

As shown in Figure 7, the Twin-Single is a reciprocating compressor with a reversible motor and a unique crankshaft. In forward motion, both pistons perform for high-capacity operation. When the motor is reversed, the crankshaft repositions one lobe so that only one piston continues to operate at low capacity. In this fashion, the Twin-Single provides two-stage benefits in one compressor.

Because Stealth is designed to operate at low capacity 80% of the time, it can deliver substantial energy savings. York's Ted Altmire says that the compressor's performance is further optimized by the company's proprietary control system — called Comfort Enhancer — which regulates staging and reduces start-stop cycles by up to 74%. "Not only does the control strategy extend the system's life," Altmire says, "it also improves dehumidification and increases comfort."

The Stealth series delivers SEERs ranging from 14 to 16.2. The highest efficiency and best humidity control are attained when the air conditioner is paired with a variable speed air handler.

As the name implies, Stealth was designed to run quietly. In fact, York claims that it is the quietest 16 SEER air conditioner on the market. Altmire tells *EDU* that York engineers equipped Stealth with a package of sound-reducing materials that includes specially designed mufflers, sound blankets, and cushioned compressor mounts. "The unit tested out at 70 decibels," Altmire says. "That's the lowest in the industry, for a unit of this type."

Other notable Stealth features include:

- A microprocessor control that constantly monitors system operation
- A brownout protection device prevents harmful low-voltage operation
- Diagnostic LED displays include four different flash codes
- Large service panel for easy access

Solatube Integrates Ventilation into Tubular Skylight

Solatube International, a pioneer in tubular skylights, continues to create and recreate products in interesting ways. The company's latest offering integrates an exhaust fan and electric light into a 10-inch diameter Solatube. Thus, a single ceiling port does triple duty, providing natural light and artificial light, and exhausting stale air. The electric light and exhaust fan are independently switched to give the homeowner operating flexibility.

As shown in Figure 8, the 150-cfm fan pulls air up through the circular intake grille, which surrounds

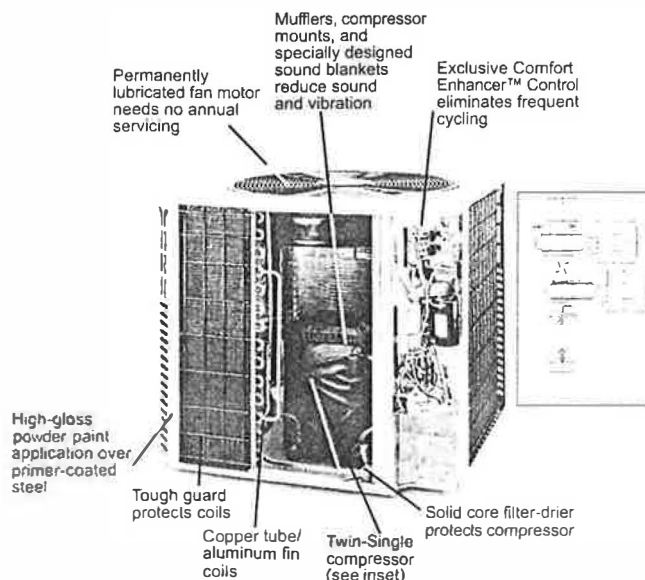


Figure 7 — Cutaway of York's new Stealth air conditioner. Inset: the unique crankshaft and piston assembly used in the Bristol Twin-Single compressor.

- True 100% nominal capacity ratings
- Schrader valves fitted ahead of the spun-copper, solid-core filter drier to measure pressure drop
- High-low pressure controls
- High-strength coil guards
- Appliance quality 80-gloss finish tested in 1500-hour salt spray test — double the industry standard

Because York International owns Bristol Compressor (Bristol, Virginia), the company will enjoy exclusive use of the Twin-Single compressor for several months. After that, Bristol will sell the compressor to competing manufacturers. Meanwhile, York is planning to introduce a new heat pump that will use the new compressor in the near future.

For more information, contact York International's Unitary Products Group, 5005 York Drive, Norman, OK 73069. Web site: www.york.com.

the translucent lens on the skylight. The fan/motor/damper assembly is installed at roof level for quiet operation and connected to the grille via 6-inch flex duct.

The cylindrical body of the skylight is made of Spectralight 2000, a smooth, reflective material that runs from the roof dome to the ceiling diffuser. Mounted inside is a light fixture (not shown in the drawing) that can accept a 100-watt incandescent or 20-watt fluorescent bulb. Mike Muhlestein, the company's technical supervisor, tells *EDU* that the electric

light is UL-listed and equipped with a thermal coupler that shuts it down in the presence of excess heat. Thus, insulation can be butted up directly against Solatube without any danger of fire, he says.

The skylight itself cannot act as a thermal chimney because the entire unit is sealed to lock out dust, insects, and moisture. A gravity damper keeps the exhaust duct from acting as a chimney when the fan isn't running. The unit is UL-listed for operation over bathtubs and showers when connected to a 100-volt, 15-amp, GFCI-protected branch circuit. Muhlestein says the three-way Solatube retails for under \$500.

For more information, contact Solatube International, 2210 Oak Ridge Way, Vista, CA 92083-8341. Tel: (760) 597-4400; Fax: (760) 599-5181.

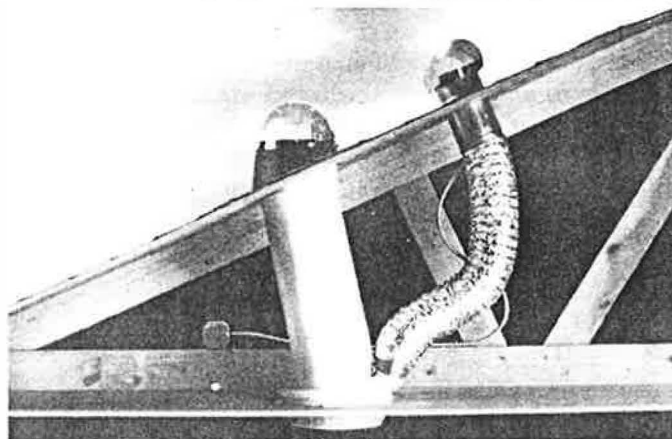


Figure 8 — A 10-inch diameter Solatube with an integrated 150-cfm exhaust fan. The motor-and-fan assembly are located just beneath the roof decking for quiet operation.

New Generation Fireplaces Offer Ducted Heat, Cooling

Two of the industry's leading fireplace manufacturers — Heat-N-Glo and Majestic — are producing a new generation of gas fireplaces equipped with forced-air distribution. With the addition of fans, ducts and controls, these fireplaces can deliver heat to multiple rooms, in some cases obviating the need for a central furnace or boiler. The advent of heating and cooling fireplaces has also prompted the adoption of a new standard — ANSI Z21.88 — that establishes testing and safety requirements for fireplace heaters (see sidebar, "A Standard All Our Own").

Heat-Zone Option Available on Several Heat-N-Glo Fireplaces

Heat-N-Glo (Lakeville, Minnesota) offers its Heat-Zone forced-air option on various 6000 and 7000 Series gas fireplaces, which have input ratings from 23,000 to 40,000 Btu/hr. These sealed-combustion, direct-vent fireplaces are designed to accept one or two Heat-Zone kits, which draw heated air from around the firebox and deliver it to other rooms (see Figure 9).

Each kit, priced at \$239, includes 20 feet of flex duct, a 100-cfm fan, a room diffuser, and a reostat to adjust the fan speed. The fan is mounted directly behind the diffuser, with the manually controlled reostat typically installed on the wall nearby. There's no return air on the system. When the fan is on, drawing warm air into another room, the radiant and convective heat output around the fireplace naturally declines.

Heat-N-Glo Marketing Manager Ross Morrison tells *EDU* that the 6000 and 7000 Series fireplaces have AFUE ratings of 73% and 72%, respectively. With no thermostatic control, limited heat distribution, and relatively low efficiency, a fireplace equipped with Heat Zone isn't really designed as a cold-climate central heating system. But it could be a nice choice as an auxiliary heat source for warming up a cold basement or

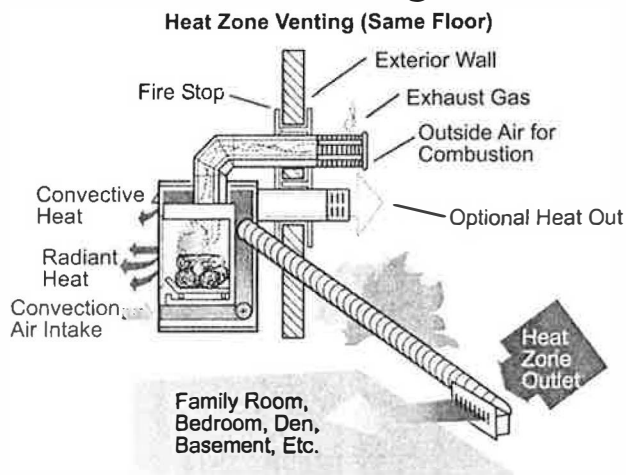


Figure 9 — Schematic of the Heat Zone distribution kit, directing heat to an adjoining room. The Heat Out option, which is also pictured, is used to dump unwanted heat outside.

bedroom. And in warm climates, it might provide all the heat you'd need.

Of course, the real reason people want fireplaces — all talk of Btus aside — is to enjoy the romance, view, and radiant heat. With that in mind, we always recommend a visit to the showroom to check out the beauty of the surround and the authenticity of the logs and flames. For more information, contact Heat-N-Glo, 20802 Kensington Blvd., Lakeville, MN 55044. Tel: (800) 669-4328; E-mail: morrisonr@heatnglo.com.

Majestic's Integrated Heating and Cooling Gas Fireplace

Majestic Products Company (Mississauga, Ontario) has introduced a new direct vent, gas fireplace — the DVHVAC36 — that's designed to be a primary heating and cooling system. The thermostatically controlled system has a maximum input of 40,000 Btu/hr for both natural gas and propane, with an AFUE rating of 78%.