GOODMAN TECHNICAL SERVICES

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NATE Certification

Goodman encourages and supports HVAC contractors who earn NATE Certification. The NATE badge is a symbol recognized by an ever-increasing number of homeowners as the official mark of technician

GoodNews Tech Tips

VOLUME 2, ISSUE 4 OCTOBER 2011

14 SEER Dual Fuel Package Units

We are pleased to introduce our new line of Dual Fuel package equipment. Production began the week of August 29th of this year. These 14 SEER units will be available in both Goodman and Amana models which will include:

*PD1424070M41

*PD1430090M41

*PD1436090M41

*PD1442115M41

*PD1448115M41.

These units will feature Tubular Aluminized Heat Exchangers(Stainless Steel on Amana products), Copeland Scroll Compressors, Ranco Reversing Valves, Swept Wing Fan Blades, EEM Blower Motors, Flowrator Metering Devices, and White Rodgers 2-Stage gas valves, just to name a few.

The 14 SEER Dual Fuel Package units are capable of running with any 1-cool/ 2-heat heat pump thermostat, but for optimal performance, it is recommended to use a 1-cool/ 2-heat dual fuel thermostat with a remote sensor or with an OTDFPKG-01 outdoor thermostat, which is sold as an accessory for the system.

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14 SEER Dual Fuel Package Units Continued

The OTDFPKG-01 thermostat is set in a “Birdhouse” enclosure and has a temperature range of 0 – 45°F. The temperature setting is determined by the local climate and the energy rates, with 40°F being a typical setting. For ease of installation, a Molex plug is pre-wired to the outdoor thermostat; therefore, eliminating the need for additional wiring to the unit. Pre-stamped holes and knockouts on the unit - corner post ensure correct positioning of the control. This control was designed to get the true Dual Fuel benefit from the system while still using a standard 1- cool/ 2-heat heat pump thermostat.

OTDFPKG-01 Outdoor thermostat with “Birdhouse” Enclosure

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Charging Labels Added to Goodman/Amana Heat Pumps

In our continuing effort to make our heat pumps the most dependable and user-friendly units on the market, we are adding charging labels to all split-system heat pumps (see illustration below). These labels will be located on the inside of the control box cover. The label will contain the expanded performance charts for the heating cycle and the proper method of determining the superheat and subcooling in the cooling cycle. The expanded heating charts should enable our dealers to increase the accuracy of their charging during the heating cycle, which should result in fewer callbacks saving dealers time and money.

HEATING MODE

Pressures shown are for most popular match indoor unit WITH NO FROST ON OUTDOOR COIL. Due to factors like airflow, charge, indoor coil & frost, pressures will vary significantly. Liquid (small) service valve pressures should be ± 20 psig & suction (access port) pressures should be ±5 psig of the values listed in this chart.

	Indoor Air Flow Rate	Indoor Return Air Dry Bulb Temperature (°F)	Outdoor Air Dry Bulb Temperature (°F)																					
			17		22		27		32		37		42		47		52		57		62		67	
			Liquid Valve & Compressor Suction Pressure																					
			Liq	Suct	Liq	Suct	Liq	Suct	Liq	Suct	Liq	Suct	Liq	Suct	Liq	Suct	Liq	Suct	Liq	Suct	Liq	Suct	Liq	Suct
Low Stage	740	65	249	51	258	61	267	72	277	82	286	92	295	103	305	113	314	124	324	134	333	144	343	155
		70	267	51	277	61	286	71	295	82	305	92	314	102	324	113	333	123	343	134	352	144	362	154
		75	286	50	296	61	306	71	315	81	325	92	334	102	344	112	354	123	363	133	373	144	382	154
	860	65	240	50	249	61	258	71	267	81	276	92	285	102	295	112	304	122	313	133	322	143	331	154
		70	258	51	267	61	276	71	286	82	295	92	304	102	313	113	322	123	331	133	341	144	350	154
		75	277	51	286	61	295	72	305	82	314	92	323	103	332	113	342	124	351	134	360	144	369	154
	960	65	234	50	243	61	252	71	261	81	269	91	278	102	287	112	296	122	305	133	314	143	323	153
		70	252	51	260	61	269	71	278	82	287	92	296	102	305	112	314	123	323	133	332	143	341	154
		75	270	51	279	61	288	72	297	82	306	92	315	103	324	113	333	123	342	134	351	144	360	154
High Stage	1090	65	271	60	281	68	290	76	300	84	310	92	320	100	330	109	340	117	350	125	360	133	370	141
		70	291	60	301	68	311	76	321	84	331	92	341	100	351	108	361	116	371	124	380	132	390	140
		75	312	60	322	68	332	76	342	84	352	92	362	100	372	108	382	116	392	124	402	132	412	140
	1250	65	262	60	271	68	281	76	290	84	300	92	309	100	319	108	328	116	338	124	348	132	357	139
		70	281	60	291	68	300	76	310	84	320	92	329	100	339	108	348	116	358	124	368	132	377	140
		75	301	61	311	69	321	77	331	85	340	93	350	101	360	109	369	117	379	124	389	132	398	140
	1410	65	255	60	264	68	274	76	283	84	292	92	301	100	311	107	320	115	330	123	339	131	349	139
		70	274	60	284	68	293	76	302	84	312	92	321	100	330	108	340	116	349	124	358	132	368	140
		75	294	61	303	69	313	77	323	85	332	92	341	100	351	108	360	116	370	124	379	132	388	140

The charging charts were added in production to the *SZC16 and *SZC18 SEER heat pumps starting in May, 2011. Charging charts will be added to the *SZ13 and *SZ14 SEER heat pumps starting in October, 2011. Dealers need to be reminded that proper airflow must be determined before charging begins. Without the correct airflow, charging charts or any other method will not be successful. **NOTE:** It is still recommended that the dealer return and verify the charge of the unit in the cooling cycle by checking superheat and or subcooling.

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Aluminum Coils Introduced in Condensing Units

In May, 2011, Goodman introduced a limited production of the VSX130241BA condenser with our new 5mm aluminum condenser coil. Due to the success of this unit, it has been decided to introduce a limited production of the GSC130241GA R22 dry charge unit in the 23" chassis with the new aluminum coil. These units are tentatively scheduled for production starting in December, 2011. The 23" chassis will have the following features.

1. Smaller footprint for easier handling and to resolve clearance issues.
2. New two-piece louver assembly for easier removal during service.
3. Hinged control panel for easier access to compressor and interior of unit.
4. Contactor mounted higher in control box for better access.
5. New base pan for more service valve clearance.
6. Relocated wiring to eliminate wires contacting tubing.

Installation and Service of Communicating Capable Equipment

For the last two years we have been producing communicating heating and cooling equipment in Goodman and Amana® brands. As part of the manufacturing process, shared data is programmed into each unit on the assembly line. This data collection holds information specific to the equipment being programmed, such as operating CFM, equipment match-up information and the model and serial number of the equipment. This process works very well and is verified by run testing each unit.

When installing and troubleshooting communicating equipment, it is extremely important to pay attention to the connection of data wires. These wires connect to terminals 1 & 2 of the ComfortNet Control (CTK01AA / CTK02AA), to your air handler or furnace and also to a communicating outdoor condensing unit. Typically, wires from the ComfortNet control and the outdoor unit will be terminated at the low-voltage terminal strip of the furnace or air handler. The two data #1 wires must be first twisted together before being placed under the data #1 screw on the low-voltage terminal strip. Likewise, the two data #2 wires must be twisted together before being placed under the data #2 screw. Solid #18 gauge wire should be used and should not contain splices.

Upon being powered up, the ComfortNet control will search for communicating devices and will report any equipment found on the screen of the control. This process is usually complete in a few minutes. In the event of continuous "searching" but not finding equipment, the data wire connections should be checked. The wire itself should also be checked for open or shorted conductors. Less than perfect connections often go undetected on 24-volt control systems but will definitely be an issue in a communicating system which operates on small voltages. The vast majority of service issues on this type of system are not caused by device failure but rather by poor connections.

Refer to the chart on the following page for troubleshooting.

Installation and Service of Communicating Capable Equipment Continued

LED	LED Status	Indication	Possible Cause	Corrective Action	Notes
Red Communi-cations LED	Off	Normal after 2 flashes	Normal op	none	
	1 Flash	Communications Failure	BIAS and TERM switches off	Depress learn button for 2 sec-onds	
				Verify that BIAS and TERM switches are in the ON position	
	2 Flashes	Normal Operation on start up	Normal op	none	
	No Flash on start up	No Power	No power to furnace	Check circuit breaker	Verify safe condition with volt meter
				Depress learn button for 2 sec-onds	
Green receive LED	1 Steady Flash	No network found	Broken / dis-connected data wire	~Check commu-nications wiring, data 1, data 2	Twist data 1 wires together, twist data 2 wires together
			Furnace in-stalled as non-communicating	Check voltage on communica-tion wires 2.6vdc & 2.3vdc to ground & .2-.6vdc between data 1 & data 2	Verify power is turned off to repair
	Rapid flashing	Normal network traffic	Control is talk-ing on network, normal opera-tion	none	
	On solid	Data 1 / Data 2miss-wire	Data 1 / Data 2 wires are crossed or shorted,	Check wiring connections	Verify power is turned off to repair

Thermostatic Expansion Valves

With more and more systems using Thermostatic Expansion Valves (TXV) instead of Fixed Orifice metering (Flowrators, Cap Tubes) , there is a need to accurately diagnose TXVs. The TXV is designed to control the rate of flow of the refrigerant in exact proportions into the evaporator coil. The TXV does this by controlling the superheat. The valve responds to the temperature of the gas leaving the evaporator (the feeler bulb on the suction line) and the pressure of the refrigerant in the coil. The refrigerant amount going into the evaporator is regulated because the metering of the flow of the refrigerant prevents the return of liquid refrigerant back to compressor.

Three forces govern the operation of the bulb:

1. The pressure created in the power head assembly by the expansion and contraction of the refrigerant that is the bulb. Good contact between the bulb and the suction line is a must if the valve is to
   control within specs.

2. The evaporator pressure.

3. The equivalent pressure of the super spring in the valve.

Trouble Shooting TXVs

External Equalizer line

The external equalizer line reads the evaporator pressure during the operating of system.

Overfeeding

Overfeeding by the TXV will result in a high-suction, cold-suction line and slugging of the compressor. Make sure that remote bulb is firmly attached to suction line.

Underfeeding

Underfeeding will result in low-system capacity and low-suction pressure.

Check if the symptoms happen.

Thermostatic Expansion Valves Continued

Checking Expansion Valve Remote Operation.

1. Remove the remote bulb of the valve from the valve.

2. Cool the bulb in a container of ice water, closing the valve.

3. Start the system and warm the bulb in your hand.

4. Feel the suction line. If a temperature chance is felt, the valve is working.

5. If no change is noticed, the valve is restricted or power element is faulty.

6. Remove the charge and replace valve and drier.

Refrigerant Overcharge

An overcharge system is normally indicated by excessively high-head pressure. A system containing noncondensable air may also have high-head pressure.

Adjustable TXVs

Some of Goodman TXVs have an adjustment stem. It is best to leave the valve at its factory setting, unless the technician has had a lot of experience with adjusting TXVs in the past. You should measure your superheat at the bulb position. To gain more superheat, the valve stem should be turned clockwise , and for less super heat, the valve should be turned counterclockwise. Adjust TXV to 7 to 9 ºF superheat, and then check subcooling.

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Thank goodness for Goodman™.

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Heating & Air Conditioning
Amana

Lasts and Lasts and Lasts™

We've become one of the largest manufacturers of residential and light commercial air conditioning, heating, and indoor air quality products and systems by focusing on just one thing-building the most reliable and refreshingly affordable indoor comfort products in the market.

The complete line if Goodman brand products are built on the principle of founder Harold Goodman, a former air conditioning contractor.

Harold's goal was to manufacture air conditioning and heating equipment that:

- **Provides industry leading product warranties**
- **Offers greater reliability and longer-lasting performance than competing products**
- **Is designed for quick., trouble-free installations**
- **Makes reliable cooling and heating as affordable as possible.**

Building our products to Harold's standards, and protecting those products with some of the best limited warranties in the industry, has helped to make the Goodman brand widely recognized as a leading brand in the residential and light commercial heating, ventilation and air conditioning industry today.

We're on the web!

www.goodmanmfg.com