

WOJCIESZAK & ASSOCIATES, INC.**CONSULTING ENGINEERS**

833 EAST 5TH STREET
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 (772) 286-8696

**TECHNICAL BULLETIN**

NO.	DATE	REVISION
200	04/25/06	2

AIR-COOLED, DIRECT EXPANSION (DX) SPLIT SYSTEM

Constraints

1. Building square footage 500 – 7,000 SQ. FT.
2. Smallest zone 500 SQ. FT.

System Description

Air-cooled, DX split systems are commonly found in buildings of 7,000 square feet or less. An air handling unit (AHU) consisting of a fan and an evaporator coil are located inside, typically in a mechanical closet. Cold refrigerant is piped into the evaporator coil and the fan blows air across the coil, cooling the air and blowing it into the space. The cold refrigerant originates in the condensing unit (CU) that sits outside. It houses a compressor, DX valve, fan and cooling coil. The compressor and DX valve cool the refrigerant. The cooling coil is similar to that of the radiator on a car. The fan pushes air over the coil and cools the compressor. (See attached schematic.)

Estimated Costs

Obtain from an HVAC contractor.

Notes:

1. Equipment Replacement Frequency
 - Condensing unit (every 5-7 years)
 - Air handling unit (every 10-12 years)

Indoor Equipment

1. Air handling unit (AHU)
 - a. Typical mechanical closet/room
 - 1-ton 2'-10"W x 1'-8"D
 - 2-ton 3'-0"W x 2'-4"D
 - 3-ton 3'-4"W x 2'-4"D
 - 4-ton 3'-10"W x 2'-4"D
 - 5-ton 3'-10"W x 2'-4"D
 - b. The air handling unit, since it only has a fan and a coil inside, is very quiet.

Outdoor Equipment

1. Condensing unit (CU)
 - a. Typical CU size
 - 1-ton 18"L x 18"W x 24"H
 - 2-ton 33"L x 29"W x 43"H
 - 3-ton 36"L x 39"W x 43"H
 - 4-ton 36"L x 39"W x 43"H
 - 5-ton 36"L x 39"W x 43"H

- b. Typical clearances for the CU
 - 18 inches between multiple CU
 - 18 inches from house or wall
 - Clear space in front of CU (may be landscaped, but CU must be accessible).
- c. Alone, the CU is relatively quiet, however, if multiple CUs are located together, they can be noisy. Care should be taken to locate the CUs away from windows, bedrooms, pools and other noise sensitive areas.

Piping

Refrigerant piping is typically run underground from the CU to the AHU. Piping is usually small and easy to route. Many manufacturers recommend that a maximum of 50 feet between the AHU and CU be maintained so the system operates properly.

Humidity Control

Humidity control is available on units between 3 and 5 tons and should be employed in all units of this size. It is achieved by using a split coil unit.

Energy Consumption

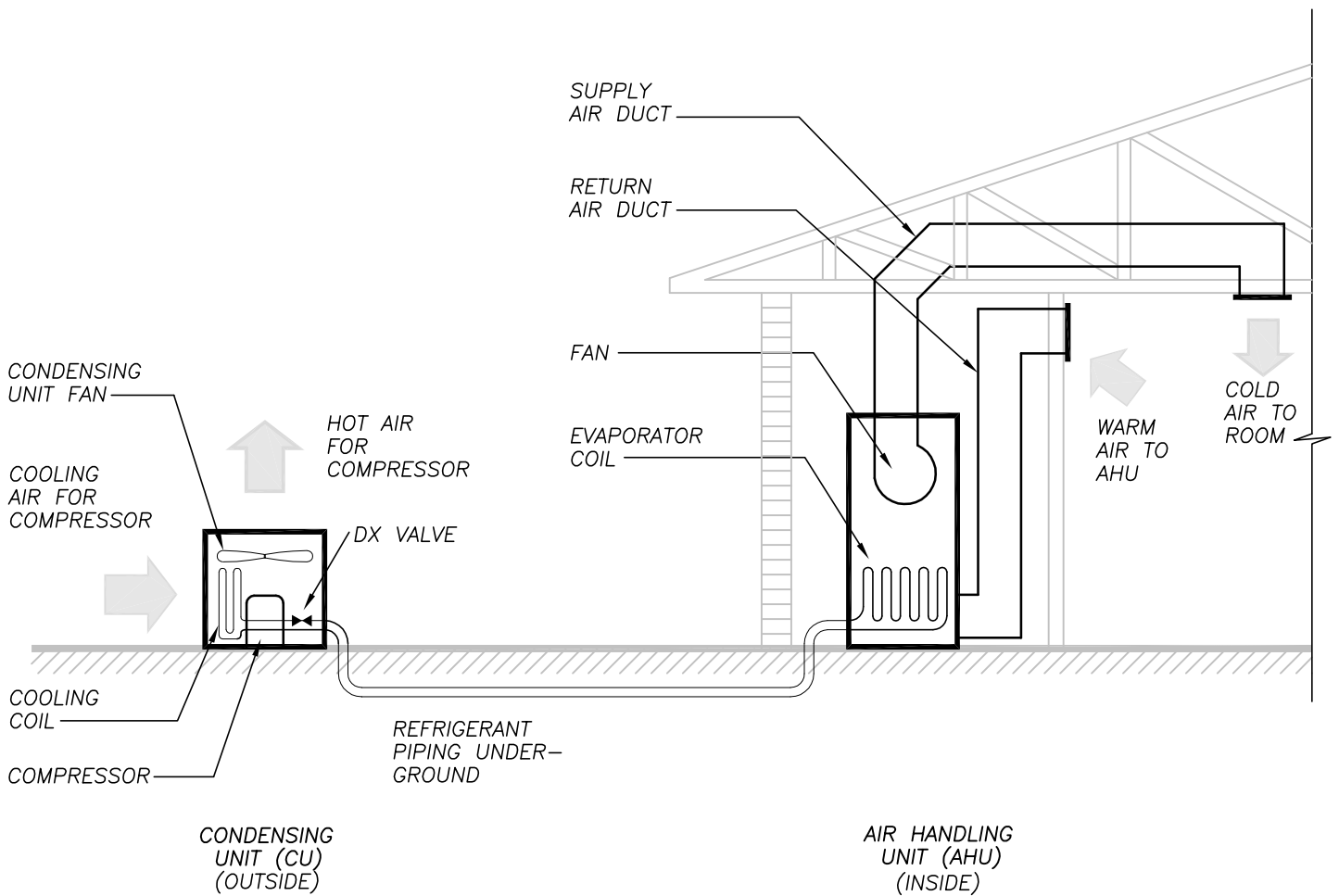
Energy consumption is quiet low with efficiencies of 12 SEER or higher. However, since the CU is located outside where it is subjected to salt-laden air, the components corrode and cause an increase in energy consumption. Coating the coils with a heresite coating has been fairly successful at elongating the life of the coil, however, the compressor and internal components still corrode, and outside equipment requires replacement every 5 to 7 years.

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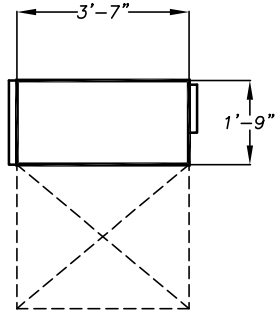


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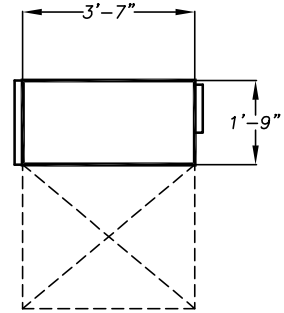
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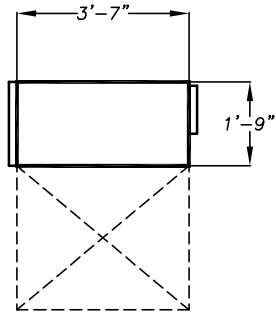
**AIR-COOLED
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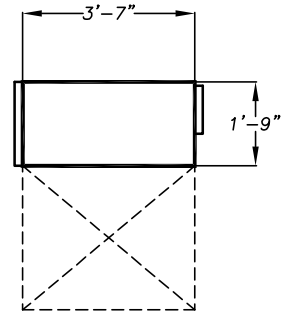
1 TON - TRANE TWE018C



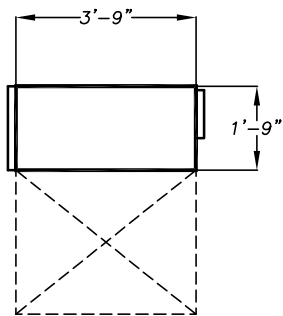
1-1/2 TON - TRANE TWE031E



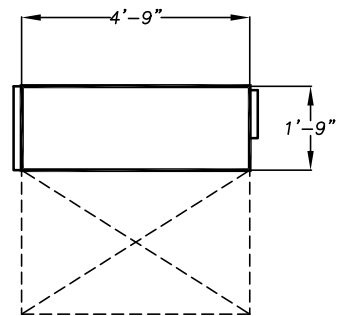
2 TON - TRANE TWE031E



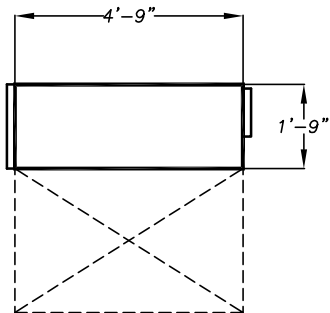
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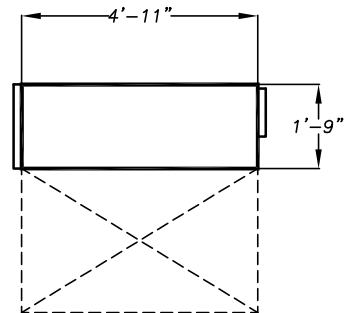
3 TON - TRANE TWE037E



4 TON - TRANE TWE049E



4-1/2 TON - TRANE TWE049E



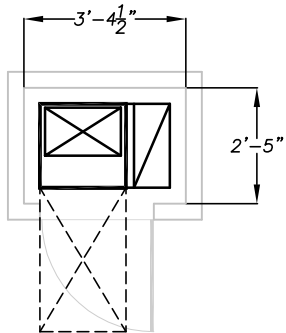
5 TON - TRANE TWE065E

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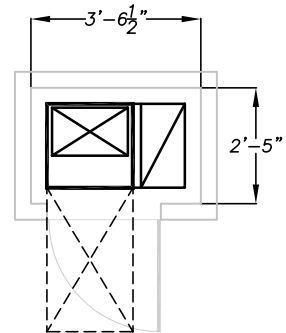
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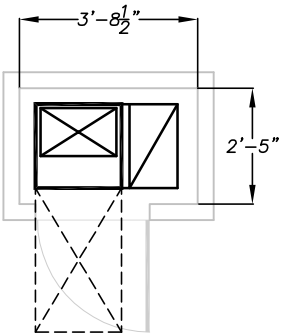
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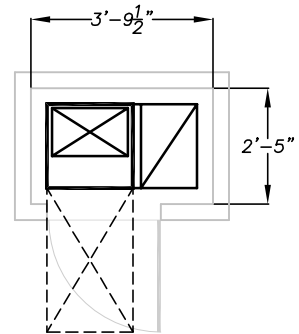
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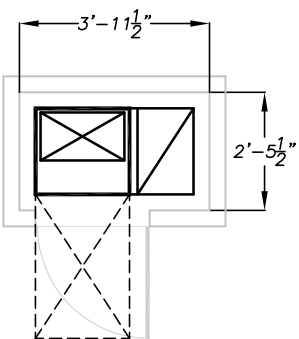
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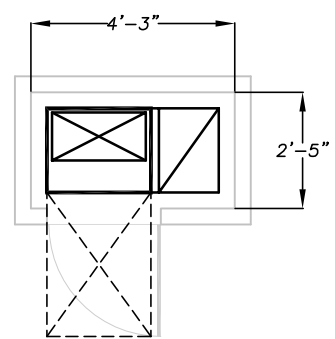
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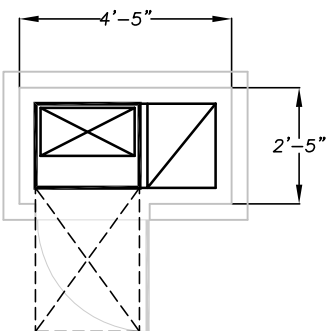
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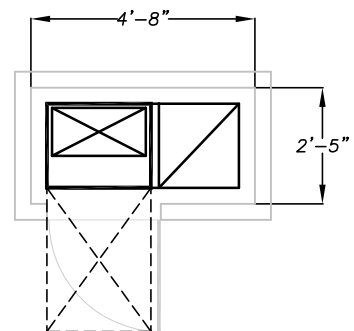
3 TON - TRANE TWE037E



4 TON - TRANE TWE049E



4-1/2 TON - TRANE TWE049E



5 TON - TRANE TWE065E