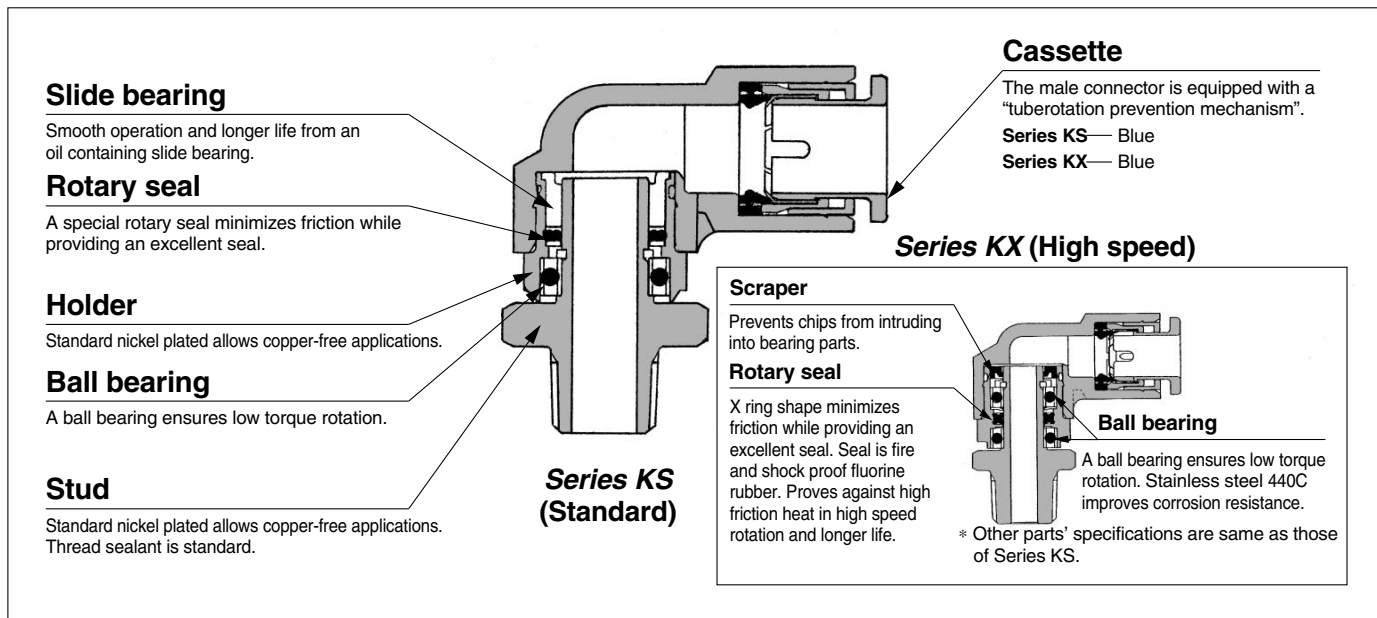


Rotary One-touch Fittings Standard Type/High Speed Type Series **KS/KX**



Low torque rotation style Rotary One-touch fittings

Applicable to use for
oscillating and rotating
sections in robots.

Copper-free specifications
Brass parts are all
electroless nickel plated.

Thread seal is standard.



Applicable Tubing

Tubing material ^{Note)}	Nylon, Soft nylon, Polyurethane
Tubing O.D.	ø4, ø6, ø8, ø10, ø12

Note) Use caution about the max. operating pressure for soft nylon and polyurethane.

Specifications

Fluid	Air
Maximum 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 B 0203 (Taper thread for piping), JIS B 0209, class 2 (Metric coarse thread)

Rotating Torque/Allowable Number of Rotations



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

Note) Rotating torque under pressure 0.5 MPa

Principal Parts Material

Model	Series KS	Series KX
Body	PBT	
Stud, Holder, Guide	C3604BD (Electroless nickel plated), Stainless steel 304	
Chuck, Retainer	Stainless steel (Stainless steel 304) ⁽¹⁾ (Retainer (C) of Series KX: C3604BD (electroless nickel plated))	
Collet, Release button, Snap ring	Polyacetal	
O-ring, Packing	NBR	
Rotary seal	NBR	FPM
Slide bearing	Oil-containing polyacetal	—
Scraper	—	NBR
Ball bearing	Bearing steel	Stainless steel 440C
Gasket	Stainless steel (Stainless steel 304), NBR	

Series KS/Series KX

Model	Connection thread	Applicable tubing O.D. (mm)				
		ø4	ø6	ø8	ø10	ø12
Male connector KSH KXH 	M5 x 0.8	●	●			
	M6 x 1	●	●			
	R 1/8	●	●	●		
	R 1/4		●	●	●	
	R 3/8			●	●	●
	R 1/2				●	●
Male elbow KSL KXL 	M5 x 0.8	●	●			
	M6 x 1	●	●			
	R 1/8	●	●	●		
	R 1/4		●	●	●	
	R 3/8			●	●	●
	R 1/2				●	●

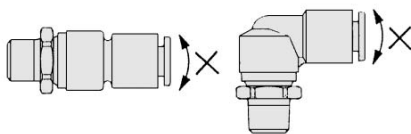
- K
- M
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- MS
- T
- VMG

⚠ Precautions

Be sure to read before handling. Refer to pages 15-18-3 to 15-18-4 for Safety Instructions and Common Precautions on the products mentioned in this catalog, and refer to pages 15-1-10 to 15-1-11 for Precautions on every series.

⚠ Caution

- Implement the tube piping in such a way that lateral load should not be applied on the ball bearings, otherwise it may adversely affect the life expectancy.
A flexible polyurethane tube is recommended when the lateral load is applied.



Series KS/KX

Male connector: KSH (Standard)

<M5, M6>



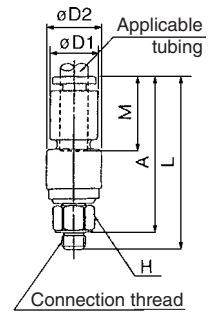
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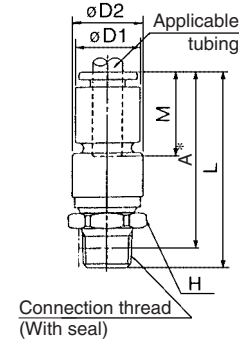
Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	D1	D2	L	A	M	Min. port size	Effective area (mm ²)		Weight (g)
										Nylon	Urethane	
4	M5 x 0.8	KSH04-M5	8	10.4	12	36.5	33	16	2.5	4.0	4.0	9
	M6 x 1	KSH04-M6	37			34	14					
	1/8	KSH04-01S	12			38	34					14
6	M5 x 0.8	KSH06-M5	8	12.8	14	37.5	33.5	17	2.5	4.0	4.0	12
	M6 x 1	KSH06-M6	38			34	17					
	1/8	KSH06-01S	14			39.5	35.5					17
	1/4	KSH06-02S	14			42.5	36.5					17
	3/8	KSH06-03S	14			44	40					17
8	1/8	KSH08-01S	17	15.2	17	44	40	18.5	6	26.1	18.0	23
	1/4	KSH08-02S	17			47	41					29
	3/8	KSH08-03S	17			48	41.5					37
10	1/4	KSH10-02S	22	18.5	22	54	48	21	7	36.3	29.5	55
	3/8	KSH10-03S	22			55	48.5					63
	1/2	KSH10-04S	22			57.5	49.5					81
12	3/8	KSH12-03S	24	20.9	24	57	50.5	22	8	46.1	16.1	75
	1/2	KSH12-04S	24			60	52					92

* Reference dimensions after R thread installation.

<M5, M6>



<R>



Male Connector: KXH (High speed)

<M5, M6>



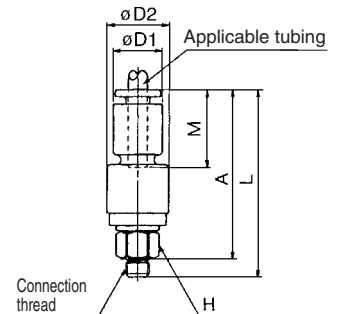
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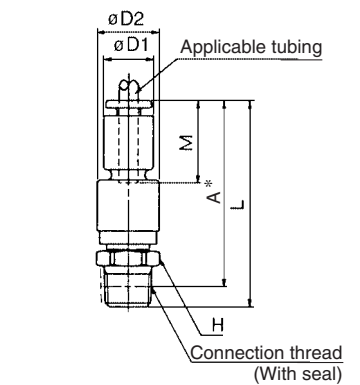
Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	D1	D2	L	A	M	Min. port size	Effective area (mm ²)		Weight (g)
										Nylon	Urethane	
4	M5 x 0.8	KXH04-M5	8	10.4	13	38.5	35	16	2.5	4.0	4.0	11
	M6 x 1	KXH04-M6	39			36	16					
	1/8	KXH04-01S	12			40	36					16
6	M5 x 0.8	KXH06-M5	8	12.8	15	39.5	36	17	2.5	4.0	4.0	15
	M6 x 1	KXH06-M6	40			36	15					
	1/8	KXH06-01S	14			42	38					20
	1/4	KXH06-02S	14			45	39					26
	3/8	KXH06-03S	14			46	42					28
8	1/8	KXH08-01S	17	15.2	18	46	42	18.5	6	26.1	18.0	34
	1/4	KXH08-02S	17			49	43					42
	3/8	KXH08-03S	17			50	44					42
10	1/4	KXH10-02S	22	18.5	23.5	58	52	21	7	36.3	29.5	68
	3/8	KXH10-03S	22			59	53					76
	1/2	KXH10-04S	22			62	54					94
12	3/8	KXH12-03S	24	20.9	26	60	53	22	8	46.1	46.1	88
	1/2	KXH12-04S	24			63	55					105

* Reference dimensions after R thread installation.

<M5, M6>



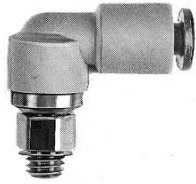
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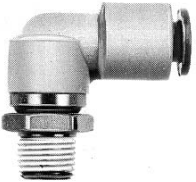
Rotary One-touch Fittings Series **KS/KX**

Male Elbow: KSL (Standard)

<M5, M6>



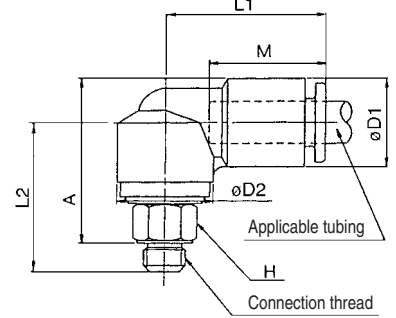
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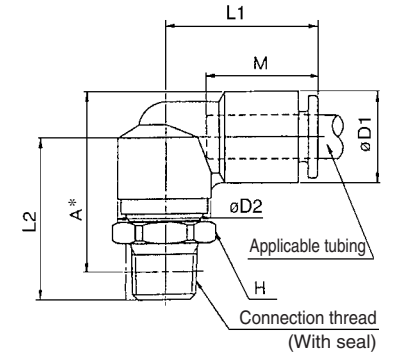
Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	D1	D2	L1	L2	A	M	Min. port size	Effective area (mm ²)		Weight (g)
											Nylon	Urethane	
4	M5 x 0.8	KSL04-M5	8	10.4	12	21	20.5	22	16	2.5	3.5	3.5	9
	M6 x 1	KSL04-M6	21				23.5	14					
	1/8	KSL04-01S	12				22	23.5					
6	M5 x 0.8	KSL06-M5	8	12.8	14	23	21	23.5	17	2.5	3.5	3.5	12
	M6 x 1	KSL06-M6	21.5				24	17					
	1/8	KSL06-01S	14				23	25.5					17
	1/4	KSL06-02S	26				26.5	17					
	3/8	KSL06-03S	26.5				30	17					
8	1/8	KSL08-01S	17	15.2	17	26	26.5	30	18.5	6	21.6	14.9	23
	1/4	KSL08-02S	29.5				31	29					
	3/8	KSL08-03S	31				32	38					
10	1/4	KSL10-02S	22	18.5	22	31.5	34	37.5	21	7	30.5	25.0	56
	3/8	KSL10-03S	35				38	64					
	1/2	KSL10-04S	38				39.5	82					
12	3/8	KSL12-03S	24	20.9	24	34	36.5	40.5	22	8	35.1	35.1	76
	1/2	KSL12-04S	39.5				42	93					

* Reference dimensions after R thread installation.

<M5, M6>



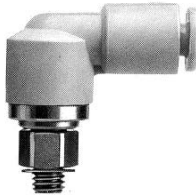
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- VMG

Male Elbow: KXL (High speed)

<M5, M6>



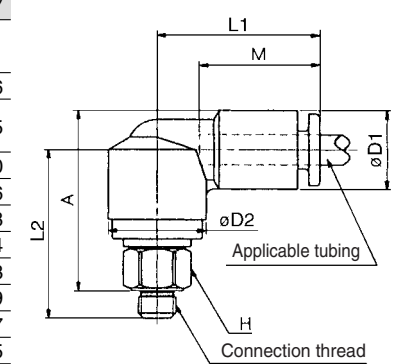
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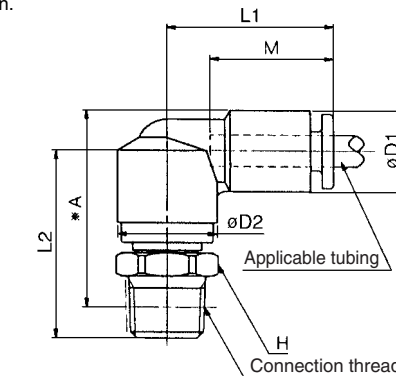
Applicable tubing O.D. (mm)	Connection thread R	Model	H (width across flats)	D1	D2	L1	L2	A	M	Min. port size	Effective area (mm ²)		Weight (g)
											Nylon	Urethane	
4	M5 x 0.8	KXL04-M5	8	10.4	13	22	22.5	24	16	2.5	3.5	3.5	11
	M6 x 1	KXL04-M6	23				25	16					
	1/8	KXL04-01S	12				24	25					
6	M5 x 0.8	KXL06-M5	8	12.8	15	24	23.5	26	17	2.5	3.5	3.5	15
	M6 x 1	KXL06-M6	24				28	17					
	1/8	KXL06-01S	14				25	28					17
	1/4	KXL06-02S	28				29	17					
	3/8	KXL06-03S	29				32	17					
8	1/8	KXL08-01S	17	15.2	18	27	29	32	18.5	6	21.6	14.9	28
	1/4	KXL08-02S	32				33	34					
	3/8	KXL08-03S	33				34	43					
10	1/4	KXL10-02S	22	18.5	23.5	32	38	42	21	7	30.5	25.0	69
	3/8	KXL10-03S	39				43	77					
	1/2	KXL10-04S	42				43	95					
12	3/8	KXL12-03S	24	20.9	26	35	40	44	22	8	35.1	35.1	89
	1/2	KXL12-04S	43				45	106					

* Reference dimensions after R thread installation.

<M5, M6>



<R>

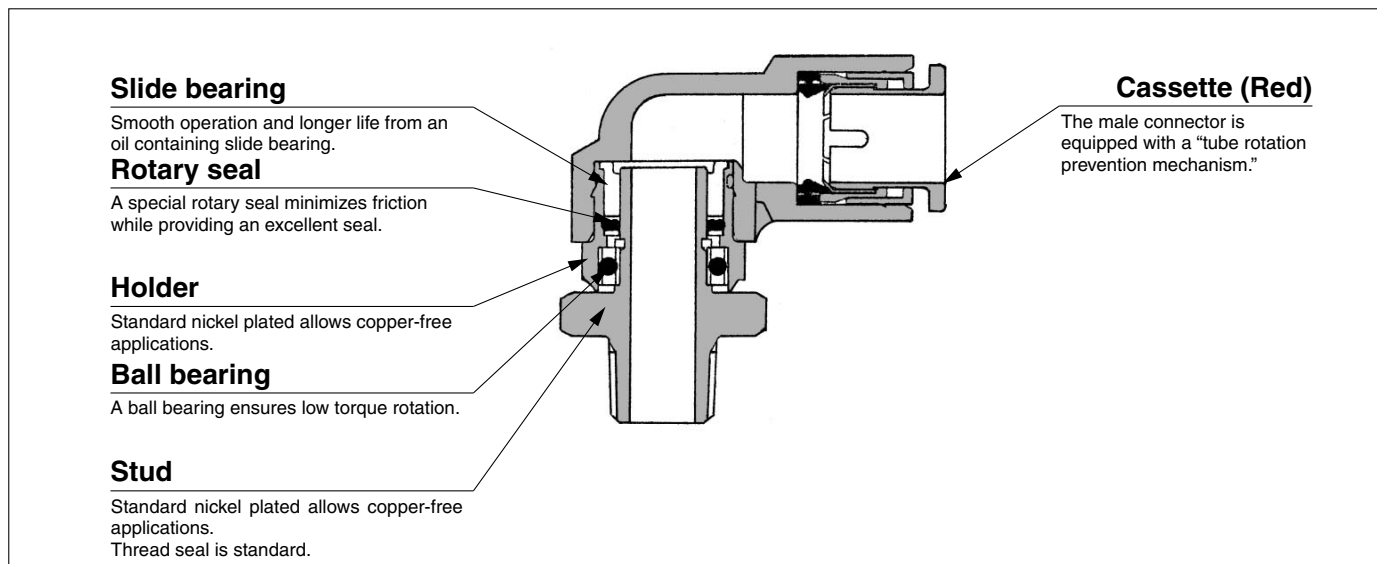




Inch-size Rotary One-touch Fittings Standard Type

Series *KS*

Applicable Tubing: Inch Size



Low-torque rotation style rotary One-touch fittings

Applicable to use for oscillating and rotating sections in robots.

Applicable to non-copper type (With electroless nickel plated)

Thread seal is standard.



Male elbow

Male connector

Applicable Tubing

Tubing material ^{Note)}	Nylon, Soft nylon, Polyurethane
Tubing O.D.	ø5/32", ø1/4", ø5/16", ø3/8"

Note) Monitor max.operating pressure for soft nylon and polyurethane tubing.

Specification

Fluid	Air
Maximum 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	ANSI/ASME B1.20.1-1983 (NTP thread) JIS B 0212 2A, Class 2B (UNF thread)

Rotating Torque/Allowable Number of Rotations



Applicable tubing O.D.	ø5/32"	ø1/4"	ø5/16"	ø3/8"
Rotating torque (N·m) ^{Note)}	0.006	0.012	0.014	0.020
Allowable number of rotations (S ⁻¹)	8.3	8.3	6.7	5

Note) Rotating torque under pressure 0.5 MPa

Principal Parts Material

Body	PBT
Stud, Holder, Guide	Stainless steel 304, C3604BD (With electroless nickel plated)
Chuck, Retainer	Stainless steel 304
Collet, Release button, Snap ring	Polyacetal
O-ring, Packing	NBR
Rotary seal	NBR
Slide bearing	Oil-containing polyacetal
Scraper	—
Ball bearing	Bearing steel
Gasket	Stainless steel 304, NBR

Series KS

Model	Connection thread	Applicable tubing O.D. (inch)			
		$\varnothing 5/32''$	$\varnothing 1/4''$	$\varnothing 5/16''$	$\varnothing 3/8''$
Male connector KSH 	10-32 UNF	●			
	NPT 1/8	●	●	●	
	NPT 1/4		●	●	●
	NPT 3/8				●
Male elbow KSL 	10-32 UNF	●			
	NPT 1/8	●	●	●	
	NPT 1/4		●	●	●
	NPT 3/8				●

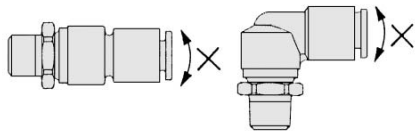
- K
- M
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- MS
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- VMG

⚠ Precautions

Be sure to read before handling. Refer to pages 15-18-3 to 15-18-4 for Safety Instructions and Common Precautions on the products mentioned in this catalog, and refer to pages 15-1-10 to 15-1-11 for Precautions on every series.

⚠ Caution

- Implement the tube piping in such a way that the lateral load should not be applied. Although ball bearing is adopted, however if the lateral load were applied on it, it may adversely affect the life expectancy. A flexible polyurethan tube is recommended when the lateral load is applied.



Series KS

Male Connector: KSH (Standard)

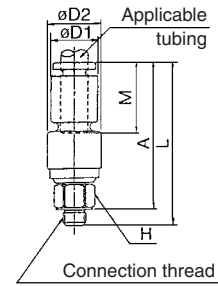
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Applicable tubing O.D. (inch)	Connection thread UNF NPT	Model	H (Width across flats)	D1	D2	L	A *		M	Min. port size	Effective area (mm ²)		Weight (g)
											Nylon	Urethane	
5/32	10-32 UNF	KSH03-32	8	10.4	12	36.5	33	16	2.5	4.0	4.0	9	
	1/8	KSH03-34S	12.7				38.5					34.5	14
1/4	1/8	KSH07-34S	14.29	13.2	14	39.5	35.5	17	4	13.4	10.4	17	
	1/4	KSH07-35S				42.5	36.5					23	
5/16	1/8	KSH09-34S	17.46	15.2	17	44	40	18.5	6	26.1	18.0	23	
	1/4	KSH09-35S				47	41					29	
3/8	1/4	KSH11-35S	22.23	17.9	22	54	48	21	7	36.3	29.5	55	
	3/8	KSH11-36S				55	48.5					63	

* Reference dimensions after NPT thread installation.

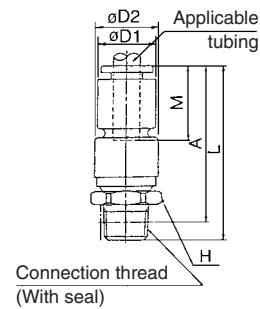
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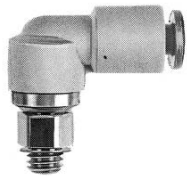


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Male Elbow: KSL (Standard)

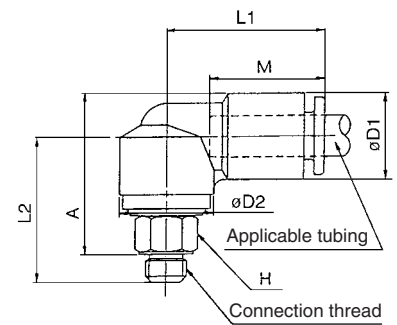
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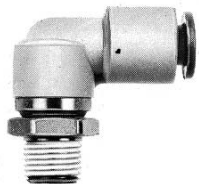
Applicable tubing O.D. (inch)	Connection thread UNF NPT	Model	H (Width across flats)	D1	D2	L1	L2	A *		M	Min. port size	Effective area (mm ²)		Weight (g)
												Nylon	Urethane	
5/32	10-32 UNF	KSL03-32	8	10.4	12	21	20.5	22	16	2.5	3.5	3.5	9	
	1/8	KSL03-34S	12.7					22					23.5	14
1/4	1/8	KSL07-34S	14.29	13.2	14	23.5	23	25.5	17	4	8.6	8.6	17	
	1/4	KSL07-35S					26	26.5					23	
5/16	1/8	KSL09-34S	17.46	15.2	17	26	26.5	30	18.5	6	21.6	14.9	23	
	1/4	KSL09-35S					29.5	31					29	
3/8	1/4	KSL11-35S	22.23	17.9	22	31.5	34	37	21	7	30.5	25.0	56	
	3/8	KSL11-36S					35	38					64	

* Reference dimensions after NPT thread installation.

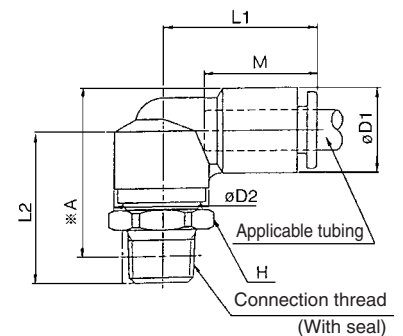
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Safety Instructions

These safety instructions are intended to prevent a hazardous situation 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 ISO 4414 ^{Note 1)}, JIS B 8370 ^{Note 2)} and other safety practices.

 **Caution** : Operator error could result in injury or equipment damage.

 **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, their compatibility for the specific pneumatic system must be based on specifications or after analysis and/or tests to meet your specific requirements. 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 once measures to prevent falling or runaway of the driver objects have been confirmed.
2. When equipment is to be removed, confirm the safety process as mentioned above. Cut the supply pressure for this equipment and exhaust all residual compressed air in the system.
3. Before machinery/equipment is restarted, take measures to prevent shooting-out of cylinder piston rod, etc.

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 beverages, recreation equipment, emergency stop circuits, clutch and brake circuits in 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.



Common Precautions

Be sure to read before handling.

For detailed precautions on every series, refer to main text.

Selection

Warning

1. Confirm the specifications.

Products represented in this catalog are designed for use in compressed air applications only (including vacuum), unless otherwise indicated.

Do not use the product outside their design parameters.

Please contact SMC when using the products in applications other than compressed air (including vacuum).

Mounting

Warning

1. Instruction manual

Install the products and operate them only after reading the instruction manual carefully and understanding its contents. Also keep the manual where it can be referred to as necessary.

2. Securing the space for maintenance

When installing the products, please allow access for maintenance.

3. Tightening torque

When installing the products, please follow the listed torque specifications.

Piping

Caution

1. Before piping

Make sure that all debris, cutting oil, dust, etc. are removed from the piping.

2. Wrapping of pipe tape

When screwing piping or fittings into ports, ensure that chips from the pipe threads or sealing material do not get inside the piping. Also, when the pipe tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.

Air Supply

Warning

1. Operating fluid

Please consult with SMC when using the product in applications other than compressed air (including vacuum).

Regarding products for general fluid, please ask SMC about applicable fluids.

2. Install an air dryer, aftercooler, etc.

Excessive condensate in a compressed air system may cause valves and other pneumatic equipment to malfunction.

Installation of an air dryer, after cooler etc. is recommended.

3. Drain flushing

If condensate in the drain bowl is not emptied on a regular basis, the bowl will over flow and allow the condensate to enter the compressed air lines.

If the drain bowl is difficult to check and remove, it is recommended that a drain bowl with the auto-drain option be installed.

For compressed air quality, refer to "Air Preparation Equipment" catalog.

4. Use clean air

If the compressed air supply is contaminated with chemicals, synthetic materials, corrosive gas, etc., it may lead to break down or malfunction.

Operating Environment

Warning

1. Do not use in environments where the product is directly exposed to corrosive gases, chemicals, salt water, water or steam.

2. Do not expose the product to direct sunlight for an extended period of time.

3. Do not use in a place subject to heavy vibrations and/or shocks.

4. Do not mount the product in locations where it is exposed to radiant heat.

Maintenance

Warning

1. Maintenance procedures are outlined in the operation manual.

Not following proper procedures could cause the product to malfunction and could lead to damage to the equipment or machine.

2. Maintenance work

If handled improperly, compressed air can be dangerous.

Assembly, handling and repair of pneumatic systems should be performed by qualified personnel only.

3. Drain flushing

Remove drainage from air filters regularly. (Refer to the specifications.)

4. Shut-down before maintenance

Before attempting any kind of maintenance make sure the supply pressure is shut of and all residual air pressure is released from the system to be worked on.

5. Start-up after maintenance and inspection

Apply operating pressure and power to the equipment and check for proper operation and possible air leaks. If operation is abnormal, please verify product set-up parameters.

6. Do not make any modifications to be product.

Do not take the product apart.

Quality Assurance Information (ISO 9001, ISO 14001)

Reliable quality of products in the global market

To enable our customers throughout the world to use our products with even greater confidence, SMC has obtained certification for international standards “ISO 9001” and “ISO 14001”, and created a complete structure for quality assurance and environmental controls. SMC products pursue to meet its customers’ expectations while also considering company’s contribution in society.

Quality management system ISO 9001

This is an international standard for quality control and quality assurance. SMC has obtained a large number of certifications in Japan and overseas, providing assurance to our customers throughout the world.



Environmental management system ISO 14001

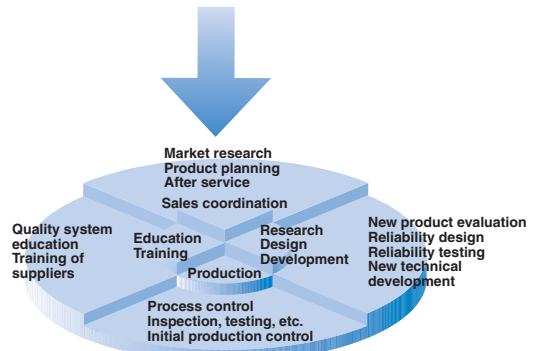
This is an international standard related to environmental management systems and environmental inspections. While promoting environmentally friendly automation technology, SMC is also making diligent efforts to preserve the environment.



SMC’s quality control system



Quality policies



Quality control activities

SMC Product Conforming to Inter

SMC products complying with EN/ISO, CSA/UL standards are supporting



The CE mark indicates that machines and components meet essential requirements of all the EC Directives applied.

It has been obligatory to apply CE marks indicating conformity with EC Directives when machines and components are exported to the member Nations of the EU.

Once "A manufacturer himself" declares a product to be safe by means of CE marking (declaration of conformity by manufacturer), free distribution inside the member Nations of the EU is permissible.

■ CE Mark

SMC provides CE marking to products to which EMC and Low Voltage Directives have been applied, in accordance with CETOP (European hydraulics and pneumatics committee) guide lines.

■ As of February 1998, the following 18 countries will be obliged to conform to CE mark legislation

Iceland, Ireland, United Kingdom, Italy, Austria, Netherlands, Greece, Liechtenstein, Sweden, Spain, Denmark, Germany, Norway, Finland, France, Belgium, Portugal, Luxembourg

■ EC Directives and Pneumatic Components

• Machinery Directive

The Machinery Directive contains essential health and safety requirements for machinery, as applied to industrial machines e.g. machine tools, injection molding machines and automatic machines. Pneumatic equipment is not specified in Machinery Directive. However, the use of SMC products that are certified as conforming to EN Standards, allows customers to simplify preparation work of the Technical Construction File required for a Declaration of Conformity.

• Electromagnetic Compatibility (EMC) Directive

The EMC Directive specifies electromagnetic compatibility. Equipment which may generate electromagnetic interference or whose function may be compromised by electromagnetic interference is required to be immune to electromagnetic affects (EMS/immunity) without emitting excessive electromagnetic affects (EMI/emission).

• Low Voltage Directive

This directive is applied to products, which operate above 50 VAC to 1000 VAC and 75 VDC to 1500 VDC operating voltage, and require electrical safety measures to be introduced.

• Simple Pressure Vessels Directive

This directive is applied to welded vessels whose maximum operating pressure (PS) and volume of vessel (V) exceed 50 bar/L. Such vessels require EC type examination and then CE marking.

national Standards

you to comply with EC directives and CSA/UL standards.



■ CSA Standards & UL Standards

UL and CSA standards have been applied in North America (U.S.A. and Canada) symbolizing safety of electric products, and are defined to mainly prevent danger from electric shock or fire, resulting from trouble with electric products. Both UL and CSA standards are acknowledged in North America as the first class certifying body. They have a long experience and ability for issuing product safety certificate. Products approved by CSA or UL standards are accepted in most states and governments beyond question.

Since CSA is a test certifying body as the National Recognized Testing Laboratory (NRTL) within the jurisdiction of Occupational Safety and Health Administration (OSHA), SMC was tested for compliance with CSA Standards and UL Standards at the same time and was approved for compliance with the two Standards. The above CSA NRTL/C logo is described on a product label in order to indicate that the product is approved by CSA and UL Standards.

■ TSSA (MCCR) Registration Products

TSSA is the regulation in Ontario State, Canada. The products that the operating pressure is more than 5 psi (0.03 MPa) and the piping size is bigger than 1 inch. fall into the scope of TSSA regulation.

Products conforming to CE Standard

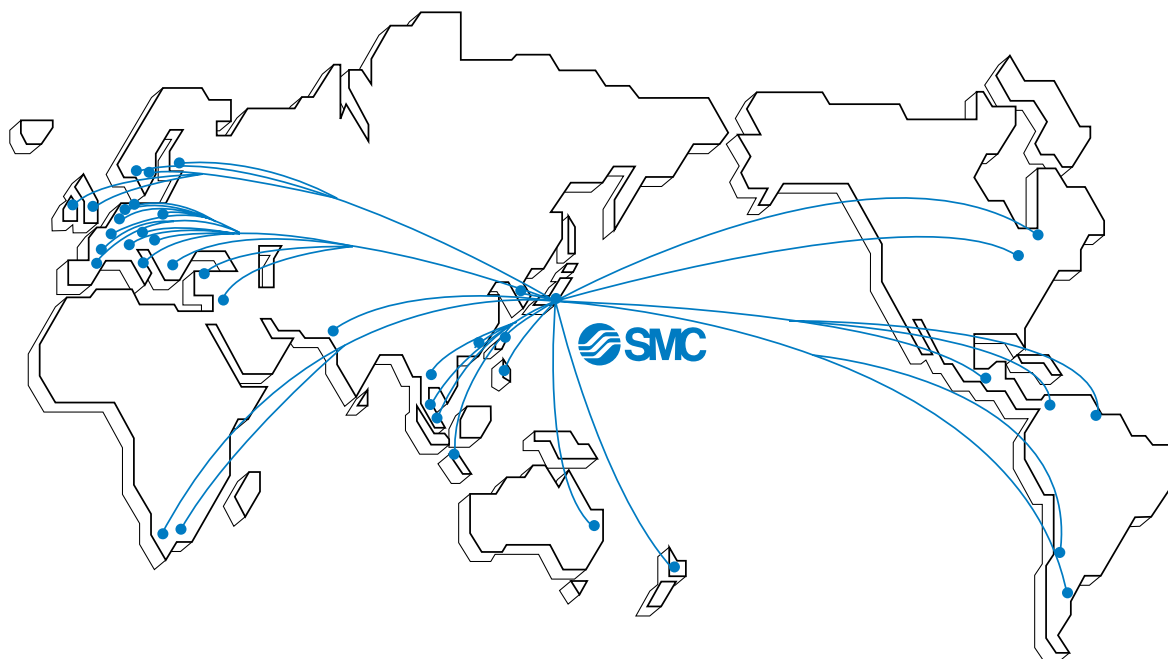


With CE symbol for simple visual recognition

In this catalog each accredited product series is indicated with a CE mark symbol. However, in some cases, every available models may not meet CE compliance. Please visit our web site for the latest selection of available models with CE mark.

<http://www.smcworld.com>

SMC's Global Service Network



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