



Q & A: 1/2 - 6 HP Air-cooled Condensing Unit

with HyperCore™
microchannel coil technology

H-HTSQA-PKG

June 2009



HyperCore™
microchannel coil technology

Orbus™
Controller



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HyperCore™ Microchannel Coil Technology

DEFINITIONS

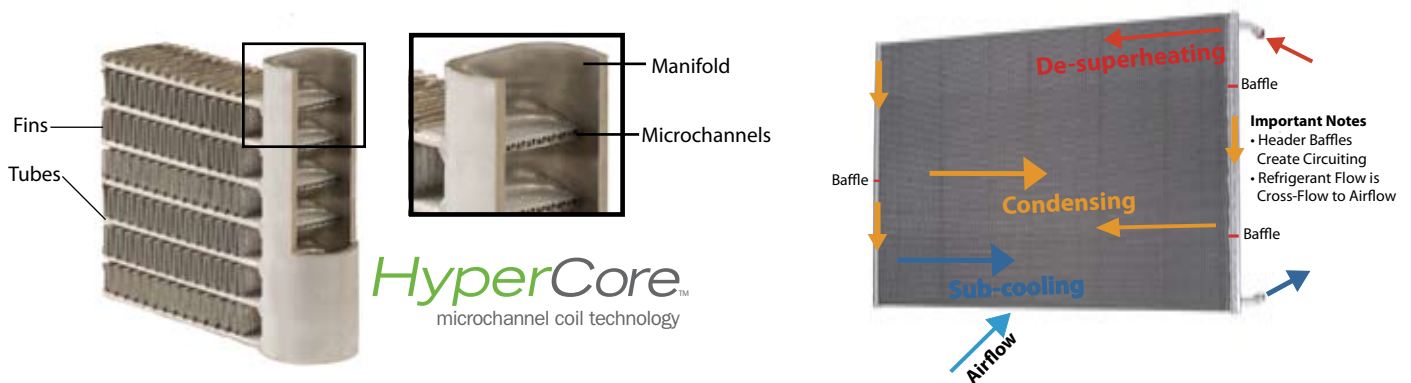
RTPF – Traditional Cu/Al round tube, plate fin coil

E-coat – Generic term for a coil coating that is either electro-deposited or a baked epoxy

Q1. What is HyperCore™ microchannel coil technology?

HyperCore™ microchannel condenser coils are all aluminum coils with multiple flat tubes containing small channels (microchannels) through which refrigerant flows. Heat transfer is maximized by the insertion of angled and louvered fins in-between the flat tubes. These components are joined with two refrigerant manifolds using an aluminum-zinc alloy brazing material in a nitrogen-charged braze furnace to make the completed microchannel coil.

Coil circuiting is accomplished by placing baffles in the distribution manifolds to feed the refrigerant through the flat tubes. In the picture below, the coil is divided into four passes. De-superheating and condensing of discharge gas takes place in the first pass. Condensing takes place in the second and third passes. The fourth pass provides liquid sub-cooling.



Q2. How is the HyperCore microchannel coil better than an RTPF coil?

HyperCore microchannel coils have significantly improved performance over traditional copper/aluminum RTPF coils in a number of areas:

1. Improved Heat Transfer Performance

HyperCore microchannel coils' heat transfer performance is 20-30% higher than standard RTPF coils of the same size, enabling comparable capacity to be achieved with a smaller coil.

The higher heat transfer performance is obtained by the flat tubes, which maximize airside heat transfer, and microchannels within the tubes. The microchannels maximize refrigerant side heat transfer via multiple tiny refrigerant channels which provide increased primary surface area. Additionally, the metallurgical fin-tube bond resulting from the braze operation maximizes surface contact and increases the heat transfer surface area, further improving the heat transfer performance of the coil.

2. Reduced Refrigerant Charge

HyperCore microchannel coils have a smaller volume, lowering condenser refrigerant charge by as much as 75%. As such, the use of HyperCore microchannel coils provides a more environmentally friendly solution for refrigeration systems to help reduce ozone depletion and global warming.

3. Improved Corrosion Protection

HyperCore microchannel coils have been proven to last up to five times (5X) longer than standard RTPF coils in extended tests.

The corrosion potential with the all aluminum HyperCore microchannel coils is significantly lower than in copper/aluminum (bi-metal) RTPF coils as there are no dissimilar metals to initiate galvanic corrosion. This makes HyperCore microchannel coils an inherently better solution for coastal installations, or any application where corrosion may be a concern.

Please refer to Question 9 for more details on how HyperCore microchannel coils perform in a corrosive environment.

4. Durability & Reduced Leaks

HyperCore microchannel coils require only one braze operation versus 50-100 manually brazed joints for RTPF, significantly reducing the likelihood for leaks. Additionally, the flat tubes serve as a fin guard to help protect the fins from damage.

5. Ease of Service & Repair

HyperCore microchannel coils are easily cleaned and can be field repaired using a two-part epoxy process.

HyperCore microchannel coils are less than one inch thick allowing for easy removal of any debris that may be caught within the coil. This is not so with RTPF coils, which are often 2 to 3 inches thick with staggered tube patterns using corrugated fins which make debris removal difficult, if not impossible, in some circumstances. The durability of HyperCore microchannel coils also allows for pressure washing (using a broad spray pattern), which is not recommended with RTPF coils.

Coil leaks, while unlikely, can also be easily repaired in the field using a simple process. Please refer to Question 8 for more details on field repair of leaks in microchannel coils.

Q3. Where else have microchannel heat exchangers been used, and why?

Microchannel coils have been used in the automotive industry for over two decades and are now an industry standard. Microchannel coils have replaced RTPF coils in all mainstream automotive air conditioning condenser, radiator and oil cooler applications.

The switch to microchannel coils enabled the automotive industry to avoid increasing the weight of their vehicles and comply with regulations requiring a phase out of R-12 to the more environmentally friendly R-134a. Microchannel coils allowed the industry to maintain the same capacity with R-134a as they had observed with R-12.

Q4. If microchannel heat exchangers are such great technology, why hasn't it been adopted by other industries?

Microchannel heat exchangers have been around since the 1980's in the automotive industry. While the merits of the technology have been known for decades, application of microchannel heat exchangers to non-automotive industry applications were cost prohibitive due to the lower volumes. It has only been recently that the manufacturing advances in microchannel heat exchange have enabled the technology to be priced competitively with traditional RTPF coils in the HVACR industry. However, many microchannel coil suppliers are still not cost competitive for refrigeration volumes.

Q5. Have microchannel heat exchangers been used in the commercial refrigeration industry before?

Microchannel heat exchangers have recently been introduced in the HVACR industry, and have been used in smaller fractional horsepower condensing units and air-cooled condensers.

Q6. Many years ago, another company tried to use all aluminum coils and it was a complete failure. How is this different?

These were aluminum round tube coils. These coils had challenges, as they required manually brazed joints, which were frequently subject to failure. Additionally, leaks in the coil were difficult to repair and required specialized equipment and training.

HyperCore microchannel coils are a radical improvement over aluminum round tube coils. There are no manually brazed joints, and the units are designed with a rigid structure, which strengthens the coil and dramatically reduces the likelihood of leaks.

Additionally, repairing leaks in a HyperCore microchannel coil is significantly less complex. An epoxy based sealant (such as red epoxy), a cleaning solution, a vacuum pump, a few simple tools, and a hot air gun is all that is required. Refer to Question 8 for additional information.

Q7. This looks like pretty tight fin spacing. Won't this coil clog up faster than our current coils?

At first glance, the tight fin spacing of the microchannel coil does look like it might pose a problem. In application, it is less likely to clog than traditional RTPF coils.

Upon closer inspection of the microchannel coil you will see that the coil is only 0.9" thick, vs. 2" to 5" thick for typical RTPF coils. The RTPF coil's corrugated fin pattern coupled with its thickness and the staggered tube pattern provide more opportunity for clogging than the microchannel coil.

As a result, the HyperCore microchannel coil is less likely to clog and is easier to clean.

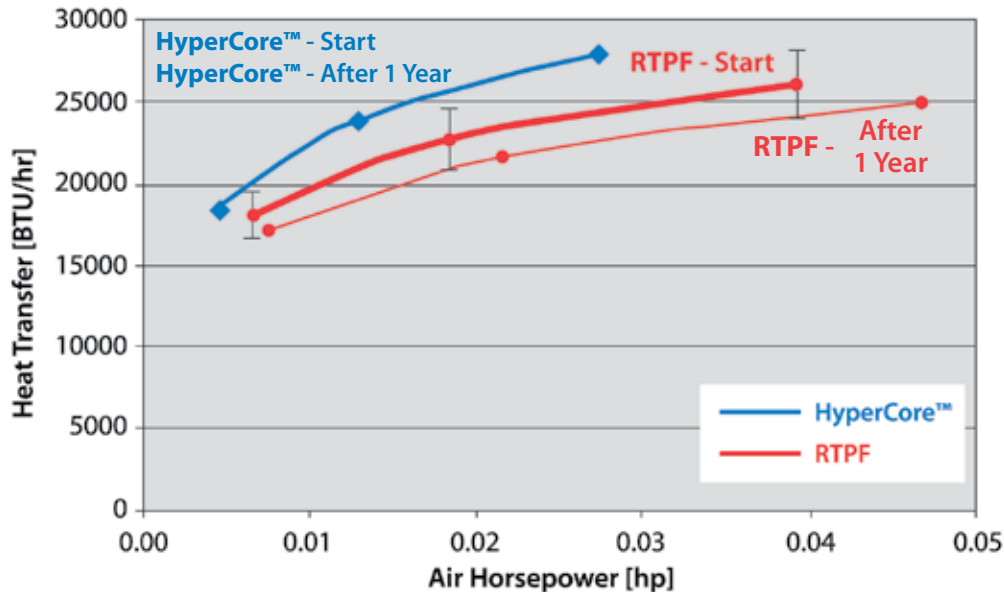
Q8. What can be done about leaks? It has been said repairing leaks in an aluminum coil is close to impossible.

Since there are no manually brazed joints in HyperCore microchannel coils, and the units are designed with a rigid structure, the likelihood of leaks is dramatically reduced. However, if repair is necessary, a simple process using an epoxy based sealant (such as red epoxy), a cleaning solution, a vacuum pump, a few simple tools, and a hot air gun is all that is required.



Q9. How do HyperCore microchannel coils perform in a corrosive environment?

The all-aluminum HyperCore microchannel coils with zinc cladding perform very well in a corrosive environment. A coastal corrosion test was performed to compare the corrosion resistance of Cu/Al RTPF coils and all-aluminum HyperCore microchannel coils. After one year, both coils were tested to measure current performance against baseline performance. The chart below shows an imperceptible change in the microchannel performance and approximately an 8% reduction in capacity for the Cu/Al RTPF.



Source: Modine Manufacturing Company

In addition to the performance testing, before and after photographs of the coils show a marked difference in the two coil types.

BEFORE

AFTER

RTPF



Figure 1 – RTPF Coil with No Exposure



Figure 2 – RTPF Coil with 1 Year of Exposure

HyperCore™

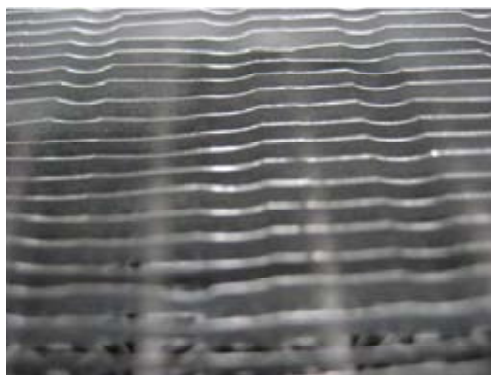


Figure 3 – HyperCore Fins with No Exposure

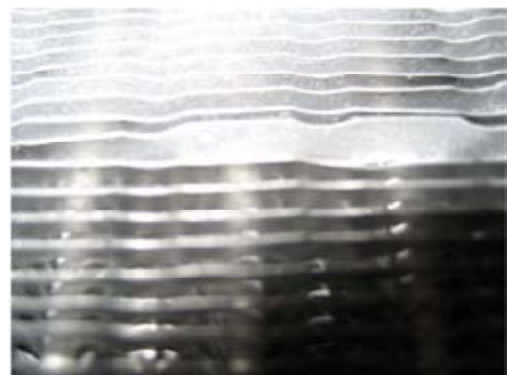


Figure 4 – HyperCore Fins with 1 Year of Exposure

Q10. How will the aluminum coil be joined to the copper tubing in the unit?

The HyperCore microchannel coil will have a stainless steel transition joint brazed onto the aluminum header connection. One end of this transition joint will have copper plating where the unit tubing attaches. Because the copper and aluminum do not touch, there is no chance for galvanic corrosion.

Q11. The channels are very small, won't these plug up?

In two separate tests to evaluate situations that could lead to clogging of the channels, Heatcraft Refrigeration Products did not observe any change in performance or internal coil plugging. The first test using multiple units with microchannel coils had the compressors go through a slow burn out to obtain a worst-case burn out situation. In the second test, miscellaneous debris (copper, flux, moisture, dust) was added to the refrigerant. In both cases there was no change observed in performance or internal coil plugging.

Our supplier performed a similar test to simulate compressor burnout with the same results; no degradation of performance or indication of internal coil plugging.

Q12. How much refrigerant charge reduction will I be able to achieve with HyperCore microchannel coils?

The amount of refrigerant charge required by the condenser will decrease by up to 75%. The total system charge will depend on the unit cooler and the length of the liquid line. Depending on system variables, the system charge could be reduced by up to 40%.

1/2 - 6 HP Condensing Unit Coil Charge Information

	Hermetic			Scroll			Semi-hermetic		
	Model	Summer Charge	Winter Charge	Model	Summer Charge	Winter Charge	Model	Summer Charge	Winter Charge
R-404A (lbs)	008X6	0.25	0.75	020M6	0.50	1.25	010M6	0.25	0.75
	009X6	0.25	0.75	025M6	0.50	1.25	020M6	0.50	1.00
	010X6	0.25	0.75	030M6	1.00	2.25	021M6	0.50	1.00
	015X6	0.50	1.00	035M6	0.75	2.25	030M6	0.75	2.25
	020X6	0.50	1.00	045M6	0.75	2.25	040M6	0.75	2.25
	025X6	0.50	1.00	055M6	0.75	2.25	010L6	0.25	0.75
	030X6	1.00	2.25	060M6	0.75	2.25	015L6	0.50	1.00
	032X6	1.00	2.25	020L6	0.50	1.25	020L6	0.50	1.00
	040X6	0.75	2.25	025L6	0.50	1.25	021L6	0.50	1.00
	050X6	0.75	2.25	030L6	0.50	1.25	027L6	0.50	1.25
	011L6	0.25	0.75	035L6	0.50	1.25	030L6	0.50	1.25
	014L6	0.25	0.75	045L6	1.00	2.25	030E6	0.50	1.25
	019L6	0.50	1.00	055L6	1.00	2.25	040L6	1.00	2.25
	025L6	0.50	1.00	060L6	1.00	2.25	—	—	—
	031L6	0.50	1.25	—	—	—	—	—	—
	R-22 (lbs)	005H2	0.25	1.00	020M6	0.50	1.50	005H2	0.25
008H2		0.25	1.00	025M6	0.50	1.50	008H2	0.25	1.00
010H2		0.25	1.00	030M6	1.00	2.75	008M2	0.25	1.00
015H2		0.50	1.25	035M6	1.00	2.75	010H2	0.25	1.00
020H2		0.50	1.25	045M6	1.00	2.75	010M2	0.25	1.00
029M2		0.50	1.50	055M6	1.00	2.75	015H2	0.50	1.25
030H2		1.00	2.75	060M6	1.00	2.75	020H2	0.50	1.25
040H2		1.00	2.75	020L6	0.50	1.50	020M2	0.50	1.25
050H2		1.00	2.75	025L6	0.50	1.50	021M2	0.50	1.25
—		—	—	030L6	0.50	1.50	029M2	0.50	1.50
—		—	—	035L6	0.50	1.50	030H2	1.00	2.75
—		—	—	045L6	1.00	2.75	030M2	1.00	2.75
—		—	—	055L6	1.00	2.75	040H2	1.00	2.75
—		—	—	060L6	1.00	2.75	050H2	1.00	2.75
—		—	—	—	—	—	050M2	1.00	2.75

NOTES:

These charges represent HyperCore coil charges only.

To determine total system charge, the liquid line and unit cooler must be taken into account.

These charges are approximate and should not be used as absolute rules for charging the system.

Q13. Will the size of the receiver change in units containing HyperCore microchannel coils? How will customers know how to charge the system?

The receiver size will remain the same. Product literature will indicate that the receiver size has not changed. The previous page contains a table of approximate charges that can be used. All customers, regardless of coil type, should charge to a clear sight glass. It is not recommended practice to charge to a full receiver. If a customer charges to a full receiver, they will not realize any refrigerant cost savings.

Q14. What about replacements? Can we get replacement coils?

We anticipate that the structural rigidity of the coils coupled with the elimination of manually brazed joints and improved corrosion resistance will significantly reduce the likelihood of coil failure. However, if a replacement coil is needed, replacement HyperCore microchannel coils will be available through InterLink™ Parts. InterLink Parts can be reached at (800) 686-7278 or www.interlinkparts.com.

Q15. How can a customer tell which coil is in their unit?

If the unit is still in a box, there should be a HyperCore microchannel coil sticker on the outside of the box. If the unit is not boxed, there should be a HyperCore microchannel coil sticker on the unit near the specplate. If there is no sticker, the customer can look at the coil. If all they see are vertical fins, it is RTPF. If they can see flat, horizontal tubes (and sinusoidal fins), they have HyperCore microchannel coil technology. If the customer does not have visual access to a unit but the serial number is available, they can contact Heatcraft Refrigeration Products and we will be able to determine the type of coil manufactured into the unit.

Variable Speed EC Motors (VSEC) with Orbus™ Controller

Q1. What is an EC motor? How is this better than a standard PSC motor?

Electronic commutation (EC) and sometimes referred to as brushless direct current (BLDC), allows for more efficient control over the speed of the motor. The motor speed of an AC motor is determined by the number of poles in the motor winding; increasing the number of poles will decrease the motor speed. In an AC motor, that speed is determined by the frequency of the alternating current. Of course, an AC motor is not limited to just one speed, but it does mean that AC motors are designed to operate at a particular speed. The efficiency of an AC motor (such as a PSC motor) drops significantly as the motor RPM deviates away from the design motor speed.

Q2. What is the Variable Speed EC Motor?

The new variable speed EC motor system incorporates the latest advancements in motor technology to provide the *most efficient* condenser motors in the industry using *integrated variable speed* technology. The variable speed EC system is a variable speed EC motor paired with Heatcraft Refrigeration Products proprietary *Orbus™* controller.

The speed of an EC motor is governed by the switching of electronics. This means that the ability to control speed is automatic in an EC motor. It also means that an EC motor runs at near full efficiency whether it is at start-up, full speed or any speed in between. An EC motor offers up to 59% greater efficiency than a shaded-pole motor, and up to 35% greater efficiency than a PSC motor. This is not the case for motors controlled by variable voltage controls, inverters, or wave choppers, especially at the low speed range.

Q3. What are the benefits of the variable speed EC motor? Can anybody get this motor?

These EC motors are designed for and available exclusively from Heatcraft Refrigeration Products brands. The motor provides a very high efficiency (up to 75%) and has an operating speed between 200 – 1500 rpm. Variable speed capability is enabled through the electronics in the motor. The motor is also designed as a drop-in replacement for all 1/2 - 6 HP air-cooled condensing units PSC fan motors.

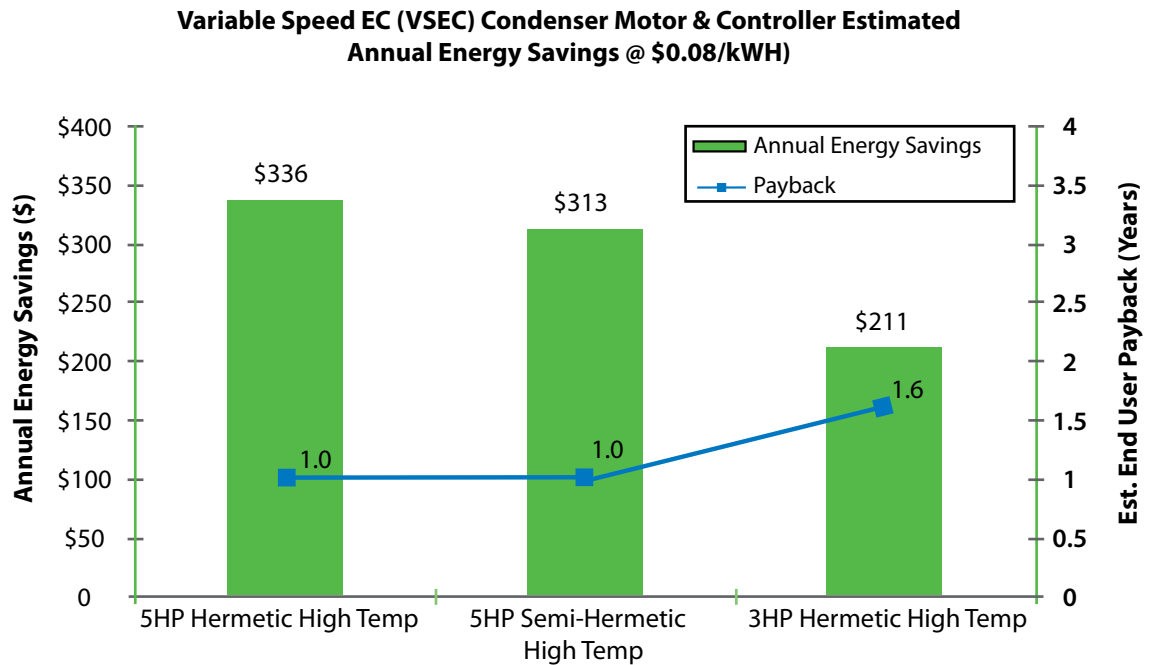
Q4. How does a condensing unit with the variable speed EC system perform vs. a standard condensing unit?

A ½ to 6 hp air-cooled condensing unit with the variable speed EC system provides a dramatic improvement in system performance vs. a standard condensing unit with a PSC motor and a head pressure valve. The system provides stable head pressure and liquid temperature as well as a significant reduction in fan motor power consumption.

Overall a variable speed EC system provides a more stable system, improves product integrity, improves compressor durability and reduces energy consumption.

Q5. What energy savings can be expected with the variable speed EC systems?

The chart below provides some examples of savings customers can expect with the variable speed EC system. The chart shows savings with three high temperature systems; a 5 HP hermetic R-22, 5 HP semi-hermetic R-22, and a 3 HP hermetic R-22 fitted with a variable speed EC system. The savings for all three systems is calculated by comparing the energy savings of EC motors to a comparable system with fixed speed PSC motors and a head pressure valve (set at the standard 170 psig)



Assuming an electricity cost of \$0.08/kWH, with a variable speed EC system an end user can see savings of \$336, \$313, and \$211 annually with a 5 HP hermetic, 5 HP semi-hermetic, and 3 HP hermetic, respectively. These savings incorporate not only the fan motor savings, but also compressor energy savings resulting from a lower, more stable head pressure setting of 125 psig.

With these savings the end user payback is very favorable, ranging from 1.0 years to 1.6 years.

Q6. This sounds very expensive. What payback time can be expected?

As the earlier example showed the payback can be as low as 1 year, depending on the electricity costs of your region. A sampling of savings from a number of different condensing units is shown below, as well as the payback at both \$0.08/kWH and \$0.10/kWH.

Cabinet Size	Model Number	kWH Savings	Savings (\$0.08/kWH)	Payback (\$0.08/kWH)	Payback w/ Rebate (\$35/motor)	Savings (\$0.10/kWH)	Payback (\$0.10/kWH)
A Cabinet	H010H2	1025	\$82	3.0	2.5	\$103	2.4
	H011L6	563	\$45	5.4	4.6	\$56	4.3
B Cabinet	H015H2	1700	\$136	2.7	2.1	\$170	2.1
	H015X6	1188	\$95	3.8	3.1	\$119	3.0
	H025X6	1275	\$102	3.5	2.9	\$128	2.8
	H025L6	1238	\$99	3.6	2.9	\$124	2.9
	H031L6	1438	\$115	3.1	2.5	\$144	2.5
C Cabinet	Z025M2	1688	\$135	2.7	2.2	\$169	2.1
	Z025M6	1138	\$91	4.0	3.2	\$114	3.2
	Z020L6	1188	\$95	3.8	3.1	\$119	3.0
	Z035L6	1375	\$110	3.3	2.6	\$138	2.6
D Cabinet	H030H2	2638	\$211	1.6	1.4	\$264	1.2
	H050H2	4200	\$336	1.0	0.9	\$420	0.8
	H030X6	1988	\$159	2.1	1.8	\$199	1.6
	H050X6	1963	\$157	2.1	1.9	\$196	1.7
	Z030M2	2300	\$184	1.8	1.6	\$230	1.4
	Z035M2	2425	\$194	1.7	1.5	\$243	1.4
	Z035M6	1750	\$140	2.3	2.1	\$175	1.9
	Z045M2	2588	\$207	1.6	1.4	\$259	1.3
	Z045M6	1788	\$143	2.3	2.0	\$179	1.8
	Z060M2	3075	\$246	1.3	1.2	\$308	1.1
	Z060M6	2000	\$160	2.0	1.8	\$200	1.6
	Z045L6	2050	\$164	2.0	1.8	\$205	1.6
	Z060L6	2250	\$180	1.8	1.6	\$225	1.5
	S040L6	2088	\$167	2.0	1.8	\$209	1.6
	S050H2	3913	\$313	1.0	0.9	\$391	0.8

Payback Period (years)	
	Less than 3.0
	3.0 - 3.9
	4.0 - 5.0

* All results are estimations only.

Q7. How is the speed of the variable speed EC controlled?

All of the commutation electronics necessary for variable speed are built into the motor housing. To control the speed of the motor an analog signal (0-10VDC) is supplied to the motor. The motor interprets the analog signal and changes the speed proportionally to match the input signal.

Q8. How does the Orbus™ controller work?

The Orbus controller measures system head pressure, compares the measurement to the desired head pressure set point, and through a proprietary algorithm outputs a 0-10V signal to the variable speed EC motor.

The Orbus controller has two predefined set points selectable by a jumper. For R-22 systems the set point is 125 psig. For R-404A systems the set point is 150 psig.

Q9. Is a head pressure valve needed?

No. Because the Orbus controller operates off head pressure, a separate head pressure controller is not needed.

- Q10. Won't a head pressure valve provide stable head pressure and energy savings like the variable speed system?**
A head pressure valve will provide reasonably stable head pressure, but it will not provide any fan motor energy savings. While the head pressure valve is controlling head pressure, the fan motors will continue to run at full speed consuming maximum watts. The variable speed EC system will not only provide stable head pressure, but because the fans are running at a reduced speed, will also provide a reduction in energy consumption. Furthermore, the standard head pressure valve setting is at 170 psig vs. 125 psig (R-22) or 150 psig (R-404A) with a variable speed EC system; leading to reduced compressor energy consumption as well.

In addition, the variable speed EC system provides a very stable liquid temperature, which improves evaporator performance leading to a more stable system overall and improved product integrity.

- Q11. What happens if there are problems with the Orbus controller?**
The variable speed EC motors are designed to run full speed if the input signal is 0V or missing (they turn off when the input signal is 10V). If there is a problem with the Orbus controller, it can be disconnected and the fans will run full speed.

To diagnose issues with the Orbus controller, it has a blinking LED that will provide status/error codes to aid in troubleshooting.

- Q12. Is the Hoffmann controller no longer available across all product lines or is it just no longer available for 1/2 to 6 HP units?**

The Hoffmann will no longer be available on the 1/2 to 6 HP product as a configurable option. If it is currently available on other units, it will continue to be available.

- Q13. What is the recommended set point on the Orbus controller for M6 scroll condensing units that are capable of handling both R-22 and R-404A?**

The controller is defaulted to the 150 psig setpoint, which would cover the R-404A models. If the unit has R-22, the jumper can be easily moved to the 125 psig setpoint.

- Q14. What is the minimum fan speed for the VSEC motors and what happens if the fan speed falls below that minimum level?**

The minimum speed is ~350 rpm. If the controller calls for a speed below this point, the motor turns off.

- Q15. What voltage are the VSEC motors?**

The motors are rated for 208-230/1/60.

- Q16. Are VSEC motors with Orbus Controller compatible with units intended to be used in international applications? Are there any exclusions or limitations?**

Orbus is designed to work on 24VAC power. We did testing to determine how it would work if it did not have 24VAC and found that Orbus will work on 60Hz power down to 18VAC and on 50Hz power down to 22VAC.

- Q17. Can I use the variable speed EC motor without the Orbus controller or with a different controller?**

Yes, the variable speed EC motor will run fine without any input signal. However, the full energy savings potential will not be realized. The system will still require some form of head pressure control and because the variable speed EC motor will be running full speed, the time to payback the investment will significantly increase.

The variable speed EC motor can be used with any control that provides a 0-10V signal (a 24V power supply is also required).

Smart Defrost Kit™

Q1. What is the Smart Defrost Kit™?

The Smart Defrost Kit™ (SDK) is a control module installed in your system which regulates defrost cycles.

Q2. How does the Smart Defrost Kit work?

Using temperature and pressure sensors in conjunction with a sophisticated statistical model, the control works by actually learning the system and predicting frost accumulation. This allows it to determine whether or not a defrost is necessary. The Smart Defrost Kit has been proven to reduce the number of defrosts on typical electric defrost refrigeration systems by 30-40%. This equates to great energy savings.

Q3. What does the SDK do?

The InterLink™ SDK accurately estimates frost accumulation on the evaporator coil and decides if it can skip the pre set defrost period that is set on the defrost time clock. It will do this by letting the clock initiate and then immediately terminate. This helps eliminate unnecessary defrost cycles, resulting in a more stable box temperature leading to increased product integrity.

Q4. How is the SDK different from the Beacon II™ Smart Defrost?

The Beacon II™ Smart Defrost System is only available factory installed on Heatcraft Refrigeration Products branded systems. The Beacon II system reduces defrost by 75%-80%; whereas the SDK can be factory installed on the condensing unit or mounted on a condensing unit that is already installed in the field and reduces defrost by 30% to 40%.

Q5. What is the advantage of the factory installed Smart Defrost Kit?

Contractors save time by not having to install the unit. There is also less opportunity for errors as the kit is installed, inspected and backed by Heatcraft Refrigeration Products. Lastly, the factory installed option is priced the same as the ship loose option.

Q6. What is the warranty for an SDK?

Twelve months from the date of installation or 18 months from the date of shipment (whichever is shorter).

High Temperature R-404A/R-507 Model Availability

Q1. What high temperature R-404A/R-507 models have been released to date in preparation for the R-22 phase out?

High temperature (H6) R-404A models for the 1/2 to 6 HP line were released to the market in December 2008 and are rated at 35°F and 40°F suction temperature. Technical data for these models is available in the 1/2 to 6 HP Technical Bulletin. Here are some key aspects about this model release.

- Impacts Hermetic and Scroll models
- Semi-hermetic models have no option for higher suction temperatures
- CFM models are not affected
- Models will have 1/2 to 6 HP design features and benefits including HyperCore microchannel coil technology as standard

Additionally in the 1/2 to 6 HP product line, the Scroll M6 product line's operating envelope has been increased to encompass 40°F. This product change did not impact pricing.

Q2. Why were 1/2 to 6 HP H6 models created instead of just extending the 1/2 to 6 HP X6 operating range?

Based on the technical limitations of the compressor at higher suction temperatures, H6 models were created to make a clear distinction between X6 and H6 capability. Here is a list of some of the limitations:

- Models 020X6 and 030X6 are NOT available above 30°F SST.
- X6 models would NOT be available in 460V above 30°F SST.
- Models 040X6 and 050X6 would be restricted to 230V above 30°F SST.
- X6 models require different RGT rating point above 30°F SST.
- X6 models would have different MCA/MOPD values above 30°F SST.

With all of these differences between the X6 and H6 product line, the technical bulletin and price book would require numerous footnotes to note the limitations at 35°F and 40°F suction if we had not taken this approach.

Q3. Are the H6 models stocked?

The H6 Outdoor models are stocked and available. The branded models have "H6*F" nomenclature and the MOH models have "D6*CF" nomenclature. These models come standard with a liquid line drier assembly and price has been adjusted accordingly.

*Since product improvement is a continuing effort,
we reserve the right to make changes in specifications without notice.*

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