

Pearl

Pearl Rotary Joint

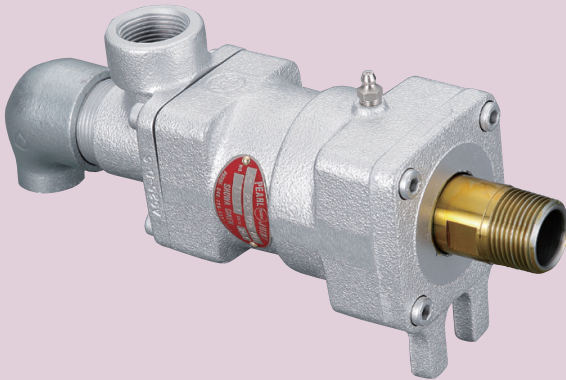
— Rotary Joint —

AC Series

CATALOG

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

AC Series



Features

Can be used in a high-temperature range (max. 180°C).
 (Quasi-standard products that can be used at 180°C or higher are available.)

Can be used for alternate heating and cooling.

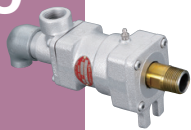
High performance is maintained for a long time due to reduced seal wear.

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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)
AC 	Saturated Steam / Thermal Oil / Water / Oil / Air	10A~40A	1.47	300	180
		50A~80A		150	

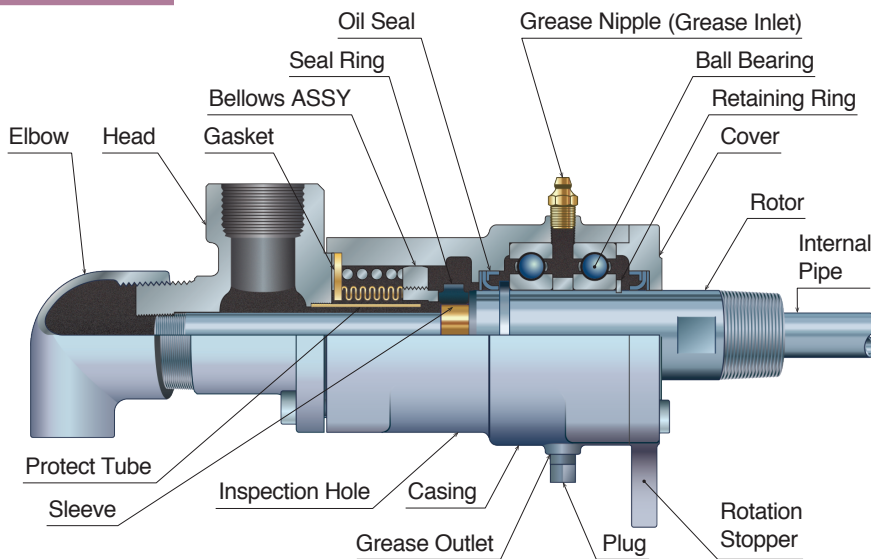
Note 1) The maximum service temperature of 180°C is a standard specification.

2) The pressure upper limit is 1.0 MPa when using saturated steam.

Structures and Materials

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

AC



Materials of Main Components (Standard Specification)

Part Name	Material
Rotor	Carbon Steel
Casing	Cast Iron
Head	Cast Iron
Seal Ring	Carbon
Sleeve	Brass
Bellows	Phosphor Bronze
Protect Tube	Brass

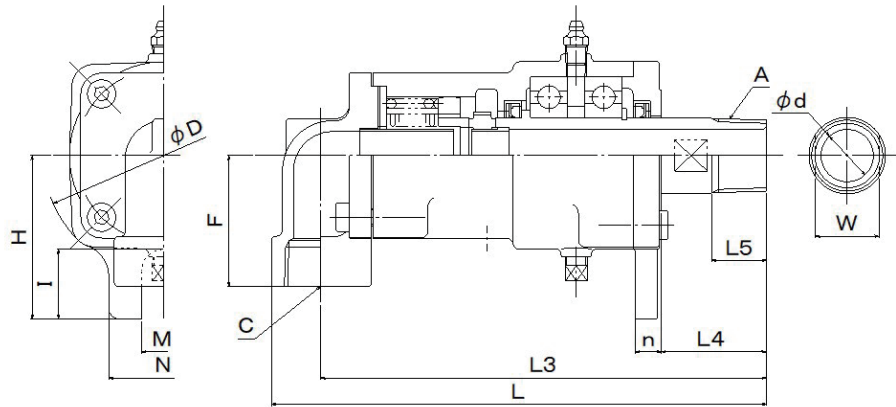
Heat-resistant paint is applied to external parts.

Note) Component materials are indicated on product drawings.

Contact our sales representative for requests for product drawings.

ACL

Simplex, Thread Connection



(mm)

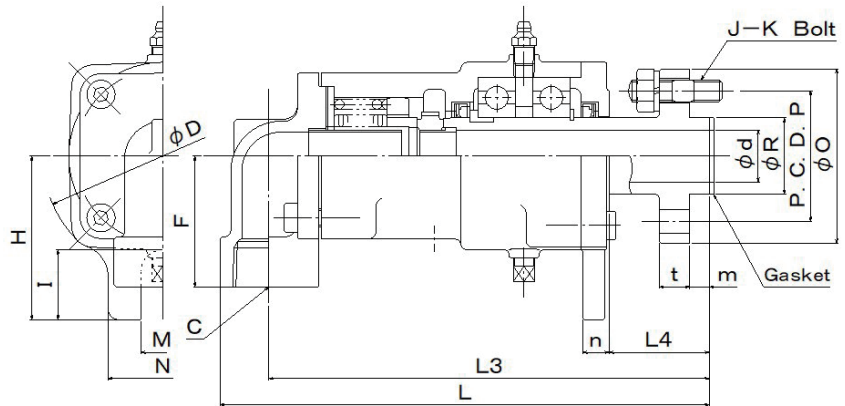
Size	A	C	F	D	H	I	M	N	L	L3	n	L4	L5	d	W
10A	R3/8	Rc3/8	55	78	55	24	15	35	179	164	9	38	18	8	21
15A	R1/2	Rc1/2	43	78	55	24	15	35	179	164	9	38	18	12	21
20A	R3/4	Rc3/4	45	90	65	28	20	45	198	180	12	38	20	18	26
25A	R1	Rc1	60	110	75	32	20	50	227	204	12	48	25	24	32
32A	R1 ¼	Rc1 ¼	75	130	95	40	20	50	270	239	14	52	25	30	46
40A	R1 ½	Rc1 ½	75	130	95	40	20	50	270	239	14	52	25	34	46
50A	R2	Rc2	85	138	100	40	20	55	307	268	15	63	30	46	58
65A	R2½	Rc2 ½	97	180	120	46	25	60	366	319	19	78	30	60	71
80A	R3	Rc3	100	193	130	52	30	70	401	346	20	85	34	72	-

Note 1) A bushing (1/2 x 3/8) is installed to 10A connecting port C. F is the dimension from the bushing.

2) The 80A rotor does not have a shank (W) for engaging a spanner.

ACLF

Simplex, Flange Connection



(mm)

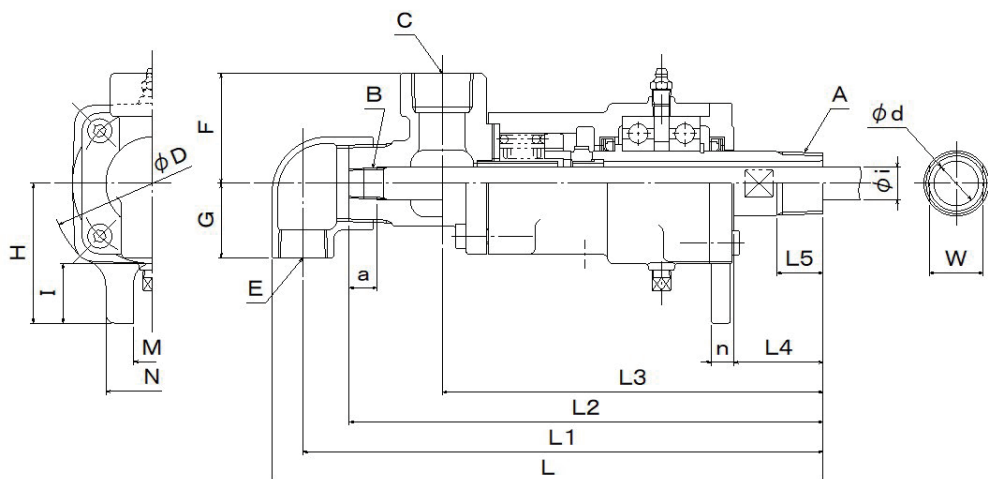
Size	C	F	D	H	I	M	N	L	L3	n	L4	d	Flange					J-K
													R	P	O	t	m	
10A	Rc3/8	55	78	55	24	15	35	179	164	9	38	12	25 d9	45	62	11	8	4-M8
15A	Rc1/2	43	78	55	24	15	35	179	164	9	38	12	25 d9	45	62	11	8	4-M8
20A	Rc3/4	45	90	65	28	20	45	202	184	12	42	18	30 c9	54	74	13	8	4-M10
25A	Rc1	60	110	75	32	20	50	225	202	12	46	24	35 d9	60	80	14	9	4-M10
32A	Rc1¼	75	130	95	40	20	50	267	236	14	49	34	50 d9	75	96	16	9	4-M10
40A	Rc1½	75	130	95	40	20	50	267	236	14	49	34	50 d9	75	96	16	9	4-M10
50A	Rc2	85	138	100	40	20	55	304	265	15	60	46	65 e9	95	120	19	10	4-M12
65A	Rc2½	97	180	120	46	25	60	351	303	19	62	60	80 e9	110	136	20	12	4-M12
80A	Rc3	100	193	130	52	30	70	401	346	20	85	72	90 e9	125	154	20	15	6-M12

Note 1) A bushing (1/2 x 3/8) is installed to 10A connecting port C. F is the dimension from the bushing.

2) The 80A flange is detachable.

AC

Duplex,
Stationary IP,
Thread
Connection



(mm)

Size	A	C	E	F	G	D	H	I	M	N	L	L1	L2	L3	n	L4	L5	a	d	W	Internal Pipe		
																					Size	i	B
15A	R1/2	Rc1/2	Rc1/2	30	30	78	55	24	15	35	230	217	198	165	9	38	18	12	12	21	6A	10.5	R1/8
20A	R3/4	Rc3/4	Rc3/4	45	35	90	65	28	20	45	261	244	221	181	12	38	20	13	18	26	6A	10.5	R1/8
																					8A	13.8	R1/4
25A	R1	Rc1	Rc3/4	59	40	110	75	32	20	50	297	280	255	205	12	48	25	15	24	32	8A	13.8	R1/4
																					10A	17.3	R3/8
32A	R1¼	Rc1	Rc1	50	45	130	95	40	20	50	332	311	283	231	14	52	25	18	30	46	15A	21.7	R1/2
40A	R1½	Rc1	Rc1	50	45	130	95	40	20	50	332	311	283	231	14	52	25	18	34	46	15A	21.7	R1/2
																					20A	27.2	R3/4
50A	R2	Rc1½	Rc1	55	51	138	100	40	20	55	382	361	333	267	15	63	30	25	46	58	20A	27.2	R3/4
																					25A	34.0	R1
65A	R2½	Rc2	Rc1 ½	65	62	180	120	46	25	60	449	419	382	314	19	78	30	25	60	71	25A	34.0	R1
																					32A	42.7	R1¼
80A	R3	Rc2	Rc2	90	74	193	130	52	30	70	496	458	411	327	20	85	34	28	72	-	40A	48.6	R1½
																					50A	60.5	R2

Note 1) 50A to 80A are shipped with connecting port C facing downward.

2) The 80A rotor does not have a shank (W) for engaging a spanner.

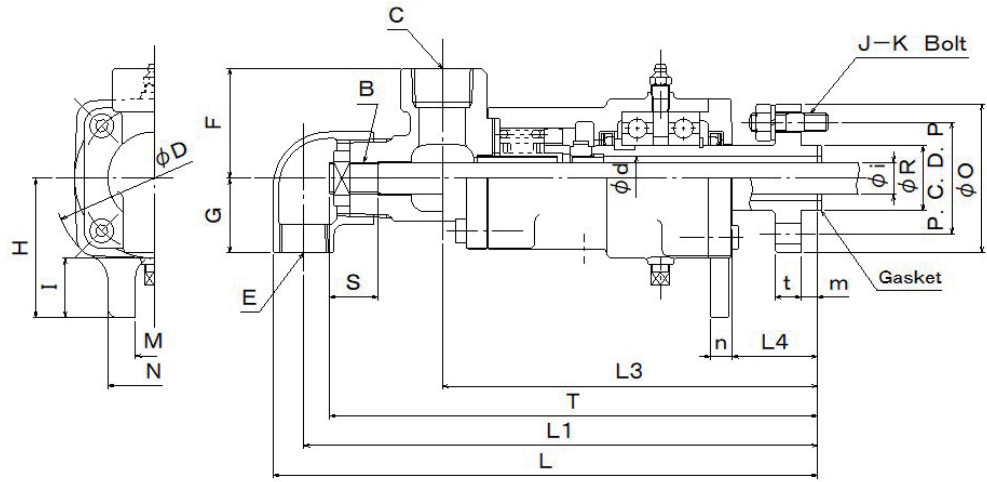
3) If the standard specification is selected, the direction of thread B is the same as that of thread A.

(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.

ACF

Duplex,
Stationary IP,
Flange
Connection



(mm)

Size	C	E	F	G	D	H	I	M	N	L	L1	L3	n	L4	d	Flange						J-K	Internal Pipe				
																R	P	O	t	m	Size		i	B	S	T	
15A	Rc1/2	Rc1/2	30	30	78	55	24	15	35	230	217	165	9	38	12	25 d9	45	62	11	8	4-M8	6A	10.5	G1/8	22	208	
20A	Rc3/4	Rc3/4	45	35	90	65	28	20	45	265	248	185	12	42	18	30 c9	54	74	13	8	4-M10	6A	10.5	G1/8	23	235	
																						8A	13.8	G1/4			
25A	Rc1	Rc3/4	59	40	110	75	32	20	50	295	278	203	12	46	24	35 d9	60	80	14	9	4-M10	8A	13.8	G1/4	25	263	
																						10A	17.3	G3/8	26	264	
40A	Rc1	Rc1	50	45	130	95	40	20	50	329	308	228	14	49	34	50 d9	75	96	16	9	4-M10	15A	21.7	G1/2	30	292	
																						20A	27.2	G3/4	32	294	
50A	Rc1½	Rc1	55	51	138	100	40	20	55	379	358	264	15	60	46	65 e9	95	120	19	10	4-M12	20A	27.2	G3/4	38	343	
																						25A	34.0	G1			
65A	Rc2	Rc1½	65	62	180	120	46	25	60	433	403	298	19	62	60	80 e9	110	136	20	12	4-M12	25A	34.0	G1	38	379	
																						32A	42.7	G1¼	40	381	
																						40A	48.6	G1½			
80A	Rc2	Rc2	90	74	193	130	52	30	70	496	458	327	20	85	72	90 e9	125	154	20	15	6-M12	40A	48.6	G1½	43	426	
																						50A	60.5	G2	45	428	

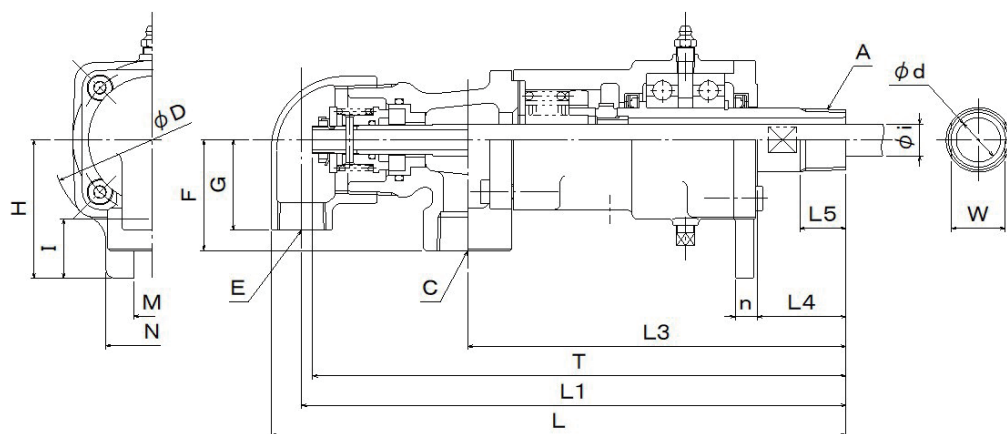
Note 1) 50A to 80A are shipped with connecting port C facing downward.

2) The 80A flange is detachable.

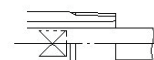
3) B is a right-hand thread.

ACW-1
ACW-2

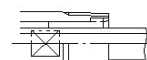
Duplex,
Rotational IP,
Thread
Connection



Internal pipes of 8A and 15A
(Two-part configuration)



ACW-1
(Without key)



ACW-2
(With key)

(mm)

Size	A	C	E	F	G	D	H	I	M	N	L	L1	L3	n	L4	L5	d	W	Internal Pipe		
																			Size	i	T
25A	R1	Rc1	Rc3/4	60	49	110	75	32	20	50	312	295	205	12	48	25	24	32	8A	13.8	289
																			10A	17.3	
32A	R1¼	Rc1	Rc1	47	60	130	95	40	20	50	363	341	243	14	52	25	30	46	15A	21.7	335
40A	R1½	Rc1	Rc1	47	60	130	95	40	20	50	363	341	243	14	52	25	34	46	15A	21.7	335
																			20A	27.2	
50A	R2	Rc1½	Rc1	55	55	138	100	40	20	55	421	389	269	15	63	30	46	58	20A	27.2	368
																			25A	34.0	372
65A	R2½	Rc2	Rc1½	65	70	180	120	46	25	60	499	460	310	19	78	30	60	71	25A	34.0	421
																			32A	42.7	432
																			40A	48.6	433
80A	R3	Rc2	Rc1½	70	193	130	52	30	70	525	486	334	20	85	34	72	-	40A	48.6	460	
			Rc2	85						85	541							502	50A	60.5	471

Note 1) The 80A rotor does not have a shank (W) for engaging a spanner.

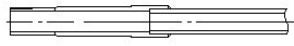
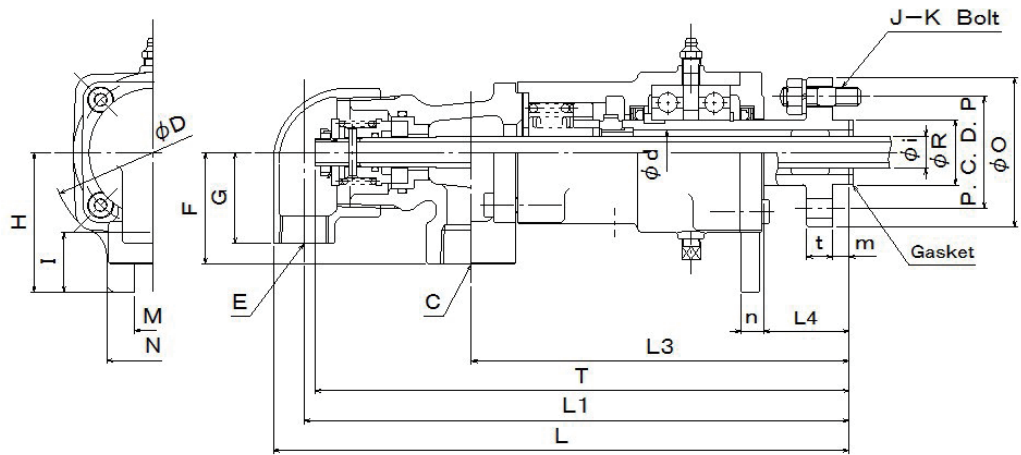
2) Internal pipes of 8A and 15A consist of two parts. (See the figure above.)

3) ACW-2 has a rotor with a keyway so that the internal pipe can rotate in phase with the rotor.

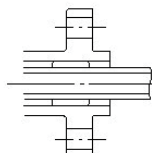
4) Contact our sales representative for internal pipe shapes and dimensions for installation to this product.

ACFW-1
ACFW-2

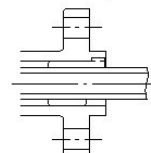
Duplex,
Rotational IP,
Flange
Connection



Internal pipes of 8A and 15A
(Two-part configuration)



ACFW-1
(Without key)



ACFW-2
(With key)

(mm)

Size	C	E	F	G	D	H	I	M	N	L	L1	L3	n	L4	d	Flange					J-K	Internal Pipe		
																R	P	O	t	m		Size	i	T
25A	Rc1	Rc3/4	60	49	110	75	32	20	50	310	293	203	12	46	24	35 d9	60	80	14	9	4-M10	8A	13.8	287
																						10A	17.3	
40A	Rc1	Rc1	47	60	130	95	40	20	50	360	338	240	14	49	34	50 d9	75	96	16	9	4-M10	15A	21.7	332
																						20A	27.2	
50A	Rc1½	Rc1	55	55	138	100	40	20	55	418	386	266	15	60	46	65 e9	95	120	19	10	4-M12	20A	27.2	365
																						25A	34.0	
65A	Rc2	Rc1½	65	70	180	120	46	25	60	483	444	294	19	62	60	80 e9	110	136	20	12	4-M12	25A	34.0	406
																						32A	42.7	
80A	Rc2	Rc1½	85	70	193	130	52	30	70	525	486	334	20	85	72	90 e9	125	154	20	15	6-M12	40A	48.6	460
		Rc2		85						541	502											50A	60.5	

Note 1) Internal pipes of 8A and 15A consist of two parts. (See the figure above.)

2) ACFW-2 has a rotor with a keyway so that the internal pipe can rotate in phase with the rotor.

3) Contact our sales representative for internal pipe shapes and dimensions for installation to this product.

Masses

Masses of AC Series

(kg)

Type	10A	15A	20A	25A	32A	40A	50A	65A	80A
ACL	2.2	2.2	3.2	5.2	9.0	9.2	12.0	19.0	25.0
ACLF	2.4	2.4	3.4	5.6	9.6	9.8	13.5	20.5	27.0
AC	-	2.3	3.8	6.0	9.3	9.5	12.5	22.0	28.0
ACF	-	2.5	4.0	6.4	-	10.1	14.0	23.5	30.0
ACW-1, ACW-2	-	-	-	6.5	11.3	11.5	14.0	25.0	32.0
ACFW-1, ACFW-2	-	-	-	6.9	-	12.1	15.5	26.5	34.0

Flow Rate

The maximum flow velocity in the product is about 3 m/s when the fluid is water, and about 30 m/s when the fluid is steam. Tables 1 and 2 show guidelines for the maximum flow rates calculated based on the above flow velocity.

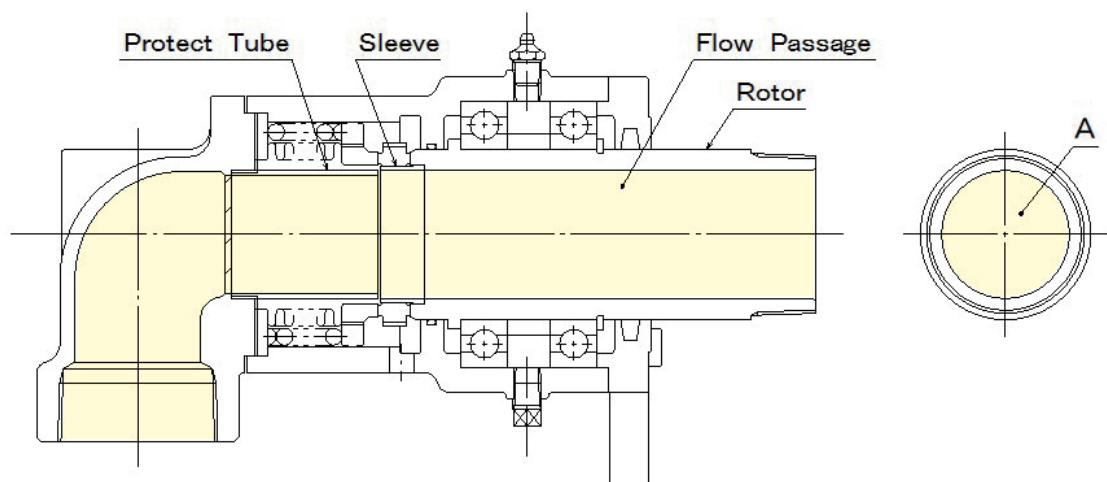
Water Flow Rate (Simplex) = $A \times 3 \times 3600 / 10000$

Flow Rate of Saturated Steam (Simplex) = $A \times 30 \times (\text{Density of saturated steam}) \times 3600 / 10000$

Table 1 Flow Rate (Simplex)

Type	Size	Flow Passage Area (cm ²) A (Note1)	Water Flow Rate (m ³ /h)	Flow Rate of Saturated Steam (kg/h)				
				0.1MPa	0.2MPa	0.4MPa	0.6MPa	0.8MPa
ACL	10A	0.503	0.543	6.16	9.00	14.5	19.9	25.3
ACLF	10A	1.13	1.22	13.9	20.3	32.7	44.9	56.9
ACL ACLF	15A	1.13	1.22	13.9	20.3	32.7	44.9	56.9
	20A	2.01	2.17	24.6	36.0	58.1	79.8	101
	25A	3.80	4.11	46.6	68.1	110	151	191
ACL	32A	7.07	7.63	86.6	127	204	280	356
ACLF	32A	8.04	8.69	98.5	144	233	319	405
ACL ACLF	40A	8.04	8.69	98.5	144	233	319	405
	50A	16.6	17.9	204	298	480	659	837
	65A	24.6	26.6	302	441	712	977	1240
	80A	40.7	44.0	499	729	1180	1620	2050

Note 1) A = (Minimum flow passage area)



Water Flow Rate (Duplex) = (B or C) × 3 × 3600 / 10000 (Note 4)

Flow Rate of Saturated Steam (Duplex) = B × 30 × (Density of saturated steam) × 3600 / 10000 (Note 5)

Table 2 Flow Rate (Duplex)

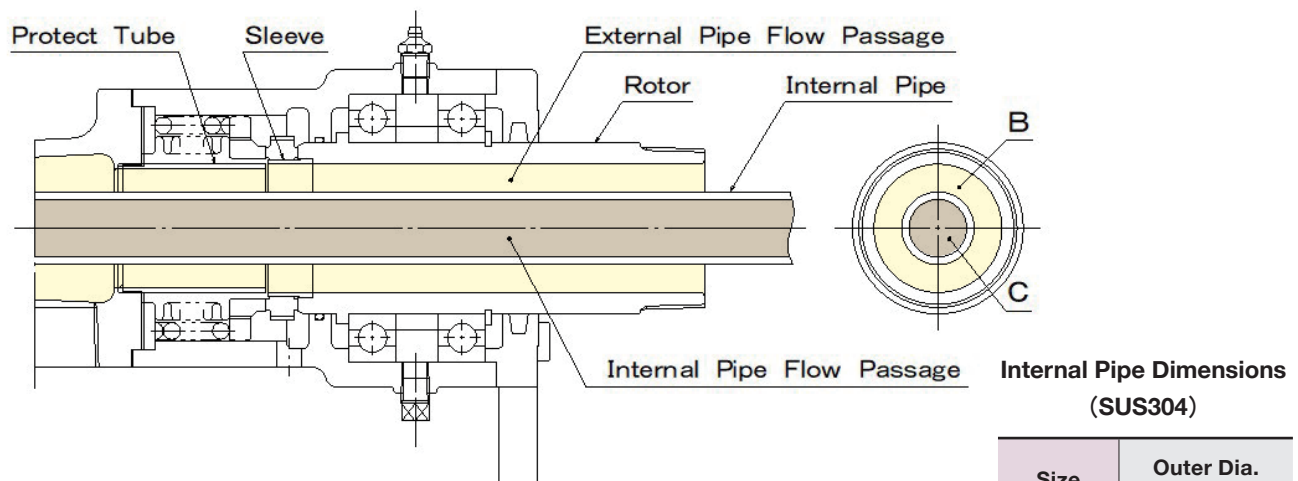
Type	Size	Flow Passage Area (cm ²)		Water Flow Rate (m ³ /h)	Flow Rate of Saturated Steam (kg/h)				
		B (Note2)	C (Note3)		0.1MPa	0.2MPa	0.4MPa	0.6MPa	0.8MPa
AC ACF	15A-6A	0.265	0.332	0.286	3.25	4.75	7.66	10.5	13.3
	20A-6A	1.14	0.332	0.358	14.0	20.5	33.1	45.4	57.6
	20A-8A	0.51	0.694	0.556	6.31	9.22	14.9	20.4	25.9
AC ACF ACW-1 ACW-2 ACFW-1 ACFW-2	25A-8A	2.31	0.694	0.749	28.2	41.3	66.7	91.5	116
	25A-10A	1.45	1.00	1.08	17.8	26.0	41.9	57.6	73
	32A-15A	3.37	1.94	2.09	41.3	60.3	97.4	134	170
	40A-15A	4.34	1.94	2.09	53.2	77.8	126	172	219
	40A-20A	2.23	3.53	2.41	27.3	40.0	64.5	88.6	112
	50A-20A	10.8	3.53	3.81	132	194	312	429	544
	50A-25A	7.54	5.73	6.18	92.3	135	218	299	380
	65A-25A	15.6	5.73	6.18	190	278	450	617	783
	65A-32A	10.3	9.46	10.2	126	185	298	409	519
	65A-40A	6.08	11.6	6.57	74.5	109	176	241	306
	80A-40A	22.2	11.6	12.5	271	397	641	879	1120
80A-50A	12.0	19.2	12.9	147	214	346	475	603	

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

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

Note 4) B or C, whichever is smaller

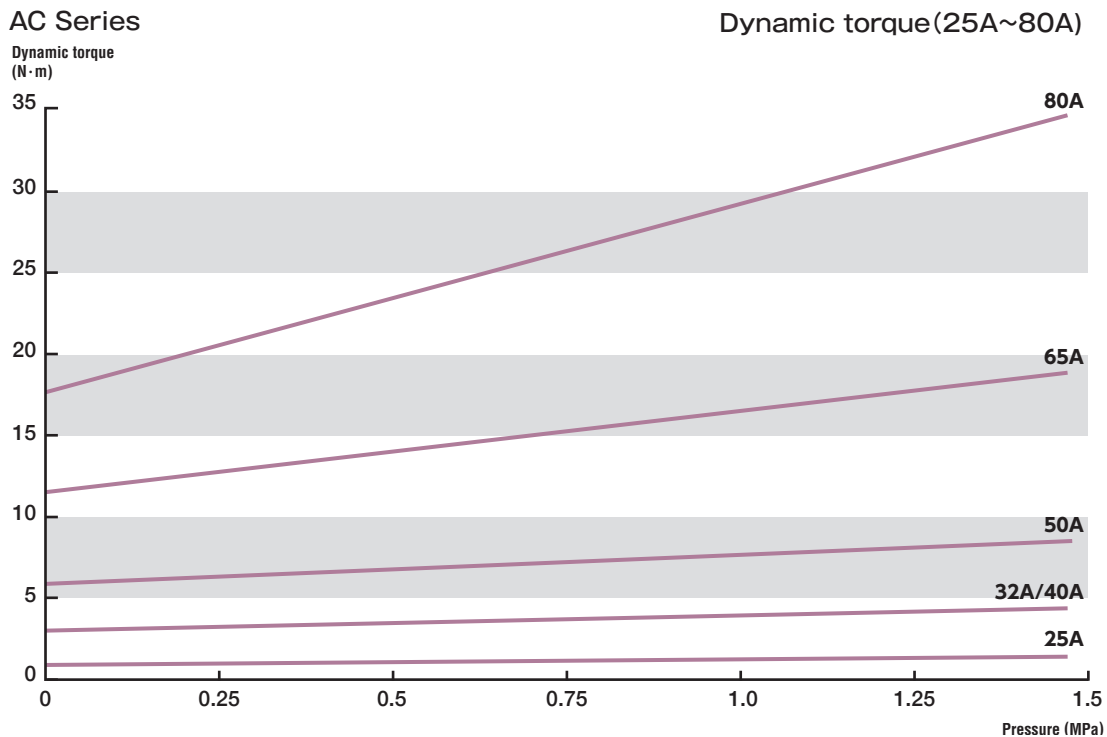
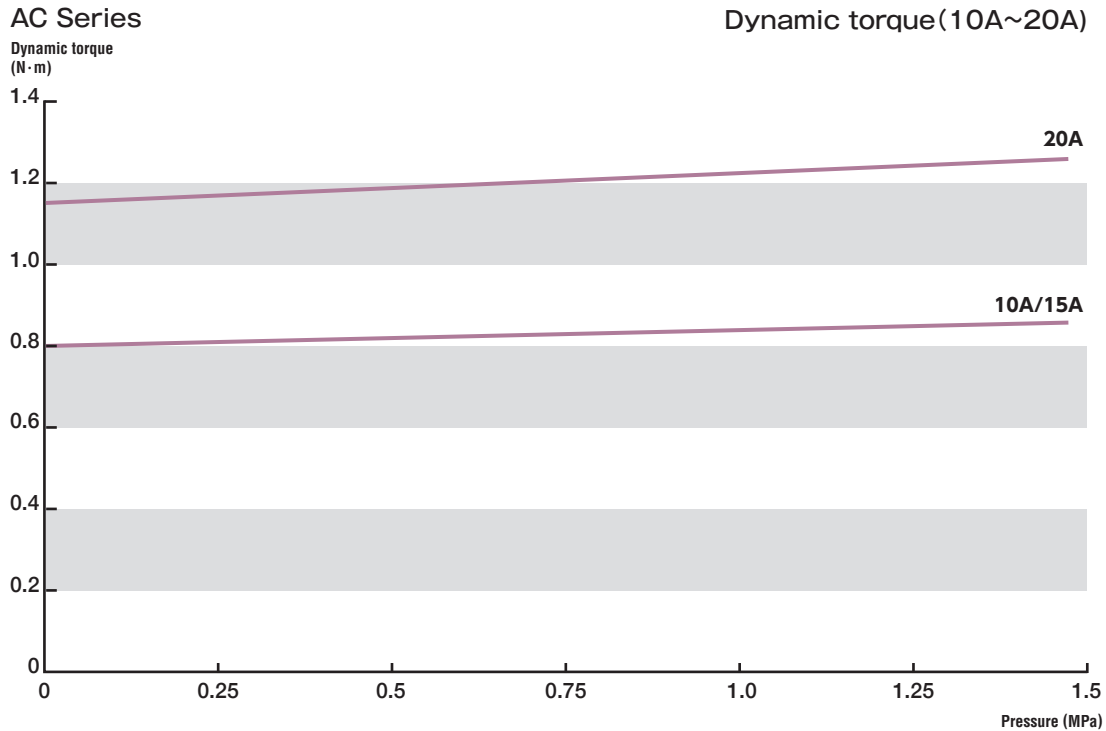
Note 5) The flow rate of saturated steam (duplex) is calculated based on the flow passage area of B.



※ 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.

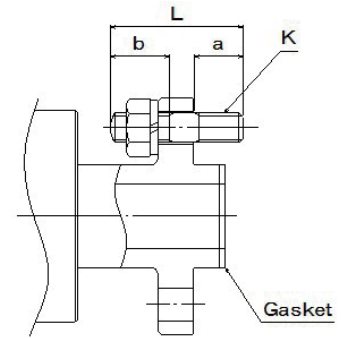
Accessories

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) for up to 65A or six sets there of for 80A.

Accessories (Flange Connection)

(mm)

Type	Size	Gasket			Stud Bolt				Hex. Nut	Spring Washer
		Outer Dia.	Inner Dia.	Thick-ness	K	L	a	b		
ACLF	10A	24	16	3.2	M8	36	11	18	M8 type1	M8 No.2
	15A									
ACF	20A	29	20	3.2	M10	45	15	20	M10 type1	M10 No.2
	25A									
ACFW-1	32A	49	37	3.2	M10	48	15	20	M10 type1	M10 No.2
	40A									
ACFW-2	50A	79	62	3.2	M12	58	18	27	M12 type1	M12 No.2
	65A									
	80A									



2) A duplex, stationary IP, flange connection product (ACF) is supplied with a lock nut (right-hand thread, SS400) used for securing the internal pipe.

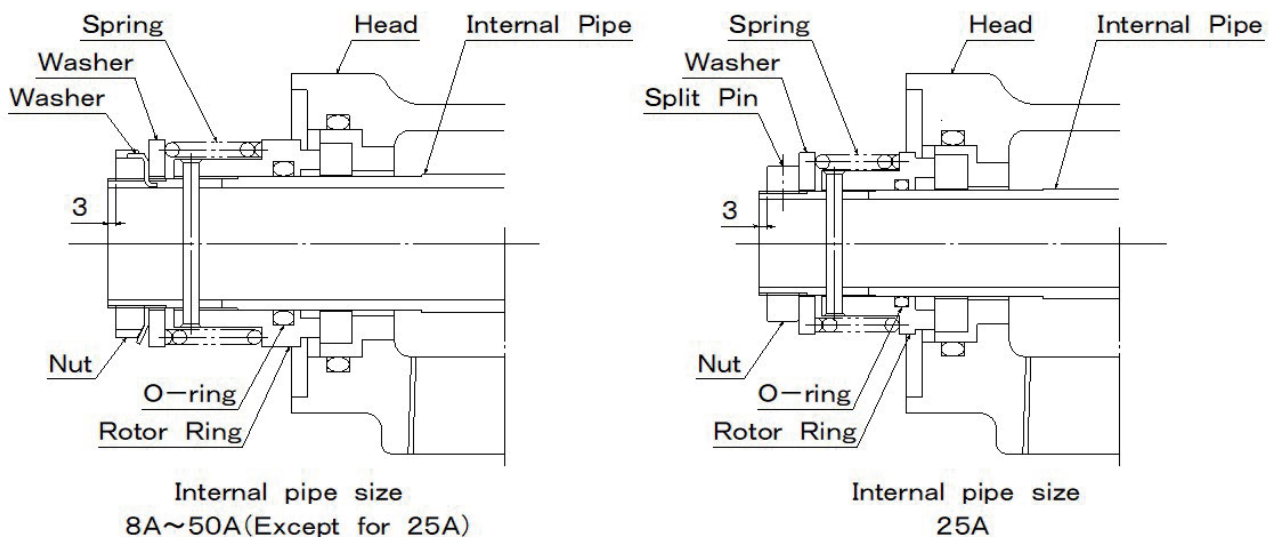
3) A duplex, rotational IP product (ACW-1, ACW-2, ACFW-1, or ACFW-2) is supplied with a seal kit for the internal pipe.

Accessories Accessories (Duplex, Rotational IP)

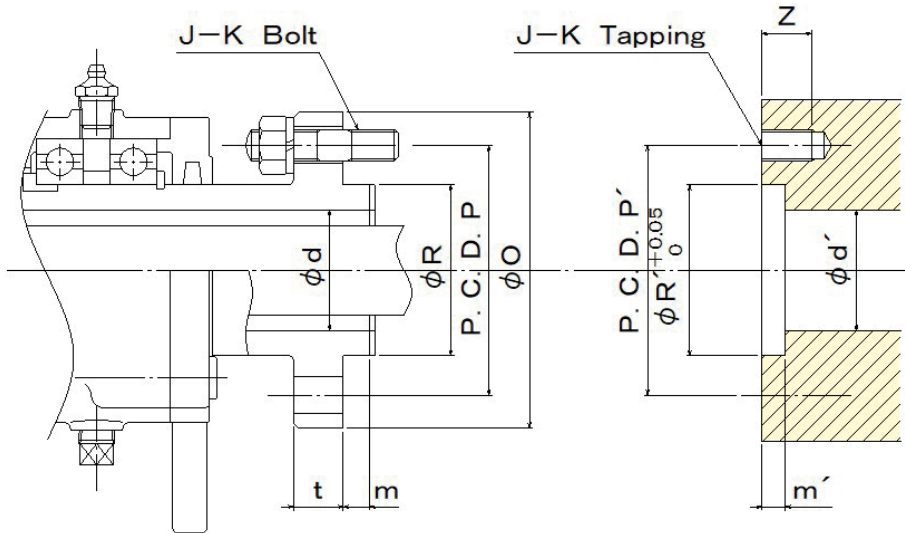
(mm)

Type	Internal Pipe Size	Rotating Seal Kit						
		Rotor Ring	Spring	Washer	Nut	Washer	Split Pin	O-Ring
ACW-1	8A	36×25	34×40	36×4	AN02	AW02	-	AS-114
	10A							
ACW-2	15A	47×34	45×45	50×5	AN05	AW05	-	AS-214
	20A							
ACFW-1	25A	56×35	55×45	56×5	48×10	-	3×20	AS-219
ACFW-2	32A	64×45	62.5×50	64×5	AN08	AW08	-	AS-326
	40A	71×45	71×50	71×5	AN09	AW09	-	AS-328
	50A	82×48	82×55	82×6	AN11	AW11	-	AS-331

Note) Dimensions of the rotor ring, spring, washer, and nut (for 25A) are the “maximum outer diameter x length (thickness)”.



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



Flange Dimensions

(mm)

Size	d	R	P	O	t	m
10A	12	25 d9	45	62	11	8
15A	12	25 d9	45	62	11	8
20A	18	30 c9	54	74	13	8
25A	24	35 d9	60	80	14	9
32A	34	50 d9	75	96	16	9
40A	34	50 d9	75	96	16	9
50A	46	65 e9	95	120	19	10
65A	60	80 e9	110	136	20	12
80A	72	90 e9	125	154	20	15

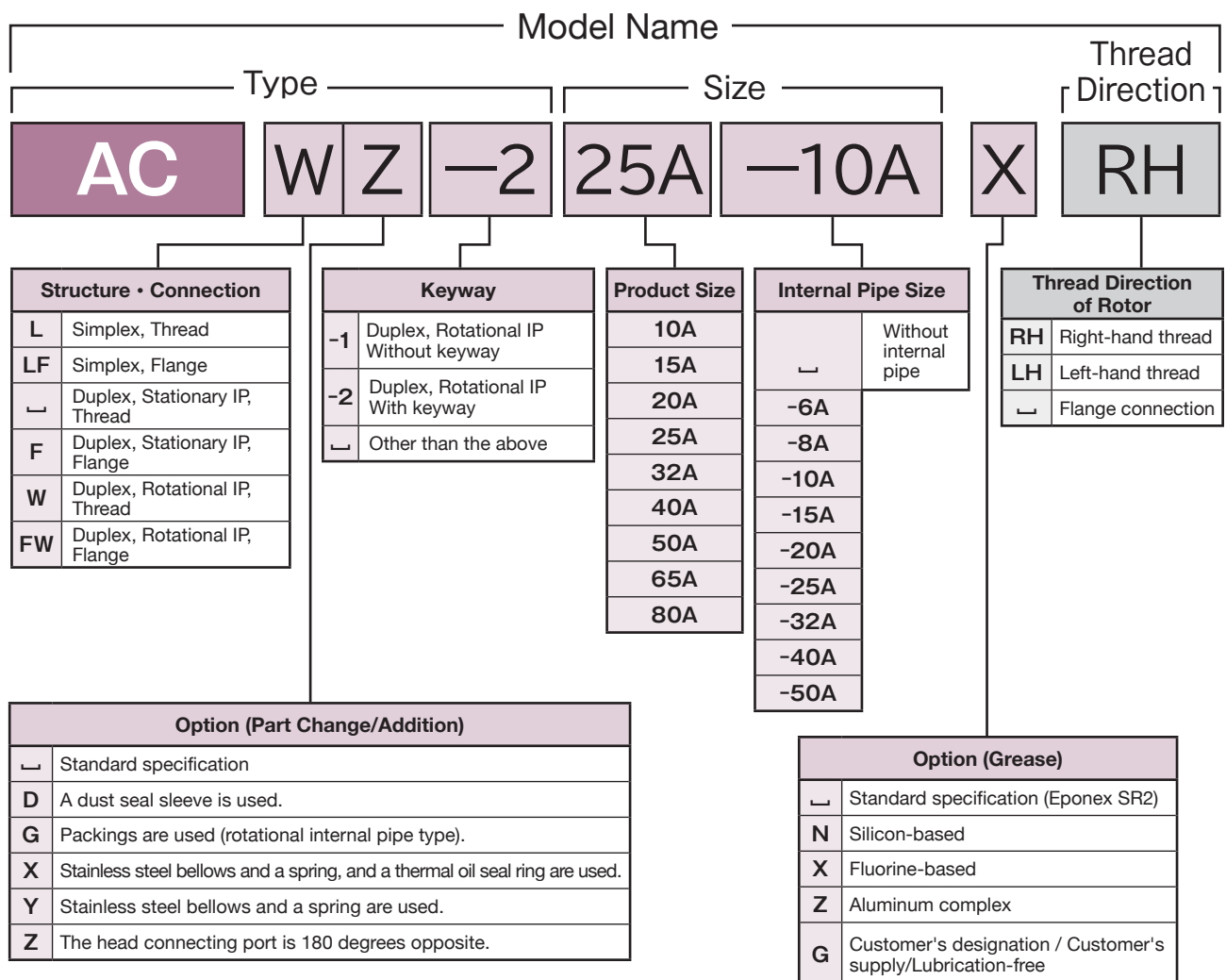
Dimensions on the Roll Side

(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	18	30	54	7	16	4-M10
25A	24	35	60	8	16	4-M10
32A	34	50	75	8	16	4-M10
40A	34	50	75	8	16	4-M10
50A	46	65	95	9	19	4-M12
65A	60	80	110	11	19	4-M12
80A	72	90	125	14	19	6-M12

Note) Roll side dimension d' is a standard dimension. If the maximum outer diameter of an internal pipe is larger than d' , it cannot be inserted into a roll. Determine dimension d' by considering the maximum outer diameter of the internal pipe.

Model Names and Types



- Note 1) “┌” indicates a space. A model name is indicated without spaces.
- 2) If option (part change/addition) code G is selected, W in a type indication is omitted.
- Thus, the type indication is ACG-1, ACG-2, ACFG-1, or ACFG-2.
- 3) If two or more option (part change/addition) codes are selected, they are indicated in alphabetical order.
- 4) The selection of two or more options resulting in a long model name is indicated as type “OC■■■■” 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.

Standard Spec : Without Options
Quasi-standard Spec : With Options

Internal Pipe

Product Size and Internal Pipe Size

Product Size	15A	20A	25A	32A	40A	50A	65A	80A
Internal Pipe Size	6A	6A/8A	8A/10A	15A	15A/20A	20A/25A	25A/32A/40A	40A/50A

Precautions on Selection

1. Select a product whose operating conditions are within the service conditions (listed in the table on page 2).
2. 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.
3. To rotate the internal pipe in phase with the rotor, select ACW-2 or ACFW-2 that has a rotor with a keyway.
4. Select an option as necessary.
 - 1) See “Model Names and Types” (page 14) for the types of options.
 - 2) If thermal oil is used at 180°C or higher, select option (part change/addition) code X.
 - 3) If steam is used at 180°C or higher (1.0 MPa or higher), select option (part change/addition) code Y.
 - 4) Depending on the application, you can change the standard specification grease (Daphne Eponex SR2) to your desired material. (See the table below.)
 - 5) If the product is used at 180°C or higher, select option (grease) code X.
5. AC series is not suitable for non-rotating, intermittent rotating, or low-speed rotating (several rotations per minute) operation. Fluid leakage may result. Please consider the use of our OPM series or swivel joint.
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. The product cannot be used for liquid containing solid particles (slurry) or pulverulent body.
9. The product cannot be used for fluid that causes corrosion on it.
10. 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.
11. 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.

■ Grease Type and Service Temperature Range (Guideline)

Option Code (Grease)	Brand	Material	Application	Temperature Range(°C)
□	Epones SR2 (Standard)	Lithium complex	General purpose	~ 200
N	-	Silicon-based	General purpose	-40 ~ 200
X	-	Fluorine-based	High-temperature	-30 ~ 260
Z	-	Aluminum complex	Food-processing machinery	-20 ~ 160
G	Customer's designation	-	-	-

Daphne Eponex SR2 is a product of Idemitsu Kosan Co., Ltd.

Note) “Temperature range” in the table above means the grease service temperature range.

It is not the joint service temperature range.

Maintenance

1) Greasing

AC series requires the periodic greasing (refilling) of ball bearings.
 Perform greasing with reference to the frequency (guideline) shown to the right.

- *Use the brand of grease filled in the product before shipment.
- *Daphne Eponex SR2 (Idemitsu Kosan) is filled as a standard specification.
- *Grease different from the standard specification is filled if a model name includes an option (grease) code.

Greasing Frequency (Guideline)

Fluid Temperature (°C)	Greasing Frequency
0~130	Every three months
130~150	Monthly
150~180	Weekly

2) Replacement of consumables

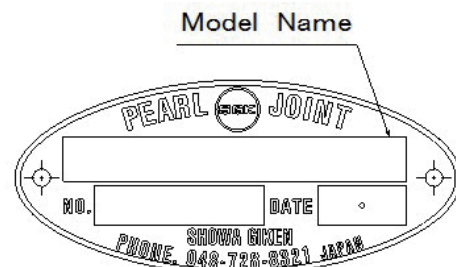
You can use the product for an extended period of time by replacing consumables.
 Contact us for replacement. We carry it out according to our repair program.
 Depending on the products, expenses for purchasing new products may be lower than repair expenses.
 Contact us for more information.

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

URL <https://www.sgk-p.co.jp>



Export Department Phone : +81-3-3598-1400 Fax. : +81-3-3598-2700
E-mail : sgk-tk@sgk-p.co.jp

Headquarters 7-24, Nishi-Kobari, Ina-Machi, Saitama, 362-0811 Japan
Phone : +81-48-728-9460 Fax. : +81-48-728-9461

Tokyo Sales Office 2-64-11, Akabane, Kita-ku, Tokyo, 115-0045 Japan
Phone : +81-3-3598-1400 Fax. : +81-3-3598-2700

Osaka Sales Office 2-9-7, Toyosaki, Kita-ku, Osaka, 531-0072 Japan
Phone : +81-6-6371-8341 Fax. +81-6-6371-6283

Nagoya Sales Office 41-1, Higashi-Ozone-cho, Higashi-ku, Nagoya, 461-0022 Japan
Phone : +81-52-938-8825 Fax. : +81-52-938-6423