

Instruction Manual

Pearl Swivel Joint

PK Series

This instruction manual applies to products with type designations that begin with PK. (This manual does not apply to movable pipelines or products that include flanges for connection.)



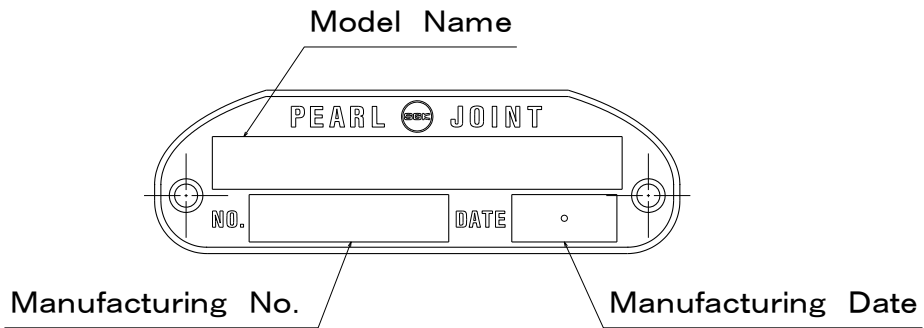
This instruction manual describes important precautions for preventing accidents and how to handle the product. To ensure safe use, be sure to read this manual and fully understand its contents before using this product. Store this manual carefully so that it can be referred to at any time.

Pearl is a trade name of Showa Giken Industrial Co., Ltd.

Table of Contents

1. How to Read Nameplate (Nameplate Information)	P3
2. For Safety	P3
2-1) Symbols	P3
2-2) For safe use	P3
3. Product Overview	P4
3-1) Application	P4
3-2) Information indicated by model names	P4
3-3) Service conditions	P5
3-4) Precautions for use	P5
3-5) Product structures and materials	P5
3-6) Product dimensions	P6
3-7) Product masses	P6
3-8) Product torque	P6
4. Transport and Storage	P7
4-1) Transport	P7
4-2) Storage	P7
5. Installation	P7
6. Removal	P8
7. Operation	P8
7-1) Operation	P8
7-2) Operation shutdown	P8
8. Inspection and Maintenance	P9
8-1) Daily inspection	P9
8-2) Greasing	P9
8-3) Repair and replacement of consumables	P9
9. Troubleshooting	P10
10. Disposal	P11
11. Product Warranty	P11
A. Appendix – How to Repair or Replace Consumables	P13

1. How to Read Nameplate (Nameplate Information)



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

(Only model name is indicated for the products produced in or before February, 2020)

2. For Safety

2-1) Symbols

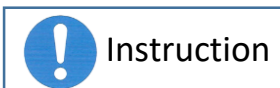
The symbols used in this instruction manual are described below.



Indicates that failure to follow the warning message may cause bodily accidents that may result in serious or even fatal injury.



Indicates that failure to follow the caution message may cause personal injury or damage to peripheral equipment.




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 starting 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

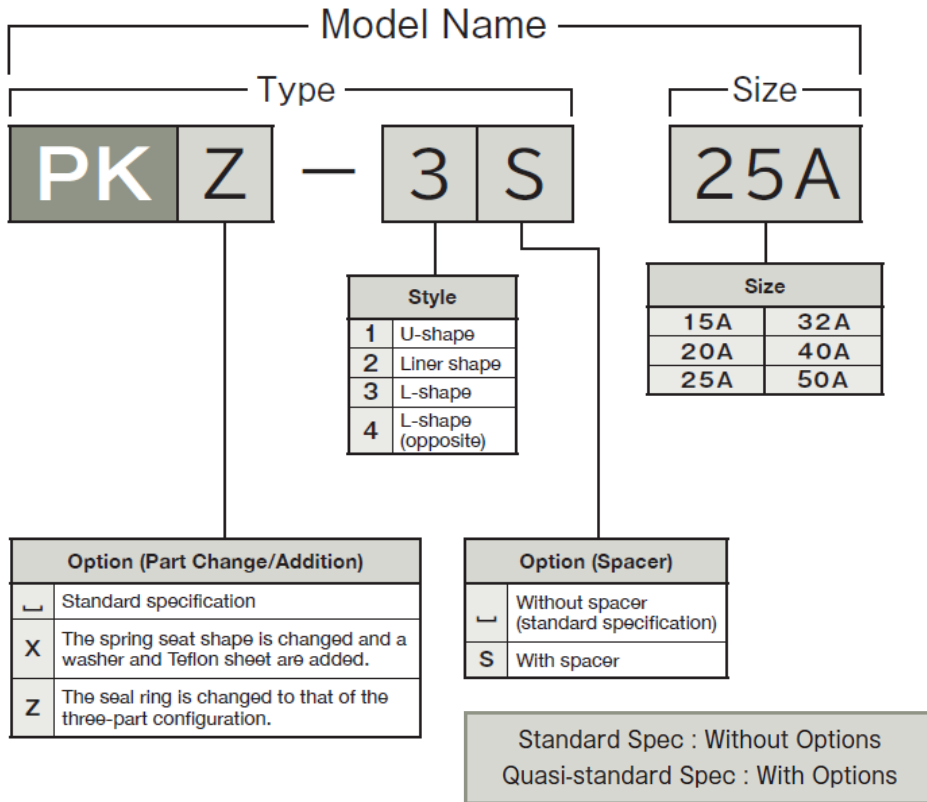
3-1) Application

A swivel joint is used when it is necessary to rotate a pipe for transporting fluid or move it up/down, left/right, or forward/backward.

3-2) Information indicated by model names

Information indicated by each series model names is described below.

The product list is shown in our catalog or on our website.



Note 1) “_” indicates a space. A model name is indicated without spaces.

2) If two or more option (part change/addition) codes are selected, they are indicated in alphabetical order.

3) Option (part change/addition) code X is applicable to sizes 15A to 40A.

If you have any questions, contact our sales representative.

3-3) Service conditions

Service Conditions of PK Series

Series	Connection	Material (main parts)	Seal Ring	Style	Size	Max.	
						Pressure (MPa)	Temperature (°C)
PK	Taper Thread (Rc/R)	Ductile Cast Iron Bronze	PTFE	1~4	15A~50A	2.3	230

3-4) Precautions for use

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

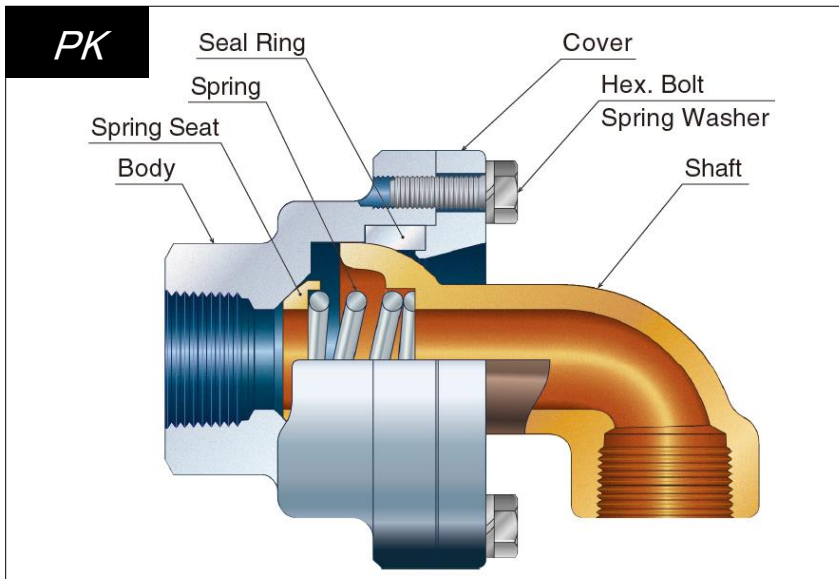
WARNING

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.

Instruction

1. Perform operation within the service conditions.
2. The product cannot be used for fluid that causes corrosion on it.
3. The use of the product in a continuous rotation condition is not appropriate. The product lifetime becomes shortened.
4. Although the shaft rotates 360° in the swivel direction, **the upper limit of its self-aligning angle is 6° (±3°)**. When introducing a hose for connecting the product or a movable pipeline for using multiple products, carefully consider the motion of the hose and the movable pipeline before selecting a style.

3-5) Product structures and materials



Materials of Main Components
(Standard Specification)

Part Name	Material
Shaft	Bronze
Body	Ductile Cast Iron Carbon Steel
Cover	Ductile Cast Iron
Seal Ring	PTFE

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.

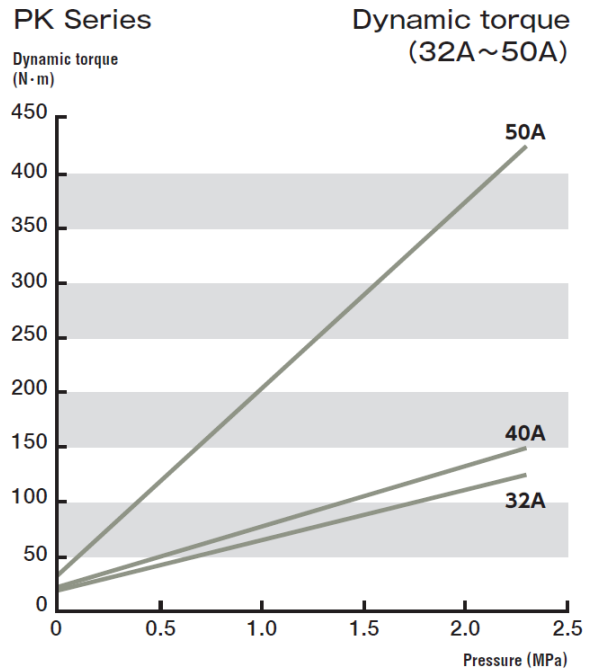
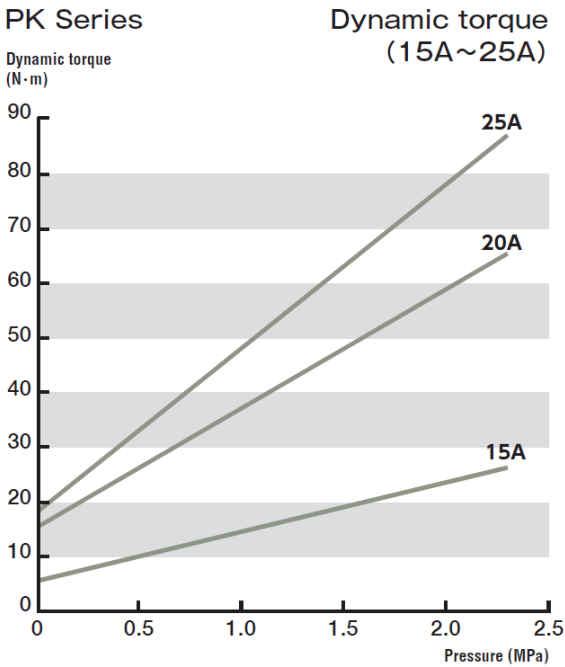
3-7) Product masses

Masses of PK Series (kg)

Size	Style			
	1	2	3	4
15A	1.1	1.0	1.0	1.0
20A	1.8	1.5	1.6	1.6
25A	2.8	2.4	2.6	2.5
32A	4.2	3.6	4.0	3.9
40A	5.2	4.8	4.9	5.0
50A	8.0	7.1	7.8	7.0

3-8) Product torque

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



4. Transport and Storage

4-1) Transport

Transport this product by following the instructions described below.



Instruction

Do not subject the product to undue impact while it is being transported. Falling down or impact causes product damage or early leakage. If the product fell down or was damaged, contact us for maintenance.

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°C to 40°C.
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

Product adjustment is not required before installation.

Install the product by following the instructions described below.



Instruction

1. **Thoroughly flush flow passages to remove foreign objects** before product installation. If the fluid contains foreign objects, install a strainer at the flow passages. Foreign objects cause early leakage.
2.  **Avoid such pipe laying that excessive force is applied in the direction of pushing the shaft towards the body.** Failure to do so may reduce the seal face pressure or open the seal face, causing fluid leakage.
3. When tightening screws, properly torque-tighten them according to their sizes.
4. Perform retightening after the start of use.

6. Removal

Perform removal by following the warnings described below.



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.

7. Operation

7-1) Operation

Perform operation by following the warnings and cautions 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.

7-2) Operation shutdown

Follow the following instructions during operation shutdown.



Instruction



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 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

Greasing is not required for the PK series.

8-3) Repair and replacement of consumables

Over the course of operation time, the seal ring is worn out or deteriorates, and 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.	The seal ring is deformed or damaged. The seal ring lifetime has been reached.	Contact us for repair. Alternatively, replace with a new one.
	The fluid contains foreign objects.	Clean the inside of the product and pipes. Install a strainer.
	Force is applied in the direction of pushing the shaft towards the body. (* 1)	Review the pipe laying method.
	The shaft inclination exceed the angle within which self-aligning can be performed. (* 2)	Review the pipe laying method.
	The pipe centers of the movable and stationary sides are misaligned with each other. (* 3)	Review the pipe laying method.
The shaft does not rotate. (Starting torque is high.)	Sticking of fluid (that has ability to solidify).	After using the product, clean its inside to remove foreign objects.
Lifetime is shortened.	The product is used in consecutive rotation condition or at high-rotation speed.	Consult with us. (The selected product may be inappropriate.)

(* 1) The shaft is pushed against the seal ring by the spring and fluid pressure, thus allowing the seal face to function. Applying force to the shaft in the direction towards the body reduces the seal face pressure, causing fluid leakage.

(* 2) Self-aligning can be performed within 6° ($\pm 3^\circ$).

(* 3) Although angle deviation within 6° between the movable and stationary sides can be accommodated, center misalignment (offset) cannot be accommodated.

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.

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

3. Scope of responsibility

Our responsibility shall be limited to repairs, replacements, or transport expenses covered by this product warranty provision. Expenses or damages caused by said failures above shall not be covered.

4. Applicable regions

This product warranty provision shall be applicable to products installed in Japan.

Contact our sales representative if you install and use our products outside Japan.

5. Another agreement

If another product warranty agreement is made separately with us and clearly states that said agreement shall have priority over this product warranty provision, this provision shall not be applicable.

6. This product warranty provision shall not restrict the customer's legal rights.

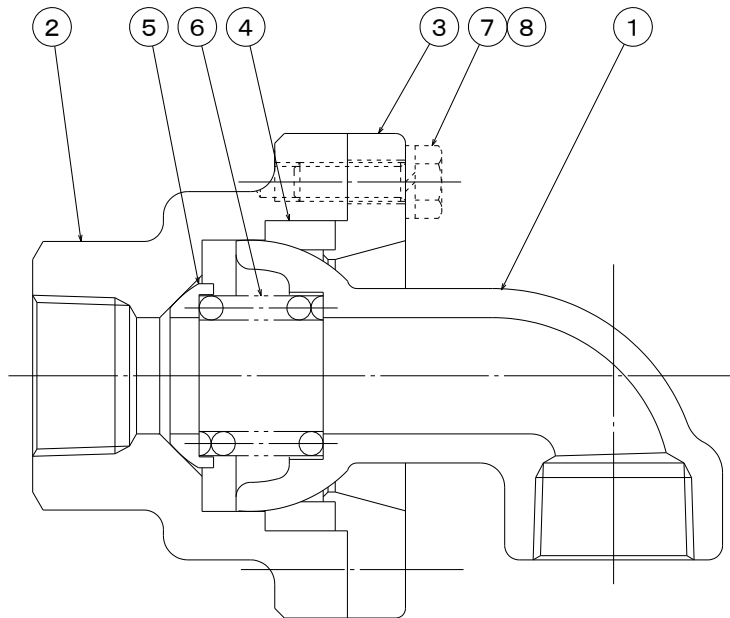
PEARL  **JOINT**
株式会社 昭和技研工業
SHOWA GIKEN INDUSTRIAL CO., LTD.

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



Export Department Phone : +81-3-3598-1400 Fax. : +81-3-3598-2700
E-mail : sgk-tk@sgk-p.co.jp
Headquarters 7-24, Nishi-Kobari, Ina-Machi, Saitama, 362-0811 Japan
Phone : +81-48-728-9460 Fax. : +81-48-728-9461
Tokyo Sales Office 2-64-11, Akabane, Kita-ku, Tokyo, 115-0045 Japan
Phone : +81-3-3598-1400 Fax. : +81-3-3598-2700
Osaka Sales Office 2-9-7, Toyosaki, Kita-ku, Osaka, 531-0072 Japan
Phone : +81-6-6371-8341 Fax. +81-6-6371-6283
Nagoya Sales Office 41-1, Higashi-Ozone-cho, Higashi-ku, Nagoya, 461-0022 Japan
Phone : +81-52-938-8825 Fax. : +81-52-938-6423

A. Appendix – How to Repair or Replace Consumables



①Shaft ②Body ③Cover ④Seal Ring ⑤Spring Seat ⑥Spring
⑦Hex. Bolt ⑧Spring Washer

< Disassembly >

Carefully disassemble the product so that each part is not damaged.

- 1) Clamp body ② with a vice, etc. so that shaft ① faces upward.
- 2) Remove hex. bolts ⑦ together with spring washers ⑧, and then remove cover ③ from body ②.
- 3) Remove seal ring ④, shaft ①, spring ⑥, and spring seat ⑤ from body ②.

< Inspection >

Clean each part and check for damage. In particular, check the degree of wear and damage on the seal faces of shaft ① and seal ring ④.

< Repair and parts replacement >

- 1) Shaft ① may be reused by repairing its seal face in case of minor damage.
- 2) Replace seal ring ④ 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) Clamp body ② with a vice, etc. so that the shaft side faces upward.
- 2) Install spring seat ⑤, spring ⑥, shaft ①, and seal ring ④ to body ②.
- 3) Install cover ③ to body ②, and evenly tighten hex. bolts ⑦ together with spring washers ⑧ in a cross pattern to secure cover ③.
- 4) Turn shaft ① a few turns clockwise/counterclockwise to make sure there is no fault.