MERCER RUBBER COMPANY PRODUCT OVERVIEW

The Mercer Rubber Company was started in 1865 as a small factory on Mercer Street in Hamilton Square, New Jersey. The company specialized in molded rubber mechanical products, rubber sheeting and conveyor belting, and began building rubber expansion joints in the early 1930s. Mercer was completely owned by one family from its inception through 1982, when it became a sister to Mason Industries, one of the world's largest producers of molded rubber expansion joints. Since that time, it has been managed by professional engineers, and we believe our engineering staff is proportionately larger than any other similar company in the United States.

Hand-built flexible connectors for piping and duct work solve problems that cannot be handled by other materials. Rubber is more compliant and resilient than metal, fiberglass or plastic. The technology behind building shapes for industrial applications has grown as well. The United States chemical and industrial complex is in the forefront of synthetic rubber for chemical resistance and temperature extremes. Modern reinforcement fabrics and tire cord have completely replaced early designs using cotton and rayon. The end result has been a lighter, more flexible, higher pressure and temperature resistant product.

In this brief presentation we can only tell you where the products are used and some of the things we do. Later in this section, we provide the details and data in separate bulletins for each of the products mentioned here. However, even then, you would have to let us know about your application, so if need be, we could design and build to your exact requirements.

I am sure that if you need a rubber expansion joint, duct connector or industrial hose, we can help. Please let us hear from you.

THE MERCER RUBBER COMPANY

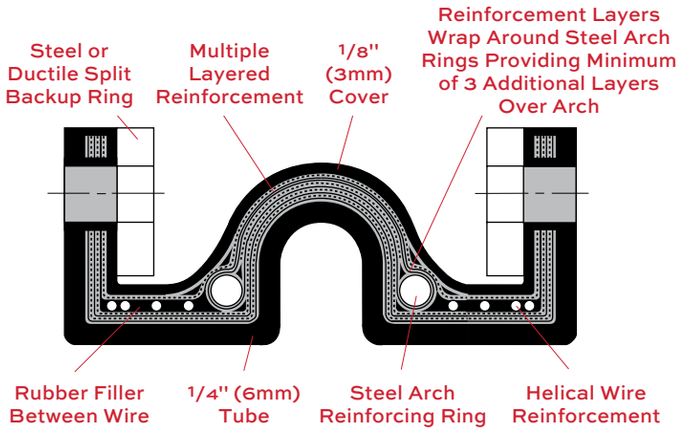
Norm Mason

WHAT IS A HAND-BUILT RUBBER EXPANSION JOINT?

Our preceding bulletin "Expansion Joint Production. A Step-by-Step Guide" breaks down the process in great detail. Should you never need an expansion joint, you might want to take a look anyway because the process is so interesting, but here is the overview version.

The illustration below is a typical cross section. The ends are normally rubber flanges that will mate with the piping system. The arch is the flexible element that allows for expansion, contraction transverse motion and misalignment. The sealing element is the rubber tube on the inside, and this is backed by multiple layers of fabric reinforcement. The straight portion is reinforced with steel wire and then fabric placed over that under the cover. While it is not absolutely mandatory, we find that the expansion joint holds up better if there are steel rings at the base of the arch to hold the arch shape. Since flange bolts would pull through the rubber flanges, we furnish steel backup rings. Ends can be built-in weld nipples, slip-on or any other mating arrangement.

TYPICAL EXPANSION JOINT CROSS SECTION



Regardless of whether the final shape is going to be round with a 1 arch, a rectangular ducting transition piece, elbow (tee or cross), eccentric or concentric reducer, or any other strange shape, we start with a steel form that matches the inside steel contours of the finished product. This form or mandrel is mounted in a slow turning foot controlled lathe, and the builder proceeds as follows:

1. Place a solid rubber arch form in the correct position on the mandrel. (After the joint is finished and cured, this rubber piece is pulled out to leave the arch opening.)
2. Cover the mandrel and the arch form with the rubber tube.
3. Add multiple plies of rubber impregnated tire cord, which forms the backing behind the tube.
4. Slide the arch reinforcing rings on from the ends and complete the wrapping of the reinforcement materials around these steel rings and up over the arch.
5. Add the helical wire reinforcement.
6. Add the rubber filler between the wire rings.
7. Add the fabric reinforcement over the wire.
8. Bring the end fabric and rubber construction up vertically at the ends, and clamp these flanges between steel mold plates.
9. Wrap the entirety securely with Nylon tape to force the many layers together and maintain the shape during the curing process.
10. Place the wrapped product in a steam pressure vessel (autoclave) and cure it for about 3 hours until completely vulcanized.
11. Remove the steel flange rings, nylon tape, etc. Drill the holes precisely, in the rubber flanges. Add the steel or ductile iron split backup rings. Pack properly and ship to the job site.

Hand-built expansion joints are also referred to as hand wrapped, because Nylon wrapping rather than a steel mold maintains the outer shape during the curing process.

An intermediate stage of building a 1 arch concentric reducer, 36" (914mm) and 24" (610mm) flanges and 48" (1220mm) face to face. A large difficult size.

Pulling back cover, tire cord reinforcement and tube prior to building the flanges on an eccentric reducer.

Pulling the tire cord reinforcement from one steel arch reinforcing ring, across the arch to the other ring adds to arch strength and shape stability.

Checking steel wire reinforcement spacing. This guarantees consistently high safety factors.

Forming the rubber flanges with steel flange rings after the Nylon tape has been wrapped over the expansion joint body to hold the shape during the curing process. Flanges must be built correctly to maintain seals and avoid pullout.

A range of products in the open autoclave before closing the door and steam curing for approximately 3 hours at 305° F (151°C).

VARIATIONS IN CONFIGURATIONS

MISMATCHED & OVERSEAS FLANGES

Expansion joints can be used as flange transition pieces. For example, a pump may have an ASA 300 flange, but the system continues with ASA 150 piping. The expansion joint is built with an ASA 300 one end, ASA 150 the other, so there is no need for another transition fitting.

Sometimes it is a European to an American standard where there might be a DIN 10 on one end and ASA 150 the other. We build expansion joints to match any Overseas flange system such as the Japanese JIS, the British PIN, the European DN, etc.

OFFSET JOINTS & UNPARALLEL FACES

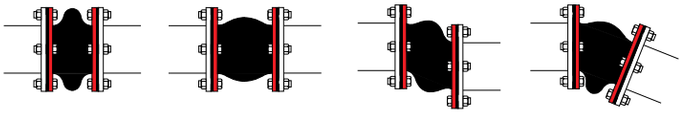
When retrofit work is in progress, we are often called on to provide expansion joints that match the piping system after years of settlement and shifting. When the expansion joints are built to fit conditions rather than forced into position, all normal movement capabilities are retained. The illustrations show offset expansion joints and joints with unparallel faces as manufactured to meet these conditions.

LONGER & SHORTER JOINTS

While we have a whole series of standard face to face dimensions, the rubber expansion joint industry is so old that we often replace joints that were never built to any standard. Thus we build joints that are longer or shorter to avoid repiping.

MOVEMENTS

Rubber expansion joints are capable of axial compression, axial expansion, transverse and angular movements. In many cases, three movements are all taking place at one time. Standard expansion joints have movement limits, but they can be increased by changing to multiple arches or single piece construction with an arch at each end and a long intermediate hose body.



TYPICAL PIPING LAYOUTS

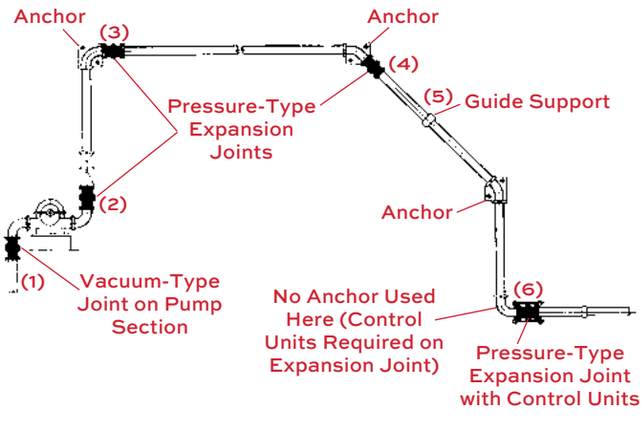
TYPICAL PIPE LINE

This simple illustration shows typical applications. While most pump inlets are under pressure, a pump used in lifting service must have a vacuum joint (1) on the pump suction. Once past the pump to the discharge, joints (2) are selected for pressure.

It is always best to install the expansion joint (2) on the equipment side of the valve, as it simplifies inspection or replacement. If the piping is anchored near the pump and by an anchor before the next expansion joint, there is no need for control rods.

Expansion joints (3) and (4) are designed to take the expansion or contraction between two anchors. Since all the thrust force will be taken by the anchors, no control rods are needed. If there is a long run between anchors, there will be movement at the intermediate points and the pipe should be supported by sliding guides. (5)

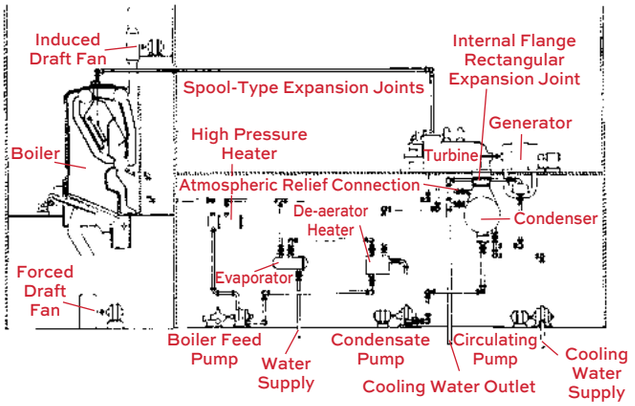
At location 6, the piping is not anchored on either side of the expansion joint. Control rods must be used to take the pressure thrust or the expansion joint will drive the piping and probably fail. When control rods are added, the expansion joint will always be in the full open position and will not accept axial motion. Expansion joints using control rods can still handle transverse and angular movement.



TYPICAL POWER PLANT

This small diagram is typical of a power plant. The steam lines going to the turbine are normally too hot for rubber joints and stainless steel or offsets handle the problem. By the time the steam has gone through the turbine it has cooled down before entering the condenser, and a U type internally flanged rubber expansion joint is commonly used underneath the turbine and before the condenser. If there is an atmospheric relief connection, it may also have a rubber expansion joint. The condensate coming out of the condenser is quite cool and rubber expansion joints should be used as needed leading to the condensate pump and in various parts of the circuit back to the boiler, whether through the boiler feed pump or directly from the condensate pump, but before the boiler preheater.

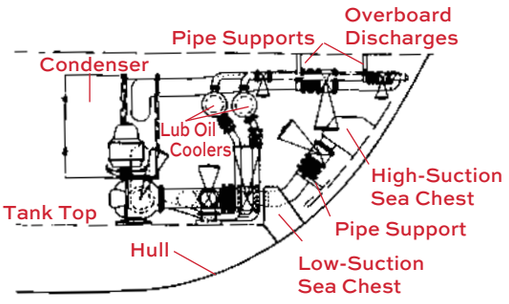
Shifting over to the cooling water supply, there are huge connections to river water or sea water, all of which are commonly fitted with rubber connections as are the cooling water outlets.



TYPICAL SHIP'S ENGINE ROOM

A ship's engine room is a miniature power plant. Rubber expansion joints to a sea chest are in the same locations as the condenser cooling water suction and discharge in a shore based plant. We also supply connections like bilge pump suction, etc., that may not have their land counterparts.

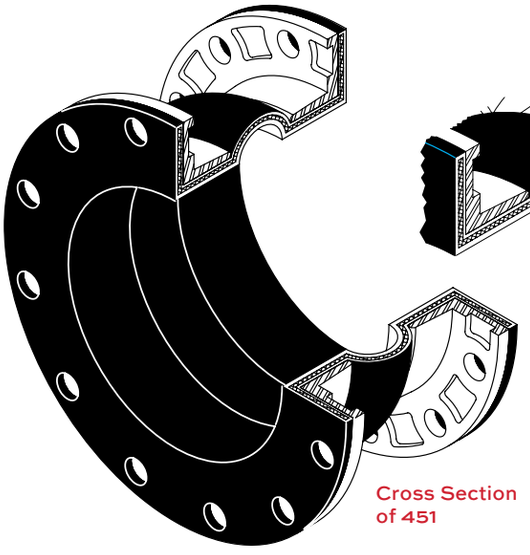
Unfortunately, this bulletin does not contain illustrations of a waste water sewage treatment plant. Mercer heavy-duty duct connectors (See page 9•51) are located in the ducts from the forced draft fans leading to the boilers and particularly in the high pressure, high temperature pressurized air ducts from the positive blowers that provide aeration to the sewage tanks. The hot air leads to unusually large duct expansion.



SERIES 450 EXPANSION JOINTS

Mercer Flexmore Series 450 is the most economical, full-pressure elastomeric expansion joint available. Tough fabric and tire cord plies are bonded between the tube and cover in a steel mold and then cured in a thermostatically controlled steam chamber. The product is uniform in both appearance and performance. A wide, low profile arch provides exceptional flexibility and virtually eliminates the need for filled arches in all but the most severe sludge and slurry applications. External integral flange reinforcing rings control both radial and arch swell. A variety of cover and tube elastomers are available, offering superior chemical, aging and temperature resistance from -30° to +250°F operating temperatures.

See Bulletin 450-MR2, pages 9·84 - 9·89



Optional Filled Arch Construction

Cross Section of 451

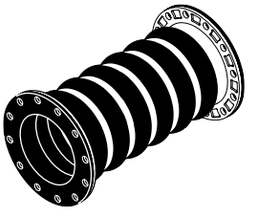
1 ARCH
Style 451

2 ARCH
Style 452

3 ARCH
Style 453

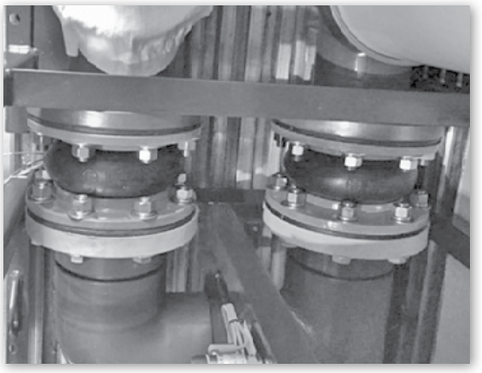
4 ARCH
Style 454

5 ARCH
Style 455



6 ARCH
Style 456

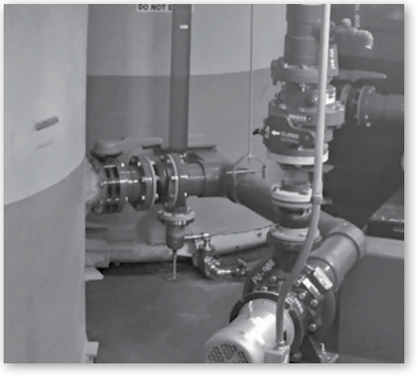
8" (200mm) diameter 1 arch 451 at a water treatment facility in Iowa.



Circulating water application ambient temperature 50 psi for 3" (80mm) diameter 1 arch 451 expansion joints.

12" (300mm) diameter 3 arch 453 expansion joints in cooling tower, high movement seismic application in California.

Various size 1 arch 451 expansion joints at a maintenance room in Colorado.



SERIES 500 AND 900 EXPANSION JOINTS

The cross section on page 9·44 is typical of Series 500 construction. The vast majority of expansion joints have 1 arch, but if the movements cannot be accommodated, we build them with 2, 3 or 4 arches, so the sum of the movements of each individual arch add up to the specifications. Multiple arches are a great help in misalignment and unparallel face situations as well.

MATERIALS

A high grade of Natural Rubber is still an excellent choice for most water applications below 180°F (82°C). DuPont™ Neoprene has the broadest range of chemical resistant capabilities and higher temperature resistance than Natural Rubber. Butyl and Sulfur cured EPDM are generally used for temperatures up to 250°F (121°C). Peroxide cured EPDM will handle 350°F (176°C) and has outstanding aging characteristics. Nitrile is superior for general oil resistance. Both Natural Rubber and Hypalon® are excellent for abrasion resistance, and DuPont™ Viton® has outstanding chemical properties as well as temperature tolerance to 400°F (204°C).

Reinforcement fabrics may be Nylon, Polyester or DuPont™ Kevlar® for much greater strength and stability, particularly at the higher temperatures.

Since we cut all of our own tire cord, the ply angle can be changed to provide either larger movements, greater pressure resistance or shape stability.

See Bulletin 500-MR7, pages 9·90 - 9·97

This bulletin is not meant to be specific. We have provided this outline just to give you a rough idea of the range of materials we use and the choices available to our engineers.

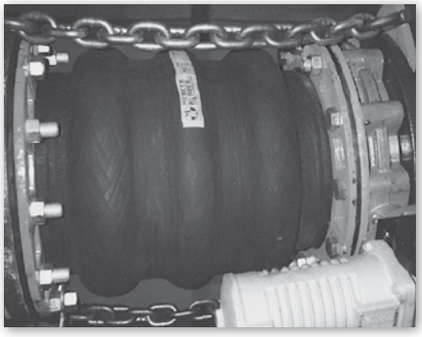
501 expansion joints are manufactured in sizes ranging from 1 1/2" to 12" (40 to 300mm) in diameter. For sizes 14" to 144" (350 to 3600mm) in diameter, we have the extra-wide arch 901. While rated at lower pressures, it has higher movement capabilities, a full vacuum rating and lower spring rates. Both are recommended for expansion and contraction in long pipe lines or in misalignment and displacement situations at equipment connections. These functions are in addition to high frequency vibration isolation.

1 ARCH
Style 501

2 ARCH
Style 502

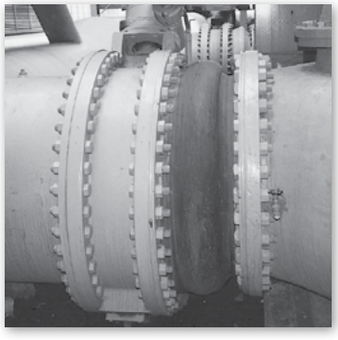
3 ARCH
Style 503

4 ARCH
Style 504

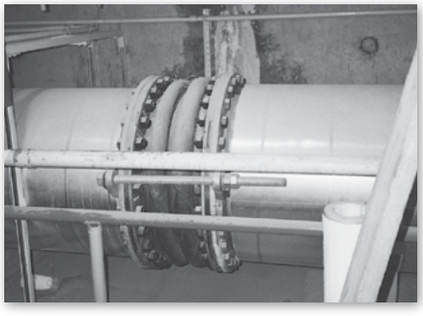


A very unusual application showing a 3 arch expansion joint used to maximize transverse movement. Rather than the conventional control rods, chains connect flange to flange to allow for very much improved transverse flexibility and movement.

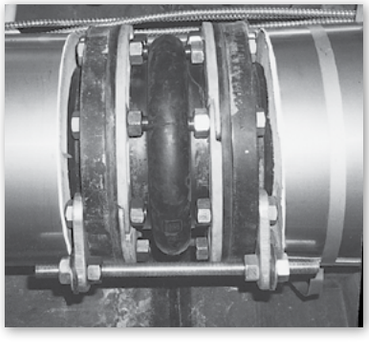
A huge 132" (3300mm) diameter 1 arch 501 under construction. Very few manufacturers have the equipment or the engineering staff to work to these diameters.



Typical 36" 1 arch expansion joint with ASA 150 flanges. Operating temperature about 180°F (82°C) at a pressure of 165 psi (11.6 Kg/cm²).



Typical 2 arch Series 502 expansion joint in a hot water line. In this application 2 arches are used to meet the specified movements.

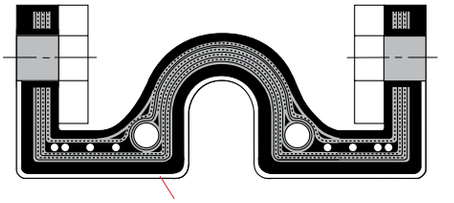


1 arch molded expansion joint in a hot water line. Temperature 215° F (101°C), pressure 165 psi (11.6kg/cm²). This is an unanchored application requiring the use of control rods. In this application nuts were used inside of the control rod plates as well to prevent inward movement. The primary function would be transverse motion and in many applications spherical washers are used under the nuts.

SERIES 700
TEFLON® LINED EXPANSION JOINTS

Series 700 Teflon® lined expansion joints are the Series 500 built over a preformed Teflon® tube. Since the Series 500 body provides the backing, we can withstand very high pressures and high temperatures. Teflon® lined expansion joints are used wherever the chemical content of the fluid is so corrosive as to be beyond the physical tolerance of a rubber material. They are also used in systems where conventional rubber might stand up quite well, but contamination must be avoided. We have built Series 700 joints as large as 60" (1500mm) in diameter.

Teflon® is a registered trademark of DuPont™.



Built-In Preformed Teflon® Liner

See Bulletin 700-MR6, pages 9·102 - 9·105

SERIES FCR500 AND FER500
CONCENTRIC AND ECCENTRIC REDUCERS

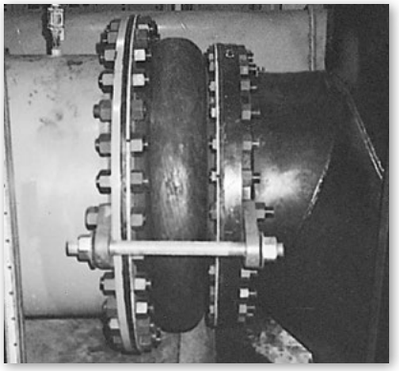
Virtually all piping systems go through changes in diameter either in the run or at the equipment connections. Since an expansion joint or flexible connector is needed anyway, it makes good sense to have the expansion joint serve the dual purpose of changing the piping diameter and handling the expansion, misalignment or vibration problem all at one time. Should you work with a straight connector, it means that in addition to the expansion joint, an expensive cast iron or steel reducer must be used for the piping transition. This would result in a need for additional space and add to the cost as well.

While we have published transition sizes, and face to face dimensions, it is seldom that the cataloged sizes are what is needed on the job site. We vary the face to face dimensions as well as the two flange sizes to fit the application.

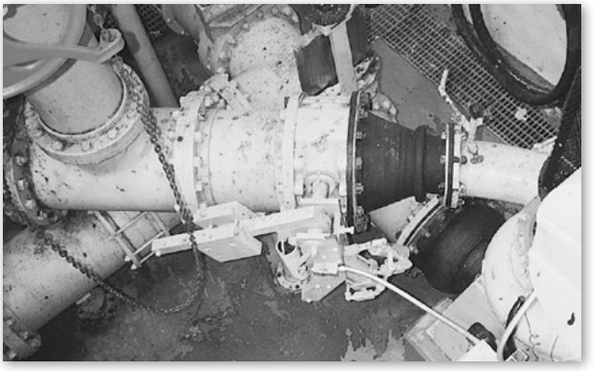
Concentric reducers are more common. The eccentric design is used primarily at pump inlets and outlets to provide smoother flow both in and out of the pump.

Since most of our competitors do not want to be involved with these difficult products, Mercer is very active in this market.

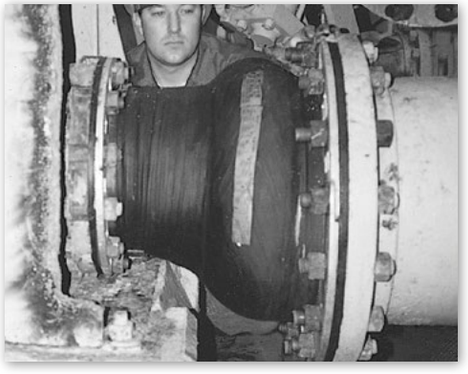
See Bulletin FR500-MR8, pages 9·98 - 9·101



Typical installation of a 24" x 18" (600 x 450mm) concentric reducer built with a continuous rather than a shaped arch. Location is unanchored and there was the need for control rods. Continuous spherical arches eliminate the need for filled arches in slurry applications and encourage smoother flow.



Another type of concentric reducer using a spool type 1 arch at the small diameter.



Measurements being taken for a retrofit.

The eccentric reducer was manufactured to the exact length with non-parallel flanges. Reducer after installation.

Industrial Hose

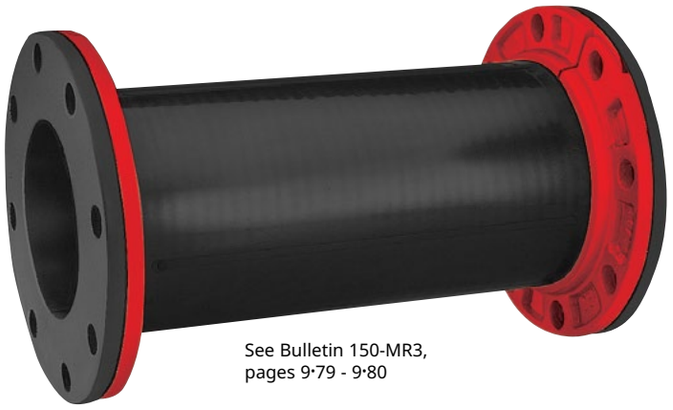
SERIES 150
VIBRAFLEX REINFORCED RUBBER PIPES

Vibraflex reinforced rubber pipe is often described as rubber flanged hose. The cross section is very similar to that of the straight portion of an expansion joint starting with the tube multi-layers of tire cord, spiral wire reinforcement or individual steel rings for very high pressures and greater flexibility. Cover plies protect the construction and the outside surface is a tough resilient cover.

While hoses are not specifically designed for expansion and compression, in effect the rubber carcass can stand some expansion and compression since none of the steel reinforcement runs parallel to the axis. Transverse movements are dependent on the length and rubber pipe is commonly used for misalignment problems or continuous transverse motion. They can be built with major offsets as well.

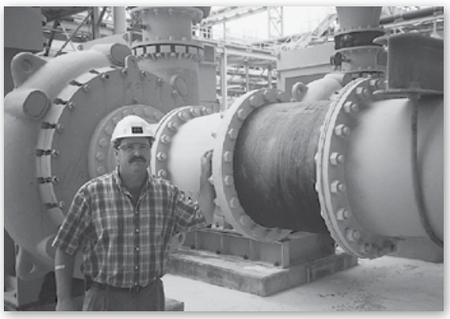
Our Vibraflex pipe utilizes all of the materials mentioned earlier, and we specialize in hoses for abrasive service. They may have Hypalon® liners, but more commonly pure gum rubber stock made to thicknesses of as much as 3/4" (19mm), particularly for the mining industry. We can match any flange or the hoses can be built with oversized cuff like slip-on ends for clamping or banding in place. Another common variation is built-in nipples for screw or welded connections. Some hoses are just simple slip-ons.

We are very proud to have manufactured hoses with arches at each end and built-in nipples as large as 72" (1800mm) in diameter and 8 ft (2.44m) long for transverse motion of plus or minus 8" (203mm). These hoses were buried deep under ground to supply water systems in cities as far removed as Bangkok.



See Bulletin 150-MR3, pages 9·79 - 9·80

Series 150 flexible hose installed in a cooling tower return line. Notice the major vertical displacement to compensate for the misaligned piping.



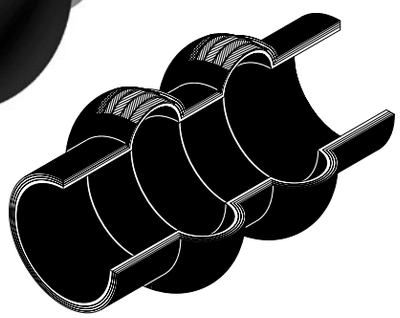
A 40" (1000mm) diameter Series 150 hose installed in the suction line, drawing river water into condenser cooling service.

SERIES 300
SLEEVE TYPE EXPANSION JOINTS

Series 300 is a sleeve type rubber expansion joints. This slip-on and lightweight construction represents the most cost-effective arrangement for low pressure applications. Mating flanges and hardware are not required, adding to the cost-effectiveness of this arrangement. The construction includes a high-grade tube, a seamless cover, multiple layers of high-strength tire cord and stainless steel worm gear clamps. Additionally, they are designed to absorb large all-directional movements, reduce noise and vibration and misalignments.

These joints are available in 1 arch, 2 arch, 3 arch, 4 arch, 5 arch and even 6 arches. Mercer specially designs these joints for seismic control by adding anti-squirm guides as shown in the photo below.

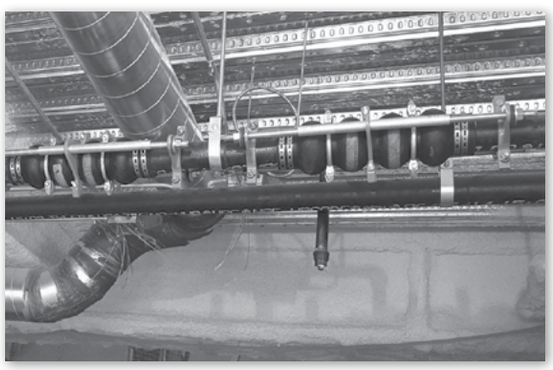
See Bulletin 300-MR4, pages 9·81 - 9·83



Available in Multiple Arches

FEATURES

- Versatile hand-built construction
- Available in custom elastomers and offset arrangements
- Economical slip-on design eliminates the need for mating flanges and hardware
- Extremely lightweight and flexible



4 arch 304 sleeve type expansion joints with anti-squirm guides for seismic application used for drainage in a California hospital.

Molded Expansion Joints

MOLDED RUBBER EXPANSION JOINTS

Spherical molded rubber expansion joints are entirely different. There is no wire reinforcement in the body, and the pressure is retained by the tire cord spanning across the body from anchors in each flange. They are very similar to truck tires without the tread.

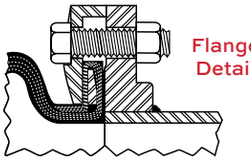
Spherical expansion joints are built straight. The curing process takes place in a steel mold clamped shut in a hydraulic press. Heat is introduced from plates on either side of the mold rather than by steam. An air bag is introduced in the center and pressurized to expand the body against the contours of the steel mold where it is vulcanized.

We manufacture these expansion joints using Nylon, Polyester or DuPont™ Kevlar® tire core. Our exclusive solid flange ring is clamped in place by the steel backup flanges. The built-in ring prevents the rubber end pulling out of the retention flange.

We manufacture this series in single and double spheres, as well as concentric reducers. In the sizes through 2" (50mm) they are built with screw on flanges.

Since these connectors are molded, there is a limitation on size, and face to face dimensions are fixed. The sealing principle is so effective, however, that we have hand-built this construction to very large diameters, as shown in the photograph below.

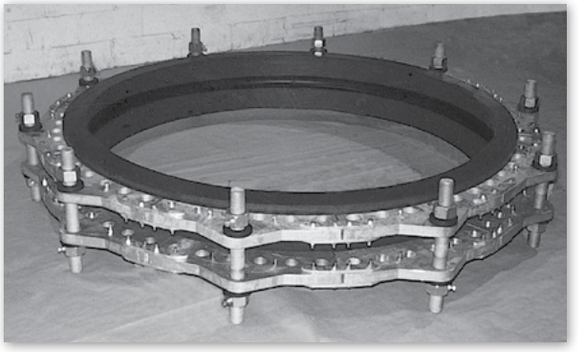
Molded expansion joints are kept in stock in Neoprene and EPDM. They can be furnished in Nitrile, Hypalon® or other materials as well.



1 ARCH
Threaded Ends
Safeflex SFU

1 ARCH
Masonflex MFEJ

See Bulletin NC-930,
pages 9·15 - 9·20



60" (1500mm) diameter hand-built SFEJ high pressure expansion joint.

CONCENTRIC
REDUCER
Safeflex SFDCR

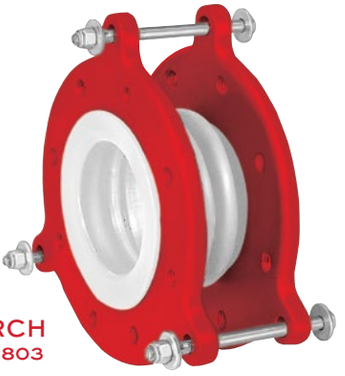
2 ARCH
Masonflex MFDEJ

SERIES 800
TEFLON® EXPANSION JOINTS

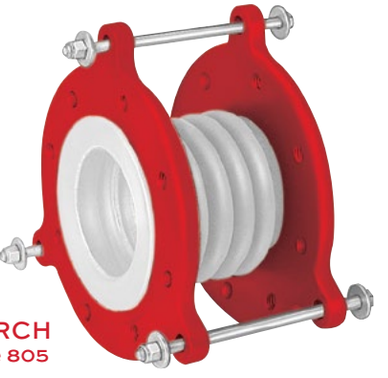
Teflon® expansion joints are always fixed dimension. They are molded in 2, 3 and 5 arch configurations. Series 800 is particularly popular in the chemical industry where they provide excellent service in relatively low temperature, low pressure systems. Standard construction includes control rods as illustrated, and all sizes through 12" (300mm) diameter are kept in stock.

See Bulletin TFE-20,
pages 9·106 - 9·107

2 ARCH
Style 802



3 ARCH
Style 803



5 ARCH
Style 805

Duct Connectors

Mercer duct connectors are not to be confused with wrap around Fiberglass or other light-weight materials used in heating and ventilating systems. Our hand-built duct connectors are another heavy duty industrial product. They are only used in high pressure, high temperature air applications or where the gas is some industrial by-product that is highly corrosive and the duct connector must be leak proof.

Duct connectors can be round or conical rectangular or square, fabricated as reducers or in some cases the transition piece from rectangular or square to round ducts. Flanged connectors are furnished with steel backup rings or plates, and where the outside exposure demands it, steel may be hot dipped galvanized or fabricated from stainless steel. Since there are no standard duct flanges, they are usually drilled to specific drawings. In some cases because the mating flanges cannot be properly measured or the existing holes follow no particular pattern, we furnish the assemblies with both the rubber and steel flanges undrilled for drilling in the field.

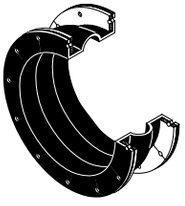
Rather than flanged ends, we often supply slip-on designs that are clamped or banded. Depending on the specified movements, the body of the expansion joint may have an arch or arches similar to piping expansion joints or they may be straight or ballooned.

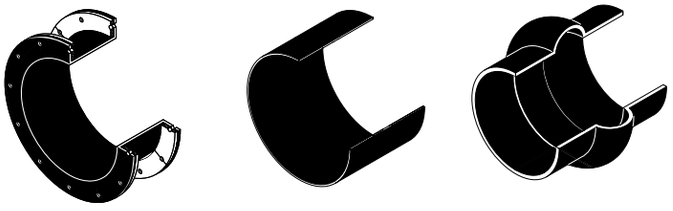
Mercer Rubber joints do not get up to high enough temperatures for applications in boiler breaching, but they are used in a temperature range as high as 400°F (204°C) and commonly located in the hot high pressure duct work in waste water and sewage treatment plants. They are used throughout the chemical industry, and we have supplied diameters as large as 132" (3300mm) for wind tunnels at both military and civilian research centers.

If you need an unusual duct connector, send the inquiry on to us. It is most likely we can build to your exact specifications and provide just what is needed.

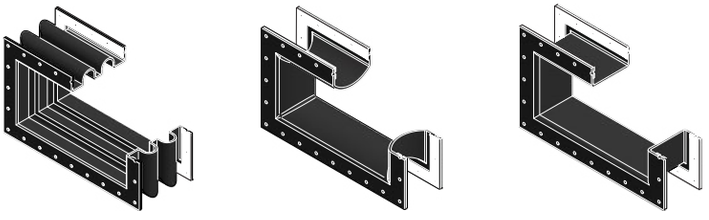
See Bulletin DJ-87, pages 9·115 - 9·118

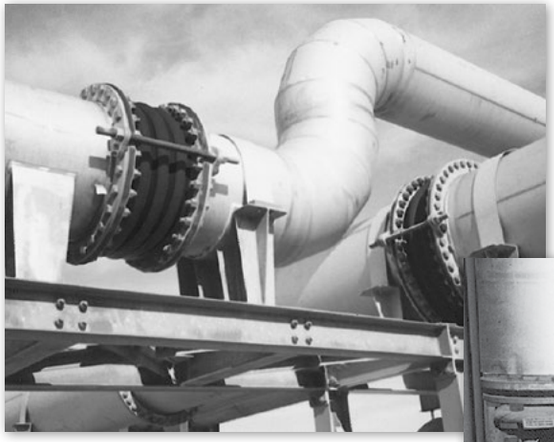
ROUND DUCT CONNECTORS



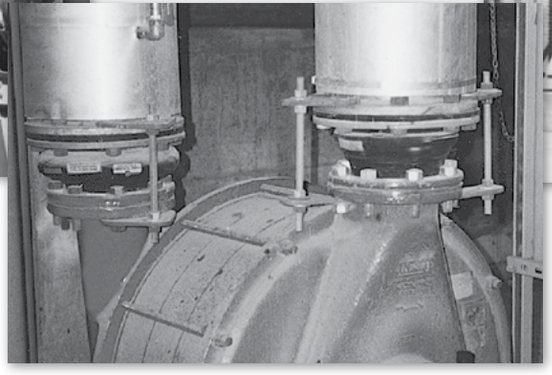


RECTANGULAR DUCT CONNECTORS





Round duct connectors installed in the duct work of a sewage treatment plant allow for major hot duct expansion.



Concentric reducers installed in the suction and discharge air connections of a positive displacement high pressure blower, reduce stress to the flanges and facilitate hook-ups.

A rectangular heavy duty flexible duct connector installed in the top horizontal discharge of a boiler forced draft blower. Pressure 12 psi (0.84kg/cm^2).

Stainless Steel Braided Annular Flexible Hoses

Stainless Steel Flexible Connectors contribute to the solution of vibration, noise, expansion and offset motion problems in piping systems. Assemblies are designed for both high and low temperatures, as well as high pressure and full vacuum.

Stock sizes include 1/2" (15mm) through 16" (400mm) pipe diameter. Temperature ranges are from below 0°F (-18°C) to 850°F (454°C) when using our standard 304 stainless steel. On rare occasions, when temperatures as high as 1500°F (816°C) are needed, Type 316 or 321 are available too. Most standard construction is single braided, but we can provide double braid for higher pressures or omit the braid for low pressure venting or exhaust applications.

Standard end fittings include a fixed ASA 150, carbon steel raised face plate flange on one end and a floating flange on the other. A floating flange is very important as twisting full strength pipe to line up bolt holes is not an issue, but torquing a stainless hose to make up for poor alignment can cause immediate or early failure. Other fittings include NPT Carbon Steel Nipples or Grooved Ends, as well as any combination. Metric threads and drillings are available for export applications.

Stock lengths vary from the minimum “Pump Connectors” to as many as three additional stock lengths for greater movements. Special lengths take a little longer.

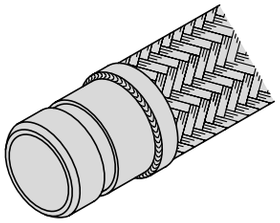
Commercial pricing pressure forces us to include the very short Nippled or Flanged Pump Connectors that range from 1/2" x 6 1/2" (15 x 165mm) thru 16" x 16" (400 x 400mm). These very short lengths are a travesty with a barely functional length of flexible hose connecting 2 long nipples. They have been shortened year after year from the old standards until no one dares make them shorter. We sell them when specified but recommend our longer lengths at a minor addition in cost, but a tremendous improvement in performance.

In addition to the equal ended flexible connectors, we also manufacture concentric reducers that act as a flexible transition piece between different sizes of piping, particularly at pump suction and discharge. They are usually used with an ASA 150 Carbon Raised Face Steel Plate Flange on one end and a Floating Flange on the other. Other configurations are available as well.

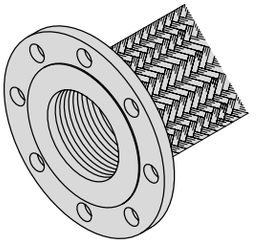
To complete this flexible connector offering, we stock bronze braided hoses with copper female ends for sweating into copper piping systems and the usual copper ended Freon connectors.

See Bulletin BH-29, pages 10·7 - 10·24

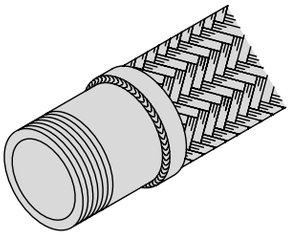
FITTING OPTIONS



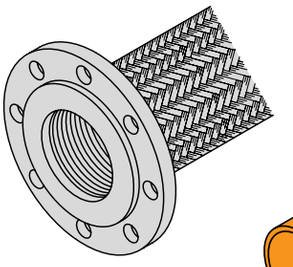
Grooved Weld Nipples



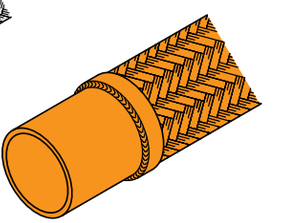
Raised Face Flanges



Threaded Nipples



Floating Flanges



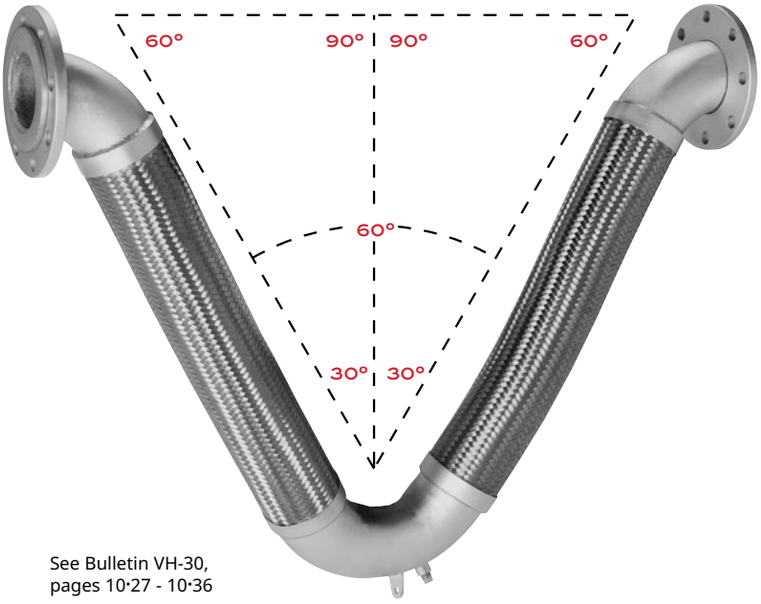
Female Copper Sweat Ends

Seismic "Vee" Assemblies

Many buildings are separated by expansion joints through the walls and floors. During an earthquake, the two adjacent parts resonate with relative motion of as much as ± 4" (102mm) in shear as well as toward and away from one another. Vertical motion is minimal. We have developed a unique product to handle this seismic motion. Our Vee construction is based on two 30°, 60°, 90° triangles complimenting one another to form a 60° "Vee" at the bottom. We thought the concept so interesting that we tooled up for these fittings rather than use the common 45°, 90° and 180° configurations. Since it may be necessary to fit these Vee's at odd angles, depending on space conditions, we have floating ASA 150 carbon steel flanges on both ends. No competitive product can be rotated this way.

Vees are often used in simple expansion applications as well.

Other fittings include Carbon Steel NPT Nipples, Weld Ends, Copper Female Sweat Couplings or Grooved Ends, as required. All of our Vee assemblies are designed for ± 4" (102mm) movement in all directions. Other manufacturers offer ± 2" (51mm) designs as well to reduce cost, but it is not worth the risk of misapplication.



See Bulletin VH-30, pages 10·27 - 10·36

See Bulletin EJ-34, pages 10·49 - 10·54

See Bulletin ASG-33, pages 10·55 - 10·58

Large Special Order & Stock Expansion Joints

Many expansion joints are custom manufactured to diameters as large as 96" (2438mm). The construction varies, depending on the operating pressure and the required movements. We can provide these unusual constructions in virtually every configuration. We can build to your specific product description or complete our own recommendations based on your movement and pressure requirements.

Please let us have your inquiries.

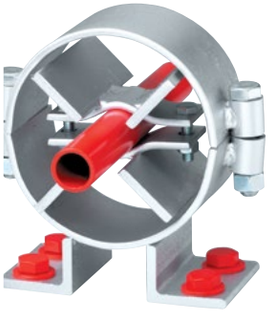
We also stock expansion joints in 2" to 16" (50 to 400mm) diameters with 2" (51mm) axial and 1/4" (6mm) transverse capability.

Pipe Alignment Guides

Our newly developed Adjustable Sliding Guides offer many improvements over other guides: one size guide for all thicknesses of insulation; less friction with our Stainless Steel Slides; sturdier construction; and they can be used as load supports.

We still carry spider guides, but the ASG design is far more versatile.

Anchors are designed and manufactured as needed.



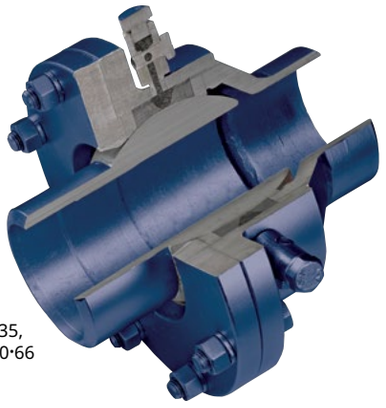
See Bulletin SPG-37, pages 10·62

Expansion Compensators & Housed Expansion Joints

Expansion Compensators and Housed Expansion Joints are basically a bellows that is protected by and guided within a pipe housing. While the industry offers two styles, one of which is referred to as “internally” and the other “externally pressurized”, they both serve the same function and we prefer the “externally pressurized” for improved bellows stability. They are furnished with a Fixed ASA150 Drilling Raised Face Carbon Steel Flange on the one end and a Floating Flange on the other. The alternates are Carbon Steel Threaded Nipples, Weld or Grooved Ends or Copper Female Sweat Ends as needed.

There are three movement choices: 2" (51mm) compression and 1/2" (13mm) extension; 4" (102mm) compression and 3/4" (19mm) extension; or 8" (203mm) compression and 11/2" (38mm) extension. They are all designed for systems that will run hot and the slight extension is only there for those occasions when ambient temperatures are fairly high during installation, and the installation drops to some very low temperatures before they are put into hot water or steam service.

See Bulletin HEJ-31, pages 10·73 - 10·84



See Bulletin BJ-35, pages 10·63 - 10·66

See Bulletin SJ-36, pages 10·67 - 10·70

Ball Joints

When ball joints are installed at each end of a pipe offset, the system can accommodate much larger movements with much lower anchorage requirements than solid pipe in the same configuration.

We not only sell our flanged and weld end ball joints, but we engineer the systems should there be no specifications or if specifications call for design by vendor.

Slip Joints

Our latest design rounds out our group of “no major failure” products. Slip joints incorporate many of the design features of ball joints.

Seals are made using high pressure, graphite enriched packing that is easily pressurized or replaced. Rather than 4" (102mm) and 8" (203mm) movement, we stock 6" (152mm) exclusively. This meets the frequent demands for movements up to 2" (51mm) more than 4" (102mm). Movements larger than 6" (152mm) are rarely required.

We hope in this overview we have given you some idea of the broad range of products that Mercer manufactures and how we can help you. We look forward to receiving any inquiries you may have. For more information on any of the products mentioned here, take a look at the individual product bulletins as referenced.

Once we have started to do business together, it will be the beginning of a long and productive partnership.