

# Pearl

Pearl Rotary Joint

## — Rotary Joint —

# SXO Series

CATALOG



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

# SXO Series



## Features

Lightweight, compact, and easy to handle.

Can be used in a high-pressure and high-rotation speed range.


Depending on the application, you can select standard seal or high-grade seal. High-grade seal can be used under a high-load condition.

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The contents are subject to change without notice.

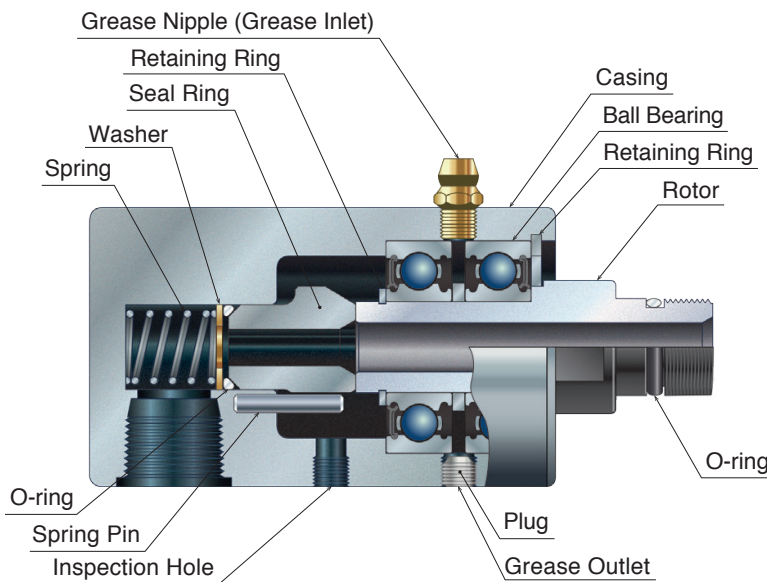
**Service Conditions**

Series	Fluid	Style	Max.		
			Pressure (MPa)	Rotation Speed (min <sup>-1</sup> )	Temperature (°C)
	Cutting Oil / Water / Oil	90°	6.9	10,000	100
		Straight			
		Compact	10.3	15,000	100

**Structures and Materials**

A mechanical seal is available in the following two combinations: carbon and tool steel (standard seal) or carbide and ceramics (high-grade seal).

**90°**

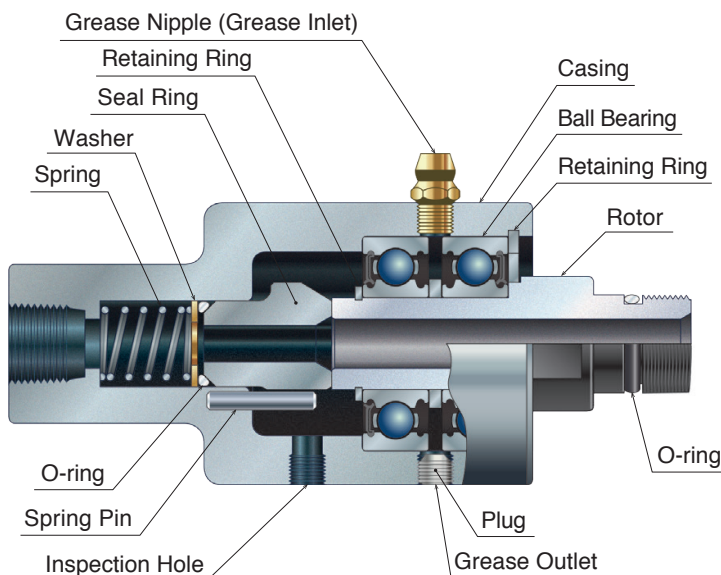


**Materials of Main Components (Standard Seal)**

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

The rotor is finished with electroless plating, and alumite treatment (anodizing) for the casing.

**Straight**

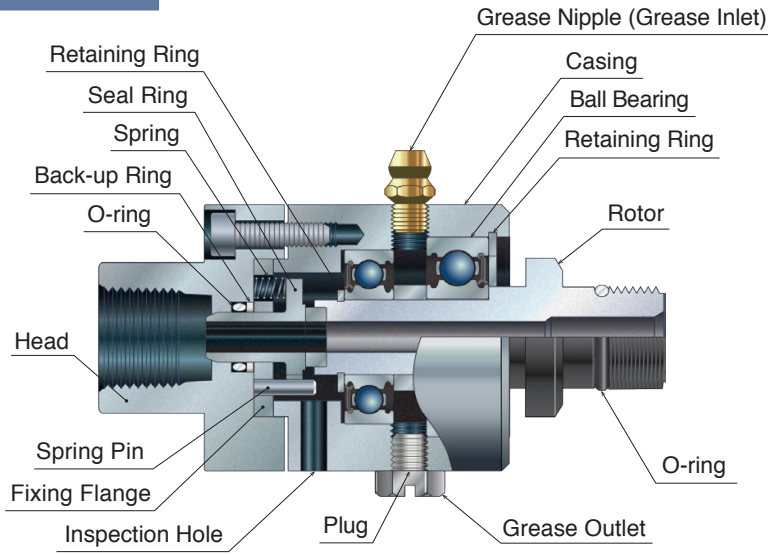


**Materials of Main Components (Standard Seal)**

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

The rotor is finished with electroless plating, and alumite treatment (anodizing) for the casing. Part configuration of the straight style is the same as that of the 90° style. Only the flow passage shape is different. (The 90° style flow passage is L-shape, and the straight style flow passage is liner shape.)

## Compact



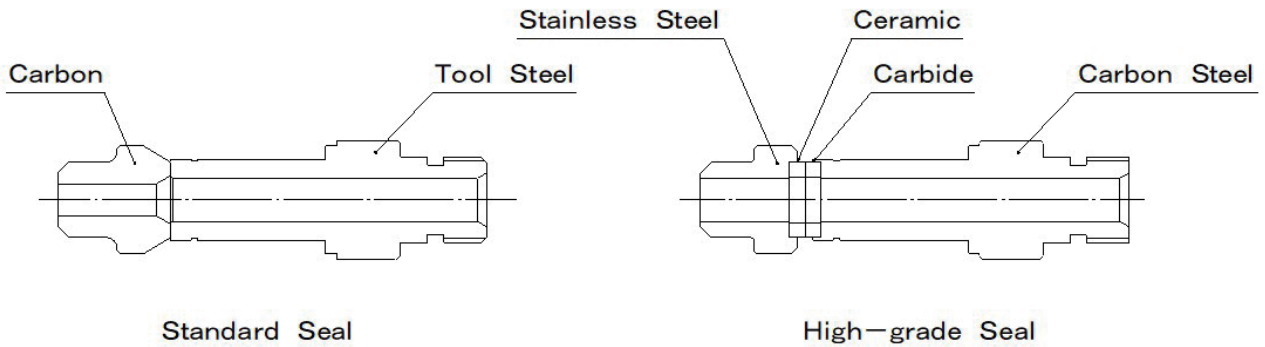
**Materials of Main Components (Standard Seal)**

Part Name	Material
Rotor	Carbon Steel (Seal Face : Carbon)
Casing	Aluminum Alloy
Head	Aluminum Alloy
Seal Ring	Tool Steel
O-ring	NBR

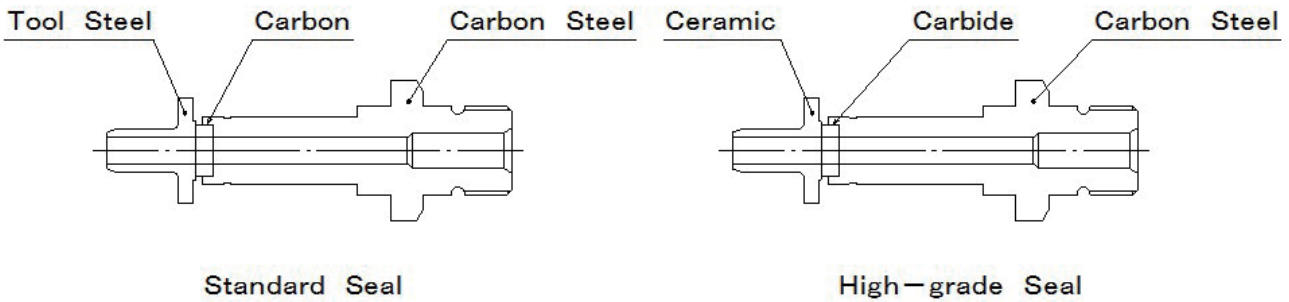
The rotor is finished with electroless plating, and alumite treatment (anodizing) for the casing and head.

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

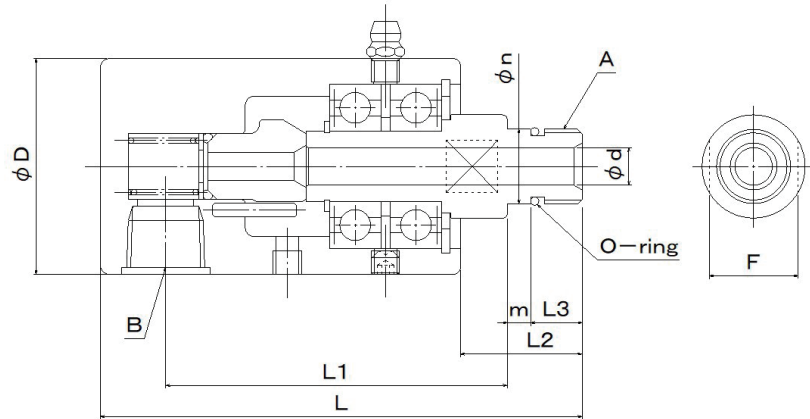
## Seal Configuration and Materials (90°/Straight)



## Seal Configuration and Materials (Compact)



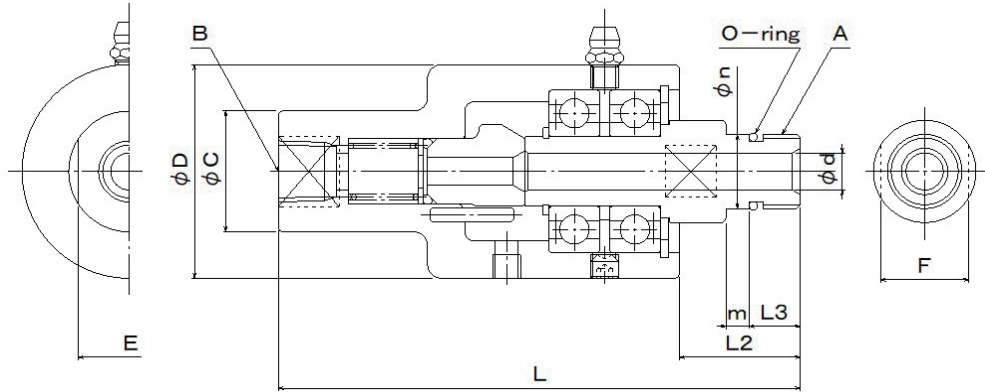
90° Style



(mm)

Type		A	B	D	L	L1	L2	L3	m	n	d	F	
Standard Seal	High-grade Seal												
SXO-090	SXO-090-1	M16×1.5	NPT3/8	46	103	73	26	11	5	16	+0.025 +0.007	8	19
SXO-091	SXO-091-1	M16×1.5	Rc1/4	46	103	73	26	11	5	16	+0.025 +0.007	8	19
SXO-091-2	SXO-091-3	M16×1.5	Rc3/8	46	103	73	26	11	5	16	+0.025 +0.007	8	19
SXO-092	SXO-092-1	5/8-18UNF	NPT3/8	46	100	73.3	23	10.3	2.4	15.9	-0.028 -0.040	8	19
SXO-098	SXO-098-1	5/8-18UNF	NPT3/8	46	106.4	73.3	29.4	14.3	4.8	16.6	+0.050 +0.037	6.5	19

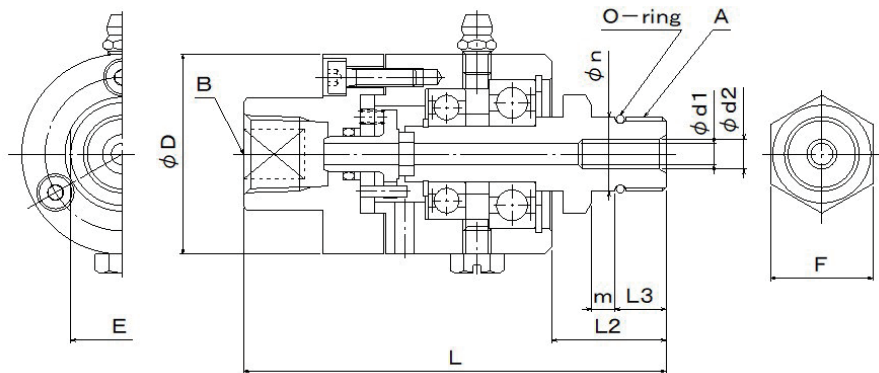
### Straight Style



(mm)

Type		A	B	C	D	E	L	L2	L3	m	n	d	F	
Standard Seal	High-grade Seal													
SXO-180	SXO-180-1	M16×1.5	NPT1/4	26	46	22	112	26	11	5	16	+0.025 +0.007	8	19
SXO-180-2	SXO-180-3	M16×1.5	NPT3/8	31	46	27	112	26	11	5	16	+0.025 +0.007	8	19
SXO-181	SXO-181-1	M16×1.5	Rc1/4	26	46	22	112	26	11	5	16	+0.025 +0.007	8	19
SXO-181-2	SXO-181-3	M16×1.5	Rc3/8	31	46	27	112	26	11	5	16	+0.025 +0.007	8	19
SXO-182	SXO-182-1	5/8-18UNF	NPT1/4	26	46	22	109	23	10.3	2.4	15.9	-0.028 -0.040	8	19
SXO-188	SXO-188-1	5/8-18UNF	NPT1/4	26	46	22	115.4	29.4	14.3	4.8	16.6	+0.050 +0.037	6.5	19

### Compact Style



(mm)

Type		A	B	D	E	L	L2	L3	m	n	d1	d2	F	
Standard Seal	High-grade Seal													
SXO-200	SXO-200-1	M16×1.5	NPT3/8	43	22	90	25	11	5	16	+0.025 +0.007	4.7	6.4	22

**Masses**

**Masses of SXO Series**

(kg)

Seal	Style		
	90°	Straight	Compact
Standard	0.39	0.34	0.28
High-grade	0.41	0.36	0.28

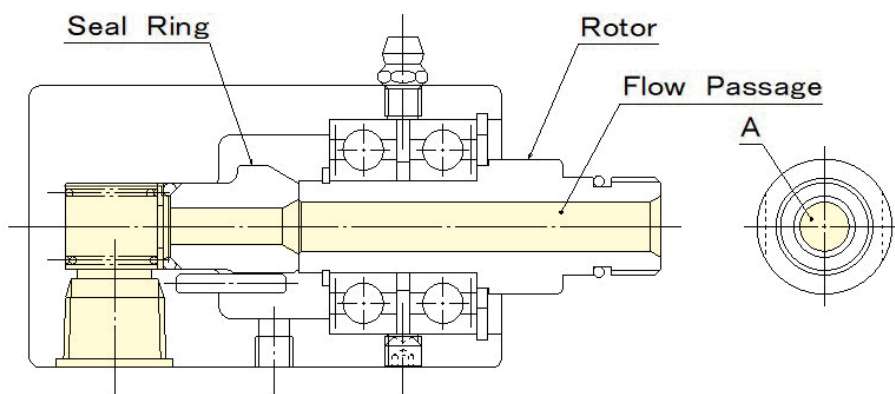
**Flow Rate**

The maximum flow velocity in the product is about 3 m/s when the fluid is water.  
The following table shows guidelines for the maximum flow rates calculated based on the above flow velocity.

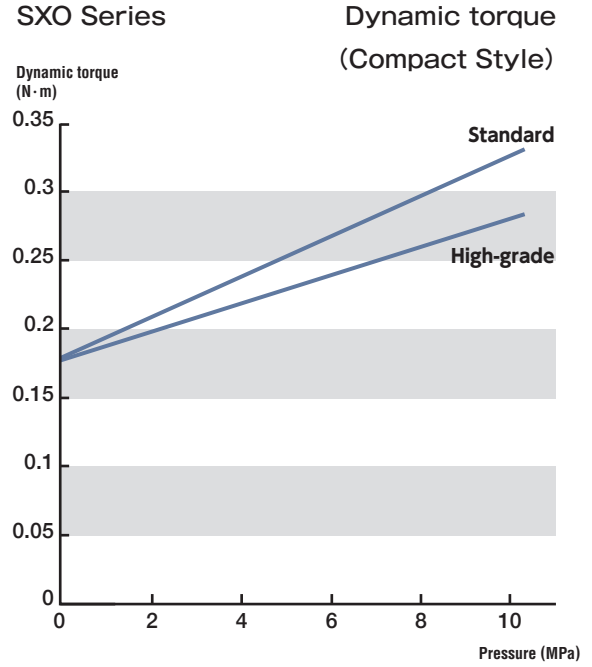
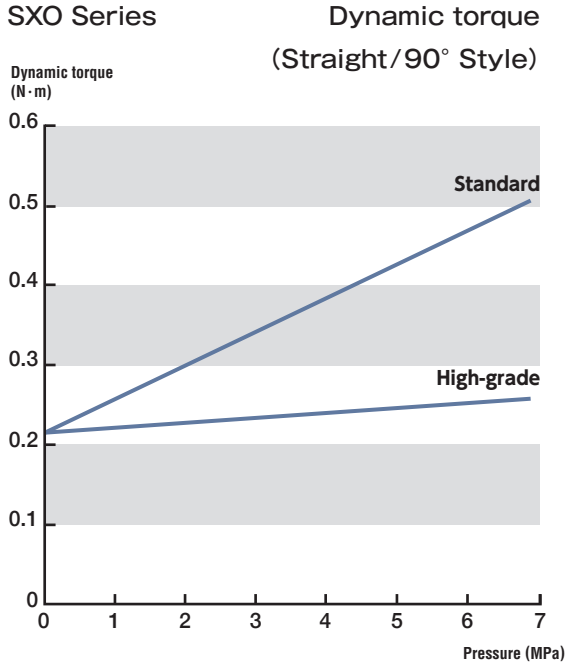
**Water Flow Rate (Simplex) =  $A \times 3 \times 3600 / 10000$**

Style	Seal	Flow Passage Area (cm <sup>2</sup> )	Water Flow Rate (m <sup>3</sup> /h)
		A (Note1)	
90°/Straight	Standard	0.283	0.305
	High-grade	0.503	0.543
Compact	Standard	0.174	0.187
	High-grade	0.174	0.187

Note 1) A = Minimum flow passage area



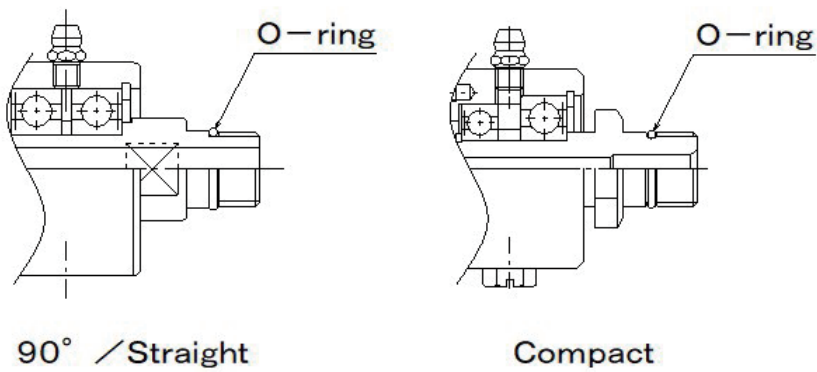
## Dynamic Torque



- 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.

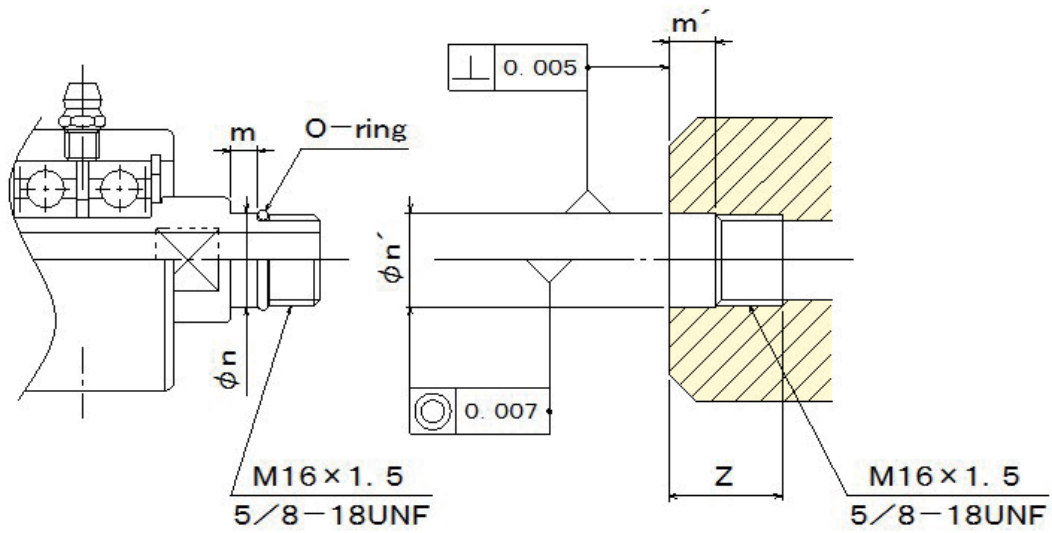
## Accessories

Every product includes an O-ring (NBR). Its type number is AS#014 Hs90.





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



■ Rotor Dimensions (mm)

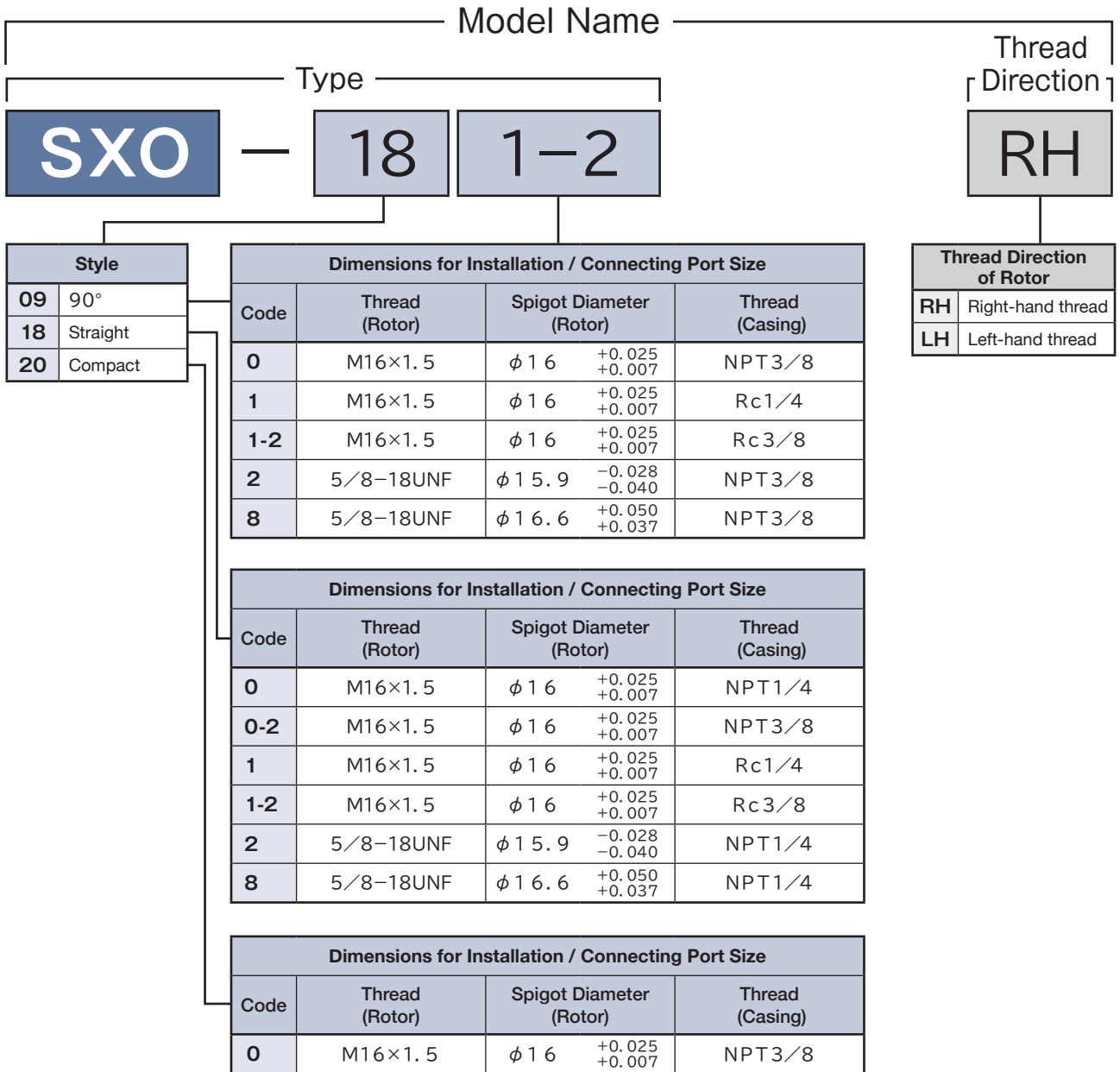
Thread (Rotor)	n	m
Metric thread	16 $\begin{matrix} +0.025 \\ +0.007 \end{matrix}$	5
Unified thread	15.9 $\begin{matrix} -0.028 \\ -0.040 \end{matrix}$	2.4
	16.6 $\begin{matrix} +0.050 \\ +0.037 \end{matrix}$	4.8

■ Dimensions on the Roll Side (mm)

Thread (Rotor)	n'	m'	Z
Metric thread	16 $\begin{matrix} +0.037 \\ +0.027 \end{matrix}$	8.5	17
Unified thread	15.9 $\begin{matrix} -0.015 \\ -0.025 \end{matrix}$	6	14
	16.6 $\begin{matrix} +0.063 \\ +0.053 \end{matrix}$	8.3	20

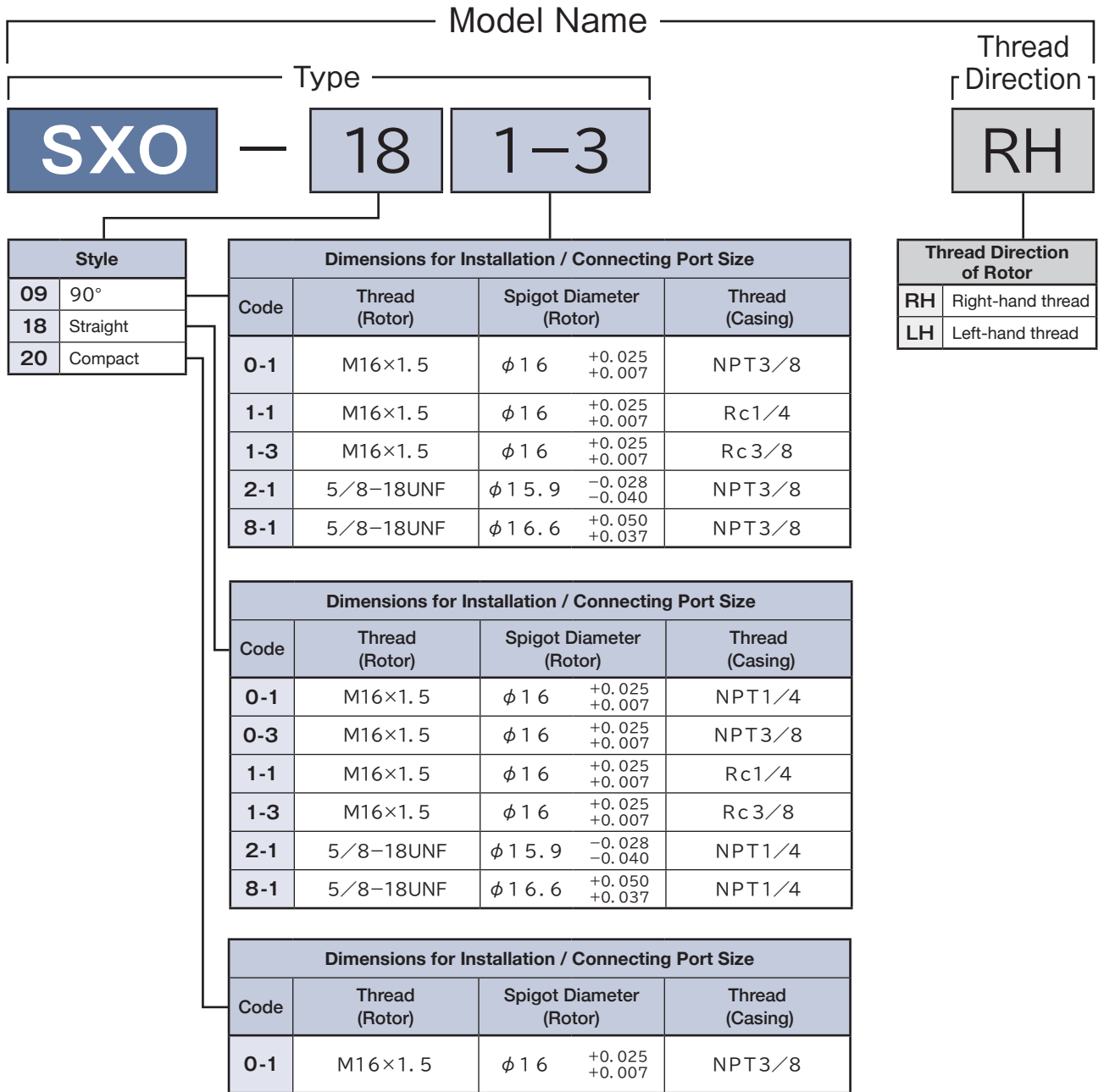
## Model Names and Types

### 1. Standard Seal



If you have any questions, contact our sales representative.

2. High-grade Seal



If you have any questions, contact our sales representative.

## 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. If the fluid contains wear particles such as shavings, or if you need a longer product lifetime, select a product equipped with high-grade seal.
4. 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.
5. 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.
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.

We can produce customized products according to your requests.

If you have any questions or wish to purchase customized products, contact our sales representative.

**Maintenance**

**1) Greasing**

SXO 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.

**Greasing Frequency (Guideline)**

Fluid Temperature (°C)	Greasing Frequency
0~60	Every six months
60~100	Every three months

**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**

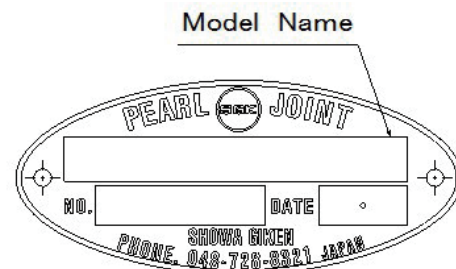
Please provide the following information.

**1) When ordering our product you are currently using**

- ① Model name (indicated on the product's nameplate)

**2) When newly ordering our products**

- ① Model name (see page 14.)
- ② 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.



**Nameplate**

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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