

# Flexible Hose Piping Recommendations For Rotary Joints

The following sketches illustrate recommended flexible hose installation for rotary joints to minimize piping loads applied to the bearings of rotary joints which directly affect the life of wearing parts.

1. Flexible metal hose should be attached directly to the joint between fixed piping and rotary joint.
2. Piping must be supported independent of the rotary joint. Do not support piping with rotary joint.
3. Flexible hose is used to minimize piping loads due to thermal expansion of piping or process equipment. Also when equipment moves or vibration is present, the flexible hose absorbs this motion with minimal effect on rotary joint.
4. These arrangements are designed to minimize hydraulic forces on the joint.

## EXAMPLES OF FLEXIBLE HOSE INSTALLATIONS

**Figure 1** – the vertical piece of hose allows for header expansion and misalignment of header connection relative to rotary joint connection within normal piping tolerances. Also flexible hose tolerance in length is compensated for to a reasonable amount. The horizontal leg of flexible hose allows for thermal and hydraulic expansion of vertical hose leg without exerting large forces on joint.

**Figure 2** – another method is shown to provide flexibility of hose length, piping and roll movement vertical or horizontal. Generally the hose must be longer than needed for Figure 1 due to the minimum bend radius allowable, which is dependent on size and material of hose and amount of equipment movement.

**Figure 3** – illustrates another recommended method using a single piece of hose which requires sufficient hose length to stay within the minimum bend radius of the specified hose size and material.

**Figure 4** – recommended dual-flow arrangements.

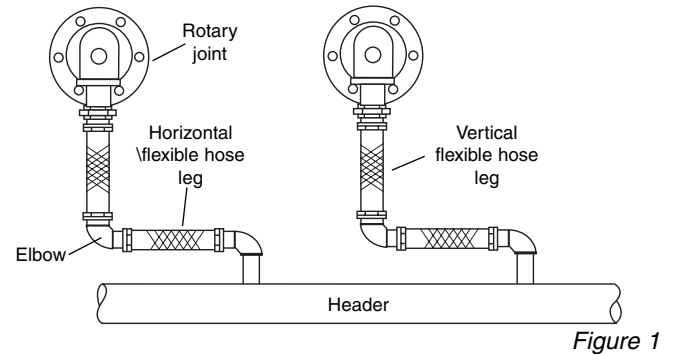


Figure 1

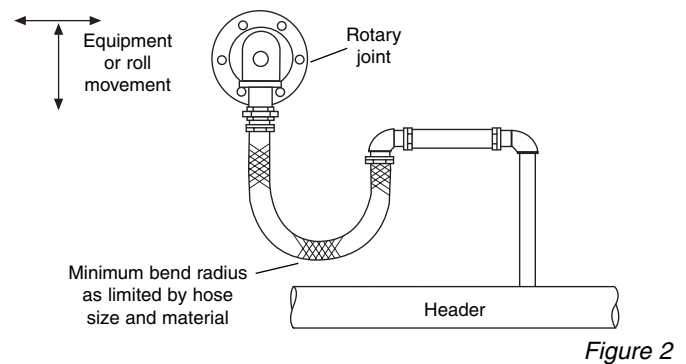


Figure 2

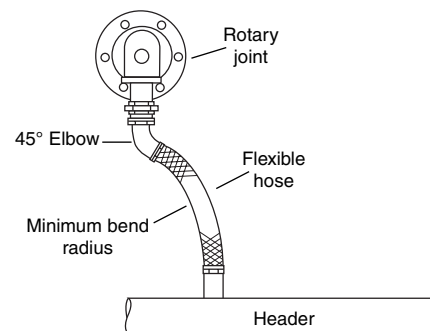


Figure 3

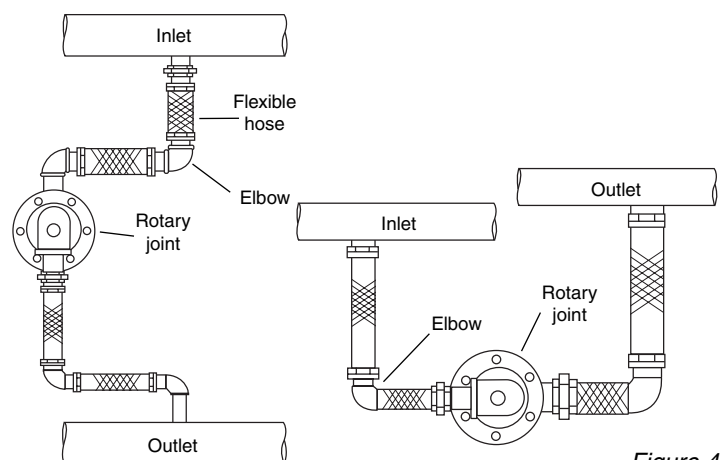
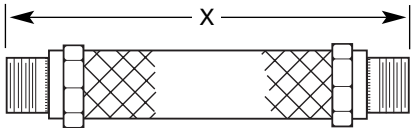


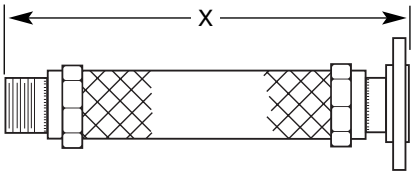
Figure 4

**RECOMMENDED MINIMUM HOSE LENGTH**

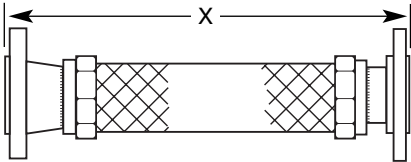
PIPE SIZE	MINIMUM LENGTH (X)	STATIC BEND	INTERMITTENT BEND	MAXIMUM OFFSET
1/4	8	0.87	5.5	1-15/16
3/8	10	1.12	5.5	1-7/8
1/2	10	1.50	6.0	1-1/2
3/4	12	2.12	8.0	15/16
1	15	2.75	9.0	1-5/8
1-1/4	18	3.25	10	2-1/8
1-1/2	18	3.75	12	1-15/16
2	21	5.00	15	2-1/8
2-1/2	22	7.00	14	2-7/16
3	24	8.25	17	2-9/16
4	28	11.0	22	2-15/16
5	30	11.0	28	2-1/2
6	33	16.5	33	2-5/8
8	36	21.5	43	2-7/16



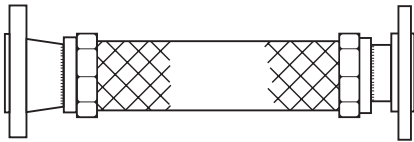
TT



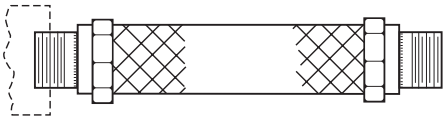
TLF



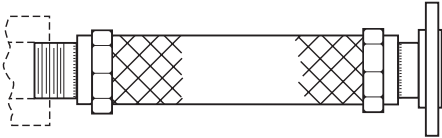
FFLF



Fixed Flange One End  
Lap Flange One End



Threaded Both Ends



Threaded One End  
Lap Flange One End

Size	Maximum Pressure (psig) at:			
	400°F	500°F	600°F	650°F
1/2 x 12	150	150	150	150
3/4 x 12	150	150	150	150
1 x 15	150	150	150	150
1-1/4 x 18	150	150	150	150
1-1/2 x 18	150	150	150	150
2 x 21	150	150	150	150
2-1/2 x 22	150	150	150	150
3 x 24	150	150	150	150
4 x 28	150	150	150	150
5 x 30	150	150	150	150
6 x 33	150	150	150	150
8 x 36	150	140	135	130

Size	Maximum Pressure (psig) at:			
	400°F	500°F	600°F	650°F
1/4 x 12	625	600	575	560
3/8 x 12	550	525	505	490
1/2 x 12	575	550	525	510
3/4 x 12	495	465	440	430
1 x 15	440	420	405	390
1-1/4 x 18	370	350	330	320
1-1/2 x 18	340	320	300	295
2 x 21	335	325	310	300
2-1/2 x 22	330	315	305	295
3 x 24	270	255	240	235
4 x 28	190	175	170	165
5 x 30	220	205	195	190
6 x 33	195	185	175	170
8 x 36	150	140	135	130

Size	Maximum Pressure (psig) at:			
	400°F	500°F	600°F	650°F
1/2 x 12	150	150	150	150
3/4 x 12	150	150	150	150
1 x 15	150	150	150	150
1-1/4 x 18	150	150	150	150
1-1/2 x 18	150	150	150	150
2 x 21	150	150	150	150
2-1/2 x 22	150	150	150	150
3 x 24	150	150	150	150
4 x 28	150	150	150	150
5 x 30	150	150	150	150
6 x 33	150	150	150	150
8 x 36	150	140	135	130

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