

# MERCER

# INVINCIBLE

**Completely Versatile Hand Built**

## **Heavy Duty Expansion Joints**

**Series 500 & HT500  
600 & HT600**



### **Performance Features**

- Pressures, vacuum ratings and temperature tolerance as detailed inside.
- Minimum 3 to 1 safety factor, rated to burst pressure.
- High temperature resistant fabric reinforcement for operating temperatures up to 400°F.
- Components are pressure cured, resulting in structurally sound, long service life.
- Optional exterior coat of Hypalon paint provides additional protection against ozone weathering and chemical exposure.

### **Construction Features**

- Sizes range 11/2 to 144 inch diameter.
- Manufactured in one to four arches or more in standard or longer lengths as required.
- Choice of eight liner elastomers.
- Choice of cover to match liner materials or different materials for superior resistance to external conditions.
- Baked Enamel, Galvanized Ductile Iron, Carbon or Stainless Steel Split Backup Rings.
- 150 lb. ASA drilling is standard. Other drillings or completely customized drillings as required. Opposite flanges can have different drillings to serve as transition pieces.
- Reinforcement— Spiral steel wire or solid rings.
- Handbuilt to your exact specifications.
- Can be built with permanent offset to compensate for existing or designed piping misalignment

## Series 500

The Invincible 500 is our most rugged expansion joint. They are all hand built by our skilled craftsmen. The 1/4" minimum thickness solid elastomer tube is continuous with the flange face. Multiple plies of rubber impregnated high strength polyester or nylon tire cord form the first pressure reinforcement over the tube. Arch swell in response to pressure and arch migration are virtually eliminated by criss-crossed layers of reinforcement that pass over the arch and around steel or ductile iron rings embedded on both sides at the base of the arch. Body swell is controlled by high strength fabric or spiral steel wire. Large diameter joints are often built with steel rings in place of the wire when in addition to internal pressure, external pressure resistance is important. External pressure may come from deep burial, shallow embankment under roadways or joints inside tanks.

Uncured rubber is used to fill the voids between the spiralled wire or steel rings. A minimum of two additional plies provide protection to the carcass and the cover rubber layer is a minimum of 1/8 of an inch. All of the layered reinforcement and cover materials are carried through the full faced flanges.

Flanges are brought to thickness by heavy duty clamps that close the steel flange forms. The body is pressure wrapped by layers of nylon tape. The joint is cured in a pressurized thermostatically controlled steam chamber or in an oven for optimum performance.

After the wraps and forms are removed, the final product is a tough homogeneous expansion joint customized to safely handle the intended service. A variety of tube, cover and carcass elastomers are available and selected to provide superior chemical and aging resistance in temperatures ranging from -30° to 250°F (See Bulletin CRG-MR1).

## Series HT500

The Invincible HT500 has all the construction features of the 500 combined with High Temperature capability. DuPont Kevlar® or other heat resistant fabrics replace the polyester or nylon. The tube and cover are either EPDM or Viton® for full pressure service up to 350°F and 400°F respectively.



## Series 600

The Invincible 600 has a built in solid steel ring locked in place by reinforcement materials at the arch crown. This enables the 600 to handle vacuum conditions in excess of those listed for the 500 in multiple arch joints.

## Series HT600

The Invincible HT600 has all the construction features of the 600 combined with High Temperature capability. DuPont Kevlar® or other heat resistant fabrics replace the polyester or nylon. The tube and cover are either EPDM or Viton® for full vacuum service up to 350°F and 400°F respectively.

### Back-up Rings

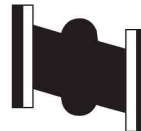
Standard expansion joints are furnished with ASA-150 back-up rings. Series ASA-300, Din, Pn, Jin and British Standards are also available, but sometimes at higher cost. Check factory for pricing.

### Filled Arches

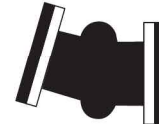
All of the styles are available with filled arch construction for use with heavy slurries. The continuous liner prevents material build-up in the arch. Filled arch joints have 50% of open arch movements.

Published dimensional data is for "Standard" joints. However, about 50% of Mercer business consists of building unusual joints such as:

Offset Joints



Unparallel Faces



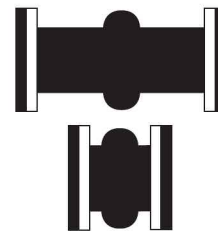
Mismatched Flanges



Overseas Flanges



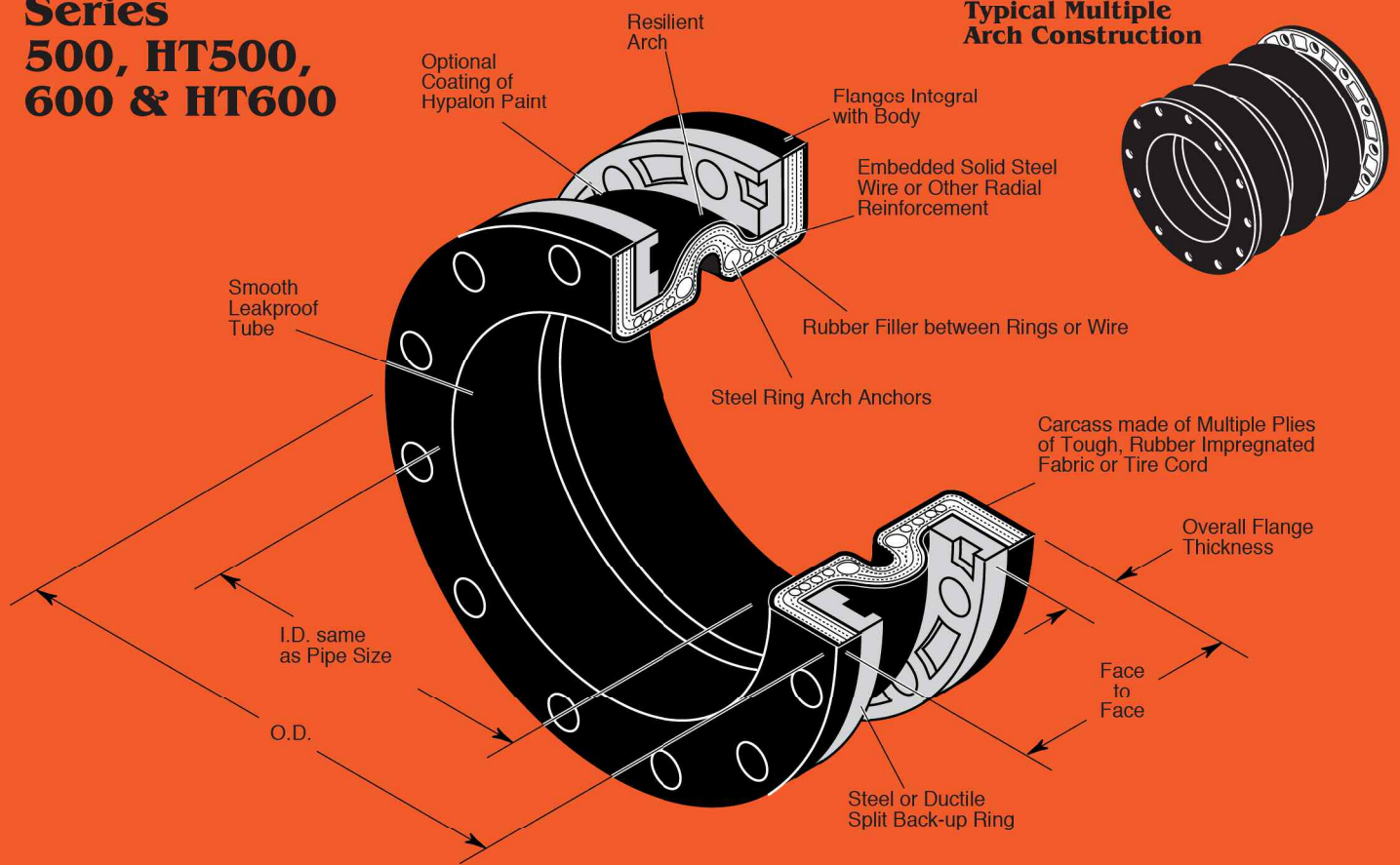
Longer or Shorter Face to Face



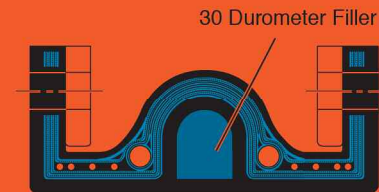
Mercer can custom design joints for most special requirements.



# Series 500, HT500, 600 & HT600



## Optional Filled Arch Construction



Series 500 & 600			
Material Availability & Operating Temperatures			
Series 500 & 600	STANDARD MATERIALS		Max Oper. Temp.
	Tube	Cover	
B	Butyl	Butyl	250°F
E	EPDM	EPDM	250°F
H	Hypalon	Hypalon	225°F
HN	Hypalon	Neoprene	225°F
N	Neoprene	Neoprene	225°F
NH	Neoprene	Hypalon	225°F
Ni	Nitrile	Nitrile	210°F
NiN	Nitrile	Neoprene	210°F
NR	Neoprene	Natural	180°F
R	Natural	Natural	180°F
RN	Natural	Neoprene	180°F
V	Viton®	Viton®	250°F

Series HT500 & HT600		
Material Availability & Operating Temperatures		
HT500/HT600	HIGH TEMPERATURE MATERIAL	Max Oper. Temp.
	Cover	
K-E	EPDM	350°F
K-V	Viton®	400°F

