

ENGINEER TO ORDER FLEX PIPE

VACUUM INSULATED FLEXIBLE PIPE

Engineer to Order Vacuum Insulated Pipe flex modules allow easy configuration of your vacuum insulated pipe system around corners or obstructions, and now offer a greatly expanded array of options. Flex modules are all stainless steel coaxial vacuum insulated pipe, pumped down and sealed at the factory. Available in four standard sizes, with stainless steel flexible outer braid as standard. The modular system, joined with MVE bayonets, offers easy installation and modification, and the VIP smart numbering system allows more integrated options.

FLEX BENEFITS

- Reduces your installation costs. Long rigid sections have to be negotiated up stairs, around turns, through doorways and hallways.
- Reduces your shipping costs. Long lengths can be coiled into a box where rigid pieces must be 40' or less.
- Accommodates your installation unknowns. Construction angles are not always 30, 60 or 90°. Angle and overall length measurements are less critical.
- If you don't know exactly where your bulk tank or application will be located, flex will provide some forgiveness. Overall lengths can't be taken up by expanding or decreasing the radius.
- Manage your unknowns. Obstructions are often not known below the floor or for ceiling installations. Flex can be "snaked around" obstacles.
- Multilayer superinsulation and chemical gettering assures long term vacuum integrity*



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Engineer to Order Flex Pipe Installation



Engineer to Order Flex Coiled for Shipping

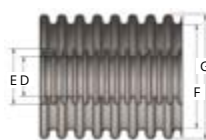
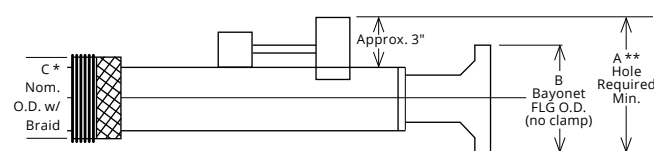
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Technical Specifications

Nominal Inner Diameter	Minimum Bend Radius	MAWP (psi)	"A" Hole Required to Accommodate Pump Out**	"B" Bayonet FLG O.D. (no clamp)	"C" Nominal O.D. with Braid*	Weight*** / Length	Notes
½"	12"	150	5.75"	2.75"	1 ⅜"	0.9 lb/ft (1.3 kg/m)	Designed for ½" MVE & 625 bayonets
¾"	12"	150	5.75"	2.75"	2 ¾"	1.75 lb/ft (2.6 kg/m)	Designed for APPS 160 units
1"	12"	150	5.75"	2.75"	2 ¾"	1.75 lb/ft (2.6 kg/m)	Designed for 1" MVE & 1250 bayonets
1 ½"	16"	150	6.75"	3.76"	4 ⅞"	3.9 lb/ft (9.7 kg/m)	Designed for 1 ½" MVE bayonets
2"	20"	150	7.50"	4.39"	5 ⅞"	6.6 lb/ft (9.7 kg/m)	Designed for 2" MVE bayonets

* Not including pump out. ** Pump out with no Thermocouple (TC). ***Weight is per foot with the pipe empty.



Smart Number	Inner ID "D"	Inner OD "E"	Outer ID "F"	Outer OD "G"
08	0.500"	0.750"	1.250"	1.680"
12	0.787"	1.110"	2.050"	2.470"
16	1.000"	1.430"	2.000"	2.580"
24	1.260"	1.810"	3.100"	3.890"
32	2.050"	2.470"	3.937"	4.980"

Performance Data

Nominal Inner Diameter	Cool Down			Static Heat Leak		LN ₂ Bayonet Pair Heat Leak	
	kJ/m	kg/m*	lb of LN ₂ /ft	BTU/hr/ft	Watt/m	BTU/hr	Watt
½"	72	0.37	0.24	0.977	0.94	14.1	4.13
¾"	89	0.45	0.29	1.09	1.05	14.1	4.13
1"	105	0.53	0.35	1.21	1.16	17.5	5.11
1 ½"	135	0.69	0.45	1.44	1.38	20.8	6.09
2"	225	1.15	0.75	1.74	1.67	22.1	6.47

* LN₂ at one bar.

LN₂ Flow Guideline

Nominal Inner Diameter	100 ft	200 ft	300 ft	400 ft	500 ft
½"	1.5 gpm	1.0 gpm	0.8 gpm	0.7 gpm	0.6 gpm
¾"	2.25 gpm	1.5 gpm	1.15 gpm	1.05 gpm	0.9 gpm
1"	3.0 gpm	2.0 gpm	1.5 gpm	1.4 gpm	1.2 gpm
1 ½"	6.5 gpm	5.0 gpm	4.0 gpm	3.7 gpm	3.5 gpm
2"	42.0 gpm	32.0 gpm	28.0 gpm	25.0 gpm	20.0 gpm

* 10 psi pressure drop ** 5 psi pressure drop

Pressure Drop (psi/ft)*

Nominal Inner Diameter	Flow (gal/min)						
	2	5	10	25	50	75	100
½"	0.012	0.077	0.307	1.919			
¾"		0.058	0.23	1.494			
1"		0.04	0.17	1.070	1.33		
1 ½"		0.009	0.034	0.213	0.852		
2"			0.004	0.060	0.110	0.115	0.400

*Pressure drop numbers listed do not account for elevation changes. Chart recommends pressure drop be kept to 5 psi or less.

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