

INSTALLATION INSTRUCTION FOR INDOOR EXPANSION VALVE KITS

**RETAIN THESE INSTRUCTIONS  
FOR FUTURE REFERENCE**

**⚠ WARNING**

**Improper installation, adjustment, alteration, service or maintenance can cause personal injury, loss of life, or damage to property.**

**Installation and service must be performed by a licensed professional installer (or equivalent) or a service agency.**

**Shipping and Packing List**

Package 1 of 1 contains the following:

- 1 — Expansion or check expansion valve
- 1 — Sensing bulb mounting hardware
- 2 — Teflon seal rings in envelope

Check parts for shipping damage. If you find any damage, immediately contact the last shipping carrier.

**Replacement Parts**

If replacement parts are necessary, order OEM catalog number 69J46. The kit includes:

- 10 — Brass nuts for liquid line assemblies
- 20 — Teflon® rings
- 10 — Liquid line orifice housings
- 10 — Liquid line assemblies

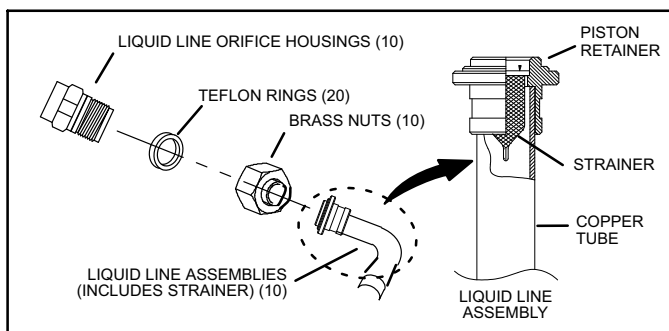


Figure 1. 69J46 Kit Components

**Application**

This instruction can be used to convert RFCIV metering system to use the following:

- Adjustable and non-adjustable expansion valves.
- Adjustable and non-adjustable check expansion valves.

The above reference expansion valve types will be referred to in this instruction simply as expansion valve.

See the applicable OEM engineering handbook for expansion valve to indoor/outdoor unit match-ups.

**Typical Fixed Orifice Removal**

1. On fully cased coils, remove the coil access and plumbing panels.
2. Remove any shipping clamps holding the liquid line and distributor assembly.
3. Using two wrenches, disconnect liquid line from liquid line orifice housing. Take care not to twist or damage distributor tubes during this process.
4. Remove and discard orifice, valve stem assembly if present, and Teflon® ring as illustrated in Figure 2.
5. Retain brass nut to be using later with the liquid line assembly.

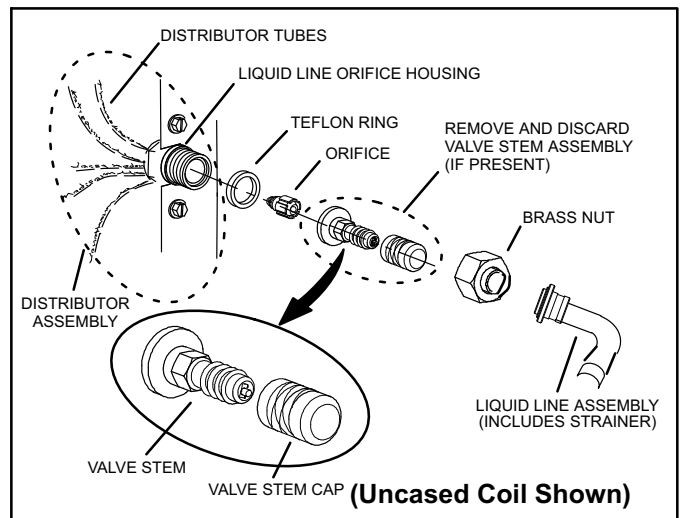
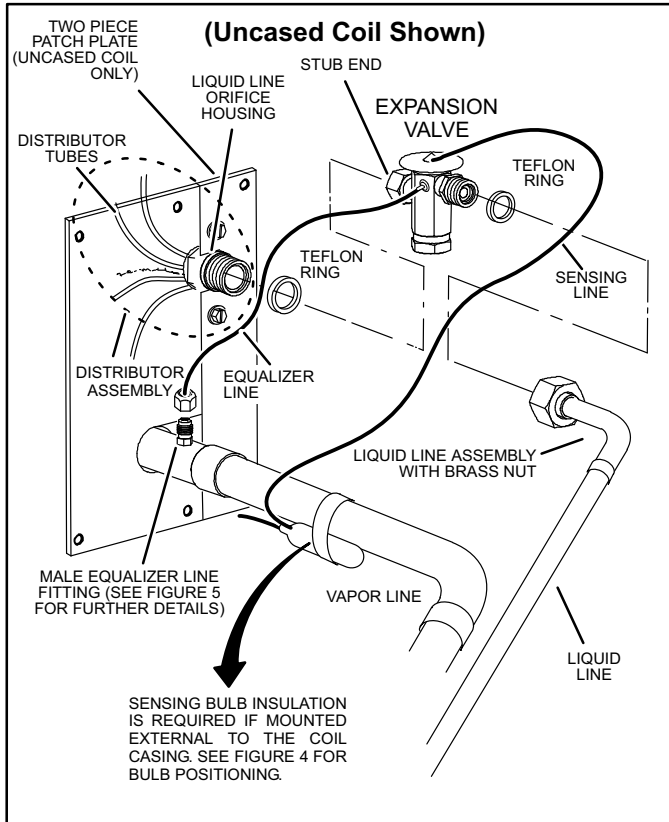


Figure 2. Typical RFC Removal



## Typical Expansion Valve Installation

The expansion valve can be installed internal or external to the indoor coil. In applications where an uncased coil is being installed in a field provided plenum, install the expansion valve in a location which will allow access for servicing. Use Figure 3 as a reference during installation of expansion valve.

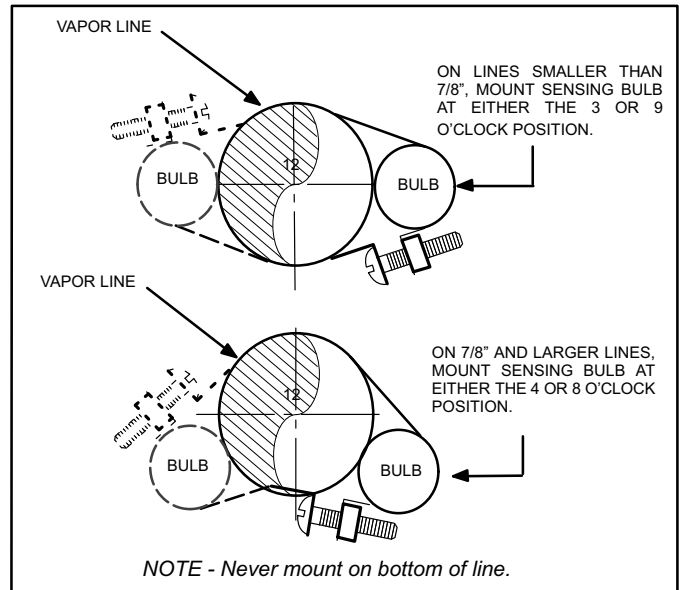


**Figure 3. Typical Expansion Valve Installation**

*NOTE - The expansion valve can be installed internally in coil blowers, or external or internal to indoor coil only applications.*

1. Install one of the provided Teflon rings around the stubbed end of the expansion valve and lightly lubricate the connector threads and exposed surface of the Teflon ring with refrigerant oil.
2. Attach the stubbed end of the kit valve to the liquid line orifice housing. Finger tighten and use an appropriately sized wrench to turn an additional 1/2 turn clockwise as illustrated in Figure 6, or 20 ft-lb.
3. Place the remaining Teflon ring around the other end of the expansion valve. Lightly lubricate connector threads and expose surface of the Teflon ring with refrigerant oil.
4. Attach the liquid line assembly using the provided brass nut to the expansion valve. Finger tighten and use an appropriately sized wrench to turn an additional 1/2 turn clockwise as illustrated in Figure 6, or 20 ft-lb.

5. Attach the sensing bulb of the expansion valve in the proper orientation as illustrated in Figure 4 to the vapor line using the clamp and screws provided with the expansion valve kit.

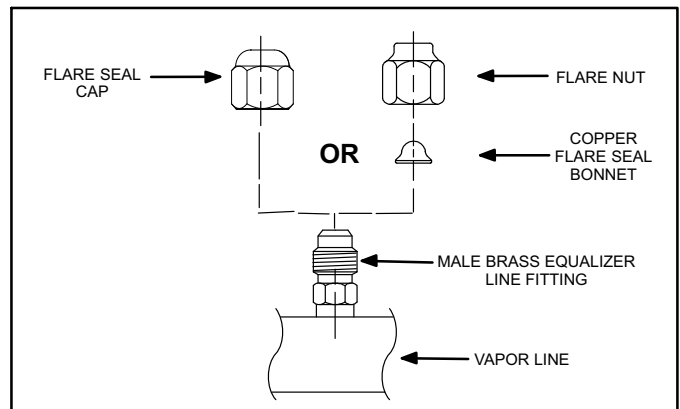


**Figure 4. Expansion Valve Sensing Bulb Installation**

6. Remove and discard either the flare seal cap or flare nut with copper flare seal bonnet from the equalizer line port on the suction line as illustrated in Figure 5.

## IMPORTANT

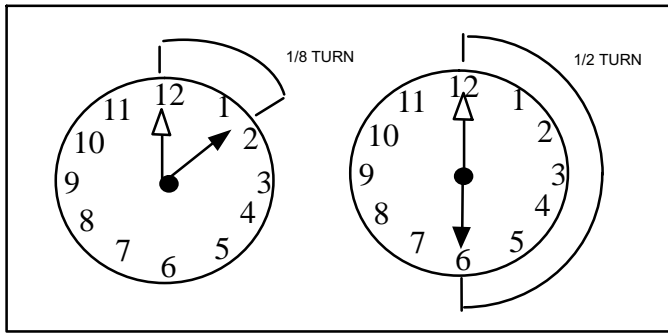
**When removing the flare nut, ensure that the copper flare seal bonnet is removed.**



**Figure 5. Copper Flare Seal Bonnet Removal**

7. Connect the equalizer line from the expansion valve to the equalizer suction port on the suction line. Finger tighten the flare nut plus 1/8 turn (7 ft-lbs) as illustrated in Figure 6.

*NOTE - To prevent against any possibility of water damage, properly insulate all parts of the expansion valve assembly that may sweat due to temperature differences between the valve and its surrounding ambient temperatures.*



**Figure 6. Tightening Distance**

### Using Adjustable Expansion Valves

Systems with refrigerant piping less than 50 feet can use the factory provided non-adjustable expansion valve. Systems with refrigerant piping 50 feet or longer will require the installation of an adjustable expansion valve. **The adjustable valve will allow required adjustments to maintain the recommended 20°F +/- 5°F superheat setting at the outdoor unit suction/vapor line service valve.**

See the applicable OEM engineering handbook for expansion valve to indoor/outdoor unit match-ups.

#### DETERMINING SUPERHEAT CORRECTLY

For long line set the recommended location to check superheat setting is at the suction/vapor service valve of the unit as illustrated in Figure 8.

1. Calibrate the gauges to **0**. Connect refrigerant gauge set to the suction/vapor and liquid service valves.
2. Securely attach the thermometer probe to the suction/vapor line as close as possible to the suction/vapor line service valve.
3. Start the compressor and allow the system to run for at least 30 minutes to stabilize system.
4. Read suction/vapor line temperature with thermometer (Example: 55°F).
5. Read the suction/vapor line pressure and convert to saturation temperature.
6. Use Table 1 for R-410A and Table 2 for HCFC-22 to convert pressure to temperature.

**EXAMPLE: HFC-410A AT 107.1 PSIG = 35°F**

Suction/vapor line temperature minus suction line pressure converted to temperature equals superheat.

**EXAMPLE: 55°F - 35°F = 20°F**

## CHANGING SUPERHEAT SETTINGS

### Reducing Superheat

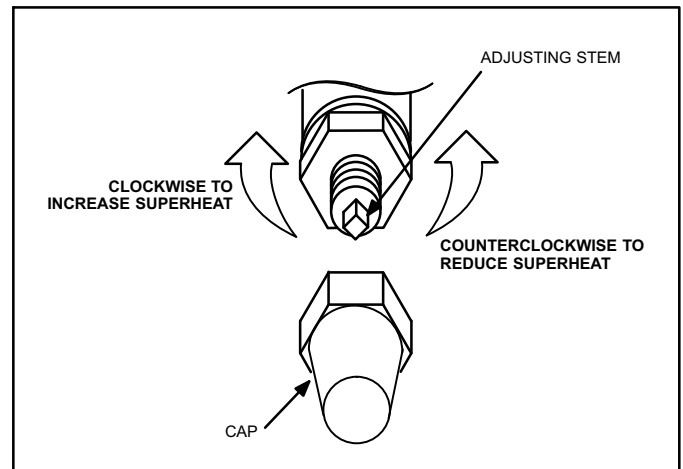
1. Remove expansion valve cap.
2. Turn the adjusting stem counterclockwise. When adjusting the valve, make no more than one turn of the stem at a time, and observe the change in superheat closely to prevent over-shooting the desired setting.
3. Replace expansion valve cap and finger tighten plus 1/8 turn as illustrated in Figure 6 or 7 ft-lbs.
4. Check for refrigerant leaks after tightening stem cap.

*NOTE* - As much as 30 minutes may be required for the new balance to take place after an adjustment is made.

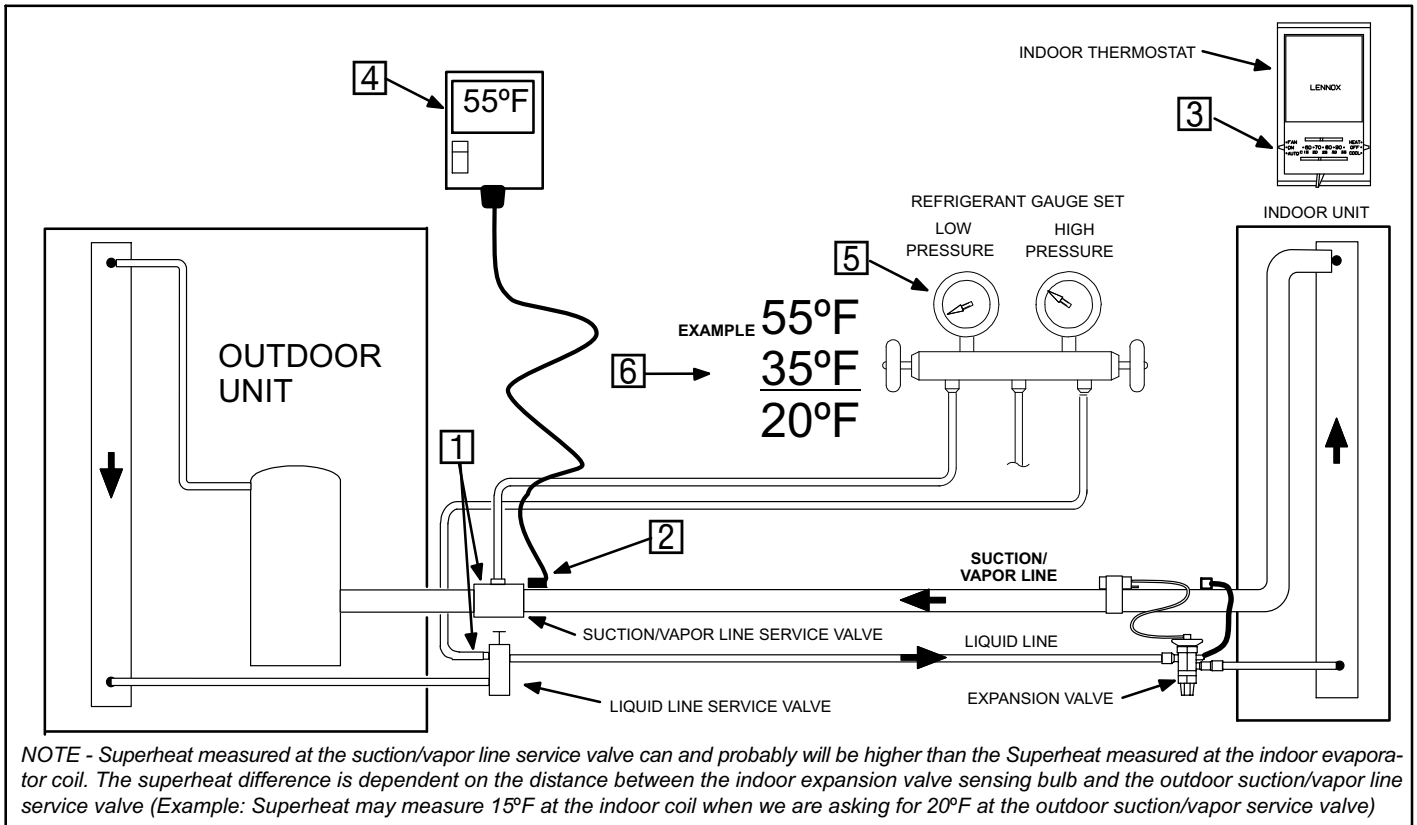
### Increasing Superheat

1. Remove expansion valve cap.
2. Turn the adjusting stem clockwise. When adjusting the valve, make no more than one turn of the stem at a time, and observe the change in superheat closely to prevent over-shooting the desired setting.
3. Replace expansion valve cap and finger tighten plus 1/8 turn as illustrated in Figure 6 or 7 ft-lbs.
4. Check for refrigerant leaks after tightening stem cap.

*NOTE* - As much as 30 minutes may be required for the new balance to take place after an adjustment is made.



**Figure 7. Expansion Valve Adjustment Stem**



**Figure 8. Determining Superheat Correctly**

**Table 1. HFC-410A Temperature (°F) - Pressure (Psig)**

°F	Psig	°F	Psig	°F	Psig
32	100.8	46	132.2	100	317.2
33	102.9	47	134.6	105	340.5
34	105.0	48	137.1	110	365.0
35	107.1	49	139.6	115	390.7
36	109.2	50	142.2	120	417.7
37	111.4	55	155.5	125	445.9
38	113.6	60	169.6	130	475.6
39	115.8	65	184.3	135	506.5
40	118.0	70	200.6	140	539.0
41	120.3	75	217.4	145	572.8
42	122.6	80	235.3	150	608.1
43	125.0	85	254.1	155	645.0
44	127.3	90	274.1		
45	129.7	95	295.1		

**Table 2. HCFC-22 Temperature (°F) - Pressure (Psig)**

°F	Psig	°F	Psig	°F	Psig
32	57.5	46	77.6	100	196.0
33	58.8	47	79.2	105	210.8
34	60.2	48	80.8	110	226.4
35	61.5	49	82.4	115	242.8
36	62.9	50	84.1	120	260.0
37	64.3	55	92.6	125	278.1
38	65.7	60	101.6	130	297.0
39	67.1	65	111.3	135	316.7
40	68.6	70	121.5	140	337.4
41	70.0	75	132.2	145	359.1
42	71.5	80	143.7	150	381.7
43	73.0	85	155.7	155	405.4
44	74.5	90	168.4		
45	76.1	95	181.9		