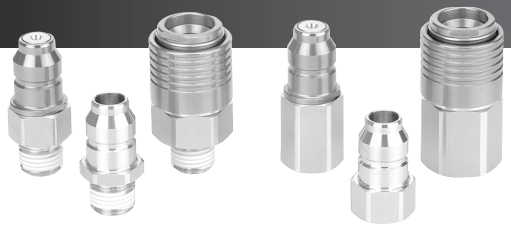
Series KKA



Stainless steel type

NEW

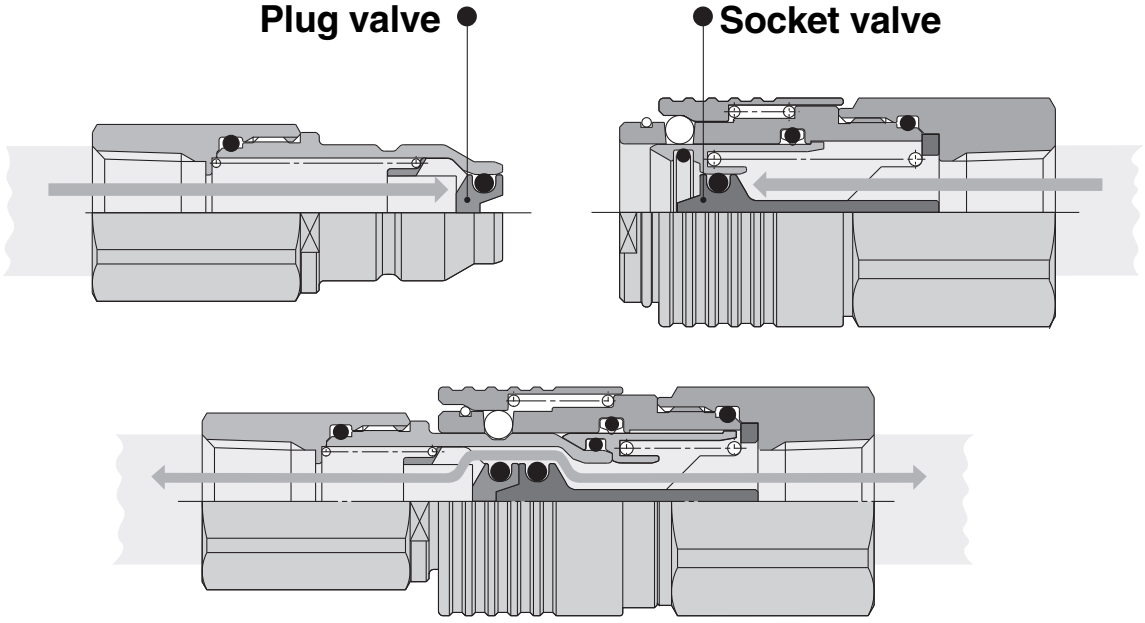
Connection port size 1 to 1 1/2 is newly added.

Series KKA7/8/9

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

- **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.**
  Liquid dripping: 0.02 to 0.77 cm^3 at each removal
  Aeration: 0.1 to 2.7 cm^3 at each removal



- **Non-greased specification (standard)**
  Allows smooth installation and removal even without grease
  • O-ring: Fluorine coated
  • Sliding parts of plug and socket: Plated with fluorine-contained material

- **Fluid: Water, Air**

- **Operating temperature range: –5 to 150°C**
  Note) This product should not be used with steam.

Plug (P)

Male thread type

With check valve

Without check valve

Body size	Port size	Part no.	
		With check valve	Without check valve
1/8	R 1/8	KKA3P-01M	KKA3P-01M-1
	R 1/4	-02M	-02M-1
	R 3/8	-03M	-03M-1
1/4	R 1/4	KKA4P-02M	KKA4P-02M-1
	R 3/8	-03M	-03M-1
	R 1/2	-04M	-04M-1
1/2	R 3/8	KKA6P-03M	KKA6P-03M-1
	R 1/2	-04M	-04M-1
	R 3/4	-06M	-06M-1
3/4	R 1/2	KKA7P-04M	—
	R 3/4	-06M	—
	R 1	-10M	—
1	R 3/4	KKA8P-06M	—
	R 1	-10M	—
	R 1 1/4	-12M	—
1 1/4	R 1	KKA9P-10M	—
	R 1 1/4	-12M	—
	R 1 1/2	-14M	—

Female thread type

With check valve

Without check valve

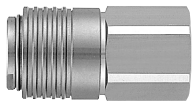
Body size	Port size	Part no.	
		With check valve	Without check valve
1/8	Rc 1/8	KKA3P-01F	KKA3P-01F-1
	Rc 1/4	-02F	-02F-1
	Rc 3/8	-03F	-03F-1
1/4	Rc 1/4	KKA4P-02F	KKA4P-02F-1
	Rc 3/8	-03F	-03F-1
	Rc 1/2	-04F	-04F-1
1/2	Rc 3/8	KKA6P-03F	KKA6P-03F-1
	Rc 1/2	-04F	-04F-1
	Rc 3/4	-06F	-06F-1
3/4	Rc 1/2	KKA7P-04F	—
	Rc 3/4	-06F	—
	Rc 1	-10F	—
1	Rc 3/4	KKA8P-06F	—
	Rc 1	-10F	—
	Rc 1 1/4	-12F	—
1 1/4	Rc 1	KKA9P-10F	—
	Rc 1 1/4	-12F	—
	Rc 1 1/2	-14F	—

Socket (S)

Male thread type

Body size	Port size	Part no.	
		With check valve	Without check valve
1/8	R 1/8	KKA3S-01M	KKA3S-01M-1
	R 1/4	-02M	-02M-1
	R 3/8	-03M	-03M-1
1/4	R 1/4	KKA4S-02M	KKA4S-02M-1
	R 3/8	-03M	-03M-1
	R 1/2	-04M	-04M-1
1/2	R 3/8	KKA6S-03M	KKA6S-03M-1
	R 1/2	-04M	-04M-1
	R 3/4	-06M	-06M-1
3/4	R 1/2	KKA7S-04M	—
	R 3/4	-06M	—
	R 1	-10M	—
1	R 3/4	KKA8S-06M	—
	R 1	-10M	—
	R 1 1/4	-12M	—
1 1/4	R 1	KKA9S-10M	—
	R 1 1/4	-12M	—
	R 1 1/2	-14M	—

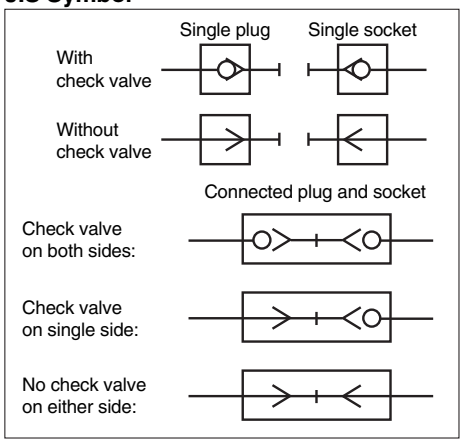
Female thread type



Body size	Port size	Part no.	
		With check valve	Without check valve
1/8	Rc 1/8	KKA3S-01F	KKA3S-01F-1
	Rc 1/4	-02F	-02F-1
	Rc 3/8	-03F	-03F-1
1/4	Rc 1/4	KKA4S-02F	KKA4S-02F-1
	Rc 3/8	-03F	-03F-1
	Rc 1/2	-04F	-04F-1
1/2	Rc 3/8	KKA6S-03F	KKA6S-03F-1
	Rc 1/2	-04F	-04F-1
	Rc 3/4	-06F	-06F-1
3/4	Rc 1/2	KKA7S-04F	—
	Rc 3/4	-06F	—
	Rc 1	-10F	—
1	Rc 3/4	KKA8S-06F	—
	Rc 1	-10F	—
	Rc 1 1/4	-12F	—
1 1/4	Rc 1	KKA9S-10F	—
	Rc 1 1/4	-12F	—
	Rc 1 1/2	-14F	—

S Couplers
Series KKA
Stainless steel type

JIS Symbol



Characteristics with check valve on both sides

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.

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 (with 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

How to Order

KKA [4] [P] – [02] [M] [-1]

Body size

3	1/8
4	1/4
6	1/2
7	3/4
8	1
9	1 1/4

Socket/Plug designation

P	Plug
S	Socket

Port size

Symbol	Thread size
01	R, Rc 1/8
02	R, Rc 1/4
03	R, Rc 3/8
04	R, Rc 1/2
06	R, Rc 3/4
10	R, Rc 1
12	R, Rc 1 1/4
14	R, Rc 1 1/2

Connection type

Symbol	Type
M	Male thread (with seal)
F	Female thread

Built-in check valve

Nil	With check valve
-1	Without check valve

Note) KKA7/8/9 is not available without a check valve. Contact us when such a type is needed.

Built-in check valve	Plug	Socket	Availability
	Yes	Yes	○
	No	Yes	○
	No	No	○
	Yes	No	×

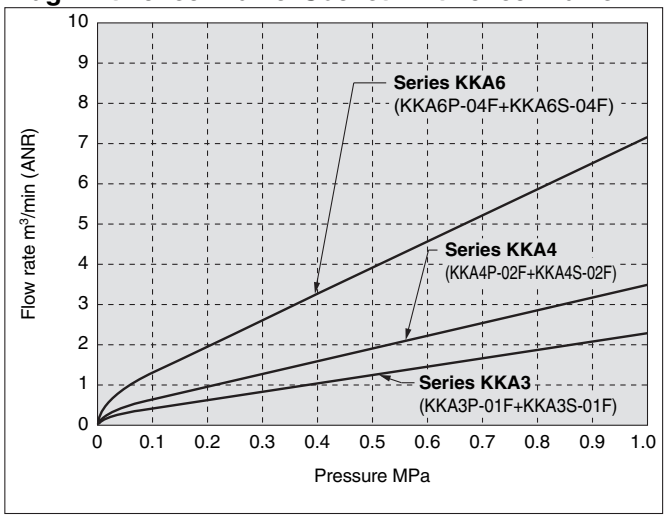
Note) A plug with check valve should be used in combination with a socket with check valve.
If a socket without check valve is used, the check valve of the plug will not open.

Note) Please refer to the previous page to confirm the right conbination.

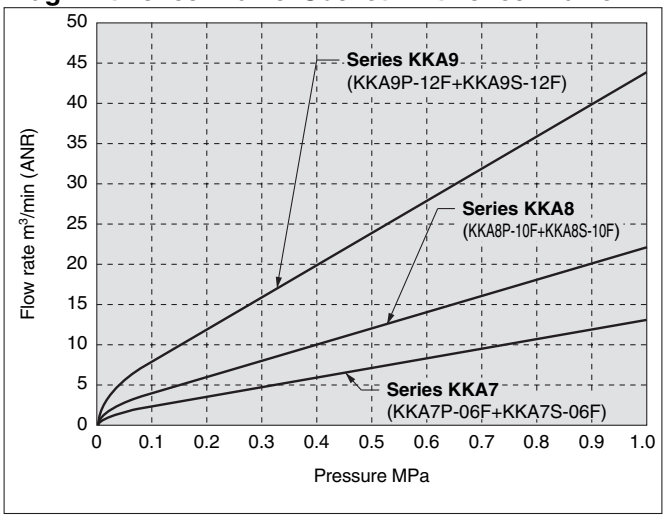
Flow Characteristics

Air

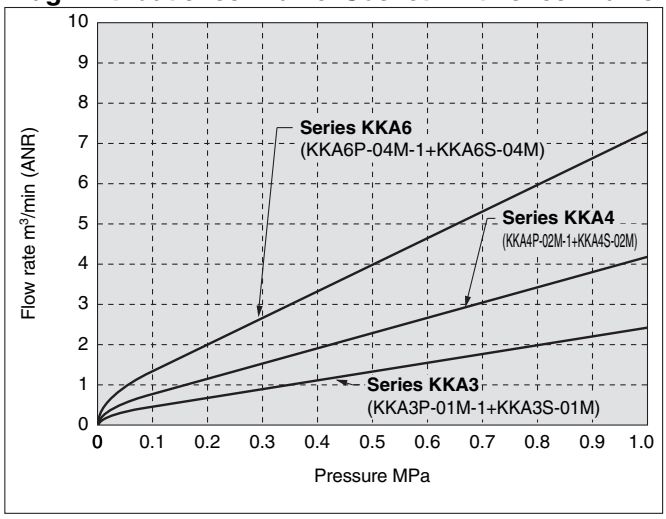
Plug: With check valve Socket: With check valve



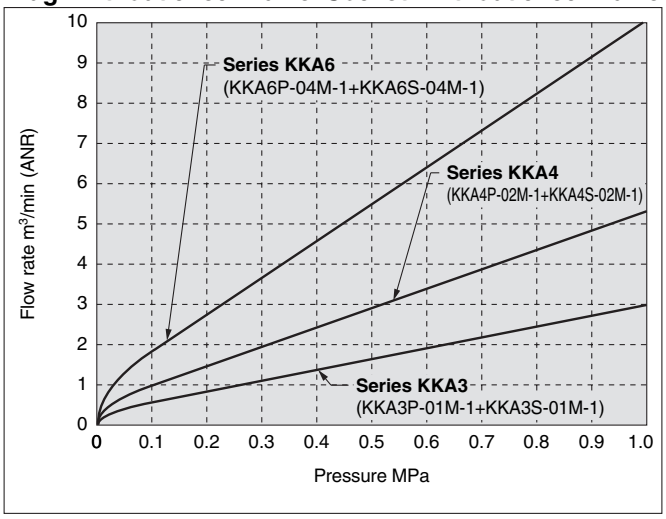
Plug: With check valve Socket: With check valve



Plug: Without check valve Socket: With check valve



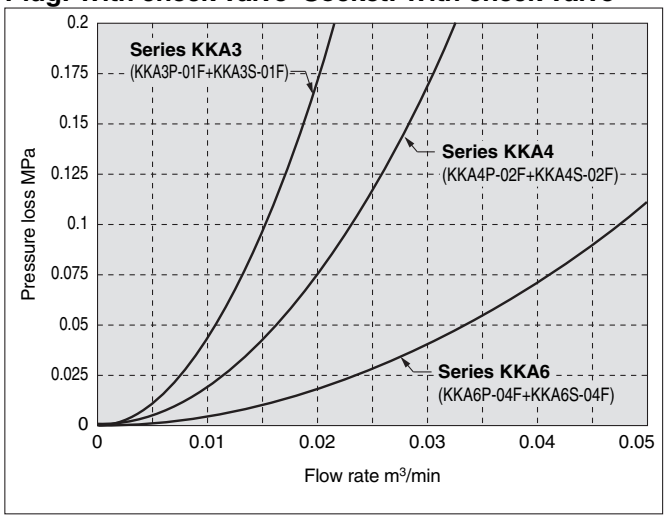
Plug: Without check valve Socket: Without check valve



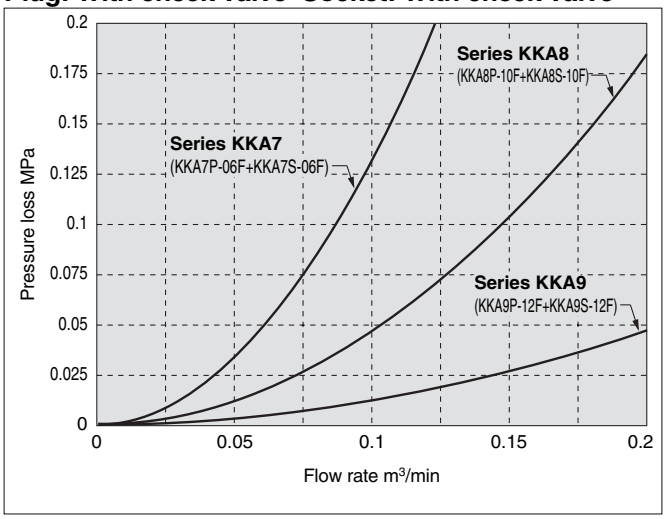
Pressure Loss

Water

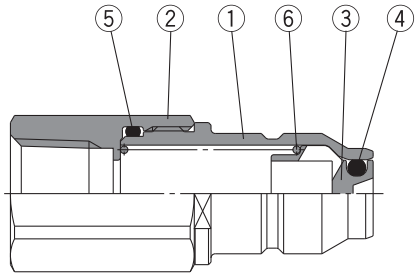
Plug: With check valve Socket: With check valve



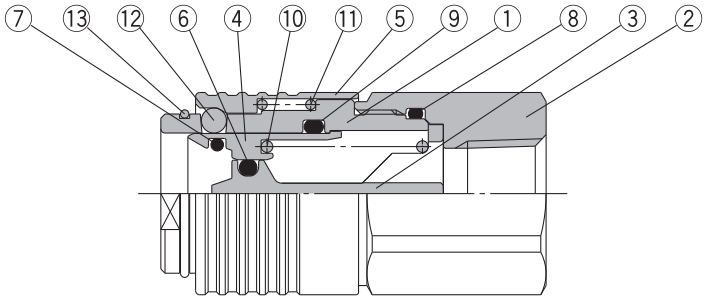
Plug: With check valve Socket: With check valve



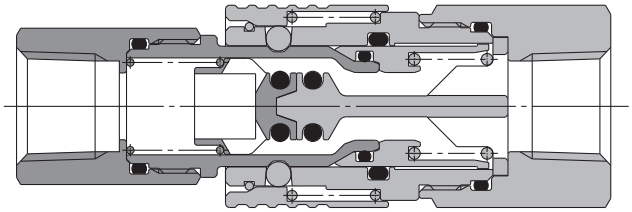
Construction



Plug



Socket



Plug

No.	Description	Material	Note
1	**Stem**	Stainless steel	Plated with fluorine-contained material
2	**Rear stem**	Stainless steel	
3	**Plug valve**	Stainless steel	
4	**Valve O-ring**	Special FKM	Fluorine coated
5	**Stem O-ring**	Special FKM	Fluorine coated
6	**Plug valve spring**	Stainless steel	

Socket

No.	Description	Material	Note
1	**Body**	Stainless steel	Plated with fluorine-contained material
2	**Rear body**	Stainless steel	
3	**Socket valve**	Stainless steel	
4	**Collar**	Stainless steel	Plated with fluorine-contained material
5	**Sleeve**	Stainless steel	Plated with fluorine-contained material
6	**Valve O-ring**	Special FKM	Fluorine coated
7	**Plug O-ring**	Special FKM	Fluorine coated
8	**Body O-ring**	Special FKM	Fluorine coated
9	**Collar seal**	Special FKM	Fluorine coated
10	**Collar spring**	Stainless steel	
11	**Sleeve spring**	Stainless steel	
12	**Steel ball**	Stainless steel	
13	**Stopper ring**	Stainless steel	

KKA Series Spare Parts

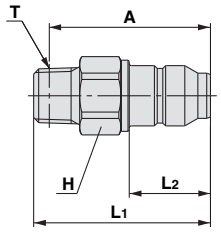
Description	Part no.	No.
Plug O-ring	KKA3S-P01	Socket ⑦
	KKA4S-P01	
	KKA6S-P01	
	KKA7S-P01	
	KKA8S-P01	
	KKA9S-P01	

Dimensions/Plug (P)

With check valve

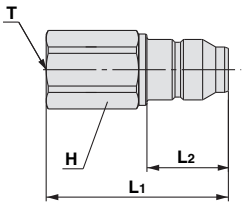
Male thread type (mm)

Body size	Model	T Connection port size	H Width across flats	L_1	L_2	A	Min. bore size	Effective area mm²	Weight g
1/8	**KKA3P-01M**	R 1/8	14	35.4	16.0	31.4	5.6	17.4	15.4
	-02M	R 1/4		38.4		32.4			19.8
	-03M	R 3/8		39.4		32.9			32.9
1/4	**KKA4P-02M**	R 1/4	17	42.2	18.9	36.2	6.9	26.4	28.3
	-03M	R 3/8		43.2		36.7			36.6
	-04M	R 1/2	22	46.2		38.2			65.9
1/2	**KKA6P-03M**	R 3/8	24	47.1	20.4	40.6	10.0	54.2	60.3
	-04M	R 1/2		47.9		39.9			69.2
	-06M	R 3/4	30	49.9		40.4			119.0
3/4	**KKA7P-04M**	R 1/2	32	66.3	27.6	58.1	13.5	99.6	173.9
	-06M	R 3/4		69.4		59.9			209.6
	-10M	R 1	36	69.9		59.5			275.0
1	**KKA8P-06M**	R 3/4	41	82.9	35.6	73.4	17.5	168.3	362.8
	-10M	R 1		85.4		75.0			403.9
	-12M	R 1 1/4	46	85.4		72.7			538.6
1 1/4	**KKA9P-10M**	R 1	55	109.5	49.1	99.1	22.0	264.9	824.1
	-12M	R 1 1/4		109.0		96.3	24.6	332.1	861.4
	-14M	R 1 1/2		109.0		96.3			936.3



Female thread type (mm)

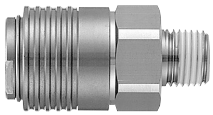
Body size	Model	T Connection port size	H Width across flats	L_1	L_2	Min. bore size	Effective area mm²	Weight g
1/8	**KKA3P-01F**	Rc 1/8	14	36.0	16.0	5.6	17.4	20.2
	-02F	Rc 1/4	17	39.6				31.8
	-03F	Rc 3/8	19	40.4				35.8
1/4	**KKA4P-02F**	Rc 1/4	17	43.4	18.9	6.9	26.4	36.1
	-03F	Rc 3/8	19	44.4				40.2
	-04F	Rc 1/2		48.6				69.7
1/2	**KKA6P-03F**	Rc 3/8	24	48.7	20.4	10.0	54.2	84.1
	-04F	Rc 1/2		52.9				79.7
	-06F	Rc 3/4	30	54.6				123.8
3/4	**KKA7P-04F**	Rc 1/2	32	67.7	27.6	13.5	99.6	217.1
	-06F	Rc 3/4		69.4				196.8
	-10F	Rc 1		72.4				325.9
1	**KKA8P-06F**	Rc 3/4	41	82.0	35.6	17.5	168.3	420.5
	-10F	Rc 1		85.0				391.3
	-12F	Rc 1 1/4	50	87.3				552.8
1 1/4	**KKA9P-10F**	Rc 1	55	107.8	49.1	24.6	332.1	986.9
	-12F	Rc 1 1/4		110.1				925.6
	-14F	Rc 1 1/2		110.1				848.2



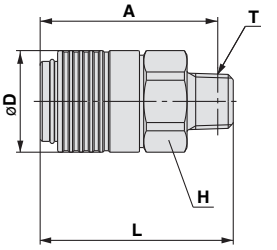
Dimensions/Socket (S)

With check valve

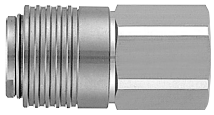
Male thread type (mm)



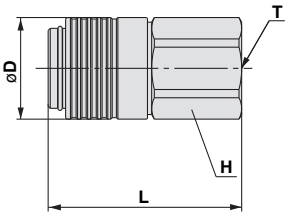
Body size	Model	T Connection port size	H Width across flats	øD	L	A	Min. bore size	Effective area mm²	Weight g
1/8	**KKA3S-01M**	R 1/8	17	18.5	38.1	34.1	5.9	18.5	38.5
	-02M	R 1/4			41.1	35.1			41.8
	-03M	R 3/8			42.1	35.6			46.3
1/4	**KKA4S-02M**	R 1/4	22	24.2	46.0	40.0	7.7	31.8	76.8
	-03M	R 3/8			47.0	40.5			78.5
	-04M	R 1/2			50.0	42.0			86.6
1/2	**KKA6S-03M**	R 3/8	30	30.7	51.4	44.9	10.2	55.3	149.1
	-04M	R 1/2			54.4	46.4			160.4
	-06M	R 3/4			56.4	46.9			184.8
3/4	**KKA7S-04M**	R 1/2	36	42.5	76.3	68.1	13.6	101.5	426.1
	-06M	R 3/4			79.3	69.8			457.8
	-10M	R 1			82.8	72.4			514.0
1	**KKA8S-06M**	R 3/4	46	55	94.9	85.4	17.6	169.9	873.5
	-10M	R 1			98.4	88.0			931.1
	-12M	R 1 1/4			100.4	87.7			1012.9
1 1/4	**KKA9S-10M**	R 1	63	69	125.5	115.1	22.0	264.9	1680.7
	-12M	R 1 1/4			127.5	114.8	25.1	344.9	1758.1
	-14M	R 1 1/2			127.5	114.8			1819.4



Female thread type (mm)



Body size	Model	T Connection port size	H Width across flats	øD	L	Min. bore size	Effective area mm²	Weight g
1/8	**KKA3S-01F**	Rc 1/8	17	18.5	37.6	5.9	18.5	46.9
	-02F	Rc 1/4			41.2			47.2
	-03F	Rc 3/8	19		43.1			52.3
1/4	**KKA4S-02F**	Rc 1/4	22	24.2	46.1	7.7	31.8	97.1
	-03F	Rc 3/8			46.9			91.1
	-04F	Rc 1/2	24		52.3			104.3
1/2	**KKA6S-03F**	Rc 3/8	30	30.7	50.5	10.2	55.3	189.6
	-04F	Rc 1/2			56.2			202.0
	-06F	Rc 3/4			57.9			180.6
3/4	**KKA7S-04F**	Rc 1/2	36	42.5	75.1	13.6	101.5	477.2
	-06F	Rc 3/4			76.5			457.4
	-10F	Rc 1	41		82.3			550.9
1	**KKA8S-06F**	Rc 3/4	46	55	90.9	17.6	169.9	935.2
	-10F	Rc 1			93.9			914.7
	-12F	Rc 1 1/4	50		99.2			1002.1
1 1/4	**KKA9S-10F**	Rc 1	63	69	121.8	25.1	344.9	1919.1
	-12F	Rc 1 1/4			121.8			1810.0
	-14F	Rc 1 1/2			121.8			1732.6

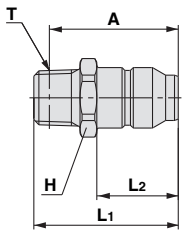


Dimensions/Plug (P)

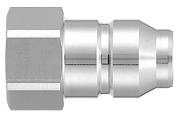
Without check valve

Male thread type (mm)

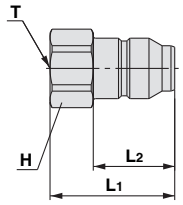
Body size	Model	T Connection port size	H Width across flats	L_1	L_2	A	Min. bore size	Effective area mm²	Weight g
1/8	KKA3P-01M-1	R 1/8	12	28.5	16.0	24.5	6.0	22.6	9.8
	-02M-1	R 1/4	14	31.5		25.5			14.6
	-03M-1	R 3/8		32.5		26.0			23.6
1/4	KKA4P-02M-1	R 1/4	17	34.4	18.9	28.4	8.0	40.2	21.0
	-03M-1	R 3/8		35.4		28.9			27.9
	-04M-1	R 1/2		39.4		31.4			50.2
1/2	KKA6P-03M-1	R 3/8	22	37.9	20.4	31.4	11.0	76.0	41.9
	-04M-1	R 1/2		40.9		32.9			56.0
	-06M-1	R 3/4	30	42.9		33.4			98.7



Female thread type (mm)



Body size	Model	T Connection port size	H Width across flats	L_1	L_2	Min. bore size	Effective area mm²	Weight g
1/8	KKA3P-01F-1	Rc 1/8	14	23.2	16.0	6.0	22.6	9.6
	-02F-1	Rc 1/4	17	30.3				20.2
	-03F-1	Rc 3/8	19	32.0				26.2
1/4	KKA4P-02F-1	Rc 1/4	17	29.7	18.9	8.0	40.2	20.0
	-03F-1	Rc 3/8	19	34.0				25.8
	-04F-1	Rc 1/2	24	39.4				46.1
1/2	KKA6P-03F-1	Rc 3/8	22	30.9	20.4	11.0	76.0	34.3
	-04F-1	Rc 1/2	24	39.6				50.0
	-06F-1	Rc 3/4	30	42.8				78.6

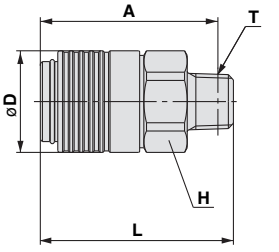


Dimensions/Socket (S)

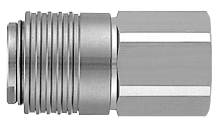
Without check valve

Male thread type (mm)

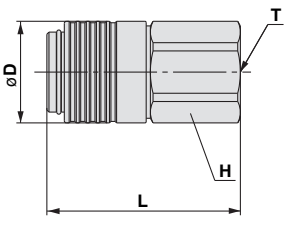
Body size	Model	T Connection port size	H Width across flats	øD	L	A	Min. bore size	Effective area mm²	Weight g
1/8	KKA3S-01M-1	R 1/8	17	18.5	38.1	34.1	6.1	23.4	36.1
	-02M-1	R 1/4			41.1	35.1			39.4
	-03M-1	R 3/8			42.1	35.6			43.9
1/4	KKA4S-02M-1	R 1/4	22	24.2	46.0	40.0	8.1	41.2	71.9
	-03M-1	R 3/8			47.0	40.5			73.6
	-04M-1	R 1/2			50.0	42.0			81.7
1/2	KKA6S-03M-1	R 3/8	30	30.7	51.4	44.9	11.4	81.6	138.3
	-04M-1	R 1/2			54.4	46.4			149.6
	-06M-1	R 3/4			56.4	46.9			174.0



Female thread type (mm)



Body size	Model	T Connection port size	H Width across flats	øD	L	Min. bore size	Effective area mm²	Weight g
1/8	KKA3S-01F-1	Rc 1/8	17	18.5	37.6	6.1	23.4	44.5
	-02F-1	Rc 1/4			41.2			44.8
	-03F-1	Rc 3/8	19		43.1			49.9
1/4	KKA4S-02F-1	Rc 1/4	22	24.2	46.1	8.1	41.2	92.2
	-03F-1	Rc 3/8			46.9			86.2
	-04F-1	Rc 1/2	24		52.3			99.4
1/2	KKA6S-03F-1	Rc 3/8	30	30.7	50.5	11.4	81.6	178.8
	-04F-1	Rc 1/2			56.2			191.2
	-06F-1	Rc 3/4			57.9			169.8



Series KK/KKH/KKA/KK13
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 a label 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.

2. Only trained personnel should operate pneumatically operated machinery and equipment.

Compressed air can be dangerous if handled incorrectly. 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 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. (Bleed air into the system gradually to create back pressure.)

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, 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.

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 AG, verify the manufacturer of applicable couplers before use.
3. Do not couple or uncouple the S coupler during pressurisation 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, 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

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. 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. 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. Contact SMC regarding use in environments where there will be direct contact with cutting oil, lubricating oil or coolant oil, etc.

Maintenance

⚠ Caution

1. Check for the following during regular maintenance, and replace components as necessary.
   a) Scratches, gouges, abrasion, corrosion
   b) Leakage
   c) Twisting, flattening or distortion of tubing
   d) Hardening, deterioration or softness of tubing
2. Do not repair or patch the replaced tubing or 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.

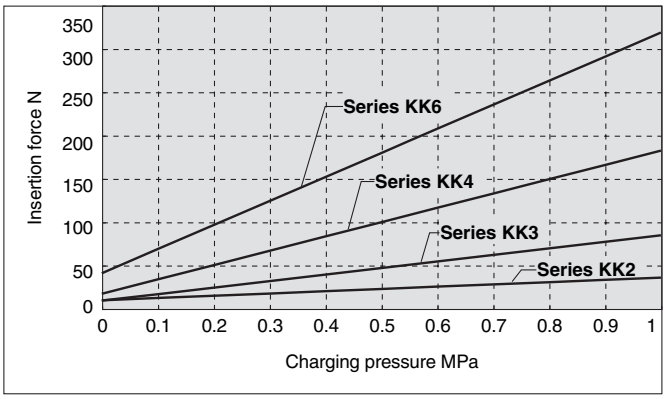
Handling

⚠ Caution

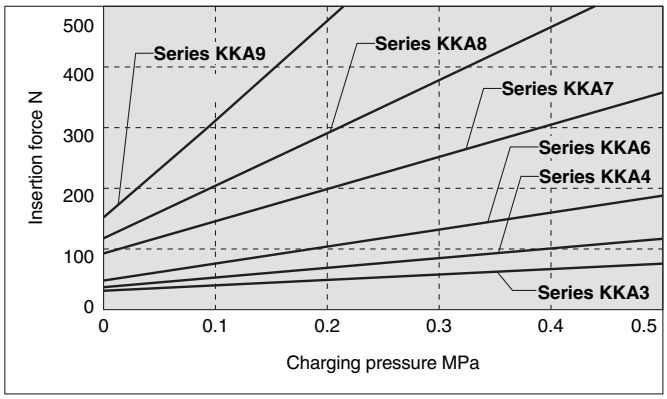
1. When connecting the plug, hold the plug securely.
   The plug may be uncoupled due to reaction at the time of connection.
2. When connecting a plug, insert it securely until a click sound is heard from the socket. After the connection, gently pull the plug to see whether it will release.
   If not securely inserted, the plug may pop out due to the pressure. Also, do not touch the sleeve until the plug is securely inserted.
   Otherwise, it may lead to a malfunction.
3. When connecting the plug, insert it straight into the socket. If not inserted straight, the socket and/or plug may be damaged or cause a malfunction.
4. When releasing the plug, hold it securely. The connection pipe may move due to reacting stress and/or residual pressure on the plug side.
5. Do not press the inside of the socket with an incompatible plug and/or with a stick. The internal fluid may be ejected and cause a dangerous situation. Also, the ejecting internal fluid may cause the sealings to come apart resulting in the product not functioning.

Plug Insertion Force in Pressurised 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

⚠ Caution

1. Tightening of the M5-size fittings
   1) Tighten the fittings with a proper tightening torque range of from 1 to 1.5 N·m. As a rule, after hand tightening, tighten an additional 1/6 turn with a tool
   2) Over tightening can cause damage to the threads and/or air leakage due to deformation of the gasket.
   3) Insufficient tightening can cause the threads to loosen and/or air to leak out.
2. Tightening of the fittings with a 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, R3/4	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 sealant 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.

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