Pipe Support

All piping systems require that the support system accommodate the weight of the pipe, joint connections, fluid, and other system components. In addition, consideration may be necessary in reducing stresses, accommodating thermal expansion or contraction, building settlement, seismic movement, etc. The following tables provide guidelines for grooved steel piping products without concentrated loads between supports.

Flexible Joints

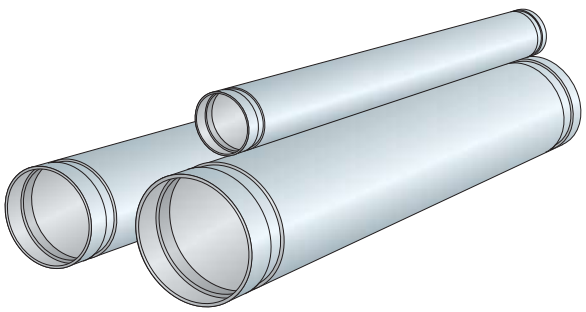
For pipe runs when linear movement is accommodated by the flexible coupling:

Number of Hangers Per Pipe Length								
Pipe Size mm *Inches*	Pipe Length in Metres *Feet*							
	3.3	3.7	4.6	6.7	7.6	9.1	10.7	12.2
	10	*12*	*15*	*22*	*25*	*30*	*35*	*40*
	Average Number of Hangers Per Pipe Length							
42.4 – 60.3 *1-¼ - 2*	2	2	2	3	4	4	5	6
73.0 – 114.3 *2-½ - 4*	1	2	2	2	2	3	4	4
141.3 – 609.6 *5 - 24*	1	1	2	2	2	3	3	3

For pipe runs when linear movement is not required:

Distance Between Supports	
Nominal Size mm *Inches*	Maximum Distance Between Supports Metres *Feet*
42.4 - 48.3	3.7
1-¼ - 1-½	*12*
60.3 - 219.1	4.6
2 - 8	*15*
273.0 - 323.9	4.9
10 - 12	*16*

Note: The requirements of ANSI, ASME or other code groups may require additional supports.



Rigid Joints

For pipe runs with rigid couplings:

Pipe Size		Suggested Maximum Span Between Supports – Meters *Feet*					
Nominal DN *In.*	O.D. mm *In.*	Water Service			Air Service		
		I	II	III	I	II	III
25	33.4	2.1	2.7	3.7	2.7	9	3.7
1	*1.315*	*7*	*9*	*12*	*9*	*2.7*	*12*
32	42.4	2.1	3.4	3.7	2.7	11	3.7
1¼	*1.660*	*7*	*11*	*12*	*9*	*3.4*	*12*
40	48.3	2.1	3.7	4.6	2.7	13	4.6
1½	*1.900*	*7*	*12*	*15*	*9*	*4.0*	*15*
50	60.3	3.0	4.0	4.6	4.0	15	4.6
2	*2.375*	*10*	*13*	*15*	*13*	*4.6*	*15*
65	73.0	3.4	4.3	4.6	4.3	16	4.6
2½	*2.875*	*11*	*14*	*15*	*14*	*4.9*	*15*
65	76.1	3.4	4.3	4.6	4.3	16	4.6
76,1mm	*3.000*	*11*	*14*	*15*	*14*	*4.9*	*15*
80	88.9	3.7	4.6	4.6	4.6	17	4.6
3	*3.500*	*12*	*15*	*15*	*15*	*5.2*	*15*
100	114.3	4.3	5.2	4.6	5.2	21	4.6
4	*4.500*	*14*	*17*	*15*	*17*	*6.4*	*15*
125	133.0	4.9	5.8	4.6	6.1	24	4.6
133.0mm	*5.236*	*16*	*19*	*15*	*20*	*7.3*	*15*
125	139.7	4.6	5.5	4.6	5.2	23	4.6
139,7mm	*5.500*	*15*	*18*	*15*	*19*	*7*	*15*
125	141.3	4.9	5.8	4.6	6.1	24	4.6
5	*5.563*	*16*	*19*	*15*	*20*	*7.3*	*15*
150	165.1	5.2	6.1	4.6	6.4	25	4.6
165,1mm	*6.500*	*17*	*20*	*15*	*21*	*7.6*	*15*
150	168.3	5.2	6.1	4.6	6.4	25	4.6
6	*6.625*	*17*	*20*	*15*	*21*	*7.6*	*15*
200	219.1	5.8	6.4	4.6	7.3	28	4.6
8	*8.625*	*19*	*21*	*15*	*24*	*8.5*	*15*
250	273.0	5.8	6.4	4.6	7.3	31	4.6
10	*10.750*	*19*	*21*	*15*	*24*	*9.4*	*15*
300	323.9	7	6.4	4.6	9.1	33	4.6
12	*12.750*	*23*	*21*	*15*	*30*	*10.1*	*15*

I - Spacing by ANSI B31.1 Power Piping Code
II - Spacing by ANSI B39.1 Building Piping Code
III - Spacing by NFPA 13 Sprinkler Systems (Steel Pipe except Threaded Lightwall)

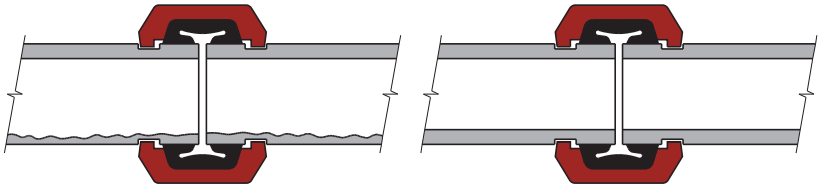
Pipe Support

Tech Data Sheets: TFP1800, G820, G830

Rotational Movement

GRINNELL Flexible Couplings are suitable for use in seismic as well as mining applications. The inherent capability of the flexible coupling to allow for linear movement, angular deflection, and rotational movement make it an excellent choice for reducing stresses in a piping system and to increase pipe life in slurry applications.

For mining applications where the pipe needs to be rotated, the system should be depressurized. The pipe coupling bolts/nuts can be loosened, pipe rotated, the bolts/nuts re-tightened, and the system be put back in service.



Even distribution of pipe wear can be achieved with this method on the inner service of the pipe.

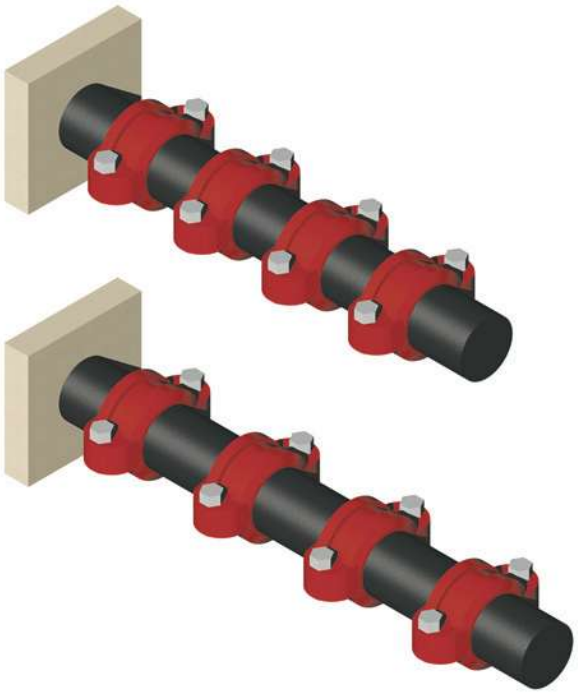
Note: Precautions are necessary to monitor pipe wall thickness to evaluate pressure capability of the pipe with reduced wall.

Linear Movement

Flexible couplings are designed with the couplings keys engaging the pipe without gripping on the bottom of the groove while still providing for a restrained mechanical joint.

The inherent flexibility of the coupling must be considered when deciding on support arrangements for the piping system as movement can occur in more than one plane (linear movement, angular deflection, and rotational movement).

Upon system pressurization, each pipe end within the flexible couplings will expand to the maximum published value. The coupling keys make contact with the face of the groove and restrain the joint. In piping systems, this movement will be accumulative.



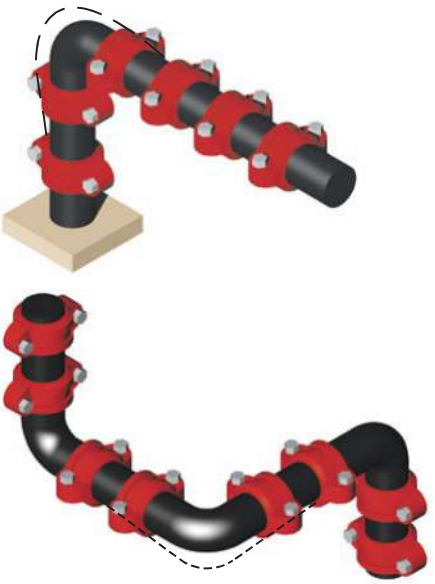
Pipe Support

Tech Data Sheets: TFP1800, G820, G830

Angular Movement

System movement can be accommodated by providing for sufficient offset lengths. Temperature increases/decreases can further increase this movement.

When systems are anchored with partially deflected joints, the system can move to the fully deflected condition upon pressurization resulting in the "snaking" of the piping system. Lightweight hangers may not be suitable to prevent the lateral motion.

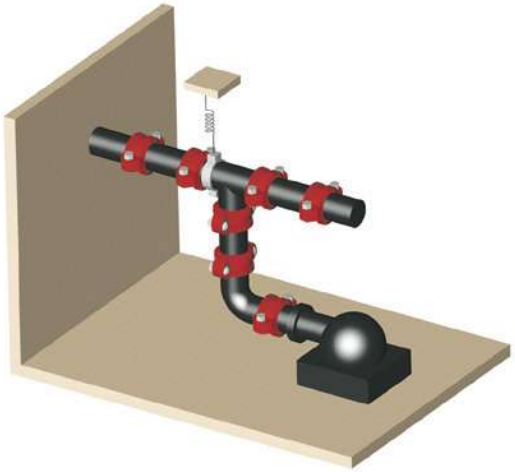


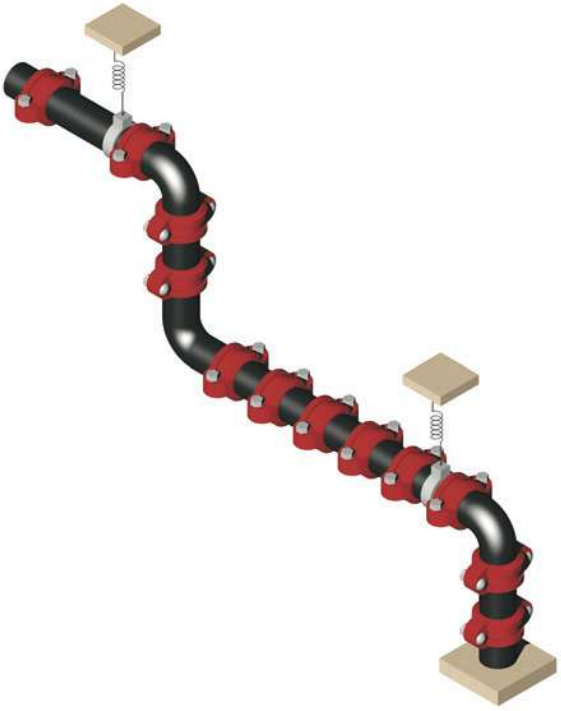
Pipe Support

Pipe hanger positioning is important when considering pipe "sagging" due to the flexible nature of the piping system. Proper positioning of hangers near the elbow, for example, should be considered.

The use of spring hangers or other methods can be considered to accommodate vibrations. Base supports, pressure thrust anchors, and pipe offsets can be used to direct pipe movement.

The use of rigid couplings can be considered to reduce the movement available with flexible couplings. Consideration of other methods of accommodation of pipe movements may be required.

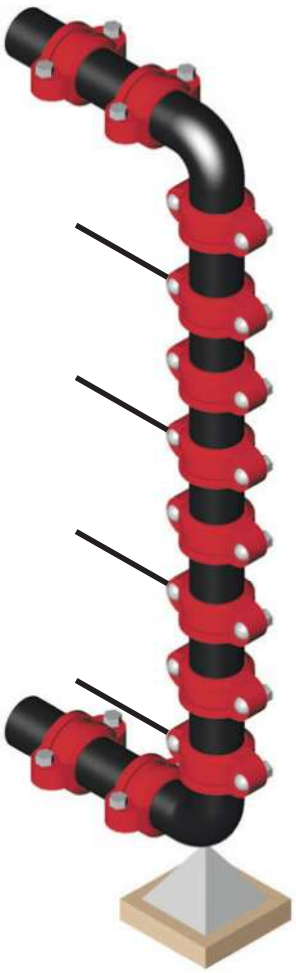




Vertical Piping

Tech Data Sheets: TFP1800, G820, G830

Risers comprised of rigid couplings can be considered instead of welded or flanged systems. Where thermal movement exists, expansion joints and/or flexible couplings with offsets may be required.



When using flexible couplings, the movement that occurs in long lengths of piping needs to be considered. Each joint can move up to the maximum pipe end separation published. This movement can accumulate and result in the growth of the piping system, for example at the top. Offsets may be necessary.

Should the riser contain branch connections, the movement which occurs at these locations with flexible couplings will also need to be considered.

One solution would be to anchor the vertical piping at appropriate locations to prevent movement which can cause stresses at the branches or equipment. The use of rigid couplings can be an advantage.

As always, good piping practice should prevail. It is the designer's responsibility to select products suitable for the intended service and to ensure that pressure ratings and performance data is not exceeded. Never remove any piping component or correct or modify any piping deficiencies without first depressurizing and draining the system. Material and gasket selection should be verified to be compatible for the specific application.