

# Expansion Joint Movement/Force/Spring Rate Capability

## BASED ON SINGLE OPEN ARCH DESIGN

NOMINAL PIPE SIZE EXPANSION JOINT I.D. (INCHES)	RECOMMENDED FACE-TO-FACE MINIMUM LENGTH (INCHES)	MOVEMENT CAPABILITY					FORCE POUNDS				SPRING RATE			
		INCHES OF AXIAL COMPRESSION	INCHES OF AXIAL EXTENSION	INCHES OF LATERAL DEFLECTION	DEGREES OF ANGULAR MOVEMENT	DEGREES OF TORSIONAL MOVEMENT	TOTAL LOAD LBS. FOR RATED COMPRESSION	TOTAL LOAD LBS. FOR RATED EXTENSION	TOTAL LOAD LBS. FOR RATED LATERAL DEFLECTION	TOTAL LOAD FOOT LBS. FOR RATED ANGULAR MOVEMENT	FORCE POUNDS FOR 1" COMPRESSION MOVEMENT	FORCE POUNDS FOR 1" EXTENSION MOVEMENT	FORCE POUNDS FOR 1" LATERAL DEFLECTION	FORCE FOOT LBS. FOR 1" ANGULAR MOVEMENT
1 1/4	6	7/16	1/4	1/2	22.5	3	129	96	219	2	294	383	483	.1
1 1/2	6	7/16	1/4	1/2	18.5	3	154	115	262	3	353	459	524	.15
2	6	7/16	1/4	1/2	14.5	3	185	138	350	4	423	552	700	.3
2 1/2	6	7/16	1/4	1/2	11.5	3	232	172	381	6	530	689	762	.5
3	6	7/16	1/4	1/2	10.0	3	278	207	412	8	635	828	824	.1
3 1/2	6	7/16	1/4	1/2	8.3	3	324	241	444	11	742	965	888	1.3
4	6	7/16	1/4	1/2	7.5	3	371	276	476	14	848	1,104	952	1.9
5	6	7/16	1/4	1/2	6.0	3	463	344	546	22	1,058	1,376	1,092	3.7
6	6	7/16	1/4	1/2	5.0	3	556	413	617	32	1,271	1,652	1,234	6.4
8	6	11/16	3/8	1/2	5.5	3	971	689	753	70	1,412	1,837	1,506	12.7
10	8	11/16	3/8	1/2	4.5	3	1,214	861	809	109	1,766	2,296	1,618	24.2
12	8	11/16	3/8	1/2	3.75	3	1,456	1,033	948	158	2,118	2,755	1,896	42.1
14	8	11/16	3/8	1/2	3.25	2	1,274	904	1,117	160	1,853	2,411	2,234	49.2
16	8	11/16	3/8	1/2	2.75	2	1,456	1,033	1,286	209	2,118	2,755	2,572	76
18	8	11/16	3/8	1/2	2.5	1	1,638	1,163	1,420	266	2,382	3,101	2,840	106
20	8	13/16	7/16	1/2	2.5	1	2,152	1,505	1,588	381	2,649	3,440	3,176	152
22	10	13/16	7/16	1/2	2.25	1	2,367	1,656	1,648	463	2,913	3,785	3,296	205
24	10	13/16	7/16	1/2	2.0	1	2,582	1,807	1,706	549	3,178	4,130	3,412	274
26	10	15/16	1/2	1/2	2.3	1	2,869	1,990	1,829	659	3,060	3,980	3,658	292
28	10	15/16	1/2	1/2	2.0	1	3,090	2,143	1,952	765	3,296	4,286	3,904	382
30	10	15/16	1/2	1/2	2.0	1	3,311	2,297	2,075	875	3,532	4,594	4,150	437

### NOTES:

#### A. MOVEMENT CAPABILITY

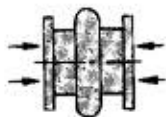
- "Filled Arch" construction reduces above movement by 50%.
- The degree of Angular Movement is based on the maximum extension shown.
- If greater movements are desired, expansion joints can be supplied with two, three or four arches. Relatively longer "Face-To-Face" length dimensions are incorporated into designs of Multiple Arch Type expansion joints.
- To calculate approximate movements of Multiple Arch Type

expansion joints, take the movement shown in the above table and multiply by the number of arches.

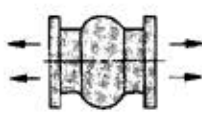
- Movements shown above are based on proper installation practice.

#### B. FORCE POUNDS/SPRING RATE

- Forces required to move expansion joints are based on zero pressure conditions and room temperature in the pipe line.
- These forces should be considered only as approximates which may vary with the elastomers and fabrics used in fabrication and the specific construction design of an individual manufacturer.



**Axial  
Compression**



**Axial  
Elongation**



**Torsional  
Movement**



**Lateral  
Movement**



**Angular  
Movement**



**Absorbing  
Vibration**