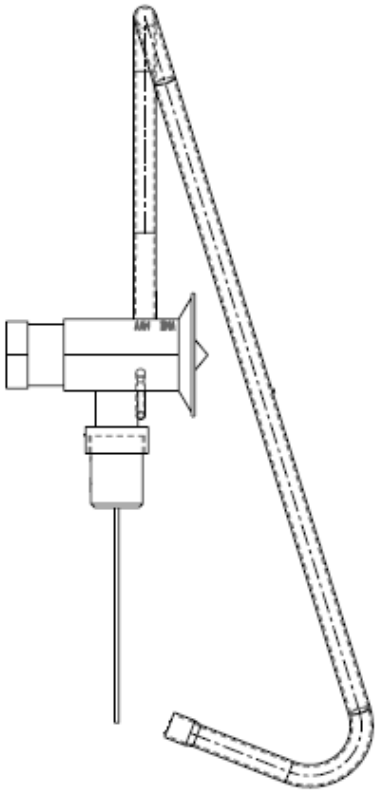
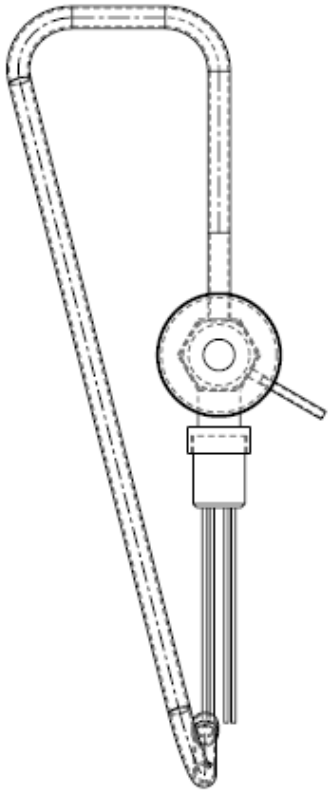
TRANE

Installation

Thermal Expansion Valve Upgrade Kit for Precedent™ Packaged Rooftops





Models: THC(036-120*) TSC(036-120)
YHC(036-120*) YSC(036-120)
*033, 043 and 063 are excluded

June 2008

PART-SVN109A-EN

Introduction

ATTENTION: Warnings and Cautions appear at appropriate sections throughout this literature. Read these carefully.

⚠ **WARNING** – Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ **CAUTION** – Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.

NOTICE – Indicates a situation that could result in equipment or property-damage only accidents.

Important Environmental Concerns!

Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine and Carbon (HCFCs). Not all refrigerants containing these compounds have the same potential impact to the environment. Trane advocates the responsible handling of all refrigerants-including industry replacements for CFCs such as HCFCs and HFCs.

Responsible Refrigerant Practices!

Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified. The Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.

⚠ WARNING
Contains Refrigerant!

System contains oil and refrigerant under high pressure. Recover refrigerant to relieve pressure before opening the system. See unit nameplate for refrigerant type. Do not use non-approved refrigerants, refrigerant substitutes, or refrigerant additives.

Failure to follow proper procedures or the use of non-approved refrigerants, refrigerant substitutes, or refrigerant additives could result in death or serious injury or equipment damage.

⚠ WARNING

Hazard of Explosion and Deadly Gases!

Never solder, braze or weld on refrigerant lines or any unit components that are above atmospheric pressure or where refrigerant may be present. Always remove refrigerant by following the guidelines established by the EPA Federal Clean Air Act or other state or local codes as appropriate. After refrigerant removal, use dry nitrogen to bring system back to atmospheric pressure before opening system for repairs. Mixtures of refrigerants and air under pressure may become combustible in the presence of an ignition source leading to an explosion. Excessive heat from soldering, brazing or welding with refrigerant vapors present can form highly toxic gases and extremely corrosive acids. Failure to follow all proper safe refrigerant handling practices could result in death or serious injury.

General Information

This information documents the process of removing the short orifice headers from a Precedent™ packaged rooftop unit and then installing R-22 thermal expansion valve(s) for use as the refrigerant metering device.

The thermal expansion valve kits are not for use on Precedent units that are heat pumps or use R-410A for the refrigerant. For help selecting the correct kit, see Table 1 or the latest version of the selection guide, PART-SVB20A-EN, in e-Library.

Table 1. Kit contents and refrigerant charge

KIT	Unit Type	TXV Tube Assembly	Bulb Clip (Quantity)	Copper Coupler-Reducer for Liquid line	Refrigerant Charge[a] (lb)	
					Circuit 1	Circuit 2
KIT15166	(T/Y)HC036	TUB11170	CLP00223	X17030023000	5.3	N/A
KIT15167	(T/Y)HC048	TUB11171	CLP00223	X17030023000	7.7	N/A
KIT15168	(T/Y)(H/S)C060	TUB11182	CLP00181	X17030023000	8.4	N/A
KIT15169	(T/Y)HC072	TUB10478	CLP00292	X17030023000	10.7	N/A
KIT15170	(T/Y)HC092	TUB10482 (CKT 1) TUB10483 (CKT 2)	CLP00181 (2)	X17030023000 (2)	6.4	6.2
KIT15171	(T/Y)HC102	TUB10486 (CKT 1) TUB10487 (CKT 2)	CLP00181 (2)	X17030023000 (2)	7.4	7.1
KIT15172	(T/Y)HC120	TUB10491 (CKT 1) TUB10490 (CKT 2)	CLP00181 (2)	X17030023000 (2)	11	7.3
KIT15173	(T/Y)SC036	TUB11180	CLP00223	X17030023000	3.8	N/A
KIT15174	(T/Y)SC048	TUB11181	CLP00223	X17030023000	3.8	N/A
KIT15175	(T/Y)SC072	TUB10477	CLP00292	X17030023000	7.1	N/A
KIT15176	(T/Y)SC090	TUB10479	CLP00292	X17030023000	11.5	N/A
KIT15177	(T/Y)SC092	TUB10480 (CKT 1) TUB10481 (CKT 2)	CLP00181 (2)	X17030023000 (2)	6.2	3.4
KIT15178	(T/Y)SC102	TUB10484 (CKT 1) TUB10485 (CKT 2)	CLP00181 (2)	X17030023000 (2)	7.9	4.0
KIT15179	(T/Y)SC120	TUB10496 (CKT 1) TUB10489 (CKT 2)	CLP00181 (2)	X17030023000 (2)	7.2	5.3

Note: Each kit also includes a piece of insulation for use around the TXV sensing bulb.

(a) If the unit nameplate has different information, recharge to the unit nameplate information.

For each TXV tube assembly, there should be a tag on one of the distribution tubes with a 12-digit identification number (see Table 2).

Table 2. Cross-reference: kit number to TXV tube assembly number

Tube Assembly Mnemonic	ID Number
TUB11170	436632500210
TUB11171	436632500310
TUB11182	436632500510
TUB10478	436621500210
TUB10482	436621500510
TUB10483	436621510210
TUB10486	436621500710
TUB10487	436621510410
TUB10491	436621500910
TUB10490	436621510610

Tube Assembly Mnemonic	ID Number
TUB11180	436632500110
TUB11181	436632500410
TUB10477	436621500110
TUB10479	436621500310
TUB10480	436621500410
TUB10481	436621510110
TUB10484	436621500610
TUB10485	436621510310
TUB10496	436623620110
TUB10489	436621510510

Note: *The following installation procedure also calls for existing filter-drier(s) to be replaced. Due to variances in sizes of filter driers used, they are not included in the upgrade kit. Correct filter driers can be identified using the unit model number and the WebCATS parts identification system.*

Installation Procedure

1. Check the contents of the kit and confirm that all parts are present.

   Note: *Refer to PART-SVB20A-EN for a list of kit parts.*

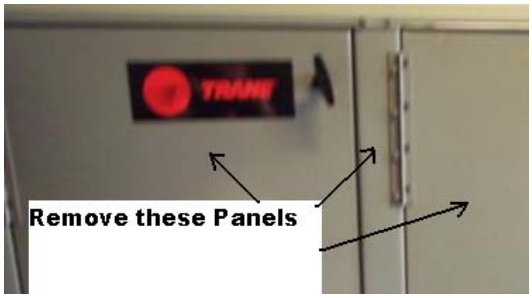
2. Before removing or opening the access panels, disconnect the electrical power.

⚠ WARNING
Hazardous Voltage!

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Failure to disconnect power before servicing could result in death or serious injury.

3. Remove the blower compartment access panels, the narrow support panel between the access panels (left-hand side of unit), and the compressor access panel (see Figure 1).

Figure 1. Access panels



4. Recover the refrigerant.

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5. Each circuit can now be cut away (see Figure 2 and Figure 3).
   a. Cut the liquid line before the header tube so that the valve will be positioned roughly in the middle of the evaporator coil.
   b. After cutting, un-braze the joint on the existing liquid line for later connection.

      Note: *The final bend in the liquid line of the valve assembly may need to be cut off.*

Figure 2. Determining placement for circuit 2

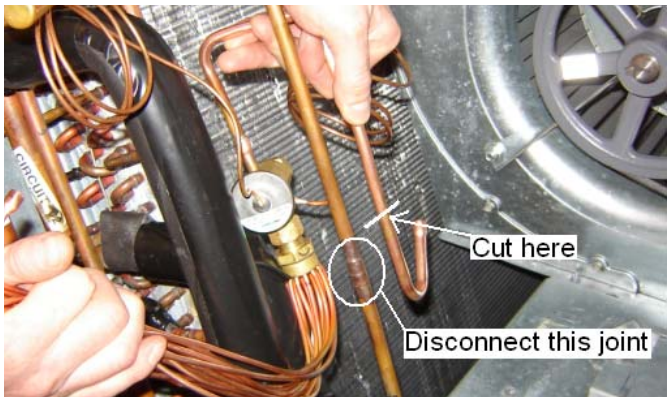
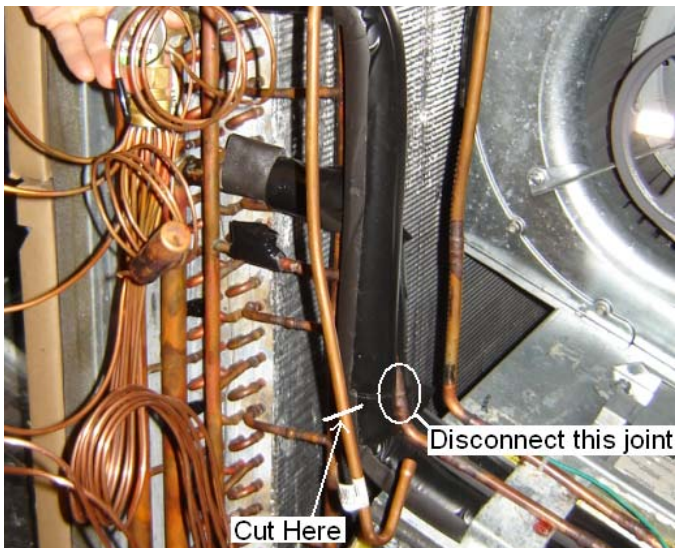


Figure 3. Determining placement for circuit 1



6. Cut each orifice tube about 1-1/2 inch from the header tube (see Figure 4).

   Note: *The orifice is located internal to this tube section. If the unit has two circuits, mark the tubes for later identification.*

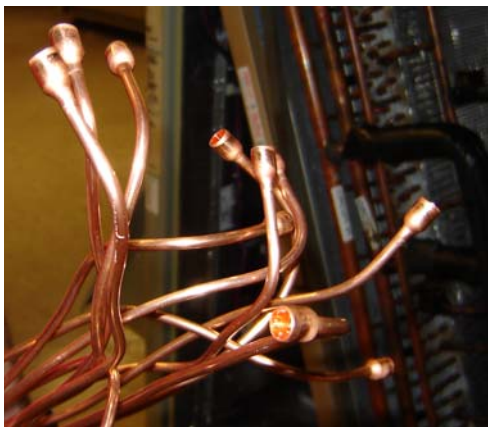
Figure 4. Cutting tubes just below the existing orifice

7. Reshape the tubes to round that were cut using a needle nose pliers or other tool (see Figure 5).

Figure 5. Bringing tubes back to round

8. Cut the ends off of the distributor tubes with a tube cutter so that they will fit inside of the tubes that were cut in Step 6. Use an awl or similar tool to widen the ends of the distributor tubes after cutting.

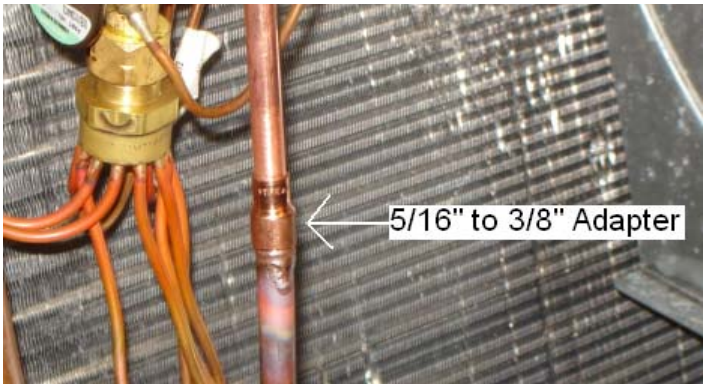
Figure 6. Ends of distributor tubes to be cut off



9. Attach the TXV assembly to the liquid tube.

   Note: *It may be necessary to use the 5/16-inch to 3/8-inch adapter provided in the kit to connect the liquid lines (see Figure 7).*

Figure 7. Liquid line connected



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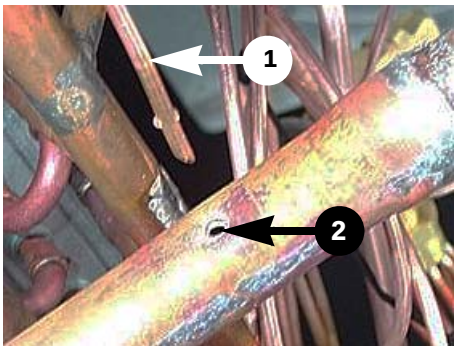
10. Route and bend the individual feeder tubes to the cut tubes feeding the evaporator coil circuits. Check to make sure the connections are not cross-circuited. The TXV feeder tubes are 3/16-inch diameter and should be inserted about 1 inch into the existing circuit tubes. The 3/8-inch existing tubes will require some crimping (see Figure 8) for a neat braze joint. Braze the feeder tube connections using the nitrogen purge (see Figure 9, p. 8).

Figure 8. Distribution tubes crimped into place

Figure 9. Brazing distribution tubes

11. Connect the equalizer line to the suction line.
    a. First, drill a 1/8-inch diameter hole near the upper portion of the suction line. Leave room to the right of the hole for the sensing bulb to be attached later.
    b. Remove or cut off the black plastic coating that is covering the end of the equalizer line, and then insert the equalizer line just far enough into the suction line so that it can be brazed into place (see Figure 10).

Figure 10. Inserting the equalizer line into the drilled hole



1. Equalizer line
2. Drilled hole (see Step 11a)

Note: *If the nitrogen purge pressure inside the suction line is between 50 to 100 psig, the copper chips will be blown to the outside of the tube. Do **not** allow copper chips to fall inside the tubing. Take care not to cross-circuit the equalizer lines.*

12. If the unit has two refrigerant circuits, repeat Step 6 through Step 11 for the other circuit.

13. The TXV sensing bulbs are to be located just to the right of the equalizer line connections on the suction line.
    a. Secure the bulbs at the 10:00 o'clock position.
    b. Pull the suction line insulation back into position and make sure the sensing bulb is insulated using the additional insulation material provided.

Figure 3. TXV sensing bulb clipped into place

Note: *Equalizer line just out of frame to the left of the sensing bulb.*

14. Replace the existing filter-drier(s).

    Note: *Due to variances in sizes of filter driers used, they are not included in the upgrade kit. Correct filter driers can be identified using the unit model number and the WebCATS parts identification system.*

15. With all weld joints complete, leak-test all the new connections.
16. The system is now ready for evacuating and recharging. Recharging with new refrigerant is recommended. Refrigerant charge information is shown in Table 1, p. 3.

    Note: *If the unit nameplate has different information, recharge to the unit nameplate information.*

17. Use the charts in the "Refrigeration Data" section of the Service Facts literature to adjust the charge if necessary. Table 3, p. 10 lists Service Facts literature numbers by model number.

    Note: *Literature can be accessed via e-Library.*

18. Reinstall the access panels, and then re-connect the electrical power.

Table 3. Service Facts literature numbers

Model Type	Service Facts Literature #
YSC036	YSC036-SF-2A
	YSC036-SF-1A
YSC048	YSC048-SF-1A
	YSC048-SF-2A
YSC060	YSC060-SF-1A
	YSC060-SF-2A
	YSC060-SF-3
YSC072	YSC072-SF-1
	YSC072-SF-2
YSC090	YSC090-SF-1
	YSC090-SF-2
	YSC090-SF-3
YSC092	YSC092-SF-1
	YSC092-SF-2
YSC102	YSC102-SF-1
	YSC102-SF-2
YSC120	YSC120-SF-1
	YSC120-SF-2
	YSC120-SF-3
YHC036	YHC036-SF-1A
	YHC036-SF-2A
YHC048	YHC048-SF-1A
	YHC048-SF-2A
YHC060	YHC060-SF-1A
	YHC060-SF-2A
YHC072	YHC072-SF-1
YHC092	YHC092-SF-1
YHC102	YHC102-SF-1
YHC120	YCH120-SF-1

Model Type	Service Facts Literature #
TSC036	TSC036-SF-1A
	TSC036-SF-2A
TSC048	TSC048-SF-1A
	TSC048-SF-2A
TSC060	TSC060-SF-1A
	TSC060-SF-2A
	TSC060-SF-3
TSC072	TSC072-SF-1
	TSC072-SF-2
TSC090	TSC090-SF-1
	TSC090-SF-2
TSC092	TSC092-SF-1
TSC102	TSC102-SF-1
	TSC102-SF-2
TSC120	TSC120-SF-1
	TSC120-SF-2
THC036	THC036-SF-1A
	THC036-SF-2A
THC048	THC048-SF-1A
	THC048-SF-2A
THC060	TCH060-SF-1A
	TCH060-SF-2A
	TCH060-SF-2B
THC072	THC072-SF-1
THC092	THC092-SF-1
THC102	THC102-SF-1
THC120	THC120-SF-1

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For more information, contact your local Trane office or e-mail us at comfort@trane.com