



PVC & CPVC SCHEDULE 80 FABRICATED EXPANSION JOINTS

EJ-2-0999

Double O-Ring Sealed Telescoping Design Available with 6” and 12” Travel



Linear expansion and contraction from temperature fluctuations can be a major problem in thermoplastic piping systems. Forces left uncontrolled can literally tear systems apart. Spears Expansion Joint allows a telescoping movement of an inner pipe within a firmly mounted outer tube to eliminate such damage. Available for PVC 1/2” through 12” and CPVC 1/2” through 10” IPS piping systems in 6” or 12” maximum travel lengths.

Compact Installation - Eliminates “Snaking” & Expansion Loops

Telescoping design allows more compact installation than possible with conventional expansion loops. Eliminates the need for “snaking” of pipe and permits rigid mounting between two fixed points.

Double Viton® O-Ring Seal with “Wiper” O-Ring for Extended Life

Designed for sealing dependability, double Viton® seals utilize additional EPDM “wiper” o-ring to remove dirt and particles that would normally wear joint seals during operation. Long-life Expansion Joint requires no repair or replacement.

Support Piston Eliminates Binding, Minimizes Alignment Problems

Alignment is critical in use of expansion joints. Specially designed support piston eliminates binding and minimizes alignment problems which can result in cocking or breakage.

Coefficient of Thermal Linear Expansion

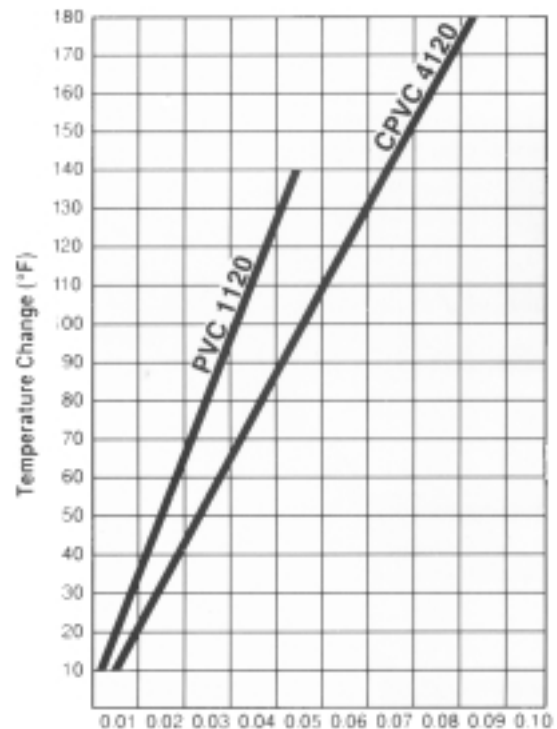
$$\text{PVC 1120} = 2.8 \times 10^{-5} \text{ in/in/}^{\circ}\text{F}$$

$$\text{CPVC 4120} = 3.4 \times 10^{-5} \text{ in/in/}^{\circ}\text{F}$$

Sample Engineering Specification

All Expansion Joints shall be telescoping design with double (2) Viton® o-ring seals, (1) EPDM wiping o-ring, and internal support piston. Maximum joint travel length shall be either 6” or 12”. All Expansion Joints shall be fabricated from PVC or CPVC pipe materials meeting the requirements of ASTM D 1784.

Linear Expansion and Contraction



Change in Pipe Length (Inches/Feet)



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Installation of Expansion Joints

An expansion joint basically consists of two tubes, one telescoping inside the other. The outer tube is to be firmly anchored and the inner tube allowed to move with a piston-like action as the attached pipe expands or contracts. Expansion movement of the pipe must be directed squarely into the expansion joint.

Alignment of expansion joints is most important, since binding or leakage may result if the piston is cocked and does not move in the same plane as the joint.

Joints are to be installed with the piston partially extended, depending on the temperature when installed. Correct piston position at the time of installation is critical and can be calculated by the following formula:

$$\frac{T - A}{T - F} XE = P$$

EXAMPLE:

A STRAIGHT RUN OF PIPE WILL OPERATE AT TEMPERATURES BETWEEN 60°F AND 110°F. THE TEMPERATURE AT THE TIME OF INSTALLATION IS 75°F.

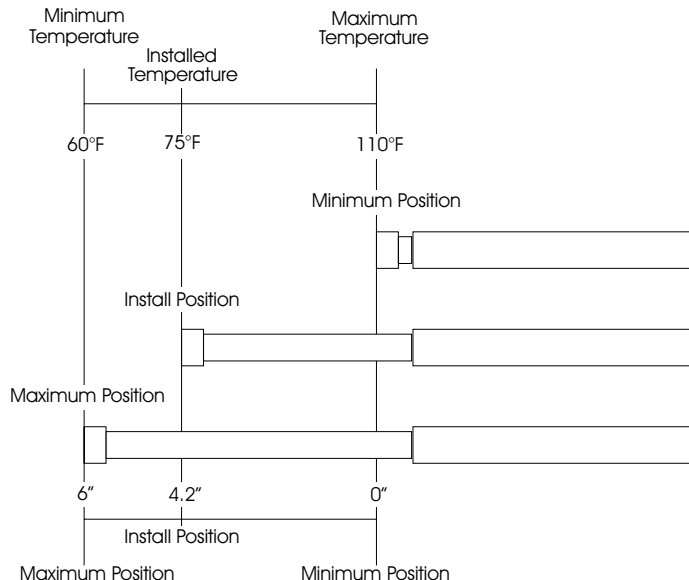
$$\frac{T - A}{T - F} XE = P \quad \frac{110 - 75}{110 - 60} X6 = 4.2''$$

SEE DIAGRAM BELOW FOR HOW TO APPLY THIS FORMULA TO PROPER PISTON POSITION.

If the expansion joint has been in storage for some time, it will be necessary to bump or tap the piston to begin movement.

- T — MAXIMUM TEMPERATURE PIPE EXPOSURE
- A — TEMPERATURE OF PIPE AT TIME OF INSTALLATION
- F — MINIMUM TEMPERATURE OF PIPE
- E — MAXIMUM EXPANSION LENGTH OF JOINT
- P — PISTON POSITION IN INCHES

General Rule: To determine length of expansion joint needed: For PVC, allow 3/8" expansion for every 10°F change in temperature per 100' of pipe (regardless of diameter); for CPVC, allow 1/2" expansion for every 10°F change in temperature per 100' of pipe (regardless of diameter). For example, A 6" travel expansion joint will accommodate approximately 160°F change in temperature in 100' of PVC pipe (16 x 3/8" = 6"), or approximately 120°F change in temperature in 100' of CPVC pipe (12 x 1/2" = 6").



Temperature Pressure Rating (PSI)

Material	Operating Temperature	Nominal Pipe Diameter												
		1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4	6	8	10	12
PVC	75°	340	340	320	260	240	200	190	190	160	130	120	110	100
	100°	260	210	200	165	150	125	120	120	100	100	100	95	90
	120°	170	140	130	105	100	80	76	76	65	55	50	50	50
	140°	95	75	70	60	55	45	75	42	40	30	30	30	30
CPVC	160°	170	135	125	105	95	80	75	75	65	51	45	45	
	180°	110	85	80	65	60	50	50	50	40	36	32	32	

Maximum operating temperature: PVC = 140°F
CPVC = 180°F

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