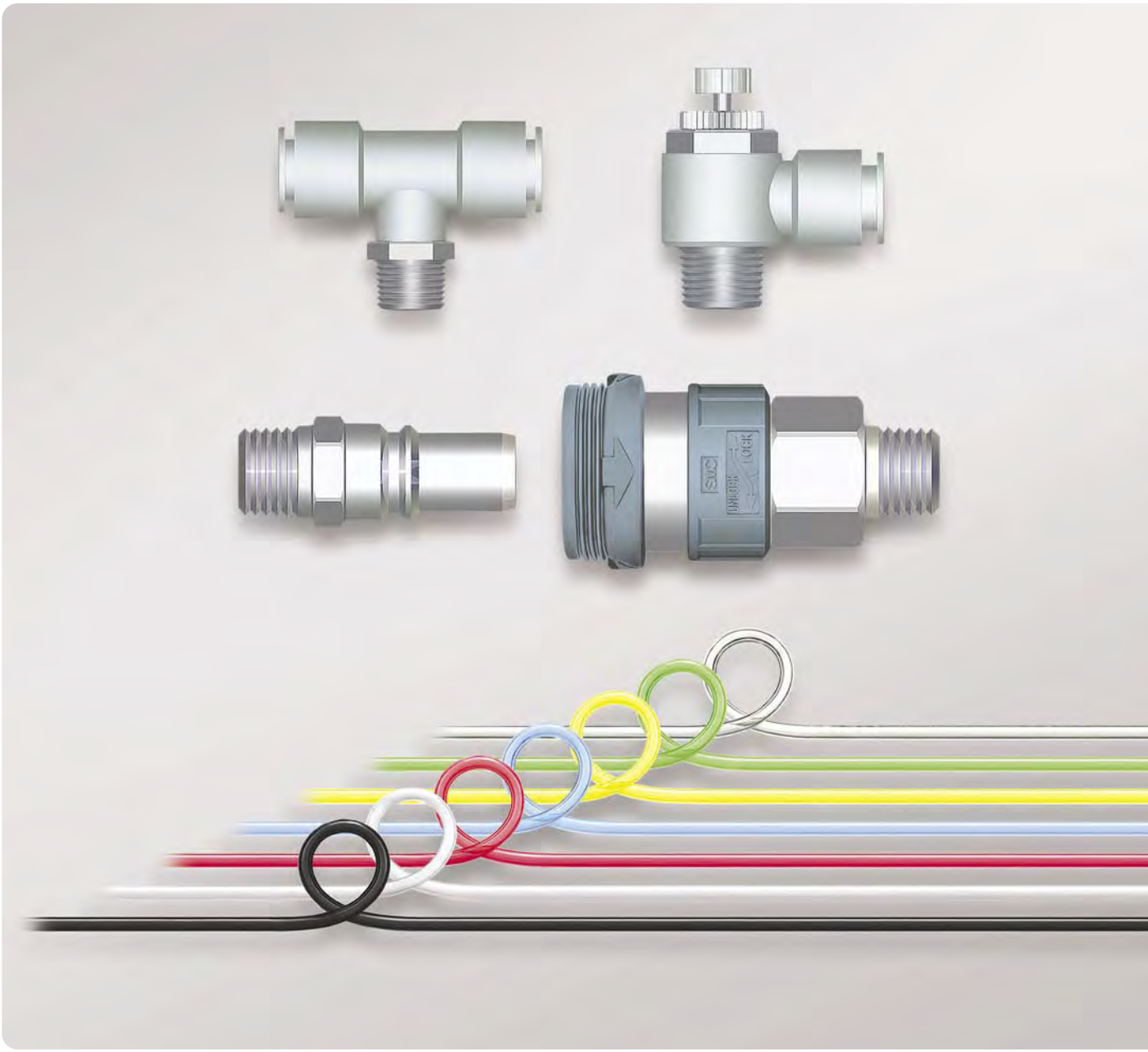
Selection guide for piping equipment



Pneumatic Piping Equipment

1959-2009 50 years

SMC

INDEX

Fittings

Speed Controller with Fittings

Tubing

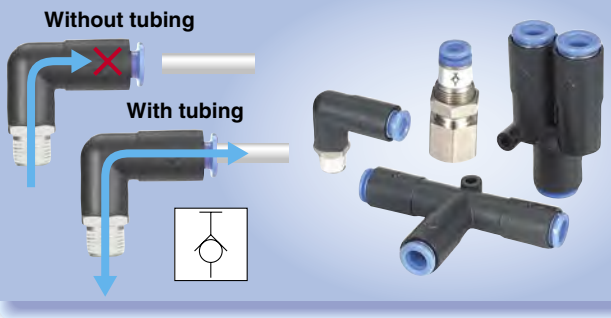
Fitting

General

One-touch Fittings (White)
KQ2 P.3
With G Type Connection Threads P.17
With UNI Type Connection Thread P.21

New

Tubing Coupler
KC P.33



One-touch Fittings (Black)
KQ P.3

One-touch Fitting Manifold
KM P.36

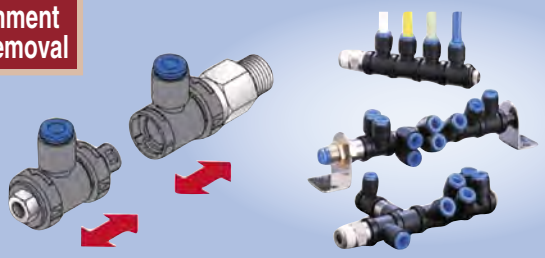
Miniature One-touch
KJ P.25

Mini

New For ø2 tube

Piping Module
KB P.38

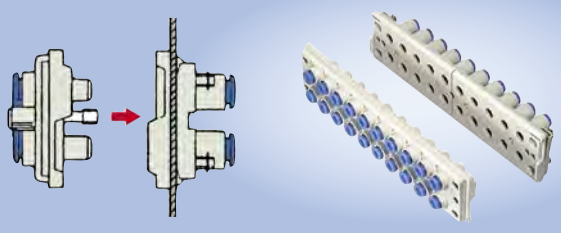
One-touch attachment and removal



Rotary One-touch Fittings
KS / KX P.31

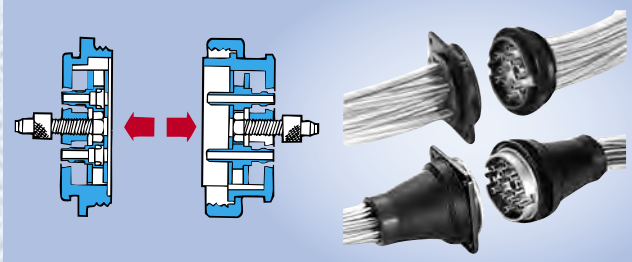
Rotation

Rectangular Multi-connector
KDM P.43

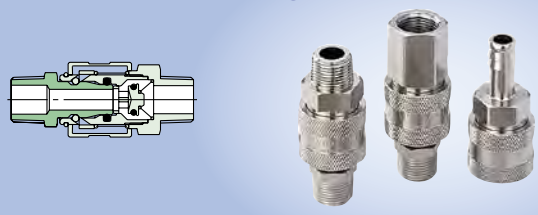


SMC

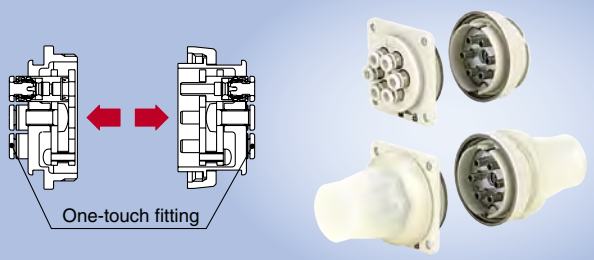
Multi Connector
DM P.44



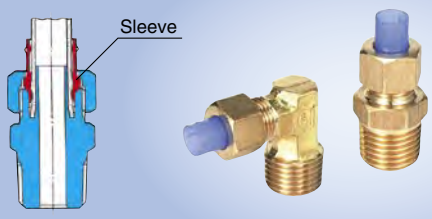
S Couplers
KK130
Coming soon!



Multi-connector with One-touch Fittings
DMK P.46

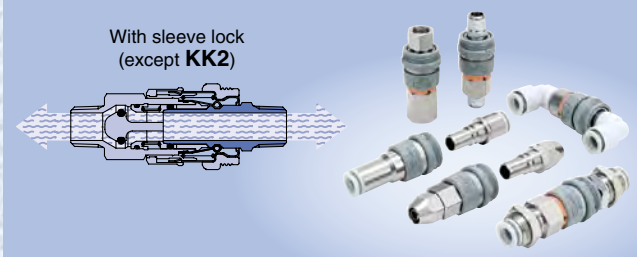


Insert Fittings
KF P.83



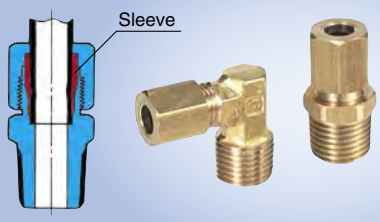
S Couplers
KK P.75

With sleeve lock
(except **KK2**)



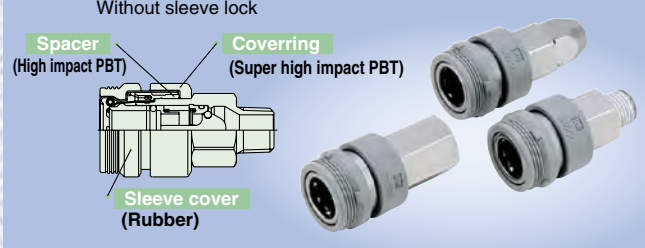
Self-align Fittings
H, DL, L, LL P.89

Soft copper



S Couplers
KKH P.78

Without sleeve lock



Miniature Fittings
M P.93

Mini

New For ø2 tube

Fitting

For Special Environment

Corrosion Resistant

Stainless Steel 316 One-touch Fittings
KQG P.48
Stainless Steel 316
Heat resistant
New

Stainless Miniature Fittings
MS P.97
Stainless Steel 316

Stainless Steel Insert Fittings
KFG P.87
Stainless Steel 316
Heat resistant
New

Stainless Steel One-touch Fittings
KG P.51
Stainless Steel 303

S Couplers
KKA P.80
Stainless Steel 304
Heat resistant
New

Antistatic Measures

Antistatic One-touch Fittings
KA P.64
Antistatic
Flame resistant
Spatter proof

Heat Resistant

High Purity Fluoropolymer Fittings
LQ1/LQ2 P.99
NewPFA
Corrosion resistant
Clean

Spatter Proof

FR One-touch Fittings
KR P.68
Flame resistant

FR One-touch Fitting Manifold
KRM P.73
Flame resistant

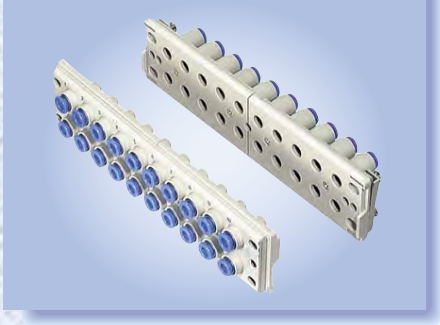
Clean room — Clean

Clean Series: One-touch Fittings
10-KQ P.19

Clean Series: Miniature One-touch
10-KJ P.30

Clean Series: Stainless Steel
10-KG P.57

Clean Series: Rectangular Multi-connector
10-KDM P.43



Clean Series: Miniature Fittings
10-M•MS P.96

Clean Series: Insert Fittings
10-KF P.86

Clean One-touch Fittings
KP P.58

For clean blow and washing lines

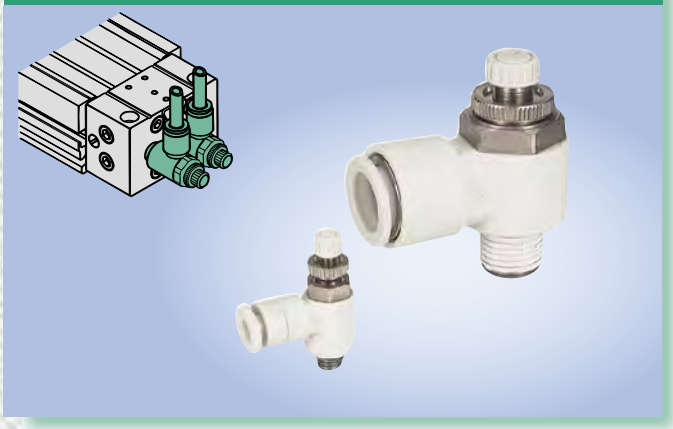
Clean One-touch Fittings
KPQ / KPG P.61

For drive system air piping

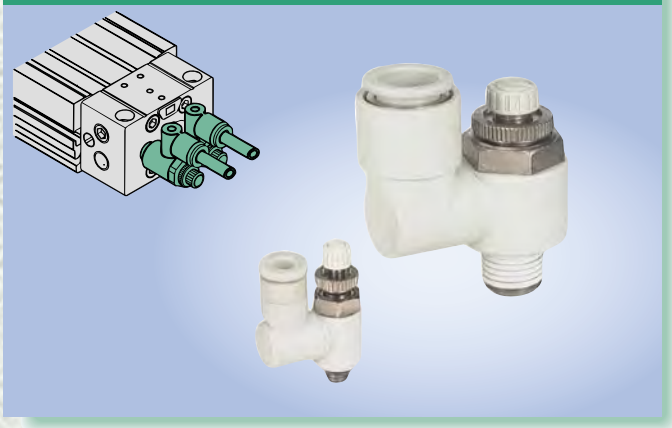
Speed Controller

General

Elbow Type
AS•F P.109



Universal Type
AS•F P.109



Inline Type
AS•F P.111

Dual Speed Controller
ASD•F P.112

Lurch prevention, Single acting cylinder control

For Low Speed Operation

Elbow/Universal Type
AS•FM P.113

Speed control in the range of 10 to 50 mm/s

Inline Type
AS•FM P.115

Dual Type
ASD•FM P.116

Low speed operation of small-bore cylinders

For Special Environment

Stainless steel Corrosion Resistant

Elbow Type	Elbow/Universal Type	Inline Type	Dual Type
ASG P.117	AS•FG P.119	AS•FG P.121	ASD•FG P.122

Stainless steel 316

Stainless steel 303

Clean

Clean Series 10-AS•F

Clean room

		Elbow	Universal	Inline
General	10-AS•F	P.110	P.110	P.111
Dual	10-ASD•F		P.112	
Low speed control	10-AS•FM	P.114	P.114	P.115
Low speed control dual	10-ASD•FM		P.116	
Stainless steel	10-AS•FG	P.120	P.120	P.121
Stainless dual	10-ASD•FG		P.122	
Flame resistant (Metal elbow)	10-AS-F	P.126		
Tamper proof	10-AS•F-T	P.132	P.132	P.133
Tamper proof dual	10-ASD•F-T		P.134	
Flat head screw adjustment	10-AS•F-D	P.135	P.135	P.136
Flat head screw adjustment dual	10-ASD•F-D		P.137	

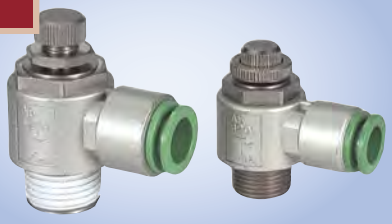
Clean Speed Controller AS-FPQ/FPG P.123

Clean room

Spatter Proof

Metal Elbow Type with One-touch Fittings AS-F P.125

Metal body and flame resistant resin for fitting parts



Speed Controller

With Special Function

Residual Pressure Exhaust

Residual pressure exhaust from cylinder

Elbow/Universal Type
AS•FE P.127

Quick Exhaust

Speed Exhaust Controller
ASV•F P.129

High speed cylinder operation

Tool Adjustment Type

Tamper proof (Handled with special tools)

Elbow/Universal Type	Inline Type	Dual Type
AS•F-T P.131	AS•F-T P.133	ASD•F-T P.134

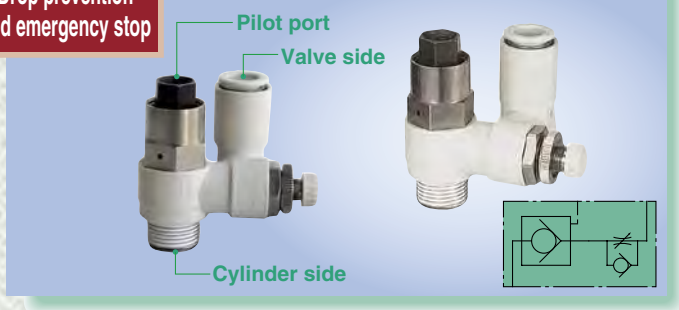
Driver operation type

Elbow/Universal Type	Inline Type	Dual Type
AS•F-D P.135	AS•F-D P.137	ASD•F-D P.138

Drop Prevention

Speed Controller with Pilot Check Valve
ASP•F P.130

Drop prevention and emergency stop



Related Equipment

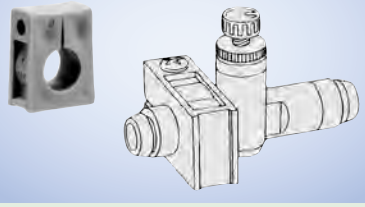
Check Valve with One-touch Fittings
AKH/AKB P.140

Quick Exhaust Valve with One-touch Fittings
AQ•F P.140

Residual Pressure Exhaust Valve with One-touch Fittings
KE P.139

Holder
TMH P.139

Securing inline type speed controller



Multiple Holder
TMA P.139

Securing Series KE, Securing Series KQL, T and H

Energy Saving Valve
ASR/ASQ P.141

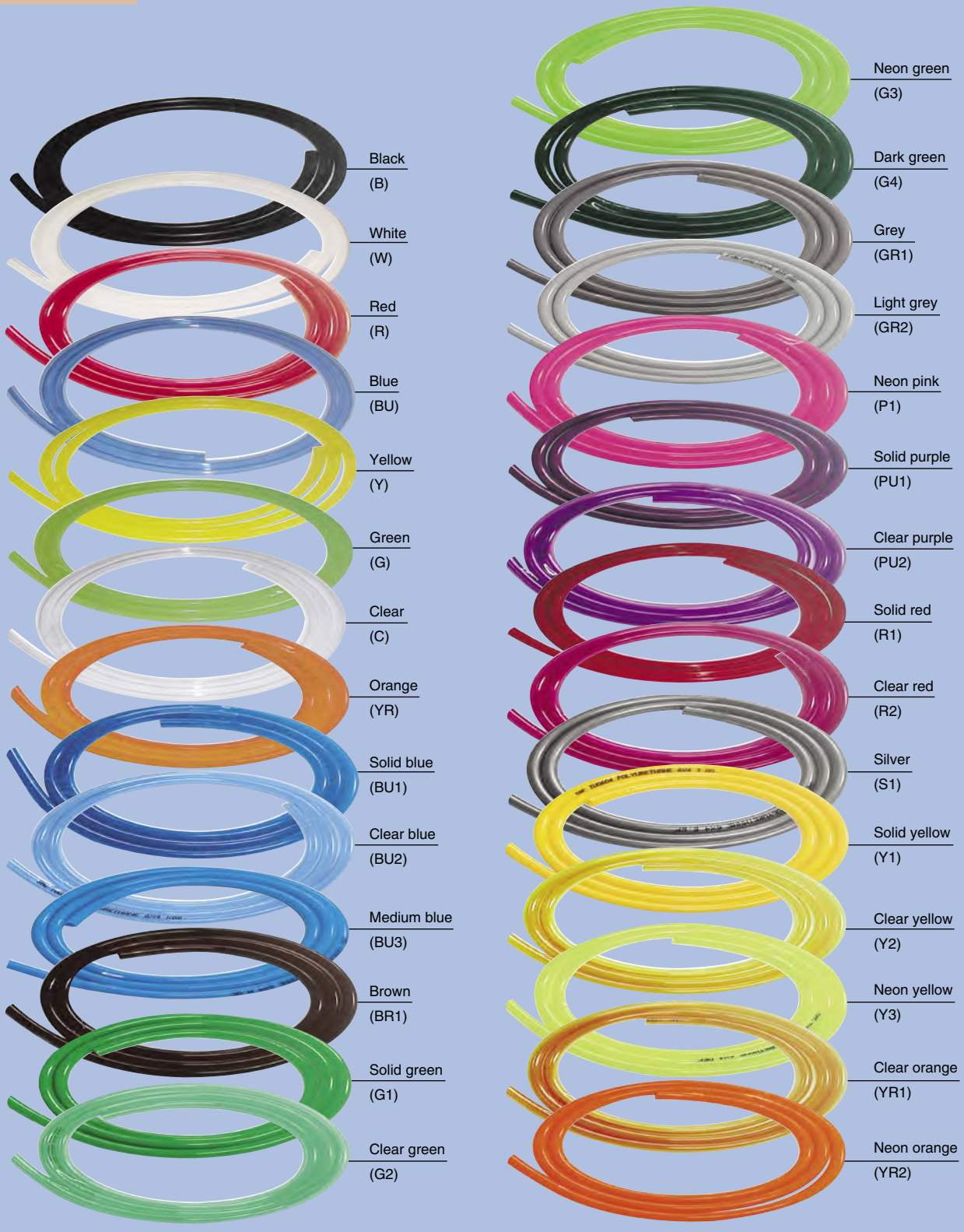
Tubing

General

Polyurethane Tubing

TU P.143

29 colour variations



Soft Polyurethane Tubing
TUS P.145

Extremely flexible

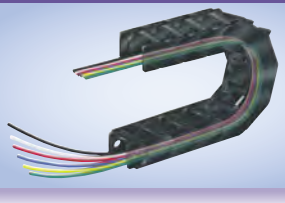
Nylon Tubing
T P.147

Soft Nylon Tubing
TS P.149

Hard Polyurethane Tubing
TUH P.151

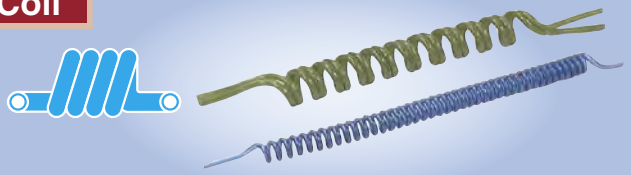
Wear Resistant Tubing
TUZ P.153

Abrasion



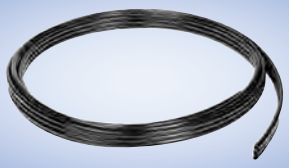
Polyurethane Coil Tubing
TCU P.155

Coil



Polyurethane Flat Tubing
TFU P.156

Flat



Tubing colour

			Black	White	Red	Blue	Yellow	Green	Orange	Yellow brown	Transparent	Translucent
General	Soft polyurethane	TUS	●	○	●	●	●	●		●		○
	Nylon	T	●	○	●	●	●	●				
	Soft nylon	TS	●	○	●	●	●	●				
	Hard polyurethane tubing	TUH	●	○		●						○
	Polyurethane coil tubing	TCU	●	○	●	●	●	●	●		○	
	Polyurethane flat tubing	TFU	●	○	●	●	●	●	●		○	
	Wear resistant tubing (Abrasion: Approx. 1/3)	TUZ	●	○	●	●	●	●				
For special environment	Antistatic tubing	TAU/TAS	●									
	FR nylon tubing (Flame resistant)	TRS	●	○	●	●		●				
	FR double layer tubing (Flame resistant)	TRBU/TRB	●	○	●	●	●	●				

Note) Series TCU and TFU except for black types are produced upon requests.

Tubing

For Special Environment

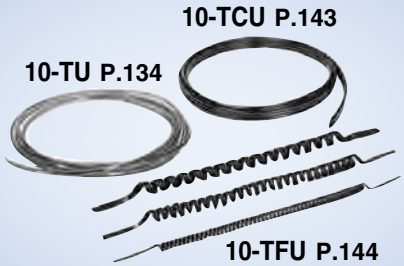
Clean

Clean Tubing
TPH/TPS P.157

Polyolefine resin

Clean Series
10-TU,TCU,TFU

Clean room



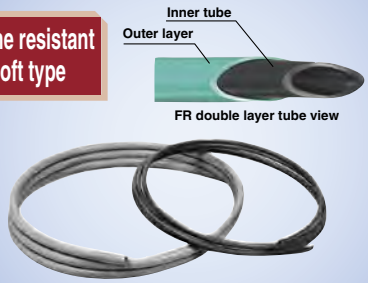
Spatter Proof

FR Nylon Tubing
TRS P.167

Flame resistant

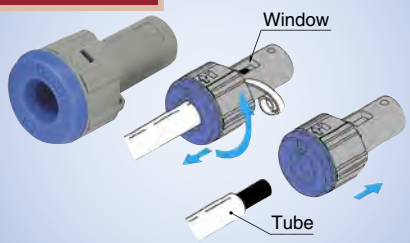
FR Double Layer Tubing
TRBU/TRB P.169

Flame resistant soft type



FR Double Layer Tubing Stripper
TKS P.174

Tubing outer layer peeling tool



Antistatic Measures

Antistatic Tubing
TAU/TAS P.165

Antistatic measures

SMC

Heat Resistant

High Purity Fluoropolymer Tubing
TL/TIL P.161

SuperPFA

Corrosion resistant

Clean

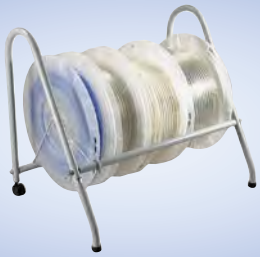
FEP Tubing (Fluoropolymer)
TH P.163

New

Related Equipment

Tubing Cutter
TK P.173

Tubing Stand
TB P.173



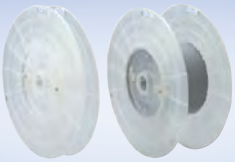
Multiple Tubing Holder
TM P.174

Blow Gun
VMG P.175

Tubing Release Tool
TG P.174

Nozzle for Blow
KN P.176

Tubing Reel
TBR P.173



Applications and Themes

Applications and themes	Clean Low particle generation	Corrosion Resistant Stainless steel /High purity fluoropolymer	Heat Resistant Metal/High Purity Fluoropolymer	Antistatic Measures Antistatic	Low Speed Control 10 to 50 mm/s	Residual Pressure Exhaust Residual pressure evacuation
Fitting	For blowing •KP For drive system air piping •KPQ/KPG Clean series •Series 10- •LQ1/LQ2	•KQG •KFG •KG •MS •KKA •LQ1/LQ2	•KQG •KFG •KKA •LQ1/LQ2	•KA		
Speed controller	Clean speed controller •AS-FPQ/FPG Clean series •Series 10-	•ASG (Elbow) •AS•FG (Elbow/Universal /In-line) •ASD•FG (Dual)			•AS•FM (Elbow/Universal /In-line) •ASD•FM (Dual)	•AS•FE (Elbow/Universal)
Tubing	Clean tubing •TP (Polyolefin) Clean series •Series 10- •TL/TIL	•TL/TIL	•TL/TIL •TH	•TA		
Other						Residual pressure exhaust valve •KE (With one-touch fittings)

Applications and Themes

Drop Prevention Pilot check	Lurch Prevention Meter-in/Meter-out control	Spatter Proof Flame resistant	Quick Exhaust Quick exhaust	Oil Free	
				No lubricant	Vaseline lubrication
		•KR •KRM (Manifold) •H,DL,L,LL •KA		No greasing •KQG •KKA •M (Miniature) •KF (Insert) •KFG (Insert) •H, DL, L, LL (Self align) •MS (Miniature/Stainless) •KP (Clean fittings) Made to Order* •X17 (Fluororesin coating) •X29 (Fluororesin coating +Electroless nickel plating)	Made to Order* •X12 (Vaseline) •X16 (Vaseline+ Nickel plating)
•ASP•F	Dual speed controller •ASD•F •ASD•FG (Stainless steel) •ASD•F-T (Tamper proof) •ASD•F-D (Flat head screw adjustment)	•AS-F (Metal elbow with one-touch fittings)	Speed exhaust controller •ASV		Made to Order* •X12 (Vaseline)
		•TRS •TRBU/TRB (Double layer tubing)			
Check valve •AKH/AKB (With one-touch fittings)			Quick exhaust valve •AQ•F (With one-touch fittings)		

*Refer to Made to Order Products for models produced upon receipt of orders.

Applications and Themes

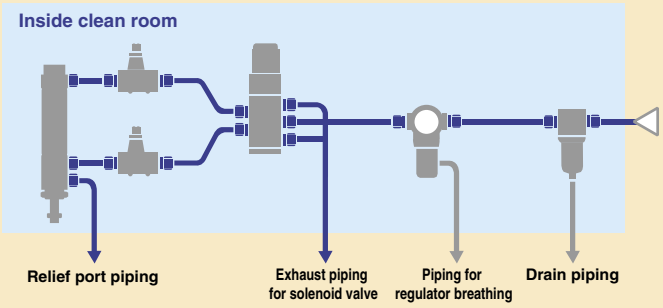
Low particle generation specifications for use in clean room

Clean

Clean Series (Series 10-)

•Double packaging •Nickel plated metal parts •Fluororesin grease

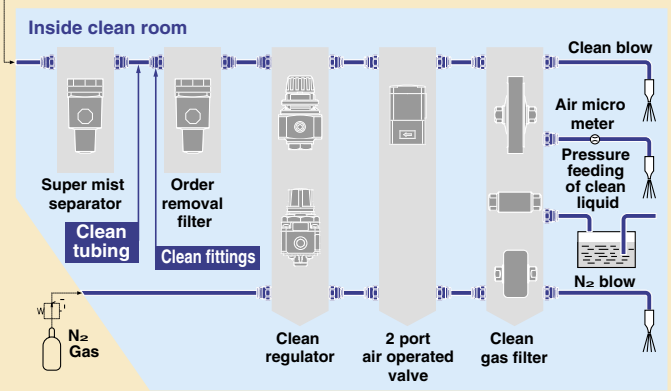
Piping for actuator driving system



Clean One-touch Fittings&Tubing

•Completely oil free •Non-metal fluid contact parts •Double packaging

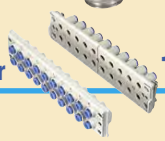
Clean blow system piping



Clean Series (Series 10-)

One-touch fittings — 10-KQ P.15, 10-KJ P.30

Rectangular multi-connector — 10-KDM P.43



Insert fittings — 10-KF P.86

Miniature fittings — 10-M P.96, 10-MS P.98

Speed controller with one-touch fittings — 10-AS Front matter 6

Polyurethane tubing — 10-TU P.144, 10-TCU P.155, 10-TFU P.156

Clean one-touch fittings&Tubing

Clean one-touch fittings — KP P.58

Clean one-touch fittings — KPQ, KPG P.61

Polyolefine tubing — TPH P.157, TPS P.159

Clean Speed Controller

Clean speed controller — AS•FPQ, AS•FPG P.123

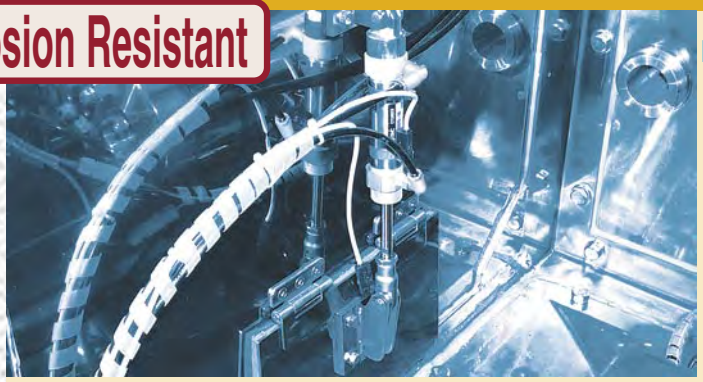
High Purity Fluoropolymer

Fittings — LQ1/LQ2 P.99

Tubing — TL/TIL P.161

Use of corrosion resistant stainless steel

Corrosion Resistant



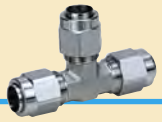
- **Metal part material**
  Stainless steel 316 (MS, KQG, KFG, ASG)
  Stainless steel 304 (KKA)
  Stainless steel 303 (KG, AS·FG, ASD·FG)
- **Prevents rust, discoloration and generation of copper ions.**
- **Applications: Food machinery and CRT lines**

Related equipment
Stainless steel specifications air cylinder
· Series CJ5/CG5
· Made to Order

symbol	Stainless parts
XB12	Use of stainless steel on all external surfaces
XC6	Piston rod, Rod end nut
XC7	Tie-rod, Tie-rod nut, Cushion valve
XC27	Pin for double clevis, Pin for double knuckle joint

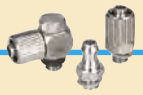
Fittings


One-touch **KQG** P.48


Insert **KFG** P.87


S Couplers **KKA** P.80


One-touch **KG** P.51


Miniature **MS** P.97


High purity fluoropolymer **LQ1/LQ2** P.99

Speed controller with fittings


Elbow **ASG** P.117


Elbow **AS·FG** P.119


Universal **AS·FG** P.119


Inline **AS·FG** P.121


Dual **ASD·FG** P.122

Tubing


FEP **TH** P.163


High purity fluoropolymer **TL/TIL** P.161

Applications and Themes

Metal or High purity fluoropolymer specifications

Heat Resistant

- **Operating temperature (Max.)/Material**
  - KQG/KFG : 150°C/Stainless steel 316, Fluoro rubber
  - KKA : 150°C/Stainless steel 304, Fluoro rubber
  - LQ1 : 150°C/New PFA
  - LQ2 : 200°C/New PFA
  - TH : 200°C/FEP
  - TL/TIL : 260°C/Super PFA

* Materials used for these products differ according to the operating pressure. Be sure to see the catalogue for confirmation.

Fittings

Stainless One-touch  KQG P.48

Insert  KFG P.87

S Couplers  KKA P.80

High purity fluoropolymer  LQ1/LQ2 P.99

Tubing

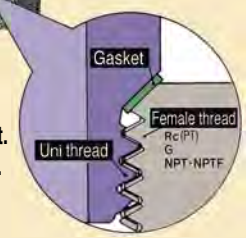
FEP  TH P.163

High purity fluoropolymer TL/TIL P.161

Prevents electro static charge

Antistatic Measures

- Use of conductive resin
- Surface: Resistance 10^4 to $10^7\Omega$
- Grounding is possible with the UNI thread construction, which does not require sealant.
- Applications: Semiconductor manufacturing, processing, etc.



One-touch fitting

Antistatic  KA P.64

Tubing

Antistatic  TAU P.165 TAS P.166

Low Speed Control

Ideal for speed control of low speed cylinders

- Effective sectional area on control flow side: 1/10 (Compared with standard products).
- Needle rotation: 10 to 20 rotations.
- Dual type ideal for low speed control of small bore cylinders.

Speed controller with fittings

Low speed: Elbow — AS·FM — P.113

Low speed: Universal — AS·FM — P.113

Low speed: In-line — AS·FM — P.115

Low speed: Dual — ASD·FM — P.116

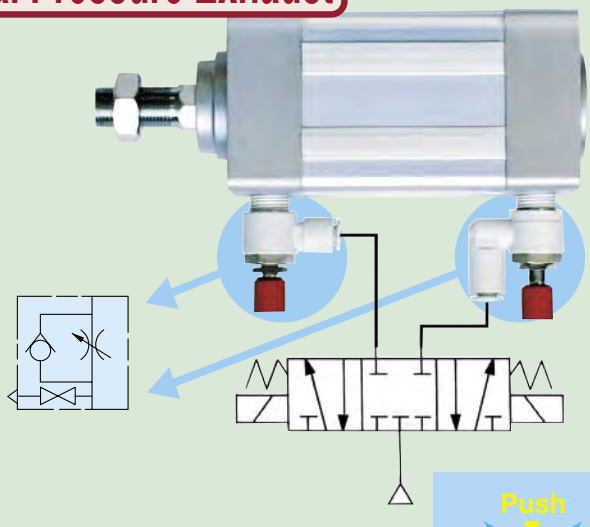
Related equipment

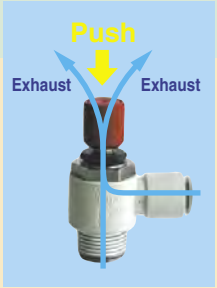
Low speed cylinder

Symbol	Speed
Series X	0.5 (1) mm/s
XB13	5 to 50 mm/s

Residual Pressure Exhaust

Prevents accidents caused by residual pressure





- Speed controller and residual pressure exhaust valve integrated in one body.
- Easy exhaust by one push.

Speed controller with fittings

With residual pressure exhaust valve: Elbow — AS·FE — P.127

With residual pressure exhaust valve: Universal — AS·FE — P.127

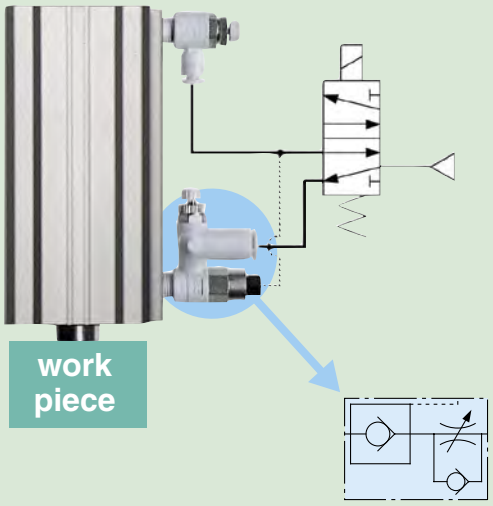
Related equipment

Residual pressure exhaust valve with one-touch fittings — KE — P.139

Applications and Themes

Drop Prevention

Drop prevention and emergency stop is possible



Speed controller with fittings

With pilot check valve — ASP•F P.130

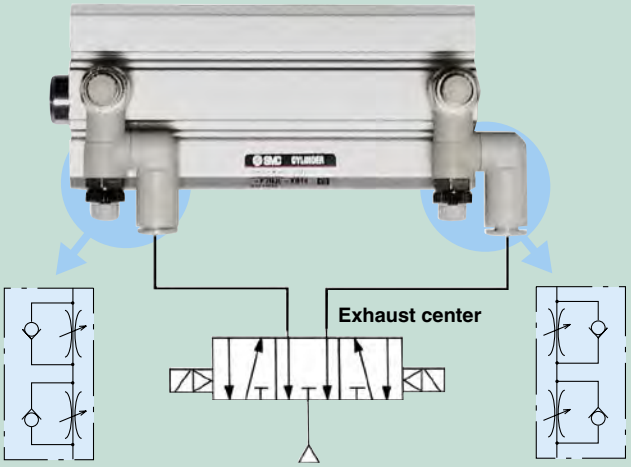
Related equipment

Check valve with one-touch fittings — AKH/AKB P.140

● Integration of a pilot check valve and a speed controller.

Lurch Prevention

Lurch prevention with meter-in and meter-out control



Speed controller with fittings

Dual — ASD•F P.112

Stainless: Dual — ASD•FG P.122

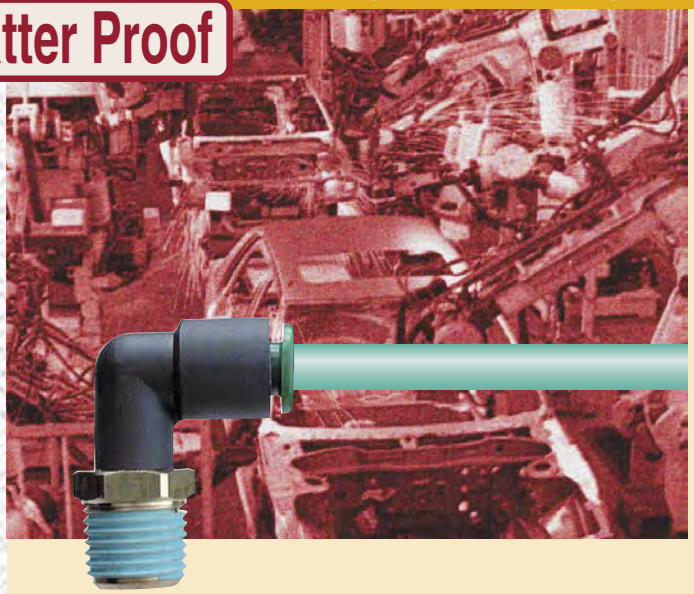
Low speed: Dual — ASD•FM P.116

● Integration of 2 flow control valves and a check valve.

■ Other applications: Speed control of single acting cylinders.

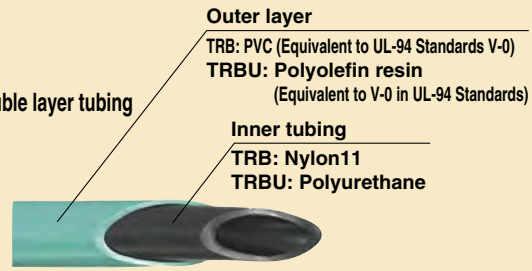
For use in atmosphere with spatters as in welding work shop

Spatter Proof



● Flame resistant (Equivalent to UL-94 Standards V-0)

● Double layer tubing



■ Application: Spot welding.

■Fitting

FR one-touch  KR P.68

Manifold  KRM P.73

Self-align  H,DL, L,LL P.89

Antistatic  KA P.64

■Speed controller with fittings

Metal elbow  AS•F P.125

■Tubing

FR tubing  TRS P.167

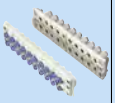
FR double layer tubing  TRBU P.169 TRB P.171

■Related equipment

Double layer tubing stripper  TKS P.174

Made to Order Products

One-touch Fittings

Made to order specifications	 White body P.3	 Black body P.3	 Miniature one-touch P.25	 Rotary (Standard speed) P.31	 Rotary (High speed) P.31	 Tubing coupler P.33	 Manifold P.36	 Piping module P.38	 Rectangular multi-connector P.43	
	KQ2	KQ	KJ	KS	KX	KC	KM	KB	KDM	
Brass metal parts: Electroless nickel plated	X2	X2					X2			
Brass metal parts: Electroless nickel plated, Packing O-ring: Fluoro rubber Note 3)	X47	X47								
Lubricant: Vaseline	X12	X12	X12				X12			
Oil-free: No lubrication	X57	X57	X57				X57			
Oil-free: No lubrication Packing: Fluororesin coating Note 4)	X17	X17	X17				X17			
Lubricant: Vaseline Brass metal parts: Electroless nickel plated	X16	X16								
Oil-free: No lubrication Brass metal parts: Electroless nickel plated **Packing: Fluororesin coating**	X29	X29								
Clean series Note 4)		Note 5) 10-	10-						10-	

Made to Order Products

Standardised Made to order specification available.

	Multi connector	Stainless steel	Stainless steel	Clean	Clean	Antistatic	Flame resistant	Flame resistant manifold	Insert	Self-align	Miniature	Miniature (Stainless steel)
												
	P.44	P.48	P.51	P.58	P.61	P.64	P.68	P.73	P.83	P.89	P.93	P.97
	DM	KQG	KG	KP	KPQ KPG	KA	KR	KRM	KF	H,DL L,LL	M	MS
	X2				Note 6)		X2	X2	X2	X2	Note 1)	
			X12									
			X57								Note 2)	
			X17									
			10-						10-		10-	10-

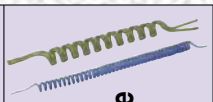
Note 1) Only M-5E, M-5ER and M-5M are available for X2.
Note 2) Not including M-5UN and MS-5UN.
Note 3) Only available for a part of models.
Note 4) Not including inch sizes.
Note 5) 10-KQ has a white body.
Note 6) Stainless steel 304 with KPG.

Made to Order Products

Speed Controller with Fittings

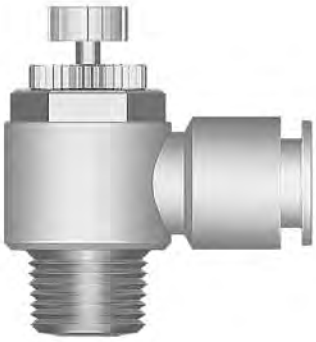
Made to order specifications	 General P.109	 Dual P.112	 Low speed control P.113	 Low speed control dual P.116	 Stainless steel P.119	 Stainless steel dual P.122	
	AS•F	ASD•F	AS•FM	ASD•FM	AS•FG	ASD•FG	
Lubricant: Vaseline	X12	X12	X12	X12	X12	X12	
Throttle valve (Without check valve)	X214		X214		X214		
Throttle valve (Without check valve) Oil free (Sealant material: PTFE coating)	X21		X21		X21		
Clean series	10-	10-	10-	10-	10-	10-	

Tubing

Made to order specifications	 Polyurethane P.143	 Nylon P.147	 Soft nylon P.149	 Coil polyurethane P.155	 Polyurethane flat P.156	
	TU	T	TS	TCU	TFU	
Reel	X3	X3	X3		X3	
Change in the number of coil windings and colour				X6		
Change in the number of tubes and colour					X4	
Clean series	10-			10-	10-	

	 Clean P.123	 Flame resistant (Metal elbow) P.125	 With residual pressure exhaust P.127	 Speed exhaust controller P.129	 Pilot with built-in check valve P.130	 Tamper proof P.131	 Tamper proof dual P.134	 Flat head screw adjustment P.135	 Flat head screw adjustment dual P.138
	AS•FPQ AS•FPG	**AS-F**	**AS•FE**	**ASV•F**	**ASP•F**	**AS•F-T**	**ASD•F-T**	**AS•F-D**	**ASD•F-D**
		X12	X12	X12	X12	X12	X12	X12	X12
		X214	X214			X214		X214	
		X21	X21			X21		X21	
	Standardised	10-				10-	10-	10-	10-

	 Clean polyolefin P.157
	TPH TPS
	Standardised



Pneumatic Piping Equipment

One-touch Fittings
S Couplers
Speed Controller with One-touch Fittings
Tubing

One-touch Fittings

Series KQ2/KQ

■Applicable tubing diameter: **Metric Size**

■Connecting thread: **M, R, Rc**

KQ2:White body

KQ:Black body

Applicable Tubing

Tubing material	Nylon, Soft Nylon, Polyurethane
Tubing outside O.D.	ø3.2, ø4, ø6, ø8, ø10, ø12, ø16

Color

Series	Body	Release button
Series KQ2	White	Light gray
Series KQ	Black	Blue

Specifications

Fluid		Air, Water Note 1)
Max. operating pressure		1.0 MPa
Operating vacuum pressure		–100 kPa
Proof pressure		3.0 MPa
Ambient and fluid temperature		–5 to 60°C, In case of water: 0 to 40°C (No freezing)
Thread	**Mounting**	JIS B0203 (Taper thread for piping) JIS B0209, Class 2 (Metric coarse thread)
	Nut	JIS B0211, Class 2 (Metric fine thread)
Sealant (Thread portion)		With / Without sealant

Note 1) Applicable to general industrial water. Consult SMC if using for other fluids.
Surge pressure must be under the maximum operating pressure.

Series KQ2: White body
Series KQ : Black body

Guide

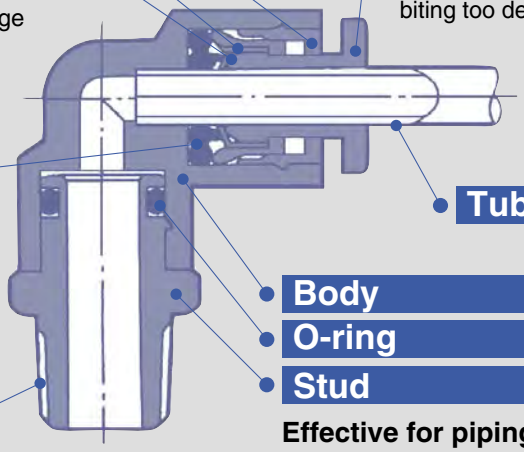
Collet

Chuck

Applicable to nylon and polyurethane
Large retaining force
Secure engagement with chuck and large retaining force with collet.

Release button

Series KQ2: Light gray
Series KQ : Blue
Requires little force for removal
Releases the chuck collet to remove the tube as well as to prevent the chuck from biting too deeply into the tubing.



Packing

Compatible with a wide range of pressure, from low vacuum to 1.0 MPa.
The special shape ensures sealing and reduces resistance in tubing insertion.

Tubing

Body

O-ring

Stud

Thread

M, R, Rc

Effective for piping in confined space
The body and thread portion can be rotated.
(For positioning)

PAT.

Refer to Best Pneumatics 2004 Vol.15 for the inch size.

Tubing — Female thread hole

KQ2H
Male connector

KQ2S
Hexagon socket head male connector

KQ2L
Male elbow

KQ2K
45° Male elbow

KQ2VT
Triple universal male elbow

KQ2W
Extended male elbow

KQ2LU
Branch union elbow

KQ2V
Universal male elbow

KQ2Z
Branch universal male elbow

KQ2VS
Hexagon socket head universal male elbow

KQ2ZD
Double branch universal male elbow

KQ2T
Male branch tee

KQ2ZT
Triple branch universal male elbow

KQ2Y
Male run tee

KQ2UD
Delta branch

KQ2U
Union "Y"

KQ2D
Delta union

KQ2VD
Double universal male elbow

Tubing — Tubing

KQ2H
Straight union

KQ2T
Different dia. tee

KQ2E
Bulkhead union

KQ2U
Different dia. union "Y"

KQ2L
Union elbow

KQ2UD
Different dia. double union "Y"

KQ2LE
Bulkhead male elbow

KQ2LU
Branch union elbow

KQ2T
Union tee

KQ2D
Delta union

KQ2U
Union "Y"

KQ2TW
Cross

KQ2H
Different dia. straight

KQ2TX
Different dia. cross

KQ2T
Different dia. tee

KQ2TY
Different dia. cross

Tubing — One-touch fittings

KQ2L
Plug-in elbow

KQ2U
Plug-in "Y"

KQ2W
Extended plug-in elbow

KQ2X
Different dia. plug-in "Y"

KQ2R
Plug-in reducer

KQ2XD
Double plug-in "Y"

KQ2L
Reducer elbow

Tubing — Male thread

KQ2F
Female connector

KQ2VF
Universal female elbow

KQ2E
Bulkhead connector

KQ2ZF
Branch universal female elbow

KQ2LF
Female elbow

Accessories

KQ2P
Plug

KQ2N
Adapter

KQ2N
Nipple

KQ2C
Tube cap

KQ2N
Different dia. nipple

KQ2C
Collar cap

Male Connector KQ2H/KQH

Most common style used to pipe from female thread in the same direction.

<M5, M6>

<R>

Applicable tubing O.D. mm	Connecting thread	Model KQ2H (Release Button, Light gray)	Model KQH (Release Button, Blue)
3.2	M5 X 0.8	KQ2H23-M5	KQH23-M5
	R1/8	-01S	-01S
	R1/4	-02S	-02S
4	M5 X 0.8	KQ2H04-M5	KQH04-M5
	M6 X 1	-M6	-M6
	R1/8	-01S	-01S
	R1/4	-02S	-02S
6	M5 X 0.8	KQ2H06-M5	KQH06-M5
	M6 X 1	-M6	-M6
	R1/8	-01S	-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
8	R1/8	KQ2H08-01S	KQH08-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
10	R1/8	KQ2H10-01S	KQH10-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
12	R1/4	KQ2H12-02S	KQH12-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
16	R3/8	KQ2H16-03S	KQH16-03S
	R1/2	-04S	-04S

Male Elbow KQ2L/KQL

Most common style used to pipe from female thread at a right angle.

<M5>

<M6>

<R>

Applicable tubing O.D. mm	Connecting thread	Model KQ2L (White)	Model KQL (Black)
3.2	M5 X 0.8	KQ2L23-M5	KQL23-M5
	R1/8	-01S	-01S
	R1/4	-02S	-02S
4	M5 X 0.8	KQ2L04-M5	KQL04-M5
	M6 X 1	-M6	-M6
	R1/8	-01S	-01S
	R1/4	-02S	-02S
6	M5 X 0.8	KQ2L06-M5	KQL06-M5
	M6 X 1	-M6	-M6
	R1/8	-01S	-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
8	R1/8	KQ2L08-01S	KQL08-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
10	R1/8	KQ2L10-01S	KQL10-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
12	R1/4	KQ2L12-02S	KQL12-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
16	R3/8	KQ2L16-03S	KQL16-03S
	R1/2	-04S	-04S

Hexagon Socket Head Male Connector KQ2S/KQS

The hexagon socket in the body is used to tighten the socket head male connector with a hexagon wrench. Useful in a confined space.

<M5, M6>

<R>

Applicable tubing O.D. mm	Connecting thread	Model KQ2S (Release Button, Light gray)	Model KQS (Release Button, Blue)
4	M5 X 0.8	KQ2S04-M5	KQS04-M5
	M6 X 1	-M6	-M6
	R1/8	-01S	-01S
6	M5 X 0.8	KQ2S06-M5	KQS06-M5
	M6 X 1	-M6	-M6
	R1/8	-01S	-01S
	R1/4	-02S	-02S
8	R1/8	KQ2S08-01S	KQS08-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
10	R1/8	KQ2S10-01S	KQS10-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
12	R1/4	KQ2S12-02S	KQS12-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
16	R3/8	KQ2S16-03S	KQS16-03S
	R1/2	-04S	-04S

45° Male Elbow KQ2K/KQK

For piping at 45° from female thread.
Intermediate model between male connector and male elbow.

<M5, M6>

<R>

Applicable tubing O.D. mm	Connecting thread	Model KQ2K (White)	Model KQK (Black)
4	M5 X 0.8	KQ2K04-M5	KQK04-M5
	M6 X 1	-M6	-M6
	R1/8	-01S	-01S
	R1/4	-02S	-02S
6	M5 X 0.8	KQ2K06-M5	KQK06-M5
	M6 X 1	-M6	-M6
	R1/8	-01S	-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
8	R1/8	KQ2K08-01S	KQK08-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
10	R1/8	KQ2K10-01S	KQK10-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
12	R1/4	KQ2K12-02S	KQK12-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
16	R3/8	KQ2K16-03S	KQK16-03S
	R1/2	-04S	-04S

Extended Male Elbow KQ2W/KQW

Basically used in the same way as a male elbow.
But also used in 3 dimensional piping to prevent interference of fittings.


<M5>


<R>

Applicable tubing O.D. mm	Connecting thread	Model KQ2W (White)	Model KQW (Black)
3.2	M5 X 0.8	KQ2W23-M5	KQW23-M5
	R1/8	-01S	-01S
	R1/4	-02S	-02S
4	M5 X 0.8	KQ2W04-M5	KQW04-M5
	R1/8	-01S	-01S
	R1/4	-02S	-02S
6	M5 X 0.8	KQ2W06-M5	KQW06-M5
	R1/8	-01S	-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
8	R1/8	KQ2W08-01S	KQW08-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
10	R1/4	KQ2W10-02S	KQW10-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
12	R1/4	KQ2W12-02S	KQW12-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
16	R3/8	KQ2W16-03S	KQW16-03S
	R1/2	-04S	-04S

Universal Male Elbow KQ2V/KQV

The hexagon head of the body is used to tighten the body with a box wrench in a confined space.


<M5>


<R>

Applicable tubing O.D. mm	Connecting thread	Model KQ2V (White)	Model KQV (Black)
4	M5 X 0.8	KQ2V04-M5	KQV04-M5
	R1/8	-01S	-01S
6	M5 X 0.8	KQ2V06-M5	KQV06-M5
	R1/8	-01S	-01S
	R1/4	-02S	-02S
8	R1/8	KQ2V08-01S	KQV08-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
10	R1/4	KQ2V10-02S	KQV10-02S
	R3/8	-03S	-03S
12	R3/8	KQ2V12-03S	KQV12-03S
	R1/2	-04S	-04S
16	R3/8	KQ2V16-03S	KQV16-03S
	R1/2	-04S	-04S

Hexagon Socket Head Universal Male Elbow KQ2VS/KQVS

The hexagon socket in the head is used to tighten the body with a hexagon wrench. Useful in a confined space.


<M5>


<R>

Applicable tubing O.D. mm	Connecting thread	Model KQ2VS (White)	Model KQVS (Black)
4	M5 X 0.8	KQ2VS04-M5	KQVS04-M5
	R1/8	-01S	-01S
6	M5 X 0.8	KQ2VS06-M5	KQVS06-M5
	R1/8	-01S	-01S
	R1/4	-02S	-02S
8	R1/8	KQ2VS08-01S	KQVS08-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
10	R1/4	KQ2VS10-02S	KQVS10-02S
	R3/8	-03S	-03S
12	R3/8	KQ2VS12-03S	KQVS12-03S
	R1/2	-04S	-04S

Male Branch Tee KQ2T/KQT

To branch the line from the female thread at 90° in each direction.


<M5>


<M6>


<R>

Applicable tubing O.D. mm	Connecting thread	Model KQ2T (White)	Model KQT (Black)
3.2	M5 X 0.8	KQ2T23-M5	KQT23-M5
	R1/8	-01S	-01S
	R1/4	-02S	-02S
4	M5 X 0.8	KQ2T04-M5	KQT04-M5
	M6 X 1	-M6	-M6
	R1/8	-01S	-01S
	R1/4	-02S	-02S
6	M5 X 0.8	KQ2T06-M5	KQT06-M5
	M6 X 1	-M6	-M6
	R1/8	-01S	-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
8	R1/8	KQ2T08-01S	KQT08-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
10	R1/8	KQ2T10-01S	KQT10-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
12	R1/4	KQ2T12-02S	KQT12-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
16	R3/8	KQ2T16-03S	KQT16-03S
	R1/2	-04S	-04S

Male Run Tee KQ2Y/KQY

To branch the line from the female thread in the same direction and at 90°.

<M5, M6>

<R>

Applicable tubing O.D. mm	Connecting thread	Model KQ2Y (White)	Model KQY (Black)
3.2	M5 X 0.8	KQ2Y23-M5	KQY23-M5
	R1/8	-01S	-01S
	R1/4	-02S	-02S
4	M5 X 0.8	KQ2Y04-M5	KQY04-M5
	M6 X 1	-M6	-M6
	R1/8	-01S	-01S
	R1/4	-02S	-02S
6	M5 X 0.8	KQ2Y06-M5	KQY06-M5
	M6 X 1	-M6	-M6
	R1/8	-01S	-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
8	R1/8	KQ2Y08-01S	KQY08-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
10	R1/8	KQ2Y10-01S	KQY10-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
12	R1/4	KQ2Y12-02S	KQY12-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
16	R3/8	KQ2Y16-03S	KQY16-03S
	R1/2	-04S	-04S

Union "Y" KQ2U/KQU

To branch tubing in the same direction.

<M5, M6>

<R>

Applicable tubing O.D. mm	Connecting thread	Model KQ2U (White)	Model KQU (Black)
3.2	M5 X 0.8	KQ2U23-M5	KQU23-M5
	R1/8	-01S	-01S
	R1/4	-02S	-02S
4	M5 X 0.8	KQ2U04-M5	KQU04-M5
	M6 X 1	-M6	-M6
	R1/8	-01S	-01S
	R1/4	-02S	-02S
6	M5 X 0.8	KQ2U06-M5	KQU06-M5
	M6 X 1	-M6	-M6
	R1/8	-01S	-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
8	R1/8	KQ2U08-01S	KQU08-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
10	R1/4	KQ2U10-02S	KQU10-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
12	R1/4	KQ2U12-02S	KQU12-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
16	R3/8	KQ2U16-03S	KQU16-03S
	R1/2	-04S	-04S

Double Universal Male Elbow KQ2VD/KQVD

To branch the line from the female thread at right angles. 2 individual parts rotate freely.

Applicable tubing O.D. mm	Connecting thread	Model KQ2VD (White)	Model KQVD (Black)
4	R1/8	KQ2VD04-01S	KQVD04-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
6	R1/8	KQ2VD06-01S	KQVD06-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
8	R1/8	KQ2VD08-01S	KQVD08-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
10	R1/4	KQ2VD10-02S	KQVD10-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
12	R1/4	KQ2VD12-02S	KQVD12-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S

Triple Universal Male Elbow KQ2VT/KQVT

To branch line from the female thread into 3 directions at right angles. 3 individual parts rotate freely.

Applicable tubing O.D. mm	Connecting thread	Model KQ2VT (White)	Model KQVT (Black)
4	R1/8	KQ2VT04-01S	KQVT04-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
6	R1/8	KQ2VT06-01S	KQVT06-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
8	R1/8	KQ2VT08-01S	KQVT08-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
10	R1/4	KQ2VT10-02S	KQVT10-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
12	R1/4	KQ2VT12-02S	KQVT12-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S

Branch Union Elbow KQ2LU/KQLU

To branch tubing at a right angle from the female thread.

Applicable tubing O.D. mm	Connecting thread	Model KQ2LU (White)	Model KQLU (Black)
4	M5 X 0.8	KQ2LU04-M5	KQLU04-M5
	M6 X 1	-M6	-M6
	R1/8	-01S	-01S
	R1/4	-02S	-02S
6	M5 X 0.8	KQ2LU06-M5	KQLU06-M5
	M6 X 1	-M6	-M6
	R1/8	-01S	-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
8	R1/8	KQ2LU08-01S	KQLU08-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
10	R1/4	KQ2LU10-02S	KQLU10-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
12	R1/4	KQ2LU12-02S	KQLU12-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S

Branch Universal Male Elbow KQ2Z/KQZ

The hexagon head of the body is used to tighten the body with a box wrench.
Used to branch the line. Elbow union for piping.

Applicable tubing O.D. mm	Connecting thread	Model KQ2Z (White)	Model KQZ (Black)
4	M5 X 0.8	KQ2Z04-M5	KQZ04-M5
	R1/8	-01S	-01S
6	R1/8	KQ2Z06-01S	KQZ06-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
8	R1/8	KQ2Z08-01S	KQZ08-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
10	R1/4	KQ2Z10-02S	KQZ10-02S
	R3/8	-03S	-03S
12	R3/8	KQ2Z12-03S	KQZ12-03S
	R1/2	-04S	-04S

Double Branch Universal Male Elbow KQ2ZD/KQZD

To branch the line from the female thread into 4 tubes at right angles.
2 individual parts rotate freely.

Applicable tubing O.D. mm	Connecting thread	Model KQ2ZD (White)	Model KQZD (Black)
4	R1/8	KQ2ZD04-01S	KQZD04-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
6	R1/8	KQ2ZD06-01S	KQZD06-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
8	R1/8	KQ2ZD08-01S	KQZD08-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
10	R1/4	KQ2ZD10-02S	KQZD10-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
12	R1/4	KQ2ZD12-02S	KQZD12-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S

Triple Branch Universal Male Elbow KQ2ZT/KQZT

To branch the line from the female thread into 6 tubes at right angles.
3 individual parts rotate freely.

Applicable tubing O.D. mm	Connecting thread	Model KQ2ZT (White)	Model KQZT (Black)
4	R1/8	KQ2ZT04-01S	KQZT04-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
6	R1/8	KQ2ZT06-01S	KQZT06-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
8	R1/8	KQ2ZT08-01S	KQZT08-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
10	R1/4	KQ2ZT10-02S	KQZT10-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
12	R1/4	KQ2ZT12-02S	KQZT12-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S

Double Branch KQ2UD/KQUD

To branch the line from the female thread into 4 tubes in the same direction.

Applicable tubing O.D. mm	Connecting thread	Model	
		KQ2UD (White)	KQUD (Black)
4	R1/8	KQ2UD04-01S	KQUD04-01S
	R1/4	-02S	-02S
6	R1/8	KQ2UD06-01S	KQUD06-01S
	R1/4	-02S	-02S

Delta Union KQ2D/KQD

To branch the line from the female thread into 2 directions at right angles.

<M5, M6>

<R>

Applicable tubing O.D. mm	Connecting thread	Model	
		KQ2D (White)	KQD (Black)
4	M5 X 0.8	KQ2D04-M5	KQD04-M5
	M6 X 1	-M6	-M6
	R1/8	-01S	-01S
	R1/4	-02S	-02S
6	M5 X 0.8	KQ2D06-M5	KQD06-M5
	M6 X 1	-M6	-M6
	R1/8	-01S	-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
8	R1/8	KQ2D08-01S	KQD08-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
10	R1/4	KQ2D10-02S	KQD10-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
12	R1/4	KQ2D12-02S	KQD12-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S

Straight Union KQ2H/KQH

To connect tubings in the same direction.

Applicable tubing O.D. mm	Model	
	KQ2H (White)	KQH (Black)
3.2	KQ2H23-00	KQH23-00
4	KQ2H04-00	KQH04-00
6	KQ2H06-00	KQH06-00
8	KQ2H08-00	KQH08-00
10	KQ2H10-00	KQH10-00
12	KQ2H12-00	KQH12-00
16	KQ2H16-00	KQH16-00

Bulkhead Union KQ2E/KQE

To connect tubing through a panel.

Applicable tubing O.D. mm	Model	
	KQ2E (Release button, Light gray)	KQE (Release button, Blue)
3.2	KQ2E23-00	KQE23-00
4	KQ2E04-00	KQE04-00
6	KQ2E06-00	KQE06-00
8	KQ2E08-00	KQE08-00
10	KQ2E10-00	KQE10-00
12	KQ2E12-00	KQE12-00
16	KQ2E16-00	KQE16-00

Union Elbow KQ2L/KQL

To connect tubing at right angles to each other.

Applicable tubing O.D. mm	Model	
	KQ2L (White)	KQL (Black)
3.2	KQ2L23-00	KQL23-00
4	KQ2L04-00	KQL04-00
6	KQ2L06-00	KQL06-00
8	KQ2L08-00	KQL08-00
10	KQ2L10-00	KQL10-00
12	KQ2L12-00	KQL12-00
16	KQ2L16-00	KQL16-00

Bulkhead Male Elbow KQ2LE/KQLE

To connect tubings through a panel and change the tubing entry by 90°.

Applicable tubing O.D. mm	Model	
	KQ2LE (White)	KQLE (Black)
4	KQ2LE04-00	KQLE04-00
6	KQ2LE06-00	KQLE06-00
8	KQ2LE08-00	KQLE08-00
10	KQ2LE10-00	KQLE10-00
12	KQ2LE12-00	KQLE12-00

Union Tee KQ2T/KQT

To branch tubing into 2 directions each at 90° to the original one.

Applicable tubing O.D. mm	Model	
	KQ2T (White)	KQT (Black)
3.2	KQ2T23-00	KQT23-00
4	KQ2T04-00	KQT04-00
6	KQ2T06-00	KQT06-00
8	KQ2T08-00	KQT08-00
10	KQ2T10-00	KQT10-00
12	KQ2T12-00	KQT12-00
16	KQ2T16-00	KQT16-00

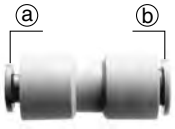
Union "Y" KQ2U/KQU

To branch tubing in the same direction.

Applicable tubing O.D. mm	Model	
	KQ2U (White)	KQU (Black)
3.2	KQ2U23-00	KQU23-00
4	KQ2U04-00	KQU04-00
6	KQ2U06-00	KQU06-00
8	KQ2U08-00	KQU08-00
10	KQ2U10-00	KQU10-00
12	KQ2U12-00	KQU12-00
16	KQ2U16-00	KQU16-00

Different Dia. Straight KQ2H/KQH

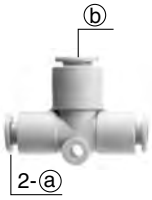
To connect tubings of different diameters.



Applicable tubing O.D. mm		Model	
ⓐ	ⓑ	KQ2H (White)	KQH (Black)
3.2	4	KQ2H23-04	KQH23-04
4	6	KQ2H04-06	KQH04-06
6	8	KQ2H06-08	KQH06-08
8	10	KQ2H08-10	KQH08-10
10	12	KQ2H10-12	KQH10-12
12	16	KQ2H12-16	KQH12-16

Different Dia. Tee KQ2T/KQT

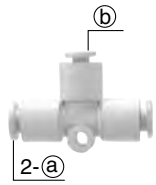
To branch the tubing into two at a right angle and reduce the resulting branches in size.



Applicable tubing O.D. mm		Model	
ⓐ	ⓑ	KQ2T (White)	KQT (Black)
3.2	4	KQ2T23-04	KQT23-04
4	6	KQ2T04-06	KQT04-06
6	8	KQ2T06-08	KQT06-08
8	10	KQ2T08-10	KQT08-10
10	12	KQ2T10-12	KQT10-12
12	16	KQ2T12-16	KQT12-16

Different Dia. Tee KQ2T

To connect tubing in the same direction as well as to branch it into another smaller tubing at 90°.



Applicable tubing O.D. mm		Model	
ⓐ	ⓑ	KQ2T (White)	KQT (Black) is manufactured as a made to order.
6	4	KQ2T06-04	
8	6	KQ2T08-06	
10	8	KQ2T10-08	
12	10	KQ2T12-10	

Different Dia. Union "Y" KQ2U/KQU

To branch tubing into 2 smaller tubes in the same direction as the original one.

Applicable tubing O.D. mm		Model	
ⓐ	ⓑ	KQ2U (White)	KQU (Black)
3.2	4	KQ2U23-04	KQU23-04
4	6	KQ2U04-06	KQU04-06
6	8	KQ2U06-08	KQU06-08
8	10	KQ2U08-10	KQU08-10
10	12	KQ2U10-12	KQU10-12
12	16	KQ2U12-16	KQU12-16

Different Dia. Double Union "Y" KQ2UD/KQUD

To branch tubing into 4 smaller tubes in the same direction as the original one.

Applicable tubing O.D. mm		Model	
ⓐ	ⓑ	KQ2UD (White)	KQUD (Black)
4	6	KQ2UD04-06	KQUD04-06
6	8	KQ2UD06-08	KQUD06-08

Branch Union Elbow KQ2LU/KQLU

To branch a tube at a right angle into two tubes.

Applicable tubing O.D. mm	Model	
	KQ2LU (White)	KQLU (Black)
4	KQ2LU04-00	KQLU04-00
6	KQ2LU06-00	KQLU06-00
8	KQ2LU08-00	KQLU08-00
10	KQ2LU10-00	KQLU10-00
12	KQ2LU12-00	KQLU12-00

Delta Union KQ2D/KQD

To connect 3 tubes at right angles with each other.

Applicable tubing O.D. mm	Model	
	KQ2D (White)	KQD (Black)
4	KQ2D04-00	KQD04-00
6	KQ2D06-00	KQD06-00
8	KQ2D08-00	KQD08-00
10	KQ2D10-00	KQD10-00
12	KQ2D12-00	KQD12-00

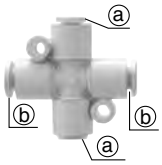
Cross KQ2TW

To branch tubing into 4 directions.

Applicable tubing O.D. mm	Model	
	KQ2TW (White)	This model is not available with black body specifications.
4	KQ2TW04-00	
6	KQ2TW06-00	
8	KQ2TW08-00	
10	KQ2TW10-00	
12	KQ2TW12-00	

Different Dia. Cross KQ2TX

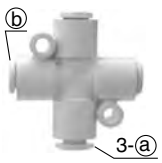
To connect 4 tubes at right angles with 2 smaller tubes on both sides.



Applicable tubing O.D. mm		Model	
ⓐ	ⓑ	KQ2TX (White)	This model is not available with black body specifications.
6	8	KQ2TX06-08	
8	10	KQ2TX08-10	
10	12	KQ2TX10-12	

Different Dia. Cross KQ2TY

To branch tubing into smaller tubing in 3 directions.



Applicable tubing O.D. mm		Model	
ⓐ	ⓑ	KQ2TY (White)	This model is not available with black body specifications.
6	8	KQ2TY06-08	
8	10	KQ2TY08-10	
10	12	KQ2TY10-12	

Plug-in Elbow KQ2L/KQL

To change the tubing direction from a one-touch fitting by 90°.

Applicable tubing O.D. mm	Fitting size	Model	
		KQ2L (White)	KQL (Black)
3.2	3.2	KQ2L23-99	KQL23-99
4	4	KQ2L04-99	KQL04-99
6	6	KQ2L06-99	KQL06-99
8	8	KQ2L08-99	KQL08-99
10	10	KQ2L10-99	KQL10-99
12	12	KQ2L12-99	KQL12-99
16	16	KQ2L16-99	KQL16-99

Extended Plug-in Elbow KQ2W/KQW

To change the tubing direction from a one-touch fitting by 90°. Applicable to 3 dimensional piping when used with a plug-in elbow.

Applicable tubing O.D. mm	Fitting size	Model	
		KQ2W (White)	KQW (Black)
3.2	3.2	KQ2W23-99	KQW23-99
4	4	KQ2W04-99	KQW04-99
6	6	KQ2W06-99	KQW06-99
8	8	KQ2W08-99	KQW08-99
10	10	KQ2W10-99	KQW10-99
12	12	KQ2W12-99	KQW12-99

Plug-in Reducer KQ2R/KQR

To connect to a smaller one-touch fitting.

Applicable tubing O.D. mm	Fitting size	Model	
		KQ2R (White)	KQR (Black)
3.2	4	KQ2R23-04	KQR23-04
4	6	KQ2R04-06	KQR04-06
	8	-08	-08
	10	-10	-10
6	4	KQ2R06-04	KQR06-04
	8	-08	-08
	10	-10	-10
	12	-12	-12
8	10	KQ2R08-10	KQR08-10
	12	-12	-12
10	12	KQ2R10-12	KQR10-12
	16	-16	-16
12	16	KQ2R12-16	KQR12-16

Reducer Elbow KQ2L/KQL

To change the tubing direction from a one-touch fitting by 90° as well as to connect to tubing of a smaller diameter.

Applicable tubing O.D. mm	Fitting size	Model	
		KQ2L (White)	KQL (Black)
3.2	4	KQ2L23-04	KQL23-04
4	6	KQ2L04-06	KQL04-06
	8	-08	-08
6	8	KQ2L06-08	KQL06-08
	10	-10	-10
8	10	KQ2L08-10	KQL08-10
	12	-12	-12
10	12	KQ2L10-12	KQL10-12
12	16	KQ2L12-16	KQL12-16

Plug-in "Y" KQ2U/KQU

To branch the line from a one-touch fitting into tubing in the same direction.

Applicable tubing O.D. mm	Fitting size	Model	
		KQ2U (White)	KQU (Black)
3.2	3.2	KQ2U23-99	KQU23-99
4	4	KQ2U04-99	KQU04-99
6	6	KQ2U06-99	KQU06-99
8	8	KQ2U08-99	KQU08-99
10	10	KQ2U10-99	KQU10-99
12	12	KQ2U12-99	KQU12-99
16	16	KQ2U16-99	KQU16-99

Different Dia. Plug-in "Y" KQ2X/KQX

To branch the line from a one-touch fitting into tubing of a smaller diameter in the same direction.

Applicable tubing O.D. mm	Fitting size	Model	
		KQ2X (White)	KQX (Black)
4	6	KQ2X04-06	KQX04-06
6	8	KQ2X06-08	KQX06-08
8	10	KQ2X08-10	KQX08-10
10	12	KQ2X10-12	KQX10-12

Double Branch "Y" KQ2XD/KQXD

To branch the line from a one-touch fitting into 4 tubes of a smaller diameter in the same direction.

Applicable tubing O.D. mm	Fitting size	Model	
		KQ2XD (White)	KQXD (Black)
4	6	KQ2XD04-06	KQXD04-06
6	8	KQ2XD06-08	KQXD06-08

Female Connector KQ2F/KQF

To pipe from the male threaded portion of a pressure gauge, etc.

Applicable tubing O.D. mm	Connecting thread	Model KQ2F (Release button, Light gray)	Model KQF (Release button, Blue)
4	Rc1/8	KQ2F04-01	KQF04-01
	Rc1/4	-02	-02
6	Rc1/8	KQ2F06-01	KQF06-01
	Rc1/4	-02	-02
	Rc3/8	-03	-03
8	Rc1/8	KQ2F08-01	KQF08-01
	Rc1/4	-02	-02
	Rc3/8	-03	-03
10	Rc1/4	KQ2F10-02	KQF10-02
	Rc3/8	-03	-03
12	Rc1/4	KQ2F12-02	KQF12-02
	Rc3/8	-03	-03
	Rc1/2	-04	-04
16	Rc3/8	KQ2F16-03	KQF16-03
	Rc1/2	-04	-04

Bulkhead Female Connector KQ2E/KQE

Used for trunk connection between tubing and a male thread installed through a panel.

Applicable tubing O.D. mm	Connecting thread	Model KQ2E (Release button, Light gray)	Model KQE (Release button, Blue)
3.2	Rc1/4	KQ2E23-02	KQE23-02
4	Rc1/8	KQ2E04-01	KQE04-01
	Rc1/4	-02	-02
6	Rc1/8	KQ2E06-01	KQE06-01
	Rc1/4	-02	-02
	Rc3/8	-03	-03
8	Rc1/8	KQ2E08-01	KQE08-01
	Rc1/4	-02	-02
	Rc3/8	-03	-03
10	Rc1/4	KQ2E10-02	KQE10-02
	Rc3/8	-03	-03
12	Rc3/8	KQ2E12-03	KQE12-03
	Rc1/2	-04	-04
16	Rc3/8	KQ2E16-03	KQE16-03
	Rc1/2	-04	-04

Female Elbow KQ2LF/KQLF

To pipe from the male threaded at the right angle.

<M5, M6>

<Rc>

Applicable tubing O.D. mm	Connecting thread	Model KQ2LF (White)	Model KQLF (Black)
4	M5 X 0.8	KQ2LF04-M5	KQLF04-M5
	M6 X 1	-M6	-M6
	Rc1/8	-01	-01
	Rc1/4	-02	-02
6	M5 X 0.8	KQ2LF06-M5	KQLF06-M5
	M6 X 1	-M6	-M6
	Rc1/8	-01	-01
	Rc1/4	-02	-02
	Rc3/8	-03	-03
8	Rc1/8	KQ2LF08-01	KQLF08-01
	Rc1/4	-02	-02
	Rc3/8	-03	-03
10	Rc1/4	KQ2LF10-02	KQLF10-02
	Rc3/8	-03	-03
	Rc1/2	-04	-04
12	Rc1/4	KQ2LF12-02	KQLF12-02
	Rc3/8	-03	-03
	Rc1/2	-04	-04

Universal Female Elbow KQ2VF/KQVF

To connect a line from a male and female thread in the same direction as well as to branch it into 2 pipes at a right angle. Multiplex connections possible.

<M5>

<R, Rc>

Applicable tubing O.D. mm	Connecting thread	Model KQ2VF (White)	Model KQVF (Black)
4	M5 X 0.8	KQ2VF04-M5	KQVF04-M5
	R/Rc1/8	-01S	-01S
6	M5 X 0.8	KQ2VF06-M5	KQVF06-M5
	R/Rc1/8	-01S	-01S
	R/Rc1/4	-02S	-02S
8	R/Rc1/8	KQ2VF08-01S	KQVF08-01S
	R/Rc1/4	-02S	-02S
	R/Rc3/8	-03S	-03S
10	R/Rc1/4	KQ2VF10-02S	KQVF10-02S
	R/Rc3/8	-03S	-03S
12	R/Rc3/8	KQ2VF12-03S	KQVF12-03S
	R/Rc1/2	-04S	-04S

Branch Universal Female Elbow KQ2ZF/KQZF

To branch a line from a male or female thread in the same direction and at a right angle. Multiplex connections possible.

<M5>

<R, Rc>

Applicable tubing O.D. mm	Connecting thread	Model KQ2ZF (White)	Model KQZF (Black)
4	M5 X 0.8	KQ2ZF04-M5	KQZF04-M5
	R/Rc1/8	-01S	-01S
6	R/Rc1/8	KQ2ZF06-01S	KQZF06-01S
	R/Rc1/4	-02S	-02S
8	R/Rc1/8	KQ2ZF08-01S	KQZF08-01S
	R/Rc1/4	-02S	-02S
10	R/Rc1/4	KQ2ZF10-02S	KQZF10-02S
	R/Rc3/8	-03S	-03S
12	R/Rc3/8	KQ2ZF12-03S	KQZF12-03S
	R/Rc1/2	-04S	-04S

Plug — KQ2P/KQP

To plug unused one-touch fittings KQ2P (White), KQP (Blue).

Applicable fitting size	Model	
	KQ2P (White)	KQP (Black)
3.2	KQ2P-23	KQP-23
4	KQ2P-04	KQP-04
6	KQ2P-06	KQP-06
8	KQ2P-08	KQP-08
10	KQ2P-10	KQP-10
12	KQ2P-12	KQP-12
16	KQ2P-16	KQP-16

Nipple — KQ2N/KQN

To connect 2 one-touch fittings.

Applicable fitting size	Model	
	KQ2N (White)	KQN (Black)
4	KQ2N04-99	KQN04-99
6	KQ2N06-99	KQN06-99
8	KQ2N08-99	KQN08-99
10	KQ2N10-99	KQN10-99
12	KQ2N12-99	KQN12-99
16	KQ2N16-99	KQN16-99

Different Dia. Nipple — KQ2N/KQN

To connect one-touch fittings of different sizes.

Applicable fitting size		Model	
ⓐ	ⓑ	KQ2N (White)	KQN (Black)
4	6	KQ2N04-06	KQN04-06
6	8	KQ2N06-08	KQN06-08
8	10	KQ2N08-10	KQN08-10
10	12	KQ2N10-12	KQN10-12
12	16	KQ2N12-16	KQN12-16

Adapter — KQ2N/KQN

To connect a one-touch fitting and R female thread.

Applicable fitting size	Connecting thread	Model	
		KQ2N (White)	KQN (Black)
4	M5 X 0.8	KQ2N04-M5	KQN04-M5
	R1/8	-01S	-01S
6	M5 X 0.8	KQ2N06-M5	KQN06-M5
	R1/8	-01S	-01S
	R1/4	-02S	-02S
8	R1/4	KQ2N08-02S	KQN08-02S
	R3/8	-03S	-03S
10	R3/8	KQ2N10-03S	KQN10-03S

Tubing Cap — KQ2C/KQC

To plug unused tubing.

Applicable tubing O.D. mm	Model	
	KQ2C (White)	KQC (Black)
4	KQ2C04-00	KQC04-00
6	KQ2C06-00	KQC06-00
8	KQ2C08-00	KQC08-00
10	KQ2C10-00	KQC10-00
12	KQ2C12-00	KQC12-00
16	KQ2C16-00	KQC16-00

Color Cap — KQ2C

Attached to release buttons for various applications to distinguish them by colour.

Applicable tubing O.D. mm	Model	Application
3.2	KQ2C-01□	Other than below
	KQ2C-01A-□	KQH, KQ2H23-M5
	KQ2C-01B-□	KQL, KQ2L23-M5 KQT, KQ2T23-M5 KQY, KQ2Y23-M5
4	KQ2C-04□	Other than below
	KQ2C-04A-□	KQH, KQ2H04-M5, M6 KQS, KQ2S04-M5, M6
	KQ2C-04B-□	KQL, KQ2L04-M5, M6 KQT, KQ2T04-M5, M6 KQY, KQ2Y04-M5, M6
6	KQ2C-06□	Other than below
	KQ2C-06A-□	KQH, KQ2H06-M5, M6 KQS, KQ2S06-M5, M6
	KQ2C-06B-□	KQL, KQ2L06-M5, M6 KQT, KQ2T06-M5, M6 KQY, KQ2Y06-M5, M6
8	KQ2C-08□	
10	KQ2C-10□	
12	KQ2C-12□	
16	KQ2C-16□	

B (Black), R (Red), YR (Orange), BR (Brown), Y (Yellow), G (Green), CB (Sky blue), GR (Grey), W (White), BU (Blue)

Made to Order

Electroless Nickel Plated on Brass Parts — **X2**

(Example) KQ2H06-02S-X2

Lubricant: Vaseline — **X12**

(Example) KQ2H06-02S-X12

Electroless Nickel Plating on Brass Parts (X2)
Lubricant: Vaseline (X12) — **X16**

(Example) KQ2H06-02S-X16

Electroless Nickel Plating on Brass Parts (X2)
Seal, O-ring: Fluororesin Rubber — **X47**

(Example) KQ2H06-02S-X47

Seal: Fluororesin Coating
Oil Free: No Lubrication — **X17**

(Example) KQ2H06-02S-X17

Clean Series — **10-**

Electroless nickel plating on brass parts (X2)
Lubricant: Fluororesin grease
Double packaging
Resin bodyrelease button: White

(Example) 10-KQH06-02S

No Lubrication — **X57**

(Example) KQ2H06-02S-X57

Electroless Nickel Plating on Brass Parts (X2)
Seal: Fluororesin Coating
Oil Free: No Lubrication (X17) — **X29**

(Example) KQ2H06-02S-X29

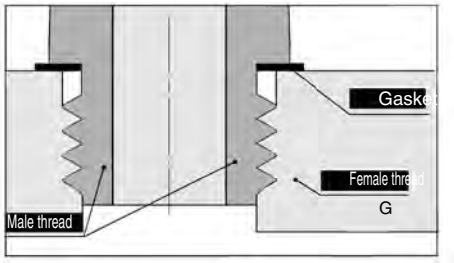
One-touch Fittings

Series KQ2

■Applicable tubing O.D.: **Metric Size**

■Connecting thread: **G**

The seal gasket on the male thread for piping eliminates the need for pipe tape



G thread

A gasket made of a stainless sheet covered with laminated NBR on both sides is seated on the female thread for a perfect sealing construction irrespective of the variations in tolerance.

One-touch connection and release. Possible to use in vacuum to -100 kPa.

The male thread for piping drastically cuts piping man-hours. Suitable for use with port threads conforming to ISO1179 and ISO16030.

Applicable Tubing

Tubing material	FEP,PFA, Nylon, Soft nylon (Note1), Polyurethane
Tubing O.D.	ø4, ø6, ø8, ø10, ø12, ø16

Note 1) The soft nylon tube is not available with water.

Specifications

Fluid		Air, Water Note 2)
Max. operating pressure		1.0 MPa Note 3)
Operating vacuum pressure		–100 kPa
Proof pressure		3.0 MPa
Ambient and fluid temperature		–5 to 60°C, In case of water: 0 to 40°C (No freezing)
Thread	**Mounting**	JIS B0207 (EN ISO228)
	Nut	JIS B0211, Class 2 (Metric fine thread)

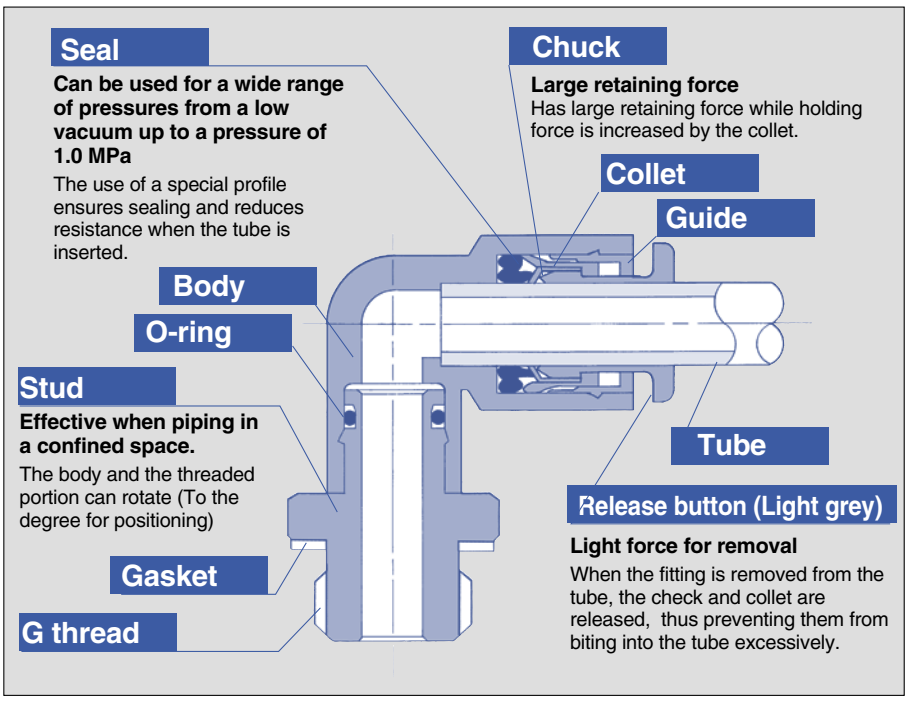
Note 2) The surge pressure must be under the maximum operating pressure.
Note 3) The amount of leakage is not zero, and so the use for holding vacuum such as a leak tester should be avoided.

Product's Color

Series	Body	Release button
Series KQ2	White	Light grey

Principal Parts Material

Body	C3604BD, PBT
Stud	C3604BD (Thread portion)
Chuck	Stainless steel 304
Guide	Stainless steel 304, C3604BD, PBT
Collet, Release button	POM
Seal, O-ring	NBR
Gasket	Stainless steel 304, NBR



SMC

Tubing — **Female thread hole**

KQ2H — Male connector

KQ2W — Extended male elbow

KQ2T — Male branch tee

KQ2S — Hexagon socket head male connector

KQ2V — Universal male elbow

KQ2Y — Male run tee

KQ2L — Male elbow

Tubing — **Male thread**

KQ2F — Female connector

KQ2E — Bulkhead connector

G thread One-touch Fittings Series KQ2

Male Connector KQ2H

Most common style used to pipe from female thread in the same direction.

<G>

Applicable tubing O.D. mm	Connecting thread	Model KQ2H
4	G1/8	KQ2H04-G01
	G1/4	-G02
6	G1/8	KQ2H06-G01
	G1/4	-G02
	G3/8	-G03
8	G1/8	KQ2H08-G01
	G1/4	-G02
	G3/8	-G03
10	G1/8	KQ2H10-G01
	G1/4	-G02
	G3/8	-G03
	G1/2	-G04
12	G1/4	KQ2H12-G02
	G3/8	-G03
	G1/2	-G04
16	G3/8	KQ2H16-G03
	G1/2	-G04

Hexagon Socket Head Male Connector KQ2S

The hexagon socket in the body is used to tighten the socket head male connector with a hexagon wrench. Useful in a confined space.

<G>

Applicable tubing O.D. mm	Connecting thread	Model KQ2S
4	G1/8	KQ2S04-G01
6	G1/8	KQ2S06-G01
	G1/4	-G02
8	G1/8	KQ2S08-G01
	G1/4	-G02
	G3/8	-G03
10	G1/8	KQ2S10-G01
	G1/4	-G02
	G3/8	-G03
	G1/2	-G04
12	G1/4	KQ2S12-G02
	G3/8	-G03
	G1/2	-G04
16	G3/8	KQ2S16-G03
	G1/2	-G04

Male Elbow — KQ2L

Most common style used to pipe from female thread at a right angle.


<G>

Applicable tubing O.D. mm	Connecting thread	Model KQ2L
4	G1/8	KQ2L04-G01
	G1/4	-G02
6	G1/8	KQ2L06-G01
	G1/4	-G02
	G3/8	-G03
8	G1/8	KQ2L08-G01
	G1/4	-G02
	G3/8	-G03
10	G1/8	KQ2L10-G01
	G1/4	-G02
	G3/8	-G03
	G1/2	-G04
12	G1/4	KQ2L12-G02
	G3/8	-G03
	G1/2	-G04
16	G3/8	KQ2L16-G03
	G1/2	-G04

Extended Male Elbow — KQ2W

Basically used in the same way as a male elbow.
But also used in 3 dimensional piping to prevent interference of fittings.


<G>

Applicable tubing O.D. mm	Connecting thread	Model KQ2W
4	G1/8	KQ2W04-G01
	G1/4	-G02
6	G1/8	KQ2W06-G01
	G1/4	-G02
	G3/8	-G03
8	G1/8	KQ2W08-G01
	G1/4	-G02
	G3/8	-G03
10	G1/4	KQ2W10-G02
	G3/8	-G03
	G1/2	-G04
12	G1/4	KQ2W12-G02
	G3/8	-G03
	G1/2	-G04
16	G3/8	KQ2W16-G03
	G1/2	-G04

Universal Male Elbow — KQ2V

The hexagon head of the body is used to tighten the body with a box wrench in a confined space.


<G>

Applicable tubing O.D. mm	Connecting thread	Model KQ2V
4	G1/8	KQ2V04-G01
6	G1/8	KQ2V06-G01
	G1/4	-G02
8	G1/8	KQ2V08-G01
	G1/4	-G02
	G3/8	-G03
10	G1/4	KQ2V10-G02
	G3/8	-G03
12	G3/8	KQ2V12-G03
	G1/2	-G04
16	G3/8	KQ2V16-G03
	G1/2	-G04

Male Branch Tee — KQ2T

To branch the line from the female thread at 90° in each direction.


<G>

Applicable tubing O.D. mm	Connecting thread	Model KQ2T
4	G1/8	KQ2T04-G01
	G1/4	-G02
6	G1/8	KQ2T06-G01
	G1/4	-G02
	G3/8	-G03
8	G1/8	KQ2T08-G01
	G1/4	-G02
	G3/8	-G03
10	G1/8	KQ2T10-G01
	G1/4	-G02
	G3/8	-G03
	G1/2	-G04
12	G1/4	KQ2T12-G02
	G3/8	-G03
	G1/2	-G04
16	G3/8	KQ2T16-G03
	G1/2	-G04

Male Run Tee KQ2Y

To branch the line from the female thread in the same direction and at 90°.

<G>

Applicable tubing O.D. mm	Connecting thread	Model KQ2Y
4	G1/8	KQ2Y04-G01
	G1/4	-G02
6	G1/8	KQ2Y06-G01
	G1/4	-G02
	G3/8	-G03
8	G1/8	KQ2Y08-G01
	G1/4	-G02
	R3/8	-G03
10	G1/8	KQ2Y10-G01
	G1/4	-G02
	G3/8	-G03
	G1/2	-G04
12	G1/4	KQ2Y12-G02
	G3/8	-G03
	G1/2	-G04
16	G3/8	KQ2Y16-G03
	G1/2	-G04

Female Connector KQ2F

To pipe from the male threaded portion of a pressure gauge, etc.

Applicable tubing O.D. mm	Connecting thread	Model KQ2F
4	G1/8	KQ2F04-G01
	G1/4	-G02
6	G1/8	KQ2F06-G01
	G1/4	-G02
	G3/8	-G03
8	G1/8	KQ2F08-G01
	G1/4	-G02
	G3/8	-G03
10	G1/4	KQ2F10-G02
	G3/8	-G03
12	G1/4	KQ2F12-G02
	G3/8	-G03
	G1/2	-G04
16	G3/8	KQ2F16-G03
	G1/2	-G04

Bulkhead Female Connector KQ2E

Used for trunk connection between tubing and a male thread installed through a panel.

Applicable tubing O.D. mm	Connecting thread	Model KQ2E
4	G1/8	KQ2E04-G01
	G1/4	-G02
6	G1/8	KQ2E06-G01
	G1/4	-G02
	G3/8	-G03
8	G1/8	KQ2E08-G01
	G1/4	-G02
	G3/8	-G03
10	G1/4	KQ2E10-G02
	G3/8	-G03
12	G3/8	KQ2E12-G03
	G1/2	-G04
16	G3/8	KQ2E16-G03
	G1/2	-G04

Spare Parts List

Description	Part no.	Applicable Thread	Applicable Model
Gasket	KQ-G01	G1/8	-
	KQ-G02	G1/4	-
	KQ-G03	G3/8	-
	KQ-G04	G1/2	-
Nut for Tube	KQ04-P01	-	KQ2E04-G**
	KQ06-P01	-	KQ2E06-G**
	KQ08-P01	-	KQ2E08-G**
	KQ10-P01	-	KQ2E10-G**
	KQ12-P01	-	KQ2E12-G**
	KQ16-P01	-	KQ2E16-G**

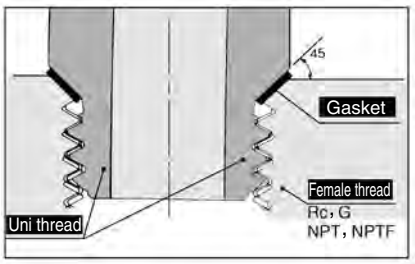
Uni One-touch Fittings

Series KQ2

■Applicable tubing O.D.: **Metric Size**

■Connecting thread: **Rc, G, NPT, NPTF**

New-stand male thread for piping that reduces the screw-in time by 1/3.



Uni thread ridge shape

A gasket made of a stainless sheet covered with laminated NBR on both sides is seated on the chamfer of a female thread for a perfect sealing construction irrespective of the difference in thread diameters due to the difference in the types of female threads, variation in tolerance, or difference in the size of chamfer. (It is applicable to any female thread with an ordinary chamfer.)

A ridge shape has been created as a Uni thread for common applications for Rc, G, NPT and NPTF.

The male thread for piping drastically cuts piping man-hours.

Applicable Tubing

Tubing material	FEP, PFA, Nylon, Soft nylon [1], Polyurethane
Tubing O.D.	ø4, ø6, ø8, ø10, ø12, ø16

Note 1) Soft nylon tubing is not compatible with water.

Product's Color

Series	Body	Release button
Series KQ2	White	Light gray
Series KQ	Black	Blue

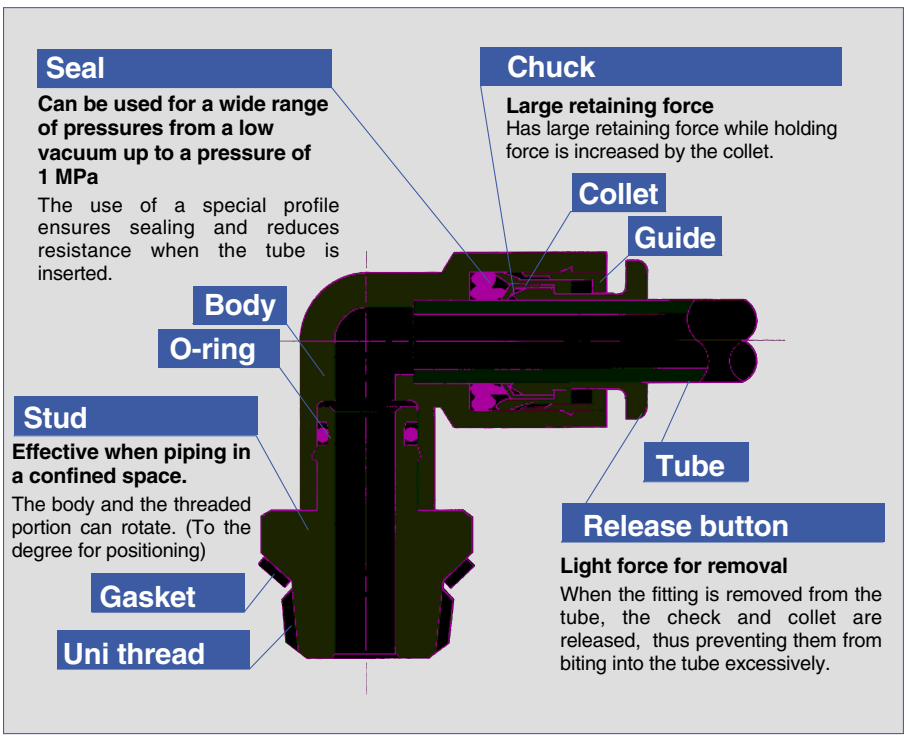
Specifications

Fluid	Air/Water [2]
Operating pressure range [3]	–100 kPa to 1 MPa
Proof pressure	3 MPa
Ambient and fluid temperature	–5 to 60°C, Water: 0 to 40°C (No freezing)

Note 2) The surge pressure must be under the maximum operating pressure.
Note 3) Do not use the fittings with a leak tester or for vacuum retention because they are not guaranteed for zero leakage.

Principal Parts Material

Body	C3604, PBT
Stud	C3604 (Thread portion)
Chuck	Stainless steel 304
Guide	Stainless steel 304, C3604, PBT
Collet, Release button	POM
Seal, O-ring	NBR
Gasket	Stainless steel 304, NBR



SMC

Tubing — Female thread hole

KQ2H — Male connector

KQ2W — Extended male elbow

KQ2T — Male branch tee

KQ2K — 45° male elbow

KQ2S — Hexagon socket head male connector

KQ2V — Universal male elbow

KQ2Y — Male run tee

KQ2U — Branch "Y"

KQ2L — Male elbow

UNI thread One-touch Fittings Series KQ2

Male Connector KQ2H

Most common style used to pipe from female thread in the same direction.

<Uni>

Applicable tubing O.D. mm	Connecting thread	Model KQ2H
4	1/8	KQ2H04-U01
	1/4	-U02
6	1/8	KQ2H06-U01
	1/4	-U02
	3/8	-U03
8	1/8	KQ2H08-U01
	1/4	-U02
	3/8	-U03
10	1/8	KQ2H10-U01
	1/4	-U02
	3/8	-U03
	1/2	-U04
12	1/4	KQ2H12-U02
	3/8	-U03
	1/2	-U04
16	3/8	KQ2H16-U03
	1/2	-U04

Hexagon Socket Head Male Connector KQ2S

The hexagon socket in the body is used to tighten the socket head male connector with a hexagon wrench. Useful in a confined space.

<Uni>

Applicable tubing O.D. mm	Connecting thread	Model KQ2S
4	1/8	KQ2S04-U01
6	1/8	KQ2S06-U01
	1/4	-U02
8	1/8	KQ2S08-U01
	1/4	-U02
	3/8	-U03
10	1/8	KQ2S10-U01
	1/4	-U02
	3/8	-U03
	1/2	-U04
12	1/4	KQ2S12-U02
	3/8	-U03
	1/2	-U04

Male Elbow — KQ2L

Most common style used to pipe from female thread at a right angle.

<Uni>

Applicable tubing O.D. mm	Connecting thread	Model KQ2L
4	1/8	KQ2L04-U01
	1/4	-U02
6	1/8	KQ2L06-U01
	G1/4	-U02
	3/8	-U03
8	1/8	KQ2L08-U01
	1/4	-U02
	3/8	-U03
10	1/8	KQ2L10-U01
	1/4	-U02
	3/8	-U03
	1/2	-U04
12	1/4	KQ2L12-U02
	3/8	-U03
	1/2	-U04
16	3/8	KQ2L16-U03
	1/2	-U04

Extended Male Elbow — KQ2W

Basically used in the same way as a male elbow.
But also used in 3 dimensional piping to prevent interference of fittings.

<Uni>

Applicable tubing O.D. mm	Connecting thread	Model KQ2W
4	1/8	KQ2W04-U01
	1/4	-U02
6	1/8	KQ2W06-U01
	1/4	-U02
	3/8	-U03
8	1/8	KQ2W08-U01
	1/4	-U02
	3/8	-U03
10	1/4	KQ2W10-U02
	3/8	-U03
	1/2	-U04
12	1/4	KQ2W12-U02
	3/8	-U03
	1/2	-U04

Universal Male Elbow — KQ2V

The hexagon head of the body is used to tighten the body with a box wrench in a confined space.

<Uni>

Applicable tubing O.D. mm	Connecting thread	Model KQ2V
4	1/8	KQ2V04-U01
6	1/8	KQ2V06-U01
	1/4	-U02
8	1/8	KQ2V08-U01
	1/4	-U02
	3/8	-U03
10	1/4	KQ2V10-U02
	3/8	-U03
12	3/8	KQ2V12-U03
	1/2	-U04

Male Branch Tee — KQ2T

To branch the line from the female thread at 90° in each direction.

<Uni>

Applicable tubing O.D. mm	Connecting thread	Model KQ2T
4	1/8	KQ2T04-U01
	1/4	-U02
6	1/8	KQ2T06-U01
	1/4	-U02
	3/8	-U03
8	1/8	KQ2T08-U01
	1/4	-U02
	3/8	-U03
10	1/8	KQ2T10-U01
	1/4	-U02
	3/8	-U03
	1/2	-U04
12	1/4	KQ2T12-U02
	3/8	-U03
	1/2	-U04
16	3/8	KQ2T16-U03
	1/2	-U04

Male Run Tee — KQ2Y

To branch the line from the female thread in the same direction and at 90°.

<Uni>

Applicable tubing O.D. mm	Connecting thread	Model KQ2Y
4	1/8	KQ2Y04-U01
	1/4	-U02
6	1/8	KQ2Y06-U01
	1/4	-U02
	3/8	-U03
8	1/8	KQ2Y08-U01
	1/4	-U02
	3/8	-U03
10	1/8	KQ2Y10-U01
	1/4	-U02
	3/8	-U03
	1/2	-U04
12	1/4	KQ2Y12-U02
	3/8	-U03
	1/2	-U04
16	3/8	KQ2Y16-U03
	1/2	-U04

Branch "Y" — KQ2U

To branch tubing in the same direction.

<Uni>

Applicable tubing O.D. mm	Connecting thread	Model KQ2U
4	1/8	KQ2U04-U01
	1/4	-U02
6	1/8	KQ2U06-U01
	1/4	-U02
	3/8	-U03
8	1/8	KQ2U08-U01
	1/4	-U02
	3/8	-U03
10	1/4	KQ2U10-U02
	3/8	-U03
	1/2	-U04
12	1/4	KQ2U12-U02
	3/8	-U03
	1/2	-U04

45° Male Elbow — KQ2K

For piping at 45° from female thread.
Intermediate model between male connector and male elbow.

<Uni>

Applicable tubing O.D. mm	Connecting thread	Model KQ2K
4	1/8	KQ2K04-U01
	1/4	-U02
6	1/8	KQ2K06-U01
	1/4	-U02
	3/8	-U03
8	1/8	KQ2K08-U01
	1/4	-U02
	3/8	-U03
10	1/8	KQ2K10-U01
	1/4	-U02
	3/8	-U03
	1/2	-U04
12	1/4	KQ2K12-U02
	3/8	-U03
	1/2	-U04

Spare Parts List

Description	Part no.	Applicable Thread
Gasket	KQ-U01	Uni 1/8
	KQ-U02	Uni 1/4
	KQ-U03	Uni 3/8
	KQ-U04	Uni 1/2

Made to Order

Made to Order

Electroless Nickel Plated on Brass Parts — X2

(Example) KQ2H06-U02-**X2**

Lubricant: Vaseline — X12

(Example) KQ2H06-U02-**X12**

With fixed throttle — X41

(Example) KQ2H06-U02-**X41**

Seal: Fluororesin Coating
Copper-free: Whith electroless nickel plated — X17

(Example) KQ2H06-U02-**X17**

Electroless Nickel Plating on Brass Parts (X2)
Seal: Fluororesin Coating
Oil Free: No Lubrication (X17) — X29

(Example) KQ2H06-U02-**X29**

Seal: Fluororesin Coating
Clean (Copper-free, air blow, duble package, resin body: white) — X39

(Example) KQ2H06-U02-**X39**

One-touch Mini

Series KJ

■Applicable tubing O.D.: **Metric Size**

■Connecting thread: **M3, M5, R1/8**

Outside diameter reduced by 20% (Compared with series KQ), allowing piping in a narrower space.

Thread sealant as standard. For application requiring copper-free material. (Electroless nickel plating)

Compatible with vacuum to –100 kPa of pressure.

ø2 tubing type is newly added.

KJ ø2

KJ ø3.2, ø4, ø6

Applicable Tubing

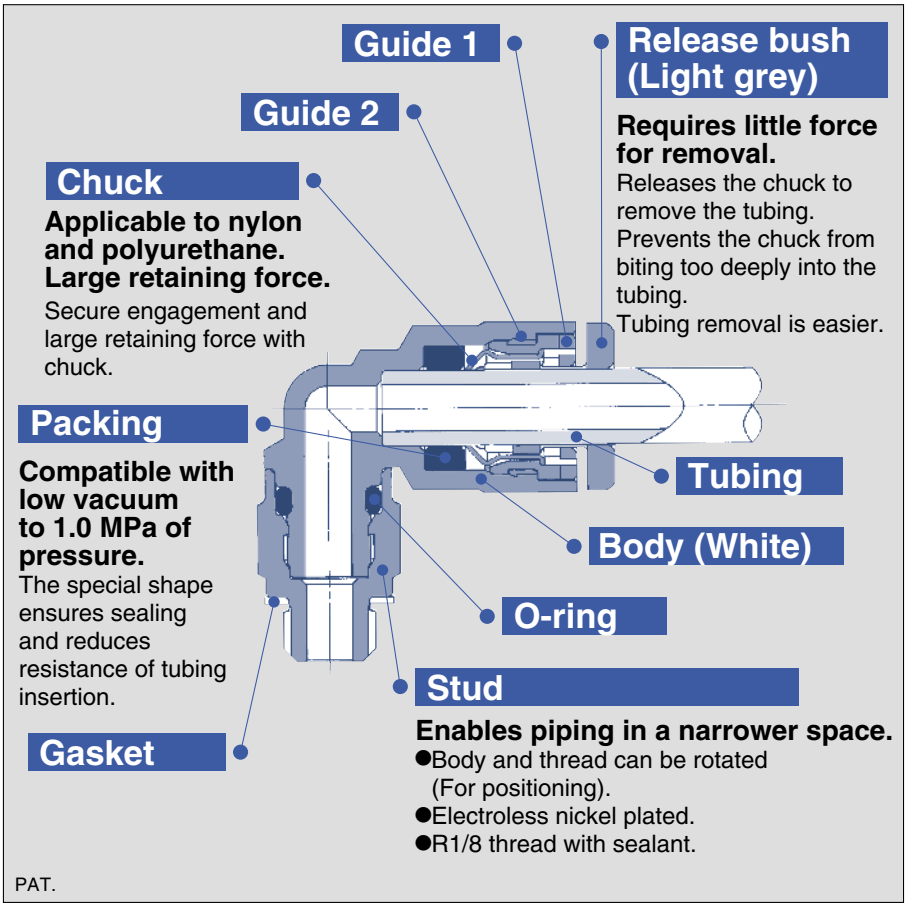
Tubing material Note1)	Nylon, Soft nylon, Polyurethane
Tubing O.D.	ø2, ø3.2, ø4, ø6

Note 1) ø2 is available in polyurethane only.

Specifications

Fluid		Air, Water Note1)
Max. operating pressure		1.0 MPa
Operating vacuum pressure		–100 kPa
Proof pressure		3.0 MPa
Ambient and fluid temperature		–5 to 60°C, In case of water: 0 to 40°C (No freezing)
Thread	**Mounting**	JIS B0203 (Taper thread for piping) JIS B0209, Class 2 (Metric coarse thread)
	Nut	JIS B0211, Class 2 (Metric fine thread)
Thread label (Standard)		With sealant
For application requiring copper-free material (Standard)		Brass parts are all electroless nickel plated.

Note 1) Applicable to general industrial water. Consult SMC if using for other fluids.
Surge pressure must be under the maximum operating pressure.



Refer to Best Pneumatics 2004 Vol.15 for the inch size.

Tubing — Female thread hole

KJH Male connector

KJS Hexagon socket head male connector

KJL Male elbow

KJW Extended male elbow

KJT Male branch tee

KJY Male run tee

KJU Branch "Y"

Tubing — Tubing

KJH Straight union

KJE Bulkhead union

KJL Union elbow

KJT Union tee

KJU Union "Y"

KJH Different dia. straight

KJT Different dia. tee

KJU Different dia. union "Y"

Tubing — One-touch fittings

KJL Plug-in elbow

KJR Reducer

KJL Reducer elbow

KJU Plug-in "Y"

KJX Reducer union plug-in "Y"

Tubing — Male thread

KJF Female connector

KJP Plug

Male Connector — KJH

Most common style used to pipe from female thread in the same direction.

Applicable tubing O.D. mm	Connecting thread	Model
2	M3 x 0.5	KJH02-M3
	M5 x 0.8	-M5
3.2	M3 x 0.5	KJH23-M3
	M5 x 0.8	-M5
	R1/8	-01S
4	M3 x 0.5	KJH04-M3
	M5 x 0.8	-M5
	R1/8	-01S
6	M5 x 0.8	KJH06-M5
	R1/8	-01S

Hexagon Socket Head Male Connector — KJS

The hexagon socket in the body is used to tighten the socket head male connector with a hexagon wrench. Useful in a confined space.

Applicable tubing O.D. mm	Connecting thread	Model
2	M3 x 0.5	KJS02-M3
3.2	M3 x 0.5	KJS23-M3
	M5 x 0.8	-M5
4	M3 x 0.5	KJS04-M3
	M5 x 0.8	-M5
	R1/8	-01S
6	M5 x 0.8	KJS06-M5
	R1/8	-01S

Male Elbow — KJL

Most common style used to pipe from female thread at a right angle.

Applicable tubing O.D. mm	Connecting thread	Model
2	M3 x 0.5	KJL02-M3
	M5 x 0.8	-M5
3.2	M3 x 0.5	KJL23-M3
	M5 x 0.8	-M5
	R1/8	-01S
4	M3 x 0.5	KJL04-M3
	M5 x 0.8	-M5
	R1/8	-01S
6	M5 x 0.8	KJL06-M5
	R1/8	-01S

Branch "Y" — KJU

To branch a tubing in the same direction.

Applicable tubing O.D. mm	Connecting thread	Model
3.2	M5 x 0.8	KJU23-M5
	R1/8	-01S
4	M5 x 0.8	KJU04-M5
	R1/8	-01S
6	M5 x 0.8	KJU06-M5
	R1/8	-01S

Extended Male Elbow — KJW

Basically used in the same way as a male elbow.
But also used in 3 dimensional piping to prevent interference of fittings.

Applicable tubing O.D. mm	Connecting thread	Model
2	M3 x 0.5	KJW02-M3
	M5 x 0.8	-M5
3.2	M3 x 0.5	KJW23-M3
	M5 x 0.8	-M5
	R1/8	-01S
4	M3 x 0.5	KJW04-M3
	M5 x 0.8	-M5
	R1/8	-01S
6	M5 x 0.8	KJW06-M5
	R1/8	-01S

Male Branch Tee — KJT

To branch the line from the female thread at 90° in each direction.

Applicable tubing O.D. mm	Connecting thread	Model
2	M3 x 0.5	KJT02-M3
	M5 x 0.8	-M5
3.2	M3 x 0.5	KJT23-M3
	M5 x 0.8	-M5
	R1/8	-01S
4	M3 x 0.5	KJT04-M3
	M5 x 0.8	-M5
	R1/8	-01S
6	M5 x 0.8	KJT06-M5
	R1/8	-01S

Male Run Tee — KJY

To branch the line from the female thread in the same direction and at 90°.

Applicable tubing O.D. mm	Connecting thread	Model
2	M3 x 0.5	KJY02-M3
	M5 x 0.8	-M5
3.2	M3 x 0.5	KJY23-M3
	M5 x 0.8	-M5
	R1/8	-01S
4	M3 x 0.5	KJY04-M3
	M5 x 0.8	-M5
	R1/8	-01S
6	M5 x 0.8	KJY06-M5
	R1/8	-01S

Straight Union — KJH

To connect tubing in the same direction.

Applicable tubing O.D. mm	Model
2	KJH02-00
3.2	KJH23-00
4	KJH04-00
6	KJH06-00

Bulkhead Union — KJE

To connect tubing through a panel.

Applicable tubing O.D. mm	Model
2	KJE02-00
3.2	KJE23-00
4	KJE04-00
6	KJE06-00

Union Elbow — KJL

To connect tubing at right angles to each other.

Applicable tubing O.D. mm	Model
3.2	KJL23-00
4	KJL04-00
6	KJL06-00

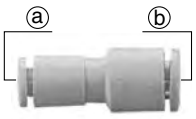
Union Tee — KJT

To branch tubing into 2 directions each at 90° to the original one.

Applicable tubing O.D. mm	Model
2	KJT02-00
3.2	KJT23-00
4	KJT04-00
6	KJT06-00

Different Dia. Straight — KJH

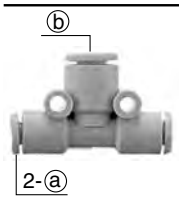
To connect tubing of different diameters.



Applicable tubing O.D. mm ⓐ	Applicable tubing O.D. mm ⓑ	Model
2	3.2	KJH02-23
	4	-04
3.2	4	KJH23-04
	6	-06
4	6	KJH04-06

Different Dia. Tee — KJT

To branch the tubing into two at a right angle and reduce the resulting branches in size.



Applicable tubing O.D. mm ⓐ	Applicable tubing O.D. mm ⓑ	Model
3.2	4	KJT23-04
4	6	KJT04-06

Different Dia. Union "Y" — KJU

To branch tubing into 2 smaller tubing in the same direction as the original one.

Applicable tubing O.D. mm ⓐ	Applicable tubing O.D. mm ⓑ	Model
2	3.2	KJU02-23
	4	-04
3.2	4	KJU23-04
4	6	KJU04-06

Union "Y" — KJU

To branch tubing in the same direction.

Applicable tubing O.D. mm	Model
2	KJU02-00
3.2	KJU23-00
4	KJU04-00
6	KJU06-00

Plug-in Elbow — KJL

To change the tubing direction from a one-touch fitting by 90°.

Applicable tubing O.D. mm	Aplicable fitting size	Model
3.2	3.2	KJL23-99
4	4	KJL04-99
6	6	KJL06-99

Plug-in "Y" — KJU

To branch the line from a one-touch fitting into tubing in the same direction.

Applicable tubing O.D. mm	Applicable fitting size	Model
3.2	3.2	KJU23-99
4	4	KJU04-99
6	6	KJU06-99

Plug-in Reducer — KJR

To connect to a smaller one-touch fitting.

Applicable tubing O.D. mm	Aplicable fitting size	Model
2	4	KJR02-04
3.2	4	KJR23-04
	6	-06
4	6	KJR04-06

Reducer Union Plug-in "Y" — KJX

To branch the line from a one-touch fitting into smaller diameter in the same direction.

Applicable tubing O.D. mm	Applicable fitting size	Model
3.2	4	KJX23-04
4	6	KJX04-06

Reducer Elbow — KJL

To change the tubing direction from a one-touch fitting by 90° as well as to connect to a tubing of a smaller diameter.

Applicable tubing O.D. mm	Applicable fitting size	Model
3.2	4	KJL23-04
	6	-06
4	6	KJL04-06

Plug — KJP

To plug unused One-touch fittings.

Applicable fitting size	Model
2	KJP-02

Female Connector — KJF

To pipe from the male threaded portion of a pressure gauge, etc.

Applicable tubing O.D. mm	Connecting thread	Model
3.2	M3 X 0.5	KJF23-M3
	M5 X 0.8	-M5
4	M3 X 0.5	KJF04-M3
	M5 X 0.8	-M5
6	M5 X 0.8	KJF06-M5

Made to Order

Made to Order

Seal, O-ring: Fluororesin Coating
Oil Free: No Lubrication **X17**

(Example) KJH06-01S-X17

Lubricant: Vaseline **X12**

(Example) KJH06-01S-X12

Clean Series **10-**

Lubricant: Fluororesin grease
Release button: White
Double packaging

(Example) 10-KJH06-01S

No Lubrication **X57**

(Example) KJH06-01S-X57

Rotary One-touch Fittings

Series KS/KX

■Applicable tubing O.D.: **Metric Size**

■Connecting thread: **M, R**

Rotary one-touch fittings for low-torque rotation.

Applicable to oscillating and rotating sections of robots etc.

For application requiring copper-free material (Electroless nickel plated)

R1/8 thread sealant is standardised.

Male Elbow

Male Connector

Applicable Tubing

Tubing material Note1)	Nylon, soft nylon, Polyurethane
Tubing O.D.	ø4, ø6, ø8, ø10, ø12

Note1) Take precautions regarding the maximum operating pressure with soft nylon and polyurethane.

Specifications

Fluid	Air
Max. operating pressure	1.0 MPa
Operating vacuum pressure	–100 kPa
Proof pressure	3.0 MPa
Ambient and fluid temperature	–5 to 60°C (No freezing)
Thread	JIS B0203 (Taper thread for piping) JIS B0209, Class 2 (Metric coarse thread)

Rotating Torque / Allowable Number of Rotations

Applicable tubing O.D.		ø4	ø6	ø8	ø10	ø12
Rotating torque N·m Note1)		0.006	0.012	0.014	0.020	0.022
Allowable number of rotations S^{-1}	**Series KS**	8.4	8.4	6.7	5	4.2
	Series KX	25	20	20	16.7	16.7

Note1) Rotating torque at a 0.5 MPa pressure.

Slide bearing

Low-torque, low-friction operation with oil containing slide bearing.

Rotary seal

The special rotary seal minimizes rotating torque and friction.

Holder

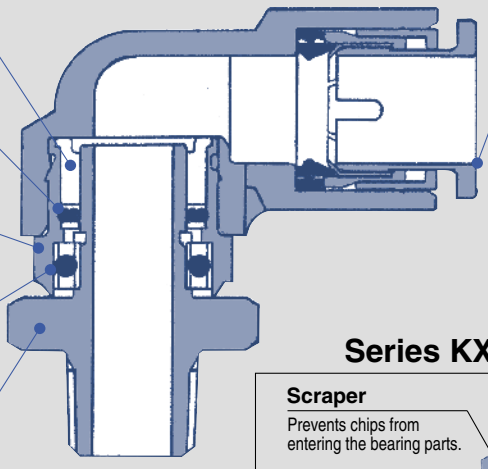
Electroless nickel plating allows copper-free applications.

Ball bearing

The ball bearing ensures low-torque rotation.

Stud

Electroless nickel plating allows copper-free applications.
Thread sealant is standardised.



Series KS
(Standard)

Cassette

Series KS: Blue
Series KX: White

The male connector is provided with a tubing rotation prevention mechanism.

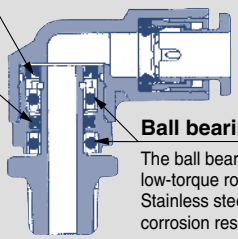
Series KX (High speed type)

Scraper

Prevents chips from entering the bearing parts.

Rotary seal

X ring shape minimizes friction while providing an excellent seal. Seal is fire and shock proof fluorine rubber. It proves against high friction heat in high speed rotation and longer life.



Ball bearing

The ball bearing ensures low-torque rotation.
Stainless steel 440C improves corrosion resistance.

∗ Other specifications are same as those of series KS.

PAT.

Refer to Best Pneumatics 2004 Vol.15 for the inch size. (The inch size is not applied to series KX.)

Standard Rotary One-touch Fittings Series KS

Male Connector KSH

Most common style used to pipe from female thread in the same direction.

<M5, M6>

<R>

Applicable tubing O.D. mm	Connecting thread	Model
4	M5 X 0.8	KSH04-M5
	M6 X 1	-M6
	R1/8	-01S
6	M5 X 0.8	KSH06-M5
	M6 X 1	-M6
	R1/8	-01S
	R1/4	-02S
8	R1/8	KSH08-01S
	R1/4	-02S
	R3/8	-03S
10	R1/4	KSH10-02S
	R3/8	-03S
	R1/2	-04S
12	R3/8	KSH12-03S
	R1/2	-04S

Male Elbow KSL

Most common style used to pipe from female thread at a right angle.

<M5, M6>

<R>

Applicable tubing O.D. mm	Connecting thread	Model
4	M5 X 0.8	KSL04-M5
	M6 X 1	-M6
	R1/8	-01S
6	M5 X 0.8	KSL06-M5
	M6 X 1	-M6
	R1/8	-01S
	R1/4	-02S
8	R1/8	KSL08-01S
	R1/4	-02S
	R3/8	-03S
10	R1/4	KSL10-02S
	R3/8	-03S
	R1/2	-04S
12	R3/8	KSL12-03S
	R1/2	-04S

High speed type Rotary One-touch Fittings Series KX

Male Connector KXH

Most common style used to pipe from female thread in the same direction.

<M5, M6>

<R>

Applicable tubing O.D. mm	Connecting thread	Model
4	M5 X 0.8	KXH04-M5
	M6 X 1	-M6
	R1/8	-01S
6	M5 X 0.8	KXH06-M5
	M6 X 1	-M6
	R1/8	-01S
	R1/4	-02S
8	R1/8	KXH08-01S
	R1/4	-02S
	R3/8	-03S
10	R1/4	KXH10-02S
	R3/8	-03S
	R1/2	-04S
12	R3/8	KXH12-03S
	R1/2	-04S

Male Elbow KXL

Most common style used to pipe from female thread at a right angle.

<M5, M6>

<R>

Applicable tubing O.D. mm	Connecting thread	Model
4	M5 X 0.8	KXL04-M5
	M6 X 1	-M6
	R1/8	-01S
6	M5 X 0.8	KXL06-M5
	M6 X 1	-M6
	R1/8	-01S
	R1/4	-02S
8	R1/8	KXL08-01S
	R1/4	-02S
	R3/8	-03S
10	R1/4	KXL10-02S
	R3/8	-03S
	R1/2	-04S
12	R3/8	KXL12-03S
	R1/2	-04S

Tube Coupler

Series KC

■Applicable tubing O.D.: **Metric Size**

■Connecting thread: **M, R, Rc**

One-touch fitting with built-in self seal mechanism to prevent air exhaust when removing the tubing.

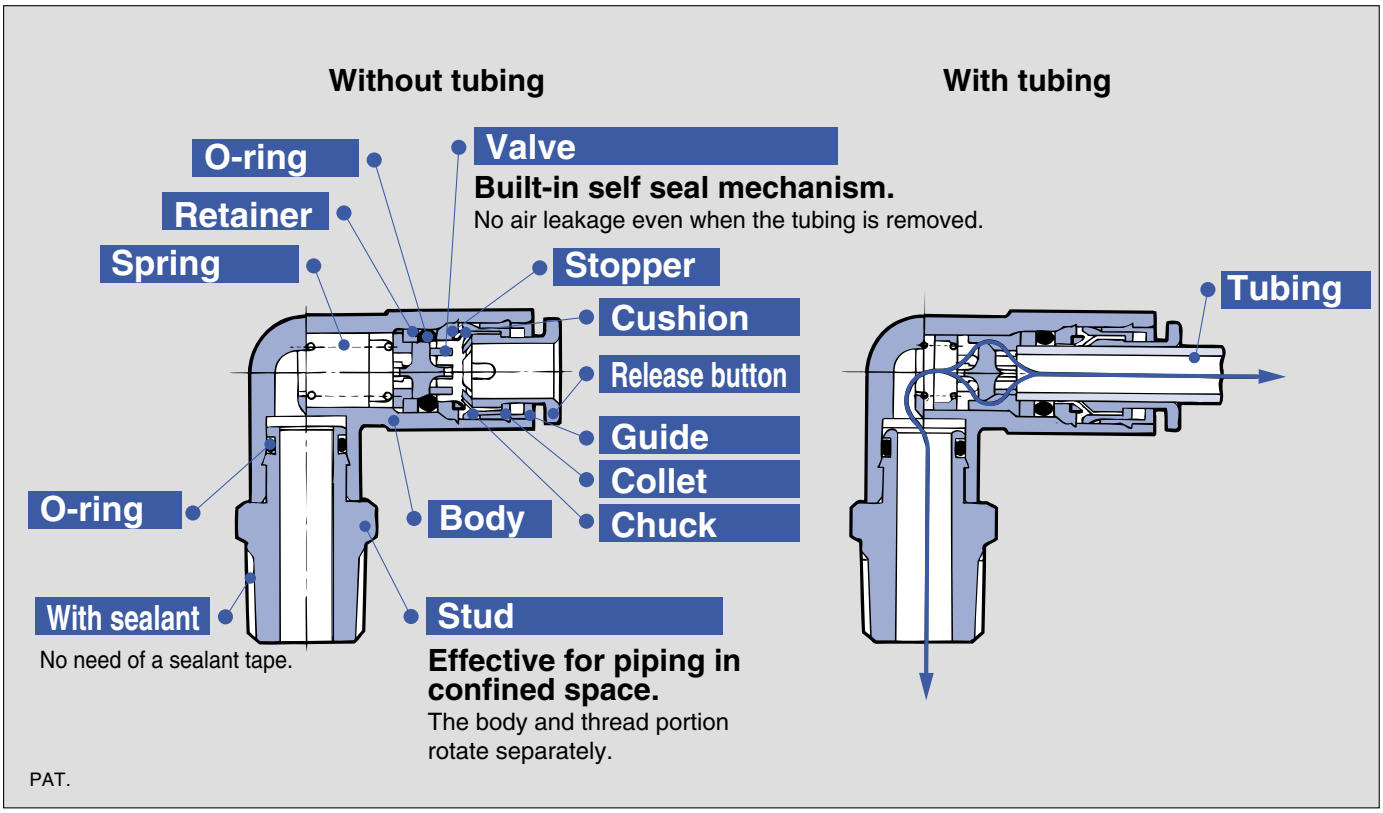
Electroless nickel plated for copper-free applications.

Applicable tubing

Tubing material	Nylon, Soft Nylon, Polyurethane
Tubing O.D.	ø4, ø6, ø8, ø10, ø12

Specifications

Fluid		Air
Max. operating pressure		1.0 MPa
Proof pressure		3.0 MPa
Ambient and fluid temperature		–5 to 60°C (No freezing)
Thread	**Mounting**	JIS B0203 (Taper thread for piping)
	Nut	JIS B0211, Class 2 (Metric fine thread)
Thread label (Standard)		With sealant
Copper-free specifications (Standard)		All brass parts with electroless nickel plated.



SMC

Male Connector KCH

For piping in the same direction from the female thread.

Applicable tubing O.D. mm	Connecting thread	Model
4	M5 X 0.8	KCH04-M5
	R1/8	-01S
6	M5 X 0.8	KCH06-M5
	R1/8	-01S
	R1/4	-02S
8	R1/8	KCH08-01S
	R1/4	-02S
	R3/8	-03S
10	R1/4	KCH10-02S
	R3/8	-03S
12	R3/8	KCH12-03S
	R1/2	-04S

Male Elbow KCL

To pipe from the female thread at the right angle.

Applicable tubing O.D. mm	Connecting thread	Model
4	M5 X 0.8	KCL04-M5
	R1/8	-01S
6	M5 X 0.8	KCL06-M5
	R1/8	-01S
	R1/4	-02S
8	R1/8	KCL08-01S
	R1/4	-02S
	R3/8	-03S
10	R1/4	KCL10-02S
	R3/8	-03S
12	R3/8	KCL12-03S
	R1/2	-04S

Straight Union KCH

To connect tubing in the same direction.
One of 2 ports has a check valve.

Applicable tubing O.D. mm	Model
4	KCH04-00
6	KCH06-00
8	KCH08-00
10	KCH10-00
12	KCH12-00

Bulkhead Union KCE

To connect tubing through a panel.
One of 2 ports has a check valve.

Applicable tubing O.D. mm	Model
4	KCE04-00
6	KCE06-00
8	KCE08-00
10	KCE10-00
12	KCE12-00

Union Tee KCT

To branch tubing into 2 directions each at 90° to the original one.

Applicable tubing O.D. mm	Model
4	KCT04-00
6	KCT06-00
8	KCT08-00
10	KCT10-00
12	KCT12-00

Union "Y" KCU

To branch tubing in the same direction.
Only branches have integral check valves.

Applicable tubing O.D. mm	Model
4	KCU04-00
6	KCU06-00
8	KCU08-00
10	KCU10-00
12	KCU12-00

Check Adapter KCJ

To be connected to a series KQ one-touch fitting to provide tube coupler function.

Applicable tubing O.D. mm	Model
4	KCJ04-99
6	KCJ06-99
8	KCJ08-99
10	KCJ10-99
12	KCJ12-99

Straight Plug for Frequent Use — KCH

To save tube cutting labor in cases where tubing is frequently connected and removed.
To connect tubing in the same direction as the tube coupler.

Applicable tubing O.D. mm	Model
4	KCH04-99
6	KCH06-99
8	KCH08-99
10	KCH10-99
12	KCH12-99

Elbow Plug for Frequent Use — KCL

To save tube cutting labor in cases where tubing is frequently connected and removed.
To connect a tubing at a right angle to the tube coupler.

Applicable tubing O.D. mm	Model
4	KCL04-99
6	KCL06-99
8	KCL08-99
10	KCL10-99
12	KCL12-99

Bulkhead Female Union — KCE

Used for trunk connection between tubing and a male thread installed through a panel.

Applicable tubing O.D. mm	Connecting thread	Model
4	Rc1/4	KCE04-02
6	Rc1/4	KCE06-02
8	Rc3/8	KCE08-03
10	Rc3/8	KCE10-03
12	Rc3/8	KCE12-03

One-touch Fittings Manifold

Series KM

■Applicable tubing O.D.: **Metric Size**

■Connecting thread: **R, Rc**

Compact piping possible.
Centralized piping possible.
Rich variation of 40 styles.
One-touch installation.

Applicable tubing

Tubing material	Nylon, Soft nylon, Polyurethane
Tubing O.D.	ø4, ø6, ø8, ø10, ø12

Specifications

Model	**KM11**	**KM12**	**KM13**	**KM14**	**KM15**	**KM16**
Fluid	Air, Water Note1)					
Max. operating pressure	1.0 MPa					
Proof pressure	3.0 MPa					
Ambient and fluid temperature	–5 to 60°C, In case of water: 0 to 40°C (No freezing)					
Thread	—	JIS B0203 (Taper thread for piping)	—	JIS B0203 (Taper thread for piping)	—	—
Accessory	No	Hexagon socket head plug: 1 pc	No	No	No	No

Note1) Applicable to general industrial water. Consult SMC if using for other fluids.
Surge pressure must be under the maximum operating pressure.

Model

Model	Porting		Number of port A	Port B Port size	Port A port size		
	Port A	Port B			ø4	ø6	ø8
KM11	One-touch fitting	One-touch fitting	6, 10	ø8	●		
				ø10		●	
				ø12			●
KM12	One-touch fitting	Rc female thread	6, 10	Rc1/4	●	●	
				Rc3/8			●
KM13	One-touch fitting	One-touch fitting	3	ø6	●		
				ø8	●	●	
				ø10		●	●
KM14	One-touch fitting	One-touch fitting R male thread	3	ø6, R1/8	●		
				ø6, R1/4	●		
				ø6, R3/8	●		
				ø8, R1/8	●	●	
				ø8, R1/4	●	●	
				ø8, R3/8	●	●	
				ø10, R1/4		●	●
				ø10, R3/8		●	●
				ø10, R1/2		●	●
KM15	One-touch fitting	One-touch fitting rod	3	ø6	●		
				ø8	●	●	
				ø10		●	●
KM16	One-touch fitting	One-touch fitting	3	ø4	●		
				ø6	●	●	

KM11

Applicable tubing O.D. mm Ⓐ	Applicable tubing O.D. mm Ⓑ	Number of port A	Model
4	8	6	KM11-04-08-6
		10	-10
6	10	6	KM11-06-10-6
		10	-10
8	12	6	KM11-08-12-6
		10	-10

KM12

Applicable tubing O.D. Ⓐ mm	Connecting thread	Number of port A	Model
4	Rc1/4	6	KM12-04-02-6
		10	-10
6	Rc1/4	6	KM12-06-02-6
		10	-10
8	Rc3/8	6	KM12-08-03-6
		10	-10

KM13

Applicable tubing O.D. mm Ⓐ	Applicable tubing O.D. mm Ⓑ	Number of port A	Model
4	6	3	KM13-04-06-3
	8	3	-08-3
6	8	3	KM13-06-08-3
	10	3	-10-3
8	10	3	KM13-08-10-3

KM14

Applicable tubing O.D. mm Ⓐ	Applicable tubing O.D. mm Ⓑ	Connecting thread	Number of port A	Model
4	6	R1/8	3	KM14-04-06-01S-3
		R1/4	3	-02S-3
		R3/8	3	-03S-3
4	8	R1/8	3	KM14-04-08-01S-3
		R1/4	3	-02S-3
		R3/8	3	-03S-3
6	8	R1/8	3	KM14-06-08-01S-3
		R1/4	3	-02S-3
		R3/8	3	-03S-3
6	10	R1/4	3	KM14-06-10-02S-3
		R3/8	3	-03S-3
		R1/2	3	-04S-3
8	10	R1/4	3	KM14-08-10-02S-3
		R3/8	3	-03S-3
		R1/2	3	-04S-3

KM15

Applicable tubing O.D. mm Ⓐ	Applicable tubing O.D. mm Ⓑ	Applicable fitting size	Number of port A	Model
4	6	6	3	KM15-04-06-3
	8	8	3	-08-3
6	8	8	3	KM15-06-08-3
	10	10	3	-10-3
8	10	10	3	KM15-08-10-3

KM16

Applicable tubing O.D. mm Ⓐ	Applicable tubing O.D. mm Ⓑ	Number of port A	Model
4	4	3	KM16-04-04-3
4	6	3	KM16-04-06-3
6	6	3	KM16-06-06-3

Made to Order

Electroless Nickel Plated on Brass Parts — X2

(Example) KM12-04-02-6-**X2**

Lubricant: Vaseline — X12

(Example) KM12-04-02-6-**X12**

Seal: Fluororesin Coating, Oil Free: No Lubrication — X17

(Example) KM12-04-02-6-**X17**

No Lubrication — X57

(Example) KM12-04-02-6-**X57**

Piping Module

Series KB

■Applicable tubing O.D.: **Metric Size**

■Connecting thread: **M, R, Rc**

Centralized piping from main line.
Enables centralization and distribution of piping suitable for each application.

One-touch installation and removal with no need of tools.
One-touch lock system enhances efficiency in piping work without requiring any tools.

Air entry allows 360° changes.
Universal construction allows changes in air entries even after piping is completed.

Applicable Tubing

Tubing material	Nylon, Soft nylon, Polyurethane
Tubing O.D.	ø4, ø6, ø8, ø10, ø12, ø16

Applicable Thread Size

Male thread	R1/8, R1/4, R3/8, R1/2
Female thread	M5 x 0.8, M6 x 1, Rc1/8, Rc1/4, Rc3/8, Rc1/2

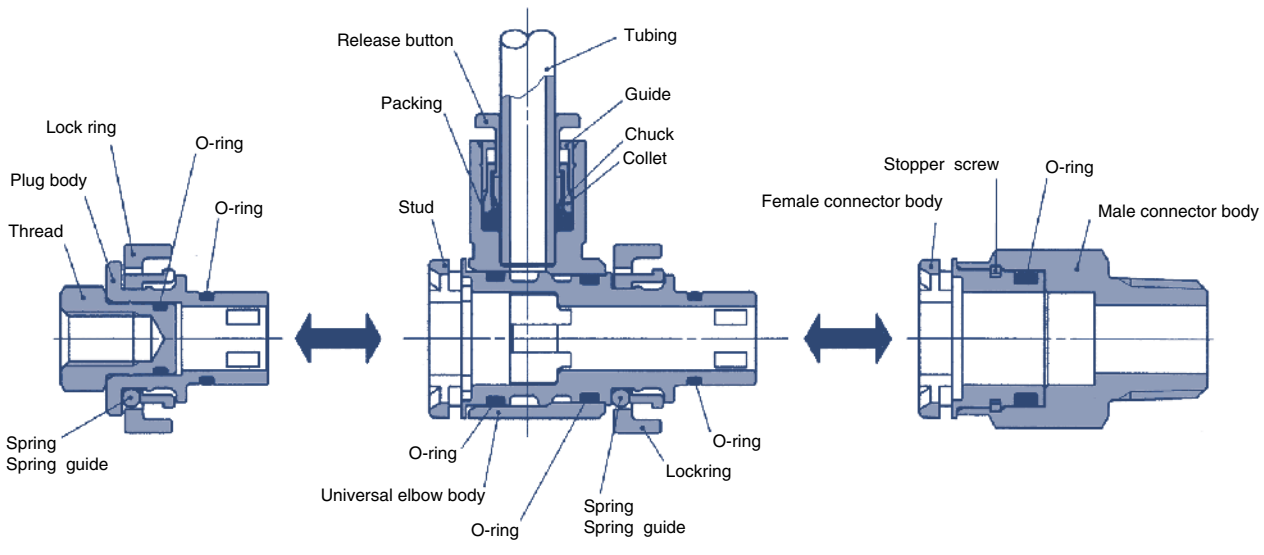
Specifications

Fluid		Air
Max. operating pressure		1.0 MPa
Operating vacuum pressure		–100 kPa
Proof pressure		3.0 MPa
Ambient and fluid temperature		–5 to 60°C (No freezing)
Thread	**Mounting**	JIS B 0203 (Taper thread for piping)
		JIS B 0209, Class 2 (Metric coarse thread)
	Nut	JIS B 0211, Class 2 (Metric fine thread)
Thread label (Standard)		With sealant
Copper-free specifications (Standard)		Brass parts are all electroless nickel plated.

Component Material

Body	C3604BD, PBT, POM
Stud	POM
Lock ring	POM
Spring	Stainless steel 304WPB
Spring guide	POM
Stopper	POM
Thread	C3604BD
Guide	Stainless steel 304, C3604BD, POM
Collet, Release button	POM
Seal, O-ring	NBR
Chuck	Stainless steel 304

Plug: KBP **Elbow Module: KBV** **Female Connector Union: KBH**



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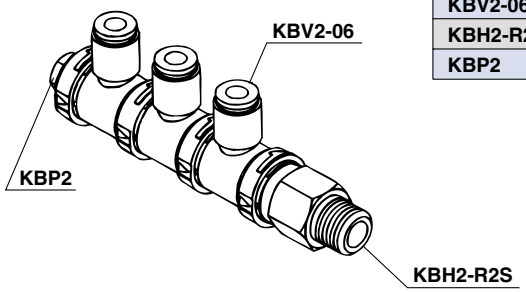
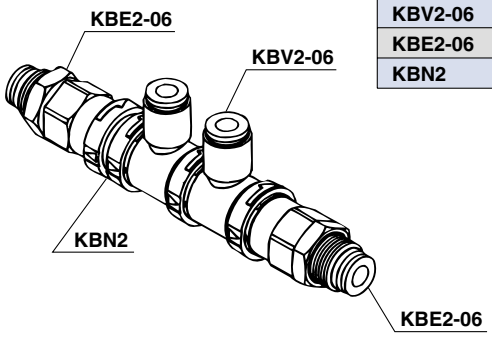
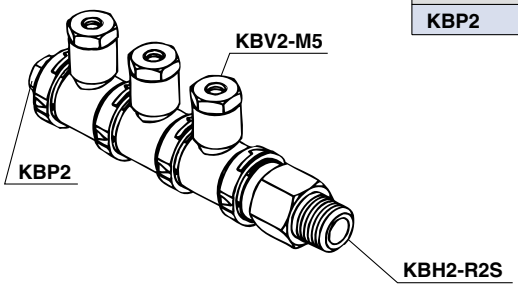
Component module	No. of modulus
KBV2-06	3 pcs.
KBH2-R2S	1 pc.
KBP2	1 pc.



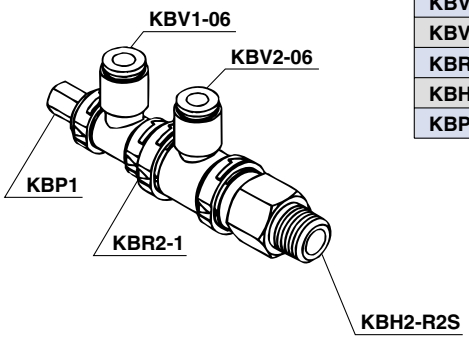
Component module	No. of modulus
KBV2-06	2 pcs.
KBE2-06	2 pcs.
KBN2	1 pc.



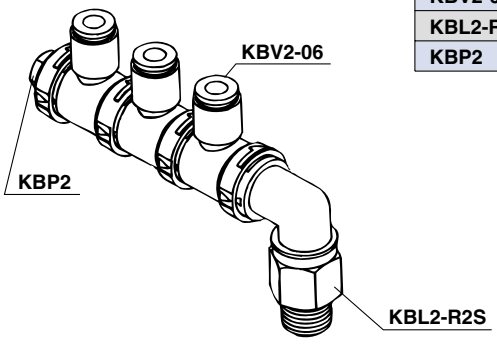
Component module	No. of modulus
KBV2-M5	3 pcs.
KBH2-R2S	1 pc.
KBP2	1 pc.



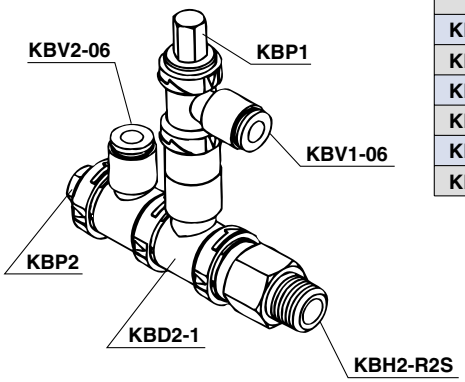
Component module	No. of modulus
KBV2-06	1 pc.
KBV1-06	1 pc.
KBR2-1	1 pc.
KBH2-R2S	1 pc.
KBP1	1 pc.



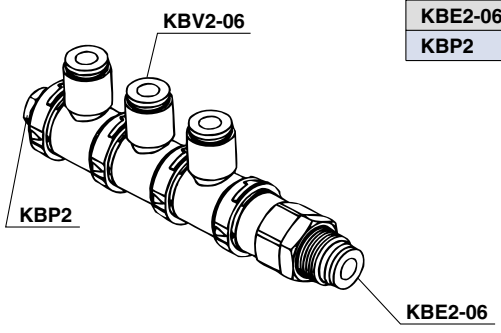
Component module	No. of modulus
KBV2-06	3 pcs.
KBL2-R2S	1 pc.
KBP2	1 pc.



Component module	No. of modulus
KBV2-06	1 pc.
KBV1-06	1 pc.
KBR2-1	1 pc.
KBH2-R2S	1 pc.
KBP2	1 pc.
KBP1	1 pc.



Component module	No. of modulus
KBV2-06	3 pcs.
KBE2-06	1 pc.
KBP2	1 pc.



Modules can be combined if they are of the same body size. To combine modules of different body sizes, use a different diameter module KBR for size conversion.

Elbow Module — KBV

Body size	Applicable tubing O.D. mm	Model
1	4	KBV1-04
1	6	-06
2		KBV2-06
2	8	-08
3		KBV3-08
3	10	KBV3-10
3	12	KBV3-12
4		KBV4-12
4	16	KBV4-16

Elbow Socket Module — KBV

Body size	Connecting thread	Model
1	M5 X 0.8	KBV1-M5
1	M6 X 1	KBV1-M6
2	M5 X 0.8	KBV2-M5
2	M6 X 1	KBV2-M6
2	Rc1/8	KBV2-R1
3		KBV3-R1
3	Rc1/4	KBV3-R2
4		KBV4-R2
4	Rc3/8	KBV4-R3

Branch Elbow Module — KBZ

Body size	Applicable tubing O.D. mm	Model
1	4	KBZ1-04
1	6	KBZ1-06
2	8	KBZ2-08
3	10	KBZ3-10
3	12	KBZ3-12
4		KBZ4-12

Female Connector Union KBH

Body size	Connecting thread	Model
1	R1/8	KBH1-R1S
2		KBH2-R1S
2	R1/4	KBH2-R2S
2	R3/8	KBH2-R3S
3	R1/4	KBH3-R2S
3	R3/8	KBH3-R3S
3	R1/2	KBH3-R4S
4	R3/8	KBH4-R3S
4	R1/2	KBH4-R4S

Female Connector Elbow Union KBL

Body size	Connecting thread	Model
1	R1/8	KBL1-R1S
2		KBL2-R1S
2	R1/4	KBL2-R2S
2	R3/8	KBL2-R3S
3	R1/4	KBL3-R2S
3	R3/8	KBL3-R3S
3	R1/2	KBL3-R4S
4	R3/8	KBL4-R3S
4	R1/2	KBL4-R4S

Bulkhead Female Connector KBE

Body size	Applicable tubing O.D. mm	Connecting thread	Model
1	4	M12 X 1	KBE1-04
1	6	M14 X 1	KBE1-06
2			KBE2-06
2	8	M16 X 1	KBE2-08
2	10	M20 X 1	KBE2-10
3	8	M16 X 1	KBE3-08
3	10	M20 X 1	KBE3-10
3	12	M22 X 1	KBE3-12
4			KBE4-12

Male Connector Socket KBB

Body size	Connecting thread	Model
1	M5 X 0.8	KBB1-M5
2	M6 X 1	KBB2-M6
3	Rc1/8	KBB3-R1
4	Rc1/4	KBB4-R2

Female Connector Socket KBS

Body size	Connecting thread	Model
1	Rc1/8	KBS1-R1
2	Rc1/4	KBS2-R2
3	Rc3/8	KBS3-R3
4	Rc1/2	KBS4-R4

Nipple — KBN

Body size	Model
1	**KBN1**
2	**KBN2**
3	**KBN3**
4	**KBN4**

Elbow Different Diameter Female Connector Module — KBD

Body size	Size of branch body	Model
2	1	**KBD2-1**
3	2	**KBD3-2**
4	3	**KBD4-3**

Different Diameter Module — KBR

Body size	Size of branch body	Model
2	1	**KBR2-1**
3	2	**KBR3-2**
4	3	**KBR4-3**

Plug — KBP

Body size	Model
1	**KBP1**
2	**KBP2**
3	**KBP3**
4	**KBP4**

Cap — KBC

Body size	Model
1	**KBC1**
2	**KBC2**
3	**KBC3**
4	**KBC4**

Bracket — KBX

Applicable part No.	Model
KBP, KBC	**KBX6**
KBE1-04	**KBX12**
KBE1-06, KBE2-06	**KBX14**
KBE2-08, KBE3-08	**KBX16**
KBE2-10, KBE3-10	**KBX20**
KBE3-12, KBE4-12	**KBX22**

∗ In case of KBX6, use the enclosed mounting screws designed for KBP (plug) and KBC (cap).
Screw size: Cross recessed round head screw (M6 X 1 X 8ℓ) Black

Rectangular Multi-connector

Series KDM

■Applicable tubing O.D.: **Metric Size**

■No. of connecting tubing: **10, 20**

Substantial reduction of mounting space.

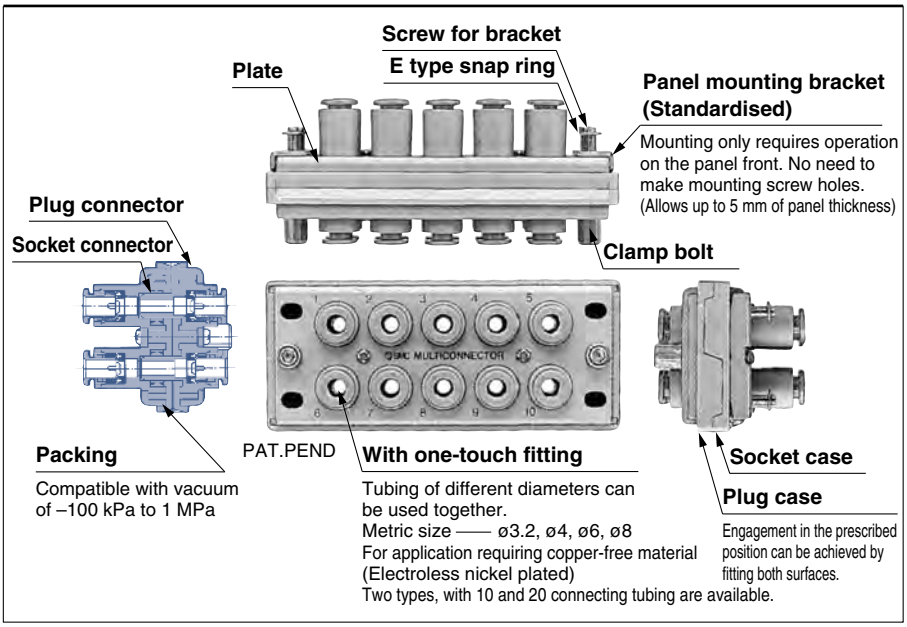
Requires less installation space compared with use of numerous bulkhead unions for panel mounting.

One-touch installation and removal of connector.

Numbers of pipes can be connected and disconnected instantly without connection errors, saving substantial labor in installation.

One-touch tubing connection.

One-touch fittings substantially cut down man hours for piping.



Refer to Best Pneumatics 2004 Vol.15 for the inch size.

Applicable Tubing

Tubing material	Nylon, Soft nylon, Polyurethane
Tubing O.D.	ø3.2, ø4, ø6, ø8

Specifications

Fluid	Air
Max. operating pressure	1.0 MPa
Operating vacuum pressure	–100 kPa
Proof pressure	1.5 MPa
Ambient and fluid temperature	–5 to 60°C (No freezing)

KDM10

No. of connecting tubing	Applicable tubing O.D. mm	Model
10	3.2	KDM10-23
	4	-04
	6	-06
	8	-08

KDM20

No. of connecting tubing	Applicable tubing O.D. mm	Model
20	3.2	KDM20-23
	4	-04
	6	-06
	8	-08

Made to Order

Electroless Nickel Plated on Brass Parts **X2**

(Example) KDM10-23-X2

Clean Series **10-**

Electroless nickel plating on brass parts (X2)
Lubricant: Fluororesin grease
Double packaging

(Example) 10-KDM10-23

■Other tubing sizes

Applicable tubing O.D. mm	Number of tubing	Part no.
10	6	IN-254-52
12	6	IN-254-53

Multi-connector

Series DM

■Applicable tubing O.D.: **Metric Size**

■No. of connecting tubing: **6, 12**

One-touch installation and removal.

Employs a unique positioning mechanism which provides one-touch installation and removal capability even in hard to see locations while preventing installation mistakes when re-connecting.

Installation processes are considerably reduced.

Simpler installation and less labor compared with use of numerous bulkhead unions for panel mounting.

Secure tubing retention.

Ensures tube retention by clamping or unclamping all tubing in one step.

No. of connecting tubes

Two types, with 6 and 12 connecting tubing, are available.

How to Order

DM [6] [ ] — [04] [N] — [ ]

No. of connecting tubing

6	6
12	12

Configuration

—	Multi connector
P	Plug side
S	Socket side

Tubing O.D.

04	4 mm
06	6 mm

Tubing material

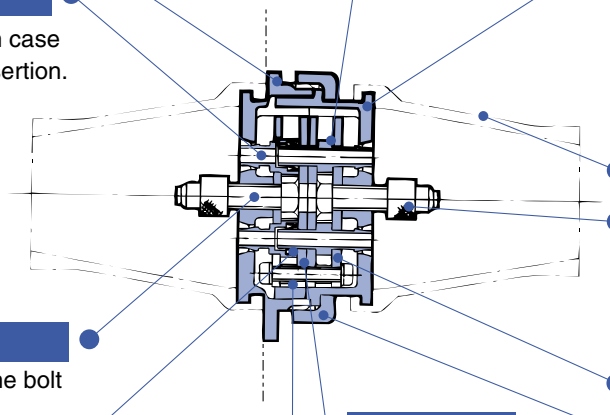
N	Nylon
NU	Soft nylon Polyurethane

Accessories (Optional)

C1	Single side cover (1 pc.)
C2	Both sides cover (2 pcs.)

Specifications

Fluid	Air
Max. operating pressure	1.0 MPa
Ambient and fluid temperature	–5 to 60°C (No freezing)



Plug

Socket case

Socket

Floating mechanism to align case holes allows easy tubing insertion.

Plug case

Secure retention by holding both tubing and barbs.

Engagement in the prescribed position can be achieved by fitting both surfaces.

Cover

Stopper (With expander)

Use of expander enables smooth tubing insertion by enlarging the tubing.

Clamp bolt

Possible to clamp with one bolt in one step operation.

U seal

Secure sealing.

Plate

Spacer

Holder

Clamp ring

The socket and plug are engaged within one turn.

PAT.

DM6

No. of connecting tubing	Applicable tubing O.D. mm	Model		
		Multi-connector	Plug side	Socket side
6	4	DM6-04N	DM6P-04N	DM6S-04N
		-04NU	-04NU	-04NU
	6	-06N	-06N	-06N
		-06NU	-06NU	-06NU

DM12

No. of connecting tubing	Applicable tubing O.D. mm	Model		
		Multi-connector	Plug side	Socket side
12	4	DM12-04N	DM12P-04N	DM12S-04N
		-04NU	-04NU	-04NU
	6	-06N	-06N	-06N
		-06NU	-06NU	-06NU

Made to Order

Made to Order

Electroless Nickel Plating on Brass Parts **X2**

(Example) DM6-04N-X2

Multi-connector with One-touch Fittings

Series DMK

■Applicable tubing O.D.: **Metric Size**

■No. of connecting tubing: **6, 12**

With One-touch fitting
Applicable to nylon, soft nylon and polyurethane tubing.

Installation processes are considerably reduced.
Simpler installation and less labor compared with use of numerous bulkhead unions for panel mounting.

Secure tubing retention.
Tubing can be firmly connected to the multiconnector in one-step operation (With one-touch fitting).

No. of connecting tubes
Two types, with 6 and 12 connecting tubing, are available.

How to Order

DMK [6] [ ] — [04] [ ]

No. of connecting tubing

6	6
12	12

Configuration

—	Multi connector
P	Plug side
S	Socket side

Tubing O.D.

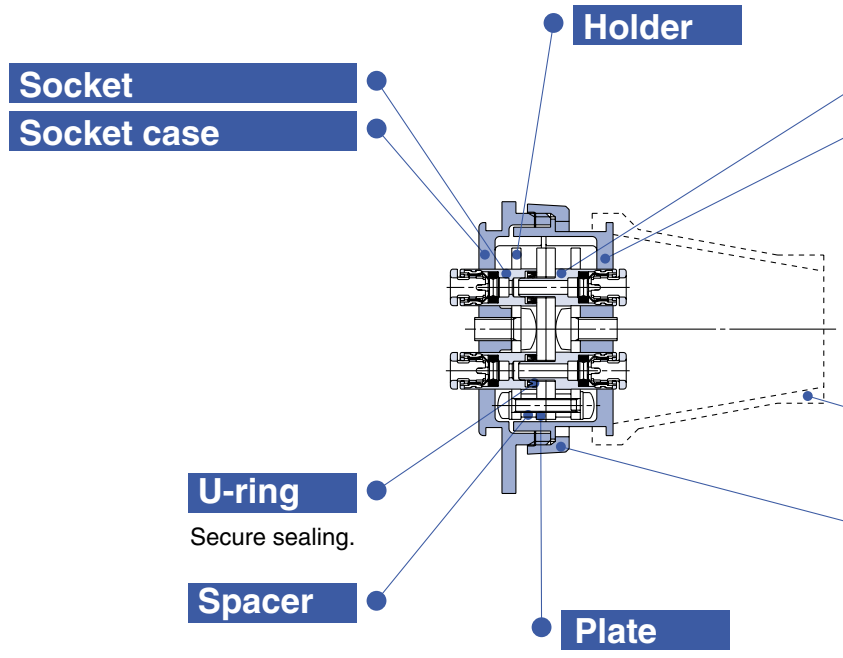
23	3.2 mm
04	4 mm

Accessories (Optional)

—	Nil
C1	Single side cover (1 pc.)
C2	Both sides cover (2 pcs.)

Specifications

Applicable tubing material	Nylon, Soft nylon, Polyurethane
Applicable tubing O.D.	ø3.2, 4
Fluid	Air
Max. operating pressure	1.0 MPa
Ambient and fluid temperature	–5 to 60°C (No freezing)



PAT.

DMK6

No. of connecting tubing	Applicable tubing O.D. mm	Model		
		Multi-connector	Plug side	Socket Side
6	3.2	DMK6-23	DMK6P-23	DMK6S-23
	4	DMK6-04	DMK6P-04	DMK6S-04

DMK12

No. of connecting tubing	Applicable tubing O.D. mm	Model		
		Multi-connector	Plug side	Socket Side
12	3.2	DMK12-23	DMK12P-23	DMK12S-23
	4	DMK12-04	DMK12P-04	DMK12S-04

Stainless Steel 316 One-touch Fittings

Series KQG

■Applicable tubing O.D.: **Metric Size**

■No. of connecting tubing: **M5, R**

Corrosion Resistant **Heat Resistant**

Material

Metal parts: **Stainless steel 316**

Seal parts: **Special FKM**

Can be used with steam

Operating fluid temperature: –5 to 150°C

Grease-free

Applicable Tubing

Tubing material	FEP, PFA, Nylon, Soft nylon, Polyurethane, Polyolefine Note 3)
Tubing O.D.	ø4, ø6, ø8, ø10, ø12

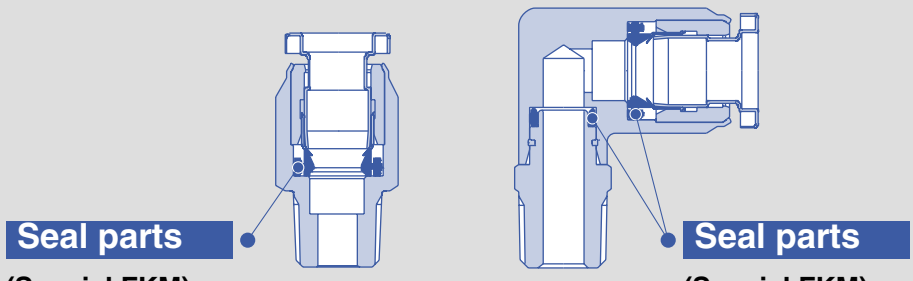
Specifications

Operating fluid	Air, Water, Steam Note 4)
Oparating pressure range Note 1)	–100 kPa to 1 MPa
Proof pressure	3.0 MPa
Ambient and Operating fluid temperature Note 2)	–5 to 150°C (No freezing)
Lubricant	Grease-free specification
Seal on the threads	With sealant

Note 1) Please avoid using in a vacuum holding application such as a leak tester, since there is leakage.
Note 2) When using at 120°C or higher, for an extended period of time, we recommend that an inner sleeve be used.
Note 3) In the event of using polyurethane tubing, we recommend the use of an inner sleeve in cases where the tubing is strained.
Note 4) Special FKM that is resistant even when steam is used.

Tube size	Tubing model (Material)				Applicable inner sleeve	
	TU (Polyurethane)	**TUS** (Soft polyurethane)	**TH** (FEP)	**TL** (PFA)	Model	Length
0402	—	—	●	—	**TJ-0402**	**18**
0425	●	●	●	—	**TJ-0425**	**18**
0403	—	—	—	●	**TJ-0403**	**18**
0604	●	●	●	●	**TJ-0604**	**19**
0805	●	●	—	—	**TJ-0805**	**20.5**
0806	—	—	●	●	**TJ-0806**	**20.5**
1065	●	●	—	—	**TJ-1065**	**23**
1075	—	—	●	—	**TJ-1075**	**23**
1008	—	—	●	●	**TJ-1208**	**24**
1208	●	●	—	—		
1209	—	—	●	—	**TJ-1209**	**24**
1210	—	—	●	●	**TJ-1210**	**24**

All stainless steel 316 except seal parts



Male connector **Male elbow**

Male Connector KQGH

Applicable tubing O.D. mm	Connection thread	Model
4	M5	KQGH04-M5
	R1/8	KQGH04-01S
6	M5	KQGH06-M5
	R1/8	KQGH06-01S
	R1/4	KQGH06-02S
8	R1/8	KQGH08-01S
	R1/4	KQGH08-02S
	R3/8	KQGH08-03S
10	R1/4	KQGH10-02S
	R3/8	KQGH10-03S
12	R3/8	KQGH12-03S
	R1/2	KQGH12-04S

Male Elbow KQGL

Applicable tubing O.D. mm	Connection thread	Model
4	M5	KQGL04-M5
	R1/8	KQGL04-01S
6	M5	KQGL06-M5
	R1/8	KQGL06-01S
	R1/4	KQGL06-02S
8	R1/8	KQGL08-01S
	R1/4	KQGL08-02S
	R3/8	KQGL08-03S
10	R1/4	KQGL10-02S
	R3/8	KQGL10-03S
12	R3/8	KQGL12-03S
	R1/2	KQGL12-04S

Hexagon Socket Head Male Connector KQGS

Applicable tubing O.D. mm	Connection thread	Model
4	M5	KQGS04-M5
	R1/8	KQGS04-01S
6	M5	KQGS06-M5
	R1/8	KQGS06-01S
	R1/4	KQGS06-02S
8	R1/8	KQGS08-01S
	R1/4	KQGS08-02S
	R3/8	KQGS08-03S
10	R1/4	KQGS10-02S
	R3/8	KQGS10-03S
12	R3/8	KQGS12-03S
	R1/2	KQGS12-04S

Union Elbow KQGL

Applicable tubing O.D. mm	Model
4	KQGL04-00
6	KQGL06-00
8	KQGL08-00
10	KQGL10-00
12	KQGL12-00

Straight Union KQGH

Applicable tubing O.D. mm	Model
4	KQGH04-00
6	KQGH06-00
8	KQGH08-00
10	KQGH10-00
12	KQGH12-00

Male Branch Tee KQGT

Applicable tubing O.D. mm	Connection thread	Model
4	M5	KQGT04-M5
	R1/8	KQGT04-01S
6	M5	KQGT06-M5
	R1/8	KQGT06-01S
	R1/4	KQGT06-02S
8	R1/8	KQGT08-01S
	R1/4	KQGT08-02S
	R3/8	KQGT08-03S
10	R1/4	KQGT10-02S
	R3/8	KQGT10-03S
12	R3/8	KQGT12-03S
	R1/2	KQGT12-04S

Union Tee KQGT

Applicable tubing O.D. mm	Model
4	KQGT04-00
6	KQGT06-00
8	KQGT08-00
10	KQGT10-00
12	KQGT12-00

Bulkhead Union KQGE

Applicable tubing O.D. mm	Model
4	KQGE04-00
6	KQGE06-00
8	KQGE08-00
10	KQGE10-00
12	KQGE12-00

Union "Y" KQGU

Applicable tubing O.D. mm	Model
4	KQGU04-00
6	KQGU06-00
8	KQGU08-00
10	KQGU10-00
12	KQGU12-00

Stainless Steel Series One-touch Fittings

Series KG

■Applicable tubing O.D.: **Metric Size**

■Connecting thread: **M5, R, Rc**

Corrosion Resistant

Stainless steel specifications compatible with corrosive environment.
Use of stainless steel 303 for metal parts.
Suitable for use in CRT production lines for copper free environment, for food processing machine washing to endure water or salt water splashes and for use in clean rooms to prevent particle generation resulting from corrosion.

Applicable tubing

Tubing material	Nylon, Soft nylon, Polyurethane
Tubing O.D.	ø4, ø6, ø8, ø10, ø12, ø16

Specifications

Fluid		Air, Water Note1)
Max. operating pressure		1.0 MPa
Operating vacuum pressure		–100 kPa
Proof pressure		3.0 MPa
Ambient and fluid temperature		–5 to 60°C, In case of water: 0 to 40°C (No freezing)
Thread	**Mounting**	JIS B0203 (Taper thread for piping)
	Nut	JIS B0211, Class 2 (Metric fine thread)
Sealant (Thread portion)		With / Without sealant Note2)

Note1) Applicable to general industrial water. Consult SMC if using for other fluids.
Surge pressure must be under the maximum operating pressure.
Note2) Suffix "S" to part number if sealant is desired.

Guide

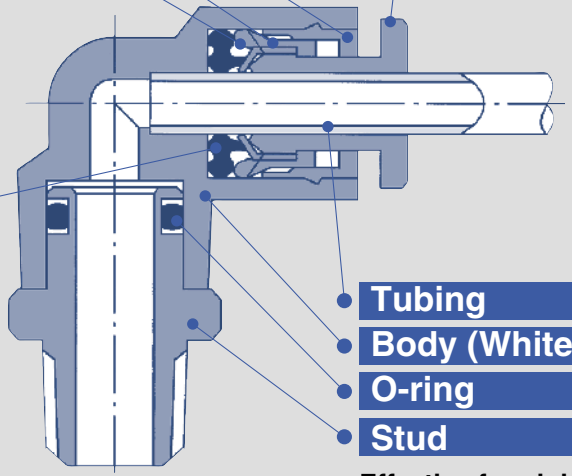
Collet

Chuck

Applicable to nylon and polyurethane.
Large retaining force.
Secure engagement with chuck and large retaining force with collet.

Release button (White)

Requires little force for removal.
Releases the chuck collet to remove the tube as well as to prevent the chuck from biting too deeply into the tubing.



Packing

Compatible with a wide range of pressure, from low vacuum to 1.0 MPa.
The special shape ensures sealing and reduces resistance in tubing insertion.

Tubing

Body (White)

O-ring

Stud

Effective for piping in confined space.
The body and thread portion can be rotated.

PAT.

Male Connector KGH

Most common style used to pipe from female thread in the same direction.

Applicable tubing O.D. mm	Connecting thread	Model
4	M5 X 0.8	KGH04-M5
	R1/8	-01
	R1/4	-02
6	M5 X 0.8	KGH06-M5
	R1/8	-01
	R1/4	-02
	R3/8	-03
8	R1/8	KGH08-01
	R1/4	-02
	R3/8	-03
10	R1/8	KGH10-01
	R1/4	-02
	R3/8	-03
	R1/2	-04
12	R1/4	KGH12-02
	R3/8	-03
	R1/2	-04
16	R3/8	KGH16-03
	R1/2	-04

Male Elbow KGL

Most common style used to pipe from female thread at a right angle.

Applicable tubing O.D. mm	Connecting thread	Model
4	M5 X 0.8	KGL04-M5
	R1/8	-01
	R1/4	-02
6	M5 X 0.8	KGL06-M5
	R1/8	-01
	R1/4	-02
	R3/8	-03
8	R1/8	KGL08-01
	R1/4	-02
	R3/8	-03
10	R1/8	KGL10-01
	R1/4	-02
	R3/8	-03
	R1/2	-04
12	R1/4	KGL12-02
	R3/8	-03
	R1/2	-04
16	R3/8	KGL16-03
	R1/2	-04

Hexagon Socket Head Male Connector KGS

The hexagon socket in the body is used to tighten the socket head male connector with a hexagon wrench. Useful in a confined space.

Applicable tubing O.D. mm	Connecting thread	Model
4	M5 X 0.8	KGS04-M5
	R1/8	-01
6	M5 X 0.8	KGS06-M5
	R1/8	-01
	R1/4	-02
8	R1/8	KGS08-01
	R1/4	-02
	R3/8	-03
10	R1/8	KGS10-01
	R1/4	-02
	R3/8	-03
	R1/2	-04
12	R1/4	KGS12-02
	R3/8	-03
	R1/2	-04

Extended Male Elbow KGW

Basically used in the same way as a male elbow.
But also used in 3 dimensional piping to prevent interference of fittings.

Applicable tubing O.D. mm	Connecting thread	Model
4	M5 X 0.8	KGW04-M5
	R1/8	-01
	R1/4	-02
6	M5 X 0.8	KGW06-M5
	R1/8	-01
	R1/4	-02
	R3/8	-03
8	R1/8	KGW08-01
	R1/4	-02
	R3/8	-03
10	R1/4	KGW10-02
	R3/8	-03
	R1/2	-04
12	R1/4	KGW12-02
	R3/8	-03
	R1/2	-04

Universal Male Elbow KGV

The hexagon head of the body is used to tighten the body with a box wrench in a confined space.

Applicable tubing O.D. mm	Connecting thread	Model
4	M5 X 0.8	KGV04-M5
	R1/8	-01
6	M5 X 0.8	KGV06-M5
	R1/8	-01
	R1/4	-02
8	R1/8	KGV08-01
	R1/4	-02
	R3/8	-03
10	R1/4	KGV10-02
	R3/8	-03
12	R3/8	KGV12-03
	R1/2	-04

Male Branch Tee KGT

To branch the line from the female thread at 90° in each direction.

Applicable tubing O.D. mm	Connecting thread	Model
4	M5 X 0.8	KGT04-M5
	R1/8	-01
	R1/4	-02
6	M5 X 0.8	KGT06-M5
	R1/8	-01
	R1/4	-02
	R3/8	-03
8	R1/8	KGT08-01
	R1/4	-02
	R3/8	-03
10	R1/8	KGT10-01
	R1/4	-02
	R3/8	-03
	R1/2	-04
12	R1/4	KGT12-02
	R3/8	-03
	R1/2	-04
16	R3/8	KGT16-03
	R1/2	-04

Male Run Tee KGY

To branch the line from the female thread in the same direction and at 90°.

Applicable tubing O.D. mm	Connecting thread	Model
4	M5 X 0.8	KGY04-M5
	R1/8	-01
	R1/4	-02
6	M5 X 0.8	KGY06-M5
	R1/8	-01
	R1/4	-02
	R3/8	-03
8	R1/8	KGY08-01
	R1/4	-02
	R3/8	-03
10	R1/8	KGY10-01
	R1/4	-02
	R3/8	-03
	R1/2	-04
12	R1/4	KGY12-02
	R3/8	-03
	R1/2	-04
16	R3/8	KGY16-03
	R1/2	-04

Union "Y" KGU

To branch tubing in the same direction.

Applicable tubing O.D. mm	Connecting thread	Model
4	M5 X 0.8	KGU04-M5
	R1/8	-01
	R1/4	-02
6	M5 X 0.8	KGU06-M5
	R1/8	-01
	R1/4	-02
	R3/8	-03
8	R1/8	KGU08-01
	R1/4	-02
	R3/8	-03
10	R1/4	KGU10-02
	R3/8	-03
	R1/2	-04
12	R1/4	KGU12-02
	R3/8	-03
	R1/2	-04

Male Branch Connector KGLU

To branch the line from the female thread at a right angle.

Applicable tubing O.D. mm	Connecting thread	Model
4	M5 X 0.8	KGLU04-M5
	R1/8	-01
	R1/4	-02
6	M5 X 0.8	KGLU06-M5
	R1/8	-01
	R1/4	-02
	R3/8	-03
8	R1/8	KGLU08-01
	R1/4	-02
	R3/8	-03
10	R1/4	KGLU10-02
	R3/8	-03
	R1/2	-04
12	R1/4	KGLU12-02
	R3/8	-03
	R1/2	-04

Delta Union KGD

To branch the line from the female thread into 2 directions at right angles.

Applicable tubing O.D. mm	Connecting thread	Model
4	M5 X 0.8	KGD04-M5
	R1/8	-01
	R1/4	-02
6	M5 X 0.8	KGD06-M5
	R1/8	-01
	R1/4	-02
	R3/8	-03
8	R1/8	KGD08-01
	R1/4	-02
	R3/8	-03
10	R1/4	KGD10-02
	R3/8	-03
	R1/2	-04
12	R1/4	KGD12-02
	R3/8	-03
	R1/2	-04

Double Branch KGUD

To branch the line from the female thread into 4 tubes in the same direction.

Applicable tubing O.D. mm	Connecting thread	Model
4	R1/8	KGUD04-01
	R1/4	-02
6	R1/8	KGUD06-01
	R1/4	-02

Straight Union KGH

To connect tubing in the same direction.

Applicable tubing O.D. mm	Model
4	KGH04-00
6	KGH06-00
8	KGH08-00
10	KGH10-00
12	KGH12-00

Bulkhead Union KGE

To connect tubing through a panel.

Applicable tubing O.D.mm	Model
4	KGE04-00
6	KGE06-00
8	KGE08-00
10	KGE10-00
12	KGE12-00
16	KGE16-00

Union Elbow KGL

To connect tubing at right angles to each other.

Applicable tubing O.D. mm	Model
4	KGL04-00
6	KGL06-00
8	KGL08-00
10	KGL10-00
12	KGL12-00
16	KGL16-00

Union Tee KGT

To branch tubing into 2 directions each at 90° to the original one.

Applicable tubing O.D. mm	Model
4	KGT04-00
6	KGT06-00
8	KGT08-00
10	KGT10-00
12	KGT12-00
16	KGT16-00

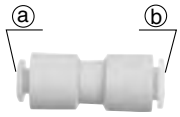
Union "Y" KGU

To branch tubing in the same direction.

Applicable tubing O.D. mm	Model
4	KGU04-00
6	KGU06-00
8	KGU08-00
10	KGU10-00
12	KGU12-00

Different Dia. Straight KGH

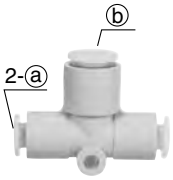
To connect tubing of different diameters.



Applicable tubing O.D. mm		Model
ⓐ	ⓑ	
4	6	KGH04-06
6	8	KGH06-08
8	10	KGH08-10
10	12	KGH10-12

Different Dia. Tee KGT

To branch the tubing into two at a right angle and reduce the resulting branches in size.



Applicable tubing O.D. mm		Model
ⓐ	ⓑ	
4	6	KGT04-06
6	8	KGT06-08
8	10	KGT08-10
10	12	KGT10-12

Different Dia. Union "Y" KGU

To branch tubing into 2 smaller tubes in the same direction as the original one.

Applicable tubing O.D. mm		Model
ⓐ	ⓑ	
4	6	KGU04-06
6	8	KGU06-08
8	10	KGU08-10
10	12	KGU10-12

Different Dia. Double Union "Y" KGUD

To branch tubing into 4 smaller tubes in the same direction as the original one.

Applicable tubing O.D. mm		Model
ⓐ	ⓑ	
4	6	KGUD04-06
6	8	KGUD06-08

Branch Union Elbow KGLU

To branch a tube at a right angle into two tubes.

Applicable tubing O.D. mm	Model
4	KGLU04-00
6	KGLU06-00
8	KGLU08-00
10	KGLU10-00
12	KGLU12-00

Delta Union KGD

To connect 3 tubes at right angles with each other.

Applicable tubing O.D. mm	Model
4	KGD04-00
6	KGD06-00
8	KGD08-00
10	KGD10-00
12	KGD12-00

Plug-in Elbow KGL

To change the tubing direction from a one-touch fitting by 90°.

Applicable tubing O.D. mm	Fitting size	Model
4	4	KGL04-99
6	6	KGL06-99
8	8	KGL08-99
10	10	KGL10-99
12	12	KGL12-99

Plug-in Reducer KGR

To connect to a smaller one-touch fitting.

Applicable tubing O.D. mm	Fitting size	Model
4	6	KGR04-06
	8	-08
	10	-10
6	4	KGR06-04
	8	-08
	10	-10
	12	-12
8	10	KGR08-10
	12	-12
10	12	KGR10-12
	16	-16
12	16	KGR12-16

Female Connector KGF

To pipe from the male threaded portion of a pressure gauge, etc.

Applicable tubing O.D. mm	Connecting thread	Model
4	Rc1/8	KGF04-01
	Rc1/4	-02
6	Rc1/8	KGF06-01
	Rc1/4	-02
	Rc3/8	-03
8	Rc1/8	KGF08-01
	Rc1/4	-02
	Rc3/8	-03
10	Rc1/4	KGF10-02
	Rc3/8	-03
12	Rc1/4	KGF12-02
	Rc3/8	-03
	Rc1/2	-04

Bulkhead Female Connector KGE

Used for trunk connection between tubing and a male thread installed through a panel.

Applicable tubing O.D. mm	Connecting thread	Model
4	Rc1/8	KGE04-01
	Rc1/4	-02
6	Rc1/8	KGE06-01
	Rc1/4	-02
	Rc3/8	-03
8	Rc1/8	KGE08-01
	Rc1/4	-02
	Rc3/8	-03
10	Rc1/4	KGE10-02
	Rc3/8	-03
12	Rc3/8	KGE12-03
	Rc1/2	-04
16	Rc3/8	KGE16-03
	Rc1/2	-04

Tubing Cap KGC

To plug unused tubing.

Applicable tubing O.D. mm	Model
4	KGC04-00
6	KGC06-00
8	KGC08-00
10	KGC10-00
12	KGC12-00
16	KGC16-00

Made to Order

Lubricant: Vaseline **X12**

(Example) KGH06-02-X12

Seal: Fluororesin Coating
Oil Free: No Lubrication **X17**

(Example) KGH06-02-X17

Clean Series **10-**

Lubricant: Fluororesin grease
Double packaging

(Example) 10-KGH06-02

No Lubrication **X57**

(Example) KGH06-02-X57

With Sealant on R Thread **S**

(Example) KGH06-02S

Clean One-touch Fittings (For Blow)

Series KP

■Applicable tubing O.D.: **Metric Size**

■Connecting thread: **R**

Clean

Completely oil free.
Liquid contact parts are non-metal.
Components are washed, assembled and double packed in a clean room.
Compatible with vacuum pressure (–100 kPa)

⚠ Caution

Series KP is designed for **clean blow** and use in **washing lines**. Consult SMC for use in other applications.

Sealant material: EPDM does not have sufficient resistance to mineral oil and is not suitable for piping of general pneumatic equipment.

Recommended Applicable Tubing

Tubing material	Polyolefin: Series TPH Soft polyolefin: Series TPS
Tubing O.D.	ø4, ø6, ø8, ø10, ø12

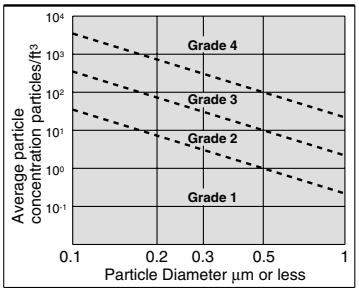
Polyurethane tubing: Series TU, Nylon tubing: Series T, Soft nylon tubing: Series TS also can be used though with lower degree of cleanliness.

Specifications

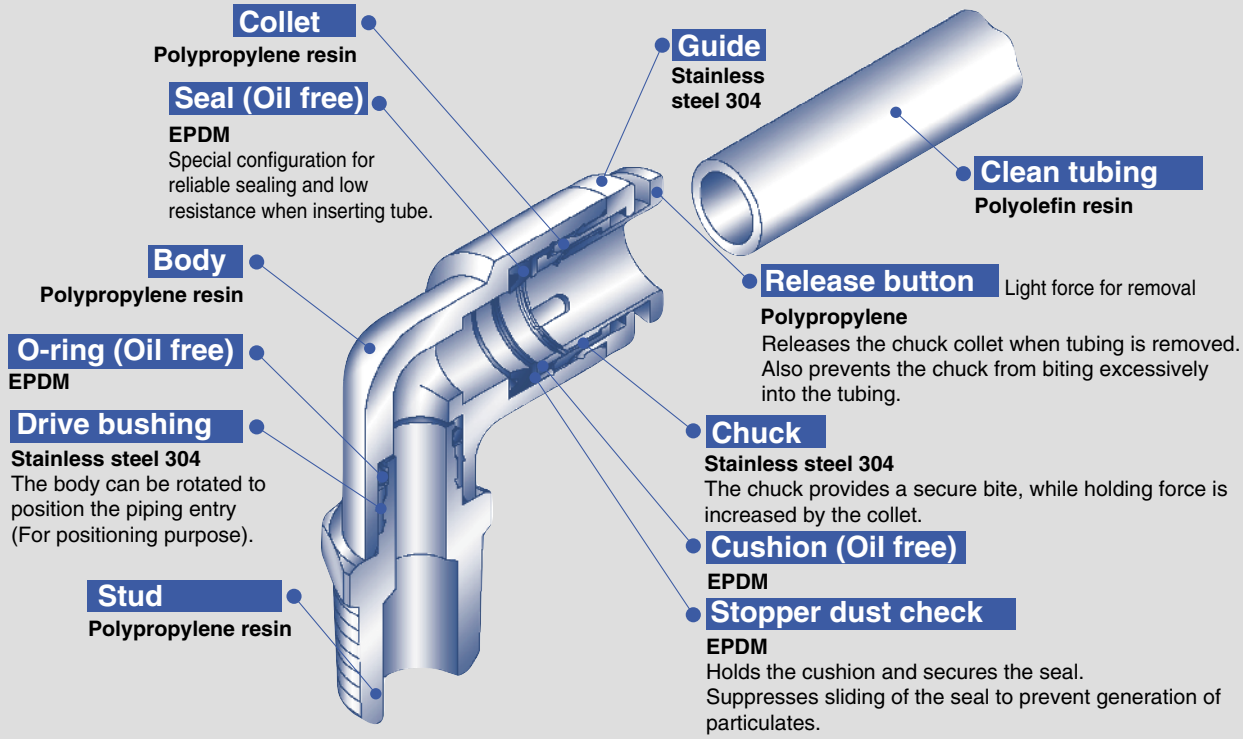
Particle generation grade	Grade 1 Note 1)
Fluid	Air, Nitrogen gas, Water (Pure water) Note 2)
Max. operating pressure (20°C)	1 MPa Note3)
Operating vacuum pressure	–100 kPa
Proof pressure (20°C)	3 MPa
Ambient and fluid temperature	–20 to 80°C
Thread	JIS B0203 (Taper thread for piping)

Note 1) Refer to the particle generation grade classifications.
Note 2) Contact SMC for other types of fluids.
Note 3) The max. operating pressure is one at 20°C.
Note 4) When water is used as the operating fluid, do not allow the surge pressure to exceed the max. operating pressure.

Particle Generation Grade Classifications



Note) For more information, refer to SMC Clean Series Catalog.



Male Connector KPH

Most common style used to pipe from female thread in the same direction.

Applicable tubing O.D. mm	Connecting thread	Model
4	R1/8	KPH04-01
	R1/4	-02
6	R1/8	KPH06-01
	R1/4	-02
8	R1/8	KPH08-01
	R1/4	-02
10	R1/4	KPH10-02
	R3/8	-03
12	R3/8	KPH12-03
	R1/2	-04

Male Run Tee KPY

To branch the line from the female thread in the same direction and at 90°.

Applicable tubing O.D. mm	Connecting thread	Model
4	R1/8	KPY04-01
	R1/4	-02
6	R1/8	KPY06-01
	R1/4	-02
8	R1/8	KPY08-01
	R1/4	-02
10	R1/4	KPY10-02
	R3/8	-03
12	R3/8	KPY12-03
	R1/2	-04

Male Elbow KPL

Most common style used to pipe from female thread at a right angle.

Applicable tubing O.D. mm	Connecting thread	Model
4	R1/8	KPL04-01
	R1/4	-02
6	R1/8	KPL06-01
	R1/4	-02
8	R1/8	KPL08-01
	R1/4	-02
10	R1/4	KPL10-02
	R3/8	-03
12	R3/8	KPL12-03
	R1/2	-04

Union "Y" KPU

To branch tubing in the same direction.

Applicable tubing O.D. mm	Connecting thread	Model
4	R1/8	KPU04-01
	R1/4	-02
6	R1/8	KPU06-01
	R1/4	-02
8	R1/8	KPU08-01
	R1/4	-02
10	R1/4	KPU10-02
	R3/8	-03
12	R3/8	KPU12-03
	R1/2	-04

Male Branch Tee KPT

To branch the line from the female thread at 90° in each direction.

Applicable tubing O.D. mm	Connecting thread	Model
4	R1/8	KPT04-01
	R1/4	-02
6	R1/8	KPT06-01
	R1/4	-02
8	R1/8	KPT08-01
	R1/4	-02
10	R1/4	KPT10-02
	R3/8	-03
12	R3/8	KPT12-03
	R1/2	-04

Straight Union KPH

To connect tubing in the same direction.

Applicable tubing O.D. mm	Model
4	KPH04-00
6	KPH06-00
8	KPH08-00
10	KPH10-00
12	KPH12-00

Union Elbow KPL

To connect tubing at right angles to each other.

Applicable tubing O.D. mm	Model
4	KPL04-00
6	KPL06-00
8	KPL08-00
10	KPL10-00
12	KPL12-00

Union Tee KPT

To branch tubing into 2 directions each at 90° to the original one.

Applicable tubing O.D. mm	Model
4	KPT04-00
6	KPT06-00
8	KPT08-00
10	KPT10-00
12	KPT12-00

Union "Y" KPU

To branch tubing in the same direction.

Applicable tubing O.D. mm	Model
4	KPU04-00
6	KPU06-00
8	KPU08-00
10	KPU10-00
12	KPU12-00

Plug-in Reducer KPR

To connect to a smaller one-touch fitting.

Applicable tubing O.D. mm	Fitting size	Model
4	6	KPR04-06
	8	-08
6	8	KPR06-08
	10	-10
8	10	KPR08-10
	12	-12
10	12	KPR10-12

Plug KPP

To plug unused one-touch fittings.

Fitting size	Model
4	KPP-04
6	KPP-06
8	KPP-08
10	KPP-10
12	KPP-12

Clean One-touch Fittings (For Driving System Air Piping)

Series KPQ/KPG

■Applicable tubing O.D.: **Metric Size**

■Connecting thread: **R**

Clean

Size M5 is standardised. Use of P.P (Polypropylene) for resin parts.

Series KPQ

Series KPG

Recommended Applicable Tubing

Tubing material	Polyurethane: Series 10-
Tubing O.D.	ø4, ø6, ø8, ø10, ø12

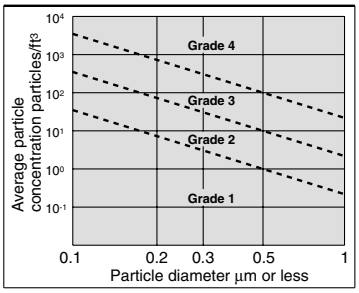
Nylon tubing: Series T and series TS soft nylon tubing can also be used though with lower degree of cleanliness.

Specifications

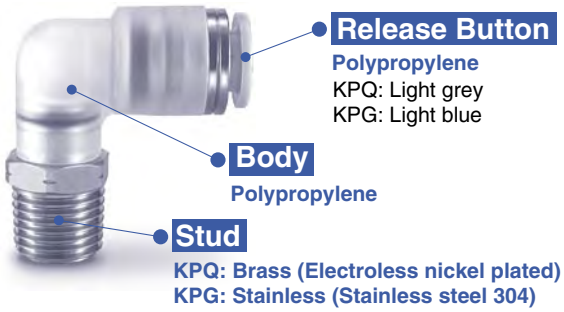
Particle generation grade	Grade 1 Note 1)
Fluid	Air
Max. operating pressure (20°C)	1 MPa Note 2)
Operating vacuum pressure	–100 kPa
Proof pressure (20°C)	3 MPa
Ambient and fluid temperature	–5 to 60°C (No freezing)
Thread	JIS B0203 (Taper thread for piping)

Note 1) Refer to the particle generation grading chart.
Internal parts are not included in the grading because of greasing on sealant.
Note 2) The max. operating pressure is one at 20°C.

Particle Generation Grading

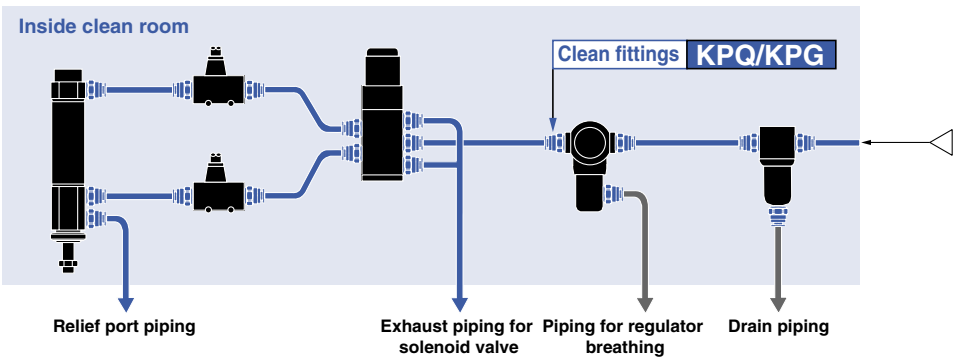


Note) For more information, refer to SMC Clean Series Catalogue.



■Driving air piping system

In case of half union



PAT.

SMC

Male Connector KPQH/KPGH

Most common style used to pipe from female thread in the same direction.

Applicable tubing O.D. mm	Connecting thread	Model KPQH	Model KPGH
4	M5 X 0.8	KPQH04-M5	KPGH04-M5
	R1/8	KPQH04-01	KPGH04-01
	R1/4	KPQH04-02	KPGH04-02
6	M5 X 0.8	KPQH06-M5	KPGH06-M5
	R1/8	KPQH06-01	KPGH06-01
	R1/4	KPQH06-02	KPGH06-02
8	R1/8	KPQH08-01	KPGH08-01
	R1/4	KPQH08-02	KPGH08-02
10	R1/4	KPQH10-02	KPGH10-02
	R3/8	KPQH10-03	KPGH10-03
12	R3/8	KPQH12-03	KPGH12-03
	R1/2	KPQH12-04	KPGH12-04

Union Tee KPQT/KPGT

To branch a tubing into 2 directions each at 90° to the original one.

Applicable tubing O.D. mm	Connecting thread	Model KPQT	Model KPGT
4	M5 X 0.8	KPQT04-M5	KPGT04-M5
	R1/8	KPQT04-01	KPGT04-01
	R1/4	KPQT04-02	KPGT04-02
6	M5 X 0.8	KPQT06-M5	KPGT06-M5
	R1/8	KPQT06-01	KPGT06-01
	R1/4	KPQT06-02	KPGT06-02
8	R1/8	KPQT08-01	KPGT08-01
	R1/4	KPQT08-02	KPGT08-02
10	R1/4	KPQT10-02	KPGT10-02
	R3/8	KPQT10-03	KPGT10-03
12	R3/8	KPQT12-03	KPGT12-03
	R1/2	KPQT12-04	KPGT12-04

Male Elbow KPQL/KPGL

Most common style used to pipe from female thread at a right angle.

Applicable tubing O.D. mm	Connecting thread	Model KPQL	Model KPGL
4	M5 X 0.8	KPQL04-M5	KPGL04-M5
	R1/8	KPQL04-01	KPGL04-01
	R1/4	KPQL04-02	KPGL04-02
6	M5 X 0.8	KPQL06-M5	KPGL06-M5
	R1/8	KPQL06-01	KPGL06-01
	R1/4	KPQL06-02	KPGL06-02
8	R1/8	KPQL08-01	KPGL08-01
	R1/4	KPQL08-02	KPGL08-02
10	R1/4	KPQL10-02	KPGL10-02
	R3/8	KPQL10-03	KPGL10-03
12	R3/8	KPQL12-03	KPGL12-03
	R1/2	KPQL12-04	KPGL12-04

Male Run Tee KPQY/KPGY

To branch the line from the female thread in the same direction and at 90°.

Applicable tubing O.D. mm	Connecting thread	Model KPQL	Model KPGL
4	M5 X 0.8	KPQY04-M5	KPGY04-M5
	R1/8	KPQY04-01	KPGY04-01
	R1/4	KPQY04-02	KPGY04-02
6	M5 X 0.8	KPQY06-M5	KPGY06-M5
	R1/8	KPQY06-01	KPGY06-01
	R1/4	KPQY06-02	KPGY06-02
8	R1/8	KPQY08-01	KPGY08-01
	R1/4	KPQY08-02	KPGY08-02
10	R1/4	KPQY10-02	KPGY10-02
	R3/8	KPQY10-03	KPGY10-03
12	R3/8	KPQY12-03	KPGY12-03
	R1/2	KPQY12-04	KPGY12-04

Union "Y" KPQU/KPGU

To branch tubing in the same direction.

Applicable tubing O.D. mm	Connecting thread	Model KPQU	Model KPGU
4	M5 X 0.8	KPQU04-M5	KPGU04-M5
	R1/8	KPQU04-01	KPGU04-01
	R1/4	KPQU04-02	KPGU04-02
6	M5 X 0.8	KPQU06-M5	KPGU06-M5
	R1/8	KPQU06-01	KPGU06-01
	R1/4	KPQU06-02	KPGU06-02
8	R1/8	KPQU08-01	KPGU08-01
	R1/4	KPQU08-02	KPGU08-02
10	R1/4	KPQU10-02	KPGU10-02
	R3/8	KPQU10-03	KPGU10-03
12	R3/8	KPQU12-03	KPGU12-03
	R1/2	KPQU12-04	KPGU12-04

Straight Union KPQH/KPGH

To connect tubing in the same direction.

Applicable tubing O.D. mm	Model KPQH	Model KPGH
4	KPQH04-00	KPGH04-00
6	KPQH06-00	KPGH06-00
8	KPQH08-00	KPGH08-00
10	KPQH10-00	KPGH10-00
12	KPQH12-00	KPGH12-00

Elbow KPQL/KPGL

To connect tubing at right angles to each other.

Applicable tubing O.D. mm	Model KPQL	Model KPGL
4	KPQL04-00	KPGL04-00
6	KPQL06-00	KPGL06-00
8	KPQL08-00	KPGL08-00
10	KPQL10-00	KPGL10-00
12	KPQL12-00	KPGL12-00

Union Tee KPQT/KPGT

To branch a tubing into 2 directions each at 90° to the original one.

Applicable tubing O.D. mm	Model KPQT	Model KPGT
4	KPQT04-00	KPGT04-00
6	KPQT06-00	KPGT06-00
8	KPQT08-00	KPGT08-00
10	KPQT10-00	KPGT10-00
12	KPQT12-00	KPGT12-00

Union "Y" KPQU/KPGU

To branch tubing in the same direction.

Applicable tubing O.D. mm	Model KPQU	Model KPGU
4	KPQU04-00	KPGU04-00
6	KPQU06-00	KPGU06-00
8	KPQU08-00	KPGU08-00
10	KPQU10-00	KPGU10-00
12	KPQU12-00	KPGU12-00

Plug-in Reducer KPQR/KPGR

To connect to a smaller one-touch fitting.

Applicable tubing O.D. mm	Fitting size	Model KPQR	Model KPGR
4	6	KPQR04-06	KPGR04-06
	8	KPQR04-08	KPGR04-08
6	8	KPQR06-08	KPGR06-08
	10	KPQR06-10	KPGR06-10
8	10	KPQR08-10	KPGR08-10
	12	KPQR08-12	KPGR08-12
10	12	KPQR10-12	KPGR10-12

Plug KPP

To plug unused one-touch fittings.

Fitting size	Model
4	KPP-04
6	KPP-06
8	KPP-08
10	KPP-10
12	KPP-12

Antistatic One-touch Fittings

Series KA

■Applicable tubing O.D.: Metric Size

■Connecting thread: M, UNI thread

Antistatic Measures ★ **Spatter Proof**

Anti-static fittings.
One-touch attachment and removal.
Compatible with vacuum pressure (–100 kPa).
Can be used for copper-free applications.
Flame resistant (Equivalent to UL-94 Standards V-0)
Surface resistance 10^4 to 10^7 Ω
Conductive resin is used for the body sealant of fittings.

Applicable Tubing

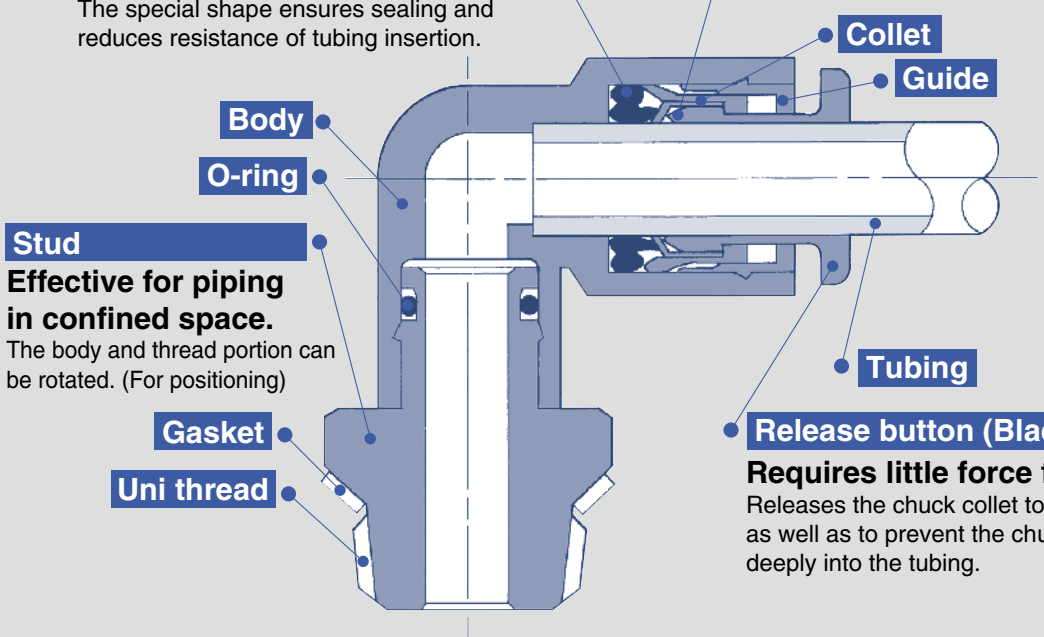
Tubing material	Antistatic soft nylon, Antistatic polyurethane
Tubing O.D.	ø3.2, ø4, ø6, ø8, ø10, ø12

Specifications

Fluid	Air
Max. operating pressure	1.0 MPa
Operating vacuum pressure	–100 kPa
Proof pressure	3.0 MPa
Ambient and fluid temperature	0 to 40°C
Mounting thread	UNI thread, screw JIS B0209, Class 2 (Metric coarse thread)
Sealant (Thread portion)	Gasket
Copper-free specifications	Brass parts are all electroless nickel plated.
Surface resistance	10^4 to 10^7 Ω

Packing
Compatible with a wide range of pressure, from low vacuum to 1.0 MPa.
The special shape ensures sealing and reduces resistance of tubing insertion.

Chuck
Large retaining force.
Secure engagement with chuck and large retaining force with collet.



Stud
Effective for piping in confined space.
The body and thread portion can be rotated. (For positioning)

Release button (Black)
Requires little force for removal.
Releases the chuck collet to remove the tube as well as to prevent the chuck from biting too deeply into the tubing.

Male Connector KAH

Most common style used to pipe from female thread in the same direction.

<M5, M6>

<UNI thread>

Applicable tubing O.D. mm	Connecting thread	Model
3.2	M5 X 0.8	KAH23-M5
	M6 X 1	-M6
	Uni 1/8	-U01
4	M5 X 0.8	KAH04-M5
	M6 X 1	-M6
	Uni 1/8	-U01
	Uni 1/4	-U02
6	M5 X 0.8	KAH06-M5
	M6 X 1	-M6
	Uni 1/8	-U01
	Uni 1/4	-U02
	Uni 3/8	-U03
8	Uni 1/8	KAH08-U01
	Uni 1/4	-U02
	Uni 3/8	-U03
10	Uni 1/8	KAH10-U01
	Uni 1/4	-U02
	Uni 3/8	-U03
	Uni 1/2	-U04
12	Uni 1/4	KAH12-U02
	Uni 3/8	-U03
	Uni 1/2	-U04

Male Branch Tee KAT

To branch the line from the female thread at 90° in each direction.

<M5, M6>

<UNI thread>

Applicable tubing O.D. mm	Connecting thread	Model
3.2	M5 X 0.8	KAT23-M5
	M6 X 1	-M6
	Uni 1/8	-U01
4	M5 X 0.8	KAT04-M5
	M6 X 1	-M6
	Uni 1/8	-U01
	Uni 1/4	-U02
6	M5 X 0.8	KAT06-M5
	M6 X 1	-M6
	Uni 1/8	-U01
	Uni 1/4	-U02
	Uni 3/8	-U03
8	Uni 1/8	KAT08-U01
	Uni 1/4	-U02
	Uni 3/8	-U03
10	Uni 1/8	KAT10-U01
	Uni 1/4	-U02
	Uni 3/8	-U03
	Uni 1/2	-U04
12	Uni 1/4	KAT12-U02
	Uni 3/8	-U03
	Uni 1/2	-U04

Male Elbow KAL

Most common style used to pipe from female thread at a right angle.

<M5,M6>

<UNI thread>

Applicable tubing O.D. mm	Connecting thread	Model
3.2	M5 X 0.8	KAL23-M5
	M6 X 1	-M6
	Uni 1/8	-U01
4	M5 X 0.8	KAL04-M5
	M6 X 1	-M6
	Uni 1/8	-U01
	Uni 1/4	-U02
6	M5 X 0.8	KAL06-M5
	M6 X 1	-M6
	Uni 1/8	-U01
	Uni 1/4	-U02
	Uni 3/8	-U03
8	Uni 1/8	KAL08-U01
	Uni 1/4	-U02
	Uni 3/8	-U03
10	Uni 1/8	KAL10-U01
	Uni 1/4	-U02
	Uni 3/8	-U03
	Uni 1/2	-U04
12	Uni 1/4	KAL12-U02
	Uni 3/8	-U03
	Uni 1/2	-U04

Male Run Tee KAY

To branch the line from the female thread in the same direction and at 90°.

<M5, M6>

<UNI thread>

Applicable tubing O.D. mm	Connecting thread	Model
3.2	M5 X 0.8	KAY23-M5
	M6 X 1	-M6
	Uni 1/8	-U01
4	M5 X 0.8	KAY04-M5
	M6 X 1	-M6
	Uni 1/8	-U01
	Uni 1/4	-U02
6	M5 X 0.8	KAY06-M5
	M6 X 1	-M6
	Uni 1/8	-U01
	Uni 1/4	-U02
	Uni 3/8	-U03
8	Uni 1/8	KAY08-U01
	Uni 1/4	-U02
	Uni 3/8	-U03
10	Uni 1/8	KAY10-U01
	Uni 1/4	-U02
	Uni 3/8	-U03
	Uni 1/2	-U04
12	Uni 1/4	KAY12-U02
	Uni 3/8	-U03
	Uni 1/2	-U04

Union "Y" — KAU

To branch tubing in the same direction.

<M5, M6>

<UNI thread>

Applicable tubing O.D. mm	Connecting thread	Model
3.2	M5 X 0.8	KAU23-M5
	M6 X 1	-M6
	Uni 1/8	-U01
4	M5 X 0.8	KAU04-M5
	M6 X 1	-M6
	Uni 1/8	-U01
	Uni 1/4	-U02
6	M5 X 0.8	KAU06-M5
	M6 X 1	-M6
	Uni 1/8	-U01
	Uni 1/4	-U02
	Uni 3/8	-U03
8	Uni 1/8	KAU08-U01
	Uni 1/4	-U02
	Uni 3/8	-U03
10	Uni 1/4	KAU10-U02
	Uni 3/8	-U03
	Uni 1/2	-U04
12	Uni 1/4	KAU12-U02
	Uni 3/8	-U03
	Uni 1/2	-U04

Straight Union — KAH

To connect tubing in the same direction.

Applicable tubing O.D. mm	Model
3.2	KAH23-00
4	KAH04-00
6	KAH06-00
8	KAH08-00
10	KAH10-00
12	KAH12-00

Union Elbow — KAL

To connect tubing at right angles to each other.

Applicable tubing O.D. mm	Model
3.2	KAL23-00
4	KAL04-00
6	KAL06-00
8	KAL08-00
10	KAL10-00
12	KAL12-00

Branch Tee — KAT

To branch a tubing into 2 directions each at 90° to the original one.

Applicable tubing O.D. mm	Model
3.2	KAT23-00
4	KAT04-00
6	KAT06-00
8	KAT08-00
10	KAT10-00
12	KAT12-00

Union "Y" — KAU

To branch tubing in the same direction.

Applicable tubing O.D. mm	Model
3.2	KAU23-00
4	KAU04-00
6	KAU06-00
8	KAU08-00
10	KAU10-00
12	KAU12-00

Different Dia. Straight — KAH

To connect tubing of different diameters.

Applicable tubing O.D. mm		Model
ⓐ	ⓑ	
3.2	4	KAH23-04
4	6	KAH04-06
6	8	KAH06-08
8	10	KAH08-10
10	12	KAH10-12

Plug-in Reducer KAR

To connect to a smaller one-touch fitting.

Applicable tubing O.D. mm	Fitting size	Model
3.2	4	KAR23-04
4	6	KAR04-06
	8	-08
	10	-10
6	8	KAR06-08
	10	-10
	12	-12
8	10	KAR08-10
	12	-12
10	12	KAR10-12

Flame Resistant (Equivalent to UL-94 Standards V-0) FR One-touch Fittings

Series KR

■Applicable tubing O.D.: Metric Size

■Connecting thread: R, Rc

Spatter Proof

KR (Black body)

KR-W2 (White body)

Applicable Tubing

Tubing material	FR double layer, FR soft nylon
Tubing O.D.	ø6, ø8, ø10, ø12

Specifications

Fluid		Air, Water Note1)
Max. operating pressure		1.0 MPa
Proof pressure		3.0 MPa
Ambient and fluid temperature		–5 to 60°C, In case of water: 0 to 60°C (No freezing)
Thread	Mounting	JIS B0203 (Taper thread for piping)
	Nut	JIS B0211, Class 2 (Metric fine thread)
Sealant (Thread portion)		With sealant (Standard)

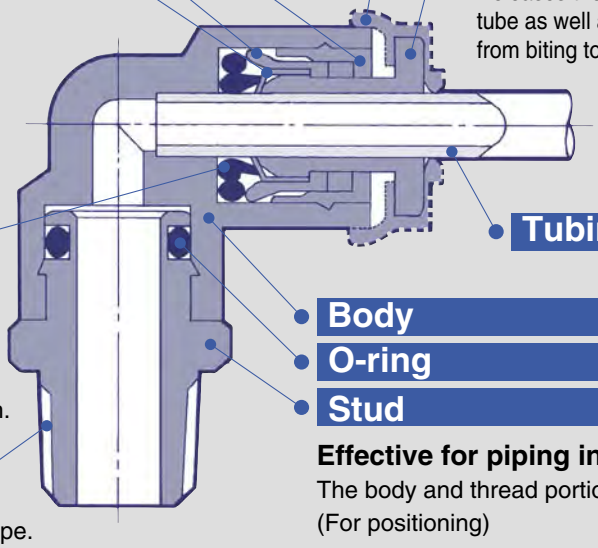
Note1) Applicable to general industrial water. Consult SMC if using for other fluids.
Surge pressure must be under the maximum operating pressure.

Series KR: Black body.
Series KR-W2: White body.

Cover (Option)
Prevents releasing of the tubing due to spatter invasion or adhesion.
Please refer to P.63 for the cover.

Guide
Collet
Chuck
Applicable to soft nylon.
Large retaining force.
Secure engagement with chuck and large retaining force with collet.

Release button
Series KR: Black body.
Series KR-W2: White body.
Requires little force for removal.
Releases the chuck collet to remove the tube as well as to prevent the chuck from biting too deeply into the tubing.



Packing
Compatible with a wide range of pressure, from low vacuum to 1.0 MPa.
The special shape ensures sealing and reduces resistance of tubing insertion.

Tubing

Body
O-ring
Stud

With sealant
No need of a sealant tape.

Effective for piping in confined space.
The body and thread portion can be rotated.
(For positioning)

PAT.

Male Connector KRH/KRH-W2

Most common style used to pipe from female thread in the same direction.

Applicable tubing O.D. mm	Connecting thread	Model	
		KRH (Release button, Green)	KRH-W2 (Release button, White)
6	R1/8	KRH06-01S	KRH06-01SW2
	R1/4	-02S	-02SW2
	R3/8	-03S	-03SW2
8	R1/8	KRH08-01S	KRH08-01SW2
	R1/4	-02S	-02SW2
	R3/8	-03S	-03SW2
10	R1/8	KRH10-01S	KRH10-01SW2
	R1/4	-02S	-02SW2
	R3/8	-03S	-03SW2
	R1/2	-04S	-04SW2
12	R1/4	KRH12-02S	KRH12-02SW2
	R3/8	-03S	-03SW2
	R1/2	-04S	-04SW2

45° Male Elbow KRK/KRK-W2

For piping at 45° from female thread.
Intermediate model between male connector and male elbow.

Applicable tubing O.D. mm	Connecting thread	Model	
		KRK (Black)	KRK-W2 (White)
6	R1/8	KRK06-01S	KRK06-01SW2
	R1/4	-02S	-02SW2
	R3/8	-03S	-03SW2
8	R1/8	KRK08-01S	KRK08-01SW2
	R1/4	-02S	-02SW2
	R3/8	-03S	-03SW2
10	R1/8	KRK10-01S	KRK10-01SW2
	R1/4	-02S	-02SW2
	R3/8	-03S	-03SW2
	R1/2	-04S	-04SW2
12	R1/4	KRK12-02S	KRK12-02SW2
	R3/8	-03S	-03SW2
	R1/2	-04S	-04SW2

Male Elbow KRL/KRL-W2

Most common style used to pipe from female thread at a right angle.

Applicable tubing O.D. mm	Connecting thread	Model	
		KRL (Black)	KRL-W2 (White)
6	R1/8	KRL06-01S	KRL06-01SW2
	R1/4	-02S	-02SW2
	R3/8	-03S	-03SW2
8	R1/8	KRL08-01S	KRL08-01SW2
	R1/4	-02S	-02SW2
	R3/8	-03S	-03SW2
10	R1/8	KRL10-01S	KRL10-01SW2
	R1/4	-02S	-02SW2
	R3/8	-03S	-03SW2
	R1/2	-04S	-04SW2
12	R1/4	KRL12-02S	KRL12-02SW2
	R3/8	-03S	-03SW2
	R1/2	-04S	-04SW2

Extended Male Elbow KRW/KRW-W2

Basically used in the same way as a male elbow.
But also used in 3 dimensional piping to prevent interference of fittings.

Applicable tubing O.D. mm	Connecting thread	Model	
		KRW (Black)	KRW-W2 (White)
6	R1/8	KRW06-01S	KRW06-01SW2
	R1/4	-02S	-02SW2
	R3/8	-03S	-03SW2
8	R1/8	KRW08-01S	KRW08-01SW2
	R1/4	-02S	-02SW2
	R3/8	-03S	-03SW2
10	R1/4	KRW10-02S	KRW10-02SW2
	R3/8	-03S	-03SW2
	R1/2	-04S	-04SW2
12	R1/4	KRW12-02S	KRW12-02SW2
	R3/8	-03S	-03SW2
	R1/2	-04S	-04SW2

Universal Male Elbow KRV/KRV-W2

The hexagon head of the body is used to tighten the body with a box wrench in a confined space.

Applicable tubing O.D. mm	Connecting thread	Model	
		KRV (Black)	KRV-W2 (White)
6	R1/8	KRV06-01S	KRV06-01SW2
	R1/4	-02S	-02SW2
8	R1/8	KRV08-01S	KRV08-01SW2
	R1/4	-02S	-02SW2
	R3/8	-03S	-03SW2
10	R1/4	KRV10-02S	KRV10-02SW2
	R3/8	-03S	-03SW2
12	R3/8	KRV12-03S	KRV12-03SW2
	R1/2	-04S	-04SW2

Branch Tee — KRT/KRT-W2

To branch the line from the female thread at 90° in each direction.

Applicable tubing O.D. mm	Connecting thread	Model	
		KRT (Black)	KRT-W2 (White)
6	R1/8	KRT06-01S	KRT06-01SW2
	R1/4	-02S	-02SW2
	R3/8	-03S	-03SW2
8	R1/8	KRT08-01S	KRT08-01SW2
	R1/4	-02S	-02SW2
	R3/8	-03S	-03SW2
10	R1/8	KRT10-01S	KRT10-01SW2
	R1/4	-02S	-02SW2
	R3/8	-03S	-03SW2
	R1/2	-04S	-04SW2
12	R1/4	KRT12-02S	KRT12-02SW2
	R3/8	-03S	-03SW2
	R1/2	-04S	-04SW2

Male Run Tee — KRY/KRY-W2

To branch the line from the female thread in the same direction and at 90°.

Applicable tubing O.D. mm	Connecting thread	Model	
		KRY (Black)	KRY-W2 (White)
6	R1/8	KRY06-01S	KRY06-01SW2
	R1/4	-02S	-02SW2
	R3/8	-03S	-03SW2
8	R1/8	KRY08-01S	KRY08-01SW2
	R1/4	-02S	-02SW2
	R3/8	-03S	-03SW2
10	R1/8	KRY10-01S	KRY10-01SW2
	R1/4	-02S	-02SW2
	R3/8	-03S	-03SW2
	R1/2	-04S	-04SW2
12	R1/4	KRY12-02S	KRY12-02SW2
	R3/8	-03S	-03SW2
	R1/2	-04S	-04SW2

Union "Y" — KRU/KRU-W2

To branch tubing in the same direction.

Applicable tubing O.D. mm	Connecting thread	Model	
		KRU (Black)	KRU-W2 (White)
6	R1/8	KRU06-01S	KRU06-01SW2
	R1/4	-02S	-02SW2
	R3/8	-03S	-03SW2
8	R1/8	KRU08-01S	KRU08-01SW2
	R1/4	-02S	-02SW2
	R3/8	-03S	-03SW2
10	R1/4	KRU10-02S	KRU10-02SW2
	R3/8	-03S	-03SW2
	R1/2	-04S	-04SW2
12	R1/4	KRU12-02S	KRU12-02SW2
	R3/8	-03S	-03SW2
	R1/2	-04S	-04SW2

Straight Union — KRH/KRH-W2

To connect tubing in the same direction.

Applicable tubing O.D. mm	Model	
	KRH (Black)	KRH-W2 (White)
6	KRH06-00	KRH06-00W2
8	KRH08-00	KRH08-00W2
10	KRH10-00	KRH10-00W2
12	KRH12-00	KRH12-00W2

Bulkhead Union — KRE/KRE-W2

To connect tubing through a panel.

Applicable tubing O.D. mm	Model	
	KRH (Release button, Green)	KRH-W2 (Release button, White)
6	KRE06-00	KRE06-00W2
8	KRE08-00	KRE08-00W2
10	KRE10-00	KRE10-00W2
12	KRE12-00	KRE12-00W2

Union Elbow — KRL/KRL-W2

To connect tubing at right angles to each other.

Applicable tubing O.D. mm	Model	
	KRL (Black)	KRL-W2 (White)
6	KRL06-00	KRL06-00W2
8	KRL08-00	KRL08-00W2
10	KRL10-00	KRL10-00W2
12	KRL12-00	KRL12-00W2

Union Tee — KRT/KRT-W2

To branch tubing into 2 directions each at 90° to the original one.

Applicable tubing O.D. mm	Model	
	KRT (Black)	KRT-W2 (White)
6	KRT06-00	KRT06-00W2
8	KRT08-00	KRT08-00W2
10	KRT10-00	KRT10-00W2
12	KRT12-00	KRT12-00W2

Union "Y" — KRU/KRU-W2

To branch tubing in the same direction.

Applicable tubing O.D. mm	Model	
	KRU (Black)	KRU-W2 (White)
6	KRU06-00	KRU06-00W2
8	KRU08-00	KRU08-00W2
10	KRU10-00	KRU10-00W2
12	KRU12-00	KRU12-00W2

Plug-in Reducer — KRR/KRR-W2

To connect to a smaller one-touch fitting.

Applicable tubing O.D. mm	Fitting size	Model	
		KRR (Black)	KRR-W2 (White)
6	8	KRR06-08	KRR06-08W2
	10	-10	-10W2
8	10	KRR08-10	KRR08-10W2
	12	-12	-12W2
10	12	KRR10-12	KRR10-12W2

Plug-in "Y" — KRU/KRU-W2

To branch the line from a one-touch fitting into tubing in the same direction.

Applicable tubing O.D. mm	Fitting size	Model	
		KRU (Black)	KRU-W2 (White)
6	6	KRU06-99	KRU06-99W2
8	8	KRU08-99	KRU08-99W2
10	10	KRU10-99	KRU10-99W2
12	12	KRU12-99	KRU12-99W2

Plug — KRP

To plug unused one-touch fittings.

Fitting size	Model
6	KRP-06
8	KRP-08
10	KRP-10
12	KRP-12

Spatter cover 1 — KR

Prevents releasing of the tubing due to spatter invasion or adhesion.
KR (Applicable tubing: FR soft nylon)

Fitting size	Model
6	KR-06C
8	KR-08C
10	KR-10C
12	KR-12C

Spatter cover 2 — KR

Prevents releasing of the tubing due to spatter invasion or adhesion.
KR (Applicable tubing: FR soft nylon, FR2 layer)

Fitting size	Model
6	KR-06C1
8	KR-08C1
10	KR-10C1
12	KR-12C1

Bulkhead Female Union KRE-W2

Used for trunk connection between tubing and a male thread installed through a panel.

Applicable tubing O.D. mm	Connecting thread	Model	
			KRE-W2 (White)
6	Rc1/8	This model is not available with black body specifications.	KRE06-01W2
	Rc1/4		-02W2
	Rc3/8		-03W2
8	Rc1/8		KRE08-01W2
	Rc1/4		-02W2
	Rc3/8		-03W2
10	Rc1/4		KRE10-02W2
	Rc3/8		-03W2
12	Rc1/4		KRE12-02W2
	Rc3/8		-03W2
	Rc1/2		-04W2

Plug-in Elbow KRL-W2

To change the tubing direction from a one-touch fitting by 90°.

Applicable tubing O.D. mm	Fitting size	Model	
			KRL-W2 (White)
6	6	This model is not available with black body specifications.	KRL06-99W2
8	8		KRL08-99W2
10	10		KRL10-99W2
12	12		KRL12-99W2

Extended Plug-in Elbow KRW-W2

To change the tubing direction from a one-touch fitting by 90°. Applicable to 3 dimensional piping when used with a plug-in elbow.

Applicable tubing O.D. mm	Fitting size	Model	
			KRW-W2 (White)
6	6	This model is not available with black body specifications.	KRW06-99W2
8	8		KRW08-99W2
10	10		KRW10-99W2
12	12		KRW12-99W2

Made to Order

Made to Order

Electroless Nickel Plated on Brass Parts **X2**

(Example) KRH06-02S-X2

Flame Resistant (Equivalent to UL-94 Standards V-0)

FR One-touch Fittings Manifold

Series KRM

■Applicable tubing O.D.: **Metric Size**

■Connecting thread: **Rc**

★Spatter Proof

Compact piping possible.
Manifold piping possible.
Rich variation of 8 styles.
One-touch installation.
Cover (Option).

KRM12

KRM11

Model

Model	Porting		Number of port A	Port A Connection size	Port B Connection size
	Port A	Port B			
KRM11	One-touch fitting	One-touch fitting	6, 10	ø6 tubing	ø10 tubing
				ø8 tubing	ø12 tubing
KRM12	One-touch fitting	Rc female thread	6, 10	ø6 tubing	Rc1/4
				ø8 tubing	Rc3/8

Applicable Tubing

Tubing material	FR double layer, FR soft nylon
Tubing O.D.	ø6, ø8, ø10, ø12

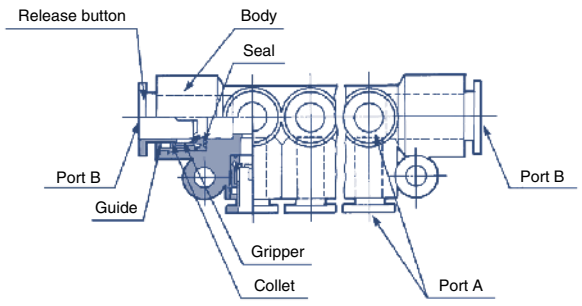
Specifications

Model	KRM11	KRM12
Fluid	Air, Water Note 1)	
Max. operating pressure	1.0 MPa	
Proof pressure	3.0 MPa	
Ambient and fluid temperature	–5 to 60°C, In case of water: 0 to 60°C (No freezing)	
Thread	—	JIS B0203 (Taper thread for piping)
Accessory	None	Hexagon socket head plug: 1 pc.

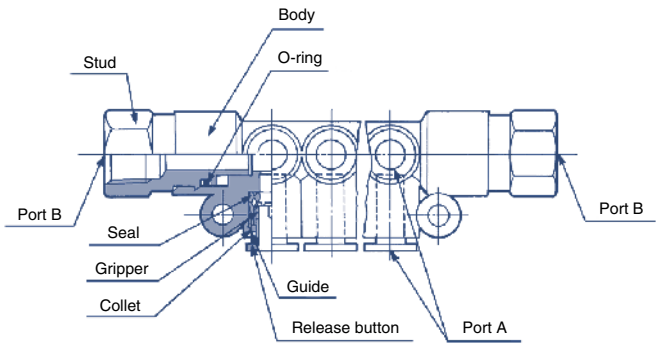
Note 1) Applicable to general industrial water. Consult SMC if using for other fluids.
Surge pressure must be under the maximum operating pressure.

Construction

KRM11



KRM12



SMC

KRM11

Applicable tubing O.D. mm Ⓐ	Applicable tubing O.D. mm Ⓑ	Number of port A	Model
6	10	6	KRM11-06-10-6
		10	-10
8	12	6	KRM11-08-12-6
		10	-10

KRM12

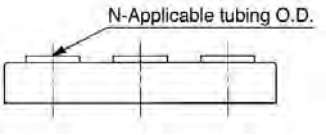
Applicable tubing O.D. Ⓐ mm	Connection thread	Number of port A	Model
6	Rc1/4	6	KRM12-06-02-6
		10	-10
8	Rc3/8	6	KRM12-08-03-6
		10	-10

Spatter Cover 3 KRMC

KRMC (Applicable tubing: FR soft nylon)

Applicable tubing O.D. mm	N	Model
6	6	KRMC-06-6
	10	-10
8	6	KRMC-08-6
	10	-10

Refer to KR-○ and page 63 for spatter covers 1 and 2.



Made to Order

Made to Order

Electroless Nickel Plated on Brass Parts **X2**

(Example) **KRM11-06-10-6-X2**

S Couplers

Series KK

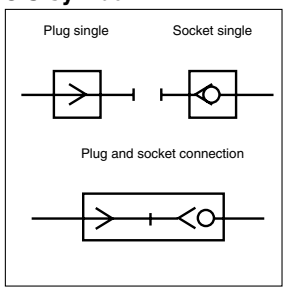
■Connection type: R, Rc, One-touch Fitting
Nut Fittings

Large effective sectional area. Light weight.

KK2

KK3/4/6

JIS symbol



Specifications

Fluid	Air, Water (General industrial water)
Operating pressure range	KK2: –100 kPa to 1 MPa KK3: –90 kPa to 1 MPa KK4, 6: 0 to 1 MPa
Proof pressure	1.5 MPa
Ambient and fluid temperature	Air: –5 to 60°C Water: 5 to 40°C (No freezing)
Plating, Seal	With electroless nickel plated (For copper free application), With male thread seal

Performance

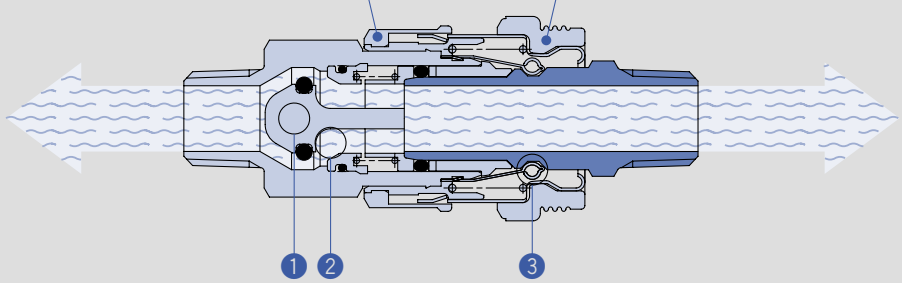
Plug and socket connection	One-touch attachment and removal
Check valve	Socket: Built-in check valve (Standard)
Sleeve lock mechanism	Manual locking type (Standard)

Series	Plug no.	Socket no.	Effective area mm² Note 1)	Weight g Note 2)
Series **KK2**	KK2P-M5M	KK2S-M5M	**3.8**	**6.1**
Series **KK3**	KK3P-01MS	KK3S-01MS	**20**	**20.1**
Series **KK4**	KK4P-02MS	KK4S-02MS	**39**	**44.1**
Series **KK6**	KK6P-04MS	KK6S-04MS	**82**	**90.1**

Note 1) Values when plug and socket are connected.
Note 2) Values for socket only.

Lock ring: Shock absorbent PBT

Sleeve cover standardized



1 Check valve end configuration facilitates rectifying effect

Allows smooth flow of fluids.

2 No spring located in the flow path

Loss of effective area is minimized because there is no valve spring to block the flow path.

3 Employs a unique connection method

A slim body design and large effective area are achieved with a construction that does not use steel balls and therefore does not restrict the flow path.

PAT.

SMC

Plug (P)

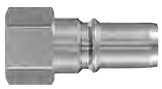
Male Thread Type

KK2

KK3/4/6

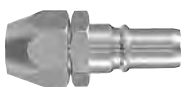
Body size	Port size	Model
M5	M5 x 0.8	**KK2P-M5M**
	R1/8	**-01MS**
1/8	R1/8	**KK3P-01MS**
	R1/4	**-02MS**
	R3/8	**-03MS**
1/4	R1/8	**KK4P-01MS**
	R1/4	**-02MS**
	R3/8	**-03MS**
	R1/2	**-04MS**
1/2	R3/8	**KK6P-03MS**
	R1/2	**-04MS**
	R3/4	**-06MS**

Female Thread Type



Body size	Port size	Model
M5	M5 x 0.8	**KK2P-M5F**
1/8	Rc1/8	**KK3P-01F**
	Rc1/4	**-02F**
	Rc3/8	**-03F**
1/4	Rc1/4	**KK4P-02F**
	Rc3/8	**-03F**
1/2	Rc3/8	**KK6P-03F**
	Rc1/2	**-04F**

Nut Fitting Type (for fiber reinforced urethane hose)



Body size	Applicable hose I.D. / O.D. mm	Model
1/8	5/8	**KK3P-50N**
	6/9	**-60N**
	6.5/10	**-65N**
1/4	5/8	**KK4P-50N**
	6/9	**-60N**
	6.5/10	**-65N**
	8/12	**-80N**
	8.5/12.5	**-85N**
1/2	8/12	**KK6P-80N**
	8.5/12.5	**-85N**
	11/16	**-110N**

Socket (S)

Male Thread Type

KK2

KK3/4/6

Body size	Port size	Model
M5	M5 x 0.8	**KK2S-M5M**
	R1/8	**-01MS**
1/8	R1/8	**KK3S-01MS**
	R1/4	**-02MS**
	R3/8	**-03MS**
1/4	R1/8	**KK4S-01MS**
	R1/4	**-02MS**
	R3/8	**-03MS**
	R1/2	**-04MS**
1/2	R3/8	**KK6S-03MS**
	R1/2	**-04MS**
	R3/4	**-06MS**

Female Thread Type

KK2

KK3/4/6

Body size	Port size	Model
M5	M5 x 0.8	**KK2S-M5F**
1/8	Rc1/8	**KK3S-01F**
	Rc1/4	**-02F**
	Rc3/8	**-03F**
1/4	Rc1/4	**KK4S-02F**
	Rc3/8	**-03F**
1/2	Rc3/8	**KK6S-03F**
	Rc1/2	**-04F**

Nut Fitting Type (for fiber reinforced urethane hose)

Body size	Applicable hose I.D. / O.D. mm	Model
1/8	5/8	**KK3S-50N**
	6/9	**-60N**
	6.5/10	**-65N**
1/4	5/8	**KK4S-50N**
	6/9	**-60N**
	6.5/10	**-65N**
	8/12	**-80N**
	8.5/12.5	**-85N**
1/2	8/12	**KK6S-80N**
	8.5/12.5	**-85N**
	11/16	**-110N**

Plug (P)

Straight Type with One-touch Fitting

Body size	Applicable tubing O.D. mm	Model
M5	3.2	**KK2P-23H**
	4	**-04H**
	6	**-06H**
1/8	4	**KK3P-04H**
	6	**-06H**
	8	**-08H**
	10	**-10H**
1/4	6	**KK4P-06H**
	8	**-08H**
	10	**-10H**
	12	**-12H**
1/2	12	**KK6P-12H**
	16	**-16H**

Elbow Type with One-touch Fitting

Body size	Applicable tubing O.D. mm	Model
M5	3.2	**KK2P-23L**
	4	**-04L**
	6	**-06L**
1/8	4	**KK3P-04L**
	6	**-06L**
	8	**-08L**
	10	**-10L**
1/4	6	**KK4P-06L**
	8	**-08L**
	10	**-10L**
	12	**-12L**
1/2	12	**KK6P-12L**
	16	**-16L**

Bulkhead Type with One-touch Fitting

Body size	Applicable tubing O.D. mm	Model
M5	3.2	**KK2P-23E**
	4	**-04E**
	6	**-06E**
1/8	4	**KK3P-04E**
	6	**-06E**
	8	**-08E**
	10	**-10E**
1/4	6	**KK4P-06E**
	8	**-08E**
	10	**-10E**
	12	**-12E**
1/2	12	**KK6P-12E**
	16	**-16E**

Socket (S)

Straight Type with One-touch Fitting

KK2

KK3/4/6

Body size	Applicable tubing O.D. mm	Model
M5	3.2	**KK2S-23H**
	4	**-04H**
	6	**-06H**
1/8	4	**KK3S-04H**
	6	**-06H**
	8	**-08H**
	10	**-10H**
1/4	6	**KK4S-06H**
	8	**-08H**
	10	**-10H**
	12	**-12H**
1/2	12	**KK6S-12H**
	16	**-16H**

Elbow Type with One-touch Fitting

KK2

KK3/4/6

Body size	Applicable tubing O.D. mm	Model
M5	3.2	**KK2S-23L**
	4	**-04L**
	6	**-06L**
1/8	4	**KK3S-04L**
	6	**-06L**
	8	**-08L**
	10	**-10L**
1/4	6	**KK4S-06L**
	8	**-08L**
	10	**-10L**
	12	**-12L**
1/2	12	**KK6S-12L**
	16	**-16L**

Bulkhead Type with One-touch Fitting

KK2

KK3/4/6

Body size	Applicable tubing O.D. mm	Model
M5	3.2	**KK2S-23E**
	4	**-04E**
	6	**-06E**
1/8	4	**KK3S-04E**
	6	**-06E**
	8	**-08E**
	10	**-10E**
1/4	6	**KK4S-06E**
	8	**-08E**
	10	**-10E**
	12	**-12E**
1/2	12	**KK6S-12E**
	16	**-16E**

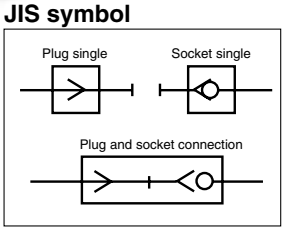
S Couplers

Series KKH

■Connection type: R, Rc, Nut Fittings

Rubber cover and super-high-impact PBT resin which absorb drop impact (Equivalent to impact energy of 0.5 J) are adopted for body peripheral materials.
Same flow rate as that of conventional series (Series KK).

JIS symbol



Specifications

Fluid	Air, Water (General industrial water)
Operating pressure range	KKH3: –90 kPa to 1 MPa KKH4: 0 to 1 MPa
Proof pressure	1.5 MPa
Ambient and fluid temperature	Air: –5 to 60°C Water: 5 to 40°C (No freezing)
Plating, Seal	Electroless nickel plated, With male thread seal
Connection plug	Series KK plug

Performance

Plug and socket connection	One-touch attachment and removal
Check valve	Socket: Built-in check valve
Sleeve lock mechanism	—

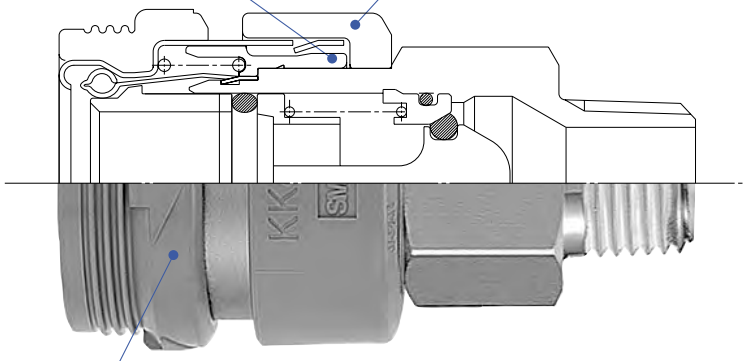
Effective Area

Body size	Plug	Socket	Effective area mm²
1/8	KK3P-01MS	KKH3S-01MS	20
1/4	KK4P-02MS	KKH4S-02MS	39

The flow rate is same as that of current standard products because common internal parts are used.

Spacer
(High impact PBT)

Cover ring
(Super high impact PBT)



Sleeve cover
(Rubber)

PAT.

Plug (P)

Male Thread Type

Body size	Port size	Model
1/8	R1/8	**KK3P-01MS**
	R1/4	**-02MS**
1/4	R1/8	**KK4P-01MS**
	R1/4	**-02MS**
	R3/8	**-03MS**
	R1/2	**-04MS**

Female Thread Type

Body size	Port size	Model
1/8	R1/8	**KK3P-01F**
1/4	R1/4	**KK4P-02F**
	R3/8	**-03F**

Nut Fitting Type (for fiber reinforced urethane hose)

Body size	Applicable hose I.D. / O.D. mm	Model
1/8	5/8	**KK3P-50N**
	6/9	**-60N**
	6.5/10	**-65N**
1/4	5/8	**KK4P-50N**
	6/9	**-60N**
	6.5/10	**-65N**
	8/12	**-80N**
	8.5/12.5	**-85N**

Socket (S)

Male Thread Type

Body size	Port size	Model
1/8	R1/8	**KKH3S-01MS**
	R1/4	**-02MS**
1/4	R1/8	**KKH4S-01MS**
	R1/4	**-02MS**
	R3/8	**-03MS**
	R1/2	**-04MS**

Female Thread Type

Body size	Port size	Model
1/8	R1/8	**KKH3S-01F**
1/4	R1/4	**KKH4S-02F**
	R3/8	**-03F**

Nut Fitting Type (for fiber reinforced urethane hose)

Body size	Applicable hose I.D. / O.D. mm	Model
1/8	5/8	**KKH3S-50N**
	6/9	**-60N**
	6.5/10	**-65N**
1/4	5/8	**KKH4S-50N**
	6/9	**-60N**
	6.5/10	**-65N**
	8/12	**-80N**
	8.5/12.5	**-85N**

Only sockets are provided as Series KKH.
Please use plugs in Series KK.

S Couplers/Stainless steel

Series KKA

■Connection type: R, Rc

Corrosion Resistant **Heat Resistant**

Material
Body material: **Stainless steel 304**
Seal material: **Fluoro rubber (Special FKM)**

Connection port size 1/8 to 1 1/2 is available.

Both plug and socket have an integral check valve.
Available with and without check valves depending on the operating conditions.

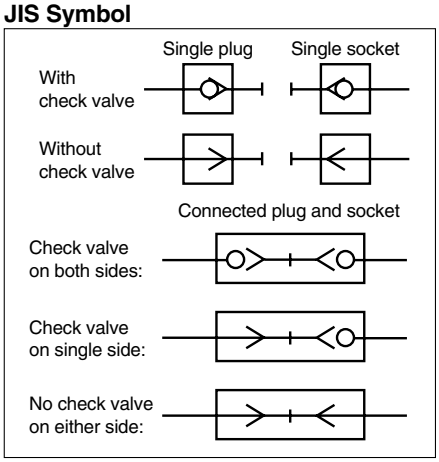
Reduces liquid dripping when the plug and socket are uncoupled.

Body size	Liquid dripping cm³ at each removal	Aeration cm³ at each removal
KKA3	0.02	0.1
KKA4	0.04	0.1
KKA6	0.06	0.2
KKA7	0.14	0.5
KKA8	0.27	0.9
KKA9	0.77	2.7

Liquid dripping:
Volume of water leakage at the time when the plug and socket are uncoupled.

Aeration:
Volume of external air entrained when the plug and socket are connected.

JIS Symbol



Specifications

Fluid	Water, Air
Operating pressure range Note)	KKA3: –100 kPa to 1.0 MPa KKA4/6/7/8/9: 0 to 1.0 MPa
Proof pressure	10 MPa
Ambient and fluid temperature	–5 to 150°C (No freezing) Note) This product should not be used with steam.
Non-greased specification	No grease is used. Rubber: Fluorine coated, (Metal sliding parts: Plated with fluorine-contained material)
Material	Metal part: Stainless steel 304, Rubber material: Fluoro rubber (Special FKM)
Seal	With male thread seal

Note) Do not use the S couplers with a leak tester or for vacuum retention because they are not guaranteed for zero leakage.

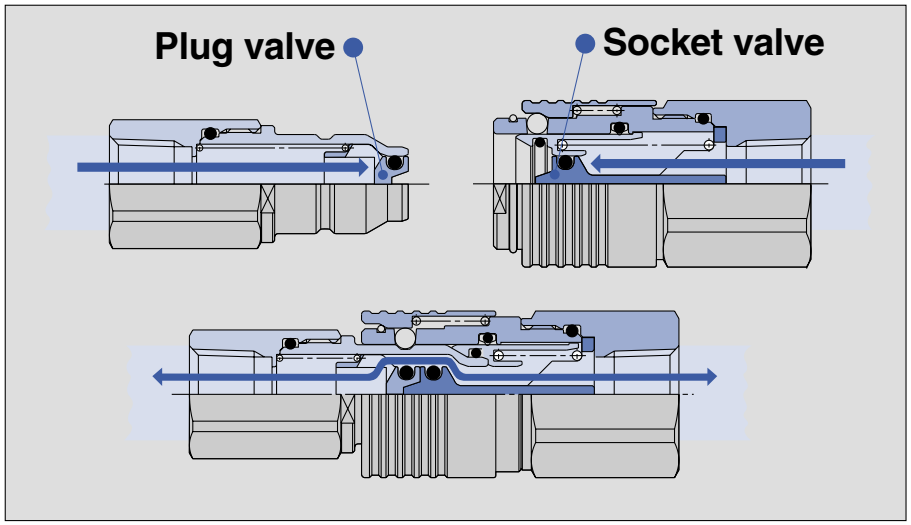
Performance

Plug and socket connection	One-touch connection and release
Check valve	Check valve on both sides, Without check valve

Note) Series KKA cannot be connected with Series KK or Series KKH.

Effective Area

Built-in check valve	Plug	Socket	Effective area mm²
Plug: With check valve Socket: With check valve	**KKA3P-01F**	**KKA3S-01F**	17.4
	KKA4P-02F	**KKA4S-02F**	26.4
	KKA6P-04F	**KKA6S-04F**	54.2
	KKA7P-06F	**KKA7S-06F**	99.6
	KKA8P-10F	**KKA8S-10F**	168.3
	KKA9P-12F	**KKA9S-12F**	332.1
Plug: Without check valve Socket: With check valve	**KKA3P-01M-1**	**KKA3S-01M**	18.5
	KKA4P-02M-1	**KKA4S-02M**	31.8
	KKA6P-04M-1	**KKA6S-04M**	55.3
Plug: Without check valve Socket: Without check valve	**KKA3P-01M-1**	**KKA3S-01M-1**	22.6
	KKA4P-02M-1	**KKA4S-02M-1**	40.2
	KKA6P-04M-1	**KKA6S-04M-1**	76.0



With check valve

Plug (P)

Male Thread Type

Body size	Connection port size	Model
1/8	R1/8	**KKA3P-01M**
	R1/4	**-02M**
	R3/8	**-03M**
1/4	R1/4	**KKA4P-02M**
	R3/8	**-03M**
	R1/2	**-04M**
1/2	R3/8	**KKA6P-03M**
	R1/2	**-04M**
	R3/4	**-06M**
3/4	R1/2	**KKA7P-04M**
	R3/4	**-06M**
	R1	**-10M**
1	R3/4	**KKA8P-06M**
	R1	**-10M**
	R1 1/4	**-12M**
1 1/4	R1	**KKA9P-10M**
	R1 1/4	**-12M**
	R1 1/2	**-14M**

Female Thread Type

Body size	Connection port size	Model
1/8	Rc1/8	**KKA3P-01F**
	Rc1/4	**-02F**
	Rc3/8	**-03F**
1/4	Rc1/4	**KKA4P-02F**
	Rc3/8	**-03F**
	Rc1/2	**-04F**
1/2	Rc3/8	**KKA6P-03F**
	Rc1/2	**-04F**
	Rc3/4	**-06F**
3/4	Rc1/2	**KKA7P-04F**
	Rc3/4	**-06F**
	Rc1	**-10F**
1	Rc3/4	**KKA8P-06F**
	Rc1	**-10F**
	Rc1 1/4	**-12F**
1 1/4	Rc1	**KKA9P-10F**
	Rc1 1/4	**-12F**
	Rc1 1/2	**-14F**

Socket (S)

Male Thread Type

Body size	Connection port size	Model
1/8	R1/8	**KKA3S-01M**
	R1/4	**-02M**
	R3/8	**-03M**
1/4	R1/4	**KKA4S-02M**
	R3/8	**-03M**
	R1/2	**-04M**
1/2	R3/8	**KKA6S-03M**
	R1/2	**-04M**
	R3/4	**-06M**
3/4	R1/2	**KKA7S-04M**
	R3/4	**-06M**
	R1	**-10M**
1	R3/4	**KKA8S-06M**
	R1	**-10M**
	R1 1/4	**-12M**
1 1/4	R1	**KKA9S-10M**
	R1 1/4	**-12M**
	R1 1/2	**-14M**

Female Thread Type

Body size	Connection port size	Model
1/8	Rc1/8	**KKA3S-01F**
	Rc1/4	**-02F**
	Rc3/8	**-03F**
1/4	Rc1/4	**KKA4S-02F**
	Rc3/8	**-03F**
	Rc1/2	**-04F**
1/2	Rc3/8	**KKA6S-03F**
	Rc1/2	**-04F**
	Rc3/4	**-06F**
3/4	Rc1/2	**KKA7S-04F**
	Rc3/4	**-06F**
	Rc1	**-10F**
1	Rc3/4	**KKA8S-06F**
	Rc1	**-10F**
	Rc1 1/4	**-12F**
1 1/4	Rc1	**KKA9S-10F**
	Rc1 1/4	**-12F**
	Rc1 1/2	**-14F**

Without check valve

Plug (P)

Male Thread Type

Body size	Connection port size	Model
1/8	R1/8	**KKA3P-01M-1**
	R1/4	**-02M-1**
	R3/8	**-03M-1**
1/4	R1/4	**KKA4P-02M-1**
	R3/8	**-03M-1**
	R1/2	**-04M-1**
1/2	R3/8	**KKA6P-03M-1**
	R1/2	**-04M-1**
	R3/4	**-06M-1**

Female Thread Type

Body size	Connection port size	Model
1/8	Rc1/8	**KKA3P-01F-1**
	Rc1/4	**-02F-1**
	Rc3/8	**-03F-1**
1/4	Rc1/4	**KKA4P-02F-1**
	Rc3/8	**-03F-1**
	Rc1/2	**-04F-1**
1/2	Rc3/8	**KKA6P-03F-1**
	Rc1/2	**-04F-1**
	Rc3/4	**-06F-1**

Socket (S)

Male Thread Type

Body size	Connection port size	Model
1/8	R1/8	**KKA3S-01M-1**
	R1/4	**-02M-1**
	R3/8	**-03M-1**
1/4	R1/4	**KKA4S-02M-1**
	R3/8	**-03M-1**
	R1/2	**-04M-1**
1/2	R3/8	**KKA6S-03M-1**
	R1/2	**-04M-1**
	R3/4	**-06M-1**

Female Thread Type

Body size	Connection port size	Model
1/8	Rc1/8	**KKA3S-01F-1**
	Rc1/4	**-02F-1**
	Rc3/8	**-03F-1**
1/4	Rc1/4	**KKA4S-02F-1**
	Rc3/8	**-03F-1**
	Rc1/2	**-04F-1**
1/2	Rc3/8	**KKA6S-03F-1**
	Rc1/2	**-04F-1**
	Rc3/4	**-06F-1**

Insert Fittings

Series KF

■Applicable tubing O.D.: **Metric Size**

■Connecting thread: **R, Rc**

Applicable to nylon, soft nylon and polyurethane tubing.

Designed for improvement of workability with low clamping torque.

Applicable Tubing

Tubing size		O.D.	4	6	8		10		12	
		I.D.	2.5	4	5	6	6.5	7.5	8	9
Material	Nylon tubing		●	●	—	●	—	●	—	●
	Soft nylon tubing		●	●	—	●	—	●	—	●
	Polyurethane tubing		●	●	◎ Note)	—	◎ Note)	—	◎ Note)	—

Note) "◎" mark (polyurethane tubing ø8, ø10, ø12) are provided with the captive styles because of different I.D.

Specifications

Fluid		Air
Maximum operating pressure		1.0 MPa
Operating vacuum pressure		–101.3 kPa
Proof pressure		7.0 MPa
Ambient and fluid temperature		–5 to 60°C (No freezing)
Thread	Mounting section	JIS B0203 (Taper thread for piping)
	Nut section	JIS B0211, Class 2 (Metric fine thread)
Sealant (Thread portion) Note)		None or with sealant

Note) The male elbow, male branch tee and male run tee with sealant are manufactured upon receipt of order.

Main Parts Material

Body	C3604BD, C3771BE
Nut	C3604BD
Ferrule	Nylon 66

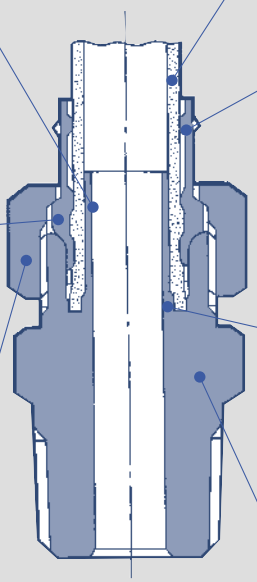
Insert

Applicable to nylon and polyurethane.
Large retaining force.
Tubing is securely held from inside and outside by the insert mechanism.

Ferrule

Small tightening torque.
Adoption of the resin ferrule increases efficiency in tightening work.
Compatible with of –101.3 kPa to 1.0 MPa

Union nut



Tubing

Tubing grip

Prevents the ferrule nut from sliding off along the tubing.
The tubing grip lightly holds the tubing.

Tubing holder

Prevents tubing sliding during installation.
The tubing holding mechanism gives the strong feeling when inserting the tubing and prevents the tubing from sliding when screwing in the tubing.

Body

PAT.

Male Connector KFH

Most common style used to pipe from female thread in the same direction.

Applicable tubing mm O.D.	Applicable tubing mm I.D.	Connecting thread	Model
4	2.5	R1/8	KFH04-01
		R1/4	-02
6	4	R1/8	KFH06-01
		R1/4	-02
		R3/8	-03
8	5	R1/8	KFH08U-01
		R1/4	-02
		R3/8	-03
	6	R1/8	KFH08N-01
		R1/4	-02
		R3/8	-03
10	6.5	R1/4	KFH10U-02
		R3/8	-03
		R1/2	-04
	7.5	R1/4	KFH10N-02
		R3/8	-03
		R1/2	-04
12	8	R1/4	KFH12U-02
		R3/8	-03
		R1/2	-04
	9	R1/4	KFH12N-02
		R3/8	-03
		R1/2	-04

Swivel Elbow KFV

To pipe from the female threaded at the right angle. Swiveled at any direction.

Applicable tubing mm O.D.	Applicable tubing mm I.D.	Connecting thread	Model
4	2.5	R1/8	KFV04-01
		R1/4	-02
6	4	R1/8	KFV06-01
		R1/4	-02
		R3/8	-03
8	5	R1/8	KFV08U-01
		R1/4	-02
		R3/8	-03
	6	R1/8	KFV08N-01
		R1/4	-02
		R3/8	-03
10	6.5	R1/4	KFV10U-02
		R3/8	-03
		R1/2	-04
	7.5	R1/4	KFV10N-02
		R3/8	-03
		R1/2	-04
12	8	R1/4	KFV12U-02
		R3/8	-03
		R1/2	-04
	9	R1/4	KFV12N-02
		R3/8	-03
		R1/2	-04

Male Elbow KFL

Most common style used to pipe from female thread at a right angle.

Applicable tubing mm O.D.	Applicable tubing mm I.D.	Connecting thread	Model
4	2.5	R1/8	KFL04-01
		R1/4	-02
6	4	R1/8	KFL06-01
		R1/4	-02
		R3/8	-03
8	5	R1/8	KFL08U-01
		R1/4	-02
		R3/8	-03
	6	R1/8	KFL08N-01
		R1/4	-02
		R3/8	-03
10	6.5	R1/4	KFL10U-02
		R3/8	-03
		R1/2	-04
	7.5	R1/4	KFL10N-02
		R3/8	-03
		R1/2	-04
12	8	R1/4	KFL12U-02
		R3/8	-03
		R1/2	-04
	9	R1/4	KFL12N-02
		R3/8	-03
		R1/2	-04

Swivel Extended Elbow KFW

To pipe from the female threaded at a right angle.
Swiveled at any direction. Solid piece moves fittings up from work piece.

Applicable tubing mm O.D.	Applicable tubing mm I.D.	Connecting thread	Model
4	2.5	R1/8	KFW04-01
		R1/4	-02
6	4	R1/8	KFW06-01
		R1/4	-02
		R3/8	-03
8	5	R1/8	KFW08U-01
		R1/4	-02
		R3/8	-03
	6	R1/8	KFW08N-01
		R1/4	-02
		R3/8	-03
10	6.5	R1/4	KFW10U-02
		R3/8	-03
		R1/2	-04
	7.5	R1/4	KFW10N-02
		R3/8	-03
		R1/2	-04
12	8	R1/4	KFW12U-02
		R3/8	-03
		R1/2	-04
	9	R1/4	KFW12N-02
		R3/8	-03
		R1/2	-04

Male Branch Tee — KFT

To branch the line from the female thread at 90° in each direction.

Applicable tubing mm O.D.	Applicable tubing mm I.D.	Connecting thread	Model
4	2.5	R1/8	KFT04-01
		R1/4	-02
6	4	R1/8	KFT06-01
		R1/4	-02
		R3/8	-03
8	5	R1/8	KFT08U-01
		R1/4	-02
		R3/8	-03
	6	R1/8	KFT08N-01
		R1/4	-02
		R3/8	-03
10	6.5	R1/4	KFT10U-02
		R3/8	-03
		R1/2	-04
	7.5	R1/4	KFT10N-02
		R3/8	-03
		R1/2	-04
12	8	R1/4	KFT12U-02
		R3/8	-03
		R1/2	-04
	9	R1/4	KFT12N-02
		R3/8	-03
		R1/2	-04

Male Run Tee — KFY

To branch the line from the female thread in the same direction and at 90°.

Applicable tubing mm O.D.	Applicable tubing mm I.D.	Connecting thread	Model
4	2.5	R1/8	KFY04-01
		R1/4	-02
6	4	R1/8	KFY06-01
		R1/4	-02
		R3/8	-03
8	5	R1/8	KFY08U-01
		R1/4	-02
		R3/8	-03
	6	R1/8	KFY08N-01
		R1/4	-02
		R3/8	-03
10	6.5	R1/4	KFY10U-02
		R3/8	-03
		R1/2	-04
	7.5	R1/4	KFY10N-02
		R3/8	-03
		R1/2	-04
12	8	R1/4	KFY12U-02
		R3/8	-03
		R1/2	-04
	9	R1/4	KFY12N-02
		R3/8	-03
		R1/2	-04

Straight Union — KFH

To connect tubing in the same direction.

Applicable tubing mm O.D.	Applicable tubing mm I.D.	Model
4	2.5	KFH04-00
6	4	KFH06-00
8	5	KFH08U-00
	6	KFH08N-00
10	6.5	KFH10U-00
	7.5	KFH10N-00
12	8	KFH12U-00
	9	KFH12N-00

Bulkhead Union — KFE

To connect tubing through a panel.

Applicable tubing mm O.D.	Applicable tubing mm I.D.	Model
4	2.5	KFE04-00
6	4	KFE06-00
8	5	KFE08U-00
	6	KFE08N-00
10	6.5	KFE10U-00
	7.5	KFE10N-00
12	8	KFE12U-00
	9	KFE12N-00

Bulkhead Connector — KFE

Used for trunk connection between tubing and a male thread installed on a panel.

Applicable tubing mm O.D.	Applicable tubing mm I.D.	Connecting thread	Model
6	4	Rc1/4	KFE06-02
8	5	Rc3/8	KFE08U-03
	6		KFE08N-03
10	6.5	Rc3/8	KFE10U-03
	7.5		KFE10N-03
12	8	Rc3/8	KFE12U-03
	9		KFE12N-03

Union Tee KFT

To branch tubing into 2 directions each at 90° to the original one.

Applicable tubing mm		Model
O.D.	I.D.	
4	2.5	KFT04-00
6	4	KFT06-00
8	5	KFT08U-00
	6	KFT08N-00
10	6.5	KFT10U-00
	7.5	KFT10N-00
12	8	KFT12U-00
	9	KFT12N-00

Plug KFP

To plug unused insert fittings.

Applicable tubing mm	Model
4	KFP-04
6	KFP-06
8	KFP-08
10	KFP-10
12	KFP-12

Female Connector KFF

To pipe from the male threaded portion of a pressure gauge, etc.

Applicable tubing mm		Connecting thread	Model
O.D.	I.D.		
4	2.5	Rc1/4	KFF04-02
6	4	Rc1/4	KFF06-02
		Rc3/8	-03
8	5	Rc1/4	KFF08U-02
	6		KFF08N-02
10	6.5	Rc1/4	KFF10U-02
	7.5		KFF10N-02
12	8	Rc1/4	KFF12U-02
	9		KFF12N-02

Made to Order

Made to Order

Electroless Nickel Plated Metal Parts X2

(Example) KFH06-02-X2

Clean Series 10-

Electroless nickel plated metal parts (X2). Double packaging.

(Example) 10-KFH06-02

With Sealant on R Thread S

(Example) KFH06-02S

Stainless Steel 316 Insert Fittings

Series KFG

■Applicable tubing O.D.: **Metric Size**

■Connecting thread: **R, Rc**

Corrosion Resistant **Heat Resistant**

Material: Stainless Steel 316.
Operating fluid temperature: –5 to 150°C.
Can be used with steam.
Grease-free.
Applicable tubing material: FEP, PFA, Nylon, Soft nylon, Polyurethane, Polyolefin

Applicable Tubing

Series	Tubing O.D.	Tubing O.D. x I.D. (mm)				
		ø4 x ø2.5	ø6 x ø4	ø8 x ø6	ø10 x ø7.5	ø12 x ø9
TH	FEP	●	●	●	●	●
TL	PFA	—	●	●	—	—
T	Nylon	●	●	●	●	●
TS	Soft nylon	●	●	●	●	●
TU	Polyurethane	●	●	—	—	—
TPH	Polyolefin	●	●	●	●	●
TPS	Soft polyolefin	●	●	—	—	—

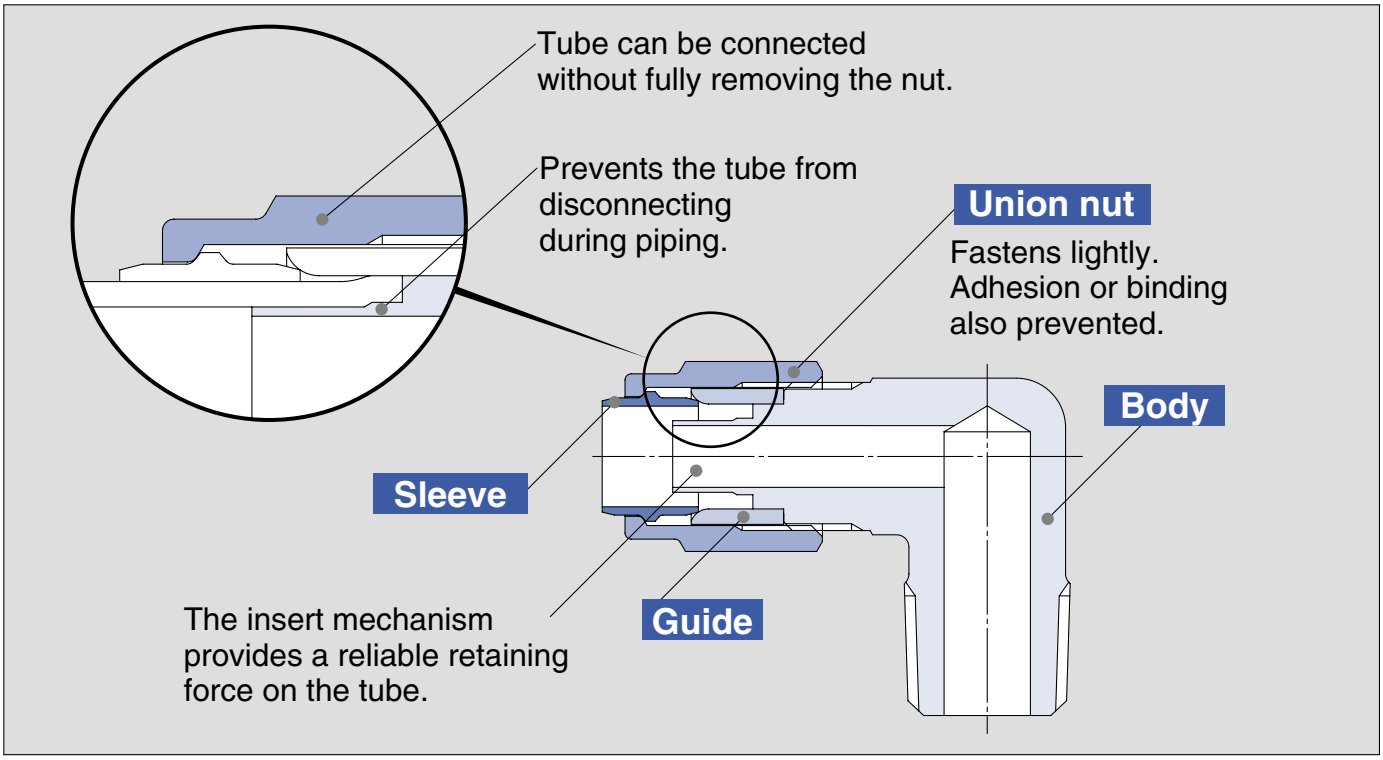
Specifications

Operating fluid	Air, Water, Steam
Operating pressure range Note)	–100 kPa to 1 MPa
Proof pressure	3.0 MPa
Ambient and Operating fluid temperature	–5 to 150°C (No freezing)
Lubricant	Grease-free specification
Seal on the threads	With sealant

Note) Please avoid using in a vacuum holding application such as a leak tester, as leakage may occur.

Component Parts

Description	Material	Note
Sleeve	Stainless steel 316	
Union nut		Silver plated inner surface
Guide		Fluorine coating
Male connector body		
Male elbow body		



Male Connector KFGH

Most common style used to pipe from female thread in the same direction.

Applicable tubing mm O.D.	Applicable tubing mm I.D.	Connecting thread	Model
4	2.5	R1/8	KFGH0425-01S
		R1/4	-02S
6	4	R1/8	KFGH0604-01S
		R1/4	-02S
8	6	R1/8	KFGH0806-01S
		R1/4	-02S
		R3/8	-03S
10	7.5	R1/4	KFGH1075-02S
		R3/8	-03S
		R1/2	-04S
12	9	R1/4	KFGH1209-02S
		R3/8	-03S
		R1/2	-04S

Male Branch Tee KFGT

To branch the line from the female thread at 90° in each direction.

Applicable tubing mm O.D.	Applicable tubing mm I.D.	Connecting thread	Model
4	2.5	R1/8	KFGT0425-01S
		R1/4	-02S
6	4	R1/8	KFGT0604-01S
		R1/4	-02S
8	6	R1/8	KFGT0806-01S
		R1/4	-02S
		R3/8	-03S
10	7.5	R1/4	KFGT1075-02S
		R3/8	-03S
		R1/2	-04S
12	9	R1/4	KFGT1209-02S
		R3/8	-03S
		R1/2	-04S

Male Elbow KFGL

Most common style used to pipe from female thread at a right angle.

Applicable tubing mm O.D.	Applicable tubing mm I.D.	Connecting thread	Model
4	2.5	R1/8	KFGL0425-01S
		R1/4	-02S
6	4	R1/8	KFGL0604-01S
		R1/4	-02S
8	6	R1/8	KFGL0806-01S
		R1/4	-02S
		R3/8	-03S
10	7.5	R1/4	KFGL1075-02S
		R3/8	-03S
		R1/2	-04S
12	9	R1/4	KFGL1209-02S
		R3/8	-03S
		R1/2	-04S

Straight Union KFGH

To connect tubing in the same direction.

Applicable tubing mm O.D.	Applicable tubing mm I.D.	Model
4	2.5	KFGH0425-00
6	4	KFGH0604-00
8	6	KFGH0806-00
10	7.5	KFGH1075-00
12	9	KFGH1209-00

Union Tee KFGT

To branch tubing into 2 directions each at 90° to the original one.

Applicable tubing mm O.D.	Applicable tubing mm I.D.	Model
4	2.5	KFGT0425-00
6	4	KFGT0604-00
8	6	KFGT0806-00
10	7.5	KFGT1075-00
12	9	KFGT1209-00

Union Nut KFGN

Applicable tubing mm O.D.	Model
4	KFGN-04
6	KFGN-06
8	KFGN-08
10	KFGN-10
12	KFGN-12

SLEEVE KFGS

Applicable tubing mm O.D.	Model
4	KFGS-04
6	KFGS-06
8	KFGS-08
10	KFGS-10
12	KFGS-12

Self-align Fittings

Series H,DL,L,LL

■Applicable tubing O.D.: **Metric Size**

■Connecting thread: **R, Rc**

Spatter Proof

Ferrule with no orientation.
The non-oriented construction is free from mistakes and consequent working loss or accidents when inserting the ferrule into the fitting body.

Hardened ridge ferrule.
The single bite construction with a strong ridge prevents breakage of ferrule when tightening.

Small pressure loss.
A large flow rate is achieved with small flow resistance due to the construction without an insert.

Wide variety of styles and sizes.
10 models including swivel styles and 5 tubing O.D. provide a wide range of fittings that will fit any application.

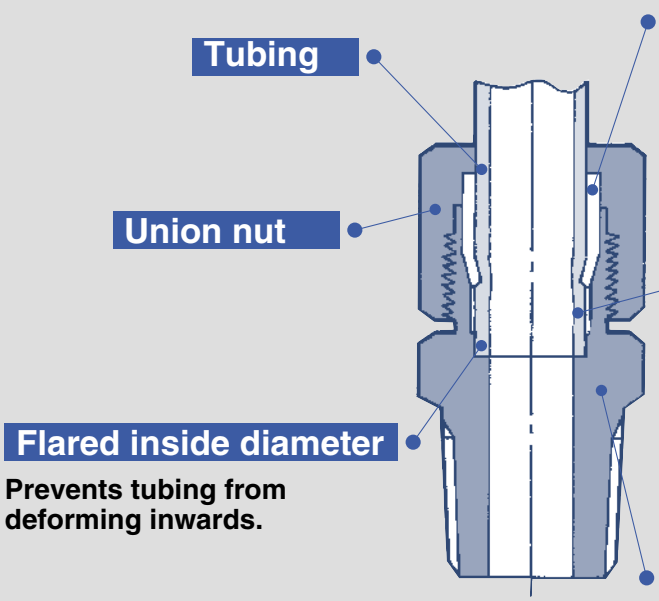
Specifications

Applicable tubing material		Nylon tubing, Soft nylon tubing, Soft copper tubing (C1220T-O)
Applicable tubing O.D.		ø4, ø6, ø8, ø10, ø12
Max. operating pressure		1.0 MPa
Proof pressure		10 MPa
Fluid		Air
Thread	**Thread portion**	JIS B 0203 (Taper thread for piping)
	Nut part	JIS B 0211 Class 2 (Metric fine thread)
Sealant (Thread portion) Note)		None or with sealant

Note) The male elbow, male branch tee and service tee union with sealant are manufactured upon receipt of order.

Main Parts Material

Body	C3604BD, C3771BE
Nut	C3604BD
Ferrule	C2700T



PAT.

SMC

Male Connector H

Most common style used to pipe from female thread in the same direction.

Applicable tubing mm	Connecting thread	Model
4	R1/8	H04-01
	R1/4	-02
6	R1/8	H06-01
	R1/4	-02
	R3/8	-03
8	R1/8	H08-01
	R1/4	-02
	R3/8	-03
10	R1/4	H10-02
	R3/8	-03
	R1/2	-04
12	R1/4	H12-02
	R3/8	-03
	R1/2	-04

Swivel Elbow L

To pipe from the female threaded at the right angle. Swiveled at any direction.

Applicable tubing mm	Connecting thread	Model
4	R1/8	L04-01
	R1/4	-02
6	R1/8	L06-01
	R1/4	-02
	R3/8	-03
8	R1/8	L08-01
	R1/4	-02
	R3/8	-03
10	R1/4	L10-02
	R3/8	-03
	R1/2	-04
12	R1/4	L12-02
	R3/8	-03
	R1/2	-04

Male Elbow DL

Most common style used to pipe from female thread at a right angle.

Applicable tubing mm	Connecting thread	Model
4	R1/8	DL04-01
	R1/4	-02
6	R1/8	DL06-01
	R1/4	-02
	R3/8	-03
8	R1/8	DL08-01
	R1/4	-02
	R3/8	-03
10	R1/4	DL10-02
	R3/8	-03
	R1/2	-04
12	R1/4	DL12-02
	R3/8	-03
	R1/2	-04

Swivel Extended Elbow LL

To pipe from the female threaded at a right angle. Swiveled at any direction. Solid piece moves fittings up from work piece.

Applicable tubing mm	Connecting thread	Model
4	R1/8	LL04-01
	R1/4	-02
6	R1/8	LL06-01
	R1/4	-02
	R3/8	-03
8	R1/8	LL08-01
	R1/4	-02
	R3/8	-03
10	R1/4	LL10-02
	R3/8	-03
	R1/2	-04
12	R1/4	LL12-02
	R3/8	-03
	R1/2	-04

Male Branch Tee DT

To branch the line from the female thread at 90° in each direction.

Applicable tubing mm	Connecting thread	Model
4	R1/8	DT04-01
	R1/4	-02
6	R1/8	DT06-01
	R1/4	-02
	R3/8	-03
8	R1/8	DT08-01
	R1/4	-02
	R3/8	-03
10	R1/4	DT10-02
	R3/8	-03
	R1/2	-04
12	R1/4	DT12-02
	R3/8	-03
	R1/2	-04

Male Run Tee DY

To branch the line from the female thread in the same direction and at 90°.

Applicable tubing mm	Connecting thread	Model
4	R1/8	DY04-01
	R1/4	-02
6	R1/8	DY06-01
	R1/4	-02
	R3/8	-03
8	R1/8	DY08-01
	R1/4	-02
	R3/8	-03
10	R1/4	DY10-02
	R3/8	-03
	R1/2	-04
12	R1/4	DY12-02
	R3/8	-03
	R1/2	-04

Bulkhead Union DE

To connect tubing through a panel.

Applicable tubing mm	Model
4	DE04-00
6	DE06-00
8	DE08-00
10	DE10-00
12	DE12-00

Union Tee DT

To branch tubing into 2 directions each at 90° to the original one.

Applicable tubing mm	Model
4	DT04-00
6	DT06-00
8	DT08-00
10	DT10-00
12	DT12-00

Female Connector DHF

To pipe from the male threaded portion of a pressure gauge, etc.

Applicable tubing mm	Connecting thread	Model
4	Rc1/4	DHF04-02
6	Rc1/4	DHF06-02
	Rc3/8	-03
8	Rc1/4	DHF08-02
10	Rc1/4	DHF10-02
12	Rc1/4	DHF12-02

Bulkhead Female Connector DEF

Used for trunk connection between tubing and a male thread installed through a panel.

Applicable tubing mm	Connecting thread	Model
6	Rc1/4	DEF06-02
8	Rc3/8	DEF08-03
10	Rc3/8	DEF10-03
12	Rc3/8	DEF12-03

Plug DP

To plug unused self-align fittings.

Applicable fitting size	Model
ø4	DP-04
ø6	DP-06
ø8	DP-08
ø10	DP-10
ø12	DP-12

Made to Order

Electroless Nickel Plated Metal Parts	X2

(Example) H06-02-X2

With Sealant on R Thread	S

(Example) H06-02S

Miniature Fittings

Series M

■Applicable tubing O.D.: **Metric Size**

■Connecting thread: **M3, M5, R1/8**

Compact piping space.
The hose nipple has a large holding force, allowing easy connection and removal.

A wide variety of models is available.
Piping in the same direction is possible at different heights.

Hose nipple, Hose elbow.
Hose nipples and hose elbow accept nylon, soft nylon and polyurethane tubing.

ø2 tubing type is newly added.

Applicable tubing O.D.
: ø2

Applicable tubing O.D.
: ø3.18, ø4, ø6

Specifications

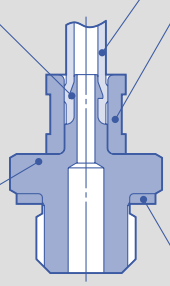
· Applicable tubing O.D.: ø2

Applicable tubing material	Polyurethane
Max. operating pressure (at 20°C)	1 MPa
Connection size	M3, M5, ø3.2, ø4
Thread	JIS B0209 Class 2 (Metric coarse thread)

· Applicable tubing O.D.: ø3.18, ø4, ø6

Applicable tubing material	Nylon	Soft nylon	Polyurethane
Max. operating pressure (at 20°C)	1.5 MPa	1.0 MPa	0.8 MPa
Connection size	M3, M5, R1/8		
Thread	JIS B0209 Class 2 (Metric coarse thread), JIS B0203 (Taper pipe thread)		

Barb Fittings: ø2



Barb
Easy tube insertion
High retaining force

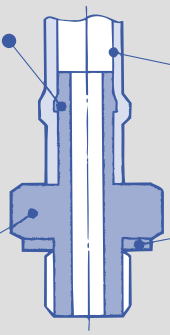
Body
Electroless nickel plated

Tubing

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

Gasket
Low clamping torque
Firm sealing

Barb Fittings: ø3.18, ø4, ø6



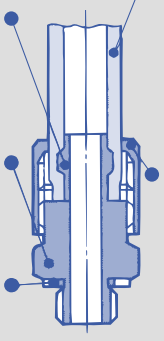
Barb
Easy tube insertion
High retaining force

Body
Electroless nickel plated

Tubing

Gasket
Low clamping torque
Firm sealing

Hose Nipple: ø3.18, ø4, ø6



Barb
Easy tube insertion
High retaining force

Body
Electroless nickel plated

Gasket
Low clamping torque
Firm sealing

Tubing
Hose nipples and hose elbow accept nylon, soft nylon and polyurethane tubing.

Cap nut
Secure holding is achieved by manual tightening.
Easy disconnection of tubing by loosening.
Electroless nickel plated.

PAT.

Applicable tubing O.D.: ø2

Port size: M3, M5

Barb fitting

Applicable tubing O.D. x I.D. (mm)	Thread	Model
ø2 X ø1.2	M3 x 0.5	**M-3AU-2**
	M5 x 0.8	**M-5AU-2**

Barb elbow

Applicable tubing O.D. x I.D. (mm)	Thread	Model
ø2 X ø1.2	M3 x 0.5	**M-3ALU-2**
	M5 x 0.8	**M-5ALHU-2**

Barb One-touch

Applicable tubing (mm)		Model
a (O.D. x I.D.)	**b** (O.D.)	
ø2 X ø1.2	ø3.2	**M-32F-2**
	ø4	**M-04F-2**

Plug-in reducer

Applicable tubing O.D. x I.D. (mm)	Fitting size ø**D**	Model
ø2 X ø1.2	ø3.2	**M-32R-2**
	ø4	**M-04R-2**

Applicable tubing O.D.: ø3.18, ø4, ø6

Port size: M3

Description	Remark(s)	Model	Application	
Barb fittings for soft tubing 	ø3.18/2.18 X M3	**M-3AU-3**	To pipe soft nylon tubing.	
	ø3.18/2 X M3		To pipe polyurethane tubing.	
	ø4/2.5 X M3	**M-3AU-4**	To pipe soft nylon, polyurethane tubing.	
Barb elbow for soft tubing 	ø3.18/2.18 X M3	**M-3ALU-3**	Body rotates 360° around the stud axis. Position can be fixed after alignment.	To pipe soft nylon tubing.
	ø3.18/2 X M3			To pipe polyurethane tubing.
	ø4/2.5 X M3	**M-3ALU-4**		To pipe soft nylon, polyurethane tubing.
Universal elbow 	M3 female X M3 male	**M-3UL**	Body rotates 360° around the stud axis. Position can be fixed after alignment.	
Universal tee 	M3 female X M3 female X M3 male	**M-3UT**	Body rotates 360° around the stud axis. Position can be fixed after alignment.	
Nipple 	M3 male X M3 male	**M-3N**	To connect fittings and equipment or to connect 2 fittings.	
Plug 		**M-3P**	To plug unused M3 port.	
Gasket 		**M-3G**	Sealant (Thread portion)	

Applicable tubing O.D.: ø3.18, ø4, ø6

Port size: M5

Description	Remark(s)	Model	Application	
Barb fittings for nylon tubing 	ø4/2.5 X M5	**M-5AN-4**	To pipe nylon tubing.	
	ø6/4 X M5	**M-5AN-6**		
Barb fittings for soft tubing 	ø3.18/2.18 X M5	**M-5AU-3**	To pipe soft nylon tubing.	
	ø3.18/2 X M5		To pipe polyurethane tubing.	
	ø4/2.5 X M5	**M-5AU-4**	To pipe soft nylon, polyurethane tubing.	
	ø6/4 X M5	**M-5AU-6**		
Barb elbow for nylon tubing 	ø4/2.5 X M5	**M-5ALN-4**	• To pipe nylon tubing • Body rotates 360° around the stud axis. Position can be fixed after alignment.	
	ø6/4 X M5	**M-5ALN-6**		
Barb elbow for soft tubing 	ø3.18/2.18 X M5	**M-5ALU-3**	Body rotates 360° around the stud axis. Position can be fixed after alignment.	To pipe soft nylon tubing.
	ø3.18/2 X M5			To pipe polyurethane tubing.
	ø4/2.5 X M5	**M-5ALU-4**		To pipe soft nylon, polyurethane tubing.
	ø6/4 X M5	**M-5ALU-6**		
Barb elbow for nylon tubing (H) 	ø4/2.5 X M5	**M-5ALHN-4**	• To pipe nylon tubing • Body rotates 360° around the stud axis. Position can be fixed after alignment.	
	ø6/4 X M5	**M-5ALHN-6**		
Barb elbow for soft tubing (H) 	ø3.18/2.18 X M5	**M-5ALHU-3**	Body rotates 360° around the stud axis. Position can be fixed after alignment.	To pipe soft nylon tubing.
	ø3.18/2 X M5			To pipe polyurethane tubing.
	ø4/2.5 X M5	**M-5ALHU-4**		To pipe soft nylon, polyurethane tubing.
	ø6/4 X M5	**M-5ALHU-6**		

Description	Remark(s)	Model	Application
Hose nipple 	ø4/2.5 X M5	**M-5H-4**	To pipe nylon, soft nylon, polyurethane tubing.
	ø6/4 X M5	**M-5H-6**	
Hose elbow 	ø4/2.5 X M5	**M-5HL-4**	• To pipe nylon, soft nylon, polyurethane tubing. • Body rotates 360° around the stud axis. Position can be fixed after alignment.
	ø6/4 X M5	**M-5HL-6**	
Hose elbow (H) 	ø4/2.5 X M5	**M-5HLH-4**	
	ø6/4 X M5	**M-5HLH-6**	
Elbow 	M5 female X M5 female	**M-5L**	Perpendicular piping.
Tee 	M5 female X M5 female X M5 female	**M-5T**	Perpendicular piping in both directions.
Universal elbow 	M5 female X M5 male	**M-5UL**	Body rotates 360° around the stud axis. Position can be fixed after alignment.
Universal tee 	M5 female X M5 female X M5 male	**M-5UT**	Body rotates 360° around the stud axis. Position can be fixed after alignment.
Extension fitting 	M5 male X M5 female	**M-5J**	For 3D piping to prevent interference between fittings.
Nipple 	M5 male X M5 male	**M-5N**	To connect fittings and equipment or to connect 2 fittings.
Universal nipple 	M5 male X M5 male PAT.	**M-5UN**	Body rotates 360° around the stud axis.
Bulkhead union 	M5 X M5 female – female	**M-5E**	Panel mount connection
Bulkhead Reducer 	Rc1/8 X M5 female	**M-5ER**	Reduction from Rc1/8 to M5. Panel mounting is possible.
Manifold 	Rc1/8 X M5 female (9 port)	**M-5M**	Rc1/8 can be diverted in up to nine M5 stations. Panel mounting is possible.

Applicable tubing O.D.: ø3.18, ø4, ø6

Port size: M5

Description	Remark(s)	Model	Application
Bushing 	R1/8 X M5 female	**M-5B**	Connection from R1/8 piping to M5 fittings.
	R1/4 X M5 female	**M-5B1**	Connection from R1/4 piping to M5 fittings.
Plug 		**M-5P**	To plug unused M5 port.
Gasket 	Material: Stainless steel /NBR	**M-5G2**	M5 thread label
Gasket (H) 	Material: Nylon66 GF30%	**M-5GH**	M-5AL□-6 M-5ALH□-6 M-5HL-4, 6 M-5HLH-4, 6.

Port size: R1/8

Description	Remark(s)	Model	Application
Barb fittings for nylon tubing 	ø4/2.5 X R1/8	**M-01AN-4**	To pipe nylon tubing.
	ø6/4 X R1/8	**M-01AN-6**	
Barb fittings for soft tubing 	ø4/2.5 X R1/8	**M-01AU-4**	To pipe soft nylon, polyurethane tubing.
	ø6/4 X R1/8	**M-01AU-6**	
Hose nipple 	ø4/2.5 X R1/8	**M-01H-4**	To pipe nylon, soft nylon, polyurethane tubing.
	ø6/4 X R1/8	**M-01H-6**	

Made to Order

Clean Series 10-

Lubricant: Fluororesin grease (Fot only M-5UN)
Double packaging

(Example) **10-M-5AN-4**

Electroless Nickel Plated Metal Parts X2

M-5E-X2
M-5ER-X2
M-5M-X2

Only the above three types are applicable. For other types, electroless nickel plating is standardized.

Miniature Fittings/Stainless Steel 316

Series MS

■Applicable tubing O.D.: **Metric Size:**

■Connecting thread: **M5**

Can be used in corrosive applications.

Material: Stainless steel 316.

Compact piping space.

The hose nipple has a large holding force, allowing easy connection and removal.

A wide variety of models is available.

Piping in the same direction is possible at different heights.

Hose Nipple, Hose elbow.

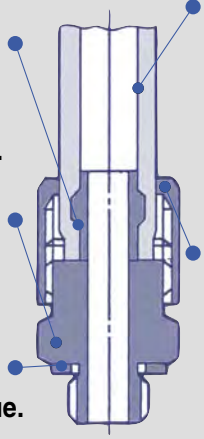
Hose nipples and hose elbow accept nylon, soft nylon and polyurethane tubing.

Specifications

Corrosion Resistant **Clean**

Applicable tubing material		Nylon	Soft nylon		Polyurethane
Applicable tubing diameter		ø4/ø2.5 ø6/ø4	ø3.18/ø2.18	ø4/ø2.5 ø6/ø4	ø3.18/ø2 ø4/ø2.5, ø6/ø4
Max. operating pressure (At 20°C)		1.5 MPa	1.0 MPa		0.8 MPa
Connection size		M5 (JIS B0209, Class 2: Metric coarse thread)			
Material	Body	Stainless steel 316			
	Gasket	PVC, Nylon66•GF30%			

Hose Nipple



Barb
The tube allows easy tubing insertion as well as secure tubing holding.

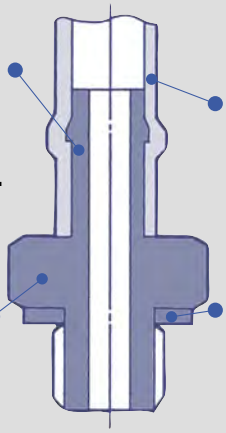
Body
Stainless steel 316

Gasket
Small tightening torque.
Secure sealing.

Tubing
Hose nipples and hose elbow accept nylon, soft nylon and polyurethane tubing.

Cap nut
Secure holding is achieved by manual tightening.
Easy disconnection of tubing by loosening.
Stainless steel 316

Barb Fittings



Barb
The tube allows easy tubing insertion as well as secure tubing holding.

Body
Stainless steel 316

Tubing

Gasket
Small tightening torque.
Secure sealing.

Applicable tubing O.D.: ø3.18, ø4, ø6

Port size: M5

Description	Remark(s)	Model	Application	
Barb fittings for soft tubing 	ø3.18/2.18 X M5	**MS-5AU-3**	To pipe soft nylon tubing.	
	ø3.18/2 X M5		To pipe polyurethane tubing.	
	ø4/2.5 X M5	**MS-5AU-4**	To pipe soft nylon, polyurethane tubing.	
	ø6/4 X M5	**MS-5AU-6**		
Barb elbow for soft tubing 	ø3.18/2.18 X M5	**MS-5ALHU-3**	Body rotates 360° around the stud axis. Position can be fixed after alignment.	To pipe soft nylon tubing.
	ø3.18/2 X M5			To pipe polyurethane tubing.
	ø4/2.5 X M5	**MS-5ALHU-4**		To pipe soft nylon, polyurethane tubing.
	ø6/4 X M5	**MS-5ALHU-6**		
Hose nipple 	ø4/2.5 X M5	**MS-5H-4**	To pipe nylon, soft nylon, polyurethane tubing.	
	ø6/4 X M5	**MS-5H-6**		
Hose elbow 	ø4/2.5 X M5	**MS-5HLH-4**	• To pipe nylon, soft nylon, polyurethane tubing. • Body rotates 360° around the stud axis. Position can be fixed after alignment.	
	ø6/4 X M5	**MS-5HLH-6**		
Gasket 	Material: PVC	**M-5G1**	Sealant (M5 thread portion)	

Description	Remark(s)	Model	Application	
Universal elbow 	M5 female X M5 male	**MS-5UL**	Body rotates 360° around the stud axis. Position can be fixed after alignment.	
Universal tee 	M5 female X M5 female X M5 male	**MS-5UT**	Body rotates 360° around the stud axis. Position can be fixed after alignment.	
Bushing 	R1/8 X M5 female	**MS-5B**	Connection from R1/8 piping to M5 fittings.	
Plug 		**MS-5P**	To plug unused M5 port.	
Extension fitting 	M5 male X M5 female	**MS-5J**	For 3D piping to prevent interference between fittings.	
Nipple 	M5 male X M5 male	**MS-5N**	To connect fittings and equipment or to connect 2 fittings.	
Universal nipple 	M5 male X M5 male PAT	**MS-5UN**	Body rotates 360° around the stud axis.	
Universal tee for soft tubing 	ø3.18/2.18 X M5	**MS-5ATHU-3**	Body rotates 360° around the stud axis. Position can be fixed after alignment.	To pipe soft nylon tubing.
	ø3.18/2 X M5			To pipe polyurethane tubing.
	ø4/2.5 X M5	**MS-5ATHU-4**		To pipe soft nylon, polyurethane tubing.
	ø6/4 X M5	**MS-5ATHU-6**		
Gasket (H) 	Material: Nylon66 GF30%	**M-5GH**	Only for MS-5ALHU-6, MS-5HLH-4, MS-5HLH-6 and MS-5ATHU-6.	

Made to Order

Made to Order

Clean Series 10-

Lubricant: Fluororesin grease (Fot only MS-5UN)
Double packaging

(Example)10-MS-5AN-4

High Purity Fluoropolymer Fittings

Series LQ1/LQ2

■Applicable tubing O.D.: **Metric/Inch Size**

■Connecting thread: **R, Rc, NPT**

Heat Resistant **Corrosion Resistant** **Clean**

Quadruple sealing construction

The quadruple sealing construction (PAT.) based on SMC's original idea results in highly reliable sealing characteristics with outstanding leakage prevention effect.

Locking

- Locking mechanism utilizes sealing lock by the nut.
- Trapezoidal thread allows application of high torque.
- 2 stage pressing by the tubing holder of the nut ensures secure tube holding.

Flow-through characteristics

Excellent flow-through characteristics are achieved by minimizing liquid deposit.

Strong resistance to tube bending and deformation.

Able to withstand lateral loads with the tubing support.

Tubing sizes are interchangeable.

- The reducer method allows tubing size changes without replacing the body.
- Helps standardise fitting items resulting in less stock requirements.

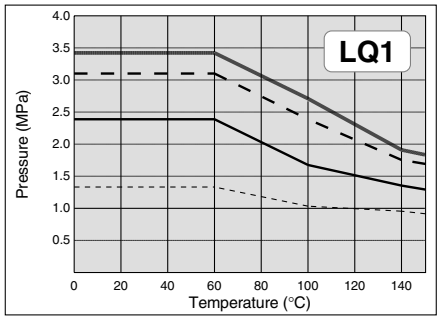
Easy tightening of nuts.

- No positioning guide is required, simply tighten up the tubing to the end of the fitting body.
- The trapezoidal thread prevents oblique nut insertion.

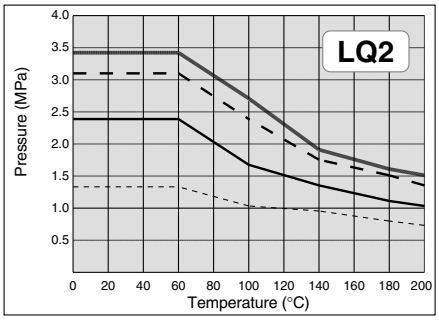
Specifications

Feature \ Model	LQ1	LQ2
Material	NEW PFA	
Maximum operating pressure (at 20C°)	0.7 MPa	1.0 MPa
Proof pressure	Refer to the withstand pressure and heat resistance performance curves.	
Operating temperature	0 to 150°C	0 to 200°C

Withstand Pressure and Heat Resistance Performance



1/8", 3/16", 1/4", ø4, ø6 tubing
3/8", ø10 tubing
1/2", ø12 tubing
3/4", ø19, 1", ø25 tubing



1/8", 3/16", 1/4", ø4, ø6 tubing
3/8", ø10 tubing
1/2", ø12 tubing
3/4", ø19, 1", ø25 tubing

Basic

2 stage pressing construction ensures sealing and tubing locking to absorb differences in the tube outside diameter.

D side sealing

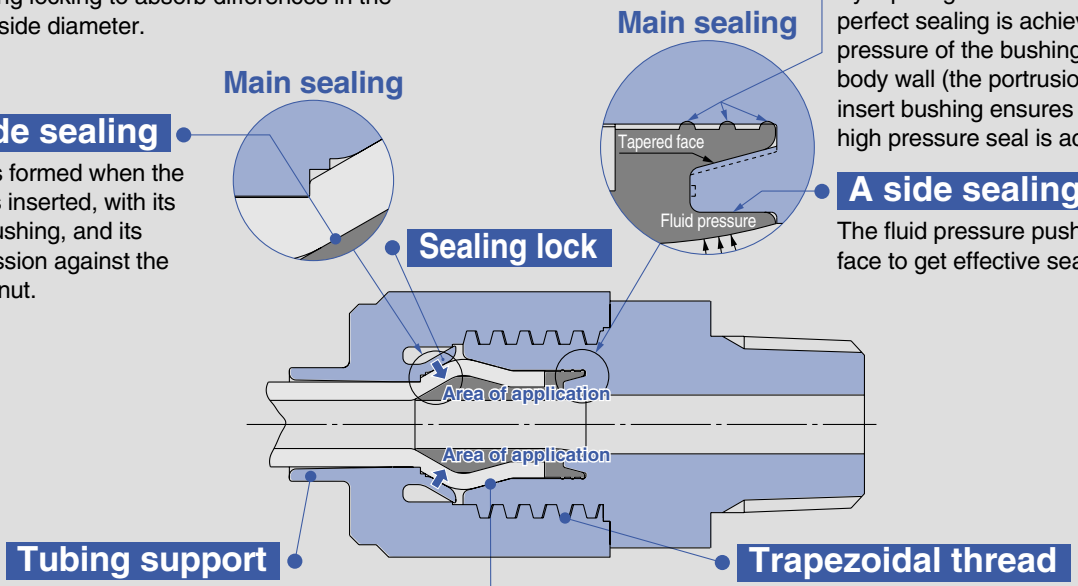
A seal is formed when the tubing is inserted, with its insert bushing, and its compression against the internal nut.

B side sealing

By tapering the face of the body, perfect sealing is achieved by the pressure of the bushing against the body wall (the portrusion of the insert bushing ensures that a secure high pressure seal is achieved).

A side sealing

The fluid pressure pushes the seal face to get effective sealing.



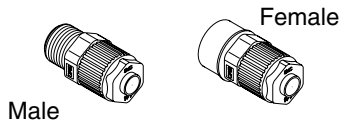
C side sealing

Sealed by the pressure exerted on the tubing by the internal nut.

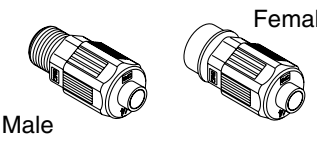
SMC

Connector

LQ1H

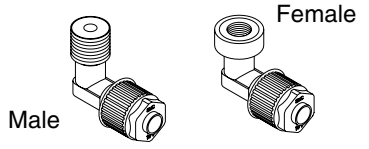


LQ2H

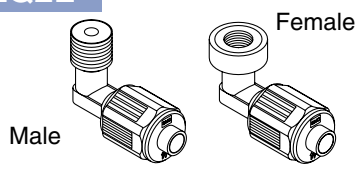


Elbow

LQ1L

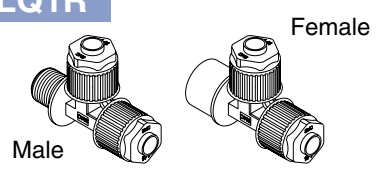


LQ2L

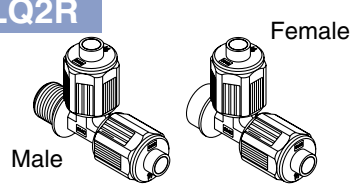


Run tee

LQ1R

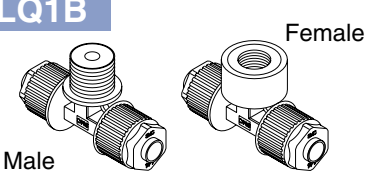


LQ2R

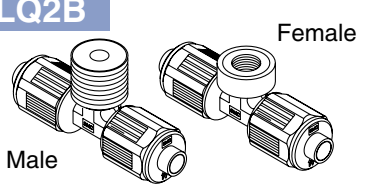


Branch tee

LQ1B

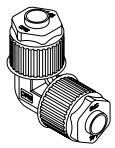


LQ2B

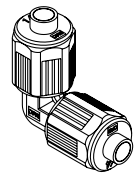


Union elbow

LQ1E

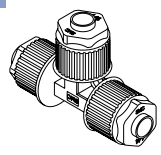


LQ2E

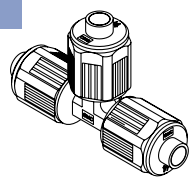


Union tee

LQ1T

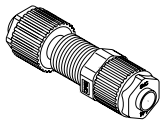


LQ2T

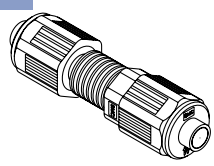


Panel mount union

LQ1P

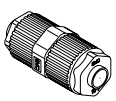


LQ2P

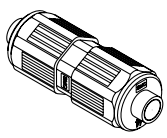


Union

LQ1U



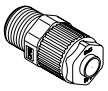
LQ2U



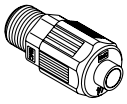
Union flange

LQ1F

Male Connector LQ1/LQ2H-M



LQ1



LQ2

Metric sizes

Applicable tubing O.D.	Connection threads R/NPT	Model LQ1	Model LQ2
ø4	1/8"	LQ1H11-M□	—
ø3		LQ1H12-M□	—
ø6	1/8"	LQ1H21-M□	LQ2H21-M□
ø4		LQ1H22-M□	LQ2H22-M□
ø6	1/4"	LQ1H23-M□	LQ2H23-M□
ø4		LQ1H24-M□	LQ2H24-M□
ø10	1/4"	LQ1H31-M□	LQ2H31-M□
ø8		LQ1H32-M□	LQ2H32-M□
ø6		LQ1H33-M□	LQ2H33-M□
ø10	3/8"	LQ1H34-M□	LQ2H34-M□
ø8		LQ1H35-M□	LQ2H35-M□
ø6		LQ1H36-M□	LQ2H36-M□
ø12	3/8"	LQ1H41-M□	LQ2H41-M□
ø10		LQ1H42-M□	LQ2H42-M□
ø12	1/2"	LQ1H43-M□	LQ2H43-M□
ø10		LQ1H44-M□	LQ2H44-M□
ø19	1/2"	LQ1H51-M□	LQ2H51-M□
ø12		LQ1H52-M□	LQ2H52-M□
ø19	3/4"	LQ1H53-M□	LQ2H53-M□
ø12		LQ1H54-M□	LQ2H54-M□
ø25	3/4"	LQ1H61-M□	—
ø19		LQ1H62-M□	—
ø25	1"	LQ1H63-M□	—
ø19		LQ1H64-M□	—

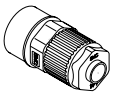
Inch sizes

Applicable tubing O.D.	Connection threads R/NPT	Model LQ1	Model LQ2
1/8"	1/8"	LQ1H1A-M□	—
1/4"	1/8"	LQ1H2A-M□	LQ2H2A-M□
3/16"		LQ1H2B-M□	LQ2H2B-M□
1/8"		LQ1H2C-M□	LQ2H2C-M□
1/4"	1/4"	LQ1H2D-M□	LQ2H2D-M□
3/16"		LQ1H2E-M□	LQ2H2E-M□
1/8"		LQ1H2F-M□	LQ2H2F-M□
3/8"	1/4"	LQ1H3A-M□	LQ2H3A-M□
1/4"		LQ1H3B-M□	LQ2H3B-M□
3/8"	3/8"	LQ1H3C-M□	LQ2H3C-M□
1/4"		LQ1H3D-M□	LQ2H3D-M□
1/2"	3/8"	LQ1H4A-M□	LQ2H4A-M□
3/8"		LQ1H4B-M□	LQ2H4B-M□
1/2"	1/2"	LQ1H4C-M□	LQ2H4C-M□
3/8"		LQ1H4D-M□	LQ2H4D-M□
3/4"	1/2"	LQ1H5A-M□	LQ2H5A-M□
1/2"		LQ1H5B-M□	LQ2H5B-M□
3/4"	3/4"	LQ1H5C-M□	LQ2H5C-M□
1/2"		LQ1H5D-M□	LQ2H5D-M□
1"	3/4"	LQ1H6A-M□	—
3/4"		LQ1H6B-M□	—
1"	1"	LQ1H6C-M□	—
3/4"		LQ1H6D-M□	—

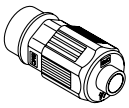
Fill in □ with appropriate thread type.

Nil	R, Rc
N	NPT

Female Connector LQ1/LQ2H-F



LQ1



LQ2

Metric sizes

Applicable tubing O.D.	Connection threads R/NPT	Model LQ1	Model LQ2
ø4	1/8"	LQ1H11-F□	—
ø3		LQ1H12-F□	—
ø6	1/8"	LQ1H21-F□	LQ2H21-F□
ø4		LQ1H22-F□	LQ2H22-F□
ø6	1/4"	LQ1H23-F□	LQ2H23-F□
ø4		LQ1H24-F□	LQ2H24-F□
ø10	1/4"	LQ1H31-F□	LQ2H31-F□
ø8		LQ1H32-F□	LQ2H32-F□
ø6		LQ1H33-F□	LQ2H33-F□
ø10	3/8"	LQ1H34-F□	LQ2H34-F□
ø8		LQ1H35-F□	LQ2H35-F□
ø6		LQ1H36-F□	LQ2H36-F□
ø12	3/8"	LQ1H41-F□	LQ2H41-F□
ø10		LQ1H42-F□	LQ2H42-F□
ø12	1/2"	LQ1H43-F□	LQ2H43-F□
ø10		LQ1H44-F□	LQ2H44-F□
ø19	1/2"	LQ1H51-F□	LQ2H51-F□
ø12		LQ1H52-F□	LQ2H52-F□
ø19	3/4"	LQ1H53-F□	LQ2H53-F□
ø12		LQ1H54-F□	LQ2H54-F□
ø25	3/4"	LQ1H61-F□	—
ø19		LQ1H62-F□	—
ø25	1"	LQ1H63-F□	—
ø19		LQ1H64-F□	—

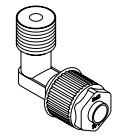
Inch sizes

Applicable tubing O.D.	Connection threads R/NPT	Model LQ1	Model LQ2
1/8"	1/8"	LQ1H1A-F□	—
1/4"	1/8"	LQ1H2A-F□	LQ2H2A-F□
3/16"		LQ1H2B-F□	LQ2H2B-F□
1/8"		LQ1H2C-F□	LQ2H2C-F□
1/4"	1/4"	LQ1H2D-F□	LQ2H2D-F□
3/16"		LQ1H2E-F□	LQ2H2E-F□
1/8"		LQ1H2F-F□	LQ2H2F-F□
3/8"	1/4"	LQ1H3A-F□	LQ2H3A-F□
1/4"		LQ1H3B-F□	LQ2H3B-F□
3/8"	3/8"	LQ1H3C-F□	LQ2H3C-F□
1/4"		LQ1H3D-F□	LQ2H3D-F□
1/2"	3/8"	LQ1H4A-F□	LQ2H4A-F□
3/8"		LQ1H4B-F□	LQ2H4B-F□
1/2"	1/2"	LQ1H4C-F□	LQ2H4C-F□
3/8"		LQ1H4D-F□	LQ2H4D-F□
3/4"	1/2"	LQ1H5A-F□	LQ2H5A-F□
1/2"		LQ1H5B-F□	LQ2H5B-F□
3/4"	3/4"	LQ1H5C-F□	LQ2H5C-F□
1/2"		LQ1H5D-F□	LQ2H5D-F□
1"	3/4"	LQ1H6A-F□	—
3/4"		LQ1H6B-F□	—
1"	1"	LQ1H6C-F□	—
3/4"		LQ1H6D-F□	—

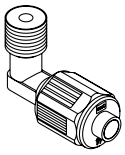
Fill in □ with appropriate thread type.

Nil	R, Rc
N	NPT

Male Elbow LQ1/LQ2L-M



LQ1



LQ2

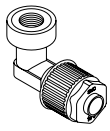
Metric sizes			
Applicable tubing O.D.	Connection threads R/NPT	Model LQ1	Model LQ2
ø4	1/8"	LQ1L11-M□	—
ø3		LQ1L12-M□	—
ø6	1/8"	LQ1L21-M□	LQ2L21-M□
ø4		LQ1L22-M□	LQ2L22-M□
ø6	1/4"	LQ1L23-M□	LQ2L23-M□
ø4		LQ1L24-M□	LQ2L24-M□
ø10	1/4"	LQ1L31-M□	LQ2L31-M□
ø8		LQ1L32-M□	LQ2L32-M□
ø6		LQ1L33-M□	LQ2L33-M□
ø10	3/8"	LQ1L34-M□	LQ2L34-M□
ø8		LQ1L35-M□	LQ2L35-M□
ø6		LQ1L36-M□	LQ2L36-M□
ø12	3/8"	LQ1L41-M□	LQ2L41-M□
ø10		LQ1L42-M□	LQ2L42-M□
ø12	1/2"	LQ1L43-M□	LQ2L43-M□
ø10		LQ1L44-M□	LQ2L44-M□
ø19	1/2"	LQ1L51-M□	LQ2L51-M□
ø12		LQ1L52-M□	LQ2L52-M□
ø19	3/4"	LQ1L53-M□	LQ2L53-M□
ø12		LQ1L54-M□	LQ2L54-M□
ø25	3/4"	LQ1L61-M□	—
ø19		LQ1L62-M□	—
ø25	1"	LQ1L63-M□	—
ø19		LQ1L64-M□	—

Inch sizes			
Applicable tubing O.D.	Connection threads R/NPT	Model LQ1	Model LQ2
1/8"	1/8"	LQ1L1A-M□	—
1/4"	1/8"	LQ1L2A-M□	LQ2L2A-M□
3/16"		LQ1L2B-M□	LQ2L2B-M□
1/8"		LQ1L2C-M□	LQ2L2C-M□
1/4"	1/4"	LQ1L2D-M□	LQ2L2D-M□
3/16"		LQ1L2E-M□	LQ2L2E-M□
1/8"		LQ1L2F-M□	LQ2L2F-M□
3/8"	1/4"	LQ1L3A-M□	LQ2L3A-M□
1/4"		LQ1L3B-M□	LQ2L3B-M□
3/8"	3/8"	LQ1L3C-M□	LQ2L3C-M□
1/4"		LQ1L3D-M□	LQ2L3D-M□
1/2"	3/8"	LQ1L4A-M□	LQ2L4A-M□
3/8"		LQ1L4B-M□	LQ2L4B-M□
1/2"	1/2"	LQ1L4C-M□	LQ2L4C-M□
3/8"		LQ1L4D-M□	LQ2L4D-M□
3/4"	1/2"	LQ1L5A-M□	LQ2L5A-M□
1/2"		LQ1L5B-M□	LQ2L5B-M□
3/4"	3/4"	LQ1L5C-M□	LQ2L5C-M□
1/2"		LQ1L5D-M□	LQ2L5D-M□
1"	3/4"	LQ1L6A-M□	—
3/4"		LQ1L6B-M□	—
1"	1"	LQ1L6C-M□	—
3/4"		LQ1L6D-M□	—

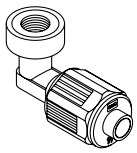
Fill in □ with appropriate thread type.

Nil	R, Rc
N	NPT

Female Elbow LQ1/LQ2L-F



LQ1



LQ2

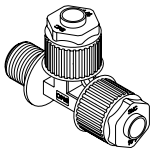
Metric sizes			
Applicable tubing O.D.	Connection threads R/NPT	Model LQ1	Model LQ2
ø4	1/8"	LQ1L11-F□	—
ø3		LQ1L12-F□	—
ø6	1/8"	LQ1L21-F□	LQ2L21-F□
ø4		LQ1L22-F□	LQ2L22-F□
ø6	1/4"	LQ1L23-F□	LQ2L23-F□
ø4		LQ1L24-F□	LQ2L24-F□
ø10	1/4"	LQ1L31-F□	LQ2L31-F□
ø8		LQ1L32-F□	LQ2L32-F□
ø6		LQ1L33-F□	LQ2L33-F□
ø10	3/8"	LQ1L34-F□	LQ2L34-F□
ø8		LQ1L35-F□	LQ2L35-F□
ø6		LQ1L36-F□	LQ2L36-F□
ø12	3/8"	LQ1L41-F□	LQ2L41-F□
ø10		LQ1L42-F□	LQ2L42-F□
ø12	1/2"	LQ1L43-F□	LQ2L43-F□
ø10		LQ1L44-F□	LQ2L44-F□
ø19	1/2"	LQ1L51-F□	LQ2L51-F□
ø12		LQ1L52-F□	LQ2L52-F□
ø19	3/4"	LQ1L53-F□	LQ2L53-F□
ø12		LQ1L54-F□	LQ2L54-F□
ø25	3/4"	LQ1L61-F□	—
ø19		LQ1L62-F□	—
ø25	1"	LQ1L63-F□	—
ø19		LQ1L64-F□	—

Inch sizes			
Applicable tubing O.D.	Connection threads R/NPT	Model LQ1	Model LQ2
1/8"	1/8"	LQ1L1A-F□	—
1/4"	1/8"	LQ1L2A-F□	LQ2L2A-F□
3/16"		LQ1L2B-F□	LQ2L2B-F□
1/8"		LQ1L2C-F□	LQ2L2C-F□
1/4"	1/4"	LQ1L2D-F□	LQ2L2D-F□
3/16"		LQ1L2E-F□	LQ2L2E-F□
1/8"		LQ1L2F-F□	LQ2L2F-F□
3/8"	1/4"	LQ1L3A-F□	LQ2L3A-F□
1/4"		LQ1L3B-F□	LQ2L3B-F□
3/8"	3/8"	LQ1L3C-F□	LQ2L3C-F□
1/4"		LQ1L3D-F□	LQ2L3D-F□
1/2"	3/8"	LQ1L4A-F□	LQ2L4A-F□
3/8"		LQ1L4B-F□	LQ2L4B-F□
1/2"	1/2"	LQ1L4C-F□	LQ2L4C-F□
3/8"		LQ1L4D-F□	LQ2L4D-F□
3/4"	1/2"	LQ1L5A-F□	LQ2L5A-F□
1/2"		LQ1L5B-F□	LQ2L5B-F□
3/4"	3/4"	LQ1L5C-F□	LQ2L5C-F□
1/2"		LQ1L5D-F□	LQ2L5D-F□
1"	3/4"	LQ1L6A-F□	—
3/4"		LQ1L6B-F□	—
1"	1"	LQ1L6C-F□	—
3/4"		LQ1L6D-F□	—

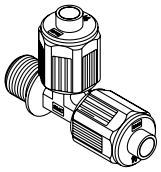
Fill in □ with appropriate thread type.

Nil	R, Rc
N	NPT

Male Run Tee LQ1/LQ2R-M



LQ1



LQ2

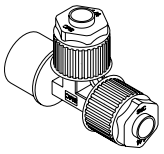
Metric sizes			
Applicable tubing O.D.	Connection threads R/NPT	Model	
		LQ1	LQ2
ø4	1/8"	LQ1R11-M□	—
ø3		LQ1R12-M□	—
ø6	1/8"	LQ1R21-M□	LQ2R21-M□
ø4		LQ1R22-M□	LQ2R22-M□
ø6	1/4"	LQ1R23-M□	LQ2R23-M□
ø4		LQ1R24-M□	LQ2R24-M□
ø10	1/4"	LQ1R31-M□	LQ2R31-M□
ø8		LQ1R32-M□	LQ2R32-M□
ø6		LQ1R33-M□	LQ2R33-M□
ø10	3/8"	LQ1R34-M□	LQ2R34-M□
ø8		LQ1R35-M□	LQ2R35-M□
ø6		LQ1R36-M□	LQ2R36-M□
ø12	3/8"	LQ1R41-M□	LQ2R41-M□
ø10		LQ1R42-M□	LQ2R42-M□
ø12	1/2"	LQ1R43-M□	LQ2R43-M□
ø10		LQ1R44-M□	LQ2R44-M□
ø19	1/2"	LQ1R51-M□	LQ2R51-M□
ø12		LQ1R52-M□	LQ2R52-M□
ø19	3/4"	LQ1R53-M□	LQ2R53-M□
ø12		LQ1R54-M□	LQ2R54-M□
ø25	3/4"	LQ1R61-M□	—
ø19		LQ1R62-M□	—
ø25	1"	LQ1R63-M□	—
ø19		LQ1R64-M□	—

Inch sizes			
Applicable tubing O.D.	Connection threads R/NPT	Model	
		LQ1	LQ2
1/8"	1/8"	LQ1R1A-M□	—
1/4"	1/8"	LQ1R2A-M□	LQ2R2A-M□
3/16"		LQ1R2B-M□	LQ2R2B-M□
1/8"		LQ1R2C-M□	LQ2R2C-M□
1/4"	1/4"	LQ1R2D-M□	LQ2R2D-M□
3/16"		LQ1R2E-M□	LQ2R2E-M□
1/8"		LQ1R2F-M□	LQ2R2F-M□
3/8"	1/4"	LQ1R3A-M□	LQ2R3A-M□
1/4"		LQ1R3B-M□	LQ2R3B-M□
3/8"	3/8"	LQ1R3C-M□	LQ2R3C-M□
1/4"		LQ1R3D-M□	LQ2R3D-M□
1/2"	3/8"	LQ1R4A-M□	LQ2R4A-M□
3/8"		LQ1R4B-M□	LQ2R4B-M□
1/2"	1/2"	LQ1R4C-M□	LQ2R4C-M□
3/8"		LQ1R4D-M□	LQ2R4D-M□
3/4"	1/2"	LQ1R5A-M□	LQ2R5A-M□
1/2"		LQ1R5B-M□	LQ2R5B-M□
3/4"	3/4"	LQ1R5C-M□	LQ2R5C-M□
1/2"		LQ1R5D-M□	LQ2R5D-M□
1"	3/4"	LQ1R6A-M□	—
3/4"		LQ1R6B-M□	—
1"	1"	LQ1R6C-M□	—
3/4"		LQ1R6D-M□	—

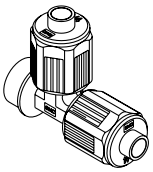
Fill in □ with appropriate thread type.

Nil	R, Rc
N	NPT

Female Run Tee LQ1/LQ2R-F



LQ1



LQ2

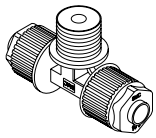
Metric sizes			
Applicable tubing O.D.	Connection threads R/NPT	Model	
		LQ1	LQ2
ø4	1/8"	LQ1R11-F□	—
ø3		LQ1R12-F□	—
ø6	1/8"	LQ1R21-F□	LQ2R21-F□
ø4		LQ1R22-F□	LQ2R22-F□
ø6	1/4"	LQ1R23-F□	LQ2R23-F□
ø4		LQ1R24-F□	LQ2R24-F□
ø10	1/4"	LQ1R31-F□	LQ2R31-F□
ø8		LQ1R32-F□	LQ2R32-F□
ø6		LQ1R33-F□	LQ2R33-F□
ø10	3/8"	LQ1R34-F□	LQ2R34-F□
ø8		LQ1R35-F□	LQ2R35-F□
ø6		LQ1R36-F□	LQ2R36-F□
ø12	3/8"	LQ1R41-F□	LQ2R41-F□
ø10		LQ1R42-F□	LQ2R42-F□
ø12	1/2"	LQ1R43-F□	LQ2R43-F□
ø10		LQ1R44-F□	LQ2R44-F□
ø19	1/2"	LQ1R51-F□	LQ2R51-F□
ø12		LQ1R52-F□	LQ2R52-F□
ø19	3/4"	LQ1R53-F□	LQ2R53-F□
ø12		LQ1R54-F□	LQ2R54-F□
ø25	3/4"	LQ1R61-F□	—
ø19		LQ1R62-F□	—
ø25	1"	LQ1R63-F□	—
ø19		LQ1R64-F□	—

Inch sizes			
Applicable tubing O.D.	Connection threads R/NPT	Model	
		LQ1	LQ2
1/8"	1/8"	LQ1R1A-F□	—
1/4"	1/8"	LQ1R2A-F□	LQ2R2A-F□
3/16"		LQ1R2B-F□	LQ2R2B-F□
1/8"		LQ1R2C-F□	LQ2R2C-F□
1/4"	1/4"	LQ1R2D-F□	LQ2R2D-F□
3/16"		LQ1R2E-F□	LQ2R2E-F□
1/8"		LQ1R2F-F□	LQ2R2F-F□
3/8"	1/4"	LQ1R3A-F□	LQ2R3A-F□
1/4"		LQ1R3B-F□	LQ2R3B-F□
3/8"	3/8"	LQ1R3C-F□	LQ2R3C-F□
1/4"		LQ1R3D-F□	LQ2R3D-F□
1/2"	3/8"	LQ1R4A-F□	LQ2R4A-F□
3/8"		LQ1R4B-F□	LQ2R4B-F□
1/2"	1/2"	LQ1R4C-F□	LQ2R4C-F□
3/8"		LQ1R4D-F□	LQ2R4D-F□
3/4"	1/2"	LQ1R5A-F□	LQ2R5A-F□
1/2"		LQ1R5B-F□	LQ2R5B-F□
3/4"	3/4"	LQ1R5C-F□	LQ2R5C-F□
1/2"		LQ1R5D-F□	LQ2R5D-F□
1"	3/4"	LQ1R6A-F□	—
3/4"		LQ1R6B-F□	—
1"	1"	LQ1R6C-F□	—
3/4"		LQ1R6D-F□	—

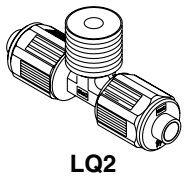
Fill in □ with appropriate thread type.

Nil	R, Rc
N	NPT

Male Branch Tee LQ1/LQ2B-M



LQ1



LQ2

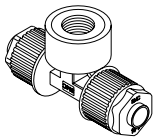
Metric sizes			
Applicable tubing O.D.	Connection threads R/NPT	Model LQ1	Model LQ2
ø4	1/8"	LQ1B11-M□	—
ø3		LQ1B12-M□	—
ø6	1/8"	LQ1B21-M□	LQ2B21-M□
ø4		LQ1B22-M□	LQ2B22-M□
ø6	1/4"	LQ1B23-M□	LQ2B23-M□
ø4		LQ1B24-M□	LQ2B24-M□
ø10	1/4"	LQ1B31-M□	LQ2B31-M□
ø8		LQ1B32-M□	LQ2B32-M□
ø6		LQ1B33-M□	LQ2B33-M□
ø10	3/8"	LQ1B34-M□	LQ2B34-M□
ø8		LQ1B35-M□	LQ2B35-M□
ø6		LQ1B36-M□	LQ2B36-M□
ø12	3/8"	LQ1B41-M□	LQ2B41-M□
ø10		LQ1B42-M□	LQ2B42-M□
ø12	1/2"	LQ1B43-M□	LQ2B43-M□
ø10		LQ1B44-M□	LQ2B44-M□
ø19	1/2"	LQ1B51-M□	LQ2B51-M□
ø12		LQ1B52-M□	LQ2B52-M□
ø19	3/4"	LQ1B53-M□	LQ2B53-M□
ø12		LQ1B54-M□	LQ2B54-M□
ø25	3/4"	LQ1B61-M□	—
ø19		LQ1B62-M□	—
ø25	1"	LQ1B63-M□	—
ø19		LQ1B64-M□	—

Inch sizes			
Applicable tubing O.D.	Connection threads R/NPT	Model LQ1	Model LQ2
1/8"	1/8"	LQ1B1A-M□	—
1/4"	1/8"	LQ1B2A-M□	LQ2B2A-M□
3/16"		LQ1B2B-M□	LQ2B2B-M□
1/8"		LQ1B2C-M□	LQ2B2C-M□
1/4"	1/4"	LQ1B2D-M□	LQ2B2D-M□
3/16"		LQ1B2E-M□	LQ2B2E-M□
1/8"		LQ1B2F-M□	LQ2B2F-M□
3/8"	1/4"	LQ1B3A-M□	LQ2B3A-M□
1/4"		LQ1B3B-M□	LQ2B3B-M□
3/8"	3/8"	LQ1B3C-M□	LQ2B3C-M□
1/4"		LQ1B3D-M□	LQ2B3D-M□
1/2"	3/8"	LQ1B4A-M□	LQ2B4A-M□
3/8"		LQ1B4B-M□	LQ2B4B-M□
1/2"	1/2"	LQ1B4C-M□	LQ2B4C-M□
3/8"		LQ1B4D-M□	LQ2B4D-M□
3/4"	1/2"	LQ1B5A-M□	LQ2B5A-M□
1/2"		LQ1B5B-M□	LQ2B5B-M□
3/4"	3/4"	LQ1B5C-M□	LQ2B5C-M□
1/2"		LQ1B5D-M□	LQ2B5D-M□
1"	3/4"	LQ1B6A-M□	—
3/4"		LQ1B6B-M□	—
1"	1"	LQ1B6C-M□	—
3/4"		LQ1B6D-M□	—

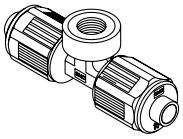
Fill in □ with appropriate thread type.

Nil	R, Rc
N	NPT

Female Branch Tee LQ1B-F



LQ1



LQ2

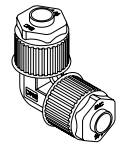
Metric sizes			
Applicable tubing O.D.	Connection threads R/NPT	Model LQ1	Model LQ2
ø4	1/8"	LQ1B11-F□	—
ø3		LQ1B12-F□	—
ø6	1/8"	LQ1B21-F□	LQ2B21-F□
ø4		LQ1B22-F□	LQ2B22-F□
ø6	1/4"	LQ1B23-F□	LQ2B23-F□
ø4		LQ1B24-F□	LQ2B24-F□
ø10	1/4"	LQ1B31-F□	LQ2B31-F□
ø8		LQ1B32-F□	LQ2B32-F□
ø6		LQ1B33-F□	LQ2B33-F□
ø10	3/8"	LQ1B34-F□	LQ2B34-F□
ø8		LQ1B35-F□	LQ2B35-F□
ø6		LQ1B36-F□	LQ2B36-F□
ø12	3/8"	LQ1B41-F□	LQ2B41-F□
ø10		LQ1B42-F□	LQ2B42-F□
ø12	1/2"	LQ1B43-F□	LQ2B43-F□
ø10		LQ1B44-F□	LQ2B44-F□
ø19	1/2"	LQ1B51-F□	LQ2B51-F□
ø12		LQ1B52-F□	LQ2B52-F□
ø19	3/4"	LQ1B53-F□	LQ2B53-F□
ø12		LQ1B54-F□	LQ2B54-F□
ø25	3/4"	LQ1B61-F□	—
ø19		LQ1B62-F□	—
ø25	1"	LQ1B63-F□	—
ø19		LQ1B64-F□	

Inch sizes			
Applicable tubing O.D.	Connection threads R/NPT	Model LQ1	Model LQ2
1/8"	1/8"	LQ1B1A-F□	—
1/4"	1/8"	LQ1B2A-F□	LQ2B2A-F□
3/16"		LQ1B2B-F□	LQ2B2B-F□
1/8"		LQ1B2C-F□	LQ2B2C-F□
1/4"	1/4"	LQ1B2D-F□	LQ2B2D-F□
3/16"		LQ1B2E-F□	LQ2B2E-F□
1/8"		LQ1B2F-F□	LQ2B2F-F□
3/8"	1/4"	LQ1B3A-F□	LQ2B3A-F□
1/4"		LQ1B3B-F□	LQ2B3B-F□
3/8"	3/8"	LQ1B3C-F□	LQ2B3C-F□
1/4"		LQ1B3D-F□	LQ2B3D-F□
1/2"	3/8"	LQ1B4A-F□	LQ2B4A-F□
3/8"		LQ1B4B-F□	LQ2B4B-F□
1/2"	1/2"	LQ1B4C-F□	LQ2B4C-F□
3/8"		LQ1B4D-F□	LQ2B4D-F□
3/4"	1/2"	LQ1B5A-F□	LQ2B5A-F□
1/2"		LQ1B5B-F□	LQ2B5B-F□
3/4"	3/4"	LQ1B5C-F□	LQ2B5C-F□
1/2"		LQ1B5D-F□	LQ2B5D-F□
1"	3/4"	LQ1B6A-F□	—
3/4"		LQ1B6B-F□	—
1"	1"	LQ1B6C-F□	—
3/4"		LQ1B6D-F□	—

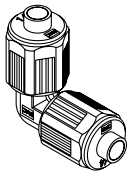
Fill in □ with appropriate thread type.

Nil	R, Rc
N	NPT

Union Elbow LQ1/LQ2E



LQ1



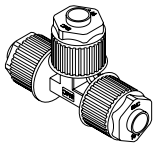
LQ2

Metric sizes		
Applicable tubing O.D.	Model	
	LQ1	LQ2
ø4	LQ1E11□□	—
ø3	LQ1E12□□	—
ø6	LQ1E21□□	LQ2E21□□
ø4	LQ1E22□□	LQ2E22□□
ø10	LQ1E31□□	LQ2E31□□
ø8	LQ1E32□□	LQ2E32□□
ø6	LQ1E33□□	LQ2E33□□
ø12	LQ1E41□□	LQ2E41□□
ø10	LQ1E42□□	LQ2E42□□
ø19	LQ1E51□□	LQ2E51□□
ø12	LQ1E52□□	LQ2E52□□
ø25	LQ1E61□□	—
ø19	LQ1E62□□	—

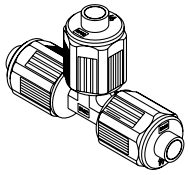
Inch sizes		
Applicable tubing O.D.	Model	
	LQ1	LQ2
1/8"	LQ1E1A□□	—
1/4"	LQ1E2A□□	LQ2E2A□□
3/16"	LQ1E2B□□	LQ2E2B□□
1/8"	LQ1E2C□□	LQ2E2C□□
3/8"	LQ1E3A□□	LQ2E3A□□
1/4"	LQ1E3B□□	LQ2E3B□□
1/2"	LQ1E4A□□	LQ2E4A□□
3/8"	LQ1E4B□□	LQ2E4B□□
3/4"	LQ1E5A□□	LQ2E5A□□
1/2"	LQ1E5B□□	LQ2E5B□□
1"	LQ1E6A□□	—
3/4"	LQ1E6B□□	—

Fill in □□ with appropriate combination code when different diameter is used.
Refer to page 107 for details.

Union Tee LQ1/LQ2T



LQ1



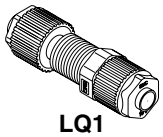
LQ2

Metric sizes		
Applicable tubing O.D.	Model	
	LQ1	LQ2
ø4	LQ1T11□□	—
ø3	LQ1T12□□	—
ø6	LQ1T21□□	LQ2T21□□
ø4	LQ1T22□□	LQ2T22□□
ø10	LQ1T31□□	LQ2T31□□
ø8	LQ1T32□□	LQ2T32□□
ø6	LQ1T33□□	LQ2T33□□
ø12	LQ1T41□□	LQ2T41□□
ø10	LQ1T42□□	LQ2T42□□
ø19	LQ1T51□□	LQ2T51□□
ø12	LQ1T52□□	LQ2T52□□
ø25	LQ1T61□□	—
ø19	LQ1T62□□	—

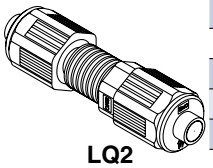
Inch sizes		
Applicable tubing O.D.	Model	
	LQ1	LQ2
1/8"	LQ1T1A□□	—
1/4"	LQ1T2A□□	LQ2T2A□□
3/16"	LQ1T2B□□	LQ2T2B□□
1/8"	LQ1T2C□□	LQ2T2C□□
3/8"	LQ1T3A□□	LQ2T3A□□
1/4"	LQ1T3B□□	LQ2T3B□□
1/2"	LQ1T4A□□	LQ2T4A□□
3/8"	LQ1T4B□□	LQ2T4B□□
3/4"	LQ1T5A□□	LQ2T5A□□
1/2"	LQ1T5B□□	LQ2T5B□□
1"	LQ1T6A□□	—
3/4"	LQ1T6B□□	—

Fill in □□ with appropriate combination code when different diameter is used.
Refer to page 107 for details.

Panel Mount Union LQ1/LQ2P



LQ1



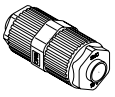
LQ2

Metric sizes		
Applicable tubing O.D.	Model	
	LQ1	LQ2
ø4	LQ1P11□□	—
ø3	LQ1P12□□	—
ø6	LQ1P21□□	LQ2P21□□
ø4	LQ1P22□□	LQ2P22□□
ø10	LQ1P31□□	LQ2P31□□
ø8	LQ1P32□□	LQ2P32□□
ø6	LQ1P33□□	LQ2P33□□
ø12	LQ1P41□□	LQ2P41□□
ø10	LQ1P42□□	LQ2P42□□
ø19	LQ1P51□□	LQ2P51□□
ø12	LQ1P52□□	LQ2P52□□
ø25	LQ1P61□□	—
ø19	LQ1P62□□	—

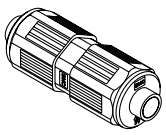
Inch sizes		
Applicable tubing O.D.	Model	
	LQ1	LQ2
1/8"	LQ1P1A□□	—
1/4"	LQ1P2A□□	LQ2P2A□□
3/16"	LQ1P2B□□	LQ2P2B□□
1/8"	LQ1P2C□□	LQ2P2C□□
3/8"	LQ1P3A□□	LQ2P3A□□
1/4"	LQ1P3B□□	LQ2P3B□□
1/2"	LQ1P4A□□	LQ2P4A□□
3/8"	LQ1P4B□□	LQ2P4B□□
3/4"	LQ1P5A□□	LQ2P5A□□
1/2"	LQ1P5B□□	LQ2P5B□□
1"	LQ1P6A□□	—
3/4"	LQ1P6B□□	—

Fill in □□ with appropriate combination code when different diameter is used. Refer to page 107 for details.

Union LQ1/LQ2U



LQ1



LQ2

Metric sizes		
Applicable tubing O.D.	Model	
	LQ1	LQ2
ø4	LQ1U11□□	—
ø3	LQ1U12□□	—
ø6	LQ1U21□□	LQ2U21□□
ø4	LQ1U22□□	LQ2U22□□
ø10	LQ1U31□□	LQ2U31□□
ø8	LQ1U32□□	LQ2U32□□
ø6	LQ1U33□□	LQ2U33□□
ø12	LQ1U41□□	LQ2U41□□
ø10	LQ1U42□□	LQ2U42□□
ø19	LQ1U51□□	LQ2U51□□
ø12	LQ1U52□□	LQ2U52□□
ø25	LQ1U61□□	—
ø19	LQ1U62□□	—

Inch sizes		
Applicable tubing O.D.	Model	
	LQ1	LQ2
1/8"	LQ1U1A□□	—
1/4"	LQ1U2A□□	LQ2U2A□□
3/16"	LQ1U2B□□	LQ2U2B□□
1/8"	LQ1U2C□□	LQ2U2C□□
3/8"	LQ1U3A□□	LQ2U3A□□
1/4"	LQ1U3B□□	LQ2U3B□□
1/2"	LQ1U4A□□	LQ2U4A□□
3/8"	LQ1U4B□□	LQ2U4B□□
3/4"	LQ1U5A□□	LQ2U5A□□
1/2"	LQ1U5B□□	LQ2U5B□□
1"	LQ1U6A□□	—
3/4"	LQ1U6B□□	—

Fill in □□ with appropriate combination code when different diameter is used. Refer to page 107 for details.

Union Flange LQ1F

Metric sizes	
Applicable tubing O.D.	Model
	LQ1
ø12	LQ1F41
ø10	LQ1F42
ø19	LQ1F51
ø12	LQ1F52
ø25	LQ1F61
ø19	LQ1F62

Inch sizes	
Applicable tubing O.D.	Model
	LQ1
1/2"	LQ1F4A
3/8"	LQ1F4B
3/4"	LQ1F5A
1/2"	LQ1F5B
1"	LQ1F6A
3/4"	LQ1F6B

How to Order

Tubing connection **LQ1 E 11** ☐

Fitting type

Symbol	Type
E	Union elbow
T	Union tee
P	Panel mount union
U	Union
F	Union flange

Combination of different diameter (on B side)

Class	No.	Applicable tubing size (mm)
1	1	4 x 3
1	2	3 x 2
2	1	6 x 4
2	2	4 x 3
3	1	10 x 8
3	2	8 x 6
3	3	6 x 4
4	1	12 x 10
4	2	10 x 8
5	1	19 x 16
5	2	12 x 10
6	1	25 x 22
6	2	19 x 16

Class	No.	Applicable tubing size (inch)
1	A	1/8" x 0.086"
—	—	——
2	A	1/4" x 5/32"
2	B	3/16" x 1/8"
2	C	1/8" x 0.086"
3	A	3/8" x 1/4"
3	B	1/4" x 5/32"
4	A	1/2" x 3/8"
4	B	3/8" x 1/4"
5	A	3/4" x 5/8"
5	B	1/2" x 3/8"
6	A	1" x 7/8"
6	B	3/4" x 5/8"

Note) For each body class, the second and later numbers or symbols indicate reducing. However, in case of size 1, the tubing cannot be changed by reducing.

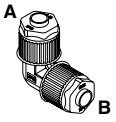
Size combination

Class	No.	Applicable tubing size (mm)
1	1	4 x 3
1	2	3 x 2
2	1	6 x 4
2	2	4 x 3
3	1	10 x 8
3	2	8 x 6
3	3	6 x 4
4	1	12 x 10
4	2	10 x 8
5	1	19 x 16
5	2	12 x 10
6	1	25 x 22
6	2	19 x 16

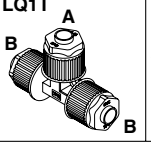
Class	No.	Applicable tubing size (inch)	Applicable flange
1	A	1/8" x 0.086"	—
—	—	——	
2	A	1/4" x 5/32"	—
2	B	3/16" x 1/8"	
2	C	1/8" x 0.086"	—
3	A	3/8" x 1/4"	
3	B	1/4" x 5/32"	
4	A	1/2" x 3/8"	15 A
4	B	3/8" x 1/4"	
5	A	3/4" x 5/8"	20 A
5	B	1/2" x 3/8"	
6	A	1" x 7/8"	25 A
6	B	3/4" x 5/8"	

Symbol	Application
–	Same tubing size
Refer to the applicable tubing table.	Different diameter tubing can be selected within the same body class.

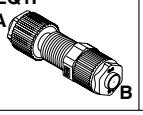
Union elbow **LQ1E**



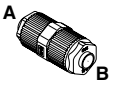
Union tee **LQ1T**



Panel mount union **LQ1P**



Union **LQ1U**



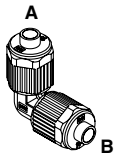
Note 1) For each body class, the second and later numbers or symbols indicate reducing. However, in case of size 1, the tubing cannot be changed by reducing.

Note 2) Sizes 1 to 3 are not available for the union flange

Note 3) For Union flange, nut sizes 4 and 5 are as shown below.
LQ1F4☐: LQ-4N☐☐
LQ1F5☐: LQ-5N☐☐

Different diameter tubing order example

Different diameter tubing (with plug-in reducer) can be selected within the same body class.
(Example) Union elbow
Body class 3
A side: ø10 x ø8
B side: ø8 x ø6
Order as shown below.



LQ1 E 31 32

- **Only select combinations from the same body class.**
- **Different dia. tubing size (B side)**
- **Applicable tubing size (A side)**
- **Union elbow**

How to Order

Tubing connection LQ2 E 21 [ ]

Fitting type

Symbol	Type
E	Union elbow
T	Union tee
P	Panel mount union
U	Union

Size combination

Class	No.	Applicable tubing size (mm)
2	1	6 x 4
2	2	4 x 3
3	1	10 x 8
3	2	8 x 6
3	3	6 x 4
4	1	12 x 10
4	2	10 x 8
5	1	19 x 16
5	2	12 x 10

Class	No.	Applicable tubing size (inch)
2	A	1/4" x 5/32"
2	B	3/16" x 1/8"
2	C	1/8" x 0.086"
3	A	3/8" x 1/4"
3	B	1/4" x 5/32"
4	A	1/2" x 3/8"
4	B	3/8" x 1/4"
5	A	3/4" x 5/8"
5	B	1/2" x 3/8"

Note) For each body class, the second and later numbers or symbols indicate reducing.

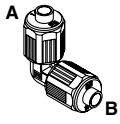
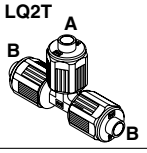
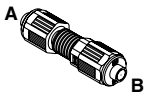
Combination of different diameter (on B side)

Class	No.	Applicable tubing size (mm)
2	1	6 x 4
2	2	4 x 3
3	1	10 x 8
3	2	8 x 6
3	3	6 x 4
4	1	12 x 10
4	2	10 x 8
5	1	19 x 16
5	2	12 x 10

Class	No.	Applicable tubing size (inch)
2	A	1/4" x 5/32"
2	B	3/16" x 1/8"
2	C	1/8" x 0.086"
3	A	3/8" x 1/4"
3	B	1/4" x 5/32"
4	A	1/2" x 3/8"
4	B	3/8" x 1/4"
5	A	3/4" x 5/8"
5	B	1/2" x 3/8"

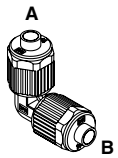
Note) For each body class, the second and later numbers or symbols indicate reducing.

Symbol	Application
–	Same tubing size
Refer to the applicable tubing table.	Different diameter tubing can be selected within the same body class.

Union elbow **LQ2E**	Union tee **LQ2T**	Panel mount union **LQ2P**	Union **LQ2U**
			

Different diameter tubing order example

Different diameter tubing (with plug-in reducer) can be selected within the same body class.
(Example) Union elbow
Body class 3
A side: ø10 x ø8
B side: ø8 x ø6
Order as shown below.



LQ2 E 31 32

- Only select combinations from the same body class.
- Different dia. tubing size (B side)
- Applicable tubing size (A side)
- Union elbow

Speed Controller with One-touch Fittings

Series AS

Elbow Type/Universal Type

■Applicable tubing O.D.: Metric Size ■Connection thread: M, R

How to Order

AS 2 2 1 1F – □ 01 – 06 S □ □

Body size

1	M3, M5 standard
2	1/8, 1/4 standard
3	3/8 standard
4	1/2 standard

Type

2	Elbow
3	Universal

Control method

0	Meter-out
1	Meter-in

With one-touch fitting

Thread type

–	Metric thread (M3, M5)
	R

Port size

M3	M3 X 0.5
M5	M5 X 0.8
01	1/8
02	1/4
03	3/8
04	1/2

Applicable tubing O.D.

Metric size

23	ø3.2*
04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

* Use a ø1/8 tubing.

Sealant

Nil	–
S	With sealant

* S is not necessary with M3 and M5, which are not available with sealant. Gaskets are standardised instead.

Lock nut configuration

–	Standard (Round)
K	Hexagon type

Electroless nickel plated specifications

–	Partly unplated
N	All plated

* Electroless nickel plating is standardized for some items. Please refer to models and types for more information.

Elbow type

Universal type

Model

◉ indicates that electroless nickel plated model (N specification) is the standardised.

Port size	Applicable tubing O.D. Metric size 3.2	4	6	8	10	12	Applicable cylinder tubing O.D. mm	Elbow type Meter-out	Elbow type Meter-in	Universal type Meter-out	Universal type meter-in
M3 X 0.5	◉	◉					2.5, 4, 6	AS1201F-M3	AS1211F-M3	AS1301F-M3	AS1311F-M3
M5 X 0.8	◉	◉	◉				6, 10, 16, 20	AS1201F-M5	AS1211F-M5	AS1301F-M5	AS1311F-M5
R1/8	◉	◉	◉	◉	◉*		20, 25, 32	AS2201F-01	AS2211F-01	AS2301F-01	AS2311F-01
R1/4		◉	◉	◉	◉		20, 25, 32, 40	AS2201F-02	AS2211F-02	AS2301F-02	AS2311F-02
R1/4			◉	◉	◉	◉	40, 50, 63	AS3201F-02	AS3211F-02	AS3301F-02	AS3311F-02
R3/8			●	●	●	●	40, 50, 63	AS3201F-03	AS3211F-03	AS3301F-03	AS3311F-03
R1/2					●	●	63, 80, 100	AS4201F-04	AS4211F-04	AS4301F-04	AS4311F-04

Note 1) *Elbow type only
Note 2) The meter-out and meter-in types are visually distinguished by the lock nut.
The lock nut of the meter-out type is electroless nickel plated while that of the meter-in type is black zinc chromate plated.

Specifications

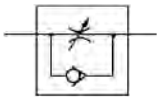
Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Ambient and fluid temperature	–5 to 60°C (No freezing)
Number of needle rotations	10 rotations (8 rotations Note 1))
Applicable tubing material Note 2)	Nylon, Soft Nylon, Polyurethane
Option	With seal Note 3), Hexagon lock nut, Electroless nickel plated specifications Note 4)

Note 1) In case of types AS1201F-M5 and AS1211F-M5.
In case of types AS1301F-M5 and AS1311F-M5.
Note 2) Pay attention to the maximum operating pressure when soft nylon or polyurethane is used.
(Refer to Best Pneumatics 2004 Vol. 15 for more information.)
Note 3) Types with M3 and M5 port sizes are not available with sealant.
Note 4) Brass parts are all electroless nickel plated.

Refer to Best Pneumatics 2004 Vol. 15 for inch sizes.

Elbow Type / Universal Type — AS

JIS symbol



Applicable tubing O.D. mm	Connection thread	Model			
		Elbow type		Universal type	
		Meter-out	Meter-in	Meter-out	Meter-in
3.2	M3 X 0.5	AS1201F-M3-23	AS1211F-M3-23	AS1301F-M3-23	AS1311F-M3-23
	M5 X 0.8	-M5-23	-M5-23	-M5-23	-M5-23
	R1/8	AS2201F-01-23	AS2211F-01-23	AS2301F-01-23	AS2311F-01-23
4	M3 X 0.5	AS1201F-M3-04	AS1211F-M3-04	AS1301F-M3-04	AS1311F-M3-04
	M5 X 0.8	-M5-04	-M5-04	-M5-04	-M5-04
	R1/8	AS2201F-01-04S	AS2211F-01-04S	AS2301F-01-04S	AS2311F-01-04S
	R1/4	-02-04S	-02-04S	-02-04S	-02-04S
6	M5 X 0.8	AS1201F-M5-06	AS1211F-M5-06	AS1301F-M5-06	AS1311F-M5-06
	R1/8	AS2201F-01-06S	AS2211F-01-06S	AS2301F-01-06S	AS2311F-01-06S
	R1/4	-02-06S	-02-06S	-02-06S	-02-06S
		AS3201F-02-06S	AS3211F-02-06S	AS3301F-02-06S	AS3311F-02-06S
	R3/8	-03-06S	-03-06S	-03-06S	-03-06S
8	R1/8	AS2201F-01-08S	AS2211F-01-08S	AS2301F-01-08S	AS2311F-01-08S
	R1/4	-02-08S	-02-08S	-02-08S	-02-08S
		AS3201F-02-08S	AS3211F-02-08S	AS3301F-02-08S	AS3311F-02-08S
	R3/8	-03-08S	-03-08S	-03-08S	-03-08S
10	R1/8	AS2201F-01-10S	AS2211F-01-10S		
	R1/4	-02-10S	-02-10S	AS2301F-02-10S	AS2311F-02-10S
		AS3201F-02-10S	AS3211F-02-10S	AS3301F-02-10S	AS3311F-02-10S
	R3/8	-03-10S	-03-10S	-03-10S	-03-10S
	R1/2	AS4201F-04-10S	AS4211F-04-10S	AS4301F-04-10S	AS4311F-04-10S
12	R1/4	AS3201F-02-12S	AS3211F-02-12S	AS3301F-02-12S	AS3311F-02-12S
	R3/8	-03-12S	-03-12S	-03-12S	-03-12S
	R1/2	AS4201F-04-12S	AS4211F-04-12S	AS4301F-04-12S	AS4311F-04-12S

Made to Order

Made to Order

Lubricant: Vaseline — X12

(Example) AS2201F-01-04S-X12

Throttle Valve (Without Check Valve) — X214

(Example) AS2201F-01-04S-X214

Note) Only items with meter-out part numbers are available in case of throttle valves.

Oil Free (Sealant: PTFE Coated) + Without Check Valve (Throttle Valve) — X21

(Example) AS2201F-01-04S-X21

Note 1) Not a non particle generation type.
Note 2) Only items with meter-out part numbers are available in case of throttle valves.

Clean Series — 10-

Lubricant: Fluororesin grease
Double packaging

(Example) 10-AS2201F-01-04

Speed Controller with One-touch Fitting

Series AS

In-line Type

■Applicable tubing O.D.: **Metric Size**

How to Order

AS 400 1F – 12 [ ] -3

Body size

100	M5 standard
200	1/8 standard
205	1/4 standard
300	3/8 standard
400	1/2 standard

With one-touch fitting

Lock nut configuration

–	Standard (Round)
K	Hexagon type

Applicable tubing O.D.

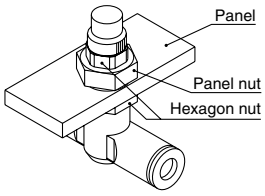
Metric size

23	ø3.2*	08	ø8
04	ø4	10	ø10
06	ø6	12	ø12

* Use a ø1/8 tube.

Panel mounting type

Panel mounting plate thickness: Max. 35 mm



Model

◉ indicates that electroless nickel plated model is standardised.

Model	Applicable tubing O.D. Metric size						Applicable cylinder tubing inside dia. mm
	3.2	4	6	8	10	12	
AS1001F	◉	◉	◉				6, 10, 16, 20
AS2001F		◉	◉				20, 25, 32
AS2051F			◉	◉			20, 25, 32, 40
AS3001F			◉	◉	◉	◉	40, 50, 63
AS4001F					◉	◉	63, 80, 100

Specifications

Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Ambient and fluid temperature	–5 to 60°C (No freezing)
Number of needle rotations	10 rotations (8 rotations Note 1))
Applicable tubing material Note 2)	Nylon, Soft nylon, Polyurethane
Option	Hexagon lock nut

Note 1) In case of AS1001F.
Note 2) Pay attention to the maximum operating pressure when soft nylon or polyurethane is used. (Refer to Best Pneumatics 2004 Vol. 15 for more information.)
Note 3) Electroless nickel plated model is standardized on all metric size brass parts.

In-line Type AS

JIS symbol

Panel mounting type

Applicable tubing O.D. mm	Model Inline Type
3.2	AS1001F-23
4	AS1001F-04
	AS2001F-04
6	AS1001F-06
	AS2001F-06
	AS2051F-06
	AS3001F-06

Applicable tubing O.D. mm	Model Inline Type
8	AS2051F-08
	AS3001F-08
10	AS3001F-10
	AS4001F-10
12	AS3001F-12
	AS4001F-12

Refer to Best Pneumatics 2004 Vol. 15 for inch sizes.

Made to Order

Made to Order

Lubricant: Vaseline — **X12**

(Example) AS2001F-04-**X12**

Oil Free (Sealant: PTFE Coated) + Without Check Valve (Throttle Valve) — **X21**

(Example) AS2001F-04-**X21**

Note) Not a non particle generation type.

Throttle Valve (Without Check Valve) — **X214**

(Example) AS2001F-04-**X214**

Clean Series — **10-**

Lubricant: Fluororesin grease, Double packaging

(Example) **10-**AS2001F-04

Dual Speed Controller with One-touch Fitting

Series ASD

Universal Type

■Applicable tubing O.D.: Metric Size ■Connection thread: M5, R

Lurch Prevention

How to Order

ASD 3 30F – [ ] 01 – 06 S [ ]

Body size

2	M5 standard
3	1/8 standard
4	1/4 standard
5	3/8 standard
6	1/2 standard

Type

3	Universal

With one-touch fitting

Thread type

–	Metric system thread (M5)
	R

Port size

M5	M5 X 0.8
01	1/8
02	1/4
03	3/8
04	1/2

Applicable tubing O.D.

Metric size

04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

With sealant

∗ S is not required with M5, which do not have sealant. Types with gasket are standardised instead.

Lock nut configuration

–	Standard (Round)
K	Hexagon type

Model

Model	Port size	Applicable tubing O.D. Metric size				
		4	6	8	10	12
ASD230F-M5	M5 X 0.8	●	●			
ASD330F-01	R1/8		●	●		
ASD430F-02	R1/4		●	●	●	
ASD530F-02	R1/4		●	●	●	●
ASD530F-03	R3/8		●	●	●	●
ASD630F-04	R1/2				●	●

Specifications

Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Ambient and fluid temperature	–5 to 60°C (No freezing)
Number of needle rotations	10 rotations (8 rotations Note 1))
Applicable tubing material Note 2)	Nylon, Soft nylon, Polyurethane
Option	Hexagon lock nut

Note 1) In case of ASD230F.
Note 2) Pay attention to the maximum operating pressure when soft nylon, polyurethane is used. (Refer to Best Pneumatics 2004 Vol. 15 for more information.)

Universal Type — ASD

Meter-in and meter-out control.
Lurch prevention.
Speed control of single acting cylinder.

JIS symbol

Applicable tubing O.D. mm	Connection thread	Model Universal type
4	M5 X 0.8	ASD230F-M5-04
6	M5 X 0.8	ASD230F-M5-06
	R1/8	ASD330F-01-06S
	R1/4	ASD430F-02-06S
		ASD530F-02-06S
	R3/8	-03-06S
8	R1/8	ASD330F-01-08S
	R1/4	ASD430F-02-08S
		ASD530F-02-08S
	R3/8	-03-08S

Applicable tubing O.D. mm	Connection thread	Model Universal type
10	R1/4	ASD430F-02-10S
		ASD530F-02-10S
	R3/8	-03-10S
	R1/2	ASD630F-04-10S
12	R1/4	ASD530F-02-12S
	R3/8	-03-12S
	R1/2	ASD630F-04-12S

Refer to Best Pneumatics 2004 Vol. 15 for inch sizes.

Made to Order

Made to Order

Lubricant: Vaseline — **X12**

(Example) ASD230F-M5-04-X12

Clean Series — **10-**

Lubricant: Fluororesin grease, Double packaging

(Example) 10-ASD230F-M5-04

Speed Controller for Low Speed Operation with One-touch Fitting

Series AS-FM

Elbow Type/Universal Type

■Applicable tubing O.D.: Metric Size ■Connection thread: M5, R

Low Speed Operation

How to Order

AS [2] [2] [1] 1 F M – [ ] [01] – [06] [S]

Body size

1	M5 standard
2	1/8, 1/4 standard

Type

2	Elbow
3	Universal

Control method

0	Meter-out
1	Meter-in

With one-touch fitting

For low speed control

Thread type

–	Metric system thread (M5)
	R

Port size

M5	M5 X 0.8
01	1/8
02	1/4

Applicable tubing O.D.

Metric size

23	ø3.2*
04	ø4
06	ø6
08	ø8
10	ø10

* Use a ø1/8 tubing.

Sealant

–	—
S	With sealant

* S is not required with M5, which do not have sealant. Types with gasket are standardized instead.

Speed control in the range of 10 to 50 mm/s

Elbow type

Universal type

Model

Port size	Applicable tubing O.D. Metric size					Elbow type		Universal type	
	3.2	4	6	8	10	Meter-out	Meter-in	Meter-out	Meter-in
M5 X 0.8	●	●	●			AS1201FM-M5	AS1211FM-M5	AS1301FM-M5	AS1311FM-M5
R1/8	●	●	●	●		AS2201FM-01	AS2211FM-01	AS2301FM-01	AS2311FM-01
R1/4		●	●	●	●	AS2201FM-02	AS2211FM-02	AS2301FM-02	AS2311FM-02

Specifications

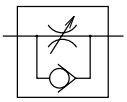
Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Ambient and fluid temperature	–5 to 60°C (No freezing)
Number of needle rotations	10 rotations (20 rotations Note 1))
Applicable tubing material Note 2)	Nylon, Soft nylon, Polyurethane, Soft polyurethane
Option Note 3)	With sealant

Note 1) In case of AS1201FM, AS1211FM, AS1301FM, AS1311FM.
Note 2) Pay attention to the maximum operating pressure when soft nylon, polyurethane or soft polyurethane is used. (Refer to Best Pneumatics 2004 Vol. 15 for more information.)
Note 3) Types with M5 ports are not available with sealant.
Note 4) Brass parts are all electroless nickel plated. The knob of the M5 type and the lock nut of the meter-in type are black zinc chromate plated.

Refer to Best Pneumatics 2004 Vol. 15 for inch sizes.

Elbow Type/Universal Type — AS-FM

JIS symbol



Applicable tubing O.D. mm	Connection thread	Model			
		Elbow type		Universal type	
		Meter-out	Meter-in	Meter-out	Meter-in
3.2	M5 X 0.8	AS1201FM-M5-23	AS1211FM-M5-23	AS1301FM-M5-23	AS1311FM-M5-23
	R1/8	AS2201FM-01-23S	AS2211FM-01-23S	AS2301FM-01-23S	AS2311FM-01-23S
4	M5 X 0.8	AS1201FM-M5-04	AS1211FM-M5-04	AS1301FM-M5-04	AS1311FM-M5-04
	R1/8	AS2201FM-01-04S	AS2211FM-01-04S	AS2301FM-01-04S	AS2311FM-01-04S
	R1/4	-02-04S	-02-04S	-02-04S	-02-04S
6	M5 X 0.8	AS1201FM-M5-06	AS1211FM-M5-06	AS1301FM-M5-06	AS1311FM-M5-06
	R1/8	AS2201FM-01-06S	AS2211FM-01-06S	AS2301FM-01-06S	AS2311FM-01-06S
	R1/4	-02-06S	-02-06S	-02-06S	-02-06S
8	R1/8	AS2201FM-01-08S	AS2211FM-01-08S	AS2301FM-01-08S	AS2311FM-01-08S
	R1/4	-02-08S	-02-08S	-02-08S	-02-08S
10	R1/4	AS2201FM-02-10S	AS2211FM-02-10S	AS2301FM-02-10S	AS2311FM-02-10S

Made to Order

Made to Order

Lubricant: Vaseline — X12

(Example) AS1201FM-M5-23-X12

Oil Free (Sealant: PTFE Coated) + Without Check Valve (Throttle Valve) — X21

(Example) AS1201FM-M5-23-X21

Note 1) Not a non particle generation type.
Note 2) Only items with meter-out part numbers are available in case of throttle valves.

Throttle Valve (Without Check Valve) — X214

(Example) AS1201FM-M5-23-X214

Note) Only items with meter-out part numbers are available in case of throttle valves.

Clean Series — 10-

Lubricant: Fluororesin grease, Double packaging

(Example) 10-AS1201FM-M5-23

Speed Controller for Low Speed Operation

Series AS-FM

In-line Type

■Applicable tubing O.D.: **Metric Size**

Low Speed Operation

How to Order

AS 200 1 F M – 06

Body size

100	M5 standard
200	1/8 standard
205	1/4 standard

With one-touch fitting

For low speed control

Applicable tubing O.D.

Metric size

23	ø3.2*
04	ø4
06	ø6
08	ø8

* Use a ø1/8 tubing.

Model

Model	Applicable tubing O.D. Metric Size				Applicable cylinder tubing I.D. mm
	3.2	4	6	8	
AS1001FM	●	●	●		6, 10, 16, 20
AS2001FM		●	●		20, 25, 32
AS2051FM			●	●	20, 25, 32, 40

Specifications

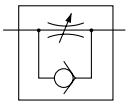
Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Ambient and fluid temperature	–5 to 60°C (No freezing)
Number of needle rotations	10 rotations (20 rotations Note 1))
Applicable tubing material Note 2)	Nylon, Soft nylon, Polyurethane, Soft polyurethane

Note 1) In case of AS1001FM.
Note 2) Pay attention to the maximum operating pressure when soft nylon, polyurethane or soft polyurethane is used. (Refer to Best Pneumatics 2004 Vol. 15 for more information.)
Note 3) Brass parts are all electroless nickel plated. The knob of the M5 type are black zinc chromate plated.

In-line Type AS-FM

Speed control in the range of 10 to 50 mm/s

JIS symbol



Applicable tubing O.D. mm	Model Inline Type
3.2	AS1001FM-23
4	AS1001FM-04
	AS2001FM-04
6	AS1001FM-06
	AS2001FM-06
	AS2051FM-06
8	AS2051FM-08

Refer to Best Pneumatics 2004 Vol. 15 for inch sizes.

Made to Order

Made to Order

Lubricant: Vaseline — **X12**

(Example) AS2001FM-04-**X12**

Oil Free (Sealant: PTFE Coated) + Without Check Valve (Throttle Valve) — **X21**

(Example) AS2001FM-04-**X21**

Note 1) Not a non particle generation type.

Throttle Valve (Without Check Valve) — **X214**

(Example) AS2001FM-04-**X214**

Clean Series — **10-**

Lubricant: Fluororesin grease, Double packaging

(Example) **10-**AS2001FM-04

Dual Speed Controller for Low Speed Operation

Series ASD-FM

Universal Type

■Applicable tubing O.D.: Metric Size ■Connection thread: M5, R

Low Speed Operation **Lurch Prevention**

How to Order

ASD 3 3 0 F M – □ 01 – 06 S

Body size

2	M5 standard
3	1/8 standard
4	1/4 standard

Type

3	Universal

With one-touch fitting

For low speed control

Thread type

–	Metric system thread (M5)
	R

Port size

M5	M5 X 0.8
01	1/8
02	1/4

Applicable tubing O.D.
Metric size

04	ø4
06	ø6
08	ø8
10	ø10

With sealant
∗ S is not required with M5, which do not have sealant. Types with gasket are standardised instead.

Model

Model	Port size	Applicable tubing O.D. Metric size			
		4	6	8	10
ASD230FM-M5	M5 X 0.8	●	●		
ASD330FM-01	R1/8		●	●	
ASD430FM-02	R1/4		●	●	●

Specifications

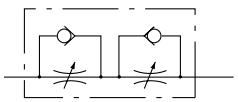
Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Ambient and fluid temperature	–5 to 60°C (No freezing)
Number of needle rotations	10 rotations (20 rotations Note 1))
Applicable tubing material Note 2)	Nylon, Soft nylon, Polyurethane, Soft polyurethane

Note 1) In case of ASD230FM.
Note 2) Pay attention to the maximum operating pressure when soft nylon, polyurethane or soft polyurethane is used. (Refer to Best Pneumatics 2004 Vol. 15 for more information.)
Note 3) Brass parts are all electroless nickel plated.
The knob of the M5 type and the lock nut on the meter-in side are black zinc chromate plated.

Universal Type ASD-FM

Speed control and lurch prevention in the range of 10 to 50 mm/s.
Low speed control of single acting cylinder.
Speed control of small bore cylinder.

JIS symbol



Applicable tubing O.D. mm	Connection thread	Model Universal type
4	M5 X 0.8	ASD230FM-M5-04
6	M5 X 0.8	ASD230FM-M5-06
	R1/8	ASD330FM-01-06S
	R1/4	ASD430FM-02-06S
8	R1/8	ASD330FM-01-08S
	R1/4	ASD430FM-02-08S
10	R1/4	ASD430FM-02-10S

Refer to Best Pneumatics 2004 Vol. 15 for inch sizes.

Made to Order

Made to Order

Lubricant: Vaseline **X12**

(Example) ASD230FM-M5-X12

Clean Series **10-**

Lubricant: Fluororesin grease, Double packaging

(Example) 10-ASD230FM-M5

Stainless Steel 316 Series Speed Controller

Series ASG

Elbow Type

■Applicable tubing O.D.: Metric Size ■Connection thread: M5, R

Corrosion Resistance

How to Order

AS G 3 2 0 F – 01 – 06 S

- **Speed controller**
- **Body material**

G	Stainless steel

- **Body size**

2	M5
3	1/8
4	1/4
5	3/8
6	1/2

- **Type**

2	Elbow

- **Control type**

0	Meter-out
1	Meter-in

- **With one-touch fitting**
- **Port size**

M5	M5 x 0.8
01	R1/8
02	R1/4
03	R3/8
04	R1/2

- **Applicable tubing O.D.**

04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

- **With seal**
  * In the case of M5, seal is inapplicable to the product.

Conforms to Food Sanitation Laws
(Material of the component parts meets the apparatus and container packaging standards.)

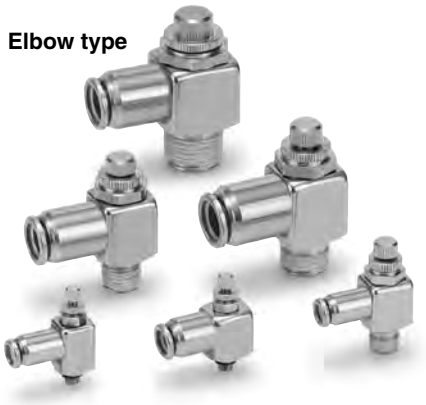
Material: Stainless steel 316

(Sealant: Special FKM
Seat ring: Stainless steel 303)

Applicable tubing materials

- FEP
- PFA
- Nylon
- Soft nylon
- Polyurethane
- Polyolefin

Elbow type



Model

Elbow type	Port size	Applicable tubing O.D. (mm)					Applicable cylinder bore size (mm)
		4	6	8	10	12	
ASG22□F-M5	M5 x 0.8	●	●				6, 10, 16, 20
ASG32□F-01	R1/8	●	●	●			20, 25, 32
ASG42□F-02	R1/4		●	●	●		20, 25, 32, 40
ASG52□F-03	R3/8			●	●	●	40, 50, 63
ASG62□F-04	R1/2					●	63, 80, 100

Specifications

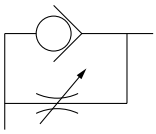
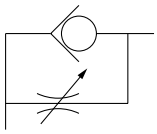
Fluid	Air
Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Ambient and fluid temperature	–5 to 60°C (No freezing)
Number of needle rotations	10 turns (8 turns Note 1))
Applicable tubing material	FEP, PFA, Nylon, Soft nylon, Polyurethane Note 3), Polyolefin

Note 1) In case of ASG22□F-M5
Note 2) Please be cautious of the max. operating pressure when soft nylon or polyurethane tubing is used.
Note 3) When polyurethane tubing is used, please use an inner sleeve.

Elbow Type

ASG

JIS Symbol

Meter-out type	Meter-in type
	

Applicable tubing O.D. mm	Connection thread	Model	
		Elbow type	
		Meter-out	Meter-in
4	M5 X 0.8	**ASG220F-M5-04**	**ASG221F-M5-04**
	R1/8	**ASG320F-01-04S**	**ASG321F-01-04S**
6	M5 X 0.8	**ASG220F-M5-06**	**ASG221F-M5-06**
	R1/8	**ASG320F-01-06S**	**ASG321F-01-06S**
	R1/4	**ASG420F-02-06S**	**ASG421F-02-06S**
8	R1/8	**ASG320F-01-08S**	**ASG321F-01-08S**
	R1/4	**ASG420F-02-08S**	**ASG421F-02-08S**
	R3/8	**ASG520F-03-08S**	**ASG521F-03-08S**
10	R1/4	**ASG420F-02-10S**	**ASG421F-02-10S**
	R3/8	**ASG520F-03-10S**	**ASG521F-03-10S**
12	R3/8	**ASG520F-03-12S**	**ASG521F-03-12S**
	R1/2	**ASG620F-04-12S**	**ASG621F-04-12S**

Stainless Steel Series Speed Controller with One-touch Fitting

Series AS-FG

Elbow Type/Universal Type

■Applicable tubing O.D.: Metric Size ■Connection thread: M5, R

Corrosion Resistance

How to Order

AS 2 3 1 1 F G – 01 – 06 S

Body size

1	M5 standard
2	1/8, 1/4 standard
3	3/8 standard
4	1/2 standard

Type

2	Elbow
3	Universal

Control type

0	Meter-out
1	Meter-in

With one-touch fitting

Stainless steel specifications (Stainless steel 303)

Thread type

–	Metric system thread (M5)
	R

Port size

M5	M5 X 0.8
01	1/8
02	1/4
03	3/8
04	1/2

Applicable tubing O.D.

Metric size

23	ø3.2 *
04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

* Use a ø1/8 tubing.

Sealant

–	—
S	With sealant

* S is not required with M5, which do not have sealant. Types with gasket are standardised instead.

Use of Stainless steel 303 for metal parts.

Elbow type

Universal type

Model

Port size	Applicable tubing O.D. Metric size 3.2	4	6	8	10	12	Applicable cylinder tubing I.D. mm	Elbow type Meter-out	Elbow type Meter-in	Universal type Meter-out	Universal type Meter-in
M5 X 0.8	●	●	●				6, 10, 16, 20	AS1201FG-M5	AS1211FG-M5	AS1301FG-M5	AS1311FG-M5
R1/8	●	●	●	●	●*		20, 25, 32	AS2201FG-01	AS2211FG-01	AS2301FG-01	AS2311FG-01
R1/4		●	●	●	●		20, 25, 32, 40	AS2201FG-02	AS2211FG-02	AS2301FG-02	AS2311FG-02
R1/4			●	●	●	●	40, 50, 63	AS3201FG-02	AS3211FG-02	AS3301FG-02	AS3311FG-02
R3/8			●	●	●	●	40, 50, 63	AS3201FG-03	AS3211FG-03	AS3301FG-03	AS3311FG-03
R1/2					●	●	63, 80, 100	AS4201FG-04	AS4211FG-04	AS4301FG-04	AS4311FG-04

Note 1) The meter-in and meter-out types are visually distinguished by the flow direction symbol on the resin body.
Note 2) *Elbow type only.

Specifications

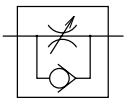
Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Ambient and fluid temperature	–5 to 60°C (No freezing)
Number of needle rotations	10 rotations (8 rotations Note 1))
Applicable tubing material Note 2)	Nylon, Soft nylon, Polyurethane, Soft polyurethane

Note 1) In case of AS1201FG, AS1211FG, AS1301FG, AS1311FG.
Note 2) Pay attention to the maximum operating pressure when soft nylon, polyurethane or soft polyurethane is used. (Refer to Best Pneumatics 2004 Vol. 15 for more information.)

Refer to Best Pneumatics 2004 Vol. 15 for inch sizes.

Elbow Type/Universal Type — AS-FG

JIS symbol



Applicable tubing O.D. mm	Connection thread	Model			
		Elbow type		Universal type	
		Meter-out	Meter-in	Meter-out	Meter-in
3.2	M5 X 0.8	AS1201FG-M5-23	AS1211FG-M5-23	AS1301FG-M5-23	AS1311FG-M5-23
	R1/8	AS2201FG-01-23S	AS2211FG-01-23S	AS2301FG-01-23S	AS2311FG-01-23S
4	M5 X 0.8	AS1201FG-M5-04	AS1211FG-M5-04	AS1301FG-M5-04	AS1311FG-M5-04
	R1/8	AS2201FG-01-04S	AS2211FG-01-04S	AS2301FG-01-04S	AS2311FG-01-04S
	R1/4	-02-04S	-02-04S	-02-04S	-02-04S
6	M5 X 0.8	AS1201FG-M5-06	AS1211FG-M5-06	AS1301FG-M5-06	AS1311FG-M5-06
	R1/8	AS2201FG-01-06S	AS2211FG-01-06S	AS2301FG-01-06S	AS2311FG-01-06S
	R1/4	-02-06S	-02-06S	-02-06S	-02-06S
		AS3201FG-02-06S	AS3211FG-02-06S	AS3301FG-02-06S	AS3311FG-02-06S
	R3/8	-03-06S	-03-06S	-03-06S	-03-06S
8	R1/8	AS2201FG-01-08S	AS2211FG-01-08S	AS2301FG-01-08S	AS2311FG-01-08S
	R1/4	-02-08S	-02-08S	-02-08S	-02-08S
		AS3201FG-02-08S	AS3211FG-02-08S	AS3301FG-02-08S	AS3311FG-02-08S
	R3/8	-03-08S	-03-08S	-03-08S	-03-08S
10	R1/8	AS2201FG-01-10S	AS2211FG-01-10S	—	—
	R1/4	-02-10S	-02-10S	AS2301FG-02-10S	AS2311FG-02-10S
		AS3201FG-02-10S	AS3211FG-02-10S	AS3301FG-02-10S	AS3311FG-02-10S
	R3/8	-03-10S	-03-10S	-03-10S	-03-10S
	R1/2	AS4201FG-04-10S	AS4211FG-04-10S	AS4301FG-04-10S	AS4311FG-04-10S
12	R1/4	AS3201FG-02-12S	AS3211FG-02-12S	AS3301FG-02-12S	AS3311FG-02-12S
	R3/8	-03-12S	-03-12S	-03-12S	-03-12S
	R1/2	AS4201FG-04-12S	AS4211FG-04-12S	AS4301FG-04-12S	AS4311FG-04-12S

Made to Order

Lubricant: Vaseline — X12

(Example) AS1201FG-M5-23-X12

Throttle Valve (Without Check Valve) — X214

(Example) AS1201FG-M5-23-X214

Note) Only items with meter-out part numbers are available in case of throttle valves.

Oil Free (Sealant: PTFE Coated) + Without Check Valve (Throttle Valve) — X21

(Example) AS1201FG-M5-23-X21

Note 1) Not a non particle generation type
Note 2) Only items with meter-out part numbers are available in case of throttle valves.

Clean Series — 10-

Lubricant: Fluororesin grease, Double packaging

(Example) 10-AS1201FG-M5-23

Stainless Steel Series Speed Controller with One-touch Fitting

Series AS-FG

In-line Type

■Applicable tubing O.D.: **Metric Size**

Corrosion Resistantce

How to Order

AS 200 1 F G – 06

Body size

100	M5 standard
200	1/8 standard
205	1/4 standard
300	3/8 standard
400	1/2 standard

With one-touch fitting

Stainless steel specifications (Stainless steel 303)

Applicable tubing O.D.

Metric size

23	ø3.2 *
04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

* Use a ø1/8 tubing.

Model

Model	Applicable tubing O.D. Metric size 3.2	4	6	8	10	12	Applicable cylinder tubing I.D. mm
AS1001FG	●	●	●				6, 10, 16, 20
AS2001FG		●	●				20, 25, 32
AS2051FG			●	●			20, 25, 32, 40
AS3001FG			●	●	●	●	40, 50, 63
AS4001FG					●	●	63, 80, 100

Specifications

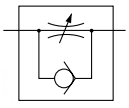
Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Ambient and fluid temperature	–5 to 60°C (No freezing)
Number of needle rotations	10 rotations (8 rotations Note 1))
Applicable tubing material Note 2)	Nylon, Soft nylon, Polyurethane, Soft polyurethane

Note 1) In case of AS1001FG.
Note 2) Pay attention to the maximum operating pressure when soft nylon, polyurethane or soft polyurethane is used. (Refer to Best Pneumatics 2004 Vol. 15 for more information.)

In-line Type AS-FG

Use of Stainless steel 303 for metal parts.

JIS symbol



Applicable tubing O.D. mm	Model Inline type
3.2	AS1001FG-23
4	AS1001FG-04
	AS2001FG-04
6	AS1001FG-06
	AS2001FG-06
	AS2051FG-06
	AS3001FG-06

Applicable tubing O.D. mm	Model Inline type
8	AS2051FG-08
	AS3001FG-08
10	AS3001FG-10
	AS4001FG-10
12	AS3001FG-12
	AS4001FG-12

Refer to Best Pneumatics 2004 Vol. 15 for inch sizes.

Made to Order

Made to Order

Lubricant:Vaseline **X12**

(Example) AS1001FG-04-**X12**

Oil Free (Sealant: PTFE Coated) + Without Check Valve (Throttle Valve) **X21**

(Example) AS1001FG-04-**X21**

Note1)Not a non particle generation type.

Throttle Valve (Without Check Valve) **X214**

(Example) AS1001FG-04-**X214**

Clean Series **10-**

Lubricant: Fluororesin grease, Double packaging

(Example) **10-**AS1001FG-04

Stainless Steel Series Dual Speed Controller with One-touch Fitting

Series ASD-FG

Universal Type

■Applicable tubing O.D.: Metric Size ■Connection thread: M5, R

Corrosion Resistance **Lurch Prevention**

How to Order

ASD 3 3 0 FG – 01 – 06 S

Body size

2	M5 standard
3	1/8 standard
4	1/4 standard
5	3/8 standard
6	1/2 standard

Type

3	Universal

With one-touch fitting

Stainless steel specifications (Stainless steel 303)

Thread type

–	Metric system thread (M5)
	R

Port size

M5	M5 X 0.8
01	1/8
02	1/4
03	3/8
04	1/2

With sealant

* S is not required with M5, which do not have sealant. Types with gasket are standardised instead.

Applicable tubing O.D.

Metric size

04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

Model

Model	Port size	Applicable tubing O.D. Metric size				
		4	6	8	10	12
ASD230FG-M5	M5 X 0.8	●	●			
ASD330FG-01	R1/8		●	●		
ASD430FG-02	R1/4		●	●	●	
ASD530FG-02	R1/4		●	●	●	●
ASD530FG-03	R3/8		●	●	●	●
ASD630FG-04	R1/2				●	●

Specifications

Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Ambient and fluid temperature	–5 to 60°C (No freezing)
Number of needle rotations	10 rotations (8 rotations Note 1))
Applicable tubing material Note 2)	Nylon, Soft nylon, Polyurethane, Soft polyurethane

Note 1) In case of ASD230FG.
Note 2) Pay attention to the maximum operating pressure when soft nylon, polyurethane or soft polyurethane is used. (Refer to Best Pneumatics 2004 Vol. 15 for more information.)

Universal Type ASD-FG

Use of Stainless steel 303 for metal parts.
Lurch prevention.
Speed control of single acting cylinder.

JIS symbol

Applicable tubing O.D. mm	Connection thread	Model Universal type
4	M5 X 0.8	ASD230FG-M5-04
6	M5 X 0.8	ASD230FG-M5-06
	R1/8	ASD330FG-01-06S
	R1/4	ASD430FG-02-06S
		ASD530FG-02-06S
	R3/8	-03-06S
8	R1/8	ASD330FG-01-08S
	R1/4	ASD430FG-02-08S
		ASD530FG-02-08S
	R3/8	-03-08S

Applicable tubing O.D. mm	Connection thread	Model Universal type
10	R1/4	ASD430FG-02-10S
		ASD530FG-02-10S
	R3/8	-03-10S
	R1/2	ASD630FG-04-10S
12	R1/4	ASD530FG-02-12S
	R3/8	-03-12S
	R1/2	ASD630FG-04-12S

Refer to Best Pneumatics 2004 Vol. 15 for inch sizes.

Made to Order

Made to Order

Lubricant: Vaseline **X12**

(Example) ASD230FG-M5-04-X12

Clean Series **10-**

Lubricant: Fluororesin grease, Double packaging

(Example) 10-ASD230FG-M5-04

Speed Controller for Clean Room

Series AS-FPQ/FPG

Elbow Type

■Applicable tubing O.D.: **Metric Size** ■Connection thread: **M5, R**

Clean

How to Order

AS 2 2 1 1 F P Q — 01 — 06

Body size

1	M5 standard
2	1/8, 1/4 standard
3	3/8 standard
4	1/2 standard

Type

2	Elbow

Control method

0	Meter-out
1	Meter-in

With one-touch fitting

Clean specification

Metal part material

Q	Brass (Electroless nickel plated)
G	Stainless steel (Stainles steel 304)

Port size

M5	M5 X 0.8
01	1/8
02	1/4
03	3/8
04	1/2

Applicable tubing O.D.

Metric size

04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

AS-FPQ/Brass (Electroless nickel plated)

Release button color: Light grey

AS-FPG/Stainless steel (Stainless steel 304)

Release button color: Light blue

Model

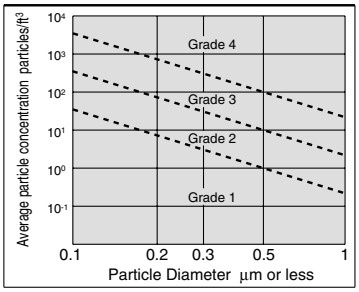
Port size	Applicable tubing O.D. Metric size 4	6	8	10	12	Applicable cylinder tubing I.D. mm	Elbow type Meter-out	Meter-in
M5 X 0.8	●	●				6, 10, 16, 20	AS1201FP□-M5	AS1211FP□-M5
R1/8	●	●	●			20, 25, 32	AS2201FP□-01	AS2211FP□-01
R1/4	●	●	●	●		20, 25, 32, 40	AS2201FP□-02	AS2211FP□-02
R3/8		●	●	●	●	40, 50, 63	AS3201FP□-03	AS3211FP□-03
R1/2				●	●	63, 80, 100	AS4201FP□-04	AS4211FP□-04

Specifications

Particle generation grade	Grade 1 Note 1)
Proof pressure (20°C)	1.5 MPa
Max. operating pressure (20°C)	1 MPa Note 2)
Min. operating pressure	0.1 MPa
Ambient and fluid temperature	–5 to 60°C (No freezing)
Number of needle rotations	10 rotations (8 rotations Note 3))

Note 1) Refer to the particle generation grading chart.
Note 2) The max. operating pressure is one at 20°C.
Note 3) **AS12□1FP□**

Particle Generation Grade Classifications



Note) For more information, refer to SMC Clean Series Catalogue.

Recommended Applicable Tubing

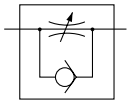
Tubing material	Clean series polyurethane tubing: Series 10-
Tubing O.D.	ø4, ø6, ø8, ø10, ø12

Polyurethane tubing: Series TU, Nylon tubing: Series T,
Soft nylon tubing: Series TS can also be used though with lower degree of cleanliness.

Elbow Type

AS-FPQ/FPG

JIS symbol



AS-FPQ/Brass (Electroless Nickel Plated)

Applicable tubing O.D. mm	Connection thread	Model	
		Elbow type	
		Meter-out	Meter-in
4	M5 X 0.8	AS1201FPQ-M5-04	AS1211FPQ-M5-04
	R1/8	AS2201FPQ-01-04	AS2211FPQ-01-04
	R1/4	-02-04	-02-04
6	M5 X 0.8	AS1201FPQ-M5-06	AS1211FPQ-M5-06
	R1/8	AS2201FPQ-01-06	AS2211FPQ-01-06
	R1/4	-02-06	-02-06
	R3/8	AS3201FPQ-03-06	AS3211FPQ-03-06
8	R1/8	AS2201FPQ-01-08	AS2211FPQ-01-08
	R1/4	-02-08	-02-08
	R3/8	AS3201FPQ-03-08	AS3211FPQ-03-08
10	R1/4	AS2201FPQ-02-10	AS2211FPQ-02-10
	R3/8	AS3201FPQ-03-10	AS3211FPQ-03-10
	R1/2	AS4201FPQ-04-10	AS4211FPQ-04-10
12	R3/8	AS3201FPQ-03-12	AS3211FPQ-03-12
	R1/2	AS4201FPQ-04-12	AS4211FPQ-04-12

AS-FPG/Stainless Steel (Stainless steel 304)

Applicable tubing O.D. mm	Connection thread	Model	
		Elbow type	
		Meter-out	Meter-in
4	M5 X 0.8	AS1201FPG-M5-04	AS1211FPG-M5-04
	R1/8	AS2201FPG-01-04	AS2211FPG-01-04
	R1/4	-02-04	-02-04
6	M5 X 0.8	AS1201FPG-M5-06	AS1211FPG-M5-06
	R1/8	AS2201FPG-01-06	AS2211FPG-01-06
	R1/4	-02-06	-02-06
	R3/8	AS3201FPG-03-06	AS3211FPG-03-06
8	R1/8	AS2201FPG-01-08	AS2211FPG-01-08
	R1/4	-02-08	-02-08
	R3/8	AS3201FPG-03-08	AS3211FPG-03-08
10	R1/4	AS2201FPG-02-10	AS2211FPG-02-10
	R3/8	AS3201FPG-03-10	AS3211FPG-03-10
	R1/2	AS4201FPG-04-10	AS4211FPG-04-10
12	R3/8	AS3201FPG-03-12	AS3211FPG-03-12
	R1/2	AS4201FPG-04-12	AS4211FPG-04-12

Metal Elbow Speed Controller with Built-in One-touch Fitting

Series AS

Elbow Type

■Applicable tubing O.D.: Metric Size ■Connection thread: M5, R

Spatter Proof

How to Order

AS 3 2 0 1 – 03 – F 10 S □ □

Body size

1	M5 standard
2	1/8, 1/4 standard
3	3/8 standard
4	1/2 standard

Elbow type

Control method

0	Meter-out
1	Meter-in

Thread

M5	M5 X 0.8
01	R1/8
02	R1/4
03	R3/8
04	R1/2

With one-touch fitting

Tubing port size

04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

With sealant

* S is not required with M5, which do not have sealant. Types with gasket are standardised instead.

Lock nut configuration

–	Standard (Round)
K	Hexagon lock nut

Electroless nickel plated specifications

–	Partly unplated
N	All plated

Use of flame resistant resin for one-touch fittings. (Equivalent to UL-94 Standards V-0)

Elbow type

Model

◉ indicates that electroless nickel plated model (N specification) is the standardised.

Port size	Applicable tubing O.D. Metric size 4	6	8	10	12	Applicable cylinder tubing I.D. mm	Elbow type Meter-out	Meter-in
M5 X 0.8	◉	◉				6, 10, 16, 20	AS1201-M5	AS1211-M5
R1/8		◉	◉			20, 25, 32	AS2201-01	AS2211-01
R1/4		◉	◉			20, 25, 32, 40	AS2201-02	AS2211-02
R3/8			●	●		40, 50, 63	AS3201-03	AS3211-03
R1/2				●	●	63, 80, 100	AS4201-04	AS4211-04

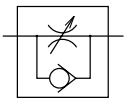
Specifications

Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Ambient and fluid temperature	–5 to 60°C (No freezing)
Number of needle rotations	10 rotations (8 rotations Note 1))
Applicable tubing material	Nylon, Soft nylon, Polyurethane
Option	Hexagon lock nut, Electroless nickel plated specifications Note 2)

The meter-in and meter-out types are visually distinguished by the lock nut.
The lock nut of the meter-out type is electroless nickel plated while that of the meter-in type is black zinc chromate plated.
Note 1) In case of size M5.
Note 2) Brass parts are all electroless nickel plated.

Elbow Type — AS

JIS symbol



Applicable tubing O.D. mm	Connection thread	Model	
		Elbow type	
		Meter-out	Meter-in
4	M5 X 0.8	AS1201-M5-F04	AS1211-M5-F04
6	M5 X 0.8	AS1201-M5-F06	AS1211-M5-F06
	R1/8	AS2201-01-F06S	AS2211-01-F06S
	R1/4	-02-F06S	-02-F06S
8	R1/8	AS2201-01-F08S	AS2211-01-F08S
	R1/4	-02-F08S	-02-F08S
	R3/8	AS3201-03-F08S	AS3211-03-F08S
10	R3/8	AS3201-03-F10S	AS3211-03-F10S
	R1/2	AS4201-04-F10S	AS4211-04-F10S
12	R1/2	AS4201-04-F12S	AS4211-04-F12S

Made to Order

Made to Order

Lubricant: Vaseline — X12

(Example) AS1201-M5-F04-X12

Oil Free (Sealant: PTFE Coated) + Without Check Valve (Throttle Valve) — X21

(Example) AS1201-M5-F04-X21

Note 1) Not a non particle generation type.
Note 2) Only items with meter-out part numbers are available in case of throttle valves.

Throttle Valve (Without Check Valve) — X214

(Example) AS1201-M5-F04-X214

Note) Only items with meter-out part numbers are available in case of throttle valves.

Clean Series — 10-

Lubricant: Fluororesin grease, Double packaging

(Example) 10-AS1201-M5-F04

Speed Controller with Residual Pressure Exhaust Valve

Series AS□□□□FE

Elbow Type/Universal Type

■Applicable tubing O.D.: Metric Size ■Connection thread: R

Residual Pressure Exhaust

How to Order

AS 2 2 1 1F E 01 — 06 S K

Body size

2	1/8, 1/4 standard
3	3/8 standard
4	1/2 standard

Type

2	Elbow
3	Universal

Control method

0	Meter-out
1	Meter-in

With one-touch fitting

With residual pressure exhaust valve

Port size

01	R1/8
02	R1/4
03	R3/8
04	R1/2

Applicable tubing O.D.

Metric size

04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

With sealant

Hexagon lock nut

Residual pressure exhaust from cylinder. Residual pressure easily exhausted with one push.

Elbow type

Universal type

Model

Port size	Applicable tubing O.D. Metric size 4	6	8	10	12	Applicable cylinder tubing I.D. mm	Elbow type Meter-out	Elbow type Meter-in	Universal type Meter-out	Universal type Meter-in
R1/8	●	●	●	●*		20, 25, 32	AS2201FE-01	AS2211FE-01	AS2301FE-01	AS2311FE-01
R1/4	●	●	●	●		20, 25, 32, 40	AS2201FE-02	AS2211FE-02	AS2301FE-02	AS2311FE-02
R3/8		●	●	●	●	40, 50, 63	AS3201FE-03	AS3211FE-03	AS3301FE-03	AS3311FE-03
R1/2				●	●	63, 80, 100	AS4201FE-04	AS4211FE-04	AS4301FE-04	AS4311FE-04

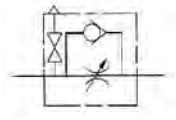
Note 1) *Elbow type only.
Note 2) Visual distinction between meter-out and meter-in types.
The meter-out and meter-in types can be visually distinguished by the lock nut.
The lock nut of the meter-out type is electroless nickel plated while that of the meter-in type is black zinc chromate plated.

Specifications

Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Ambient and fluid temperature	–5 to 60°C (No freezing)
Number of needle rotations	10 rotations
Effective sectional area of residual pressure exhaust valve	0.8 mm^2
Applicable tubing material	Nylon, Soft nylon, Polyurethane

Elbow Type/Universal Type — AS□□□□FE

JIS symbol



Applicable tubing O.D. mm	Connection thread	Model			
		Elbow type		Universal type	
		Meter-out	Meter-in	Meter-out	Meter-in
4	R1/8	AS2201FE-01-04SK	AS2211FE-01-04SK	AS2301FE-01-04SK	AS2311FE-01-04SK
	R1/4	-02-04SK	-02-04SK	-02-04SK	-02-04SK
6	R1/8	AS2201FE-01-06SK	AS2211FE-01-06SK	AS2301FE-01-06SK	AS2311FE-01-06SK
	R1/4	-02-06SK	-02-06SK	-02-06SK	-02-06SK
	R3/8	AS3201FE-03-06SK	AS3211FE-03-06SK	AS3301FE-03-06SK	AS3311FE-03-06SK
8	R1/8	AS2201FE-01-08SK	AS2211FE-01-08SK	AS2301FE-01-08SK	AS2311FE-01-08SK
	R1/4	-02-08SK	-02-08SK	-02-08SK	-02-08SK
	R3/8	AS3201FE-03-08SK	AS3211FE-03-08SK	AS3301FE-03-08SK	AS3311FE-03-08SK
10	R1/8	AS2201FE-01-10SK	AS2211FE-01-10SK	—	—
	R1/4	-02-10SK	-02-10SK	AS2301FE-02-10SK	AS2311FE-02-10SK
	R3/8	AS3201FE-03-10SK	AS3211FE-03-10SK	AS3301FE-03-10SK	AS3311FE-03-10SK
	R1/2	AS4201FE-04-10SK	AS4211FE-04-10SK	AS4301FE-04-10SK	AS4311FE-04-10SK
12	R3/8	AS3201FE-03-12SK	AS3211FE-03-12SK	AS3301FE-03-12SK	AS3311FE-03-12SK
	R1/2	AS4201FE-04-12SK	AS4211FE-04-12SK	AS4301FE-04-12SK	AS4311FE-04-12SK

Made to Order

Made to Order

Lubricant: Vaseline — X12

(Example) AS2201FE-01-04SK-X12

Throttle Valve (Without Check Valve) — X214

(Example) AS2201FE-01-04SK-X214

Note) Only items with meter-out part numbers are available in case of throttle valves.

Oil Free (Sealant: PTFE Coated) + Without Check Valve (Throttle Valve) — X21

(Example) AS2201FE-01-04SK-X21

Note 1) Not a non particle generation type.
Note 2) Only items with meter-out part numbers are available in case of throttle valves.

Speed Exhaust Controller

Series ASV

Elbow Type/Tee Type

■Applicable tubing O.D.: Metric Size ■Connection thread: M, R

Quick Exhaust

How to Order

ASV 3 1 0 F – 01 – 06 S

Body size

1	M3 standard
2	M5 standard
3	1/8 standard
4	1/4 standard
5	3/8 standard

Model

1	Union tee
2	Elbow Note1)

Note 1) Only M3 and M5 for the elbow type.

With one-touch fitting

Port size

M3	M3 X 0.5
M5	M5 X 0.8
01	R1/8
02	R1/4
03	R3/8
04	R1/2

Applicable tubing O.D.

04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

Sealant

Symbol	Sealant	Applicable model
Nil	Without sealant	ASV120F, 220F
S	With sealant	ASV310F, 410F, 510F

Lock nut configuration

Nil	Standard (Round)
K	Hexagon type

Spatter cover

Nil	—
C	With spatter cover*

* Only available to ASV310F, 410F and 510F.

Model

Model	Port size	Applicable tubing O.D. (Metric size)				
		4	6	8	10	12
ASV120F-M3	M3 X 0.5	●				
ASV220F-M5	M5 X 0.8	●	●			
ASV310F-01	R1/8		●	●		
ASV310F-02	R1/4		●	●		
ASV410F-01	R1/8			●	●	
ASV410F-02	R1/4			●	●	
ASV410F-03	R3/8			●	●	
ASV510F-02	R1/4				●	●
ASV510F-03	R3/8				●	●
ASV510F-04	R1/2				●	●

Specifications

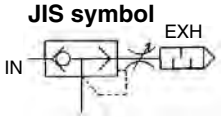
Series	ASV120F	ASV220F	ASV310F, 410F	ASV510F
Proof pressure	1.5 MPa			
Max. operating pressure	1 MPa			
Min. operating pressure	0.1 MPa			
Ambient and fluid temperature	–5 to 60°C (No freezing)			
Number of needle rotations	10 rotations	8 rotations	12 rotations	15 rotations
Applicable tubing material Note 1)	Nylon, Soft nylon, Polyurethane			
Option	Hexagon lock nut		With spatter cover, Hexagon lock nut	

Note 1) Pay attention to the maximum operating pressure when soft nylon, polyurethane is used. (Refer to Best Pneumatics 2004 Vol. 15 for more information.)

Elbow Type/Tee Type ASV

Integration of a quick exhaust valve and an exhaust restrictor.
Permits high-speed cylinder operation.

Elbow type



Tee type

Applicable tubing O.D. mm	Connection thread	Model (Elbow type)
4	M3 X 0.5	ASV120F-M3-04
	M5 X 0.8	ASV220F-M5-04
6	M5 X 0.8	ASV220F-M5-06

Applicable tubing O.D. mm	Connection thread	Model (Tee type)
6	R1/8	ASV310F-01-06S
	R1/4	-02-06S
8	R1/8	ASV310F-01-08S
	R1/4	-02-08S
	R1/8	ASV410F-01-08S
8	R1/4	ASV410F-02-08S
	R3/8	-03-08S
10	R1/8	ASV410F-01-10S
	R1/4	-02-10S
	R3/8	-03-10S
	R1/4	ASV510F-02-10S
	R3/8	-03-10S
	R1/2	-04-10S
12	R1/4	ASV510F-02-12S
	R3/8	-03-12S
	R1/2	-04-12S

Made to Order

Made to Order

Lubricant: Vaseline X12

(Example) ASV120F-M3-04-X12

Speed Controller with Pilot Check Valve

Series ASP

Universal Type

■Applicable Tubing O.D.: Metric Size ■Connection thread: R

Drop Prevention

How to Order

ASP 3 3 0 F – 01 – 06 S

- ASP: Pilot check valve
- 3: Body size

3	1/8 Standard
4	1/4 Standard
5	3/8 Standard
6	1/2 Standard

- 3: Type

3	Universal

- F: With one-touch fitting
- 01: Port size

Symbol	Cylinder side	Pilot port
01	R1/8	M5 X 0.8
02	R1/4	Rc1/8
03	R3/8	Rc1/8
04	R1/2	Rc1/4

- 06: Applicable tubing O.D. (Metric size)

06	ø6
08	ø8
10	ø10
12	ø12

- S: With sealant

Model

Model	Port size	Applicable tubing O.D. Metric size 6	8	10	12	Pilot port
ASP330F-01	R1/8	●	●			M5 X 0.8
ASP430F-02	R1/4	●	●			Rc1/8
ASP530F-03	R3/8		●	●		Rc1/8
ASP630F-04	R1/2			●	●	Rc1/4

Note) Brass parts are all electroless nickel plated.

Specifications

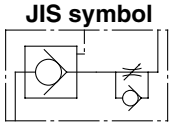
Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Pilot check valve operating pressure	50% or more the operating pressure
Ambient and fluid temperature	–5 to 60°C (No freezing)
Number of needle rotations	10 rotations
Applicable tubing material	Nylon, Soft nylon, Polyurethane

Note) Pay attention to the maximum operating pressure when soft nylon or polyurethane is used. (Refer to Best Pneumatics 2004 Vol. 15 for more information.)

Universal Type — ASP

Built-in pilot check valve to prevent drop down.
Temporary intermediate stop.
Emergency stop.

JIS symbol



Applicable tubing O.D. mm	Connection thread (a)	Connection thread (b)	Model Universal type
6	R1/8	M5 X 0.8	ASP330F-01-06S
	R1/4	Rc1/8	ASP430F-02-06S
8	R1/8	M5 X 0.8	ASP330F-01-08S
	R1/4	Rc1/8	ASP430F-02-08S
	R3/8	Rc1/8	ASP530F-03-08S
10	R3/8	Rc1/8	ASP530F-03-10S
	R1/2	Rc1/4	ASP630F-04-10S
12	R1/2	Rc1/4	ASP630F-04-12S

Refer to Best Pneumatics 2004 Vol. 15 for inch sizes.

Made to Order

Made to Order

Lubricant: Vaseline — X12

(Example) ASP330F-01-06S-X12

Tamper Proof Speed Controller

Series AS□□□1F-T

Elbow Type/Universal Type

■Applicable tubing O.D.: Metric Size ■Connection thread: M5, R

How to Order

AS [2] [2] [1] 1 F — [01] — [06] [S] [T]

Body size

1	M5 standard
2	1/8, 1/4 standard
3	3/8 standard
4	1/2 standard

Type

2	Elbow
3	Universal

Control method

0	Meter-out
1	Meter-in

With one-touch fitting

Port size

M5	M5 X 0.8
01	R1/8
02	R1/4
03	R3/8
04	R1/2

Applicable tubing O.D.

Metric size

23	ø3.2 *
04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

* Use ø1/8 tube.

With sealant

Note) S is not necessary in case of types with a M5 port, which do not have sealant. Types with gasket are standardised.

Tamper proof type

Note) Flow control requires special tools, which must be procured separately (Model number: AS-T-1).

Flow rate control with special tools for safety measures.

Elbow type

Universal type

Special tool (AS-T-1)

Model

Port size	Applicable tubing O.D. Metric size 3.2	4	6	8	10	12	Applicable cylinder tubing I.D. mm	Elbow type Meter-out	Elbow type Meter-in	Universal type Meter-out	Universal type Meter-in
M5 X 0.8	●	●	●				6, 10, 16, 20	AS1201F-M5	AS1211F-M5	AS1301F-M5	AS1311F-M5
R1/8	●	●	●	●	●*		20, 25, 32	AS2201F-01	AS2211F-01	AS2301F-01	AS2311F-01
R1/4		●	●	●	●		20, 25, 32, 40	AS2201F-02	AS2211F-02	AS2301F-02	AS2311F-02
R1/4			●	●	●	●	40, 50, 63	AS3201F-02	AS3211F-02	AS3301F-02	AS3311F-02
R3/8			●	●	●	●	40, 50, 63	AS3201F-03	AS3211F-03	AS3301F-03	AS3311F-03
R1/2					●	●	63, 80, 100	AS4201F-04	AS4211F-04	AS4301F-04	AS4311F-04

Note 1) *Elbow type only.

Note 2) The meter-in and meter-out types are visually distinguished by the flow direction symbol on the resin body.

Specifications

Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Ambient and fluid temperature	–5 to 60°C (No freezing)
Number of needle rotations	10 rotations (8 rotations Note1))
Applicable tubing material Note 2)	Nylon, Soft nylon, Polyurethane

Note1) In case of AS1201F-M5 and AS1211F-M5 types.
In case of AS1301F-M5 and AS1311F-M5 types.

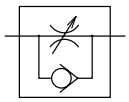
Note2) Pay attention to the maximum operating pressure when soft nylon or polyurethane is used. (Refer to Best Pneumatics 2004 Vol. 15 for more information.)

Note3) Brass parts of standard products are all electroless nickel plated.

Refer to Best Pneumatics 2004 Vol. 15 for inch sizes.

Elbow Type/Universal Type — AS□□□1F-T

JIS symbol



Applicable tubing O.D. mm	Connection thread	Model			
		Elbow type		Universal type	
		Meter-out	Meter-in	Meter-out	Meter-in
3.2	M5 X 0.8	AS1201F-M5-23T	AS1211F-M5-23T	AS1301F-M5-23T	AS1311F-M5-23T
	R1/8	AS2201F-01-23ST	AS2211F-01-23ST	AS2301F-01-23ST	AS2311F-01-23ST
4	M5 X 0.8	AS1201F-M5-04T	AS1211F-M5-04T	AS1301F-M5-04T	AS1311F-M5-04T
	R1/8	AS2201F-01-04ST	AS2211F-01-04ST	AS2301F-01-04ST	AS2311F-01-04ST
	R1/4	-02-04ST	-02-04ST	-02-04ST	-02-04ST
6	M5 X 0.8	AS1201F-M5-06T	AS1211F-M5-06T	AS1301F-M5-06T	AS1311F-M5-06T
	R1/8	AS2201F-01-06ST	AS2211F-01-06ST	AS2301F-01-06ST	AS2311F-01-06ST
	R1/4	-02-06ST	-02-06ST	-02-06ST	-02-06ST
		AS3201F-02-06ST	AS3211F-02-06ST	AS3301F-02-06ST	AS3311F-02-06ST
	R3/8	-03-06ST	-03-06ST	-03-06ST	-03-06ST
8	R1/8	AS2201F-01-08ST	AS2211F-01-08ST	AS2301F-01-08ST	AS2311F-01-08ST
	R1/4	-02-08ST	-02-08ST	-02-08ST	-02-08ST
		AS3201F-02-08ST	AS3211F-02-08ST	AS3301F-02-08ST	AS3311F-02-08ST
	R3/8	-03-08ST	-03-08ST	-03-08ST	-03-08ST
10	R1/8	AS2201F-01-10ST	AS2211F-01-10ST	—	—
	R1/4	-02-10ST	-02-10ST	AS2301F-02-10ST	AS2311F-02-10ST
		AS3201F-02-10ST	AS3211F-02-10ST	AS3301F-02-10ST	AS3311F-02-10ST
	R3/8	-03-10ST	-03-10ST	-03-10ST	-03-10ST
	R1/2	AS4201F-04-10ST	AS4211F-04-10ST	AS4301F-04-10ST	AS4311F-04-10ST
12	R1/4	AS3201F-02-12ST	AS3211F-02-12ST	AS3301F-02-12ST	AS3311F-02-12ST
	R3/8	-03-12ST	-03-12ST	-03-12ST	-03-12ST
	R1/2	AS4201F-04-12ST	AS4211F-04-12ST	AS4301F-04-12ST	AS4311F-04-12ST

Made to Order

Lubricant: Vaseline — X12

(Example) AS1201F-M5-23T-X12

Throttle Valve (Without Check Valve) — X214

(Example) AS1201F-M5-23T-X214

Note) Only items with meter-out part numbers are available in case of throttle valves.

Oil Free (Sealant: PTFE Coated) + Without Check Valve (Throttle Valve) — X21

(Example) AS1201F-M5-23T-X21

Note 1) Not a non particle generation type.
Note 2) Only items with meter-out part numbers are available in case of throttle valves.

Clean Series — 10-

Lubricant: Fluororesin grease, Double packaging

(Example) 10-AS1201F-M5-23T

Tamper Proof Speed Controller

Series AS□□□1F-T

In-line Type

■Applicable tubing O.D.: **Metric Size**

How to Order

AS 200 1F – 06 T

Body size

100	M5 standard
200	1/8 standard
205	1/4 standard
300	3/8 standard
400	1/2 standard

With one-touch fitting

Tamper proof type

Note) Flow control requires special tools, which must be procured separately (reference number: AS-T-1).

Applicable tubing O.D.

Metric size

23	ø3.2 *	08	ø8
04	ø4	10	ø10
06	ø6	12	ø12

*Use ø1/8 tube.

Model

Model	Applicable tubing O.D. Metric size						Applicable cylinder tubing I.D. mm
	3.2	4	6	8	10	12	
AS1001F	●	●	●				6, 10, 16, 20
AS2001F		●	●				20, 25, 32
AS2051F			●	●			20, 25, 32, 40
AS3001F			●	●	●	●	40, 50, 63
AS4001F					●	●	63, 80, 100

Specifications

Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Ambient and fluid temperature	–5 to 60°C (No freezing)
Number of needle rotations	10 rotations (8 rotations Note 1))
Applicable tubing material Note 2)	Nylon, Soft nylon, Polyurethane

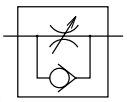
Note 1) In case of type AS1001F.

Note 2) Pay attention to the maximum operating pressure when soft nylon or polyurethane is used. (Refer to Best Pneumatics 2004 Vol. 15 for more information.)

In-line Type — AS□□□1F-T

Flow control with special tools. For safety measures.

JIS symbol



Special tool (AS-T-1)

Applicable tubing O.D. mm	Model In-line type
3.2	AS1001F-23T
4	AS1001F-04T
	AS2001F-04T
6	AS1001F-06T
	AS2001F-06T
	AS2051F-06T
	AS3001F-06T

Applicable tubing O.D. mm	Model In-line type
8	AS2051F-08T
	AS3001F-08T
10	AS3001F-10T
	AS4001F-10T
12	AS3001F-12T
	AS4001F-12T

Refer to Best Pneumatics 2004 Vol. 15 for inch sizes.

Made to Order

Made to Order

lubricant: Vaseline — **X12**

(Example) AS1001F-23T-X12

Oil Free (Sealant: PTFE Coated) + Without Check Valve (Throttle Valve) — **X21**

(Example) AS1001F-23T-X21

Note 1) Not a non particle generation type.

Throttle Valve (Without Check Valve) — **X214**

(Example) AS1001F-23T-X214

Clean Series — **10-**

Lubricant: Fluororesin grease, Double packaging

(Example) 10-AS1001F-23T

Tamper Proof Dual Speed Controller

Series ASD□□□F-T

Universal Type

■Applicable tubing O.D.: Metric Size ■Connection thread: M5, R

Lurch Prevention

How to Order

ASD 3 3 0 F – 01 – 06 S T

Body size

2	M5 standard
3	1/8 standard
4	1/4 standard
5	3/8 standard
6	1/2 standard

Type

3	Universal

With one-touch fitting

Port size

M5	M5 X 0.8
01	R1/8
02	R1/4
03	R3/8
04	R1/2

Applicable tubing O.D.

Metric size

04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

With sealant

Note) S is not necessary in case of types with a M5 port, which do not have sealant. Types with gasket are standardised.

Tamper proof type

Note) Flow control requires special tools, which must be procured separately (Model number: AS-T-1).

Model

Model	Port size	Applicable tubing O.D. Metric size				
		4	6	8	10	12
ASD230F-M5	M5 X 0.8	●	●			
ASD330F-01	R1/8		●	●		
ASD430F-02	R1/4		●	●	●	
ASD530F-02	R1/4		●	●	●	●
ASD530F-03	R3/8		●	●	●	●
ASD630F-04	R1/2				●	●

Specifications

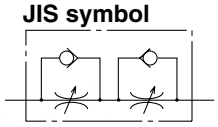
Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Ambient and fluid temperature	–5 to 60°C (No freezing)
Number of needle rotations	10 rotations (8 rotations Note 1))
Applicable tubing material Note 2)	Nylon, Soft nylon, Polyurethane

Note 1) In case of ASD230F.
Note 2) Pay attention to the maximum operating pressure when soft nylon or polyurethane is used. (Refer to Best Pneumatics 2004 Vol. 15 for more information.)
Note 3) Brass parts of standard products are all electroless nickel plated.

Universal Type — ASD□□□F-T

Lurch prevention.
Speed control of single acting cylinder.
Flow rate control with special tools.
For safety measures.

JIS symbol



Applicable tubing O.D. mm	Connection thread	Model Universal type
4	M5 X 0.8	ASD230F-M5-04T
6	M5 X 0.8	ASD230F-M5-06T
	R1/8	ASD330F-01-06ST
	R1/4	ASD430F-02-06ST
		ASD530F-02-06ST
	R3/8	-03-06ST
8	R1/8	ASD330F-01-08ST
	R1/4	ASD430F-02-08ST
		ASD530F-02-08ST
	R3/8	-03-08ST

Applicable tubing O.D. mm	Connection thread	Model Universal type
10	R1/4	ASD430F-02-10ST
		ASD530F-02-10ST
	R3/8	-03-10ST
	R1/2	ASD630F-04-10ST
12	R1/4	ASD530F-02-12ST
	R3/8	-03-12ST
	R1/2	ASD630F-04-12ST

Refer to Best Pneumatics 2004 Vol. 15 for inch sizes.

Made to Order

Made to Order

lubricant: Vaseline — X12

(Example) ASD230F-M5-04T-X12

Clean Series — 10-

Lubricant: Fluororesin grease, Double packaging

(Example) 10-ASD230F-M5-04T

Flat Head Screw Driver Adjustable Speed Controller

Series AS□□□1F-D

Elbow Type/Universal Type

■Applicable tubing O.D.: Metric Size ■Connection thread: M5, R

How to Order

AS **2** **2** **1** **1** **F** – **01** – **06** **S** **D**

Body size

1	M5 standard
2	1/8, 1/4 standard
3	3/8 standard
4	1/2 standard

Type

2	Elbow
3	Universal

Control method

0	Meter-out
1	Meter-in

With one-touch fitting

Port size

M5	M5 X 0.8
01	R1/8
02	R1/4
03	R3/8
04	R1/2

Applicable tubing O.D.

Metric size

23	ø3.2 *
04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

* Use ø1/8 tubing .

With sealant

Note) S is not necessary in case of types with a M5 port, which do not have sealant. Types with gasket are standardised.

Flat head screw driver adjustment type

Flow adjustment with flat head screw driver.

For safety measures.

Elbow type

Universal type

Model

Port size	Applicable tubing O.D. Metric size 3.2	4	6	8	10	12	Applicable cylinder tubing I.D. mm	Elbow type Meter-out	Elbow type Meter-in	Universal type Meter-out	Universal type Meter-in
M5 X 0.8	●	●	●				6, 10, 16, 20	AS1201F-M5	AS1211F-M5	AS1301F-M5	AS1311F-M5
R1/8	●	●	●	●	●*		20, 25, 32	AS2201F-01	AS2211F-01	AS2301F-01	AS2311F-01
R1/4		●	●	●	●		20, 25, 32, 40	AS2201F-02	AS2211F-02	AS2301F-02	AS2311F-02
R1/4			●	●	●	●	40, 50, 63	AS3201F-02	AS3211F-02	AS3301F-02	AS3311F-02
R3/8			●	●	●	●	40, 50, 63	AS3201F-03	AS3211F-03	AS3301F-03	AS3311F-03
R1/2					●	●	63, 80, 100	AS4201F-04	AS4211F-04	AS4301F-04	AS4311F-04

Note 1) *Elbow type only.

Note 2) The meter-out and meter-in types can be visually determined by the flow direction symbol on the resin body.

Specifications

Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Ambient and fluid temperature	–5 to 60°C (No freezing)
Number of needle rotations	10 rotations (8 rotations Note 1))
Applicable tubing material Note 2)	Nylon, Soft nylon, Polyurethane

Note 1) In case of types AS1201F-M5 and AS1211F-M5.
In case of types AS1301F-M5 and AS1311F-M5.

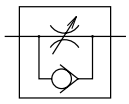
Note 2) Pay attention to the maximum operating pressure when soft nylon or polyurethane is used.
(Refer to Best Pneumatics 2004 Vol. 15 for more information.)

Note 3) Brass parts of standard products are all electroless nickel plated.

Refer to Best Pneumatics 2004 Vol. 15 for inch sizes.

Elbow Type/Universal Type — AS□□□1F-D

JIS symbol



Applicable tubing O.D. mm	Connection thread	Model			
		Elbow type		Universal type	
		Meter-out	Meter-in	Meter-out	Meter-in
3.2	M5 X 0.8	AS1201F-M5-23D	AS1211F-M5-23D	AS1301F-M5-23D	AS1311F-M5-23D
	R1/8	AS2201F-01-23SD	AS2211F-01-23SD	AS2301F-01-23SD	AS2311F-01-23SD
4	M5 X 0.8	AS1201F-M5-04D	AS1211F-M5-04D	AS1301F-M5-04D	AS1311F-M5-04D
	R1/8	AS2201F-01-04SD	AS2211F-01-04SD	AS2301F-01-04SD	AS2311F-01-04SD
	R1/4	-02-04SD	-02-04SD	-02-04SD	-02-04SD
6	M5 X 0.8	AS1201F-M5-06D	AS1211F-M5-06D	AS1301F-M5-06D	AS1311F-M5-06D
	R1/8	AS2201F-01-06SD	AS2211F-01-06SD	AS2301F-01-06SD	AS2311F-01-06SD
	R1/4	-02-06SD	-02-06SD	-02-06SD	-02-06SD
		AS3201F-02-06SD	AS3211F-02-06SD	AS3301F-02-06SD	AS3311F-02-06SD
	R3/8	-03-06SD	-03-06SD	-03-06SD	-03-06SD
8	R1/8	AS2201F-01-08SD	AS2211F-01-08SD	AS2301F-01-08SD	AS2311F-01-08SD
	R1/4	-02-08SD	-02-08SD	-02-08SD	-02-08SD
		AS3201F-02-08SD	AS3211F-02-08SD	AS3301F-02-08SD	AS3311F-02-08SD
	R3/8	-03-08SD	-03-08SD	-03-08SD	-03-08SD
10	R1/8	AS2201F-01-10SD	AS2211F-01-10SD	—	—
	R1/4	-02-10SD	-02-10SD	AS2301F-02-10SD	AS2311F-02-10SD
		AS3201F-02-10SD	AS3211F-02-10SD	AS3301F-02-10SD	AS3311F-02-10SD
	R3/8	-03-10SD	-03-10SD	-03-10SD	-03-10SD
	R1/2	AS4201F-04-10SD	AS4211F-04-10SD	AS4301F-04-10SD	AS4311F-04-10SD
12	R1/4	AS3201F-02-12SD	AS3211F-02-12SD	AS3301F-02-12SD	AS3311F-02-12SD
	R3/8	-03-12SD	-03-12SD	-03-12SD	-03-12SD
	R1/2	AS4201F-04-12SD	AS4211F-04-12SD	AS4301F-04-12SD	AS4311F-04-12SD

Made to Order

Made to Order

Lubricant: Vaseline — X12

(Example) AS1201F-M5-23D-X12

Oil Free (Sealant: PTFE Coated) + Without Check Valve (Throttle Valve) — X21

(Example) AS1201F-M5-23D-X21

Note 1) Not a non particle generation type.
Note 2) Only items with meter-out part numbers are available in case of throttle valves.

Throttle Valve (Without Check Valve) — X214

(Example) AS1201F-M5-23D-X214

Note) Only items with meter-out part numbers are available in case of throttle valves.

Clean Series — 10-

Lubricant: Fluororesin grease, Double packaging

(Example) 10-AS1201F-M5-23D

Flat Head Screw Driver Adjustable Speed Controller

Series AS□□□1F-D

In-line Type

■Applicable tubing O.D.: Metric Size

How to Order

AS 200 1F – 06 D

- Body size: 200
- With one-touch fitting: 1F
- Applicable tubing O.D.: 06
- Flat head screw driver adjustment type: D

Body size	
100	M5 standard
200	1/8 standard
205	1/4 standard
300	3/8 standard
400	1/2 standard

Applicable tubing O.D. Metric size	
23	ø3.2 *
04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

* Use ø1/8 tubing.

Model

Model	Applicable tubing O.D. Metric size						Applicable cylinder tubing I.D. mm
	3.2	4	6	8	10	12	
AS1001F	●	●	●				6, 10, 16, 20
AS2001F		●	●				20, 25, 32
AS2051F			●	●			20, 25, 32, 40
AS3001F			●	●	●	●	40, 50, 63
AS4001F					●	●	63, 80, 100

Specifications

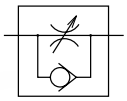
Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Ambient and fluid temperature	–5 to 60°C (No freezing)
Number of needle rotations	10 rotations (8 rotations Note 1))
Applicable tubing material Note 2)	Nylon, Soft nylon, Polyurethane

Note 1) In case of type AS1001F.
Note 2) Pay attention to the maximum operating pressure when soft nylon or polyurethane is used. (Refer to Best Pneumatics 2004 Vol. 15 for more information.)

In-line Type — AS□□□1F-D

Flow adjustment with flat head screw driver.
For safety measures.

JIS symbol



Applicable tubing O.D. mm	Model In-line type
3.2	AS1001F-23D
4	AS1001F-04D
	AS2001F-04D
6	AS1001F-06D
	AS2001F-06D
	AS2051F-06D
	AS3001F-06D

Applicable tubing O.D. mm	Model In-line type
8	AS2051F-08D
	AS3001F-08D
10	AS3001F-10D
	AS4001F-10D
12	AS3001F-12D
	AS4001F-12D

Refer to Best Pneumatics 2004 Vol. 15 for inch sizes.

Made to Order

Made to Order

lubricant: Vaseline — X12

(Example) AS1001F-23D-X12

Oil Free (Sealant: PTFE Coated) + Without Check Valve (Throttle Valve) — X21

(Example) AS1001F-23D-X21

Note 1) Not a non particle generation type.

Throttle Valve (Without Check Valve) — X214

(Example) AS1001F-23D-X214

Clean Series — 10-

Lubricant: Fluororesin grease, Double package

(Example) 10-AS1001F-23D

Flat Head Screw Driver Adjustable Dual Speed Controller

Series ASD□□□F-D

Universal Type

■Applicable tubing O.D.: Metric Size ■Connection thread: M5, R

Lurch Prevention

How to Order

ASD 3 3 0 F — 01 — 06 S D

- **Body size**

2	M5 standard
3	1/8 standard
4	1/4 standard
5	3/8 standard
6	1/2 standard

- **Type**

3	Universal

- **With one-touch fitting**
- **Port size**

M5	M5 X 0.8
01	R1/8
02	R1/4
03	R3/8
04	R1/2

- **Applicable tubing O.D.**

Metric size

04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

- **With sealant**

Note) S is not necessary in case of types with a M5 port, which do not have sealant. Types with gasket are standardised.

- **Flat head screw driver adjustment type**

Model

Model	Port size	Applicable tubing O.D. Metric size				
		4	6	8	10	12
ASD230F-M5	M5 X 0.8	●	●			
ASD330F-01	R1/8		●	●		
ASD430F-02	R1/4		●	●	●	
ASD530F-02	R1/4		●	●	●	●
ASD530F-03	R3/8		●	●	●	●
ASD630F-04	R1/2				●	●

Specifications

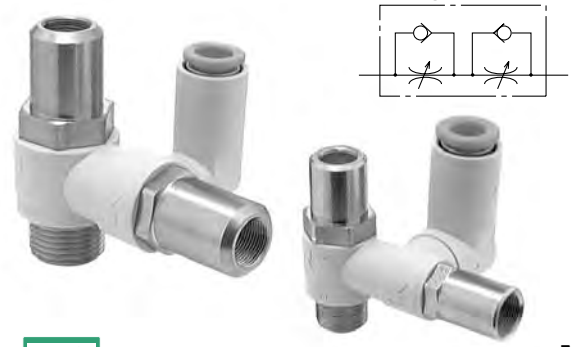
Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Ambient and fluid temperature	–5 to 60°C (No freezing)
Number of needle rotations	10 rotations (8 rotations Note 1))
Applicable tubing material Note 2)	Nylon, Soft nylon, Polyurethane

Note 1) In case of type ASD230F.
Note 2) Pay attention to the maximum operating pressure when soft nylon or polyurethane is used. (Refer to Best Pneumatics 2004 Vol. 15 for more information.)
Note 3) Brass parts of standard products are all electroless nickel plated.

Universal Type — ASD□□□F-D

Lurch prevention.
Speed control of single acting cylinder.
Flow adjustment with flat head screw driver.
For safety measures.

JIS symbol



Applicable tubing O.D. mm	Connection thread	Model Universal type
4	M5 X 0.8	ASD230F-M5-04D
6	M5 X 0.8	ASD230F-M5-06D
	R1/8	ASD330F-01-06SD
	R1/4	ASD430F-02-06SD
		ASD530F-02-06SD
	R3/8	-03-06SD
8	R1/8	ASD330F-01-08SD
	R1/4	ASD430F-02-08SD
		ASD530F-02-08SD
	R3/8	-03-08SD

Applicable tubing O.D. mm	Connection thread	Model Universal type
10	R1/4	ASD430F-02-10SD
		ASD530F-02-10SD
	R3/8	-03-10SD
	R1/2	ASD630F-04-10SD
12	R1/4	ASD530F-02-12SD
	R3/8	-03-12SD
	R1/2	ASD630F-04-12SD

Refer to Best Pneumatics 2004 Vol. 15 for inch sizes.

Made to Order

Made to Order

Lubricant: Vaseline — X12

(Example) ASD230F-M5-04D-X12

Clean Series — 10-

Lubricant: Fluororesin grease, Double package

(Example) 10-ASD230F-M5-04D

Residual Pressure Exhaust Valve with One-touch Fitting Series KE□

Residual pressure inside the cylinder is released to the atmosphere by pressing the button.

Residual Pressure Exhaust

Without push button guard With one-touch fitting

Applicable tubing O.D. mm	Model
6	KEA06
8	KEA08
10	KEA10
12	KEA12

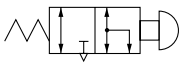
With push button guard With one-touch fitting

Applicable tubing O.D. mm	Model
6	KEB06
8	KEB08
10	KEB10
12	KEB12

With push button guard Rc screw

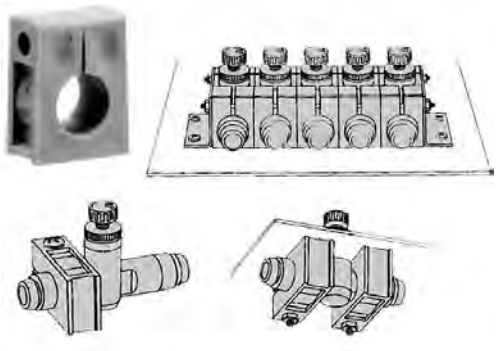
Connection thread	Model
Rc1/4	KEC-02
Rc3/8	KEC-03

JIS symbol



Holder Series TMH

Holder to secure an in-line type speed controller with one-touch fitting.



In-line speed controllers and applicable holders

Body size \ Tubing size	Applicable tubing					
	23	04	06	08	10	12
	ø3.2	ø4	ø6	ø8	ø10	ø12
AS1001F	TMH-23J	TMH-04J	TMH-06J			
AS2001F						
AS2051F			TMH-06	TMH-08		
AS3001F					TMH-10	TMH-12
AS4001F						

Multiple Fitting Holder Series TMA

To secure series KE□ exhaust valves. To secure union tee KQT, union elbow KQL, straight union KQH.

Model

Model	Stations	Applicable exhaust valve	Applicable one-touch fittings		
			Union tee	Union elbow	Straight union
TMA-06	8	KEA06	KQ2T06-00 KQT06-00	KQ2L06-00 KQL06-00	KQ2H06-00 KQH06-00
		KEB06			
TMA-08	8	KEA08	KQ2T08-00 KQT08-00	KQ2L08-00 KQL08-00	KQ2H08-00 KQH08-00
		KEB08			
		KEC-02			
TMA-10	6	KEA-10	KQ2T10-00 KQT10-00	KQ2L10-00 KQL10-00	KQ2H10-00 KQH10-00
		KEB-10			
TMA-12	6	KEA-12	KQ2T12-00 KQT12-00	KQ2L12-00 KQL12-00	KQ2H12-00 KQH12-00
		KEB-12			
		KEC-03			

Check Valve with One-touch Fitting

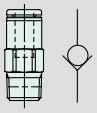
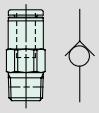
Series AKH/AKB

Drop Prevention

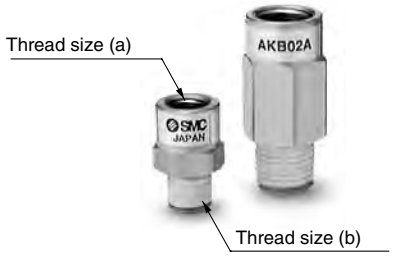
Straight type: AKH

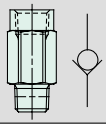
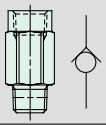
Applicable tubing O.D. mm	Model
4	AKH04-00
6	AKH06-00
8	AKH08-00
10	AKH10-00
12	AKH12-00

Male connector type: AKH

Applicable tubing O.D. mm	Connection thread	Model	
			
4	M5 X 0.8	AKH04A-M5	AKH04B-M5
	R1/8	-01S	-01S
6	M5 X 0.8	AKH06A-M5	AKH06B-M5
	R1/8	-01S	-01S
	R1/4	-02S	-02S
8	R1/8	AKH08A-01S	AKH08B-01S
	R1/4	-02S	-02S
	R3/8	-03S	-03S
10	R1/4	AKH10A-02S	AKH10B-02S
	R3/8	-03S	-03S
	R1/2	-04S	-04S
12	R3/8	AKH12A-03S	AKH12B-03S
	R1/2	-04S	-04S

Bushing type: AKB



Thread size		Model	
			
(a)	(b)		
Rc1/8	R1/8	AKB01A-01S	AKB01B-01S
Rc1/4	R1/4	AKB02A-02S	AKB02B-02S
Rc3/8	R3/8	AKB03A-03S	AKB03B-03S
Rc1/2	R1/2	AKB04A-04S	AKB04B-04S

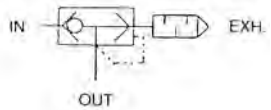
Quick Exhaust Valve with Built-in One-touch Fitting

Series AQ□40F

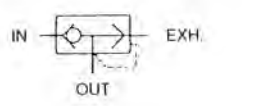
Space saving: Rectilinear IN-OUT tubing connections.

Quick Exhaust

JIS symbol



With silencer



With exhaust port fitting

With silencer

Applicable tubing O.D. mm	Model
4	AQ240F-04-00
6	AQ240F-06-00
6	AQ340F-06-00

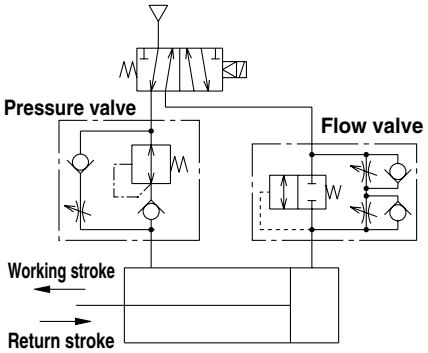
With exhaust port fitting

Applicable tubing O.D. mm	Model
4	AQ240F-04-04
6	AQ240F-06-06
6	AQ340F-06-06

Air Saving Valve
Pressure Valve/Flow Valve

Air consumption cut down by 25%

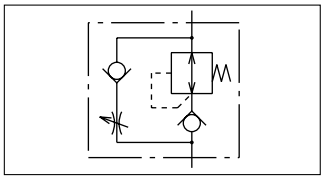
It is not necessary to supply a high pressure to both sides of piston movement. The side with no work only requires a pressure sufficient to ensure smooth operation during the set time period (0.2 MPa).
The system with PFC and QFC valves cuts down consumption by 25% and drastically reduces running and equipment costs.



Pressure valve Series ASR

Regulator with check valve
+
Speed controller

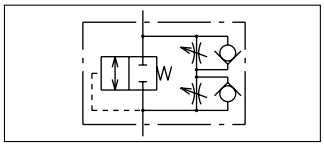
A regulator with check valve and a flow control valve are integrated in one body.



Flow valve Series ASQ

Quick supply and exhaust valve
+
Speed controller
(Meter-in, Meter-out)

A pilot type switching valve and 2 direction flow control valve are integrated in one body.



How to Order

ASR 4 3 0 F – 02 – 06 S – F20

Model

ASR	Pressure valve
ASQ	Flow valve

Body size

4	1/4 standard
5	3/8 standard
6	1/2 standard

Type

3	Universal

With One-touch fittings

Port size

02	R1/4
03	R3/8
04	R1/2

Applicable tubing O.D.

06	6 mm
08	8 mm
10	10 mm
12	12 mm

With seal

Option

–	Variable set pressure type (0.1 to 0.3 MPa)
F20	Fixed set pressure type (0.2 MPa)

Model

Model		Port size	Applicable tubing O.D. (mm)			
Pressure valve	Flow valve		6	8	10	12
ASR430F-02	**ASQ430F-02**	R1/4	●	●	●	
ASR530F-02	**ASQ530F-02**	R1/4	●	●	●	●
ASR530F-03	**ASQ530F-03**	R3/8	●	●	●	●
ASR630F-03	**ASQ630F-03**	R3/8			●	●
ASR630F-04	**ASQ630F-04**	R1/2			●	●

Specifications

Proof pressure		1.5 MPa
Max. operating pressure		1.0 MPa
Set pressure range	**Variable**	0.1 to 0.3 MPa
	Fixed (option)	0.2 MPa
Ambient and fluid temperature		–5 to 60°C (No freezing)
Number of needle rotations		10 rotations
Applicable tubing material		Nylon, Soft nylon, Polyurethane

Series ASR/ASQ

Pressure Valve: ASR

Variable Set Pressure Type

Applicable tubing O.D. mm	Connection thread	Model
6	R1/4	**ASR430F-02-06S**
	R1/4	**ASR530F-02-06S**
	R3/8	**-03-06S**
8	R1/4	**ASR430F-02-08S**
	R1/4	**ASR530F-02-08S**
	R3/8	**-03-08S**
10	R1/4	**ASR430F-02-10S**
	R1/4	**ASR530F-02-10S**
	R3/8	**-03-10S**
	R3/8	**ASR630F-03-10S**
	R1/2	**-04-10S**
12	R1/4	**ASR530F-02-12S**
	R3/8	**-03-12S**
	R3/8	**ASR630F-03-12S**
	R1/2	**-04-12S**

Fixed Set Pressure Type

Applicable tubing O.D. mm	Connection thread	Model
6	R1/4	**ASR430F-02-06S-F20**
	R1/4	**ASR530F-02-06S-F20**
	R3/8	**-03-06S-F20**
8	R1/4	**ASR430F-02-08S-F20**
	R1/4	**ASR530F-02-08S-F20**
	R3/8	**-03-08S-F20**
10	R1/4	**ASR430F-02-10S-F20**
	R1/4	**ASR530F-02-10S-F20**
	R3/8	**-03-10S-F20**
	R3/8	**ASR630F-03-10S-F20**
	R1/2	**-04-10S-F20**
12	R1/4	**ASR530F-02-12S-F20**
	R3/8	**-03-12S-F20**
	R3/8	**ASR630F-03-12S-F20**
	R1/2	**-04-12S-F20**

Flow Valve: ASQ

Variable Set Pressure Type

Applicable tubing O.D. mm	Connection thread	Model
6	R1/4	**ASQ430F-02-06S**
	R1/4	**ASQ530F-02-06S**
	R3/8	**-03-06S**
8	R1/4	**ASQ430F-02-08S**
	R1/4	**ASQ530F-02-08S**
	R3/8	**-03-08S**
10	R1/4	**ASQ430F-02-10S**
	R1/4	**ASQ530F-02-10S**
	R3/8	**-03-10S**
	R3/8	**ASQ630F-03-10S**
	R1/2	**-04-10S**
12	R1/4	**ASQ530F-02-12S**
	R3/8	**-03-12S**
	R3/8	**ASQ630F-03-12S**
	R1/2	**-04-12S**

Fixed Set Pressure Type

Applicable tubing O.D. mm	Connection thread	Model
6	R1/4	**ASQ430F-02-06S-F20**
	R1/4	**ASQ530F-02-06S-F20**
	R3/8	**-03-06S-F20**
8	R1/4	**ASQ430F-02-08S-F20**
	R1/4	**ASQ530F-02-08S-F20**
	R3/8	**-03-08S-F20**
10	R1/4	**ASQ430F-02-10S-F20**
	R1/4	**ASQ530F-02-10S-F20**
	R3/8	**-03-10S-F20**
	R3/8	**ASQ630F-03-10S-F20**
	R1/2	**-04-10S-F20**
12	R1/4	**ASQ530F-02-12S-F20**
	R3/8	**-03-12S-F20**
	R3/8	**ASQ630F-03-12S-F20**
	R1/2	**-04-12S-F20**

Polyurethane Tubing

Series TU

■Tubing size: **Metric Size**

How to Order Note 1)

TU 04 25 BU — 20

- 04: Tubing O.D.
- 25: Tubing I.D.
- BU: Colour indication
- 20: Length per roll

Length per roll

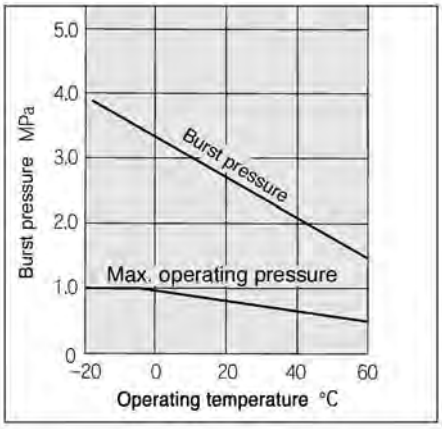
Symbol	Length
20	20 m roll
100	100 m roll

Colour indication

Symbol	Colour
B	Black
W	White
R	Red
BU	Blue
Y	Yellow
G	Green
C	Transparent
YR	Orange
BU1	Solid blue
BU2	Clear blue
BU3	Medium blue
BR1	Brown
G1	Solid green
G2	Clear green
G3	Neon green
G4	Dark green
GR1	Grey
GR2	Light grey
P1	Neon pink
PU1	Solid purple
PU2	Clear purple
R1	Solid red
R2	Clear red
S1	Silver
Y1	Solid yellow
Y2	Clear yellow
Y3	Neon yellow
YR1	Clear orange
YR2	Neon orange

∗ Refer to the front matter regarding the colour tone.

Burst Pressure Characteristics and Operating Pressure Curve



Specifications

	TU0212	TIUB01	TU0425	TU0604	TU0805	TU1065	TU1208	TU1610
Fluid	Air, Water							
Max. operating pressure (at 20°C)	0.8 MPa							
Burst pressure	Refer to burst pressure characteristics curve.							
Min. bending radius mm	4	10	10	15	20	27	35	45
Operating temperature	−20 to 60°C, Water: 0 to 40°C (No freezing)							
Material	Polyurethane							

Note 1) Applicable tubing colour and length per roll vary according to tubing sizes. Refer to the table on the next page for details.
Note 2) Tubing size of TIUB01 is 3.2 mm (O.D.) and 2 mm (I.D.).

● –20 m roll □ –100 m roll

	Tubing size							
	Metric size							
Model	TU0212	TIUB01	TU0425	TU0604	TU0805	TU1065	TU1208	TU1610
O.D. mm	2	3.2	4	6	8	10	12	16
I.D. mm	1.2	2	2.5	4	5	6.5	8	10
Black (B)	●	□	□	□	□	□	□	□
White (W)	●	□	□	□	□	□	□	□
Red (R)	●	□	□	□	□	□	□	
Blue (BU)	●	□	□	□	□	□	□	□
Yellow (Y)	●	□	□	□	□	□	□	
Green (G)	●	□	□	□	□	□	□	
Transparent (C)	●	□	□	□	□	□	□	□
Orange (YR)		□	□	□	□	□	□	
Solid blue (BU1)		□	□	□	□	□	□	
Clear blue (BU2)		□	□	□	□	□	□	
Medium blue (BU3)		□	□	□	□	□	□	
Brown (BR1)		□	□	□	□	□	□	
Solid green (G1)		□	□	□	□	□	□	
Clear green (G2)		□	□	□	□	□	□	
Neon green (G3)		□	□	□	□	□	□	
Dark green (G4)		□	□	□	□	□	□	
Gray (GR1)		□	□	□	□	□	□	
Light grey (GR2)		□	□	□	□	□	□	
Neon pink (P1)		□	□	□	□	□	□	
Solid purple (PU1)		□	□	□	□	□	□	
Clear purple (PU2)		□	□	□	□	□	□	
Solid red (R1)		□	□	□	□	□	□	
Clear red (R2)		□	□	□	□	□	□	
Silver (S1)		□	□	□	□	□	□	
Solid yellow (Y1)		□	□	□	□	□	□	
Clear yellow (Y2)		□	□	□	□	□	□	
Neon yellow (Y3)		□	□	□	□	□	□	
Clear orange (YR1)		□	□	□	□	□	□	
Neon orange (YR2)		□	□	□	□	□	□	

Made to Order

Made to Order

Reel X3

O.D.	I.D.	Model	Length per roll
3.2	2	TIUB01 Colour symbol -100-X3	100 m
4	2.5	TU0425 Colour symbol -100-X3	100 m
		TU0425 Colour symbol -500-X3	500 m
6	4	TU0604 Colour symbol -100-X3	100 m
		TU0604 Colour symbol -400-X3	400 m
8	5	TU0805 Colour symbol -100-X3	100 m
		TU0805 Colour symbol -200-X3	200 m
10	6.5	TU1065 Colour symbol -100-X3	100 m
12	8	TU1208 Colour symbol -100-X3	100 m

Colour indication — B (Black), W (White), R (Red), BU (Blue), Y (Yellow), G (Green), C (Transparent), YR (Orange).

Clean Series 10-

O.D.	I.D.	Model
2	1.2	10-TU0212 Colour symbol -20
3.2	2	10-TIUB01 Colour symbol -20
4	2.5	10-TU0425 Colour symbol -20
6	4	10-TU0604 Colour symbol -20
8	5	10-TU0805 Colour symbol -20
10	6.5	10-TU1065 Colour symbol -20
12	8	10-TU1208 Colour symbol -20

Colour indication — B (Black), W (White), R (Red), BU (Blue), Y (Yellow), G (Green), C (Transparent), YR (Orange).
YR (Orange) is not available for ø2.

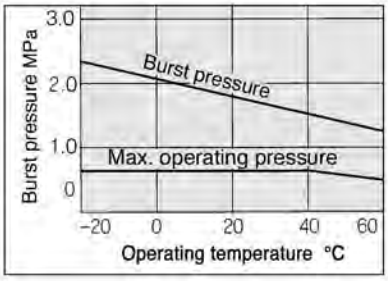
Soft Polyurethane Tubing

Series TUS

■Tubing size: **Metric Size**

Supersoft

Burst Pressure Characteristics and Operating Pressure Curve



How to Order

TUS 10 65 B — 100

- 10: Tubing O.D.
- 65: Tubing I.D.
- B: Colour indication
- 100: Length per roll

Length per roll

Symbol	Length
20	20 m roll
100	100 m reel (Black and Blue only)

Colour indication

Symbol	Colour
B	Black
W	White
R	Red
BU	Blue
Y	Yellow
G	Green
N	Translucent
YB	Yellow brown

Series

● –20 m roll □ –100 m reel

	Tubing				
	Metric size				
Model	TUS0425	TUS0604	TUS0805	TUS1065	TUS1208
O.D. mm	4	6	8	10	12
I.D. mm	2.5	4	5	6.5	8
Black (B)	●	●	●	●	●
White (W)	●	●	●	●	●
Red (R)	●	●	●	●	●
Blue (BU)	●	●	●	●	●
Yellow (Y)	●	●	●	●	●
Green (G)	●	●	●	●	●
Translucent (N) Note 1)	●	●	●	●	●
Yellow brown (YB)	●	●	●	●	●

Specifications

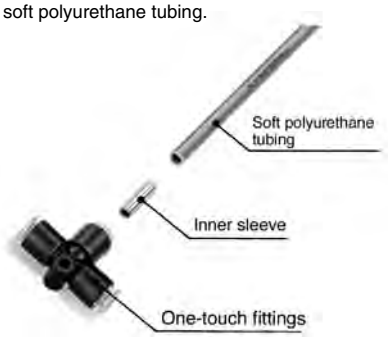
Fluid		Air				
Max. operating pressure (at 20°C)		0.6 MPa				
Burst pressure		Refer to burst pressure characteristics curve.				
Applicable fitting		One-touch fitting, insert fittings, hose nipple				
Min. bending radius mm		8	15	15	22	29
Operating temperature		–20 to 60°C (No freezing)				
Material		Polyurethane				
Tubing drawing strength N (with one-touch fitting)	Without inner sleeve	15	60	60	85	110
	With inner sleeve	80	230	250	300	480

Note 1) Not transparent but translucent owing to the material.

TUS Related Accessories

Inner Sleeve *Series TJ*

Reinforces soft polyurethane tubing connected to one-touch fitting.
Insert an inner sleeve into soft polyurethane tubing.



Model

Model	Applicable tubing model	Length
TJ-0425	TUS0425	18
TJ-0604	TUS0604	19
TJ-0805	TUS0805	20.5
TJ-1065	TUS1065	23
TJ-1208	TUS1208	24

SMC

20 m Roll

O.D.	I.D.	Colour	Model
4	2.5	Black (B)	TUS0425 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
		Translucent (N) Note 1)	
		Yellow brown (YB)	
6	4	Black (B)	TUS0604 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
		Translucent (N) Note 1)	
		Yellow brown (YB)	
8	5	Black (B)	TUS0805 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
		Translucent (N) Note 1)	
		Yellow brown (YB)	
10	6.5	Black (B)	TUS1065 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
		Translucent (N) Note 1)	
		Yellow brown (YB)	
12	8	Black (B)	TUS1208 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
		Translucent (N) Note 1)	
		Yellow brown (YB)	

Note 1) Not transparent but translucent owing to the material.

100 m on Reel

O.D.	I.D.	Colour	Model
4	2.5	Black (B)	TUS0425 Colour symbol -100
		Blue (BU)	
6	4	Black (B)	TUS0604 Colour symbol -100
		Blue (BU)	
8	5	Black (B)	TUS0805 Colour symbol -100
		Blue (BU)	
10	6.5	Black (B)	TUS1065 Colour symbol -100
		Blue (BU)	
12	8	Black (B)	TUS1208 Colour symbol -100
		Blue (BU)	

■Tubing size: Metric Size

How to Order

T 04 25 B – 20

Tubing O.D.

Tubing I.D.

Note 1) Tubing size of **TIA01** is 3.2 mm (O.D.) and 2.2 mm (I.D.).

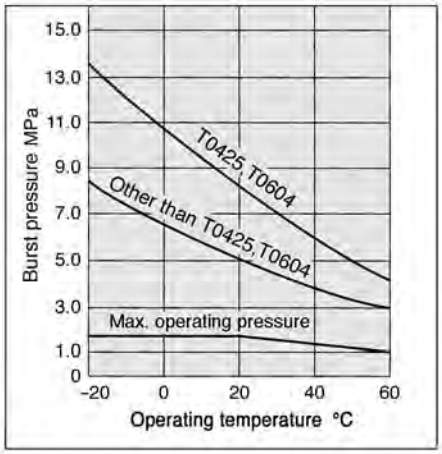
Length per roll

Symbol	Length
20	20 m roll
100	100 m roll (Black and White only)

Colour indication

Symbol	Colour
B	Black
W	White
R	Red
BU	Blue
Y	Yellow
G	Green

Burst Pressure Characteristics and Operating Pressure Curve



Series

● –20 m roll □ –100 m roll (T1613 is on reel.)

	Tubing								
	Metric size								
Model	TIA01	T0425	T0403	T0604	T0645	T0806	T1075	T1209	T1613
O.D. mm	3.2	4	4	6	6	8	10	12	16
I.D. mm	2.2	2.5	3	4	4.5	6	7.5	9	13
Black (B)	●	●	●	●	●	●	●	●	●
White (W)	●	●	●	●	●	●	●	●	●
Red (R)		●		●		●	●	●	
Blue (BU)		●		●		●	●	●	
Yellow (Y)		●		●		●	●	●	
Green (G)		●		●		●	●		

Specifications

Fluid	Air, Water								
Max. operating pressure (at 20°C)	1.5 MPa								
Burst pressure	Refer to burst pressure characteristics curve.								
Min. bending radius mm	15	13	25	24	36	48	60	75	100
Operating temperature	–20 to 60°C, Water: 0 to 40°C (No freezing)								
Material	Nylon 12								

20 m Roll

O.D.	I.D.	Colour (Colour symbol)	Model
3.2	2.2	Black (B)	TIA01 Colour symbol -20
		White (W)	
4	2.5	Black (B)	T0425 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
	3	Black (B)	T0403 Colour symbol -20
		White (W)	
6	4	Black (B)	T0604 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
	4.5	Black (B)	T0645 Colour symbol -20
		White (W)	
8	6	Black (B)	T0806 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
10	7.5	Black (B)	T1075 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
12	9	Black (B)	T1209 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
16	13	Black (B)	T1613 Colour symbol -20
		White (W)	

100 m Roll

O.D.	I.D.	Colour (Colour symbol)	Model
4	2.5	Black (B)	T0425 Colour symbol -100
		White (W)	
6	4	Black (B)	T0604 Colour symbol -100
		White (W)	
	4.5	Black (B)	T0645 Colour symbol -100
8	6	Black (B)	T0806 Colour symbol -100
		White (W)	
10	7.5	Black (B)	T1075 Colour symbol -100
		White (W)	
12	9	Black (B)	T1209 Colour symbol -100
		White (W)	
16	13	Black (B)	T1613 Colour symbol -100*
		White (W)	

* T1613 is on reel.

Made to Order

Made to Order

Reel X3

O.D.	I.D.	Model	Length per roll
3.2	2.2	TIA01 Colour symbol -100-X3	100 m
4	2.5	T0425 Colour symbol -100-X3	100 m
		T0425 Colour symbol -500-X3	500 m
4	3	T0403 Colour symbol -100-X3	100 m
6	4	T0604 Colour symbol -100-X3	100 m
		T0604 Colour symbol -500-X3	500 m
8	6	T0806 Colour symbol -100-X3	100 m
		T0806 Colour symbol -200-X3	200 m
10	7.5	T1075 Colour symbol -100-X3	100 m
		T1075 Colour symbol -150-X3	150 m
12	9	T1209 Colour symbol -100-X3	100 m

Colour symbol -B (Black), W (White), R (Red), BU (Blue), Y (Yellow), G (Green)

Soft Nylon Tubing

Series TS

■Tubing size: **Metric Size**

Pliable

How to Order

TS 06 04 W – 100

- **TubingO.D.**
- **Tubing I.D.**

Note 1) Tubing size of **TISA01** is 3.2 mm (O.D.) and 2.2 mm (I.D.).

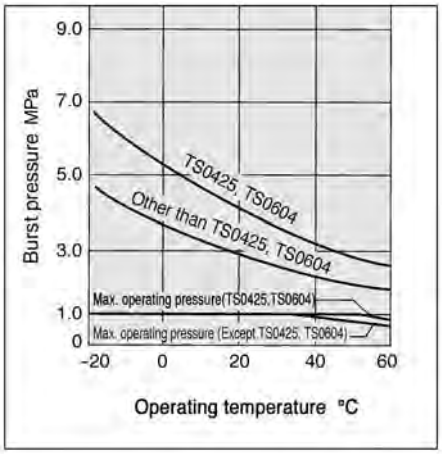
Length per roll

Symbol	Length
20	20 m roll
100	100 m roll (Black and White only)

Colour indication

Symbol	Colour
B	Black
W	White
R	Red
BU	Blue
Y	Yellow
G	Green

Burst Pressure Characteristics and Operating Pressure Curve



Series

●–20 m roll □–100 m roll (TS1612 is on reel.)

	Tubing						
	Metric size						
Model	TISA01	TS0425	TS0604	TS0806	TS1075	TS1209	TS1612
O.D. mm	3.2	4	6	8	10	12	16
I.D. mm	2.2	2.5	4	6	7.5	9	12
Black (B)	●	●	●	●	●	●	●
White (W)	●	●	●	●	●	●	●
Red (R)		●	●	●	●	●	
Blue (BU)		●	●	●	●	●	
Yellow (Y)		●	●	●	●	●	
Green (G)		●	●	●	●	●	

Specifications

Fluid	Air						
Max. operating pressure (at 20°C)	1.0 MPa						
Burst pressure	Refer to burst pressure characteristics curve.						
Min. bending radius mm	12	12	15	23	27	31	60
Operating temperature	–20 to 60°C (No freezing)						
Material	Nylon 11, Nylon 12						

20 m Roll

O.D.	I.D.	Color (Color symbol)	Model
3.2	2.2	Black (B)	TISA01 Colour symbol -20
		White (W)	
4	2.5	Black (B)	TS0425 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
6	4	Black (B)	TS0604 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
8	6	Black (B)	TS0806 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
10	7.5	Black (B)	TS1075 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
12	9	Black (B)	TS1209 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
16	12	Black (B)	TS1612 Colour symbol -20
		White (W)	

100 m Roll

O.D.	I.D.	Color (Color symbol)	Model
4	2.5	Black (B)	TS0425 Colour symbol -100
		White (W)	
6	4	Black (B)	TS0604 Colour symbol -100
		White (W)	
8	6	Black (B)	TS0806 Colour symbol -100
		White (W)	
10	7.5	Black (B)	TS1075 Colour symbol -100
		White (W)	
12	9	Black (B)	TS1209 Colour symbol -100
		White (W)	
16	12	Black (B)	TS1612 Colour symbol -100
		White (W)	

∗ TS1612 is on reel.

Made to Order

Made to Order

Reel X3

O.D.	I.D.	Model	Length per roll
3.2	2.2	TISA01 Colour symbol -100-X3	100 m
4	2.5	TS0425 Colour symbol -100-X3	100 m
		TS0425 Colour symbol -500-X3	500 m
6	4	TS0604 Colour symbol -100-X3	100 m
		TS0604 Colour symbol -500-X3	500 m
8	6	TS0806 Colour symbol -100-X3	100 m
		TS0806 Colour symbol -200-X3	200 m
10	7.5	TS1075 Colour symbol -100-X3	100 m
		TS1075 Colour symbol -150-X3	150 m
12	9	TS1209 Colour symbol -100-X3	100 m

Colour symbol -B (Black), W (White), R (Red), BU (Blue), Y (Yellow), G (Green)

Hard Polyurethane Tubing

Series TUH

■Tubing size: **Metric Size**

Standard type

Effective sectional area increased by approx. 44% at the maximum.
TUH / Standard type

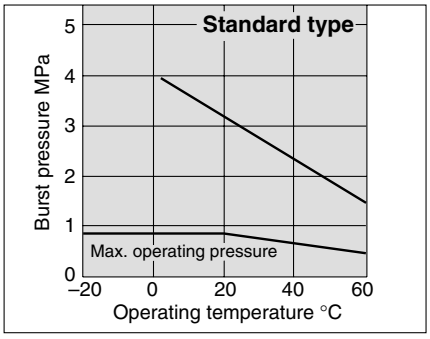
(Compared with polyurethane tubing TU0805: O.D. 8 mm , length 1 m)

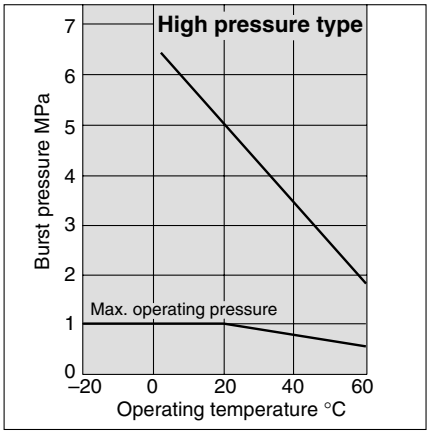
High pressure type

Operating pressure 1.0 MPa (at 20°C)
TUH / High pressure type

(Has the same operating pressure as series TS soft nylon tubing, and a bending strength equivalent to that of series TU polyurethane tubing.)

Burst Pressure Characteristics and Operating Pressure Curve





How to Order

TUH 06 04 B – 20

- 06: Tubing O.D.
- 04: Tubing I.D.
- B: Colour indication

Symbol	Colour
B	Black
W	Opal
BU	Blue
N	Translucent

- 20: Length per roll

Symbol	Length
20	20 m roll
100	100 m roll

Series

● –20 m roll □ –100 m roll

		Tubing				
		Metric size				
Standard	Model	TUH0428	TUH0644	TUH0858	TUH1073	TUH1288
	O.D. mm	4	6	8	10	12
	I.D. mm	2.8	4.4	5.8	7.3	8.8
High pressure	Model	TUH0425	TUH0604	TUH0805	TUH1065	TUH1208
	O.D. mm	4	6	8	10	12
	I.D. mm	2.5	4	5	6.5	8
Black (B)		●	●	●	●	●
Opal (W)		●	●	●	●	●
Blue (BU)		●	●	●	●	●
Translucent (N)		●	●	●	●	●

Specifications

Fluid		Air Note 1)				
Max. operating pressure (at 20°C)	Standard type	0.8 MPa Note 2)				
	High pressure type	1.0 MPa Note 2)				
Min. bending radius mm	Standard type	10	18	24	30	36
	High pressure type	10	15	20	27	35
Burst pressure		Refer to burst pressure characteristics curve.				
Operating temperature		–20 to 60°C (No freezing)				
Material		Polyurethane				

Note 1) Consult SMC regarding other fluids.
Water cannot be used because of occurrence of hydrolysis.
Note 2) The maximum operating pressure is the value at 20°C. Refer to the burst pressure characteristics and operating pressure curve for other temperatures. Abnormal temperature rises due to adiabatic compression can cause tubing to burst.

20 m Roll

Standard Type

O.D.	I.D.	Colour (Colour symbol)	Model
4	2.8	Black (B) / Opal (W) / Blue (BU) / Translucent (N)	TUH0428 Colour symbol -20
6	4.4	Black (B) / Opal (W) / Blue (BU) / Translucent (N)	TUH0644 Colour symbol -20
8	5.8	Black (B) / Opal (W) / Blue (BU) / Translucent (N)	TUH0858 Colour symbol -20
10	7.3	Black (B) / Opal (W) / Blue (BU) / Translucent (N)	TUH1073 Colour symbol -20
12	8.8	Black (B) / Opal (W) / Blue (BU) / Translucent (N)	TUH1288 Colour symbol -20

High Pressure Type

O.D.	I.D.	Colour (Colour symbol)	Model
4	2.5	Black (B) / Opal (W) / Blue (BU) / Translucent (N)	TUH0425 Colour symbol -20
6	4	Black (B) / Opal (W) / Blue (BU) / Translucent (N)	TUH0604 Colour symbol -20
8	5	Black (B) / Opal (W) / Blue (BU) / Translucent (N)	TUH0805 Colour symbol -20
10	6.5	Black (B) / Opal (W) / Blue (BU) / Translucent (N)	TUH1065 Colour symbol -20
12	8	Black (B) / Opal (W) / Blue (BU) / Translucent (N)	TUH1208 Colour symbol -20

100 m Roll

O.D.	I.D.	Colour (Colour symbol)	Model
4	2.8	Black (B) / Opal (W) / Blue (BU) / Translucent (N)	TUH0428 Colour symbol -100
6	4.4	Black (B) / Opal (W) / Blue (BU) / Translucent (N)	TUH0644 Colour symbol -100
8	5.8	Black (B) / Opal (W) / Blue (BU) / Translucent (N)	TUH0858 Colour symbol -100
10	7.3	Black (B) / Opal (W) / Blue (BU) / Translucent (N)	TUH1073 Colour symbol -100
12	8.8	Black (B) / Opal (W) / Blue (BU) / Translucent (N)	TUH1288 Colour symbol -100

O.D.	I.D.	Colour (Colour symbol)	Model
4	2.5	Black (B) / Opal (W) / Blue (BU) / Translucent (N)	TUH0425 Colour symbol -100
6	4	Black (B) / Opal (W) / Blue (BU) / Translucent (N)	TUH0604 Colour symbol -100
8	5	Black (B) / Opal (W) / Blue (BU) / Translucent (N)	TUH0805 Colour symbol -100
10	6.5	Black (B) / Opal (W) / Blue (BU) / Translucent (N)	TUH1065 Colour symbol -100
12	8	Black (B) / Opal (W) / Blue (BU) / Translucent (N)	TUH1208 Colour symbol -100

Wear resistant Tubing

Series TUZ

■Tubing size: **Metric Size**

Wear Resistant

Abrasion: Approx. 1/3

(Compared with SMC polyurethane tubing TU series)

Description	Maximum abrasion (mm) After 10 million cycles
Wear resistant tubing TUZ series	0.16
Polyurethane tubing TU series	0.46

Note) Comparison based on the SMC's specific testing condition

How to Order

TUZ0425 BU – 20

Tubing model

Model	O.D. x I.D. (mm)
TUZ0425	4 x 2.5
TUZ0604	6 x 4
TUZ0805	8 x 5
TUZ1065	10 x 6.5
TUZ1208	12 x 8

Colour

Symbol	Colour
B	Black
W	White
R	Red
BU	Blue
Y	Yellow
G	Green

Length per roll

Symbol	Length
20	20 m roll
100	100 m roll

Model

● — 20 m roll □ — 100 m roll

Model	TUZ0425	TUZ0604	TUZ0805	TUZ1065	TUZ1208
Tubing O.D. (mm)	4	6	8	10	12
Tubing I.D. (mm)	2.5	4	5	6.5	8
Black (B)	●	●	●	●	●
White (W)	●	●	●	●	●
Red (R)	●	●	●	●	●
Blue (BU)	●	●	●	●	●
Yellow (Y)	●	●	●	●	●
Green (G)	●	●	●	●	●

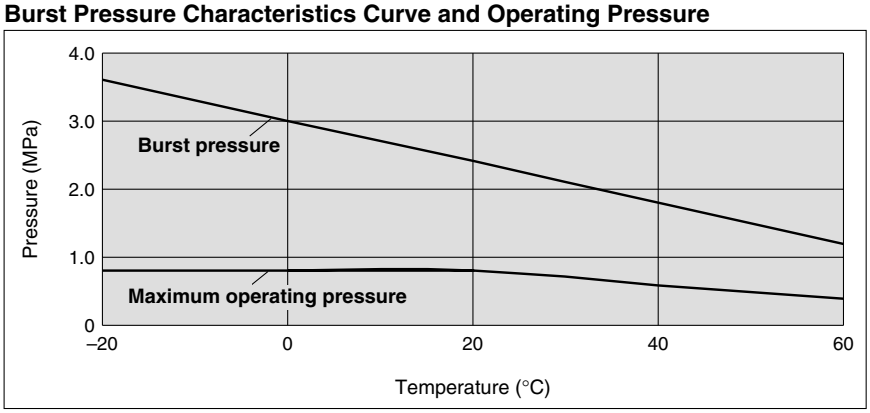
Specifications

Fluid		Air				
Applicable fittings		One-touch fittings KQ/KJ series, Insert fittings KF series, Stainless steel 316 insert fittings KFG series, Miniature fittings M/MS series (hose nipple type)				
Max. operating pressure	20°C	0.8 MPa				
	60°C	0.4 MPa				
Burst pressure		Refer to the burst pressure characteristics curve.				
Min. bending radius (mm)		10	15	20	27	35
Operating temperature		–20 to +60°C				
Material		Special polyurethane				

Note 1) The minimum bending radius means the value measured by the method shown in the figure at the right at the temperature of 20°C when the tube is bent. The minimum bending radius assumes static piping. If the tube is used in a moving part, provide extra length to the tube. Check the bending radius recommended by the flexible protection tube manufacturer to assure that the tube is used in the flexible protection tube.

Note 2) Not clear, but opaque due to material.

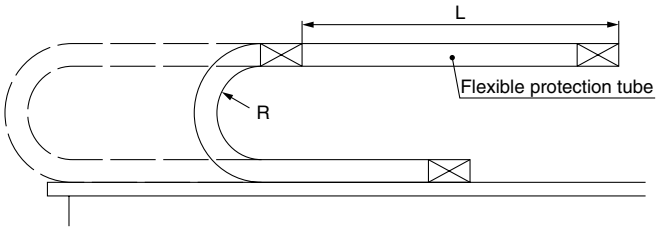
Burst Pressure Characteristics Curve and Operating Pressure



Reference Data: Abrasion due to Flexible Protection Tube

Test Conditions

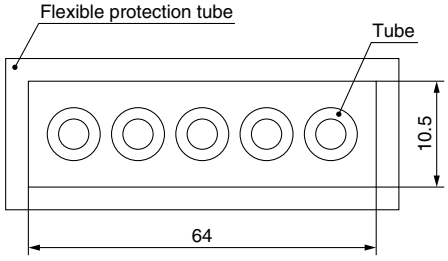
Test tube	TUZ0604, TU0604
Quantity of tube tested	5 pcs. for each
Operating speed	1500 mm/sec
Operating frequency	90 c.p.m
Stroke L	500 mm
Bending radius R	28 mm
Material of flexible protection tube	Special engineering plastic
Tube tie	Not used



Test Results

Model	Maximum abrasion after 10 million cycles (mm)
TUZ0604	0.16
TU0604	0.46

As this test was an acceleration test, the tube bending radius was out of the flexible protection tube manufacturer's allowable range.
When the flexible protection tube is used in the actual application, check the manufacturer's catalogue specifications.
The values in the table above are representative values, and not guaranteed.



Tube dimensions inside the flexible protection tube

Made to Order

Flat type of the TUZ series — TFU-X73

The identification line is not shown. Colour combinations are also available.
Please contact SMC for detailed specifications, dimensions, and delivery.

How to Order

TFU0425 BU – 2 – 10 – X73

Colour

Symbol	Colour
B	Black
W	White
R	Red
BU	Blue
Y	Yellow
G	Green

Special polyurethane

Length per roll

Number of cores

Tubing model

Model	O.D. x I.D. (mm)
TFU0425	4 x 2.5
TFU0604	6 x 4
TFU0805	8 x 5
TFU1065	10 x 6.5
TFU1208	12 x 8

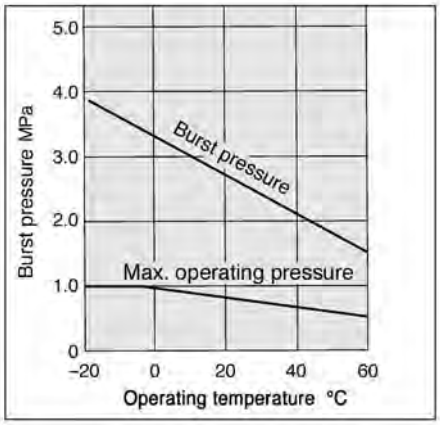
Polyurethane Coil Tubing

Series TCU

■Tubing size: **Metric Size**

For compact piping.

Burst Pressure Characteristics and Operating Pressure Curve



Specifications

Model	TCU 0425B-1	TCU 0425B-2	TCU 0425B-3	TCU 0604B-1	TCU 0604B-2	TCU 0604B-3	TCU 0805B-1
Number of rolls	1	2	3	1	2	3	1
Tubing O.D. mm	4			6			8
Tubing I.D. mm	2.5			4			5
Fluid	Air Note 1)						
Max. operating pressure (at 20°C) Note 2)	0.8 MPa						
Burst pressure	Refer to burst pressure characteristics curve.						
Operating temperature	−20 to 60°C (No freezing)						
Material	Polyurethane						
Colour	Black						

Note 1) Consult SMC regarding other fluids.
Note 2) Refer to the burst pressure characteristics and operating pressure curve for other temperatures. Avoid abnormal temperature rises due to adiabatic compression.

Coil Tubing

O.D.	I.D.	Colour	Number of rolls	Max. operating length m	Model
4	2.5	**Black (B)**	1	1.5	**TCU0425B-1**
		Black (B)	2		**TCU0425B-2**
		Black (B)	3	1	**TCU0425B-3**
6	4	**Black (B)**	1	2	**TCU0604B-1**
		Black (B)	2	1.5	**TCU0604B-2**
		Black (B)	3	1	**TCU0604B-3**
8	5	**Black (B)**	1	2	**TCU0805B-1**

Made to Order

Made to Order

Change in the Number of Coil Windings and Colour — X6

O.D.	I.D.	Length per roll	Coil windingst	Model
4	2.5	1	3 to 90	TCU0425 Colour symbol -1- Coil windings -X6
		2	3 to 90	TCU0425 Colour symbol -2- Coil windings -X6
		3	3 to 63	TCU0425 Colour symbol -3- Coil windings -X6
6	4	1	3 to 90	TCU0604 Colour symbol -1- Coil windings -X6
		2	3 to 66	TCU0604 Colour symbol -2- Coil windings -X6
		3	3 to 44	TCU0604 Colour symbol -3- Coil windings -X6
8	5	1	3 to 90	TCU0805 Colour symbol -1- Coil windings -X6
		2	3 to 40	TCU0805 Colour symbol -2- Coil windings -X6
10	6.5	1	3 to 45	TCU1065 Colour symbol -1- Coil windings -X6
		2	3 to 35	TCU1065 Colour symbol -2- Coil windings -X6
12	8	1	3 to 35	TCU1208 Colour symbol -1- Coil windings -X6
		2	3 to 30	TCU1208 Colour symbol -2- Coil windings -X6

Colour symbol —B (Black), W (White), R (Red), BU (Blue), Y (Yellow), G (Green), C (Transparent), YR (Orange)

Clean Series — 10-

(Example) 10-TCU0425B-1

SMC

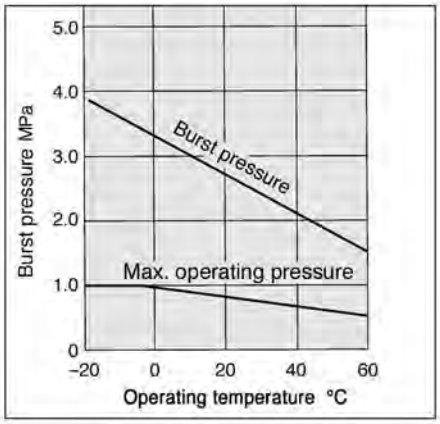
Polyurethane Flat Tubing

Series TFU

■Tubing size: **Metric Size**

For compact piping.

Burst Pressure Characteristics and Operating Pressure Curve



How to Order

TFU 04 25 B – 2

- 04: Tubing O.D.
- 25: Tubing I.D.
- B: Colour indication

Symbol	Colour
B	Black

- 2: Number of rolls

Symbol	Number of rolls
2	2
3	3

Specifications

Model	TFU 0425B-2	TFU 0425B-3	TFU 0604B-2	TFU 0604B-3	TFU 0805B-2	TFU 0805B-3
Length per roll	2	3	2	3	2	3
Tubing O.D. mm	4		6		8	
Tubing I.D. mm	2.5		4		5	
Fluid	Air Note 1)					
Max. operating pressure (at 20°C) Note 2)	0.8 MPa					
Burst pressure	Refer to burst pressure characteristics curve.					
Operating temperature	–20 to 60°C (No freezing)					
Material	Polyurethane					
Colour	Black					
Min. bending radius mm	10		15		20	
Tubing length per roll (m)	10					

Note 1) Consult SMC regarding other fluids.
Note 2) Refer to the burst pressure characteristics and operating pressure curve for other temperatures. Avoid abnormal temperature rises due to adiabatic compression.

10 m Roll

O.D.	I.D.	Colour (Colour symbol)	Number of rolls	Model
4	2.5	Black (B)	2	TFU0425B-2
		Black (B)	3	TFU0425B-3
6	4	Black (B)	2	TFU0604B-2
		Black (B)	3	TFU0604B-3
8	5	Black (B)	2	TFU0805B-2
		Black (B)	3	TFU0805B-3

Made to Order

Made to Order

Change in the Number of Rolls and Colour — X4

10 m roll

O.D.	I.D.	Number	model
4	2.5	2 to 8	TFU0425 Colour symbol - Length per roll -10-X4
6	4	2 to 8	TFU0604 Colour symbol - Length per roll -10-X4
8	5	2 to 6	TFU0805 Colour symbol - Length per roll -10-X4
10	6.5	2 to 3	TFU1065 Colour symbol - Length per roll -10-X4
12	8	2 to 3	TFU1208 Colour symbol - Length per roll -10-X4

Colour symbol—B (Black), W (White), R (Red), BU (Blue), Y (Yellow), G (Green), C (Transparent), YR (Orange)

Clean Series — 10-

(Example) 10-TFU0425B-2

Reel — X3

50 m roll

O.D.	I.D.	Number	Model
4	2.5	2	TFU0425 Colour symbol -2-50-X3
		3	TFU0425 Colour symbol -3-50-X3
6	4	2	TFU0604 Colour symbol -2-50-X3
		3	TFU0604 Colour symbol -3-50-X3
8	5	2	TFU0805 Colour symbol -2-50-X3
		3	TFU0805 Colour symbol -3-50-X3

Colour symbol—B (Black), W (White), R (Red), BU (Blue), Y (Yellow), G (Green), C (Transparent), YR (Orange)

100 m roll

O.D.	I.D.	Number	Model
4	2.5	2	TFU0425 Colour symbo -2-100-X3
		3	TFU0425 Colour symbo -3-100-X3
6	4	2	TFU0604 Colour symbo -2-100-X3
		3	TFU0604 Colour symbo -3-100-X3
8	5	2	TFU0805 Colour symbo -2-100-X3

Colour symbo—B (Black), W (White), R (Red), BU (Blue), Y (Yellow), G (Green), C (Transparent), YR (Orange)

Clean Tubing: Polyolefin Tubing

Series TPH

■Tubing size: **Metric Size**

Clean

⚠Caution

Series TP has less resistance to lithium grease and is not suitable for piping of pneumatic equipment using lithium grease.

How to Order

TPH 06 04 B — 20

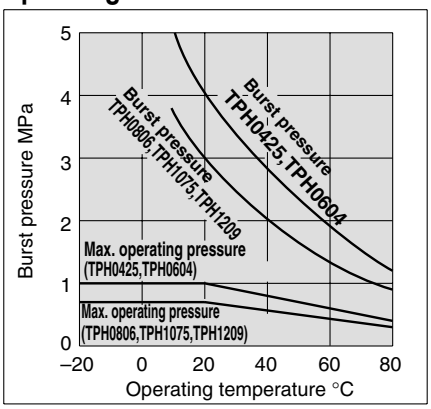
- 06: Tubing O.D.
- 04: Tubing I.D.
- B: Colour indication

Symbol	Colour
W	White
B	Black
R	Red
BU	Blue
Y	Yellow
G	Green

- 20: Length per roll

Symbol	Length
20	20 m roll
100	100 m roll

Burst Pressure Characteristics and Operating Pressure Curve



Series

● –20 m roll □ –100 m roll

	Tubing				
	Metric size				
Model	TPH0425	TPH0604	TPH0806	TPH1075	TPH1209
O.D. mm	4	6	8	10	12
I.D. mm	2.5	4	6	7.5	9
White (W)	●	●	●	●	●
Black (B)	●	●	●	●	●
Red (R)	●	●	●	●	●
Blue (BU)	●	●	●	●	●
Yellow (Y)	●	●	●	●	●
Green (G)	●	●	●	●	●

Specifications

Fluid	Air, Nitrogen gas, Water (Deionized water) Note 1)				
Max. operating pressure (at 20°C) Note 2)	1.0 MPa		0.7 MPa		
Min. bending radius mm	15	25	35	45	55
Burst pressure	Refer to burst pressure characteristics curve.				
Operating temperature	–20 to 80°C, Water: 5 to 80°C (No freezing)				
Material	Polyolefine resin				

Note 1) Contact SMC regarding other fluids.
Note 2) The maximum operating pressure is the value at 20°C.
Refer to the burst pressure characteristics and operating pressure curve for other temperatures.
Abnormal temperature rises due to adiabatic compression can cause tubing to burst.
Note 3) The minimum bending radius is measured at 20°C based on the method shown in the figure at the left.
At higher temperatures, breakage or flattening may occur even with a value larger than the minimum bending radius.

20 m Roll

O.D.	I.D.	Colour (Colour symbol)	Model
4	2.5	White (W)	TPH0425 Colour symbol -20
		Black (B)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
6	4	White (W)	TPH0604 Colour symbol -20
		Black (B)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
8	6	White (W)	TPH0806 Colour symbol -20
		Black (B)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
10	7.5	White (W)	TPH1075 Colour symbol -20
		Black (B)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
12	9	White (W)	TPH1209 Colour symbol -20
		Black (B)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	

100 m Roll

O.D.	I.D.	Colour (Colour symbol)	Model
4	2.5	White (W)	TPH0425 Colour symbol -100
		Black (B)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
6	4	White (W)	TPH0604 Colour symbol -100
		Black (B)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
8	6	White (W)	TPH0806 Colour symbol -100
		Black (B)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
10	7.5	White (W)	TPH1075 Colour symbol -100
		Black (B)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
12	9	White (W)	TPH1209 Colour symbol -100
		Black (B)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	

Clean Tubing: Soft Polyolefine Tubing

Series TPS

■Tubing size: **Metric Size**

Clean

⚠Caution

Series TP has less resistance to lithium grease and is not suitable for piping of pneumatic equipment using lithium grease.

How to Order

TPS 06 04 B – 20

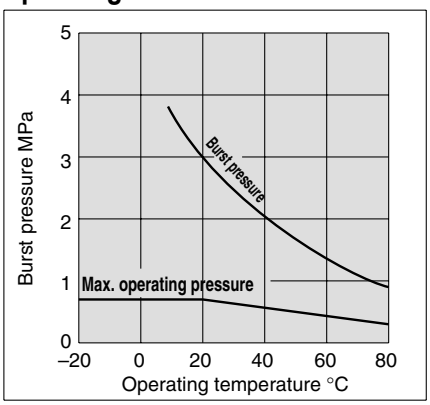
- Tubing O.D.
- Tubing I.D.
- Colour indication

Symbol	Colour
W	White
B	Black
R	Red
BU	Blue
Y	Yellow
G	Green

- Length per roll

Symbol	Length
20	20 m roll
100	100 m roll

Burst Pressure Characteristics and Operating Pressure Curve



Series

● –20 m roll □ –100 m roll

	Tubing				
	Metric size				
Model	TPS0425	TPS0604	TPS0805	TPS1065	TPS1208
O.D. mm	4	6	8	10	12
I.D. mm	2.5	4	5	6.5	8
White (W)	●	●	●	●	●
Black (B)	●	●	●	●	●
Red (R)	●	●	●	●	●
Blue (BU)	●	●	●	●	●
Yellow (Y)	●	●	●	●	●
Green (G)	●	●	●	●	●

Specifications

Fluid	Air, Nitrogen gas (Deionized water) Note 1)				
Max. operating pressure (at 20°C) Note 2)	0.7 MPa				
Min. bending radius mm	10	20	25	30	40
Burst pressure	Refer to burst pressure characteristics curve.				
Operating temperature	–20 to 80°C, Water: 5 to 80°C (No freezing)				
Material	Polyolefine resin				

Note 1) Contact SMC regarding other fluids.
Note 2) The maximum operating pressure is the value at 20°C.
Refer to the burst pressure characteristics and operating pressure curve for other temperatures.
Abnormal temperature rises due to adiabatic compression can cause tubing to burst.
Note 3) The minimum bending radius is measured at temperature of 20°C and O.D. variable rate 10% or less.
At higher temperatures, breakage or flattening may occur even with a value larger than the minimum bending radius.

20 m Roll

O.D.	I.D.	Colour (Colour symbol)	Model
4	2.5	White (W)	TPS0425 Colour symbol -20
		Black (B)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
6	4	White (W)	TPS0604 Colour symbol -20
		Black (B)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
8	5	White (W)	TPS0805 Colour symbol -20
		Black (B)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
10	6.5	White (W)	TPS1065 Colour symbol -20
		Black (B)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
12	8	White (W)	TPS1208 Colour symbol -20
		Black (B)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	

100 m Roll

O.D.	I.D.	Colour (Colour symbol)	Model
4	2.5	White (W)	TPS0425 Colour symbol -100
		Black (B)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
6	4	White (W)	TPS0604 Colour symbol -100
		Black (B)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
8	5	White (W)	TPS0805 Colour symbol -100
		Black (B)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
10	6.5	White (W)	TPS1065 Colour symbol -100
		Black (B)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
12	8	White (W)	TPS1208 Colour symbol -100
		Black (B)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	

High Purity Fluoropolymer Tubing

Series TL/TIL

■Tubing size: **Metric Size / Inch Size**

Corrosion Resistant **Heat Resistant** **Clean**

Material: Super PFA

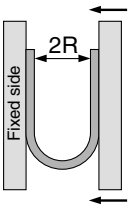
Note 1) • The maximum operating pressure is the value at 20°C. For other temperatures, calculate from the burst pressure drop coefficient. Furthermore, an abnormal temperature increase due to adiabatic compression can cause tubing to burst. To operate at a temperature other than 20°C, the operating pressure must be no more than the value calculated using the equation below: When the value (calculated using the formula below) exceeds 1 MPa, the Max. operating pressure is 1 MPa.

(Max. operating pressure) = 1/4 x (burst pressure drop coefficient) x (burst pressure at 20°C)

• When using a fluid in liquid form, the surge pressure must be no more than the maximum operating pressure. A surge pressure higher than the maximum operating pressure can cause breakage of the fitting or bursting of the tubing.

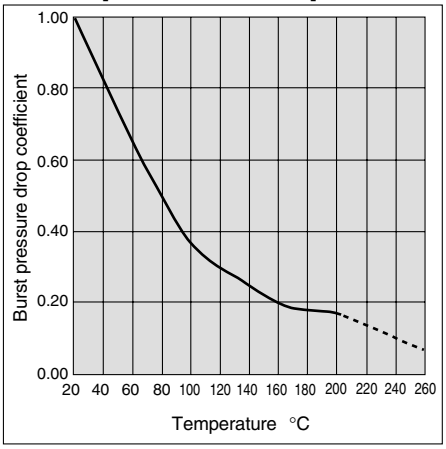
Note 2) The minimum bending radius is measured using the method shown in the figure at the below.

Note 3) It is connectable with LQ Series (3/4" size). As for other commercially available products, there are some cases it is not able to connect due to tolerance of dimensions.



At a temperature of 20°C bend the tubing into a U shape. Then with one side fixed, gradually close the other side and measure 2R at the point where the tubing folds or flattens, etc.

Burst pressure drop curve



Series and Specifications

		Series TL (Metric sizes)						Series TIL (Inch sizes)							
Tubing model		**TL0403**	**TL0604**	**TL0806**	**TL1008**	**TL1210**	**TL1916**	**TIL01**	**TILB01**	**TIL05**	**TIL07**	**TIL11**	**TIL13**	**TIL19**	**TIL25**
Nominal diameter		—	—	—	—	—	—	1/8"	1/8"	3/16"	1/4"	3/8"	1/2"	3/4"	1"
O.D. x I.D. (mm)		ø4 x ø3	ø6 x ø4	ø8 x ø6	ø10 x ø8	ø12 x ø10	ø19 x ø16	1/8" x 0.086"	1/8" x 1/16"	3/16" x 1/8"	1/4" x 5/32"	3/8" x 1/4"	1/2" x 3/8"	3/4" x 5/8"	1" x 7/8"
O.D. (mm)	Basic diameter	4	6	8	10	12	19	3.18	3.18	4.75	6.35	9.53	12.7	19.05	25.4
	Tolerance	±0.1				+0.2 −0.1		±0.1					+0.2 −0.1		
Thickness (mm)	Basic diameter	0.5	1				1.5	0.5	0.8	0.8	1.2	1.6			
	Tolerance	±0.05	±0.1				±0.15	±0.05	±0.08	±0.08	±0.12	±0.15			
Bundle	10 m	—	—	—	●	●	●	—	—	—	—	●	●	—	—
	20 m	●	●	●	●	●	●	●	—	●	●	●	●	●	●
	50 m	●	●	●	●	●	●	●	—	●	●	●	●	●	●
	100 m	●	●	●	●	●	●	●	—	●	●	●	●	●	—
	50 Ft. (16 m)	—	—	—	—	—	—	●	●	●	●	●	●	●	●
	100 Ft. (33 m)	—	—	—	—	—	—	●	●	●	●	●	●	●	●
Straight pipe	2 m	●	●	●	●	●	●	●	—	●	●	●	●	●	●
Colour		Translucent (colour of material)													
Applicable fluid		Refer to the applicable fluid in the separate catalog.													
Max. operating pressure (at 20°C) Note 1)		1.0 MPa			0.9 MPa	0.7 MPa	0.6 MPa	1.0 MPa					0.7 MPa	0.5 MPa	
Burst pressure (at 20°C)		4.9 MPa	6.9 MPa	4.7 MPa	3.6 MPa	2.9 MPa	2.6 MPa	6.4 MPa	9.9 MPa	6.7 MPa	7.9 MPa	6.7 MPa	4.6 MPa	2.8 MPa	2.0 MPa
Min. bending radius (mm) Note 2)		20		40	65	110	160	12	6	20		30	60	160	290
Max. operating temperature (Fixed use)		260°C													
Material		Super PFA													

How to Order

Metric sizes **TL0604** – **20**

Inch sizes **TIL01** – **20**

Tubing Model

Length

Applicable to both metric and inch size

Symbol	Type	Length
10	Roll	10 m
20		20 m
50		50 m
100		100 m
2S	Straight	2 m

Applicable to inch size only

Symbol	Type	Length
16	Roll	50 Ft. (16 m)
33		100 Ft. (33 m)

Please refer to the "Series and Specifications" above, as the tubing length differs dependant on each size.

Eluting fluorine ion amount (μg/g)

Note 4)

Type	Fluorine ion
Eluting amount	0.1 or less

A 15 g piece of fluororesin tubing is cut off, washed in deionised water and immersed in 15 ml of 25% methyl alcohol extract at room temperature for 24 hours. Then the extract is diluted with deionised water to be subjected to a quantitative analysis of fluorine ions.

Eluting metal ion amount (ng/cm²)

Note 4)

Type	Al	Fe	Ni	Na	Ca
Eluting amount	4.5	0.3	0.2	7.1	1.3

The interior of the fluororesin tubing is washed with super deionised water. Approximately 20g of super high purity hydrofluoric acid (48%) is measured and injected into the tubing. The interior wall of the tubing is immersed at normal temperature for one week with both ends of the tubing plugged. Then the extract was diluted with super deionized water to be subjected to a quantitative analysis on Al, Fe, Ni, Na and Ca by the stripping method.

Note 4) Figures shown in the tables are representative values, not guaranteed values.

SMC

Metric Sizes

10 m Roll

O.D.	I.D.	Model
10	8	TL1008-10
12	10	TL1210-10
19	16	TL1916-10

20 m Roll

O.D.	I.D.	Model
4	3	TL0403-20
6	4	TL0604-20
8	6	TL0806-20
10	8	TL1008-20
12	10	TL1210-20
19	16	TL1916-20

50 m Roll

O.D.	I.D.	Model
4	3	TL0403-50
6	4	TL0604-50
8	6	TL0806-50
10	8	TL1008-50
12	10	TL1210-50
19	16	TL1916-50

100 m Roll

O.D.	I.D.	Model
4	3	TL0403-100
6	4	TL0604-100
8	6	TL0806-100
10	8	TL1008-100
12	10	TL1210-100
19	16	TL1916-100

Straight type 2 m

O.D.	I.D.	Model
4	3	TL0403-2S
6	4	TL0604-2S
8	6	TL0806-2S
10	8	TL1008-2S
12	10	TL1210-2S
19	16	TL1916-2S

Inch Sizes

10 m Roll

O.D.	I.D.	Model
3/8"	1/4"	TIL11-10
1/2"	3/8"	TIL13-10

20 m Roll

O.D.	I.D.	Model
1/8"	0.086"	TIL01-20
3/16"	1/8"	TIL05-20
1/4"	5/32"	TIL07-20
3/8"	1/4"	TIL11-20
1/2"	3/8"	TIL13-20
3/4"	5/8"	TIL19-20
1"	7/8"	TIL25-20

50 m Roll

O.D.	I.D.	Model
1/8"	0.086"	TIL01-50
3/16"	1/8"	TIL05-50
1/4"	5/32"	TIL07-50
3/8"	1/4"	TIL11-50
1/2"	3/8"	TIL13-50
3/4"	5/8"	TIL19-50
1"	7/8"	TIL25-50

100 m Roll

O.D.	I.D.	Model
1/8"	0.086"	TIL01-100
3/16"	1/8"	TIL05-100
1/4"	5/32"	TIL07-100
3/8"	1/4"	TIL11-100
1/2"	3/8"	TIL13-100
3/4"	5/8"	TIL19-100

Straight type 2 m

O.D.	I.D.	Model
1/8"	0.086"	TIL01-2S
3/16"	1/8"	TIL05-2S
1/4"	5/32"	TIL07-2S
3/8"	1/4"	TIL11-2S
1/2"	3/8"	TIL13-2S
3/4"	5/8"	TIL19-2S
1"	7/8"	TIL25-2S

50 Ft. (16 m) Roll

O.D.	I.D.	Model
1/8"	0.086"	TIL01-16
1/8"	1/16"	TILB01-16
3/16"	1/8"	TIL05-16
1/4"	5/32"	TIL07-16
3/8"	1/4"	TIL11-16
1/2"	3/8"	TIL13-16
3/4"	5/8"	TIL19-16
1"	7/8"	TIL25-16

100 Ft. (33 m) Roll

O.D.	I.D.	Model
1/8"	0.086"	TIL01-33
1/8"	1/16"	TILB01-33
3/16"	1/8"	TIL05-33
1/4"	5/32"	TIL07-33
3/8"	1/4"	TIL11-33
1/2"	3/8"	TIL13-33
3/4"	5/8"	TIL19-33
1"	7/8"	TIL25-33

FEP Tubing (Fluoropolymer)

Series TH

■Tubing size: **Metric Size**

How to Order

Heat Resistant

Metric size

TH0604 N – 20

Indication of tubing model

Colour indication

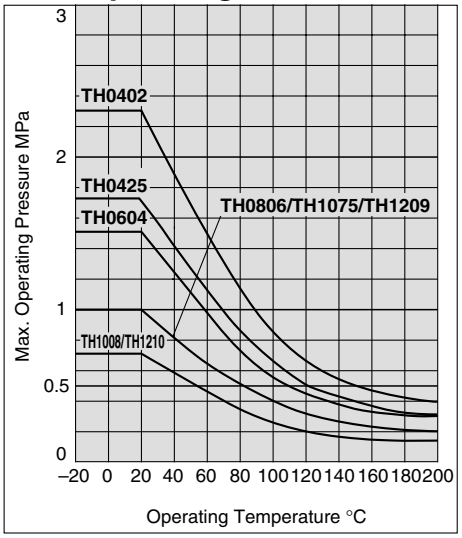
Symbol	Colour
N	Translucent
R	Red (Translucent)
BU	Blue (Translucent)
B	Black (Opaque)

Length per roll

Symbol	Roll size
20	20 m roll
100 Note)	100 m roll

Note) 100 m roll is available with translucent (colour indication: N) only.

Max. Operating Pressure



Note) The maximum operating pressure varies dependant on the I.D. bore size even if the O.D. is the same.

Series

● –20 m roll □ –100 m roll

	Metric size							
Model	TH0402	TH0425	TH0604	TH0806	TH1075	TH1008	TH1209	TH1210
Tubing O.D. (mm)	4	4	6	8	10	10	12	12
Tubing I.D. (mm)	2	2.5	4	6	7.5	8	9	10
Translucent (N)	●	●	●	●	●	●	●	●
Red (Translucent) (R)	●	●	●	●	●	●	●	●
Blue (Translucent) (BU)	●	●	●	●	●	●	●	●
Black (Opaque) (B)	●	●	●	●	●	●	●	●
Inch nominal size	5/32"			5/16"				

Specifications

Fluid		Air, Water Note 1), Inert gas						
Applicable fittings Note 2)		One-touch fittings: Series KQ, KJ Insert fittings: Series KF Fluoropolymer fittings: Series LQ Miniature fittings: Series M, MS (Hose nipple type)						
Max. operating pressure (MPa)	**20°C**	2.3	1.7	1.5	1	0.7	1	0.7
	100°C	0.85	0.6	0.55	0.4	0.25	0.4	0.25
	200°C	0.4	0.3	0.3	0.2	0.1	0.2	0.1
	Refer to below “Max. Operating Pressure.”							
Min. bending radius (mm)		15	20	35	60	95	100	130
Operating temperature		Air, Inert gas: –20 to 200°C Water: 0 to 100°C (No freezing)						
Material		FEP (Fluorinated Ethylene Propylene Resin)						

Note 1) When using a fluid in liquid form, the surge pressure must not exceed the maximum operating pressure. A surge pressure higher than the maximum operating pressure can cause breakage of the fittings, or rupture of the tubing.
Furthermore, an abnormal temperature increase due to adiabatic compression can also result in ruptured tubing.

Note 2) Do not use in locations where the FEP tubing will move.
Be sure to operate under the maximum operating pressure conditions using the lower maximum operating specification of either the tubing or fittings.
After long term use or under high temperatures, some fittings leakage may occur due to material deterioration with age. Perform periodic inspections, and if any leakage is detected, replace with a new product immediately.
(Refer to maintenance part of CAT.ES50-22, “FEP Tubing (Fluoropolymer)”.)
Refer to Best Pneumatics catlogue Vol. 15 for all other precautions.
For High Purity Fluoropolymer, refer to the precautions of CAT.ES70-17, “High Purity Fluoropolymer Fittings & Tubing.”

SMC

20 m Roll

O.D.	I.D.	Colour (Colour symbol)	Model
4	2	Translucent (N)	TH0402 Colour symbol -20
		Red (R)	
		Blue (BU)	
		Black (B)	
4	2.5	Translucent (N)	TH0425 Colour symbol -20
		Red (R)	
		Blue (BU)	
		Black (B)	
6	4	Translucent (N)	TH0604 Colour symbol -20
		Red (R)	
		Blue (BU)	
		Black (B)	
8	6	Translucent (N)	TH0806 Colour symbol -20
		Red (R)	
		Blue (BU)	
		Black (B)	
10	7.5	Translucent (N)	TH1075 Colour symbol -20
		Red (R)	
		Blue (BU)	
		Black (B)	
10	8	Translucent (N)	TH1008 Colour symbol -20
		Red (R)	
		Blue (BU)	
		Black (B)	
12	9	Translucent (N)	TH1209 Colour symbol -20
		Red (R)	
		Blue (BU)	
		Black (B)	
12	10	Translucent (N)	TH1210 Colour symbol -20
		Red (R)	
		Blue (BU)	
		Black (B)	

Colour symbol Red or Blue: Translucent
Colour symbol Black: Opaque

100 m Reel

O.D.	I.D.	Colour (Colour symbol)	Model
4	2	Translucent (N)	TH0402N-100
4	2.5		TH0425N-100
6	4		TH0604N-100
8	6		TH0806N-100
10	7.5		TH1075N-100
10	8		TH1008N-100
12	9		TH1209N-100
12	10		TH1210N-100

Antistatic Polyurethane Tubing

Series TAU

■Tubing size: **Metric Size**

For pneumatic piping system requiring antistatic measures.

Flexible tubing

Antistatic Measures

How to Order

TAU 10 65 B – 100

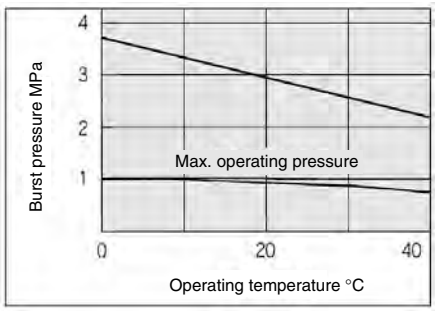
- 10: Tubing O.D.
- 65: Tubing I.D.
- B: Colour indication

Symbol	Colour
B	Black

- 100: Length per roll

Symbol	Length
20	20 m roll
100	100 m on reel

Burst Pressure Characteristics and Operating Pressure Curve



Series

● –20 m roll □ –100 m on reel

	Tubing					
	Metric size					
Model	TAU3220	TAU0425	TAU0604	TAU0805	TAU1065	TAU1208
O.D. mm	3.2	4	6	8	10	12
I.D. mm	2	2.5	4	5	6.5	8
Black (B)	●	●	●	●	●	●

Specifications

Max. operating pressure (at 20°C) Note 1)	0.9 MPa					
Burst pressure	Refer to burst pressure characteristics curve.					
Min. bending radius Note 2) **mm**	10	10	15	20	27	35
Operating temperature	0 to 40°C					
Material	Conductive polyurethane					
Surface resistance	10^4 to 10^7 Ω					

Note 1) Refer to the burst pressure characteristics and operating pressure curve for other temperatures. Avoid abnormal temperature rises due to adiabatic compression.

Note 2) The value at a temperature of 20°C.

20 m Roll

O.D.	I.D.	Colour (Colour symbol)	Model
3.2	2	Black (B)	TAU3220B-20
4	2.5	Black (B)	TAU0425B-20
6	4	Black (B)	TAU0604B-20
8	5	Black (B)	TAU0805B-20
10	6.5	Black (B)	TAU1065B-20
12	8	Black (B)	TAU1208B-20

100 m on Reel

O.D.	I.D.	Colour (Colour symbol)	Model
3.2	2	Black (B)	TAU3220B-100
4	2.5	Black (B)	TAU0425B-100
6	4	Black (B)	TAU0604B-100
8	5	Black (B)	TAU0805B-100
10	6.5	Black (B)	TAU1065B-100
12	8	Black (B)	TAU1208B-100

Antistatic Soft Nylon Tubing

Series TAS

■Tubing size: **Metric Size**

Antistatic Measures

For pneumatic piping system requiring antistatic measures.

Flame resistant tubing (Equivalent to UL-94 Standards V-0)

How to Order

TAS 10 65 B – 100

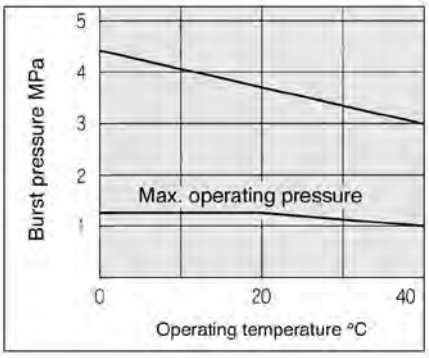
- 10: Tubing O.D.
- 65: Tubing I.D.
- B: Colour indication

Symbol	Colour
B	Black

- 100: Length per roll

Symbol	Length
20	20 m roll
100	100 m on reel

Burst Pressure Characteristics and Operating Pressure Curve



Series

●–20 m roll □–100 m on reel

	Tubing					
	Metric size					
Model	TAS3222	TAS0425	TAS0604	TAS0805	TAS1065	TAS1208
O.D. mm	3.2	4	6	8	10	12
I.D. mm	2.2	2.5	4	5	6.5	8
Black (B)	●	●	●	●	●	●

Specifications

Max. operating pressure (at 20°C) Note 1)	1.2 MPa					
Burst pressure	Refer to burst pressure characteristics curve.					
Min. bending radius Note 2) mm	12	12	15	19	27	32
Operating temperature	0 to 40°C					
Material	Conductive nylon + Flame resistant nylon (Equivalent to UL-94 Standards V-0)					
Surface resistance	10^4 to 10^7 Ω					

Note 1) Refer to the burst pressure characteristics and operating pressure curve for other temperatures. Avoid abnormal temperature rises due to adiabatic compression.
Note 2) The value at a temperature of 20°C, with a 10% or less O.D. variable rate.

20 m Roll

O.D.	I.D.	Colour (Colour symbol)	Model
3.2	2.2	Black (B)	TAS3222B-20
4	2.5	Black (B)	TAS0425B-20
6	4	Black (B)	TAS0604B-20
8	5	Black (B)	TAS0805B-20
10	6.5	Black (B)	TAS1065B-20
12	8	Black (B)	TAS1208B-20

100 m on Reel

O.D.	I.D.	Colour (Colour symbol)	Model
3.2	2.2	Black (B)	TAS3222B-100
4	2.5	Black (B)	TAS0425B-100
6	4	Black (B)	TAS0604B-100
8	5	Black (B)	TAS0805B-100
10	6.5	Black (B)	TAS1065B-100
12	8	Black (B)	TAS1208B-100

Flame Resistant (Equivalent to UL-94 Standards V-0) /FR Soft Nylon Tubing

Series TRS

■Tubing size: **Metric Size**

Applicable to general pneumatic and water piping in a spark atmosphere such as in spot welding.

Flame resistant tubing

Spatter Proof

How to Order

TRS 10 65 B – 100

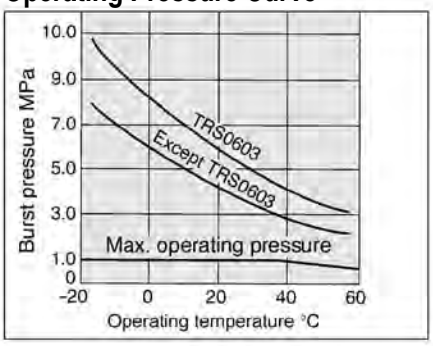
- 10: Tubing O.D.
- 65: Tubing I.D.
- B: Colour indication

Symbol	Colour
B	Black
W	White
R	Red
BU	Blue
G	Green

- 100: Length per roll

Symbol	Length
20	20 m roll
100	100 m on reel

Burst Pressure Characteristics and Operating Pressure Curve



Series

●–20 m roll □–100 m on reel

	Tubing			
	Metric size			
Model	TRS0603	TRS0805	TRS1065	TRS1208
O.D. mm	6	8	10	12
I.D. mm	3	5	6.5	8
Black (B)	●	●	●	●
White (W)	●	●	●	●
Red (R)	□	□	□	□
Blue (BU)	●	●	●	●
Green (G)	□	□	□	□

Specifications

Fluid	Air, Water			
Max. operating pressure (at 20°C)	1.2 MPa			
Burst pressure	Refer to burst pressure characteristics curve.			
Min. bending radius mm	17	19	27	32
Operating temperature	–20 to 60°C, Water: 0 to 60°C (No freezing)			
Material	Flame resistant nylon (Equivalent to UL-94 Standards V-0)			

20 m Roll

O.D.	I.D.	Colour (Colour symbol)	Model
6	3	Black (B)	TRS0603 Colour symbol -20
		White (W)	
		Blue (BU)	
8	5	Black (B)	TRS0805 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Green (G)	
10	6.5	Black (B)	TRS1065 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Green (G)	
12	8	Black (B)	TRS1208 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Green (G)	

100 m on Reel

O.D.	I.D.	Colour (Colour symbol)	Model
6	3	Black (B)	TRS0603 Colour symbol -100
		White (W)	
		Blue (BU)	
8	5	Black (B)	TRS0805 Colour symbol -100
		White (W)	
		Red (R)	
		Blue (BU)	
		Green (G)	
10	6.5	Black (B)	TRS1065 Colour symbol -100
		White (W)	
		Red (R)	
		Blue (BU)	
		Green (G)	
12	8	Black (B)	TRS1208 Colour symbol -100
		White (W)	
		Red (R)	
		Blue (BU)	
		Green (G)	

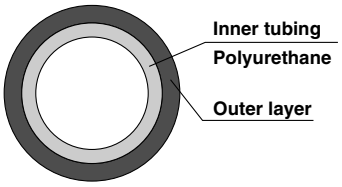
Flame Resistant (Equivalent to UL-94 Standards V-0) /FR Double Layer Polyurethane Tubing

Series TRBU

■Tubing size: **Metric Size**

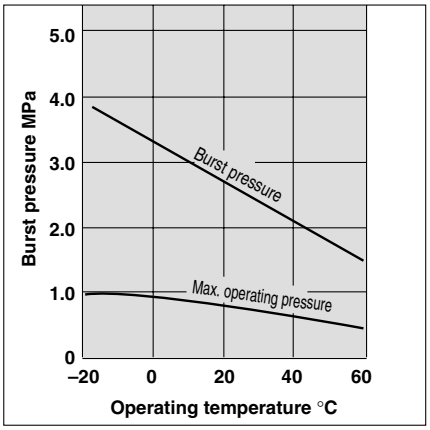
Spatter Proof

Applicable to general pneumatic and water piping in a spark atmosphere such as in spot welding.
Double layer design using flame resistant resin (equivalent to UL-94 Standard V-0) for outer layer.
Inner tubing material: Polyurethane



FR double layer polyurethane tubing
(Sectional view)

Burst Pressure Characteristics and Operating Pressure Curve



How to Order

TRBU 10 65 B – 100

- Inner tubing O.D.
- Inner tubing I.D.
- Colour indication

Symbol	Colour
B	Black
W	White
R	Red
BU	Blue
Y	Yellow
G	Green

- Length per roll

Symbol	Length
20	20 m roll
100	100 m on reel

Series

●–20 m roll □–100 m on reel

	Tubing			
	Metric size			
Model	TRBU0604	TRBU0805	TRBU1065	TRBU1208
Inner tubing O.D. mm	6	8	10	12
Inner tubing I.D. mm	4	5	6.5	8
Outer layer thickness mm	1	1	1	1
Note 1) Outer layer colour: Black (B)	●	●	●	●
White (W)	●	●	●	●
Red (R)	●	●	●	●
Blue (BU)	●	●	●	●
Yellow (Y)	●	●	●	●
Green (G)	●	●	●	●

Specifications

Fluid		Air, Water Note 2)			
Max. operating pressure (at 20°C) Note 3)		0.8 MPa			
Burst pressure		Refer to burst pressure characteristics curve.			
Min. bending radius Note 4) mm		15	20	27	35
Operating temperature		–20 to 60°C, Water: 0 to 40°C (No freezing)			
Material	Inner tubing	Polyurethane			
	Outer layer	Polyolefin resin (Equivalent to V-0 in UL-94 Standards)			

Note 1) The inner tubing are all black.
Note 2) Applicable to general industrial water. Consult SMC for use of other types of fluids. Keep the surge pressure below the maximum operating temperature.
Note 3) Refer to the burst pressure characteristics and operating pressure curve for other temperatures. Avoid abnormal temperature rises due to adiabatic compression.
Note 4) The value at a temperature of 20°C.

Related Accessories

Tubing Cutter *Series TKS*

Tool to peel off outer layer tubing.

Refer to page174 for more information.

SMC

20 m Roll

Inner tubing O.D.	Inner tubing I.D.	Colour (Colour symbol)	Model
6	4	Black (B)	TRBU0604 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
8	5	Black (B)	TRBU0805 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
10	6.5	Black (B)	TRBU1065 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
12	8	Black (B)	TRBU1208 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	

100 m on Reel

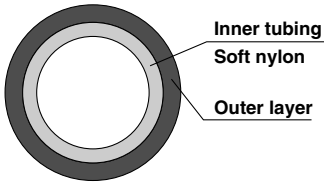
Inner tubing O.D.	Inner tubing I.D.	Colour (Colour symbol)	Model
6	4	Black (B)	TRBU0604 Colour symbol -100
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
8	5	Black (B)	TRBU0805 Colour symbol -100
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
10	6.5	Black (B)	TRBU1065 Colour symbol -100
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
12	8	Black (B)	TRBU1208 Colour symbol -100
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	

Flame Resistant (Equivalent to UL-94 Standards V-0) /FR Double Layer Tubing

Series TRB

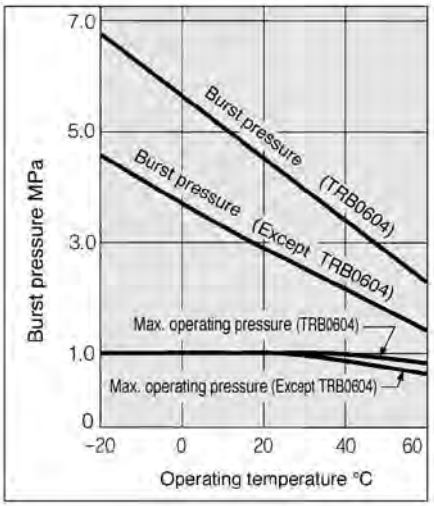
■Tubing size: **Metric Size**

Applicable to general pneumatic and water piping in a spark atmosphere such as in spot welding.
Double layer design using flame resistant resin (Equivalent to UL-94 Standards V-0) for outer layer.



FR double layer tubing
(Sectional view)

Burst Pressure Characteristics and Operating Pressure Curve



Related Accessories
Tubing Stopper
Series TKS

Tubing outer layer peeling tool.

Refer to page 174 for more information.

How to Order

TRB 10 75 B – 100

- 10: Inner tubing O.D.
- 75: Inner tubing I.D.
- B: Colour indication
- 100: Length per roll

Length per roll

Symbol	Length
20	20 m roll
100	100 m on reel

Colour indication

Symbol	Colour
B	Black
W	White
R	Red
BU	Blue
Y	Yellow
G	Green

Series

●20 m roll □–100 m on reel

	Tubing			
	Metric size			
Model	TRB0604	TRB0806	TRB1075	TRB1209
Inner tubing O.D. mm	6	8	10	12
Inner tubing I.D. mm	4	6	7.5	9
Outer layer thickness mm	1	1	1	1
Note 1) Outer layer colour: Black (B)	●	●	●	●
White (W)	●	●	●	●
Red (R)	●	●	●	●
Blue (BU)	●	●	●	●
Yellow (Y)	●	●	●	●
Green (G)	●	●	●	●

Specifications

Fluid		Air, Water Note 2)			
Max. operating pressure (at 20°C) Note 3)		1.0 MPa			
Burst pressure		Refer to burst pressure characteristics curve.			
Min. bending radius Note 4) mm		15	28	35	45
Operating temperature		–20 to 60°C, Water: 0 to 60°C (No freezing)			
Material	Inner tubing	Nylon 11			
	Outer layer	PVC (Equivalent to UL-94 Standards V-0)			

Note 1) The inner tubing are all black.
Note 2) Applicable to general industrial water. Consult SMC if using other fluids.
Surge pressure must be under the maximum operating temperature.
Note 3) Refer to the burst pressure characteristics and operating pressure curve for other temperatures.
Avoid abnormal temperature rises due to adiabatic compression.
Note 4) The value at a temperature of 20°C, with a 10% or less O.D. variable rate.

SMC

20 m Roll

Inner tubing O.D.	Inner tubing I.D.	Colour (Colour symbol)	Model
6	4	Black (B)	TRB0604 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
8	6	Black (B)	TRB0806 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
10	7.5	Black (B)	TRB1075 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
12	9	Black (B)	TRB1209 Colour symbol -20
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	

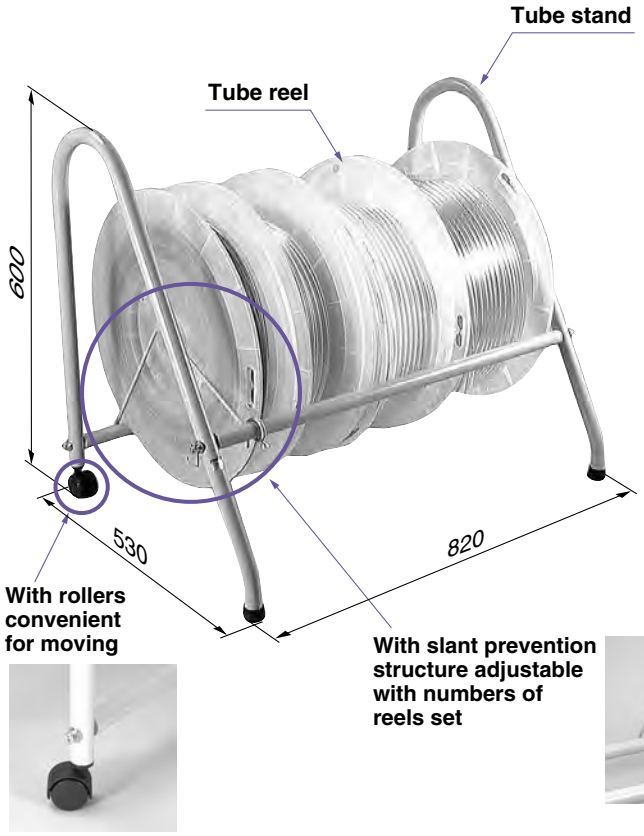
100 m on Reel

Inner tubing O.D.	Inner tubing I.D.	Colour (Colour symbol)	Model
6	4	Black (B)	TRB0604 Colour symbol -100
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
8	6	Black (B)	TRB0806 Colour symbol -100
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
10	7.5	Black (B)	TRB1075 Colour symbol -100
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	
12	9	Black (B)	TRB1209 Colour symbol -100
		White (W)	
		Red (R)	
		Blue (BU)	
		Yellow (Y)	
		Green (G)	

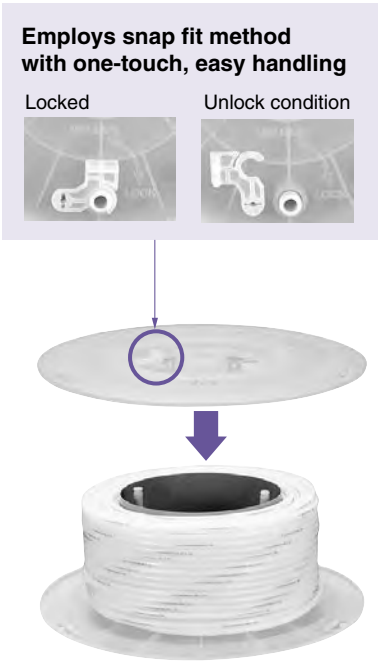
Tube Stand & Tube Reel

Series TB/TBR

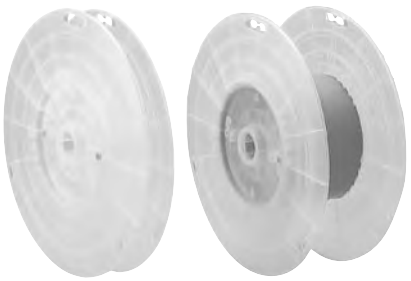
■Compact size without taking up space.
■Easy installment just by putting tube reel.



■Allows easy refilling and replacing tubes.



Tube Reel



Applicable tubing size mm	Model
4, 6	TBR-1
8	TBR-2
10	TBR-3
12	TBR-4

Tube Stand: TB-2

Tube Cutter

Series TK

TK-1 Applicable tubing O.D.: 13 mm or less

TK-2 Applicable tubing O.D.: 18 mm or less

TK-3 (Useful type)
Applicable tubing O.D.: 12 mm or less

Note) Do not use the cutter to cut the metalic materials such as electric wires.

Multi-tube Holder

Series TM

Possible to separate options depending on number of connection tubes.
Use of flame resistant resin (Equivalent to UL-94 Standards V-0).

Model

Applicable tubing O.D.	Model	Number of tubing (Max.)			Accessory: Phillips countersunk tapping screw	
		6	8	12	Size: nominal size X length	Number of pieces
4	TM-04			●	2 X 6	4
6	TM-06			●	2.6 X 8	
8	TM-08		●			
10	TM-10	●			3 X 8	
12	TM-12	●				

How to Use

⚠ Caution

1. Cut the multi-tube holder depending on number of tubes to be connected.

<Cutting method>
Cut the groove for separation with side cutters.

2. Install the multi-tube holder to the equipment with cross-recessed head, countersunk tapping screw.
3. Lay the tube across the gripper and push on the tube.
4. For removing the tubes, pull up the tubes from the gripper.

Tube Releasing Tool

Series TG

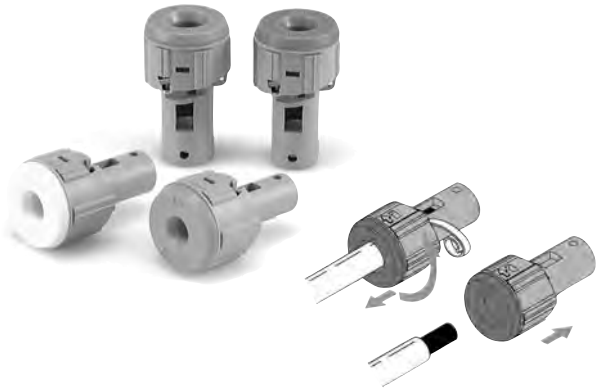
For attaching and dettaching tubes for One-touch fittings mounted in a narrow space or on manifolds.

Model	TG-1
Applicable tubing size	ø4, ø6
Applicable tubing material	Nylon, Soft nylon, Polyurethane
Handle colour	Blue
Weight	33 g

Double Layer Tube Stripper

Series TKS

Allows easy stripping of the outer layer from double layer tubes.



Variations

Model	Tip colour	Applicable tubing*
TKS-06	Orange	TRB0604, TRBU0604
TKS-08	Yellow	TRB0806, TRBU0805
TKS-10	Blue	TRB1075, TRBU1065
TKS-12	Green	TRB1209, TRBU1208

* Inner tubing material/TRB: soft nylon, TRBU: polyurethane

Blow Gun

Series VMG

Energy for air-blowing can be saved.
■Effective sectional area 30 mm²
■Pressure loss is less than 1%
(Nozzle size: ø2.5)

Top piping
Screw-in type

Bottom piping
With S coupler plug

VMG 1 1 W — [ ] 03 — 01

Blow gun

Standard type

Series

1	Resin body lever type

Piping entry

1	Bottom
2	Top

Body colour

W	Urban white
BU	Dark blue

Piping connection type

Nil	Rc
N	NPT
F	G

Connection size

	Piping connection system	Size and part no.	
02	Screw-in type	Port size	1/4
03			3/8
11	With S coupler plug Note 1)	Plug part no.	KK4P-02MS

Note 1) In case of a type with an S coupler plug, specify no symbol (Rc) for the piping connection type. The size is Rc 1/4.

Nozzle

	Type		Nozzle model	Nozzle size
Nil	Without nozzle			
01	Male thread nozzle		KN-R02-100	ø1
02			KN-R02-150	ø1.5
03			KN-R02-200	ø2
04			KN-R02-250	ø2.5
11	High efficiency nozzle		KNH-R02-100	ø1
12			KNH-R02-150	ø1.5
13			KNH-R02-200	ø2
21	Low noise nozzle with male thread		KNS-R02-075-4	ø0.75 X 4
22			KNS-R02-090-8	ø0.9 X 8
23			KNS-R02-100-4	ø1 X 4
24			KNS-R02-110-8	ø1.1 X 8
31	Copper extension nozzle Note 1)	Length 300 mm	KNL3-06-150	ø1.5
32			KNL3-06-200	ø2
33		Length 600 mm	KNL6-06-150	ø1.5
34			KNL6-06-200	ø2

Note 1) One piece of H06-02 self-align fitting is attached. When a copper extension nozzle is ordered separately, a self-align fitting will also be reguired for connection. Order one with the above part number in addition to the nozzle.

Nozzle for Blow

Series KN

Nozzle with self-align fitting: KN

Model	Nozzle size D	Connection size
KN-04-100	ø1	ø4
KN-04-150	ø1.5	ø4
KN-06-100	ø1	ø6
KN-06-150	ø1.5	ø6
KN-06-200	ø2	ø6
KN-08-150	ø1.5	ø8
KN-08-200	ø2	ø8
KN-10-250	ø2.5	ø10
KN-10-300	ø3	ø10
KN-10-350	ø3.5	ø10
KN-10-400	ø4	ø10
KN-10-600	ø6	ø10
KN-12-350	ø3.5	ø12
KN-12-400	ø4	ø12
KN-12-600	ø6	ø12
KN-16-400	ø4	ø16
KN-16-600	ø6	ø16
KN-20-400	ø4	ø20
KN-20-600	ø6	ø20

Male thread nozzle: KN

Model	Nozzle size D	Connection size
KN-R01-100	ø1	R1/8
KN-R01-150	ø1.5	R1/8
KN-R02-100	ø1	R1/4
KN-R02-150	ø1.5	R1/4
KN-R02-200	ø2	R1/4
KN-R02-250	ø2.5	R1/4
KN-R02-600	ø6	R1/4
KN-R03-400	ø4	R3/8
KN-R03-600	ø6	R3/8
KN-R04-400	ø4	R1/2
KN-R04-600	ø6	R1/2
KN-R06-600	ø6	R3/4
KN-R06-800	ø8	R3/4
KN-R10-800	ø8	R1

Copper extension nozzle: KNL

Model	Nozzle size D	O.D.	L_1
KNL3-06-150	ø1.5	ø6	300
KNL3-06-200	ø2	ø6	300
KNL3-08-200	ø2	ø8	300
KNL3-08-250	ø2.5	ø8	300
KNL3-10-250	ø2.5	ø10	300
KNL3-10-300	ø3	ø10	300
KNL6-06-150	ø1.5	ø6	600
KNL6-06-200	ø2	ø6	600
KNL6-08-200	ø2	ø8	600
KNL6-08-250	ø2.5	ø8	600
KNL6-10-250	ø2.5	ø10	600
KNL6-10-300	ø3	ø10	600

Nozzle for One-touch fitting (KQ, KQ2): KN

Note) Cannot be connected to the M5 or M6 type connection thread of KJ/KQ series.

Model	Nozzle size D	Connection size
KN-Q06-100	ø1	ø6
KN-Q06-150	ø1.5	ø6
KN-Q06-200	ø2	ø6
KN-Q08-150	ø1.5	ø8
KN-Q08-200	ø2	ø8
KN-Q10-200	ø2	ø10
KN-Q10-250	ø2.5	ø10
KN-Q12-250	ø2.5	ø12
KN-Q12-300	ø3	ø12

Pivoting nozzle with self-align fitting: KNK

Model	Nozzle size D	Connection size
KNK-10-400	ø4	ø10
KNK-10-600	ø6	ø10
KNK-12-400	ø4	ø12
KNK-12-600	ø6	ø12
KNK-16-400	ø4	ø16
KNK-16-600	ø6	ø16
KNK-20-400	ø4	ø20
KNK-20-600	ø6	ø20

Male thread pivoting nozzle : KNK

Model	Nozzle size D	Connection size
KNK-R02-400	ø4	R1/4
KNK-R02-600	ø6	R1/4
KNK-R03-400	ø4	R3/8
KNK-R03-600	ø6	R3/8
KNK-R04-400	ø4	R1/2
KNK-R04-600	ø6	R1/2

High efficiency nozzle: KNH

Model	Nozzle size D	Connection size
KNH-R02-100	ø1	R1/4
KNH-R02-150	ø1.5	R1/4
KNH-R02-200	ø2	R1/4

Low noise nozzle with self-align fittings: KNS

Model	Nozzle size D	Connection size
KNS-08-075-4	ø0.75 X 4	ø8
KNS-08-100-4	ø1 X 4	ø8
KNS-10-075-4	ø0.75 X 4	ø10
KNS-10-090-8	ø0.9 X 8	ø10
KNS-10-100-4	ø1 X 4	ø10

Low noise nozzle with male thread: KNS

Model	Nozzle size D	Connection size
KNS-R01-075-4	ø0.75 X 4	R1/8
KNS-R01-100-4	ø1 X 4	R1/8
KNS-R01-090-8	ø0.9 X 8	R1/8
KNS-R02-075-4	ø0.75 X 4	R1/4
KNS-R02-090-8	ø0.9 X 8	R1/4
KNS-R02-100-4	ø1 X 4	R1/4
KNS-R02-110-8	ø1.1 X 8	R1/4

Pneumatic Piping Equipment
Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard by labels of **"Caution"**, **"Warning"** or **"Danger"**. To ensure safety, be sure to observe ISO4414 Note 1), JIS B 8370 Note 2) and other safety practices.

⚠ Caution: An application which has the possibility of having negative effects on people, property or animals, requiring special safety analysis.

⚠ Warning: Operator error could result in serious injury or loss of life.

⚠ Danger: In extreme conditions, there is a possible result of serious injury or loss of life.

Note 1) ISO 4414: Pneumatic fluid power-General rules relating to systems.
Note 2) JIS B 8370: General Rules for Pneumatic Equipment.

⚠ Warning

1. The compatibility of pneumatic equipment is the responsibility of the person who designs the pneumatic system or decides its specifications.

Since the products specified here are used in various operating conditions, analysis and/or tests should be carried out before determining their compatibility for a specific pneumatic system. The expected performance and safety assurance will be the responsibility of the person who has determined the compatibility of the system. This person should continuously review the suitability of all items specified. Referring to the latest catalog information with a view to giving due consideration to any possibility of equipment failure when configuring a system.

2. Only trained personnel should operate pneumatically operated machinery and equipment.

Compressed air can be dangerous if an operator is unfamiliar with it. Assembly, handling or repair of pneumatic systems should be performed by trained and experienced operators.

3. Do not service machinery/equipment or attempt to remove components until safety is confirmed.

1. Inspection and maintenance of machinery/equipment should only be performed after confirmation of safe locked-out control positions.
2. When equipment is to be removed, confirm the aforementioned safety step. Cut the supply pressure to the equipment and exhaust all residual compressed air in the system.
3. Before restarting machinery/equipment, ensure that anti-lurching measures have been taken.

4. Contact SMC if the product is to be used in any of the following conditions:

1. Conditions and environments beyond the given specifications, or if product is used outdoors.
2. Installation on equipment in conjunction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverage, recreational equipment, emergency stop circuits, press applications, or safety equipment.
3. An application which has the possibility of having negative effects on people, property, or animals, requiring special safety analysis.

Air Fittings & Tubing/Precautions 1

Be sure to read before handling. Refer to Back page 1 for Safety Instructions.

⚠ Common Precautions

Selection

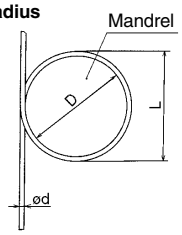
⚠ Caution

1. Keep the connection part of fittings and tubes from rotating to prevent cracking. Use Rotary One-touch Fittings Series KS (Standard) or KX (High speed) for these cases.
2. The tube bending radius in the vicinity of the fitting should be at least the minimum bending radius of the tube. If bent more than the min. bending radius, tubing may fail or be crushed.
   The minimum bending radius, with the exception of TU, TIUB polyurethane tubing, TUH hard polyurethane tubing, TRBU FR double layer polyurethane tubing, TAU antistatic polyurethane tubing and TUS soft polyurethane tubing, is measured as following in accordance with JIS B 8381-1995.
   JIS specifies the tubing deformation ratio measured at the minimum bending ratio to be 25% or less.

Tube deformation ratio at the minimum bending radius is obtained through the following formula, based on tubing diameter and mandrel diameter by wrapping the same radius mandrel tube.

$$\eta = \left(1 - \frac{L-D}{2d}\right) \times 100$$

Tube deformation ratio at the minimum bending radius



Here, η: Deformation ration (%)
d: Tube diameter (mm)
L: Measured length (mm)
D: Mandrel diameter (mm)
(Twice against the minimum bending radius)

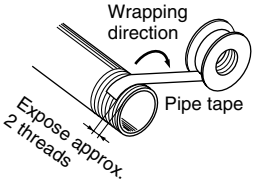
Test temperature: 20 ± 5°C
Relative humidity: 65 ± 5%

3. Applicable for general industry water. Please consult with SMC if using other fluids. Surge pressure must be under the max. operating pressure. If surge pressure exceeds the max. operating pressure, fitting or tubing may be damaged.
4. Applicable for general industrial water. Please consult with SMC if using for other fluids. Surge voltage pressure must be under the max. operating pressure. If surge voltage pressure exceeds the max. operating pressure, fitting or tubing may be damaged.

Mounting

⚠ Caution

1. Check tubing for damage before installing. Confirm model size, etc.
2. Do not apply unnecessary forces such as twisting, pulling, moment loads, etc. on fittings or tubing. This will cause damage to fittings and will crush, burst or release tubing.
3. Tubing, with the exception of coiled tubing, requires stationary installation. Do not use standard tubing (non-coiled) in applications where tubing is required to travel. Tubing that travels may sustain abrasion, extention, or severance due to tensile force, or may result in removal of tubing from fitting. Use caution prior to use for proper application.
4. When screwing pipes and fittings etc., ensure that cutting chips or sealing materials from the pipe threads should not get inside the piping. Also, when the pipe tape is used, leave 1.5 to 2 thread ridges exposed at the end.



Operating Environment

⚠ Caution

1. Do not use the usual fittings and tubes in locations where static electricity would be problematic; it may result in the system failure and trouble. In such places, use of antistatic fittings (Series KA) and antistatic tube (Series TA) are recommended.
2. Do not use the ordinary One-touch fittings in locations where spatter is generated. Spattering may result in a fire hazard. In such a place, use of flame resistant fittings (Series KR/KRM/KQG) and tubing (Series TRS/TRB/TRBU) are recommended.
3. Do not use in an environment where the product is directly exposed to cutting oil, lubricant or coolant oil, etc. Please contact SMC if using for an environment exposed to cutting oil, lubricant or coolant oil, etc.

Maintenance

⚠ Caution

1. Replace fittings or tubing having the following problems.
   a) Cracks, gouges, wearing, corrosion
   b) Air leakage
   c) Twists or crushing of tubing
   d) Hardening, deterioration, softening of tubing
2. Do not reuse damaged fittings/tubing.

Handling of One-touch Fittings

⚠ Caution

1. Tube insertion and removal from One-touch fittings
   1) Attaching of tube
      (1) Cut the tube perpendicularly, being careful not to damage the outside surface. Use SMC tube cutter "TK-1", "TK-2" or "TK-3". Do not cut the tube with pliers, nippers, scissors, etc., otherwise, the tube will be deformed and troubles may result.
      (2) Outside diameter of polyurethane tubing is swelled by applying internal pressure. As such, it may be that the tubing cannot be re-inserted into One-touch fittings. Make sure to confirm the tubing outside diameter, and when the accuracy of the outside diameter is more than + 0.15, insert into One-touch fitting again, not cutting the tubing to use it. When tubing is re-inserted into One-touch fitting, make sure to confirm that the tubing was able to go through the release bush smoothly.
      (3) Grasp the tube, slowly push it into the One-touch fittings until it comes to a stop.
      (4) Pull the tubing back gently to make sure it has a positive seal. Insufficient installation may cause air to leak or the tube to release.
   2) Removing of tube
      (1) Push in evenly on the release button.
      (2) Pull out the tube while keeping the release button depressed. If the release button is not held down, the tube cannot be withdrawn.
      (3) To reuse the tubing, cut off the previously lodged portion of the tube.
2. To install the fittings, screw the fitting into the hexagonal face of the body, applying the appropriate wrench as close to the thread as possible.
   Use a spanner corresponding to the size of hexagonal portion, or hexagonal portion may become deformed.
3. Tightening the threaded portion of an M3, M5 or M6 fittings
   1) M3
      First, tighten it by hand, then give it an additional 1/4 turn with a wrench.
   2) M5 and M6
      First, tighten it by hand, then give it an additional 1/6 turn with a wrench.

   Excessive tightening may damage the thread portion or deform the gasket and cause air leakage.

Air Fittings & Tubing/Precautions 2

Be sure to read before handling. Refer to Back page 1 for Safety Instructions.

⚠ Common Precautions

Handling of Fittings with Seal

⚠ Caution

1. The standard thread torques of the fittings are as shown in the table below. In short, tighten by hand, then turn it two or three revolutions with a wrench.

Connection thread size	Standard torque (N·m)
NPT 1/16, NPT, R 1/8	7 to 9
NPT, R 1/4	12 to 14
NPT, R 3/8	22 to 24
NPT, R 1/2	28 to 30

2. If the fitting is threaded in with excessive torque, a large amount of sealant will seep out. Remove the excess sealant.
3. Insufficient tightening may loosen threads, or cause air leakage.
4. Reuse
   1) Normally, fittings with the sealant can be reused 2 to 3 times.
   2) Remove loose sealant stuck to the fitting by blowing air over the threaded portion of the fitting to prevent air leakage caused by entering the sealant.
   3) If the sealant no longer provides the sealing performance effectively, wrap a sealing tape over the sealant before reusing. Do not use the sealant in any form other than a tape type.
5. Once the fitting has been tightened, backing it out to its original position often causes the sealant to become defective. Air leakage will occur.

Precautions on Other Tubing Brands

⚠ Caution

1. When using a brand of tubing other than SMC, be careful of the tolerance of the tube's O.D.
   1) Nylon tubing ≤ ±0.1 mm
   2) Soft nylon tubing ≤ ±0.1 mm
   3) Polyurethane tubing ≤ +0.15 mm, ≤ –0.2 mm

   When the tolerance of the tube's O.D. is out of the range mentioned above, do not use the tube. Because tubing cannot be connected, or it may cause air leakage or tubing to come out after installation.
2. Do not use tubing brands other than SMC for the following series, as the tubing may not be connected, or air leakage or disconnection may occur after connection.
   • Miniature One-touch fittings (Series KJ), applicable tubing O.D. ø2
   • Miniature fittings (Series M) , applicable tubing O.D. ø2 size
   • Stainless steel 316 One-touch fittings (Series KQG)

Handling of Uni Fittings

⚠ Caution

1. First tighten by hand, then use a proper wrench, which could be suitable for the hexagon across flats on the body to tighten with the proper tightening torque given below.

Connecting Female Thread: Rc, NPT, NPTF

Nominal size of uni thread	Standard torque (N·m)	Approx. spanner tightening angle after tightened by hand deg
1/8	5 to 7	30 to 60
1/4	11 to 13	30 to 60
3/8	14 to 16	15 to 45
1/2	20 to 22	15 to 30

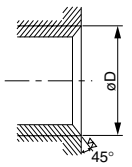
Connecting Female Thread: G

Nominal size of uni thread	Standard torque (N·m)	Approx. spanner tightening angle after tightened by hand deg
1/8	3 to 4	30 to 45
1/4	4 to 5	15 to 30
3/8	8 to 9	15 to 30
1/2	14 to 15	15 to 30

2. Gasket can be recycled 6 to 10 times. It can be replaced easily when it has sustained damage. Broken gasket can be removed by holding and then turning in the same direction of loosening the thread. If gasket is difficult to remove, cut it with nippers, etc. In such a case, use caution not to scratch seat face because the seat face of 45° gasket of fitting is the sealing face.
3. Please consult with SMC if using for other fluids than air.
4. Other precautions on handling, etc. are the same as those of One-touch fitting.

Chamfered area for female thread (Recommended value)

By chamfering as shown in the following table, machining of threads is easier and effective for burr prevention, too.



Female thread size	Chamfered port size øD (Recommended value)	
	Rc, G	NPT, NPTF
1/8	10.2 to 11.8	10.5 to 11.8
1/4	13.6 to 15.8	14.1 to 15.8
3/8	17.1 to 19.4	17.4 to 19.4
1/2	21.4 to 25.1	21.7 to 25.1

⚠Specific Product Precautions

Series KP Precautions

Installation of Threads

⚠Caution

Be sure to wind a sealant tape around the resin thread part.

Use without a sealant tape may cause air leakage.

1. Series KP (With resin thread)
   1) Wrapping the seal tape
      Wind the seal tape 2 to 3 turns around the threads, leaving 1.5 to 2 thread ridges exposed at the end of the threads.
   2) Tightening method
      After tightening by hand, use a tightening tool for additional 2 to 3 turns.
2. Tightening tool
   Tighten the fitting by applying an appropriate wrench to the hexagonal face of the body.
   Position the wrench on the base as close to the threads as possible. If the size of the wrench is not suitable for the hexagon wrench flats, the wrench flats may be crushed.

Installation and Removal of Tubing

⚠Caution

1. Grease is not used due to Series KP's oil-free specifications. For this reason, greater insertion force is required when tubing is installed. In particular, polyurethane tubing may fold when inserted due to its softness. Hold the tubing while keeping the insertion length at the end and insert it all the way slowly and securely until its end is felt to touch the bottom. Refer to dimension drawings for guidance on the tubing insertion length.

Tubing port size	Tubing insertion length mm
ø4	18
ø6	19.5
ø8	21.5
ø10	24
ø12	25

Operating Environment

⚠Caution

1. Series KP is a line of special one-touch fittings for use in **clean room blowing** and **washing lines**. Consult SMC regarding other types of applications.
   Sealant material: EPDM does not have sufficient resistance to mineral oil and is not suitable for piping of general pneumatic equipment.
   Use Series KPQ and KPG for piping of general pneumatic equipment.
2. Series TP has less resistance to lithium grease and is not suitable for piping of pneumatic equipment using lithium grease.

Maintenance

⚠Caution

1. Tightening of blow fittings (Resin taper threads for piping).
   Since Series KP taper threads are made of resin, minute leakage may gradually occur due to stress relaxation. Perform periodic inspections. If leakage is detected, correct the problem by additional tightening. When additional tightening is no longer effective, replace the fitting with a new product.

Precautions on Use of Other Brands

⚠Caution

1. When using tubing brands other than SMC, confirm that the outside diameter tolerances of the tubing satisfy the following specifications.
   1)Polyolefin tubing within ±0.1 mm
   2)Polyurethane tubing within +0.15 mm, within –0.2 mm
   3)Nylon tubeing within ±0.1 mm
   4)Soft nylon tubing within ±0.1 mm
   Do not use the product unless the outside diameter tolerance is satisfied.
   Otherwise, the tubing may not be connected or air leakage or disconnection may occur after connection.
   Polyolefin tubing is recommended for use with clean room fittings. Note that while other types of tubing will satisfy performance standards for leakage and tubing pull-out strength, etc., they are inferior in terms of cleanliness.

S Couplers/Common Precautions 1

Be sure to read before handling.

Selection

⚠ Warning

1. Cannot be used as a stop valve that requires zero leakage. A certain amount of leakage is allowed during operation.
2. Series KK and Series KKH cannot be connected with Series KKA. Also, SMC's S coupler cannot be connected with quick couplers of other brands.
   This will cause leakage, damage, and disconnection of the plug.
   With series KK13, manufactured by Rectus, verify the manufacturer of applicable couplers before use.
3. Do not couple or uncouple the S coupler during pressurization or while residual pressure remains. The coupler may shoot out under the influence of the pressure.
4. Never apply pressure to an S coupler without check valve when it is uncoupled. The piping may move violently and cause danger.
5. An S coupler without check valve experiences leakage of fluid inside piping when it is uncoupled. Pay special attention in using fluid that can cause danger such as fluid of a high temperature and pressure. Additional use of a stop valve is recommended.
6. The S coupler is heated when used at a high temperature. Take precautions not to touch it since touching it can cause burns.

⚠ Caution

1. For a plug and socket connection, select a plug and socket with the same body size. If their body sizes are different, they cannot be connected. This will cause leakage, damage, and disconnection of the plug.
2. Do not use in locations where the connecting threads and tubing connection will slide or rotate. The connecting threads and tubing connection will come apart under these conditions.
3. Use tubing at or above the minimum bending radius. Using below the minimum bending radius can cause breakage or flattening of the tube.
4. Do not use couplers with flammable, explosive, or toxic substances, such as gas, gas fuel, and refrigerant. They may leak from inside the tubing to the outside.
5. Can be used with standard industrial water. When using with other liquids, please consult with SMC.
   Also, operate with a surge pressure of no more than the maximum operating pressure. If the surge pressure exceeds the maximum operating pressure, it will cause damage to couplers and tubing.
6. Do not use the S coupler with steam. Corrosion of the metal material and deterioration of the sealing material may result from long-term use with steam.

Mounting

⚠ Warning

1. Do not use couplers where rotation normally occurs. The couplers may be damaged.
2. Avoid applications in which vibration or shock is directly applied to the fittings.
3. Fittings with sleeve lock mechanism must be locked during operation in order to prevent sudden disconnection.
4. Install a stop valve at the supply pressure side of the socket. Emergency shutdown may not be possible without it.

⚠ Caution

1. Before mounting confirm the model and size, etc. Also, confirm that there are no blemishes, nicks or cracks in the product.
2. When connecting a tube, consider factors such as changes in the tubing length due to pressure, and allow sufficient leeway.
3. Mount so that couplers and tubing are not subjected to twisting, pulling or moment loads. This can cause damage to couplers and flattening, bursting or disconnection of tubing, etc.
4. Mount so that tubing is not damaged due to tangling and abrasion. This can cause flattening, bursting or disconnection of tubing, etc.

Operating Environment

⚠ Warning

1. Do not use in locations where static electric charges will be a problem. Please consult with SMC regarding use in this kind of environment.
2. Do not use in locations where spatter occurs.
   There is a danger of spatter causing a fire. Please consult with SMC regarding use in this kind of environment.
3. Do not use in environments where there is direct contact with liquids such as cutting oil, lubricating oil or coolant oil, etc. Please consult with SMC regarding use in environments where there will be direct contact with cutting oil, lubricating oil or coolant oil, etc.

Maintenance

⚠ Caution

1. Check for the following during regular maintenance, and replace components as necessary.
   a) Scratches, gouges, abrasion, corrosion
   b) Leakage
   c) Twisting, flattening or distortion of tubing
   d) Hardening, deterioration or softness of tubing
2. Do not repair or patch the replaced tubing or couplers for reuse.
3. Do not disassemble the S coupler. Spare parts are not available for this product.

S Couplers/Common Precautions 2

Be sure to read before handling.

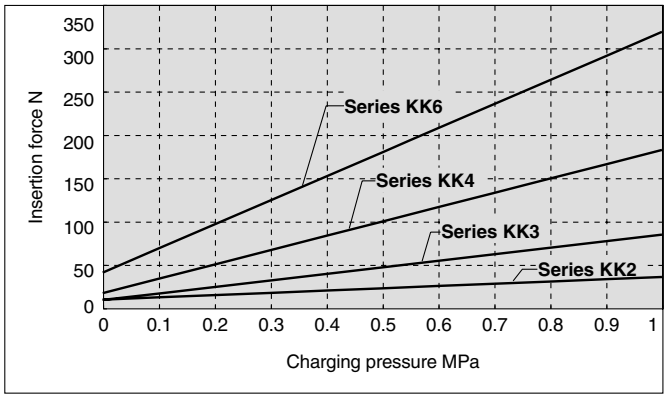
Handling

⚠ Warning

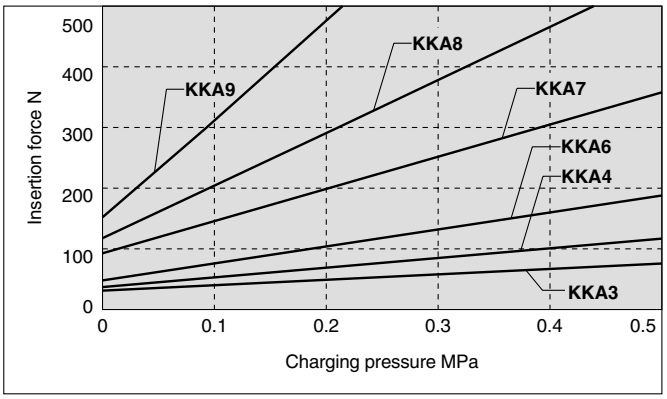
1. When connecting the plug, hold it securely. The plug may slip out due to the reaction when connecting.
2. When connecting the plug, make sure to insert the plug until the socket clicks. After connecting the plug, pull the plug lightly to make sure the plug will not be disconnected. If the plug is not inserted sufficiently, it might come out due to the pressure. Also, do not touch the sleeve until the plug is inserted sufficiently, as doing so could cause malfunction.
3. When connecting the plug, insert the plug vertically into the socket. If inserted at an angle, the socket or plug may be damaged or may malfunction.
4. When removing the plug, hold it securely. The tube may move due to reaction at the time of removal or residual pressure inside the plug.
5. Do not push inside the socket with plugs that cannot be combined or with anything other than a plug, otherwise the fluid inside the socket may spurt out, which could cause the seal to come out and breakdown to occur.

Plug Insertion Force in Pressurized Condition

Insertion Force of Series KK



Insertion Force of Series KKA



Handling of One-touch Fittings

⚠ Caution

1. Tube attachment/detachment for One-touch fittings

1) Attaching of tubing

1. Take a tube having no flaws on its periphery and cut it off at a right angle. When cutting the tubing, use tubing cutters TK-1, 2 or 3. Do not use pinchers, nippers or scissors, etc. If cutting is done with tools other than tubing cutters, the tubing may be cut diagonally or become flattened, etc. This can make a secure installation impossible, and cause problems such as the tubing pulling out after installation or air leakage. Allow some extra length in the tubing.
2. Grasp the tubing and push it in slowly, inserting it securely all the way into the fitting.
3. After inserting the tubing, pull on it lightly to confirm that it will not come out. If it is not installed securely all the way into the fitting, this can cause problems such as air leakage or the tubing pulling out.

2) Detaching of tubing

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

S Couplers/Common Precautions 3

Be sure to read before handling.

Handling of Barb Fittings and Nut Fittings

⚠ Caution

1. When using a nut fitting, insert the hose all the way to the end and securely tighten it with the nut. When the insertion of the hose or the tightening of the nut are not sufficient, the hose may slip out.
2. Disconnection may occur depending on the material or the O.D. accuracy of the hose; therefore be sure to confirm the applicability of the hose.

Handling of Fittings with Seal

⚠ Caution

1. M5 fittings
   1) Tighten fittings using the proper tightening torques of 1 to 1.5 N·m. As a rule, first, tighten it by hand, then give it an additional 1/6 turn with a wrench.
   2) Excessive tightening may damage the threaded portion or deform the gasket to cause air leakage.
   3) Insufficient tightening may cause the thread to become loose or the air to leak.
2. Fittings with sealant
   1) Tighten fittings with sealant using the proper tightening torques in the table below. As a rule, they should be tightened 2 to 3 turns with a tool after first tightening by hand.

Connection thread size	Proper tightening torque N·m
NPT, R1/8	7 to 9
NPT, R1/4	12 to 14
NPT, R3/8	22 to 24
NPT, R1/2	28 to 30
NPT, R 3/4	28 to 30
NPT, R1	36 to 38
NPT, R1 1/4	40 to 42
NPT, R1 1/2	48 to 50

   2) When a fitting is over tightened, more of the sealant material is squeezed out. Remove the squeezed out sealant material.
   3) When tightening is not sufficient, it will cause sealant failure or a loose fitting.
   4) Re-using
      (1) Normally, a fitting with sealant can be re-used 2 to 3 times.
      (2) Remove the sealant material that is separated and adhering to a removed fitting with air blow, etc. If the separated sealant enters into nearby equipment, it will cause air leakage or malfunction.
      (3) When the sealant is no longer effective, wrap sealant tape over the sealant material and re-use the fitting. Do not use a seal material other than sealant tape.
   5) In cases where positioning is required, turning the fitting in the reverse direction after tightening will cause air leakage.

Precautions on Other Tubing Brands

⚠ Caution

1. When using tubing brands other than SMC, confirm that the tubing outside diameter tolerances satisfy the following specifications.
   1) Nylon tubing within ±0.1 mm
   2) Soft nylon tubing within ±0.1 mm
   3) Polyurethane tubing within +0.15 mm
      within –0.2 mm

   Do not use tubing if the outside diameter tolerance is not satisfied. It may not be possible to connect the tubing, or leakage or disconnection may occur after connection.

Flow Control Equipment/Precautions 1

Be sure to read before handling. Refer to Back page 1 for Safety Instructions.

⚠Common Precautions

Selection

⚠Warning

1. The products presented in this catalog are not designed for use as stop valves with zero air leakage.
The product specification allows for a certain degree of leakage.

Mounting

⚠Warning

1. Confirm that the lock nut is not loose.
A loose lock nut may cause dangerous changes in actuator speed.

2. Confirm the number of rotations of the needle valve.
The products are of a retainer type so that the needle is not removed completely. Over rotation will cause damage.

3. Confirm air flow direction.
If mounted in the wrong direction, the speed adjustment needle may not function and may cause uncontrolled extension of the piston rod.

4. Adjust the speed by opening the needle slowly after having closed it completely.
Loose needle valves may cause unexpected sudden actuator extension. When a needle valve is turned clockwise, it is closed and the actuator speed decreases. When a needle valve is turned counterclockwise, it is opened and the actuator speed increases.

5. Needle adjustment and lock nut tightening must be conducted manually.
Use of tools such as cutting pliers may result in fracture of the handle or overtightening and consequent changes in the flow characteristics.

6. Do not use universal type fitting for applications involving continuous rotation.
The fitting may be damaged.

⚠Specific Product Precautions

Series AS-F, FE, FG, FM Precautions

Selection

⚠Warning

1. Please confirm if it is compatible with PTFE.
PTFE powder (tetrafluoroethylene resin) is included in sealing. Confirm if its use may cause any adverse effect in the system.

Mounting

⚠Warning

1. To install/remove the flow control equipment, tighten/loosen at wrench flat B as close to the thread as possible using an appropriate wrench.
Do not apply torque to other points as the product may be damaged. Rotate Body A manually for positioning after installation.

2. Do not use universal type fittings for applications involving continuous rotation.
The fitting may be damaged.

3. Do not use in an environment where vibration or tensile load is applied to the tubing.
The fitting may be damaged.

4. Do not apply impacts and excessive loads to the resin part.
It may cause deformation or damage.

Tightening Torque

⚠Caution

1. The proper tightening torque for fittings is shown in the table. As a rule, tighten the fitting 2 or 3 turns with a tool after first tightening by hand. Be careful excessive tightening may damage the fitting.

Male Thread	Appropriate tightening torque N·m	Width across flats of hexagon socket mm	The nominal size of an adjustable angle wrench mm
M3	1/4 turn after manual tightening	4.5	—
M5 10/32-UNF	1/6 turn after manual tightening	8	100
1/8	7 to 9	14	150
1/4	12 to 14	17	200
3/8	22 to 24	21	200
1/2	28 to 30	24	200

Flow Control Equipment/Precautions 2

Be sure to read before handling. Refer to Back page 1 for Safety Instructions.

⚠ Specific Product Precautions

Lock Nut Tightening Torque

⚠ Caution

1. Suitable torque for tightening hexagon lock nuts is shown in the table below. For standard installation, turn 15 to 30° using a tool after fastening by hand. Be careful not to damage the product by over torque.

Body size	Appropriate tightening torque N·m
M3	0.07
M5	0.3
1/8	1
1/4	1.5
3/8	4
1/2	10

Handling of One-touch Fittings

⚠ Caution

1. Refer to Best Pneumatics 2004 Vol. 15 for handling of one-touch fittings.

Series AKH/AKB Precautions

Operating Environment

⚠ Warning

1. Bush type: Except for AKB, do not use in an environment where spatters are generated.
Spatters may adhere to synthetic resin parts, resulting in fires.

2. Bush type: Except for AKB, do not use in an environment where the product is directly exposed to cutting oil, lubricant or coolant oil.
Consult SMC regarding use in an environment of this kind.

Mounting

⚠ Caution

1. Confirm the flow direction of the check valve.
Confirm the free flow direction referring to the JIS symbol on the body.

Series ASD Precautions

Operation

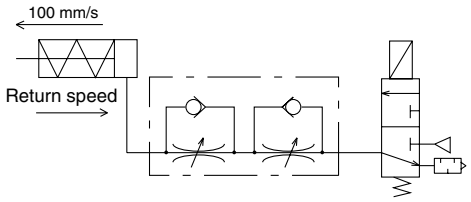
⚠ Caution

1. Single acting cylinder
When a single acting cylinder is controlled, the cylinder's retracting speed will vary with the operating condition. Confirm the maximum retracting speed mentioned in the table below.

Speed Controller	Cylinder	Solenoid Valve	Tubing	Silencer	Max. return speed mm/s 100 200 300
ASD230F	CJ2	VJ500	TU0604 1m	AN110-01	ø6 ø10 ø16 Cylindersize
ASD330F	CM2	VZ500	TU0604 1m	AN110-01	ø20 ø25 ø32 Cylindersize

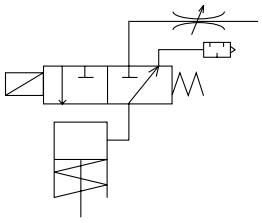
∗At pressure of 0.5 MPa and temperature of 20°C

<Operating conditions>
- Cylinder extending speed: 100 mm/s
- Needle fully open at meter-out side



(Reference) Recommended circuit to accelerate the return speed.

If a low extension speed and a high retraction speed are desired, a circuit using 3 ports as illustrated below is recommended.



Note) Use the -X214 throttle valve in Series AS-F.

Flow Control Equipment/Precautions 3

Be sure to read before handling. Refer to Back page 1 for Safety Instructions.

⚠ Specific Product Precautions

Series ASP Precautions

Caution on Design

⚠ Warning

1. This product cannot be used for accurate and precise intermediate stops of the actuator.

Due to the compressibility of air as a fluid, the actuator will continue to move until it reaches a position of pressure balance, even though the pilot check valve closes with an intermediate stop signal.

2. This product cannot be used to hold a stop position for an extended period of time.

Pilot check valves and actuators are not guaranteed for zero air leakage. Therefore, it is sometimes not possible to hold a stop position for an extended period of time. In the event that holding for an extended time is necessary, a mechanical means for holding should be devised.

3. Consider the release of residual pressure.

Actuators may move suddenly due to residual pressure, which can be dangerous during maintenance procedures.

Selection

⚠ Warning

1. When used in a balance control circuit, there are instances in which the check valve cannot release, even though the pilot pressure is 50% of the operating pressure. In these cases, the pilot pressure should be the same as the operating pressure.

2. For reference, SMC has conducted endurance tests in which ON, OFF operation of the check valve was performed at the maximum operating pressure, with a confirmed endurance of 10 million operations. Since the tests were performed under limited conditions, use caution in evaluating the results.

Series ASR/ASQ Precautions

Selection

⚠ Warning

1. Keep the set pressure range of the outlet pressure of the pressure valve within 85% that of the inlet pressure.

If the value exceeds 85%, the pressure may become unstable, affected by the fluctuation of the inlet pressure.

Installation

⚠ Warning

1. The number of opening and closing rotations of the needle valve and adjustment screw should be adjusted within the range of the specifications.

Since it has a pull-out stop mechanism, it will not rotate past the limit. Confirm the number of rotations for the product being used, as excessive turning of the needle will cause damage.

2. The valve cannot be used if there are fluctuations of the load.

The piston rod may jerk during operation.

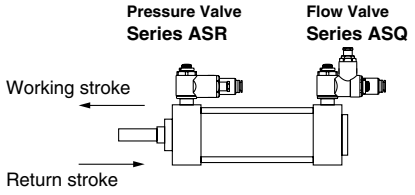
3. In case a closed-center solenoid valve is used, switch to the center position only after pressure charge inside the cylinder at the stroke end is completed.

If the pressure charge is insufficient, the piston rod may jerk after restart.

Operating

⚠ Caution

1. The valve cannot be used if the same pressure is required for both the working and return strokes.
   The pressure valve and flow valve are designed to save air by the difference in the operating pressure.
2. Install a flow valve on the working side which requires the cylinder output and a pressure valve on the return side. The cylinder may not operate if the valves are installed on the wrong sides.



3. If a closed-center, exhaust-center, pressure-center or perfect solenoid valve is used and the solenoid valve is set at the center position, the cylinder may move to the position where the pressure balance and load balance are achieved.

ALPHABET INDEX (In alphabetic order)

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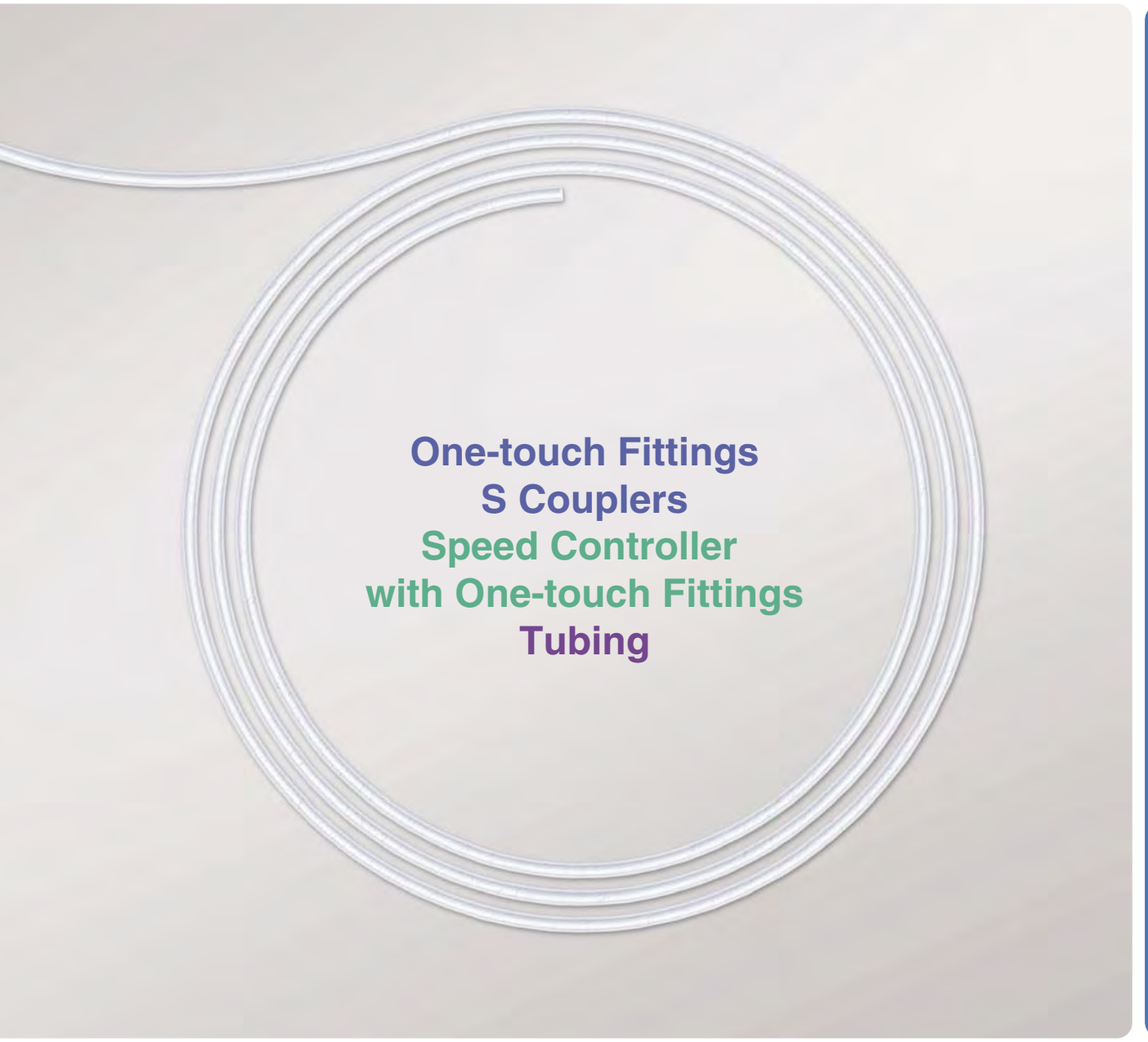

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