# Pearl

**Pearl Rotary Joint** 

# Rotary Joint

**AC** Series

CATALOG



# 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.



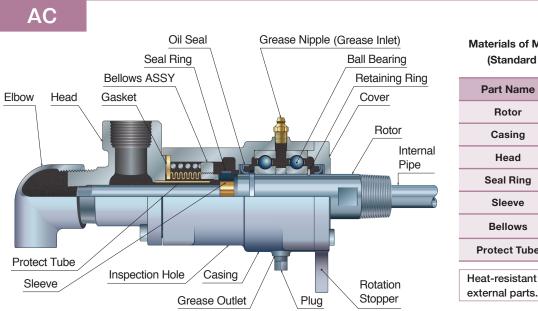
#### **Service Conditions**

					Max.	
Ser	ries	Fluid	Size	Pressure (MPa)	Rotation Speed (min <sup>-1</sup> )	Temperature (°C)
AC		Saturated Steam /	10A~40A	1.47	300	180
		Thermal Oil / Water / Oil / Air	50A~80A	1.47	150	180

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

#### **Structures and Materials**

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



# Materials of Main Components (Standard Specification)

Material
Carbon Steel
Cast Iron
Cast Iron
Carbon
Brass
Phosphor Bronze
Brass

Heat-resistant paint is applied to external parts.

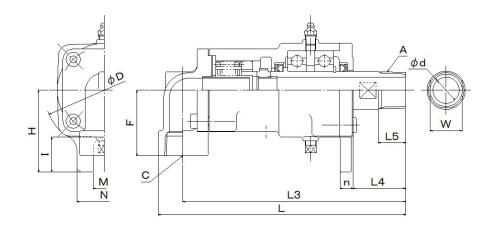
Note) Component materials are indicated on product drawings.

Contact our sales representative for requests for product drawings.

<sup>2)</sup> The pressure upper limit is 1.0 MPa when using saturated steam.

# ACL

Simplex, Thread Connection



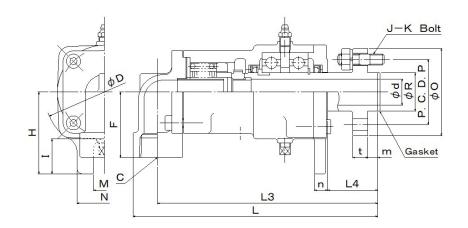
															(mm)
Size	Α	С	F	D	н	1	М	N	L	L3	n	L4	L5	d	w
10A	R3/8	Rc3/8	55	78	55	24	15	35	179	164	9	38	18	8	21
15A	R1/2	Rc1/2	43	78	55	24	15	35	179	164	9	38	18	12	21
20A	R3/4	Rc3/4	45	90	65	28	20	45	198	180	12	38	20	18	26
25A	R1	Rc1	60	110	75	32	20	50	227	204	12	48	25	24	32
32A	R1 ¼	Rc1 1/4	75	130	95	40	20	50	270	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  $(1/2 \times 3/8)$  is installed to 10A connecting port C. F is the dimension from the bushing.

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

# ACLF

Simplex, Flange Connection

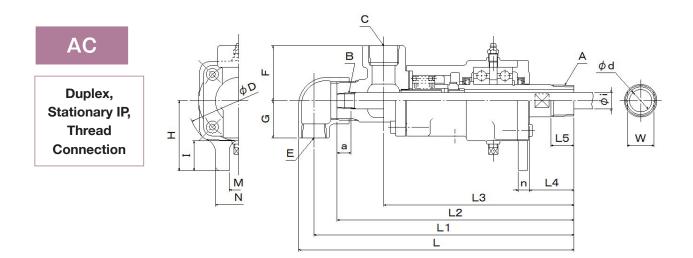


(mm)

Size	С	F	D	н	1	М	N	L	L3		L4	d		F	lange			J-K
Size		Г				IVI	IN		L3	n	L4	a	R	Р	0	t	m	J-K
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.

<sup>2)</sup> The 80A flange is detachable.



(mm)

Cina	Α	С	E	F	G	D			B.4	N		L1	L2	L3	_	L4	L5		ام	w	Inte	ernal P	ipe
Size	A	C	-		G	<u> </u>	Н	<u>'</u>	М	IN	L	LI	L2	L3	n	L4	Lo	а	d	VV	Size	i	В
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	D2 /4	De2/4	Rc3/4	1 =	25	00	65	28	20	45	261	244	221	101	12	20	20	13	10	26	6A	10.5	R1/8
20A	N3/4	NC3/4	NC3/4	45	33	90	05	20	20	45	201	244	221	101	12	30	20	13	10	20	8A	13.8	R1/4
25.4	D1	Do1	De2/4	ΕO	40	110	75	22	20	ΕO	207	200	255	205	12	40	25	1.5	24	22	8A	13.8	R1/4
25A	R1	Rc1	Rc3/4	59	40	110	75	32	20	50	291	280	255	205	12	48	25	15	24	32	10A	17.3	R3/8
32A	R11/4	Rc1	Rc1	50	45	130	95	40	20	50	332	311	283	231	14	52	25	18	30	46	15A	21.7	R1/2
404	D11/	D-1	D-1	F0	4.5	120	٥٢	40	20	F0	222	211	202	221	1 /	<b>-</b> -2	2.5	1.0	24	1.0	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	20A	27.2	R3/4
Ε0.	- D2	D 11/	D 1		<b>-1</b>	120	100	40	20		202	2/1	222	245	1.5	(2)	20	٥٢	4.		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	25A	34.0	R1
																					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	32A	42.7	R11/4
																					40A	48.6	R1½
004	D2	D-2	D-2	00	- T	100	120	<b>-</b> -2	20	70	406	450	411	227	20	٥٢	2.4	20	<b>7</b> 2		40A	48.6	R1½
80A	R3	Rc2	Rc2	90	/4	193	130	52	30	70	496	458	411	321	20	85	34	28	12		50A	60.5	R2

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

(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.

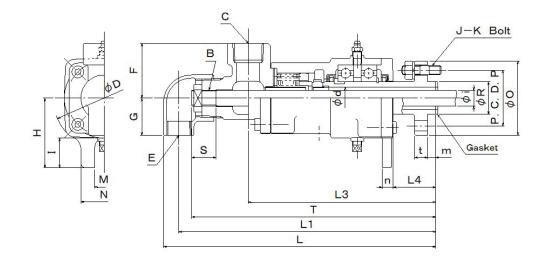
<sup>2)</sup> The 80A rotor does not have a shank (W) for engaging a spanner.

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

**AC** Series

# ACF

Duplex, Stationary IP, Flange Connection



(mm)

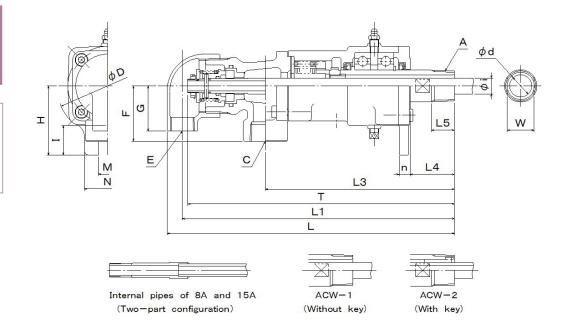
Size	С	Е	F	G	_	н	_	N/I	N		L1	12	_	1.4	٦		Fla	nge			J-K		Inter	nal Pip	ре	
Size			_	G		п	<u>'</u>	IVI	IN		LI	L3	n	L4	a	R	Р	0	t	m	J-K	Size	i	В	S	Т
15A	Rc1/2	Rc1/2	30	30	78	55	24	15	35	230	217	165	9	38	12	25 d9	45	62	11	8	4-M8	6A	10.5	G1/8	22	208
201	D-2/4	D-2/4	4.5	25	00	<b>.</b> -	20	20	4.5	265	240	105	10	40	1.0	20 -0	<b>5</b> 4		10	0	4.1410	6A	10.5	G1/8	22	225
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 -	8A	13.8	G1/4	23	235
254	D-1	D-2/4		40	110	7.5	22	20		205	270	202	10	16	2.4	25 40		00	1.4	_	4.1410	8A	13.8	G1/4	25	263
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 -	10A	17.3	G3/8	26	264
404	De1	De1		45	120	0.5	40	20		220	200	220	1.4	40	24	E0 40	75	06	1.	^	4-M10 -	15A	21.7	G1/2	30	292
40A	Rc1	Rc1	50	45	130	95	40	20	50	329	308	228	14	49	34	50 09	/5	90	.10	9	4-1/110 -	20A	27.2	G3/4	32	294
Γ0Λ	D-11/	D-1		<b>-1</b>	120	100	40	20		250	250	264	1.5		4.6	<b>65.0</b>	٥٢	100	1.0	10	4.141.0	20A	27.2	G3/4	20	242
50A	Rc1½	Rc1	55	51	138	100	40	20	55	379	358	264	15	60	46	65 e9	95	120	19	10	4-M12 -	25A	34.0	G1	38	343
																						25A	34.0	G1	38	379
65A	Rc2	Rc1½	65	62	180	120	46	25	60	433	403	298	19	62	60	80 e9	110	136	20	12	4-M12	32A	42.7	G1¼	40	381
																						40A	48.6	G1½	40	381
004	D-2	D-2		<b>5</b> 4	102	120	F2	20	<b>50</b>	106	450	225	20	0.5	<b>7</b> 2	00 - 0	105	154	20	1.	( M12	40A	48.6	G1½	43	426
80A	Rc2	Rc2	90	74	193	130	52	30	70	496	458	327	20	85	12	90 e9	125	154	-20	15	6-M12 -	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



(mm)

Ī	Size	Α	С	Е	F	G	D	н		М	N	L	L1	L3	n	L4	L5	d	w	Int	ernal P	ipe
	Size	A	C			G	D	п	'	IVI	IN		LI	L3	n	L4	Lo	a	VV	Size	i	Т
	254	R1	D-1	D-2/4		40	110	75	32	20	50	312	295	205	10	48	25	24	32	8A	13.8	289
	25A	KI	Rc1	Rc3/4	60	49	110	75	32	20	50	312	295	205	12	48	25	24	32	10A	17.3	209
	32A	R11/4	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	2/1	243	14	52	25	34	46	15A	21.7	335
	40A	K1/2	KC I	KC I	4 /	00	130	95	40	20	50	303	341	243	14	52	25	34	40	20A	27.2	333
	50A	R2	Rc1½	Rc1	55	55	138	100	40	20	55	421	389	269	15	63	30	46	58	20A	27.2	368
	30A	NZ	NC 1 /2	KC1	55	55	130	100	40	20	55	421	309	209	15	03	30	40	36	25A	34.0	372
																				25A	34.0	421
	65A	R2½	Rc2	Rc1½	65	70	180	120	46	25	60	499	460	310	19	78	30	60	71	32A	42.7	432
																				40A	48.6	433
Ī	80A	R3	Rc2	Rc1½	0.5	70		130	52	30	70	525	486	334	20	85	34	72		40A	48.6	460
	OUA	L/2	KC2	Rc2	00	85	193	130	52	30	70	541	502	334	20	00	54	12	_	50A	60.5	471

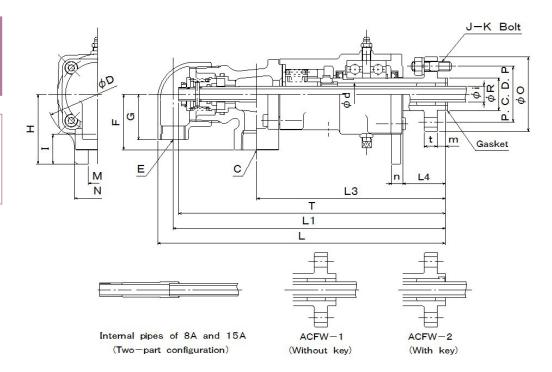
Note 1) The 80A rotor does not have a shank (W) for engaging a spanner.

- 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



(mm)

C:	С	Е	F	G		н	$\overline{}$	м	N	L	14	L3	_	L4			Fla	nge			J-K	Inter	nal Pi	ре
Size			_	G		п		IVI	IN		L1	L3	n	L4	a	R	Р	0	t	m	J-K	Size	i	Т
25A	Rc1	Rc3/4	60	40	110	75	32	20	50	210	293	203	12	46	24	35 d9	60	80	11	. 0	4-M10 -	8A	13.8	287
ZSA	KCI	RC3/4	00	43	110	75	J2	20	50	310	293	203	12	40	24	35 U9	00	80	14	9	4-14110	10A	17.3	201
40A	Rc1	Rc1	47	60	130	95	40	20	50	360	338	240	14	49	34	50 d9	75	96	16	0	4-M10 -	15A	21.7	332
40A	I KCI	NC I	47	00	130	93	40	20	50	300	336	240	14	49	34	50 d9	75	90	10	9	4-14110	20A	27.2	332
50A	Rc1½	Rc1	55		138	100	40	20	E E	418	204	266	1 =	60	46	65 e9	0.E	120	10	10	4-M12 -	20A	27.2	365
SUA	KC1/2	KCI	55	55	130	100	40	20	55	410	300	200	15	80	40	05 69	95	120	19	10	4-14112	25A	34.0	369
																						25A	34.0	406
65A	Rc2	Rc1½	65	70	180	120	46	25	60	483	444	294	19	62	60	80 e9	110	136	20	12	4-M12	32A	42.7	417
																						40A	48.6	418
201	D-2	Rc1½		70	102	120		20	70		486	224	20	0.5	72	00.00	125	154	20	1.	6 M12	40A	48.6	460
80A	Rc2	Rc2		85	193	130	52	30	70		502	334	20	85	72	90 e9	125	154	20	15	6-M12 -	50A	60.5	471

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)

Туре	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.

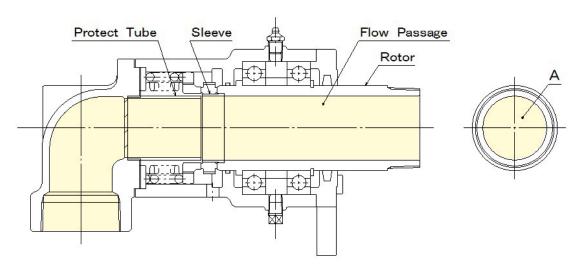
Water Flow Rate (Simplex) = A×3×3600/10000

Flow Rate of Saturated Steam (Simplex) = A×30×(Density of saturated steam)×3600/10000

#### ■ Table 1 Flow Rate (Simplex)

Туре	Size	Flow Passage Area	Water Flow Rate		Flow Rate	of Saturated	Steam (kg/h)	
		A (Note1)	(m³/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
A.C.I	15A	1.13	1.22	13.9	20.3	32.7	44.9	56.9
ACL ACLF	20A	2.01	2.17	24.6	36.0	58.1	79.8	101
ACLF	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
	40A	8.04	8.69	98.5	144	233	319	405
ACL	50A	16.6	17.9	204	298	480	659	837
ACLF	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)

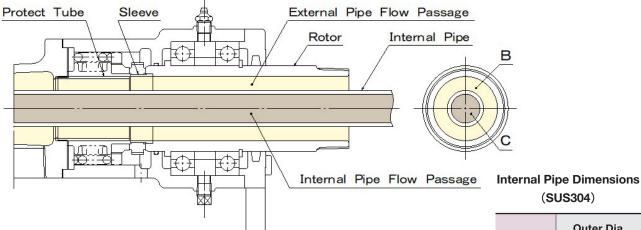
Туре	Size	I	sage Area	Water Flow Rate		Flow Rate o	of Saturated	Steam (kg/h)	
		B (Note2)	C (Note3)	(m³/h)	0.1MPa	0.2MPa	0.4MPa	0.6MPa	0.8MPa
4.6	15A-6A	0.265	0.332	0.286	3.25	4.75	7.66	10.5	13.3
AC	20A-6A	1.14	0.332	0.358	14.0	20.5	33.1	45.4	57.6
ACF	20A-8A	0.51	0.694	0.556	6.31	9.22	14.9	20.4	25.9
	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
AC	40A-15A	4.34	1.94	2.09	53.2	77.8	126	172	219
ACF	40A-20A	2.23	3.53	2.41	27.3	40.0	64.5	88.6	112
ACW-1	50A-20A	10.8	3.53	3.81	132	194	312	429	544
ACW-2	50A-25A	7.54	5.73	6.18	92.3	135	218	299	380
ACFW-1	65A-25A	15.6	5.73	6.18	190	278	450	617	783
ACFW-2	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.

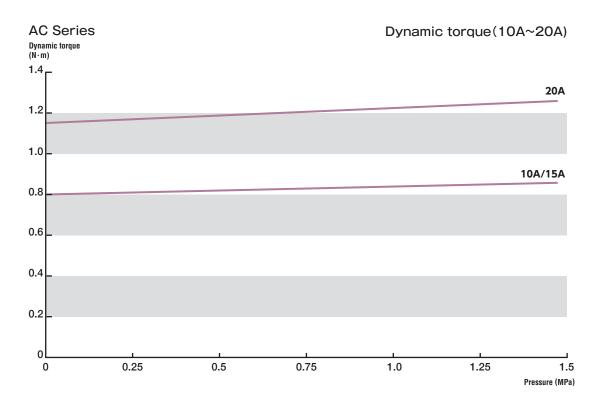


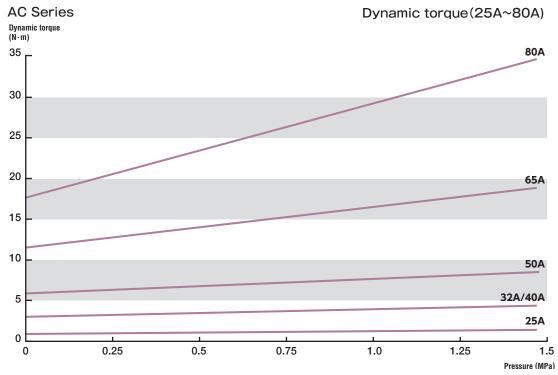
\* Internal pipe outer diameters and thickness are based on the values of "internal pipe dimensions" in the table shown on the right.

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

Size	Outer Dia. ×Thickness
6A	φ10.5×2.0
8A	φ13.8×2.2
10A	φ17.3×3.0
15A	φ21.7×3.0
20A	φ27.2×3.0
25A	φ34.0×3.5
32A	φ42.7×4.0
40A	φ48.6×5.1
50A	φ60.5×5.5

# **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.



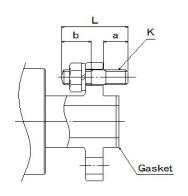
#### **Accessories**

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.

(mm)

#### Accessories (Flange Connection)

		Gasket		Stud Bolt					Spring	
Туре	Size	Outer Dia.	Inner Dia.	Thick- ness	K	L	а	b	Hex. Nut	Washer
	10A	24	16	3.2	M8	36	11	18	M9 + 40 o 1	M8 No.2
	15A	24	10	3.2	IVIO	30	11	10	M8 type1	MO 140.2
ACLF	20A	29	20	3.2	M10	45	15	20	M10 type1	M10 No.2
ACF	25A	34	26	3.2	10110	45	15	20	MITO type	M10 NO.2
	32A	49	37	3.2	M10	48	15	20	M10 type1	M10 No.2
ACFW-1	40A	49	31	3.2	MITO	40	15	20	мто турет	M10 No.2
ACFW-2	50A	64	50	3.2						
	65A	79	62	3.2	M12	58	18	27	M12 type1	M12 No.2
	80A	89	74	3.2						



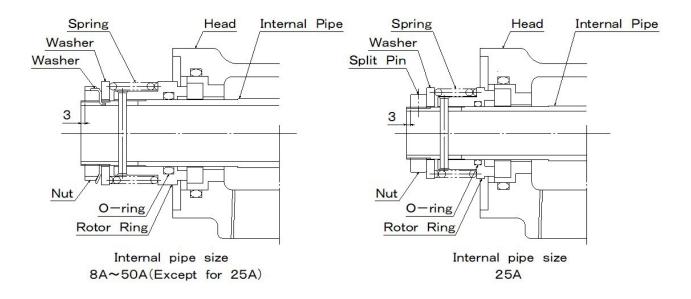
- 2) A duplex, stationary IP, flange connection product (ACF) is supplied with a lock nut (right-hand thread, SS400) used for securing the internal pipe.
- 3) A duplex, rotational IP product (ACW-1, ACW-2, ACFW-1, or ACFW-2) is supplied with a seal kit for the internal pipe.

#### Accessories Accessories (Duplex, Rotational IP)

(mm)

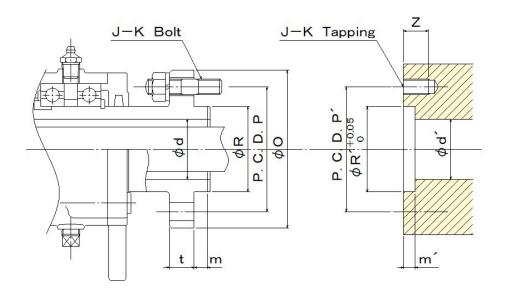
Туре	Internal	Rotating Seal Kit									
туре	Pipe Size	Rotor Ring	Spring	Washer	Nut	Washer	Split Pin	O-Ring			
	8A	36×25	24×40	36×4	AN02	AW02	-	AS-114			
	10A	30^25	34×40	30^4	ANUZ			A3-114			
ACW-1	15A	45.24	45.745	5 50×5	AN05	AW05	-	AS-214			
ACW-2	20A	47×34	45×45								
ACFW-1	25A	56×35	55×45	56×5	48×10	_	3×20	AS-219			
ACFW-2	32A	64×45	62.5×50	64×5	AN08	AW08	_	AS-326			
, tel W L	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)



(mm)

#### ■ Flange Dimensions

Size	d	R	Р	0	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

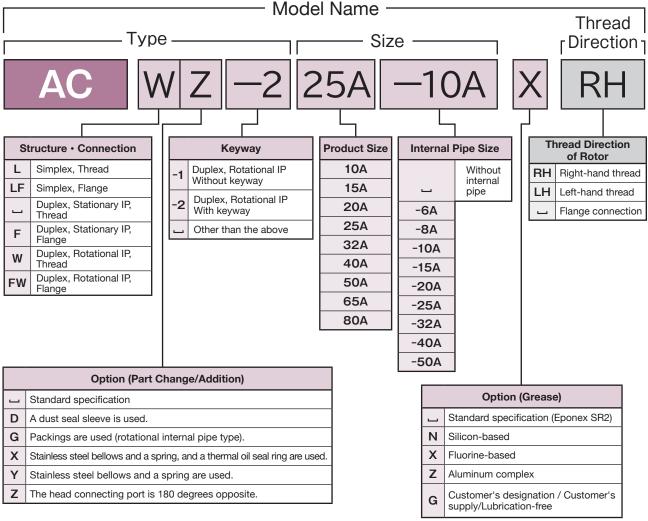
						, ,
Size	ď	R'	P'	m'	Z	J-K
10A	12	25	45	7	12	4-M8
15A	12	25	45	7	12	4-M8
20A	18	30	54	7	16	4-M10
25A	24	35	60	8	16	4-M10
32A	34	50	75	8	16	4-M10
40A	34	50	75	8	16	4-M10
50A	46	65	95	9	19	4-M12
65A	60	80	110	11	19	4-M12
80A	72	90	125	14	19	6-M12

(mm)

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 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).
- 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. A rotary joint with mechanical seals is not suitable for operation with no rotation, intermittent rotation, or low-rotation speed (a few rotations per minute), and fluid leakage may occur. Consider the use of a swivel joint with elastic seals.
- 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)
u	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)**

Fuid 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.

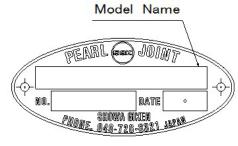
Contact us for more information.

#### **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)
- 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
- Tailure 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.

#### 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.

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