TRANE SVN257B Restrictor Replacement Compressor Installation Guide

Contents

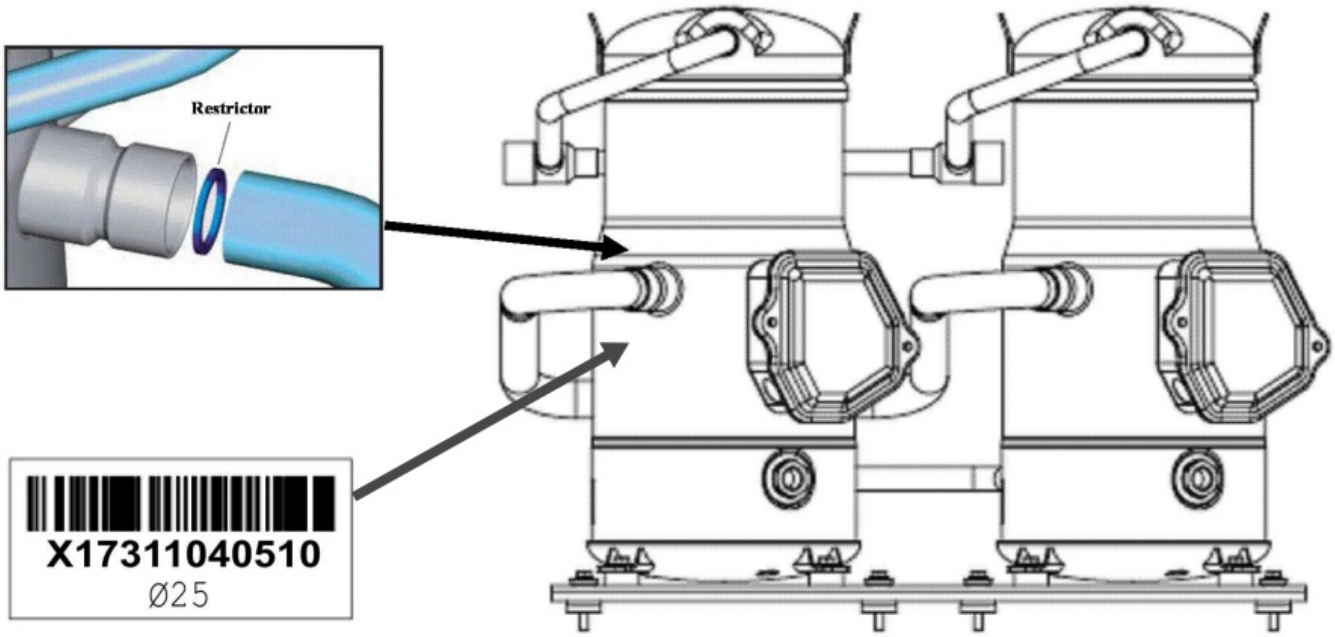
TRANE SVN257B Restrictor Replacement Compressor

Product Information

Specifications

- Model: PART-SVN257B-EN
- Compressor Type: Replacement Compressor
- Refrigerant: R-410A
- Operating Pressure: High Pressure

Installation Instructions
Restrictor
For Replacement Compressorz



SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of

heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

Introduction

Read this manual thoroughly before operating or servicing this unit.

Warnings, Cautions, and Notices
Safety advisories appear throughout this manual as required. Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

The three types of advisories are defined as follows:

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.

Important 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 according to local rules. For the USA, 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
Proper Field Wiring and Grounding Required!
Failure to follow code could result in death or serious injury.
All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

WARNING
Personal Protective Equipment (PPE) Required!
Failure to wear proper PPE for the job being undertaken could result in death or serious injury. Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, MUST follow precautions in this manual and on the tags, stickers, and labels, as well as the instructions below:

- Before installing/servicing this unit, technicians MUST put on all PPE required for the work being undertaken

(Examples; cut resistant gloves/sleeves, butyl gloves, safety glasses, hard hat/bump cap, fall protection, electrical PPE and arc flash clothing). ALWAYS refer to appropriate Safety Data Sheets (SDS) and OSHA guidelines for proper PPE.

- When working with or around hazardous chemicals, ALWAYS refer to the appropriate SDS and OSHA/GHS (Global Harmonized System of Classification and Labelling of Chemicals) guidelines for information on allowable personal exposure levels, proper respiratory protection and handling instructions.
- If there is a risk of energized electrical contact, arc, or flash, technicians MUST put on all PPE in accordance with OSHA, NFPA 70E, or other country-specific requirements for arc flash protection, PRIOR to servicing the unit. NEVER PERFORM ANY SWITCHING, DISCONNECTING, OR VOLTAGE TESTING WITHOUT PROPER ELECTRICAL PPE AND ARC FLASH CLOTHING. ENSURE ELECTRICAL METERS AND EQUIPMENT ARE PROPERLY RATED FOR INTENDED VOLTAGE.

WARNING
Follow EHS Policies!
Failure to follow instructions below could result in death or serious injury.

- All Trane personnel must follow the company's Environmental, Health and Safety (EHS) policies when performing work such as hot work, electrical, fall protection, lockout/tagout, refrigerant handling, etc. Where local regulations are more stringent than these policies, those regulations supersede these policies.
- Non-Trane personnel should always follow local regulations.

WARNING
Refrigerant under High Pressure!
Failure to follow instructions below could result in an explosion which could result in death or serious injury or equipment damage.
System contains 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.

WARNING
R-410A Refrigerant under Higher
Pressure than R-22!
Failure to use proper equipment or components as described below, could result in equipment failing and possibly exploding, which could result in death, serious injury, or equipment damage.
The units described in this manual use R-410A refrigerant which operates at higher pressures than R-22. Use ONLY R-410A rated service equipment or components with these units. For specific handling concerns with R-410A, please contact your local Trane representative.

WARNING
R-454B Flammable A2L Refrigerant!
Failure to use proper equipment or components as described below could result in equipment failure, and possibly fire, which could result in death, serious injury, or equipment damage.
The equipment described in this manual uses R-454B refrigerant which is flammable (A2L). Use ONLY R-454B rated service equipment and components. For specific handling concerns with R-454B, contact your local representative.

WARNING
Explosion Hazard and Deadly Gases!
Failure to follow all proper safe refrigerant handling practices could result in death or serious injury. 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.

WARNING
Explosion Hazard!
Failure to follow safe leak test procedures below could result in death or serious injury or equipment or property-only-damage.
Never use an open flame to detect gas leaks. Use a leak test solution for leak testing.

WARNING
Hazardous Service Procedures!
Failure to follow all precautions in this manual and on the tags, stickers, and labels could result in death or serious injury.
Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, MUST follow precautions in this manual and on the tags, stickers, and labels, as well as the following instructions: Unless specified otherwise, disconnect all electrical power including remote disconnect and discharge all energy storing devices such as capacitors before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. When necessary to work with live electrical components, have a qualified licensed electrician or other individual who has been trained in handling live electrical components perform these tasks.

Revision History

- Units with microchannel (MCHE) condensers table is divided as per product in Installation chapter.
- Updated the Service part restrictor identification, IPAK 2, IPAK 1, Voyager 3, RAU Large splits, and IPAK 3 tables in Installation chapter.

Installation

Table 2, p. 8, Table 3, p. 9, Table 4, p. 13, Table 5, p. 13 , Table 6, p. 14, and Table 7, p. 17 provide the information for the correct location and selection of the restrictor.
The service compressor is shipped with the necessary restrictor(s) packaged in individual bags and labeled with the restrictor mnemonic part number on the outside of the bag. Another label is also included inside the bag. The X1731****** number identifies the restrictor. The restrictor is physically marked on the face with the part number extension and ID size.

Note: 51-25 stamped on the face of the restrictor. Drawing X17311040510, 51 is the extension. 25 mm is the ID. When removing a restrictor, the restrictor in the compressor may not match the number of the restrictor shipping with the service compressor.
The restrictor part number is dependent on the product type, manufacturing location, and if originally packaged in a bag. See Table 1, p. 6 for equivalent restrictor face stamping number and mnemonic part number cross reference.

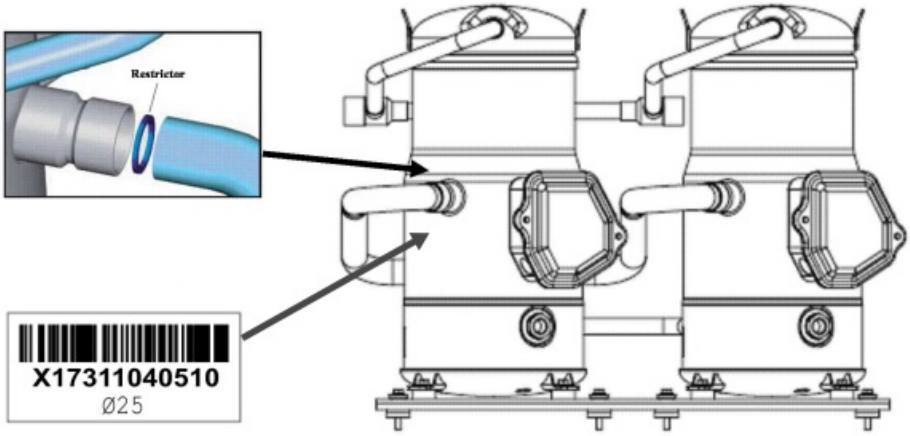
Table 1. Service part restrictor identification

MNE	Label	Restrictor	
		ID Size (mm)	Face Stamping Number
RSR00235	X17311040510	25	51-25
RSR00348	X17311040570	22.5	57-22.5
RSR00237	X17311040530	23	53-23
RSR00238	X17311040540	27	54-27
RSR00240	X17311040560	26	56-26
RSR00244	X17311028540	26	54-26
RSR00241	X17311028510	31	51-31
RSR00242	X17311028520	33	52-33
RSR00366	X17311028560	32	56-32
RSR00355	X17311040600	15	60-15
RSR00354	X17311040590	19	59-19
RSR00353	X17311040580	22	58-22
RSR00380	X17311040680	20	68-20

1.

Figure 1. Labels

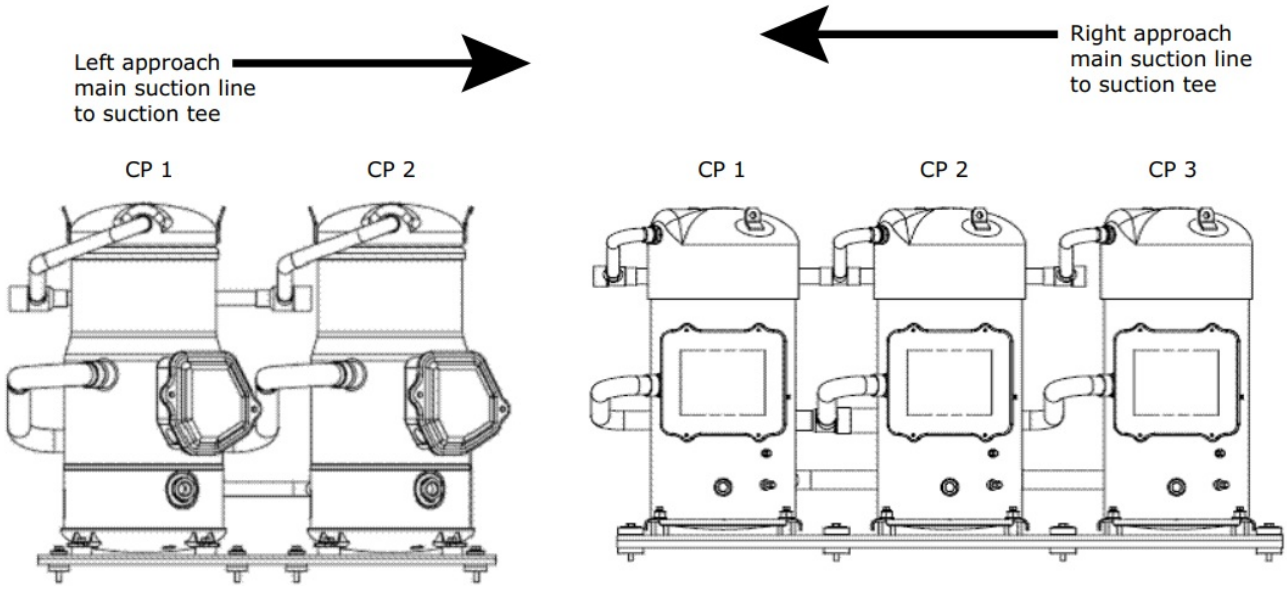
Figure 2. Restrictor installation



Install restrictor in the suction inlet of the replacement compressor.

2. Insert the tube into the suction connection and use the tube to seat the restrictor firmly into the suction connection.
3. Braze the suction tube to the compressor.
4. After completing the brazing of the suction tube, attach the label included inside the bag to the compressor near the suction connection. This will enable future identification of the restrictor.

Figure 3. Determining suction approach



The suction approach is the direction from which the unit suction piping enters the compressor tandem or trio set when viewed from the front, terminal box side. This must be determined to use Table 2, p. 8, Table 3, p. 9, Table 4, p. 13, Table 5, p. 13 , Table 6, p. 14, and Table 7, p. 17 it is also used in determining the correct compressor to receive the restrictor.

In addition to suction approach, verify compressor model numbers in the serviced unit match the designated CP1, CP2, and CP3 compressors in their respective circuits when referencing Table 2, p. 8, Table 3, p. 9, Table 4, p. 13, Table 5, p. 13 , Table 6, p. 14, and Table 7, p. 17. If the compressor model numbers do not match, call Trane Tech Support for assistance.

Table 2. IPAK 2 — suction restrictor size and location

Digit 4 – Development sequence	Digit 5,6,7 – Nominal Cooling capacity	Digit 28 – Efficiency, Capacity, and Drain Pan Option	Circuit #	Compressor Position			Suct. Appr.	Restrictor Size (ID mm) and Location			Trane Part Number	Mnemonic Part Number
				CP1	CP2	CP3		CP1	CP2	CP3		
	090	A/C	1	CSHN250	CSHN250	—	Left	Not Req.			—	—
			2	CSHN250	CSHN250	—	Right	Not Req.			—	—
		W/Z	1	VZH170	CSHL169	—	Left	Not Req.			—	—
			2	CSHL169	CSHL169	CSHL169	Right	32	—	31	X17311028560 / X17311028510	RSR00366 / RSR00241
	105	A/C	1	CSHN184	CSHN184	CSHN184	Left	—	—	31	X17311028510	RSR00241
			2	CSHN184	CSHN184	CSHN184	Right	32	—	31	X17311028560 / X17311028510	RSR00366 / RSR00241
		W/Z	1	VZH170	CSHL227	—	Left	Not Req.			—	—
			2	CSHL169	CSHL169	CSHL169	Right	32	—	31	X17311028560 / X17311028510	RSR00366 / RSR00241
	120	A/C	1	CSHN184	CSHN184	CSHN250	Left	33	33	—	X17311028520 / X17311028520	RSR00242 / RSR00242
			2	CSHN184	CSHN184	CSHN250	Right	32	31	—	X17311028560 / X17311028510	RSR00366 / RSR00241
			1	VZH170	CSHL285	—	Left	Not Req.			—	—

E		W/Z	2	CSHL169	CSHL169	CSHL227	Right	32	31	—	X17311028560 / X17311028510	RSR00366 / RSR00241
	130	A/C	1	CSHN240	CSHN240	CSHN240	Left	—	—	33	X17311028520	RSR00242
			2	CSHN240	CSHN240	CSHN240	Right	33	—	33	X17311028520 / X17311028520	RSR00242 / RSR00242
		W/Z	1	VZH170	CSHL346	—	Left	Not Req.			—	—
			2	CSHL227	CSHL227	CSHL227	Right	33	—	33	X17311028520 / X17311028520	RSR00242 / RSR00242
	150	A/C	1	CSHN250	CSHN250	CSHN250	Left	33	—	—	X17311028520	RSR00242
			2	CSHN250	CSHN250	CSHN250	Right	33	—	33	X17311028520 / X17311028520	RSR00242 / RSR00242
		W/Z	1	VZH170	CSHL346	—	Left	Not Req.			—	—
			2	CSHL227	CSHL169	CSHL346	Right	31	26	—	X17311028510 / X17311028540	RSR00241 / RSR00244
	090	A/C	1	CSHP237	CSHP237	—	Left	Not Req.			—	—
			2	CSHP237	CSHP237	—	Right	Not Req.			—	—
		W/Z	1	VZH170	CSHP178	—	Left	Not Req.			—	—
			2	CSHP178	CSHP178	CSHP178	Right	32	—	31	X17311028560 / X17311028510	RSR00366 / RSR00241

T	105	A/C	1	CSHP178	CSHP178	CSHP178	Left	—	—	31	X17311028510	RSR00241
			2	CSHP178	CSHP178	CSHP178	Right	32	—	31	X17311028560 / X17311028510	RSR00366 / RSR00241
		W/Z	1	VZH170	CSHP237	—	Left	Not Req.			—	—
			2	CSHP178	CSHP178	CSHP178	Right	32	—	31	X17311028560 / X17311028510	RSR00366 / RSR00241

Digit 4 – Development sequence	**Digit 5,6,7 – Nominal Cooling capacity**	**Digit 28 – Efficiency, Capacity, and Drain Pan Option**	**Circuit #**	**Compressor Position**			**Suct. Appr.**	**Restrictor Size (ID mm) and Location**			**Trane Part Number**	**Mnemonic Part Number**
				CP1	**CP2**	**CP3**		**CP1**	**CP2**	**CP3**		
	120	A/C	1	CSHP178	CSHP178	CSHP237	Left	33	33	—	X17311028520 / X17311028520	RSR00242 / RSR00242
			2	CSHP178	CSHP178	CSHP237	Right	32	31	—	X17311028560 / X17311028510	RSR00366 / RSR00241
		W/Z	1	VZH170	CSHP297	—	Left	Not Req.			—	—
			2	CSHP178	CSHP178	CSHP237	Right	32	31	—	X17311028560 / X17311028510	RSR00366 / RSR00241
			1	CSHP227	CSHP227	CSHP227	Left	—	—	33	X17311028520	RSR00242

T	130	A/C	2	CSHP227	CSHP227	CSHP227	Right	33	—	33	X17311028520 / X17311028520	RSR00242 / RSR00242
		W/Z	1	VZH170	CSHP346	—	Left	Not Req.			—	—
			2	CSHP227	CSHP227	CSHP227	Right	33	—	33	X17311028520 / X17311028520	RSR00242 / RSR00242
	150	A/C	1	CSHP237	CSHP237	CSHP237	Left	—	—	33	X17311028520	RSR00242
			2	CSHP237	CSHP237	CSHP237	Right	33	—	33	X17311028520 / X17311028520	RSR00242 / RSR00242
		W/Z	1	VZH170	CSHP346	—	Left	Not Req.			—	—
			2	CSHP237	CSHP178	CSHP346	Right	31	26	—	X17311028510 / X17311028540	RSR00241 / RSR00244

Note: IPAK 2 90 to 150 ton MCHE: no change in compressors digit 10 design sequence P.

Table 3. IPAK 1 — suction restrictor size and location

Digit 4 – Development sequence	Digit 5,6,7 – Nominal Cooling capacity	Digit 26 – Effiicency Options	Circuit #	Compressor Position			Restrictor Size (ID mm) and Location			Trane Part Number	Mnemonic Part Number
				CP1	CP2	CP3	CP 1	CP 2	CP 3		
M	*20	0	1	ZP154	ZPS104	—	Not Req.			—	—
		H	1	ZP154	ZPS104	—	Not Req.			—	—
		V	1	VZH088	CSHD110	—	Not Req.			—	—
	*25	0	1	CSHD075	CSHD110	CSHD110	15	—	—	X17311040600	RSR00355
		H	1	ZP182	ZPS122	—	Not Req.			—	—
		V	1	VZH088	CSHD125	—	Not Req.			—	—
	*30	0	1	CSHD075	CSHD120	CSHD120	19	—	—	X17311040590	RSR00354
		H	1	CSHD075	CSHD120	CSHD120	19	—	—	X17311040590	RSR00354
		V	1	VZH117	CSHD161	—	Not Req.			—	—
	*40	0	1	CSHD092	CSHD110	—	25	—	—	X17311040510	RSR00235
			2	CSHD110	CSHD110	—	Not Req.			—	—
		H	1	CSHD092	CSHD092	—	Not Req.			—	—
			2	CSHD092	CSHD110	—	25	—	—	X17311040510	RSR00235
		V	1	VZH117	—	—	Not Req.			—	—
			2	CSHD110	CSHD110	—	Not Req.			—	—

Digit 4 – Development sequence	Digit 5,6,7 – Nominal Cooling capacity	Digit 26 – Effiicency Options	Circuit #	Compressor Position			Restrictor Size (ID mm) and Location			Trane Part Number	Mnemonic Part Number
				CP1	CP2	CP3	CP 1	CP 2	CP 3		
	*50	0	1	CSHD125	CSHD125	—	Not Req.			—	—
			2	CSHD125	CSHD125	—	Not Req.			—	—
		H	1	CSHD125	CSHD142	—	26	—	—	X17311040560	RSR00240
			2	CSHD125	CSHD142	—	26	—	—	X17311040560	RSR00240
		V	1	VZH170	—	—	Not Req.			—	—
			2	CSHD142	CSHD142	—	Not Req.			—	—
	*55	0	1	CSHD142	CSHD161	—	27	—	—	X17311040540	RSR00238
			2	CSHD142	CSHD161	—	27	—	—	X17311040540	RSR00238
		H	1	CSHD142	CSHD142	—	Not Req.			—	—
			2	CSHD142	CSHD142	—	Not Req.			—	—
		V	1	VZH170	—	—	Not Req.			—	—
			2	CSHD142	CSHD161	—	27	—	—	X17311040540	RSR00238
	*60	0	1	CSHD161	CSHD161	—	Not Req.			—	—
			2	CSHD161	CSHD161	—	Not Req.			—	—
		H	1	CSHD161	CSHD161	—	Not Req.			—	—
			2	CSHD161	CSHD183	—	26	—	—	X17311040560	RSR00240
			1	VZH170	—	—	Not Req.			—	—

		V	2	CSHD161	CSHD183	—	26	—	—	X17311040560	RSR00240
	*70	0	1	CSHD183	CSHD183	—	Not Req.			—	—
			2	CSHN184	CSHN250	—	31	—	—	X17311028510	RSR00241
		H	1	CSHD183	CSHD183	—	Not Req.			—	—
			2	CSHD183	CSHD183	—	Not Req.			—	—
		V	1	VZH170	—	—	Not Req.			—	—
			2	CSHN184	CSHN250	—	31	—	—	X17311028510	RSR00241
	*75	0	1	CSHN184	CSHN250	—	31	—	—	X17311028510	RSR00241
			2	CSHN184	CSHN250	—	31	—	—	X17311028510	RSR00241
		H	1	CSHN184	CSHN250	—	31	—	—	X17311028510	RSR00241
			2	CSHN250	CSHN250	—	Not Req.			—	—
		V	1	VZH170	CSHN184	—	Not Req.			—	—
			2	CSHD183	CSHD183	—	Not Req.			—	—
	*90	0/H	1	CSHN250	CSHN250	—	Not Req.			—	—
			2	CSHN250	CSHN250	—	Not Req.			—	—
	*11	0/H	1	CSHN250	CSHN315	—	31	—	—	X17311028510	RSR00241
			2	CSHN250	CSHN315	—	31	—	—	X17311028510	RSR00241
	*12	0/H	1	CSHN250	CSHN315	—	31	—	—	X17311028510	RSR00241
			2	CSHN315	CSHN315	—	Not Req.			—	—
	*13	0/H	1	CSHN315	CSHN315	—	Not Req.			—	—
			2	CSHN315	CSHN374	—	31	—	—	X17311028510	RSR00241
M											

Digit 4 – Development sequence	Digit 5,6,7 – Nominal Cooling capacity	Digit 26 – Effiiciency Options	Circuit #	Compressor Position			Restrictor Size (ID mm) and Location			Trane Part Number	Mnemonic Part Number
				CP1	CP2	CP3	CP 1	CP 2	CP 3		
	*20	0	1	YA154	YAS104	—	Not Req.			—	—
		H	1	YA154	YAS104	—	Not Req.			—	—
		V	1	VZH088	CSHE113	—	Not Req.			—	—
	*25	0	1	CSHE071	CSHE113	CSHE113	19	—	—	X17311040590	RSR00354
		H	1	YA182	YAS122	—	Not Req.			—	—
		V	1	VZH088	CSHE132	—	Not Req.			—	—
	*30	0	1	CSHE071	CSHE127	CSHE127	19	—	—	X17311040590	RSR00354
		H	1	CSHE071	CSHE117	CSHE117	19	—	—	X17311040590	RSR00354
		V	1	VZH117	CSHE152	—	Not Req.			—	—
	*40	0	1	CSHE104	CSHE113	—	Not Req.			—	—
			2	CSHE104	CSHE113	—	Not Req.			—	—
		H	1	CSHE088	CSHE104	—	25	—	—	X17311040510	RSR00235
			2	CSHE088	CSHE104	—	25	—	—	X17311040510	RSR00235
		V	1	VZH117	—	—	Not Req.			—	—
			2	CSHE113	CSHE113	—	Not Req.			—	—
		0	1	CSHE117	CSHE132	—	26	—	—	X17311040560	RSR00240
			2	CSHE117	CSHE132	—	26	—	—	X17311040560	RSR00240

P	*50	H	1	CSHE117	CSHE132	—	26	—	—	X17311040560	RSR00240
			2	CSHE132	CSHE132	—	Not Req.			—	—
		V	1	VZH170	—	—	Not Req.			—	—
			2	CSHE132	CSHE132	—	Not Req.			—	—
	*55	0	1	CSHE132	CSHE152	—	27	—	—	X17311040540	RSR00238
			2	CSHE152	CSHE152	—	Not Req.			—	—
		H	1	CSHE132	CSHE132	—	Not Req.			—	—
			2	CSHE132	CSHE152	—	27	—	—	X17311040540	RSR00238
		V	1	VZH170	—	—	Not Req.			—	—
			2	CSHE152	CSHE152	—	Not Req.			—	—
	*60	0	1	CSHE152	CSHE152	—	Not Req.			—	—
			2	CSHE152	CSHE177	—	26	—	—	X17311040560	RSR00240
		H	1	CSHE152	CSHE177	—	26	—	—	X17311040560	RSR00240
			2	CSHE152	CSHE177	—	26	—	—	X17311040560	RSR00240
		V	1	VZH170	—	—	Not Req.			—	—
			2	CSHE152	CSHE177	—	26	—	—	X17311040560	RSR00240

Digit 4 – Development sequence	**Digit 5,6,7 – Nominal Cooling capacity**	**Digit 26 – Effiicency Options**	**Circuit #**	**Compressor Position**			**Restrictor Size (ID mm) and Location**			**Trane Part Number**	**Mnemonic Part Number**
				CP1	**CP2**	**CP3**	**CP1**	**CP2**	**CP3**		
			1	CSHE177	CSHE177	—	Not Req.			—	—

P	*70	0	2	CSHP178	CSHP237	—	31	—	—	X17311028510	RSR00241
		H	1	CSHE177	CSHE177	—	Not Req.			—	—
			2	CSHE177	CSHE177	—	Not Req.			—	—
		V	1	VZH170	—	—	Not Req.			—	—
			2	CSHP227	CSHP227	—	Not Req.			—	—
	*75	0	1	CSHP178	CSHP237	—	31	—	—	X17311028510	RSR00241
			2	CSHP178	CSHP237	—	31	—	—	X17311028510	RSR00241
		H	1	CSHP178	CSHP237	—	31	—	—	X17311028510	RSR00241
			2	CSHP237	CSHP237	—	Not Req.			—	—
		V	1	VZH170	CSHP178	—	Not Req.			—	—
			2	CSHE177	CSHE177	—	Not Req.			—	—
	90	0/H	1	CSHP237	CSHP237	—	Not Req.			—	—
			2	CSHP237	CSHP237	—	Not Req.			—	—
	*11	0/H	1	CSHP237	CSHP297	—	31	—	—	X17311028510	RSR00241
			2	CSHP237	CSHP297	—	31	—	—	X17311028510	RSR00241
	*12	0/H	1	CSHP237	CSHP297	—	31	—	—	X17311028510	RSR00241
			2	CSHP297	CSHP297	—	Not Req.			—	—
	*13	0/H	1	CSHP297	CSHP346	—	31	—	—	X17311028510	RSR00241
			2	CSHP297	CSHP346	—	31	—	—	X17311028510	RSR00241

Notes

1. IPAK RT G high efficiency unit—indicated by G in digit 26 of model number.
2. IPAK RTsizes 24, 29, 36, 48, 59, 73, 80, 89 are evaporative cooled condenser models.

3. IPAK RT 20 to 75 ton MCHE digit 10 design Sequence E.
4. IPAK RT 90 to 130 ton MCHE: no change in compressors digit 10 design sequence D.
5. IPAK RT V eFlex™ variable speed unit – indicated by V in digit 26 of model number.

Table 4. Voyager 3 — suction restrictor size and location

Digit 7- Major development sequence	Digit 29 – Efficiency	Digit 4,5,6 – Nominal Cooling capacity	Compressor Position			Suct. Appr.	Restrictor Size (ID mm)			Trane Part Number	Mnemonic Part Number
			CP1	CP2	CP3		CP1	CP2	CP3		
C	0 / J	330	CSHD075	CSHD110	CSHD110	Left	15	—	—	X17311040600	RSR00355
		360	CSHD075	CSHD120	CSHD120	Left	19	—	—	X17311040590	RSR00354
		420	CSHD075	CSHD136	CSHD136	Left	None			—	—
		480	CSHD092	CSHD155	CSHD155	Left	None			—	—
		600	CSHD120	CSHD183	CSHD183	Left	22	—	—	X17311040580	RSR00353
	K / L	330	CSHD075	CSHD110	CSHD110	Left	15	—	—	X17311040600	RSR00355
		360	CSHD075	CSHD120	CSHD120	Left	19	—	—	X17311040590	RSR00354
		420	CSHD089	CSHD136	CSHD136	Left	None			—	—
		480	CSHD092	CSHD155	CSHD155	Left	None			—	—
		600	CSHD120	CSHD183	CSHD183	Left	22	—	—	X17311040580	RSR00353
D	0 / J / K / L	330	CSHE071	CSHE113	CSHE113	Left	15	—	—	X17311040600	RSR00355
		360	CSHE071	CSHE127	CSHE127	Left	19	—	—	X17311040590	RSR00354
		420	CSHE088	CSHE132	CSHE132	Left	None			—	—
		480	CSHE097	CSHE152	CSHE152	Left	20	—	—	X17311040680	RSR00380
		600	CSHE117	CSHE177	CSHE177	Left	22	—	—	X17311040580	RSR00353

Note: Voyager 3 MCHE: no change in compressors digit 10 design sequence F.

Table 5. RA — suction restrictor size and location

Digit 4 – Development sequence	Digit 5, 6,7 – Nominal Cooling capacity	Compressor Position			Suct. Appr.	Restrictor Size (ID mm) and Location			Trane Part Number	Mnemonic Part Number
		CP1	CP2	CP3		CP1	CP2	CP3		
J	C20	CSHD120	CSHD120	—	Right	Not Req.			—	—
	C25	CSHD125	CSHD161	—	Right	25	—	—	X17311040510	RSR00235
	C30	CSHD183	CSHD183	—	Right	Not Req.			—	—
	C40	CSHD120	CSHD120	—	Right	Not Req.			—	—
	C50	CSHD142	CSHD161	—	Right	27	—	—	X17311040540	RSR00238
	C60	CSHD175	CSHD175	—	Right	Not Req.			—	—
	C80	CSHN176	CSHN176	CSHN176	Left	—	—	31	X17311028510	RSR00241
	D10	CSHN184	CSHN184	CSHN250	Left	33	33	—	X17311028520	RSR00242
	D12	CSHN250	CSHN250	CSHN250	Left	—	—	33	X17311028520	RSR00242
K	C20	YA154	YAS104	—	Right	Not Req.			—	—
	C25	YA182	YAS122	—	Right	Not Req.			—	—
	C30	CSHE088	CSHE132	CSHE132	Right	Not Req.			—	—
	C40	CSHE117	CSHE132	—	Right	26	—	—	X17311040560	RSR00240
	C50	CSHE132	CSHE145	—	Right	27	—	—	X17311040540	RSR00238

Digit 4 – Development sequence	Digit 5, 6,7 – Nominal Cooling capacity	Compressor Position			Suct. Appr.	Restrictor Size (ID mm) and Location			Trane Part Number	Mnemonic Part Number
		CP1	CP2	CP3		CP1	CP2	CP3		
K	C60	CSHE177	CSHE177	—	Right	Not Req.			—	—
	C80	CSHP178	CSHP178	CSHP178	Left	—	—	31	X17311028510	RSR00241
	D10	CSHP178	CSHP178	CSHP237	Left	33	33	—	X17311028520	RSR00242
	D12	CSHP237	CSHP237	CSHP237	Left	—	—	33	X17311028520	RSR00242

Notes

1. RAUJ split system 20 to 60 ton MCHE: no change in compressors digit 10 design sequence C.
2. RAUJ split system 20 to 120 ton MCHE: no change in compressors digit 10 design sequence B.

Table 6. IPAK 3 — suction restrictor size and location

Digit 12 – Development sequence	Digit 3,4,5 – Nominal Cooling capacity	Digit 9 – Refrigera- tion System Performance	Circuit #	Compressor Position			Suct. Appr.	Restrictor Size (ID mm) and Location			Trane Part Number	Mnemonic Part Number
				CP1	CP2	CP3		CP1	CP2	CP3		
	020	1	1	CSHW058	CSHW089	CSHW089	—	Not Req.			—	—
		2	1	CSHD125	CSHD142	—	—	26	—	—	X17311040560	RSR00240
		3	1	VZH088	CSHD110	—	—	Not Req.			—	—
	025	1	1	CSHD075	CSHD110	CSHD110	—	15	—	—	X17311040600	RSR00355
		2	1	CSHD142	CSHD161	—	—	27	—	—	X17311040540	RSR00238

A		3	1	VZH088	CSHD125	—	—	Not Req.			—	—
	030	1	1	CSHD075	CSHD120	CSHD120	—	19	—	—	X17311040590	RSR00354
		2	1	CSHD161	CSHD183	—	—	26	—	—	X17311040560	RSR00240
		3	1	VZH117	CSHD161	—	—	Not Req.			—	—
	040	1	1	CSHD110	CSHD110	—	—	Not Req.			—	—
			2	CSHD110	CSHD110	—	—	Not Req.			—	—
		2	1	CSHD110	CSHD110	—	—	Not Req.			—	—
			2	CSHD110	CSHD110	—	—	Not Req.			—	—
		3	1	VZH117	—	—	—	Not Req.			—	—
			2	CSHD110	CSHD110	—	—	Not Req.			—	—
	050	1	1	CSHD125	CSHD142	—	—	26	—	—	X17311040560	RSR00240
			2	CSHD125	CSHD142	—	—	26	—	—	X17311040560	RSR00240
		2	1	CSHD125	CSHD125	—	—	Not Req.			—	—
			2	CSHD125	CSHD125	—	—	Not Req.			—	—
		3	1	VZH170	—	—	—	Not Req.			—	—
			2	CSHD142	CSHD142	—	—	Not Req.			—	—

	055	1	1	CSHD142	CSHD142	—	—	Not Req.			—	—
			2	CSHD142	CSHD142	—	—	Not Req.			—	—
		2	1	CSHD125	CSHD142	—	—	26	—		X17311040560	RSR00240
			2	CSHD125	CSHD142	—	—	26	—	—	X17311040560	RSR00240

A		3	1	VZH170	—	—	—	Not Req.			—	—
			2	CSHD142	CSHD142	—	—	Not Req.			—	—
	060	1	1	CSHD161	CSHD183	—	—	26	—	—	X17311040560	RSR00240
			2	CSHD161	CSHD183	—	—	26	—	—	X17311040560	RSR00240
		2	1	CSHD161	CSHD161	—	—	Not Req.			—	—
			2	CSHD161	CSHD161	—	—	Not Req.			—	—
		3	1	VZH170	—	—	—	Not Req.			—	—
			2	CSHD183	CSHD183	—	—	Not Req.			—	—
	070	1	1	CSHD183	CSHD183	—	—	Not Req.			—	—
			2	CSHD183	CSHD183	—	—	Not Req.			—	—
		2	1	CSHD161	CSHD183	—	—	26	—	—	X17311040560	RSR00240
			2	CSHD161	CSHD183	—	—	26	—		X17311040560	RSR00240
		3	1	VZH170	—	—	—	Not Req.			—	—
			2	CSHD183	CSHD183	—	—	Not Req.			—	—
	075	1	1	CSHD183	CSHD183	—	—	Not Req.			—	—
			2	CSHD183	CSHD183	—	—	Not Req.			—	—
		2	1	CSHD183	CSHD183	—	—	Not Req.			—	—
			2	CSHD183	CSHD183	—	—	Not Req.			—	—
		3	1	VZH170	CSHN184	—	—	Not Req.			—	—
			2	CSHD161	CSHD161	—	—	Not Req.			—	—
	020	3	1	VZH088	CSHE113	—	—	Not Req.			—	—

B	025	2	1	CSHE 071	CSHE 113	CSHE 113	—	19	—	—	X1731104 0590	RSR0035 4
		3	1	VZH0 88	CSHE 132	—	—	Not Req.			—	—
	030	1	1	CSHE 071	CSHE 117	CSHE 117	—	19	—	—	X1731104 0590	RSR0035 4
		2	1	CSHE 071	CSHE 132	CSHE 132	—	19	—	—	X1731104 0590	RSR0035 4
		3	1	VZH1 17	CSHE 152	—	—	Not Req.			—	—
	040	1	1	CSHE 104	CSHE 113	—	—	Not Req.			—	—
			2	CSHE 104	CSHE 113	—	—	Not Req.			—	—
		2	1	CSHE 104	CSHE 113	—	—	Not Req.			—	—
			2	CSHE 104	CSHE 113	—	—	Not Req.			—	—
		3	1	VZH1 17	—	—	—	Not Req.			—	—
			2	CSHE 113	CSHE 113	—	—	Not Req.			—	—

	050	1	1	CSHE 117	CSHE 132	—	—	26	—	—	X1731104 0560	RSR0024 0
			2	CSHE 132	CSHE 132	—	—	Not Req.			—	—
		2	1	CSHE 117	CSHE 132	—	—	26	—	—	X1731104 0560	RSR0024 0
			2	CSHE 117	CSHE 132	—	—	26	—	—	X1731104 0560	RSR0024 0
		3	1	VZH1 70	—	—	—	Not Req.			—	—
			2	CSHE 132	CSHE 132	—	—	Not Req.			—	—
		1	1	CSHE 132	CSHE 145	—	—	Not Req.			—	—
			2	CSHE 132	CSHE 145	—	—	Not Req.			—	—
		2	1	CSHE 132	CSHE 132	—	—	Not Req.			—	—
			2									

	055		2	CSHE 132	CSHE 132	—	—	Not Req.			—	—
		3	1	VZH170	—	—	—	Not Req.			—	—
			2	CSHE 145	CSHE 145	—	—	Not Req.			—	—
	060	1	1	CSHE 152	CSHE 177	—	—	26	—	—	X17311040560	RSR00240
			2	CSHE 152	CSHE 177	—	—	26	—	—	X17311040560	RSR00240
		2	1	CSHE 152	CSHE 177	—	—	26	—	—	X17311040560	RSR00240
			2	CSHE 152	CSHE 177	—	—	26	—	—	X17311040560	RSR00240
		3	1	VZH170	—	—	—	Not Req.			—	—
			2	CSHE 177	CSHE 177	—	—	Not Req.			—	—
	070	1	1	CSHE 177	CSHE 177	—	—	Not Req.			—	—
			2	CSHE 177	CSHE 177	—	—	Not Req.			—	—
		2	1	CSHE 177	CSHE 177	—	—	Not Req.			—	—
			2	CSHE 177	CSHE 177	—	—	Not Req.			—	—
		3	1	VZH170	CSHP 178	—	—	Not Req.			—	—
			2	CSHE 132	CSHE 132	—	—	Not Req.			—	—
	075	1	1	CSHE 177	CSHE 177	—	—	Not Req.			—	—
			2	CSHE 177	CSHE 177	—	—	Not Req.			—	—
		2	1	CSHE 177	CSHE 177	—	—	Not Req.			—	—
			2	CSHE 177	CSHE 177	—	—	Not Req.			—	—
		3	1	VZH170	CSHP 178	—	—	Not Req.			—	—
			2	CSHE 177	CSHE 177	—	—	Not Req.			—	—

B

Table 7. Legacy restrictor selection and location

Product Line						Compressor Position			Suct. Appr.	Restrictor Size (ID mm) and Location			Trane Part Number w/Bag and Label	Mnemonic #
Clarksville	Clarksville	Clarksville	Clarksville	Clarksville	Macon									
IPAK 2	IPAK 1	Voyager 3	Odyssey	RA	CSC	CP1	CP2	CP3		CP 1	CP 2	CP 3		
—	S*HL*40	—	—	—	—	CSHD092	CSHD110	—	right	—	25	—	X17311040510	RSR00235
—	S*HL*40/48 G	—	—	—	—	CSHD110	CSHD110	—	right	Not Req.		—	—	—
—	S*HL*20/24 G	—	—	—	—	CSHD125	CSHD125	—	right	Not Req.		—	—	—
—	—	—	TTA240 F	—	—	CSHD120	CSHD120	—	left	Not Req.		—	—	—
—	S*HL*20	—	—	RAUJC20 RAUJC40	—	CSHD120	CSHD120	—	right			—	—	—
—	—	—	—	—	S*RF*30 S*RF*35	CSHD120	CSHD120	—	center	Not Req.		—	—	—
—	S*HL*25	—	—	—	—	CSHD125	CSHD142	—	right	26	—	—	X17311040560	RSR00240
—	S*HL*50	—	—	—	—	CSHD120	CSHD136	—	right	26	—	—	X17311040560	RSR00240
—	S*HL25/29 G	—	—	RAUJC25	—	CSHD125	CSHD161	—	right	25	—	—	X17311040510	RSR00235
—	S*HL*50/59 G	—	—	—	—	CSHD142	CSHD142	—	right	Not Req.		—	—	—
—	—	TC/TE/YC 330	—	—	—	CSHD142	CSHD161	—	left	27	—	—	X17311040540	RSR00238
—	S*HL*60	—	—	RAUJC50	—	CSHD142	CSHD161	—	right	27	—	—	X17311040540	RSR00238
—	—	TC/TE/YC 360	—	—	—	CSHD161	CSHD161	—	left	Not R		—	—	—

—	S*HL*30 S*HL*60/73 G	—	—	—	—	CSHD161	CSHD161	—	right	eq.		—	—	—
—	—	TC/TE/YC 420	—	—	—	CSHD161	CSHD183	—	left	26	—	—	X17311040560	RSR00240
—	S*HL*30/36 G	—	—	—	—	CSHD161	CSHD183	—	right	26	—	—	X17311040560	RSR00240
—	—	TC/TE/YC 600	—	—	—	CSHD155	CSHD183	—	left	25	—	—	X17311040510	RSR00235
—	—	—	—	—	S*RF*40	CSHD183	CSHD120	—	center		22.5	—	X17311040570	RSR00348
—	S*HL*70/80	—	—	RAUJC30	—	CSHD183	CSHD183	—	right	Not Req.		—	—	—
—	—	—	—	—	S*RF*50	CSHD183	CSHD183	—	center	Not Req.		—	—	—

Product Line						**Compressor Position**			**Suct. Appr.**	**Restrictor Size (ID mm) and Location**			**Trane Part Number w/Bag and Label**	**Mnemonic #**
Clarksville	**Clarksville**	**Clarksville**	**Clarksville**	**Clarksville**	**Macon**									
IPAK2	**IPAK1**	**Voyager 3**	**Odyssey**	**RA**	**CSC**	**CP1**	**CP2**	**CP3**		**CP1**	**CP2**	**CP3**		
—	—	—	—	—	S*RF*60	CSHD183	CSHD183	—	center	Not Req.		—	—	—
—	—	—	—	—	S*WF*85	CSHD183	CSHD183	—	center	Not Req.		—	—	—
—	—	—	—	RAUJC60	—	CSHD175	CSHD175	—	right	Not Req.		—	—	—
—	S*HL*75/89 G	—	—	—	—	CSHN184	CSHN250	—	right	31	—	—	X17311028510	RSR00241
—	S*HL*75	—	—	—	—	CSHN176	CSHN240	—	right	31	—	—	X17311028510	RSR00241
S*HJ090 S*HJ100	SXHK*90	—	—	—	—	CSHN250	CSHN250	—	left			—	—	—

S*HJ 090 S*HJ 100	SXHK* 90	—	—	—	—	—	—	—	right	Not Req.		—	—	—
S*HJ 105 S*HJ 118	SXHK* 11 SXHK* 12	—	—	—	—	CSH N250	CSH N315	—	left	31	—	—	X17311028510	RSR00241
S*HJ 105 S*HJ 118	SXHK* 11 SXHK* 12	—	—	—	—	—	—	—	right	31	—	—	X17311028510	RSR00241
S*HJ 120 S*HJ 128	SXHK* 13	—	—	—	—	CSH N315	CSH N315	—	left	Not Req.		—	—	—
S*HJ 120 S*HJ 128	SXHK* 13	—	—	—	—	—	—	—	right			—	—	—
S*HJ 130 S*HJ 140	—	—	—	—	—	CSH N315	CSH N374	—	left	31	—	—	X17311028510	RSR00241
S*HJ 130 S*HJ 140	—	—	—	—	—	—	—	—	right	31	—	—	X17311028510	RSR00241
S*HJ 150 S*HJ 162	—	—	—	—	—	CSH N374	CSH N374	—	left	Not Req.		—	—	—
S*HJ 150 S*HJ 162	—	—	—	—	—	—	—	—	right			—	—	—
—	—	—	—	RAUJD80	—	CSH N176	CSH N176	CSH N176	left	—	—	31	X17311028510	RSR00241
—	—	—	—	RAUJD100	—	CSH N184	CSH N184	CSH N250	left	33	33		X17311028520	RSR00242
—	—	—	—	RAUJD120	—	CSH N250	CSH N250	CSH N250	left	—	—	33	X17311028520	RSR00242

Notes

1. IPAK RT G high efficiency air cooled unit—digit G listed in Position 21–38 in model number.
2. IPAK RTsizes 24, 29, 36, 48, 59, 73, 80, 89 are evaporative cooled condenser models

Trane and American Standard create comfortable, energy efficient indoor environments for commercial and residential applications. For more information, please visit **trane.com** or **americanstandardair.com**.

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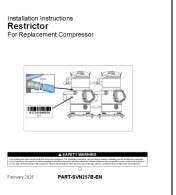
PART-SVN257B-EN 24 Feb 2025
Supersedes PART-SVN257A-EN (July 2023)

Frequently Asked Questions

- **Q: Who should install and service the equipment?**
  A: Only qualified personnel should install and service the equipment to ensure safety and proper operation.
- **Q: What type of refrigerant does the unit use?**
  A: The unit uses R-410A refrigerant, which operates at higher pressures than R-22. It is important to use only R-410A rated service equipment with these units.
- **Q: What precautions should be taken when working with the equipment?**
  A: Always observe all safety precautions, wear proper PPE, follow proper field wiring and grounding requirements, and adhere to responsible refrigerant practices to avoid hazards and ensure safe operation.

Documents / Resources

	TRANE SVN257B Restrictor Replacement Compressor [pdf] Installation Guide PART-SVN257B-EN, SVN257B Restrictor Replacement Compressor, Restrictor Replacement Compressor, Replacement Compressor, Compressor

References

- American Standard® | Air Conditioning and Heating | HVAC Systems
- Trane Heating & Air Conditioning
- User Manual