# RUBBER EXPANSION JOINTS*

Senior Flexonics stocks and distributes a comprehensive range of rubber expansion joints for use in many tough, demanding industrial applications such as air conditioning, heating and ventilation systems, petrochemical, industrial process piping systems, power generation, marine services, paper, water and sewerage systems.

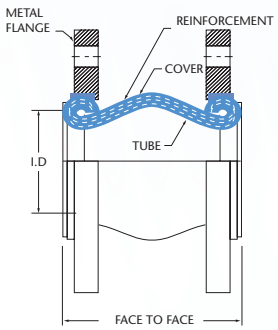
Senior Flexonics standard rubber expansion joints feature an engineered sphere design bellows which is inherently stronger than the hand fabricated older standard cylindrical shapes. Internal pressure within a sphere is exerted in all directions distributing forces evenly over a large area.

The spherical design "flowing arch" reduces turbulence, sediment build-up, thrust area and the effects of thrust on the piping system equipment when compared to the "high arch" design.

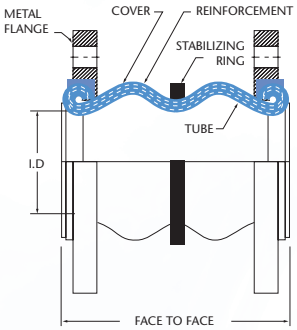
Standard stock units in styles 101 and 102 are constructed from EPDM rubber inner liner and outer cover, with an embedded nylon cord reinforcement and wire reinforced flange collars. Floating flanges allow for easy installation and alignment of bolt holes.

Other materials and styles of rubber flexible joints are available on request or can be designed to meet customers' specific requirements.

## STYLE 101 SINGLE SPHERE CONNECTORS
## STYLE 102 DUAL SPHERE CONNECTORS




STYLE 101




STYLE 102

## FEATURES:

- Precision molded design eliminates transmission of noise and vibration, cushions water hammer and smooths out pumping impulses and waterborne noises.
- Excellent for suction and discharge installations. The inherent design strength of the spherical arch allows for high operating pressure ( up to 232 PSIG). The nylon reinforcement permits the use of SERIES 100 rubber expansion joints under vacuum conditions (up to 25 in. of Hg).
- Easy installation on piping due to the elastic spherical body and rotating flanges

* Rubber Expansion Joints are not CRN registered.

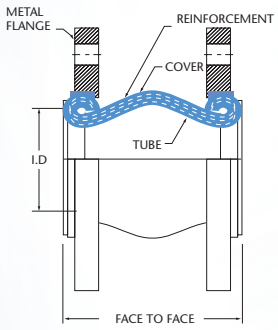
## APPLICATIONS:

- Pulp and Paper
- Petrochemical
- Shipbuilding
- Pumps
- Circulating Water Lines
- Chemical
- Power Plants
- Waste Water Treatment
- Steel and Mining
- HVAC
- Compressors
- Turbine to Condenser
- Refrigeration
- Sewage

# RUBBER EXPANSION JOINTS*

## DESIGN DATA:

### STYLE 101 SINGLE SPHERE CONNECTORS




STYLE 101

| Temperature | | Pressure | | | |
|---|---|---|---|---|---|
| | | Diameter: 1" ~ 12" (32 mm ~300 mm) | | Diameter: 14" and up (350 mm and up) | |
| (° F) | (° C) | (PSI) | (bar) | (PSI) | (bar) |
| 170 | 77 | 232 | 16 | 125 | 8 |
| 180 | 82 | 200 | 14 | 115 | 7.5 |
| 190 | 88 | 175 | 12 | 105 | 7 |
| 200 | 93 | 150 | 10 | 95 | 6 |
| 210 | 99 | 125 | 8 | 40 | 3 |
| 220 | 104 | 100 | 6 | 35 | 2 |
| 230 | 110 | 75 | 5 | 25 | 1 |

## DIMENSIONS, MOVEMENTS AND OPERATING CONDITIONS

| Diameter (in) | Diameter (mm) | Model Number | Allowable Movements | | | | | | | | | Pressure @ 70° F / 21°C | | Approx. Weight (lb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Face to Face (in) | Face to Face (mm) | Compression (in) | Compression (mm) | Extension (in) | Extension (mm) | Lateral (in) | Lateral (mm) | Angular (deg) | (PSI) | (bar) | |
| 1 1/2 | 40 | RJ-101-EPDM-024 | 5.90 | 150 | 1/2 | 12 | 3/8 | 9 | 1/2 | 12 | 15° | **232** | **16** | **6** |
| 2 | 50 | RJ-101-EPDM-032 | 5.90 | 150 | 1/2 | 12 | 3/8 | 9 | 1/2 | 12 | 15° | **232** | **16** | **7** |
| 2 1/2 | 65 | RJ-101-EPDM-040 | 5.90 | 150 | 1/2 | 12 | 3/8 | 9 | 1/2 | 12 | 15° | **232** | **16** | **10** |
| 3 | 80 | RJ-101-EPDM-048 | 5.90 | 150 | 1/2 | 12 | 3/8 | 9 | 1/2 | 12 | 15° | **232** | **16** | **12** |
| 4 | 100 | RJ-101-EPDM-064 | 5.90 | 150 | 5/8 | 15 | 3/8 | 9 | 1/2 | 12 | 15° | **232** | **16** | **16** |
| 5 | 125 | RJ-101-EPDM-080 | 5.90 | 150 | 5/8 | 15 | 3/8 | 9 | 1/2 | 12 | 15° | **232** | **16** | **21** |
| 6 | 150 | RJ-101-EPDM-096 | 5.90 | 150 | 5/8 | 15 | 3/8 | 9 | 1/2 | 12 | 15° | **232** | **16** | **26** |
| 8 | 200 | RJ-101-EPDM-128 | 5.90 | 150 | 5/8 | 15 | 3/8 | 9 | 1/2 | 12 | 15° | **232** | **16** | **37** |
| 10 | 250 | RJ-101-EPDM-160 | 7.87 | 200 | 3/4 | 19 | 1/2 | 12 | 3/4 | 19 | 15° | **232** | **16** | **50** |
| 12 | 300 | RJ-101-EPDM-192 | 7.87 | 200 | 3/4 | 19 | 1/2 | 12 | 3/4 | 19 | 15° | **232** | **16** | **73** |
| 14 | 350 | RJ-101-EPDM-224 | 7.87 | 200 | 3/4 | 19 | 1/2 | 12 | 3/4 | 19 | 15° | **150** | **10** | **94** |
| 16 | 400 | RJ-101-EPDM-256 | 7.87 | 200 | 3/4 | 19 | 1/2 | 12 | 3/4 | 19 | 15° | **150** | **10** | **123** |
| 18 | 450 | RJ-101-EPDM-288 | 7.87 | 200 | 3/4 | 19 | 1/2 | 12 | 3/4 | 19 | 15° | **150** | **10** | **133** |
| 20 | 500 | RJ-101-EPDM-320 | 7.87 | 200 | 3/4 | 19 | 1/2 | 12 | 3/4 | 19 | 15° | **150** | **10** | **154** |

Movements given are non-concurrent. Consult Senior Flexonics for concurrent movement capabilities.

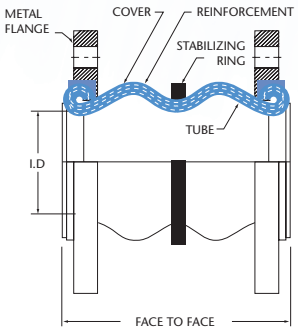
Pressure rating is based on °F operating temperature. Maximum operating temperature is 230°F.

At higher temperatures the pressure must be reduced as per chart.

Other sizes, styles and materials available upon request.

* Rubber Expansion Joints are not CRN registered.

## DESIGN DATA:
### STYLE 102 DUAL SPHERE CONNECTORS




STYLE 102

| Temperature | | Pressure | | | |
|---|---|---|---|---|---|
| | | Diameter: 1″ ~ 12″ (32 mm ~300 mm) | | Diameter: 14″ and up (350 mm and up) | |
| (° F) | (° C) | (PSI) | (bar) | (PSI) | (bar) |
| 170 | 77 | 232 | 16 | 125 | 8 |
| 180 | 82 | 200 | 14 | 115 | 7.5 |
| 190 | 88 | 175 | 12 | 105 | 7 |
| 200 | 93 | 150 | 10 | 95 | 6 |
| 210 | 99 | 125 | 8 | 40 | 3 |
| 220 | 104 | 100 | 6 | 35 | 2 |
| 230 | 110 | 75 | 5 | 25 | 1 |

## DIMENSIONS, MOVEMENTS AND OPERATING CONDITIONS

| Diameter (in) | (mm) | Model Number | Allowable Movements | | | | | | | | | | Pressure @ 70° F / 21°C | | Approx. Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Face to Face (in) | (mm) | Compression (in) | (mm) | Extension (in) | (mm) | Lateral (in) | (mm) | Angular (deg) | | (PSI) | (bar) | (lb) |
| 1 1/2 | 40 | RJ-102-EPDM-024 | 6.88 | 175 | 1.97 | 50 | 1.18 | 30 | 1.38 | 35 | 40° | | **232** | **16** | **6** |
| 2 | 50 | RJ-102-EPDM-032 | 6.88 | 175 | 1.97 | 50 | 1.18 | 30 | 1.38 | 35 | 40° | | **232** | **16** | **8** |
| 2 1/2 | 65 | RJ-102-EPDM-040 | 6.88 | 175 | 1.97 | 50 | 1.18 | 30 | 1.38 | 35 | 40° | | **232** | **16** | **11** |
| 3 | 80 | RJ-102-EPDM-048 | 6.88 | 175 | 1.97 | 50 | 1.18 | 30 | 1.38 | 35 | 40° | | **232** | **16** | **13** |
| 4 | 100 | RJ-102-EPDM-064 | 8.85 | 225 | 2.25 | 57 | 1.38 | 35 | 1.57 | 40 | 35° | | **232** | **16** | **18** |
| 5 | 125 | RJ-102-EPDM-080 | 8.85 | 225 | 2.25 | 57 | 1.38 | 35 | 1.57 | 40 | 35° | | **232** | **16** | **22** |
| 6 | 150 | RJ-102-EPDM-096 | 8.85 | 225 | 2.25 | 57 | 1.38 | 35 | 1.57 | 40 | 35° | | **232** | **16** | **28** |
| 8 | 200 | RJ-102-EPDM-128 | 12.79 | 325 | 2.48 | 63 | 1.38 | 35 | 1.77 | 45 | 30° | | **232** | **16** | **45** |
| 10 | 250 | RJ-102-EPDM-160 | 12.79 | 325 | 2.48 | 63 | 1.38 | 35 | 1.77 | 45 | 30° | | **232** | **16** | **58** |
| 12 | 300 | RJ-102-EPDM-192 | 12.79 | 325 | 2.48 | 63 | 1.38 | 35 | 1.77 | 45 | 30° | | **232** | **16** | **83** |
| 14 | 350 | RJ-102-EPDM-224 | 13.77 | 350 | 1.57 | 40 | 1.18 | 30 | 1.18 | 30 | 20° | | **150** | **10** | **107** |

Movements given are non-concurrent. Consult Senior Flexonics for concurrent movement capabilities.
Pressure rating is based on °F operating temperature. Maximum operating temperature is 230°F.
At higher temperatures the pressure must be reduced as per chart.
Other sizes, styles and materials available upon request.

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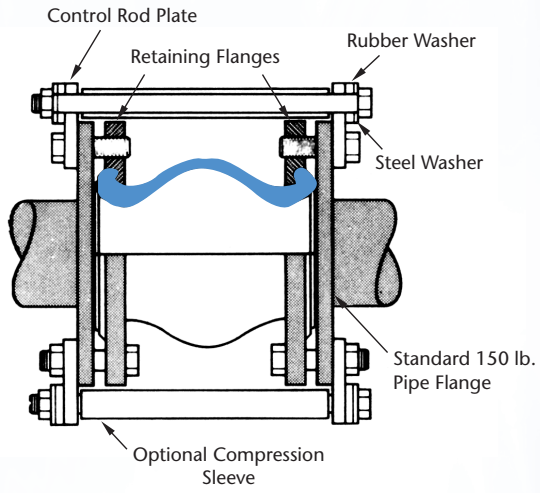
## CONTROL UNITS

Control Rod/Units are designed to absorb static pressure thrust developed at the expansion joint. When used in this manner, control unit assemblies are an additional safety feature, minimizing possible failure of the expansion joint or damage to the equipment.

1. **Anchored Systems:** Control unit assemblies are not required in piping systems that are anchored on both sides of the expansion joint, providing piping movements are within the rated movements.

2. **Unanchored Systems:** Control Unit assemblies are always recommended in unanchored systems. Additionally, control unit assemblies must be used when the maximum pressure exceeds the limit shown in the table below, or the movement exceeds the rated movements.

3. **Spring Mounted Equipment:** Control unit assemblies are always recommended for spring mounted equipment. Control units must be used when the maximum pressure is higher than the ratings shown in the table below, or the movement exceeds the rated movements.




Control Rod Unit must be installed when pressure (test, surge, operating) exceeds the rating below.

| SIZE (ins.) | STYLE 101 (PSIG) | STYLE 102 (PSIG) |
|---|---|---|
| 1-4 | 150 | 150 |
| 5-10 | 135 | 135 |
| 12-14 | 90 | 90 |
| 16-24 | 45 | 45 |

Custom fabricated joints available in the following profiles:

| Style | Profile |
|---|---|
| RJ-TU100 | OPEN DOUBLE ARCH - THREADED UNIONS |
| RJ-101W | OPEN SINGLE WIDE ARCH |
| RJ-201 | SINGLE OPEN ARCH |
| RJ-202 | DOUBLE OPEN ARCH |
| RJ-203 | TRIPLE OPEN ARCH |
| RJ-204 | QUADRUPLE OPEN ARCH |
| RJ-201F | SINGLE FILLED ARCH |
| RJ-202F | DOUBLE FILLED ARCH |
| RJ-203F | TRIPLE FILLED ARCH |
| RJ-204F | QUADROUPLE FILLED ARCH |
| RJ-301W | SINGLE WIDE ARCH |
| RJ-302W | DOUBLE WIDE ARCH |
| RJ-303W | SINGLE WIDE OPEN ARCH |
| RJ-401LP | SINGLE LOW PROFILE OPEN ARCH HIGH PRESSURE |
| RJ-401SR | SINGLE LOW PROFILE OPEN ARCH HIGH PRESSURE |
| RJ-CJ-100 | SINGLE ARCH CONCENTRIC REDUCER |
| RJ-CR-100 | SINGLE ARCH LOW PRESSURE |
| RDC-01 | A 1/4" THICK CIRCULAR RUBBER DUCT CONNECTOR (AVAILABLE AS CONCENTRIC OR ECCENTRIC REDUCING) |
| RPC-00 | PUMP CONNECTOR - SMOOTHE BORE - NO ARCH (AVAILABLE AS CONCENTRIC OR ECCENTRIC REDUCING) |

Fabricated joints available in the following materials:

| Style | Profile |
|---|---|
| Neoprene | CR |
| Buna | NB |
| Natural Rubber | NR |
| Butyl | CI |
| Hypalon | CS |
| EPDM | EPDM |
| Viton | FK |
| PTFE | PTFE |
| Silicon | SI |

Other sizes, styles and materials available upon request.

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