

# Pearl

Pearl Rotary Joint

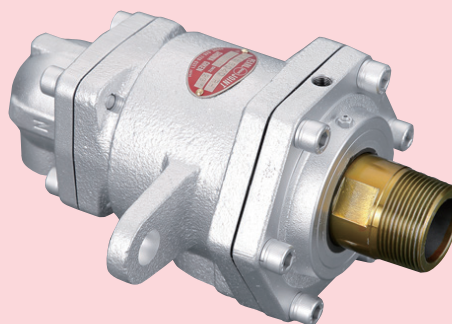
## — Rotary Joint —

# NX Series

CATALOG

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

# NX Series



**NXE**

**NXH**


Features	NXE	NXH
Specialized product for steam applications. (Max. 200°C)	✓	—
Specialized product for thermal oil applications. (Max. 280°C)	—	✓
As carbon bearings are used, greasing is not required.	✓	✓

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The contents are subject to change without notice.

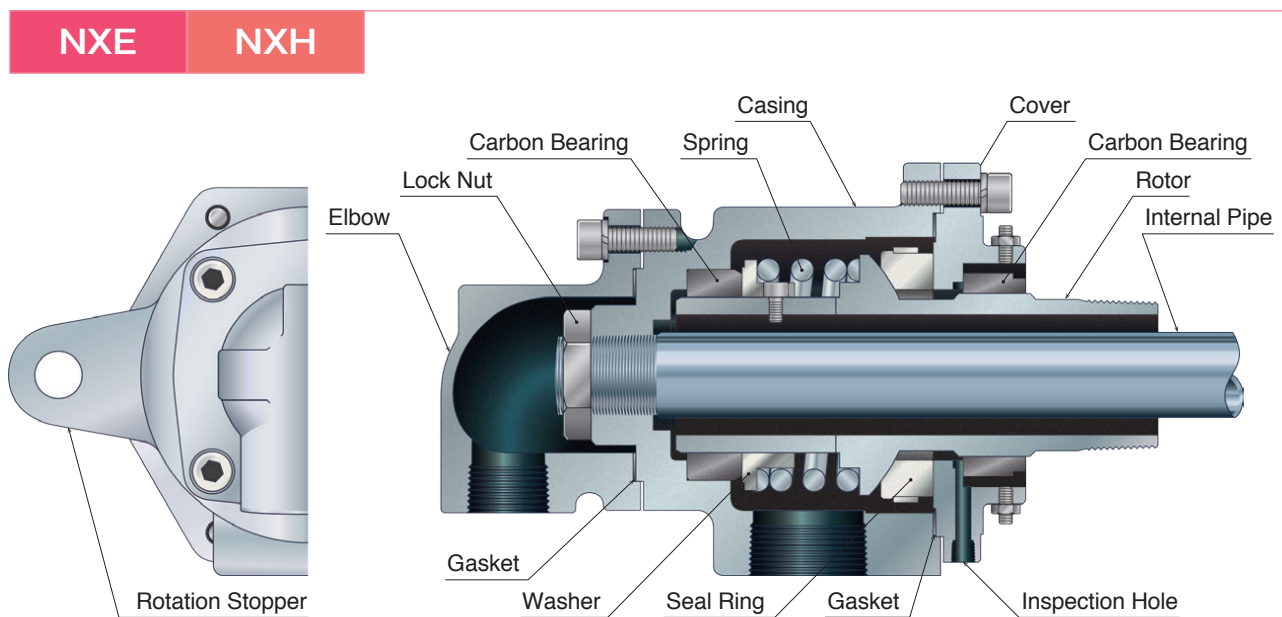
**Service Conditions**

Series	line	Fluid	Size	Max.		
				Pressure (MPa)	Rotation Speed (min <sup>-1</sup> )	Temperature (°C)
	NXE	Saturated Steam	32A~65A	1.5	150	200
	NXH	Thermal Oil	32A~65A	1.0	150	280

**Structures and Materials**

A mechanical seal consists of a combination of carbon and carbon steel for the sphere section, and a combination of carbon and cast iron for the plane section.

NXE and NXH are different in terms of seal ring shape and materials of the spring and gasket.



**Materials of Main Components**

Part Name	Material
Rotor	Carbon Steel
Casing	Cast Iron
Cover	Cast Iron
Elbow	Cast Iron
Seal Ring	Carbon

Heat-resistant paint is applied to external parts.

Note) Component materials are indicated on product drawings.

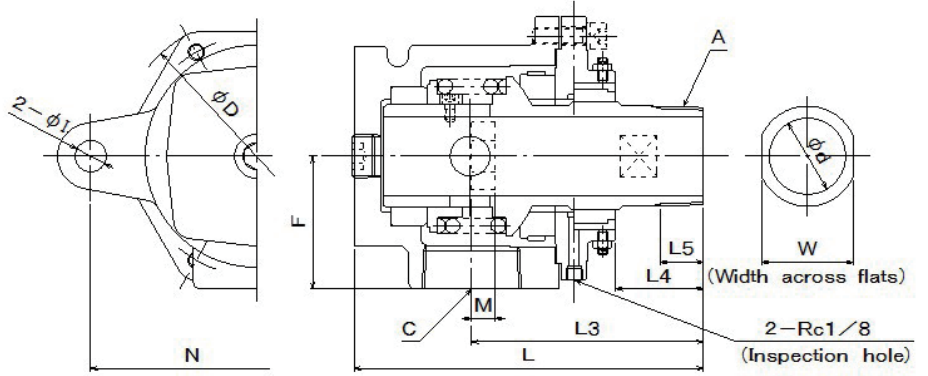
Contact our sales representative for requests for product drawings.

**NXE**

10 ■■■  
Code

**NXH**

**Simplex, Thread  
Connection**



(mm)

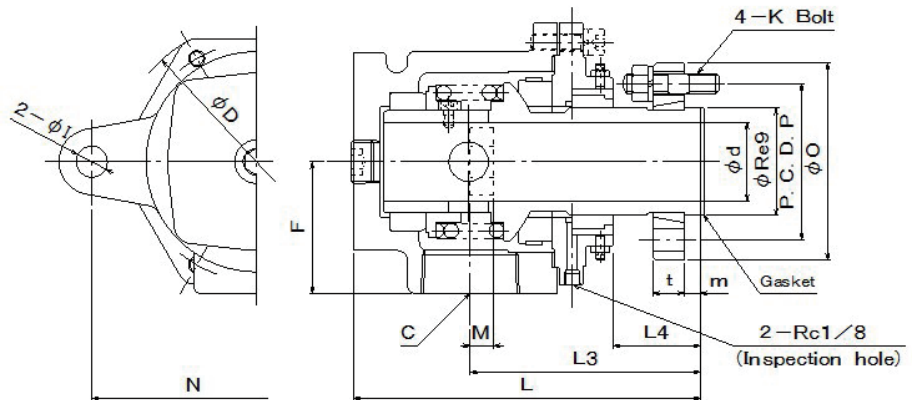
Size	Code	A	C	F	D	M	N	I	L	L3	L4	L5	d	W
32A	1032	R1½	Rc1½	65	145	12	180	19	195	126	50	22	30	46
40A	1040	R1½	Rc1½	65	145	12	180	19	195	126	50	22	34	46
50A	1050	R2	Rc2	80	169	14	200	19	211	140	53	26	48	55
65A	1065	R2½	Rc2½	90	189	16	220	23	226	145	56	30	60	71

**NXE**

20 ■■■  
Code

**NXH**

**Simplex, Flange  
Connection**

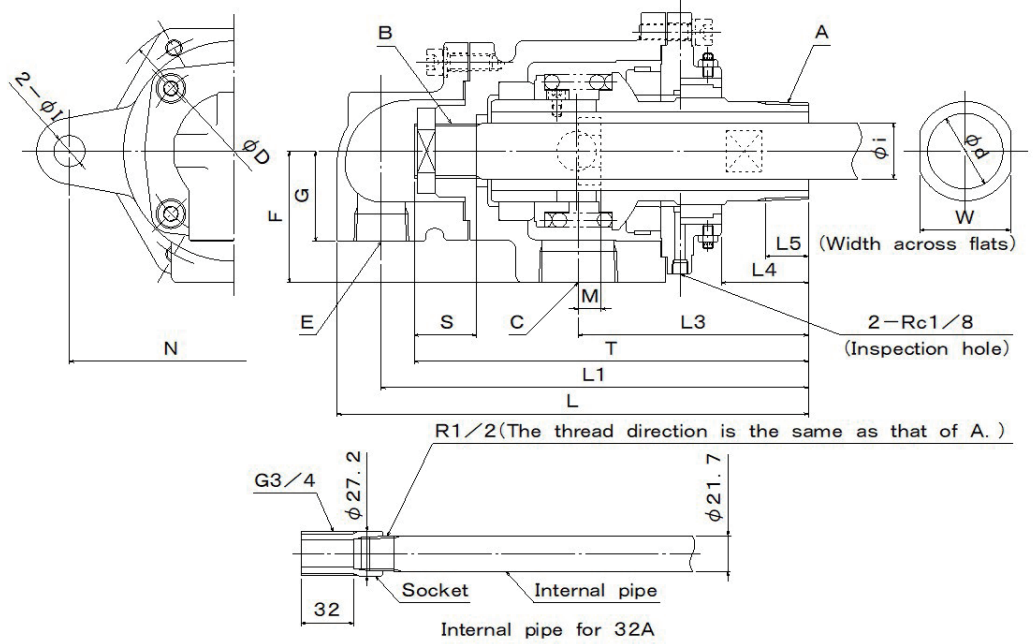


(mm)

Size	Code	C	F	D	M	N	I	L	L3	L4	d	Flange					K
												R	P	O	t	m	
40A	2040	Rc1½	65	145	12	180	19	195	126	50	34	50	75	96	16	9	M10
50A	2050	Rc2	80	169	14	200	19	211	140	53	48	65	95	120	19	10	M12
65A	2065	Rc2½	90	189	16	220	23	226	145	56	60	80	110	136	20	12	M12

**NXE** 30 ■ ■ ■  
**NXH** Code

**Duplex, Stationary IP,  
 Thread Connection**



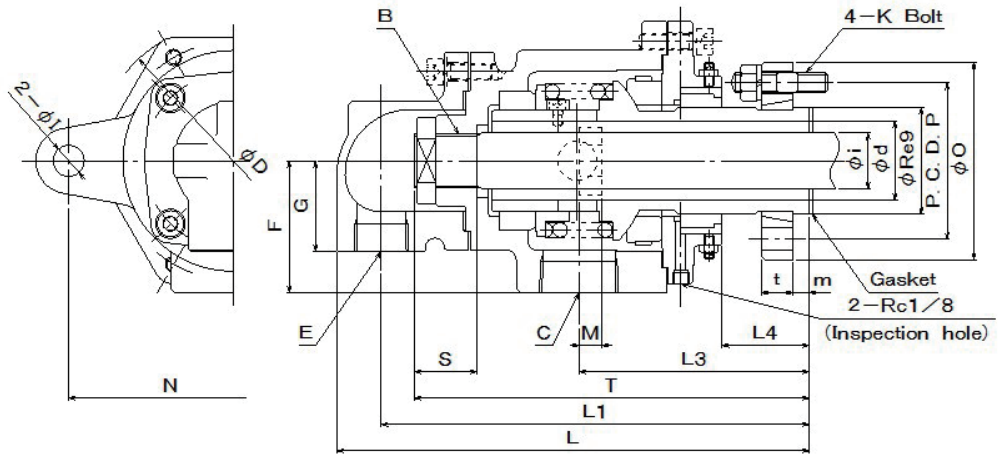
(mm)

Size	Code	A	C	E	F	G	D	M	N	I	L	L1	L3	L4	L5	d	W	Internal Pipe				
																		Size	i	B	S	T
32A	3032	R1¼	Rc1	Rc3/4	65	45	145	12	180	19	258	235	126	50	22	30	46	15A	21.7	G3/4	32	222
40A	3040	R1½	Rc1	Rc3/4	65	45	145	12	180	19	258	235	126	50	22	34	46	20A	27.2	G3/4	32	222
50A	3050	R2	Rc1½	Rc1	80	55	169	14	200	19	287	260	140	53	26	48	55	25A	34.0	G1	38	240
65A	3065	R2½	Rc2	Rc1½	90	58	189	16	220	23	320	285	145	56	30	60	71	40A	48.6	G1½	40	262

- Note 1) An internal pipe for 32A is installed to the socket. The thread direction of the internal pipe is the same as that of A. (See the figure above.)
- 2) The socket is secured to the casing with a lock nut before shipment.
- 3) B is a right-hand thread.

<b>NXE</b>	40 ■■ Code
<b>NXH</b>	

**Duplex, Stationary IP,  
Flange Connection**



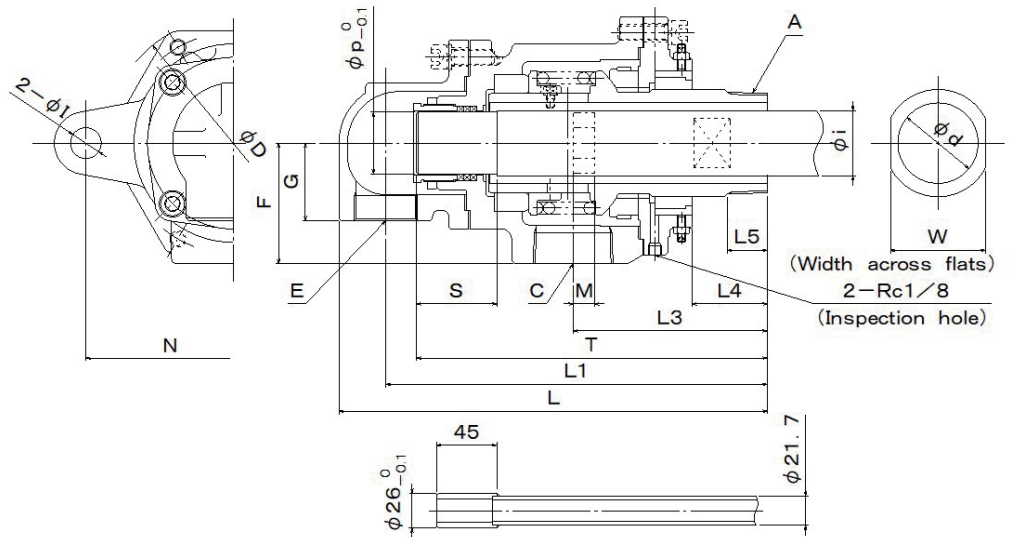
(mm)

Size	Code	C	E	F	G	D	M	N	I	L	L1	L3	L4	d	Flange					K	Internal Pipe				
															R	P	O	t	m		Size	i	B	S	T
40A	4040	Rc1	Rc3/4	65	45	145	12	180	19	258	235	126	50	34	50	75	96	16	9	M10	20A	27.2	G3/4	32	222
50A	4050	Rc1½	Rc1	80	55	169	14	200	19	287	260	140	53	48	65	95	120	19	10	M12	25A	34.0	G1	38	240
65A	4065	Rc2	Rc1½	90	58	189	16	220	23	320	285	145	56	60	80	110	136	20	12	M12	40A	48.6	G1½	40	262

Note) B is a right-hand thread.

**NXE** 50 ■ ■ ■  
**NXH** Code

**Duplex, Rotational IP,  
 Thread Connection**



Internal pipe for 32A (Two-part configuration)

(mm)

Size	Code	A	C	E	F	G	D	M	N	I	L	L1	L3	L4	L5	d	W	Internal Pipe				
																		Size	i	p	S	T
32A	5032	R1¼	Rc1	Rc3/4	65	45	145	12	180	19	258	235	126	50	22	30	46	15A	21.7	26	45	222
40A	5040	R1½	Rc1	Rc3/4	65	45	145	12	180	19	258	235	126	50	22	34	46	20A	27.2	26	45	222
50A	5050	R2	Rc1½	Rc1	80	55	169	14	200	19	287	260	140	53	26	48	55	25A	34.0	34	50	238
65A	5065	R2½	Rc2	Rc1½	90	58	189	16	220	23	320	285	145	56	30	60	71	40A	48.6	46	60	262

Note 1) An internal pipe for 32A consists of two parts (welded product). (See the figure above.)

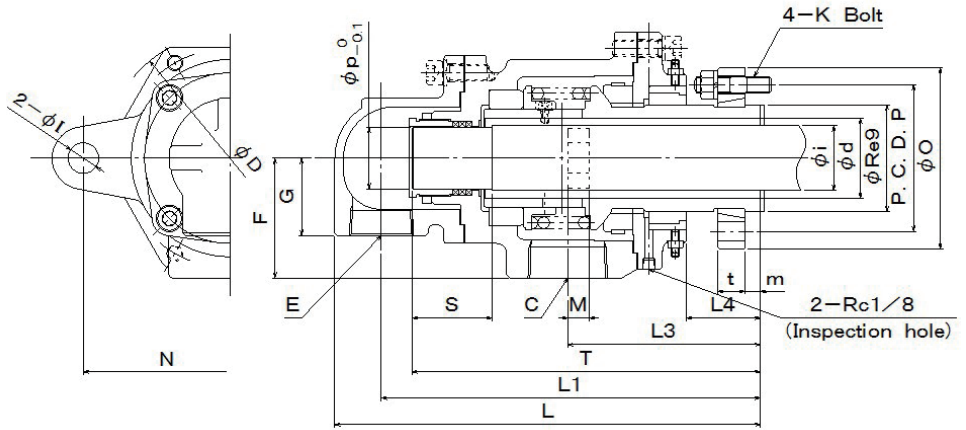
2) The tolerance (0/-0.1) of dimension p is not applicable to the internal pipe for 50A.

**NXE**

60 ■ ■ ■  
Code

**NXH**

**Duplex, Rotational IP,  
Flange Connection**



(mm)

Size	Code	C	E	F	G	D	M	N	I	L	L1	L3	L4	d	Flange						K	Internal Pipe				
															R	P	O	t	m	Size		i	p	S	T	
40A	6040	Rc1	Rc3/4	65	45	145	12	180	19	258	235	126	50	34	50	75	96	16	9	M10	20A	27.2	26	45	222	
50A	6050	Rc1½	Rc1	80	55	169	14	200	19	287	260	140	53	48	65	95	120	19	10	M12	25A	34.0	34	50	238	
65A	6065	Rc2	Rc1½	90	58	189	16	220	23	320	285	145	56	60	80	110	136	20	12	M12	40A	48.6	46	60	262	

Note) The tolerance (0/-0.1) of dimension p is not applicable to the internal pipe for 50A.



**Masses**

■ **Masses of NX Series**

(kg)

Line	Code	32A	40A	50A	65A
<b>NXE</b> <b>NXH</b>	10■■■	8.1	7.9	11.8	15.7
	20■■■	-	8.6	13.4	17.6
	30■■■	9.2	9.0	13.6	16.5
	40■■■	-	9.8	15.2	18.4
	50■■■	9.2	9.0	15.0	16.3
	60■■■	-	9.9	15.7	18.2

## 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.

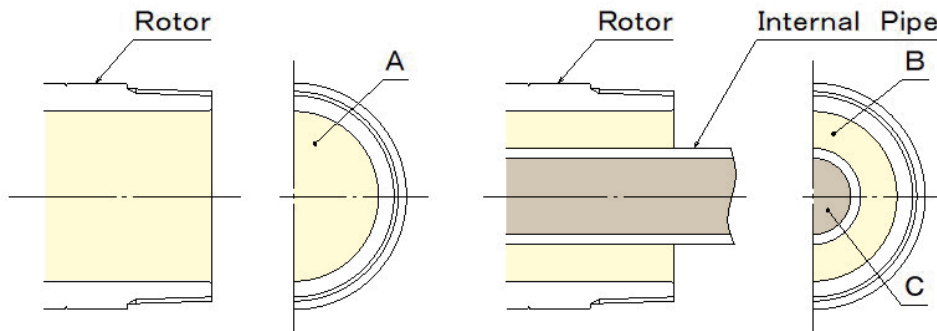
**Water Flow Rate (Simplex) =  $A \times 3 \times 3600 / 10000$**

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

**Table 1 Flow Rate (Simplex)**

Line	Code	Size	Flow Passage Area (cm <sup>2</sup> )		Water Flow Rate (m <sup>3</sup> /h)	Flow Rate of Saturated Steam (kg/h)				
			A (Note1)			0.1MPa	0.2MPa	0.4MPa	0.6MPa	0.8MPa
NXE NXH	10	32A	7.07		7.63	86.6	127	204	280	356
		40A	9.08		9.81	111	163	262	360	457
	20	50A	18.1		19.5	222	324	523	718	911
		65A	28.3		30.5	346	506	817	1120	1420

Note 1) A = Minimum flow passage area



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

**Flow Rate of Saturated Steam (Duplex) =  $B \times 30 \times (\text{Density of saturated steam}) \times 3600 / 10000$  (Note 5)**

**Table 2 Flow Rate (Duplex)**

Line	Code	Size	Flow Passage Area (cm <sup>2</sup> )		Water Flow Rate (m <sup>3</sup> /h)	Flow Rate of Saturated Steam (kg/h)				
			B (Note2)	C (Note3)		0.1MPa	0.2MPa	0.4MPa	0.6MPa	0.8MPa
NXE	30	32A-20A	3.37	1.94	2.09	41.3	60.3	97.4	134	170
	40	40A-20A	3.27	3.53	3.53	40.0	58.5	94.5	130	165
NXH	50	50A-25A	9.02	5.73	6.18	110	161	261	358	454
	60	65A-40A	9.72	12.9	10.5	119	174	281	386	490

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

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

Note 4) B or C, whichever is smaller

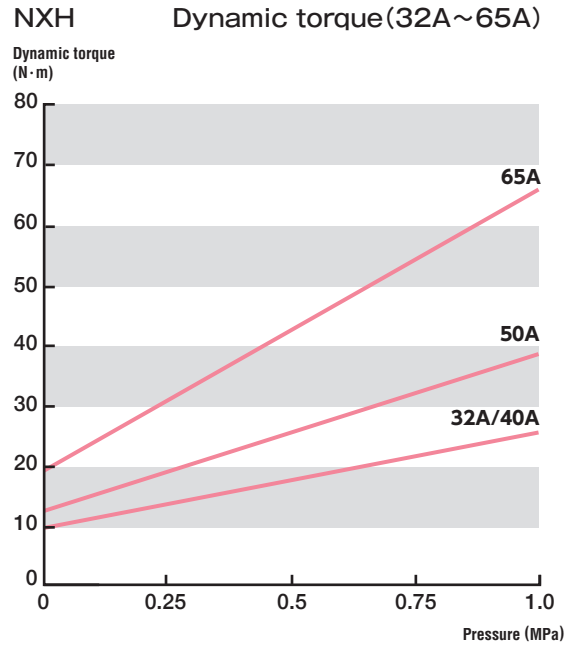
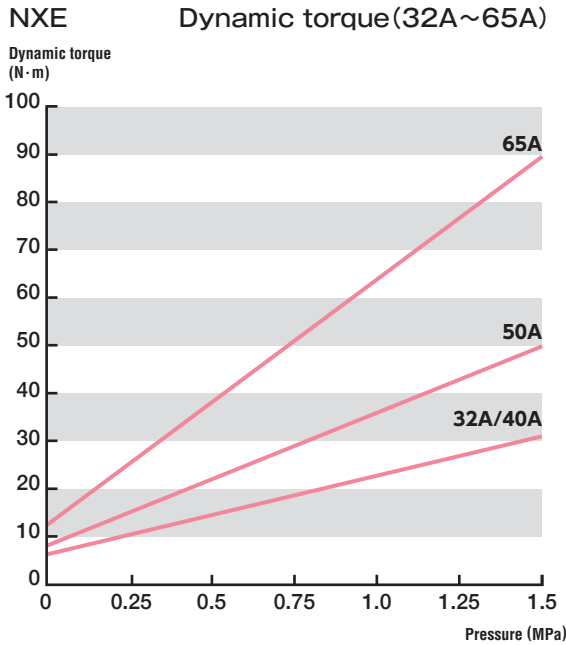
Note 5) The flow rate of saturated steam (duplex) is calculated based on the flow passage area of B.

### Internal Pipe Dimensions (SUS304)

Size	Outer Dia. × Thickness
15A	φ21.7 × 3.0
20A	φ27.2 × 3.0
25A	φ34.0 × 3.5
40A	φ48.6 × 4.0

※ 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



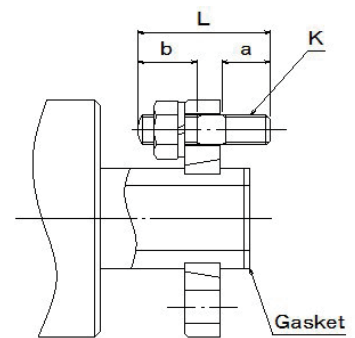
- Note 1) Dynamic torque varies depending on product storage conditions, storage period, or fluid types.
- 2) Starting torque is larger than dynamic torque. Although starting torque is even larger when wringing occurs, it does not indicate any fault.
- 3) Data are typical values measured based on in-house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

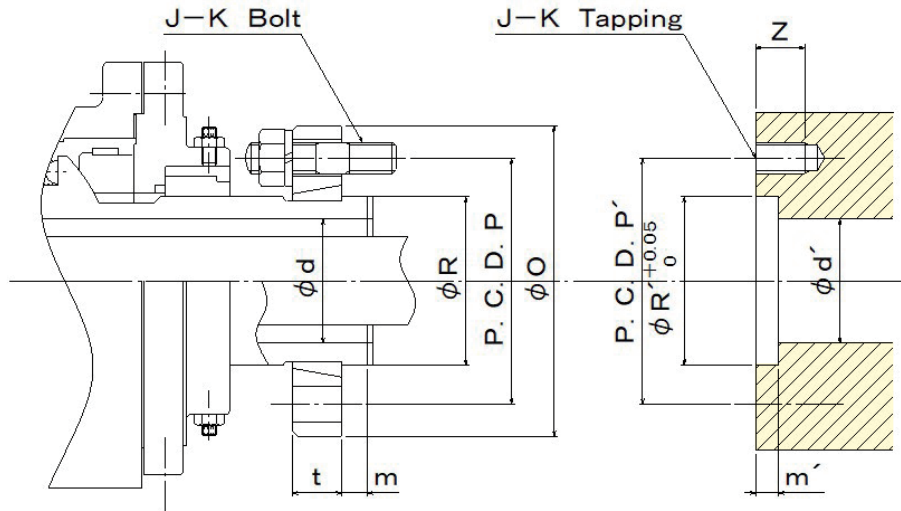
Accessories (Flange Connection)

Line	Size	Gasket			Stud Bolt				Hex. Nut	Spring Washer
		Outer Dia.	Inner Dia.	Thick-ness	K	L	a	b		
NXE NXH	40A	49	37	3.2	M10	48	15	20	M10 type1	M10 No.2
	50A	64	50	3.2	M12	58	18	27	M12 type1	M12 No.2
	65A	79	62	3.2						



- 2) A duplex, stationary IP product is supplied with a lock nut (right-hand thread) used for securing the internal pipe.
- 3) A duplex, rotational IP product is supplied with a gland (C3604), a lock nut (C3604), and four packings for 32A-40A or three packings for 50A-65A. Each part is temporarily installed in the product.

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



### Flange Dimensions

(mm)

Size	d	R	P	O	t	m
40A	34	50 e9	75	96	16	9
50A	48	65 e9	95	120	19	10
65A	60	80 e9	110	136	20	12

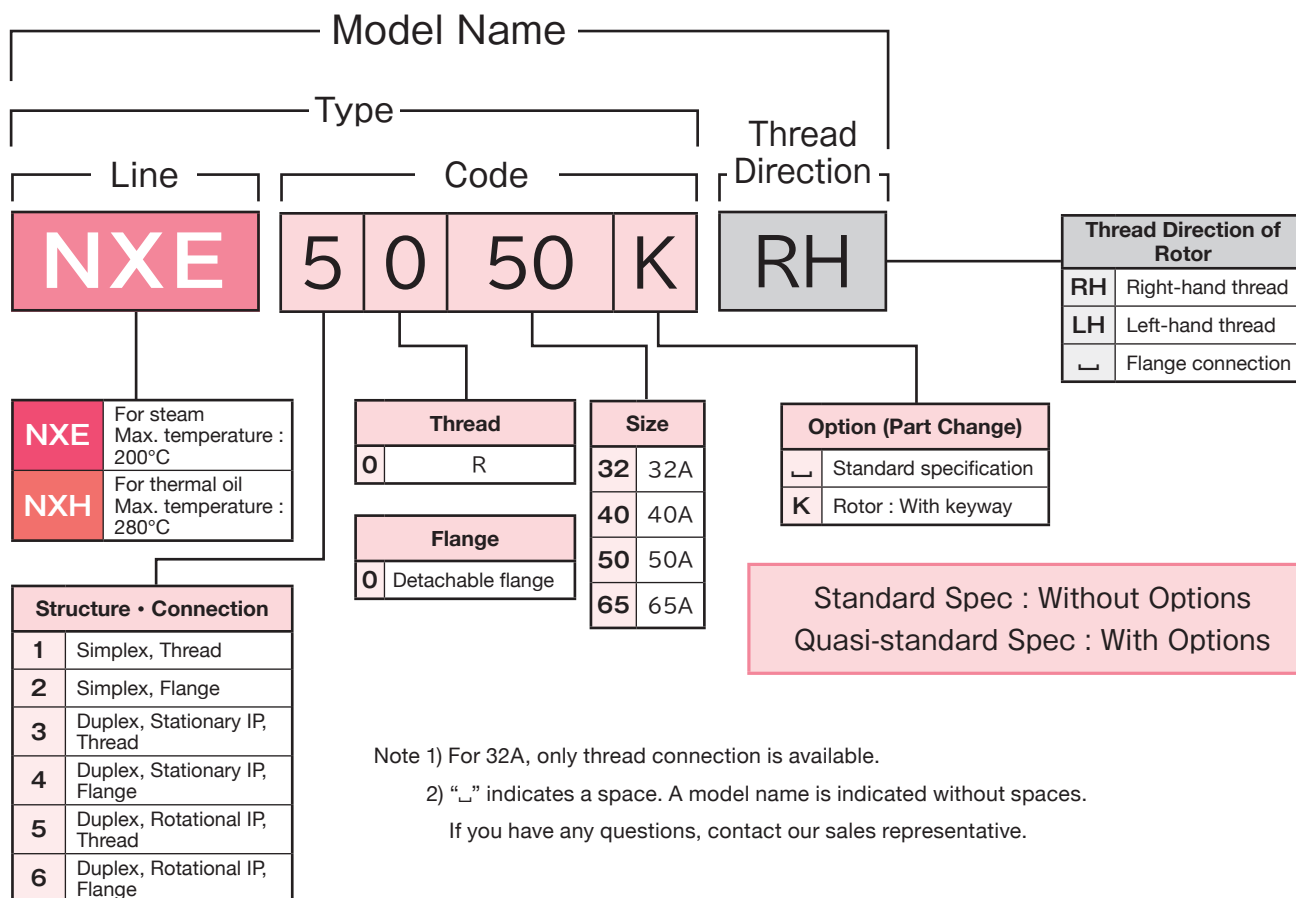
### Dimensions on the Roll Side

(mm)

Size	d'	R'	P'	m'	Z	J-K
40A	34	50	75	8	16	4-M10
50A	48	65	95	9	19	4-M12
65A	60	80	110	11	19	4-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



Internal Pipe

Product Size and Internal Pipe Size

Product Size	32A	40A	50A	65A
Internal Pipe Size	15A	20A	25A	40A

## 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. Select an option as necessary.
  - 1) See “Model Names and Types” (page 12) for the types of options.
  - 2) If option code K is selected, the rotor has a keyway so that the internal pipe rotates in phase with the rotor.
4. NX 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.
5. 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.
6. The product cannot be used for liquid containing solid particles (slurry) or pulverulent body.
7. The product cannot be used for fluid that causes corrosion on it.
8. 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.
9. 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 a carbon bearings are used for the NX 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.

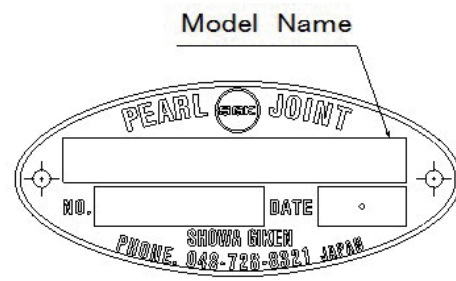
**Product Order**

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 page12.)
- 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.



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