

AIR ENTERPRISES VS GALVANIZED STEEL UNITS

CONSTRUCTION FEATURES & BENEFITS

ALL ALUMINUM CONSTRUCTION: Air Enterprises' unit construction is all-aluminum; including casing, structural base and floor plate, equipment flashing, etc. Aluminum construction has been Air Enterprises' prime construction and expertise since the company's inception in 1963. Aluminum offers superior corrosion resistance.

Benefit:

- **Increased equipment life** - consideration of unit replacement due to rust propagation or deterioration is eliminated.
- **Reduced unit maintenance costs** - periodic maintenance considerations for sealing and repainting units is eliminated.
- **Increased equipment uptime** - minimized maintenance requirement reduces scheduled shut-down timing allowing maximum operation uptime.
- **Reduced unit weight** - aluminum construction results in units that weigh generally 30%-40% less than a conventional custom air handling unit with steel construction. Reduced weight results in reduced building design structural requirements and potential savings to rigging costs during field installation.



Most manufacturers utilize galvanized steel as the primary material of construction and will provide a baked on phenolic coating for critical applications. This coating can easily be damaged during installation, leaving bare steel.

DOUBLE WALL CASING CONSTRUCTION WITH TOTALLY ENCAPSULATED INSULATION

Air Enterprises' structural unit casing is 2-1/2" thick double wall with skins hermetically sealed to structural panel frames. Insulating material is totally encapsulated inside panel cavity. Assembly protocol does not allow panel cavity to be penetrated breaching the integrity of the panel.

Benefit:

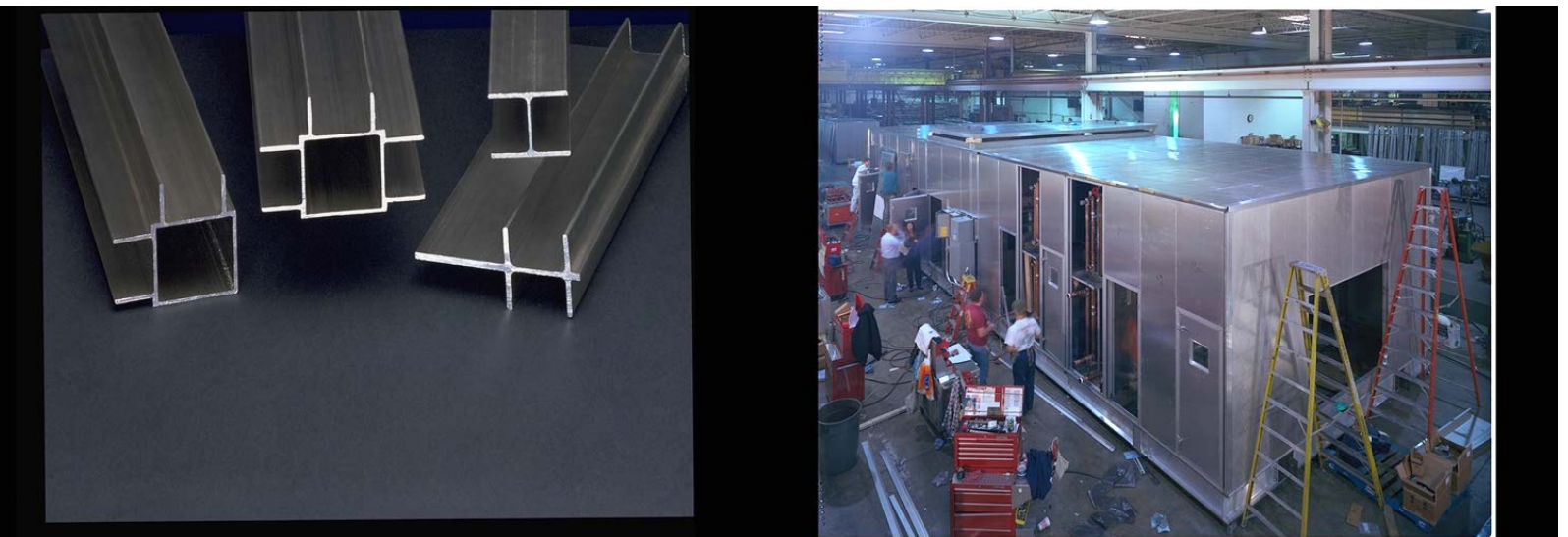
- IAQ concerns from stray insulation fibers eliminated - outmigration of insulating material is virtually impossible due to sealed panel system.
- Longer integrity of insulation materials - probability of moisture migration into panel interior, which can degrade the insulation, is eliminated.

STRUCTURAL UNIT CASING

Air Enterprises' structural unit casing, as designed for standard application, are capable of withstanding positive or negative pressures in excess of 12 in. wc. In many cases, this value exceeds 1-1/2 times fan design static pressure. This casing when designed for special application has been applied to units with operating pressures exceeding 70 in. wc.

Benefit:

- **Catastrophic casing failure protection** -in the event of an improper system damper closure causing unit static pressures beyond intended design operating conditions, unit damage, such as blown-out or collapsed panels, is avoided.



Most manufacturers typically provide a break formed bolted structure with an inward standing seam.

TRUE THERMAL BREAK

Air Enterprises offers an integral no-through-metal casing system where appropriate, to address condensation on the unit exterior, thus minimizing unsightly sweating. This casing system incorporates structural extrusions with a ½” resin break to separate the thru metal path. This resin break is included in all of the components that make up the air handling units.

Benefit:

- **Increased Energy Efficiency** – System energy efficiency is improved by lowering the heat loss.
- **Unit condensation minimized or eliminated** - unit condensation is potentially damaging to unit, creating hazardous conditions on the floor around indoor units or creating costly water damage to the elements below the unit installation.



Most manufacturers utilize isolation tape or gasket between sheet metal panels as a thermal break. This is not as effective or efficient as the Air Enterprises ½” carbon bridge.

LEAK RESISTANT CASING

Air Enterprises' 'custom' panel system is air and vapor tight. Equaled by no other in the industry, our structural casing system can be expected to have a leakage rate less than 1/2% of the total volume. This leakage rate is inherent to our method of construction; construction methods cannot be modified to provide cost savings to obtain greater leakage rates if so specified.

Our casing system will maintain its leakage integrity with no degradation for the entire life of the air handling unit. It is our experience that competitive panel systems do not maintain their 'as delivered' leakage characteristics; degrading ~1% per year, maximizing at ~5% or more. At this point the casing system will require refurbishment (new caulking, gaskets, etc.) to improve the casing integrity. Following refurbishment, the casing system may be improved to ~3% with typical degradation to be expected.

Benefit:

- **Guaranteed system performance and cleanliness** - by not allowing dilution of conditioned air with dirty, unconditioned air or waste due to leaks in the air handling casing, the owner is assured of optimum air handling unit performance.
- **Operational costs savings** - by not allowing expensive conditioned air to be lost through leaks in the housing; minimum operating costs can be maintained. Additional operating cost due to leakage can be calculated for your air handling unit application based upon the difference between the specified leakage rate and Air Enterprises equipment leakage rate. These costs are based upon the 'as delivered' leakage rates, as the equipment ages these savings may be increased.

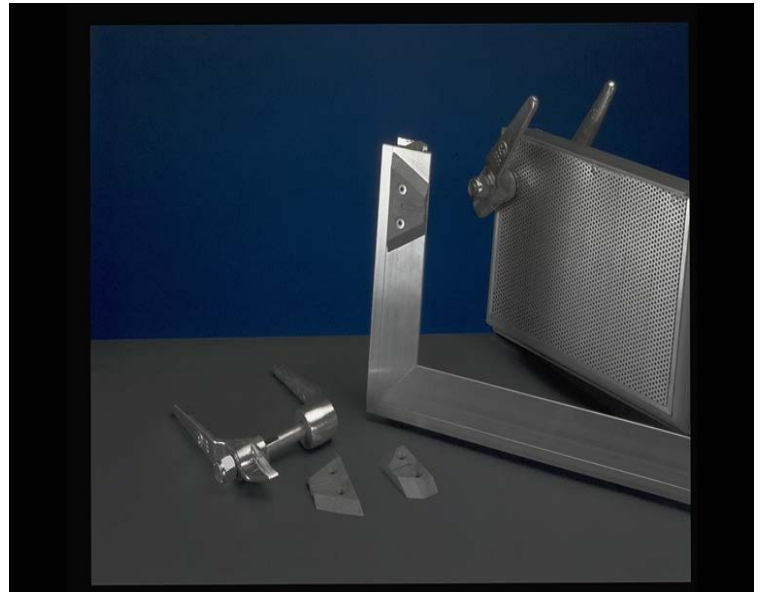
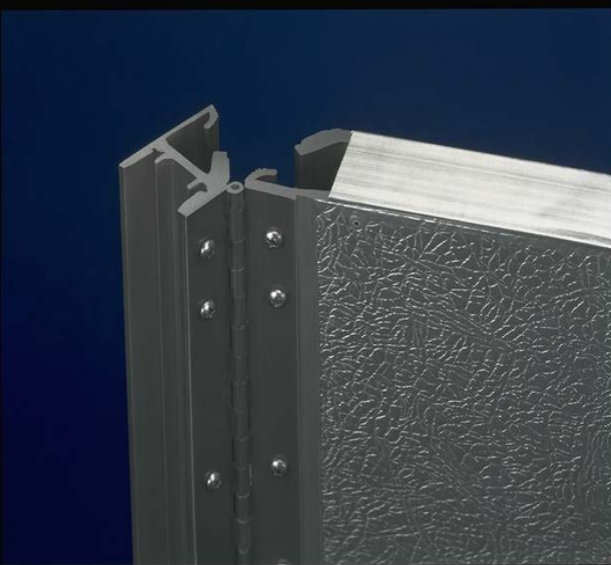


TIGHT-SEALING EASY-OPEN ACCESS DOORS

Every Air Enterprises' engineered access door or removable service panel is provided with a unique air seal design. The air seal is comprised of two continuous separate gasket seals around the entire periphery, beveled at a 45 degree angle to assure a true perpendicular, tight non-shearing compression fit. This double seal reduces door air leakage to virtually zero. The 45 degree bevel eliminates gasket tear and pull away caused by the shear forces present in the conventional 90 bevel gasket configuration. Air Enterprises provides high quality hardware, such as, continuous piano hinges to prevent door racking and air leakage. Handles are cast aluminum to Air Enterprises' hardness standards to curtail breakage.

Benefit:

- **Maintenance-Free, Leak-Free, and Long-Life Operation** - due to Air Enterprises' unique access door and service plug panel design. Full retention of system air and elimination of the need for periodic door gasket replacement offers the owner operational savings
- **Long-Term Proper Door Operation** - due to high quality hardware are standard benefits provided to the owner and his maintenance staff.



Most manufacturers provide a single gasket door that is in shear when the door is opened or closed.

FACTORY APPLIED ROOFING SYSTEM

Every Air Enterprises' engineered roof provides a complete system that allows the owner to properly control rain run-off from the air handler. Each air handler includes a sloped profile (in any direction) at a rate of 1/8" / ft (min.) using a rigid foam board. The roof membrane includes a 45 mill thick hypalon type material. Aluminum gutters and downspouts are provided to help direct the water and prevent rain run-off from washing over the entrance doors.

Benefit:

- **Built-up roof system** provides a complete system that controls the rain run-off on outdoor units.
- **Protects the air handler roof** from standing rain water typical to flat roofs.



Typical manufacturers provide a standing seam roof using formed metal and caulk sealants. Over time these materials may break-down causing leaks in the roofing system.

STRUCTURAL ALUMINUM BASE WITH FULLY WELDED FLOORS

The welded structural aluminum base and floor supporting an Air Enterprises' unit is designed to be self-supporting. Field support of this base structure is required only at the perimeter of the base, additional support is recommended at any location where the base is split. The unit base is fully insulated and provided with a true sealed continuous vapor barrier covered with metal sheeting for protection during rigging and installation. Incorporating all aluminum construction, with floor material fully welded to base structure, this base is guaranteed watertight.

Benefit:

- **Long -term structural integrity of unit base** - due to structural design of base, owner is assured that integrity will be maintained through the life of the product.
- **Long-term safety of base structure** - design ensures that base is safe and comfortable for service personnel to work off while performing maintenance duties.
- **Guaranteed water tightness of the unit base** - means owner confidence and assurance of a dry building and no costly water damage to the elements below the unit installation.



Typical manufacturers do not provide continuously welded bases unless specified. The typical base is tack welded and screwed together.

IAQ DRAIN DRY DRAINPANS – SEPARATE FROM THE UNIT BASE

Air Enterprises utilizes IAQ “Drain Dry” pans which are designed to eliminate standing water and to simplify the coil removal process. The coils are supported with stainless steel structure to allow for easy removal and replacement. The drain pans are separate from and elevated above the base to allow for sufficient trap height and allow the unit base to act as a secondary drain pan.



DIRECT DRIVE FAN MOTOR / ASSEMBLIES

Fan assemblies are provided with single or multiple direct drive fan arrays. Direct drive fans eliminate belt maintenance and the associated energy losses. All fans are individually supported and isolated. Fan maintenance is reduced to periodic motor lubrication.

Benefit:

- **Direct Drive** – No belt adjustments, replacements or tensioning required.
- **Improved Efficiency** – No belt energy losses.
- **N+1 Redundancy** – True N+1 redundancy can be achieved with 4 fans.



EQUIPMENT SERVICE PANELS

Air Enterprises provides removable “plug” panels in addition to standard access doors. The plug panels are provided at all necessary service locations to allow for component removal, including coils and fans.

The plug panels are light weight aluminum and utilize the same dual seal as provided for the access doors. Quick release latches are provided for each removable panel.



Bolted panels are typically provided by steel manufacturers which must be disassembled to remove components.