

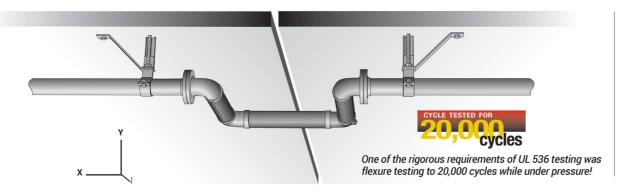
## **Connectors**

Horizontal Pipe Run Spanning a Building Seismic Joint

The Tri-Flex Loop's superior capabilities for withstanding large and irregular movements caused by seismic activities in a piping system were proven by independent, third party testing at The New York State Center for Advanced Technology (CAT) at Rensselaer Polytechnic Institute.

The Tri-Flex Loop's design of three flexible sections allow it to compensate pipe movement in six degrees of freedom (three coordinates axes, plus rotation about those axes simultaneously). It is the safest and most reliable means of absorbing movement resulting from random seismic shift.

The Tri-Flex Loop is capable of accommodating seismic displacements for vertical piping between floors of the building, where pipes pass through or bridge building seismic joints or building expansion joints. They are also used for horizontal piping across building seismic and building expansion joints to accommodate the resultant drift of each building unit, or where rigidly supported pipes connect to equipment mounted on vibration isolators.





(Flexible Joint Fitting)

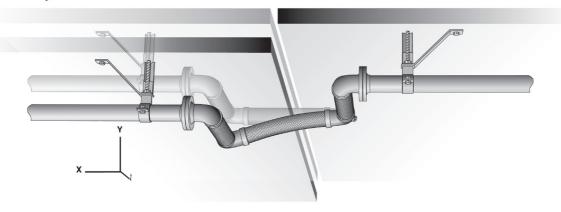
#### LISTED

Tri-Flex Loop® stainless steel 1"-4" for compressed and combustible gases at 175PSI at ambient temperature 33NB

#### **Seismic Horizontal Displacement**



#### **Seismic Vertical Displacement**





## Assure Flex Tri-Flex Loop®





## Hanger Assembly Kit and Accessories

Save Labor Costs with these Tri-Flex Loop Accessories!

The UL Listed Seismic Wire Rope/Cable™ used in our hanger assemblies conform to the requirements of the ASCE (American Society of Civil Engineers) guidelines for structured applications of wire rope, in that the cable is pre-stretched and the permanent end fittings maintain the breakstrength of the cable with a safety factor of two.



- Color Coded
- Pre-stretched

Breakstrength Certified

Breakstrength Certified





Color coded, factory cable cutter & crimper to meet cable specifications

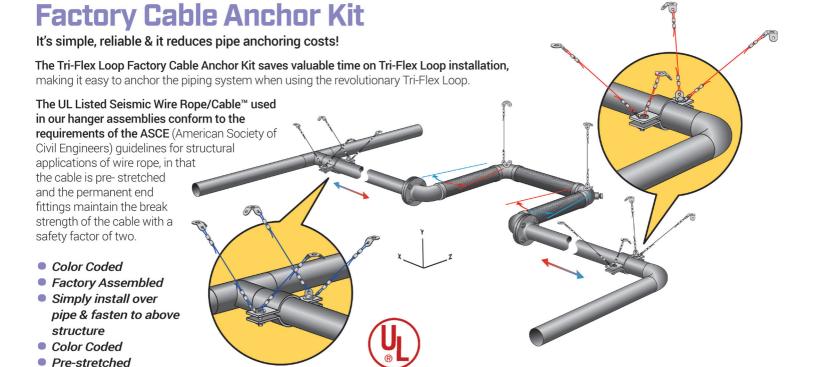


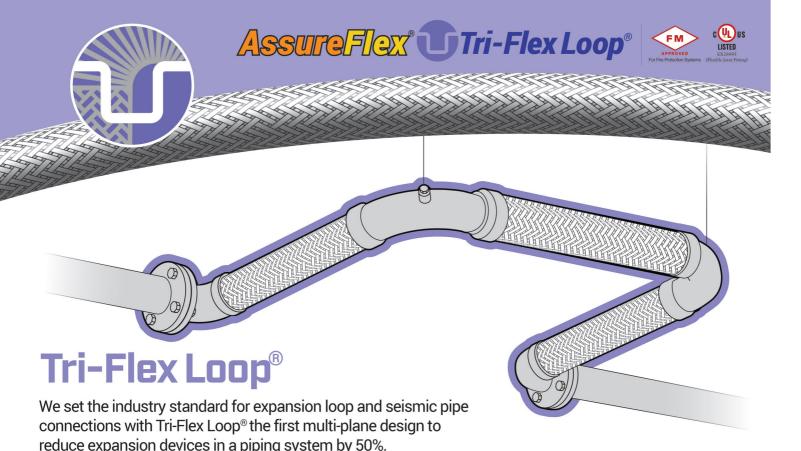
Color coded for Tri-Flex Loop installations of 10" and larger in diameter



Color coded for Tri-Flex Loop installations of up to 8" diameter

\* UL 9P62 Loos





The Tri-Flex Loop's superior design is the only flexible pipe loop that absorbs and compensates pipe movement in six degrees of freedom. (three coordinates axes, plus rotation about those axes simultaneously.)

The multiplane movement design can reduce expansion devices required in a piping system by up to 50%. It is the safest and most reliable means of absorbing movement resulting from thermal changes and random seismic shifts in a piping system.

#### **Simplifies Piping Design**

The Tri-Flex Loop does not impose pressure thrust on the piping system. The braid is designed to take the stress of pressurization containing the core, reducing anchor loads by 93% compared to mechanical pipe loops and 98% less than expansion joints.

Tri-Flex Loops also eliminate pipe guides required by traditional pipe designs such as mechanical pipe loops or expansion joints.

## Compact Design increases useable space and reduces system cost

The Tri-Flex Loop uses 64% less space than a mechanical pipe loop, and eliminates six welds. Fewer fittings and welds can be achieved in the piping system by positioning the Tri-Flex Loop at directional changes and rotating one of the Tri-Flex elbows during manufacturing to incorporate directional change, eliminating 90° elbow in the field. It can also be designed to incorporate elevation changes in the piping system, saving space, fewer fittings and welds.

#### **Applications**

Flex-Hose Co.'s UL536 listed Tri-Flex Loop and sesimic connectors are approved for compressed and combustible gases. Other common applications for the Tri-Flex Loop include steam, condenser water, hot water, domestic hot water and chilled water.

Tri-Flex Loop makes a world of difference in your critical piping connections. They are designed to handle working pressures up to 1325 psi, or full vacuum and operating temperatures of -400°F to 1500°F.

Tri-Flex Loops are manufactured with 321 (ASTM A240) grade stainless steel or bronze (ASTM C51000) grade annular corrugated close pitch metal flexible hose.

Tri-Flex Loops are available with flanged ends, steel male NPT ends, weld ends, grooved ends, copper female sweat, or press fit ends.

#### **Passing the Test!**

The Tri-Flex Loop's superior capabilities for withstanding large and irregular movements caused by seismic activities in a piping system were proven by independent, third party testing at The New York State Center for Advanced Technology (CAT) at Rensselaer Polytechnic Institute.

The Tri-Flex Loop's unique design of three flexible sections allow it to compensate pipe movement in six degrees of freedom (three coordinates axes, plus rotation about those axes simultaneously). It is the safest and most reliable means of absorbing movement resulting from random seismic shift.

The Tri-Flex Loop is capable of accommodating seismic displacements for vertical piping between floors of the building, where pipes pass through or bridge building seismic joints or building expansion joints. They are also used for horizontal piping across building seismic and building expansion joints to accommodate the resultant of the drifts of each building unit, or where rigidly supported pipes connect to equipment mounted on vibration isolators.

### Quality Assurance... Precision Manufacturing

Tri-Flex Loop units are pressure tested prior to release for shipment and have a five (5) year product replacement warranty.

Tri-Flex Loops are UL Listed, CSA Certified and FM Approved and our manufacturing utilizes state-of-the-art welding

Standard Sizes 1/2" to 12" I.D. Custom sizes available to 30" I.D. Other alloys and custom styles available. Please consult factory.

technology. Flex-Hose Co. welders are ASME (American Society of Mechanical Engineers) Section IX certified.

Tri-Flex Loops are 100% dye penetrant tested at the seal welds. The seal weld joins the hose, braid, and collar. It is one of the most critical welds in the manufacturing process.









# Tri-Flex Loop® Design Specifications

Pressures and Motion Classifications Threaded ends | Flanged ends | Grooved

#### **PRESSURES**

#### MAXIMUM WORKING PRESSURE:

Maximum operating pressure to which the assembly should be subjected. It is established at 25% of the nominal design burst pressure. Tri-Flex Loop sizes 1"-3" are Factory Mutual tested and approved for 300 psi working pressure and sizes 4"-12" are Factory Mutual tested and approved for 175 psi

#### MAXIMUM PROOF PRESSURE:

Maximum test pressure to which the assembly should be subjected. It is established at 150% of the maximum working pessure with the Tri-Flex Loop installed in its neutral position.

No harmful deformation shall occur.

#### **MOTION CLASSIFICATIONS**

The Tri-Flex Loop is the only flexible pipe loop that absorbs and compensates pipe movement in six degrees of freedom (three coordinates axes, plus rotation about those axes simultaneously.)

The patented multi-plane movement design make the Tri-Flex Loop the safest and most reliable means of absorbing movement resulting from random seismic shifts in a fire protection system.

Tri-Flex Loop manufactured with a 4:1 safety factory.

#### Threaded ends (MT)

(Sch 40 Carbon Steel Male N.P.T.)

(corr to cargori ottos maio mini)											
FHTFLFM2MT											
NOMINAL PIPE SIZE (N.P.S.)	1.0	1.25	1.5	2.0	2.5	3.0	4.0				
A LENGTH (IN.)	21.00	25.00	27.00	31.00	35.00	39.25	48.75				
B LENGTH (IN.)	15.75	18.00	19.50	22.25	25.00	28.00	33.00				
PRESSURE (PSI) 70°F	300	300	300	300	300	300	175				
MOVEMENTS											
COMPRESSION (IN.)	2	2	2	2	2	2	2				
EXTENSION (IN.)	2	2	2	2	2	2	2				
PARALLEL (IN.)	2	2	2	2	2	2	2				
ROTATION "X" AXIS (°)	20°	15°	15°	10°	10°	10°	5°				
NON-PARALLEL "Y" AXIS (IN.)	1	1	1	1	1	1	1				

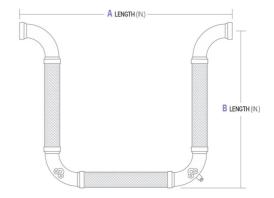
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13 23

33 53

#### CUTCI CMAMT

LUILILIAI-HAII							
NOMINAL PIPE SIZE (N.P.S.)	1.0	1.25	1.5	2.0	2.5	3.0	4.0
A LENGTH (IN.)	25.75	29.38	32.00	37.00	41.00	45.25	55.75
B LENGTH (IN.)	20.50	22.50	24.50	28.25	31.00	34.00	40.00
PRESSURE (PSI) 70°F	300	300	300	300	300	300	175
MOVEMENTS							
COMPRESSION (IN.)	4	4	4	4	4	4	4
EXTENSION (IN.)	4	4	4	4	4	4	4
PARALLEL (IN.)	4	4	4	4	4	4	4
ROTATION "X" AXIS (°)	30°	25°	25°	20°	20°	15°	10°
NON-PARALLEL "Y" AXIS (IN.)	2	2	2	2	2	2	2
SPRING RATE*	7	9	10	13	23	33	53
WEIGHT (LBS.)	7	9	13	18	30	40	70



#### Flanged ends (F)

SPRING RATE\*

WEIGHT (LBS.)

(Plate Steel Flange ANSI Class 150 Hole Pattern)

( late etect langer it of elace too floor atterny										
FHTFLFM2F										
NOMINAL PIPE SIZE (N.P.S.)	2.0	2.5	3.0	4.0	5.0	6.0	8.0	10.0	12.0	
A LENGTH (IN.)	31.50	35.50	39.75	43.25	54.00	60.25	73.50	88.50	102.50	
B LENGTH (IN.)	22.50	25.00	28.00	33.00	41.25	45.00	53.25	63.38	72.38	
PRESSURE (PSI) 70°F	300	300	300	175	175	175	175	175	175	
MOVEMENTS										
COMPRESSION (IN.)	2	2	2	2	2	2	2	2	2	
EXTENSION (IN.)	2	2	2	2	2	2	2	2	2	
PARALLEL (IN.)	2	2	2	2	2	2	2	2	2	
ROTATION "X" AXIS (0)	10°	10°	10°	5°	50	30	30	2°	00	
NON-PARALLEL "Y" AXIS (IN.)	1	1	1	1	1	1	1	1	1	
SPRING RATE*	13	23	33	53	66	79	105	132	158	
WEIGHT (LBS.)	22	37	48	79	125	177***	340**	576**	855**	

F	Н	TE	FL	F	M	4	F

FHIFLFM <b>4F</b>									
NOMINAL PIPE SIZE (N.P.S.)	2.0	2.5	3.0	4.0	5.0	6.0	8.0	10.0	12.0
A LENGTH (IN.)	37.50	41.50	45.75	50.25	63.75	69.50	83.50	99.50	114.50
B LENGTH (IN.)	28.25	31.00	34.00	40.00	51.00	54.25	63.25	74.38	84.38
PRESSURE (PSI) 70°F	300	300	300	175	175	175	175	175	175
MOVEMENTS									
COMPRESSION (IN.)	4	4	4	4	4	4	4	4	4
EXTENSION (IN.)	4	4	4	4	4	4	4	4	4
PARALLEL (IN.)	4	4	4	4	4	4	4	4	4
ROTATION "X" AXIS (°)	20°	20°	15°	10°	10°	5°	5°	5°	30
NON-PARALLEL "Y" AXIS (IN.)	2	2	2	2	2	2	2	2	2
SPRING RATE*	13	23	33	53	66	79	105	132	158
WEIGHT (LBS.)	25	40	51	85	137	189***	372**	621**	936**

#### FHTFL FM8F

NOMINAL PIPE SIZE (N.P.S.)	2.0	2.5	3.0	4.0	5.0	6.0	8.0	10.0	12.0
A LENGTH (IN.)	37.50	41.50	45.75	50.25	63.75	69.50	83.50	99.50	114.50
B LENGTH (IN.)	37.00	39.75	43.25	50.50	64.00	67.50	77.00	90.00	101.00
PRESSURE (PSI) 70°F	300	300	300	175	175	175	175	175	175
MOVEMENTS									
COMPRESSION (IN.)	8	8	8	8	8	8	8	8	8
EXTENSION (IN.)	8	8	8	8	8	8	8	8	8
PARALLEL (IN.)	8	8	8	8	8	8	8	8	8
ROTATION "X" AXIS (°)	20°	20°	15°	10°	10°	5°	5°	5°	3°
NON-PARALLEL "Y" AXIS  (IN.)	2	2	2	2	2	2	2	2	2
SPRING RATE*	13	23	33	53	66	79	105	132	158
WEIGHT (LBS.)	27	44	55	91	146	203***	396*	666**	1004**

#### Grooved (G)

(Sch 40 Carbon Steel)

FHTFLFM2G									
NOMINAL PIPE SIZE (N.P.S.)	2.0	2.5	3.0	4.0	5.0	6.0	8.0	10.0	12.0
A LENGTH (IN.)	31.00	35.00	39.25	48.75	61.50	67.75	82.00	99.00	113.00
B LENGTH (IN.)	22.25	25.00	28.00	33.00	41.25	45.00	53.25	63.38	72.38
PRESSURE (PSI) 70°F	300	300	300	175	175	175	175	175	175
MOVEMENTS									
COMPRESSION (IN.)	2	2	2	2	2	2	2	2	2
EXTENSION (IN.)	2	2	2	2	2	2	2	2	2
PARALLEL (IN.)	2	2	2	2	2	2	2	2	2
ROTATION "X" AXIS (°)	10°	10°	10°	50	5°	30	30	2°	00
NON-PARALLEL "Y" AXIS (IN.)	1	1	1	1	1	1	1	1	1
SPRING RATE*	13	23	33	53	66	79	105	132	158
WEIGHT (LBS.)	15	27	37	64	105	154***	298**	526**	775**

#### FHTFLFM4G

NOMINAL PIPE SIZE (N.P.S.)	2.0	2.5	3.0	4.0	5.0	6.0	8.0	10.0	12.0
A LENGTH (IN.)	37.00	41.00	45.25	55.75	71.25	77.00	92.00	110.00	125.00
B LENGTH (IN.)	28.25	31.00	34.00	40.00	51.00	54.25	63.25	74.38	84.38
PRESSURE (PSI) 70°F	300	300	300	175	175	175	175	175	175
MOVEMENTS									
COMPRESSION (IN.)	4	4	4	4	4	4	4	4	4
EXTENSION (IN.)	4	4	4	4	4	4	4	4	4
PARALLEL (IN.)	4	4	4	4	4	4	4	4	4
ROTATION "X" AXIS (°)	20°	20°	15°	10°	10°	5°	5°	5°	30
NON-PARALLEL "Y" AXIS (IN.)	2	2	2	2	2	2	2	2	2
SPRING RATE*	13	23	33	53	66	79	105	132	158
WEIGHT (LBS.)	18	30	40	70	117	166***	330**	571**	856**

#### FHTFLFM8G

NOMINAL PIPE SIZE (N.P.S.)	2.0	2.5	3.0	4.0	5.0	6.0	8.0	10.0	12.0
A LENGTH (IN.) B LENGTH (IN.)	37.00 37.00	41.00 39.75	45.25 43.25	55.75 50.50	71.25 64.00	77.00 67.50	92.00 77.00		125.00 101.00
PRESSURE (PSI) 70°F	300	300	300	175	175	175	175	175	175
MOVEMENTS									
COMPRESSION (IN.)	8	8	8	8	8	8	8	8	8
EXTENSION (IN.)	8	8	8	8	8	8	8	8	8
PARALLEL (IN.)	8	8	8	8	8	8	8	8	8
ROTATION "X" AXIS (°)	20°	20°	15°	10°	10°	5°	5°	5°	30
NON-PARALLEL "Y" AXIS (IN.)	2	2	2	2	2	2	2	2	2
SPRING RATE*	13	23	33	53	66	79	105	132	158
WEIGHT (LRS.)	20	33	44	75	126	170***	35/1**	616**	02/1**

<sup>\*</sup> Force 9lbs.) required to compress Tri-Flex Loop to full movement capability.

<sup>\*\*</sup> Double Braided

<sup>\*\*\*</sup> High Pressure Braid (Single Layer)









A world of difference in critical piping connections since 1968.<sup>TM</sup>

#### **CORPORATE HEADQUARTERS:**

4560 Buckley Road Liverpool, NY 13088

P: 315-437-1611 F: 315-437-1903

#### **DESIGN & MANUFACTURING:**

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P: 315-701-0001 F: 315-701-0032







...Critical Piping Connections

...American Manufacturing

...Quality 3rd ...Engineering & Design Services

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