



The technology behind the comfort.

American Standard[®]
HEATING & AIR CONDITIONING



The Inside Story.

The heart of the system.

The Duration™ compressor is a marvel of durability and function. It can take a beating season after season, yet still run with exacting precision. It also has one of the lowest failure rates in the industry. That means enduring comfort for customers and fewer warranty calls for you.

Pages 4–7



The All Aluminum story.

There's always a better way to do something. When it comes to heat transfer, we've found it. Our amazing Spine Fin™ technology represents thinking that has advanced not only the efficiency of our units, but the whole concept of heat transfer.

Pages 8–11

The really big finish.

Our outdoor unit louvers aren't just painted. Because that's not good enough. Instead, we cover them in a high gloss powder coated appliance-grade finish that's as durable as it is attractive. Think of them as the art of comfort, encased in a work of art.

Pages 12–13



The SEET Lab.

Where only the strong survive. This is where our reputation for reliability and durability is forged daily. Nobody builds them like we do. Because nobody tests them like we do.

Pages 14–15

AccuLink™ Home Communicating Systems: The new age of comfort.

American Standard's AccuLink™ Home Communicating System offers unprecedented control, convenience and comfort. The advanced AccuLink™ technology allows for self-configuration and optimization through constant digital communication between system components. So you'll save time during installs and repairs while your customers could save on heating and cooling costs throughout the life of the system.

Pages 16–17



The American Standard Heating & Air Conditioning product lineup represents one of the most comprehensive in the industry. It also represents the forefront of comfort, efficiency, durability and innovation. Together, we're creating a revolution in home comfort. This is the story of the thinking that goes into everything we build. We'll take you inside our equipment, and inside our company, to see why there's nothing else in the world like American Standard Heating & Air Conditioning.

Inside residential products: Real efficiency. Real reliability.

American Standard Heating & Air Conditioning is committed to bringing you real solutions for today's consumer. And we've made it easier for you to provide those solutions by offering innovative technology that makes even our most complicated systems easier to install, while providing maximum efficiency, reliability and comfort.

Pages 18–21



Smart, precise control at your fingertips.

Comfort is nothing without control. Specifically, the precise control and smart features of an American Standard Heating & Air Conditioning comfort control. And now, with Nexia™ Home Intelligence and an American Standard zoning system, we're taking control a step further.

Pages 22–23



Let's clear the air about indoor comfort.

The ideal indoor environment starts with the most basic ingredient: clean air. AccuClean™ has revolutionized whole-home air filtration with its industry-leading technology. With air that clean and fresh circulating through perfectly matched American Standard systems, your customers are comfortable through all four seasons.

Pages 24–27



Packaged profits.

American Standard Packaged Units are the all-in-one solution that sacrifices nothing. Building on the popularity of our 13 SEER packaged units, the 14 and 16 SEER units are efficient and make servicing easy.

Pages 28–29

The Light Commercial lineup.

We offer the most complete line of packaged units in the industry. That means your light commercial customers don't have to compromise on anything. They'll have the right-size system with the features they want, no matter what the application.

Pages 30–31



Duration™ Compressors:

The heart of the system.

Built to take it. No matter what “it” is.

The Duration compressors are designed to work reliably in air conditioners, but also withstand the high-stress environment of a heat pump, including higher operating temperatures, liquid refrigerant flooding, repeated electrical stresses and a grueling year-long schedule of operation.

The reliability of any compressor is directly related to its ability to handle three types of stress: thermal, mechanical and electrical. Each works individually to wear on the equipment, but since everything's part of a sealed system, these factors can often work together to do far more harm. A Duration™ compressor is designed from the ground up to address each stress at its source.

Fighting thermal stress.

The battle against heat starts with the materials we use. Research shows that cast iron frames hold on to heat, increasing thermal stress throughout the system. Aluminum dissipates heat more effectively, so Duration compressors are built around a lightweight aluminum frame, and use aluminum pistons and connecting rods. Duration's clever design helps fight heat, too; for added cooling, we route our return suction gas line over the motor. Together, these innovations help the Duration compressor run 35 degrees cooler than most other compressors, increasing efficiency and reducing stress on bearings, motors and other moving parts.

Fighting mechanical stress.

The construction and design of Duration's moving parts help it last even longer by reducing system stress. Specially sculpted lightweight aluminum pistons and connecting rods reduce startup torque, so the pistons, rods and crankshaft don't receive as much of a shock when the compressor switches on. Furthermore, precision machining to a few ten-thousandths of an inch makes each piston stroke more efficient, resulting in less wasted motion and a higher EER rating. And due to the clever design of the compressor's reciprocating



Lightweight pistons and connecting rods reduce mechanical stress during startup and increase efficiency. We house them in pearlitic cast iron cylinder liners for durability.

crankshaft, it also functions as a centrifugal oil pump. This delivers a constant supply of oil to the bearing surfaces, while at the same time vaporizing liquid refrigerant and cooling the motor bearings.

Duration compressors also use unique pearlitic cast iron cylinders for greater durability where it counts. Since the cast iron cylinder liner and aluminum piston each have a different coefficient of expansion, we put a cast iron piston ring in place to keep the seal tight even at high compression ratios. We also design our frames with very large intakes, so suction gas doesn't undergo as much of a dynamic pressure drop. This unrestricted gas flow helps reduce system wear and increase efficiency.

Fighting electrical stress.

Attention to detail is key in a Duration compressor, even down to the motor windings. During operation, magnetic flux between wires causes them to move against each other. This constant flexing can eventually wear away insulation, leading to shorts and compressor failure. But we cover our wires in a special thick epoxy coating that's nearly as hard as the wires themselves. This keeps them well-insulated against contact, preventing system failure due to electrical stress. We were the first to develop this process, and while other manufacturers have adopted a similar epoxy coating, ours is substantially thicker, harder and more durable. Because that's what our reputation demands.

Easy does it.

The two most stressful parts of a compressor's cycle are startup and shutdown. We alleviate some of these stresses by using lightweight aluminum pistons and connecting rods, but our engineers didn't stop there. They also developed a patented dual-spring system to absorb even more energy; the compressor rides on extra soft springs within the shell, while heavy snubber springs help absorb the extra forces when the compressor starts or stops.

The Duration™ compressor's crankshaft doubles as a centrifugal oil pump. It provides a constant oil supply to the bearing surfaces when the pump is running. In addition, it helps vaporize liquid refrigerant and cools the motor bearings.



Cast iron frames retain heat and create thermal stress, so we don't use them. Duration's all-aluminum frame runs cooler to reduce thermal stress and prolong system life.

Every American Standard Heating & Air Conditioning compressor is built tough enough for heat pump use, tough enough for the SEET Lab and tough enough to wear the American Standard Heating & Air Conditioning name. So you'll experience fewer call backs and a reputation for selling a quality product.

Durable valves for a durable compressor.

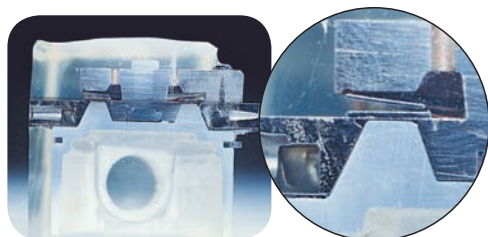
Some components are designed to fight multiple stresses at once. Take our valves, for example. With nearly a billion cycles a year in heat pump applications, no other part experiences as much simultaneous mechanical and thermal stress. That kind of durability doesn't come off the shelf, so we build our own valves from a nearly indestructible blend of Swedish steel with a very high carbon content and very few sulfide and silicate occlusions. This special formula makes it extremely heat resistant, but also highly resistant to impact, distortion and metal fatigue.



Since valves are the most critical part of the compressor, we fabricate our own to maintain exacting quality control.

Going with the flow.

Every part of a Duration compressor has been designed in some way to make it work more efficiently. That even includes the way we run our gas lines. Duration compressors route return suction gas over the motor to help prevent liquid refrigerant from reaching the valves and maintain motor temperature. Meanwhile, discharge lines are routed down through the compressor sump for three reasons. First, the line and oil act as a vibration damper during startup and shutdown. Second, the heat from the discharge line vaporizes liquid refrigerant in the sump, separating it from the oil. During the off cycle, most systems (except some scroll units) use crankcase heat to accomplish the same task, and maintain desired oil temperature. Finally, the oil dampens the motion of the discharge line during operation.



American Standard's piston head is sculptured to provide minimum clearance at full upstroke to just a few ten-thousandths of an inch. Tighter tolerances mean more efficient compression, less wasted movement, higher volumetric efficiency and higher EER ratings.

Protecting our pride and joy.

Duration compressors are designed with two integrated safeguards that work in tandem to protect them from excessive stress and pressure. The Internal Overload device (IOL), mounted near the motor windings, shuts the compressor off automatically if it detects any combination of temperature and current outside of acceptable ranges. By monitoring both, it can sense a problem even if temperature and current are within their individual safe operating limits.

The Internal Pressure Relief valve (IPR), mounted on the discharge muffler, works in tandem with the IOL. If the IPR detects a pressure difference of more than 400-500 psi between the discharge and suction sides, it releases hot gas across the IOL. The increased heat and compressor current cause the IOL to shut the compressor down. Since the IPR vents hot gas into the compressor shell, no refrigerant is lost, unlike external high pressure switches used on inferior compressors which simply vent into the atmosphere.

Since Duration compressors are used in both air conditioners and heat pumps, the IOL and IPR are each designed for the more demanding heat pump stresses.

Why we don't settle for small.

American Standard Duration compressors have a 25% larger shell than many of our competitors. There's a lot of thinking behind that decision. For starters, a larger shell volume provides a greater safety margin against refrigerant slugging and performance loss due to pressure drops.

A larger shell also eliminates the need for suction line accumulators on residential units, which is better for many reasons. A system without an accumulator doesn't suffer from reduced oil return. Removing the accumulator from the system also means one less place for a leak to occur and, thanks to Duration's clever design, more fully vaporized liquid refrigerant.



The components of American Standard's unique compressor protection system eliminate the need for high and low pressure cutouts.

Talk about durable. During the 850 psi Discharge Pressure Test in American Standard's test facility, the safeguards are bypassed and extreme mechanical, thermal and electric stress is placed on the compressor. Thanks to our rugged design, it easily survives the abuse.



The path through a scroll compressor: simple, unrestricted, efficient gas flow.



Cold, Low Pressure – Entering Gas.

As the orbital scroll begins to move around the stationary scroll, cold gas is sucked into the outer opening.



Warmer, Medium Pressure – Interim Gas.

The open passage is sealed off as the gas is drawn deeper into the spiral.



Hot, High Pressure – Discharge Gas.

As the spiral continues to orbit, the gas is compressed into an increasingly smaller pocket. By the time the gas arrives at the center port, it has reached discharge pressure.



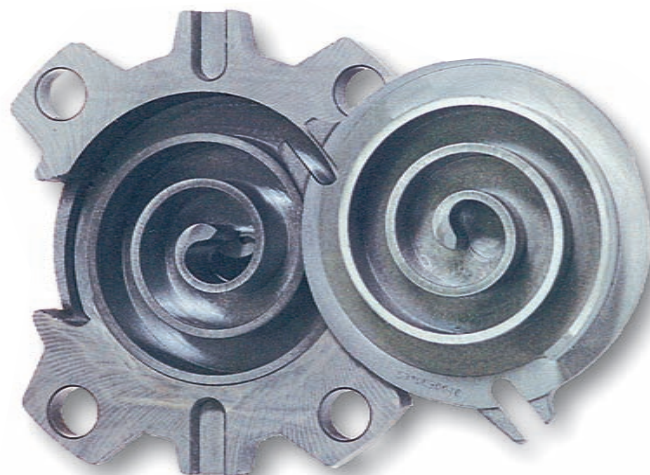
The Cycle Starts Again.

Since the orbiting scroll never stops moving, all six gas passages work together in continual and various stages of compression. This allows the scroll compressor to provide nearly continuous suction and discharge.

Duration™ Scroll Compressors: A symphony of movement.

First, compression is steady and even, which promotes longer equipment life. Scroll compressors also use fewer moving parts, and require less startup energy.

Scroll compressors also stand up better to refrigerant flooding and debris; if excessive liquid refrigerant or foreign objects enter the scroll pocket, the scrolls separate and allow it to pass through to the system filter driers. Scroll compressors also operate with less noise, less vibration and require no hard-start kits in non-equalizing systems.

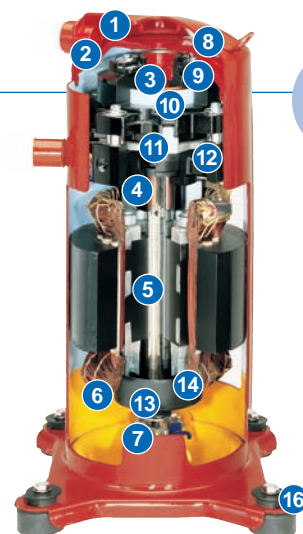


The scroll compressor volume is formed by the orbiting relationship between the two involutes. To perform properly, the involutes must stay in contact the entire length of the involute.

Duration™ Scroll Compressor

Duration Compressors are designed from the ground up with innovative features to increase performance, efficiency, and long service life.

- 1 High Pressure Volume**
The small top cap of shell serves as an internal muffler.
- 2 Discharge Check Valve**
To equalize internal shell pressure for easy startups.
- 3 Bi-Metallic (TOD) Thermal Disc**
Bypasses discharge gas.
- 4 Rotor Counterweights**
Allows for smooth operation.
- 5 Counterweighted Crankshaft/Rotor assemblies**
To reduce stresses on the bearings caused by vibration.
- 6 Yellow Shows Oil Level**
- 7 Lower Bearings**
For greater durability when supporting the crankshaft.
- 8 Discharge Deflector**
Spreads out hot gas to reduce shell temperature.
- 9 Floating Seal for Axial Conformance**
Seals high to low pressure and allows axial conformance.
- 10 Lower Orbiting Scroll Set**
Rotating crankshaft converts to orbiting motion of lower scroll, which produces compressed gas.
- 11 Positive Shutdown/AntiReverse Device**
Separates the scrolls at shutdown to vent high-pressure gas, eliminate noise and prevent reversal.
- 12 Internal Overload**
Protects motor from overheating.
- 13 Oil Baffle**
Separates oil in sump from churning counterweights.
- 14 Oil Pick-up (Underneath)**
- 15 Terminal Plug**
Assures correct electrical connections.
- 16 Rubber vibration dampers**
To keep compressor movement from translating to the rest of the system.



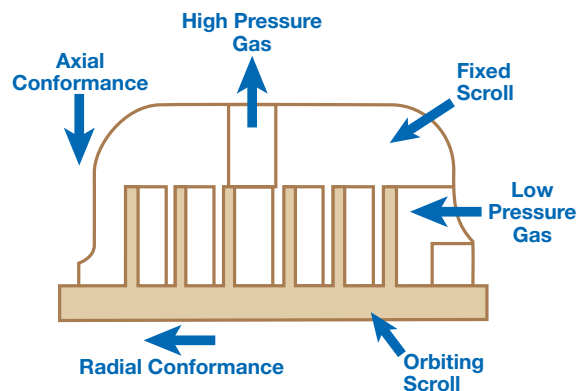
At American Standard Heating & Air Conditioning, we take a different approach to compression. An approach that helps our systems last longer, run more efficiently and do a better job keeping customers comfortable. Inside a Duration scroll compressor, you'll find two interleaved cast iron scrolls, one fixed and one orbital. During the compressor cycle, the orbital scroll moves around the fixed scroll in a continuous 540-degree cycle to keep a steady pocket of refrigerant moving forward at all times into a smaller and smaller area. There are a lot of reasons we went with this innovative design.

The innovation of conformance.

To assure a tight compression pocket and more efficient operation, American Standard Duration scroll compressors operate using a method called "conformance". This means the scrolls move in multiple dimensions during operation, adjusting to optimize their path with each others' movement to keep the seal tight. While the fixed scroll moves up and down, the orbiting scroll moves in and out using centrifugal force and a specially-designed bushing.

This helps keep the seal between the scrolls as tight and efficient as possible, allowing more gas to be compressed with each scroll cycle. Scroll conformance also allows for easier low-voltage starts, because as the compressor cycles off, the scrolls separate to release all high-pressure gas.

Conformance



The All Aluminum Story



Spine Fin: optimized for heat transfer inside and out.

Careful examination of the Spine Fin shows just how perfectly suited it is for its task. For starters, nobody else uses a premium Spine Fin all-aluminum coil. Frankly, we can't imagine using anything else. Aluminum not only stands up to corrosion extremely well, it transfers heat efficiently, too.

Inside, the tube's surface is grooved for better heat transfer.

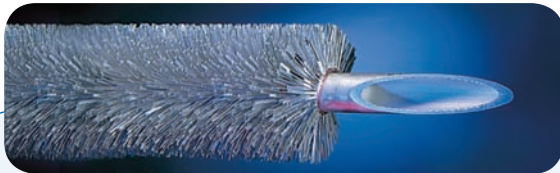
Outside, you'll find the fins that make Spine Fin coils legendary for many reasons. Thousands of tiny metal fingers create a larger heat transfer surface that lets plenty of air flow in and around the fins, drawing heat away. The spine's greater surface area means air can flow at a lower volume, exposing the fins to fewer contaminants over time. But thanks to their brilliant design, even when they are exposed to dirt or frost in the air, the Spine Fin coil's design makes it more resistant to buildup. Since contaminants build from the inside out, the fins maintain

plenty of surface area exposed to the air. So even when they have a substantial buildup of contaminants, known as "depth loading", Spine Fin coils can continue transferring heat in or out of the system.

Making the fins that make the difference.

During the manufacturing process, high-quality aluminum tubing is pulled through a bath of thermal conductive adhesive, and then tightly wrapped with ribbons of aluminum spine fins. The adhesive not only provides greater thermal contact between the tube and fins, it also provides a barrier against the intrusion of moisture and electrolytes, preventing the two main types of corrosion that coils are subject to.

Galvanic corrosion occurs when two different metals come in contact with an electrolyte such as salt spray or polluted rainwater, and actually create a weak but destructive electrical charge. Since Spine Fin coils use all-aluminum construction, galvanic corrosion can't occur.



The unique construction of a Spine Fin means it's made in one continuous piece. The only brazed joints occur at the inlet and outlet; fewer brazed joints mean fewer chances for a leak to develop. As a result, no other competitor matches the durability and reliability of our Spine Fin coils.

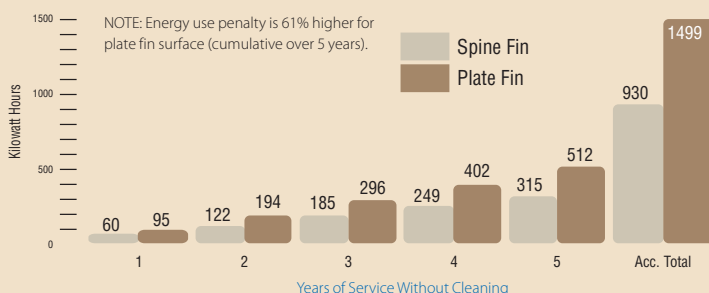


Spine Fin's unique transition joint provides an ideal bond between the aluminum fin coils and the copper coils of the refrigerant circuit. The joint is ultrasonically tinned with a zinc-rich aluminum solder. As it comes in contact with the heated tubing, the joint forms a thin layer of solder between both base metals to resist bi-metallic corrosion.

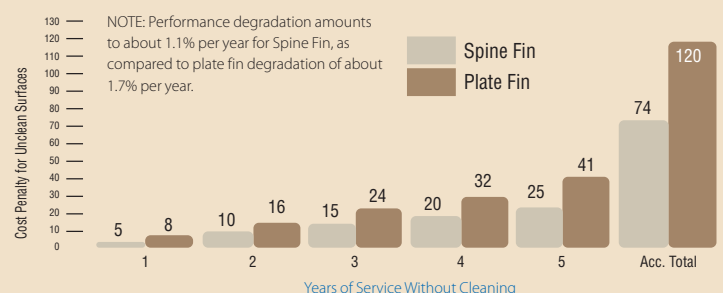
The Purdue Study

Spine Fin to Plate Fin performance comparison

Energy Use Penalty due to contaminated condenser surfaces in 3-ton 10 SEER systems (1500 Hrs/Yr operation)



Operating Cost Penalty for contaminated condenser surfaces in 3-ton 10 SEER systems



Making Heat Transfer History

In our quest to build the best heating and cooling equipment on the planet, we've come up with a better way to do a lot of things. Our Spine Fin™ technology represents a substantial improvement over conventional methods of heat transfer, even in adverse conditions.

The second type of corrosion often encountered by coils is what's known as crevice corrosion. When small amounts of water seep into microscopic cracks through capillary action, they can create inefficient barriers between regular fins and tubes. The adhesive used to bind Spine Fin coils together seals against this microscopic seepage, maintaining top efficiency.

Technology that passes the test.

When you install an American Standard Heating & Air Conditioning unit, you know it's been rigorously tested at the factory using our time and expense. Not yours or your customers'. That includes our coils. Spine Fin coils will undergo as many as five internal tests before they're installed and shipped.

Test 1:

Coils are pressurized with hydrogen/nitrogen and leak-tested within a pressure bell.

Test 2:

Units placed on a vacuum system.

Test 3:

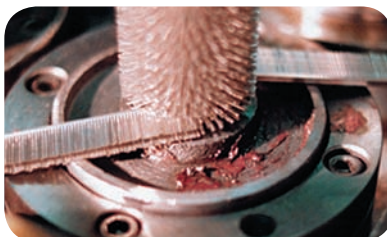
After vacuum, the unit is charged with refrigerant after verification of acceptable vacuum level.

Test 4:

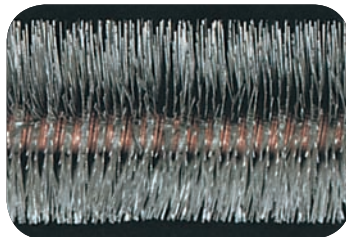
All units then proceed to a halogen leak tester used to detect refrigerant leaks.

Test 5:

All units are leak-tested once again using a halogen leak tester just prior to final assembly. Some units are randomly selected for audit at the end of the assembly line as well.



The Spine Fin being created. Spined aluminum ribbon is chemically bonded to the extruded aluminum tube. The color between the fin ribbons indicates adhesive pushed out by application pressure, which further serves to seal the ribbons to each other and to the tube.



Even with heavy contaminant buildup, or "depth loading," Spine Fin coils have plenty of metal exposed to the air to transfer heat.



An American Standard four-sided coil with radius corners eliminates return bends for greater reliability and efficiency.



Our construction uses fewer brazed joints for reliability. The few that we do use are checked multiple times during the manufacturing process.



Every American Standard Heating & Air Conditioning unit is given a complete run test when it reaches the end of the assembly line, which includes 67 checks for air conditioners, and 110 for heat pumps.

U.S. Naval research confirms the benefits of aluminum construction.

The heavy concentrations of salt and pollution found in coastal and urban environments can introduce substantial corrosion to heat exchangers. According to an unbiased study conducted by the United States Navy Civil Engineering Laboratory, Naval Construction Battalion Center in Port Hueneme, California, aluminum construction resists this corrosion better than conventional copper and steel construction. In fact, after 24 months of corrosive

conditions, test results showed aluminum heat exchangers performed 32% better than those made with copper and aluminum, leading the Navy lab to conclude that "uncoated aluminum tube/aluminum fin heat exchangers are more thermally efficient than either the uncoated copper tube/copper fin or copper tube/aluminum fin heat exchangers after two years of operation in a temperate marine environment."



The All Aluminum Story

The Story of Comfort Coil™ Technology

American Standard Heating & Air Conditioning's indoor Comfort Coils have been designed for years of trouble-free service and easy maintenance. They're easy to access, and thanks to all-aluminum construction, they're incredibly resistant to corrosion and rust.

Why our coils continue to lead the industry.

A story of formicary corrosion, and how we put it to bed.

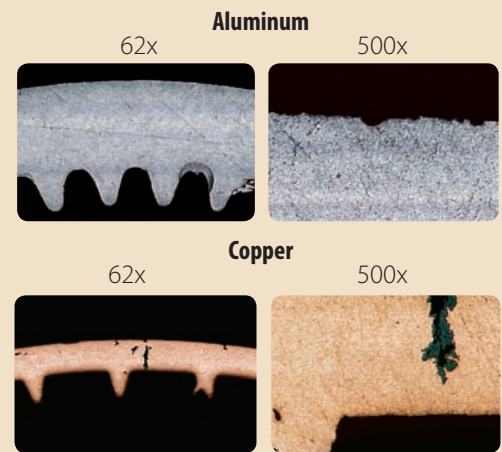
Since the inception of the home comfort industry, all manufacturers have faced the very real problem of formicary corrosion. This corrosion comes not from the quality of manufacture, but from copper's natural tendency to absorb and bond with indoor contaminants in the air. During normal operation, copper indoor coil tubing can be exposed to chemical waste, dirt, and even organic acids found in everyday air, especially in today's more tightly sealed homes. Formicary corrosion is notorious for causing tiny pinhole, or "champagne" leaks in the surface of an indoor coil's copper tube. So we found a better way.



An aluminum solution to a copper problem.

Rather than finding new ways to prevent formicary corrosion, American Standard simply eliminated the problem altogether by creating the industry's first truly reliable, production-friendly aluminum indoor coil. With aluminum tubes, aluminum fins, aluminum tube sheets and aluminum end plates, it represents the leading edge of corrosion-resistant coil technology. Different grades of aluminum are used for two reasons. First, the use of different grades of aluminum helps transfer heat more efficiently. Second, if the indoor coil is forced to operate in an extremely corrosive environment, the aluminum alloy fins will absorb the corrosive elements long before the tubing does, preventing it from developing pinhole leaks due to formicary corrosion.

Formicary Corrosion Test



By looking at magnified cross sections of aluminum and copper tubes, the results of an accelerated formicary corrosion test can be seen with the naked eye. After 127 days of exposure in an accelerated environment, aluminum tubes showed only minor surface corrosion. After 12 days of exposure, copper tubes completely failed with through-wall penetration.

Note: The test for formicary susceptibility of Alloys A (Aluminum) and C (Copper) was performed by Corrosion Testing Laboratories, Inc. in August 2004.



After 500 hours of salt spray, a galvanized steel tube sheet with a copper tube shows substantial corrosion.



After 500 hours of salt spray, an all-aluminum tube sheet with an aluminum tube shows virtually no corrosion.

As every professional knows, proper cleaning is the secret to extending the life of any system.

A dirty evaporator coil not only loses some of its heat transfer efficiency, it also impedes airflow. That puts stress on every component and reduces energy efficiency. It also exposes your customers to more airborne impurities, as the air is constantly circulating through a dirty coil. American Standard Comfort™ Coils are designed with cleaning in mind. Since they're made from aluminum, they'll resist the corrosion. And easily-removable door provides quick access for cleaning and routine maintenance, while a removable inner coil panel further simplifies cleaning. So the system can always perform at peak efficiency.

External coil connection improvements.

Suction Pressure Port
Used to insert 10 to 15 psi holding charge and for field service.

Braze Cap
Soft soldered for easy removal. Also eliminates rubber plug leaks.



TXV line design

Allows use of second backup wrench when tightening to prevent twisting.



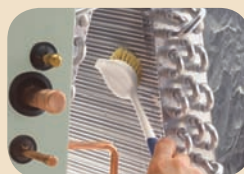
External service port

For quicker, easier serviceability.



Coil attachment method

Makes it easy to secure coil to furnace. Insert 4 stand-offs and use self-drilling screws to firmly attach.



Split inner coil panels

Makes coil cleaning a snap! Clean coils are more efficient, increase system life and improve indoor air quality.

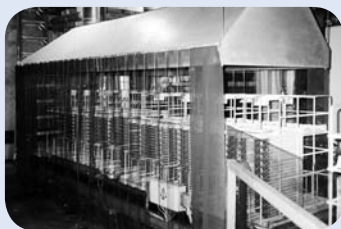


100% foil insulation

Easy to wipe off and contributes to quiet operation.



Our rotating coil washer spins the coils through the cleaning tank to remove any oils from the manufacturing process. A cleaner coil means brazed joints form better with less chance of leakage.



Each coil is pressurized with hydrogen/nitrogen and leak-tested within a pressure bell. Sensitive mass spectrometers in the vacuum lines can detect a leak as small as 0.1 ounce per year.

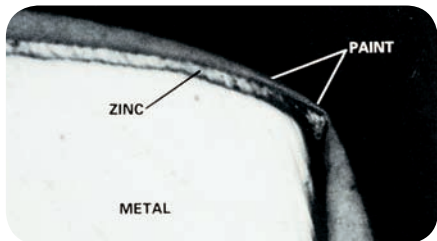


Sloped drip pans prevent buildup of moisture, mildew and bacteria.

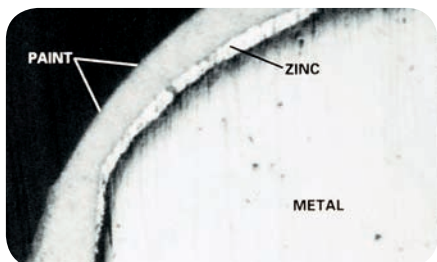


The really big finish.

In American Standard's powder paint facility, 90,000 volts are applied to the paint as it exits the gun. The paint gives up its electrons to the grounded metal, resulting in a smooth finish.



In the cross section of a louvered panel above, liquid paint has clearly receded from the edges due to surface tension during the painting process. A cross section of a powder-painted louver below shows thicker coverage around the edges where it's needed most.



The premium paint coating in the industry.

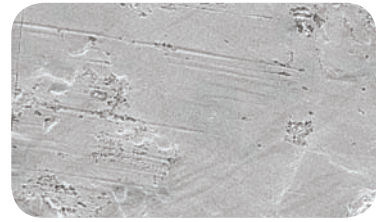
The only finish good enough for American Standard also happens to be the best in the industry. It all starts with the way we apply it. Ultraviolet rays break down the chemical bonds in normal liquid paint, resulting in fading and chalking. So instead, we cover our cabinet louvers in powder paint, known for its resistance to the effects of UV light. Rather than painting or spraying, powder paint is affixed using electrostatic bonding, and baked in a superheated oven. This results in a more durable finish, but it also makes coverage more even; during the liquid painting process, surface tension causes paint to recede from the edges. Our powder-painting method actually causes an electrostatic charge to build around the edges, causing more paint to collect around these critical areas for greater resistance to corrosion and rust.

The foundation of an extraordinary finish.

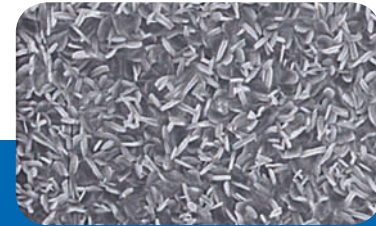
Even after ten years in service, our units look brand new. To get that kind of corrosion resistance, you have to start from the ground up. On most products, we start with non-stabilized galvanic steel and apply our own pretreatment right before powder painting, ensuring no zinc phosphate is lost in forming or handling. During the six-stage pretreatment process, the surface is thoroughly cleaned then etched to provide better adhesion with the zinc phosphate. On a microscopic level, the zinc phosphate's interlocking crystalline structure covers the steel thoroughly, while providing a rough surface that gives the tiny powder paint particles an even greater area to hold on to.

Durability is in the Details.

American Standard Heating & Air Conditioning's quality and durability go far beneath the surface. But that doesn't mean the surface doesn't get our same attention to detail. Rather than merely paint our cabinets, we use an electrostatic process to powder coat them, then we cure them at high temperatures for a glossy finish that stands up to Mother Nature's worst. Just like the components inside.



Under magnification, galvanized steel (above) has a surface that's relatively smooth. After zinc phosphate treatment (below) the surface is full of rough edges, giving the paint plenty of places to bond.



The finish goes on. And on.

After pretreatment, the parts to be powder-painted are sent to the powder application booth. As it's applied, the heavy coating of paint particles is positively charged with 90,000 volts, so it sticks tenaciously to the grounded metal parts as they move through the painting process.

After powder application, the parts go through a series of ovens to gradually heat, melt and cure the particles together for uniform coverage and airtight corrosion resistance. This results in a finish that's smooth as glass, consistent and as attractive as it is durable.

Durability on all sides.

While other manufacturers are content to use mesh or wire guards to protect their coils, our standards demand more. Instead, American Standard uses full louvers made of heavy galvanized steel to protect our coils. Found on all four sides, these louvers provide superior protection from hail, lawn equipment and gardening implements.

Even our paint gets the torture test.

To make sure it continues to live up to our standards, a two-pound sample of all new paint powder is sent to the lab for analysis. This sample is color-certified for uniformity, and then applied to phosphate-coated test panels to be baked and evaluated for thickness, hardness, proper adhesion, flexibility and impact resistance.

Accelerated testing is then performed on these panels, during which they're subjected to caustic blasts in laboratory salt-spray cabinets and placed in a weathering tester where they endure ultraviolet light and simulated bad weather. If the paint sample passes, it's sent on to our factory. If it doesn't pass, it's sent back.



American Standard Heating & Air Conditioning designs durable products from the inside out, using materials that resist wear and tear and adverse climate conditions.



2,688 hours of the worst possible conditions. For the best possible reasons.

Our reputation for durability is earned every day as our engineers put American Standard heat pumps through the worst scenarios they can dream up. Each test unit will undergo a two week regimen of brutal extremes, eight consecutive times. At the end of the 16-week period, every component is carefully disassembled and examined for weak spots or areas of potential failure. It's the most grueling test bed in the business. But it helps us build the best systems in the industry.

SEET

**Systems
Extreme
Environmental
Test**

The SEET Laboratory

ROUND 1:

Heating defrost with snow

Outside temp: 23° with snow and ice

Inside temp: 105°

In this test, the heat pump must maintain an inside room at 105° while operating in sub-freezing conditions. The coil must be free of ice build-up in order to perform under these conditions. This test will require the compressor to work very hard and run almost continuously.

ROUND 2:

Cooling

Outside temp: 100° with fan shut off

Inside temp: 75°

This test causes the unit to cycle on overload by simulating outdoor fan failure. This test will also determine if the unit will restart after it cools down. Thanks to American Standard's innovative dual safety components, the IPR valve opens and discharges hot gases over the internal motor overload, which in turn opens and shuts down the compressor. The IOL is designed to take the compressor off-line if any combination of temperature and current exceeds motor winding tolerances.

ROUND 3:

Minimum load heating

Outside temp: 0°

Inside temp: 90°

Minimum refrigerant flow causes lesser motors to seize due to bearing oil starvation, burning the bearings in the process. Because of its brilliant design, the Duration™ compressor has the velocity to pull oil back through the lines and into the compressor to keep the bearings lubricated.

ROUND 4:

Power shut off

This test simulates the adverse conditions of a sustained power outage. After 12 hours without electricity, most of the oil will drain or wash off the bearing surfaces by refrigerant migration. The level of oil in the reservoir at the bottom of the sump has floated above the oil pump opening due to the heavier liquid refrigerant. During the harsh startup with low oil pressure, American Standard's unique bearing plating will serve as a boundary lubricant until oil flow is established.

It's here our systems earn their reliable reputation.

We believe in durability. In fact, you could say it's almost an obsession. That's why we created the Systems Extreme Environmental Test (SEET) Lab. It's sort of a worst-case scenario that helps us refine and improve our systems using the most severe conditions as a test bed.

Our Duration compressors are tested in heat pumps, because that's the application where they have to work the hardest. In the SEET lab, these heat pumps are subjected to an environmental roller coaster far beyond anything they'd encounter in the real world; one day, we're cooking them in the heat and moisture of a Gulf Coast summer, the next, we're icing them over in a simulated New York blizzard. All the while starting them up and shutting them down as abruptly as we can. 24 hours a day, every day, for sixteen straight weeks.

Every heat pump in the lab goes through 2,688 hours of this testing that simulates years of operating under extreme weather conditions, while being monitored constantly for any signs of weakness.

We give our compressors a lot of individual attention as well. During testing, our engineers will run them at twice their normal operating pressure or at six times the rated current. They'll also run them at twice the normal operating temperature levels and then turn them on and off at ten times their normal cycle rate for weeks at a time.

We subject our equipment to this kind of torture, because it helps us create a better product. In the end, the worst-case scenario helps us build the best systems.

WHAT IT IS: A controlled testing environment that simulates extreme weather conditions.

WHAT IT TESTS: Heat pump systems.

LENGTH OF TEST: 16 weeks of high stress, accelerated conditions simulating five years of wear and tear.

WHY IT EXISTS: SEET supports American Standard Heating & Air Conditioning's manufacturing philosophy of testing in the lab, not in a consumer's home. All of American Standard's testing procedures are conducted at much higher extremes and in more stressful conditions than the rest of the industry.

ROUND 5:

Cooling maximum load #2

Outside temp: 135°

Inside temp: 100°

This searing heat test forces the compressor to run continuously at high temperatures, removing excessive indoor heat and getting rid of it outdoors.

ROUND 6:

Cooling flood

Outside temp: 85°

Inside temp: 80°, indoor blower off

This test subjects the compressor to the mechanical stresses of liquid refrigerant flood back, a condition caused by gross system overcharge or blocked indoor airflow.

ROUND 7:

Cooling maximum load #1

Outside temp: 125°

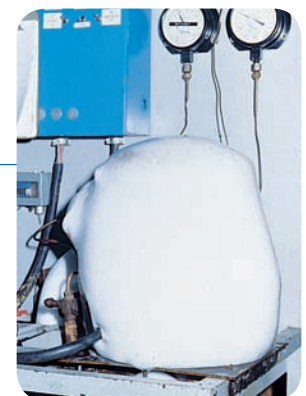
Inside temp: 80°

This test attempts to force the compressor to shut down under the stress of high load and voltage conditions.

ROUND 8:

Power shut off

The compressor is started with low bearing oil pressure, a test that turns lesser compressors into seized-up junk.



Snowball: A Legendary Test of Strength and Endurance.

Underneath that frozen condensate sits a remarkable symbol of American Standard Heating & Air Conditioning quality. Meet Snowball. As part of our research into adverse conditions and durability, Snowball was put into a continuous flood-back test to see how long it would last before it failed. 27 years later, we finally got our answer. This incredible resilience demonstrated the Duration compressor's reliability under adverse conditions like low indoor airflow or system overcharge. Now imagine how long it'll last when it's not fighting for its life.



AccuLink™ Home Communicating Systems: The new age of comfort.

Ease of connection.

The installation wiring process has been simplified. Instead of dealing with an eight or twelve wire configuration, AccuLink requires only two wires for the outdoor system and three wires for the indoor system. Even our dual fuel systems use this simplified, efficient wiring configuration.

Ease of set-up.

The AccuLink™ Home Communicating System acts like a piece of "plug and play" computer hardware. All default settings have been preprogrammed and will run automatically once the system is in place and power is restored.

Ease of installation.

With the help of Charge Assist™ and a simplified wiring process, complicated set-ups are a thing of the past. It makes no difference whether you install an air conditioning, heat pump, or dual fuel system. AccuLink runs its own self-diagnostics, becomes operational and then automatically programs the correct airflow for heating and cooling modes, as well as the correct heat source configuration, blower timing and humidity control.

Ease of service.

Should a problem arise, critical error codes are displayed on the Comfort Control, with fault information on the indoor user interface and LED's on the outdoor unit control board. When the service technician arrives, the problem has already been isolated. Service times are shortened so your technicians can handle more calls per day. That all falls to your bottom line.

Constant communication for constant efficiency.

Every component in an American Standard AccuLink Home Communicating System is wired to every other component and is in steady contact with an array of sensors. This constant flow of information is used by the system to constantly tune its performance. Airflow, humidity, fan speed, compressor speed and temperature are all continually monitored for efficiency and indoor comfort.

Matched system components that work together in perfect harmony.

American Standard AccuLink Home Communicating Systems are made up of components that have been tested, retested and perfectly matched to work together for total comfort and ideal efficiency. The lineup includes the AccuLink Platinum ZV Control **1**, select outdoor units **2**, and select furnaces and air handlers. **3**



When Home Communicating Systems were first introduced, they represented a shift in the way the industry thought about comfort. By allowing every component to receive and respond to input from each other, much of the imprecision was taken out of setup and daily use. Naturally, American Standard Heating & Air Conditioning was among the first to embrace this new method. We're proud of the innovation that AccuLink Home Communicating Systems represents with regard to efficiency, optimum performance and comfort. We're also proud to say they make dealers' lives easier, with simpler installs, self-monitoring operation, simpler troubleshooting and faster service calls.

Accurate charges are easy with Charge Assist™

EPA/Energy Star and other independent agency studies have shown that a correct refrigerant charge is one of the most difficult settings to calculate manually. American Standard Heating & Air Conditioning made guesswork a thing of the past when we introduced Charge Assist™.

Accurate charges every time.

Charge Assist eliminates on-site refrigerant calculations, measurements and gauges forever. Simply push a button on the AccuLink control board and the system will go to work calculating its own correct charge. One light tells you the system is charging, and another tells you when it's done. Your technicians can install with total confidence, while your customers relax in total comfort. A correct charge will help the system operate at peak efficiency. It will also reduce system stress, resulting in longer compressor life, less maintenance and fewer repair calls.



Inside Residential Products: Real Efficiency.



Typical HVAC Efficiency Drains

- Improper refrigerant charge can reduce system efficiency by 5% to 20%¹
- Incorrect airflow can reduce cooling efficiency by 10%²
- Mismatched units can reduce efficiency by 10%³
- Leaking air ducts can reduce efficiency by as much as 20%⁴

AccuLink Applied Efficiency

- Charge Assist™ ensures proper refrigerant charge at setup and maintains correct charge after installation
- AccuLink's Auto Configure feature maintains proper airflow throughout each cycle
- Precisely matched indoor and outdoor units maximize system efficiency
- The expertise of a local independent American Standard Heating & Air Conditioning dealer ensures the installation of the equipment in your customer's home is appropriate for their system set-up and comfort needs.

Collectively, these efficiency drains can cause a 20 SEER system to operate at the efficiency level of a 12 SEER system.

SOURCES: 1) www.epa.gov, 2) www.energydesignresources.com, 3) [Suggestions for HVAC Efficiency Improvements for the 2008 California Building Energy Efficiency Standards](#), Robert Mowris and Associates, 4) www.energystar.gov

Real Reliability.

Technology that is as good as the comfort it creates.

The American Standard AccuLink™ Home Communicating System is a great example of how quality engineering and advanced technology can maximize efficiency and increase home comfort. Properly installed components that are built to work together and linked with communicating technology will always deliver efficiency, reliability and comfort that is superior to systems that are mismatched and randomly maintained.

Rated efficiency applies to systems that are rated in laboratory conditions assuming the refrigerant charge and system airflow is 100 percent accurate. However, studies by the Environmental Protection Agency (EPA) indicate that a majority of heating and cooling systems are not reaching their full efficiency due to variables such as inaccurate refrigerant charging, improper airflow and mismatched components. The AccuLink Home Communicating System addresses

these common problems by automatically and accurately charging the system at set-up, performing self-diagnostics and constantly monitoring all components for proper airflow and humidity control. And with your added expertise as a local independent American Standard Heating & Air Conditioning dealer, your customers can count on their system to deliver real efficiency and real reliability – what they expected when purchasing their system.

Why are we so reliable? Like our air conditioners and heat pumps, the list goes on and on.

American Standard air conditioners and heat pumps set the industry standard because we use only the highest-quality materials, and build in countless innovations that contribute to overall system performance. Like valves made of surgical-grade steel. Lightweight piston components to reduce startup torque and stress. The fewest number of brazed joints in the industry, reducing the number of potential leak areas. All-aluminum construction that resists corrosion better than the copper and galvanized steel used by other manufacturers.



Inside Residential Products: Built for comfort.

Platinum Series Gas Furnace

Our most efficient and powerful gas furnace just might be our most comfortable too. With AccuLink™ communicating capability, continuous Comfort-R™ mode, fully modulating gas valve and an array of other innovative features, the Platinum Series gives the home maximum efficiency with controlled comfort.

Modulating heat. Countless benefits for your home.

Each American Standard Heating & Air Conditioning furnace is engineered with innovative technological features throughout to deliver the long-term performance you and your customers expect. In fact, American Standard's top of the line furnace, the Platinum ZV, features the industry's first and most time-tested, true communicating, fully-modulating gas valve. Thanks to AccuLink™ technology, the Platinum ZV communicates with other system components to learn and adapt to individual homes, providing truly optimized, customized comfort and efficiency for each and every one of your customers. And because our highly reliable, fully-modulating gas valve operates between 40% and 100%, depending on your customers' specific heating needs, they can enjoy unparalleled comfort and greater efficiency, season after season.



Older furnaces more than likely allow a temperature swing of 3° to 5°F before turning on or off. With an American Standard multi-stage gas furnace those days are gone forever.



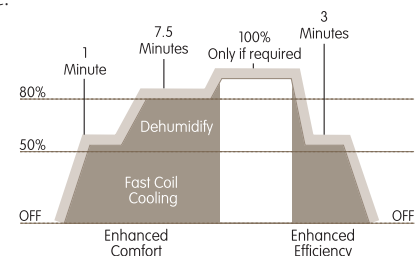
The incredible comfort of Comfort-R.™

When you think about it, summers are made even more miserable by the sweltering humidity. Likewise, winter's dry, harsh air makes the cold feel even more uncomfortable. American Standard's Heating & Air Conditioning industry-leading Comfort-R technology has mastered humidity control, allowing for the most comfortable air your customers have ever experienced.

By linking control of the air speed to a sophisticated humidity sensor, Comfort-R technology can move humid air at a slower speed to draw it slowly across the coils, thereby removing more moisture at the beginning of the cycle. This controlled airflow can remove up to four times as much moisture from the air as a standard cooling system, which can provide more immediate comfort by allowing a home to feel cooler or warmer in a shorter amount of time.

Because of the optimized humidity of Comfort-R technology, the air will actually feel more comfortable with less heating or cooling. That means your customers can set their thermostats for more energy-efficient settings and reduce energy all year long.

Comfort-R is set during the installation of a non-communicating system, and self-adjusts to offer even more features in AccuLink™ Home Communicating Systems.



Platinum Series Air Handler

At American Standard Heating & Air Conditioning, it's our goal to deliver the utmost in comfort and efficiency to our customers. And we designed our new air handlers with that goal in mind. Whether it's the supreme comfort and efficiency of our Platinum Series, or the reliable performance of our Gold Series, each and every air handler comes with innovative components and precision craftsmanship. Because our customers deserve a higher standard of comfort.

1 Unique Cabinet Design★

Designed unlike any other air handler on the market, so less moisture and fewer dust particles are drawn in from garages, attics or crawl spaces. This double-wall cabinet design also helps prevent energy loss and virtually eliminates condensation. And for better air quality, the cabinet is also easy to clean, inside and out.

2 Fully Enclosed Insulation★

Built with a layer of dense foam between its inner and outer walls to seal in cool, crisp air. This increases efficiency, while eliminating loose fiberglass insulation that can break off and enter the airstream.



3 All-Aluminum Coil★

Substantially more durable than conventional copper coils, which means longer system life, as well as less chance of refrigerant leaking into the atmosphere.

4 Vortica™ Blower★

Specially constructed for quiet operation, the Vortica Blower also helps reduce overall energy use and carbon footprint.

5 Flexible Design★

Thanks to its smaller size and easy configuration, more installation options are available throughout the home.

6 Control Board Pocket★

A dedicated slot for the control board protects it from humidity in the airstream and extends its life.

7 Electronic Refrigerant Flow and Regulation★

Refrigerant flow is regulated with an electronic expansion valve for greater system life and maximum reliability.



8 "No Leak" Drain Pan

Made from rust-resistant polycarbonate, this unique drain pan is gently sloped to eliminate standing water.

9 Heating Options

Can accommodate either electric or hydronic heat with no modification to the cabinet.

10 Corrosion Resistant Finish

Thanks to a high quality finish, the air handler will look great for years to come.



Features and components may vary by model and are shown for illustration purposes only.

Platinum ZM

★ Indicates American Standard Heating & Air Conditioning technology you won't find anywhere else.

Select models of our Platinum XV air handler have been specifically engineered to match with our EnviroWise™ geothermal heat pumps.

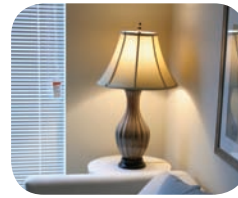


Bright and brilliant in so many ways.

Nexia™ Home Intelligence offers homeowners a new way to take care of home and family, even when they can't be there. Using most web-enabled mobile devices, they can remotely lock and unlock doors, turn on lights for security, or monitor and adjust heating and cooling from a distance to save energy, all with just the touch of a button. The AccuLink Platinum ZV Control Module comes Nexia-enabled, so once installed, either dealer or homeowner can set it up and build it out as desired.*

Nexia™ Home Intelligence makes home automation simple and accessible — so homeowners can be connected with their home, even when they're not at home.

*Nexia Remote Climate Access is included with the purchase of an AccuLink Control. Live video viewing is included with the purchase of a Schlage camera. Other features may require a Nexia subscription.



A higher standard of convenience.

Log into the system using most web-enabled cell phones or computers to adjust the temperature or turn lights, appliances or other electronics on or off.



A higher standard of efficiency.

It's simple to manage energy use and achieve a lower carbon footprint with user-friendly scheduling features, and the ability to switch to more energy-conscious settings while away from home.



A higher standard of comfort.

Nexia™ Home Intelligence gives greater peace of mind. Know that children have arrived safely to a warm, well-lit home by accessing the home's indoor camera from any web-enabled computer.



Nexia™ Home Intelligence gives greater control from anywhere.



AccuLink™ Platinum ZV Control: Smart, precise control

The AccuLink Platinum ZV Control Module. Command Central for Comfort.

The AccuLink Platinum ZV is the top of the line in home automation, offering homeowners the newest features and the most advanced technology for control, integration, and comfort. The backlit touchscreen interface makes programming and setup simple and straightforward. Different schedules for temperature and humidity can be programmed for different parts of the day, or set to energy-conserving settings when homeowners are away. Humidity and temperature are easily adjusted with a few simple touches. Adjustable fan speeds mean homeowners can precisely adjust airflow, much like adjusting a ceiling fan, to create a more even temperature throughout the home.

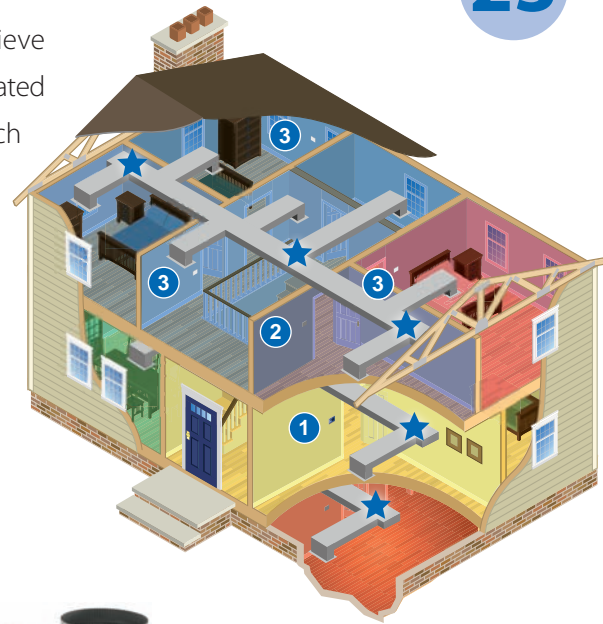


The control also acts as a diagnostic panel. When a fault is detected anywhere in the system, the screen will alert the homeowner and provide an error code for the servicer. This information allows service technicians to spend repair call time more efficiently.

Comfort tailored to every zone.

23

Our groundbreaking new AccuLink Zoning System makes it simple to achieve consistent temperatures throughout the home. It all starts with the most sophisticated control ever produced by American Standard Heating & Air Conditioning which acts as the hub of the system. And with the option to add a wired zoning sensor with display that acts as both a sensor and a thermostat, homeowners can now monitor and adjust the temperature within a specific zone without returning to the main control. Working with motorized modulating dampers that can be installed within new or existing ductwork, the AccuLink Zoning System systematically redirects airflow to where it's needed by opening dampers in partial increments so homeowners can fine-tune zoning areas for maximum comfort.



1 Platinum ZV Control

The hub of the system.



2 Wired Zoning Sensor with Display

Allows temperature to be monitored and adjusted within the zone.



3 Wired Zoning Sensor without Display

Monitors a specific zone, with temperature viewing and adjustment done at the Platinum ZV control.



Modulating Dampers

Motorized modulating dampers can be installed within your new or existing ductwork to systematically redirect airflow to where it's needed.

at your fingertips.



Scheduling

Get a handle on energy consumption with scheduling. The system will keep families comfortable when they're home, and use less energy when everyone's away.



Live Weather

Stay informed of local weather with live updates, alerts and even real-time radar data.



Alerts and Reminders

The Platinum ZV helps keep families informed by alerting them if regular maintenance is required, or if a filter needs changing.

Let's clear the air:

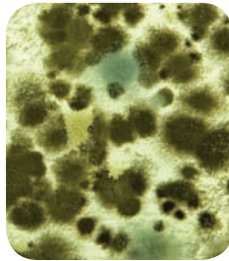
Indoor Air Quality

AccuClean.™ A revolution in air filtration on the home front.

When it comes to air cleaning technology, there's never been anything quite like the AccuClean™ Whole Home Air Filtration System. It represents a different way to think about the way harmful particles cling to the air, and a different way to draw them out. As a result, patented AccuClean filtration works up to 100 times better than standard 1 inch filters and up to 8 times better than even HEPA filtration. Air that's this clean actually creates a healthier indoor environment for homeowners and their children.

Smaller filtration for better health.

Tests conducted by the Harvard School of Public Health confirm that AccuClean filters air down to an incredible .1 micron. That means it removes all sorts of unwanted particles, including common allergens like dust, mold, bacteria, pet dander and dirt.



The communicating advantage.

As a part of a communicating system, AccuClean can display filter timers and alerts on the AccuLink Control. A Quick Clean or Allergy Clean cycle can be run with the touch of a button, which can boost clean air output from 3 to 24 hours at a time.

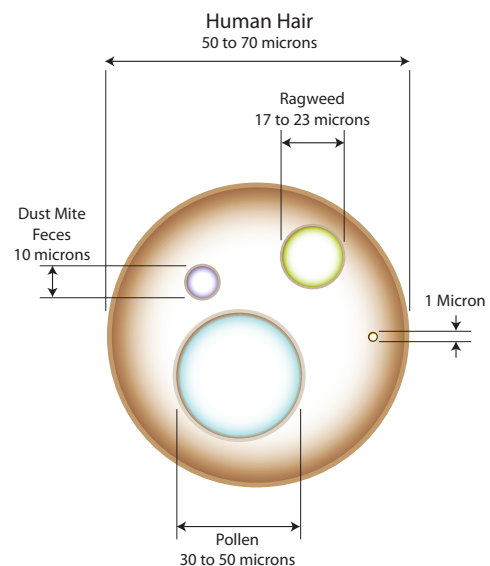
Cleaner air for a cleaner home.

AccuClean's amazing filtration offers another benefit to homeowners that will make their lives easier. Since it filters so well at such a high Clean Air Delivery Rate (CADR), AccuClean can actually remove dust particles from the air, reducing the frequency of dusting by up to 50%.



How small is a micron?

American Standard's AccuClean removes up to 99.98% of particles down to .1 micron from the air it filters. That's 1/700th of a human hair, pretty small by any standard. It means AccuClean can trap dust, mold, pet dander and bacteria. But it also means AccuClean is the only air filtration system to remove what science refers to as "ultrafine" particles from the air. These ultrafine particles can actually increase the risk of heart attack, stroke, asthma attack and other respiratory disorders. And AccuClean removes up to 99.98% of them. Nobody else can say that. With .1 micron filtration, we've effectively changed the market. Again.



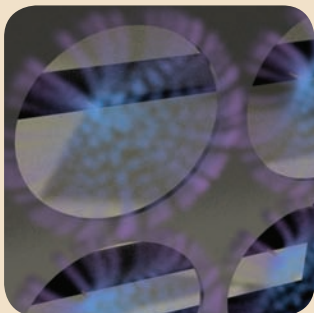
Electricity, attraction and efficient filtration.

As the air moves through an AccuClean unit, it passes through several stages.

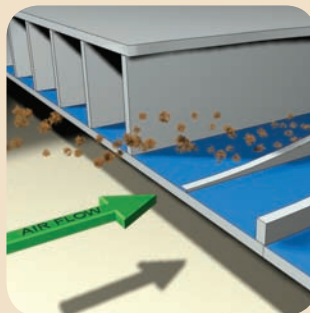
- 1 The pre-filter.** Used to trap large particles and extend the time between collection cell cleanings.
- 2 The field charger.** An internal transformer creates a high-voltage corona field, using plasma to charge particles to make them cling tightly to the oppositely-charged collection cell. The plasma-charged holes are large to allow for much greater airflow and a higher CADR.
- 3 The collection cells.** Precision-engineered filters that trap particles down to .1 micron in size. They're negatively charged to provide electronic as well as physical particle capture. With a simple vacuuming, collection cells are restored to new condition for easy reuse.



AccuClean air filtration removes particles that would pass right through other air filters. Nothing else even comes close to AccuClean's effectiveness, not even HEPA or so-called "ionic" technology.



AccuClean's patented Intense Field Dielectric technology means air passes through a series of smaller, very high voltage corona fields rather than passing over a single charged wire or plate. This unique approach allows more particles to be charged, captured and taken out of circulation.



AccuClean's collection element has 8 times the collection surface of conventional electric air cleaners. It's made up of alternately-charged cell layers placed less than 0.08 inches apart, giving airborne particles virtually no chance of escape.

Dirtier air needs a cleaner solution.

The need for cleaner air has never been greater. Thanks to more refined construction techniques, today's homes are more tightly sealed than ever. While that's great for keeping the weather out, it also serves to keep airborne contaminants in. As a result:

- Up to 72 trillion allergens can enter your customers' homes every day.
- Indoor pollution can be up to five times worse than outdoor pollution.
- The average home generates 40 pounds of dust per 1500 square feet, every year.
- Dust isn't just a problem on its own; one ounce of dust can provide a home with 40,000 dust mites, one of the most common household allergens.
- American consumers are responding by spending more than ever on air filtration, a projected \$700 million by 2011.



What about ozone?

Ozone is an issue that American Standard Heating & Air Conditioning takes very seriously. AccuClean was designed to fall well below the 50 parts per billion (ppb) FDA voluntary emission limit for medical devices and contributes a negligible amount of ozone – less than .3 ppb to the living space.

To put this into perspective further, typical ozone levels during the summer outdoors are at about 60 to 90 ppb, and indoor levels can vary greatly but are typically between 12 ppb to more than 80 ppb. Testing of American Standard AccuClean by third parties has shown there's no more ozone in a home installed with American Standard AccuClean than naturally occurs in the environment already.

Let's clear the air: Indoor Air Quality

CADR: The true test of any filtration system.

There are many ways to measure the effectiveness of an air filtration system. We believe the true test of a system's ability is found in its Clean Air Delivery Rate (CADR). Testing and comparing filtration methods using CADR most accurately represents the real-world conditions found in your customers' homes, because CADR measures not only the cleanliness of filtered air, but also the rate at which it flows. In other words, it's not just about how clean you make the air, it's about how fast the air moves through the system. Filters that provide a serious system bottleneck aren't doing their job effectively. They not only increase the load on the system,

reducing equipment life, but the slower air flow they create also allows dirty air to stay in circulation longer. AccuClean™ definitively solves both problems. Thanks to the high-flow design of its large flow holes, large electrostatic fields and the large surface area of its filter media, AccuClean replaces dirty air with fresh, clean, filtered air at the highest rate in the industry. As a result, nothing else can even come close to filtering as effectively.

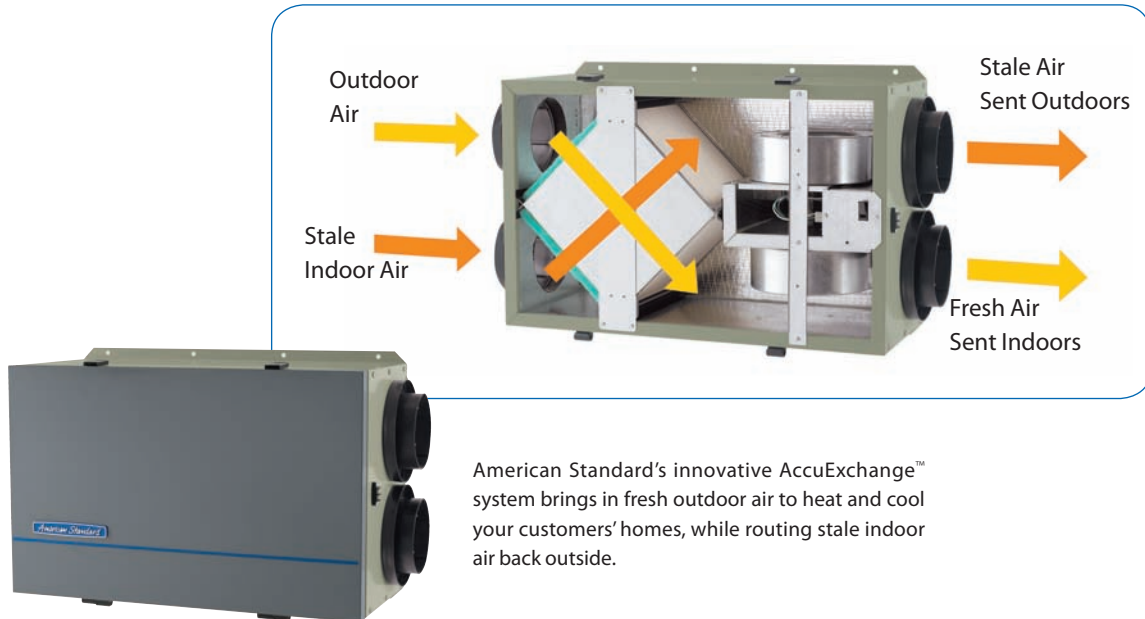
FILTER EFFICIENCY X AIRFLOW = CADR (Clean Air Delivery Rate)

Clean Air Delivery Rate Versus MERV Ratings

Several air cleaners on the market have chosen to use the Minimum Efficiency Rating Value (MERV) rather than clean air delivery rate. Here's why American Standard Heating & Air Conditioning uses clean air delivery rate:

- MERV ratings do not go high enough to measure the capabilities of American Standard AccuClean, so we have chosen to measure through clean air delivery rate. American Standard AccuClean would be "off the charts" if given a MERV rating.
- Some whole-house air cleaners tout their rating based on a 5-ton system rather than a typical 3-ton system. It's important to notice the tonnage used for the rating. American Standard AccuClean uses a 3-ton system to compare our system's clean air delivery rate. It's applicable to most consumers.
- It's also important to compare efficiencies of air cleaners at 0.3 micron and even down to 0.1 micron, not at larger sizes like 7 to 10 microns, like some competitors' claims.





A breath of fresh air.

American Standard's ERV system helps your customers breathe healthier, cleaner air. By allowing controlled ventilation of outside air, the stale air inside is gradually replaced with fresher, cleaner air from outside. As an added benefit, the ERV system recovers heat and moisture from the air in winter, while pre-cooling and dehumidifying incoming air in the summer.

ERV systems are designed for low maintenance and long life. They automatically vent air around the clock, but feature manual control if your customers desire. The internal filter slides out for easy cleaning with a household vacuum cleaner.

ERV units easily integrate into American Standard systems. The unit mounts in a variety of positions in any number of locations throughout the home, including the attic, the basement or the garage.



Humidity control goes both ways.

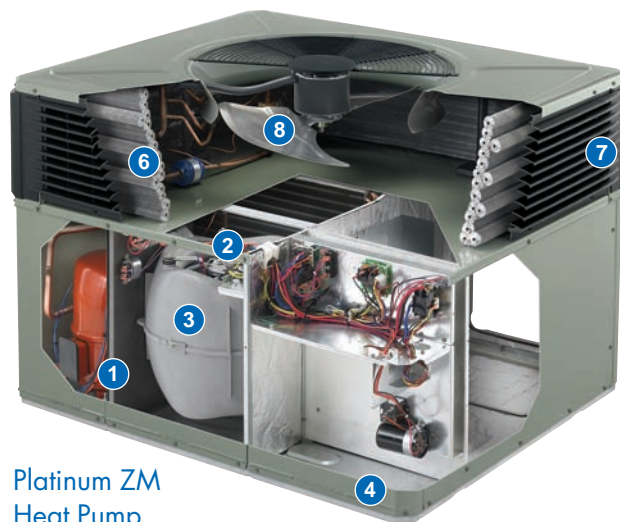
Even more precise humidity control is available with the addition of an ultra-quiet American Standard Humidifier. Available in three different configurations, American Standard humidifiers use sophisticated outdoor sensors to adjust indoor humidity to the maximum level of comfort with both manual and automatic settings. Their flow-through design resists mineral buildup, while corrosion-resistant construction provides years of trouble-free life.



Platinum ZM
Gas/Electric System

Easy service by design.

American Standard packaged units offer incredible flexibility in system configuration. But the convenience doesn't end with the install. Our packaged units are also designed to offer the best cleaning and maintenance access in the business. They need the fewest number of tools per task of any packaged unit made. They also offer the lowest technician disassembly time, because all components are arranged to be easy to reach. Many components even slide out for totally unencumbered access. To make your job easier, we use access panels with a maximum of three screws, or eliminate screws entirely with optional hinged access panels.



Platinum ZM
Heat Pump

Exclusive Features

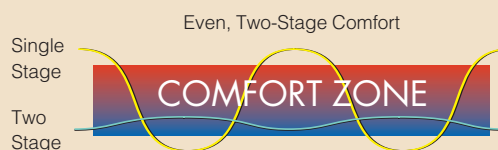
- 1 Duration™ Compressor
- 2 Variable Speed Blower Motor with Comfort-R™
- 3 Slide Out Vortica™ Blower
- 4 Embossed Service Panels for Quick, Easy Access
- 5 Stainless Steel Heating System
- 6 All Aluminum Spine Fin™ Condenser Coil
- 7 Attractive Appearance with Reversible Louvers
- 8 Super Quiet, High Efficiency Ducted Fan

Packaged Profits

Packaged units that bring the whole package.

Staged compressors keep temperatures consistent.

For extra efficiency and comfort, many American Standard Heating & Air Conditioning Hybrid and Gas/Electric packaged systems offer multi-stage heating and cooling. Not only does it help your Hybrid or Gas/Electric system operate at more efficient speeds, it also provides more steady, even comfort during extreme temperatures.



Older systems more than likely allow a temperature swing of 3° to 5°F before turning on or off. With a Platinum ZM or Gold XM, those days are gone forever.

No need to be quiet about our advantages.

Your customers can enjoy a little peace and quiet with their total comfort, because every American Standard packaged unit not only does its job well, it does it quietly. In fact, some units operate at sound ratings as low as 68 decibels, the quietest in the industry.

Efficiency.

American Standard's family of packaged dual fuel gas/electric, heat pump and air conditioning systems, which range in SEER ratings from 13 to 16 and have 80 AFUE ratings, includes some of the highest efficiencies in the industry.

Easy adaptability to light commercial applications.

American Standard packaged systems are as flexible as they are durable. With 3-phase models and a long list of available factory accessories, including filter kits, economizer controls and a Unicurb, American Standard packaged systems can easily make the transition from residential to light commercial use. This provides our dealers with a greater array of cost-effective solutions to light commercial applications, while simple conversion from horizontal to downflow designs make them easier to install at the jobsite.

Common household sound levels comparison:



Measured in decibels.

Exclusive Vortica™ Advanced Airflow System

The Vortica™ Advanced Airflow System is an example of American Standard Heating & Air Conditioning's ongoing leadership in technology and design. American Standard has developed an innovative blower technology that improves airflow while reducing sound. And, because of its enhanced performance capabilities, this new system allows for a smaller cabinet size.

The Vortica Advanced Airflow System in select American Standard packaged units and high-efficiency air handlers feature:

- Durable composite construction; materials that won't crack, corrode or rust.
- Higher system efficiency and lower energy use; requires less fan power.



When everything has to work in one space, you often have to compromise. But we don't. Instead, we design everything better, using more than a century of expertise in air movement, heat transfer and comfort. Which means you can offer your customers truly revolutionary solutions, with distinct advantages they'll appreciate. With sound ratings as low as 68 decibels, American Standard packaged units are the quietest you can buy. They also offer the flexibility of rooftop or ground placement, and the legendary durability only American Standard Heating & Air Conditioning can offer.

Sometimes it's not what you put in. It's what you take out.

American Standard packaged units are a miracle of efficiency. That applies to their energy use, their use of space, and even their design. The way our engineers see it, the fewer parts a system has, the fewer chances it has for failure. So our packaged units are built with 42% fewer parts than our previous models. That means 42% fewer opportunities for a leak, a short, or a break. And fewer warranty calls for you.



Our Platinum and Gold packaged units are as attractive as they are durable, with tough powder-coated panels in an appliance-grade finish and colored louvers.

Light Commercial lineup.

3 to 25-Ton Packaged Units

American Standard Heating & Air Conditioning Precedent™ and Voyager™ light commercial packaged rooftop units are powerful for their size and packed with features for even your most demanding commercial applications. They're flexible, with a variety of motor and drive types and gas or electric capability. They're also easily customized with a wide array of features, so your customers only pay for what they need. With one of the shortest ship times in the industry and a wide array of options, American Standard Heating & Air Conditioning makes customization simple and fast. So you can offer truly custom solutions with off-the-shelf speed.



All 3 to 10-ton models feature tubular heat exchangers with three different capacities for greater efficiency and versatility.



All 12.5 to 25-ton packaged units use durable, dependable scroll compressors. That's why they last so long.

Precedent Light Commercial Packaged Units (3 to 10-ton)

Capacity (Tons)	3	4	5	6	7.5	8.5	10
Efficiency SEER	13.0 – 17.5	13.0 – 17.5	13.0 – 17.2	N/A	N/A	N/A	N/A
Efficiency EER	11.2 – 13.0	10.9 – 13.35	11.0 – 13.0	11.2 – 12.6	11.1 – 13.0	11.2 – 13.0	11.2 – 11.3
Efficiency IEER	N/A	N/A	N/A	13.0 – 14.5	12.0 – 15.0	13.0 – 15.5	12.5 – 14.5
Compressor	1	1	1	1	1 or 2	2	2
OD Sound (dB)	80 – 81	82 – 87	82 – 87	89	87 – 91	87 – 89	87 – 88
Heat Capacity	Lo, Med, Hi	Lo, Med, Hi	Lo, Med, Hi	Lo, Med, Hi	Lo, Med, Hi	Lo, Med, Hi	Lo, Med, Hi
Refrig. Control	TXV	TXV	TXV	TXV	TXV	TXV	TXV

Voyager Light Commercial Packaged Units (12.5 to 25-ton)

Capacity (Tons)	12.5	15	17.5	20	25
Efficiency EER	10.6 – 12.1	10.6 – 12.0	11.0 – 11.8	9.7 – 11.0	10.0 – 10.6
Efficiency IEER	12.0 – 14.2	12.0 – 14.2	11.8 – 13.6	11.5 – 13.1	10.4 – 13.0
Compressor	2	2	2	2	2
ARI Sound Rating BELS	9.2	9.2	9.2 – 9.4	9.4	9.4
Heat Capacity	L, M, H, Mod	L, M, H, Mod	L, M, H, Mod	L, M, H, Mod	L, M, H, Mod
Refrig. Control	TXV or Orifice	TXV or Orifice	TXV or Orifice	TXV or Orifice	TXV or Orifice

1 High-Efficiency Scroll Compressors

Five years of simulated operation over 16 weeks of testing in our System Extreme Environmental Test (SEET) facility ensure outstanding system operation.

2 Single-Side Access

Any necessary servicing of the unit can be completed from one side by removing three screws or less on any service panel.

3 Serviceability

Hinged Access Doors

Provide easy access for service and reduce the potential for roof damage from screws or sharp access door corners.

Quick-Adjust Idler Arm

Provides for easy adjustment of the belt and sheaves without having to move the mounted fan motor.

Separated Condenser Coil

Perfectly positioned for easy access and cleaning.

4 Sloped Condensate Drain Pans

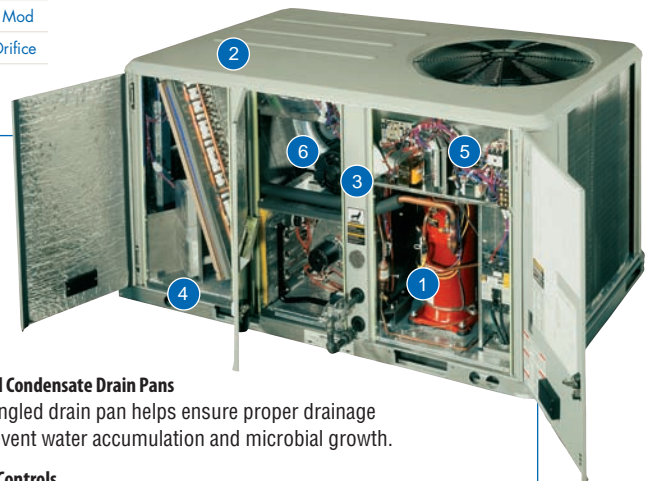
The angled drain pan helps ensure proper drainage to prevent water accumulation and microbial growth.

5 Micro Controls

ReliaTel™ microprocessor programming makes field-installed anti-short-cycle timers and time-delay relays unnecessary.

6 CompleteCoat™ Condenser Coil Coating

Provides excellent durability and resistance to the corrosive effects of harsh environments.



Split Systems

Tough, versatile American Standard Heating & Air Conditioning Odyssey™ split light commercial systems keep customers comfortable in any environment. Our air handlers lead the industry in airflow volume, which makes for more comfortable air, while also allowing customers to use their existing ductwork on most installs. Each American Standard air handler is designed and tested with our outdoor units to give you the best match for any capacity and load. Our air conditioners, heat pumps and air handlers offer some of the highest efficiencies on the market, and are available from 5 to 25 tons.



With their compact size, flexible fit, and ease of installation, the Odyssey light commercial split systems are extremely efficient. Ranging from 5 to 25-ton capacity, they are ideal for retrofitting with existing air ducts as well as in new construction.

Outdoor Unit Compressor Options

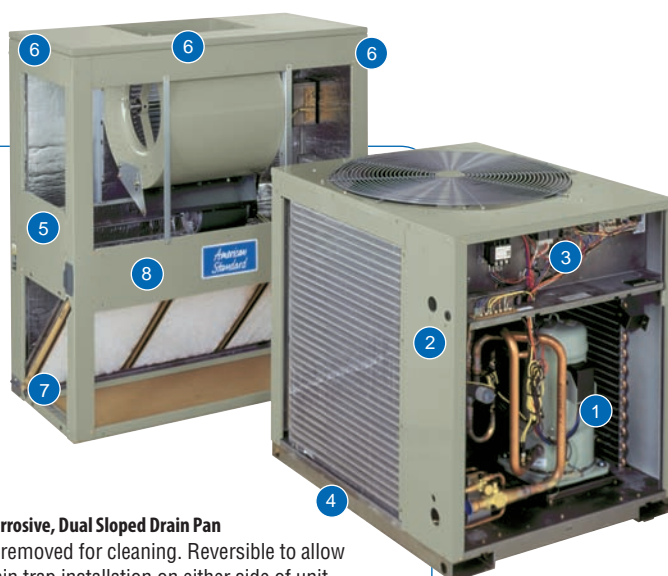
Capacity		5	6	7.5	10	12.5	15	20	25
Cooling	Single Compressor								
	Dual Compressors								
	Dual Manifold Compressors								
Heating	Single Compressor								
	Dual Compressors								

Indoor Unit Options

Air Handler	Single Compressor								
	Dual Compressors								

■ = R-410A ■ = R-22/R-410A

- 1 Scroll Compressor**
Innovative features provide increased performance and efficiency.
- 2 Single Side Service**
Direct unit access allows for faster service.
- 3 Colored and Numbered Wiring**
Easy identification for quicker diagnostics and service.
- 4 Small Footprint**
Easily replaces older outdoor units, especially where fit is an issue.
- 5 Slim Unit**
Fits through a 36" door, which speeds replacement installations.
- 6 Multiple Service Panels**
One service technician can access any side of the unit through easily removed panels.



- 7 Non-Corrosive, Dual Sloped Drain Pan**
Easily removed for cleaning. Reversible to allow for drain trap installation on either side of unit. Prevents standing water and sludge build-up.
- 8 Fully Assembled Heat Pump Air Handler**
Factory assembled and tested to ensure quick installation and better reliability.

To be an industry leader, you have to look in two directions at once: forward and backward.

Forward, to bring newer, more innovative products to market, to harness ever-developing technology, and to keep customers comfortable with less energy.

Backward, to draw on more than 130 years of expertise, research and testing to make sure everything we build is as durable as it can be. And that it works well enough to deserve the American Standard Heating & Air Conditioning name.

When we first started making steam boilers and radiators over a hundred years ago, we chose to do things differently. We chose to use premium materials instead of cheaper substitutes. We tried new designs rather than reusing conventional ones. We chose to build systems that would stand up to years of use even in the worst conditions imaginable. This approach has earned us a reputation for quality and reliability that we continue every day. With our dealers, with our customers, and in print.

There are more than 130 years of comfort behind this name.

In May of 2012, readers of a national product testing and research magazine rated American Standard Heating & Air Conditioning's air conditioners and heat pumps as the most reliable brand among leading manufacturers. And in December of 2012, readers of the same national product testing and research magazine also rated American Standard gas furnaces as one of the most reliable brands among leading manufacturers. This all comes after ranking highest in overall dealer satisfaction five times in the last seven years.*

A national consumer testing magazine gave AccuClean™ a top ranking for whole-home air filtration.

Another major national testing publication rated American Standard Heating & Air Conditioning the most trouble free manufacturer, results echoed by a reader survey done by the same publication.

American Standard Customer Care™ Dealers continue to receive national customer satisfaction scores of 98%, and a referral rate of 99%.**

Since our first day in business, we've come up with a lot to be proud of. But we're just as excited to see what happens next.

*Based on survey results compiled by the independent research firms Syndics Research and JLA Strategic Research, LLC, funded by Ingersoll Rand

** Customer Satisfaction Score and Dealer Referral Score based on survey results compiled by Data Recognition Corporation, 2012



americanstandardair.com

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