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Instruction Manual

Pearl Rotary Joint

RX Series

This instruction manual applies to products with type designations that begin with RXE, RXH, or RXK.

This instruction manual describes important precautions for preventing accidents and how to handle the product. To ensure safe use, be sure to read this manual and fully understand its contents before using this product. Store this manual carefully so that it can be referred to at any time.

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

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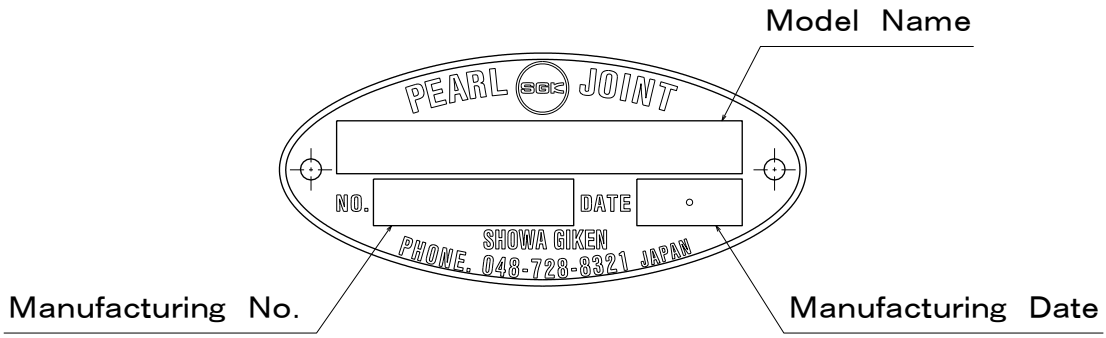


The nameplate attached to the product indicates the model name, manufacturing number, and manufacturing date.

2. For Safety

2-1) Symbols

The symbols used in this instruction manual are described below.

WARNING	Indicates that failure to follow the warning message may cause bodily accidents that may result in serious or even fatal injury.
CAUTION	Indicates that failure to follow the caution message may cause personal injury or damage to peripheral equipment.
Instruction	Indicates that failure to follow the instruction message may cause reduced product lifetime, product damage, or early leakage.
	Indicates “prohibited actions”.

2-2) For safe use

1. Transport, storage, installation, piping, operation, or maintenance of this product should be carried out by an experienced expert.
2. Be sure to observe all warnings, cautions, and instructions described in each section.
3. Never disassemble or modify this product because doing so is dangerous. We shall assume no responsibility for any malfunctions, accidents, or the results thereof involving a reassembled product after disassembly or a modified product. Also, a reassembled product after disassembly or a modified product shall not be covered by the product warranty even if the warranty period is still valid. This also applies to repairs done by yourself.
4. Confirm specifications (dimensions, materials, masses) indicated on individual product drawings before staring work. Contact our sales representative for requests for product drawings.
5. Always use the latest instruction manual. You can download the latest version from our website.

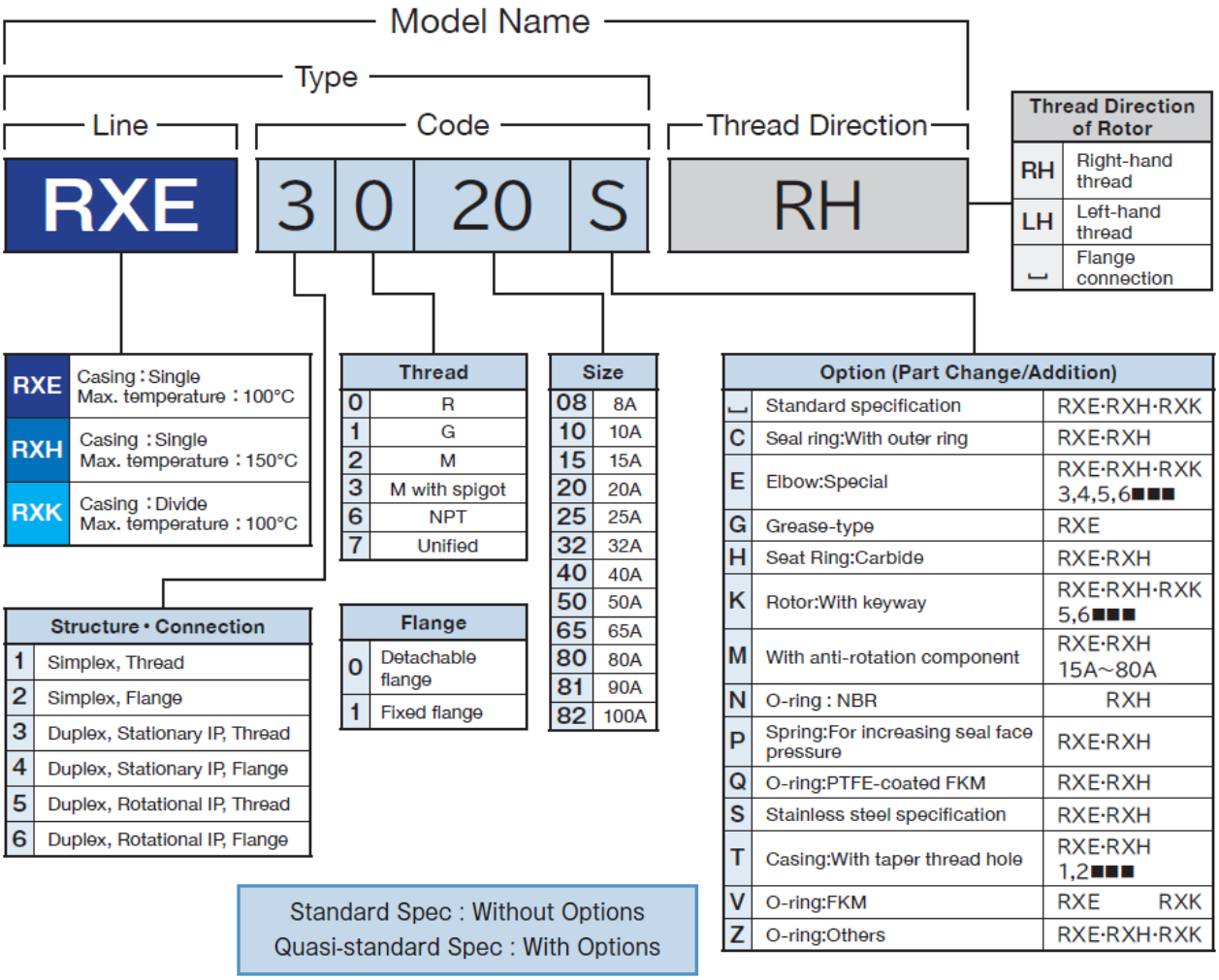
3. Product Overview

3-1) Application

A rotary joint is used for supplying fluid to or draining it from a machine rotating part called a roll, drum or cylinder, via fixed pipes.

3-2) Information indicated by model names

Information indicated by RX series model names is described below.
The product list is shown in our catalog or on our website.



Note 1) RXE/RXH is available for up to 80A.
2) Only two types, RXK6081 for 90A and RXK6082 for 100A, are available for RXK.
3) "␣" indicates a space. A model name is indicated without spaces.
4) If two codes are selected, they are indicated in alphabetical order.
5) The selection of three or more options resulting in a long model name is indicated as "RXS****" to denote a customized product for administrative reasons.
(The asterisks (****) indicate a four-digit number allocated to each model.)

If you have any questions, contact our sales representative.

3-3) Service conditions

Service Conditions of RX Series

Series	Line	Fluid	Size	Max.		
				Pressure (MPa)	Rotation speed (min^{-1})	Temperature (℃)
RX	RXE	Water / Oil	8A～25A	2.25	3,500	100
			32A, 40A	1.67	2,000	
			50A～80A	1.18	750	
	RXH	Water / Thermal Oil	10A～25A	2.25	3,500	150
			32A, 40A	1.67	2,000	
			50A～80A	1.18	750	
	RXK	Water / Oil	90A, 100A	0.98	500	100

3-4) Precautions for use

Use this product by following the warnings, cautions, and instructions described below.

WARNING

1. If flammable fluids leak and ignite, bodily accidents including serious or even fatal injury, or accidents that damage peripheral equipment may occur due to explosion or fire. Depending on the type of fluid, this product may subject to restrictions due to national laws or local regulations.
2. This product cannot be used for food-processing machinery. Doing so may lead to adverse health effects.

CAUTION

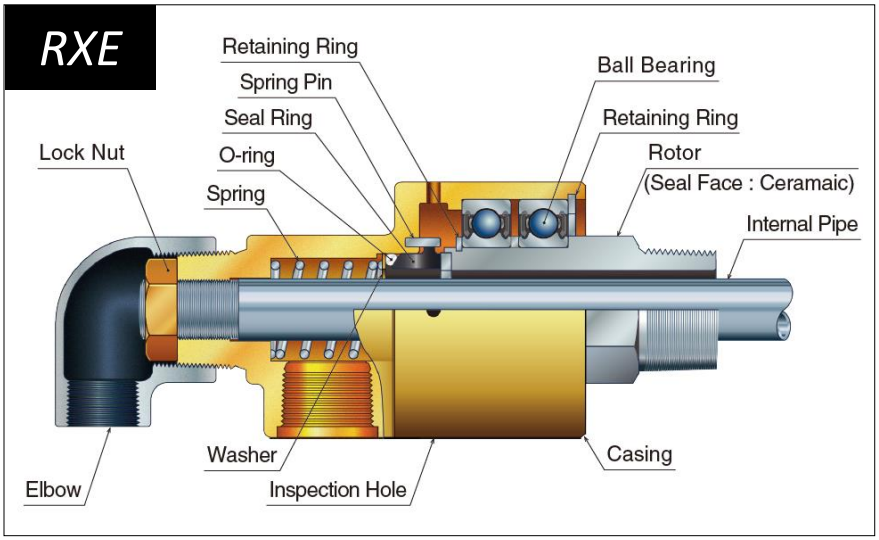
This product cannot be used for steam applications. Otherwise, steam leakage may result, causing burns.

Instruction

1. Perform operation within the service conditions.
2. Do not operate under conditions where both pressure and rotation speed are close to the max. values. Doing so significantly reduces product lifetime.
3. This product cannot be used in temperature conditions where the product ambient temperature exceeds the upper limit of the service conditions.
4. The product cannot be used for liquid containing solid particles (slurry) or pulverulent body. The product cannot be used for fluid that causes corrosion on it.
5. **This product cannot be used for operation with no rotation, intermittent rotation, or low-rotation speed (a few rotations per minute).** Otherwise, fluid leakage may occur.
6. If the product is used in a high-rotation speed range, select a product installed with a parallel thread or a flange instead of a taper thread.

3-5) Product structures and materials

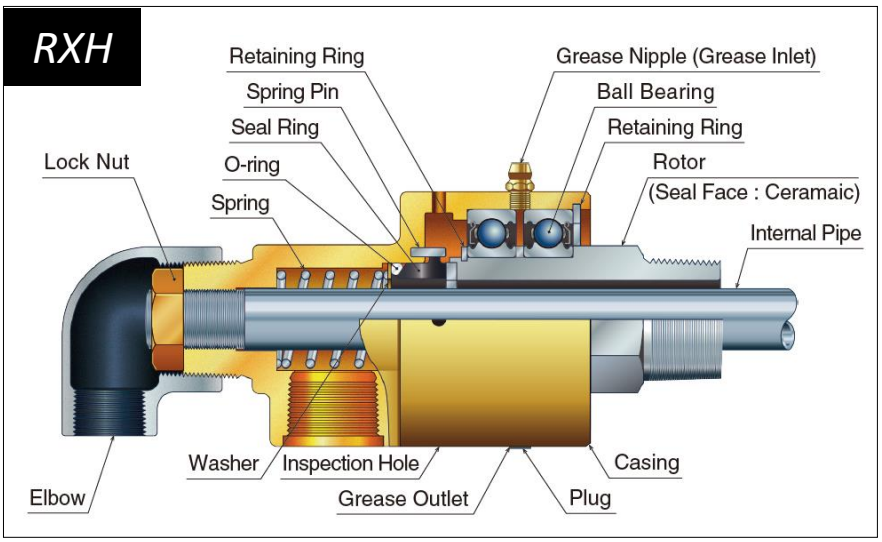
RXE



Materials of Main Components
(Standard Specification)

Part Name	Material
Rotor	Stainless Steel (Seal face : Ceramic)
Casing	Copper Alloy
Seal Ring	Carbon
O-ring	NBR

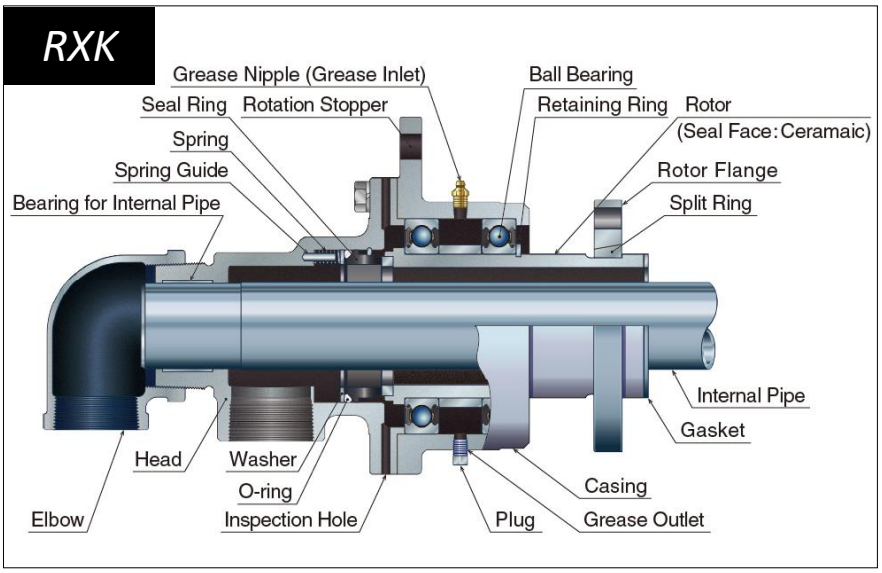
RXH



Materials of Main Components
(Standard Specification)

Part Name	Material
Rotor	Stainless Steel (Seal Face : Ceramic)
Casing	Copper Alloy
Seal Ring	Carbon
O-ring	FKM

RXK



Materials of Main Components
(Standard Specification)

Part Name	材料
Rotor	Carbon Steel (Seal Face : Ceramic)
Casing	Cast Iron
Head	Cast Iron
Seal Ring	Carbon
O-ring	NBR

The rotor and head are finished with electroless nickel plating.
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.

3-6) Product dimensions

Product dimensions are shown on product drawings, in our catalog, or on our website.

3-7) Product masses

Masses of RXE/RXH (Standard Specification) (kg)

Code	8A	10A	15A	20A	25A	32A	40A	50A	65A	80A
1***	0.35	0.60	0.9	1.3	1.8	2.7	3.4	6.5	8.7	12.0
21**	–	–	1.1	1.7	2.1	3.5	4.0	7.4	9.9	13.6
3***/5***	–	–	1.0	1.4	2.0	3.1	3.7	6.7	9.6	11.6
41**/61**	–	–	1.2	1.8	2.3	3.9	4.3	7.6	10.8	13.2

Masses of RXE/RXH (Stainless Steel Specification) (kg)

Code	8A	10A	15A	20A	25A	32A	40A	50A
10**S	0.45	0.80	1.2	1.8	2.5	4.7	5.0	11.5
21**S	–	–	1.4	2.2	2.8	5.4	5.7	12.5
30**S	–	–	1.3	1.9	2.7	4.0	4.7	–
41**S	–	–	1.5	2.3	3.0	4.8	5.3	–

Masses of RXK (kg)

Code	90A	100A
6081	25	–
6082	–	35

3-8) Accessories

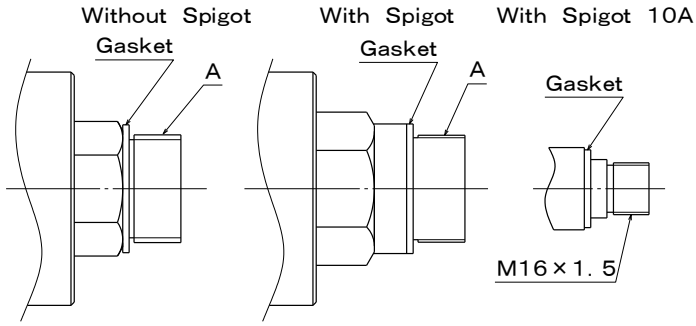
1. A product installed with a parallel thread is supplied with a gasket (copper plate).

Accessories
Parallel Thread Connection without Spigot (mm)

Line	Size	A	Gasket		
			Outer Dia.	Inner Dia.	Thick-ness
RXE RXH	10A	G3/8	26	17	2
		M16×1.5	23	16.3	2
		5/8-18UNF			
	15A	G1/2	30	21.3	2
		M22×1.5	27.5	22.2	2
		3/4-16UNF	27.5	19.5	2
	20A	G3/4	35	26.8	2
		M26×1.5			
		1-14UNS			
	25A	G1	39.5	33.5	2
		M35×1.5	42	35.3	2
		11/2-12UNF	44	38.5	2
	32A	G11/4	49	42.5	2
		M42×1.5			
		13/4-12UN	52	45	2
	40A	G11/2	58	51	2
		M50×1.5			
		2-12UN			

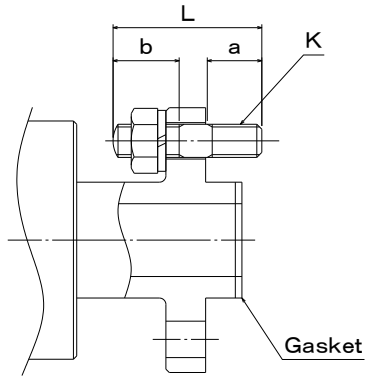
Accessories
Parallel Thread Connection with Spigot (mm)

Line	Size	A	Gasket		
			Outer Dia.	Inner Dia.	Thick-ness
RXE RXH	10A	M16×1.5	24	18.5	2
	15A	M22×1.5	27.5	22.2	2
	20A	M25×1.5	29.5	25.2	2
	25A	M33×1.5	39.5	33.5	2



2. 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 80A, or six sets thereof for 90A and 100A.

*The gasket material for RXK is copper plate.
*The gasket material for products with stainless steel specifications (21**S or 41**S) is PTFE.



Accessories (Flange Connection) (mm)

Line	Size	Gasket (Copper Jacket)			Gasket (PTFE)			Stud Bolt				Hex. Nut	Spring Washer
		Outer Dia.	Inner Dia.	Thick-ness	Outer Dia.	Inner Dia.	Thick-ness	K	L	a	b		
RXE RXH	15A	24	16	3.2	24	13.5	2	M8	36	11	18	M8 type1	M8 No.2
	20A	29	20	3.2	29.5	20	2	M10	45	15	20	M10 type1	M10 No.2
	25A	34	26	3.2	34	25	2						
	32A	49	37	3.2	49	37	2	M10	48	15	20	M10 type1	M10 No.2
	40A												
	50A	64	50	3.2	64	50	2	M12	58	18	27	M12 type1	M12 No.2
	65A	79	62	3.2	–	–	–						
	80A	89	74	3.2	–	–	–						
RXK	90A	99	82	3	–	–	–						
	100A	119	100	3	–	–	–	M16	69	24	28	M16 type1	M16 No.2

3. A duplex, stationary IP product is supplied with a lock nut (right-hand thread) used for securing the internal pipe. The material for the standard specification is copper alloy for 15A to 25A, or SS400 for 32A to 80A. The material for the stainless steel specification is SUS304.

4. Transport and Storage

4-1) Transport

Transport this product by following the cautions and instructions described below.

CAUTION	To transport a product that weighs over 25 kg, use appropriate lifting equipment to prevent injuries.

Instruction	1. **Do not subject the product to undue impact** while it is being transported. Falling down or impact causes product damage (grease nipple, seal ring, etc.) or early leakage. If the product fell down or was damaged, contact us for maintenance. 2. When transporting a product with an internal pipe, **do not secure the product so that the load is directly applied to the internal pipe**. Doing so may bend the internal pipe, hindering installation to a roll. Moreover, abnormal noise or early leakage may result after installation.

4-2) Storage

An improper storage method causes product damage or early leakage.
Store this product by following the instructions described below.

Instruction	1. Wrap the product before storing it to prevent the entry of foreign objects. 2. Store this product in a dry environment at 10℃ to 40℃. 3. The storage period should be within two years. If the storage period exceeds two years, contact us for maintenance. 4. If the product is stored after use, clean and then store it under the above conditions.

5. Installation to Machinery

Product adjustment is not required before installation.

5-1) Internal pipe (for duplex only)

Install an internal pipe to the product according to the following instructions.

Instruction	1. When inserting an internal pipe into the product rotor, **be careful so that the pipe does not hit inner parts**. Failure to do so could cause inner part damage, resulting in fluid leakage. 2. When installing an internal pipe to the product, **be careful not to bend the pipe**. If it is bent, product installation to a roll may be hindered. Also, vibration or abnormal noise after installation, or early leakage may result.

●Duplex, stationary IP (RXE3***, RXE41**, RXH3***, RXH41**)
Screw the G thread (right-hand thread) of an internal pipe into the casing, and then secure it with a supplied lock nut.

●Duplex, rotational IP (RXE5***, RXE61**, RXH5***, RXH61**, RXK60**)
Insert an internal pipe into the bearing for internal pipe in the product.

5-2) Installing to a roll

Install the product by following the warnings, cautions, and instructions described below.

⚠ WARNING	**Be sure to install the product so that an inspection hole faces downward.** Also, **do not block the hole.** This hole is used for detecting leakage at an early stage. If this hole is directed toward other directions or is blocked, leakage cannot be detected at an early stage. Moreover, leaked fluid may accumulate in a casing and ball bearings may be damaged, causing serious bodily accidents due to resulting rotation failure.

⚠ CAUTION	In order to prevent injuries, take the product weight into consideration before installing the product. Use equipment such as a crane as necessary. This work should be performed by two or more persons.

Instruction	1. **Remove any foreign objects in such flow passages as a pipe or a roll** before product installation. If the fluid contains foreign objects, install a strainer at the flow passages. Foreign objects cause early leakage. 2. If the product is installed with its center misaligned or tilted, vibration or abnormal noise may result. Moreover, the product or machine equipment may be damaged due to vibration. 3. When tightening screws or nuts, properly torque-tighten them according to the screw type or size. 4. To prevent uneven tightening, evenly tighten flange screws in a cross pattern. 5. Perform retightening after the start of use. 6. To prevent internal pipe damage, do not hook a webbing sling to an internal pipe. Hook a webbing sling to a casing. For RXK lines, the rotation stopper hole can be used for suspension.

●Installation: taper thread

1. Wrap seal tape around the taper thread of the rotor.
2. Use the shank on the rotor to screw the product into a roll.

●Installation: parallel thread

1. Install the supplied gasket to the rotor.
2. Use the shank on the rotor to screw the product into a roll.

●Installation: thread with spigot

1. Install the supplied gasket to the rotor.
2. Use the shank on the rotor to screw the product while inserting the rotor spigot into a roll socket.

●Installation: flange

1. Install the supplied stud bolts to a roll.
2. Install the supplied gasket to a roll socket.
3. Insert the rotor spigot into the roll socket while checking that the stud bolts go through the rotor flange holes.
4. Set the supplied spring washers on the stud bolts, and then secure the product with the supplied nuts.

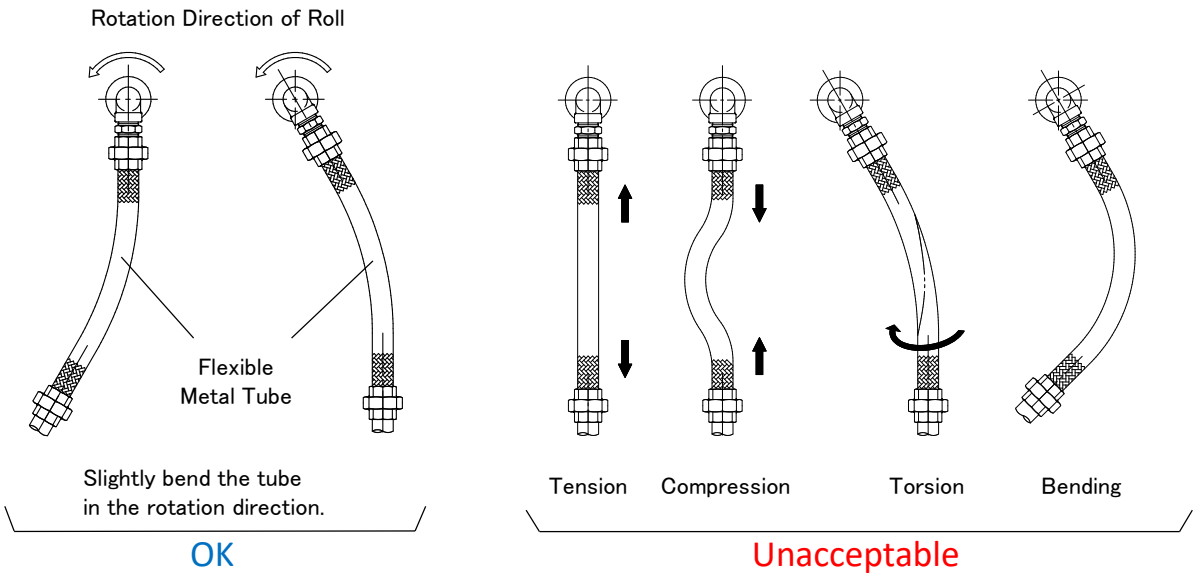
The flange of RXK is detachable. Install it to the rotor together with a split ring in advance.

5-3) Pipe laying

Perform pipe laying work by following the warnings and instructions described below.

WARNING	Use a hose for product connection suitable for characteristics of fluid used and operating conditions (pressure, temperature). If an unsuitable hose is used, it may be damaged, causing injury to workers or damage to peripheral equipment.

Instruction	Observe the following instructions to prevent the generation of force applied to the sides of the product, possibly causing product damage or early leakage. 1. **Use a flexible metal tube or rubber hose with adequate flexibility.** 2. **Steel pipes should not be used for pipe laying.** 3. **Avoid such pipe laying where heavy items such as valves are suspended from the product.** 4. **When installing a flexible metal tube, slightly bend it in the rotation direction of roll**. (See the bottom left figure.) 5. **Carry out pipe laying work so that excessive "tension", "compression", "torsion", or "bending" is not applied to a flexible metal tube**. In particular, "torsion" may significantly reduce the lifetime of the flexible metal tube. (See the bottom right figure.) 6. Use the following table as a guideline for the flexible metal tube length.



Flexible Metal Tube Length (Guideline) (mm)

Size	8A～20A	25A	32A/40A	50A	65A	80A
Length	300～400	400～500	600～800	900～1000	1200～1300	1500～1600

5-4) Measures for preventing rotation

●RXE line, RXH line

As torque of both lines is low, a measure for preventing casing rotation is not required in many cases. As an option, an anti-rotation component is available. Contact our sales representative if you need a measure for preventing rotation.

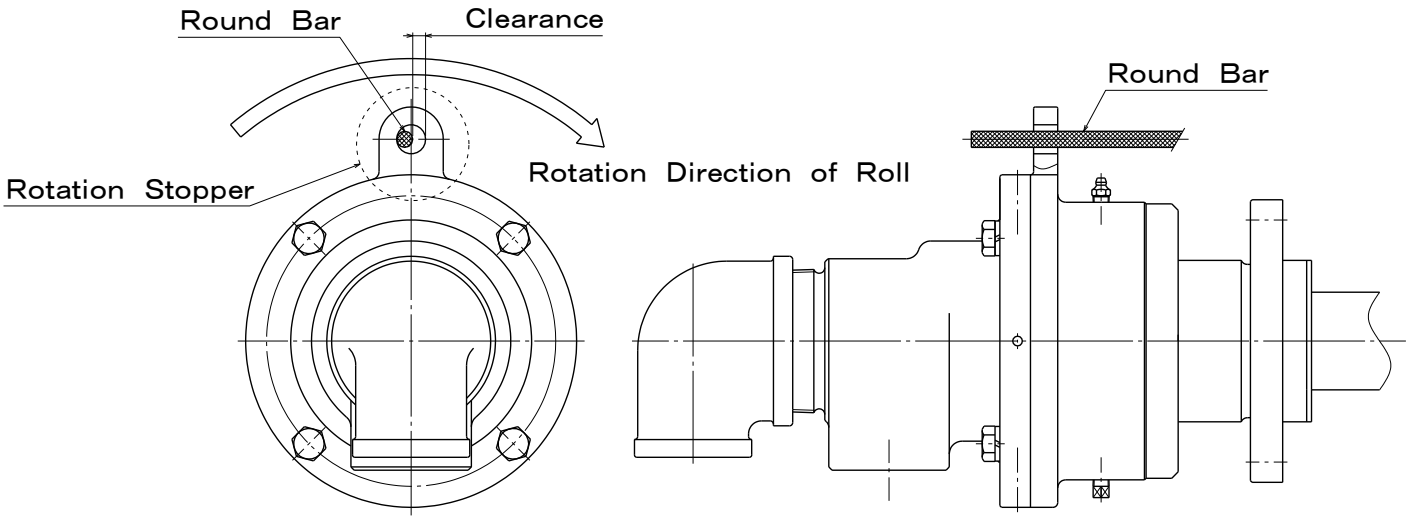
●RXK line

A measure for preventing casing rotation is required. Take a measure according to the following instructions.

Instruction	<u>Do not secure the rotation stopper to an anti-rotation plate or a round bar.</u> Doing so can apply a load to the product, causing product damage or early leakage.

Example of a measure using a round bar

(The periphery of a round bar that comes in contact with the rotation stopper must be smooth.)



6. Removal from Machinery

Remove the product by following the warnings, cautions, and instructions described below in reverse order of the installation.

WARNING	In order to prevent bodily accidents due to residual fluid in the product or pipes, remove the product after fluid has been completely drained from the product or pipes and temperature has dropped to room temperature.

CAUTIION	In order to prevent injuries, take the product weight into consideration before removing the product. Use equipment such as a crane as necessary. This work should be performed by two or more persons.

Instruction	To prevent internal pipe damage, do not hook a webbing sling to an internal pipe. Hook a webbing sling to a casing. For RXK lines, the rotation stopper hole can be used for suspension.

7. Operation

7-1) Operation

Perform operation by following the warnings, cautions, and instructions described below.

WARNING	Immediately stop operation if fluid leakage is detected during operation. If operation is continued with fluid leakage not being repaired, serious accidents including bodily accidents may result.
CAUTION	During rotation or high-temperature/pressure fluid flow, keep well away from the product to prevent injuries or burns. Do not directly touch rotating or hot parts during operation.
Instruction	1. When starting operation, check for abnormal rotation (center runout, abnormal noise, etc.) or fluid leakage from the product while gradually increasing fluid pressure and roll rotational velocity. 2. If operation is continued under a center runout condition, product damage or fluid leakage may result. 3. The occurrence of surging or water hammer can cause product damage or fluid leakage. Avoid such occurrence. 4. **Do not perform dry operation (operation without fluid flow) for a long time.** The product lifetime becomes shortened.

7-2) Operation shutdown

Follow the following instructions during operation shutdown.

Instruction	1. **If the product is left as is for a long time during operation shutdown, rust may occur, causing fluid leakage after operation restart.** Clean flow passages for the product, pipes, and roll before restarting operation. 2. **If water is used as the fluid, take a measure to prevent water from freezing in the product.** Freezing may cause product damage, resulting in fluid leakage after operation restart. 3. Do not put your hand on or ride on the product during equipment maintenance. Doing so may cause product damage or fluid leakage after operation restart.

8. Inspection and Maintenance

8-1) Daily inspection

Perform inspection according to the following instructions.

Instruction	1. Visually check pipe connections, product connections, and the product for fluid leakage. If leakage is detected, repair the product or replace it with a new one. 2. When replacing, use the same type of product with the same size.

8-2) Greasing

●RXE line (Except for RXE****G)

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

●RXH line, RXK line, RXE****G

Periodic greasing (refilling) of ball bearings is required.

Carry out greasing according to the following instructions.

Instruction	1. Remove the grease outlet plug and fill the grease through the grease nipple (grease inlet). Continue to fill until new grease comes out from the grease outlet. 2. **<u>If the grease is filled without removing the plug, parts inside the product may be damaged by the grease pressure, causing fluid leakage.</u>** 3. Use the same grease as the one filled in the product before shipment. Do not use grease mixed with other ones. Doing so may reduce the lubricating effect. 4. Carry out greasing with reference to the frequency and amount (guideline) shown in the following table. Failure to carry out greasing can reduce the lubricating performance of the grease, causing the reduction in the ball bearing lifetime.

< Grease filled in the product before shipment >

Daphne Eponex SR2 (Idemitsu Kosan) is filled in the RX series.

Greasing Frequency (Guideline)

Fuid Temperature (℃)	Greasing Frequency
0～60	Every six months
60～120	Every three months
120～150	Monthly

Grease Amount (Guideline) (cm^3)

Size	First Time	Refill
10A	5	2.5～3.0
15A	6	3.0～3.5
20A	11	5.5～6.5
25A	14	7.0～8.0
32A	21	11～13
40A	26	13～16
50A	47	24～28
65A	98	49～59
80A	143	72～86
90A	200	100～120
100A	350	175～210

8-3) Repair and replacement of consumables

The ball bearings and the seal face of the seal ring become worn over the course of operation time. O-rings also deteriorate. Moreover, if the internal pipe rotates in the product, bearings that support the pipe also become worn. Then such malfunctions as fluid leakage may occur. However, the product can be reused by repairing or replacing worn or deteriorated parts.

Contact us for repair or parts 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. Consult with us when requesting repair or replacement.

< When carrying out repair or replacement of consumables by yourself >

- Repair or replacement should be carried out by an experienced expert.
- Perform work according to "A. Appendix – How to Repair or Replace Consumables".
- Use our genuine parts as replacement parts.
  Contact our sales representative to request genuine parts.
- Properly dispose of waste resulting from work according to national laws or local government regulations or ordinances.

(Attention)

If you carry out repair or replacement, we shall assume no responsibility for any product malfunctions, equipment malfunctions or accidents resulting from such product or the results thereof. Also, the product shall not be covered by the product warranty even if the warranty period is still valid.

9. Troubleshooting

This section describes the possible causes of and countermeasures against malfunctions.
If a problem persists, contact our sales representative for assistance.

Malfunctions	Causes	Countermeasures
Fluid is leaking from the inspection hole.	A load is applied to the product due to an improper method of pipe laying.	Review the pipe laying method.
	The seal ring is damaged. The seal ring lifetime has been reached. The rotor seal face is damaged.	Contact us for repair.
	The fluid contains foreign objects.	Clean the inside of the product, pipes, and roll. Install a strainer.
	The O-ring adheres to the casing.	Contact us for repair.
	A load is applied to the product due to improper countermeasures for preventing rotation.	Review the countermeasure for preventing rotation.
	Operation is performed without rotation, or operation occasionally ceases during the operation cycle.	Consult with us.
	Operation is performed at low-rotation speed (a few rotations per minute).	Consult with us.
	Improper product selection.	Consult with us.
The product has center runout. (It is vibrating.)	The rotation axes of a roll and the product are misaligned with each other.	–
	<Flange connection type>	<Flange connection type>
	The shaft end socket of a roll is offset from the roll rotation axis.	Repair the spigot /socket.
	<Thread connection type>	<Thread connection type>
	The shaft end screw hole of a roll is offset from the roll rotation axis.	Repair the screw hole.
	The rotation axes of a roll and the product are inclined from each other.	–
	<Flange connection type>	<Flange connection type>
	The shaft end socket of a roll is offset from the roll rotation axis.	Repair the installation face on the roll side to which the product is installed.
	Uneven tightening of fixing screws.	Evenly tighten the fixing screws.
	<Thread connection type>	<Thread connection type>
	The center lines of screw holes for fixing the product are inclined from the roll rotation axis.	Repair the screw hole.
	The product is screwed in diagonally.	Reinstall the product.
Noise occurs.	The internal pipe bends and comes in contact with the inner perimeter of the product rotor or that of the roll shaft.	Straighten the bent internal pipe.
	The internal pipe bent by its weight comes in contact with the inner perimeter of the product rotor or that of the roll shaft.	Consult with us.
	A load is applied to the product due to an improper method of pipe laying.	Review the pipe laying method.
	Ball bearings are damaged.	Contact us for repair.
	A sliding sound is heard from the seal face.	No fault is indicated.
The rotor does not rotate.	A ball bearing does not rotate.	Contact us for repair.
Oil is leaking from a ball bearing.	Oil released from the grease seeps.	No fault is indicated.

10. Disposal

When disposing of packaging materials or products, properly dispose of them according to national laws or local government regulations or ordinances.

11. 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.

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

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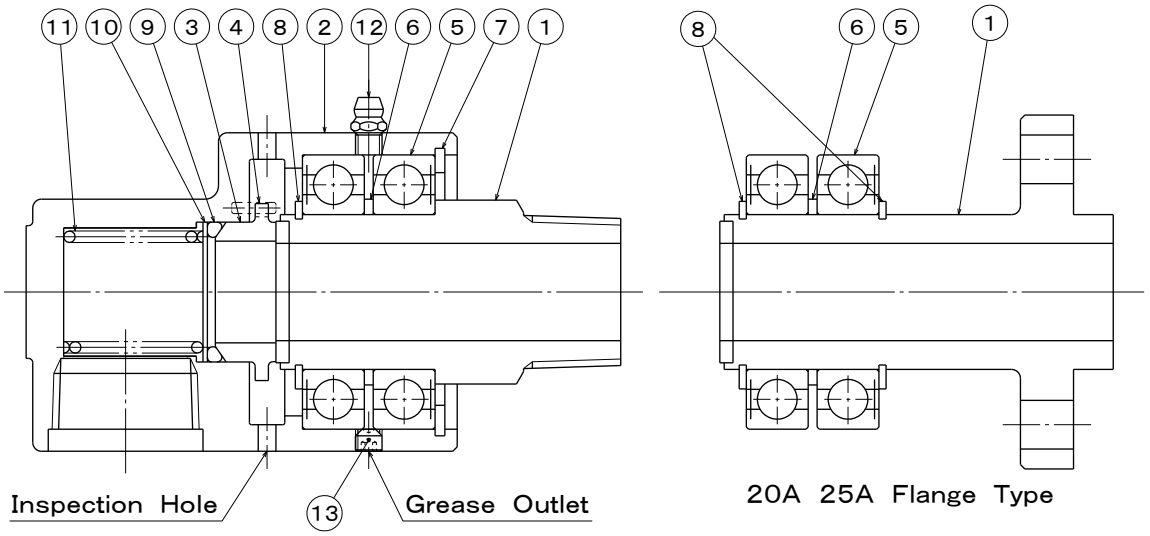
A. Appendix – How to Repair or Replace Consumables

A-1) For simplex (RXE1***, RXE21**, RXH1***, RXH21**)

An explanation is given below with reference to RXH10** (see the left figure).

＊Although the 20A or 25A flange type (RXE2120, RXE2125, RXH2120, RXH2125) has two retaining rings ⑧ on the rotor (see the right figure), the same workflow is applied.



①Rotor ②Casing ③Seal Ring ④Spring Pin ⑤Ball Bearing
⑥Spacer ⑦Retaining Ring ⑧Retaining Ring ⑨O-ring ⑩Washer
⑪Spring ⑫Grease Nipple ⑬Plug (Set Screw)

< Disassembly >

Carefully disassemble the product so that each part is not damaged. In particular, be careful not to damage the seal faces of rotor ① and seal ring ③.

1) Disconnect all pipes, etc. connected to the product.
2) Remove grease nipple ⑫ and plug (set screw) ⑬.
3) Clamp casing ② with a vice, etc. so that rotor ① faces upward.
4) Remove retaining ring ⑦.
5) Pull out the assembly consisting of rotor ①, ball bearings ⑤, spacer ⑥, and retaining ring ⑧ (hereinafter called the rotor assembly) from casing ②.
6) Remove seal ring ③, O-ring ⑨, washer ⑩, and spring ⑪ from casing ②.
7) Remove retaining rings ⑧ from rotor ①, and then pull out ball bearings ⑤ and spacer ⑥.

< Inspection >

Clean each part and check for damage. In particular, check the degree of wear and damage on the seal faces of rotor ① and seal ring ③.

< Repair and parts replacement >

1) Rotor ① and seal ring ③ may be reused by lapping their seal faces in case of minor damage.
2) Replace O-ring ⑨ with a new one regardless of its condition.
3) If repair or reuse of parts is impossible, replace them with our new genuine parts.
   Contact our sales representative to request genuine parts.

< Assembly >

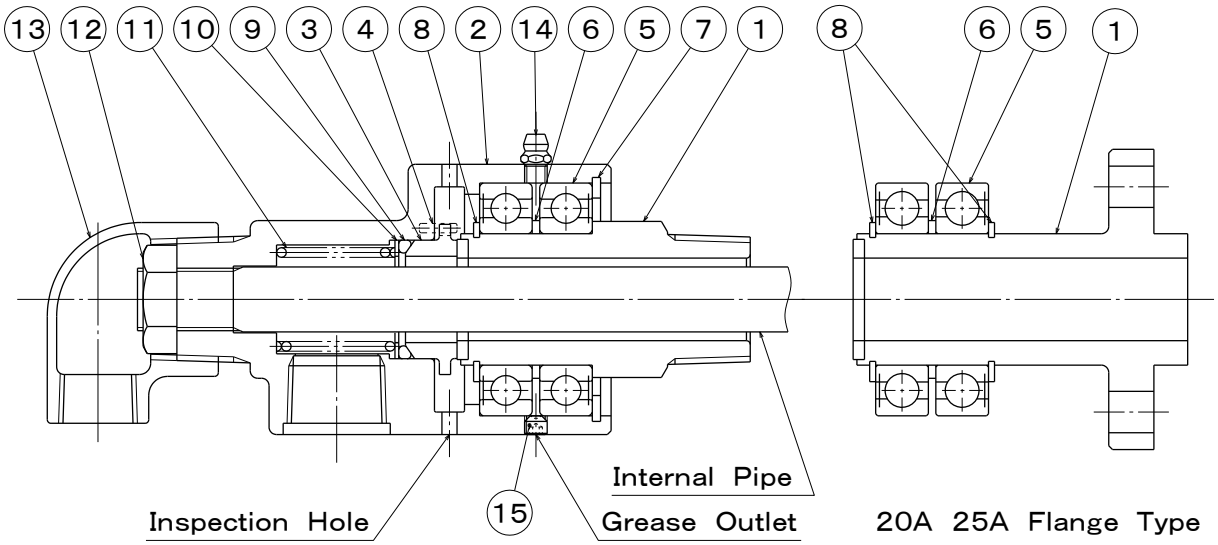
Assemble the product in the reverse order of disassembly.
Carefully assemble the product so that each part is not damaged. In particular, be careful not to damage the seal faces. If dust adheres to the seal face, wipe it off with thinner.

1) Apply grease to O-ring ⑨ and the inner perimeter of casing ② with which the O-ring comes in contact.
2) Clamp casing ② with a vice, etc. so that the rotor side faces upward.
3) Install spring ⑪, washer ⑩, O-ring ⑨, and seal ring ③ to casing ② in order. At this point, align the notch of seal ring ③ with spring pin ④ before installing the seal ring.
4) Insert ball bearing ⑤, spacer ⑥, and ball bearing ⑤ to rotor ① in order, and then install retaining rings ⑧. At this point, be sure to confirm that the direction of the ball bearings is correct.
5) Install the rotor assembly assembled in step 4) to casing ②.
6) Install retaining ring ⑦ to casing ②.
7) Check that rotor ① smoothly rotates.
8) 【 For RXH1***, RXH21**, RXE1***G and RXE21**G only 】
   Install grease nipple ⑫ and fill the grease through it. Continue to fill until new grease comes out from the grease outlet. After greasing, attach plug (set screw) ⑬.

A-2) For duplex, stationary IP (RXE3***, RXE41**, RXH3**, RXH41**)

An explanation is given below with reference to RXH30** (see the left figure).

＊Although the 20A or 25A flange type (RXE4120, RXE4125, RXH4120, RXH4125) has two retaining rings ⑧ on the rotor (see the right figure), the same workflow is applied.



①Rotor ②Casing ③Seal Ring ④Spring Pin ⑤Ball Bearing
⑥Spacer ⑦Retaining Ring ⑧Retaining Ring ⑨O-ring ⑩Washer
⑪Spring ⑫Lock Nut ⑬Elbow ⑭Grease Nipple ⑮Plug (Set Screw)

< Disassembly >

Carefully disassemble the product so that each part is not damaged. In particular, be careful not to damage the seal faces of rotor ① and seal ring ③.

1) Disconnect all pipes, etc. connected to the product.
2) Remove grease nipple ⑭ and plug (set screw) ⑮.
3) Remove elbow ⑬ from casing ②.
4) Remove lock nut ⑫ and the internal pipe.
5) Clamp casing ② with a vice, etc. so that rotor ① faces upward.
6) Remove retaining ring ⑦.
7) Pull out the assembly consisting of rotor ①, ball bearings ⑤, spacer ⑥, and retaining ring ⑧ (hereinafter called the rotor assembly) from casing ②.
8) Remove seal ring ③, O-ring ⑨, washer ⑩, and spring ⑪ from casing ②.
9) Remove retaining rings ⑧ from rotor ①, and then pull out ball bearings ⑤ and spacer ⑥.

< Inspection >

Clean each part and check for damage. In particular, check the degree of wear and damage on the seal faces of rotor ① and seal ring ③.

< Repair and parts replacement >

1) Rotor ① and seal ring ③ may be reused by lapping their seal faces in case of minor damage.
2) Replace O-ring ⑨ with a new one regardless of its condition.
3) If repair or reuse of parts is impossible, replace them with our new genuine parts.
   Contact our sales representative to request genuine parts.

< Assembly >

Assemble the product in the reverse order of disassembly.
Carefully assemble the product so that each part is not damaged. In particular, be careful not to damage the seal faces. If dust adheres to the seal face, wipe it off with thinner.

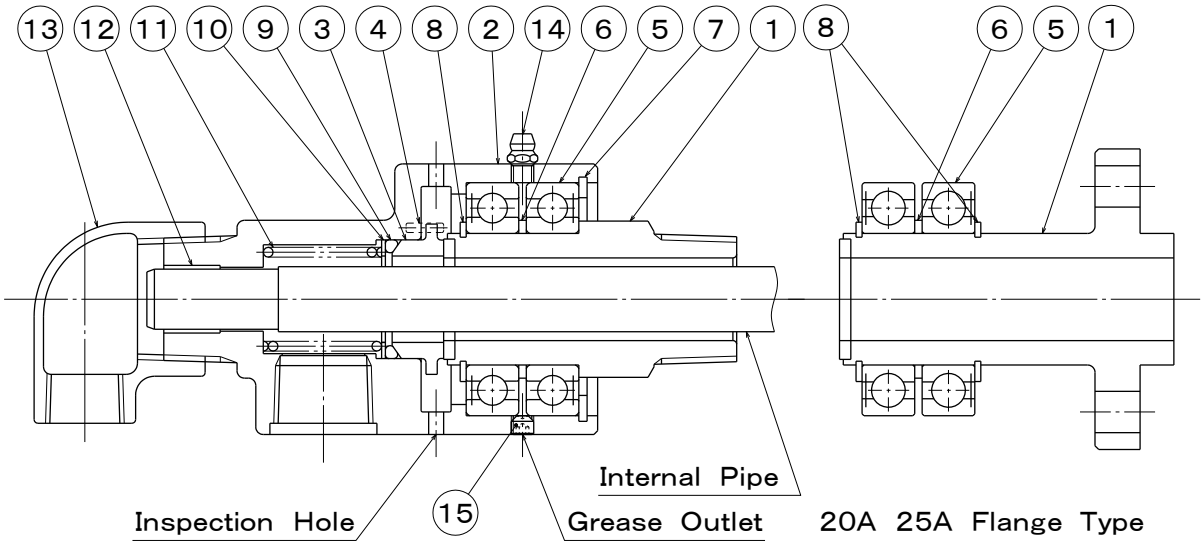
1) Apply grease to O-ring ⑨ and the inner perimeter of casing ② with which the O-ring comes in contact.
2) Clamp casing ② with a vice, etc. so that the rotor side faces upward.
3) Install spring ⑪, washer ⑩, O-ring ⑨, and seal ring ③ to casing ② in order. At this point, align the notch of seal ring ③ with spring pin ④ before installing the seal ring.
4) Insert ball bearing ⑤, spacer ⑥, and ball bearing ⑤ to rotor ① in order, and then install retaining rings ⑧. At this point, be sure to confirm that the direction of the ball bearings is correct.
5) Install the rotor assembly assembled in step 4) to casing ②.
6) Install retaining ring ⑦ to casing ②.
7) Check that rotor ① smoothly rotates.
8) 【 For RXH3***, RXH41**, RXE3***G and RXE41**G only 】
   Install grease nipple ⑭ and fill the grease through it. Continue to fill until new grease comes out from the grease outlet. After greasing, attach plug (set screw) ⑮.
9) Screw the internal pipe into the product and secure it with lock nut ⑫.
10) Wrap seal tape around the taper thread of casing ②, and then install elbow ⑬.

A-3) For duplex, rotational IP (RXE5***, RXE61**, RXH5***, RXH61**)

An explanation is given below with reference to RXH50** (see the left figure).

＊Although the 20A or 25A flange type (RXE6120, RXE6125, RXH6120, RXH6125) has two retaining rings ⑧ on the rotor (see the right figure), the same workflow is applied.

＊For 80A, ⑫ indicates a Teflon liner.



①Rotor ②Casing ③Seal Ring ④Spring Pin ⑤Ball Bearing
⑥Spacer ⑦Retaining Ring ⑧Retaining Ring ⑨O-ring ⑩Washer
⑪Spring ⑫Bush ⑬Elbow ⑭Grease Nipple ⑮Plug (Set Screw)

< Disassembly >

Carefully disassemble the product so that each part is not damaged. In particular, be careful not to damage the seal faces of rotor ① and seal ring ③.

1) Disconnect all pipes, etc. connected to the product.
2) Remove grease nipple ⑭ and plug (set screw) ⑮.
3) Remove elbow ⑬ from casing ②.
4) Pull out the internal pipe.
5) Clamp casing ② with a vice, etc. so that rotor ① faces upward.
6) Remove retaining ring ⑦.
7) Pull out the assembly consisting of rotor ①, ball bearings ⑤, spacer ⑥, and retaining ring ⑧ (hereinafter called the rotor assembly) from casing ②.
8) Remove seal ring ③, O-ring ⑨, washer ⑩, and spring ⑪ from casing ②.
9) Remove retaining rings ⑧ from rotor ①, and then pull out ball bearings ⑤ and spacer ⑥.

(＊)For a product type whose internal pipe is secured to a roll, the internal pipe comes off from the product when the product is removed from the roll. Therefore, steps 3) and 4) are not required.

< Inspection >

Clean each part and check for damage. In particular, check the degree of wear and damage on the seal faces of rotor ① and seal ring ③, and check the damage condition of Bush ⑫.

< Repair and parts replacement >

1) Rotor ① and seal ring ③ may be reused by lapping their seal faces in case of minor damage.
2) Replace O-ring ⑨ with a new one regardless of its condition.
3) If repair or reuse of parts is impossible, replace them with our new genuine parts.
   Contact our sales representative to request genuine parts.

< Assembly >

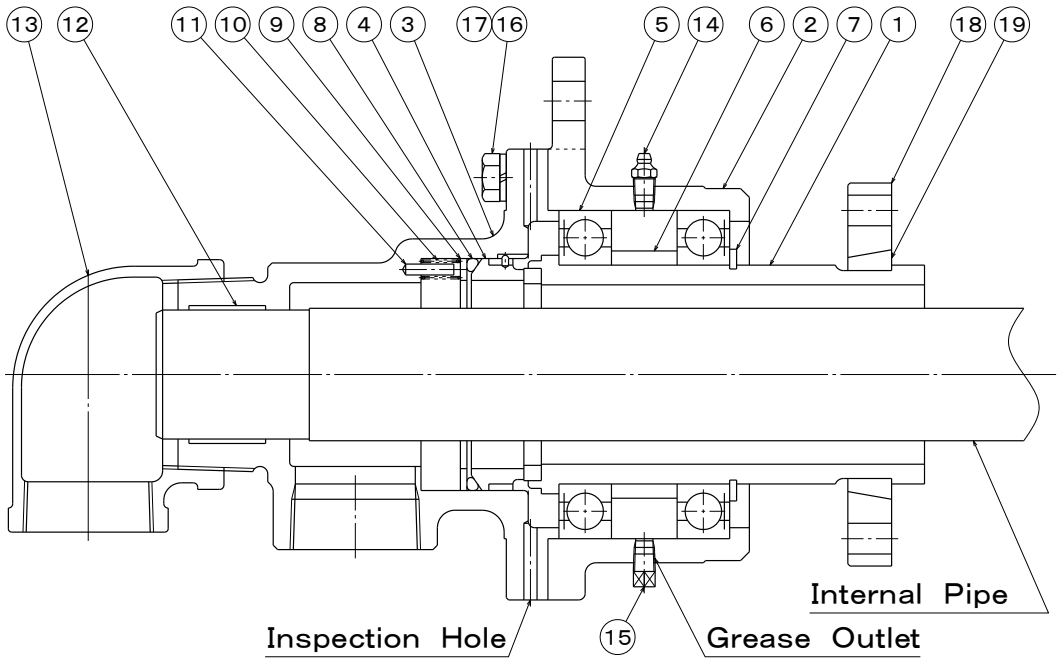
Assemble the product in the reverse order of disassembly.
Carefully assemble the product so that each part is not damaged. In particular, be careful not to damage the seal faces. If dust adheres to the seal face, wipe it off with thinner.

1) Apply grease to O-ring ⑨ and the inner perimeter of casing ② with which the O-ring comes in contact.
2) Clamp casing ② with a vice, etc. so that the rotor side faces upward.
3) Install spring ⑪, washer ⑩, O-ring ⑨, and seal ring ③ to casing ② in order. At this point, align the notch of seal ring ③ with spring pin ④ before installing the seal ring.
4) Insert ball bearing ⑤, spacer ⑥, and ball bearing ⑤ to rotor ① in order, and then install retaining rings ⑧. At this point, be sure to confirm that the direction of the ball bearings is correct.
5) Install the rotor assembly assembled in step 4) to casing ②.
6) Install retaining ring ⑦ to casing ②.
7) Check that rotor ① smoothly rotates.
8) 【 For RXH5***, RXH61**, RXE5***G and RXE61**G only 】
   Install grease nipple ⑭ and fill the grease through it. Continue to fill until new grease comes out from the grease outlet. After greasing, attach plug (set screw) ⑮.
9) Insert the internal pipe into the product.
10) Wrap seal tape around the taper thread of casing ②, and then install elbow ⑬.

(*) For a product type whose internal pipe is secured to a roll, install the internal pipe to a roll and then install the product to the roll. After installing the product to the roll, perform steps 9) and 10).

A-4) For RXK (RXK6081, RXK6082)

An explanation is given below with reference to RXK6081 (figure shown below).
The same workflow is applied to RXK6082.



①Rotor ②Casing ③Head ④Seal Ring ⑤Ball Bearing
⑥Spacer ⑦Retaining Ring ⑧O-ring ⑨Washer ⑩Spring
⑪Spring Guide ⑫Teflon liner ⑬Elbow ⑭Grease Nipple ⑮Square Head Plug
⑯Hex. Bolt ⑰Spring Washer ⑱Rotor Flange ⑲Sprit Ring

< Disassembly >

Carefully disassemble the product so that each part is not damaged. In particular, be careful not to damage the seal faces of rotor ① and seal ring ③.

1) Disconnect all pipes, etc. connected to the product.
2) Remove grease nipple ⑭ and square head plug ⑮.
3) Move rotor flange ⑱ to the casing ② side and remove split ring ⑲. Then pull out rotor flange ⑱ from rotor ①.
4) Remove elbow ⑬ from head ③.
5) Pull out the internal pipe.
6) Clamp head ③ with a vice, etc. so that rotor ① faces upward.
7) Unscrew hex. bolt ⑯ and remove the assembly consisting of rotor ①, ball bearings ⑤, spacer ⑥, and retaining ring ⑦ (hereinafter called the rotor assembly) together with casing ②.
8) Remove seal ring ④, O-ring ⑧, washer ⑨, and spring ⑩ from head ③.
9) Remove the rotor assembly from casing ②.
10) Remove retaining rings ⑦ from rotor ①, and then pull out ball bearings ⑤ and spacer ⑥.

(＊)For a product type whose internal pipe is secured to a roll, the internal pipe comes off from the product when the product is removed from the roll. Therefore, steps 4) and 5) are not required.

< Inspection >

Clean each part and check for damage. In particular, check the degree of wear and damage on the seal faces of rotor ① and seal ring ④, and check the damage condition of Teflon liner ⑫.

< Repair and parts replacement >

1) Rotor ① and seal ring ③ may be reused by lapping their seal faces in case of minor damage.
2) Replace O-ring ⑨ with a new one regardless of its condition.
3) If repair or reuse of parts is impossible, replace them with our new genuine parts.
   Contact our sales representative to request genuine parts.

< Assembly >

Assemble the product in the reverse order of disassembly.
Carefully assemble the product so that each part is not damaged. In particular, be careful not to damage the seal faces. If dust adheres to the seal face, wipe it off with thinner.

1) Apply grease to O-ring ⑧ and the inner perimeter of head ③ with which the O-ring comes in contact.
2) Clamp head ③ with a vice, etc. so that the rotor side faces upward.
3) Put spring ⑩ through spring guide ⑪, and then install washer ⑨, O-ring ⑧, and seal ring ④ to head ③ in order. At this point, install so that the pin of seal ring ④ fits into the groove on head ③.
4) Insert ball bearing ⑤, spacer ⑥, and ball bearing ⑤ to rotor ① in order, and then install retaining rings ⑦. At this point, be sure to confirm that the direction of the ball bearings is correct.
5) Install the rotor assembly assembled in step 4) to casing ②.
6) Use hex. bolt ⑯ and spring washer ⑰ to secure casing ② to head ③.
7) Check that rotor ① smoothly rotates.
8) Insert rotor flange ⑱ into rotor ① and install split ring ⑲. Then move rotor flange ⑱ to the split ring ⑲ side.
9) Install grease nipple ⑭ and fill the grease through it. Continue to fill until new grease comes out from the grease outlet. After greasing, attach square head plug ⑮.
10) Insert the internal pipe into the product.
11) Wrap seal tape around the taper thread of head ③, and then install elbow ⑬.

(*) For a product type whose internal pipe is secured to a roll, install the internal pipe to a roll and then install the product to the roll. After installing the product to the roll, perform steps 9) and 10).