Clean One-touch Fittings For Driving Air Piping

RoHS

KPQ/KPG Series

KPQ Series
Brass (electroless nickel plated)
Release button: Light gray

KPG Series
Stainless steel 304
Release button: Light blue

Made to Order

Made to Order
(Refer to page 357 for details.)

Applicable Tubing

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

FEP, nylon and soft nylon tubing, and tubing not compatible with the clean series can also be used. However, the degree of clean performance will be reduced.

Specifications

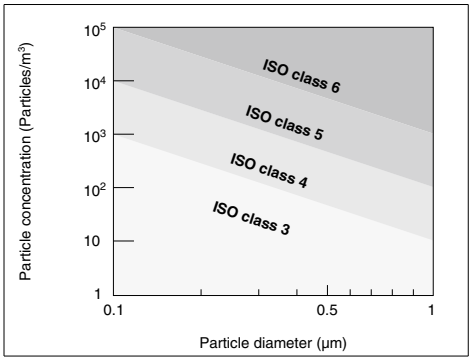
Cleanliness class (ISO class)	Class 3 Note 1)
Fluid	Air
Maximum operating pressure (20°C)	1 MPa Note 2)
Operating vacuum pressure	–100 kPa
Proof pressure (20°C)	3 MPa
Ambient and fluid temperature	–5°C to 60°C
Threads	JIS B0203 (Taper thread for piping)
Oil	Fluorine-based grease

Note 1) Refer to particle generation classifications
This falls outside of the grade because fluorine grease is applied to the internal seal materials.

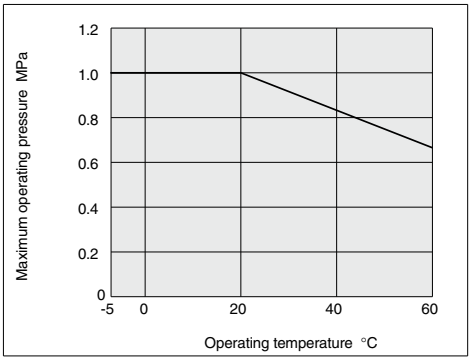
Note 2) The maximum operating pressure is the value at 20°C. Refer to the operating pressure curve for other temperatures.

Note 3) Do not use the fittings with a leak tester or for vacuum retention because they are not guaranteed for zero leakage.

Particulate Generation Classifications



Relation between Operating Temperature and Maximum Operating Pressure



Note) Refer to "SMC Pneumatic Clean Series" (CAT.E02-23) for details.

SMC

How to Order

KP Q H 06 – 01 – ☐

Clean One-touch fittings

Specifications

Symbol	Specifications (metal part materials)
Q	Brass (electroless nickel plated)
G	Stainless steel 304

Model

H	Male connector, Straight union
L	Union elbow, Male elbow
T	Male branch tee, Union tee
Y	Male run tee
U	Male branch, Union "Y"
R	Plug-in reducer

Applicable tubing O.D.

04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

Made to Order

X53	With pipe tape
X193 Note 1)	Grease-free Rubber material: EPDM (Fluorine-coated) Gasket: M-5G3 (Stainless steel 316, Special FKM) Note 2) With release bushing, Guide color: Natural

Note 1) KPG series: Compatible with products with threads only
Note 2) M5 thread

Port size/Applicable tubing O.D.

Thread connection	M5	M5 x 0.8	
	01	R 1/8	
	02	R 1/4	
	03	R 3/8	
	04	R 1/2	
Tubing (rod) connection	00	Same dia. tubing	
	04	ø4	Different dia. tubing (plug-in reducer)
	06	ø6	
	08	ø8	
	10	ø10	
	12	ø12	

KP P 08

Applicable fitting size

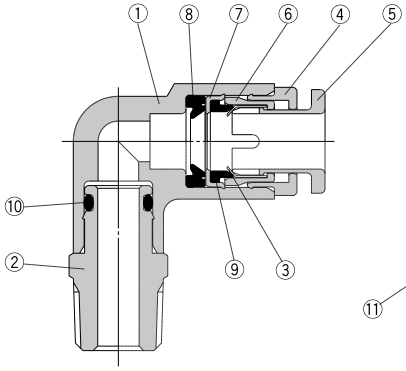
04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

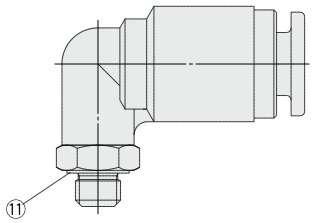
Plug

Clean One-touch fittings

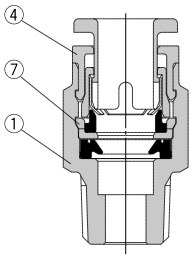
For details on applicable tubing O.D. and port size combinations for each model, refer to the charts on the Dimensions page.

Construction





M5 type



Male connector

Component Parts

No.	Description		Material	
			KPQ Series	KPG Series
1	Body		PP	
		With male connector	C3604 (electroless nickel plated)	Stainless steel 304
2	Stud		C3604 (electroless nickel plated)	Stainless steel 304
3	Chuck		Stainless steel 304	
4	Guide		C3604 (electroless nickel plated)	Stainless steel 304
		With male connector	PP	
5	Release button		PP (color: light gray)	PP (color: light blue)
6	Collet		PP	
7	Stopper		Stainless steel 304	
		With male connector	PP	
8	Seal		NBR	
9	Bumper		NBR	
10	O-ring		NBR	
11	Gasket		Stainless steel 304, NBR	

Dimensions

Male Connector: KPQH, KPGH

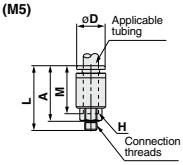
(M5)

(R)

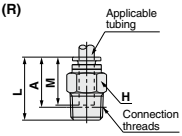
Applicable tubing O.D. mm	Connection thread R M	Model		H (width across flats)	øD	L	A*	M	Effective area mm² TPH	Effective area mm² TPS	Weight g
4	M5 x 0.8	KPQH04-M5	—	8	10	24.4	21.5	17	4	4	4
	—		KPGH04-M5			24.9					
	1/8	KPQH04-01	KPGH04-01	10	—	23.5	18.5				7
	1/4	KPQH04-02	KPGH04-02	14	—	21.4	16				12
6	M5 x 0.8	KPQH06-M5	—	8	12	25.3	22	18.5	10	10	5
	—		KPGH06-M5			25.8					
	1/8	KPQH06-01	KPGH06-01	12	—	23.7	18.5				7
	1/4	KPQH06-02	KPGH06-02	14	—	24.6	19				14
8	1/8	KPQH08-01	KPGH08-01	14	—	30.7	25.5	20.5	26	18	14
	1/4	KPQH08-02	KPGH08-02		—	29.1	23.5				13
10	1/4	KPQH10-02	KPGH10-02	17	—	36.1	30.5	23	41	29	24
	3/8	KPQH10-03	KPGH10-03		—	30.9	25.5				23
12	3/8	KPQH12-03	KPGH12-03	19	—	32	26.5	24	58	46	23
	1/2	KPQH12-04	KPGH12-04	22	—	32.2	25				46

∗ Reference dimension for R threads after installation

(M5)



(R)



Male Elbow: KPQL, KPGL

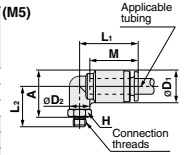
(M5)

(R)

Applicable tubing O.D. mm	Connection thread R M	Model		H (width across flats)	Note 1) øD₁	øD₂	L₁	L₂	A*	M	Effective area mm² TPH	Effective area mm² TPS	Weight g
4	M5 x 0.8	KPQL04-M5	KPGL04-M5	8	10.4	8	19.7	15.3	17	17	4	4	4
	1/8	KPQL04-01	KPGL04-01	10		10		21.1	21				10
	1/4	KPQL04-02	KPGL04-02	14				25.5	25				19
6	M5 x 0.8	KPQL06-M5	KPGL06-M5	8	12.8	8	21.8	15.8	18.5	18.5	10	10	6
	1/8	KPQL06-01	KPGL06-01	10		10		22.3	23.5				12
	1/4	KPQL06-02	KPGL06-02	14				26.7	27.5				20
8	1/8	KPQL08-01	KPGL08-01	12	15.2	12	25.3	23.5	26	20.5	26	18	13
	1/4	KPQL08-02	KPGL08-02	14				27.9	30				21
10	1/4	KPQL10-02	KPGL10-02	17	18.5	17	28.4	29.4	33	23	41	29	26
	3/8	KPQL10-03	KPGL10-03					30.8	34.5				36
12	3/8	KPQL12-03	KPGL12-03		20.9		30.4	32	37	24	58	46	38
	1/2	KPQL12-04	KPGL12-04	22				36.2	39.5				65

∗ Reference dimension for R threads after installation Note 1) **øD₁** indicates the maximum diameter.

(M5)



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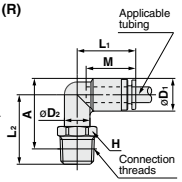


Union Tee: KPQT, KPGT

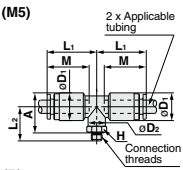
(M5)

(R)

Applicable tubing O.D. mm	Connection thread R M	Model		H (width across flats)	Note 1) øD₁	øD₂	L₁	L₂	A*	M	Effective area mm² TPH	Effective area mm² TPS	Weight g
4	M5 x 0.8	KPQT04-M5	KPGT04-M5	8	10.4	8	19.7	15.3	17	17	4	4	6
	1/8	KPQT04-01	KPGT04-01	10		10		21.1	21				13
	1/4	KPQT04-02	KPGT04-02	14				25.5	25				19
6	M5 x 0.8	KPQT06-M5	KPGT06-M5	8	12.8	8	21.8	15.8	18.5	18.5	10	10	7
	1/8	KPQT06-01	KPGT06-01	10		10		22.3	23.5				14
	1/4	KPQT06-02	KPGT06-02	14				26.7	27.5				20
8	1/8	KPQT08-01	KPGT08-01	12	15.2	12	25.3	23.5	26	20.5	26	18	14
	1/4	KPQT08-02	KPGT08-02	14				27.9	30				22
10	1/4	KPQT10-02	KPGT10-02	17	18.5	17	28.4	29.4	33	23	41	29	29
	3/8	KPQT10-03	KPGT10-03					30.8	34.5				39
12	3/8	KPQT12-03	KPGT12-03		20.9		30.4	32	37	24	58	46	41
	1/2	KPQT12-04	KPGT12-04	22				36.2	39.5				38

∗ Reference dimension for R threads after installation Note 1) **øD₁** indicates the maximum diameter.

(M5)



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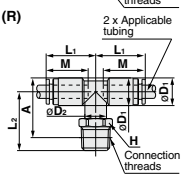


Dimensions

Male Run Tee: KPQY, KPGY

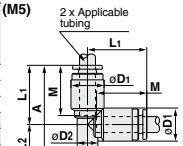
(M5)

(R)

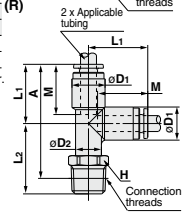
Applicable tubing O.D. mm	Connection thread R M	Model		H (width across flats)	Note1) øD1	øD2	L1	L2	A*	M	Effective area mm² TPH	Effective area mm² TPS	Weight g
4	M5 x 0.8	KPQY04-M5	KPGY04-M5	8	10.4	8	19.7	15.3	31.5	17	4	4	6
	1/8	KPQY04-01	KPGY04-01	10		10		21.1	35.5				13
	1/4	KPQY04-02	KPGY04-02	14				25.5	39.5				19
6	M5 x 0.8	KPQY06-M5	KPGY06-M5	8	12.8	8	21.8	15.8	34	18.5	10	10	7
	1/8	KPQY06-01	KPGY06-01	10		10		22.3	39				14
	1/4	KPQY06-02	KPGY06-02	14				26.7	43				20
8	1/8	KPQY08-01	KPGY08-01	12	15.2	12	25.3	23.5	43.5	20.5	26	18	14
	1/4	KPQY08-02	KPGY08-02	14				27.9	47.5				22
10	1/4	KPQY10-02	KPGY10-02	17	18.5	17	28.4	29.4	52.5	23	41	29	29
	3/8	KPQY10-03	KPGY10-03					30.8	54				39
12	3/8	KPQY12-03	KPGY12-03		20.9		30.4	32	57	24	58	46	41
	1/2	KPQY12-04	KPGY12-04	22				36.2	59.5				68

∗ Reference dimension for R threads after installation Note 1) **øD₁** indicates the maximum diameter.

(M5)



(R)



Male Branch: KPQU, KPGU

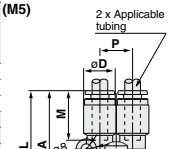
(M5)

(R)

Applicable tubing O.D. mm	Connection thread R M	Model		H (width across flats)	Note1) øD	L	P	A*	M	Effective area mm² TPH	Effective area mm² TPS	Weight g
4	M5 x 0.8	KPQU04-M5	KPGU04-M5	11	10.4	40.7	10.4	37	17	4	4	10
	1/8	KPQU04-01	KPGU04-01			42.3						11
	1/4	KPQU04-02	KPGU04-02	14		46.7		41				20
6	M5 x 0.8	KPQU06-M5	KPGU06-M5	13	12.8	43.9	12.8	40.5	18.5	10	10	12
	1/8	KPQU06-01	KPGU06-01			45.5						11
	1/4	KPQU06-02	KPGU06-02	14		49.9		44.5				21
8	1/8	KPQU08-01	KPGU08-01	17	15.2	53.6	15.2	48.5	20.5	26	18	15
	1/4	KPQU08-02	KPGU08-02			59.1		53.5				23
10	1/4	KPQU10-02	KPGU10-02	19	18.5	62.3	18.5	57	23	41	29	30
	3/8	KPQU10-03	KPGU10-03			59.2		54				40
12	3/8	KPQU12-03	KPGU12-03	22	20.9	64.9	20.9	59.5	24	58	46	40
	1/2	KPQU12-04	KPGU12-04			69.5		62.5				65

∗ Reference dimension for R threads after installation Note 1) **øD** indicates the maximum diameter.

(M5)



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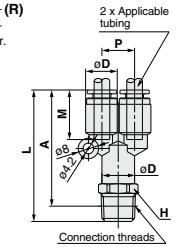
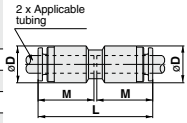


Straight Union: KPQH, KPGH

Applicable tubing O.D. mm	Model		Note 1) øD	L	M	Effective area mm² TPH	Effective area mm² TPS	Weight g
4	KPQH04-00	KPGH04-00	10.4	35.4	17	4	4	4
6	KPQH06-00	KPGH06-00	12.8	37.6	18.5	10	10	6
8	KPQH08-00	KPGH08-00	15.2	42.4	20.5	26	18	10
10	KPQH10-00	KPGH10-00	18.5	46.6	23	41	29	15
12	KPQH12-00	KPGH12-00	20.9	48.6	24	58	46	18

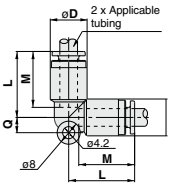
Note 1) **øD** indicates the maximum diameter.



Elbow: KPQL, KPGL

Applicable tubing O.D. mm	Model		Note 1) øD	L	Q	M	Effective area mm²		Weight g
							TPH	TPS	
4	KPQL04-00	KPGL04-00	10.4	19.7	4.5	17	3.5	3.5	3
6	KPQL06-00	KPGL06-00	12.8	21.8	5.3	18.5	9	9	7
8	KPQL08-00	KPGL08-00	15.2	25.3	6	20.5	22	15	11
10	KPQL10-00	KPGL10-00	18.5	28.4	6.8	23	35	25	16
12	KPQL12-00	KPGL12-00	20.9	30.4	7.5	24	50	40	20

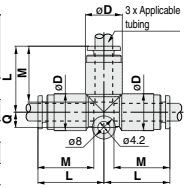
Note 1) ø**D** indicates the maximum diameter.



Union Tee: KPQT, KPGT

Applicable tubing O.D. mm	Model		Note 1) øD	L	Q	M	Effective area mm²		Weight g
							TPH	TPS	
4	KPQT04-00	KPGT04-00	10.4	19.7	4.5	17	4	4	7
6	KPQT06-00	KPGT06-00	12.8	21.8	5.3	18.5	10	10	9
8	KPQT08-00	KPGT08-00	15.2	25.3	6	20.5	26	18	16
10	KPQT10-00	KPGT10-00	18.5	28.4	6.8	23	41	29	25
12	KPQT12-00	KPGT12-00	20.9	30.4	7.5	24	58	46	29

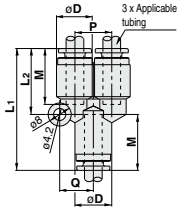
Note 1) ø**D** indicates the maximum diameter.



Union "Y": KPQU, KPGU

Applicable tubing O.D. mm	Model		Note 1) øD	L1	L2	P	Q	M	Effective area mm²		Weight g
									TPH	TPS	
4	KPQU04-00	KPGU04-00	10.4	36.8	19.6	10.4	9.7	17	4	4	7
6	KPQU06-00	KPGU06-00	12.8	40.1	21.8	12.8	11.7	18.5	10	10	10
8	KPQU08-00	KPGU08-00	15.2	46.7	26.5	15.2	13.7	20.5	26	18	17
10	KPQU10-00	KPGU10-00	18.5	52	29.7	18.5	16.1	23	41	29	26
12	KPQU12-00	KPGU12-00	20.9	55.2	31.9	20.9	18.1	24	58	46	32

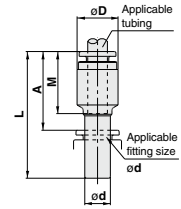
Note 1) ø**D** indicates the maximum diameter.



Plug-in Reducer: KPQR, KPGR

Applicable tubing O.D. mm	Applicable fitting size ød	Model		Note 1) øD	L	A	M	Effective area mm²		Weight g
								TPH	TPS	
4	6	KPQR04-06	KPGR04-06	10.4	38.4	19.1	17	4	4	3
	8	KPQR04-08	KPGR04-08		40.9	19.2				4
6	8	KPQR06-08	KPGR06-08	12.8	41.5	19.8	18.5	10	10	4
	10	KPQR06-10	KPGR06-10		44	20.2				5
8	10	KPQR08-10	KPGR08-10	15.2	46	22.2	20.5	26	18	5
	12	KPQR08-12	KPGR08-12		47					6
10	12	KPQR10-12	KPGR10-12	18.5	49.5	24.7	23	41	29	9

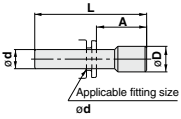
Note 1) ø**D** indicates the maximum diameter.



Plug: KPP

Applicable fitting size ød	Model	øD	L	A	Weight g
4	KPP-04	6	32	13.8	0.4
6	KPP-06	8	35	15.7	0.7
8	KPP-08	10	39	17.3	1.1
10	KPP-10	12	43	19.2	1.7
12	KPP-12	14	45.5	20.7	2.5

∗ The plug is commom for KPQ, KPG and KP series.



KP/KPQ/KPG Series
Specific Product Precautions 1

Be sure to read this before handling the products.
Refer to back page 50 for Safety Instructions and pages 13 to 17 for Fittings and Tubing Precautions.

Selection

⚠Caution

1. Please consult with SMC regarding fluids other than air, water and nitrogen gas.

Handling

⚠Caution

1. Store away from direct sunlight at 40°C or less.

2. Open the inner package of double packaging in a clean room or other clean environment.

Installation of Threads

⚠Caution

Be sure to wrap sealing tape around the taper threads for both resin and metal threads.

If used without sealing tape air leakage can occur.

1. KP Series (with resin thread)

1) Winding of sealant tape
Wrap the pipe tape 2 to 3 times around the threads, leaving 1.5 to 2 thread ridges exposed at the end of the threads.

2) Tightening
After tightening by hand, tighten an additional 2 to 3 turns using a tightening tool.

2. KPQ/KPG Series (with metal thread)

1) For M5
After tightening by hand, tighten approximately 1/6 turn further using a tightening tool. Reference values for the tightening torque are 1 to 1.5 N·m. Excessive tightening can cause air leakage due to thread damage or deformation of the gasket, etc. Insufficient tightening can cause loose threads and air leakage, etc.

Installation of Threads

⚠Caution

2) Taper thread

(1) Winding of sealant tape
Wrap the pipe tape 2 to 3 times around the threads, leaving 1 thread ridges exposed at the end of the threads.

(2) When installing, tighten with the proper torque shown in the table below. As a rule, this corresponds to two or three turns with a tool after tightening by hand.

Connection thread size	Proper tightening torque (N·m)
R 1/8	7 to 9
R 1/4	12 to 14
R 3/8	22 to 24
R 1/2	28 to 30

3. Tightening tools

Tighten with an appropriate wrench using the hexagon wrench flats on the body.

Position the wrench on the base as close as possible to the threads. 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. Installation of tubing

1) Grease is not used due to the KP series 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 end of the tubing, and insert it all the way in slowly and securely. Refer to dimension "M" in the dimension drawings for guidance on the insertion depth of tubing.

2. Removal of tubing

1) The outside diameter of tubes that have been used at high temperatures or for long periods of time will expand, and in some cases pipe fittings cannot be reattached. Tubes that cannot be attached should be discarded and replaced with new ones.

KP/KPQ/KPG Series
Specific Product Precautions 2

Be sure to read this before handling the products.
Refer to back page 50 for Safety Instructions and pages 13 to 17 for Fittings and Tubing Precautions.

Operating Environment

⚠Warning

1. Do not use in environments or locations where there is a danger of damage to fittings and tubing.
For fitting and tubing materials, refer to specifications and construction drawings, etc.

2. Provide shade in locations which receive direct sunlight.

⚠Caution

1. KP series are special One-touch fittings for use on clean blowing and washing lines.
Please consult with SMC regarding other types of applications.

Seal material: The durability of EPDM with respect to mineral oils is inferior, making it unsuitable for piping in general pneumatic equipment.
Use KPQ and KPG series for piping to general pneumatic equipment.

Maintenance

⚠Caution

1. Tightening of blow fittings (resin taper threads for piping)
Since KP series taper threads are made of resin, minute leakage may gradually occur due to stress relaxation. Perform periodic inspections, and if leakage is detected correct the problem by further tightening. If additional tightening becomes ineffective, replace the fitting with a new product.

2. Check for the following during regular maintenance, and replace components as necessary.
a) Scratches, gouges, abrasion, corrosion
b) Leakage, refer to item 3 regarding taper thread leakage.
c) Twisting, flattening or distortion of tubing
d) Hardening, deterioration or softness of tubing

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