GALA Regulating Systems

# FLEXIBLE CONNECTOR

Catalogue2013

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## FLEXIBLE RUBBER JOINT



## FLEXIBLE HOSE



## EXPANSION JOINT

# Company Profile

**GALA - Extends Business on a Global Perspective.**
GALA company offers a wide range of products and systems in the field of valves, piping, and seismic isolation for applications ranging from equipment for office buildings, fire fighting, heating, water works, sewerage, marine, industrial to top fluid control. Our aim is meaningful contribution to society by providing comfort and safety through our products, technical skills and services!

**GALA - Professional Manufacturer of Industrial Valves**
GALA have variety products to meet customer demand of different valve. Designing, manufacture and sale of one-stop service is the company's core strengths.

**GALA products cover the following industry area:**
Water supply system, water treatment, food, chemical, cement, air-conditioning systems, industry engineering, nuclear power, papermaking, Petrochemical Industry, pharmaceutical, Powder Industry, steel industry, sugar refining, textiles and so on. GALA anti-pollution environmental protection industry is one of the major business. GALA provides various valve for wastewater processing and exhaust gas processing.

**GALA have wide variety of industrial valves, including following main products:**
- ♦ Fire Protection Valve
- ♦ Balancing Valve
- ♦ Butterfly Valve
- ♦ Gate Valve,Globe Valve,Check Valve,Ball Valve
- ♦ Strainer
- ♦ Flexible Rubber Joint
- ♦ Flexible Stainless Steel Hose, Expansion Joints

Other Valves and fittings are also available from GALA.

All products will be designed, manufactured and assembly by GALA.

# FLEXIBLE RUBBER JOINT

Single-Sphere Flexible Rubber Joint with Floating Flanges

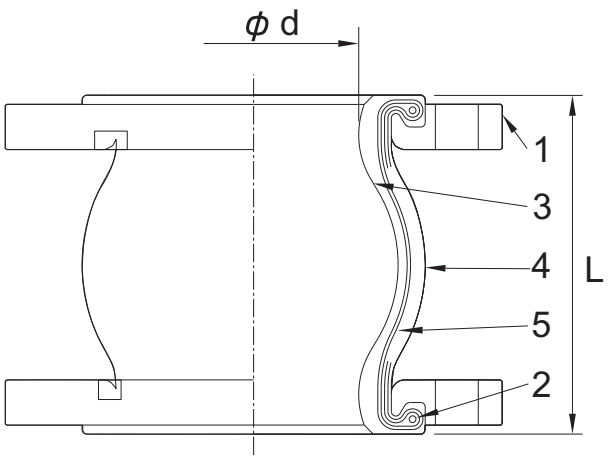
Fig.GFLEX-F1


## Features

**Achievements**
Having been used in more than 20 countries for over 30years, GALA brand products proudly demonstrate their popularily.

**Reliability**
Unparalleled durability is guaranteed by the distinctive and strict design standards of GALA

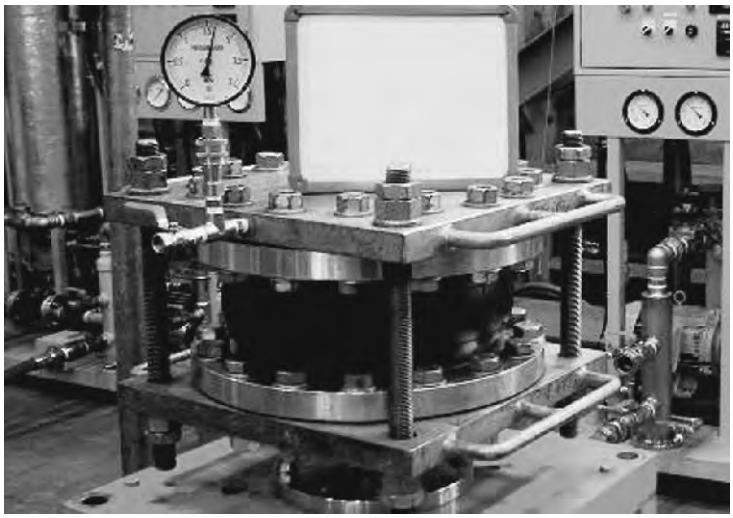
**Quality**
Manufactured in GALA's own factory under thorough control with ISO9000 quality management system.




## Materials

| No. | Parts | Materials |
|---|---|---|
| 1 | Flange | Ductile Iron (32 - 300)<br>Mild Steet (350-600) |
| 2 | Reinforcing Ring | Carbon Steel |
| 3 | Inner Rubber | EPDM |
| 4 | Outer Rubber | EPDM |
| 5 | Reinforcing Cord | Nylon |

Flanges on ANSI, BS, etc. available.
The flange material can be changed to Mild Steel, SUS304 and SUS316. Please consult us.
JIS16K / JIS20K Flanges are all Mild steel (32~600).

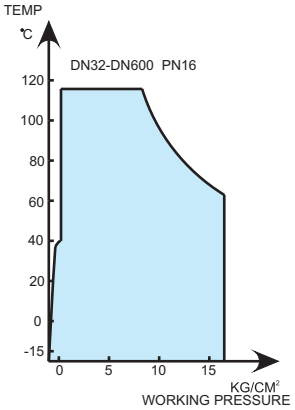


# FLEXIBLE RUBBER JOINT

Single-Sphere Flexible Rubber Joint with Floating Flanges

## Operating Conditions and Performance

Working Temperature vs. Working Pressure




## Applications

This product is mainly applicable for piping systems in commercial and industrial buildings and plants.

Applicable fluids are exclusively water including cold water, warm water, cooled water, sea water, etc.

This product can not be used for drinking water, pool water, oil, or boiled water.

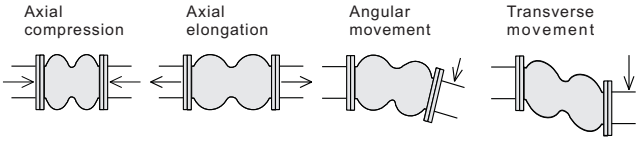
## Technical Parameters

| Size | Working Pressure | Bursting Pressure | Vaculty |
|---|---|---|---|
| DN32-DN300 | 1.6Mpa | 4.8Mpa | 750 mmHG |
| DN350-DN600 | 1.6Mpa | 4.8Mpa | 500 mmHg |

## Dimensions and Allowable Movements

| Nominal Dia. (A) | | Dimensions(mm) | | Mass(kg) | Allowable Movements (mm) | | | | Installation Tolerances(mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DN | inch | L | Φd | | T.M. | A.E. | A.C. | A.M.(°) | T.M. | A.E. | A.C. | A.M.(°) |
| 32 | 1-1/4 | 95 | 40 | 2.0 | 9 | 6 | 9 | 10 | 4 | 3 | 6 | 5 |
| 40 | 1-1/2 | 95 | 40 | 2.1 | 9 | 6 | 10 | 10 | 4 | 3 | 6 | 5 |
| 50 | 2 | 105 | 50 | 2.6 | 10 | 7 | 10 | 10 | 5 | 3 | 6 | 5 |
| 65 | 2-1/2 | 115 | 60 | 2.6 | 12 | 7 | 12 | 10 | 5 | 3 | 6 | 5 |
| 80 | 3 | 135 | 72 | 3.8 | 12 | 7 | 12 | 10 | 5 | 3 | 6 | 5 |
| 100 | 4 | 150 | 100 | 4.7 | 15 | 10 | 15 | 7 | 6 | 3 | 6 | 3 |
| 125 | 5 | 165 | 125 | 6.9 | 15 | 10 | 15 | 7 | 6 | 3 | 6 | 3 |
| 150 | 6 | 180 | 150 | 10 | 15 | 12 | 18 | 5 | 7 | 3 | 6 | 2 |
| 200 | 8 | 190 | 200 | 14 | 18 | 12 | 18 | 5 | 7 | 3 | 6 | 2 |
| 250 | 10 | 230 | 250 | 22 | 20 | 15 | 20 | 5 | 8 | 3 | 6 | 2 |
| 300 | 12 | 245 | 300 | 25 | 20 | 15 | 20 | 5 | 8 | 3 | 6 | 2 |
| 350 | 14 | 255 | 300 | 44 | 25 | 15 | 20 | 5 | 8 | 3 | 6 | 2 |
| 400 | 16 | 255 | 300 | 53 | 25 | 15 | 20 | 5 | 8 | 3 | 6 | 2 |
| 450 | 18 | 255 | 300 | 64.5 | 25 | 15 | 20 | 5 | 8 | 3 | 6 | 2 |
| 500 | 20 | 255 | 300 | 88 | 25 | 15 | 20 | 5 | 8 | 3 | 6 | 2 |
| 600 | 24 | 260 | 300 | 106 | 25 | 15 | 20 | 5 | 8 | 3 | 6 | 2 |

A.E.=Axial Elongation
T.M.=Transverse Movement
A.M.=Angular Movement
A.C.=Axial Compression




·Mass indicates only the case with JIS 10K (FCD450) flanges.
·Products should be used within the given allowable movements only.
·Tolerances for installation are included in the allowable movements (Allowable movements=Tolerances for installation+Operating movements).

·Please note that the information in the above table is for single movement only.
In case of complex movements, please do adjustment by using the following formula.

$$C.A.E.\ (C.A.C.) = A.A.E.\ (A.A.C) \times \left\{ 1 - \left( \frac{T.M.}{A.T.M} + \frac{A.M.}{A.A.M.} \right) \right\}$$

C.A.E. (C.A.C.):Correct Elongationg Movement(Correct Compression Movement)
A.A.E. (C.A.C.):Allowable Elongation Movement (Allowable Compression Movement)
A.T.M.:Allowable Transverse Movement
A.A.M.:Allowable Angular Movement

Example: In case of 100mm joint, if 10mm transverse movement is needed, then the correct elongation should be:

$$C.A.E. = 10 \times \left\{ 1 - \left( \frac{10}{15} + \frac{0}{7} \right) \right\} = 3.3mm$$

# FLEXIBLE RUBBER JOINT

Twin-Sphere Rubber Joint with Floating Flanges

Fig.GFLEX-F2


## Features

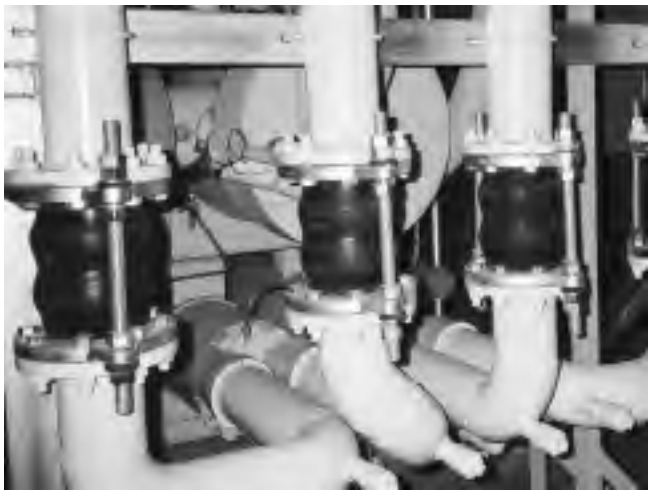
**Fit for suction and delivery (discharge)**

**Additional Features and Benefits**

1.Additional gaskets and/or packing are not required.
2.Simplified installation in all piping systems using easy alignment flanges.
3.Ability to absorb considerable elongation and compression of pipes caused by temperature changes prevents piping system breaks and equipment down time.
4.Absorbs the force created by pulsating water and reduces the effect of water hammer.

## Typical Applications

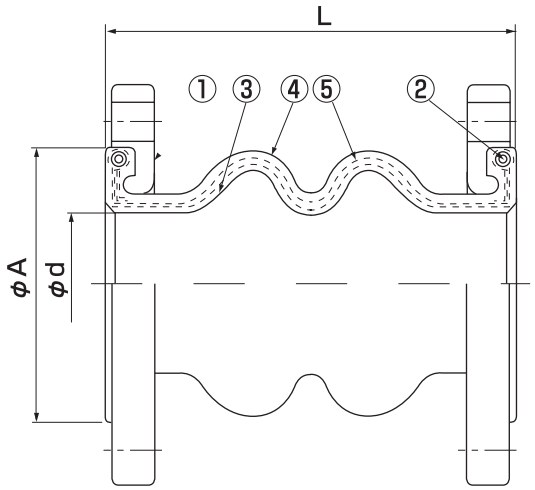
1.Cold and warm water pressure piping systems in commercial and industrial buildings and plants.
2.Pump and turbine piping used for power generation plants, industrial machinery and pump blowers.
3.Feed-water and drainage piping for water, wastewater, and sanitary system.



**Note: FLEXIBLE RUBBER JOINT is not applicable for use with oil, air gases, hot water supply lines and with pool water.**

# FLEXIBLE RUBBER JOINT

Twin-Sphere Rubber Joint with Floating Flanges




## Materials

| No. | Parts | Materials |
|---|---|---|
| 1 | Flange | Ductile Iron (32 - 300)<br>Mild Steet (350-600) |
| 2 | Reinforcing Ring | Carbon Steel |
| 3 | Inner Rubber | EPDM |
| 4 | Outer Rubber | EPDM |
| 5 | Reinforcing Cord | Nylon |

Flanges on ANSI, BS, etc. available.
The flange material can be changed to Mild Steel, SUS304 and SUS316. Please consult us.
JIS16K / JIS20K Flanges are all Mild steel (32~600).

## Technical Parameters

| | |
|---|---|
| Size | DN32-DN600 |
| Working Pressure | 1.6Mpa |
| Bursting Pressure | 4.8Mpa |
| Vaculty | 500 mmHg |

## Dimensions and Allowable Movements

| Nominal Dia. (A) | | Dimensions(mm) | | | Mass(kg) | Allowable Movements (mm) | | | | Installation Tolerances(mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DN | Inch | L | Φ A | Φ D | | T.M. | A.E. | A.C. | A.M.(°) | T.M. | A.E. | A.C. | A.M.(°) |
| 32 | 1-1/4 | 175 | 76 | 40 | 2.9 | 20 | 10 | 20 | 30 | 8 | 3 | 6 | 10 |
| 40 | 1-1/2 | 175 | 76 | 40 | 3.3 | 20 | 10 | 20 | 30 | 8 | 3 | 6 | 10 |
| 50 | 2 | 175 | 86 | 50 | 3.9 | 20 | 10 | 20 | 30 | 8 | 3 | 6 | 10 |
| 65 | 2-1/2 | 175 | 106 | 65 | 5.2 | 20 | 10 | 20 | 30 | 8 | 3 | 6 | 10 |
| 80 | 3 | 175 | 120 | 76 | 5.3 | 20 | 10 | 20 | 30 | 8 | 3 | 6 | 10 |
| 100 | 4 | 225 | 150 | 100 | 6.8 | 25 | 15 | 30 | 30 | 10 | 3 | 6 | 10 |
| 125 | 5 | 225 | 180 | 125 | 10 | 25 | 15 | 30 | 30 | 10 | 3 | 6 | 10 |
| 150 | 6 | 225 | 212 | 150 | 14 | 25 | 15 | 30 | 30 | 10 | 3 | 6 | 10 |
| 200 | 8 | 325 | 260 | 200 | 18 | 30 | 20 | 40 | 30 | 12 | 3 | 6 | 10 |
| 250 | 10 | 325 | 324 | 250 | 27 | 30 | 20 | 40 | 30 | 12 | 3 | 6 | 10 |
| 300 | 12 | 325 | 372 | 300 | 30 | 30 | 20 | 40 | 30 | 12 | 3 | 6 | 10 |
| 350 | 14 | 345 | 372 | 300 | 36 | 30 | 20 | 40 | 30 | 12 | 3 | 6 | 10 |
| 400 | 16 | 345 | 372 | 300 | 47 | 30 | 20 | 40 | 30 | 12 | 3 | 6 | 10 |
| 450 | 18 | 345 | 372 | 300 | 53 | 30 | 20 | 40 | 30 | 12 | 3 | 6 | 10 |
| 500 | 20 | 345 | 372 | 300 | 63 | 30 | 20 | 40 | 30 | 12 | 3 | 6 | 10 |
| 600 | 24 | 360 | 372 | 300 | 85 | 30 | 20 | 40 | 30 | 12 | 3 | 6 | 10 |

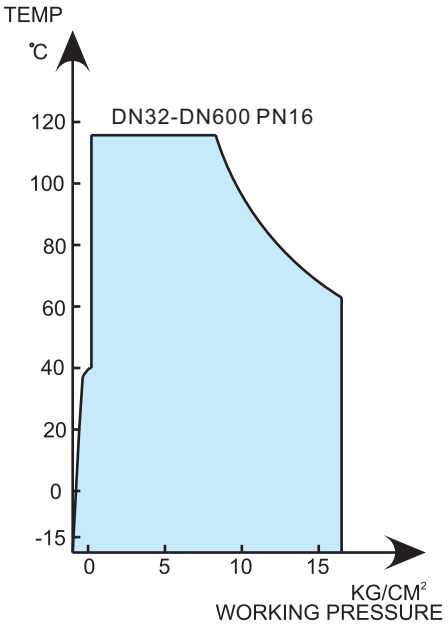
※T.M.=Transverse Movement
※A.E.=Axial Elongation
A.C.=Axial Compression
A.M.=Angular Movement

Mass is only for reference.
Use the products within the given allowable movements.
Tolerance for installation are included in the allowable movements (Allowable movments=Toleances for installation+Operating movements)
Please note that information in the above table are for single movement only. In case of complex movements. Some correction is required.

# FLEXIBLE RUBBER JOINT

Twin-Sphere Rubber Joint with Floating Flanges

## Operating Conditions




**Control Unit**

Use of the Control Unit option is recommended for the following conditions:

1.Adequate piping support can not be provided to counteract pressure forces.
2.Whenever transverse movement is expected that may exceed design specifications.
3.If there is a possibility that the joint will operate in a compression mode.

## Notes

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

$$C.EL(C) = A.EL(C) \times \left\{ 1-\left( \frac{A.T.M. - T.M.}{A.T.M.} \times \frac{A.A.M. - A.M.}{A.A.M.} \right) \right\}$$

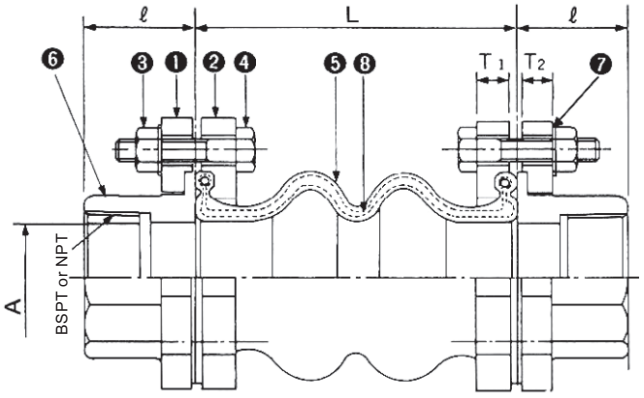
C.EL(C) =Correct Elongation(Compression)
A.EL(C) =Allowable Elongation(Compression)
A.T.M. = Allowable Transverse Movement
T.M =Transverse Movement
A.A.M. =Allowable Angular Movement
A.M. =Angular Movement

2. Install the joint according to the specified allowable dimensions.
3. Check suitability of joint to operating conditions prior to installation.
4. Prior to installation, check for cracks on the rubber body surface, especially after extended storage.
5. If there is movement in the joint, insure that the rubber joint body is not damaged by external objects.
6. Keep joint away from all sources of heat. If necessary, cover the joint with a protective sheet to restrict damage caused by welding sparks, grinding, etc.
7. Avoid contact of the rubber body with oils, fats, organic solvents (thinner, toluene, etc.), acid or alkali. Wipe immediately if rubber is contaminated with these items.
8. Secure piping before and after joint to limit elongation of the joint during operation.

# FLEXIBLE RUBBER JOINT

Screwed Type

Fig.GFLEX-GS




## Features

Flexible rubber joint can afford large deflection that you can hardly imagine. It has various functions and are highly reliable. Followings are the main features:

**High Efficiency for Vibration and Noise Isolation**
The twin sphere makes the spring constant small, decreases the body natural frequency and increases the efficiency of vibration absorption.

**Withstandability**
It can withstand a bursting pressure of over 5.39 Mpa and a maximum working pressure of 2.5 Mpa with the combination of excellent formative technique and strong chemical fibre.

**Large Displacement Absorption for Eccentricity, Axial Movement and Angular Movement**
Since it can absorb large displacement, Flexible rubber joint is most appropriate for the protection of pipe line system. For example, it can prevent the destruction of connecting pipe due to earthquake and subsidence of ground.

**Applicable for both Suction and Delivery**
The joint fits for both suction and delivery.

**Highly Reliable**
The packing parts are strengthened with steel reinforcing rings to prevent the rubber body from slipping out of the fitting sides of flanges.

**Convenient to install**
When limited space is allowed for installation, the free type sockets can be screwed separately to pipe before fitting in the joint.

## Materials

| No. | Parts | Materials |
|---|---|---|
| 1 | Flange-A | Ductile Iron |
| 2 | Flange-B | Ductile Iron |
| 3 | Nut | SS400 |
| 4 | Bolt | SS400 |
| 5 | Rubber | EPDM |
| 6 | Union Edge | Ductile Iron |
| 7 | Washer | SS400 |
| 8 | Reinforcing Cord | Nylon |

## Applications

Vibration isolation for small pumps and circular pumps.

Sewage disposal purifier line.

Vibration isolation for air-conditioners and pipes.

Not suitable for hot water.

# FLEXIBLE RUBBER JOINT

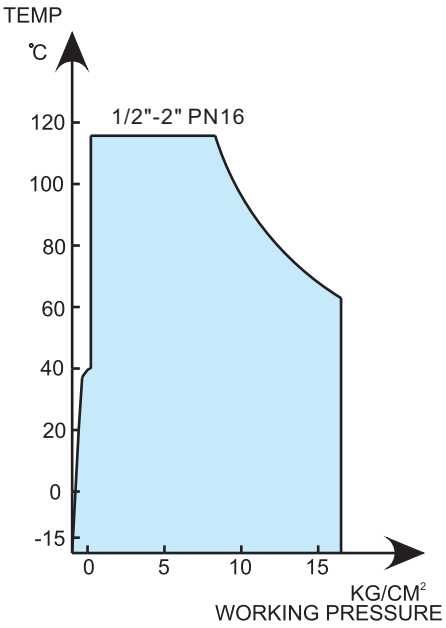
Screwed Type

## Dimensions and Allowable Movements

| Nominal Dia. | | Dimensions(mm) | | | Allowable Movements (mm) | | | | Installation Tolerances(mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DN | inch | A | L | ℓ | T.M. | A.E. | A.C. | A.M.(°) | T.M. | A.E. | A.C. | A.M.(°) |
| 15 | 1/2 | 25 | 120 | 30 | 15 | 10 | 15 | 20 | 6 | 3 | 4 | 10 |
| 20 | 3/4 | 25 | 120 | 30 | 15 | 10 | 15 | 20 | 6 | 3 | 4 | 10 |
| 25 | 1 | 25 | 120 | 30 | 15 | 10 | 15 | 20 | 6 | 3 | 4 | 10 |
| 32 | 1-1/4 | 40 | 175 | 35 | 20 | 10 | 20 | 30 | 8 | 3 | 6 | 10 |
| 40 | 1-1/2 | 40 | 175 | 35 | 20 | 10 | 20 | 30 | 8 | 3 | 6 | 10 |
| 50 | 2 | 50 | 175 | 40 | 20 | 10 | 20 | 30 | 8 | 3 | 6 | 10 |

T.M.=Transverse Movement
A.E.=Axial Elongation
A.C.=Axial Compression
A.M.=Angular Movement

## Operating Condition




## Notes

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

$$C.EL(C) = A.EL(C) \times \left\{ 1 - \left( \frac{T.M.}{A.T.M} + \frac{A.M.}{A.A.M.} \right) \right\}$$

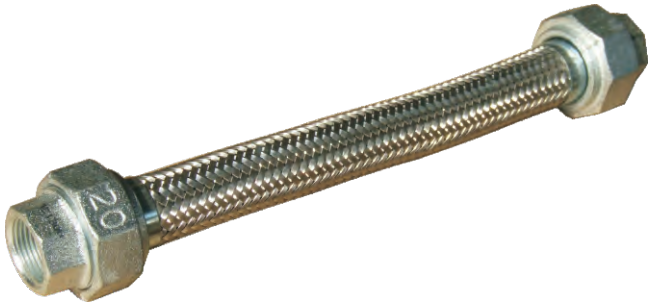
| | | | | | |
|---|---|---|---|---|---|
| C.EL( C ) | = | Correct Elongation (Compression) | T.M. | = | Transverse Movement |
| A.EL( C ) | = | Allowable Elongation (Compression) | A.A.M. | = | Allowable Angular Movement |
| A.T.M. | = | Allowable Transverse Movement | A.M | = | Angular Movement |

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

# FLEXIBLE HOSE

Union Type Flexible Hose

Fig.GF100



## Application

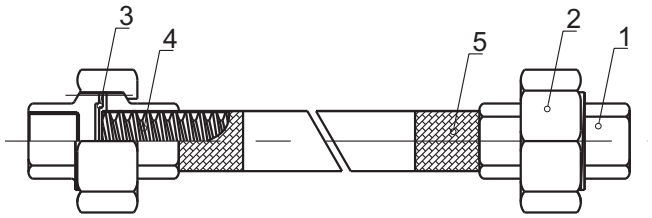
Absorption of the piping strain in the line of water, steam, oil, chemicals, etc., absorption of vibration and ground sinking.

## Max. Working Temperature

220℃

## Max. Working Pressure

16 and 25 kgf/cm$^2$




## Construction

| No. | Parts | Materials |
|---|---|---|
| 1 | Union Screw | Non-Asbestos / Stainless Stessl |
| 2 | Union Nut | Non-Asbestos / Stainless Stessl |
| 3 | Gasket | Fiber |
| 4 | Flexible Tube | Stainless Steel |
| 5 | Braid | Stainless Steel |

## Specification

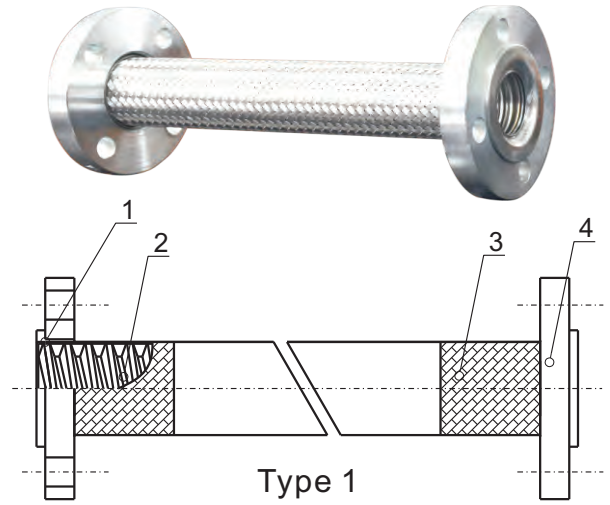
| Nominal Diameter | | Overall Length | Lateral Movement | Working Pressure |
|---|---|---|---|---|
| DN | inch | mm | mm | Kgf/cm$^2$ |
| 15 | 1/2 | 300 | 25 | 16 |
| 20 | 3/4 | 300 | 25 | 16 |
| 25 | 1 | 300 | 25 | 16 |
| 32 | 1-1/4 | 300 | 20 | 16 |
| 40 | 1-1/2 | 300 | 15 | 16 |
| 50 | 2 | 300 | 20 | 16 |

**Remarks:**
Special length available on request.
Higher pressure rating is available.

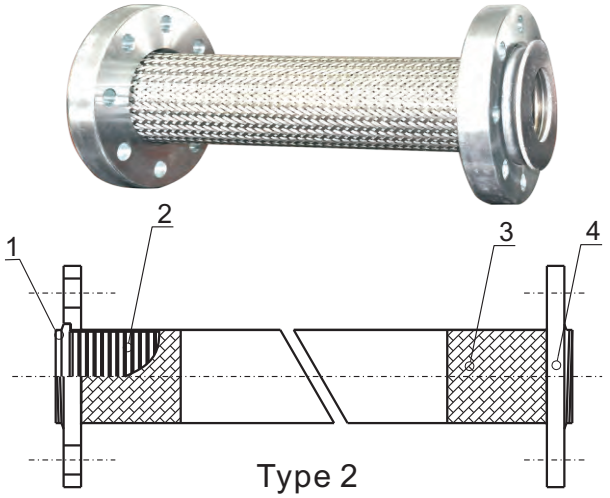
# FLEXIBLE HOSE

Flange Type Flexible Hose

Fig.GF600




Type 1




Type 2

## Application

Water, Steam, Turbines, Gas, Fuel Oil, Air, Etc.

## Max. Working Temperature

300℃

## Max. Working Pressure

16 and 25 kgf/cm$^2$

## Construction

| No. | Parts | Materials |
|---|---|---|
| 1 | Collar | Stainless Stessl |
| 2 | Bellow | Stainless Steel |
| 3 | Braid | Stainless Steel |
| 4 | Loose Flange | Carbon Steel / Stainless Stessl |

| No. | Parts | Materials |
|---|---|---|
| 1 | Ring | Carbon Steel |
| 2 | Bellow | Stainless Stessl |
| 3 | Braid | Stainless Stessl |
| 4 | Loose Flange | Carbon Steel / Stainless Stessl |

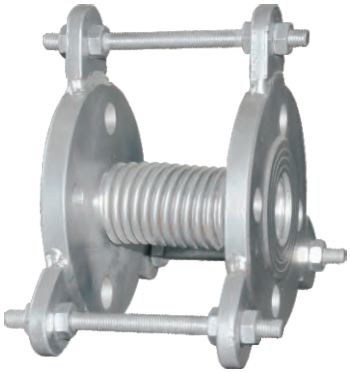
## Specification

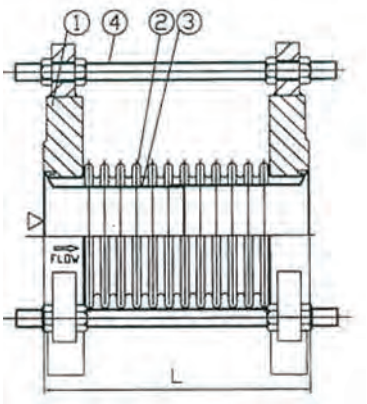
| Nominal Diameter | | Overall Length | Lateral Movement | | Working Pressure |
|---|---|---|---|---|---|
| | | | Type1 | Type2 | |
| DN | inch | mm | mm | mm | Kgf/cm$^2$ |
| 15 | 1/2 | 300 | 30 | - | 16 |
| 20 | 3/4 | 300 | 30 | 30 | 16 |
| 25 | 1 | 300 | 30 | 30 | 16 |
| 32 | 1-1/4 | 300 | 30 | 30 | 16 |
| 40 | 1-1/2 | 300 | 25 | 30 | 16 |
| 50 | 2 | 300 | 20 | 30 | 16 |
| 65 | 2-1/2 | 300 | 15 | 30 | 16 |
| 80 | 3 | 300 | 10 | 30 | 16 |
| 100 | 4 | 300 | 5 | 25 | 16 |
| 125 | 5 | 300 | - | 20 | 16 |
| 150 | 6 | 300 | - | 20 | 16 |
| 200 | 8 | 300 | - | 10 | 16 |
| 250 | 10 | 300 | - | 5 | 16 |
| 300 | 12 | 300 | - | 5 | 16 |

# EXPANSION JOINT

Stainless Steel Expansion Joint Complete With Shipping Rods

Fig.GF900






## Application

Water, Steam, Turbines, Gas, Fuel Oil, Air, Etc.

## Max. Working Temperature

220℃

## Max. Working Pressure

16 and 25 kgf/cm$^2$

## Construction

| No. | Parts | Materials |
|---|---|---|
| 1 | Flange | Carbon Steel |
| 2 | Bellows | Stainless Steel |
| 3 | Sleeve | Stainless Steel |
| 4 | Shipping Rod | Carbon Steel |

## Specification

| Nominal Diameter | | overall length | Axial Movement | Working Pressure |
|---|---|---|---|---|
| mm | inch | mm | mm | Kgf/cm$^2$ |
| 20 | 3/4 | 120 | ±15 | 16/25 |
| 25 | 1 | 120 | ±15 | 16/25 |
| 32 | 1-1/4 | 120 | ±15 | 16/25 |
| 40 | 1-1/2 | 150 | ±15 | 16/25 |
| 50 | 2 | 150 | ±15 | 16/25 |
| 65 | 2-1/2 | 150 | ±20 | 16/25 |
| 80 | 3 | 150 | ±20 | 16/25 |
| 100 | 4 | 200 | ±20 | 16/25 |
| 125 | 5 | 200 | ±20 | 16/25 |
| 150 | 6 | 200 | ±20 | 16/25 |
| 200 | 8 | 250 | ±20 | 16/25 |
| 250 | 10 | 250 | ±20 | 16/25 |
| 300 | 12 | 250 | ±20 | 16/25 |
| 350 | 14 | 250 | ±20 | 16/25 |
| 400 | 16 | 300 | ±20 | 16/25 |
| 450 | 18 | 300 | ±20 | 16/25 |
| 500 | 20 | 300 | ±20 | 16/25 |
| 600 | 24 | 300 | ±20 | 16/25 |

**Remarks:**

Others flange standard, larger size, various length & axial movement available on request.

GALA | Regulating Systems

# CAUTION

Technical date published in this catalogue have been developed from our design calculation, in-house testing, field reports provided by our customers and/or published official standard or specifications. They are good only to cover typical applications as a general guideline to users of GALA products introduced in this catalogue.

For any specific application, users are kindly requested to contact GALA for technical advice, or to carry out their own study and evaluation for providing suitability of the products to such an application. Failure to follow this request could result I property damage and/or personal injury, for which we shall not be liable.

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