EST4-R1/4-C1	4	R1/4	17.7	27.7	17.7	45.4	25.4	12.0	14	14.0x15.4	10.0	7.0	3.0	4.0	4.0
EST6-R1/8-C1	6	R1/8	18.9	26.2	18.9	45.1	25.4	9.0	15	12.0x13.0	13.0	4.5	4.5	12.0	5.0
EST6-R1/4-C1	6	R1/4	18.9	30.2	18.9	49.1	26.6	12.0	15	14.0x15.4	13.0	7.0	4.5	12.0	6.0
EST8-R1/8-C1	8	R1/8	21.1	29.2	21.1	50.3	28.8	9.0	16	14.0x15.4	15.0	6.0	6.0	18.5	7.0
EST8-R1/4-C1	8	R1/4	21.1	31.2	21.1	52.3	28.8	12.0	16	14.0x15.4	15.0	6.5	6.5	23.0	8.0
EST10-R1/4-C1	10	R1/4	25.0	37.2	25.0	62.2	34.3	12.0	19	17.0x18.5	18.0	8.0	8.0	34.5	14.0
EST10-R3/8-C1	10	R3/8	25.0	37.2	25.0	62.2	34.3	14.0	19	17.0x18.5	18.0	9.0	8.0	37.0	16.0
EST12-R3/8-C1	12	R3/8	26.7	38.7	26.7	65.4	37.2	14.0	20	19.0x21.0	20.5	10.0	10.0	43.0	19.0
EST12-R1/2-C1	12	R1/2	26.7	41.7	26.7	68.4	38.7	16.0	20	22.0x24.0	20.5	12.0	9.5	43.0	21.0
EST6-N1/8-C1	6	NPT1/8	18.9	26.2	18.9	45.1	25.4	9.0	15	12.0x13.0	13.0	4.5	4.5	12.0	5.0
EST6-N1/4-C1	6	NPT1/4	18.9	30.2	18.9	49.1	26.6	12.0	15	14.0x15.4	13.0	7.0	4.5	12.0	6.0

●Inch size type

Product number	Applicable tubing outer diameter (inch)	T Thread size (R)	L1 (mm)	L2 (mm)	L6 (mm)	L7 (mm)	L8 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EST1/4-R1/8-C1	1/4	R1/8	19.9	26.2	19.9	46.1	26.4	9.0	16	12.0x13.0	13.0	4.5	4.5	13.0	5.0
EST1/4-R1/4-C1	1/4	R1/4	19.9	30.2	19.9	50.1	27.6	12.0	16	14.0x15.4	13.0	7.0	4.5	13.0	6.0
EST3/8-R1/4-C1	3/8	R1/4	25.8	37.2	25.8	63.0	35.1	12.0	20	17.0x18.5	18.0	8.0	8.0	30.0	14.0
EST3/8-R3/8-C1	3/8	R3/8	25.8	37.2	25.8	63.0	35.1	14.0	20	17.0x18.5	18.0	9.0	8.0	32.0	16.0
EST1/2-R3/8-C1	1/2	R3/8	29.7	39.0	29.7	68.7	40.2	14.0	23	19.0x21.0	21.5	10.0	10.0	53.0	19.0
EST1/2-R1/2-C1	1/2	R1/2	29.7	42.0	29.7	71.7	41.7	16.0	23	22.0x24.0	21.5	12.0	9.5	55.5	21.0

Y joint



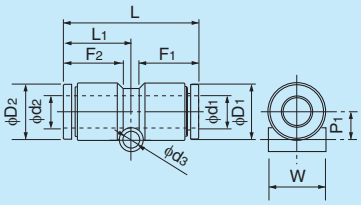
●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L (mm)	L11 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	P3 (mm)	P4 (mm)	W (mm)	D (mm)	d1 (mm)	d2 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EY4-R1/8-C1	4	R1/8	41.9	21.0	9.0	14	10.0x11.0	13.9	11.0	9.7	10.0	5.0	3.2	3.0	3.5	4.0
EY4-R1/4-C1	4	R1/4	45.9	21.0	12.0	14	14.0x15.4	13.9	11.0	9.7	10.0	7.0	3.2	3.0	3.5	5.0
EY6-R1/8-C1	6	R1/8	45.2	25.2	9.0	15	12.0x13.0	15.2	12.2	12.5	13.0	4.5	4.2	4.5	9.0	6.0
EY6-R1/4-C1	6	R1/4	49.2	25.2	12.0	15	14.0x15.4	15.2	12.2	12.5	13.0	7.0	4.2	4.5	9.0	7.0
EY8-R1/8-C1	8	R1/8	50.3	29.2	9.0	16	14.0x15.4	16.8	14.2	14.5	15.0	6.0	4.2	6.0	17.5	8.0
EY8-R1/4-C1	8	R1/4	52.3	29.2	12.0	16	14.0x15.4	16.8	14.2	14.5	15.0	6.5	4.2	6.5	20.0	9.0
EY10-R1/4-C1	10	R1/4	60.2	35.5	12.0	19	17.0x18.5	18.7	17.5	17.5	18.0	8.0	4.2	8.0	27.5	15.0
EY10-R3/8-C1	10	R3/8	60.2	35.5	14.0	19	17.0x18.5	18.7	17.5	17.5	18.0	9.0	4.2	8.0	28.0	16.0
EY12-R3/8-C1	12	R3/8	64.2	40.5	14.0	20	19.0x21.0	20.7	20.0	20.0	20.5	10.0	4.2	10.0	40.0	22.0
EY12-R1/2-C1	12	R1/2	67.2	40.5	16.0	20	22.0x24.0	20.7	20.0	20.0	20.5	12.0	4.2	9.5	40.0	23.0
EY6-N1/8-C1	6	NPT1/8	45.2	25.2	9.0	15	12.0x13.0	15.2	12.2	12.5	13.0	4.5	4.2	4.5	9.0	6.0
EY6-N1/4-C1	6	NPT1/4	49.2	25.2	12.0	15	14.0x15.4	15.2	12.2	12.5	13.0	7.0	4.2	4.5	9.0	7.0

●Inch size type

Product number	Applicable tubing outer diameter (inch)	T Thread size (R)	L (mm)	L11 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	P3 (mm)	P4 (mm)	W (mm)	D (mm)	d1 (mm)	d2 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EY1/4-R1/8-C1	1/4	R1/8	46.2	25.2	9.0	16	12.0x13.0	16.2	12.2	12.5	13.0	4.5	4.2	4.5	10.5	6.0
EY1/4-R1/4-C1	1/4	R1/4	50.2	25.2	12.0	16	14.0x15.4	16.2	12.2	12.5	13.0	7.0	4.2	4.5	10.5	7.0
EY3/8-R1/4-C1	3/8	R1/4	61.0	35.5	12.0	20	17.0x18.5	19.5	17.5	17.5	18.0	8.0	4.2	8.0	26.0	15.0
EY3/8-R3/8-C1	3/8	R3/8	61.0	35.5	14.0	20	17.0x18.5	19.5	17.5	17.5	18.0	9.0	4.2	8.0	26.0	16.0
EY1/2-R3/8-C1	1/2	R3/8	67.7	42.5	14.0	23	19.0x21.0	22.7	21.0	21.0	21.5	10.0	4.2	10.0	48.0	22.0
EY1/2-R1/2-C1	1/2	R1/2	70.7	42.5	16.0	23	22.0x24.0	22.7	21.0	21.0	21.5	12.0	4.2	9.5	48.0	23.0

Union connector



●Millimeter size type

Product number	d1 Applicable tubing outer diameter (mm)	d2 Applicable tubing outer diameter (mm)	L (mm)	L1 (mm)	P1 (mm)	F1 Tubing insertion length (mm)	F2 Tubing insertion length (mm)	d3 (mm)	D1 (mm)	D2 (mm)	W (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EUC3-C1	3	3	23.2	11.6	3.6	11	11	3.2	6.3	6.3	6.0	2.0	2.5	—
EUC4-C1	4	4	32.7	16.4	5.0	14	14	4.2	10.0	10.0	9.7	3.0	3.5	2.0
EUC6-C1	6	6	34.5	17.2	6.0	15	15	4.2	13.0	13.0	12.5	5.0	12.5	4.0
EUC8-C1	8	8	36.6	18.3	7.0	16	16	4.2	15.0	15.0	14.5	7.0	28.0	5.0
EUC10-C1	10	10	42.4	21.2	8.5	19	19	4.2	18.0	18.0	17.5	9.0	45.0	10.0
EUC12-C1	12	12	44.4	22.2	9.8	20	20	4.2	20.5	20.5	20.0	11.0	67.0	14.0

●Inch size type

Product number	d1 Applicable tubing outer diameter (inch)	d2 Applicable tubing outer diameter (inch)	L (mm)	L1 (mm)	P1 (mm)	F1 Tubing insertion length (mm)	F2 Tubing insertion length (mm)	d3 (mm)	D1 (mm)	D2 (mm)	W (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EUC1/8-C1	1/8	1/8	25.9	13.0	4.5	12	12	3.2	8.0	8.0	8.0	2.5	—	—
EUC1/4-C1	1/4	1/4	36.4	18.2	6.0	16	16	4.2	13.0	13.0	12.5	5.0	12.5	4.0
EUC3/8-C1	3/8	3/8	44.0	22.0	8.5	20	20	4.2	18.0	18.0	17.5	9.0	28.0	10.0
EUC1/2-C1	1/2	1/2	48.5	24.2	10.3	23	23	4.2	21.5	21.5	20.0	11.0	35.0	19.0

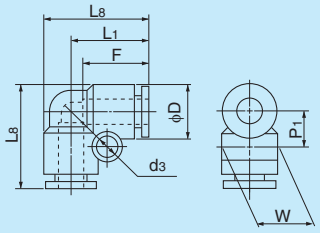
●Inch size type (different diameter connection)

Product number	d1 Applicable tubing outer diameter (inch)	d2 Applicable tubing outer diameter (inch)	L (mm)	L1 (mm)	P1 (mm)	F1 Tubing insertion length (mm)	F2 Tubing insertion length (mm)	d3 (mm)	D1 (mm)	D2 (mm)	W (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EUC1/8-1/4-C1	1/8	1/4	34.4	18.2	6.0	12	16	4.2	10.0	13.0	12.5	2.5	—	—
EUC1/4-3/8-C1	1/4	3/8	40.7	22.0	8.5	16	20	4.2	15.0	18.0	17.5	5.0	—	—
EUC3/8-1/2-C1	3/8	1/2	46.2	24.2	9.8	20	23	4.2	18.0	21.5	20.0	9.0	—	—

●Inch size — millimeter size connection

Product number	d1 Applicable tubing outer diameter (inch)	d2 Applicable tubing outer diameter (mm)	L (mm)	L1 (mm)	P1 (mm)	F1 Tubing insertion length (mm)	F2 Tubing insertion length (mm)	d3 (mm)	D1 (mm)	D2 (mm)	W (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EUC1/4-6-C1	1/4	6	35.4	17.2	6.0	16	15	4.2	13.0	13.0	12.5	5.0	12.5	4.0
EUC3/8-10-C1	3/8	10	43.2	21.2	8.5	20	19	4.2	18.0	18.0	17.5	9.0	45.0	10.0

90 degree union elbow



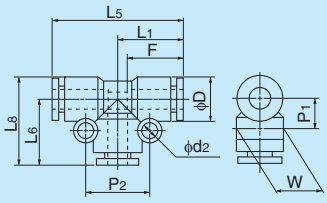
●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	L1 (mm)	L8 (mm)	P1 (mm)	F Tubing insertion length (mm)	d3 (mm)	D (mm)	W (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EUL3-C1	3	12.6	15.7	4.1	11	3.2	6.3	6	2.0	2.0	–
EUL4-C1	4	17.7	22.7	6.9	14	4.2	10.0	9.7	3.0	3.5	3.0
EUL6-C1	6	18.9	25.4	8.3	15	4.2	13.0	12.5	5.0	9.5	4.0
EUL8-C1	8	21.1	28.6	9.3	16	4.2	15.0	14.5	7.0	19.5	6.0
EUL10-C1	10	25.0	34.0	10.8	19	4.2	18.0	17.5	9.0	32.5	12.0
EUL12-C1	12	26.7	37.0	12.1	20	4.2	20.5	20.0	11.0	45.5	16.0

●Inch size type

Product number	Applicable tubing outer diameter (mm)	L1 (mm)	L8 (mm)	P1 (mm)	F Tubing insertion length (mm)	d3 (mm)	D (mm)	W (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EUL1/8-C1	1/8	15.2	19.2	5.0	12	3.2	8.0	8.0	3.0	–	–
EUL1/4-C1	1/4	19.9	26.4	8.3	16	4.2	13.0	12.5	5.0	12.0	4.0
EUL3/8-C1	3/8	25.8	34.8	10.8	20	4.2	18.0	17.5	9.0	27.0	12.0
EUL1/2-C1	1/2	29.7	40.5	12.6	23	4.2	21.5	21.0	11.0	54.5	20.0

Union tee



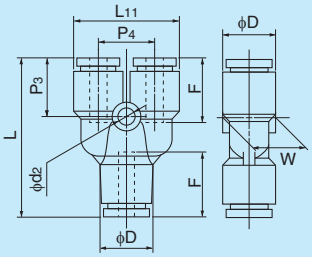
●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	L1 (mm)	L5 (mm)	L6 (mm)	L8 (mm)	P1 (mm)	P2 (mm)	F Tubing insertion length (mm)	D (mm)	d2 (mm)	W (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EUT3-C1	3	12.6	25.1	12.6	15.7	4.1	8.2	11	6.3	3.2	6	2.0	2.0	1.5
EUT4-C1	4	17.7	35.3	17.7	22.7	6.9	14.0	14	10.0	4.2	9.7	3.0	3.5	4.0
EUT6-C1	6	18.9	37.9	18.9	25.4	8.3	17.0	15	13.0	4.2	12.5	5.0	9.5	7.0
EUT8-C1	8	21.1	42.2	21.1	28.6	9.3	19.0	16	15.0	4.2	14.5	7.0	19.5	9.0
EUT10-C1	10	25.0	50.0	25.0	34.0	10.8	22.0	19	18.0	4.2	17.5	9.0	32.5	17.0
EUT12-C1	12	26.7	53.4	26.7	37.0	12.1	24.0	20	20.5	4.2	20.0	11.0	45.5	23.0

●Inch size type

Product number	Applicable tubing outer diameter (inch)	L1 (mm)	L5 (mm)	L6 (mm)	L8 (mm)	P1 (mm)	P2 (mm)	F Tubing insertion length (mm)	D (mm)	d2 (mm)	W (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EUT1/8-C1	1/8	15.2	30.4	15.2	19.2	5.0	10.0	12	8.0	3.2	8.0	3.0	—	—
EUT1/4-C1	1/4	19.9	39.8	19.9	26.4	8.3	17.0	16	13.0	4.2	12.5	5.0	12.0	7.0
EUT3/8-C1	3/8	25.8	51.6	25.8	34.8	10.8	22.0	20	18.0	4.2	17.5	9.0	27.0	17.0
EUT1/2-C1	1/2	29.7	59.5	29.7	40.5	12.6	25.0	23	21.5	4.2	21.0	11.0	54.5	29.0

Y union



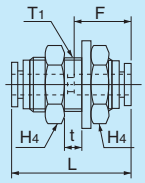
●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	L (mm)	L11 (mm)	F Tubing insertion length (mm)	P3 (mm)	P4 (mm)	W (mm)	D (mm)	d2 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EYB3-C1	3	25.7	13.3	11	10.9	7.0	6.0	6.3	2.0	2.0	2	—
EYB4-C1	4	34.7	21.0	14	13.9	11.0	9.7	10.0	3.2	3.0	3.0	4.0
EYB6-C1	6	38.4	25.2	15	15.2	12.2	12.5	13.0	4.2	5.0	8.0	6.0
EYB8-C1	8	43.7	29.2	16	16.8	14.2	14.5	15.0	4.2	7.0	18.0	9.0
EYB10-C1	10	49.0	35.5	19	18.7	17.5	17.5	18.0	4.2	9.0	27.0	17.0
EYB12-C1	12	54.8	40.5	20	20.7	20.0	20.0	20.5	4.2	11.0	38.5	24.0

●Inch size type

Product number	Applicable tubing outer diameter (inch)	L (mm)	L11 (mm)	F Tubing insertion length (mm)	P3 (mm)	P4 (mm)	W (mm)	D (mm)	d2 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EYB1/8-C1	1/8	29.4	17.0	12	11.7	9.0	8.0	8.0	3.2	3.0	—	—
EYB1/4-C1	1/4	40.3	25.2	16	16.2	12.2	12.5	13.0	4.2	5.0	10.5	10.0
EYB3/8-C1	3/8	50.6	35.5	20	19.5	17.5	17.5	18.0	4.2	9.0	24.0	24.0
EYB1/2-C1	1/2	60.4	42.5	23	22.7	21.0	21.0	21.5	4.2	11.0	46.5	33.0

Panel touch connector



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	L (mm)	F Tubing insertion length (mm)	H4 (mm)	t Max. panel thickness (mm)	T1 Recommended panel hole diameter (mm)	Washer outer diameter (mm)	Washer thickness (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EPC4-C1	4	32.7	14	17.0	7.5	13	24.0	2.5	3.0	3.5	5.0
EPC6-C1	6	34.5	15	19.0	9.5	15	28.0	2.5	5.0	12.5	7.0
EPC8-C1	8	36.6	16	22.0	10.0	17	30.0	3.0	7.0	28.0	9.0
EPC10-C1	10	42.4	19	27.0	14.0	21	37.0	3.0	9.0	45.0	16.0
EPC12-C1	12	44.4	20	30.0	16.0	23	39.0	3.0	11.0	67.0	67.0

●Inch size type

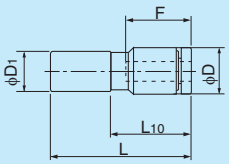
Product number	Applicable tubing outer diameter (inch)	L (mm)	F Tubing insertion length (mm)	H4 (mm)	t Max. panel thickness (mm)	T1 Recommended panel hole diameter (mm)	Washer outer diameter (mm)	Washer thickness (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EPC1/4-C1	1/4	36.4	16	19.0	9.5	15	28.0	2.5	5.0	12.5	7.0
EPC3/8-C1	3/8	44.0	20	27.0	14.0	21	37.0	3.0	9.0	45.0	16.0
* EPC1/2-C1	1/2	48.5	23	30.0	16.0	23	39.0	3.0	10. 0	67.0	67.0

*Made to order

Reducer

●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	D_1 Insertion part diameter (mm)	L (mm)	L_{10} (mm)	F Tubing insertion length (mm)	D (mm)	Min. inner diameter (mm)	Effective sectional area (mm^2)	Weight (g)
ER4-6-C1	4	6	34.5	18.0	14	10.0	3.0	3.5	2.0
ER4-8-C1	4	8	32.0	18.8	14	10.0	3.0	3.5	2.0
ER6-8-C1	6	8	34.7	17.7	15	13.0	5.0	10.5	2.0
ER6-10-C1	6	10	35.6	20.6	15	13.0	5.0	10.5	3.0
ER8-10-C1	8	10	39.4	18.9	16	15.0	7.0	28.0	3.0
ER8-12-C1	8	12	38.3	16.3	16	15.0	7.0	28.0	4.0
ER10-12-C1	10	12	42.8	20.8	19	18.0	9.0	45.0	8.0



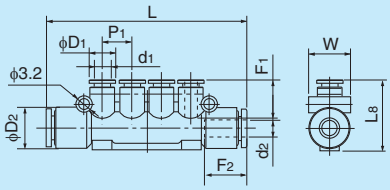
●Inch size type

Product number	Applicable tubing outer diameter (inch)	D_1 Insertion part diameter (inch)	L (mm)	L_{10} (mm)	F Tubing insertion length (mm)	D (mm)	Min. inner diameter (mm)	Effective sectional area (mm^2)	Weight (g)
ER1/4-3/8-C1	1/4	3/8	35.2	16.4	16	13.0	5.0	12.0	3.0

Manifold

●Inch size type

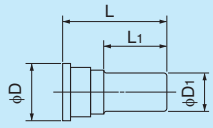
Product number	d_1 Applicable tubing outer diameter (inch)	d_2 Applicable tubing outer diameter (inch)	L (mm)	P_1 (mm)	L_8 (mm)	F_1 Tubing insertion length (mm)	F_2 Tubing insertion length (mm)	D_1 (mm)	D_2 (mm)	W (mm)	Weight (g)
EMA1/8-1/4-4S-C1	1/8	1/4	65.7	9.0	21.7	12	16	8.0	13.0	12.6	—



Blank plug

●Millimeter size type

Product number	D_1 Insertion part diameter (mm)	L (mm)	L_1 (mm)	D (mm)	Weight (g)
BC3-C1	3	23.5	13.0	5.0	0.5
BC4-C1	4	28.0	15.5	7.7	0.5
BC6-C1	6	28.0	16.0	9.7	0.8
BC8-C1	8	29.0	16.0	11.7	1.1
BC10-C1	10	32.0	17.7	14.0	1.6
BC12-C1	12	34.0	20.4	16.0	2.4



●Inch size type

Product number	D_1 Insertion part diameter (inch)	L (mm)	L_1 (mm)	D (mm)	Weight (g)
BC1/8-C1	1/8	26.0	13.5	7.7	—
BC1/4-C1	1/4	28.0	16.0	9.7	1.2
BC3/8-C1	3/8	32.0	17.7	14.0	2.5
BC1/2-C1	1/2	34.0	20.4	16.0	3.8

Chemifit™ Series

Chemifit™ C1S Series

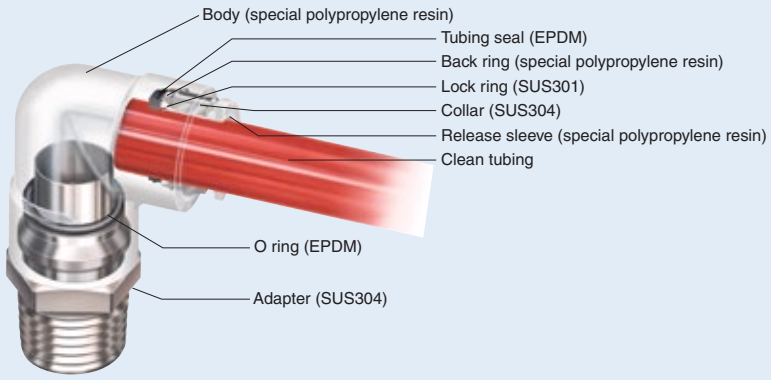
Clean-conscious product

PushOne™ fitting for clean air, pure water and chemical liquids

Features

- **Made in oil-free process**
  Assembled after cleaning each part in a clean room. No oil or fat is used in the sealing materials.
- **PushOne connection of tubing**
  The tubes can be connected without using a jig or tools.
- **SUS304 thread**
  High thread strength.
- **Double clean package**
  Each fitting is packed in a clean room and put in a zipper sealed bag.
- **Easy directional setting of tubing**
  The direction of elbows, tees, etc., can be decided at the time of piping installation.

Cross-sectional structure diagram



Product number example

EL 6 – R1/4 – C1S

- C1S: Chemifit C1S series
- R1/4: Thread size
- 6: Applicable tubing outer diameter
- EL: Shape

Distinction of millimeter/inch sizes

- The tubing size is shown on the release sleeve.

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air (clean air)	−20°C~+80°C
Water (pure water)	0°C~+80°C

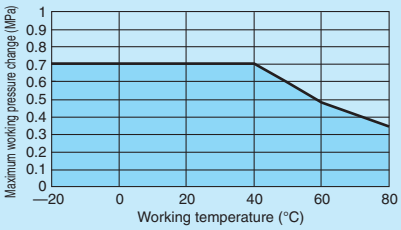
☞ Contact us for various chemical liquids.
☞ See "Combination List of Tubing and Fitting" on page 8.

Pressure condition

Maximum working pressure: 0.7MPa(at20°C)
Negative pressure performance: −99.975kPa

Relation between the working temperature and the maximum working pressure

Maximum working pressure varies with working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep pressure within the range.



Handling instructions

⚠ **Caution:** When the working conditions of tubes and fittings differ, use them under the lower specified conditions.

⚠ **Caution:** When water is used as the operating fluid, do not allow it to freeze.

⚠ **Caution:** Do not bend the pipe sharply near the tubing insertion port (sleeve end) of the fitting. Keep the tubing straight for twice as long as the tubing diameter from the insertion port.

☞ See page 34 for the common handling instructions for fittings.

Applicable tubing

Polyolefin resin tubing	Fluorocarbon resin tubing	Polyurethane tubing
		
PL PN	TA TP	U2 U1

(*1)

Related products and product introduction

Chemifit C1 speed controller	Off tool
	

Reference

(*1) Combinatory use of U2 or U1 tubing and Chemifit C1S series mixes general and clean type performances. When using them together in a clean environment, be aware of how this could lower the cleanliness level.

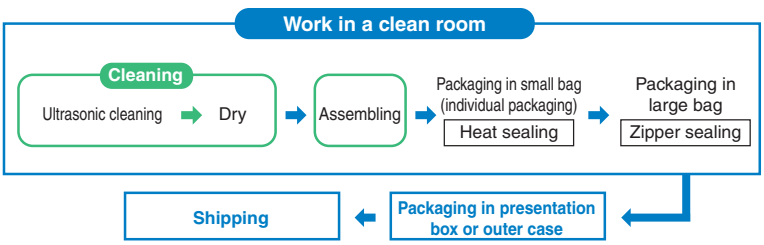
Chemifit™ C1S Series

Shape list

☞ See Chemifit C1 series for union type shape.

Oil-free processing, Clean wrapping and packaging

● **Ultrasonic cleaning with no oil or fat used for assembling in a clean room.**



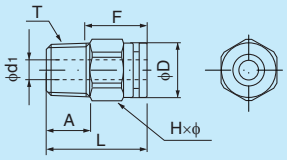
● **High-barrier sheet packaging available**

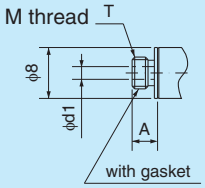
What is high-barrier sheet packaging?

In order to maintain the cleanliness of our products, no space for oxygen, water, or corrosive gas is allowed inside the package so a packaging bag with a high gas barrier is needed for protecting the content from these gases. To meet this requirement, Nitta provides high-barrier bags with a high gas barrier performance also for nitrogen sealing or atmospheric sealing.

- The packaging bags that Nitta uses have the highest gas barrier performance among clear bags.
- The bags do not contain halogen, etc., for safe burning.

Connector





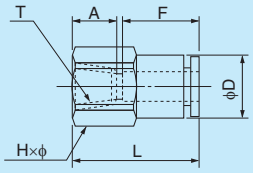
●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (R,M)	L (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d1 (mm)	Effective sectional area (mm²)	Weight (g)
EC3-M5-C1S	3	M5×0.8	15.9	3.5	11	7.0×7.7	5.5	2.0	2.0	2.0
EC4-M5-C1S	4	M5×0.8	19.4	4.0	14	10.0×11.0	10.0	2.0	3.0	6.0
EC4-R1/8-C1S	4	R1/8	19.4	8.0	14	10.0×11.0	10.0	2.5	4.0	7.0
EC6-M5-C1S	6	M5×0.8	23.2	4.0	15	12.0×13.0	12.0	2.0	3.5	9.0
EC6-R1/8-C1S	6	R1/8	21.6	8.0	15	12.0×13.0	12.0	4.0	10.5	9.0
EC6-R1/4-C1S	6	R1/4	24.6	11.0	15	14.0×15.4	12.0	4.0	10.5	18.0
EC8-R1/8-C1S	8	R1/8	28.2	9.0	16	14.0×15.4	13.9	6.0	20.0	14.0
EC8-R1/4-C1S	8	R1/4	25.2	11.0	16	14.0×15.4	13.9	6.0	25.0	16.0
EC10-R1/4-C1S	10	R1/4	28.1	11.0	19	17.0×18.5	16.9	8.0	40.0	21.0
EC10-R3/8-C1S	10	R3/8	29.1	12.0	19	17.0×18.5	16.9	8.0	40.0	29.0
EC12-R3/8-C1S	12	R3/8	30.0	12.0	20	19.0×21.0	19.0	10.0	50.0	31.0
EC12-R1/2-C1S	12	R1/2	33.0	15.0	20	22.0×24.0	19.0	10.0	50.0	58.0

●Inch size type

Product number	Applicable tubing outer diameter (inch)	T Thread size (M)	L (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d1 (mm)	Effective sectional area (mm²)	Weight (g)
EC1/8-M5-C1S	1/8	M5×0.8	16.2	3.5	11	8.0×8.8	8	2.5	—	—

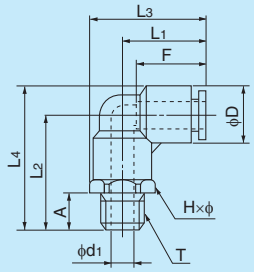
Internal connector

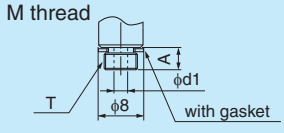


●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (RC)	L (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	Effective sectional area (mm²)	Weight (g)
EFC4-R1/8-C1S	4	RC1/8	23.9	8.7	14	14.0×15.4	10.0	4.0	16.0
EFC6-R1/8-C1S	6	RC1/8	25.0	8.7	15	14.0×15.4	12.0	10.5	17.0
EFC6-R1/4-C1S	6	RC1/4	29.5	13.0	15	17.0×18.5	12.0	10.5	26.0
EFC8-R1/4-C1S	8	RC1/4	30.9	13.0	16	17.0×18.5	13.9	25.0	28.0
EFC10-R1/4-C1S	10	RC1/4	33.9	13.0	19	17.0×18.5	16.9	40.0	34.0
EFC10-R3/8-C1S	10	RC3/8	34.4	13.5	19	22.0×24.5	16.9	40.0	50.0
EFC10-R1/2-C1S	10	RC1/2	38.4	17.5	19	24.0×26.5	16.9	40.0	56.0
EFC12-R3/8-C1S	12	RC3/8	35.3	13.5	20	22.0×24.5	19.0	50.0	50.0
EFC12-R1/2-C1S	12	RC1/2	39.3	17.5	20	24.0×26.5	19.0	50.0	58.0

90 degree elbow





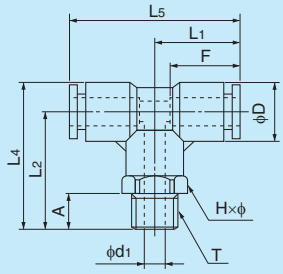
●Millimeter size type

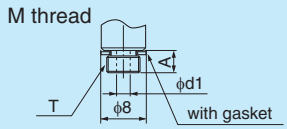
Product number	Applicable tubing outer diameter (mm)	T Thread size (R,M)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EL3-M5-C1S	3	M5×0.8	12.6	13.0	16.4	16.2	3.5	11	7.0x7.7	6.3	2.5	1.5	1.5	—
EL4-M5-C1S	4	M5×0.8	17.7	20.2	23.2	25.2	4.0	14	10.0x11.0	10.0	2.0	2.0	3.0	7.0
EL4-R1/8-C1S	4	R1/8	17.7	22.7	23.2	27.7	8.0	14	10.0x11.0	10.0	5.0	3.0	4.0	9.0
EL6-M5-C1S	6	M5×0.8	18.9	22.7	25.4	29.2	4.0	15	12.0x13.0	13.0	2.0	2.0	3.5	10.0
EL6-R1/8-C1S	6	R1/8	18.9	25.2	25.4	31.7	8.0	15	12.0x13.0	13.0	5.0	4.5	12.0	18.0
EL6-R1/4-C1S	6	R1/4	18.9	29.2	26.6	35.7	11.0	15	14.0x15.4	13.0	7.0	4.5	12.0	18.0
EL8-R1/8-C1S	8	R1/8	21.1	27.2	28.8	34.7	8.0	16	14.0x15.4	15.0	6.5	6.5	18.5	15.0
EL8-R1/4-C1S	8	R1/4	21.1	31.2	28.8	38.7	12.0	16	14.0x15.4	15.0	6.5	6.5	23.0	20.0
EL10-R1/4-C1S	10	R1/4	25.0	37.2	34.3	46.2	12.0	19	17.0x18.5	18.0	8.0	8.0	34.5	27.0
EL10-R3/8-C1S	10	R3/8	25.0	37.2	34.3	46.2	14.0	19	17.0x18.5	18.0	9.0	8.0	37.0	33.0
EL12-R3/8-C1S	12	R3/8	26.7	38.7	37.2	49.0	14.0	20	19.0x21.0	20.5	10.0	10.0	43.0	39.0
EL12-R1/2-C1S	12	R1/2	26.7	41.7	38.7	52.0	16.0	20	22.0x24.0	20.5	12.0	9.5	43.0	56.0

●Inch size type

Product number	Applicable tubing outer diameter (inch)	T Thread size (M)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EL1/8-M5-C1S	1/8	M5×0.8	14.7	12.0	19.1	16.0	3.5	11	8.0×8.8	8	2.5	2.5	—	—

Tee





●Millimeter size type

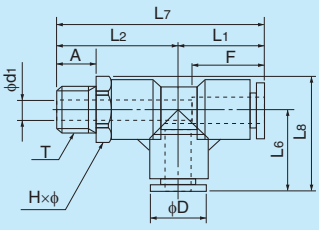
	Product number	Applicable tubing outer diameter (mm)	T Thread size (R,M)	L1 (mm)	L2 (mm)	L4 (mm)	L5 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
	ET3-M5-C1S	3	M5×0.8	12.6	13.0	16.2	25.1	3.5	11	7.0×7.7	6.3	2.5	1.5	1.5	2.0
	ET4-M5-C1S	4	M5×0.8	17.7	20.2	25.2	35.3	4.0	14	10.0×11.0	10.0	2.0	2.0	3.0	8.0
*	ET4-R1/8-C1S	4	R1/8	17.7	22.7	27.7	35.3	8.0	14	10.0×11.0	10.0	5.0	3.0	4.0	10.0
	ET6-M5-C1S	6	M5×0.8	18.9	22.7	29.2	37.9	4.0	15	12.0×13.0	13.0	2.0	2.0	3.5	12.0
*	ET6-R1/8-C1S	6	R1/8	18.9	25.2	31.7	37.9	8.0	15	12.0×13.0	13.0	5.0	4.5	12.0	14.0
*	ET6-R1/4-C1S	6	R1/4	18.9	29.2	35.7	37.9	11.0	15	14.0×15.4	13.0	7.0	4.5	12.0	21.0
*	ET8-R1/8-C1S	8	R1/8	21.1	27.2	34.7	42.2	8.0	16	14.0×15.4	15.0	6.5	6.5	18.5	18.0
*	ET8-R1/4-C1S	8	R1/4	21.1	31.2	38.7	42.2	12.0	16	14.0×15.4	15.0	6.5	6.5	23.0	24.0
*	ET10-R1/4-C1S	10	R1/4	25.0	37.2	46.2	50.0	12.0	19	17.0×18.5	18.0	8.0	8.0	34.5	34.0
*	ET10-R3/8-C1S	10	R3/8	25.0	37.2	46.2	50.0	14.0	19	17.0×18.5	18.0	9.0	8.0	37.0	39.0
*	ET12-R3/8-C1S	12	R3/8	26.7	38.7	49.0	53.4	14.0	20	19.0×21.0	20.5	10.0	10.0	43.0	48.0
*	ET12-R1/2-C1S	12	R1/2	26.7	41.7	52.0	53.4	16.0	20	22.0×24.0	20.5	12.0	9.5	43.0	65.0

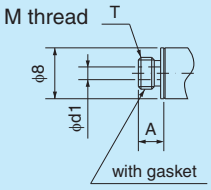
*Made to order

●Inch size type

Product number	Applicable tubing outer diameter (inch)	T Thread size (M)	L1 (mm)	L2 (mm)	L4 (mm)	L5 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
ET1/8-M5-C1S	1/8	M5×0.8	15.2	12.0	16.0	30.4	3.5	11	8×8.8	8.0	2.5	2.5	13.0	5.0

Service tee



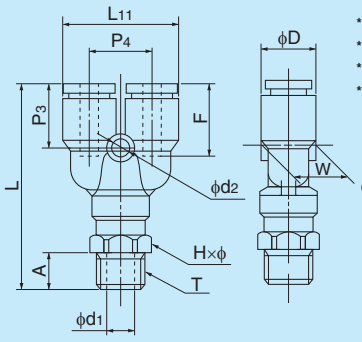


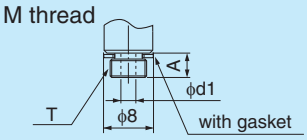
●Millimeter size type

	Product number	Applicable tubing outer diameter (mm)	T Thread size (R,M)	L1 (mm)	L2 (mm)	L6 (mm)	L7 (mm)	L8 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	D (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
	EST4-M5-C1S	4	M5×0.8	17.7	20.2	17.7	38.0	23.2	4.0	14	10.0×11.0	10.0	2.0	2.0	3.0	8.0
*	EST4-R1/8-C1S	4	R1/8	17.7	22.7	17.7	40.4	23.2	8.0	14	10.0×11.0	10.0	5.0	3.0	4.0	10.0
	EST6-M5-C1S	6	M5×0.8	18.9	22.7	18.9	41.6	25.4	4.0	15	12.0×13.0	13.0	2.0	2.0	3.5	12.0
*	EST6-R1/8-C1S	6	R1/8	18.9	25.2	18.9	44.1	25.4	8.0	15	12.0×13.0	13.0	5.0	4.5	12.0	14.0
*	EST6-R1/4-C1S	6	R1/4	18.9	29.2	18.9	48.1	26.6	11.0	15	14.0×15.4	13.0	7.0	4.5	12.0	21.0
*	EST8-R1/8-C1S	8	R1/8	21.1	27.2	21.1	48.3	28.8	8.0	16	14.0×15.4	15.0	6.5	6.5	18.5	18.0
*	EST8-R1/4-C1S	8	R1/4	21.1	31.2	21.1	52.3	28.8	12.0	16	14.0×15.4	15.0	6.5	6.5	23.0	24.0
*	EST10-R1/4-C1S	10	R1/4	25.0	37.2	25.0	62.2	34.3	12.0	19	17.0×18.5	18.0	8.0	8.0	34.5	34.0
*	EST10-R3/8-C1S	10	R3/8	25.0	37.2	25.0	62.2	34.3	14.0	19	17.0×18.5	18.0	9.0	8.0	37.0	40.0
*	EST12-R3/8-C1S	12	R3/8	26.7	38.7	26.7	65.4	37.2	14.0	20	19.0×21.0	20.5	10.0	10	43.0	48.0
*	EST12-R1/2-C1S	12	R1/2	26.7	41.7	26.7	68.4	38.7	16.0	20	22.0×24.0	20.5	12.0	9.5	43.0	65.0

*Made to order

Y joint





●Millimeter size type

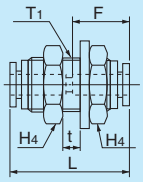
	Product number	Applicable tubing outer diameter (mm)	T Thread size (R,M)	L (mm)	L11 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	P3 (mm)	P4 (mm)	W (mm)	D (mm)	d1 (mm)	d2 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
	EY3-M5-C1S	3	M5×0.8	26.2	13.3	3.5	11	7.0×7.7	10.9	7.0	6.0	6.3	2.5	2.0	1.5	—	—
	EY4-M5-C1S	4	M5×0.8	38.4	21.0	4.0	14	10.0×11.0	13.9	11.0	9.7	10.0	2.0	3.2	2.0	2.0	9.0
*	EY4-R1/8-C1S	4	R1/8	40.9	21.0	8.0	14	10.0×11.0	13.9	11.0	9.7	10.0	5.0	3.2	3.5	3.5	11.0
	EY6-M5-C1S	6	M5×0.8	41.7	25.2	4.0	15	12.0×13.0	15.2	12.2	12.5	13.0	2.0	4.2	2.0	2.5	12.0
*	EY6-R1/8-C1S	6	R1/8	44.2	25.2	8.0	15	12.0×13.0	15.2	12.2	12.5	13.0	5.0	4.2	4.5	9.0	15.0
*	EY6-R1/4-C1S	6	R1/4	48.2	25.2	11.0	15	14.0×15.4	15.2	12.2	12.5	13.0	7.0	4.2	4.5	9.0	22.0
*	EY8-R1/8-C1S	8	R1/8	48.3	29.2	8.0	16	14.0×15.4	16.8	14.2	14.5	15.0	6.5	4.2	6.5	17.5	20.0
*	EY8-R1/4-C1S	8	R1/4	52.3	29.2	12.0	16	14.0×15.4	16.8	14.2	14.5	15.0	6.5	4.2	6.5	20.0	25.0
*	EY10-R1/4-C1S	10	R1/4	60.2	35.5	12.0	19	17.0×18.5	18.7	17.5	17.5	18.0	8.0	4.2	8.0	27.5	33.0
*	EY10-R3/8-C1S	10	R3/8	60.2	35.5	14.0	19	17.0×18.5	18.7	17.5	17.5	18.0	9.0	4.2	8.0	28.0	41.0
*	EY12-R3/8-C1S	12	R3/8	64.2	40.5	14.0	20	19.0×21.0	20.7	20.0	20.0	20.5	10.0	4.2	10.0	40.0	52.0
*	EY12-R1/2-C1S	12	R1/2	67.2	40.5	16.0	20	22.0×24.0	20.7	20.0	20.0	20.5	12.0	4.2	9.5	40.0	70.0

*Made to order

●Inch size type

Product number	Applicable tubing outer diameter (inch)	T Thread size (M)	L (mm)	L11 (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	P3 (mm)	P4 (mm)	W (mm)	D (mm)	d1 (mm)	d2 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EY1/8-M5-C1S	1/8	M5×0.8	26.4	17.0	3.5	11	8.0×8.8	11.7	9.0	8.0	8.0	2.5	3.2	2.5	—	—

Panel touch connector



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	L (mm)	F Tubing insertion length (mm)	H4 (mm)	T1 Recommended panel hole diameter (mm)	t Max. panel thickness (mm)	Washer outer diameter (mm)	Washer thickness (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EPC3-C1S	3	24.8	11	12.0	9.0	4.5	15.0	1.6	2.0	2.5	—

●Inch size type

Product number	Applicable tubing outer diameter (inch)	L (mm)	F Tubing insertion length (mm)	H4 (mm)	T1 Recommended panel hole diameter (mm)	t Max. panel thickness (mm)	Washer outer diameter (mm)	Washer thickness (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
EPC1/8-C1S	1/8	26.1	11	14.0	11.0	5.5	18.0	1.6	2.5	—	—

Chemifit™ CSE Series

Clean-conscious product

Threaded fitting for clean air, pure water and chemical liquids

Features

- **SUS316 threaded fitting**
  2-piece assembly, consisting of nut and body, which utilizes Nitta's proprietary mechanism.
- **Highly improved workability for attaching and detaching a tubing**
  Fitting body and insertion part have an integrated construction. The assembly nut has a built-in sleeve. Both the fitting body and the assembly nut are reusable.
- **Uniform workability for connecting tubing**
  Tubing connection is completed when the assembly nut reaches the fitting body. No need for torque control or special tools.
- **No rotation of tubing when the tubing is attached**
  A sleeve inside the assembly nut can rotate. Hence the inserted does not rotate with it.
- **Made in oil-free proccess**
  Assembled after cleaning each part in a clean room.
- **High sealing performance**
  Nitta's original sealing mechanism achieves high durability against degradation of sealing performance due to cold-hot cycle.
- **No need for additional tightening of nut**
  Construction with less stress relaxation ensures high sealing performance for a long period of time and the nut does not need to be tightened at maintenance.
- **Highly smooth inner surface and R sphere surface processing on elbow crossing**
  The surface roughness is below Ra3.2. The corner of the elbow is sphere surface processed, which reduces liquid and detergent remnants.
- **Silver plated thread inside assembly nut**
  Prevents the body and assembly nuts from seizing when the tubing is tightened.

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air (clean air)	−65°C~+260°C
Water (pure water)	0°C~+100°C

☞Contact us for various chemical liquids.
☞See "Combination List of Tubing and Fitting" on page 8.

Pressure condition

Maximum working pressure: 5.0MPa
Negative pressure performance: −101.294kPa

Handling instructions

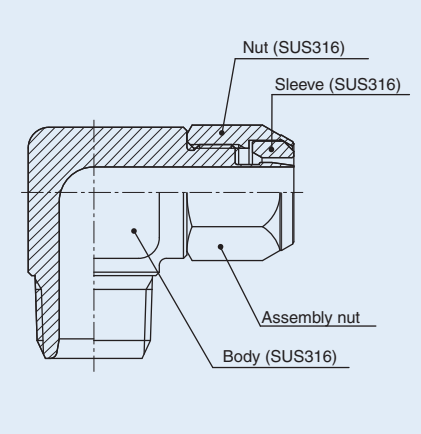
⚠ **Caution:** When the working conditions of tubes and fittings differ, use them under the lower specified conditions.

⚠ **Caution:** When water is used as the operating fluid, do not allow it to freeze.

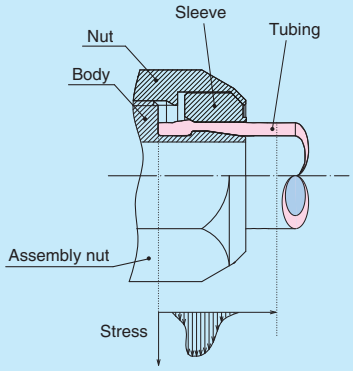
⚠ **Caution:** Do not bend the pipe sharply near the tubing insertion port of the fitting. Keep the tubing straight for twice as long as the tubing diameter from the insertion port.

☞ See page 34 for the common handling instructions for fittings.

Cross-sectional structure diagram



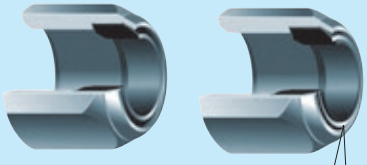
Sealing mechanism



Nitta's original sealing mechanism achieves high durability against degradation of sealing performance due to cold-hot cycle.
The mechanism does not cause stress relaxation, ensuring sealing performance for a long period of time. Also, the nut does not need to be tightened at maintenance.

Distinction of millimeter/inch sizes

Assembly nut



Millimeter size　Inch size

The inch size type has a boss at the sleeve end to distinguish from millimeter size type.

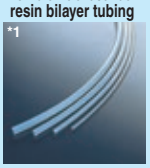
Product number example

CSE − C 6×4 − R1/4

- R1/4 — Thread size
- 6×4 — Applicable tubing outer diameter
- C — Shape
- CSE — Chemifit CSE series

Reference

Applicable tubing

Polyolefin resin tubing	Fluorocarbon resin tubing	Polyurethane tubing	Flexible fluorocarbon resin bilayer tubing	Flame-resistant tubing	Polybutene tubing	Antistatic tubing	Polyurethane processed tubing
							
PL　PN	TA	U2　U1　U5	TES	FUK	PB	UE	UC　USC UMC　UML

Clean, Antistatic tubing

ES

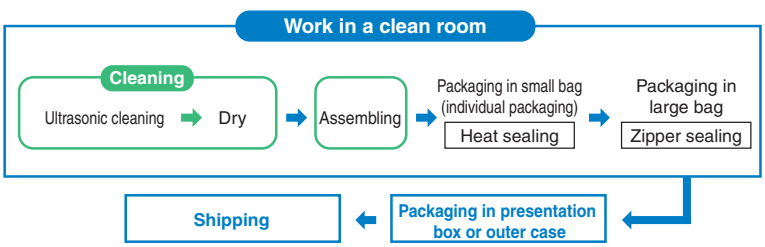
(*1) Combinatory use of U2, U1, U5, TES, FUK, PB, UE or polyurethane processed tubing and Chemifit CSE series mixes general and clean type performances.
When using them together in a clean environment, be aware of how this could lower the cleanliness level.

Chemifit™ CSE Series

Shape list

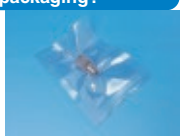
Oil-free processing, Clean wrapping and packaging

● **Ultrasonic cleaning with no oil or fat used for assembling in a clean room.**



● **High-barrier sheet packaging available**

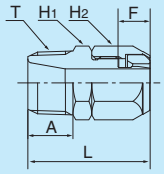
What is high-barrier sheet packaging?



In order to maintain the cleanliness of our products, no space for oxygen, water, or corrosive gas is allowed inside the package and a packaging bag with a high gas barrier is needed for protecting the content from these gases. To meet this requirement, Nitta provides high-barrier bags with a high gas barrier performance also for nitrogen sealing or atmospheric sealing.

- The packaging bags that Nitta uses have the highest gas barrier performance among clear bags.
- The bags do not contain halogen, etc., for safe burning.

Connector



●Millimeter size type

	Product number	Applicable tubing outer×inner diameters (mm)	T Thread size (R)	L (mm)	A (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	Min. inner diameter (mm)	Effective sectional area (mm^2)	Weight (g)
	CSE-C4×2-R1/8	4×2	R1/8	23.0	8.0	5.5	10.0	10.0	1.5	1.7	11.0
	CSE-C4×2-R1/4	4×2	R1/4	26.0	11.0	5.5	14.0	10.0	1.5	1.7	19.0
	CSE-C6×4-R1/8	6×4	R1/8	25.5	8.0	7	12.0	12.0	3.5	9.0	16.0
	CSE-C6×4-R1/4	6×4	R1/4	28.5	11.0	7	14.0	12.0	3.5	9.0	23.0
	CSE-C6×4-R3/8	6×4	R3/8	29.5	12.0	7	17.0	12.0	3.5	9.0	33.0
*	CSE-C8×5-R1/8	8×5	R1/8	27.0	8.0	7.5	14.0	14.0	4.5	15.0	22.0
*	CSE-C8×5-R1/4	8×5	R1/4	30.0	11.0	7.5	14.0	14.0	4.5	15.5	26.0
*	CSE-C8×5-R3/8	8×5	R3/8	31.0	12.0	7.5	17.0	14.0	4.5	15.5	36.0
	CSE-C8×6-R1/8	8×6	R1/8	27.0	8.0	7.5	14.0	14.0	5.5	23.0	21.0
	CSE-C8×6-R1/4	8×6	R1/4	30.0	11.0	7.5	14.0	14.0	5.5	23.5	25.0
	CSE-C8×6-R3/8	8×6	R3/8	31.0	12.0	7.5	17.0	14.0	5.5	23.5	35.0
	CSE-C8×6-R1/2	8×6	R1/2	34.0	15.0	7.5	22.0	14.0	5.5	23.5	54.0
*	CSE-C10×6.5-R1/4	10×6.5	R1/4	31.5	11.0	8.5	17.0	17.0	6.0	27.5	36.0
	CSE-C10×8-R1/4	10×8	R1/4	31.5	11.0	8.5	17.0	17.0	7.5	42.5	34.0
	CSE-C10×8-R3/8	10×8	R3/8	32.5	12.0	8.5	17.0	17.0	7.5	43.5	40.0
	CSE-C10×8-R1/2	10×8	R1/2	35.5	15.0	8.5	22.0	17.0	7.5	43.5	58.0
*	CSE-C12×8-R1/4	12×8	R1/4	33.5	11.0	10	17.0	19.0	7.5	42.5	42.0
	CSE-C12×9-R1/4	12×9	R1/4	33.5	11.0	10	17.0	19.0	8.0	48.5	40.0
	CSE-C12×9-R3/8	12×9	R3/8	34.5	12.0	10	17.0	19.0	8.5	53.0	46.0
	CSE-C12×9-R1/2	12×9	R1/2	37.5	15.0	10	22.0	19.0	8.5	54.0	65.0
	CSE-C12×10-R1/4	12×10	R1/4	33.5	11.0	10	17.0	19.0	8.0	49.5	39.0
	CSE-C12×10-R3/8	12×10	R3/8	34.5	12.0	10	17.0	19.0	9.5	67.0	44.0
	CSE-C12×10-R1/2	12×10	R1/2	37.5	15.0	10	22.0	19.0	9.5	68.5	63.0
*	CSE-C19×16-R1/2	19×16	R1/2	42.3	15.0	12.3	27.0	27.0	12.0	–	100.0
*	CSE-C19×16-R3/4	19×16	R3/4	44.3	17.0	12.3	29.0	27.0	15.0	–	119.0

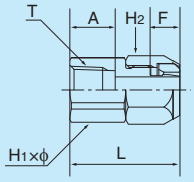
*Made to order

●Inch size type

	Product number	Applicable tubing outer×inner diameters (mm)	T Thread size (R)	L (mm)	A (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	Min. inner diameter (mm)	Effective sectional area (mm^2)	Weight (g)
	CSE-C1/4-R1/8	6.35×4.57	R1/8	25.5	8.0	7	12.0	12.0	4.0	12.5	16.0
	CSE-C1/4-R1/4	6.35×4.57	R1/4	28.5	11.0	7	14.0	12.0	4.0	12.5	22.0
*	CSE-C1/4-R3/8	6.35×4.57	R3/8	29.5	12.0	7	17.0	12.0	4.0	12.5	32.0
	CSE-C3/8-R1/4	9.53×6.99	R1/4	32.0	11.0	9	17.0	17.0	6.5	32.0	36.0
	CSE-C3/8-R3/8	9.53×6.99	R3/8	33.0	12.0	9	17.0	17.0	6.5	33.0	42.0
*	CSE-C3/8-R1/2	9.53×6.99	R1/2	36.0	15.0	9	22.0	17.0	6.5	32.5	62.0
*	CSE-C1/2-R1/4	12.70×9.56	R1/4	35.0	11.0	10.5	19.0	22.0	8.0	49.5	57.0
	CSE-C1/2-R3/8	12.70×9.56	R3/8	36.0	12.0	10.5	19.0	22.0	9.0	61.0	63.0
	CSE-C1/2-R1/2	12.70×9.56	R1/2	39.0	15.0	10.5	22.0	22.0	9.0	61.0	81.0

*Made to order

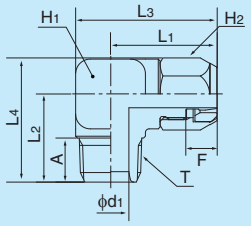
Internal connector



●Millimeter size type

Product number	Applicable tubing outer×inner diameters (mm)	T Thread size (RC)	L (mm)	A (mm)	F Tubing insertion length (mm)	H2 Width across flat (mm)	H×ϕ Width across flat (mm)	Min. inner diameter (mm)	Effective sectional area (mm)	Weight (g)
CSE-FC6×4-R1/8	6×4	RC1/8	24.5	8.7	7	12.0	14.0×15.4	3.5	9.0	20.0
CSE-FC8×6-R1/4	8×6	RC1/4	30.0	13.0	7.5	14.0	17.0×18.5	5.5	21.5	33.0
CSE-FC10×8-R1/4	10×8	RC1/4	31.5	13.0	8.5	17.0	17.0×18.5	7.5	29.0	39.0

90 degree elbow



●Millimeter size type

Product number	Applicable tubing outer×inner diameters (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	A (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
CSE-L6×4-R1/8	6×4	R1/8	23.5	17.0	30.5	24.0	8	7	14.0	12.0	6	3.5	8.5	33.0
CSE-L6×4-R1/4	6×4	R1/4	23.5	20.0	30.5	27.0	11	7	14.0	12.0	8	3.5	8.5	35.0
CSE-L6×4-R3/8	6×4	R3/8	26.0	24.0	35.5	33.5	12	7	19.0	12.0	10	3.5	8.0	72.0
* CSE-L8×5-R1/4	8×5	R1/4	25.0	20.0	32.0	28.1	11	7.5	14.0	14.0	8	4.5	–	42.0
CSE-L8×6-R1/8	8×6	R1/8	25.0	18.0	32.0	26.1	8	7.5	14.0	14.0	6	5.5	19.0	37.0
CSE-L8×6-R1/4	8×6	R1/4	25.0	20.0	32.0	28.1	11	7.5	14.0	14.0	8	5.5	20.0	38.0
CSE-L8×6-R3/8	8×6	R3/8	27.5	24.0	37.0	33.5	12	7.5	19.0	14.0	10	5.5	20.5	74.0
* CSE-L8×6-R1/2	8×6	R1/2	29.0	27.0	40.0	38.0	15	7.5	22.0	14.0	12	5.5	20.5	98.0
CSE-L10×8-R1/4	10×8	R1/4	29.0	23.0	38.5	32.8	11	8.5	19.0	17.0	8	7.5	35.0	77.0
CSE-L10×8-R3/8	10×8	R3/8	29.0	24.0	38.5	33.8	12	8.5	19.0	17.0	10	7.5	37.0	79.0
CSE-L10×8-R1/2	10×8	R1/2	30.5	27.0	41.5	38.0	15	8.5	22.0	17.0	12	7.5	–	116.0
* CSE-L12×8-R1/4	12×8	R1/4	31.0	23.0	40.5	34.0	11	10	19.0	19.0	8	7.5	34.0	85.0
* CSE-L12×8-R1/2	12×8	R1/2	32.5	27.0	43.5	38.0	15	10	22.0	19.0	12	7.5	38.0	110.0
CSE-L12×9-R1/4	12×9	R1/4	31.0	23.0	40.5	34.0	11	10	19.0	19.0	8	8	40.5	83.0
CSE-L12×9-R3/8	12×9	R3/8	31.0	24.0	40.5	35.0	12	10	19.0	19.0	10	8.5	44.0	85.0
CSE-L12×9-R1/2	12×9	R1/2	32.5	27.0	43.5	38.0	15	10	22.0	19.0	12	8.5	48.5	107.0
CSE-L12×10-R1/4	12×10	R1/4	31.0	23.0	40.5	34.0	11	10	19.0	19.0	8	8	47.5	80.0
CSE-L12×10-R3/8	12×10	R3/8	31.0	24.0	40.5	35.0	12	10	19.0	19.0	10	9.5	54.0	83.0
CSE-L12×10-R1/2	12×10	R1/2	32.5	27.0	43.5	38.0	15	10	22.0	19.0	12	9.5	56.0	106.0
* CSE-L19×16-R3/8	19×16	R3/8	37.3	27.5	50.3	43.1	12	12.3	26.0	27.0	10	10	–	192.0
* CSE-L19×16-R1/2	19×16	R1/2	37.3	30.5	50.3	46.1	15	12.3	26.0	27.0	12	12	–	201.0
* CSE-L19×16-R3/4	19×16	R3/4	38.8	34.0	53.3	49.6	17	12.3	29.0	27.0	15	15	–	267.0

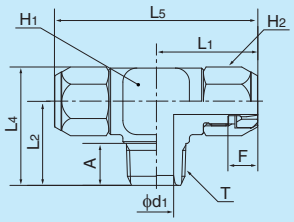
*Made to order

●Inch size type

Product number	Applicable tubing outer×inner diameters (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	A (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
CSE-L1/4-R1/8	6.35×4.57	R1/8	23.5	17.0	30.5	24.0	8	7	14.0	12.0	6.0	4.0	10.5	37.0
CSE-L1/4-R1/4	6.35×4.57	R1/4	23.5	20.0	30.5	27.0	11	7	14.0	12.0	8.0	4.0	11.0	38.0
* CSE-L1/4-R3/8	6.35×4.57	R3/8	26.0	24.0	35.5	33.5	12	7	19.0	12.0	10.0	4.0	11.0	81.0
CSE-L3/8-R1/4	9.53×6.99	R1/4	29.5	23.0	39.0	33.0	11	9	19.0	17.0	8.0	6.5	27.5	90.0
CSE-L3/8-R3/8	9.53×6.99	R3/8	29.5	24.0	39.0	34.0	12	9	19.0	17.0	10.0	6.5	28.5	91.0
* CSE-L3/8-R1/2	9.53×6.99	R1/2	31.0	27.0	42.0	38.0	15	9	22.0	17.0	12.0	6.5	29.5	123.0
* CSE-L1/2-R1/4	12.70×9.56	R1/4	31.5	26.0	41.0	38.7	11	10.5	19.0	22.0	8.0	8.0	44.0	111.0
CSE-L1/2-R3/8	12.70×9.56	R3/8	31.5	27.0	41.0	39.7	12	10.5	19.0	22.0	10.0	9.0	50.5	112.0
CSE-L1/2-R1/2	12.70×9.56	R1/2	33.0	27.5	44.0	40.2	15	10.5	22.0	22.0	12.0	9.0	51.5	135.0

*Made to order

Tee



●Millimeter size type

Product number	Applicable tubing outer×inner diameters (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L4 (mm)	L5 (mm)	A (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
* CSE-T6×4-R1/8	6×4	R1/8	23.5	17.0	24.0	47.0	8.0	7	14.0	12.0	6.0	3.5	–	48.0
* CSE-T6×4-R1/4	6×4	R1/4	23.5	20.0	27.0	47.0	11.0	7	14.0	12.0	8.0	3.5	–	50.0
* CSE-T6×4-R3/8	6×4	R3/8	26.0	24.0	33.5	52.0	12.0	7	19.0	12.0	10.0	3.5	–	94.0
* CSE-T8×6-R1/8	8×6	R1/8	25.0	18.0	26.1	50.0	8.0	7.5	14.0	14.0	6.0	5.5	–	54.0
* CSE-T8×6-R1/4	8×6	R1/4	25.0	20.0	28.1	50.0	11.0	7.5	14.0	14.0	8.0	5.5	–	56.0
* CSE-T8×6-R3/8	8×6	R3/8	27.5	24.0	33.5	55.0	12.0	7.5	19.0	14.0	10.0	5.5	20.5	102.0
* CSE-T8×6-R1/2	8×6	R1/2	29.0	27.0	38.0	58.0	15.0	7.5	22.0	14.0	12.0	5.5	–	127.0
* CSE-T10×8-R1/4	10×8	R1/4	29.0	23.0	32.8	58.0	11.0	8.5	19.0	17.0	8.0	7.5	34.0	109.0
* CSE-T10×8-R3/8	10×8	R3/8	29.0	24.0	33.8	58.0	12.0	8.5	19.0	17.0	10.0	7.5	–	110.0
* CSE-T10×8-R1/2	10×8	R1/2	30.5	27.0	38.0	61.0	15.0	8.5	22.0	17.0	12.0	7.5	–	138.0
* CSE-T12×9-R1/4	12×9	R1/4	31.0	23.0	34.0	62.0	11.0	10	19.0	19.0	8.0	8.0	–	119.0
* CSE-T12×9-R3/8	12×9	R3/8	31.0	24.0	35.0	62.0	12.0	10	19.0	19.0	10.0	8.5	–	121.0
* CSE-T12×9-R1/2	12×9	R1/2	32.5	27.0	38.0	65.0	15.0	10	22.0	19.0	12.0	8.5	–	149.0
* CSE-T12×10-R1/4	12×10	R1/4	31.0	23.0	34.0	62.0	11.0	10	19.0	19.0	8.0	8.0	–	115.0
* CSE-T12×10-R3/8	12×10	R3/8	31.0	24.0	35.0	62.0	12.0	10	19.0	19.0	10.0	9.5	–	117.0
* CSE-T12×10-R1/2	12×10	R1/2	32.5	27.0	38.0	65.0	15.0	10	22.0	19.0	12.0	9.5	–	145.0

*Made to order

●Inch size type

Product number	Applicable tubing outer×inner diameters (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L4 (mm)	L5 (mm)	A (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
* CSE-T1/4-R1/8	6.35×4.57	R1/8	23.5	17.0	24.0	47.0	8.0	7	14.0	12.0	6.0	4.0	–	47.0
* CSE-T1/4-R1/4	6.35×4.57	R1/4	23.5	20.0	27.0	47.0	11.0	7	14.0	12.0	8.0	4.0	–	49.0
* CSE-T1/4-R3/8	6.35×4.57	R3/8	26.0	24.0	33.5	52.0	12.0	7	19.0	12.0	10.0	4.0	–	93.0
* CSE-T3/8-R1/4	9.53×6.99	R1/4	29.5	23.0	33.0	59.0	11.0	9	19.0	17.0	8.0	6.5	–	112.0
* CSE-T3/8-R3/8	9.53×6.99	R3/8	29.5	24.0	34.0	59.0	12.0	9	19.0	17.0	10.0	6.5	–	114.0
* CSE-T3/8-R1/2	9.53×6.99	R1/2	31.0	27.0	38.0	62.0	15.0	9	22.0	17.0	12.0	6.5	–	142.0
* CSE-T1/2-R1/4	12.70×9.56	R1/4	31.5	26.0	38.7	63.0	11.0	10.5	19.0	22.0	8.0	8.0	–	149.0
* CSE-T1/2-R3/8	12.70×9.56	R3/8	31.5	27.0	39.7	63.0	12.0	10.5	19.0	22.0	10.0	9.0	–	151.0
* CSE-T1/2-R1/2	12.70×9.56	R1/2	33.0	27.5	40.2	66.0	15.0	10.5	22.0	22.0	12.0	9.0	–	175.0

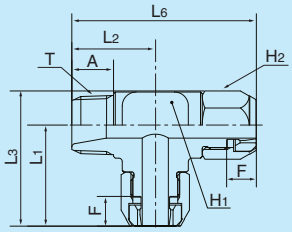
*Made to order

Service tee

●Millimeter size type

	Product number	Applicable tubing outer×inner diameters (mm)	T Thread size (R)	L_1 (mm)	L_2 (mm)	L_3 (mm)	L_6 (mm)	A (mm)	F Tubing insertion length (mm)	H_1 Width across flat (mm)	H_2 Width across flat (mm)	Min. inner diameter (mm)	Effective sectional area (mm^2)	Weight (g)
*	CSE-ST6×4-R1/8	6×4	R1/8	23.5	17.0	30.5	40.5	8	7	14.0	12.0	3.5	–	50.0
*	CSE-ST6×4-R1/4	6×4	R1/4	23.5	20.5	30.5	44.0	11	7	14.0	12.0	3.5	7.0	56.0
*	CSE-ST8×6-R1/4	8×6	R1/4	25.0	20.0	33.1	45.0	11	7.5	14.0	14.0	5.5	–	59.0
*	CSE-ST10×8-R3/8	10×8	R3/8	29.0	24.0	38.8	53.0	12	8.5	19.0	17.0	7.5	–	115.0
*	CSE-ST12×9-R1/2	12×9	R1/2	32.5	30.0	45.5	62.5	15	10	26.0	19.0	8.5	–	221.0
*	CSE-ST12×10-R1/2	12×10	R1/2	32.5	30.0	45.5	62.5	15	10	26.0	19.0	9.5	–	216.0

*Made to order

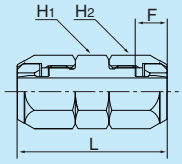


Union connector

●Millimeter size type

	Product number	Applicable tubing outer×inner diameters (mm)	L (mm)	F Tubing insertion length (mm)	H_1 Width across flat (mm)	H_2 Width across flat (mm)	Min. inner diameter (mm)	Effective sectional area (mm^2)	Weight (g)
	CSE-UC6×4	6×4	32.0	7	12.0	12.0	3.5	8.5	23.0
*	CSE-UC8×5	8×5	36.0	7.5	14.0	14.0	4.5	–	35.0
	CSE-UC8×6	8×6	36.0	7.5	14.0	14.0	5.5	21.5	34.0
	CSE-UC10×8	10×8	40.0	8.5	17.0	17.0	7.5	39.5	54.0
	CSE-UC12×9	12×9	45.0	10	19.0	19.0	8.5	47.0	73.0
	CSE-UC12×10	12×10	45.0	10	19.0	19.0	9.5	63.0	70.0

*Made to order



●Inch size type

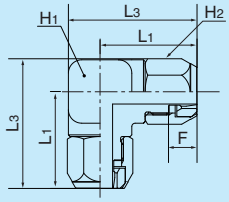
Product number	Applicable tubing outer×inner diameters (mm)	L (mm)	F Tubing insertion length (mm)	H_1 Width across flat (mm)	H_2 Width across flat (mm)	Min. inner diameter (mm)	Effective sectional area (mm^2)	Weight (g)
CSE-UC1/4	6.35×4.57	32.0	7	12.0	12.0	4	11.0	23.0
CSE-UC3/8	9.53×6.99	41.0	9.0	17.0	17.0	6.5	30.0	57.0
CSE-UC1/2	12.70×9.56	48.0	10.5	19.0	22.0	9	57.5	102.0

90 degree union elbow

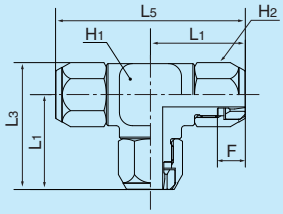
●Millimeter size type

	Product number	Applicable tubing outer×inner diameters (mm)	L_1 (mm)	L_3 (mm)	F Tubing insertion length (mm)	H_1 Width across flat (mm)	H_2 Width across flat (mm)	Min. inner diameter (mm)	Effective sectional area (mm^2)	Weight (g)
	CSE-UL6×4	6×4	23.5	30.5	7	14.0	12.0	3.5	7.0	43.0
	CSE-UL8×6	8×6	25.0	33.1	7.5	14.0	14.0	5.5	17.5	49.0
	CSE-UL10×8	10×8	29.0	38.8	8.5	19.0	17.0	7.5	32.5	95.0
	CSE-UL12×9	12×9	31.0	42.0	10	19.0	19.0	8.5	42.0	116.0
*	CSE-UL12×10	12×10	31.0	42.0	10	19.0	19.0	9.5	–	106.0
*	CSE-UL19×16	19×16	38.8	54.4	12.3	26.0	27.0	15.0	–	–

*Made to order



Union tee



●Millimeter size type

	Product number	Applicable tubing outer×inner diameters (mm)	L1 (mm)	L3 (mm)	L5 (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
	CSE-UT6×4	6×4	23.5	30.5	47.0	7	14.0	12.0	3.5	7.0	59.0
*	CSE-UT8×5	8×5	25.0	33.1	50.0	7.5	14.0	14.0	4.5	11.5	72.0
	CSE-UT8×6	8×6	25.0	33.1	50.0	7.5	14.0	14.0	5.5	16.5	68.0
	CSE-UT10×8	10×8	29.0	38.8	58.0	8.5	19.0	17.0	7.5	31.5	127.0
	CSE-UT12×9	12×9	31.0	42.0	62.0	10	19.0	19.0	8.5	–	140.0
*	CSE-UT12×10	12×10	31.0	42.0	62.0	10	19.0	19.0	9.5	–	133.0

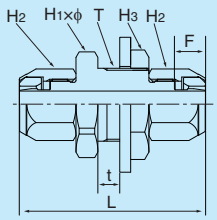
*Made to order

●Inch size type

	Product number	Applicable tubing outer×inner diameters (mm)	L1 (mm)	L3 (mm)	L5 (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
*	CSE-UT1/4	6.35×4.57	23.5	30.5	47.0	7	14.0	12.0	4	–	55.0
*	CSE-UT3/8	9.53×6.99	29.5	39.5	59.0	9	19.0	17.0	6.5	–	129.0
	CSE-UT1/2	12.70×9.56	33.0	45.7	66.0	10.5	22.0	22.0	9	45.5	204.0

*Made to order

Panel touch connector

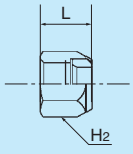


●Millimeter size type

	Product number	Applicable tubing outer×inner diameters (mm)	L (mm)	F Tubing insertion length (mm)	H2 Width across flat (mm)	H3 Width across flat (mm)	T Thread size (M)	t Max. panel thickness (mm)	Washer thickness (mm)	Washer outer diameter (mm)	H1×ϕ Width across flat (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
	CSE-UCT6×4	6×4	45.0	7	12.0	21.0	M15×1	6.0	3	28	21.0x23.0	3.5	8.0	70.0
*	CSE-UCT8×5	8×5	48.0	7.5	14.0	22.0	M17×1	6.0	3	30	22.0x24.5	4.5	–	85.0
	CSE-UCT8×6	8×6	48.0	7.5	14.0	22.0	M17×1	6.0	3	30	22.0x24.5	5.5	21.0	83.0
	CSE-UCT10×8	10×8	51.0	8.5	17.0	26.0	M20×1	6.0	3	34	26.0x29.0	7.5	40.5	121.0
	CSE-UCT12×9	12×9	54.5	10	19.0	27.0	M22×1	5.5	3	37	27.0x30.0	8.5	47.5	139.0
	CSE-UCT12×10	12×10	54.5	10	19.0	27.0	M22×1	5.5	3	37	27.0x30.0	9.5	63.0	135.0

*Made to order

Assembly nut



●Millimeter size type

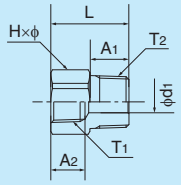
	Product number	Applicable tubing outer diameter (mm)	L (mm)	H2 Width across flat (mm)	Weight (g)
	CSAN4	4	11.0	10.0	4.0
	CSAN6	6	12.5	12.0	6.0
	CSAN8	8	14.0	14.0	8.5
	CSAN10	10	15.5	17.0	14.0
	CSAN12	12	17.5	19.0	18.5
*	CSAN19	19	22.5	27.0	37.5

*Made to order

●Inch size type

Product number	Applicable tubing outer diameter (inch)	L (mm)	H2 Width across flat (mm)	Weight (g)
CSAN1/4	1/4	12.5	12.0	6.0
CSAN3/8	3/8	15.5	17.0	14.5
CSAN1/2	1/2	19.0	22.0	29.0

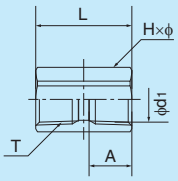
Bushing



●Millimeter size type

Product number	T1 Thread size (RC)	T2 Thread size (R)	L (mm)	A1 (mm)	A2 (mm)	H×ϕ Width across flat (mm)	d1 (mm)	Weight (g)
3A0-4-6-CS	RC1/4	R3/8	29.0	14.0	13.0	17.0×18.5	9.0	—
3A0-6-8-CS	RC3/8	R1/2	34.5	18.0	13.5	22.0×24.5	11.0	—
3A0-8-12-CS	RC1/2	R3/4	40.0	20.0	17.5	30.0×33.0	11.0	—

Socket



●Millimeter size type

Product number	T Thread size (RC)	L (mm)	A (mm)	H×ϕ Width across flat (mm)	d1 (mm)	Weight (g)
330-4-4-CS	RC1/4	30.0	13.0	17.0×18.5	9.0	—
330-6-6-CS	RC3/8	33.0	13.5	19.0×21.0	13.0	—
330-8-8-CS	RC1/2	39.5	17.5	24.0×26.5	17.0	—

Chemifit™ CP Series

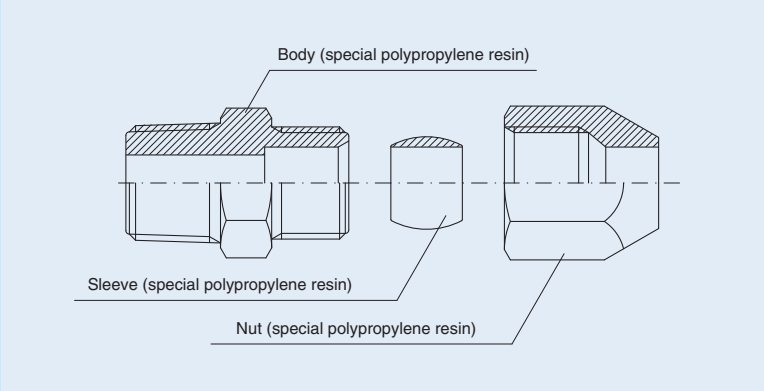
Clean-conscious product

Threaded fitting for clean air, pure water and chemical liquids

Features

- Threaded fitting made of polypropylene resin
  Lightweight.
- Made in oil-free process
  Each part is cleaned in a clean room.
- Highly smooth inner surface
  Smooth inner surface due to ejection forming.
- High performance, free of dust and contamination
  Made of special polypropylene resin.
- Compliant with the MHLW Ministerial Notification No.201(2006), MHW Ministerial Notification No.370(1959), Japan

Cross-sectional structure diagram



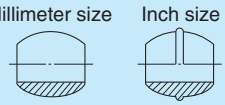
Product number example

CP – C 6 – R1/4

- R1/4: Thread size
- 6: Applicable tubing outer diameter
- C: Shape
- CP: Chemifit CP series

Distinction of millimeter/inch sizes

Sleeve



The millimeter and inch size types of the Chemifit CP series are distinguished by the outer shape of the sleeve.

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air (clean air)	–20°C~+80°C
Water (pure water)	0°C~+80°C

☞Contact us for various chemical liquids.
☞See “Combination List of Tubing and Fitting” on page 8.

Pressure condition

Maximum working pressure: 0.4MPa(at20°C)
Negative pressure performance: –99.975kPa

Handling instructions

⚠ **Caution:** When the working conditions of tubes and fittings differ, use them under the lower specified conditions.

⚠ **Caution:** Use an insertion part (sold separately) to attach a flexible tubing.

⚠ **Caution:** Stress relaxation occurs more readily with resin thread than with metal thread. The relaxation is prominent at a high temperature. Tighten the thread periodically.

⚠ **Caution:** For use at a high temperature within the working temperature range, tighten the nut periodically. If the nut cannot be tightened further, cut the tubing end and insert the tubing again with a new sleeve.

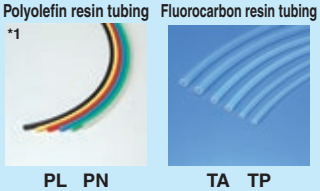
⚠ **Caution:** When water is used as the operating fluid, do not allow it to freeze.

⚠ **Caution:** Do not bend the pipe sharply near the tubing insertion port (sleeve end) of the fitting. Keep the tubing straight for twice as long as the tubing diameter from the insertion port.

☞ See page 34 for the common handling instructions for fittings.

Applicable tubing

Polyolefin resin tubing *1 — Fluorocarbon resin tubing



PL PN TA TP

(*1) Use an insertion part (sold separately) to attach a flexible tubing.

Reference

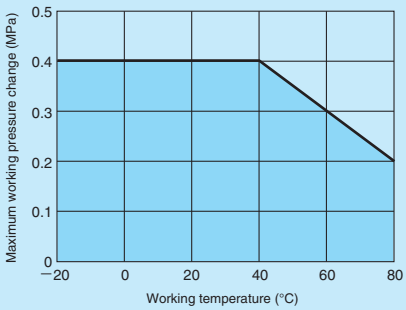
Chemifit™ CP Series

Shape list

Relation between the working temperature and the maximum working pressure

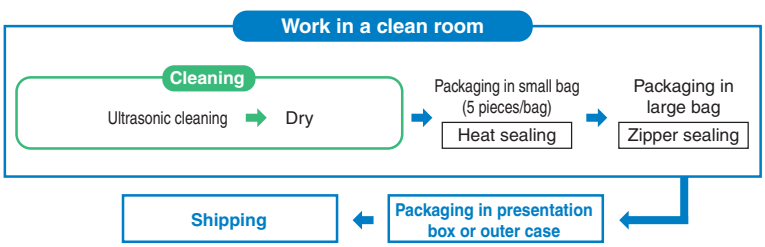
The maximum working pressure varies with the working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep the pressure within the indicated range.

⚠ **Caution:** Using tubes at a pressure outside the range may cause accidents or damage, for which Nitta is not liable.



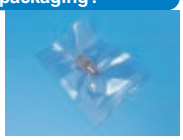
Oil-free processing, Clean wrapping and packaging

● **Ultrasonic cleaning with no oil or fat used for assembling in a clean room.**



● **High-barrier sheet packaging available**

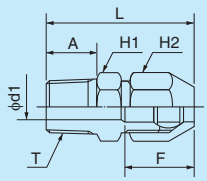
What is high-barrier sheet packaging?



In order to maintain the cleanliness of our products, no space for oxygen, water, or corrosive gas is allowed inside the package and a packaging bag with a high gas barrier is needed for protecting the content from these gases. To meet this requirement, Nitta provides high-barrier bags with a high gas barrier performance also for nitrogen sealing or atmospheric sealing.

- The packaging bags that Nitta uses have the highest gas barrier performance among clear bags.
- The bags do not contain halogen, etc., for safe burning.

Connector



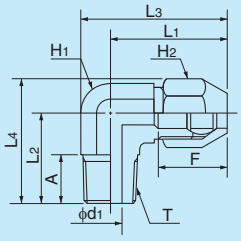
●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L (mm)	A (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
CP-C4-R1/8	4	R1/8	29.8	8.0	17	12.0	12.0	4.3	2.8	3.5	2.0
CP-C6-R1/8	6	R1/8	37.1	12.0	19	14.0	14.0	5.0	5.0	11.0	3.0
CP-C6-R1/4	6	R1/4	37.1	12.0	19	14.0	14.0	5.0	5.0	11.0	3.0
CP-C8-R1/8	8	R1/8	42.5	9.0	22	16.5	16.5	6.0	6.0	24.5	5.0
CP-C8-R1/4	8	R1/4	45.0	12.0	22	16.5	16.5	6.0	6.0	24.5	5.0
CP-C10-R1/4	10	R1/4	46.8	12.0	29	18.5	19.0	8.0	8.0	37.0	6.0
CP-C10-R3/8	10	R3/8	48.6	13.5	29	18.5	19.0	8.0	8.0	37.0	7.0
CP-C12-R3/8	12	R3/8	57.7	13.5	29	24.0	21.5	9.9	9.9	54.0	11.0
CP-C12-R1/2	12	R1/2	59.9	15.5	29	24.0	21.5	9.9	9.9	54.0	13.0

●Inch size type

Product number	Applicable tubing outer diameter (inch)	T Thread size (R)	L (mm)	A (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
CP-C1/4-R1/8	1/4	R1/8	37.4	12.0	19	14.0	14.0	5.0	5.0	15.0	3.0
CP-C1/4-R1/4	1/4	R1/4	37.4	12.0	19	14.0	14.0	5.0	5.0	15.0	3.0
CP-C3/8-R1/4	3/8	R1/4	45.9	12.0	28	18.5	19.0	8.0	8.0	34.0	6.0
CP-C3/8-R3/8	3/8	R3/8	47.7	13.5	28	18.5	19.0	8.0	8.0	34.0	7.0
CP-C1/2-R3/8	1/2	R3/8	58.2	13.5	29	24.0	22.0	9.9	9.9	59.0	11.0
CP-C1/2-R1/2	1/2	R1/2	60.7	15.5	29	24.0	22.0	9.9	9.9	59.0	13.0

90 degree elbow



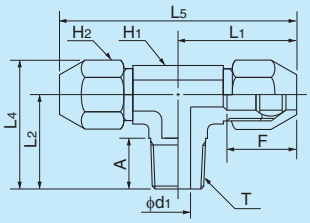
●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	A (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
CP-L4-R1/8	4	R1/8	26.8	21.0	32.6	27.9	8.0	17	10.0	12.0	4.0	2.8	3.0	3.0
CP-L6-R1/8	6	R1/8	29.1	23.0	36.0	31.1	12.0	19	12.0	14.0	5.0	5.0	10.0	4.0
CP-L6-R1/4	6	R1/4	29.1	23.0	36.0	31.1	12.0	19	12.0	14.0	5.0	5.0	10.0	4.0
CP-L8-R1/8	8	R1/8	37.0	24.0	43.9	33.5	9.0	22	12.0	16.5	6.0	6.0	19.5	6.0
CP-L8-R1/4	8	R1/4	37.0	27.0	43.9	36.5	12.5	22	12.0	16.5	6.0	6.0	19.5	6.0
CP-L10-R1/4	10	R1/4	41.8	27.0	51.3	37.9	12.0	29	16.5	19.0	8.0	8.0	30.0	9.0
CP-L10-R3/8	10	R3/8	41.8	27.0	51.3	37.9	13.5	29	16.5	19.0	8.0	8.0	30.0	10.0
CP-L12-R3/8	12	R3/8	45.7	27.0	56.3	39.4	13.7	29	18.5	21.5	9.9	9.9	46.0	12.0
CP-L12-R1/2	12	R1/2	45.7	27.0	56.3	39.4	16.0	29	18.5	21.5	9.9	9.9	46.0	14.0

●Inch size type

Product number	Applicable tubing outer diameter (inch)	T Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	A (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
CP-L1/4-R1/8	1/4	R1/8	29.4	23.0	36.3	31.1	12.0	19	12.0	14.0	5.0	5.0	12.0	4.0
CP-L1/4-R1/4	1/4	R1/4	29.4	23.0	36.3	31.1	12.0	19	12.0	14.0	5.0	5.0	12.0	4.0
CP-L3/8-R1/4	3/8	R1/4	40.9	27.0	50.4	37.9	12.0	28	16.5	19.0	8.0	8.0	29.0	9.0
CP-L3/8-R3/8	3/8	R3/8	40.9	27.0	50.4	37.9	13.5	28	16.5	19.0	8.0	8.0	29.0	10.0
CP-L1/2-R3/8	1/2	R3/8	46.2	27.0	56.8	39.7	13.5	29	18.5	22.0	9.9	9.9	53.0	12.0
CP-L1/2-R1/2	1/2	R1/2	46.2	27.0	56.8	39.7	16.0	29	18.5	22.0	9.9	9.9	53.0	14.0

Tee



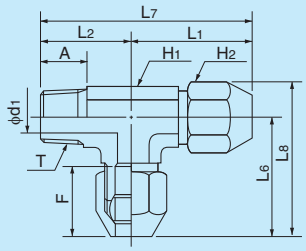
●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L4 (mm)	L5 (mm)	A (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
CP-T4-R1/8	4	R1/8	26.8	18.0	24.9	53.7	8.0	17	10.0	12.0	2.8	2.8	3.0	4.0
CP-T6-R1/8	6	R1/8	29.2	22.0	30.1	58.5	12.0	19	12.0	14.0	5.0	5.0	10.0	5.0
CP-T6-R1/4	6	R1/4	29.2	22.0	30.1	58.5	12.0	19	12.0	14.0	5.0	5.0	10.0	5.0
CP-T8-R1/8	8	R1/8	35.0	20.5	30.0	69.9	10.0	22	9.5	16.5	6.0	6.0	19.5	6.0
CP-T8-R1/4	8	R1/4	35.0	24.0	33.5	69.9	13.0	22	9.5	16.5	6.0	6.0	19.5	6.0
CP-T10-R1/4	10	R1/4	44.5	28.5	39.4	89.0	12.0	29	12.0	19.0	8.0	8.0	30.0	9.0
CP-T10-R3/8	10	R3/8	44.5	29.0	39.9	89.0	13.5	29	12.0	19.0	8.0	8.0	30.0	10.0
CP-T12-R3/8	12	R3/8	50.1	31.0	43.4	100.2	13.5	29	13.5	21.5	9.9	9.9	46.0	12.0
CP-T12-R1/2	12	R1/2	50.1	33.0	45.4	100.2	15.5	29	13.5	21.5	9.9	9.9	46.0	14.0

●Inch size type

Product number	Applicable tubing outer diameter (inch)	T Thread size (R)	L1 (mm)	L2 (mm)	L4 (mm)	L5 (mm)	A (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
CP-T1/4-R1/8	1/4	R1/8	29.6	22.0	30.1	59.1	12.0	19	12.0	14.0	5.0	5.0	12.0	5.0
CP-T1/4-R1/4	1/4	R1/4	29.6	22.0	30.1	59.1	12.0	19	12.0	14.0	5.0	5.0	12.0	5.0
CP-T3/8-R1/4	3/8	R1/4	43.5	28.5	39.4	87.0	12.0	28	12.0	19.0	8.0	8.0	29.0	9.0
CP-T3/8-R3/8	3/8	R3/8	43.5	29.0	39.9	87.0	13.5	28	12.0	19.0	8.0	8.0	29.0	10.0
CP-T1/2-R3/8	1/2	R3/8	50.6	31.0	43.7	101.1	13.5	29	13.5	22.0	9.9	9.9	53.0	12.0
CP-T1/2-R1/2	1/2	R1/2	50.6	33.0	45.7	101.1	15.5	29	13.5	22.0	9.9	9.9	53.0	14.0

Service tee



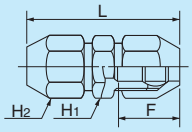
●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L6 (mm)	L7 (mm)	L8 (mm)	A (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
CP-ST4-R1/8	4	R1/8	26.8	18.0	26.8	44.8	33.7	8.0	17	10.0	12.0	2.8	2.8	3.0	4.0
CP-ST6-R1/8	6	R1/8	29.1	22.0	29.1	51.1	37.1	12.0	19	12.0	14.0	5.0	5.0	10.0	5.0
CP-ST6-R1/4	6	R1/4	29.1	22.0	29.1	51.1	37.1	12.0	19	12.0	14.0	5.0	5.0	10.0	5.0
CP-ST8-R1/8	8	R1/8	35.5	21.0	35.5	56.5	45.0	10.0	22	9.5	16.5	6.0	6.0	19.5	6.0
CP-ST8-R1/4	8	R1/4	35.5	23.5	35.5	59.0	45.0	13.0	22	9.5	16.5	6.0	6.0	19.5	6.0
CP-ST10-R1/4	10	R1/4	44.8	28.0	44.8	72.8	53.8	12.0	29	12.0	19.0	8.0	8.0	30.0	9.0
CP-ST10-R3/8	10	R3/8	44.8	30.0	44.8	74.8	53.8	13.5	29	12.0	19.0	8.0	8.0	30.0	9.0
CP-ST12-R3/8	12	R3/8	50.2	30.3	50.2	80.5	62.5	13.5	29	13.5	21.5	9.9	9.9	46.0	12.0
CP-ST12-R1/2	12	R1/2	50.2	32.5	50.2	82.7	62.5	15.5	29	13.5	21.5	9.9	9.9	46.0	14.0

●Inch size type

Product number	Applicable tubing outer diameter (inch)	T Thread size (R)	L1 (mm)	L2 (mm)	L6 (mm)	L7 (mm)	L8 (mm)	A (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	d1 (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
CP-ST1/4-R1/8	1/4	R1/8	29.4	22.0	29.4	51.4	37.5	12.0	19	12.0	14.0	5.0	5.0	12.0	5.0
CP-ST1/4-R1/4	1/4	R1/4	29.4	22.0	29.4	51.4	37.5	12.0	19	12.0	14.0	5.0	5.0	12.0	5.0
CP-ST3/8-R1/4	3/8	R1/4	43.9	28.0	43.9	71.9	54.8	12.0	28	12.0	19.0	8.0	8.0	29.0	9.0
CP-ST3/8-R3/8	3/8	R3/8	43.9	30.0	43.9	73.9	54.8	13.5	28	12.0	19.0	8.0	8.0	29.0	9.0
CP-ST1/2-R3/8	1/2	R3/8	50.7	30.3	50.7	81.0	63.3	13.5	29	13.5	22.0	9.9	9.9	53.0	12.0
CP-ST1/2-R1/2	1/2	R1/2	50.7	32.5	50.7	83.2	63.3	16.0	29	13.5	22.0	9.9	9.9	53.0	14.0

Union connector



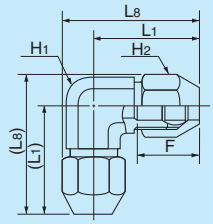
●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	L (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
CP-UC4	4	38.7	17	12.0	12.0	2.8	3.0	3.0
CP-UC6	6	43.2	19	14.0	14.0	5.0	10.0	3.0
CP-UC8	8	57.4	22	16.5	16.5	6.0	22.0	5.0
CP-UC10	10	63.2	29	18.5	19.0	8.0	35.5	9.0
CP-UC12	12	77.4	29	24.0	21.5	10.0	51.0	15.0

●Inch size type

Product number	Applicable tubing outer diameter (Inch)	L (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
CP-UC1/4	1/4	43.8	19	14.0	14.0	5.0	12.0	3.0
CP-UC3/8	3/8	61.2	28	18.5	19.0	8.0	31.5	9.0
CP-UC1/2	1/2	78.6	29	24.0	22.0	10.0	56.0	15.0

90 degree union elbow



●Millimeter size type

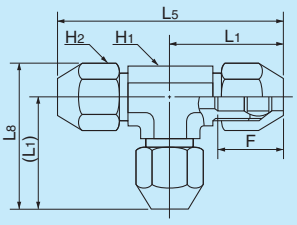
Product number	Applicable tubing outer diameter (mm)	L1 (mm)	L8 (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
CP-UL6	6	29.1	37.1	19	12.0	14.0	5.0	9.0	5.0
CP-UL8	8	39.0(37.0)	48.5(46.5)	22	12.0	16.5	6.0	18.5	8.0
CP-UL10	10	41.8	52.8	29	16.5	19.0	8.0	30.5	12.0
CP-UL12	12	45.7	58.0	29	18.5	21.5	10.0	44.0	16.0

☞L1 and L8 of CP-UL8 have two lengths. Other length is inside parentheses.

●Inch size type

Product number	Applicable tubing outer diameter (inch)	L1 (mm)	L8 (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
CP-UL1/4	1/4	29.4	37.5	19	12.0	14.0	5.0	11.5	5.0
CP-UL3/8	3/8	40.9	51.8	28	16.5	19.0	8.0	27.0	12.0
CP-UL1/2	1/2	46.2	58.8	29	18.5	22.0	10.0	49.0	16.0

Union tee



●Millimeter size type

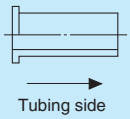
Product number	Applicable tubing outer diameter (mm)	L1 (mm)	L5 (mm)	L8 (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
CP-UT4	4	26.8	53.7	33.7	17	10.0	12.0	2.8	2.5	5.0
CP-UT6	6	29.1	58.2	37.1	19	12.0	14.0	5.0	9.0	8.0
CP-UT8	8	36.5(36.0)	71.9	46.0	22	9.5	16.5	6.0	18.5	11.0
CP-UT10	10	44.3	88.7	55.3	29	12.0	19.0	8.0	30.5	15.0
CP-UT12	12	50.1	100.2	62.5	29	13.5	21.5	10.0	44.0	20.0

☞L1 of CP-UT8 has two lengths. Other length is inside parentheses.

●Inch size type

Product number	Applicable tubing outer diameter (inch)	L1 (mm)	L5 (mm)	L8 (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	Min. inner diameter (mm)	Effective sectional area (mm²)	Weight (g)
CP-UT1/4	1/4	29.4	58.8	37.5	19	12.0	14.0	5.0	11.5	8.0
CP-UT3/8	3/8	43.4	86.7	54.3	28	12.0	19.0	8.0	27.0	15.0
CP-UT1/2	1/2	50.7	101.3	63.3	29	13.5	22.0	10.0	49.0	20.0

Insertion part



●Millimeter size type

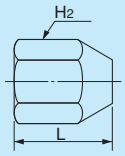
Product number	Applicable tubing outerxinner diameters (mm)
CPI 6x4	6x4
CPI 8x6	8x6
CPI 10x8	10x8
CPI 12x9	12x9
CPI12x10	12x10

●Inch size type

Product number	Applicable tubing outerxinner diameters (mm)
CPI1/4	6.35x4.57
CPI3/8	9.53x6.99
CPI1/2	12.7x9.56

⚠ **Caution:** When using a flexible tubing such as a polyolefin resin tubing, insert it first to the insertion part before connecting to a fitting.

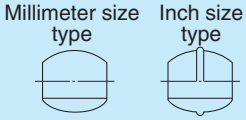
Nut



Product number	Applicable tubing outer diameter		L	H2 Width across flat	Weight
	(mm)	(Inch)	(mm)	(mm)	(g)
CPN4	4	—	13.5	12.0	1.0
CPN6	6	1/4	15.0	14.0	1.0
CPN8	8	—	19.0	16.5	2.0
CPN10	10	3/8	22.0	21.5	2.0
CPN12	12	—	26.5	22.0	4.0
CPN1/2	—	1/2	26.5	22.0	4.0

⚠ **Caution:** When you detach and re-attach a tubing, replace the nut with a new one.

Sleeve



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	Weight (g)
CPS4	4	0.1
CPS6	6	0.1
CPS8	8	0.2
CPS10	10	0.4
CPS12	12	0.4

●Inch size type

Product number	Applicable tubing outer diameter (inch)	Weight (g)
CPS1/4	1/4	0.1
CPS3/8	3/8	0.3
CPS1/2	1/2	0.5

⚠ **Caution:** When you detach and re-attach a tubing, replace the sleeve with a new one.

Bamboo-shoot Series

Barb Type

Features

- Various shapes can be made by combining the connector and each part.
- Seal-processed PT thread requires no sealing tape.

Product number example

BN 4 – PT1/8

- PT1/8: Thread size
- 4: Applicable tubing outer diameter
- BN: Shape

Applicable tubing

Polyurethane tubing

U5

How to attach

Insert a tubing into the tubing connection part (bamboo-shoot shaped) until the tubing reaches the end. The thread part is attached in the same way as the PushOne series.

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	–40°C~+80°C

Pressure condition

Maximum working pressure: 0.4MPa
Negative pressure performance: –99.975kPa

See page 34 for the common handling instructions for fittings.

Sample combinations of barb fittings

Various shapes of barb fittings can be made by combining the connector and each part.

Elbow shape

Sample combination
Tubing size : 4×2.5
Thread size : M5

(Body) Elbow block: BL-M5 + (Thread side) Adapter nipple: BAN-M5 + (Tubing side) Connector: BN4-M5

Tee shape

Sample combination
Tubing size : 6×4
Thread size : R1/8

(Body) Tee block: BT-M5 + (Thread side) Adapter nipple: BAN-M5, Adapter bush: BAB-M5-PT1/8 + (Tubing side) Connector: BN6-M5, Connector: BN6-M5

Service tee shape

Sample combination
Tubing size : 3.5×2
Thread size : M5

(Body) Tee block: BT-M5 + (Thread side) Adapter nipple: BAN-M5 + (Tubing side) Connector: BN3.5-M5, Connector: BN3.5-M5

Union elbow shape

Sample combination
Tubing size : 4×2.5

(Body) Elbow block: BL-M5 + (Tubing side) Connector: BN4-M5, Connector: BN4-M5

Union tee shape

Sample combination
Tubing size : 4×2.5

(Body) Tee block: BT-M5 + Connector: BN4-M5 + (Tubing side) Connector: BN4-M5 + Connector: BN4-M5

Universal elbow shape

Sample combination
Tubing size : 6×4
Thread size : PT1/8

(Body) Universal elbow block: BUVL-M5 + (Thread side) Adapter bush: BAB-M5-PT1/8 + (Tubing side) Connector: BN6-M5

Universal tee shape

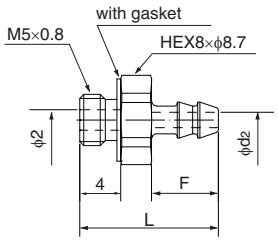
Sample combination
Tubing size : 3.5×2
Thread size : M5

(Body, Thread side) Universal tee block: BUVT-M5 + (Tubing side) Connector: BN3.5-M5, Connector: BN3.5-M5

Connector

●Millimeter size type

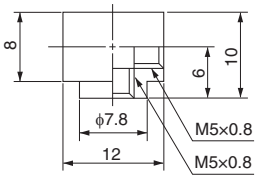
Product number	Applicable tubing outer×inner diameters (mm)	Thread size (M,R)	L (mm)	F Tubing insertion length (mm)	d2 (mm)	Min. inner diameter (mm)	Weight (g)
BN3.5-M5	3.5×2	M5×0.8	13.5	6.5	1.0	1.0	2.0
BN4-M5	4×2.5	M5×0.8	13.5	6.5	1.5	1.5	2.0
BN6-M5	6×4	M5×0.8	15.0	8.0	3.0	2.0	2.5

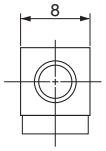


Barb type parts

Elbow block
Product number : BL-M5

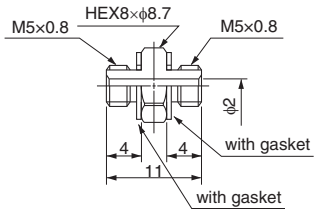
Weight 5.5g





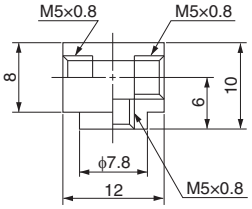
Adapter nipple
Product number : BAN-M5

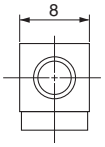
Weight 2.0g



Tee block
Product number : BT-M5

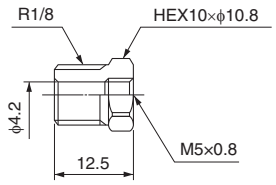
Weight 5.0g





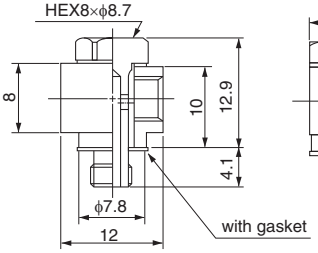
Adapter bush
Product number : BAB-M5-PT1/8

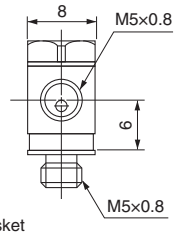
Weight 6.0g



Universal elbow block
Product number : BUVL-M5

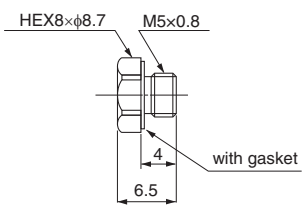
Weight 7.5g





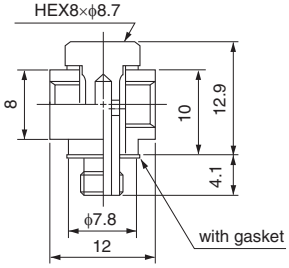
Plug
Product number : BBP-M5

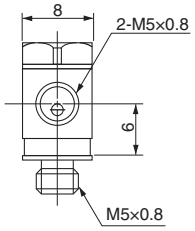
Weight 1.5g



Universal tee block
Product number : BUVT-M5

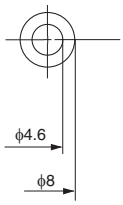
Weight 7.0g





Gasket
Product number : MRG-5-01

Thickness 0.4mm



CONTROL
Control Switch and Detachable Series

Handling instructions for control switch and detachable series

⚠Safety Note

This Safety Note provides indications on the correct use of the product in order to prevent harm to people and property. The indications are classified into three categories, “danger”, “warning”, and “caution”, depending on the level of potential harm due to improper use. Each category contains important instructions on safety that should be followed in addition to the latest ISO 4414(*1), JIS B 8370(*2), ISO 4413 (*3), and JIS B 8361 (*4).

(*1) ISO 4414 Pneumatic fluid power...Recommendations for the application of equipment to transmission and control systems.
(*2) JIS B 8370(1988) Pneumatic System General Rules
(*3) ISO 4413 Hydraulic fluid power...General rules for the application of equipment to transmission and control systems.
(*4) JIS B 8361 Hydraulic System General Rules

⚠DANGER
Where inappropriate use of this equipment may cause death or severe injury and where immediate warning of a dangerous situation is mandated.

⚠WARNING
Where inappropriate use of this equipment may cause death or severe injury.

⚠CAUTION
Where inappropriate use of this equipment may cause minor injury.

⚠Before Selection

⚠DANGER
- Cannot use for machines or equipment for life support.
- To use for machines or equipment that require extremely high safety, measures have to be taken to prevent danger in the event tubing pulls out, bursts or leaks.

⚠WARNING
- Please contact us before using our products under conditions other than those specified in the catalog.
- Please contact us before using our products for equipment, machines, various types of vehicles, and passenger aircraft, for leisure equipment passenger transport, for medical equipment that would cause human harm in case the specifications are not properly followed, and for machines in contact with food or drinking water.

⚠Selection

⚠WARNING
- Please check that our products are used under the “use conditions” specified in the catalog.
- Do not use our products when a caustic or flammable gas is used as the fluid or is in the environment.

⚠CAUTION
- Cannot be used in locations subject to excessive vibration or impact.
- If use conditions differ between the tubing and the fittings, use them under the lower specified conditions.
- For Nitta’s fitting products, use tubing products that Nitta specifies or JIS B 8381-1995 on-spec products.
- When a chemical is used in fluid or the environment, see “Chemical resistance specification table”. Contact us for chemical resistance of plating.
- When spatter (hot wasted metal) is likely to stick to the fittings, use flame-resistant products only. Otherwise the spatter may cause a fire.
- Couplers and nipples of the Q.D.C. 101 series and the 103 series cannot be connected to other manufactures products.
- The maximum operating pressure varies for Chemifit C1 speed controller depending on the operating temperature. Please be sure to refer to “Relationship graph between operating temperature and maximum operating pressure” before selecting.

⚠Installation

⚠WARNING
- Fix tubes in place when installing them in a situation where unexpected disconnection of the tubing and connector could cause harm to people or property.

⚠CAUTION
- Attach the control, switch, and detachable series following the instruction manual of the fitting series that has the same tubing connector shape (ex. PushOne, QuickSeal, and Chemifit series).
- Do not throw or drop the control, switch, and detachable series. The impact may cause internal damage even if no outer damage is found.
- Because the connection part of the fitting may swell or crack depending on the material, check the strength of the part when connecting.
- Fittings with a sealing processed thread may swell due to the action of an operating fluid such as organic solvent, allowing fluid leakage from the thread part.
- Do not bend the pipe sharply near the tubing insertion port (sleeve end) of the fitting. Keep the tubing straight for twice as long as the tubing diameter from the insertion port.
- Do not use a fitting with a damaged thread or damaged tubing insertion port. In addition, please make sure that the product is not damaged when using a reusable product.
- Nitta only guarantees products fabricated by designated companies.
- Please do not install with tension applied on the tubing or a torsional or bending load applied on the fittings.
- When using water as the operating fluid for the fitting series that has the same tubing connector shape (ex. PushOne, QuickSeal, and Chemifit series), avoid installing to a pleace where assembly could be moved.
- You cannot re-use sleeves that have QuickSeal series tubing connector shape. Replace them with a new sleeve each time you detach.
- Please do not use the products in an environment where foreign materials may enter the product or come into contact with its internal parts. Doing so may result in damage or leakage.
- Please do not use the products in a manner where the screw side or the tube insertion opening side is rotated or oscillated repeatedly.

⚠Usage

⚠WARNING
- Nitta’s products should be handled only by designers who have sufficient knowledge of equipment, instruments and systems in which our products are to be installed, or by persons responsible for determining specifications. Test and analysis should be conducted if necessary. The designers or the responsible persons are liable for the performance and the safety of the equipment, instruments and systems.

⚠CAUTION
- When water is used as fluid, do not allow it to freeze.
- Do not touch a tubing at pressurization. Improperly treating or touching a tubing at pressurization may lead to danger from unexpected breakage or leakage of fluid.
- Do not touch a tubing when the operating fluid is hot. Doing so may cause burns.
- Use of the control, switch and detachable series in a place contaminated with many metal particles or dust could cause operation problems. Do not use them in such an environment.

⚠Storage

⚠CAUTION
- When storing unused products, make sure to keep them in a clean place to prevent dust. When fine particles such as dust enter the inside of tubing products or the connected equipment, they may cause problems.
- Keep products in a dry place below 40°C avoiding direct sunlight.
- Do not use tubing products that have been stored for more than one year after production.
- The packaging of clean tubes should be opened just before use. Store the tubes in a box in a clean place in a dust-free environment.

⚠Maintenance and Inspection

⚠CAUTION
- Before handling or removing Nitta’s products, be sure to check the safety by shutting off the power supply, stopping the pressure supply, evacuating pressurized air in the pipe, and terminating the operation of equipment, instruments, and systems.
- Please be sure to make periodic inspections. Confirm that there is no degradation such as outer damage, corrosion, and abrasion and replace any damaged piping.
- If you are using a product with QuickSeal series tubing mounting shape continuously for a long period of time, or if you are using a product continuously under a high temperature range within the operating temperature range, please tighten the nut additionally on a regular basis.

⚠Disposal

⚠CAUTION
- Dispose of unnecessary products as industrial waste or have them disposed of by a waste disposal firm. In particular, incineration of products containing fluorocarbon may generate a toxic pyrolysis gas.

CONTROL INDEX

Control Series

Chemifit™ C1 speed controller

- Suitable for environment (atmosphere) that requires chemical resistance
- PushOne connection
- Inline type (ESU) allows central control on the piping

P.136

Control Series

Compact speed controller

- Smaller than the conventional model
- PushOne connection
- Electroless nickel plated
- Sealing-processed R thread

P.138

Control Series

Speed controller

- PushOne connection
- Inline type (ASU) allows central control on the piping line
- Electroless nickel plated

P.140

Switch Series

Ball valve

- Enables compact piping
- PushOne connection
- Position of handle can be changed
- Nickel plated

P.143

Control Series

Throttle valve

- Fine control of flow rate
- Inline type (ASU) allows central control on the piping line
- PushOne connection
- Electroless nickel plated

P.146

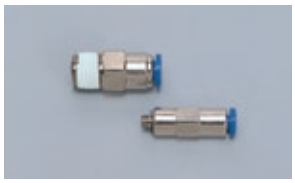
Miniature valve

- Easy flow rate control
- PushOne connection for millimeter size type (quick seal type for inch size type)

P.148

Switch Series

Valve built-in connector



- Valve inside fitting is opened/closed by attaching/detaching the tubing
- PushOne connection
- Electroless nickel plated

P.151

Detachable Series

Q.D.C 101

- Push-To-Connect type
- Automatic opening/closing valve inside the coupler
- PushOne fitting integrated types available

P.152

Q.D.C 103

- Push-To-Connect type
- Automatic opening/closing valve inside the coupler
- Smaller than 101 series
- Electroless nickel plated

P.155

Control Series

Chemifit™ C1 Speed Controller

PushOne™ Type

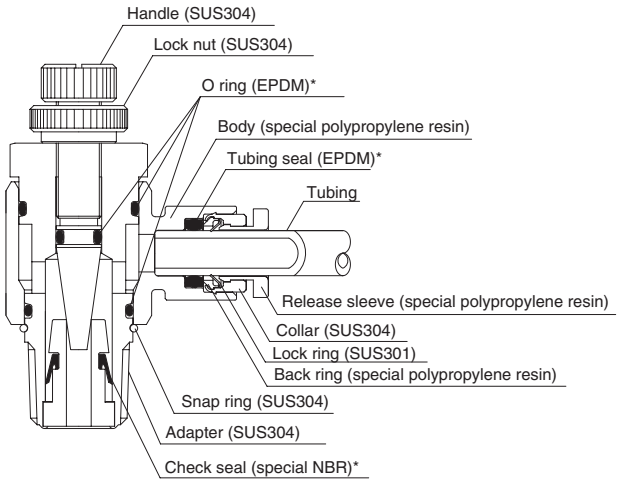
Clean-conscious product

Features

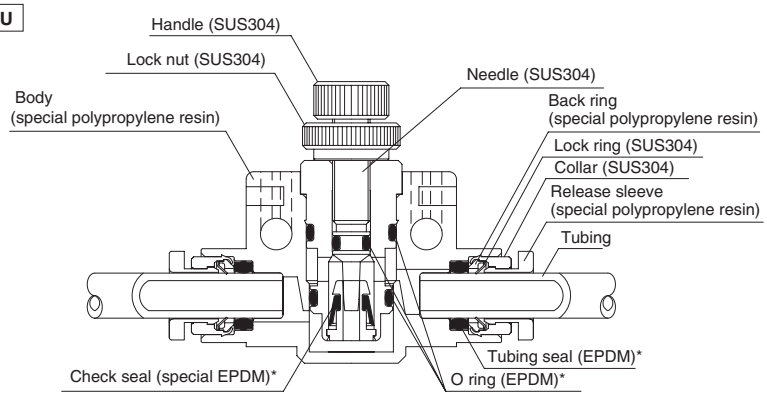
- Suitable for environment (atmosphere) that requires chemical resistance
  Mostly made of special polypropylene resin and SUS304. Special EPDM is used for sealing material.
- PushOne connection of tubing
  Jig and tool not required for connecting the tubes.
- Inline type (ESU) allows central control on a pipe line
  Various kinds of piping are possible by fixing with connector pins and brackets.

Cross-sectional structure diagram

ESC



ESU



*Non-scattering lubricant applied

Product number example

ESC 6 – R1/4 – O – C1SG

- C1SG: Chemifit C1 type
- O: Control method (O: Meter-out)
- R1/4: Thread size
- 6: Applicable tubing outer diameter
- ESC: Shape

Inline type connection

Inline type controllers can be connected with a connector pin.

Applicable tubing

Polyolefin resin tubing	Fluorocarbon resin tubing	Polyurethane tubing
		 *1
PL PN	TA TP	U2 U1

(*1) Combinatory use of U2 or U1 tubing and Chemifit C1 speed controller mixes general and clean type performances.
When using them together in a clean environment, be aware of how this could lower the cleanliness level.

Operating fluid, working temperature range

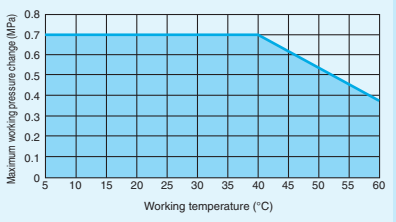
Operating fluid	Working temperature range
Air	+5°C~+60°C

Pressure condition

Maximum working pressure:
0.7MPa(at20°C)

Relation between the working temperature and the maximum working pressure

Maximum working pressure varies with working temperature (environmental temperature). For use at an abnormal temperature, always check the maximum working pressure change in the graph below and keep pressure within the range.

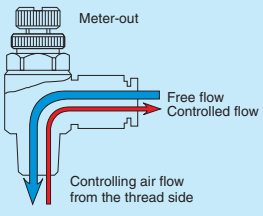


Handling instructions

- ⚠ **Caution:** When the working conditions of tubes and fittings differ, use them under the lower specified conditions.
- ⚠ **Caution:** Tighten the lock nut and handle by hand, not by using a spanner.
- ⚠ **Caution:** The needle part stops when fully opened. Forced rotation could cause damage.
- ⚠ **Caution:** Cannot be used at a negative pressure.
- ⚠ **Caution:** Non-scattering lubricant is applied to some parts. Contact us for details.
- ⚠ **Caution:** Be sure to check the air flow direction when attaching a speed controller to equipment.
- ⚠ **Caution:** Do not bend the pipe sharply near the tubing insertion port (sleeve end) of the fitting. Keep the tubing straight for twice as long as the tubing diameter from the insertion port.
- ⚠ **Caution:** Cannot be used for sealing purposes.

See page 134 for the common handling instructions for control, switch and detachable series products.

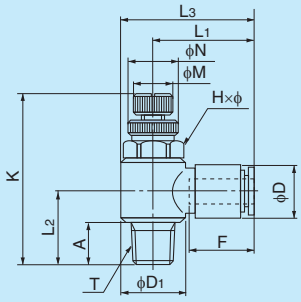
Control mechanism



Reference

Flow characteristic graph·····P.165

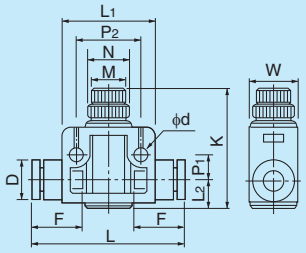
Elbow type



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	K Full open (mm)	K Full closed (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	N (mm)	M (mm)	D (mm)	D1 (mm)	Weight (g)
ESC4-R1/8-O-C1SG	4	R1/8	23.9	17.7	30.6	46.8	42.0	9.7	14	13.0×14.0	13.0	10.0	10.0	13.5	26.0
ESC6-R1/8-O-C1SG	6	R1/8	23.2	17.7	30.0	46.8	42.0	9.7	15	13.0×14.0	13.0	10.0	13.0	13.5	27.0
ESC6-R1/4-O-C1SG	6	R1/4	25.2	23.1	34.9	55.2	48.7	13.6	15	17.0×18.3	13.0	10.0	13.0	19.4	51.0
ESC8-R1/8-O-C1SG	8	R1/8	24.8	17.7	31.6	46.8	42.0	9.7	16	13.0×14.0	13.0	10.0	15.0	13.5	29.0
ESC8-R1/4-O-C1SG	8	R1/4	26.8	23.1	36.5	55.2	48.7	13.6	16	17.0×18.3	13.0	10.0	15.0	19.4	52.0
ESC8-R3/8-O-C1SG	8	R3/8	28.8	24.6	40.8	59.0	51.5	14.1	16	21.0×22.6	16.0	13.0	15.0	24.0	84.0
ESC10-R1/4-O-C1SG	10	R1/4	29.7	23.1	39.4	55.2	48.7	13.6	19	17.0×18.3	13.0	10.0	18.0	19.4	55.0
ESC10-R3/8-O-C1SG	10	R3/8	31.7	24.6	43.7	59.0	51.5	14.1	19	21.0×22.6	16.0	13.0	18.0	24.0	87.0
ESC12-R3/8-O-C1SG	12	R3/8	32.7	24.6	44.7	59.0	51.5	14.1	20	21.0×22.6	16.0	13.0	20.5	24.0	116.0

Inline type

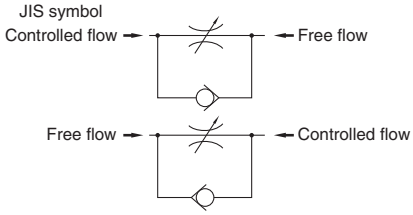


●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	L (mm)	L1 (mm)	L2 (mm)	P1 (mm)	P2 (mm)	K Full open (mm)	K Full closed (mm)	F Tubing insertion length (mm)	N (mm)	M (mm)	D (mm)	d (mm)	W (mm)	Weight (g)
ESU4-C1SG	4	42.7	20.0	6.4	6.0	14.0	29.5	26.9	14	8.0	8.0	9.7	3.2	10.6	11.0
ESU6-C1SG	6	48.5	28.0	9.0	8.2	20.0	43.5	39.8	15	13.0	10.0	12.5	4.2	15.0	32.0
ESU8-C1SG	8	56.6	30.0	10.3	9.2	22.0	47.7	42.1	16	13.0	10.0	14.5	4.2	17.6	48.0

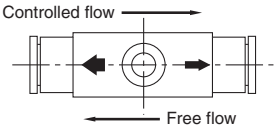
JIS symbol mark

JIS symbols are marked on both sides of the body.

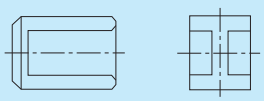


Control direction mark

Control directions are marked by arrows on the top of the body.



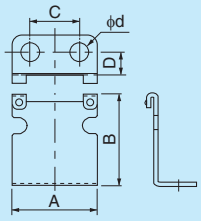
Connector pin (polypropylene resin)



●Connector pin

Product number	Applicable fitting product number
HPN4-C1	ESU4-C1SG
HPN6-C1	ESU6-C1SG
	ESU8-C1SG

Bracket (SUS304)



●Bracket

Product number	Applicable fitting product number	A (mm)	B (mm)	C (mm)	D (mm)	d (mm)
SBRK4	ESU4-C1SG	18.0	18.5	10.0	6.5	5.0
SBRK6	ESU6-C1SG	24.0	26.0	14.0	6.5	5.0
SBRK8	ESU8-C1SG	26.0	30.0	14.0	6.5	5.0

Control Series

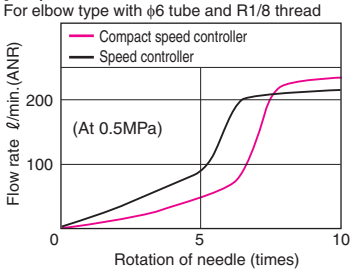
Compact Speed Controller

PushOne™ Type

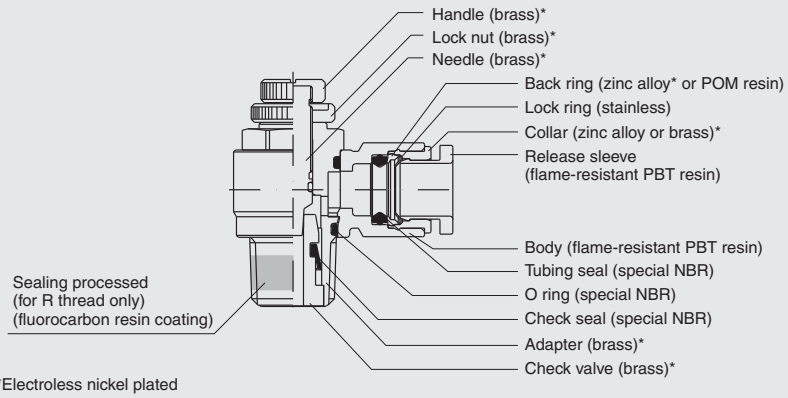
Features

- Smaller than the conventional model
- Easy fine adjustment at low flow rate
  Compact size with a maximum flow rate comparable to that of the conventional model. (See the graph.)
- PushOne connection of tubing
  Jig and tool not required for connecting the tubes.
- Flame-resistant resin (compliant with V-0 of UL94 standard)
  Made of flame-resistant resin PBT. High self-extinguishing performance is compliant with V-0 of UL94 standard. Usable under an environment with spatters.
- Electroless nickel plated
  Prevents degradation of surface and dissolution of copper ions into fluid.
- Sealing-processed R thread
  Sealing tape is not required.

[Comparison of control flow with the conventional model]
For elbow type with ϕ6 tube and R1/8 thread



Cross-sectional structure diagram



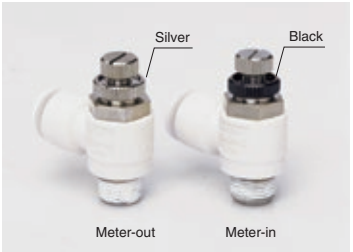
*Electroless nickel plated

☞ Meter-in type has a black zinc chromate processed lock nut.

Product number example

ASC 6 – R1/4 – O
- O: Control method (O: Meter-out, I: Meter-in)
- R1/4: Thread size
- 6: Applicable tubing outer diameter
- ASC: Shape

Distinction of Meter-out/in types



Meter-out/in types are distinguished by the color of the lock nut.

Applicable tubing

Polyurethan tubing	Nylon tubing	Flame-resistant tubing	Polyolefin resin tubing	Fluorocarbon resin tubing
				
U2 U1	N2 N5 N1	FS FW FWU FUK	PL PN	TA TP

*1

(*1) Combinatory use of PL or PN tubing and compact speed controller mixes general and clean type performances.
When using them together in a clean environment, be aware of how this could lower the cleanliness level.

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	+5°C~+60°C

Pressure condition

Maximum working pressure: 1.0MPa

Handling instructions

⚠ **Caution:** When the working conditions of tubes and fittings differ, use them under the lower specified conditions.

⚠ **Caution:** Tighten the lock nut and handle by hand, not by using a spanner.

⚠ **Caution:** The needle part stops when fully opened. Forced rotation could cause damage.

⚠ **Caution:** Cannot be used at a negative pressure.

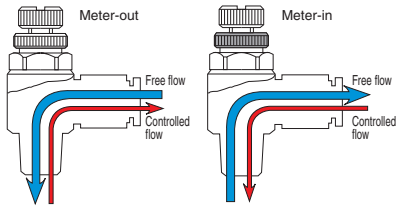
⚠ **Caution:** Be sure to check the air flow direction when attaching a speed controller to equipment.

⚠ **Caution:** Do not bend the pipe sharply near the tubing insertion port (sleeve end) of the fitting. Keep the tubing straight for twice as long as the tubing diameter from the insertion port.

⚠ **Caution:** Cannot be used for sealing purposes.

☞ See page 134 for the common handling instructions for control, switch and detachable series products.

Control mechanism



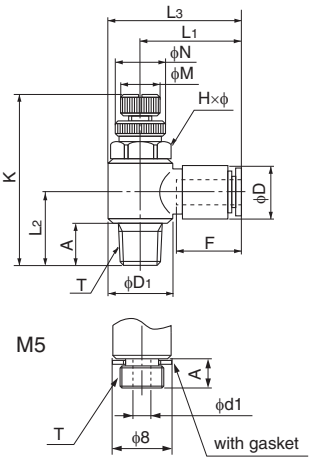
Controlling air flow from the thread side

Controlling air flow to the thread side

Reference

Flow characteristic graph·····P.163
UL-94 standard flame test·····P.195

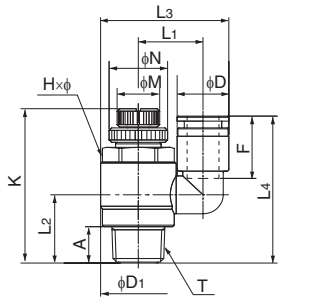
Elbow type



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (M,R)	L1 (mm)	L2 (mm)	L3 (mm)	K Full open (mm)	K Full closed (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	N (mm)	M (mm)	D (mm)	D1 (mm)	Weight (g)
ASC4-M5-O	4	M5×0.8	18.0	10.1	22.8	28.6	25.8	3.4	13.5	8.0×9.0	8.0	5.0	9.8	9.6	8.0
ASC4-M5-I	4	M5×0.8	18.0	10.1	22.8	28.6	25.8	3.4	13.5	8.0×9.0	8.0	5.0	9.8	9.6	8.0
ASC4-R1/8-O	4	R1/8	20.1	13.7	27.2	36.0	31.0	7.3	13.5	12.0×13.5	11.0	8.0	9.8	14.2	19.0
ASC4-R1/8-I	4	R1/8	20.1	13.7	27.2	36.0	31.0	7.3	13.5	12.0×13.5	11.0	8.0	9.8	14.2	19.0
ASC6-M5-O	6	M5×0.8	20.3	10.6	25.1	28.6	25.8	3.4	15.0	8.0×9.0	8.0	5.0	12.6	9.6	9.0
ASC6-M5-I	6	M5×0.8	20.3	10.6	25.1	28.6	25.8	3.4	15.0	8.0×9.0	8.0	5.0	12.6	9.6	9.0
ASC6-R1/8-O	6	R1/8	21.8	13.7	28.9	36.0	31.0	7.3	15.0	12.0×13.5	11.0	8.0	12.6	14.2	20.0
ASC6-R1/8-I	6	R1/8	21.8	13.7	28.9	36.0	31.0	7.3	15.0	12.0×13.5	11.0	8.0	12.6	14.2	20.0
ASC6-R1/4-O	6	R1/4	23.6	18.2	32.9	40.3	35.3	10.8	15.0	14.0×15.8	13.0	10.0	12.6	18.5	33.0
ASC6-R1/4-I	6	R1/4	23.6	18.2	32.9	40.3	35.3	10.8	15.0	14.0×15.8	13.0	10.0	12.6	18.5	33.0
ASC8-R1/8-O	8	R1/8	26.6	14.7	33.7	36.0	31.0	7.3	16.0	12.0×13.5	11.0	8.0	14.6	14.2	21.0
ASC8-R1/8-I	8	R1/8	26.6	14.7	33.7	36.0	31.0	7.3	16.0	12.0×13.5	11.0	8.0	14.6	14.2	21.0
ASC8-R1/4-O	8	R1/4	24.9	18.2	34.1	40.3	35.3	10.8	16.0	14.0×15.8	13.0	10.0	14.6	18.5	34.0
ASC8-R1/4-I	8	R1/4	24.9	18.2	34.1	40.3	35.3	10.8	16.0	14.0×15.8	13.0	10.0	14.6	18.5	34.0
ASC8-R3/8-O	8	R3/8	26.9	19.9	38.2	46.3	41.3	11.1	16.0	19.0×21.0	16.0	13.0	14.6	22.6	62.0
ASC8-R3/8-I	8	R3/8	26.9	19.9	38.2	46.3	41.3	11.1	16.0	19.0×21.0	16.0	13.0	14.6	22.6	62.0
ASC10-R1/8-O	10	R1/8	30.4	16.2	37.5	36.0	31.0	7.3	19.0	12.0×13.5	11.0	8.0	17.5	14.2	23.0
ASC10-R1/8-I	10	R1/8	30.4	16.2	37.5	36.0	31.0	7.3	19.0	12.0×13.5	11.0	8.0	17.5	14.2	23.0
ASC10-R1/4-O	10	R1/4	31.5	19.6	40.7	40.3	35.3	10.8	19.0	14.0×15.8	13.0	10.0	17.5	18.5	37.0
ASC10-R1/4-I	10	R1/4	31.5	19.6	40.7	40.3	35.3	10.8	19.0	14.0×15.8	13.0	10.0	17.5	18.5	37.0
ASC10-R3/8-O	10	R3/8	30.3	19.9	41.6	46.3	41.3	11.1	19.0	19.0×21.0	16.0	13.0	17.5	22.6	65.0
ASC10-R3/8-I	10	R3/8	30.3	19.9	41.6	46.3	41.3	11.1	19.0	19.0×21.0	16.0	13.0	17.5	22.6	65.0
ASC10-R1/2-O	10	R1/2	32.4	24.5	46.0	54.5	49.5	14.4	19.0	24.0×26.0	20.0	16.0	17.5	27.4	109.0
ASC10-R1/2-I	10	R1/2	32.4	24.5	46.0	54.5	49.5	14.4	19.0	24.0×26.0	20.0	16.0	17.5	27.4	109.0
ASC12-R3/8-O	12	R3/8	37.7	21.2	49.0	46.3	41.3	11.1	20.0	19.0×21.0	16.0	13.0	20.0	22.6	67.0
ASC12-R3/8-I	12	R3/8	37.7	21.2	49.0	46.3	41.3	11.1	20.0	19.0×21.0	16.0	13.0	20.0	22.6	67.0
ASC12-R1/2-O	12	R1/2	33.7	24.5	47.4	54.5	49.5	14.4	20.0	24.0×26.0	20.0	16.0	20.0	27.4	111.0
ASC12-R1/2-I	12	R1/2	33.7	24.5	47.4	54.5	49.5	14.4	20.0	24.0×26.0	20.0	16.0	20.0	27.4	111.0

Universal type



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (M,R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	K Full open (mm)	K Full closed (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	N (mm)	M (mm)	D (mm)	D1 (mm)	Weight (g)
ASD4-M5-O	4	M5×0.8	9.9	10.1	18.5	24.5	28.6	25.8	3.4	11.0	8.0×9.0	8.0	5.0	8.0	9.6	8.0
ASD4-M5-I	4	M5×0.8	9.9	10.1	18.5	24.5	28.6	25.8	3.4	11.0	8.0×9.0	8.0	5.0	8.0	9.6	8.0
ASD4-R1/8-O	4	R1/8	12.2	13.7	23.1	28.0	36.0	31.0	7.3	11.0	12.0×13.5	11.0	8.0	8.0	14.2	18.0
ASD4-R1/8-I	4	R1/8	12.2	13.7	23.1	28.0	36.0	31.0	7.3	11.0	12.0×13.5	11.0	8.0	8.0	14.2	18.0
ASD6-M5-O	6	M5×0.8	9.9	10.1	19.5	25.9	28.6	25.8	3.4	12.0	8.0×9.0	8.0	5.0	10.0	9.6	8.0
ASD6-M5-I	6	M5×0.8	9.9	10.1	19.5	25.9	28.6	25.8	3.4	12.0	8.0×9.0	8.0	5.0	10.0	9.6	8.0
ASD6-R1/8-O	6	R1/8	12.2	13.7	24.1	29.4	36.0	31.0	7.3	12.0	12.0×13.5	11.0	8.0	10.0	14.2	19.0
ASD6-R1/8-I	6	R1/8	12.2	13.7	24.1	29.4	36.0	31.0	7.3	12.0	12.0×13.5	11.0	8.0	10.0	14.2	19.0
ASD6-R1/4-O	6	R1/4	14.3	17.1	28.4	32.9	40.3	35.3	10.8	12.0	14.0×15.8	13.0	10.0	10.0	18.5	32.0
ASD6-R1/4-I	6	R1/4	14.3	17.1	28.4	32.9	40.3	35.3	10.8	12.0	14.0×15.8	13.0	10.0	10.0	18.5	32.0
ASD8-R1/8-O	8	R1/8	16.1	14.4	30.5	35.1	36.0	31.0	7.3	16.0	12.0×13.5	11.0	8.0	14.6	14.2	22.0
ASD8-R1/8-I	8	R1/8	16.1	14.4	30.5	35.1	36.0	31.0	7.3	16.0	12.0×13.5	11.0	8.0	14.6	14.2	22.0
ASD8-R1/4-O	8	R1/4	18.2	18.0	34.8	38.7	40.3	35.3	10.8	16.0	14.0×15.8	13.0	10.0	14.6	18.5	36.0
ASD8-R1/4-I	8	R1/4	18.2	18.0	34.8	38.7	40.3	35.3	10.8	16.0	14.0×15.8	13.0	10.0	14.6	18.5	36.0
ASD8-R3/8-O	8	R3/8	20.3	18.7	38.9	39.4	46.3	41.3	11.1	16.0	19.0×21.0	16.0	13.0	14.6	22.6	64.0
ASD8-R3/8-I	8	R3/8	20.3	18.7	38.9	39.4	46.3	41.3	11.1	16.0	19.0×21.0	16.0	13.0	14.6	22.6	64.0
ASD10-R1/4-O	10	R1/4	18.2	18.0	36.2	42.6	40.3	35.3	10.8	19.0	14.0×15.8	13.0	10.0	17.5	18.5	38.0
ASD10-R1/4-I	10	R1/4	18.2	18.0	36.2	42.6	40.3	35.3	10.8	19.0	14.0×15.8	13.0	10.0	17.5	18.5	38.0
ASD10-R3/8-O	10	R3/8	20.3	18.7	40.3	43.3	46.3	41.3	11.1	19.0	19.0×21.0	16.0	13.0	17.5	22.6	66.0
ASD10-R3/8-I	10	R3/8	20.3	18.7	40.3	43.3	46.3	41.3	11.1	19.0	19.0×21.0	16.0	13.0	17.5	22.6	66.0

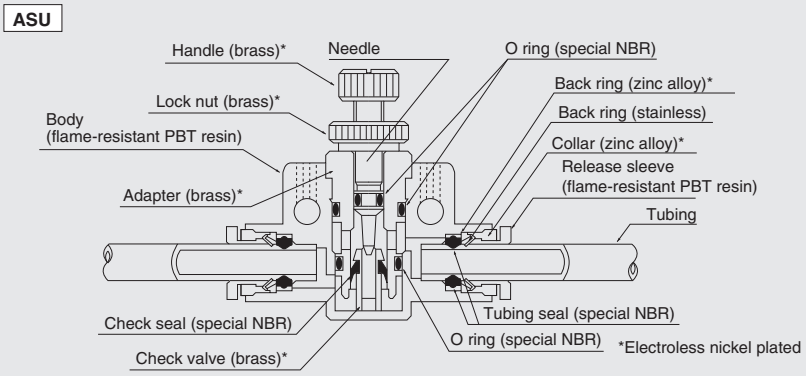
Speed Controller

PushOne™ Type

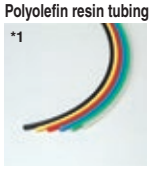
Features

- PushOne connection of tubing
  Jig and tool not required for connecting the tubes.
- Centrally controllable on a pipe line
  Various kinds of piping are possible by fixing with connector pins and brackets.
- Electroless nickel plated
  Prevents degradation of surface and dissolution of copper ions into fluid.
- Flame-resistant resin (compliant with V-0 of UL94 standard)
  Made of flame-resistant resin PBT. High self-extinguishing performance is compliant with V-0 of UL94 standard. Usable under an environment with spatters.

Cross-sectional structure diagram



Applicable tubing

Polyurethan tubing	Nylon tubing	Flame-resistant tubing	Polyolefin resin tubing	Fluorocarbon resin tubing
			 *1	 *1
U2 U1 U5	N2 N5 N1	FS FW FWU FUK	PL PN	TA TP

(*1) Combinatory use of PL, PN, TA or TP tubing and Speed controller mixes general and clean type performances.
When using them together in a clean environment, be aware of how this could lower the cleanliness level.

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	+5°C~+60°C

Pressure condition

Maximum working pressure: 1.0MPa

Handling instructions

⚠ **Caution:** When the working conditions of tubes and fittings differ, use them under the lower specified conditions.

⚠ **Caution:** Tighten the lock nut and handle by hand, not by using a spanner.

⚠ **Caution:** The needle part stops when fully opened. Forced rotation could cause damage.

⚠ **Caution:** Cannot be used at a negative pressure.

⚠ **Caution:** Be sure to check the air flow direction when attaching a speed controller to equipment.

⚠ **Caution:** Do not bend the pipe sharply near the tubing insertion port (sleeve end) of the fitting. Keep the tubing straight for twice as long as the tubing diameter from the insertion port.

⚠ **Caution:** Cannot be used for sealing purposes.

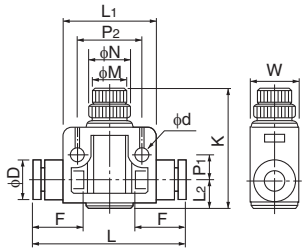
See page 134 for the common handling instructions for control, switch and detachable series products.

Inline type connection

Controllers can be connected with a connector pin.

Reference

Inline type

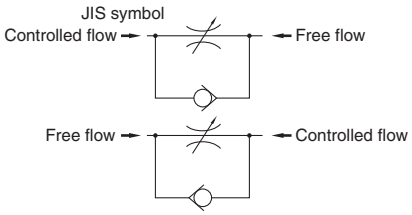


●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	L (mm)	L1 (mm)	L2 (mm)	P1 (mm)	P2 (mm)	K		F Tubing insertion length (mm)	N (mm)	M (mm)	D (mm)	d (mm)	W (mm)	Weight (g)
							Full open (mm)	Full closed (mm)							
ASU4	4	41.8	20.0	6.4	6.0	14.0	29.5	26.9	13.5	8.0	5.0	9.8	3.2	10.6	11.5
ASU6	6	47.6	28.0	9.0	8.2	20.0	43.5	39.8	15.0	11.0	8.0	12.6	4.2	15.0	31.0
ASU8	8	55.8	30.0	10.3	9.2	22.0	47.7	42.1	16.0	13.0	10.0	14.6	4.2	17.6	48.0

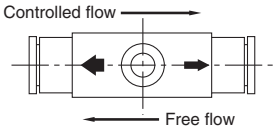
JIS symbol mark

JIS symbols are marked on both sides of the body.

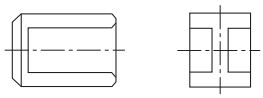


Control direction mark

Control directions are marked by arrows on the top of the body.



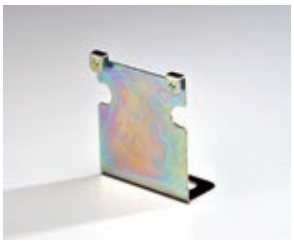
Connector pin

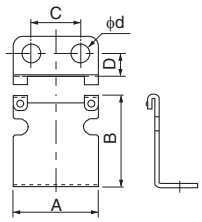


●Connector pin

Product number	Applicable fitting product number
HPN4	ASU4
HPN6	ASU6 ASU8

Bracket





●Bracket

Product number	Applicable fitting product number	A (mm)	B (mm)	C (mm)	D (mm)	d (mm)
BRK4	ASU4	18.0	18.5	10.0	6.5	5.0
BRK6	ASU6	24.0	26.0	14.0	6.5	5.0
BRK8	ASU8	26.0	30.0	14.0	6.5	5.0

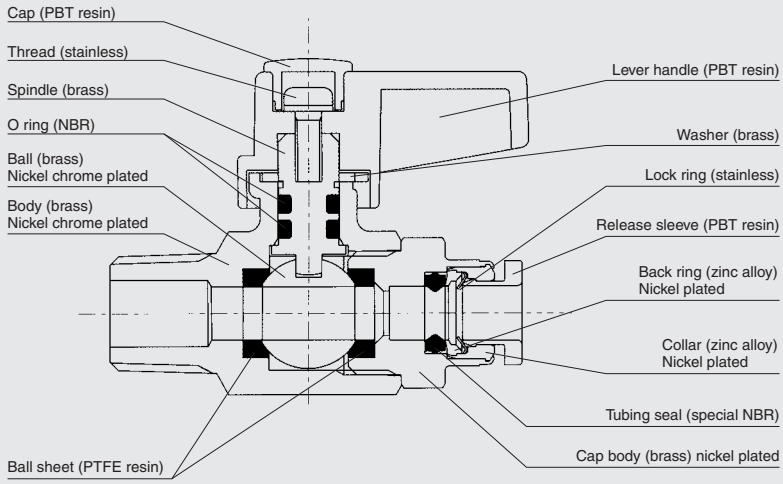
Ball Valve

PushOne™ Type

Features

- **Enables compacting piping**
  Integrated space-saving ball valve and PushOne fitting enables compact piping.
- **PushOne connection of tubing**
  Jig and tool not required for connecting the tubes.
- **Position of handle can be changed**
  Handle can be re-attached in different position if it hits something when opened or closed.
- **Nickel plated**
  Prevents degradation of surface and dissolution of copper ions into fluid.

Cross-sectional structure diagram



Product number example

VS-E6-F1/4

- Thread size
- Thread shape (F=internal thread (RC), M=external thread (R))
- Applicable tubing outer diameter
- Type
- Shape
- Ball valve with PushOne E series

Applicable tubing

Polyurethan tubing	Nylon tubing	Polyolefin resin tubing	Fluorocarbon resin tubing
		 *1	 *1
U2 U1 U5	N2 N5 N1	PL PN	TA TP

(*1) Combinatory use of PL, PN, TA or TP tubing and ball valve mixes general and clean type performances.
When using them together in a clean environment, be aware of how this could lower the cleanliness level.

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	–20°C~+80°C
Water	–0°C~+40°C

Pressure condition

Maximum working pressure: 1.0MPa

Change of open/close position of handle

Position of the lever handle can be changed when the handle could be interfered with by any objects that would prevent it from opening or closing a full 90 degrees.

① 
Detach the cap and the thread inside.

② 
Detach the lever handle.

③ 

Attach the lever handle in new position at user's discretion, then confirm that the handle can be opened or closed smoothly a full 90 degrees before tightening up the thread.

④ 
Attach the cap again.

Handling instructions

⚠ **Caution:** When the working conditions of tubes and fittings differ, use them under the lower specified conditions .

⚠ **Caution:** When water is used as the operating fluid, do not allow it to freeze.

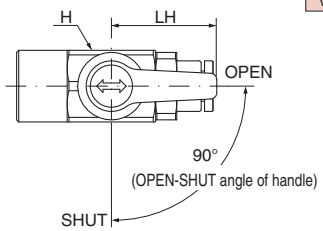
⚠ **Caution:** Use the valve at fully open or closed position, not at an intermediate position.

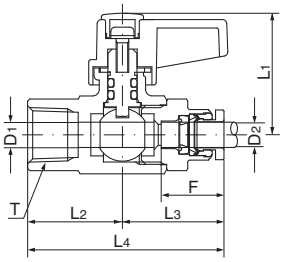
⚠ **Caution:** Do not bend the pipe sharply near the tubing insertion port (sleeve end) of the fitting. Keep the tubing straight for twice as long as the tubing diameter from the insertion port.

⚠ **Caution:** Cannot be used at a negative pressure.

See page 134 for the common handling instructions for control, switch and detachable series products.

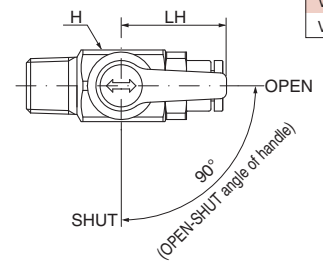
Straight type

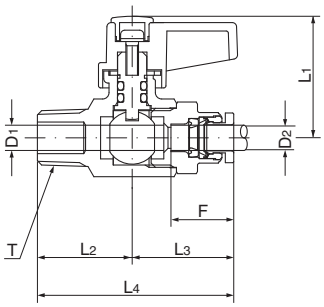




●Internal thread

Product number	Applicable tubing outer diameter (mm)	T Thread size (RC)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	LH (mm)	F Tubing insertion length (mm)	D1 (mm)	D2 (mm)	H (mm)	Effective sectional area (mm²)	Weight (g)
VS-E6-F1/8	6	RC1/8	29.0	20.5	24.5	45.0	25.0	15	6.0	5.0	17	—	62.0
VS-E6-F1/4	6	RC1/4	29.0	22.5	24.5	47.0	25.0	15	6.0	5.0	17	—	66.0
VS-E8-F1/8	8	RC1/8	29.0	20.5	25.7	46.2	25.0	16	6.0	6.0	17	—	62.0
VS-E8-F1/4	8	RC1/4	29.0	22.5	25.7	48.2	25.0	16	6.0	6.0	17	—	66.0
VS-E8-F3/8	8	RC3/8	30.5	23.0	27.4	50.4	25.0	16	7.5	6.0	22	—	106.0
VS-E10-F1/4	10	RC1/4	29.0	22.5	28.5	51.0	25.0	19	6.0	6.0	17	—	70.0
VS-E10-F3/8	10	RC3/8	30.5	23.0	30.0	53.0	25.0	19	7.5	7.5	22	—	108.0
VS-E12-F3/8	12	RC3/8	30.5	23.0	32.3	55.3	25.0	20	7.5	7.5	22	—	110.0





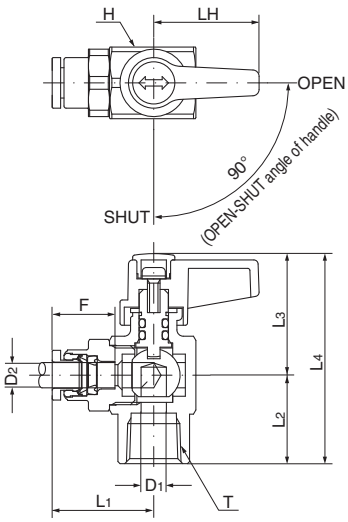
●External thread

Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	LH (mm)	F Tubing insertion length (mm)	D1 (mm)	D2 (mm)	H (mm)	Effective sectional area (mm²)	Weight (g)
VS-E6-M1/8	6	R1/8	29.0	20.5	24.5	45.0	25.0	15	6.0	5.0	17	—	58.0
VS-E6-M1/4	6	R1/4	29.0	22.5	24.5	47.0	25.0	15	6.0	5.0	17	—	61.0
VS-E8-M1/8	8	R1/8	29.0	20.5	25.7	46.2	25.0	16	6.0	6.0	17	—	58.0
VS-E8-M1/4	8	R1/4	29.0	22.5	25.7	48.2	25.0	16	6.0	6.0	17	—	61.0
VS-E8-M3/8	8	R3/8	30.5	23.0	27.4	50.4	25.0	16	7.5	6.0	22	—	100.0
VS-E8-M1/2	8	R1/2	30.5	24.0	27.4	51.4	25.0	16	7.5	6.0	22	—	108.0
VS-E10-M1/4	10	R1/4	29.0	22.5	28.5	51.0	25.0	19	6.0	6.0	17	—	65.0
VS-E10-M3/8	10	R3/8	30.5	23.0	30.0	53.0	25.0	19	7.5	7.5	22	—	102.0
VS-E10-M1/2	10	R1/2	30.5	24.0	30.0	54.0	25.0	19	7.5	7.5	22	—	110.0
VS-E12-M3/8	12	R3/8	30.5	23.0	32.3	55.3	25.0	20	7.5	7.5	22	—	104.0
VS-E12-M1/2	12	R1/2	30.5	24.0	32.3	56.3	25.0	20	7.5	7.5	22	—	112.0

Angled type

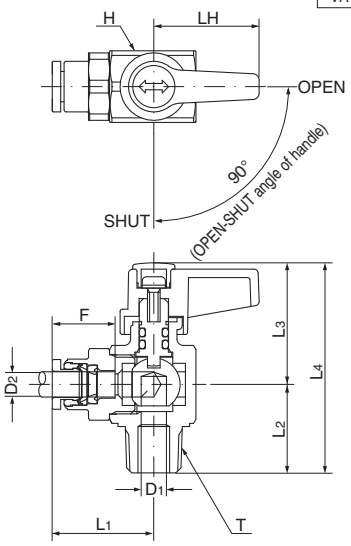
●Internal thread

Product number	Applicable tubing outer diameter (mm)	T Thread size (RC)	L_1 (mm)	L_2 (mm)	L_3 (mm)	L_4 (mm)	LH (mm)	F Tubing insertion length (mm)	D_1 (mm)	D_2 (mm)	H (mm)	Effective sectional area (mm^2)	Weight (g)
VA-E6-F1/8	6	RC1/8	24.5	19.0	29.0	48.0	25.0	15	6.0	5.0	17	—	68.0
VA-E6-F1/4	6	RC1/4	24.5	21.0	29.0	50.0	25.0	15	6.0	5.0	17	—	65.0
VA-E8-F1/8	8	RC1/8	25.7	19.0	29.0	48.0	25.0	16	6.0	6.0	17	—	68.0
VA-E8-F1/4	8	RC1/4	25.7	21.0	29.0	50.0	25.0	16	6.0	6.0	17	—	65.0
VA-E8-F3/8	8	RC3/8	27.4	24.0	31.0	55.0	25.0	16	7.5	6.0	22	—	114.0
VA-E10-F1/4	10	RC1/4	28.5	21.0	29.0	50.0	25.0	19	6.0	6.0	17	—	69.0
VA-E10-F3/8	10	RC3/8	30.0	24.0	31.0	55.0	25.0	19	7.5	7.5	22	—	103.0
VA-E12-F3/8	12	RC3/8	32.3	24.0	31.0	55.0	25.0	20	7.5	7.5	22	—	118.0



●External thread

Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L_1 (mm)	L_2 (mm)	L_3 (mm)	L_4 (mm)	LH (mm)	F Tubing insertion length (mm)	D_1 (mm)	D_2 (mm)	H (mm)	Effective sectional area (mm^2)	Weight (g)
VA-E6-M1/8	6	R1/8	24.5	20.0	29.0	49.0	25.0	15	6.0	5.0	17	—	61.0
VA-E6-M1/4	6	R1/4	24.5	21.0	29.0	50.0	25.0	15	6.0	5.0	17	—	64.0
VA-E8-M1/8	8	R1/8	25.7	20.0	29.0	49.0	25.0	16	6.0	6.0	17	—	61.0
VA-E8-M1/4	8	R1/4	25.7	21.0	29.0	50.0	25.0	16	6.0	6.0	17	—	64.0
VA-E8-M3/8	8	R3/8	27.4	25.0	31.0	56.0	25.0	16	7.5	6.0	22	—	110.0
VA-E10-M1/4	10	R1/4	28.5	21.0	29.0	50.0	25.0	19	6.0	6.0	17	—	68.0
VA-E10-M3/8	10	R3/8	30.0	25.0	31.0	56.0	25.0	19	7.5	7.5	22	—	112.0
VA-E12-M3/8	12	R3/8	32.3	25.0	31.0	56.0	25.0	20	7.5	7.5	22	—	106.0
VA-E12-M1/2	12	R1/2	32.3	27.0	31.0	57.0	25.0	20	9.0	7.5	22	—	113.0



Control Series

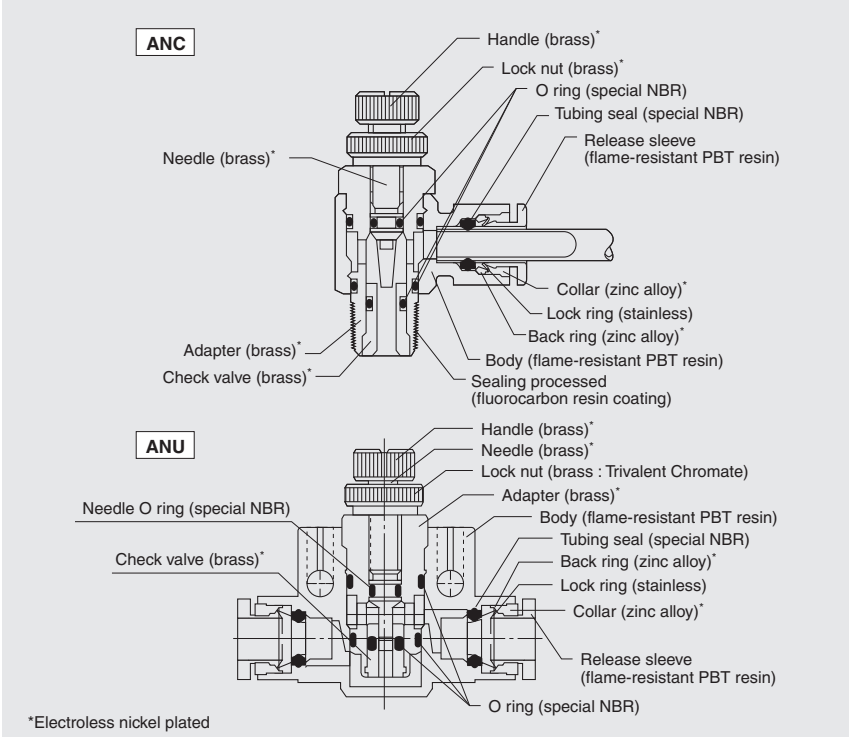
Throttle Valve

PushOne™ Type

Features

- Fine control of flow rate
- Flame-resistant resin (compliant with V-0 of UL94 standard)
  Made of flame-resistant resin PBT. High self-extinguishing performance is compliant with V-0 of UL94 standard. Usable under an environment with spatters.
- Inline type (ANU) allows central control on a pipe line
  Various kinds of piping are possible by fixing with connector pins and brackets.
- PushOne connection of tubing
  Jigs and tools are not required for connecting the tubes.
- Electroless nickel plated
  Prevents degradation of the surface and dissolution of copper ions into fluid.
- Sealing-processed R thread
  Sealing tape is not required.

Cross-sectional structure diagram



*Electroless nickel plated

Product number example

ANC 6 – R1/8

- Shape
- Applicable tubing outer diameter
- Thread size

Distinction from speed controller

No arrow mark (left): Throttle valve
Arrow mark present (right): Speed controller

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	–20°C~+80°C
Water	0°C~+40°C

Pressure condition

Maximum working pressure: 1.0MPa

Handling instructions

⚠ **Caution:** When the working conditions of tubes and fittings differ, use them under the lower specified conditions.

⚠ **Caution:** Tighten the lock nut and handle by hand, not by a spanner.

⚠ **Caution:** The needle part stops when fully opened. Forced rotation could cause damage.

⚠ **Caution:** When water is used as the operating fluid, do not allow it to freeze.

⚠ **Caution:** When water is used as the operating fluid, confirm that there is no water leakage damage to equipment and instruments due to construction failure.

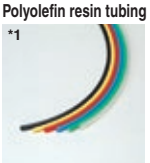
⚠ **Caution:** Do not bend the pipe sharply near the tubing insertion port (sleeve end) of the fitting. Keep the tubing straight for twice as long as the tubing diameter from the insertion port.

See page 134 for the common handling instructions for control, switch and detachable series products.

Inline type connection

Inline type controllers can be connected with a connector pin.
(The photograph shows speed controllers.)

Applicable tubing

Polyurethane tubing	Nylon tubing	Flame-resistant tubing	Polyolefin resin tubing	Fluorocarbon resin tubing
			 *1	 *1
U2 U1 U5	N2 N5 N1	FS FW FWU FUK	PL PN	TA TP

(*1) Combinatory use of PL, PN, TA or TP tubing and throttle valve mixes general and clean type performances. When using them together in a clean environment, be aware of how this could lower the cleanliness level.

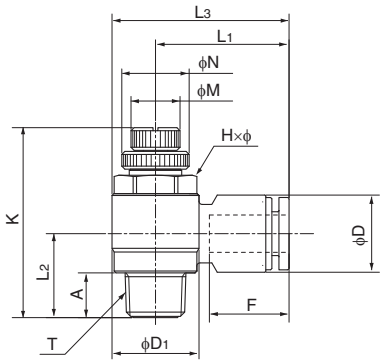
Reference

UL-94 standard flame test·····P.195

Elbow type

●Millimeter size type

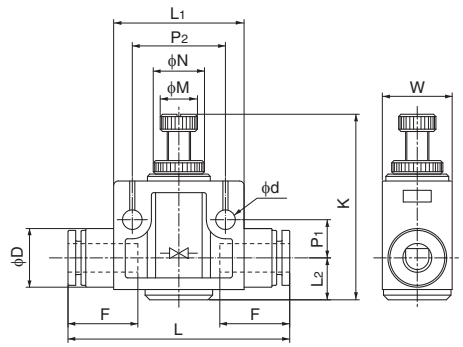
Product number	Applicable tubing outer diameter (mm)	Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	K Full open (mm)	K Full closed (mm)	A (mm)	F Tubing insertion length (mm)	H×ϕ Width across flat (mm)	N (mm)	M (mm)	D (mm)	D1 (mm)	Weight (g)
ANC4-R1/8	4	R1/8	20.1	13.7	27.2	36.0	31.0	7.3	13.5	12.0×13.5	11.0	8.0	9.8	14.2	19.0
ANC6-R1/8	6	R1/8	21.8	13.7	28.9	36.0	31.0	7.3	15	12.0×13.5	11.0	8.0	12.6	14.2	20.0



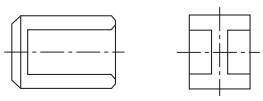
Inline type

●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	L (mm)	L1 (mm)	L2 (mm)	P1 (mm)	P2 (mm)	K Full open (mm)	K Full closed (mm)	F Tubing insertion length (mm)	N (mm)	M (mm)	D (mm)	d (mm)	W (mm)	Weight (g)	Effective sectional area (mm²)
ANU4	4	41.8	20.0	6.4	6.0	14.0	29.5	26.9	13	8.0	5.0	9.8	3.2	10.6	11.5	—
ANU6	6	47.6	28.0	9.0	8.2	20.0	43.5	39.8	15	11.0	8.0	12.6	4.2	15.0	31.0	—
ANU8	8	55.8	30.0	10.3	9.2	22.0	47.7	42.1	16	13.0	10.0	14.6	4.2	17.6	48.0	—



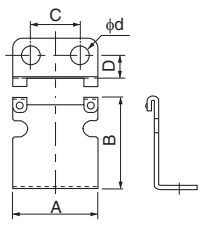
Connector pin



●Connector pin

Product number	Applicable fitting product number
HPN4	ANU4
HPN6	ANU6
	ANU8

Bracket



●Bracket

Product number	Applicable fitting product number	A (mm)	B (mm)	C (mm)	D (mm)	d (mm)
BRK4	ANU4	18.0	18.5	10.0	6.5	5.0
BRK6	ANU6	24.0	26.0	14.0	6.5	5.0
BRK8	ANU8	26.0	30.0	14.0	6.5	5.0

Control Series

Miniature Valve

PushOne™ Type and QuickSeal Type

Features

- Easy flow rate control
  Easy operation with large handle.
- Fine control of flow rate
  Fine thread is used for valve system.
- PushOne connection for millimeter size type
  Jigs and tools are not required for connecting the tubes.

Product number example

E MVB 6 – PT1/8

- Thread size
- Tubing size
- Shape
- Type (E: PushOne type)

Q MVB 1N 1/4 – R1/8

- Thread size
- Tubing size
- Inch size type (group 1)
- Shape
- Type (Q: QuickSeal type)

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	–20°C~+80°C
Water	0°C~+40°C

Pressure condition

Maximum working pressure: 1.0MPa
Negative pressure performance: –98.642kPa

Handling instructions

⚠ **Caution:** When the working conditions of tubes and fittings differ, use them under the lower specified conditions.

⚠ **Caution:** When water is used as the operating fluid, do not allow it to freeze.

⚠ **Caution:** Do not bend the pipe sharply near the tubing insertion port (sleeve end) of the fitting. Keep the tubing straight for twice as long as the tubing diameter from the insertion port.

⚠ **Caution:** The miniature valve has a determined flow direction, which is indicated on the side body. Flow fluid in the correct direction to control the flow rate.

See page 134 for the common handling instructions for control, switch and detachable series products.

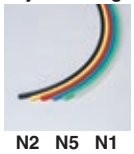
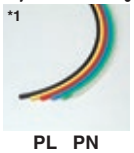
Applicable tubing

PushOne type (millimeter size)

Polyurethane tubing	Nylon tubing	Polyolefin resin tubing	Fluorocarbon resin tubing
		 *1	 *1
U2 U1 U5	N2 N5 N1	PL PN	TA TP

(*1) Combinatory use of PL, PN, TA or TP tubing and miniature valve mixes general and clean type performances. When using them together in a clean environment, be aware of how this could lower the cleanliness level.

QuickSeal type (Inch size)

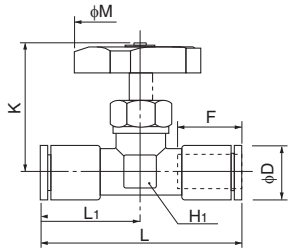
Polyurethane tubing	Nylon tubing	Polybutene tubing	Polyolefin resin tubing	Fluorocarbon resin tubing
			 *1	 *1
U2	N2 N5 N1	PB	PL PN	TA TP

(*1) Combinatory use of PL, PN, TA or TP tubing and miniature valve mixes general and clean type performances. When using them together in a clean environment, be aware of how this could lower the cleanliness level.

Reference

Negative-pressure performance list·····P.169

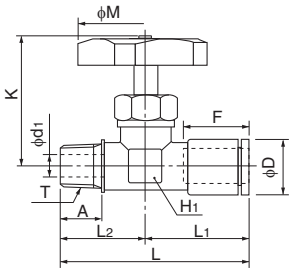
Inline type



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	L (mm)	L1 (mm)	K		M (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	D (mm)	Weight (g)	Effective sectional area (mm²)
				Full open (mm)	Full closed (mm)						
EMVA6	6	50.6	25.3	39.9	35.9	40.0	15	15.0	15.0	—	—
EMVA8	8	51.6	25.8	39.9	35.9	40.0	16	15.0	15.0	86.0	2.5

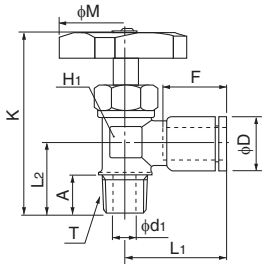
Straight type



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L (mm)	L1 (mm)	L2 (mm)	A (mm)	K		M (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	d1 (mm)	D (mm)	Weight (g)	Effective sectional area (mm²)
							Full open (mm)	Full closed (mm)							
EMVB6-PT1/8	6	R1/8	46.8	25.3	21.5	10.0	39.9	35.9	40.0	15	15.0	5.0	15.0	81.0	3.5
EMVB6-PT1/4	6	R1/4	49.8	25.3	24.5	13.0	39.9	35.9	40.0	15	15.0	7.0	15.0	84.5	3.5
EMVB8-PT1/4	8	R1/4	50.3	25.8	24.5	13.0	39.9	35.9	40.0	16	15.0	7.0	15.0	—	—

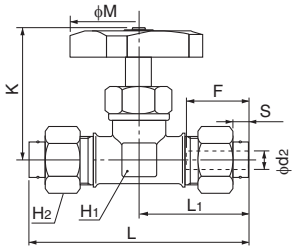
Angled type



●Millimeter size type

Product number	Applicable tubing outer diameter (mm)	T Thread size (R)	L1 (mm)	L2 (mm)	A (mm)	K		M (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	d1 (mm)	D (mm)	Weight (g)	Effective sectional area (mm²)
						Full open (mm)	Full closed (mm)							
EMVC6-PT1/8	6	R1/8	25.3	23.0	12.0	57.9	53.9	40.0	15	15.0	5.0	15.0	76.5	7.0
EMVC6-PT1/4	6	R1/4	25.3	23.0	12.0	57.9	53.9	40.0	15	15.0	7.0	15.0	—	—
EMVC8-PT1/4	8	R1/4	24.8	23.0	12.0	57.9	53.9	40.0	16	15.0	7.0	15.0	78.0	7.0

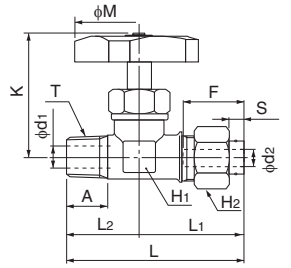
Inline type



●Inch size type

Product number	Applicable tubing outer diameter (inch)	L (mm)	L1 (mm)	K		M (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 (mm)	d2 (mm)	Weight (g)	Effective sectional area (mm²)
				Full open (mm)	Full closed (mm)								
QMVA1N1/4	1/4	54.2	27.1	37.4	33.4	ϕ40.0	4.6	15	14.0	12.0	3.4	80.0	5.0
QMVA1N3/8	3/8	62.6	31.3	38.9	34.9	ϕ40.0	4.6	17	17.0	17.0	5.7	117.0	6.0

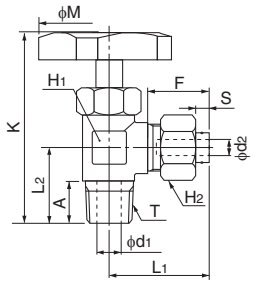
Straight type



●Inch size type

Product number	Applicable tubing outer diameter (inch)	T Thread size (R)	L (mm)	L1 (mm)	L2 (mm)	A (mm)	K		M (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 (mm)	d1 (mm)	d2 (mm)	Weight (g)	Effective sectional area (mm²)
							Full open (mm)	Full closed (mm)									
QMVB1N1/4-R1/8	1/4	R1/8	46.6	27.1	19.5	10.0	37.4	33.4	ϕ40.0	4.6	15	14.0	12.0	5.0	3.4	76.0	5.0
QMVB1N1/4-R1/4	1/4	R1/4	48.6	27.1	21.5	12.0	37.4	33.4	ϕ40.0	4.6	15	14.0	12.0	7.0	3.4	95.0	5.5
QMVB1N3/8-R1/4	3/8	R1/4	56.3	31.3	25.0	12.0	38.9	34.9	ϕ40.0	4.6	17	17.0	17.0	7.0	5.7	113.0	6.0

Angled type

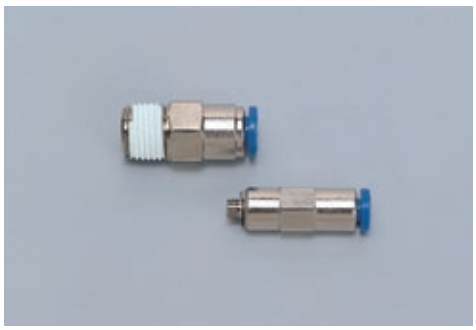


●Inch size type

Product number	Applicable tubing outer diameter (inch)	T Thread size (R)	L1 (mm)	L2 (mm)	A (mm)	K		M (mm)	S (mm)	F Tubing insertion length (mm)	H1 Width across flat (mm)	H2 (mm)	d1 (mm)	d2 (mm)	Weight (g)	Effective sectional area (mm²)
						Full open (mm)	Full closed (mm)									
QMVC1N1/4-R1/8	1/4	R1/8	27.1	20.0	10.0	54.9	50.9	ϕ40.0	4.6	15	14.0	12.0	5.0	3.4	75.0	—
QMVC1N1/4-R1/4	1/4	R1/4	27.1	22.0	12.0	56.9	50.9	ϕ40.0	4.6	15	14.0	12.0	7.0	3.4	92.0	7.0
QMVC1N3/8-R1/4	3/8	R1/4	28.3	23.0	12.0	59.9	55.9	ϕ40.0	4.6	17	17.0	17.0	7.0	5.7	104.0	7.0

Valve Built-in Connector

PushOne™ Type

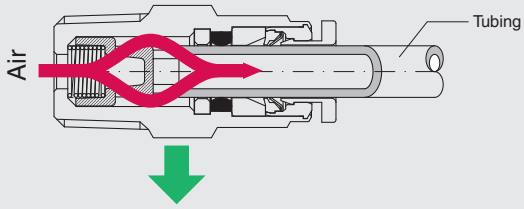


Features

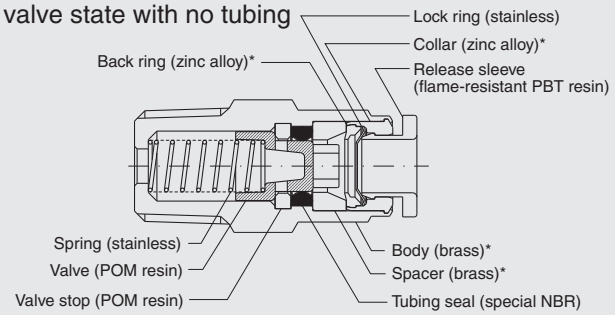
- Valve inside fitting is opened/closed by attaching/detaching tubing
  The valve is automatically closed by detaching the tubing.
- PushOne connection of tubing
  Jigs and tools are not required for connecting the tubes.
- Electroless nickel plated
  Prevents degradation of surface and dissolution of copper ions into fluid.
- Sealing-processed R thread
  Sealing tape is not required.

Cross-sectional structure diagram

Open valve state



Closed valve state with no tubing



*Electroless nickel plated

Operating fluid, working temperature range

Operating fluid	Working temperature rangee
Air	+20°C~+60°C

Pressure condition

Maximum working pressure: 1.0MPa

Handling instructions

⚠ **Caution:** When the working conditions of tubes and fittings differ, use them under the lower specified conditions.

⚠ **Caution:** Cannot be used at a negative pressure.

⚠ **Caution:** Detach tubing when it is unpressurized.

⚠ **Caution:** Do not bend the pipe sharply near the tubing insertion port (sleeve end) of the fitting. Keep the tubing straight for twice as long as the tubing diameter from the insertion port.

⚠ **Caution:** Reducers, adapter elbows and Y-plugs of PushOne series cannot be used.

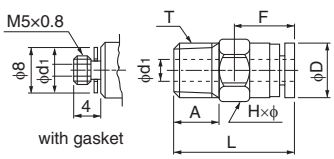
See page 134 for the common handling instructions for control, switch and detachable series products.

Applicable tubing

Polyurethane tubing	Nylon tubing	Flame-resistant tubing	Polyolefin resin tubing	Fluorocarbon resin tubing
			 *1	 *1
U2 U1 U5	N2 N5 N1	FS FW FWU FUK	PL PN	TA TP

(*1) Combinatory use of PL, PN, TA or TP tubing and valve built-in connector mixes general and clean type performances.
When using them together in a clean environment, be aware of how this could lower the cleanliness level.

Connector



●**Millimeter size type**

Product number	Applicable tubing outer diameter (mm)	T Thread size (M,R)	L (mm)	A (mm)	F Tubing insertion length (mm)	H×φ Width across flat (mm)	D (mm)	d1 (mm)	Weight (g)	Effective sectional area (mm²)
ECV4-M5	4	M5×0.8	32.6	4.0	16	10.0×11.0	10.0	2.0	11.0	2.0
ECV6-PT1/8	6	R1/8	40.4	8.0	17	14.0×15.4	13.0	4.0	26.0	6.5
ECV6-PT1/4	6	R1/4	31.4	11.0	17	14.0×15.4	13.0	4.0	21.0	6.5

Detachable Series

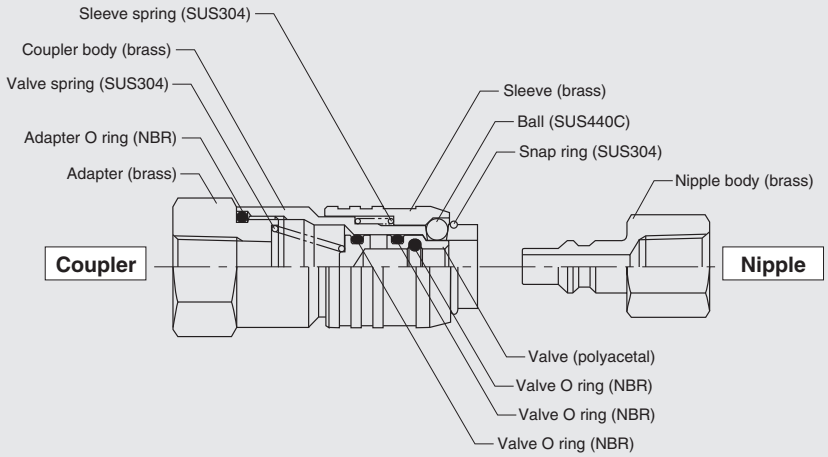
Q.D.C. 101 Series

Compact coupler for air pressure

Features

- Push-To-Connect type
  One-touch connection just by pushing the nipple into the coupler.
- Automatic opening/closing valve inside the coupler
  The valve inside the coupler is automatically opened by connecting the coupler and the nipple.
- SUS304 type (made to order) available
- PushOne fitting integrated types available

Cross-sectional structure diagram



Product number example

(S) 101 C 4 – 4 F

- Attachment shape
- Attachment size
- Body size
- C = Coupler, N = Nipple
- Product name
- No symbol = brass
  S = SUS304 (made to order)

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	–20°C~+80°C

Pressure condition

Maximum working pressure: 1.0MPa
Negative pressure performance:
–99.975kPa

Handling instructions

⚠ **Caution:** When the working conditions of tubes and fittings are different, use them under the lower specified conditions.

⚠ **Caution:** Neither the coupler nor nipple can be connected to other manufacturers' products.

⚠ **Caution:** Detach the tubing, coupler or nipple in an unpressurized state.

⚠ **Caution:** Do not use and rotate the coupler as a substitute for a rotary joint or swivel joint.

⚠ **Caution:** Do not use the coupler or nipple in a place contaminated with metal particles or dust. It could cause problems with operation.

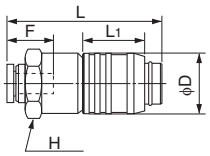
⚠ **Caution:** Connection and disconnection under a residual pressure may cause an accident. Also, do not hit the front end with a hammer to release pressure.

⚠ **Caution:** In case of leakage due to abrasion or degradation of O ring, replace both the O ring and body with new ones.

See page 134 for the common handling instructions for control, switch and detachable series products.

Coupler

PushOne™ type

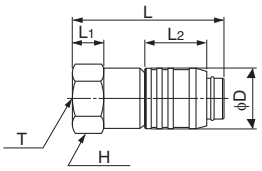


Product number	Applicable tubing outer diameter (mm)	L (mm)	L1 (mm)	F Tubing insertion length (mm)	H Width across flat (mm)	D (mm)	Weight (g)
101C4-6E	6	49.3	19.5	15	19.0	19.0	62.0
101C4-8E	8	50.9	19.5	16	19.0	19.0	62.0
101C4-10E	10	53.9	19.5	19	19.0	19.0	64.5

Internal thread type

Brass type

Stainless type



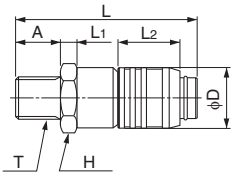
	Product number	T Thread size (RC)	L (mm)	L1 (mm)	L2 (mm)	H Width across flat (mm)	D (mm)	Weight (g)
	101C4-2F	RC1/8	48.0	10.0	19.5	19.0	19.0	67.5
	101C4-4F	RC1/4	48.0	10.0	19.5	19.0	19.0	60.5
*	S101C4-2F	RC1/8	48.0	10.0	19.5	19.0	19.0	67.5
*	S101C4-4F	RC1/4	48.0	10.0	19.5	19.0	19.0	60.5

*Made to order

External thread type

Brass type

Stainless type

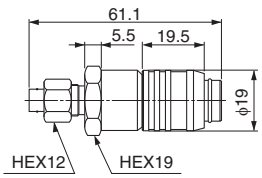


	Product number	T Thread size (R)	L (mm)	A (mm)	L1 (mm)	L2 (mm)	H Width across flat (mm)	D (mm)	Weight (g)
	101C4-2M	R1/8	53.5	10.0	5.5	19.5	19.0	19.0	59.0
	101C4-4M	R1/4	57.5	14.0	5.5	19.5	19.0	19.0	64.0
*	S101C4-2M	R1/8	53.5	10.0	5.5	19.5	19.0	19.0	59.0
*	S101C4-4M	R1/4	57.5	14.0	5.5	19.5	19.0	19.0	64.0

*Made to order

N2-1-1/4 type

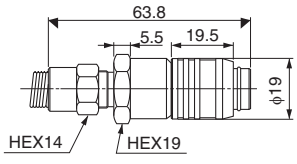
Product number : 101C4-4T



Weight : 64.0g

Nylon coil tubing S1/4 type

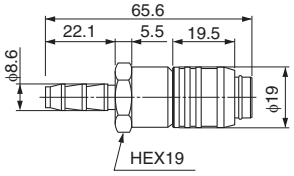
Product number : 101C4-4S



Weight : 78.5g

φ8 hose type

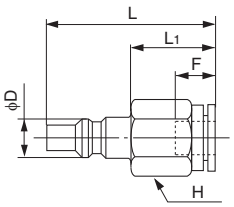
Product number : 101C4-4H



Weight : 63.5g

Nipple

PushOne™ type

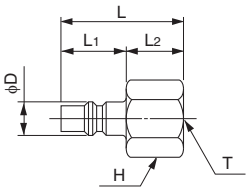


Product number	Applicable tubing outer diameter (mm)	L (mm)	L1 (mm)	F Tubing insertion length (mm)	H Width across flat (mm)	D (mm)	Weight (g)
101N4-6E	6	32.8	16.2	15	12.0	8.3	13.0
101N4-8E	8	34.9	18.3	16	14.0	8.3	16.0
101N4-10E	10	38.4	21.8	19	17.0	8.3	27.0

Internal thread type

Brass type

Stainless type



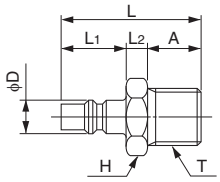
	Product number	T Thread size (RC)	L (mm)	L1 (mm)	L2 (mm)	H Width across flat (mm)	D (mm)	Weight (g)
	101N4-2F	RC1/8	29.5	16.6	12.9	14.0	8.3	16.5
	101N4-4F	RC1/4	32.8	16.6	16.2	17.0	8.3	25.0
*	S101N4-2F	RC1/8	29.5	16.6	12.9	14.0	8.3	16.5
*	S101N4-4F	RC1/4	32.8	16.6	16.2	17.0	8.3	25.0

*Made to order

External thread type

Brass type

Stainless type

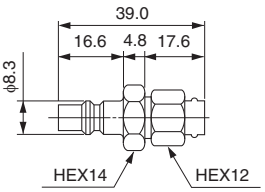


	Product number	T Thread size (R)	L (mm)	L1 (mm)	L2 (mm)	A (mm)	H Width across flat (mm)	D (mm)	Weight (g)
	101N4-2M	R1/8	31.4	16.6	4.8	10.0	14.0	8.3	13.5
	101N4-4M	R1/4	35.4	16.6	4.8	14.0	14.0	8.3	18.0
*	S101N4-2M	R1/8	31.4	16.6	4.8	10.0	14.0	8.3	13.5
*	S101N4-4M	R1/4	35.4	16.6	4.8	14.0	14.0	8.3	18.0

*Made to order

N2-1-1/4 type

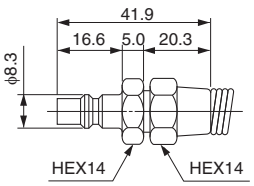
Product number : 101N4-4T



Weight : 18.0g

Nylon coil tubing S1/4 type

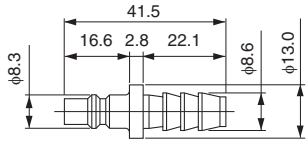
Product number : 101N4-4S



Weight : 32.5 g

φ8 hose type

Product number : 101N4-4H



Weight : 12.5 g

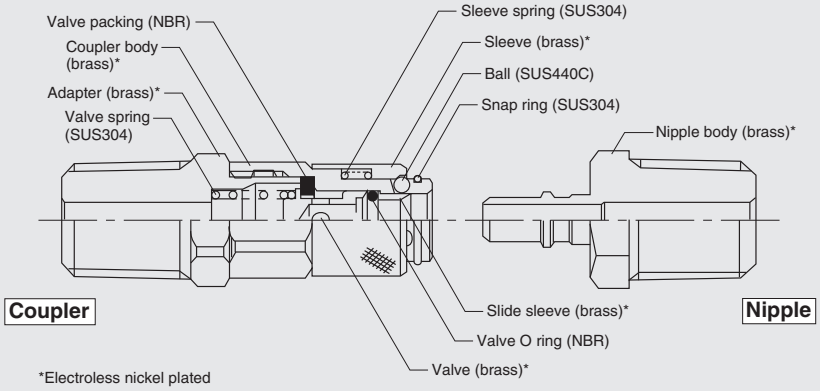
Q.D.C. 103 Series

Micro size coupler for air and oil pressure

Features

- **Push-To-Connect type**
  One-touch connection just by pushing the nipple into the coupler.
- **Automatic opening/closing valve inside the coupler**
  The valve inside the coupler is automatically opened by connecting the coupler and the nipple.
- **Smaller than 101 series**
  Bamboo-shoot fitting integrated type available for direct connection to U5 tubing.
- **Electroless nickel plated**
  Prevents degradation of surface and dissolution of copper ions into fluid.

Cross-sectional structure diagram



Product number example

103 C – M5

- M5: Attachment shape and size
- C: C = Coupler, N = Nipple
- 103: Product name

Operating fluid, working temperature range

Operating fluid	Working temperature range
Air	–20°C~+80°C
Water	0°C~+80°C
General operating oil	–20°C~+80°C

Pressure condition

Maximum working pressure: 1.0MPa
Negative pressure performance: –99.975kPa

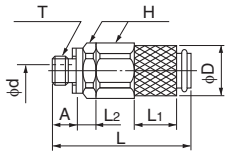
Handling instructions

- **Caution:** When working conditions of tubes and fittings are different, use them under the lower specified conditions.
- **Caution:** Neither the coupler nor nipple can be connected to other manufacturers' products.
- **Caution:** Detach the tubing, coupler or nipple in an unpressurized state.
- **Caution:** Do not use and rotate coupler as a substitute for rotary joint or swivel joint.
- **Caution:** When water is used as the operating fluid, do not allow it to freeze.
- **Caution:** Do not use the coupler or nipple in a place contaminated with metal particles or dust. It could cause problems with operation.
- **Caution:** Connection and disconnection under residual pressure may cause an accident. Also, do not hit the front end with a hammer to release pressure.
- **Caution:** In case of leakage due to abrasion or degradation of O ring, replace both the O ring and body with new ones.

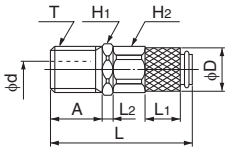
See page 134 for the common handling instructions for the control, switch and detachable series products.

Coupler

Connector type

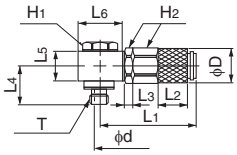


Product number	T Thread size (M)	L (mm)	L1 (mm)	L2 (mm)	A (mm)	H Width across flat (mm)	D (mm)	d (mm)	Weight (g)
103C-M5	M5×0.8	25.0	8.0	2.5	4.0	9.0	9.5	2.5	8.0

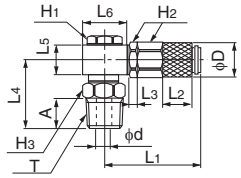


Product number	T Thread size (R)	L (mm)	L1 (mm)	L2 (mm)	A (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	D (mm)	d (mm)	Weight (g)
103C-2M	R1/8	31.0	8.0	3.0	11.0	10.0	9.0	9.5	3.0	13.0

Elbow type

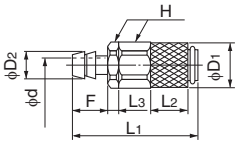


Product number	T Thread size (M)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	D (mm)	d (mm)	Weight (g)
103C-M5UL	M5×0.8	26.0	8.0	2.5	10.0	8.0	12.0	8.0	9.0	9.5	2.0	15.0



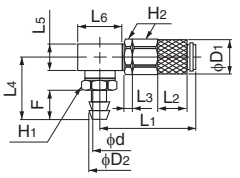
Product number	T Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	A (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	H3 Width across flat (mm)	D (mm)	d (mm)	Weight (g)
103C-2MUL	R1/8	26.0	8.0	2.5	19.0	8.0	12.0	8.5	8.0	9.0	10.0	9.5	4.2	21.0

U5-tubing dedicated barb type



Product number	Applicable tubing type	L1 (mm)	L2 (mm)	L3 (mm)	F (mm)	H Width across flat (mm)	D1 (mm)	D2 (mm)	d (mm)	Weight (g)
103C-25H	U5-4-4x2.5	26.0	8.0	2.5	6.5	9.0	9.5	3.5	1.5	7.5
103C-40H	U5-4-6x4	27.5	8.0	2.5	8.0	9.0	9.5	5.7	3.0	8.0

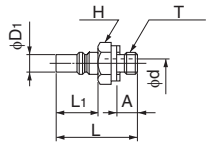
U5-tubing dedicated barb elbow type



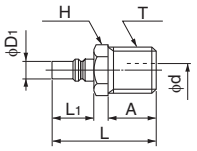
Product number	Applicable tubing type	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	F (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	D1 (mm)	D2 (mm)	d (mm)	Weight (g)
103C-25HL	U5-4-4x2.5	26.0	8.0	2.5	16.0	8.0	12.0	6.5	8.0	9.0	9.5	3.5	1.5	15.0
103C-40HL	U5-4-6x4	26.0	8.0	2.5	17.5	8.0	12.0	8.0	8.0	9.0	9.5	5.7	3.0	15.5

Nipple

Connector type

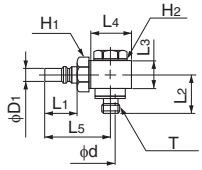


Product number	T Thread size (M)	L (mm)	L1 (mm)	A (mm)	H Width across flat (mm)	D1 (mm)	d (mm)	Weight (g)
103N-M5	M5×0.8	17.5	9.0	4.0	8.0	3.5	2.5	2.5

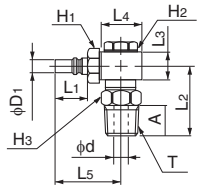


Product number	T Thread size (R)	L (mm)	L1 (mm)	A (mm)	H Width across flat (mm)	D1 (mm)	d (mm)	Weight (g)
103N-2M	R1/8	23.0	9.0	11.0	10.0	3.5	3.0	8.0

Elbow type

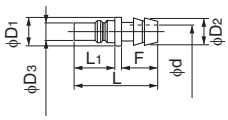


Product number	T Thread size (M)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	D1 (mm)	d (mm)	Weight (g)
103N-M5UL	M5×0.8	9.0	10.0	8.0	12.0	18.5	8.0	8.0	3.5	2.0	9.5



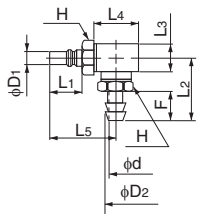
Product number	T Thread size (R)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	A (mm)	H1 Width across flat (mm)	H2 Width across flat (mm)	H3 Width across flat (mm)	D1 (mm)	d (mm)	Weight (g)
103N-2MUL	R1/8	9.0	19.0	8.0	12.0	18.5	8.5	8.0	8.0	10.0	3.5	4.2	15.5

U5-tubing dedicated barb type



Product number	Applicable tubing type	L (mm)	L1 (mm)	F (mm)	D1 (mm)	D2 (mm)	D3 (mm)	d (mm)	Weight (g)
103N-25H	U5-4-4x2.5	17.0	9.0	6.5	6.0	3.5	3.5	1.5	1.0
103N-40H	U5-4-6x4	18.5	9.0	8.0	6.0	5.7	3.5	3.0	1.5

U5-tubing dedicated barb elbow type



Product number	Applicable tubing type	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	F (mm)	H Width across flat (mm)	D1 (mm)	D2 (mm)	d (mm)	Weight (g)
103N-25HL	U5-4-4x2.5	9.0	16.0	8.0	12.0	18.5	6.5	8.0	3.5	3.5	1.5	9.5
103N-40HL	U5-4-6x4	9.0	17.5	8.0	12.0	18.5	8.0	8.0	3.5	5.7	3.0	10.0

Jigs, Tools and Accessories

INDEX

Tube Cutter

TC04	TC01
Compact type (~16mm)	Nipper type (~13mm)
	
P.159	P.159

Hose Cutter

HC03
Nipper type (~20mm)

P.159

FW Tubing Outer Cover Peeling Cutter

TC02 • TC03

P.160

FWU Tubing Outer Cover Peeling Cutter

TC02U • TC03U

P.160

Spatter Cap For protection of the PushOne connection part from spatter, etc.

CP	CPFW	CPP
For FUK and FS tubes	For FW and FWU tubes	For FUK, FS, FW and FWU tubes
		
P.161	P.161	(Attachable after piping) P161

Tubing Removing jig

EOT

P.161

Tube Reel

PTR

P.161

Tube Cutter

TC04

Features

- Compact, handy-to-carry, lightweight tubing cutter.
- Only the blade needs changing. It comes with three spare blades.
- Tubes up to 16mm diameter can be cut.

Applicable tubing size

Tubing outer diameter : ~16mm (5/8inch)

Handling instructions

⚠ **Warning:** Do not touch the cutter blade. It is sharp and may cut your fingers.

⚠ **Caution:** TC04 is developed for cutting resin tubes only. Do not use it for other purposes.

⚠ **Caution:** Do not put it in your pocket, etc. It may cause an accident if the blade is open.

TC01

Features

- Highly durable nipper-type tubing cutter.
- Tubes up to 13mm diameter can be cut.

Applicable tubing size

Tubing outer diameter : ~13mm (1/2inch)

Handling instructions

⚠ **Warning:** Do not touch the cutter blade. It is sharp and may cut your fingers.

⚠ **Caution:** TC01 is developed for cutting resin tubes. Do not use it for other purposes.

Hose Cutter

HC03

Features

- Highly durable nipper-type tubing cutter.
- Tubes up to 20mm diameter can be cut.

Applicable tubing size

Tubing outer diameter : ~20mm (3/4inch)

☞ Use hose cutter HC01 to cut a tubing of size 20-40mm.

Handling instructions

⚠ **Warning:** Do not touch the cutter blade. It is sharp and may cut your fingers.

⚠ **Caution:** HC03 is developed for cutting resin tubes. Do not use it for other purposes.

FW Tubing Outer Cover Peeling Cutter

TC02 • TC03

Features

- Easy peeling of FW tubing outer cover.

Applicable tubing size

Product number	Applicable tubing type
TC02	FW-4-6×4, FW-4-8×6
TC03	FW-4-10×7.5, FW-4-12×9

Handling instructions

⚠ **Warning:** Do not touch the cutter blade. It is sharp and may cut your fingers.

⚠ **Caution:** TC02 and TC03 are developed only for peeling the outer cover of FW tubes. Do not use them for other purposes, because doing so may cause an accident.

Reference

- Instruction manual·····P.183

FWU Tubing Outer Cover Peeling Cutter

TC02U • TC03U

Features

- Easy peeling of FWU tubing outer cover.

Applicable tubing size

Product number	Applicable tubing type
TC02U	FWU-4-6×4, FWU-4-8×5
TC03U	FWU-4-10×6.5, FWU-4-12×8

Handling instructions

⚠ **Warning:** Do not touch the cutter blade. It is sharp and may cut your fingers.

⚠ **Caution:** TC02U and TC03U are developed only for peeling the outer cover of FWU tubes. Do not use them for other purposes, because doing so may cause an accident.

Reference

- Instruction manual·····P.183

Spatter Cap

CP・CPFW

Features

- Protecting PushOne connecting part from spatter, etc.
- CCP can be attached after connecting tubing.

Specification

Specification	Product number	Applicable tubing outer diameter (mm)	Applicable tubing type
Attachment before tubing piping	CP4	4	FUK・FS
	CP6	6	
	CP8	8	
	CP10	10	
	CP12	12	
	CPFW6	6	FW・FWU
	CPFW8	8	
	CPFW10	10	
	CPFW12	12	
Attachment after tubing piping	CPP6	6	FUK・FS・FW・FWU
	CPP8	8	
	CPP10	10	
	CPP12	12	

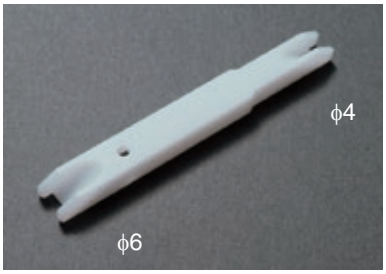
Reference

- Instruction manual·····P.186

CPP(Attachable after piping)

Tubing Removing Jig (Off Tool)

EOT 6-4



Features

- Helps removing tubing from PushOne.

Applicable tube size

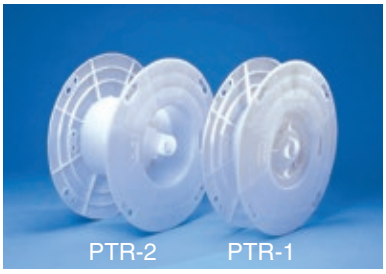
Tubing with outer diameter : ϕ4, ϕ6

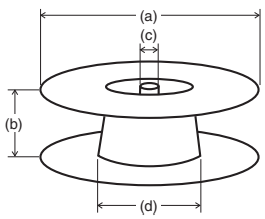
Reference

- Instruction manual·····P.187

Tube Reel

PTR





Features

- Easy handling.
- Recycled polypropylene resin used.

Specification

Product number	Applicable tubing size	Size (mm) (a)Collar width×(b)Reel width×(c)Shaft width×(d)Reel body diameter	Weight (g)
PTR-1	Millimeter size : ϕ4, 6, 8 Inch size : ϕ1/8, 1/4, 5/16	(a) (b) (c) (d) 480×105×50×225	1030
PTR-2	Millimeter size : ϕ10, 12 Inch size : ϕ3/8, 1/2	(a) (b) (c) (d) 480×210×50×225	1170

PTR tube reels are only for nylon tubes manufacturered by Nitta. For other products, please check the actual information available for those items regarding any accessories.

Handling instructions

Caution: The tube reel cannot be used with other manufacturers' tubes.

Caution: The tube reel is made of resin and may be cracked if dropped or hit hard. Careful handling is required.

Caution: You may need to widen the inner drum to set a tubing if the wound tubing bundle is deformed.

Reference

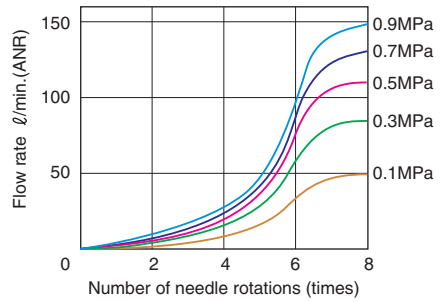
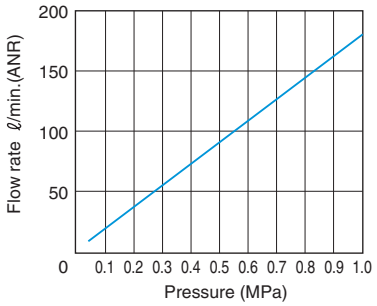
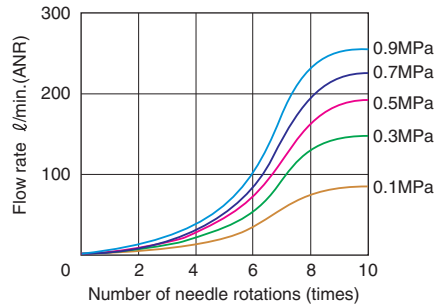
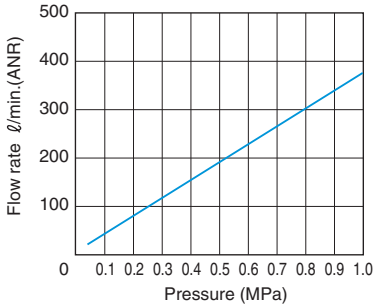
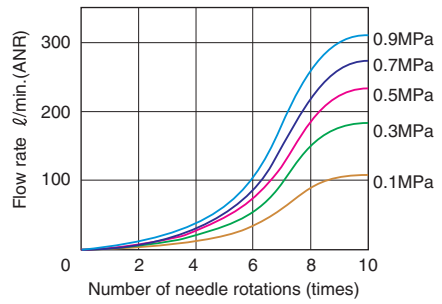
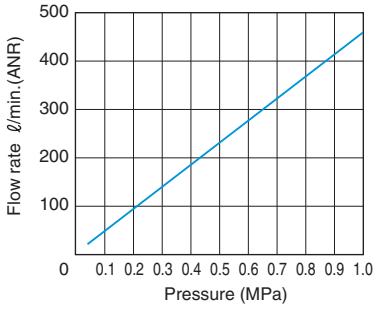
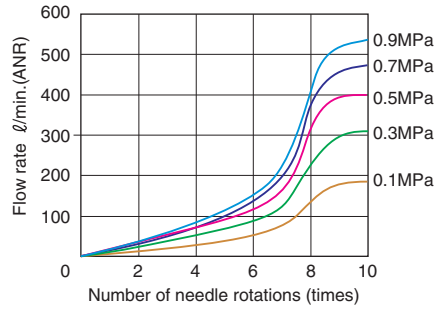
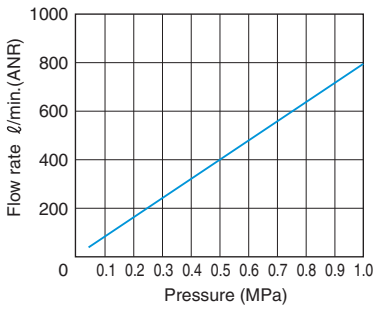
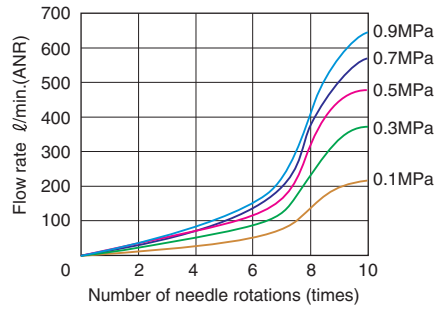
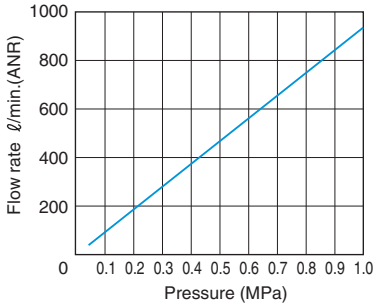
- Instruction manual·····P.184

Technical Information

INDEX

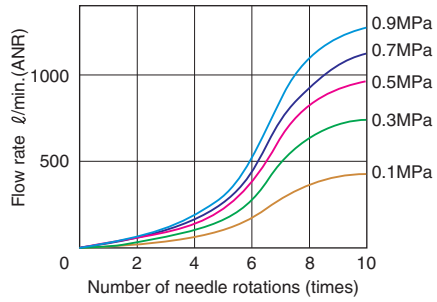
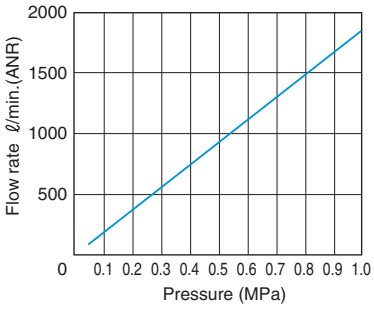
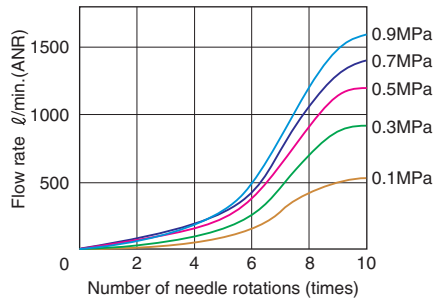
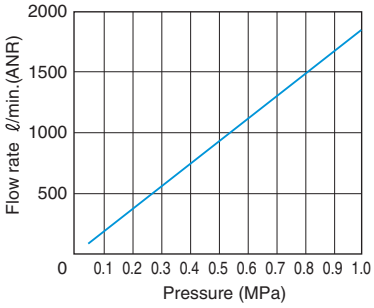
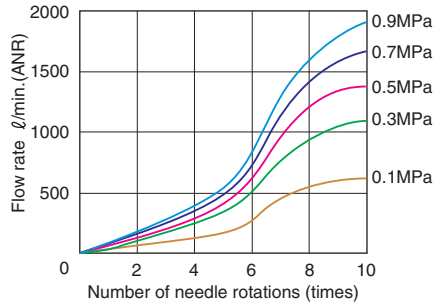
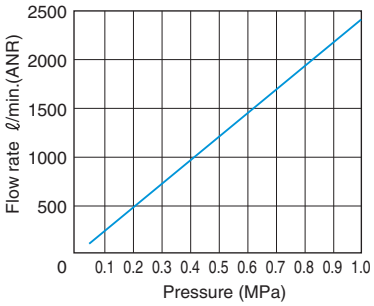
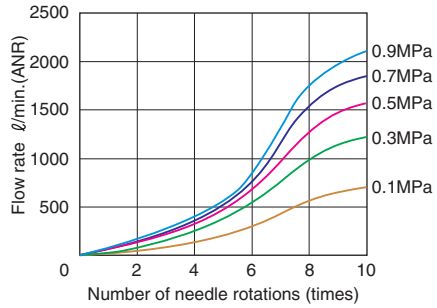
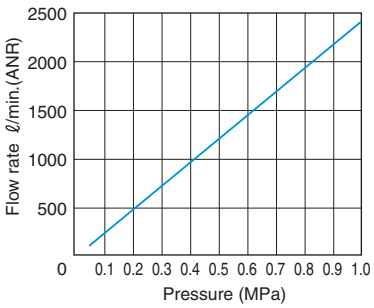
Speed Controller Flow Rate Characteristics

Compact Speed Controller (elbow type)

Product number	Controlled flow	Free flow
ASC4-M5-✱ ASC6-M5-✱		
ASC4-R1/8-✱		
ASC6-R1/8-✱ ASC8-R1/8-✱ ASC10-R1/8-✱		
ASC6-R1/4-✱		
ASC8-R1/4-✱ ASC10-R1/4-✱		

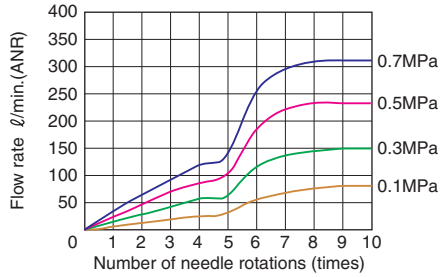
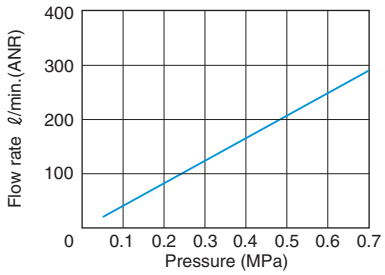
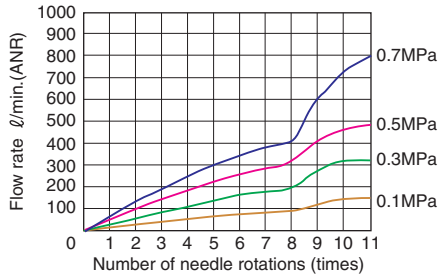
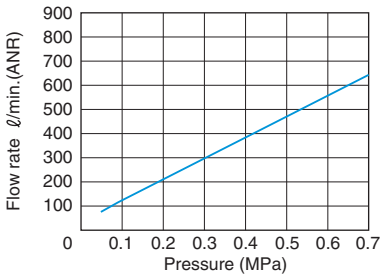
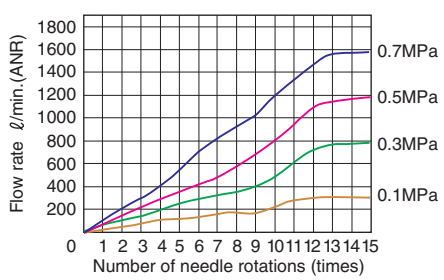
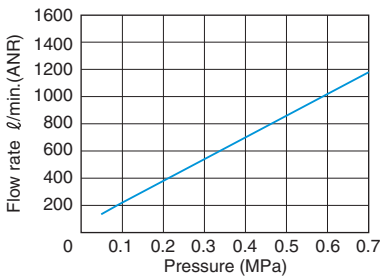
"✱" is either O (meter-out) or I (meter-in).

Compact Speed Controller (elbow type)

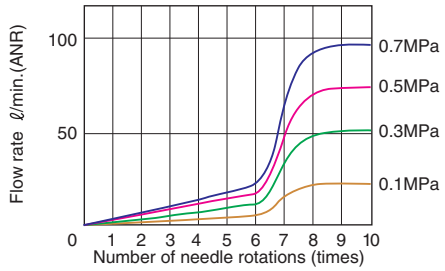
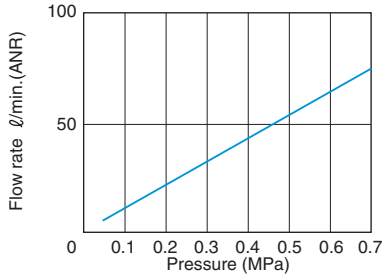
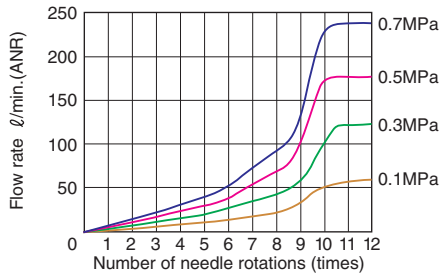
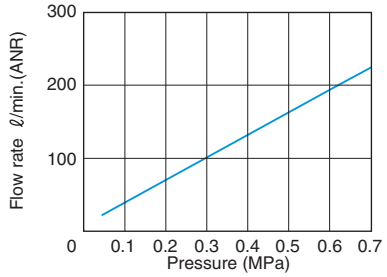
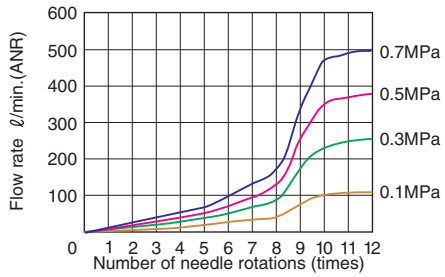
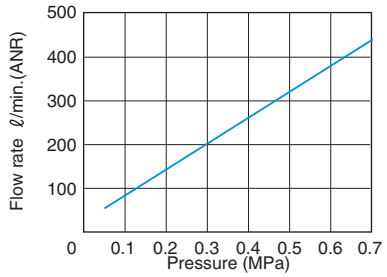
Product number	Controlled flow	Free flow
ASC8-R3/8-★		
ASC10-R3/8-★ ASC12-R3/8-★		
ASC10-R1/2-★		
ASC12-R1/2-★		

"★" is either O (meter-out) or I (meter-in).

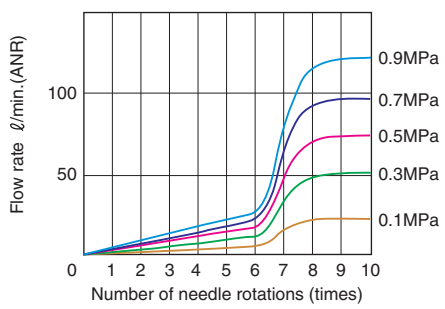
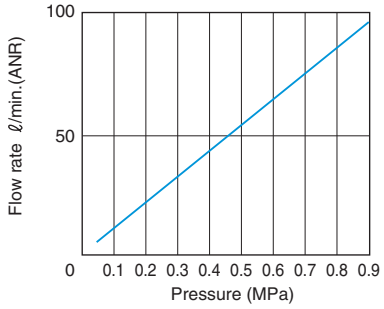
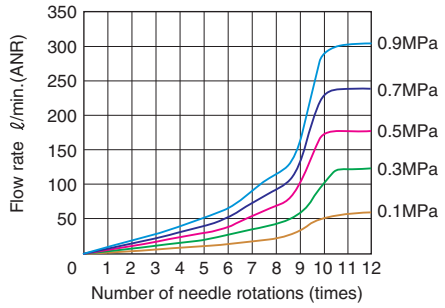
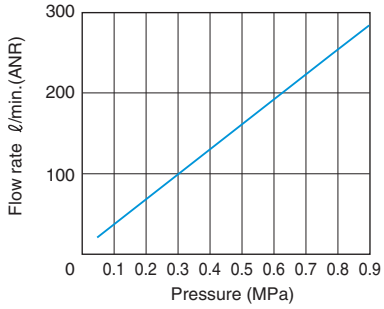
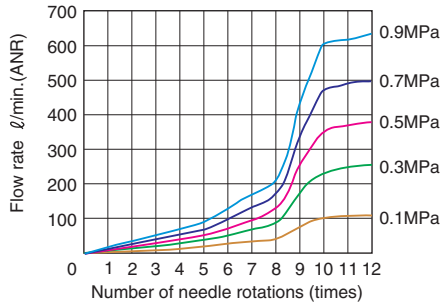
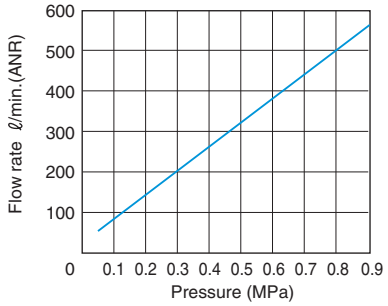
Chemifit™ C1 Speed Controller (elbow type)

Product number	Controlled flow	Free flow
ESC4-R1/8-O-C1SG ESC6-R1/8-O-C1SG ESC8-R1/8-O-C1SG		
ESC6-R1/4-O-C1SG ESC8-R1/4-O-C1SG ESC10-R1/4-O-C1SG		
ESC8-R3/8-O-C1SG ESC10-R3/8-O-C1SG ESC12-R3/8-O-C1SG		

Chemifit™ C1 Speed Controller (inline type)

Product number	Controlled flow	Free flow
ESU4-C1SG		
ESU6-C1SG		
ESU8-C1SG		

Speed Controller (inline type)

Product number	Controlled flow	Free flow
ASU4		
ASU6		
ASU8		

Effective sectional Area

1 Effective sectional area of fitting

Measurement method (JIS B 8381-1995 compliant)

Attach a switching valve to a container of inner volume [V], and attach a sample fitting (*) to the outlet of the switching valve. Fill 0.5MPa air in the container. Open the valve to release air for time until the air pressure inside the container decreases to 0.2MPa. Wait until the inside pressure is stabilized. Measure the residual pressure and calculate the effective sectional area using the following equation.

(*) Connect a tubing listed in Table 1 to the fitting and cut the tubing at the fitting end.

$$S=\left(12.9V\times\frac{1}{t}\log_{10}\frac{P_0+0.101}{P+0.101}\right)\sqrt{\frac{273}{T+273}}$$

S : Effective sectional area (mm^2)
V : Inner volume of container (ℓ)
P_0 : Initial pressure inside container (MPa)
P : Residual pressure (MPa)
t : Release time (s)
T : Room temperature (°C)

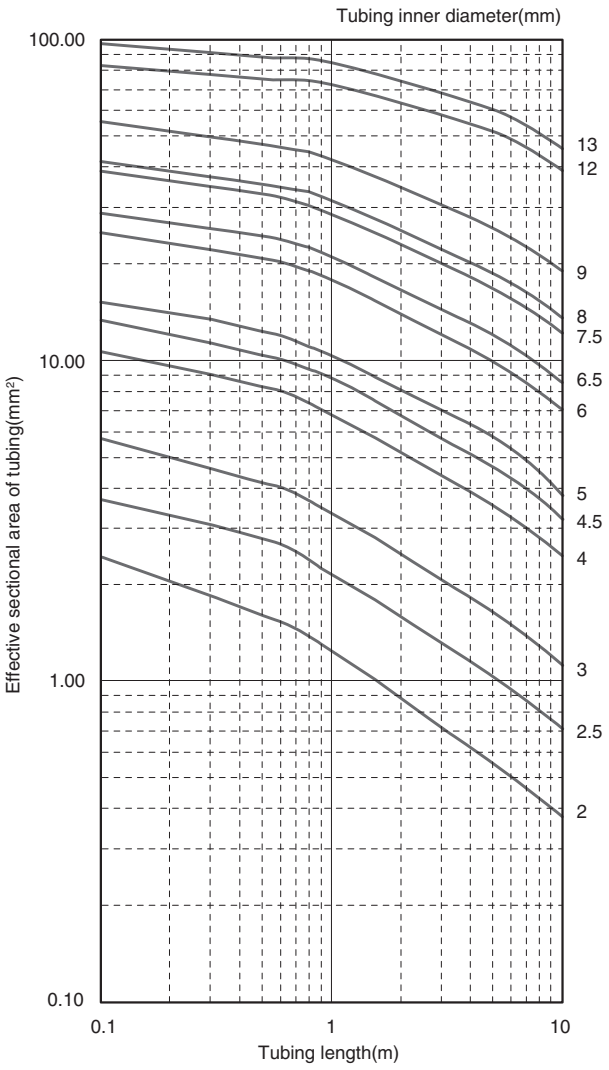
[Table 1] Test tubing size list

Test fitting	Fitting size	Tubing size
PushOne A series PushOne E series QuickSeal series Insertless type Chemifit C1 series Chemifit C1S series Chemifit CP series	3	3×1.8
	4	4×2.5
	6	6×4
	8	8×6
	10	10×7.5
	12	12×9
	16	16×13
	1/4	6.35×4.57
	5/16	7.94×5.90
	3/8	9.53×6.99
	1/2	12.7×9.56

(*) For QuickSeal series (insertion type, DK tubing dedicated type, nylon coil tubing dedicated type), bamboo-shoot series (barb type), Chemifit CSE series, use applicable tubing size.

2 Effective sectional area of tubing

Relation of tubing length and effective sectional area (mm^2) for various tubing inner diameters (mm)



3 Calculation of combined effective sectional area

(1) Series connection

$$\frac{1}{S^2}=\sum_{i=1}^{n}\left(\frac{1}{S_i^2}\right)=\frac{1}{S_1^2}+\frac{1}{S_2^2}+\cdots+\frac{1}{S_n^2}$$

S : Combined effective sectional area (mm^2)
S_i : $S_1 \cdots S_n$: Effective sectional area of each element (mm^2)

(2) Parallel connection

$$S=\sum_{i=1}^{n}(S_i)=S_1+S_2+\cdots+S_n$$

S : Combined effective sectional area (mm^2)
S_i : $S_1 \cdots S_n$: Effective sectional area of each element (mm^2)

4 Air consumption

(1) Sound speed flow

$$\frac{P_1+0.1013}{P_2+0.1013}\geq 1.89$$

$$Q=113\times S\times(P_1+0.1013)$$

Q : Air flow rate(ℓ/min. atmospheric pressure basis)
P_1 : Primary pressure(MPa)
P_2 : Secondary pressure(MPa)
S : Effective sectional area of the narrow part(mm^2)

(2) Subsonic flow

$$\frac{P_1+0.1013}{P_2+0.1013}\leq 1.89$$

$$Q=226\times S\times\sqrt{(P_2+0.1013)\times(P_1-P_2)}$$

Q : Air flow rate(ℓ/min. atmospheric pressure basis)
P_1 : Primary pressure(MPa)
P_2 : Secondary pressure(MPa)
S : Effective sectional area of the narrow part(mm^2)

Negative Pressure Performance List

Product name \ Unit		Standard	Absolute vacuum←				→Atmospheric pressure
		Gauge pressure [Gauge]	−101.325kPa G	−101.294kPa G	−99.975kPa G	−98.642kPa G	0kPa G
		Absolute pressure [abs]	0kPa abs	0.030kPa abs	1.350kPa abs	2.683kPa abs	101.325kPa abs
Tubing (*1) (U5,U2,U1,N5,N2,N1,TES,PL,PN,TA,TP,FS, FW,FWU,UE,DK,PB,UC,USC,UMC,UML,S)							
PushOne series	A series						
	E series						
QuickSeal series	Insertion type						
	Insertless type						
Bamboo-shoot fitting series	Barb type						
Chemifit series	C1 series						
	C1S series						
	CSE series						
	CP series						
Switch and detachable series (*2)	Q.D.C 101 series						
	Q.D.C 103 series						
	Miniature valve						

Shaded area : Usable

(*1) Influence of permeation, etc., on the operation fluid should be checked under your company's use conditions.
(*2) Other control and switch products (speed controller, ball valve, throttle valve, and valve built-in connector) cannot be used at a negative pressure.

About explanations of negative pressure performance
In pages introducing each product, the unit of negative pressure performance is based on atmospheric pressure, which is gauge pressure.
Therefore, negative pressure performance is indicated by adding a minus sign in front.
In addition, the character "G" is omitted on signage of the unit.

(Unit conversion)
−101.325kPa G = −760mmHg G = −760Torr G

Instruction Manual for PushOne™ A and E Series

1 Preparation before piping

Prepare a tube cutter and attachment tools of an appropriate size.

(Note)

- Select an appropriate tube cutter TC01, TC04 or HC03 for the tubing size. See [Table 1] for the applicable tubing size of each cutter.
- Seal-processed thread of the PushOne series does not require sealing tape.

⚠ Caution: Close the tube cutter blades when not using the cutter.

⚠ Caution: Check that the fitting and the tubing meet the specifications of the piping environment. Incorrect selection of products may cause an extremely serious accident.

[Table 1] Applicable tubing size of tube cutter

Tube cutter product number	Applicable tubing outer diameter(mm)
TC01	~13(1/2inch)
TC04	~16(5/8inch)
HC03	~20(3/4inch)

2 Attaching a fitting (re-attaching a fitting)

Use appropriate-size attachment tools to attach a fitting. Tighten the fitting to the recommended tightening torque given in [Table 2.]

(Note)

- Usually, processed seal can be used two or three times.
- When the processed seal becomes less effective, bind sealing tape around the seal-processed thread. The sealing tape should be bound 2-2.5 times in the correct direction, leaving one or two ridges unsealed from the end.

⚠ Caution: When a hexagon spanner is used for hexagon socket connector, be sure not to touch the lock ring part or the tubing seal part of the fitting to prevent disconnection of tubing and leakage.

⚠ Caution: Over-tightening of M thread could break the thread part or deform gasket, causing leakage. Be sure to tighten the thread to the recommended torque.

⚠ Caution: When reattaching a fitting, be careful not to let the sealing material of the seal-processed part contaminate operating fluid.

[Table 2] Recommended tightening torque for PushOne series

Thread size (JIS B 0205 : 2001) (JIS B 0203 : 1999)	Recommended tightening torque (N · m)
M3	0.7
M5	1.2
M6	2.0
R1/8	3.0~5.0
R1/4	7.0~9.0
R3/8	18.0~20.0
R1/2	20.0~22.0

3 Cut the tubing

Cutting tubes at a right angle with a tube cutter. Clean the surfaces of tubes before cutting. Select undented, undamaged, well-shaped tubes.

⚠ Caution: Do not leave dirt, dents, damage, deformations, burrs, or fluff on the cut surface. Do not cut tubes at a titled angle. The seal of the connection could be damaged, causing leakage.

4 Connect tubing and finishing work.

Insert the tubing steadily straight into the fitting until the tubing reaches the end. After inserting the tubing, try to pull it out gently and check that it will not pop out.

(Note)

- The insertion length of the tubing is summarized in [Table 3]. See the table for reference.
- Before inserting a tubing, mark the tubing at the insertion length from the end so that you can check if the tubing is properly inserted. See [Table 3] for the tubing insertion length. If the mark comes to the edge of the release sleeve and if the tubing would not be pulled out easily, the tubing connection work is completed.

- The millimeter and the inch size types of the PushOne E series are distinguished by a punch mark (of tubing size) on the release sleeve and the release sleeve color (millimeter: blue, inch: white). ϕ8 and ϕ5/16 types share a release sleeve mold with the same size mark, and therefore should be distinguished only by the release sleeve color.

⚠ Caution: An improperly inserted tubing may cause disconnection or leakage.

⚠ Caution: If you use other manufacturers' tubes to make the connection, check that the outer diameter tolerance of the tubing lies in the range of the size tolerance given in [Table 4]. If it does not, leakage may occur.

[Table 3] Insertion length of PushOne series tubing

PushOne series	Applicable tubing outer diameter(mm)	Insertion length of tubing (mm)
PushOne A series Mini type	3	9
	4	10
	6	11
PushOne A series PushOne E series	4	13
	6	15
	8	16
	10	19
	12	20
	16	27
	6.35(1/4inch)	15
	7.94(5/16inch)	16
	9.53(3/8inch)	19
	12.70(1/2inch)	21

[Table 4] Outer diameter tolerance of applicable tubing

Tubing material	Outer diameter tolerance of tubing (mm)
Polyurethane tubing	±0.1
Nylon tubing	±0.1

5 Disconnect tubing

Re-insert the tubing into the fitting body until the tubing reaches the end, and pull it out straight from the fitting while pushing the release sleeve evenly with two fingers. Do not twist the tubing when pulling it out.

⚠ Caution: If you try to pull out or twist a tubing without re-inserting it until it reaches the end and without sufficiently pressing the release sleeve, the tubing will not come out.

⚠ Caution: Be sure to make the internal pressure zero before disconnecting a tubing.

6 Re-connect tubing

Repeat the steps from “3. Cut the tubing”. If you re-connect a disconnected tubing, cut off the tip where a claw pattern is left. Also, confirm that there is no dirt, dents, damage, or deformations on the tubing.

⚠ Caution: In the event internal pressure or heat changes the inner and outer diameters of tubing, replace the tubing with a new one.

Instruction Manual for QuickSeal Series

1 Preparation before piping

Prepare a tube cutter, attachment tools of an appropriate size and sealing tape.

(Note)

- Select an appropriate tube cutter TC01, TC04 or HC03 for the tubing size. See [Table 1] for the applicable tubing size of each cutter.
- The seal-processed brass connector of the QuickSeal series does not require sealing tape.

⚠ Caution: Close the tube cutter blades when not using the cutter.

⚠ Caution: Check that the fitting and the tubing meet the specifications of the piping environment. Incorrect selection of products may cause an extremely serious accident.

[Table 1] Applicable tubing size of tubing cutter

Tube cutter product number	Applicable tubing outer diameter(mm)
TC01	~13(1/2inch)
TC04	~16(5/8inch)
HC03	~20(3/4inch)

2 Winding of sealant tape

The sealing tape should be bound 2-2.5 times in the correct direction, leaving one or two ridges unsealed from the end. Seal-processed brass connector of the QuickSeal series does not require sealing tape.

(Note)

- When the seal on brass connector becomes less effective, bind sealing tape around the seal-processed thread.
- Usually, a processed seal can be used two or three times.

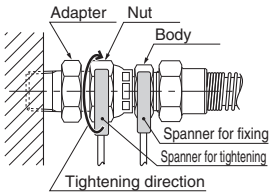
⚠ Caution: When reattaching a seal-processed product, be careful not to let the sealing material contaminate the operating fluid.

⚠ Caution: When reattaching a fitting other than seal-processed products, remove the old seal on the thread and bind with new sealing tape. The old sealing tape could contaminate the operating fluid and cause problems.

3 Mounting

Use appropriate-size attachment tools to attach a fitting. Tighten the fitting to the recommended tightening torque given in [Table 2] .

(Attaching swivel nut)



First, tighten by hand. Then tighten the nut with a torque wrench while fixing the nipple with a spanner.

⚠ Caution: The thread may become seized with high heat in the stainless type of fitting. Tighten slowly to prevent the thread from seizing.

⚠ Caution: Quick rotation of a torque wrench to tighten a swivel nut fitting generates small pressure on the sheet surface and could cause leakage.

[Table 2] Recommended tightening torque for QuickSeal series

Thread size (JIS B 0203 : 1999) (JIS B 0202 : 1999)	Recommended tightening torque (N · m)
R1/8	3.0~5.0
R1/4	7.0~9.0
R3/8	18.0~20.0
R1/2	20.0~22.0
G1/8	15
G1/4	25
G3/8	50
G1/2	60

4 Cut the tubing

Cutting tubes at a right angle with a tube cutter. Clean the surfaces of tubes before cutting. Select undented, undamaged, well-shaped tubes.

(Note)

- When you cut a DK tubing, be sure not to deform the tubing tip. An old blade cutter may cause deformation. Use a new tube cutter in this case.
- Use hose cutter HC01 for cutting S3/4-type nylon coil tubing.

⚠ Caution: Do not leave dirt, dents, damage, deformations, burrs, or fluff on the cut surface. Do not cut the tubes at a titled angle. The seal of the connection, causing leakage.

5 Insert tubing into the nut and the sleeve

Insert tubing into the nut and the sleeve as shown in the photograph. The sleeve has a correct insertion direction. The thicker part should face the tubing end direction. Leave a space of more than 1cm long between the sleeve and the tubing end.

(Note)

☞ The millimeter and the inch size types of the QuickSeal series insertion type are distinguished by a punch mark (of tubing size) on the fitting body, the cut on the nut, and the sleeve color (millimeter: milky white, inch: black).

☞ Use a tubing insertion part (SI 3/4) for 3/4-size nylon coil tubing QuickSeal fitting.

Brass type

Millimeter size　Inch size

Stainless type

Millimeter size　Inch size

6 Insert tubing

Insert the tubing into the fitting body until the tubing reaches the end.

(Note)

☞ The insertion length of the tubing is summarized in [Table 3]. See the table for reference.

⚠ Caution: If you use other manufacturers' tubes to make the connection, check that the outer diameter tolerance of the tubing lies in the range of the size tolerance given in [Table 4]. If it does not, leakage may occur. An improperly inserted tubing may cause disconnection or leakage.

[Table 3] Insertion length of QuickSeal series tubing

Type	Applicable tubing outer diameter (mm)	Insertion length of tubing (mm)
Insertion type (group 4) DK tubing dedicated type	4	15
	6	15
	8	16
	10	17
	12	18
	16	23
Insertion type (group 1) Insertion type (group 2)	3.18(1/8inch)	15
	4.76(3/16inch)	15
	6.35(1/4inch)	15
	7.94(5/16inch)	16
	9.53(3/8inch)	17
	12.70(1/2inch)	18
	15.88(5/8inch)	23

Type	Applicable tubing outer diameter (mm)	Insertion length of tubing (mm)
Insertion type (group 2)	3.18(1/8inch)	21
Insertless type	4	14
	6	14
	8	15
	10	18
	12	19

Type	Applicable tubing product number	Insertion length of tubing (mm)
Nylon coil tubing dedicated type	S3/16	16
	S1/4	18
	S3/8	22
	S1/2	29
	S3/4	31

[Table 4] Outer diameter tolerance of applicable tubing

Tubing material	Outer diameter tolerance of tubing (mm)
Polyurethane tubing	±0.1
Nylon tubing	±0.1

7 Tightening nuts by hand

Tighten the nut by hand.

(Note)

☞ It is recommended to mark the nut and the fitting body at the hand tightened position in order to check the number of rotations of the nut.

8 Tightening nuts and finishing work

Tighten the hand tightened nut with a spanner or a crescent wrench according to the appropriate number of rotations for tightening the nuts given in [Table 5] .

(Note)

☞ Before inserting a tubing, mark the tubing at the insertion length from the end so that you can check if the tubing is properly inserted.
If the marking moves 1-2mm from the sleeve end by tightening the nut, it is a sign that the nut is properly tightened.

⚠ Caution: The thread may become seized with high heat in the stainless type of fitting. Tighten slowly to prevent seizing of thread.

⚠ Caution: The appropriate number of rotations for tightening nuts varies depending on the size and material of sleeve. Be sure to check the appropriate number of rotations.

⚠ Caution: For use of the QuickSeal series at a high temperature within the working temperature range, tighten the nut periodically. If the nut cannot be tightened further, cut off the tubing end as well as the sleeve and repeat the steps from “4. Cut the tubing” with a new sleeve.

[Table 5] Appropriate number of rotations for tightening nuts

Sleeve material	Applicable tubing outer diameter (mm)	Appropriate number of rotations for tightening nuts
Nylon sleeve	4	2~2.5
	6	2~2.5
	8	2~2.5
	10	2~2.5
	12	2~2.5
	16	2~2.5
	3.18(1/8inch)	2~3
	4.76(3/16inch)	2~3
	6.35(1/4inch)	2~3
	7.94(5/16inch)	2~3
	9.53(3/8inch)	2~3
	12.70(1/2inch)	2~3
	15.88(5/8inch)	2.5~3

Sleeve material	Applicable tubing outer diameter (mm)	Appropriate number of rotations for tightening nuts
Brass sleeve	4	1~1.5
	6	1~1.5
	8	1~1.5
	10	1.5~2
	12	1.5~2
	3.18 (1/8inch)	1~1.5
	4.76 (3/16inch)	1~1.5
	6.35 (1/4inch)	1~1.5
	7.94 (5/16inch)	0.75~1.25
	9.53 (3/8inch)	0.75~1.25
	12.70 (1/2inch)	0.75~1.25

Type	Applicable tubing product number	Appropriate number of rotations for tightening nuts
Nylon coil tubing dedicated type	S3/16	1.5~2
	S1/4	2~2.5
	S3/8	2~2.5
	S1/2	2.5~3
	S3/4	2~2.5

9 Re-connect tubing

Cut off the tubing end as well as the sleeve and repeat the steps from “4. Cut the tubing” with a new sleeve. Confirm that there is no dirt, dents, damage, and or deformations on the tubing surface.

(Note)

☞ If you reuse a nut, check that the nut is not damaged. A damaged nut could cause problems such as improper tightening or leakage.

⚠ Caution: In the event internal pressure or heat changes the inner and outer diameters of tubing, replace the tubing with a new one.

Instruction Manual for Chemifit™ C1 Series

1 Preparation before piping

Prepare a tube cutter and crescent wrench, and sealing tape.

(Note)

☞ Select an appropriate tube cutter TC01, TC04 or HC03 for the tubing size. See [Table 1] for the applicable tubing size of each cutter.

⚠ Caution: Close the tube cutter blades when not using the cutter.

⚠ Caution: Check that the fitting and the tubing meet the specifications of the piping environment. Incorrect selection of products may cause an extremely serious accident.

[Table 1] Applicable tubing size of tube cutter

Tube cutter product number	Applicable tubing outer diameter(mm)
TC01	~13(1/2inch)
TC04	~16(5/8inch)
HC03	~20(3/4inch)

2 Winding of sealant tape

The sealing tape should be bound 2-2.5 times in the correct direction, leaving one or two ridges unsealed from the end.

3 Mounted fittings

First, tighten a fitting by hand. Then tighten it about two turns with a crescent wrench.

⚠ Caution: Over-tightening could damage the resin thread and cause deformation and leakage.

⚠ Caution: Use a crescent wrench to tighten the hexagonal (HEX) part, which is made of resin. Using a spanner could cause damage to the HEX part.

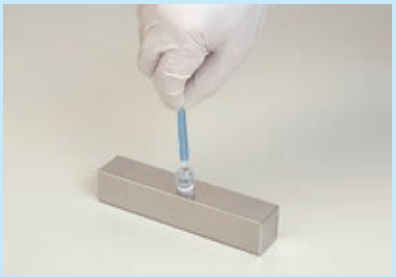
4 Cut the tubing

Cutting tubes at a right angle with a tube cutter. Clean the surfaces of tubes before cutting. Select undented, undamaged, well-shaped tubes.

⚠ Caution: Do not leave dirt, dents, damage, deformations, burrs, or fluff on the cut surface. Do not cut tubes at a titled angle. The seal of the connection could be damaged, causing leakage.

5 Connect tubing and finish work.

Insert the tubing steadily straight into the fitting until the tubing reaches the end. After inserting the tubing, try to pull it out gently and check that it will not pop out.



(Note)

☞ The millimeter and the inch size types of the Chemifit C1 series are distinguished by a punch mark of tubing size on the release sleeve.

☞ The insertion length of the tubing is summarized in [Table 2]. See the table for reference.

⚠ Caution: An improperly inserted tubing may cause disconnection or leakage.

⚠ Caution: Chemifit C1 series has a resin thread, which allows stress relaxation relatively easily compared to metal thread. In some cases oozing leakage occurs. In particular at a high temperature, tighten the fitting periodically. If the fitting cannot be tightened further, replace it with a new one.

⚠ Caution: If you use other manufacturers' tubes to make the connection, use a tubing with a size tolerance within ±0.1mm. Otherwise, leakage may occur.

[Table 2] Insertion length of Chemifit C1 series tubing

Series name	Applicable tubing outer diameter(mm)	Insertion length of tubing (mm)
Chemifit C1 series	3	11
	4	14
	6	15
	8	16
	10	19
	12	20
	3.18(1/8inch)	11
	6.35(1/4inch)	16
	9.53(3/8inch)	20
	12.70(1/2inch)	23

6 Disconnect tubing

Re-insert the tubing into the fitting body until the tubing reaches the end, and pull it out straight from the fitting while pushing the release sleeve evenly with two fingers. Do not twist the tubing when pulling it out.

⚠ Caution: If you try to pull out or twist a tubing without re-inserting it until it reaches the end and without sufficiently pressing the release sleeve, the tubing will not come out.

⚠ Caution: Be sure to make the internal pressure zero before disconnecting a tubing.

7 Re-connect tubing

Repeat the steps from “4. Cut the tubing”. If you re-connect a disconnected tubing, cut off the tip where a claw pattern is left. Also, confirm that there is no dirt, dents, damage, or deformations on the tubing.

⚠ Caution: In the event internal pressure or heat changes the inner and outer diameters of tubing, replace the tubing with a new one.

Instruction Manual for Chemifit™ C1S Series

1 Preparation before piping

Prepare a tube cutter, attachment tools of an appropriate size and sealing tape.

(Note)

☞ Select an appropriate tube cutter TC01, TC04 or HC03 for the tubing size. See [Table 1] for the applicable tubing size of each cutter.

⚠ Caution: Close the tube cutter blades when not using the cutter.

⚠ Caution: Check that the fitting and the tubing meet the specifications of the piping environment. Incorrect selection of products may cause an extremely serious accident.

[Table 1] Applicable tubing size of tube cutter

Tube cutter product number	Applicable tubing outer diameter(mm)
TC01	~13(1/2inch)
TC04	~16(5/8inch)
HC03	~20(3/4inch)

2 Winding of sealant tape

The sealing tape should be bound 2-2.5 times in the correct direction, leaving one or two ridges unsealed from the end.

⚠ Caution: When reattaching the fitting body, remove the old seal on the thread and bind with new sealing tape. The old sealing tape could contaminate the operating fluid and cause problems.

3 Mounting

Use appropriate-size attachment tools to attach a fitting. Tighten the fitting to the recommended tightening torque given in [Table 2].

⚠ Caution: Tighten slowly to prevent the thread from seizing.

⚠ Caution: Over-tightening of M thread could break the thread or deform the gasket, causing leakage. Be sure to tighten it to the recommended torque.

[Table 2] Recommended tightening torque for Chemifit C1S series

Thread size (JIS B 0205 : 2001) (JIS B 0203 : 1999)	Recommended tightening torque (N · m)
M5	1.2
R1/8	3.0~5.0
R1/4	7.0~9.0
R3/8	18.0~20.0
R1/2	20.0~22.0

4 Cut the tubing

Cutting tubes at a right angle with a tube cutter. Clean the surfaces of tubes before cutting. Select undented, undamaged, well-shaped tubes.

⚠ Caution: Do not leave dirt, dents, damage, deformations, burrs, or fluff on the cut surface. Do not cut tubes at a titled angle. The seal of the connection could be damaged, causing leakage.

5 Connect tubing and finishing work

Insert the tubing steadily straight into the fitting until the tubing reaches the end. After inserting the tubing, try to pull it out gently and check that it will not pop out.

(Note)

☞ The millimeter and the inch size types of the Chemifit C1S series are distinguished by a punch mark of tubing size on the release sleeve. The insertion length of the tubing is summarized in [Table 3]. See the table for reference.

⚠ Caution: An improperly inserted tubing may cause disconnection or leakage.

⚠ Caution: If you use other manufacturers' tubes to make the connection, use a tubing with a size tolerance within ±0.1mm. Otherwise, leakage may occur.

[Table 3] Insertion length of Chemifit C1S series tubing

Series name	Applicable tubing outer diameter(mm)	Insertion length of tubing (mm)
Chemifit C1S series	3	11
	4	14
	6	15
	8	16
	10	19
	12	20
	3.18(1/8inch)	11
	6.35(1/4inch)	16
	9.53(3/8inch)	20
	12.70(1/2inch)	23

6 Disconnect tubing

Re-insert the tubing into the fitting body until the tubing reaches the end, and pull it out straight from the fitting while pushing the release sleeve evenly with two fingers. Do not twist the tubing when pulling it out.

⚠ Caution: If you try to pull out or twist a tubing without re-inserting it until it reaches the end and without sufficiently pressing the release sleeve, the tubing will not come out.

⚠ Caution: Be sure to make the internal pressure zero before disconnecting a tubing.

7 Re-connect tubing

Repeat the steps from "Cut the tubing". If you re-connect a disconnected tubing, cut off the tip where a claw pattern is left. Also, confirm that there is no dirt, dents, damage, or deformations on the tubing.

⚠ Caution: In the event internal pressure or heat changes the inner and outer diameters of tubing, replace the tubing with a new one.

Instruction Manual for Chemifit™ CSE Series

1 Preparation before piping

Prepare a tube cutter, attachment tools of an appropriate size and sealing tape.

(Note)

☞ Select an appropriate tube cutter TC01, TC04 or HC03 for the tubing size. See [Table 1] for the applicable tubing size of each cutter.

⚠ Caution: Close the tube cutter blades when not using the cutter.

⚠ Caution: Check that the fitting and the tubing meet the specifications of the piping environment. Incorrect selection of products may cause an extremely serious accident.

[Table 1] Applicable tubing size of tube cutter

Tube cutter product number	Applicable tubing outer diameter(mm)
TC01	~13(1/2inch)
TC04	~16(5/8inch)
HC03	~20(3/4inch)

2 Winding of sealant tape

The sealing tape should be bound 2-2.5 times in the correct direction, leaving one or two ridges unsealed from the end.

⚠ Caution: When reattaching the fitting body, remove the old seal on the thread and bind with new sealing tape. The old sealing tape could contaminate the operating fluid and cause problems.

3 Mounting

Use appropriate-size attachment tools to attach a fitting. Tighten the fitting to the recommended tightening torque given in [Table 2].

⚠ Caution: Tighten slowly to prevent the thread from seizing.

[Table 2] Recommended tightening torque for Chemifit CSE series

Thread size (JIS B 0203 : 1999)	Recommended tightening torque (N · m)
R1/8	3.0~5.0
R1/4	7.0~9.0
R3/8	18.0~20.0
R1/2	20.0~22.0

4 Cut the tubing

Cutting tubes at a right angle with a tube cutter. Clean the surfaces of tubes before cutting. Select undented, undamaged, well-shaped tubes.

⚠ Caution: Do not leave dirt, dents, damage, deformations, burrs, or fluff on the cut surface. Do not cut tubes at a titled angle. The seal of the connection could be damaged, causing leakage.

5 Insert tubing into the assembly nut

Insert tubing into the assembly nut in such a direction that the thread part faces the tubing end.

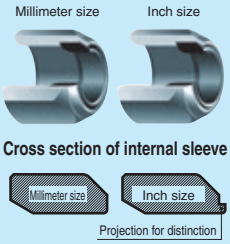
6 Insert tubing

Insert the tubing into the fitting body until the tubing reaches the end.

(Note)

☞ The insertion length of the tubing is summarized in [Table 3]. See the table for reference.

☞ The millimeter and the inch size types of the Chemifit CSE series are distinguished by a boss at the internal sleeve as shown on the right.



⚠ Caution: If you use other manufacturers' tubes to make the connection, use a tubing with a size tolerance within ±0.1mm. Otherwise, leakage may occur.

⚠ Caution: An improperly inserted tubing may cause disconnection or leakage.

[Table 3] Insertion length of Chemifit CSE series tubing

Applicable tubing outer × inner diameters (mm)	Insertion length of tubing (mm)
4×2	5.5
6×4	7.0
8×5	7.5
8×6	7.5
10×6.5	8.5
10×8	8.5
12×9	10.0
12×10	10.0
19×16	12.5
6.35×4.57(1/4inch)*	7.0
9.53×6.99(3/8inch)*	8.5
12.70×9.56(1/2inch)*	10.5

*Tube outer diameter

7 Tightening nuts by hand

Tighten the assembly nut by hand.

8 Tightening nuts

Tighten the hand-tightened nut with a spanner or a crescent wrench until the nut reaches the fitting body.

9 Tightening completed

If the assembly nut touches the fitting body, the assembly work is completed.

10 Re-connect tubing

Cut off the tubing end and repeat the steps from "4. Cut the tubing". Confirm that there is no dirt, dents, damage, or deformations on the tubing surface.

(Note)

☞ If you reuse an assembly nut, check that the internal sleeve is not damaged. A damage assembly nut could cause problems such as leakage.

⚠ Caution: Be sure to make the internal pressure zero before disconnecting a tubing.

⚠ Caution: In the event internal pressure or heat changes the inner and outer diameters of tubing, replace the tubing with a new one.

Instruction Manual for Chemifit™ CP Series

1 Preparation before piping

Prepare a tube cutter, a crescent wrench and sealing tape.

(Note)

☞ Select an appropriate tube cutter TC01, TC04 or HC03 for the tubing size. See [Table 1] for the applicable tubing size of each cutter.

⚠ Caution: Close the tube cutter blades when not using the cutter.

⚠ Caution: Check that the fitting and the tubing meet the specifications of the piping environment. Incorrect selection of products may cause an extremely serious accident.

[Table 1] Applicable tubing size of tube cutter

Tube cutter product number	Applicable tubing outer diameter(mm)
TC01	~13(1/2inch)
TC04	~16(5/8inch)
HC03	~20(3/4inch)

2 Winding of sealant tape

The sealing tape should be bound 2-2.5 times in the correct direction, leaving one or two ridges unsealed from the end.

3 Mounting

First, tighten a fitting by hand. Then tighten it about two turns with a crescent wrench.

⚠ Caution: Over-tightening could damage the resin fittings body and cause deformation and leakage.

⚠ Caution: Use a crescent wrench to tighten the hexagonal (HEX) part, which is made of resin. Using a spanner could cause damage to the HEX part.

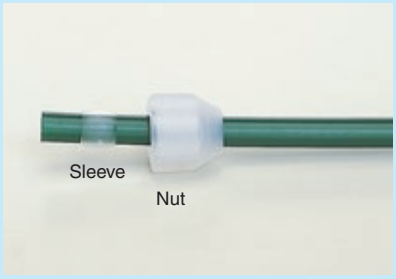
4 Cut the tubing

Cutting tubes at a right angle with a tube cutter. Clean the surfaces of tubes before cutting. Select undented, undamaged, well-shaped tubes.

⚠ Caution: Do not leave dirt, dents, damage, deformations, burrs, or fluff on the cut surface. Do not cut tubes at a titled angle. The seal of the connection could be damaged, causing leakage.

5 Insert tubing into nut and sleeve (using insertion part)

Insert tubing first into nut, then into sleeve. Leave a space of more than 1cm long between the tubing end and the sleeve. (It is recommended to use an insertion part for flexible tubes such as polyolefin tubing.)

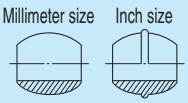


Insert tubing

Insert the tubing into the fitting body until the tubing reaches the end.

(Note)

☞ The millimeter and the inch size types of the Chemifit CP series are distinguished by the shape of the sleeve. The insertion length of the tubing is summarized in [Table 2]. See the table for reference.



⚠ Caution: If you use other manufacturers' tubes to make the connection, use a tubing with a size tolerance within ±0.1mm. Otherwise, leakage may occur.

⚠ Caution: An improperly inserted tubing may cause disconnection or leakage.

[Table 2] Insertion length of Chemifit CP series tubing

Applicable tubing outer diameter(mm)	Insertion length of tubing (mm)
4	16
6	18
8	20
10	25
12	29
6.35(1/4 inch)	18
9.53(3/8 inch)	25
12.70(1/2 inch)	29

7 Tightening nuts by hand

Tighten the nut by hand with the tubing being inserted to the fitting body.

8 Tightening nuts

Tighten the hand-tightened nut 1.5-2 turns with a crescent wrench.

⚠ Caution: Use a crescent wrench to tighten the hexagonal (HEX) part, which is made of resin. Using a spanner could cause damage to the HEX part.

9 Tightening completed

If there is an appropriate space left between the nut and the fitting body as described in [Table 3], the assembly work is completed.

[Table 3] Space between the nut and the fitting body of the Chemifit CP series

Applicable tubing outer diameter(mm)	Space between the nut and the fitting body(mm)	Remaining number of ridges
4	0.5	1
6	1.0	1
8	2.5	1.5
10	3.5	2
12	3.5	2
6.35(1/4 inch)	1.0	1
9.53(3/8 inch)	1.0	1
12.70(1/2 inch)	2.5	1.5

⚠ Caution: The Chemfit CP series has a resin thread, which allows stress relaxation relatively easily compared to metal thread. In some cases leakage occurs. In particular at a high temperature, tighten the fitting periodically. If the fitting cannot be tightened further, replace it with a new one.

10 Re-connect tubing

Cut off the tubing end and repeat the steps from “4. Cut the tubing” with a new sleeve (and insertion part). Confirm that there is no dirt, dents, damage, or deformations on the tubing surface.

⚠ Caution: Be sure to make the internal pressure zero before disconnecting a tubing.

⚠ Caution: The Chemifit CP series is made of resin, hence the nut and body could be deformed. Confirm that the nut and body are not damaged. A damaged nut and body would cause leakage.

⚠ Caution: In the event internal pressure or heat changes the inner and outer diameters of tubing, replace the tubing with a new one.

Instruction Manual for Q.D.C 101 and 103 Series

101 series

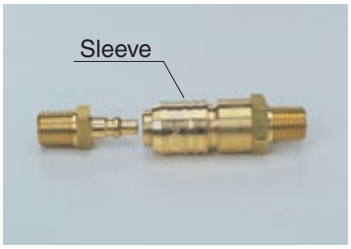
(Note)

☞ See instruction manuals of appropriate specifications such as those of the PushOne series or QuickSeal series for handling thread and tubing connection parts.

⚠ Caution: Rotational use of a coupler and a nipple is not recommended.
⚠ Caution: Use the product at a pressure lower than the maximum working pressure.
⚠ Caution: Do not use the product under too much bending stress or tension.

1 Connection of coupler and nipple

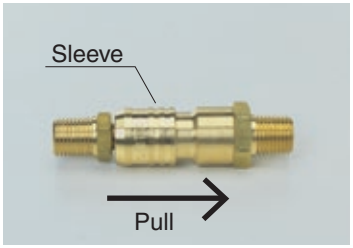
Make the residual pressure on the coupler side zero. Check that there is no foreign matter in the connection part. Then insert the nipple to the coupler without pulling the sleeve on the coupler.



⚠ Warning: Do not hit the valve head with a hammer, etc., to release residual pressure. It could break the valve and be extremely dangerous.
⚠ Caution: Connection without releasing residual pressure may break the valve.
⚠ Caution: Insert the nipple straight into the coupler.
⚠ Caution: When connecting a coupler and a nipple, do not hold the sleeve of the coupler.

2 Disconnection of coupler and sleeve

Make the residual pressure on the coupler side zero. Pull out the coupler or the nipple to disconnect while pulling the sleeve of the coupler.



⚠ Warning: Be aware that disconnection without releasing residual pressure not only causes damage to the product body but will also cause an accident.

103 series

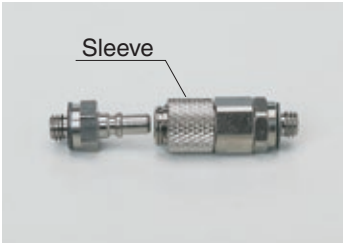
(Note)

☞ See instruction manuals of appropriate specifications such as those of the PushOne series or QuickSeal series for handling thread and tubing connection parts.

⚠ Caution: Rotational use of a coupler and a nipple is not recommended.
⚠ Caution: Use the product at a pressure lower than the maximum working pressure.
⚠ Caution: Do not use the product under too much bending stress or tension.

1 Connection of coupler and nipple

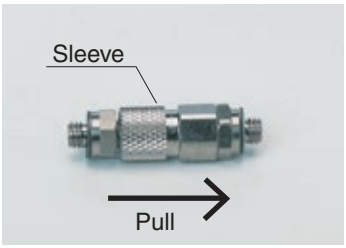
Make the residual pressure on the coupler side zero. Check that there is no foreign matter in the connection part. Then insert the nipple to the coupler without pulling the sleeve on the coupler.



⚠ Warning: Do not hit the valve head with a hammer, etc., to release residual pressure. It could break the valve and be extremely dangerous.
⚠ Caution: Connection without releasing residual pressure may break the valve.
⚠ Caution: Insert the nipple straight into the coupler.
⚠ Caution: When connecting a coupler and a nipple, do not hold the sleeve of the coupler.

2 Disconnection of coupler and sleeve

Make the residual pressure on the coupler side zero. Pull out the coupler or the nipple to disconnect while pulling the sleeve of the coupler.



⚠ Warning: Be aware that fact that disconnection without releasing residual pressure not only causes damage to the product body but will also cause an accident.

1 Preparation and cut the tubing

Prepare a tube cutter and an outer cover peeling cutter of appropriate type described in [Table 1]. Cut the tubes at a right angle with a tube cutter. Clean the surfaces of tubes before cutting. Select undented, undamaged, well-shaped tubes.

(Note)

☞ Select an appropriate tube cutter TC01 or TC04 for the tubing size. See [Table 2] for the applicable tubing size of each cutter.

[Table 1] Product number of applicable outer cover peeling cutter

Tubing type	Applicable tubing outer diameter(mm)	Product number of applicable outer cover peeling cutter
FW	6	TC02
	8	
	10	TC03
	12	
FWU	6	TC02U
	8	
	10	TC03U
	12	

[Table 2] Tubing size applicable for tube cutter

Tube cutter product number	Applicable tubing outer diameter(mm)
TC01	~13(1/2inch)
TC04	~16(5/8inch)

2 Insert tubing

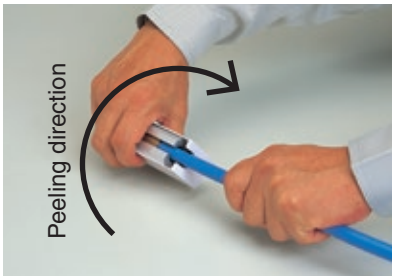
Contact the cutting surface of tubing with the blade in the insertion slot of the cutter.

⚠ Warning: Do not insert your finger into the insertion slot of the outer cover peeling cutter.

⚠ Caution: Do not use the cutter for tubes that Nitta does not designate.

3 Peeling outer cover and pulling out of tubing

Slowly insert the tubing while rotating to the contact surface in the cutter. When the tubing reaches the contact surface, pull it out slowly while rotating in the opposite direction.



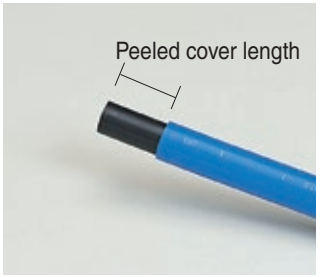
⚠ Warning: Do not pull out a tubing with a strong force or rotate it rapidly. Doing so may cause damage to the cutter blade or the outer surface of the tubing.

4 Removing outer cover

Remove the outer cover along the spiral cut line.

5 Completing work

The peeling work is completed if the peeled cover length satisfies the requirement shown in [Table 3].



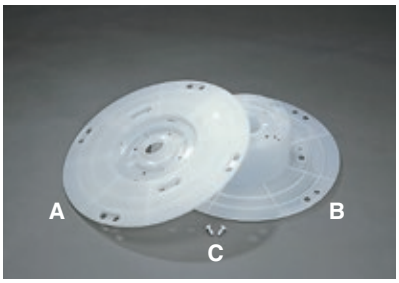
[Table 3] Peeled outer cover length

FW/FWU tubing outer diameter (mm)	Peeled outer cover length (mm)
6	15
8	16
10	19
12	20

Instruction Manual for Tube Reel

1 Check of the type and sizes

Check the product number and applicable tubing sizes and confirm that you have all the necessary parts.



Specification of each part

Part	Name	Material	Color	Quantity
A	Reel plate	Polypropylene (P.P.)	White	1
B	Reel body	Polypropylene (P.P.)	White	1
C*	Reel fixing pin	Polycarbonate + Nylon	White	2

*Product number of reel fixing pin is PTR-P.

Combination

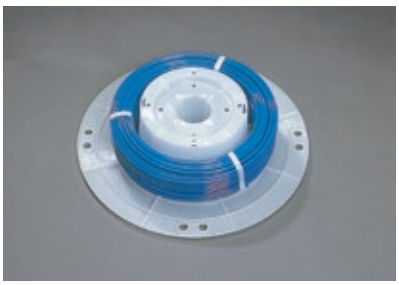
Product number	Combination
PTR-1	A+B+C
PTR-2	B+B+C

2 How to set PTR-1

☞ For setting PTR-2, substitute “reel plate (A)” with “reel body (B)” in the following instructions and follow the same procedure.

2-1 Set the tubing

Place the reel body (B) as shown in the photograph, and a bundled tubing onto it. The tubing is bundled with tape. Place the tubing in such a direction so that the inside tubing end faces the clockwise direction.



(Note)

☞ It is recommended to cut the bundle tape somewhere inside and tape it temporarily onto the side of the bundle before you put the tubing bundle onto the reel body.

2-2 Position adjustment of inside tubing end

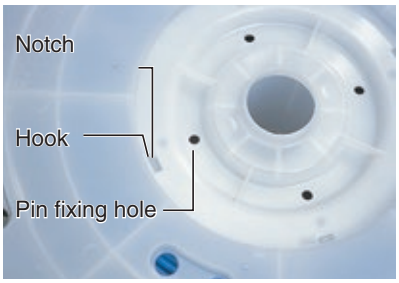
Pull out the inside tubing end from the bundle tape and rotate the tubing bundle for the tubing end to reach a hook of the reel body (B).

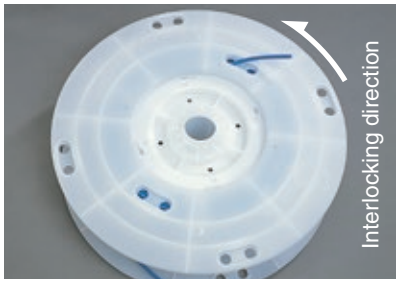
2-3 Fixing inside tubing end and setting reel plate

Cover the reel body with a reel plate (A) while inserting the position-adjusted tubing end into an inner-side hole (nearer one of two holes) of the reel plate.

2-4 Fixing reel plate

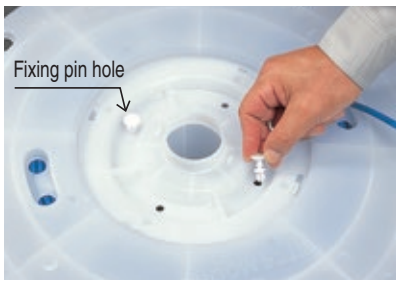
Adjust the position of the reel plate (A) to match the positions of a notch of the reel plate (A) and the hook of the reel body (B). Rotate the reel plate (A) counterclockwise to interlock the notch and the hook. (Tip: Rotate the reel plate (A) pressing its center slightly.) Fit the positions of the fixing pin holes of the reel body (B) and the reel plate (A).





2-5 Insert fixing pins

Insert a reel fixing pin (C) into each of two fixing pin holes of the reel plate (A) to fix the plate with the reel body (B).

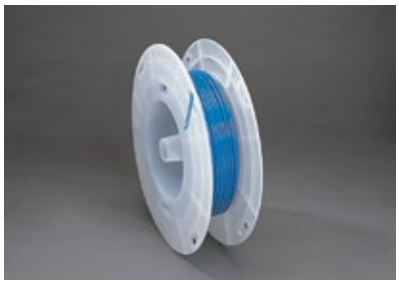


2-6 Setting inside tubing end

The inside tubing end coming out of the reel plate (A) should be re-inserted in the other hole of the reel plate (A) as in the photograph. Or rotate the tubing bundle by hand to an appropriate position.

2-7 Completing work

Insert the outside tubing end into the outer-side hole of the reel plate (A) and remove the bundle tape. The assembly of the tube reel is completed.



Instruction Manual for Spatter Cap

CP/CPFW

1 Attachment of CP (CPFW)

Insert Tubing into CP (CPFW) in such a direction that the larger diameter side faces the tubing end.

⚠ Caution: CP (CPFW) can be used only for PushOne series (except mini type).

2 Insert into tube fitting

Insert the tubing into a fitting following the instruction manual of the PushOne series.

3 Setting CP (CPFW)

Push CP (CPFW) to cover the fitting body.

4 Completing work

Check if CP (CPFW) is properly attached.

CPP

1 Insert into tube fitting

Insert the tubing into a fitting following the instruction manual of the PushOne series, and check if the tubing is properly inserted.

2 Attaching CPP

Open CPP halved in advance and cover the tubing connection part with them.

(Note)

☞ If you use CPP for FS tubing, there will be a 1mm space between the outer surface of the FS tubing and the inner surface of CPP.

⚠ Caution: CPP can be used only for PushOne series (except mini type).

3 Fixing CPP

Fix the hook of the CPP and close the opened body.

4 Completing work

Check if CPP is properly attached.

Instruction Manual for Off Tool

Put the guide of an off tool onto the outer surface of a tubing. Insert the tubing into the fitting body until it reaches the end. Pull the tubing straight out from the fitting while pressing the release sleeve with the off tool.

⚠ Caution: If you do not insert the tubing sufficiently and do not press the release sleeve completely, pulling out or twisting the tubing may cause permanent damage to the tubing.

⚠ Caution: Before you pull out tubing, make the inside pressure zero.

Reference Information

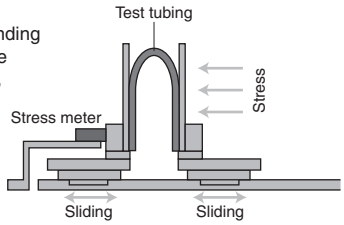
INDEX

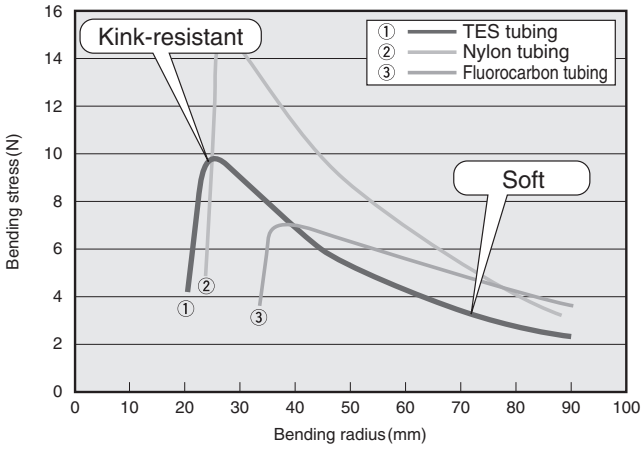
TES Tubing Technical Data

Comparison of flexibility

Test method
A test tubing is placed on a bending strength measurement machine and bent until a kink is created, at which moment the stress is measured.

Test condition
Test temperature:
Room temperature
Tubing size: 8 x 6

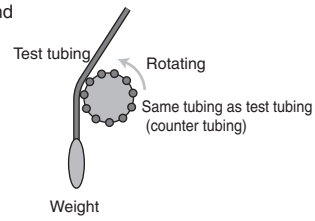


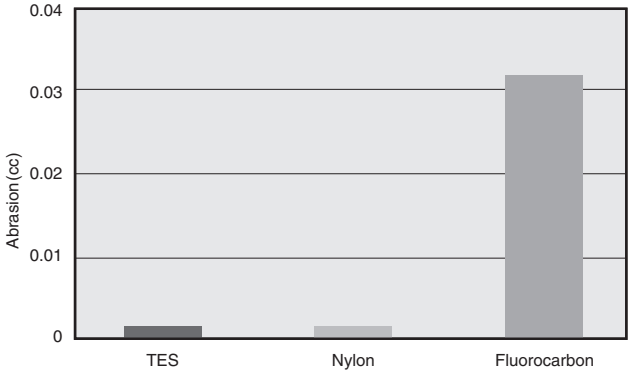


Abrasion resistance

Test method
A tubing suspended from above and a counter tubing fixed on a rotating jig are rubbed together.

Test condition
Number of counter tubes: 11
Rotation speed: 60rpm
Number of rotations: 50,000
Weight mass: 500g
Test temperature: Room temperature





Chemical resistance performance table

Check chemical resistance of each material in Chemical resistance performance table for safe use of Nitta's products.

Criteria
○ =No influence × =Unusable
△ =Sufficient confirmation required

*When contacting us for the criteria △, please check① working pressure,② maximum working temperature, ③ concentration, ④ piping status, and ⑤ application.

1. The criteria of the chemical resistance performance table are made under certain conditions. Therefore the criteria ○ can not ensure safety under different conditions, different environment, and different use period.
2. Before using our products, check them under the actual use conditions in your company.
3. Unless indicated specifically, test chemicals in the table are used at a saturated concentration and the test temperature is room temperature.
4. The table presents the chemical resistance performance of materials, not the permeability of gas chemicals. Do not use chemicals (activated gases) that are hazardous if they permeate a tubing.
5. When using a QuickSeal series fitting at a high temperature within the working temperature range, tighten the nut periodically. If the nut cannot be tightened further, cut off the tubing end and old sleeve and attach the tubing again with a new sleeve.

Category	Chemicals	Inner surface (fluorocarbon resin)	Outer surface (nylon)
Inorganic acid	Hydrochloric acid (35%)	○	×
	Sulfuric acid (98%)	△	×
	Nitric acid (25%)	○	×
	Phosphoric acid (50%)	○	×
Alkali	Caustic soda (10%)	○	△
	Caustic potash (10%)	○	△
	Ammonium hydroxide (15%)	○	△
Other inorganic substance	Chlorine	△	×
	Bromine	○	×
	Hydrogen peroxide	○	×
	Water	○	○
Ketone	Acetone	△	△
	Methyl ethyl ketone	○	△
	Methyl isobutyl ketone	○	△

Category	Chemicals	Inner surface (fluorocarbon resin)	Outer surface (nylon)
Organic acid	Acetic acid	△	×
	Oxalic acid	○	○
	Citric acid	○	○
	Stearic acid	○	○
	Formic acid	○	×
	Trichloroacetic acid	○	×
	Lactic acid	○	△
Ester	Ethyl acetate	△	○
	Butyl acetate	○	○
Alcohol	Methanol	○	△
	Ethanol	○	△
	Propyl alcohol	○	△
Hydrocarbon	Hexane	○	○
	Mineral oil ASTM No.3	○	○
	Octane	○	○
	Cyclohexane	○	○

Category	Chemicals	Inner surface (fluorocarbon resin)	Outer surface (nylon)
Amine	Aniline	△	×
	Pyridine	○	×
	Ethylenediamine	△	△
	Dimethylformamide	△	×
Aromatic series	Phenol	○	△
	Benzaldehyde	△	△
	Nitrobenzene	△	△
	Benzene	○	△
	Toluene	○	△
	Xylene	○	△
	Cresol	○	×
Halides	Chloroform	○	△
	Carbon tetrachloride	○	△
	Trichloroethylene	○	△
	Tetrachloroethylene	○	△
Ether	Tetrahydrofuran	△	△
	Cellosolve	△	△

Applied Standard List

(as of April 1996)

(1) Test items and applied standard for pneumatic fitting

<Standard No.>	<Test items>
JIS B 8381-1995	① Flow rate characteristics test (effective cross-sectional area) ② Airtight test ③ Pressure resistance test ④ Repeated connection test ⑤ Pulling strength test ⑥ Durability test

(2) Test items and applied standard for pneumatic fitting tubing (nylon tubing, polyurethane tubing).

<Standard No.>	<Test items>
JIS B 8381-1995 Appendix	① Minimum bending radius test ② Impact pressure test ③ Durability test

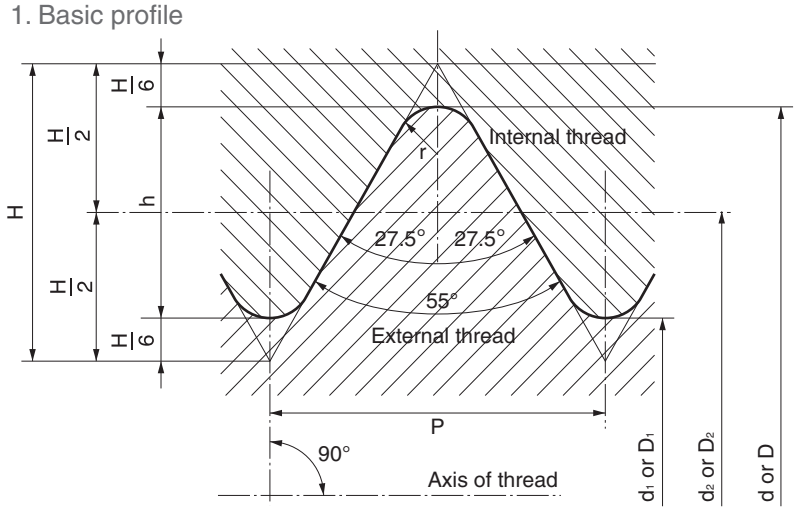
(3) Test items and applied standard for speed controller

<Standard No.>	<Test items>
JIS B 8376-1982, JIS B 8381-1995	① Controlled flow rate characteristics test ② Free flow rate characteristics test ③ Pressure resistance test ④ Cracking pressure test of valve ⑤ Leaking test of valve ⑥ Durability test

Screw Standard List

Parallel Pipe Threads (JIS B 0202-1999)

1. Basic profile



Thick continuous line shows basic profile.

$P=\frac{25.4}{n}$

$H=0.960491P$

$h=0.640327P$

$r=0.137329P$

$d_2=d-h$ $D_2=d_2$

$d_1=d-2h$ $D_1=d_1$

$D=d$

2. Basic sizes

(Unit:mm)

Designation of thread	Number of threads (per 25.4mm) n	Pitch P	Height of thread h	Radius r	External thread		
					Major dia. d	Pitch dia. d_2	Minor dia. d_1
					Internal thread		
					Major dia. D	Pitch dia. D_2	Minor dia. D_1
G 1/16	28	0.9071	0.581	0.12	7.723	7.142	6.561
G 1/8	28	0.9071	0.581	0.12	9.728	9.147	8.566
G 1/4	19	1.3368	0.856	0.18	13.157	12.301	11.445
G 3/8	19	1.3368	0.856	0.18	16.662	15.806	14.950
G 1/2	14	1.8143	1.162	0.25	20.955	19.793	18.631
G 5/8	14	1.8143	1.162	0.25	22.911	21.749	20.587
G 3/4	14	1.8143	1.162	0.25	26.441	25.279	24.117
G 7/8	14	1.8143	1.162	0.25	30.201	29.039	27.877
G 1	11	2.3091	1.479	0.32	33.249	31.770	30.291

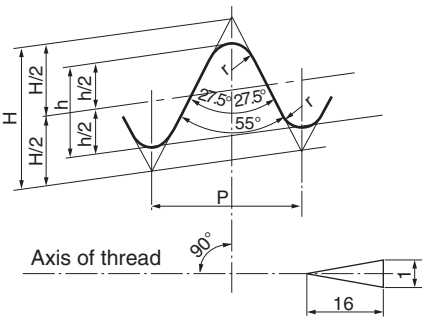
About thread standard

The above standard is an excerpt from a standard table issued by the Japan Standards Association. For design and trade, be sure to check the appropriate updated standard table.

Taper Pipe Threads (JIS B 0203-1999)

1. Basic profile

Basic profile applied for taper external and taper internal threads.

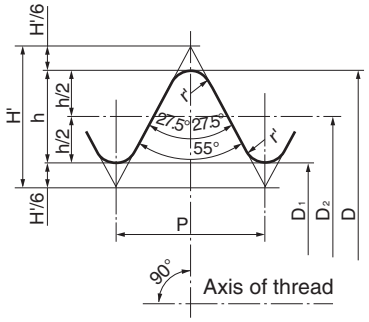


Thick continuous line shows basic profile.

$P=\frac{25.4}{n}$ h=0.640327P

H=0.960237P r=0.137278P

Basic profile applied for parallel internal threads.

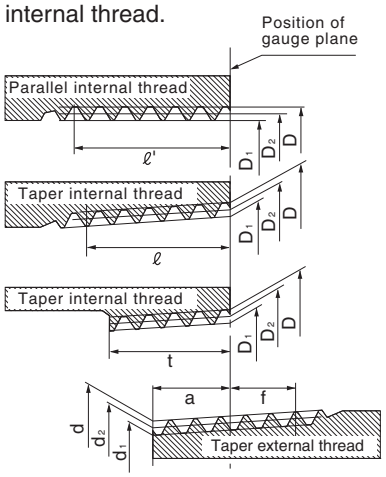


Thick continuous line shows basic profile.

$P=\frac{25.4}{n}$ h=0.640327P

H'=0.960491P r'=0.137329P

Fit between taper external thread and taper internal or parallel internal thread.



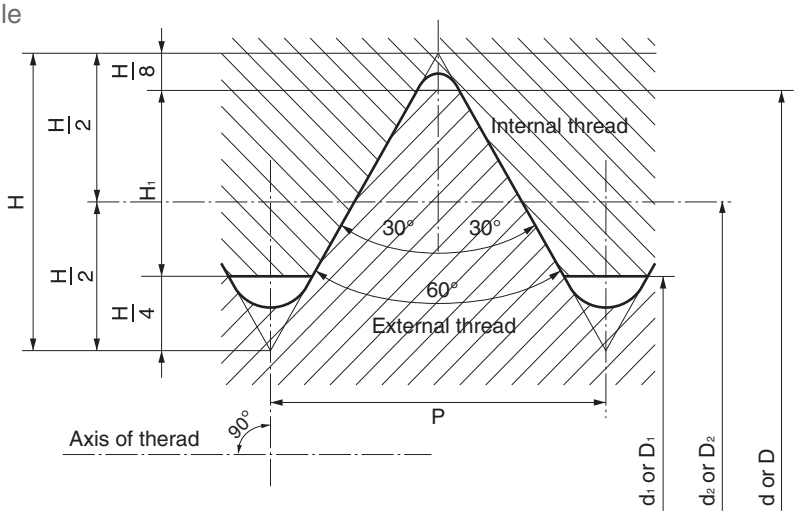
2. Basic size

(Unit:mm)

Designation of thread (PT)	Thread: Number of threads (per 25.4mm) n	Thread: Pitch P (referential)	Thread: Height of thread h	Thread: Radius r or r'	Gauge dia.: External thread: Major dia. d	Gauge dia.: External thread: Pitch dia. d_2	Gauge dia.: External thread: Minor dia. d_1	Gauge dia.: Internal thread: Major dia. D	Gauge dia.: Internal thread: Pitch dia. D_2	Gauge dia.: Internal thread: Minor dia. D_1	Position of gauge plane: External thread: From pipe end: Gauge length a	Position of gauge plane: External thread: From pipe end: Axial tolerance b	Position of gauge plane: Internal thread: At pipe end: Axial tolerance c	Tolerance on D, D_2 and D_1 of parallel internal thread	Length of useful thread (min.): External thread: From position of gauge plane toward larger dia. end f	Length of useful thread (min.): Internal thread: When there is incomplete thread part: Taper internal thread: From position of gauge plane toward smaller dia.end ℓ	Length of useful thread (min.): Internal thread: When there is incomplete thread part: Parallel internal thread: From end of pipe or coupler ℓ' (referential)	Length of useful thread (min.): Internal thread: When there is no incomplete thread part: Taper internal thread, parallel internal thread: From gauge plane or end of pipe or coupler t
R1/16	28	0.9071	0.581	0.12	7.723	7.142	6.561	7.237	7.142	6.561	3.97	±0.91	±1.13	±0.071	2.5	6.2	7.4	4.4
R1/8	28	0.9071	0.581	0.12	9.728	9.147	8.566	9.728	9.147	8.566	3.97	±0.91	±1.13	±0.071	2.5	6.2	7.4	4.4
R1/4	19	1.3368	0.856	0.18	13.157	12.301	11.445	13.157	12.301	11.445	6.01	±1.34	±1.67	±0.104	3.7	9.4	11.0	6.7
R3/8	19	1.3368	0.856	0.18	16.662	15.806	14.950	16.662	15.806	14.950	6.35	±1.34	±1.67	±0.104	3.7	9.7	11.4	7.0
R1/2	14	1.8143	1.162	0.25	20.955	19.793	18.631	20.955	19.793	18.631	8.16	±1.81	±2.27	±0.142	5.0	12.7	15.0	9.1
R3/4	14	1.8143	1.162	0.25	26.441	25.279	24.117	26.441	25.279	24.117	9.53	±1.81	±2.27	±0.142	5.0	14.1	16.3	10.2
R1	11	2.3091	1.479	0.32	33.249	31.770	30.291	33.249	31.770	30.291	10.39	±2.31	±2.89	±0.181	6.4	16.2	19.1	11.6

Metric Coarse Screw Threads (JIS B 0205-1987)

1. Basic profile



H=0.866025P
H_1=0.541266P

d_2=d-0.649519P
d_1=d-1.082532P

D=d
D_2=d_2
D_1=d_1

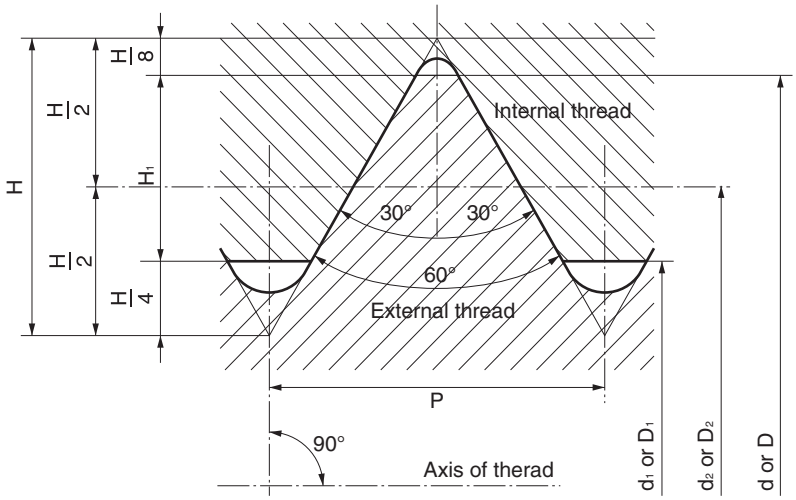
2. Basic sizes

(Unit:mm)

Designation of thread			Pitch	Thread overlap	External thread		
					Major dia. d	Pitch dia. d_2	Minor dia. d_1
Primary	Secondary	Tertiary	P	H_1	Internal thread		
					Major dia. D	Pitch dia. D_2	Minor dia. D_1
M3			0.5	0.271	3.000	2.675	2.459
	M3.5		0.6	0.325	3.500	3.110	2.850
M4			0.7	0.379	4.000	3.545	3.242
	M4.5		0.75	0.406	4.500	4.013	3.688
M5			0.8	0.433	5.000	4.480	4.134
M6			1	0.541	6.000	5.350	4.917
		M7	1	0.541	7.000	6.350	5.917
M8			1.25	0.677	8.000	7.188	6.647
		M9	1.25	0.677	9.000	8.188	7.647
M10			1.5	0.812	10.000	9.026	8.376
		M11	1.5	0.812	11.000	10.026	9.376
M12			1.75	0.947	12.000	10.863	10.106
	M14		2	1.083	14.000	12.701	11.835
M16			2	1.083	16.000	14.701	13.835
	M18		2.5	1.353	18.000	16.376	15.294
M20			2.5	1.353	20.000	18.376	17.294
	M22		2.5	1.353	22.000	20.376	19.294
M24			3	1.624	24.000	22.051	20.752
	M27		3	1.624	27.000	25.051	23.752
M30			3.5	1.894	30.000	27.727	26.211

Metric Fine Screw Threads (JIS B 0207-1987)

1. Basic profile



$H=0.866025P$

$H_1=0.541266P$

$d_2=d-0.649519P$

$d_1=d-1.082532P$

$D=d$

$D_2=d_2$

$D_1=d_1$

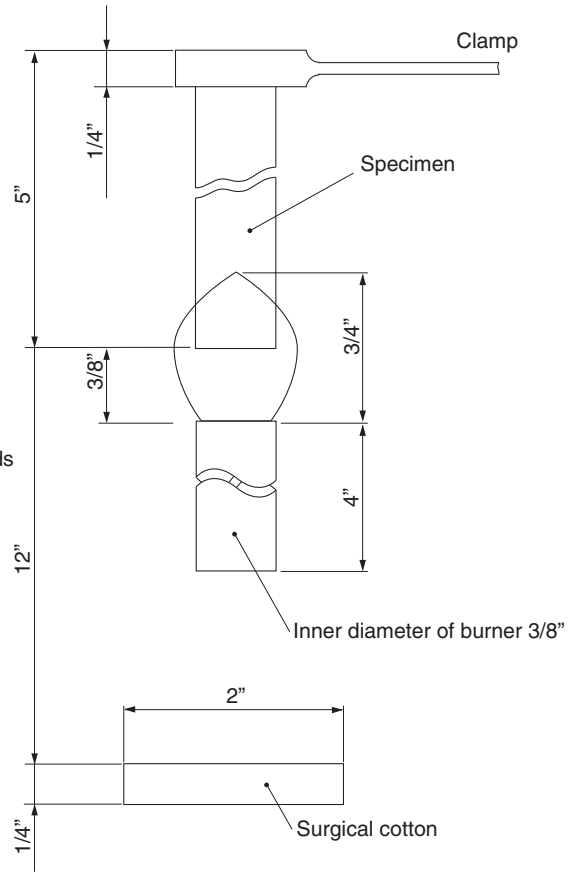
2. Basic sizes

(Unit:mm)

Designation of thread	Pitch P	Thread overlap H_1	External thread		
			Major dia. d	Pitch dia. d_2	Minor dia. d_1
			Internal thread		
			Major dia. D	Pitch dia. D_2	Minor dia. D_1
M3×0.35	0.35	0.189	3.000	2.773	2.621
M3.5×0.35	0.35	0.189	3.500	3.273	3.121
M4×0.5	0.5	0.271	4.000	3.675	3.459
M4.5×0.5	0.5	0.271	4.500	4.175	3.959
M5×0.5	0.5	0.271	5.000	4.675	4.459
M5.5×0.5	0.5	0.271	5.500	5.175	4.959
M6×0.75	0.75	0.406	6.000	5.513	5.188
M7×0.75	0.75	0.406	7.000	6.513	6.188
M8×1	1	0.541	8.000	7.350	6.917
M8×0.75	0.75	0.406	8.000	7.513	7.188
M9×1	1	0.541	9.000	8.350	7.917
M9×0.75	0.75	0.406	9.000	8.513	8.188
M10×1.25	1.25	0.677	10.000	9.188	8.647
M10×1	1	0.541	10.000	9.350	8.917
M10×0.75	0.75	0.406	10.000	9.513	9.188
M11×1	1	0.541	11.000	10.350	9.917
M11×0.75	0.75	0.406	11.000	10.513	10.188
M12×1.5	1.5	0.812	12.000	11.026	10.376
M12×1.25	1.25	0.677	12.000	11.188	10.647
M12×1	1	0.541	12.000	11.350	10.917
M14×1.5	1.5	0.812	14.000	13.026	12.376
M14×1.25	1.25	0.677	14.000	13.188	12.647
M14×1	1	0.541	14.000	13.350	12.917
M15×1.5	1.5	0.812	15.000	14.026	13.376
M15×1	1	0.541	15.000	14.350	13.917
M16×1.5	1.5	0.812	16.000	15.026	14.376
M16×1	1	0.541	16.000	15.350	14.917
M17×1.5	1.5	0.812	17.000	16.026	15.376
M17×1	1	0.541	17.000	16.350	15.917
M18×2	2	1.083	18.000	16.701	15.835
M18×1.5	1.5	0.812	18.000	17.026	16.376
M18×1	1	0.541	18.000	17.350	16.917
M20×2	2	1.083	20.000	18.701	17.835
M20×1.5	1.5	0.812	20.000	19.026	18.376
M20×1	1	0.541	20.000	19.350	18.917
M22×2	2	1.083	22.000	20.701	19.835
M22×1.5	1.5	0.812	22.000	21.026	20.376
M22×1	1	0.541	22.000	21.350	20.917
M24×2	2	1.083	24.000	22.701	21.835
M24×1.5	1.5	0.812	24.000	23.026	22.376
M24×1	1	0.541	24.000	23.350	22.917
M25×2	2	1.083	25.000	23.701	22.835
M25×1.5	1.5	0.812	25.000	24.026	23.376
M25×1	1	0.541	25.000	24.350	23.917
M26×1.5	1.5	0.812	26.000	25.026	24.376
M27×2	2	1.083	27.000	25.701	24.835
M27×1.5	1.5	0.812	27.000	26.026	25.376
M27×1	1	0.541	27.000	26.350	25.917
M28×2	2	1.083	28.000	26.701	25.835
M28×1.5	1.5	0.812	28.000	27.026	26.376
M28×1	1	0.541	28.000	27.350	26.917
M30×3	3	1.624	30.000	28.051	26.752
M30×2	2	1.083	30.000	28.701	27.835
M30×1.5	1.5	0.812	30.000	29.026	28.376
M30×1	1	0.541	30.000	29.350	28.917

UL-94 Standard Flame Test

UL (Underwriters Laboratories Inc.) is a non-profit test organization established in 1894 by an American insurance company mainly to respond to the need for improving safety in electric, and later electronic, instruments.
Major tasks are various regulations on raw materials, parts, unfinished products and finished products, as well as creation, examination, certification and registration of safety test standards. It has a major influence with a world-wide network.
UL-94 standard (Tests for Flammability of Plastic Materials for Parts in Devices and Appliances) is the most fundamental one among several UL standards for plastic materials flammability tests.
UL-94 standard has various test methods and flammability classes. Here we introduce self-extinguishing material classes V-0, V-1 and V-2 from the tests for flammability class of materials such as injection-molding grade, extruded plate and press-molded plate.
The flammability of general nylon and the material of the polyurethane tubing are tested by UL-94 HB to examine the combustion velocity.

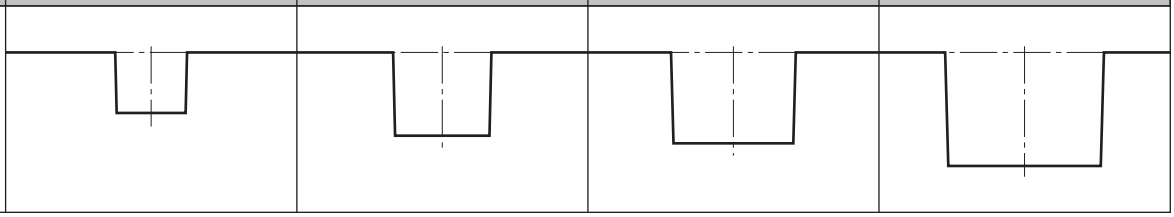
<table>
<tr><th></th><th>94 V-0</th><th>94 V-1</th><th>94 V-2</th></tr>
<tr><td>Specimen</td><td colspan="3">A set of five specimens processed for 48 hours at 23±2 °C and RH50±5%, and a set of five specimens processed for 168 hours at 70±1 °C, each of which is 5 inch (127mm) long, 0.5 inch (12.7mm) wide with the maximum thickness under 0.5 inch.</td></tr>
<tr><td>Test method</td><td colspan="3">●Conduct a test with no draft.
●Prepare a 3/4 inch-high blue burner flame with no yellow tip.
●Apply the adjusted flame to a specimen for 10 seconds and remove. Observe the specimen burning. When the burning stops, reapply the flame for an additional 10 seconds.
 
</td></tr>
<tr><td>Require-ments</td><td>A.The specimens may not burn with flaming combustion for more than 10 seconds after either application of the test flame.
B.The total flaming combustion time may not exceed 50 seconds for the 10 flame applications for each set of five specimens.
C.The specimens may not burn with flaming or glowing combustion up to the holding clamp.
D.The specimens may not drip flaming particles that ignite the surgical cotton located 12 inches below the test specimen.
E.The specimens may not have glowing combustion that persists for more than 30 seconds after the second removal of the test flame.</td><td>A.The specimens may not burn with flaming combustion for more than 30 seconds after either application of the test flame.
B.The total flaming combustion time may not exceed 250 seconds for the 10 flame applications for each set of five specimens.
C.The specimens may not burn with flaming or glowing combustion up to the holding clamp.
D.The specimens may not drip flaming particles that ignite the surgical cotton located 12 inches below the test specimen.
E.The specimens may not have glowing combustion that persists for more than 60 seconds after the second removal of the test flame.</td><td>A.The specimens may not burn with flaming combustion for more than 30 seconds after either application of the test flame.
B.The total flaming combustion time may not exceed 250 seconds for the 10 flame applications for each set of five specimens.
C.The specimens may not burn with flaming or glowing combustion up to the holding clamp.
D.The specimens can drip flaming particles that ignite the surgical cotton below the test specimen.
E.The specimens may not have glowing combustion that persists for more than 60 seconds after the second removal of the test flame.</td></tr>
<tr><td></td><td colspan="3">If any one of five specimens does not meet the requirements and if the total flaming combustion time is in the range below (*), test another set of five specimens.
The second set has to meet all the requirements.
*94V-0 51-55 seconds, 94V-1 251-255 seconds, 94V-2 251-255 seconds</td></tr>
</table>

About UL standard
The above is extracted from UL standards as reference.
See the appropriate latest original standards for design and trade.

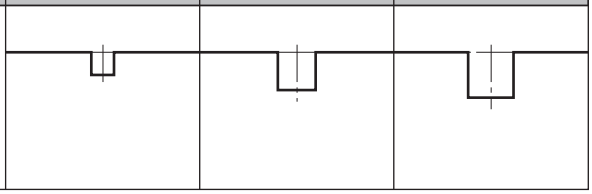
Table of Full Scale of Tubing and Screw

The size of the tubing and thread can be easily checked by placing the product on the following full-scale figures.

●Taper pipe threads

Thread size	R1/8	R1/4	R3/8	R1/2
Full scale				

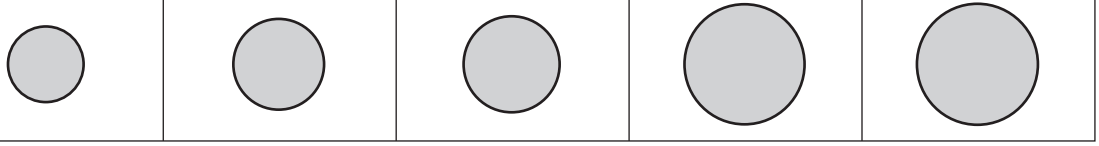
●Metric threads

Thread size	M3×0.5	M5×0.8	M6×1.0
Full scale			

●Tubing (outer diameter)

Millimeter size	ϕ3	—	ϕ3.5	ϕ4	—
Inch size	—	1/8 (ϕ3.18)	—	—	3/16 (ϕ4.76)
Full scale					

Millimeter size	ϕ6	—	—	ϕ8	—
Inch size	—	1/4 (ϕ6.35)	5/16 (ϕ7.94)	—	3/8 (ϕ9.53)
Full scale					

Millimeter size	ϕ10	ϕ12	—	—	ϕ16
Inch size	—	—	1/2 (ϕ12.70)	5/8 (ϕ15.88)	—
Full scale					

Unit Conversion Table

Length

m	inch	foot	yard	mile
1	3.937×10	3.2808	1.0936	6.2×10^{-4}
2.54×10^{-2}	1	8.3333×10^{-2}	2.778×10^{-2}	1.6×10^{-5}
3.048×10^{-1}	1.2×10	1	3.3333×10^{-1}	1.9×10^{-4}
9.114×10^{-1}	3.6×10	3	1	5.7×10^{-4}
1.6093×10^{3}	6.3360×10^{4}	5.280×10^{3}	1.760×10^{3}	1

Weight

kg	ton(UK)	ton(US)	lb	Ounce
1	9.842×10^{-4}	1.1023×10^{-3}	2.2046	3.5274×10
1.016×10^{3}	1	1.12	2.240×10^{3}	3.5838×10^{4}
9.072×10^{2}	8.9286×10^{-1}	1	2×10^{3}	3.2×10^{4}
4.536×10^{-1}	4.464×10^{-4}	5×10^{-4}	1	1.6×10
2.835×10^{-2}	2.79×10^{-5}	3.13×10^{-5}	6.25×10^{-2}	1

Pressure

Pa	MPa	bar	kgf/cm^2	psi	mmHg
1	1×10^{-6}	1×10^{-5}	1.0197×10^{-5}	1.4504×10^{-4}	7.5006×10^{-3}
1×10^{5}	1×10^{-1}	1	1.0197	1.4504×10	7.5006×10^{2}
9.8067×10^{4}	9.8067×10^{-2}	9.8067×10^{-1}	1	1.4223×10	7.3556×10^{2}
6.8948×10^{3}	6.8948×10^{-3}	6.4898×10^{-2}	7.0307×10^{-2}	1	5.1715×10
1.3332×10^{2}	1.3332×10^{-4}	1.332×10^{-3}	1.3595×10^{-3}	$1.934^{1}\times10^{-2}$	1

Force

N	dyn	kgf
1	1×10^{5}	1.0197×10^{-1}
1×10^{-5}	1	1.0197×10^{-6}
9.8066	9.8066×10^{5}	1

* ☐ Å† presents SI units.

Chemical Resistance Specification Table (alphabetical order)

[How to read the table]

- The table shows chemical resistance of materials, not of Nitta's products (finished products). Therefore the table does not guarantee the chemical resistance performance of the products.
- The table is created under certain conditions. The symbol [○] does not always mean chemical resistance depending on the environment, condition, and duration of use. Be sure to check under the actual conditions of use.
- Test is conducted for saturated solutions of chemicals in the table at room temperature unless specifically indicated.
- The table does not present permeability for gas chemicals. Chemicals that are toxic when permeating, such as activated gas, cannot be used for Nitta's products.
- Contact us for chemical resistance of plated and seal-processed parts.

[Contact us]

Before contacting us, check 1. the maximum working pressure, 2. working temperature range, 3. chemical concentration, 4. piping state (environmental state), and 5. use application, and then contact us or our regional office.

[Criteria]

○: Can be used with no influence, or almost no influence on material
△: Can be used although having influence to a certain degree on material. Sufficient check is required.
×: Cannot be used.
—: No data.

Chemical Resistance Specification Table (for reference)

Test is conducted for saturated solutions of chemicals in the table at room temperature unless specifically indicated.

	Chemical (weight concentration %, temperature °C)	Tubing material				Fitting material					Seal material		
		Polyurethane	Nylon	Polyolefin	Fluorocarbon resin	Brass	SUS304	SUS316	PBT	PP	NBR	EPDM	FKM
2	2-Aminophenyl Disulfide	△	○	○	—	—	—	—	—	—	—	—	—
A	Acetaldehyde	×	△	×	×	○	○	○	△	△	×	△	×
	Acetic Acid (10%, 20°C)	×	△	○	○	×	△	○	△	○	×	—	—
	Acetic Acid (50%, 20°C)	×	×	△	○	×	△	△	△	×	×	—	△
	Acetic Acid (50%, 70°C)	×	×	×	○	×	△	△	△	×	×	—	△
	Acetic Acid (100%, 20°C)	×	×	×	○	×	△	△	△	×	×	—	△
	Acetic Anhydride	×	×	△	○	×	△	△	—	△	×	△	×
	Acetoamide	—	—	×	○	—	—	—	△	△	○	○	△
	Acetone	×	△	△	○	○	△	△	△	×	×	△	×
	Acetyl Bromide	×	×	×	○	—	—	—	—	—	×	○	○
	Acetyl Chloride	×	×	×	—	—	—	△	—	—	—	—	—
	Acetylene	○	○	○	○	×	○	○	○	○	○	○	○
	Acrylonitrile	—	—	△	○	△	△	△	△	—	×	—	×
	Alum	—	×	○	○	—	—	—	—	○	○	—	—
	Aluminium Acetate	—	○	○	○	—	—	—	△	○	△	○	×
	Aluminium Bromide	—	△	○	○	—	—	—	—	○	○	○	○
	Aluminium Chloride	—	△	○	○	×	×	×	△	○	○	○	○
	Aluminium Fluoride	—	△	○	○	○	×	×	—	○	○	○	○
	Aluminium Nitrate	△	△	○	○	—	—	△	△	○	○	○	○
	Aluminium Sulfate	—	○	○	○	×	○	○	△	○	○	○	○
	Ammonia Anhydrous	—	○	○	○	×	○	○	△	○	○	○	×
	Ammonia Gas Cold	×	×	×	×	×	○	○	△	—	○	○	×
	Ammonia Gas Hot	×	×	×	×	×	△	△	×	—	△	○	×
	Ammonia Liquid	—	○	○	○	△	○	○	△	△	△	—	—
	Ammonia Water	△	△	○	○	×	△	△	△	—	—	—	—
	Ammonium Carbonate	—	○	○	○	—	△	△	△	○	×	○	○
	Ammonium Chloride	○	○	○	○	×	△	△	△	○	○	○	○
	Ammonium Hydroxide	△	△	○	○	×	△	△	×	○	×	○	○
	Ammonium Nitrate	○	○	○	○	×	△	△	△	○	○	○	—
	Ammonium Persulphate	—	○	○	○	—	—	—	—	—	—	—	—
	Ammonium Phosphate	○	○	○	○	△	△	△	△	○	○	—	—
	Ammonium Sulfate	○	○	○	○	△	△	△	△	○	○	○	×
	Amyl Acetate	×	○	×	○	△	—	○	△	×	×	△	×
	Amyl Alcohol	△	△	△	△	△	—	—	△	△	△	○	○
	Amyl Borate	—	—	△	○	—	—	—	—	△	○	×	○

Chemical Resistance Specification Table (for reference)

Test is conducted for saturated solutions of chemicals in the table at room temperature unless specifically indicated.

	Chemical (weight concentration %, temperature °C)	Tubing material				Fitting material					Seal material		
		Polyurethane	Nylon	Polyolefin	Fluorocarbon resin	Brass	SUS304	SUS316	PBT	PP	NBR	EPDM	FKM
A	Amyl Naphthalene	—	—	△	○	—	—	—	○	△	×	—	—
	Anethole	—	○	—	○	—	—	—	—	—	—	—	—
	Aniline	×	×	×	○	×	△	△	△	×	×	△	△
	Aniline Dyes	—	×	○	○	—	—	—	△	○	×	△	△
	Animal Oil (Lard Oil)	○	○	○	○	○	—	△	○	○	○	△	○
	Aqua Regia	×	×	×	○	—	—	—	—	×	×	△	○
	Arsenic Acid	—	△	○	○	△	△	△	—	○	—	—	—
	Asphalt	○	○	○	○	○	○	○	—	○	○	×	○
	ASTM Lubricant No.1	○	○	×	○	○	○	○	○	△	○	×	○
	ASTM Lubricant No.2	×	○	×	○	○	○	○	○	△	○	×	○
	ASTM Lubricant No.3	×	○	×	○	○	○	○	○	△	△	×	○
	ASTM Standard Fuel Oil A	○	○	×	○	○	○	○	○	△	○	×	○
	ASTM Standard Fuel Oil B	○	○	×	○	○	○	○	○	△	○	×	○
	ASTM Standard Fuel Oil C	○	○	×	○	○	○	○	○	△	○	×	○
B	Balium Hydroxide	—	○	○	○	×	—	○	△	○	○	○	○
	Barium Chloride	○	○	○	○	×	—	△	△	○	○	○	○
	Barium Sulfate	—	○	○	○	△	△	△	△	○	○	○	○
	Barium Sulfide	—	○	○	○	—	—	△	△	○	○	○	○
	Beet Sugar liquid	—	○	○	○	×	—	○	—	○	○	—	—
	Benzoaldehyde	△	△	×	○	△	△	△	—	×	×	—	×
	Benzene	×	△	×	○	×	△	△	△	×	×	×	△
	Benzine	△	△	×	○	—	—	—	△	×	○	—	○
	Benzoic Acid	×	○	○	○	△	△	△	△	—	—	—	—
	Benzyl Alcohol	△	△	△	○	△	△	△	△	—	×	○	○
	Benzyl Benzoate	—	—	—	○	—	—	—	△	—	×	×	○
	Benzyl Chloride	—	×	—	○	—	—	×	—	—	×	×	○
	Borax	○	○	○	○	×	—	○	—	○	△	○	○
	Boric Acid	○	○	○	○	△	△	△	△	○	○	○	○
	Bromine	×	×	×	○	×	—	×	×	—	×	×	○
	Bunker Fuel	—	○	—	○	△	—	○	—	—	○	—	—
	Butane	—	○	△	○	○	○	○	○	○	○	×	○
	Butyl Acetate	×	○	×	○	△	—	△	△	×	×	△	×
	Butyl Acrylate	—	○	×	○	—	—	—	△	△	×	—	×
	Butyl Alcohol	△	△	△	○	○	○	○	△	—	△	△	○
	Butyl Cellosolve	—	△	—	—	△	—	△	○	—	△	—	—
	Butyl Stearate	—	○	—	○	—	—	—	△	—	△	×	○
C	Calcium Acetate	○	○	○	○	△	—	△	△	○	○	○	×
	Calcium Arsenate	○	○	○	—	—	—	—	△	—	△	○	△
	Calcium Bisulfite	○	○	○	○	×	—	△	△	—	—	—	—
	Calcium Chloride	○	○	○	○	○	△	△	△	○	○	○	○
	Calcium Hydroxide	△	○	○	○	△	△	△	×	○	○	○	○
	Calcium Hypochlorite (20%, 20°C)	×	×	○	○	×	—	△	△	○	—	—	—
	Calcium Nitrate	—	○	○	○	—	—	—	△	○	○	○	○
	Calcium Sulfide	—	○	○	○	—	—	△	△	○	○	○	○
	Cane Sugar Liquor	—	○	○	○	○	—	○	○	○	○	○	—
	Carbitol	—	—	△	—	△	—	△	—	—	○	—	—
	Carbon Dioxide	○	○	○	○	○	○	○	○	○	○	—	—
	Carbon Disulfide	×	×	×	○	○	○	○	—	×	△	×	○
	Carbon Oxide	○	○	○	○	○	○	○	△	—	○	○	○
	Carbon Tetrachloride	×	×	×	△	△	△	△	×	×	×	×	○
	Carbonic Acid	△	○	△	○	○	△	△	—	△	△	○	○
	Castor Oil	△	○	○	○	○	△	△	△	—	○	△	○
	Cellosolve	—	○	○	○	△	—	△	○	×	○	×	×
	Cellosolve Acetate	×	△	—	—	—	—	—	△	—	×	○	×
	Chlorine Gas (dry)	×	×	×	△	△	×	×	×	×	△	×	○
	Chlorine Gas (wet)	×	×	×	△	×	×	×	×	×	×	×	△
	Chloro Acetone	—	—	×	—	—	—	—	—	×	×	○	×
	Chloroform	×	△	×	○	△	△	△	△	×	×	×	○
	Chlorosulfonic Acid	—	×	×	○	△	×	×	△	×	×	×	×
	Chlorotoluene	—	×	×	○	—	—	—	△	×	×	×	○

Chemical Resistance Specification Table (for reference)

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	Chemical (weight concentration %, temperature °C)	Tubing material				Fitting material					Seal material		
		Polyurethane	Nylon	Polyolefin	Fluorocarbon resin	Brass	SUS304	SUS316	PBT	PP	NBR	EPDM	FKM
C	Chromic Acid (2%, 50°C)	×	×	×	○	×	×	△	△	—	—	—	—
	Chromic Acid (2%, 70°C)	×	×	×	○	×	×	△	×	△	×	○	○
	Chromic Acid (10%, 70°C)	×	×	×	○	×	×	△	×	×	×	—	○
	Chromic Acid (25%, 70°C)	×	×	×	△	×	×	△	×	×	×	×	○
	Citric Acid	△	○	○	○	△	△	△	×	○	○	○	○
	Coal-Tar	○	○	△	○	△	○	○	—	△	○	—	—
	Copper Chloride	○	△	○	○	×	×	×	△	—	○	○	○
	Copper Cyanide	—	○	○	○	—	—	○	△	○	○	○	○
	Copper Sulfate	○	○	○	○	○	△	○	△	○	○	○	○
	Corn Oil	○	○	△	○	×	—	○	○	○	○	—	—
	Cotton Seed Oil	○	○	△	○	△	△	△	—	△	○	△	○
	Creosote	×	×	△	○	△	△	△	—	—	○	—	○
	Cresol	×	×	×	○	△	△	○	△	△	×	×	○
	Cyclohexane	△	○	×	○	△	—	△	○	×	○	×	○
	Cyclohexanol	—	○	△	○	△	△	△	△	△	△	×	○
	Cyclohexanone	×	○	×	○	—	—	—	△	×	×	△	×
D	Decalin	—	○	△	○	—	—	—	—	—	×	×	○
	Developer	△	△	○	○	—	—	—	△	○	○	△	○
	Diacetone Alcohol	△	○	○	○	△	○	○	—	—	×	○	×
	Dibenzine Ether	×	△	×	△	○	—	○	—	×	×	△	×
	Dibutyl Ether	△	△	×	○	—	—	—	△	×	×	×	△
	Dibutyl Phthalate	△	○	△	○	—	—	—	△	△	×	○	△
	Dichlorobenzene	×	△	×	○	△	—	—	△	×	×	×	○
	Diethanol Amine	△	○	—	—	—	—	○	△	—	—	—	—
	Diethyl Ether	△	△	△	○	△	—	△	△	—	×	×	×
	Diethyl Sebacate	—	△	×	○	—	—	—	△	×	△	△	△
	Diisopropyl Ketone	×	△	△	○	—	—	—	△	×	×	—	—
	Dimethyl Formamide	×	×	△	△	△	—	—	△	×	×	×	×
	Dinitrogen Oxide (Nitrous Oxide)	×	○	×	○	×	△	○	△	—	—	—	—
	Dioctyl Phthalate (DOP)	△	○	×	○	—	—	—	△	△	○	○	○
	Dioctyl Sebacate (DOS)	△	○	×	○	—	—	—	○	△	×	—	△
	Dipentene (Limonene)	×	△	×	○	—	—	—	—	—	△	×	○
	Diphenyl	×	△	×	○	—	—	—	△	—	×	×	○
	Diphenyl Oxide	—	—	—	○	—	—	—	—	—	×	×	○
	Dowtherm(100°C)	—	—	—	○	—	—	—	—	—	×	—	○
	Dowtherm(200°C)	—	—	—	○	—	—	—	—	—	—	—	—
E	Epichlorohydrin	—	×	—	○	—	—	—	—	—	×	△	×
	Ester Silicate	—	○	—	○	—	—	—	△	—	○	—	—
	Ethanol Amine	—	×	×	○	—	—	—	△	△	○	○	×
	Ethyl Acetate	×	○	△	○	△	△	△	△	×	×	△	×
	Ethyl Acetoacetate	—	—	—	○	—	—	—	△	—	×	△	×
	Ethyl Acrylate	×	—	—	△	△	—	—	△	—	×	—	×
	Ethyl Alcohol	×	△	△	○	○	△	○	△	△	○	○	○
	Ethyl Benzene	—	—	×	○	△	○	○	△	×	×	×	○
	Ethyl Cellulose	—	—	○	○	—	—	△	○	○	○	○	×
	Ethyl Chloride	×	○	×	—	△	○	○	—	×	○	△	○
	Ethyl Ether (>Diethyl Ether)	△	△	△	○	△	○	○	△	—	—	—	—
	Ethyl Oxalate	×	○	×	○	—	—	—	△	—	×	○	△
	Ethyl Silicate	—	△	—	○	—	—	—	△	—	○	○	○
	Ethylene Chlorohydrin	×	×	×	○	—	—	—	—	×	×	△	△
	Ethylene Diamine	—	×	×	○	—	—	—	△	△	○	○	×
	Ethylene Dichloride	×	×	△	○	○	△	△	×	—	×	—	○
	Ethylene Glycol	○	○	○	○	△	△	△	△	△	○	○	○
	Ethylene Oxide	×	○	×	○	△	—	△	△	○	×	—	×
F	Fatty Acids	△	○	×	○	△	△	○	△	×	△	×	○
	Ferric Chloride	—	△	○	○	×	×	×	△	○	○	○	○
	Ferric Nitrate	—	○	○	○	—	—	—	△	○	○	○	○
	Ferric Sulfate	○	○	○	○	×	△	△	△	○	○	○	○
	Fluorine	×	—	×	×	×	—	△	—	—	—	—	—
	Fluoroboric Acid	×	—	○	○	—	—	○	—	○	△	—	—

Chemical Resistance Specification Table (for reference)

Test is conducted for saturated solutions of chemicals in the table at room temperature unless specifically indicated.

	Chemical (weight concentration %, temperature °C)	Tubing material				Fitting material					Seal material		
		Polyurethane	Nylon	Polyolefin	Fluorocarbon resin	Brass	SUS304	SUS316	PBT	PP	NBR	EPDM	FKM
F	Formaldehyde (40%, 20°C)	×	×	△	○	△	△	△	—	○	×	△	○
	Formic Acid (25%, 20°C)	×	×	○	○	×	△	○	△	○	×	○	×
	Formic Acid (50%, 20°C)	×	×	○	○	×	△	○	—	○	×	—	—
	Formic Acid (90%, 20°C)	×	×	△	○	×	△	○	—	○	×	—	—
	Freon 11	—	△	—	△	○	○	○	○	—	○	—	△
	Freon 12	—	△	—	△	○	○	○	○	—	△	—	○
	Freon 21	—	△	—	△	○	○	○	○	—	×	—	—
	Freon 22	—	△	—	△	○	○	○	○	—	×	—	×
	Freon 113	—	△	—	△	○	○	○	○	—	○	—	○
	Freon 114	—	△	—	△	○	○	○	○	—	—	—	—
	Furan	—	×	—	△	—	—	—	△	—	×	×	○
	Furfural	×	×	×	○	△	△	△	△	×	×	○	×
	Furfuryl Alcohol	○	○	○	—	—	—	—	—	—	—	—	—
G	Gasoline	×	○	△	○	○	○	○	○	△	○	×	○
	Gelatine	○	○	○	○	○	○	○	△	○	○	○	○
	Glucose	○	○	○	○	○	○	○	○	○	○	—	—
	Glue	—	○	○	○	△	—	△	—	○	○	—	—
	Glycerine	△	○	○	○	△	○	○	○	○	○	○	○
	Grease	△	○	△	○	△	○	○	○	×	—	—	—
H	Heavy Water	○	○	○	○	—	—	—	△	—	○	○	—
	Heptane	○	○	×	—	○	○	○	△	—	○	×	○
	Hexane	△	○	×	○	△	△	△	○	×	○	×	○
	Hexyl Alcohol	—	△	△	○	—	—	—	△	△	○	×	○
	Hydrazine	—	△	△	△	—	—	—	—	—	△	○	×
	Hydrobromic Acid (20%, 20°C)	—	△	○	○	×	×	×	△	○	×	○	○
	Hydrobromic Acid (20%, 70°C)	—	×	△	○	×	×	×	△	○	—	—	—
	Hydrobromic Acid (37%, 20°C)	—	△	○	○	×	×	×	△	○	○	—	—
	Hydrochloric Acid (10%, 20°C)	×	△	○	○	×	×	×	△	○	○	○	○
	Hydrochloric Acid (20%, 20°C)	×	×	△	○	×	×	×	×	○	△	○	○
	Hydrochloric Acid (20%, 80°C)	×	×	×	○	×	×	×	×	△	×	○	○
	Hydrochloric Acid (38%, 20°C)	×	×	○	○	×	×	×	×	○	×	△	○
	Hydrocyanic Acid	—	×	○	○	×	—	○	△	○	△	○	○
	Hydrofluoric Acid (10%, 20°C)	×	×	△	○	△	×	×	△	○	×	—	—
	Hydrofluoric Acid (20%, 20°C)	×	×	△	○	△	×	×	△	○	×	—	—
	Hydrofluoric Acid (40%, 20°C)	×	×	△	○	△	×	×	△	○	×	—	—
	Hydrofluoric Acid (Anhydrous)	×	×	×	○	×	—	×	—	×	—	—	—
	Hydrogen	○	○	○	○	△	○	○	○	○	○	○	○
	Hydrogen Peroxide (5%, 20°C)	△	○	○	○	×	△	△	△	○	×	○	○
	Hydrogen Peroxide (5%, 50°C)	×	△	△	○	×	△	△	—	○	×	△	○
	Hydrogen Peroxide (30%, 20°C)	×	×	△	○	×	△	△	—	○	×	×	○
	Hydrogen Sulfide	—	△	○	○	△	△	△	△	○	×	○	×
	Hydroquinone	—	○	○	○	—	—	—	—	○	—	—	—
	Hypochlorous Acid	×	△	○	○	—	—	—	△	○	—	—	—
I	Isobutyl Alcohol	—	△	○	○	—	—	—	△	○	△	○	○
	Isocyanates	○	○	○	○	—	—	—	—	—	—	—	—
	Isooctane	×	○	×	○	○	△	△	○	—	○	×	○
	Isopropyl Acetate	△	○	×	○	○	—	△	△	×	×	—	—
	Isopropyl Alcohol	—	△	○	○	△	△	△	△	○	△	○	○
	Isopropyl Ether	—	△	△	○	○	△	△	△	△	○	—	—
J	JP Fuel Oil	△	△	×	○	○	○	○	—	△	—	—	—
K	Kerosene	○	○	△	○	○	○	○	○	×	○	×	○
	Ketones	△	○	○	○	△	△	△	△	—	—	—	—
L	Lacquer	△	△	△	○	—	—	—	△	×	×	×	×
	Lactic Acid	—	△	△	○	×	△	△	△	○	○	○	○
	Lard Oil	○	○	○	○	○	—	△	○	○	○	—	○
	Lead Acetate	—	○	○	○	—	△	—	△	○	△	○	×
	Lead Arsenate	○	○	○	—	—	—	—	—	—	△	○	△
	Lead Nitrate	—	○	○	○	—	—	—	△	○	○	○	—
	Lead Sulfamate	—	○	○	○	—	—	—	△	○	△	○	△
	Lead Sulfate	○	○	○	—	△	—	△	△	—	—	—	—

Chemical Resistance Specification Table (for reference)

Test is conducted for saturated solutions of chemicals in the table at room temperature unless specifically indicated.

	Chemical (weight concentration %, temperature °C)	Tubing material				Fitting material					Seal material		
		Polyurethane	Nylon	Polyolefin	Fluorocarbon resin	Brass	SUS304	SUS316	PBT	PP	NBR	EPDM	FKM
L	Linoleic Acid	—	△	△	○	—	—	—	—	○	△	—	—
	Linseed Oil	○	○	×	○	—	—	—	—	—	○	△	○
	Liquid Chlorine	×	×	×	△	—	—	—	×	×	×	×	△
	Liquidified Petroleum Gas	—	○	△	○	○	○	○	○	—	○	—	—
	Lubricant (Ether Type)	×	△	×	○	○	○	○	△	—	—	—	—
	Lubricant (Mineral Oil Type)	○	○	×	○	○	○	○	○	△	○	×	○
	Lye Solutions	—	○	○	○	—	—	—	△	—	△	○	○
M	Magnesium Chloride	○	○	○	○	×	×	×	△	○	○	○	○
	Magnesium Hydroxide	△	○	○	○	△	—	△	×	○	△	○	○
	Magnesium Sulfate	○	○	○	○	△	○	○	△	○	○	—	—
	Maleic Acid	△	○	○	○	—	△	△	—	○	×	×	○
	Malic Acid	—	○	○	○	△	△	△	△	○	○	△	○
	Mercaptan	—	—	×	○	—	—	—	—	—	○	×	○
	Mercuric Chloride	○	○	○	○	×	×	×	—	○	○	—	—
	Mercury	—	○	○	○	×	—	△	—	○	○	○	—
	Methane	○	○	○	○	○	—	△	○	—	○	×	○
	Methyl Acetate	×	○	△	○	○	—	○	△	×	×	△	×
	Methyl Alcohol	×	△	△	○	○	△	△	△	△	△	○	△
	Methyl Bromide	×	△	×	○	○	—	○	△	—	△	×	○
	Methyl Chloride	×	×	×	○	△	○	○	—	×	×	×	○
	Methyl Ethyl Ketone	×	△	△	○	○	△	△	△	×	×	△	×
	Methyl Isobutyl Ketone	×	△	△	○	△	—	△	△	×	×	△	×
	Methyl Metacrylate	—	○	×	○	—	—	—	△	×	×	×	×
	Methyl Sulfate	×	△	×	—	—	—	—	△	—	—	—	—
	Methylene Dichloride	×	×	△	○	—	—	—	×	×	×	×	△
	Mineral Oils	○	○	△	○	○	○	○	○	△	○	×	△
	Monochloro Benzene	×	×	×	○	—	—	—	—	×	×	×	○
	Monochloro Acetic Acid	×	×	×	○	—	—	—	△	△	×	—	—
	Monoethanol Amine	—	○	△	○	—	—	—	—	○	×	—	—
N	n-Hexa Aldehyde	—	—	×	○	—	—	—	—	—	×	—	—
	Naphtha	△	○	×	○	△	△	△	△	△	×	×	○
	Naphthalene	△	○	△	○	△	—	△	△	○	×	×	○
	Naphthenic Acid	—	—	○	○	—	—	—	△	○	△	×	○
	Natural Gas	—	○	○	○	○	○	○	○	○	○	×	○
	Nickel Acetate	—	○	○	○	—	—	△	△	○	△	○	×
	Nickel Chloride	—	×	○	○	×	—	×	—	○	○	○	○
	Nickel Sulfate	—	○	○	○	—	△	△	△	○	○	○	○
	Nitric Acid (10%, 20°C)	×	×	○	○	×	△	○	×	○	×	○	○
	Nitric Acid (10%, 70°C)	×	×	△	○	×	△	○	×	△	×	△	○
	Nitric Acid (30%, 20°C)	×	×	△	○	×	△	○	×	○	×	△	○
	Nitric Acid (30%, 70°C)	×	×	×	○	×	△	○	×	△	×	×	○
	Nitric Acid (61%, 20°C)	×	×	×	○	×	△	○	×	×	×	×	○
	Nitric Acid (fuming, 20°C)	×	×	×	○	×	△	○	×	×	×	×	△
	Nitrobenzene	×	×	×	○	△	△	△	—	×	×	△	△
	Nitroethane	—	—	×	○	—	—	—	—	×	×	△	×
	Nitrogen	○	○	○	○	○	○	○	○	○	○	○	○
	Nitromethane	—	—	×	○	—	—	—	—	×	×	△	×
	Nitropropane	—	—	×	○	—	—	—	—	×	×	—	×
O	Octyl Alcohol	—	×	△	○	△	—	△	△	○	△	△	○
	Oleic Acid	△	○	△	○	△	△	△	○	△	○	×	○
	Olive Oil	○	○	○	○	△	○	○	○	△	○	△	○
	Oxalic Acid	△	○	○	○	×	×	×	△	○	△	○	○
	Oxygene	△	△	△	○	○	○	○	△	○	△	○	○
	Ozone	△	△	△	○	△	△	○	○	—	×	○	○
P	Palm Oil	—	○	△	○	△	—	△	—	○	—	△	—
	Palmitic Acid	○	○	○	○	△	△	△	△	○	○	—	—
	Pentane	○	○	×	—	△	—	△	△	—	—	—	—
	Perchloric Acid	×	×	△	○	×	×	×	△	×	×	○	○
	Perchloroethylene	×	×	×	○	△	—	△	×	×	△	×	○
	Petroleum	○	○	×	○	—	—	—	△	△	○	×	○

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	Chemical (weight concentration %, temperature °C)	Tubing material				Fitting material					Seal material		
		Polyurethane	Nylon	Polyolefin	Fluorocarbon resin	Brass	SUS304	SUS316	PBT	PP	NBR	EPDM	FKM
P	Phenol	×	×	△	○	△	△	△	△	—	×	○	○
	Phenyl Disulfide	△	○	×	—	—	—	—	—	—	—	—	—
	Phenyl Hydrazine	—	—	—	○	—	—	—	—	—	×	△	○
	Phorone	—	—	—	○	—	—	—	—	—	×	—	—
	Phosphoric Acid (50%, 20°C)	×	△	○	○	×	△	△	△	○	×	—	—
	Phosphoric Acid (50%, 70°C)	×	×	○	○	×	△	×	△	○	×	—	—
	Phosphoric Acid (75%, 20°C)	×	×	○	○	×	△	△	△	○	×	—	—
	Phosphorobenzene	△	○	○	—	△	—	△	—	—	—	—	—
	Pickling Solution (Nitric Acid 20%/Fluoric Acid 4%)	—	×	○	○	—	—	—	△	○	×	—	—
	Pickling Solution (Sulfric Acid 40%/Nitric Acid 15%)	—	×	○	○	—	—	—	△	○	△	—	—
	Picric Acid	×	×	△	○	×	△	△	△	△	△	○	○
	Pine Oil	—	×	×	○	△	△	○	△	△	○	—	—
	Pinene	—	○	×	○	—	—	—	—	—	○	—	—
	Piperidine	—	△	△	○	—	—	—	—	—	×	×	×
	Potassium Bichromate	△	△	○	○	×	—	△	△	○	△	○	△
	Potassium Chloride	○	○	○	○	△	△	○	△	○	○	○	○
	Potassium Cyanide	—	○	○	○	×	△	△	—	○	○	—	—
	Potassium Hydroxide	△	△	○	○	△	△	△	×	○	○	○	×
	Potassium Nitrate	○	△	○	○	△	△	△	△	○	○	○	○
	Potassium Permanganate (5%, 20°C)	×	×	△	○	△	△	△	△	○	×	○	×
	Potassium Sulfate	○	○	○	○	△	△	△	△	○	○	○	○
	Propane	△	○	○	○	○	○	○	○	○	○	×	○
	Propyl Acetate	×	○	×	○	○	—	○	△	×	×	△	×
	Propyl Alcohol	×	△	△	○	△	○	○	△	△	△	○	○
	Propylene	—	○	—	○	○	○	○	○	—	△	×	○
	Pyridine	△	×	○	○	△	—	△	△	—	×	—	×
	Pyrrole	—	—	△	○	—	—	—	—	—	×	×	×
S	Salicylic Acid	—	—	○	○	○	△	△	△	○	△	○	○
	Salt Water	—	○	○	○	×	△	△	△	○	○	—	○
	Sea Water	○	○	○	○	△	○	○	△	—	○	○	○
	Silicone Grease	—	○	△	○	—	—	—	○	△	○	○	○
	Silicone Oil	—	○	△	○	—	—	—	○	△	○	○	○
	Silver Nitrate	—	△	○	○	—	—	—	△	○	△	○	○
	Soap Aqueous Solution	○	○	△	○	○	○	○	△	○	○	○	○
	Soda Water	○	○	○	○	—	—	—	△	—	—	—	—
	Sodium Bicarbonate	○	○	○	○	×	—	△	△	○	○	—	○
	Sodium Bisulphate	○	○	○	○	—	—	—	△	○	○	—	—
	Sodium Carbonate	○	○	○	○	○	△	△	△	—	○	○	○
	Sodium Cyanide	○	○	○	○	×	—	△	△	○	○	○	—
	Sodium Hydroxide (10%, 20°C)	×	○	○	○	△	△	△	△	○	○	○	—
	Sodium Hydroxide (30%, 20°C)	×	○	○	○	—	—	—	×	○	○	○	×
	Sodium Hydroxide (30%, 70°C)	×	×	×	○	—	—	—	×	○	○	○	×
	Sodium Hypochlorite (5%, 20°C)	×	×	○	○	×	×	△	△	○	×	○	○
	Sodium Hypochlorite (5%, 70°C)	×	×	△	○	×	×	△	△	○	×	△	○
	Sodium Metaphosphate	—	○	○	○	—	—	△	△	○	○	○	○
	Sodium Nitrate	○	○	○	○	△	○	○	△	○	○	—	—
	Sodium Perborate	—	○	○	○	×	—	△	△	○	△	○	○
	Sodium Peroxide	—	×	○	×	×	—	△	—	○	△	○	○
	Sodium Phosphate	○	○	○	○	—	△	△	△	○	○	—	—
	Sodium Silicate	○	○	○	○	△	—	△	△	—	○	○	○
	Sodium Sulfate	○	○	○	○	○	△	△	△	○	○	○	○
	Sodium Sulfide	○	○	○	—	×	△	△	△	—	○	○	○
	Sodium Sulfite	—	×	×	○	○	○	○	△	—	○	—	—
	Sodium Thiosulfate	○	○	○	○	△	—	△	△	○	△	○	○
	Soy Bean Oil	—	○	○	○	△	△	○	○	○	○	—	—
	Stannic Chloride	—	△	○	○	×	×	×	△	○	○	○	○
	Stannous Chloride	○	△	○	—	×	×	×	△	—	○	○	○
	Stearic Acid	○	○	○	○	△	△	△	△	○	△	△	—
	Styrene	△	△	△	○	△	—	△	△	△	×	×	○
	Sulfur	○	○	○	○	×	△	△	—	○	×	○	○

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	Chemical (weight concentration %, temperature °C)	Tubing material				Fitting material					Seal material		
		Polyurethane	Nylon	Polyolefin	Fluorocarbon resin	Brass	SUS304	SUS316	PBT	PP	NBR	EPDM	FKM
S	Sulfur Chloride	—	—	×	○	×	—	△	—	○	△	×	○
	Sulfur Dioxide	×	×	×	○	—	—	△	△	—	△	—	—
	Sulfur Trioxide	×	△	○	○	△	△	△	△	—	—	—	—
	Sulfuric Acid (10%, 20°C)	×	△	△	○	×	×	×	△	○	×	○	○
	Sulfuric Acid (10%, 70°C)	×	×	△	○	×	×	×	×	○	×	○	○
	Sulfuric Acid (30%, 20°C)	×	×	△	○	×	×	×	△	○	×	○	○
	Sulfuric Acid (30%, 70°C)	×	×	×	○	×	×	×	×	○	×	○	○
	Sulfuric Acid (98%, 20°C)	×	×	×	○	×	×	×	×	×	×	×	○
	Sulfuric Acid (fuming, 20°C)	×	×	×	○	×	×	×	×	×	×	×	○
	Sulfurous Acid	×	×	×	○	×	△	△	△	—	△	△	○
T	Table Salt	○	○	○	○	△	△	△	△	○	○	—	○
	Tannic Acid	△	○	○	○	×	△	△	—	○	○	○	○
	Tartaric Acid	○	△	○	○	×	△	△	△	○	○	—	—
	Terpineol	—	○	×	○	—	—	—	—	△	×	—	—
	Tetrachloroethane	—	△	×	○	—	—	—	×	×	×	×	○
	Tetraethyl Lead	—	△	△	○	△	—	△	—	—	—	—	—
	Tetrahydro Furan	—	△	×	○	—	—	—	×	×	×	△	×
	Tetralin	—	△	×	○	—	—	—	—	×	×	×	○
	Tetramethyl Lead	○	○	—	○	—	—	—	—	—	—	—	—
	Thionyl Chloride	—	×	×	○	—	—	—	—	×	—	—	○
	Toluene	×	△	×	△	○	○	○	△	×	×	×	△
	Triacetin	—	—	—	○	—	—	—	—	—	△	○	×
	Tributoxyethyl Phosphate	—	○	—	○	—	—	—	○	—	×	—	—
	Tributyl Phosphate	△	○	×	○	○	—	○	○	—	×	—	×
	Trichloroacetic Acid	×	×	△	—	—	△	△	△	—	—	—	—
	Trichloroethylene	×	△	×	○	○	—	○	△	×	×	×	○
	Tricresyl Phosphate	△	○	×	○	—	—	—	○	—	×	○	○
	Triethanolamine	—	○	×	○	—	—	○	△	△	△	△	×
	Tung Oil	—	○	○	○	○	○	○	—	○	○	×	○
	Turpentine Oil	○	○	×	○	△	—	○	△	×	△	△	○
U	Uric Acid	×	○	○	—	—	—	—	△	—	△	○	△
V	Vegetable Oil	—	○	○	○	—	—	—	△	○	○	△	○
X	Xylene	×	△	×	○	—	○	○	○	×	×	×	○
Z	Zeolite	—	○	○	○	—	—	—	△	○	○	○	○
	Zinc Acetate	—	○	○	○	—	—	—	△	○	—	—	—
	Zinc Chloride	○	△	○	○	×	△	○	△	○	○	○	○
	Zinc Sulfide	△	△	○	○	△	△	△	△	○	△	○	△

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