

TOZEN-FLEX FLEXIBLE RUBBER JOINT

FEATURES

- **Applicable to both suction and delivery (discharge) with its excellent stability and pressure withstandability.**

With the combination of excellent moulding technique and tough chemical fiber, TOZEN-FLEX can be used at a bursting pressure of over 780p. s. i. (55kgf/cm²) and within a normal internal pressure of 240p. s. i. (16kgf/cm²). In addition, since it can satisfactorily withstand the force for creating a vacuum of 650mmHg, it can be used on both the delivery and suction sides. Also, since its carcass is of a special spherical type, it will not come in contact with the connecting bolt heads even if it expands. This connector can be used with a sense of security even when subjected to high pressures.



- **Excellent temperature resistance**

Since this connector is made of heat resisting synthetic rubber of special composition, which is superior to natural or chloroprene rubber, its deterioration due to hot water is quite limited and it exhibits a stable pressure withstandability persistently.

- **Excellent ability to isolate sound and vibration**

The highly soft carcass effectively isolates vibration and solid sound in all directions.

- **Other advantages and effects**

- 1) Needs neither gasket nor packing.
- 2) Since flanges used are of loose fit type, they can be installed on pipes easily.
- 3) Its ability to absorb elongation and contraction of pipes caused by variation in temperature prevents the piping system and equipment from breaking down.
- 4) It absorbs the pulsation of water and prevents water hammering to some extent.

TYPICAL APPLICATIONS

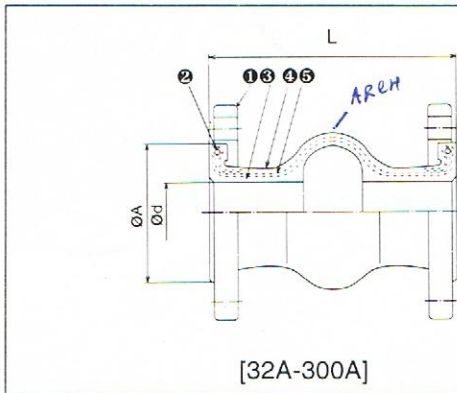
This joint is applied to the piping system for construction equipment and industrial plants where noise and vibration isolations as well as alignment between pipes are necessary.

Examples:

- 1) Air-conditioning and sanitary equipment: pumps, air compressors, etc.
- 2) Industrial plant equipment: pumps, air compressors, refrigerators, roots, blowers, etc.
- 3) Marine piping systems: Feed-water and drainage equipment, etc.
- 4) Various plant piping systems: power generation plants, chemical plants, etc.

TOZEN-FLEX

DIMENSIONS, STRUCTURES, AND ALLOWABLE MOVEMENTS IN OPERATION



No.	Part	Material
①	Flanges	SS400
②	Reinforcing Ring	SWRH
③	Inner Rubber	Synthetic Rubber
④	Outer Rubber	Synthetic Rubber
⑤	Reinforcing Cord	Synthetic Fibre

- Flanges on ANSI, BS, etc. available. Please consult us.
- The products are not applicable to oil. However, it may be possible by changing the rubber material. Please consult us.
- Please use U-FLEX for hot water supply.

DIMENSIONS AND ALLOWABLE MOVEMENTS

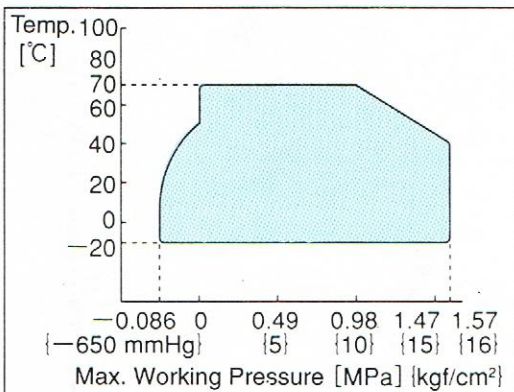
Nominal Bore	Size (mm)		Allowable Movement				Installing Allowance			
	A	L	T.M. (mm)	A.E. (mm)	A.C. (mm)	A.M. (°)	T.M. (mm)	A.E. (mm)	A.C. (mm)	A.M. (°)
32mm (1 1/4 inches)	40	150	20	10	20	25	8	3	6	10
40mm (1 1/2 inches)	40	150	20	10	20	25	8	3	6	10
50mm (2 inches)	50	150	20	10	20	25	8	3	6	10
65mm (2 1/2 inches)	65	150	20	10	20	20	8	3	6	10
80mm (3 inches)	75	150	20	10	20	20	8	3	6	10
100mm (4 inches)	100	150	20	15	20	20	8	3	6	10
125mm (5 inches)	125	150	20	15	20	20	8	3	6	10
150mm (6 inches)	150	150	20	8	15	20	8	3	6	10
200mm (8 inches)	200	150	20	8	15	20	10	3	6	10
250mm (10 inches)	250	200	25	15	20	20	10	3	6	10
300mm (12 inches)	300	200	25	15	20	20	10	3	6	10

T. M. = Transverse Movement
A. E. = Axial Elongation

A. C. = Axial Compression
A. M. = Angular Movement

* Although allowable movements are given, do not allow them for axial elongations when installing joints for suction purpose.

OPERATING CONDITIONS



- Applicable Fluids:
Water, Hot Water, Sea Water, Weak Acid, Weak Alkaline, etc.
- Apply within operating conditions in pressure and temperature.

NOTES

1. Information in the above table is for single displacement only. In case of complex displacement, follow the below expression.

$$C. EL (C) = A. EL (C) \times \frac{A. E. - E}{A. E.} \times \frac{A. A. M. - A. M.}{A. A. M.}$$

- C. EL (C) = Correct Elongation (Compression)
- A. EL (C) = Allowable Elongation (Compression)
- A. E. = Allowable Eccentricity
- E = Eccentricity
- A. A. M. = Allowable Angular Movement
- A. M. = Angular Movement

2. Install the joint according to the above given allowable dimensions.

* The contents of this literature are subject to change without notice.

AGENT

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INSTALLATION INSTRUCTION

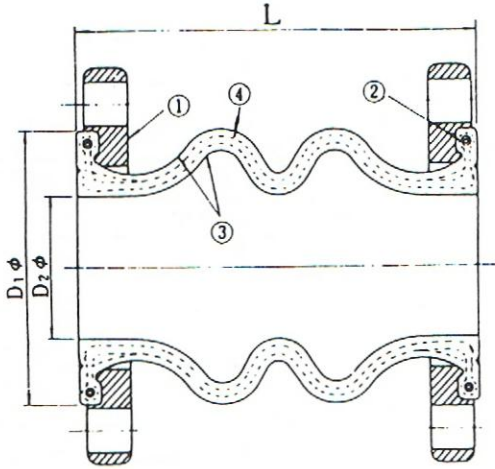
When control units are required to assist with the installation of joint, refer to the below table.

Max. Working Pressure	Size		
	32 - 100A	125A	150 - 300A
10kgf/cm ²	NO	NO	YES
16, 20kgf/cm ²	NO	YES	YES

NOTES

1. Always check for the suitability of the operating conditions when installing the joint.
2. When installing the joint, check for cracks on rubber body surface, especially after a long period of storage.
3. Do not install joints at full limits of all allowable movements simultaneously.
4. In case of joint displacement, be aware of external objects (especially those with sharp edges) which may damage the rubber body.
5. Keep away from heating source when install. Cover the joint with protection sheet to free from any harm of spark resulted from welding, pre-arcing and grinding near the spot of joint installation.
6. If oils, fats, organic solvent (e.g. thinner, toluene), acid or alkali are adhered, wipe them off quickly.
7. Avoid direct exposure of sunlight in case of outdoor piping to prevent aging and deterioration of rubber.
8. In order to avoid elongation of the joint by the reaction force resulted from water pressure, fix pipes before and behind the joint.

STRUCTURE



Symbol	Part	Engineering Material
(1)	Flange	Mild Steel
(2)	Wire	Carbon Steel
(3)	Facing Rubber Liner Rubber	Special Synthetic Rubber
(4)	Reinforcing Fabric	Synthetic Fiber

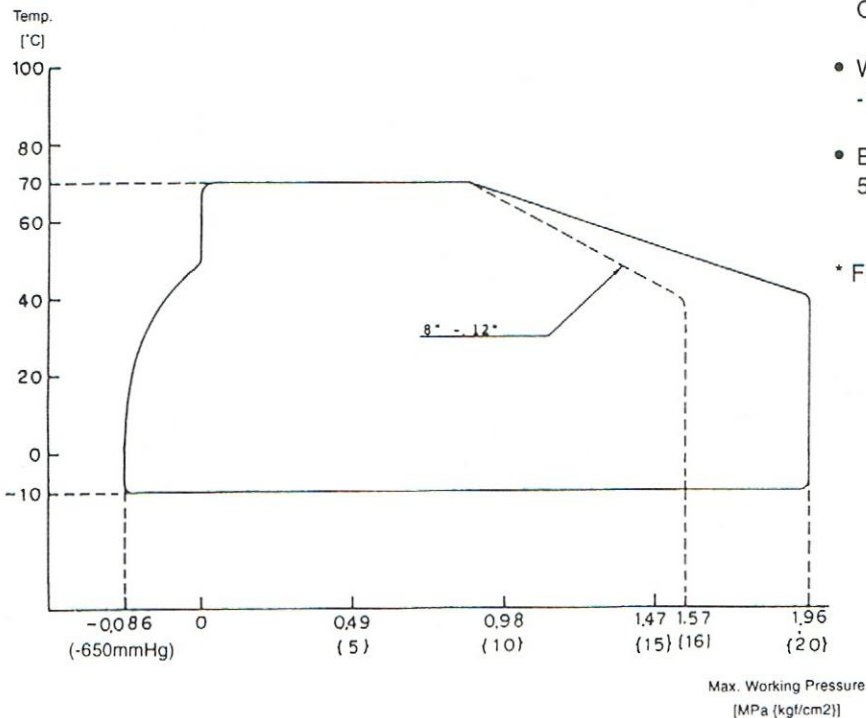
* Standard item employs JIS 10 kg/cm² flange. May be replaced with ANSI, BS, DIN, and other standard (drillings).

DIMENSION

		1 1/4(32)	1 1/2(40)	2(50)	2 1/2(65)	3(80)	4(100)	5(125)	6(150)	8(200)	10(250)	12(300)
Body	PLY	4	4	4	4	4	6	6	6	8	8	8
	L	175	175	175	175	175	225	225	225	325	325	325
	D _{1φ}	80	80	96	115	125	152	182	212	260	322	367
	D _{2φ}	40	40	50	65	75	100	125	150	200	250	300

OPERATING CONDITIONS

Use TWINFLEX under conditions specified in the below graph.



- Normal working pressure:
Below 6" size : Max. 20kgf/cm² at normal temp.
Over 8" size : Max. 16kgf/cm² at normal temp.
- Working temperature
-10 to 70 deg. C.
- Bursting pressure:
55kgf/cm² (780p. s. i.) or above at normal temp.

* For high temp. application, please consult us.

- Applicable fluids: water, warm water, sea water, weak acids, alkalines, etc. (Other kinds of fluids may be applicable with the change of the composition or constituents of rubber. For details, please consult us.)

ALLOWABLE MOVEMENTS IN OPERATION

Nominal bore	Transverse movement	Axial elongation	Axial compression	Angular movement	Installing Allowance			
					T. M.	A. E.	A. C.	A. M.
1 ¹ / ₄ (32)	20 (mm)	10 (mm)	20 (mm)	30°	8 (mm)	3 (mm)	6 (mm)	10°
1 ¹ / ₂ (40)	20	10	20	30°	8	3	6	10°
2 (50)	20	10	20	30°	8	3	6	10°
2 ¹ / ₂ (65)	20	10	20	30°	8	3	6	10°
3 (80)	20	10	20	30°	8	3	6	10°
4 (100)	25	15	30	30°	10	3	6	10°
5 (125)	25	15	30	30°	10	3	6	10°
6 (150)	25	15	30	30°	10	3	6	10°
8 (200)	30	20	40	30°	12	3	6	10°
10 (250)	30	20	40	30°	12	3	6	10°
12 (300)	30	20	40	30°	12	3	6	10°

- 1) T. M. = Transverse Movement A. C. = Axial Compression
 A. E. = Axial Elongation A. M. = Angular Movement
- 2) Although allowable movements are given, no allowance for elongation is recommended when installing the joint.
- 3) Install the joint following the given allowable dimensions.

NOTES

1. Information in the above table are for single displacement only. In case of complex displacement, follow the below expression.

$$C. EL (C) = A. EL (C) \times \frac{A. E. - E}{A. E.} \times \frac{A. A. M. - A. M.}{A. A. M.}$$

- C. EL (C) = Correct Elongation (Compression)
 A. EL (C) = Allowable Elongation (Compression)
 A. E. = Allowable Eccentricity
 E = Eccentricity
 A. A. M. = Allowable Angular Movement
 A. M. = Angular Movement

TWINFLEX

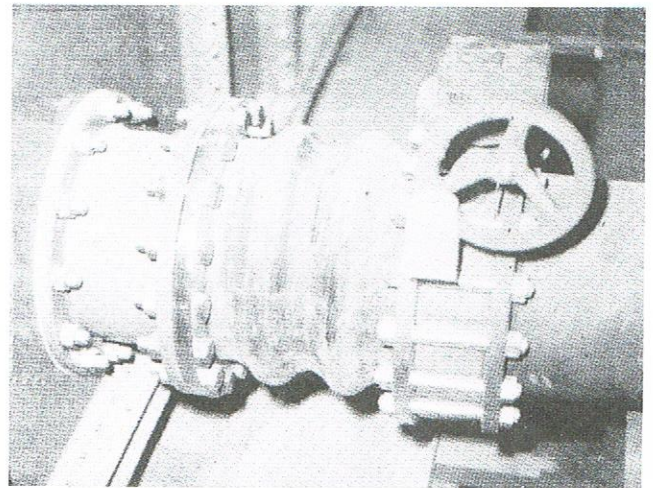
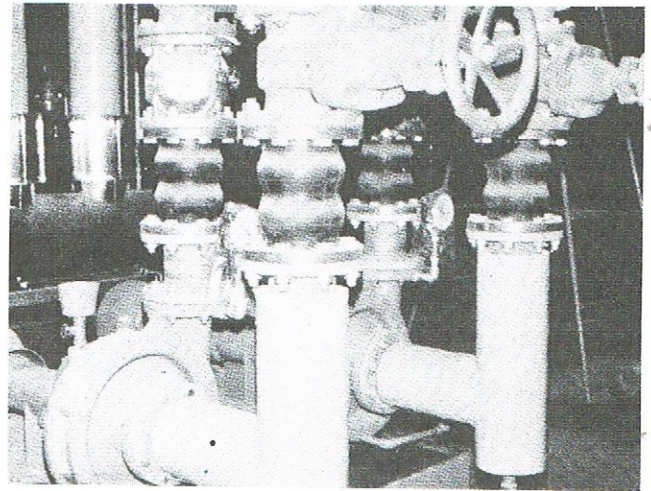
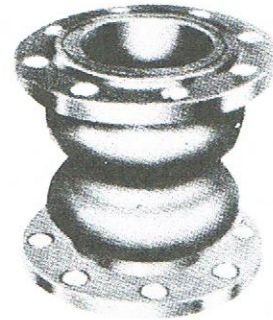
TWIN-SPHERE RUBBER JOINT with Floating Flange

FEATURES

- Withstands high pressures
The excellent molding technique combined with tough chemical fibers gives TWINFLEX an outstanding pressure withstandability. It can withstand a bursting pressure of over 780p. s. i. (55kgf/cm²) and a maximum working pressure of 300p. s. i. (20kgf/cm²).
- Allows greater compression, elongation, and angular movement.
- Fit for suction and delivery (discharge).
- Outstanding in absorbing thermal expansion.
- Highly effective to eliminate sound and vibration.
- Excellent in resisting the effects of heat, water and weathering etc.

Other advantages.

- 1) Neither gasket nor packing is needed.
- 2) Mass production makes comparatively low prices possible.
- 3) Fit for use as both expansion and flexible joint.
- 4) A good insulator to electricity.



TYPICAL APPLICATIONS

- (1) Pressure piping systems for water and warm water used in building equipment and general industrial plants, etc.
 - (2) Pump lines and turbine lines used for power generation plants, industrial machinery and universal pump blowers, etc.
 - (3) Feed-water and drainage lines for waterworks, sewerage and sanitary piping systems, etc.
 - (4) Oil pipe lines for industrial plants and shipbuilding yards, etc.
- Others: This connector has a wide range of applications in waste water disposal plants, mines and chemical plants, etc.