

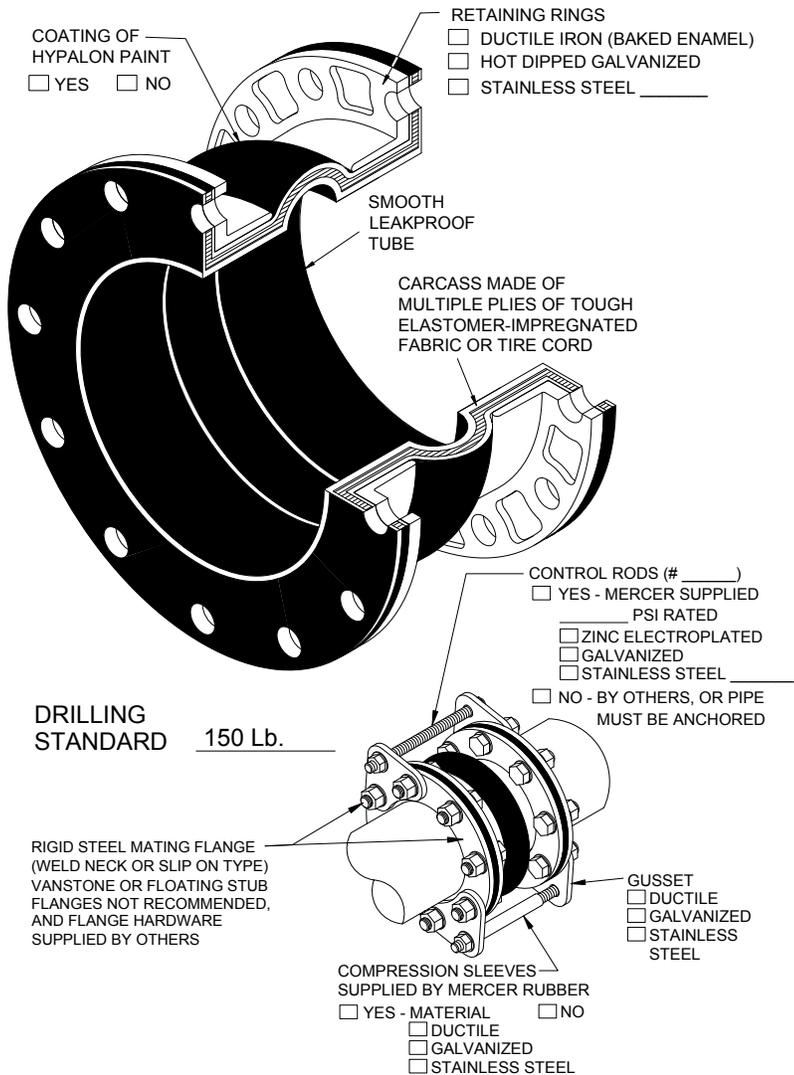


**MERCER RUBBER Co.**  
Info@Mercer-Rubber.com

350 Rabro Drive  
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Tel 631-582-1524  
FAX 631-348-0279

JOB NAME \_\_\_\_\_  
 CUSTOMER \_\_\_\_\_  
 CUSTOMER P.O. \_\_\_\_\_  
 MERCER NO. \_\_\_\_\_  
 DATE: \_\_\_\_\_ DWG. NO. \_\_\_\_\_

### STYLE 451 EXPANSION JOINT



Tube	Cover		Temperature Rating
<input type="checkbox"/>	<input type="checkbox"/>	Natural Rubber	180°F
<input type="checkbox"/>	<input type="checkbox"/>	Chlorobutyl	250°F *
<input type="checkbox"/>	<input type="checkbox"/>	Neoprene	225°F
<input type="checkbox"/>	<input type="checkbox"/>	Nitrile (Buna N)	210°F
<input type="checkbox"/>	<input type="checkbox"/>	EPDM	250°F *

\* Intermittent use only

Expansion joints installed in piping systems must be anchored on both sides of the joint. In this case no control rods are necessary providing piping movements are within allowables. If control rods are installed as a safety measure, the locking nuts must be backed off with a clearance equal to the specified axial movement. The expansion joint will exert a thrust force on the anchors. To calculate pressure thrust on anchors use the following equation:

**Pressure Thrust = (Pressure Thrust Area) x (Rated Working Pressure)**

Expansion joints installed in unanchored piping or connected to isolated equipment must have control rods. Once control rods are installed the joint will no longer act as an expansion joint, since the pressure will extend the joint into the nuts of the control rods. The joint will no longer take up axial motion. It will make up for misalignment, transverse and possibly angular motion. In this case the nuts of the control rods should be threaded tight to control rod gussets, thereby locking out control rods.

Initial misalignment should be kept to a maximum of 1/8". Expansion joint flanges must be in contact with a continuous surface, or a maximum of 1/16" standard raised face. Depressions or protrusions typical of victaulic or similar type flanges must be covered with a steel spacer flange first. Rubber flanges will not retain loose elements in valve bodies that rely on contact with a steel flange. In these applications, a steel spacer flange must be inserted between the rubber expansion joint and the valve body.

#### PRESSURE RATINGS

Natural Rubber	250 psig@150°F / 225 psig@180°F
Chlorobutyl	250 psig@150°F / 180 psig@225°F
Neoprene	250 psig@150°F / 180 psig@225°F
Nitrile (Buna N)	250 psig@150°F / 200 psig@210°F
EPDM	250 psig@150°F / 180 psig@225°F

**\* RUBBER EXPANSION JOINTS ARE NOT TO BE INSTALLED IN OCCUPIED SPACE \***

### STYLE 451 DIMENSIONS, ALLOWABLE MOVEMENTS and OPERATING PRESSURES

QUANTITY	SIZE (in)	FACE TO FACE F.F. (in)	FLANGE OD (in)	DIA. BOLT CIRCLE (in)	NO. OF HOLES	DIA. OF HOLES (in)	AXIAL COMPRESSION (in)	AXIAL EXTENSION (in)	LATERAL DEFLECTION (in)	VACUUM RATING (in Hg.)	PRESSURE THRUST AREA (in <sup>2</sup> )
	1 1/2	6	5	3 7/8	4	5/8	1 3/4	7/8	1	29	10
	2	6	6	4 3/4	4	3/4	1 3/4	7/8	1	29	13
	2 1/2	6	7	5 1/2	4	3/4	1 3/4	7/8	1	29	16
	3	6	7 1/2	6	4	3/4	1 3/4	7/8	1	29	20
	4	6	9	7 1/2	8	3/4	1 3/4	7/8	1	29	28
	5	6	10	8 1/2	8	7/8	1 3/4	7/8	1	29	38
	6	6	11	9 1/2	8	7/8	1 3/4	7/8	1	29	50
	8	6	13 1/2	11 3/4	8	7/8	1 3/4	7/8	1	29	79
	10	8	16	14 1/4	12	1	1 3/4	7/8	1	29	113
	12	8	19	17	12	1	1 3/4	7/8	1	29	154

DWN \_\_\_\_\_ CHKD \_\_\_\_\_ DATE \_\_\_\_\_

DWG No. \_\_\_\_\_



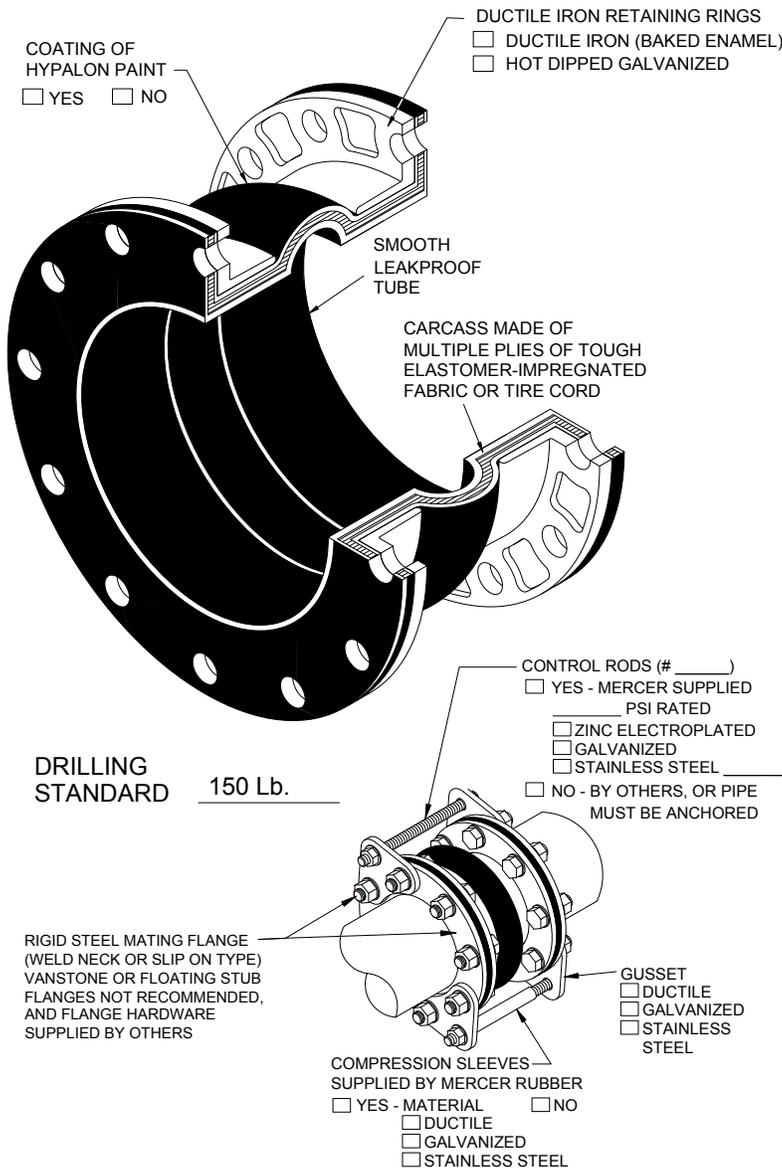
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## STYLE 451 EXPANSION JOINT



Tube	Cover		Temperature Rating
<input type="checkbox"/>	<input type="checkbox"/>	Natural Rubber	180°F
<input type="checkbox"/>	<input type="checkbox"/>	Chlorobutyl	250°F *
<input type="checkbox"/>	<input type="checkbox"/>	Neoprene	225°F
<input type="checkbox"/>	<input type="checkbox"/>	Nitrile (Buna N)	210°F
<input type="checkbox"/>	<input type="checkbox"/>	EPDM	250°F *

\* Intermittent use only

Expansion joints installed in piping systems must be anchored on both sides of the joint. In this case no control rods are necessary providing piping movements are within allowables. If control rods are installed as a safety measure, the locking nuts must be backed off with a clearance equal to the specified axial movement. The expansion joint will exert a thrust force on the anchors. To calculate pressure thrust on anchors use the following equation:

$$\text{Pressure Thrust} = (\text{Pressure Thrust Area}) \times (\text{Rated Working Pressure})$$

Expansion joints installed in unanchored piping or connected to isolated equipment must have control rods. Once control rods are installed the joint will no longer act as an expansion joint, since the pressure will extend the joint into the nuts of the control rods. The joint will no longer take up axial motion. It will make up for misalignment, transverse and possibly angular motion. In this case the nuts of the control rods should be threaded tight to control rod gussets, thereby locking out control rods.

Initial misalignment should be kept to a maximum of 1/8".

Expansion joint flanges must be in contact with a continuous surface, or a maximum of 1/16" standard raised face. Depressions or protrusions typical of victaulic or similar type flanges must be covered with a steel spacer flange first. Rubber flanges will not retain loose elements in valve bodies that rely on contact with a steel flange. In these applications, a steel spacer flange must be inserted between the rubber expansion joint and the valve body.

### PRESSURE RATINGS

Natural Rubber	250 psig@150°F / 225 psig@180°F
Chlorobutyl	250 psig@150°F / 180 psig@225°F
Neoprene	250 psig@150°F / 180 psig@225°F
Nitrile (Buna N)	250 psig@150°F / 200 psig@210°F
EPDM	250 psig@150°F / 180 psig@225°F

**\* RUBBER EXPANSION JOINTS ARE NOT TO BE INSTALLED IN OCCUPIED SPACE \***

## STYLE 451 DIMENSIONS, ALLOWABLE MOVEMENTS and OPERATING PRESSURES

QUANTITY	SIZE (in)	FACE TO FACE F.F. (in)	FLANGE OD (in)	DIA. BOLT CIRCLE (in)	NO. OF HOLES	DIA. OF HOLES (in)	AXIAL COMPRESSION (in)	AXIAL EXTENSION (in)	LATERAL DEFLECTION (in)	VACUUM RATING (in Hg.)	PRESSURE THRUST AREA (in <sup>2</sup> )
	14	8	21	18 3/4	12	1 1/8	2 1/8	1	1 1/4	15	214
	16	8	23 1/2	21 1/4	16	1 1/8	2 1/8	1	1 1/4	15	269
	18	8	25	22 3/4	16	1 1/4	2 1/8	1	1 1/4	15	330
	20	8	27 1/2	25	20	1 1/4	2 1/8	1	1 1/4	15	398
	24	10	32	29 1/2	20	1 3/8	2 5/8	1 1/4	1 1/2	15	573
	30	10	38 3/4	36	28	1 3/8	2 5/8	1 1/4	1 1/2	15	855
	36	10	46	42 3/4	32	1 5/8	2 5/8	1 1/4	1 1/2	15	1195

DWN \_\_\_\_\_ CHKD \_\_\_\_\_ DATE \_\_\_\_\_

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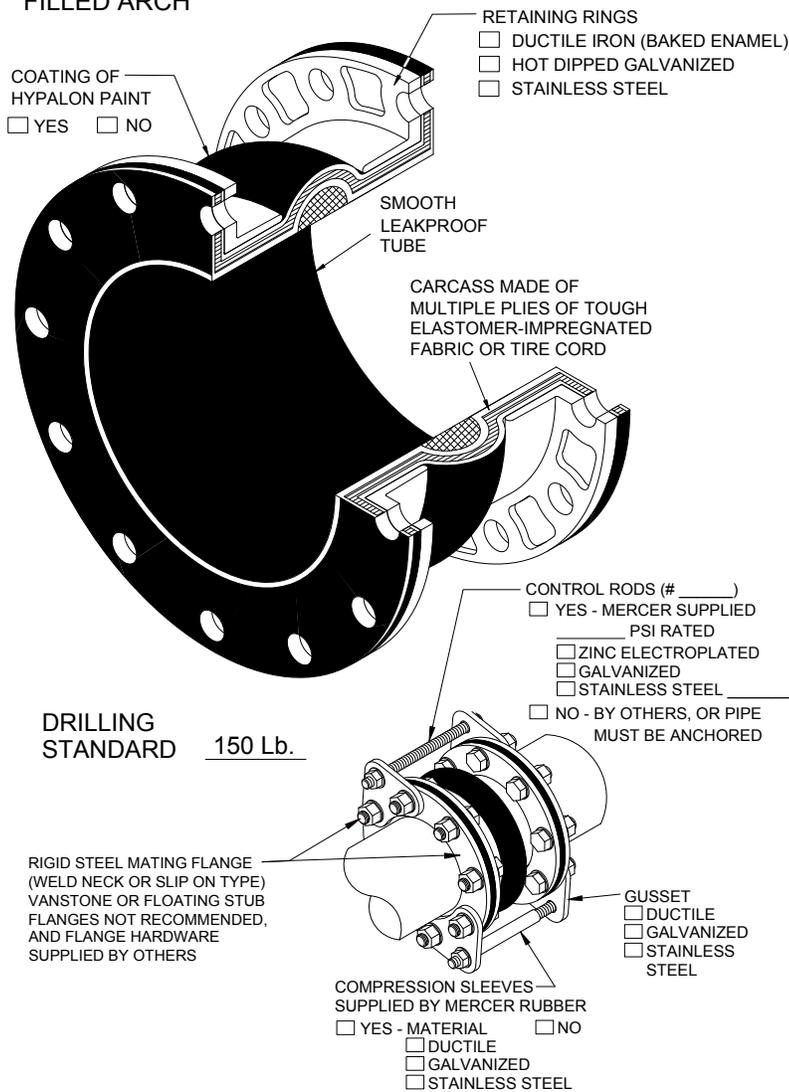
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**STYLE 451FA EXPANSION JOINT  
FILLED ARCH**



Tube  Cover  Neoprene  
 Temperature Rating 225°F

Expansion joints installed in piping systems must be anchored on both sides of the joint. In this case no control rods are necessary providing piping movements are within allowables. If control rods are installed as a safety measure, the locking nuts must be backed off with a clearance equal to the specified axial movement. The expansion joint will exert a thrust force on the anchors. To calculate pressure thrust on anchors use the following equation:

$Pressure\ Thrust = (Pressure\ Thrust\ Area) \times (Rated\ Working\ Pressure)$

Expansion joints installed in unanchored piping or connected to isolated equipment must have control rods. Once control rods are installed the joint will no longer act as an expansion joint, since the pressure will extend the joint into the nuts of the control rods. The joint will no longer take up axial motion. It will make up for misalignment, transverse and possibly angular motion. In this case the nuts of the control rods should be threaded tight to control rod gussets, thereby locking out control rods. Initial misalignment should be kept to a maximum of 1/8".

Expansion joint flanges must be in contact with a continuous surface, or a maximum of 1/16" standard raised face. Depressions or protrusions typical of vitaulic or similar type flanges must be covered with a steel spacer flange first. Rubber flanges will not retain loose elements in valve bodies that rely on contact with a steel flange. In these applications, a steel spacer flange must be inserted between the rubber expansion joint and the valve body.

**PRESSURE RATING**

Neoprene 250 psig@150°F / 180 psig@225°F

**\* RUBBER EXPANSION JOINTS ARE NOT TO BE INSTALLED IN OCCUPIED SPACE \***

**STYLE 451FA DIMENSIONS, ALLOWABLE MOVEMENTS and OPERATING PRESSURES**

QUANTITY	SIZE (in)	FACE TO FACE F.F. (in)	FLANGE OD (in)	DIA. BOLT CIRCLE (in)	NO. OF HOLES	DIA. OF HOLES (in)	AXIAL COMPRESSION (in)	AXIAL EXTENSION (in)	LATERAL DEFLECTION (in)	VACUUM RATING (in Hg.)	PRESSURE THRUST AREA (in <sup>2</sup> )
2	6	6	6	4 3/4	4	3/4	7/8	7/16	1/2	29	3
3	6	7 1/2	7 1/2	6	4	3/4	7/8	7/16	1/2	29	7
4	6	9	9	7 1/2	8	3/4	7/8	7/16	1/2	29	13
6	6	11	11	9 1/2	8	7/8	7/8	7/16	1/2	29	28
8	6	13 1/2	13 1/2	11 3/4	8	7/8	7/8	7/16	1/2	29	50
10	8	16	16	14 1/4	12	1	7/8	7/16	1/2	29	78
12	8	19	19	17	12	1	7/8	7/16	1/2	29	113

DWN \_\_\_\_\_ CHKD \_\_\_\_\_ DATE \_\_\_\_\_

DWG No. \_\_\_\_\_