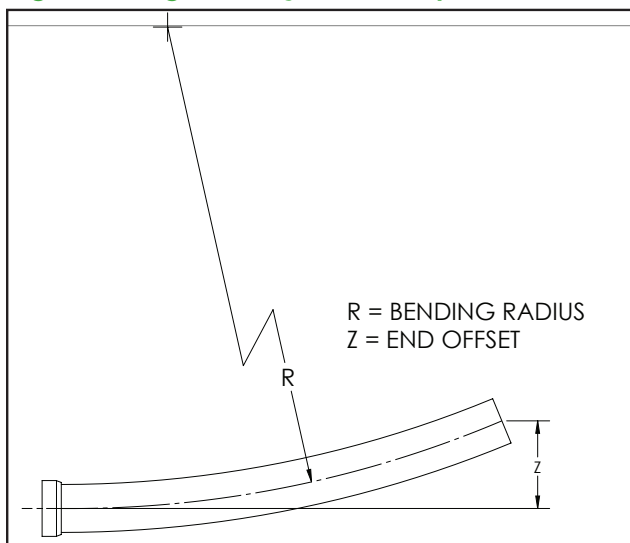


# Longitudinal Bending of PVC Pipe

Atkore pipe and conduit products are made from unplasticized polyvinyl chloride (PVC) compounds, which allow these products to flex without breaking. Consequently, Atkore pipe and conduit products can be purposely curved along their length a certain amount without adversely affecting their pressure-carrying or load-carrying ability.

**Figure 1 Longitudinally Curved Pipe**



Curving a pipe along its length is commonly referred to as longitudinal bending. See Figure 1 for an illustration of a pipe that has been longitudinally bent.

There are two important limitations to the longitudinal bending of Atkore products 1) the bending stresses that are induced in the pipe due to the bending, and 2) the axial deflection of gasketed pipe joints. These limitations are discussed below.

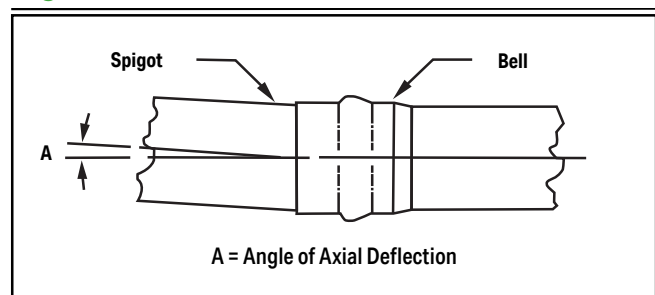
## Bending Stresses

For a pipe of a given material, the stresses that are induced in the pipe when it is bent depend upon the radius of bending curvature and the diameter of the pipe. Smaller bending radii cause greater stresses in pipe walls. Also, larger diameter pipes will be stressed more

than smaller diameter pipes for a given bending radius. Wall thickness is not a consideration for bending stresses.

The minimum Bending Radius (R), and maximum End Offset (Z), for each Atkore product can be found in the tables on the back of this sheet. Longitudinal bending of Atkore products by mechanical means must be controlled to prevent excessive loading and/or damage to the pipe.

**Figure 2 Axial Deflection of Gasketed Joint**



*Note: Joint Deflection Shown Exaggerated*

In many cases, bending of PVC pipe can and should be accomplished manually. Pipes with large diameters and/or thick walls may be very difficult to properly bend, so fittings may be required to achieve directional changes in these cases.

**Gasketed Joint Axial Deflection** In the field, Atkore recommends a maximum of one degree of axial gasketed joint deflection. If greater curvature or joint deflection is desired than what is recommended, fittings should be used. There are many fittings for PVC pipe available for this purpose.

It is difficult to longitudinally bend gasketed pipe without causing axial deflection at the joints. For this reason, Atkore gasketed pipe joints must be restrained from excessive axial deflection if the pipe is to be longitudinally bent. It is sometimes possible to accomplish this by backfilling over the joint before bending the pipe body.



# Longitudinal Bending of PVC Pipe

## Water/Irrigation Pressure Pipe - IPS-Sized - 20' Lengths

Trade Size (in)	O.D. (in)	R (ft)	Z (ft)
½	0.840	14.0	12.0
¾	1.050	17.5	10.2
1	1.315	21.9	8.5
1¼	1.660	27.7	6.9
1½	1.900	31.7	6.1
2	2.375	39.6	4.9
2½	2.875	47.9	4.1
3	3.500	58.3	3.4
4	4.500	75.0	2.7
5	5.563	92.7	2.1
6	6.625	110.4	1.8
8	8.625	143.8	1.4
10	10.750	179.2	1.1
12	12.750	212.5	0.9

## Gravity Sewer Pipes - 20' and 14' Lengths

Trade Size (in)	O.D. (in)	R (ft)	Z (ft)
20' Lengths			
4	4.215	54.9	3.6
6	6.275	81.7	2.4
8	8.400	109.4	1.8
10	10.500	136.7	1.5
12	12.500	162.8	1.2
15	15.300	199.2	1.0
14' Lengths			
4	4.215	54.9	1.8
6	6.275	81.7	1.2
8	8.400	109.4	0.9
10	10.500	136.7	0.7
12	12.500	162.8	0.6
15	15.300	199.2	0.5

## Pressure Pipe - PIP-Sized - 20' Lengths

Trade Size (in)	O.D. (in)	R (ft)	Z (ft)
6	6.140	102.3	1.9
8	8.160	136.0	1.5
10	10.200	170.0	1.2
12	12.240	204.0	1.0
15	15.300	255.0	0.8

## Electrical Conduit/Ducts - 20' and 10' Lengths

Trade Size (in)	O.D. (in)	R (ft)	Z (ft)
20' Lengths			
½	0.840	10.9	13.7
¾	1.050	13.7	12.2
1	1.315	17.1	10.4
1¼	1.660	21.6	8.6
1½	1.900	24.7	7.7
2	2.375	30.9	6.2
2½	2.875	37.4	5.2
3	3.500	45.6	4.3
3½	4.000	52.1	3.8
4C	4.350	56.6	3.5
4	4.500	58.6	3.4
5	5.563	72.4	2.7
6	6.625	86.3	2.3
8	8.625	112.3	1.8
10' Lengths			
½	0.840	10.9	4.3
¾	1.050	13.7	3.5
1	1.315	17.1	2.8
1¼	1.660	21.6	2.3
1½	1.900	24.7	2.0
2	2.375	30.9	1.6
2½	2.875	37.4	1.3
3	3.500	45.6	1.1
3½	4.000	52.1	1.0
4C	4.350	56.6	0.9
4	4.500	58.6	0.9
5	5.563	72.4	0.7
6	6.625	86.3	0.6
8	8.625	112.3	0.4

