

Expansion joint

User's Manual



Thank you for choosing our product.
This instruction manual contains important information for safe use of our product, so please be sure to read it before handling the product.
After reading this manual, please be sure to keep it in a place where the user can see it at any time.

ASAHI YUKIZAI CORPORATION

-SAFETY PRECAUTIONS-

This instruction manual is written on the assumption that the person who handles our products has a basic knowledge of our products, electrical equipment, machinery, control, etc., and it contains technical terms depending on the handling contents.

Please read this manual carefully and fully understand the contents and observe the safety precautions for proper use.

In this manual, the warning, caution, prohibition, and enforcement are categorized together with the symbol to inform the situation and scale of human injury or property damage.

Failure to observe this precaution may result in unexpected failure or damage. Be sure to observe this precaution.

<WARNING/CAUTION indications>

 Warning	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 Caution	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or property damage.

<Prohibited/Forced display>

 Prohibition	In the handling of the product, it is prohibited to do it in "Do not do it".
 Forcing	In the handling of the product, it is forced by "contents to be carried out without fail".

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1. Our product warranty coverage

Unless otherwise stated in the Contract or Specifications, etc., the warranty for the piping material products (hereinafter referred to as "applicable products") such as valves manufactured or sold by us is as follows.

Applicable to

This warranty applies only when the product is used in Japan. If you intend to use the product overseas, please contact us.

Warranty Period

The warranty period is one year after delivery.

Guaranteed range

In the event of failure or malfunction due to our responsibility during the above warranty period, we will replace or repair the product with a substitute free of charge.

Provided, however, that even within the warranty period, the warranty shall not apply to any of the following cases (charged service).

- ▶ When the storage, operating conditions, precautions, etc. described in the specifications, instruction manual, etc. are not adhered to in the construction, installation, handling, maintenance, etc.
- ▶ Defects, such as the design of the customer's equipment or software, caused by other than the target product.
- ▶ The fault is due to modification or secondary processing of the product by something other than us.
- ▶ In the case of a failure which can be deemed to have been avoided if the periodic inspection described in the instruction manual, etc. or the maintenance or replacement of consumable parts has been performed normally.
- ▶ The component is used for purposes other than the product's intended use.
- ▶ Failure or malfunction due to causes that could not be foreseen by our level of science and technology at the time of shipment.
- ▶ The fault is due to an external factor that is not our responsibility, such as natural disaster or disaster.

Disclaimer

- ▶ The warranty will not cover secondary damage (damage to equipment, loss of opportunity, loss of profit, etc.) or any other damage caused by the failure of our product.
- ▶ Although we strive to improve the quality and reliability of our products, we do not guarantee their integrity. Especially when using this product for equipment that may infringe human life, body or property, take appropriate safety design measures, etc., with full consideration of problems that may normally occur. We assume no responsibility for such use if we have not obtained our consent in advance in writing of specifications, etc.
- ▶ Please observe the product specifications and precautions when using our products. We shall not assume any responsibility for any damage to the customer caused by the customer's negligence. However, this does not apply to damage caused by a defect in our product.

2. Safety Instructions

Unpacking, Transportation and Storage

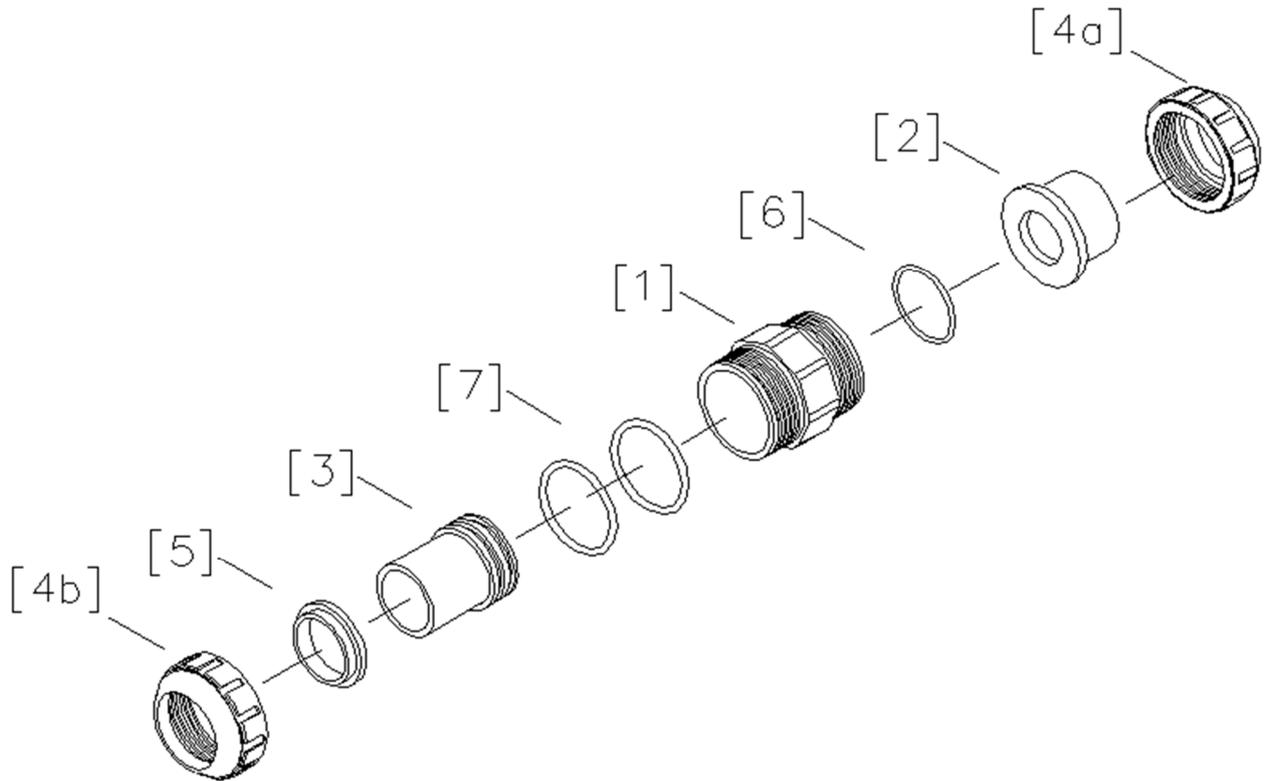
 Caution	
 Prohibition	<p>The product can be damaged, or leak.</p> <ul style="list-style-type: none"> ▶ Do not subject the product to impact by throwing, dropping or hitting. ▶ Do not step on the package or place heavy objects on it. ▶ Do not scratch or pierce the product with a sharp object such as a knife or hand hook. ▶ Do not pile up cardboard boxes forcefully to prevent the load from collapsing. ▶ Avoid contact with coal tar, creosote (a wood preservative), white pesticides, insecticides, paints, etc.
 Forcing	<p>The product can be damaged, or leak.</p> <ul style="list-style-type: none"> ▶ Keep in cardboard until just before piping, and store indoors (at room temperature) away from direct sunlight. Also, avoid storing the product in places of high temperature. (The strength of cardboard packaging decreases when it gets wet. Be very careful when storing and handling it.) ▶ After unpacking, make sure that the fitting is correct and that it meets the specifications.

Product Handling

 Warning	
 Forcing	<p>Serious injury can result.</p> <ul style="list-style-type: none"> ▶ If positive pressure gas is used for our resin piping material, a dangerous condition may occur due to the repulsive force peculiar to compressible fluids even if the pressure is the same as the water pressure. Therefore, be sure to take safety measures for the surrounding area, such as covering the piping with protective materials. If you have any questions, please contact us separately. ▶ When conducting a pipe leak test after completion of piping construction, be sure to check with water pressure. Contact us in advance if you are unavoidable to test with a gas.

 Caution	
 Prohibition	<p>The product can be damaged, or leak.</p> <ul style="list-style-type: none"> ▶ Do not step on the fitting or place heavy objects on it. ▶ Keep away from fire and hot objects.
 Forcing	<p>The product can be damaged, or leak.</p> <ul style="list-style-type: none"> ▶ Keep the pressure and temperature of the fluid within the allowable range. (The maximum allowable pressure includes water hammer pressure.) ▶ Secure sufficient space for maintenance and inspection when piping. ▶ Select and use materials suitable for the operating conditions. (Depending on the type of chemical liquid, the parts may be damaged. Contact us in advance for details.) ▶ Use fluids containing crystalline material under conditions that do not recrystallize. ▶ Avoid any place where the valve is constantly exposed to splashes of water and dust, or direct sunlight, or protect the valve with a cover or the like to cover the entire area. ▶ Perform maintenance periodically by referring to "7. Inspection items". Pay particular attention to temperature changes and aging during long-term storage or shutdown or use.

3. Name of each part



[1]	Body	
[2]	End connector (A)	Fixed side
[3]	End connector (B)	Expansion side
[4a]	Union nut (A)	Fixed side
[4b]	Union nut (B)	Expansion side
[5]	Stop ring	
[6]	O Ring (A)	For between End connector (A)
[7]	O Ring (B)	For between End connector (B)

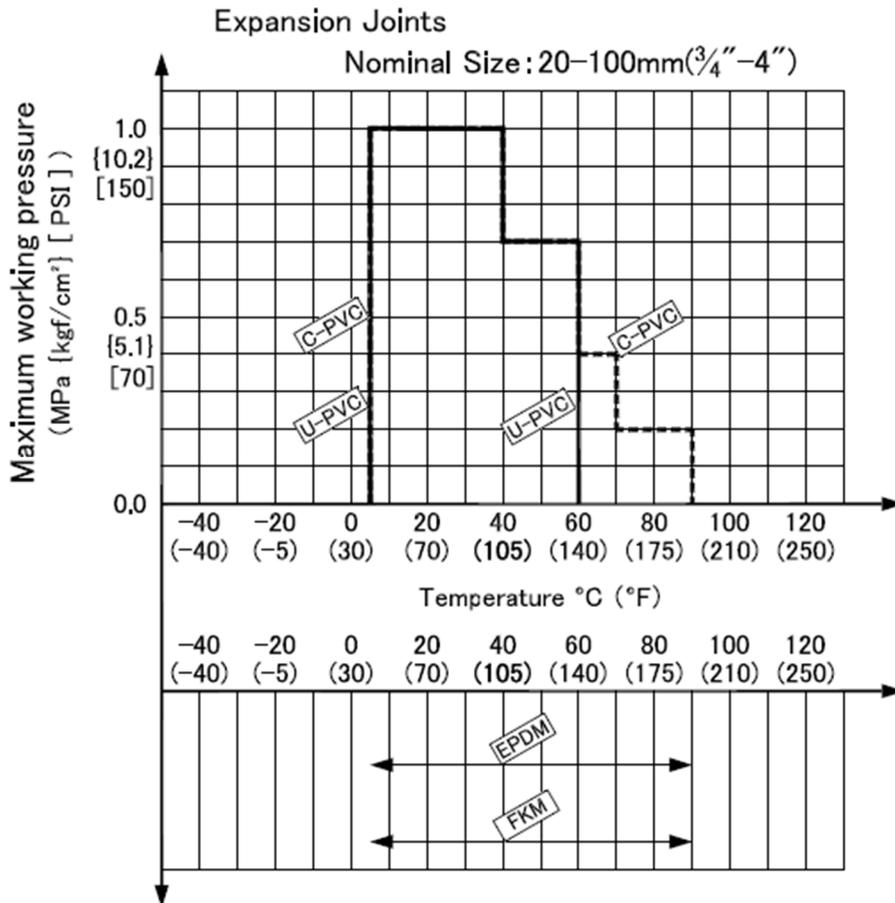
※[4b] Union nut is used for 65mm~100mm

4. Product Specifications

Model number table

TYPE	BODY MATERIAL	SEAL MATERIAL	CONNECTION	STANDARD	SIZE
J E F	*	*	T	J	* * *
JEP EXPNSION JOINTS	U PVC C C-PVC	E EPDM V FKM	T SOCKET	J JIS	020 20mm 025 25mm 030 30mm 040 40mm 050 50mm 065 65mm 075 75mm 100 100mm

Relationship between maximum allowable pressure and temperature



5. Piping method

 Warning	
 Prohibition	<p>Serious injury can result.</p> <ul style="list-style-type: none"> ▶ Ensure adequate ventilation when using adhesives, and prohibit the use of open flames and do not inhale odors directly.
 Forcing	<p>Serious injury can result.</p> <ul style="list-style-type: none"> ▶ Be sure to perform safety inspections of the machine tool and power tool beforehand. ▶ Wear appropriate protective equipment according to the type of work being performed. ▶ If the adhesive adheres to the skin, remove it immediately. If you feel worse or feel unusual, promptly seek medical assistance and take appropriate action.

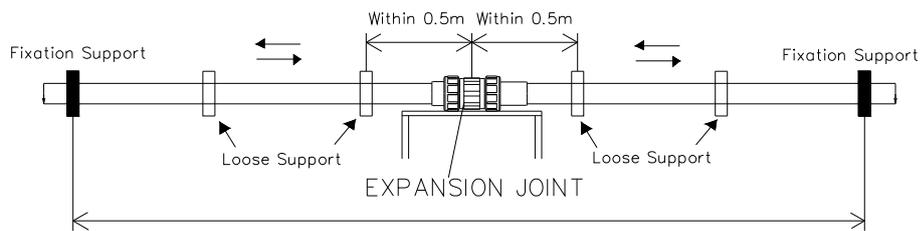
 Caution	
 Prohibition	<p>The product can be damaged, or leak.</p> <ul style="list-style-type: none"> ▶ Be careful not to overtighten the pipe support when you remove it with a U band or the like. ▶ Do not over tighten the Union nut. ▶ Do not use a pipe wrench when tightening the Union nut. ▶ Never strike the tube to insert it, as this may damage it.

⚠ Caution

! Forcing

The product can be damaged, or leak.

- ▶ Be careful not to apply too much adhesive.
(If adhesive enters the fitting, it may cause malfunction or internal leakage, or it may cause a solvent crack or damage.)
- ▶ Care must be taken during construction at low temperatures because solvent vapors are less likely to evaporate and remain.
(Solvent crack may occur, resulting in damage.)
After piping, open both ends of the pipe and remove solvent vapor by ventilating with a blower (low-pressure type) or the like.
- ▶ Use "ASAHI AV adhesive" depending on the material.
- ▶ Perform the water flow test after at least 24 hours have elapsed after completion of bonding.
- ▶ When installing, be careful not to apply excessive stress such as tension, compression, bending or impact to the piping or expansion joint.
- ▶ For the temperature difference, consider the outside air temperature and the internal fluid temperature.
- ▶ When installing the product, keep in mind the changes in temperature (outside air and internal fluid) after installation (extended or contracted).
- ▶ Be sure to provide fixed supports at both ends of the piping. Provide loose support to prevent meandering in the middle of the piping.
- ▶ To prevent misalignment of the expansion section, provide the support with the first support centered on AV expansion joint and within 0.5m. At this time, be sure to use the loose support on the Expansion side, and take care not to hinder the telescopic movement. It is also safer to provide a frame at the bottom of AV expansion joint as shown in the figure below.



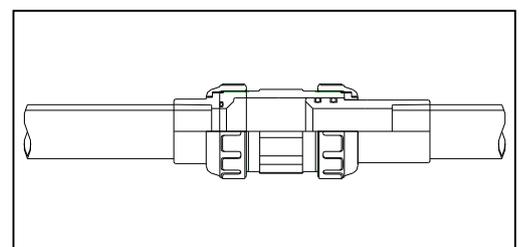
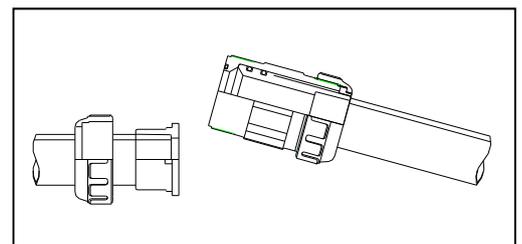
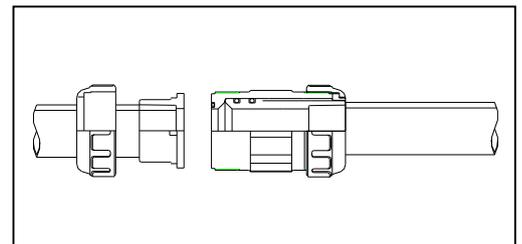
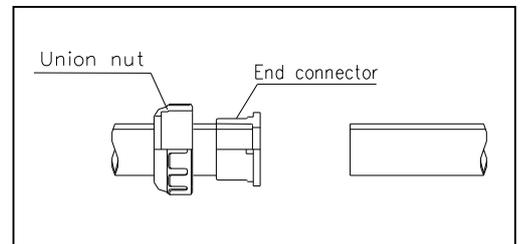
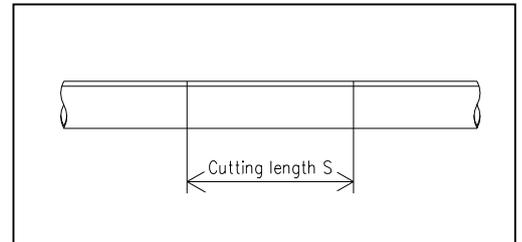
- ▶ Be careful to apply the adhesive thinly and evenly. In particular, if a large amount of adhesive is applied to the receptacle, adhesive may flow on the inner surface of the expansion joint and adhere the slide section. Particular attention should be paid to vertical piping.
- ▶ Calculate the length of the piping that can absorb the expansion and contraction of the pipe, and confirm that the piping can absorb it before starting construction.
- ▶ Be careful not to allow dust or other foreign matter to adhere to the slide section. Especially for vertical piping, it is recommended to install the slide part on the lower side.

Preparations	▶ Pipe cutter	▶ Belt Wrench
	▶ ASAHI AV glue	

*For AV expansion joints, consider the minimum and maximum temperatures during use and the temperatures during construction (when installing the expansion joints).
Design and install the piping.

[Procedure]

- 1) Set the dimension (S) between the mounting surfaces of AV expansion joint.
The dimension between mounting surfaces (S) is set from the condition (extended or contracted condition, etc.) considering the temperature change (outside air/internal fluid) after construction.
- 2) Cut the pipes according to the dimensions between the mounting surfaces of AV expansion joint.
- 3) Pass the fixing-side Union nut [4a,4b] through the pipe and glue the End connector (A) [2].
- 4) Retract the End connector B on the slide side to the minimum and adhere the End connector in the same manner as 2).
- 5) For 80mm~100mm, remove the slide-side pipe shaft core before bonding.
- 6) Extend the body on the slide side, align it with the End connector on the fixing side, check that the shaft is aligned, and then tighten the fixing side Union nut.
- 7) Tighten the Union nut until it was tight by hand
After that, tighten 1/4 to 1/2 turn with a belt wrench, etc.
Use this as a guide.



<Reference Material for Construction>

AV Super Pipe and Hard PVC Pipe Thermal Expansion List

Units: mm

Temperature difference \ Length of piping	5m	10m	20m	30m	40m	50m	60m	70m	80m
1°C	0.35	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6
10°C	3.5	7.0	14.0	21.0	28.0	35.0	42.0	49.0	56.0
20°C	7.0	14.0	28.0	42.0	56.0	70.0	84.0	98.0	112.0
30°C	10.5	21.0	42.0	63.0	84.0	105.0	126.0	147.0	168.0
40°C	14.0	28.0	56.0	84.0	112.0	140.0	168.0	196.0	224.0
50°C	17.5	35.0	70.0	105.0	140.0	175.0	210.0	245.0	280.0
60°C	21.0	42.0	84.0	126.0	168.0	210.0	252.0	294.0	336.0
70°C	24.5	49.0	98.0	147.0	196.0	245.0	294.0	343.0	392.0
80°C	28.0	56.0	112.0	168.0	224.0	280.0	336.0	392.0	448.0

<Example>

If the nominal diameter is 80mm and the temperature differential is 20° C, how many meters should a AV expansion joint be inserted?

• Calculation formula
$$L = \frac{\Delta l}{\alpha \cdot \Delta t} \quad (1)$$

L: Pipe length absorbed by expansion joint (mm)

Δl : Pipe expansion/contraction length

From the dimension table, the extension $l_2=80$ mm of the nominal diameter 80mm

The margin 5mm at both ends $\times 2 = 10$ mm

$$\Delta l = (80 - 10) \text{mm}$$

α : Coefficient of thermal expansion of super pipe or hard vinyl chloride pipe
 $7 \times 10^{-5} (\text{°C})$

Δt : Temp. differential 20° C

Assigning the above values to (1),

$$L = \frac{80 - 10}{7.0 \times 10^{-5} \times 20} = 50,000 \text{mm}$$

In other words, it is sufficient to attach one on 50m.

6. How to disassemble/assemble parts for replacement

 Warning	
 Forcing	<p>Serious injury can result.</p> <ul style="list-style-type: none"> ▶ Be sure to perform safety inspections of the machine tool and power tool beforehand. ▶ Wear appropriate protective equipment according to the type of work being performed. ▶ Completely drain the fluid in the piping when replacing fittings or replacing parts. If the fluid does not escape, reduce the fluid pressure to zero.

 Caution	
 Prohibition	<p>The product can be damaged, or leak.</p> <ul style="list-style-type: none"> ▶ Do not over tighten the Union nut. ▶ Do not use a pipe wrench.
 Forcing	<p>The product can be damaged, or leak.</p> <ul style="list-style-type: none"> ▶ Fix the End connector during piping installation or disassembly and reassembly. ▶ Be sure to check that the Union nut is fully tightened before the water flow test. ▶ Tighten the Union nut paying attention to the shaft misalignment and face-to-face dimension.

Preparations	▶ Belt wrench	▶ Protective gloves	▶ Protective glasses
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<Disassembly>

[Procedure]

- 1) Completely drain the fluid in the piping.
- 2) Loosen the right and left Union nuts [4] with a belt wrench, etc.

7. Inspection item

 Caution	
 Forcing	<p>The valve can be damaged, or leak.</p> <ul style="list-style-type: none"> ▶ Maintenance should be performed every 3 to 6 months as a guide in order to keep the watch in normal condition and use it for a long time. Pay particular attention to temperature changes and aging during long-term storage or shutdown or use. ▶ When removing the valve from the piping when replacing the valve or parts, completely remove the fluid from the piping before starting work. ▶ If any trouble is found, take the appropriate action referring to "8. Cause of malfunction and remedy"

Daily inspection

Inspection items and methods	Guideline of judgment	Check point	Treatment method
External leakage (visual inspection)	No leakage	Adhesive construction section	Remove the joint from the piping and retry the adhesive work. (Ref: 5. Piping method)
		Union nut portion of the fitting	① Retighten the Union nut ② Remove the fitting from the piping, check the O-ring and sealing surface, and replace the defective part. (Ref: 5. Piping method)
		Surface of the entire joint	Remove the valve from the pipe and replace the valve. (Ref: 6. How to disassemble/assemble parts for replacement)
Abnormal noise (hearing)	No abnormal noise	Piping around the joint	Reconfirm the conditions of use (Ref: 2. Safety Instructions)
Odor ^{※1)} (sniffing)	No abnormal odor	Entire joint	Remove the fitting from the pipe and replace it. (Ref: 6. How to disassemble/assemble parts for replacement)

Periodic inspection
●Guideline for the inspection cycle: 3 months

As inspection items Inspection method	Guideline of judgment	Check point	Remedy for malfunctions
Vibration (palpation)	No difference from other parts	Fitting	Recheck the operating conditions and remove the source of vibration. (Ref: 2. Safety Instructions)
			Remove the fitting from the pipe and replace it. (Ref: 6. How to disassemble/assemble parts for replacement)
		Piping around the joint	Recheck the operating conditions and remove the source of vibration. (Ref: 2. Safety Instructions)

●Guideline of the inspection cycle: 6 months

As inspection items Inspection method	Guideline of judgment	Check point	Remedy for malfunctions
Product damage	No scratches, cracks, or deformation	Appearance of the product	Remove the fitting from the pipe and replace it. (Ref: 6. How to disassemble/assemble parts for replacement)

8. Cause of malfunction and remedy

Failure phenomenon	Possible cause	Measures and measures
There is external leakage.	Loose Union nut	Retightening
	O-ring scratched or worn	Replacing the O-ring
Slide is heavy	Adhesion of foreign matter	Cleaning
	Deformation (thermal deformation, etc.)	Parts replacement

9. Disposal method of residual materials and waste materials

 Warning	
 Forcing	<p>When burnt, toxic gas is generated.</p> <ul style="list-style-type: none"> ▶ When disposing of the product or parts, please dispose of them according to the guidelines of each local authority by a professional disposal company.

Inquiries

Contact the nearest dealer, our sales office, or our web website for inquiries about this product.

[User's Manual]

Expansion joint



<https://www.asahi-yukizai.co.jp/en>

Please note that the content of this manual is subject to change without notice.

March 2024

[User's Manual] Expansion joint