

Pearl

Pearl Rotary Joint

— Rotary Joint —

KC Series

CATALOG

PEARL  JOINT
株式会社 昭和技研工業
SHOWA GIKEN INDUSTRIAL CO., LTD.

KC Series



Features

Aluminum alloy is used for a casing. Installation to a roll is easy as this product is small and lightweight.

As sealed ball bearings are used, greasing is not required.


Due to low torque, a measure for preventing casing rotation is not required.

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The contents are subject to change without notice.

Service Conditions

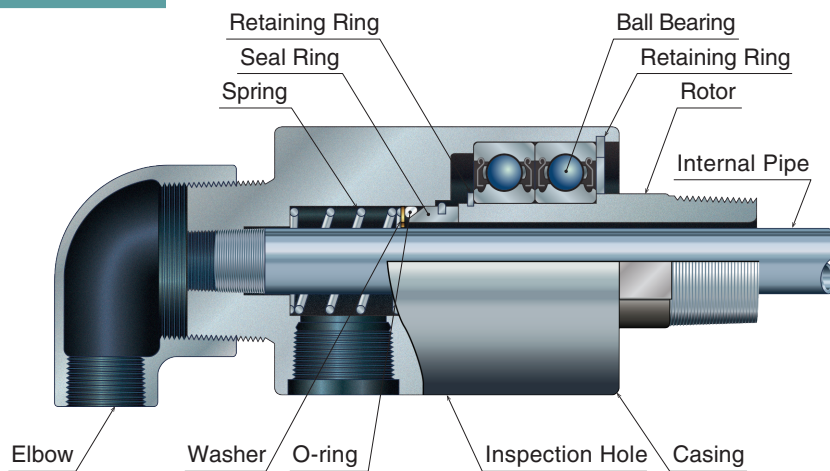
Series	Fluid	Size	Max.		
			Pressure (MPa)	Rotation Speed (min ⁻¹)	Temperature (°C)
	Air / Gas / Water / Oil	6A~25A	0.98	1,500	100
		32A~65A		1,000	

Note) The lowest pressure when used under a pressure lower than atmospheric pressure is 1.3 k Pa abs (10 Torr).

Structures and Materials

A mechanical seal consists of a combination of carbon and stainless steel or carbon steel.

KC



Materials of Main Components (Standard Specification)

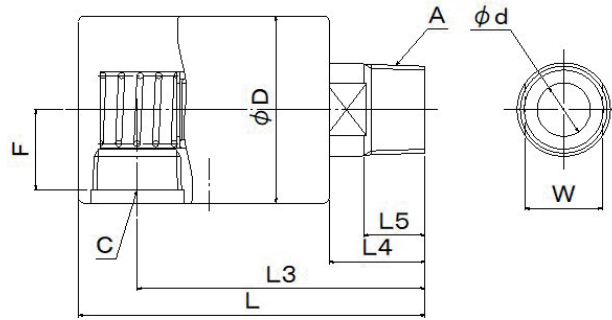
Part Name	Material
Rotor	Stainless Steel Carbon Steel
Casing	Aluminum Alloy
Seal Ring	Carbon
O-ring	NBR

The casing is finished with alumite treatment (anodizing).

Note) Component materials are indicated on product drawings.
Contact our sales representative for requests for product drawings.

KCL

Simplex, Thread Connection

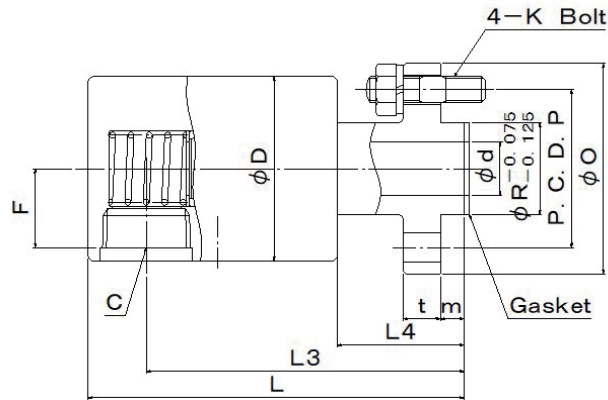


(mm)

Size	A	C	F	D	L	L3	L4	L5	d	W
6A	R1/8	Rc1/8	16	34	70	60	20	10	4	11
8A	R1/4	Rc1/4	19	40	85	75	24	14	6	13
10A	R3/8	Rc3/8	21	46	94	82	29	19	9	17
15A	R1/2	Rc1/2	24	54	109	94	33	21	12	21
20A	R3/4	Rc3/4	27	60	120	102	34	22	16	26
25A	R1	Rc1	30	70	130	108	36	23	20	29
32A	R1¼	Rc1¼	39	90	158	131	43	28	30	41
40A	R1½	Rc1½	41	95	165	135	43	28	35	46
50A	R2	Rc2	54	124	203	164	55	30	48	60
65A	R2½	Rc2½	64	148	256	206	78	40	56	71

KCLF

Simplex, Flange Connection

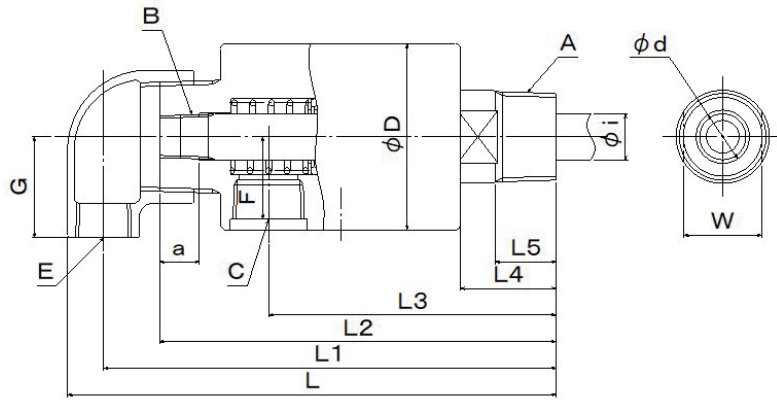


(mm)

Size	C	F	D	L	L3	L4	d	Flange					K
								R	P	O	t	m	
10A	Rc3/8	24	54	115	100	39	12	25	45	62	11	8	M8
15A	Rc1/2	24	54	115	100	39	12	25	45	62	11	8	M8
20A	Rc3/4	27	60	128	110	42	16	30	54	74	13	8	M10
25A	Rc1	30	70	142	120	48	20	35	60	80	14	9	M10
32A	Rc1¼	39	90	166	139	51	30	50	75	96	16	9	M10
40A	Rc1½	41	95	173	143	51	35	50	75	96	16	9	M10
50A	Rc2	54	124	208	169	60	48	65	95	120	19	10	M12
65A	Rc2½	64	148	240	190	62	56	80	110	136	20	12	M12

KC

Duplex, Stationary IP,
Thread Connection



(mm)

Size	A	C	E	F	G	D	L	L1	L2	L3	L4	L5	a	d	W	Internal Pipe		
																Size	i	B
15A	R1/2	Rc1/2	Rc3/8	24	28	54	157	145	127	94	33	21	13	12	21	6A	10.5	R1/8
20A	R3/4	Rc1/2	Rc3/8	27	31	60	166	154	135	100	34	22	13	16	26	6A	10.5	R1/8
																8A	13.8	R1/4
25A	R1	Rc3/4	Rc1/2	31	38	70	184	170	149	108	36	23	15	20	29	8A	13.8	R1/4
																10A	17.3	R3/8
32A	R1¼	Rc1	Rc3/4	40	43	90	215	198	173	127	43	28	20	30	41	10A	17.3	R3/8
																15A	21.7	R1/2
40A	R1½	Rc1	Rc3/4	44	43	95	215	198	173	127	43	28	20	35	46	15A	21.7	R1/2
																20A	27.2	R3/4
50A	R2	Rc1½	Rc1½	56	62	124	297	267	230	160	55	30	25	48	60	20A	27.2	R3/4
																25A	34.0	R1
65A	R2½	Rc2	Rc1½	65	62	148	337	307	270	198	78	40	30	56	71	25A	34.0	R1
																32A	42.7	R1¼
																40A	48.6	R1½

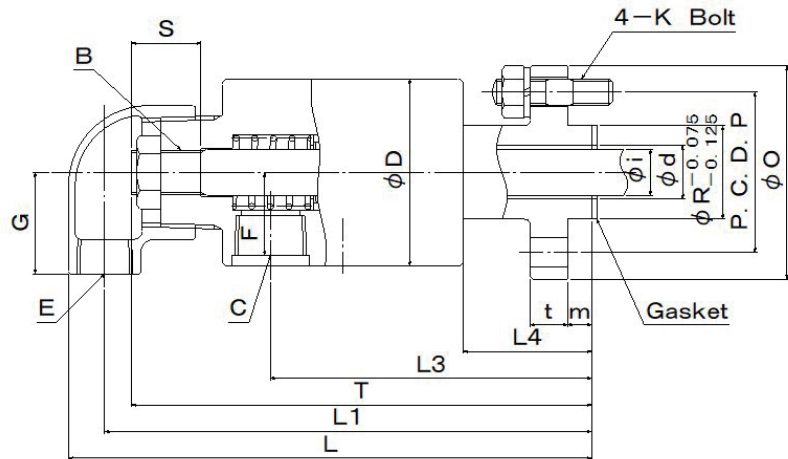
Note) If the standard specification is selected, the direction of thread B is the same as that of thread A.

(If A is right-hand thread, B is also right-hand thread. If A is left-hand thread, B is also left-hand thread.)

Upon request, we can produce products in which the thread directions of threads A and B are different from each other.

KCF

Duplex, Stationary IP,
Flange Connection



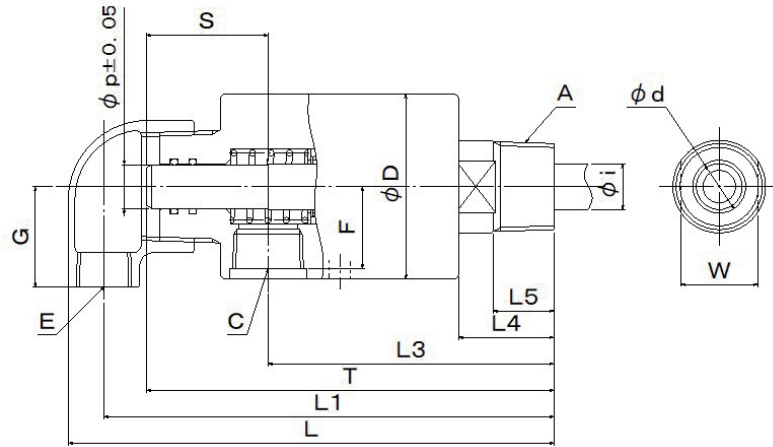
(mm)

Size	C	E	F	G	D	L	L1	L3	L4	d	Flange					K	Internal Pipe				
											R	P	O	t	m		Size	i	B	S	T
15A	Rc1/2	Rc3/8	24	28	54	163	151	100	39	12	25	45	62	11	8	M8	6A	10.5	G1/8	23	143
20A	Rc1/2	Rc3/8	27	31	60	173	162	108	42	16	30	54	74	13	8	M10	6A	10.5	G1/8	23	153
																	8A	13.8	G1/4	23	153
25A	Rc3/4	Rc1/2	31	38	70	196	182	120	48	20	35	60	80	14	9	M10	8A	13.8	G1/4	25	171
																	10A	17.3	G3/8	26	172
32A	Rc1	Rc3/4	40	43	90	223	206	135	51	30	50	75	96	16	9	M10	10A	17.3	G3/8	31	192
																	15A	21.7	G1/2	32	193
40A	Rc1	Rc3/4	44	43	95	223	206	135	51	35	50	75	96	16	9	M10	15A	21.7	G1/2	33	194
																	20A	27.2	G3/4	34	195
50A	Rc1½	Rc1½	56	62	124	302	272	165	60	48	65	95	120	19	10	M12	20A	27.2	G3/4	38	248
																	25A	34.0	G1	39	249
65A	Rc2	Rc1½	65	62	148	321	291	182	62	56	80	110	136	20	12	M12	25A	34.0	G1	44	268
																	32A	42.7	G1¼	45	269
																	40A	48.6	G1½	46	270

Note) B is a right-hand thread.

KCW

Duplex, Rotational IP,
Thread Connection

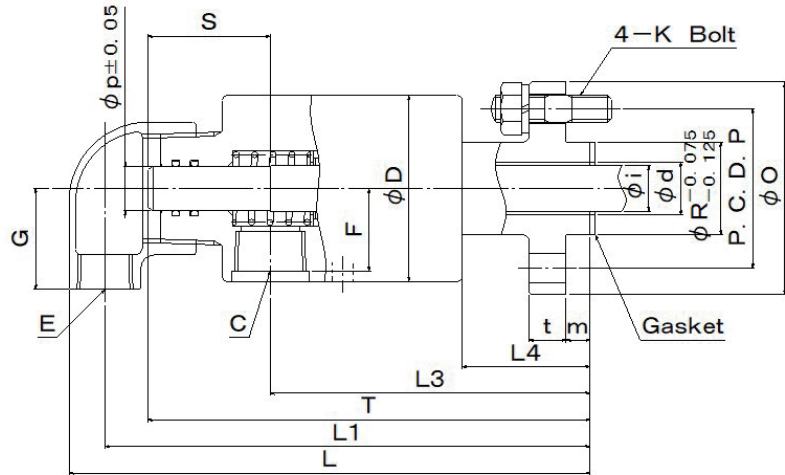


(mm)

Size	A	C	E	F	G	D	L	L1	L3	L4	L5	d	W	Internal Pipe				
														Size	i	p	S	T
15A	R1/2	Rc1/2	Rc3/8	24	28	54	157	145	94	33	21	12	21	6A	10.5	9.9	42	132
20A	R3/4	Rc1/2	Rc3/8	27	31	60	166	154	100	34	22	16	26	6A	10.5	9.9	42	140
														8A	13.8	12.5		
25A	R1	Rc3/4	Rc1/2	31	38	70	184	170	108	36	23	20	29	8A	13.8	12.5	46	154
														10A	17.3	16.5		
32A	R1¼	Rc1	Rc3/4	40	43	90	215	198	127	43	28	30	41	10A	17.3	16.5	50	178
														15A	21.7	20.7		
40A	R1½	Rc1	Rc3/4	44	43	95	215	198	127	43	28	35	46	15A	21.7	20.7	50	178
														20A	27.2	25.5		
50A	R2	Rc1½	Rc1½	56	62	124	297	267	160	55	30	48	60	20A	27.2	25.5	55	235
														25A	34.0	33.5		
65A	R2½	Rc2	Rc1½	65	62	148	337	307	198	78	40	56	71	25A	34.0	33.5	60	275
														32A	42.7	41.5		
														40A	48.6	46.8		

KCFW

Duplex, Rotational IP,
Flange Connection

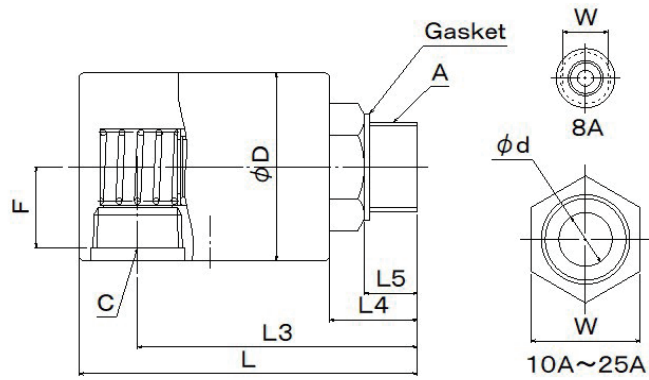


(mm)

Size	C	E	F	G	D	L	L1	L3	L4	d	Flange					K	Internal Pipe				
											R	P	O	t	m		Size	i	p	S	T
15A	Rc1/2	Rc3/8	24	28	54	163	151	100	39	12	25	45	62	11	8	M8	6A	10.5	9.9	42	138
20A	Rc1/2	Rc3/8	27	31	60	173	162	108	42	16	30	54	74	13	8	M10	6A	10.5	9.9	42	148
																	8A	13.8	12.5		
25A	Rc3/4	Rc1/2	31	38	70	196	182	120	48	20	35	60	80	14	9	M10	8A	13.8	12.5	46	166
																	10A	17.3	16.5		
32A	Rc1	Rc3/4	40	43	90	223	206	135	51	30	50	75	96	16	9	M10	10A	17.3	16.5	50	186
																	15A	21.7	20.7		
40A	Rc1	Rc3/4	44	43	95	223	206	135	51	35	50	75	96	16	9	M10	15A	21.7	20.7	50	186
																	20A	27.2	25.5		
50A	Rc1½	Rc1½	56	62	124	302	272	165	60	48	65	95	120	19	10	M12	20A	27.2	25.5	55	240
																	25A	34.0	33.5		
65A	Rc2	Rc1½	65	62	148	321	291	182	62	56	80	110	136	20	12	M12	25A	34.0	33.5	60	259
																	32A	42.7	41.5		
																	40A	48.6	46.8		

SKCL

Simplex, Thread Connection



(mm)

Size	A	C	F	D	L	L3	L4	L5	d	W
8A	G1/4	Rc1/4	19	40	87	77	26	14	6	17
	M16×1.5	Rc1/4	19	40	87	77	26	14	6	17
10A	G3/8	Rc3/8	21	46	91	79	26	16	9	26
	M18×1.5	Rc3/8	21	46	91	79	26	16	9	26
15A	G1/2	Rc1/2	24	54	105	90	29	18	12	29
	M22×1.5	Rc1/2	24	54	105	90	29	18	12	29
20A	G3/4	Rc3/4	27	60	117	99	31	19	16	32
	M26×1.5	Rc3/4	27	60	117	99	31	19	16	32
25A	G1	Rc1	30	70	127	105	33	20	20	41
	M30×1.5	Rc1	30	70	127	105	33	20	20	41

Masses

Masses of KC Series

(kg)

Type	6A	8A	10A	15A	20A	25A	32A	40A	50A	65A
KCL	0.15	0.25	0.37	0.60	0.85	1.2	2.3	2.6	5.3	9.6
KCLF	-	-	0.90	0.90	1.25	1.7	3.0	3.3	6.6	10.9
KC/KCW	-	-	-	0.75	1.05	1.5	2.6	2.9	6.5	10.6
KCF/KCFW	-	-	-	1.05	1.45	2.0	3.3	3.6	7.8	11.9
SKCL	-	0.25	0.37	0.60	0.85	1.2	-	-	-	-

Flow Rate

The maximum flow velocity in the product is about 3 m/s when the fluid is water.

The following tables show guidelines for the maximum flow rates calculated based on the above flow velocity.

Water Flow Rate (Simplex) = $A \times 3 \times 3600 / 10000$

Type	Size	Flow Passage Area (cm ²)	Water Flow Rate (m ³ /h)
		A (Note1)	
KCL KCLF	6A	0.126	0.136
	8A	0.283	0.305
	10A	0.636	0.687
	15A	1.13	1.22
	20A	2.01	2.17
	25A	3.14	3.39
	32A	7.07	7.63
	40A	9.62	10.4
	50A	18.1	19.5
65A	24.6	26.6	

Note 1) A = (Rotor flow passage area)

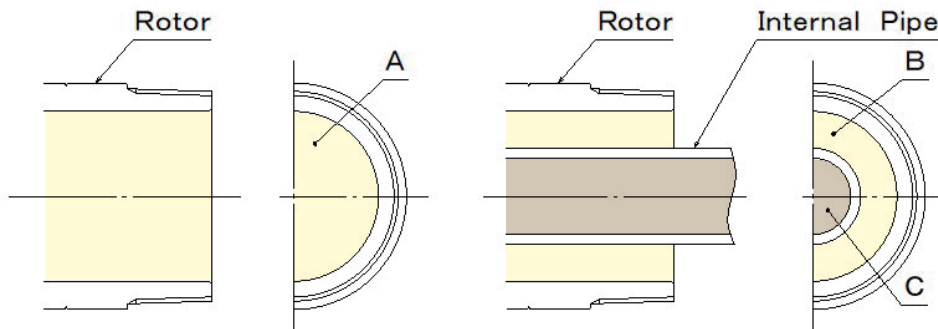
Note 2) B = A - (Internal pipe section area)

Note 3) C = (Internal pipe flow passage area)

Note 4) B or C, whichever is smaller

Water Flow Rate (Duplex) = $(B \text{ or } C) \times 3 \times 3600 / 10000$ (Note 4)

Type	Size	Flow Passage Area (cm ²)		Water Flow Rate (m ³ /h)
		B (Note2)	C (Note3)	
KC KCF KCW KCFW	15A-6A	0.265	0.332	0.286
	20A-6A	1.14	0.332	0.358
	20A-8A	0.515	0.694	0.556
	25A-8A	1.65	0.694	0.749
	25A-10A	0.791	1.19	0.854
	32A-10A	4.72	1.19	1.28
	32A-15A	3.37	1.94	2.09
	40A-15A	5.92	1.94	2.09
	40A-20A	3.81	3.53	3.81
	50A-20A	12.3	3.53	3.81
	50A-25A	9.02	5.73	6.18
	65A-25A	15.6	5.73	6.18
	65A-32A	10.3	10.0	10.8
	65A-40A	6.08	13.6	6.57



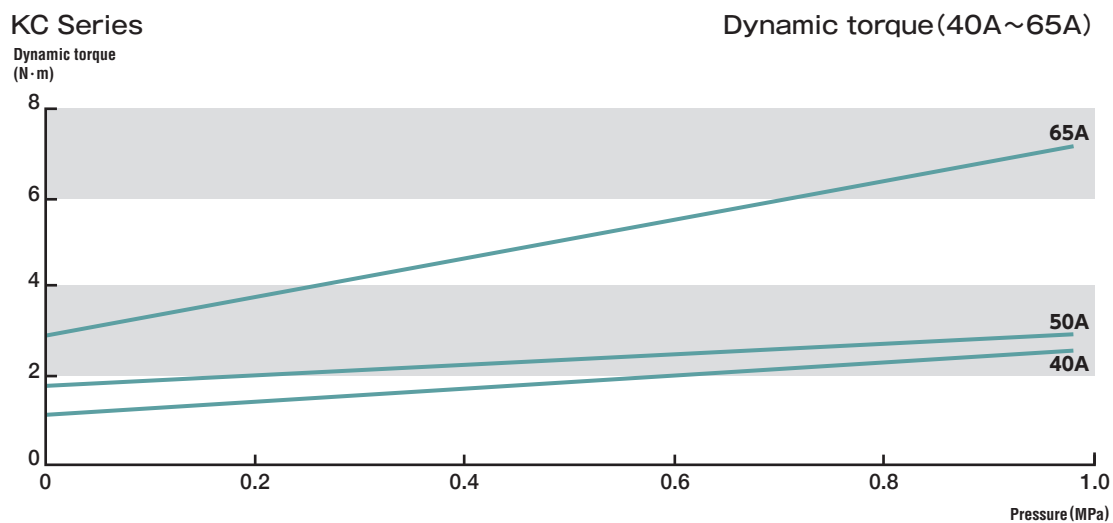
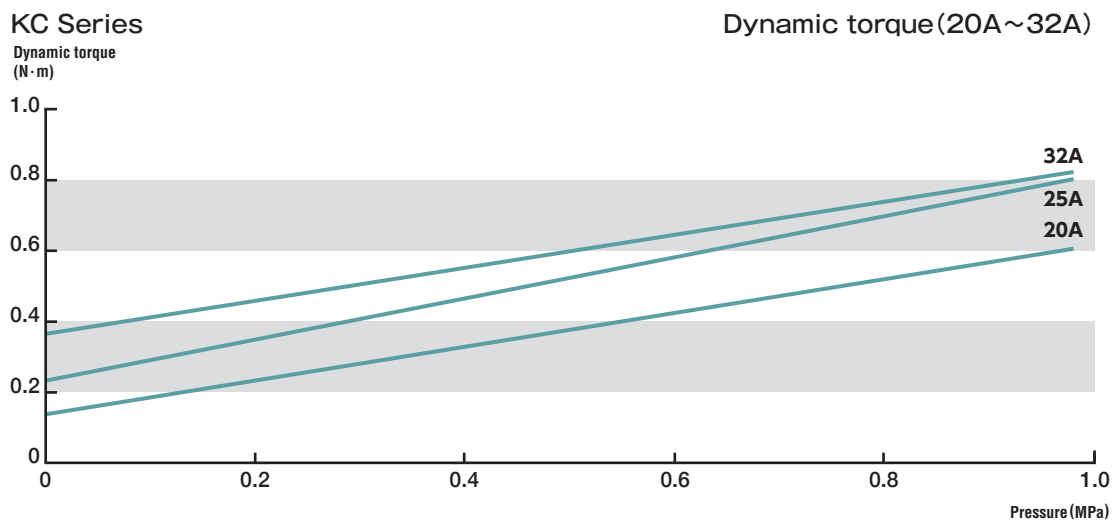
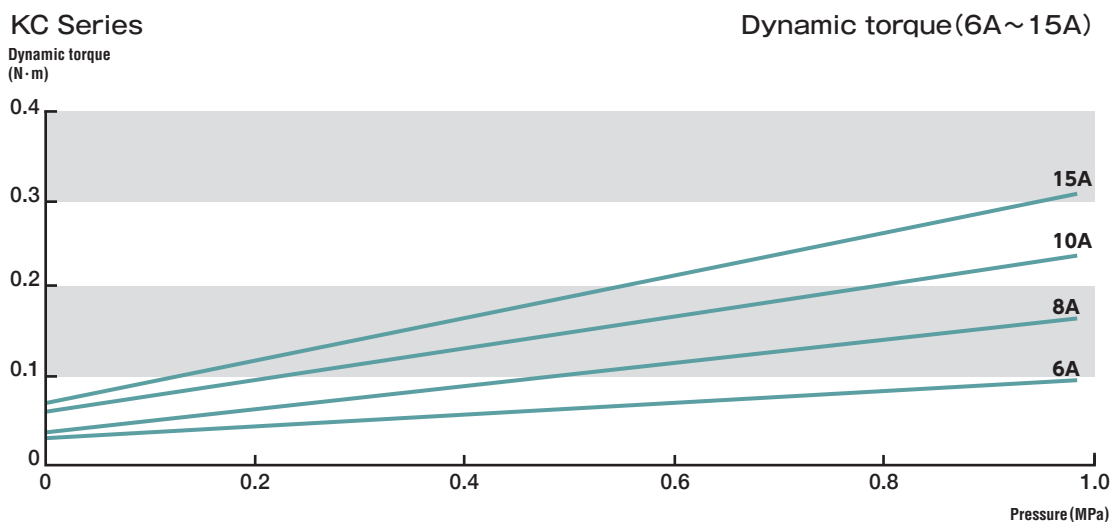
Internal Pipe Dimensions (SUS304)

Size	Outer Dia. x Thickness
6A	φ10.5×2.0
8A	φ13.8×2.2
10A	φ17.3×2.5
15A	φ21.7×3.0
20A	φ27.2×3.0
25A	φ34.0×3.5
32A	φ42.7×3.5
40A	φ48.6×3.5

* Internal pipe outer diameters and thickness are based on the values of "internal pipe dimensions" in the table shown on the right.

If an internal pipe with a different thickness is used, the water flow rate (for duplex) varies.

Dynamic Torque



- Note 1) Dynamic torque varies depending on product storage conditions, storage period, or fluid types.
- 2) Starting torque is larger than dynamic torque. Although starting torque is even larger when wringing occurs, it does not indicate any fault.
- 3) Data are typical values measured based on in-house test standards. They are not guaranteed values.

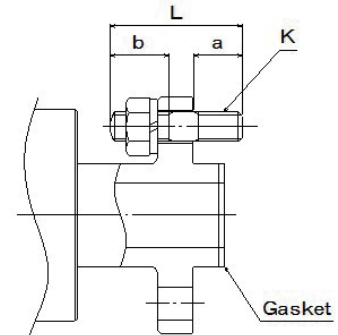
Accessories

- 1) A product installed with a flange is supplied with a gasket (copper jacket) and four sets of a stud bolt (SS400), a hex. nut (SS400), and a spring washer (SWRH).

Accessories (Flange Connection)

(mm)

Type	Size	Gasket			Stud Bolt				Hex. Nut	Spring Washer
		Outer Dia.	Inner Dia.	Thick-ness	K	L	a	b		
KCLF	10A	24	16	3.2	M8	36	11	18	M8 type1	M8 No.2
	15A	24	16	3.2						
KCLF	20A	29	20	3.2	M10	45	15	20	M10 type1	M10 No.2
	25A	34	26	3.2						
KCF	32A	49	37	3.2	M10	48	15	20	M10 type1	M10 No.2
	40A									
KCFW	50A	64	50	3.2	M12	58	18	27	M12 type1	M12 No.2
	65A	79	62	3.2						

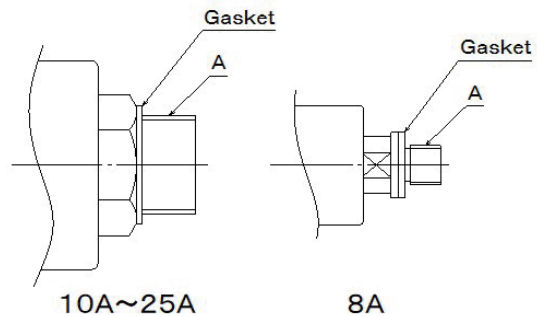


- 2) A duplex, stationary IP, flange connection product (KCF) is supplied with a lock nut (right-hand thread, SS400) used for securing the internal pipe.
- 3) A product installed with a parallel thread (SKCL) is supplied with a gasket (copper plate).

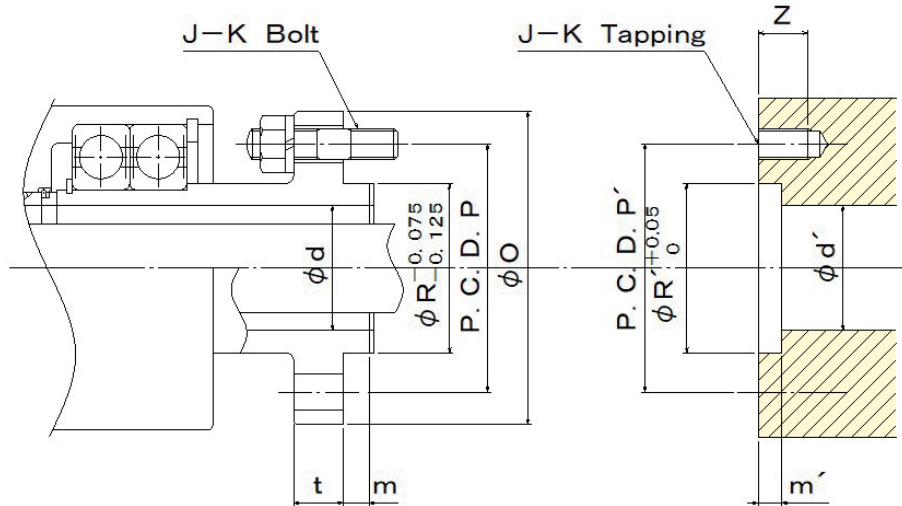
Accessories (Parallel Thread Connection)

(mm)

Type	Size	A	Gasket		
			Outer Dia.	Inner Dia.	Thick-ness
SKCL	8A	G1/4	22	13.5	2
		M16×1.5	23	16.3	2
SKCL	10A	G3/8	26	17	2
		M18×1.5	24	18.5	2
SKCL	15A	G1/2	30	21.3	2
		M22×1.5	27.5	22.2	2
SKCL	20A	G3/4	35	26.8	2
		M26×1.5	35	26.8	2
SKCL	25A	G1	39.5	33.5	2
		M30×1.5	39	30.5	2



Flange Connection - Dimensions on the Roll Side (Reference Values)



Flange Dimensions

(mm)

Size	d	R	P	O	t	m
10A	12	25	45	62	11	8
15A	12	25	45	62	11	8
20A	16	30	54	74	13	8
25A	20	35	60	80	14	9
32A	30	50	75	96	16	9
40A	35	50	75	96	16	9
50A	48	65	95	120	19	10
65A	56	80	110	136	20	12

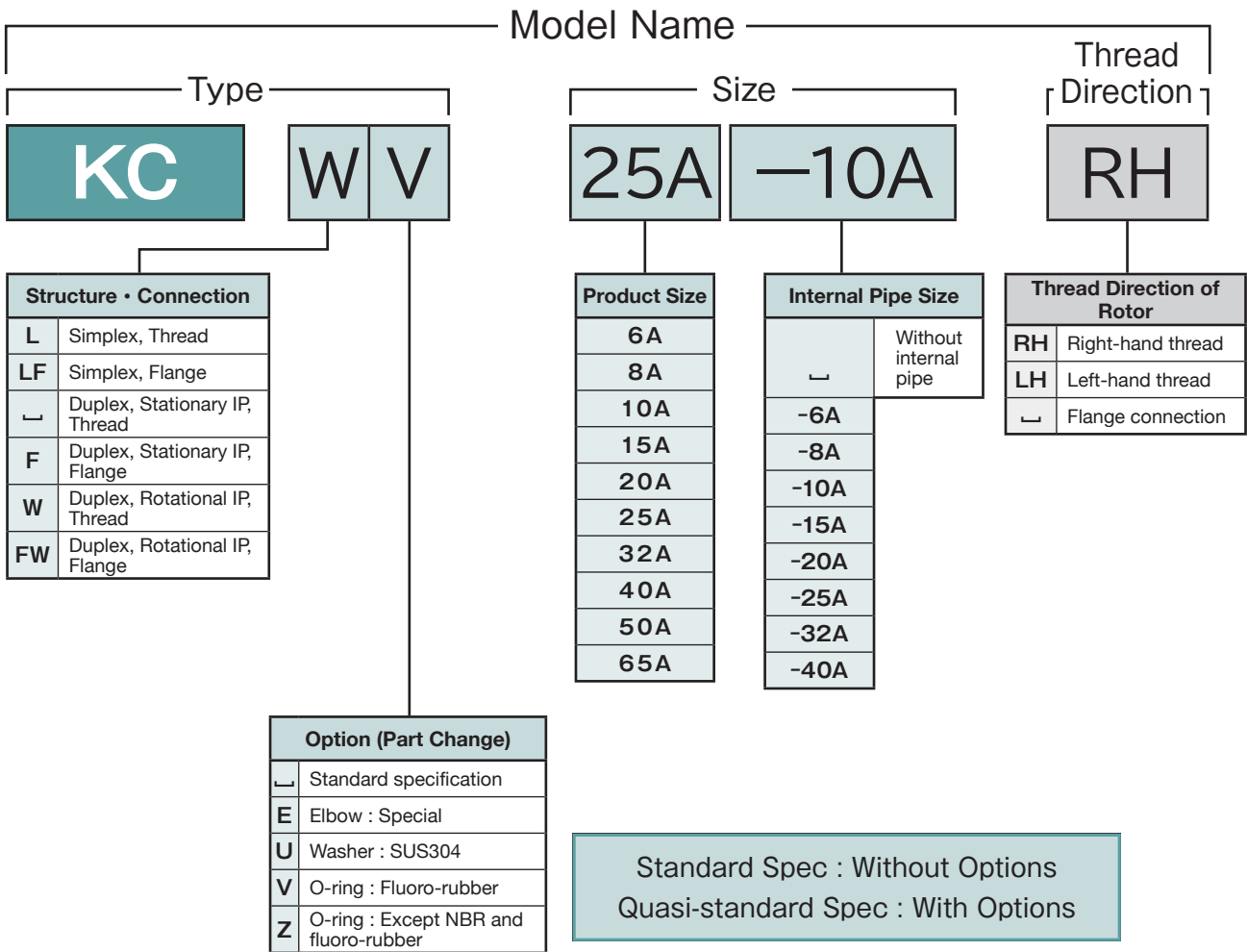
Dimensions on the Roll Side

(mm)

Size	d'	R'	P'	m'	Z	J-K
10A	12	25	45	7	12	4-M8
15A	12	25	45	7	12	4-M8
20A	16	30	54	7	16	4-M10
25A	20	35	60	8	16	4-M10
32A	30	50	75	8	16	4-M10
40A	35	50	75	8	16	4-M10
50A	48	65	95	9	19	4-M12
65A	56	80	110	11	19	4-M12

Model Names and Types

1. For installation with a taper thread or a flange



Note 1) “┌” indicates a space. A model name is indicated without spaces.

2) If two or more option (part change) codes are selected, they are indicated in alphabetical order.

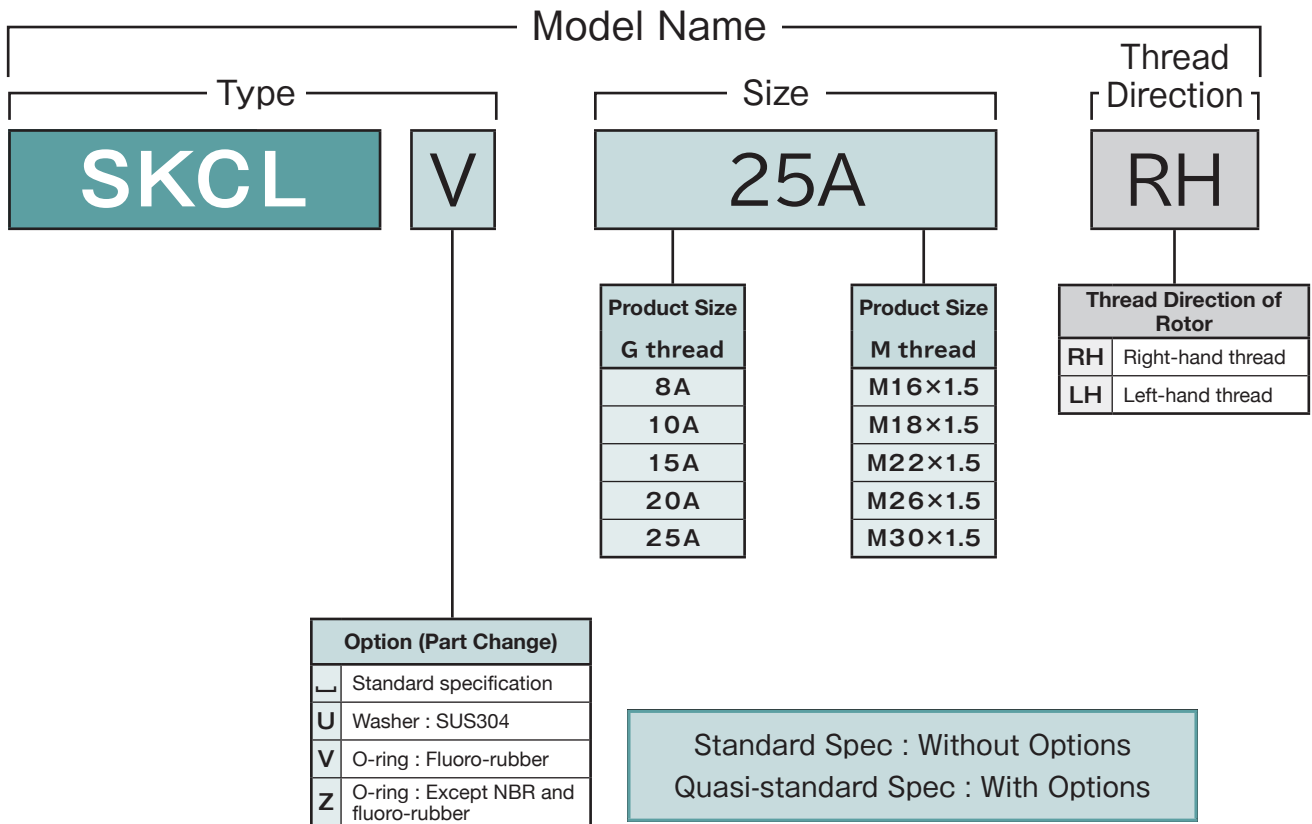
3) The selection of two or more options resulting in a long model name is indicated as type

“OKC■■■■” to denote a customized product for administrative reasons.

(“■■■■” indicates a four-digit number allocated to each model.)

If you have any questions, contact our sales representative.

2. For installation with a parallel thread (simplex only)



Note 1) “└” indicates a space. A model name is indicated without spaces.

2) If two or more option (part change) codes are selected, they are indicated in alphabetical order.

3) The selection of two or more options resulting in a long model name is indicated as type “OKC■■■■” to denote a customized product for administrative reasons.

(“■■■■” indicates a four-digit number allocated to each model.)

If you have any questions, contact our sales representative.

Internal Pipe

Product Size and Internal Pipe Size

Product Size	15A	20A	25A	32A	40A	50A	65A
Internal Pipe Size	6A	6A/8A	8A/10A	10A/15A	15A/20A	20A/25A	25A/32A/40A

Precautions on Selection

1. Select a product whose operating conditions are within the service conditions (listed in the table on page 2).
2. Select a product installed with a parallel thread or a flange instead of a taper thread if it is used in a high-rotation speed range.
3. An installation thread must be tightened when a roll is operated. Select a left-hand thread for a roll that rotates clockwise when viewed from the product installation side, and select a right-hand one for a roll that rotates counterclockwise.
4. Select an option as necessary.
 - 1) See “Model Names and Types” (page 13, page 14) for the types of options.
 - 2) Depending on the fluid used or application, you can change the standard specification O-ring (NBR) to your desired material.
5. KC series is not suitable for non-rotating, intermittent rotating, or low-speed rotating (several rotations per minute) operation. Fluid leakage may result. Contact our sales representative if you need a product suitable for such operating condition.
6. Operation under conditions where both pressure and rotation speed are close to the max. values or long-time dry operation (operation without fluid flow) reduces product lifetime.
7. If the fluid is air, add oil mist to the air.
8. After a long-time storage or depending on service environment, oil released from the grease may seep from the ball bearing. However, it does not indicate any fault.
9. The product cannot be used for liquid containing solid particles (slurry) or pulverulent body.
10. The product cannot be used for fluid that causes corrosion on it.
11. The product is not designed according to the general design rules for safety and hygiene of food processing machinery (JIS B 9650). Consult with us when considering the use of the product in food-related facilities.
12. Depending on the fluid used, the product may subject to restrictions due to national laws or local regulations.

As for customized products, we can produce products with modifications that are not included in the options. If you have any questions or wish to purchase customized products, contact our sales representative.

Maintenance

1) Greasing

As grease-sealed ball bearings are used for KC series, greasing is not required.

2) Replacement of consumables

You can use the product for an extended period of time by replacing consumables.

Contact us for replacement. We carry it out according to our repair program.

Depending on the products, expenses for purchasing new products may be lower than repair expenses.

Contact us for more information.

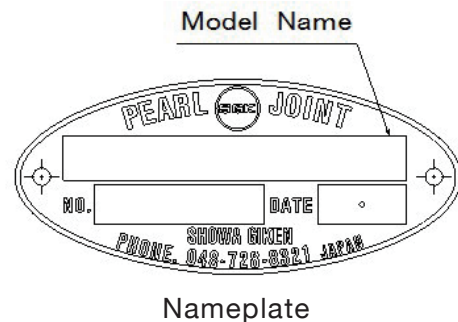
Product Order

Please provide the following information.

1) When ordering our product you are currently using

- ① Model name (indicated on the product's nameplate)
- ② When ordering our product with an internal pipe

The drawing number if you have a product drawing we provided. The tip shape and dimensions of the internal pipe if you don't have the product drawing.



Nameplate

2) When newly ordering our products

- ① Model name (see page 13, page 14.)
- ② The tip shape and dimensions of an internal pipe for a product ordered with it
- ③ Related information
 - The name of equipment to which our product is installed
 - The name of the fluid used
 - Fluid pressure and temperature, and roll rotation speed
 - Roll rotation direction viewed from the product installation side
 - Roll connection method
 - Service environment
 - Requests, etc.

If you have any questions, contact our sales representative.

Product Warranty

If a malfunction occurs during the warranty period, contact us or the distributor and send the product to us. Be sure to carefully pack the product for protection before sending it. After receiving the product, we will confirm the malfunction. If the malfunction was clearly caused by the materials of product components or the manufacturing method, we will repair the product in question or replace it with a new one free of charge.

Product Warranty Provision

1. Warranty Period

< New products >

One (1) year and six (6) months after shipment (from the manufacturing date) or one (1) year after installation, whichever comes first.

< Repaired products >

Six (6) months after shipment (from the manufacturing date).

2. We charge a fee for repairs in any of the following cases.

- ① Failure after the warranty period has expired
- ② Failure caused by use of the product deviating from the service conditions
- ③ Failure caused by misuse (improper storage, installation, pipe laying, operation or maintenance, etc.)
- ④ Failure caused by fluid contaminants or foreign objects in the fluid
- ⑤ Failure caused by relocation, transport, or falling of the product after delivery
- ⑥ Failure caused by disassembly, repair, or modification done by personnel other than our service personnel
- ⑦ Failure of the product attributed to using materials or according to standards specified by the customer
- ⑧ Failure of the product attributed to using materials provided by the customer
- ⑨ Failure caused due to unavoidable acts of nature such as fires or other natural disasters

3. Scope of Responsibility

Our responsibility shall be limited to repairs, replacements, or transport expenses covered by this product warranty provision. Expenses or damages caused by said failures above shall not be covered.


4. Applicable Regions

This product warranty provision shall be applicable to products installed in Japan.
Contact our sales representative if you install and use our products outside Japan.

5. Another Agreement

If another product warranty agreement is made separately with us and clearly states that said agreement shall have priority over this product warranty provision, this provision shall not be applicable.

6. This product warranty provision shall not restrict the customer's legal rights.

PEARL  JOINT
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