

Seismic Joints and Expansion Loops

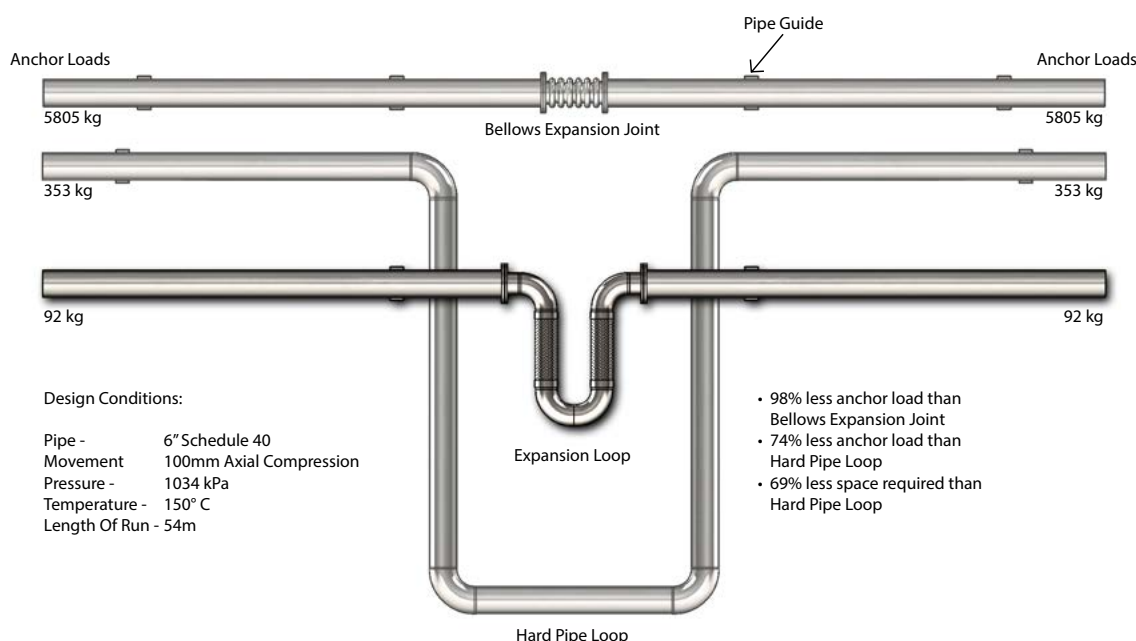


VITALFLEX® - Seismic Joints and Expansion Loops

Model name: VITALFLEX-V

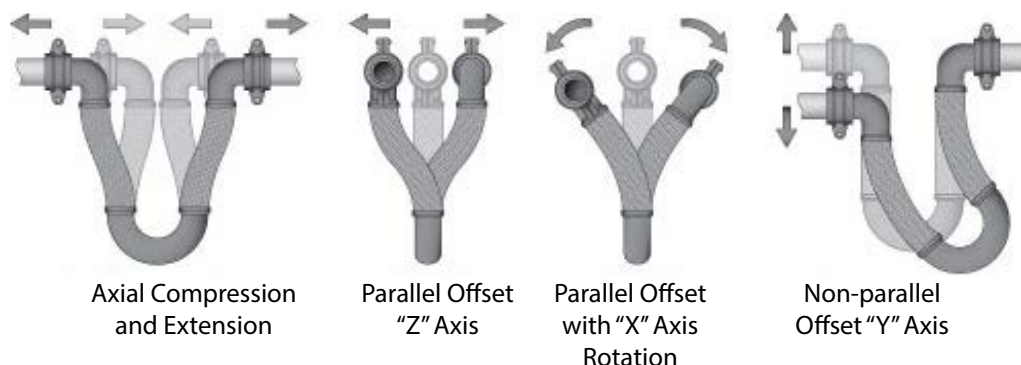
VITALFLEX® seismic joints and expansion loops are engineered to account for the cumulative movement(s) in piping systems. The VITALFLEX® joints have been designed to counter thermal expansion/contraction, offset and rotation.

Piping used in locations subject to seismic conditions have their own set of unexpected random movements. The random motion common to earthquakes, requires that seismic expansion joints be capable of movement in any direction and are able to withstand the acceleration forces.



Significant cost and safety benefits found in VITALFLEX® seismic expansion joints

- It is an inexpensive alternative to dual-tied bellows expansion joints and especially ball joints
- During an earthquake, it protects equipment by allowing boilers, chillers, fan-coil units and other systems to move independently from buildings such as hospitals, high rises and stadiums
- Installation at the connection point, prevents nozzles from cracking or shearing off
- A break in the gas pipe work could start a fire and cause vast damage to the entire building. This Australian Gas Approval (AGA) certified seismic expansion joint will compensate for the movement that occurs during any seismic activity such as an earthquake
- Designed for potable water applications the VITALFLEX® joint can be Watermark certified in accordance with WMTS 520:2016



Seismic Expansion Joints

Stainless steel is superior to carbon steel, galvanised steel and copper. Where a VITALFLEX® joint connects directly to these materials in a wetted or condensing installation, the adjoining pipework becomes the anode and corrodes at the connection or weld. The stainless joint is the protected member where the dissimilar connecting pipe carries the risk. This applies to galvanised fire main and copper HVAC connections.

When NOT welded and dissimilar metal flanges or threads are bolted or screwed together consider a full dielectric isolation method which can include a isolating gasket, sleeves and washers as a complete kit. This will break the electrolyte path. Verify electrical resistance across the joint after installation and confirm no bypass through supports, brackets, conduit or earthing straps. Seek electrical engineering advice on installation requirements.

Galvanic corrosion is driven by the internal potential difference between the two metals (the voltage gap on the galvanic series). Earthing shifts the absolute electrical potential of the entire system relative to the earth, but the internal gap between the stainless steel and carbon steel remains exactly the same. Galvanic corrosion to happen, you need a metallic path (the weld) and an ion path (the mains water). Earthing does nothing to block the ions travelling through the water from the carbon steel to the stainless steel.

Installation Guide:

Reduce misalignment of the connecting pipes as any offset will change the design movements of the joint. When installing in any configuration other than with the product in a horizontal down position, the weight of the joint must be support at the elbow connecting the two braided hoses. The recommended supports are wire cable or metal chain. These can be secured to the elbow used a pipe support clamp/bracket or on request to the hanging lugs which can be welded to the elbow in the manufacturing process.

Typical Installation:

HORIZONTAL
SIDE



HORIZONTAL
DOWN



HORIZONTAL
UP



NESTED



VERTICAL



UNDER-OVER



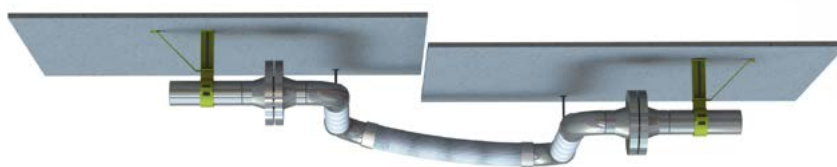
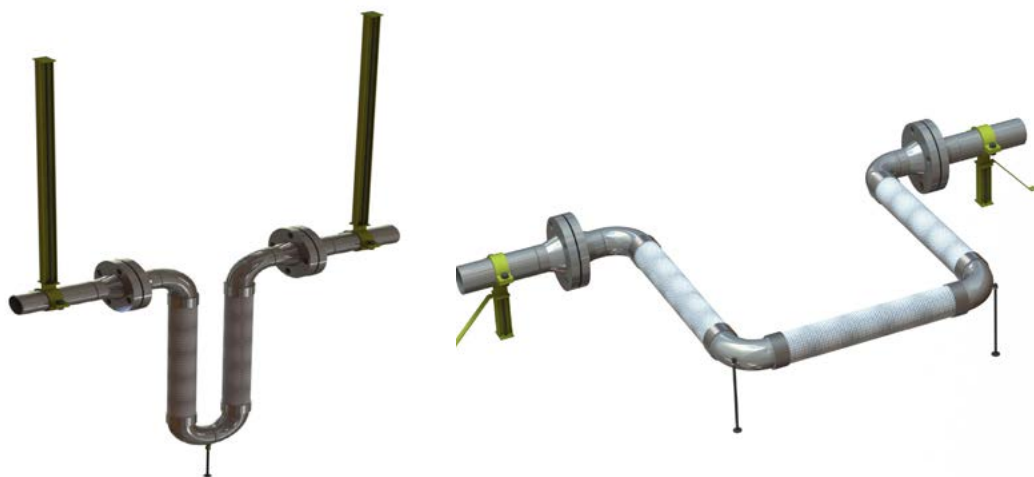
Seismic Expansion Joints

Maintenance Guide:

In the event of seismic activity or if excessive movements may have been applied, the product should be inspected to ensure that it has not incurred damage.

If there is an indication of evidence that the joint may have performed movements outside the design parameters this information should be communicated to Pacific Hoseflex to assess if the joints need to be repaired or replaced.

When the joints are visible a 12 monthly inspection should occur to enforce preventative maintenance.



Seismic Expansion Joints

VITALFLEX® - V Shape

Construction: Annular / Close Pitch

Profile: High Flexibility / High Pressure

Material Available: 304 / 316 Stainless Steel

Braid Available: 304 / 316 Stainless Steel

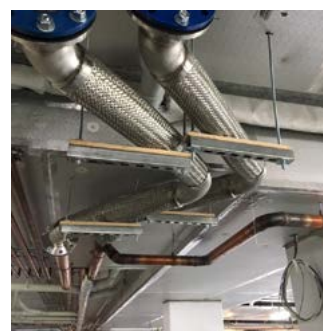
Size Available: 1/4" (06mm) - 16" (500mm)

(Larger sizes upon Request)

Max Temp: 700°C

	Low	Med	High
Flexibility	☐	☐	☒
Cycle Life	☐	☐	☒
Pressure Rating	☐	☒	☐
Chemical Resistance	☐	☐	☒
Wall Thickness	☐	☒	☐

Installations:



Couplings:

VITALFLEX® - Swivel Flange

Model Name: VITALFLEX-V-AF4



VITALFLEX® - Rolled groove coupling

Model Name: VITALFLEX-V-RG



VITALFLEX® - Male coupling

Model Name: VITALFLEX-V-AF1



VITALFLEX® - Female Union coupling

Model Name: VITALFLEX-V-AF12



Seismic Expansion Joints (V Shape)

Specifications

Movement range: Up to +/- 500mm

(Standard catalogue range: 50mm, 75mm, 100mm, 150mm and 200mm)

(Customised movement available upon request from 0 to > 500 mm)

Pressure range:

WaterMark: Full Vacuum up to 2500 kPa

(Compressed hose may be considered for negative pressure/vacuum applications)

(Temperature correction factors may apply)

(Pressure restrictions may apply related to pressure rating of end fittings used)

Standards:

Corrugated Metal Hoses: ISO 10380

AGA Approved: AS 4631 (upon request)

Watermark Approved: WMTS 520 (upon request)

Welding Compliant: AS 4041- Class 1 (upon request)

Seismic Rated: AS 1170 (upon request)

Activfire Certified: AS 2118.1 (upon request)

AGA (Australian Gas Association):

Full Vacuum up to 1500 kPa

(Compressed hose may be considered for negative pressure/vacuum applications)

(Temperature correction factors may apply)

(Pressure restrictions may apply related to pressure rating of end fittings used)

Temperature range: -276 °C to 700 °C

(Restrictions from applicable standards for assemblies and end fittings may apply)

(Calculated values available for single braided hose MAOP, double braided hose MAOP, 100 kPa, 500 kPa, 800 kPa, 1000 kPa, 1200 kPa, 1500 kPa, 2000 kPa 2500 kPa)

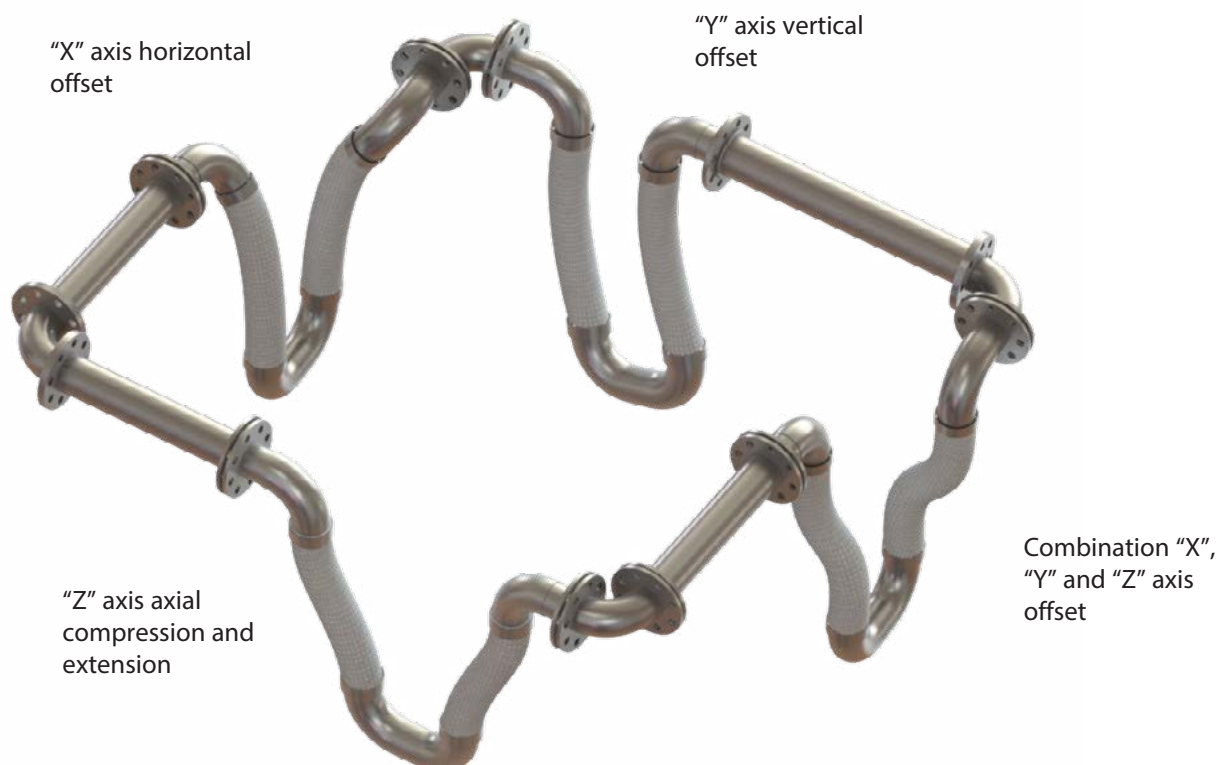
Pressure thrust range: 0.01 kN to 147.39 kN

(Calculated values available for single braided hose MAOP, double braided hose MAOP, 100 kPa, 500 kPa, 800 kPa, 1000 kPa, 1200 kPa, 1500 kPa, 2000 kPa 2500 kPa)

Unit weight range: Refer to technical

catalogue for unfilled and filled water values

(Available on request)



Seismic Expansion Joints

VITALFLEX® - V Shape

Construction: Annular / Close Pitch

Profile: High Flexibility / High Pressure

Material Available: 304 / 316 Stainless Steel

Braid Available: 304 / 316 Stainless Steel

Size Available: 1/4" (06mm) - 16" (500mm)

(Larger sizes upon Request)

Max Temp: 700°C

Low | Med | High

Flexibility ☐ ☐ ☒

Cycle Life ☐ ☐ ☒

Pressure Rating ☐ ☒ ☐

Chemical Resistance ☐ ☐ ☒

Wall Thickness ☐ ☒ ☐

Construction

Use:

Used in a variety of applications and locations where subject to seismic conditions or large amounts of pipework movement. The random motion common to earthquakes requires that seismic expansion joints to be capable of movement in any direction.

Standards:

Corrugated Metal Hoses: ISO 10380

AGA Approved: AS 4631 (upon request)

Watermark Approved: WMTS 520 (upon request)

Welding Compliant: AS 4041- Class 1 (upon request)

Seismic Rated: AS 1170 (upon request)

Seismic rated: NZS 4219 - 2009 (upon request)

Activfire Certified: AS 2118.1 (upon request)



Specifications

Hose Size (mm)	Hose Size (inch)	Model	MOVEMENT (mm)	Dimension A	Dimension B	Pressure (kPa) @ 23 deg c	Hydrostatically Filled Hose weight (kg) (+/- 5%) Excluding all pipe bends and end fittings	Pneumatically Filled Hose weight (kg) (+/- 5%) Excluding all pipe bends and end fittings	Hose Spring Rate (Kg/Cm)	Hose Pipe load (kgs)
12	1/2"	VITALFLEX-V-12	50	331	150	8445	0.129	0.078	0.31	1.550
20	3/4"	VITALFLEX-V-20	50	351	160	7128	0.311	0.173	0.88	4.400
25	1"	VITALFLEX-V-25	50	367	167	5487	0.432	0.221	1.13	5.650
32	1 1/4"	VITALFLEX-V-32	50	436	198	4136	0.819	0.402	1.49	7.450
38	1 1/2"	VITALFLEX-V-38	50	483	218	3840	1.205	0.560	2.00	10.000
50	2"	VITALFLEX-V-50	50	548	242	3930	1.905	0.869	2.67	13.350
65	2 1/2"	VITALFLEX-V-65	50	684	302	2826	3.825	1.417	2.52	12.600
75	3"	VITALFLEX-V-75	50	760	333	2310	5.453	1.854	7.94	39.700
100	4"	VITALFLEX-V-100	50	915	394	1654	9.456	2.772	8.53	42.650
125	5"	VITALFLEX-V-125	50	1057	450	1316	15.457	4.392	8.59	42.950
150	6"	VITALFLEX-V-150	50	1205	508	1137	21.866	5.410	9.44	47.200
200	8"	VITALFLEX-V-200	50	1450	599	1643	39.335	9.276	24.47	122.350
250	10"	VITALFLEX-V-250	50	1734	709	1585	72.582	20.674	39.76	198.800
300	12"	VITALFLEX-V-300	50	2228	893	1110	134.914	35.626	27.76	138.800

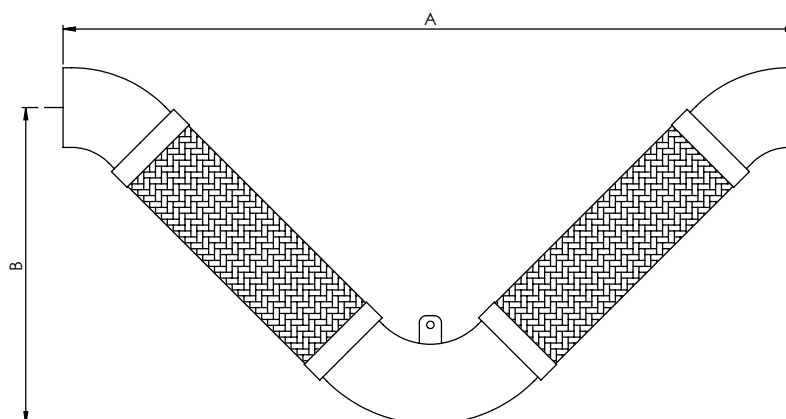
Seismic Expansion Joints

VITALFLEX® - V Shape

Hose Size (mm)	Hose Size (inch)	Model	MOVEMENT (mm)	Dimension A	Dimension B	Pressure (kPa) @ 23 deg c	Hydrostatically Filled Hose weight (kg) (+/- 5%) Excluding all pipe bends and end fittings	Pneumatically Filled Hose weight (kg) (+/- 5%) Excluding all pipe bends and end fittings	Hose Spring Rate (Kg/Cm)	Hose Pipe load (kgs)
12	1/2"	VITALFLEX-V-12	100	432	200	8445	0.187	0.113	0.1	1
20	3/4"	VITALFLEX-V-20	100	460	214	7128	0.459	0.255	0.12	1.2
25	1"	VITALFLEX-V-25	100	481	225	5487	0.648	0.331	0.3	3
32	1 1/4"	VITALFLEX-V-32	100	567	264	4136	1.218	0.597	0.46	4.6
38	1 1/2"	VITALFLEX-V-38	100	623	288	3840	1.781	0.827	0.63	6.3
50	2"	VITALFLEX-V-50	100	691	314	3930	2.791	1.274	0.85	8.5
65	2 1/2"	VITALFLEX-V-65	100	860	391	2826	5.583	2.069	0.78	7.8
75	3"	VITALFLEX-V-75	100	946	426	2310	7.925	2.694	2.73	27.3
100	4"	VITALFLEX-V-100	100	1119	496	1654	13.595	3.985	2.844	28.44
125	5"	VITALFLEX-V-125	100	1275	559	1316	22.144	6.293	2.92	29.2
150	6"	VITALFLEX-V-150	100	1439	625	1137	31.238	7.729	3.2	32
200	8"	VITALFLEX-V-200	100	1697	722	1643	56.151	13.241	8.29	82.9
250	10"	VITALFLEX-V-250	100	2010	847	1585	103.327	29.431	13.69	136.9
300	12"	VITALFLEX-V-300	100	2528	1043	1110	180.028	47.539	11.45	114.5

Note :

Dimension 'A' and 'B' are approx dimensions without Fitting only and are subject to change without notice.



Applications

