

# Thermostatic Expansion Valves for Refrigeration

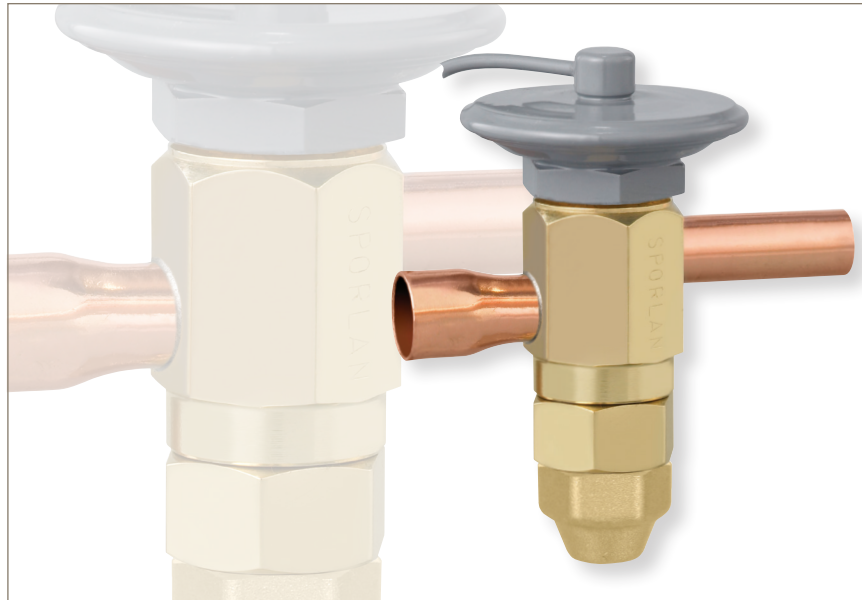
FR Series



Sporlan's new **FR Series Thermostatic Expansion Valves** feature micro-capacities that are ideal for food service or food retail applications where the cooling capacity is significantly smaller than 1 ton. Featuring nominal tonnage capacities of 1/10 and 1/16 tons, these new valves precisely control superheat in high efficiency refrigeration cases or reach-ins where the use of LED lights, improved insulation and doors, and smaller anti-sweat heaters lead to reduced load.

## Features & Benefits

- New 1/10 and 1/16 ton Nominal Capacities for Micro-system Optimization
- Works with All Common Refrigeration Refrigerants
- Unique Design Minimizes Solid Debris Build-up
- Internal or External Equalization
- Field Replaceable Power Element for Easy Retrofit
- Selective Thermostatic Charges for Application Optimization
- Easily Adjustable Superheat Setting
- Long Lasting, Durable Stainless Steel Diaphragm and Weld Design
- High-Strength Silver Soldered Joints with Solid Copper Fittings
- Multiple Capillary Tube Lengths Available



## Save Hours of Design and Development Time Reduce Project Timelines

- Quickly and easily optimize expansion for enhanced evaporator efficiency
- Gain energy efficiency to meet pending regulations
- Minimize cost and refrigerant charge with reduced evaporator size
- Ease the transition to low GWP or natural refrigerants

The FR Series TEV modulates allowing it to maintain target superheat under varying loads and conditions while capillary tubing does not. The resulting coil efficiency gain and reduced coil size assists with meeting refrigerant charge restrictions when using flammable refrigerants like propane (R-290). OEM tested and approved, the FR Series can make your next project run as efficiently as your systems.



ENGINEERING YOUR SUCCESS.

## Specifications

<b>Refrigerants</b>	R-134a, R-290, R-404A/507, R-448A, R-449A, R-513A
<b>Lubricants</b>	Mineral Oil, Polyolester (POE), Polyvinylether (PVE)
<b>Maximum Rated Pressure</b>	500 psig (34.5 bar)

## Nominal Capacities

### Tons (kW)

R-134a, R-513A	R-290, R-407A/F, R-448A, R449A	R-404A, R-507
1/20 (0.18)	1/16 (0.21)	1/25 (0.14)
1/12 (0.29)	1/10 (0.35)	1/16 (0.21)

## Nomenclature and Standard Connections / Options

FR	D	E	1/16	C	2 x 3 x 2 ODF	15"
<b>Series</b>	<b>Refrigerant</b>	<b>Options</b>	<b>Tonnage</b>	<b>Charge</b>	<b>Fittings</b>	<b>Capillary</b>
	D – R-448A, R-449A	None =	See Nominal	C	<b>Inlet x Outlet x Equalizer</b>	<b>Tube</b>
	J – R-134a, R-513A	Internally Equalized	Capacities	Z	<b>in 1/8 inches</b>	<b>Length</b>
	N – R-407A, R-407F	E =	in table at		ODF	15"
	O – R-290	Externally Equalized	above right		Inlet: 1/4", 3/8"	30"
	S – R-404A	(1/4" ODF Std.)			Outlet: 3/8", 1/2"	60"

## Extended Capacities

### R-404A - Tons (kW)

Nominal Capacity	Evaporator Temperature °F (°C)					
	40 (4)	20 (-7)	0 (-18)	-10 (-23)	-20 (-29)	-40 (-40)
1/25	0.033 (0.12)	0.035 (0.12)	0.03 (0.11)	0.025 (0.09)	0.022 (0.08)	0.015 (0.05)
1/16	0.069 (0.24)	0.073 (0.26)	0.062 (0.22)	0.051 (0.18)	0.045 (0.16)	0.032 (0.11)

### R-404A - BTU

Nominal Capacity	Evaporator Temperature °F					
	40	20	0	-10	-20	-40
1/25	396	420	360	300	264	180
1/16	828	876	744	612	540	384

### R-290 - Tons (kW)

Nominal Capacity	Evaporator Temperature °F (°C)					
	40 (4)	20 (-7)	0 (-18)	-10 (-23)	-20 (-29)	-40 (-40)
1/16	0.065 (0.23)	0.069 (0.24)	0.06 (0.21)	0.049 (0.17)	0.043 (0.15)	0.032 (0.11)
1/10	0.135 (0.47)	0.144 (0.51)	0.123 (0.43)	0.101 (0.35)	0.09 (0.32)	0.065 (0.23)

### R-290 - BTU

Nominal Capacity	Evaporator Temperature °F					
	40	20	0	-10	-20	-40
1/16	780	828	720	588	516	384
1/10	1620	1728	1476	1212	1080	780

### R-407A - Tons (kW)

Nominal Capacity	Evaporator Temperature °F (°C)					
	40 (4)	20 (-7)	0 (-18)	-10 (-23)	-20 (-29)	-40 (-40)
1/16	0.05 (0.18)	0.054 (0.19)	0.047 (0.16)	0.038 (0.13)	0.034 (0.12)	0.025 (0.09)
1/10	0.104 (0.37)	0.112 (0.39)	0.096 (0.34)	0.079 (0.28)	0.07 (0.25)	0.052 (0.18)

### R-407A - BTU

Nominal Capacity	Evaporator Temperature °F					
	40	20	0	-10	-20	-40
1/16	600	648	564	456	408	300
1/10	1248	1344	1152	948	840	624

### R-407F - Tons (kW)

Nominal Capacity	Evaporator Temperature °F (°C)					
	40 (4)	20 (-7)	0 (-18)	-10 (-23)	-20 (-29)	-40 (-40)
1/16	0.055 (0.19)	0.06 (0.21)	0.052 (0.18)	0.043 (0.15)	0.038 (0.13)	0.028 (0.10)
1/10	0.114 (0.40)	0.124 (0.44)	0.107 (0.38)	0.089 (0.31)	0.079 (0.28)	0.058 (0.20)

### R-407F - BTU

Nominal Capacity	Evaporator Temperature °F					
	40	20	0	-10	-20	-40
1/16	660	720	624	516	456	336
1/10	1368	1488	1284	1068	948	696

## Extended Capacities (Continued)

### R-448A - Tons (kW)

Nominal Capacity	Evaporator Temperature °F (°C)					
	40 (4)	20 (-7)	0 (-18)	-10 (-23)	-20 (-29)	-40 (-40)
1/16	0.045 (0.16)	0.048 (0.17)	0.042 (0.15)	0.034 (0.12)	0.03 (0.11)	0.022 (0.08)
1/10	0.093 (0.33)	0.1 (0.35)	0.086 (0.30)	0.071 (0.25)	0.063 (0.22)	0.046 (0.16)

### R-449A - Tons (kW)

Nominal Capacity	Evaporator Temperature °F (°C)					
	40 (4)	20 (-7)	0 (-18)	-10 (-23)	-20 (-29)	-40 (-40)
1/16	0.044 (0.15)	0.048 (0.17)	0.041 (0.14)	0.034 (0.12)	0.03 (0.11)	0.022 (0.08)
1/10	0.092 (0.32)	0.099 (0.35)	0.085 (0.30)	0.07 (0.25)	0.062 (0.22)	0.045 (0.16)

### R-134a - Tons (kW)

Nominal Capacity	Evaporator Temperature °F (°C)					
	40 (4)	20 (-7)	0 (-18)	-10 (-23)	-20 (-29)	-40 (-40)
1/20	0.04 (0.14)	0.045 (0.16)	0.038 (0.13)	0.032 (0.11)	0.028 (0.10)	0.021 (0.07)
1/12	0.084 (0.29)	0.092 (0.32)	0.079 (0.28)	0.066 (0.23)	0.059 (0.21)	0.043 (0.15)

### R-513A - Tons (kW)

Nominal Capacity	Evaporator Temperature °F (°C)					
	40 (4)	20 (-7)	0 (-18)	-10 (-23)	-20 (-29)	-40 (-40)
1/20	0.033 (0.12)	0.036 (0.13)	0.031 (0.11)	0.026 (0.09)	0.023 (0.08)	0.016 (0.06)
1/12	0.069 (0.24)	0.075 (0.26)	0.064 (0.22)	0.053 (0.19)	0.047 (0.16)	0.034 (0.12)

### R-448A - BTU

Nominal Capacity	Evaporator Temperature °F					
	40	20	0	-10	-20	-40
1/16	540	576	504	408	360	264
1/10	1116	1200	1032	852	756	552

### R-449A - BTU

Nominal Capacity	Evaporator Temperature °F					
	40	20	0	-10	-20	-40
1/16	528	576	492	408	360	264
1/10	1104	1188	1020	840	744	540

### R-134a - BTU

Nominal Capacity	Evaporator Temperature °F					
	40	20	0	-10	-20	-40
1/20	480	540	456	384	336	252
1/12	1008	1104	948	792	708	516

### R-513A - BTU

Nominal Capacity	Evaporator Temperature °F					
	40	20	0	-10	-20	-40
1/20	396	432	372	312	276	192
1/12	828	900	768	636	564	408



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