

# Applications

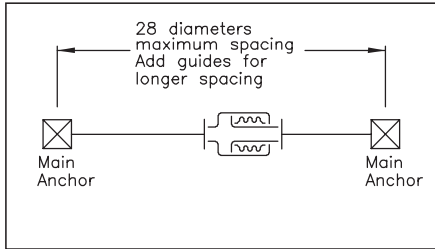
Series 8500 Expansion Compensators are designed for installations where the principal movement is axial. Standard joints are designed for 2" or 3" axial compression (pipe expansion) and 0.5" extension. If the primary movement is

extension (pipe contraction) the compensator can be preset at the factory. The piping system must include anchors to react the force produced by pressure thrust and the bellows spring constant, supports to

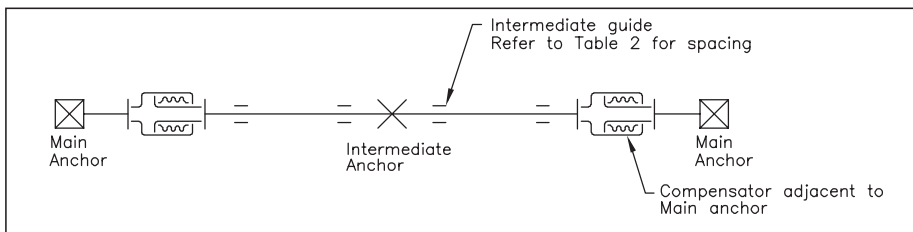
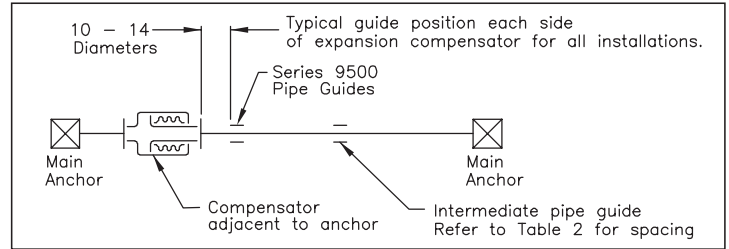
react the weight of the pipe and media, and guides to ensure that the pipe alignment is maintained.

*Refer to Table 2 for the intermediate guide spacing in the center of runs.*

## Short run between heaters or solar panels



## Run requiring only one compensator



## Run requiring more than one compensator

*See page 6 for calculation methods for travel required and anchor forces.*

**Table 1 Thermal Expansion**

	Saturated Steam Pressure	Temperature		Copper Tube	Carbon Steel Pipe	
		Deg F	Deg C			
Vacuum (inches of mercury)		-325	-198			
		-300	-185			
		-250	-157			
		-200	-129	-2.85		
		-150	-101	-1.81		
		-100	-73	-1.81		
		-50	-46	-1.32	-0.84	
		0	-18	-0.75	-0.49	
		25	-4	-0.47	-0.32	
		29.7	32	0	-0.39	-0.27
		29.6	50	10	-0.19	-0.14
		29.2	70	21	-0	0
		28.0	100	38	0.38	0.23
		26.0	125	52	0.66	0.42
		22.4	150	66	0.94	0.61
Pressure (psig)		16.3	175	80	1.23	0.80
		6.0	200	93	1.51	0.99
		0	212	100	1.65	1.10
		4	225	107	1.80	1.21
		5	250	121	2.09	1.40
		31	275	135	2.38	1.61
		52	300	149	2.67	1.82
		120	350	177	3.27	2.26
		150	358	181	3.37	2.33
		300	417	214	4.09	2.86
	666	500	260	5.09	3.62	

Linear thermal expansion of pipe or tube per 100 feet between 70°F & tabulated temperature

**Table 2 Intermediate Guide spacing**

Nominal Size	Pressure (psig)					
	50	75	100	150	200	
Models 8503 - 8506 Schedule 40 Carbon Steel Pipe	3/4	7.7	7.3	6.9	6.3	5.8
	1	11.9	11.0	10.3	9.2	8.4
	1-1/4	16.3	14.7	13.5	11.7	10.5
	1-1/2	19.4	17.2	15.6	13.4	11.9
	2	26.8	23.2	20.7	17.5	15.4
	2-1/2	31.3	27.5	24.8	21.2	18.8
	3	38.8	33.5	29.9	25.2	22.0
	4	47.1	40.7	36.4	30.8	27.0
Models 8509 & 8510 Type L Copper Tube	3/4	2.4	2.3	2.2	2.1	1.9
	1	4.0	3.7	3.5	3.2	2.9
	1-1/4	5.7	5.2	4.9	4.3	3.9
	1-1/2	7.5	6.8	6.2	5.4	4.9
	2	10.0	9.0	8.3	7.2	6.5
	2-1/2	13.9	12.2	10.9	9.4	8.3
	3	16.8	14.7	13.2	11.2	9.9
	4	20.6	18.3	16.6	14.3	12.7

**Note:** Guide Spacing is center to center measured in feet.