Vertical Stack Series

AVS • Recessed Hi-Rise

Factory assembled, vertical high-rise building AVS fan coils are designed for free-blow or ducted, concealed installations, suitable for hotel, motel and apartment building applications.

Standard Features Include:

- Performance ARI Certified to Standard 440.
- ETL-Listed. Constructed in compliance with ANSI/ UL 1995 Standard.
- All casing sheet metal components fabricated of 18GA G90 galvanized steel.
- High-efficiency 2-row coil suitable for a 2-pipe system.
- Coil manual air vent.
- 1-inch thick disposable filter.
- Cabinet liner in ½-inch dual-density fiberglass.
- Multi-speed motor of the permanent split capacitor (PSC) type.
- Double Width Double Inlet (DWDI) direct driven blowers of the whisper quite type.
- Controls installed in a single control box suitable for single power supply.
- Single wall condensate pan in galvanized steel, thermally protected on the outside (Consult Superior Rex for availability).
- Translucent flexible condensate water P-trap.
- Plenum discharge air flanges for duct and dry wall applications.

Optional Features Include:

- 3-, 4- and 5-row coils for 2-pipe systems.
- Single block 2, 3 and 4 rows CW with 1-row re-heat coils for 4-pipe system applications (5 rows max).
- Single block 2 and 3 rows CW with 2 rows re-heat for 4-pipe system applications (5 rows max).
- Filter option include:
  - 1-inch high-efficiency pleated filters.
  - 1-inch washable filters.
- Cabinet liner in 1-inch dual-density fiberglass.
- Cabinet liner in ½-inch foil face.
- Motor voltage suitable for 208V, 230V or 277V/1Ph/60Hz power supplies.
- Motor in-line quick disconnect.
- Thermostat and Accessories (Refer to Accessories section for details.
- Single power supply disconnect switch and fuses.
- Automatic 2-pipe changeover switch for heating and cooling applications.
- Electric heaters.
- Standby electric heater auto changeover switch.
- Fresh air opening.
- Fresh air manual and auto dampers.
- Fresh air freeze protection.
- Valve Packages (Refer to Accessories section for details.
- Condensate pan options:
  - Single wall condensate pan manufactured in 20GA 304 Stainless Steel (Consult Superior Rex for availability).
  - Double wall construction consisting of outer and inner skins.
  - Condensate pan overflow safety switch.
- Discharge air grilles:
  - Aluminum double deflection.
  - Deluxe aluminum double deflection grilles (Contact Superior Rex for availability).
  - Linear bar aluminum grilles.
- Discharge air grille options:
  - Dual discharge.
  - Air damper controls for units with dual discharge grilles.
- Special discharge air grille colors (Contact Superior Rex for color range availability and price).
- Discharge air grille location.
- Return air/access panels painted white:
  - Stamped galvanealed steel.
  - Remote stamped galvanealed steel.
  - ADA stamped galvanealed steel.
  - ADA remote stamped panel.
  - Invisislot blank front panel.
  - Deluxe aluminum panel with a removable core.

  - Linear bar aluminum panel with a removable core.
- Special return air/access panel color (Contact Superior Rex for color range availability and price).
- Return air/access panel fasteners:
  - Philips head fasteners.
  - Tamper proof fasteners.
  - Quarter turn fasteners.
- Fan section noise reduction kit.
- 1-hour fire rating.

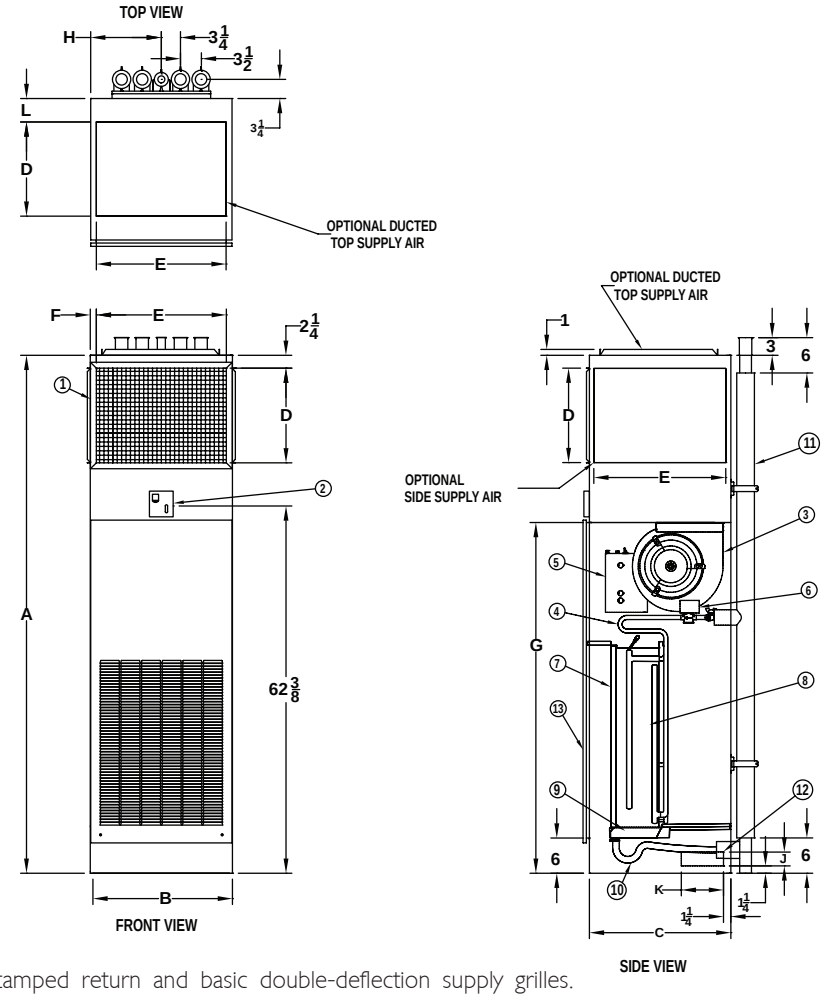
Optional Riser Assembly Features Include:

  - Unit mounted riser.
  - Risers supplied loose.
- Riser pipe type M, L and K. (Consult Superior Rex for availability of type K risers).
- Riser thermal Insulation in ½- or ¾-inch wall thickness.
- Riser connections to unit options:
  - Welded to the unit piping.
  - Union connections using rigid copper pipe.
  - Union connections with flexible braided stainless steel hoses.
- Riser extensions.
- Riser extension end connection reducers.

A Participating Corporation in the ARI 440 Certification Program

Dimensions

AVS Recessed Hi-Rise



Note: For units with stamped return and basic double-deflection supply grilles.

1. Supply Air Grille (optional)
2. Unit-Mounted Thermostat (optional)
3. Motor/Blower Assemby
4. Riser Expansion Loops
5. Electrical Control Box
6. Valve Package (optional)
7. Filter
8. Coil
9. Condensate Tray
10. See through P-Trap Drain
11. Riser Assembly
12. Fresh Air Damper Opening (optional)
13. Stamped Return Air/Access Panel (optional)

Model	Dimensions (inches)												Approx. Weight (pounds)
	A	B	C	D	E	F	G	H	J	K	L	Filter	
AVS03	88	17	17	10	12	2½	56⅝	8½	3¼	7⅜	3½	13x23x1	230
AVS03 Dual Supply	88	17	17	8	12	2½	56⅝	8½	3¼	7⅜	4½	13x23x1	230
AVS04	88	17	17	10	16	½	56⅝	8½	3¼	7⅜	3½	13x23x1	240
AVS04 Dual Supply	88	17	17	8	12	2½	56⅝	8½	3¼	7⅜	4½	13x23x1	240
AVS06	88	20	20	12	16	2	56⅝	10	3¼	8⅞	4	16x27x1	270
AVS06 Dual Supply	88	20	20	10	12	4	56⅝	10	3¼	8⅞	5	16x27x1	270
AVS08	88	20	20	12	18	1	56⅝	10	3¼	8⅞	4	16x27x1	280
AVS08 Dual Supply	88	20	20	10	12	4	59⅝	10	3¼	8⅞	5	16x27x1	280
AVS10	88	24	24	14	20	2	59⅝	12	2⅜	10⅞	5	20x31x1	310
AVS10 Dual Supply	88	24	24	12	16	4	59⅝	12	2⅜	10⅞	6	20x31x1	310
AVS12	88	24	24	16	22	1	59⅝	12	2⅜	10⅞	4	20x31x1	320
AVS12 Dual Supply	88	24	24	12	16	4	59⅝	12	2⅜	10⅞	6	20x31x1	320

All dimensions are in inches.

Performance Data

AVS Recessed Hi-Rise

2-PIPE SYSTEM							
Model	2 Rows Cooling (1)				2 Rows Heating (1)		
	Total MBH	Sensible MBH	Flow gpm	PD ft wg	Sensible MBH	Flow gpm	PD ft wg
AVS03	9.5	6.8	1.9	4.35	24.7	1.7	2.71
AVS04	10.8	7.9	2.2	5.57	29.0	2.0	3.66
AVS06	14.9	11.1	3.0	2.39	41.7	2.8	1.86
AVS08	18.3	14.1	3.7	3.56	53.1	3.6	2.95
AVS10	24.4	18.6	4.9	3.31	70.1	4.8	2.86
AVS12	26.2	20.2	5.2	3.78	76.2	5.2	3.35

4-PIPE SYSTEM							
Model	2 Rows Cooling				1 Row Heating		
	Total MBH	Sensible MBH	Flow gpm	PD ft wg	Sensible MBH	Flow gpm	PD ft wg
AVS03	9.1	6.6	1.8	4.01	15.8	1.1	4.24
AVS04	10.5	7.5	2.1	5.21	18.1	1.2	5.46
AVS06	14.2	10.5	2.8	2.20	26.3	1.8	2.08
AVS08	17.6	13.5	3.5	3.30	32.8	2.2	3.15
AVS10	23.5	17.7	4.7	3.06	43.7	3.0	7.13
AVS12	25.1	19.2	5.0	3.49	47.1	3.2	8.19

2-PIPE SYSTEM							
Model	3 Rows Cooling				3 Rows Heating		
	Total MBH	Sensible MBH	Flow gpm	PD ft wg	Sensible MBH	Flow gpm	PD ft wg
AVS03	12.4	8.3	2.5	10.72	31.1	2.1	6.26
AVS04	12.8	9.1	2.6	1.97	35.8	2.4	1.52
AVS06	20.0	13.8	4.0	5.83	53.0	3.6	4.00
AVS08	23.4	17.2	4.7	3.28	67.5	4.6	2.83
AVS10	33.5	23.5	6.7	7.82	90.0	6.1	5.87
AVS12	34.3	25.0	6.9	4.95	97.2	6.6	4.32

4-PIPE SYSTEM							
Model	3 Rows Cooling				1 Row Heating		
	Total MBH	Sensible MBH	Flow gpm	PD ft wg	Sensible MBH	Flow gpm	PD ft wg
AVS03	11.9	7.9	2.4	9.79	15.0	1.0	3.92
AVS04	12.2	8.7	2.4	1.81	17.2	1.2	5.04
AVS06	19.0	13.1	3.8	5.29	25.1	1.7	2.02
AVS08	22.5	16.4	4.5	3.04	31.4	2.1	3.04
AVS10	31.9	22.3	6.4	7.11	41.8	2.9	6.87
AVS12	32.8	23.7	6.6	4.53	45.0	3.1	7.85

2-PIPE SYSTEM							
Model	4 Rows Cooling				4 Rows Heating		
	Total MBH	Sensible MBH	Flow gpm	PD ft wg	Sensible MBH	Flow gpm	PD ft wg
AVS03	12.9	8.6	2.6	2.54	32.7	2.2	1.61
AVS04	15.0	10.1	3.0	3.39	39.1	2.7	2.26
AVS06	21.8	14.7	4.4	3.46	56.8	3.9	2.45
AVS08	28.1	19.4	5.6	5.61	75.2	5.1	4.17
AVS10	37.6	25.5	7.5	6.85	98.1	6.7	5.11
AVS12	40.9	28.0	8.2	8.04	108.0	7.4	6.13

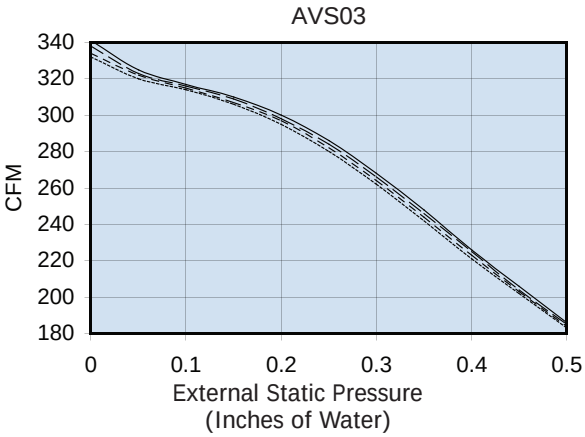
4-PIPE SYSTEM							
Model	4 Rows Cooling				1 Row Heating		
	Total MBH	Sensible MBH	Flow gpm	PD ft wg	Sensible MBH	Flow gpm	PD ft wg
AVS03	12.2	8.0	2.4	2.27	14.3	1.0	3.57
AVS04	14.2	9.5	2.8	3.05	16.4	1.1	4.62
AVS06	20.6	13.8	4.1	3.11	23.9	1.6	1.90
AVS08	26.6	18.3	5.3	5.07	29.9	2.0	2.94
AVS10	35.5	24.0	7.1	6.12	39.8	2.7	6.48
AVS12	38.7	26.4	7.7	7.25	42.9	2.9	7.49

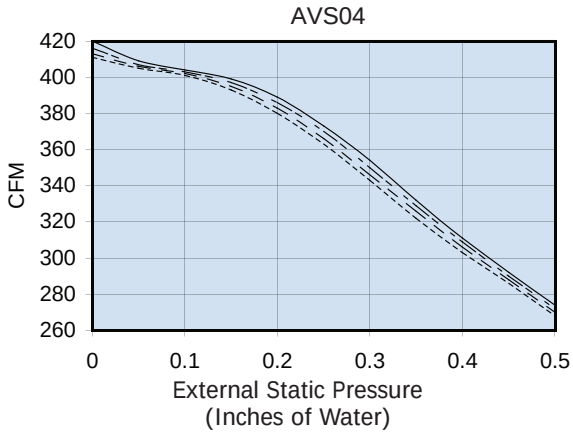
2-PIPE SYSTEM							
Model	5 Rows Cooling				5 Rows Heating		
	Total MBH	Sensible MBH	Flow gpm	PD ft wg	Sensible MBH	Flow gpm	PD ft wg
AVS03	13.7	8.8	2.7	3.44	33.0	2.3	1.96
AVS04	16.2	10.5	3.2	4.69	39.8	2.7	2.79
AVS06	23.4	15.2	4.7	4.63	57.6	3.9	2.93
AVS08	29.5	19.9	5.9	4.16	77.0	5.3	3.11
AVS10	40.5	26.5	8.1	9.00	100.4	6.9	6.07
AVS12	44.5	29.3	8.9	10.77	111.2	7.6	7.37

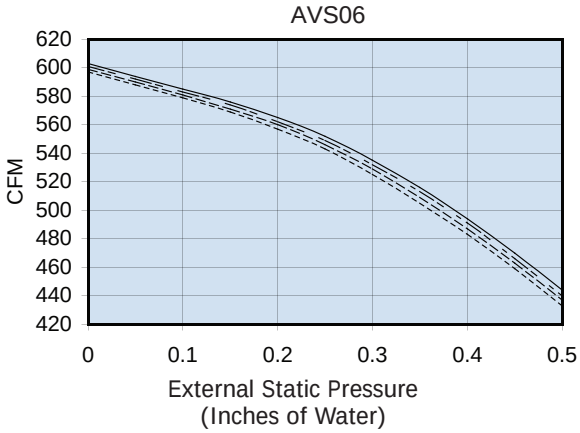
1. Standard basic unit.
2. All ratings are based at sea level altitude, nominal air volumes at 0 external static pressure and with water as the cooling fluid.
3. Cooling capacities are based on 80°F DB/67°F WB entering air, 45°F entering water, 10F water temperature rise and high fan speed.
4. Heating capacities are based on 70°F DB entering air temperature, 180°F entering hot water, 30°F water temperature drop and high fan speed.

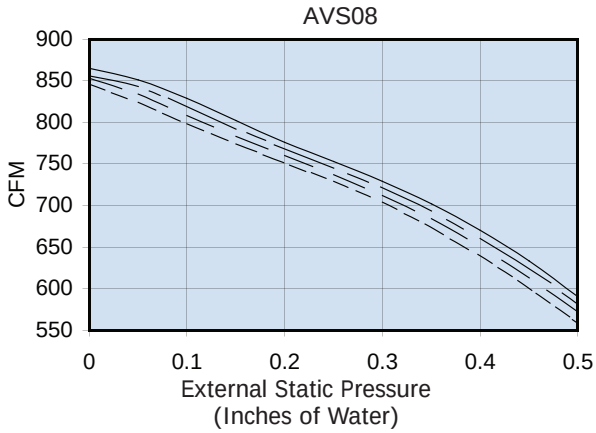
Performance Data (continued)

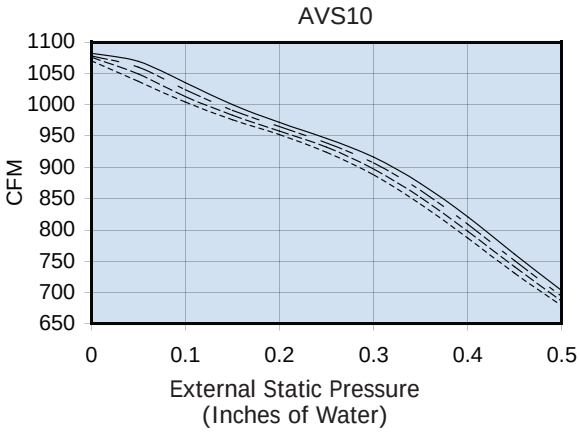
Airflow vs. External Static Pressure

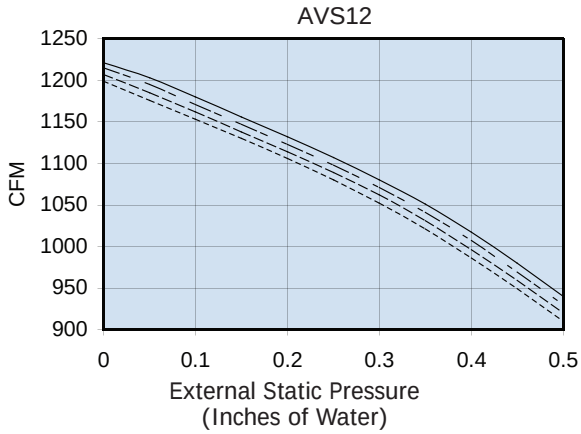












2 Row
3 Row
4 Row
5 Row

1. Airflows are based at high fan speed.

Performance Data (continued)

Nominal Air Volumes			
Model	cfm (1)		
	High	Med	Low
AVS03	362	303	254
AVS04	445	355	293
AVS06	643	488	399
AVS08	916	731	576
AVS10	1153	945	651
AVS12	1300	1202	977

1. Nominal air volume ratings are based on a 2-row coil at sea level altitude with zero static pressure.
2. Air volumes are based at high fan speed.

Model	Motor	
	HP	Total AMPS
AVS03	1/10	1.50
AVS04	1/10	1.50
AVS06	1/10	1.90
AVS08	1/4	3.50
AVS10	1/4	3.90
AVS12	1/3	4.00

1. Electric ratings are based on units suitable for a power supply of 115V/1Ph/60Hz.

Suggested Specifications

Fan Coils

Vertical Stack Units Standard Configurations

1. Furnish and install Superior Rex Models AVS, AVSM, AVSS and AVSM/AVSS vertical stack high rise fan coils of sizes and capacities shown on the plans to meet prevailing cooling and heating requirements.
2. Fan coils shall be performance certified to ARI Standard 440. Units shall be wired in compliance with ANSI/UL 1995 Standard and listed with ETL.
3. Fan coils shall be sound tested in accordance with ARI Standard 260 for ducted units and ARI Standard 350 for non-ducted units. Manufacturer shall provide these dB ratings on request for each model specified.
4. Casing components shall be fabricated of 18-gauge G90 galvanized steel.
5. High-efficiency, 2-row coil shall be suitable for a 2-pipe system. Coils shall be manufactured with aluminum fins mechanically bonded to seamless copper tubes. The copper tubes shall be ⅜-inch OD with a wall thickness of 0.017-inch which comply with ASTM B-75. The fins shall be waved with ripple hedges for superior efficiency with a thickness of 0.0045-inch and spaced at 10 fpi. All coils shall be at 100 psi leak tested with 100% helium to ensure a leak free coil. All coils shall be shipped with a safety air pressure of 100 - 125 psi to guarantee a leak free arrival at the final destination.
6. Coils shall be installed with manual Schrader type air vents with a sealing cap and be located at the highest point of the coil. The cap shall have a dual purpose, to seal any potential water leakage in the eventuality of Schrader valve failure and as a service tool for the extraction/insertion of the internal Schrader valve.
7. Unit pipe entry/riser location shall be in accordance with the project schedule.
8. Standard filters shall be 1-inch thick of the disposable type with a one-piece, moisture resistant chipboard frame to eliminate corner separations. The spun glass filtering media shall be bonded with a resinous agent providing rigidity and resistance to media compression and meets UL class 2.
9. Filters shall be installed near the coil with two spring clips for easy removal.
10. Cabinet steel panels shall be lined with ½-inch dual-density fiberglass with a density of 1.5lbs/ft^3 and 4.0lbs/ft^3 for the face meeting NFPA 90A and 90B (appliances), NFPA 255, UL 181, UL723 and ASTM E84.
11. Motors shall be multi-speed of the permanent split capacitor type (PSC) and be directly coupled to the centrifugal fan blower. Motor shall be suitable for a power supply of 115V/1Ph/60Hz and shall be internally protected with an automatic thermal overload. Motor shaft shall be supported by sleeve bearings of the permanently lubricated type for the full life expectancy of the motor. All motors shall be directly mounted to the fan blower casing side and be isolated from the unit casing by three resilient anti-vibration mounts.
12. Direct-driven fan shall be of the whisper quite type, Double Width Double Inlet (DWDI) forward curved statically and dynamically balanced at the factory. The fan wheel and casing shall be constructed of galvanized steel.
13. Electric components shall be wired to a single control panel for single point power supply.
14. Condensate pan shall be single-wall 18-gauge G90 galvanized steel welded at the corners, thermally protected on the outside with fire and smoke rated ¼-inch high-density insulation to prevent condensation. The factory installed ⅞-inch OD sweat copper condensate connection shall be located at the lowest point of the condensate pan to ensure all water drains from the condensate pan (Consult Superior Rex for availability).
15. A translucent flexible P-trap shall be installed and secured to the condensate tray connection via a spring clip for easy inspection and maintenance.
16. Discharge air plenum shall have discharge openings with a ½-inch discharge air collar(s) for location of the dry wall and/or field connection. Top discharge supply air flange shall be 1-inch.
17. Return air/access panel shall be of the stamped type made of 18-gauge galvanealed steel, painted white with polyester powder coated paint and oven baked.

Suggested Specifications (continued)

Fan Coils

Vertical Stack Units Optional Configurations

Cooling and Heating Coils

1. High-efficiency 3-, 4- and 5-row coils suitable for 2-pipe systems or,
2. High-efficiency single block with 2, 3 and 4 rows chilled water (CW) with 1-row re-heat coil suitable for 4-pipe system applications, or
3. High-efficiency single block with 2, 3 rows chilled water (CW) with 2-row re-heat coil suitable for 4-pipe system applications.

Filter

1. Filter shall be 1-inch pleated filter with an average atmospheric dust spot efficiency range of 20 - 30% per ASHRAE Standard 52.1 test method, or
2. Filter shall be 1-inch washable filter consisting of synthetic fibers coated with a special resin, then baked together at a high temperature resulting in a tough and springy, thoroughly bonded, nearly rigid air filtration media. Washable filters shall have a longer service life, better structural integrity as well as being completely odor free.
3. A spare set of filters shall be available for replacement after the commissioning of the unit and prior to the handover of the project.

Cabinet Insulation

Cabinet liners shall be 1-inch dual-density fiberglass with a density of 1.5lbs/ft^3 and 4.0lbs/ft^3 for the face meeting NFPA 90A and 90B (appliances) and NFPA 255 with less than 25 flame and less than 50 smoke spread, UL 181, UL723 and ASTM E84.

Motor

1. Motor shall be suitable for 115V/1Ph/60Hz or 208V/1Ph/60Hz or 230V/1Ph/60Hz or 277V/1Ph/60Hz power supplies (delete as applicable).
2. A motor in-line quick disconnect shall be installed to facilitate the removal/replacement of motor.

Thermostat and Accessories

Refer to Accessories section for details..

Disconnect Switches and Fuses

Units shall be wired for single power with supply with a disconnect switch and fuse(s) to match the unit full maximum circuit ampacity (MCA) in line with UL 1995.

2-Pipe Heat/Cool Auto Changeover Switch

A mechanical or electronic changeover switch shall be supplied on 2-pipe systems for automatic changeover of the operation of the thermostat for summer and winter modes.

Electric Heater and Accessories

1. Electric heaters shall be of the wound type mounted in a metal frame and supported by ceramic rings and terminals. Electric heaters shall installed on the blower discharge side for better heat dissipation and shall include an automatic reset, high limit cut-out and contactor.
2. 2-pipe standby electric heating - heaters shall be installed and pre-wired as standby heating in the eventuality of a failure of the primary hot water (HW) system. A changeover sensor shall be installed in each unit and the changeover between the failed hot water system and the standby electric heater shall be automatic.

Chilled and Hot Water Valve Controls

Refer to Accessories section for details..

Fresh Air and Accessories

1. A fresh air opening shall be provided with an external 1-inch flange for field connection, or
2. A fresh air opening shall be provided with an external 1-inch flange for field connection complete with an internal manual adjustable damper control, or
3. A fresh air opening shall be provided with an external 1-inch flange for field connection complete with an automatic ON/OFF damper control which shall close if the unit is in the OFF mode. A freeze protection thermostat shall be installed at the fresh air intake and close the fresh air damper to prevent damage to the coil if temperature drops below 40°F.

Condensate Pan and Accessories

1. Condensate pan shall be single wall manufactured in 20-gauge 304 stainless steel and shall be thermally protected on the outside with fire and smoke rated ¼-inch high-density insulation to prevent condensation. The factory installed ⅞-inch OD sweat copper condensate connection shall be located at the lowest point of the condensate pan to ensure that all water is drained from the condensate pan (Consult Superior Rex for availability), or
2. Condensate pan shall be double wall construction consisting of an outer and inner skin. The outer skin shall be manufactured of 18-gauge G90 galvanized sheet metal wrapped around the inner skin with 1-inch thermal insulation between both skins to prevent condensation. The inner skin of the double wall condensate pan shall be of 18-gague G90 galvanized sheet metal, or
3. Condensate pan shall be double wall construction consisting of an outer and inner skin. The outer skin shall be manufactured of 18-gauge G90 galvanized sheet metal wrapped around the inner skin with 1-inch thermal insulation between both skins to prevent the formation of condensation. The inner skin of the double wall condensate pan shall be of 20-gauge 304 stainless steel galvanized sheet metal.
4. An automatic safety overflow switch shall be installed in the condensate pan and shall prevent the operation of the unit electric system if an overflow status is detected.

Noise Reduction Kit

A noise reduction kit, fan section blank off acoustic panel shall be installed in the fan section to reduce the noise propagation thru the return air/access panel.

Suggested Specifications (continued)

UL 1479 Fire Rating

Units shall be installed with ⅝-inch gypsum board X rated to meet a 1-hour fire rating in accordance with UL1479 standards.

Discharge Air Grilles and Accessories

1. Discharge air grilles shall be double-deflection made of aluminum and painted white, or
2. Discharge air grilles shall be double-deflection of the Deluxe type, made of aluminum and painted white, or
3. Discharge air grilles shall be non adjustable of the linear type, made of aluminum and painted white.
4. Units shall have dual discharge grilles with manual adjustable dampers to control the air discharge thru each air outlet.
5. Special discharge air grilles colors shall be_____. (Contact Superior Rex for color range availability and price).
6. Discharge air grille location shall be in accordance with the project specification and drawings.

Return Air/Access Panel and Accessories

1. Remote Return air/access panel shall be installed away from the unit, stamped, galvanealed steel painted white with polyester powder coated paint, oven baked suitable for application where the unit is remote from the wall. Discharge air must be ducted to avoid air recirculation between the supply and the return air, or
2. ADA return air/access panel shall be stamped, galvanealed steel, painted white with polyester powder coated paint, oven baked and designed for applications to meet the Americans with Disability Act. The thermostat shall be installed in the return air/access panel located at a max height of 48 inches from the floor. An in-line quick connector shall be provided between the thermostat and the unit electric control box to facilitate the removal of the return air/access panel, or
3. Remote ADA return air/access panel shall be installed away from the unit, stamped, galvanealed steel, painted white with polyester powder coated paint, oven baked and designed for applications to meet the Americans with Disability Act. The thermostat shall be installed in the return air/access panel located at a max height of 48″ from the floor. An in-line quick connector shall be provided between the thermostat and the unit electric control box to facilitate the removal of the return air/access panel, or
4. Invisislot return air/access panel shall be a blank front panel, galvanealed steel, painted white with polyester powder coated paint, oven baked. The panel shall be offset from the wall as per the manufacturers' recommendations to allow the return air entry into the units, or
5. Deluxe return air/access panel shall be manufactured of aluminum, painted white with a removable core for easy access to the unit, or
6. Linear bar return air/access panel shall be manufactured of aluminum painted white with a removable core for easy access to the unit.
7. Special Return air/access panel color shall be_____. Contact Superior Rex for color range availability and price.
8. Return air/access panel security fasteners shall be tamperproof, which require a special tool to access the units, or
9. Return air/access panel security fasteners shall be of the quarter turn type, to facilitate the removal of the access panel.

Riser Assembly

1. Risers shall be installed at the factory and supplied in two pieces (riser and riser extension) to reduce field installation time or, supplied loose in a single piece for field installation.
2. Riser pipe diameters shall vary between ¾-inch and 2½ inches OD and be in accordance with the riser schedule.
3. Riser pipes shall be copper type M, L or K (Contact Superior Rex for availability of K copper risers).
4. Riser insulation shall be of the closed cell, flexible elastomeric thermal insulation type available in ½- or ¾-inch wall thickness.
5. Riser connections shall be welded directly to the unit piping or, connected to the units via O-ring unions (risers supplied loose or separate Master/Slave units) or connected to the unit via O-ring unions and flexible braided connectors (risers supplied loose or separate Master/Slave units).

Riser Extensions

1. Riser extension material and insulation type shall be the same as the main risers attached to the unit. Riser extensions shall be supplied loose and clearly marked to bridge the space between the fixed risers of two units. All riser extension insulation shall be supplied loose uncut for field installation.
2. Riser extension length shall be in accordance with the riser schedule.

Riser Extension Connections

Riser extension end connections shall be swaged or installed with an expanding or reducing coupling in accordance with the riser schedule.