

INSTALLATION AND SERVICE MANUAL

Sentinel®

Chilled and/or Hot Water Vertical Unit Ventilator Models UVV and UVD



⚠ WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death, and could cause exposure to substances which have been determined by various state agencies to cause cancer, birth defects or other reproductive harm. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.

⚠ AVERTISSEMENT

Une installation, un réglage, une altération, une réparation ou une maintenance impropre risque de causer des dommages, des blessures ou la mort, et d'engendrer une exposition à des substances dont certains États ont déterminé qu'elles étaient cancérigènes ou pouvaient causer des malformations à la naissance et des problèmes de reproduction. Lisez bien les instructions d'installation, d'utilisation et de maintenance avant d'installer ou de réparer cet appareil.

IMPORTANT

The use of this manual is specifically intended for a qualified installation and service agency. A qualified installation and service agency must perform all installation and service of these appliances.

IMPORTANT

Ce manuel est spécifiquement destiné au personnel d'une entreprise qualifiée d'installation et d'entretien. Toutes les opérations d'installation et d'entretien doivent être confiées à une entreprise qualifiée.

INSPECTION ON ARRIVAL

1. Inspect unit upon arrival. In case of damage, report immediately to transportation company and your local factory sales representative.
2. Check serial plate on unit to verify that the power supply meets available electric power at the point of installation.
3. Inspect unit upon arrival for conformance with description of product ordered (including specifications where applicable).



SPECIAL PRECAUTIONS

SPECIAL PRECAUTIONS

THE INSTALLATION AND MAINTENANCE INSTRUCTIONS IN THIS MANUAL MUST BE FOLLOWED TO PROVIDE SAFE, EFFICIENT, AND TROUBLE-FREE OPERATION. IN ADDITION, PARTICULAR CARE MUST BE EXERCISED REGARDING THE SPECIAL PRECAUTIONS LISTED BELOW. FAILURE TO PROPERLY ADDRESS THESE CRITICAL AREAS COULD RESULT IN PROPERTY DAMAGE OR LOSS, PERSONAL INJURY, OR DEATH. THESE INSTRUCTIONS ARE SUBJECT TO ANY MORE RESTRICTIVE LOCAL OR NATIONAL CODES.

Hazard Intensity Levels

1. **DANGER:** Indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.
2. **WARNING:** Indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.
3. **CAUTION:** Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury.
4. **IMPORTANT:** Indicates a situation which, if not avoided, MAY result in a potential safety concern.

PRÉCAUTIONS PARTICULIÈRES

LES INSTRUCTIONS D'INSTALLATION ET D'ENTRETIEN DE CE MANUEL DOIVENT ÊTRE OBSERVÉES POUR ASSURER UN FONCTIONNEMENT SÉCURITAIRE, EFFICACE ET FIABLE. DE PLUS, LES PRÉCAUTIONS PARTICULIÈRES CI-APRÈS DOIVENT ÊTRE RIGOREUSEMENT RESPECTÉES. SINON, IL Y AURAIT RISQUE DE DÉGÂTS MATÉRIELS OU DE PERTE, DE BLESSURE PERSONNELLE OU DE MORT D'HOMME. CES INSTRUCTIONS SONT SUJETTES À TOUTE DISPOSITION PLUS RESTRICTIVE DES CODES PROVINCIAL OU NATIONAL.

HIÉRARCHIE DES NIVEAUX DE RISQUES

1. **DANGER:** Indique un danger imminent qui, s'il n'est pas évité, entraînera INÉVITABLEMENT des blessures graves, voire mortelles.
2. **AVERTISSEMENT:** Indique un danger potentiel qui, s'il n'est pas évité, RISQUE d'entraîner des blessures graves, voire mortelles.
3. **ATTENTION:** Indique un danger potentiel qui, s'il n'est pas évité, PEUT entraîner des blessures mineures ou modérées.
4. **IMPORTANT:** Indique une situation qui, si elle se matérialise, PEUT entraîner des risques pour la sécurité des personnes.

⚠ DANGER

Appliances must not be installed where they may be exposed to potentially explosive or flammable atmosphere.

⚠ DANGER

Les appareils ne doivent pas être installés à un endroit où ils risquent d'être exposés à une atmosphère potentiellement explosive ou inflammable.

⚠ WARNING

1. Disconnect power supply before making wiring connections or working on this equipment. Follow all applicable safety procedures to prevent accidental power up. Failure to do so can result in injury or death from electrical shock or moving parts and may cause equipment damage.
2. All appliances must be wired strictly in accordance with the wiring diagram furnished with the appliance. Any wiring different from the wiring diagram could result in a hazard to persons and property.
3. Any original factory wiring that requires replacement must be replaced with wiring material having a temperature rating of at least 221°F (105°C).
4. Ensure that the supply voltage to the appliance, as indicated on the serial plate, is not 5% greater than rated voltage.
5. When servicing or repairing this equipment, use only factory-approved service replacement parts. Refer to the rating plate on the appliance for complete appliance model number, serial number, and company address. Any substitution of parts or controls not approved by the factory will be at the owner's risk.
6. Units are heavy and care must be taken in the handling and moving of this unit to prevent it from becoming unstable and tipping over. Do not lean a ladder against the unit or put weight on or against it prior to completing the installation to prevent the unit from tipping.

⚠ AVERTISSEMENT

1. Débranchez l'alimentation électrique avant d'effectuer des connexions ou de travailler sur l'appareil. Respectez toutes les procédures de sécurité qui s'appliquent pour éviter toute mise en marche accidentelle. Le non-respect de cette directive peut entraîner des blessures ou la mort causées par un choc électrique ou des pièces mobiles, en plus d'endommager l'appareil.
2. Tous les appareils doivent être branchés de manière strictement conforme au diagramme fourni. Tout câblage différent de celui du schéma peut créer des risques de dommages matériels ou de blessures.
3. Tout câblage usine d'origine exigeant un remplacement doit être remplacé par un câble d'indice thermique nominal de 221 °F (105 °C).
4. Assurez-vous que la tension d'alimentation de l'appareil, comme indiqué sur la plaque de série, n'est pas de 5 % supérieure à la tension nominale.
5. Pour l'entretien et les réparations de cet appareil, utilisez uniquement des pièces d'origine certifiées. Pour la liste complète des pièces de rechange, consultez Modine Manufacturing Company. Le numéro de modèle complet, le numéro de série et l'adresse du fabricant figurent sur la plaque signalétique fixée à l'appareil. Toute substitution de pièce ou de commande non approuvée par le fabricant sera aux risques du propriétaire.
6. Les unités sont lourdes, par conséquent il faut faire attention lors de leur manipulation et déplacement pour éviter toute instabilité et les empêcher de basculer. N'appuyez pas une échelle contre l'unité et ne mettez pas du poids sur celle-ci ou contre celle-ci avant d'avoir terminé l'installation pour l'empêcher de basculer.

SPECIAL PRECAUTIONS

CAUTION

1. Ensure that the supply voltage to the appliance, as indicated on the serial plate, is not 5% less than the rated voltage.
2. Units not approved for use in potable water systems.
3. Hot water supplied to the hot water heating option must not exceed 200°F (93°C) temperature or 125 PSIG (862 kPa) pressure.
4. Do not attempt to reuse any mechanical or electrical component which has been wet. Such component must be replaced.
5. When servicing the unit, some components may be hot enough to cause pain or injury. Allow time for cooling of hot components before servicing.
6. In order to avoid a hazard due to inadvertent resetting of the THERMAL CUT-OUT, this appliance must NOT be supplied through an external switching device, such as a timer, or connected to a circuit that is regularly switched on and off by the utility.

ATTENTION

1. Vérifiez que la tension d'alimentation de l'appareil n'est pas inférieure de plus de 5 % à la tension nominale inscrite sur la plaque de série.
2. Ces unités ne sont pas approuvées pour l'usage dans des systèmes à eau potable.
3. La température de l'eau chaude alimentée en vertu de l'option de chauffage de l'eau chaude ne doit pas dépasser 200 °F (93 °C) ou une pression de 125 lb/po² (862 kPa).
4. Ne tentez pas de réutiliser un composant mécanique ou électrique qui a été mouillé. Ces composants doivent être remplacés.
5. Durant l'entretien de l'unité, certains composants peuvent être assez chauds pour causer de la douleur ou une blessure. Laissez les composants chauds se refroidir avant de procéder à tout entretien.
6. Afin d'éviter tout danger causé par la réinitialisation involontaire du COUPE-CIRCUIT THERMIQUE, cet appareil ne doit PAS être alimenté par l'entremise d'un dispositif de commutation externe, comme une minuterie, ou relié à un circuit qui est régulièrement mis en marche et coupé par le service public.

IMPORTANT

1. Start up and adjustment procedures, installation, and service of these appliances must be performed by a qualified installation and service agency.
2. No water-flow can cause a freeze condition resulting in damage to the coil.
3. Never leave the unit filled with water in a building without heat unless antifreeze has been added.
4. To check most of the Possible Remedies in the troubleshooting guide listed in Table 30.1, refer to the applicable sections of the manual.
5. Unit performance will be significantly reduced at or above 7215ft (2200m) and should not be operated above this altitude.

IMPORTANT

6. This appliance is not intended to be operated or serviced by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
7. Children should be supervised to ensure that they do not play with the appliance.

IMPORTANT

1. Les procédures de démarrage et de réglage, l'installation et le service de ces appareils doivent être confiés à un centre d'installation et de service qualifié.
2. L'absence d'écoulement d'eau risque de causer une condition de gel et d'endommager le serpentín.
3. Ne laissez jamais l'appareil rempli d'eau dans un immeuble non chauffé sans lui ajouter de l'antigel.
4. Pour essayer la plupart des solutions possibles suggérées dans le guide de dépannage du Tableau 30.1, reportez-vous aux sections correspondantes du manuel.
5. La performance de l'unité sera grandement réduite à une altitude de 7 215 pieds (2 200 m) et elle ne doit pas être utilisée au-delà de cette hauteur.
6. Cet appareil n'est pas conçu pour être utilisé ou entretenu par des personnes (y compris des enfants) dont les capacités physiques, sensorielles ou mentales sont réduites, ou qui n'ont pas l'expérience et les connaissances suffisantes, à moins d'être supervisées ou d'avoir obtenu des directives concernant l'utilisation de l'appareil par une personne responsable de leur sécurité.
7. Les enfants doivent être supervisés pour s'assurer qu'ils ne jouent pas avec l'appareil.

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UNIT LOCATION / INSTALLATION

Table 4.1 - SI (Metric) Conversion Factors

To Convert	Multiply By	To Obtain	To Convert	Multiply By	To Obtain
"W.C.	0.24	kPa	CFH	1.699	m ³ /min
psig	6.893	kPa	Btu/ft ³	0.0374	mJ/m ³
°F	(°F-32) x 0.555	°C	pound	0.453	kg
inches	25.4	mm	Btu/hr	0.000293	kW
feet	0.305	meters	gallons	3.785	liters
CFM	0.028	m ³ /min	psig	27.7	"W.C.

SPECIAL DESIGN REQUESTS

Units are sometimes built with special features as requested by the customer. This manual only covers standard features and does not include any changes made for special feature requests by the customer. Units built with special features are noted with a 5-digit SPO (Special Product Order) Number on the Serial Plate.

UNIT LOCATION

DANGER

Appliances must not be installed where they may be exposed to potentially explosive or flammable atmosphere.

DANGER

Les appareils ne doivent pas être installés à un endroit où ils risquent d'être exposés à une atmosphère potentiellement explosive ou inflammable.

WARNING

Units are heavy and care must be taken in the handling and moving of this unit to prevent it from becoming unstable and tipping over. Do not lean a ladder against the unit or put weight on or against it prior to completing the installation to prevent the unit from tipping.

AVERTISSEMENT

Les unités sont lourdes, par conséquent il faut faire attention lors de leur manipulation et déplacement pour éviter toute instabilité et les empêcher de basculer. N'appuyez pas une échelle contre l'unité et ne mettez pas du poids sur celle-ci ou contre celle-ci avant d'avoir terminé l'installation pour l'empêcher de basculer.

IMPORTANT

1. Start up and adjustment procedures, installation, and service of these appliances must be performed by a qualified installation and service agency.
2. Never leave the unit filled with water in a building without heat unless antifreeze has been added.

IMPORTANT

1. Les procédures de démarrage et de réglage, l'installation et le service de ces appareils doivent être confiés à un centre d'installation et de service qualifié.
2. Ne laissez jamais l'appareil rempli d'eau dans un immeuble non chauffé sans lui ajouter de l'antigel.

Handling

Each unit will be shipped to the site on a wood skid. Whenever possible, all lifting and handling of the unit should be done with the packing and skid in position. When slinging or using a forklift to lift the unit, the support points should be sufficiently apart to give stability when lifting. Unless otherwise noted, the lifting points should be equidistant from the centerline. Extreme care should be taken not to drop the unit.

Considerable damage can occur to the unit during positioning, in particular, to the paneling and exterior paint. Use an adequate number of personnel and the correct tools when moving the unit. The unit is designed to remain upright so care should be taken when lifting the unit up steps.

The use of torque screwdrivers on panel, cover or component mounting screws is not recommended. Hand-start all screws. If electric drills are used – set at the lowest possible torque.

Preparation

1. Select the unit location. Ensure the wall structure is adequate for the required mounting provisions as outlined in the "INSTALLATION" section.
2. Before installation, ensure that the correct electrical power supply is available for the unit.
3. Each unit requires an independently fused and isolated power supply.
4. If the installation has multiple units, check that unit model and tagging corresponds with the installation plans. Please contact the factory immediately if discrepancies are noted.
5. Check to make sure that the units will have adequate installation clearance around them.
6. Note that each unit has a condensate connection at the rear and suitable provisions should be made for draining. If multiple units tee into a common drain manifold, the drain line must be sized to ensure free draining with all the units in operation.
7. Inspect the wall sleeve installation for gaps that would allow leakage of outdoor air into the space. All joints and abutments should be sealed with waterproof sealant.
8. Ensure the wall opening sill height aligns with the outside air and exhaust air openings on the back of the classroom unit. If not, a rear extension is required to provide a sealed transition. Rear extensions are available for purchase from the factory.

UNIT LOCATION / INSTALLATION

Drainage

Units with cooling coils have a condensate drain pan connection and 3/4" ID condensate line. The condensate drain pan connection is field changeable and can be mounted on either the left or right side of the unit. To change the connection location, remove the condensate line from the elbow. Remove the elbow from the drain pan and remove the plug from the opposite side of the drain pan. Re-install the elbow and the plug on the opposite sides of the drain pan. Re-connect the condensate line.

INSTALLATION

Optional Unit Rough-In Accessories

Wall Sleeve and Louver (Optional)

A wall sleeve is designed to provide a sealed plenum from the fresh air intake and exhaust air outlet on the back of the classroom unit to the outside of the building. When a single wall sleeve is used, the intake and exhaust airstreams are separated with a splitter plate. Units may use a single wall sleeve with horizontal splitter plate or double wall sleeves depending on the unit configuration. A louver prevents rain, snow, and other elements from entering the building.

Refer to the latest revision of literature 75-563, "Installation Instructions for Wall Sleeves" or if not provided by the factory, refer to the supplier's recommendations.

Rear Extension (Optional)

A rear extension is designed to provide a sealed transition from the fresh air intake and exhaust air outlet on the back of the classroom unit to the outside of the building, specifically when the wall openings are not aligned. Units are available with a 15" (381mm) deep or 6" (152mm) deep rear extension with adjustable sill heights.

Refer to latest revision of literature AIR75-564, "Installation Instructions for Rear Extensions" or if not provided by the factory, refer to the supplier's recommendations.

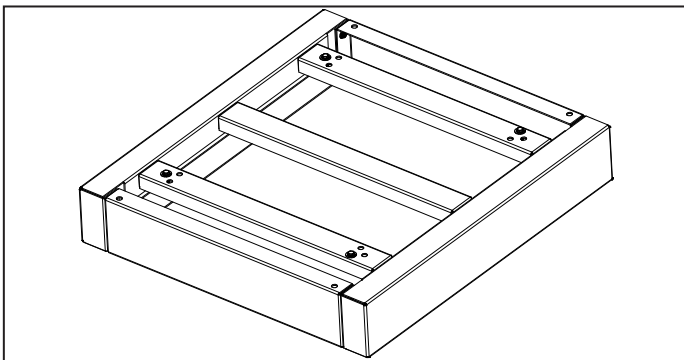
Floor Stand (Optional)

A installed floor stand is designed to be installed below the unit to move the unit up to match existing sill heights.

If supplied by the factory, the recommended procedure for installation is described as follows:

1. Reference unit installation steps on page 4, steps 1 and 2.
2. Floor stand must be secured to the floor. The floor stand has four pre-punched holes. The type of materials used for the floor will determine the type of fastener to use. The factory recommends the use of 1/2" (12.7mm) diameter fasteners with 1-1/2" (38mm) diameter washers. Securing the floor stand to the floor helps to reduce movement and noise due to vibration.
3. The unit needs to be installed to the floor stand. Per instructions on page 4, use mounting hardware supplied by the factory. Otherwise, use field supplied 1/2" (12.7mm) diameter fasteners with 1-1/2" (38mm) diameter washers.

Figure 6.1 - Floor Stand



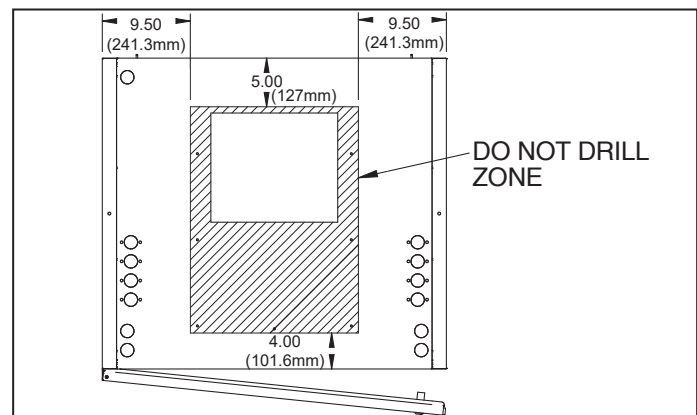
Unit Installation

The instructions detailed below are for the Installation of a "Standard" unit. Accommodations and adjustments will be required for the usage of additional unit accessories. Should assistance be required for the installation of these additional items, contact the factory at the phone number listed on the back cover of this manual.

Note: Minimum clearance to combustible is 0" (0mm).

1. Check the floor for levelness and check to ensure the wall is at a right angle to the floor. Should there be any irregularity, the placement of foam tape on the outside edges of the unit will fill the gaps between the unit and the wall, allowing for the use of a sealant, to create a smooth transition from the unit to the wall.
2. After adjusting for any irregularity in the location site, locate the position for the floor mounting bolts (see figures 13.1–17.1). Drill the appropriate sized holes, for the fasteners that are to be utilized, and insert the anchors that are to be used.
3. Remove the backing strip from the gasket on the wall sleeve. Place the unit in the correct location, ensuring a tight seal with the wall sleeve and the wall.
4. Check to ensure that the unit is plumb and level in both directions. If adjustment is necessary, place metal shims in the out most corners of the base.
5. The cabinet must be secured to either the back wall or the floor. The floor of the cabinet has four pre-punched holes and the back of the cabinet has a hole on each side. The type of materials used for the floor and the walls will determine the type of fastener to use. If unit is mounted on a floor stand, use mounting hardware supplied by the factory, otherwise use field supplied 1/2" (12.7mm) diameter fasteners with 1-1/2" (38mm) diameter washers. Securing the cabinet to the floor or wall helps to reduce movement and noise due to vibration.
6. Once the cabinet is secured, seal any gaps caused by uneven floors or wall surfaces to prevent noise from escaping through these openings.
7. Make the condensate drain connection and the necessary electrical connections to the unit.
8. When connecting a duct flange or ductwork directly to the top of the unit, do not drill or put screws into the area immediately surrounding the supply air opening(s). See Figure 6.1 (dimensions in inches). Holes in the top of the cabinet indicate recommended mounting locations.

Figure 6.2 - Do Not Drill Zone - UVD Only

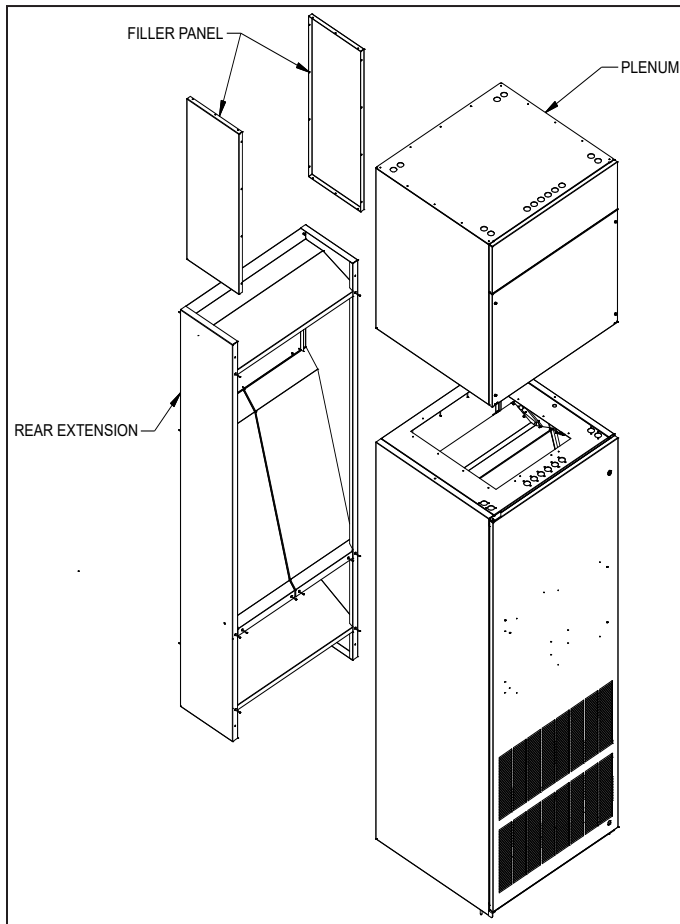


INSTALLATION

Rear Extension, Plenum, and Filler Panel Assembly Installation

See Figure 7.1 for an exploded view of how the cabinet, rear extension, plenum, and filler panels should be installed and assembled in the field. See separate accessory installation sections for step by step instructions on how each piece is installed.

Figure 7.1 - Rear Extension, Plenum, and Filler Panel Assembly



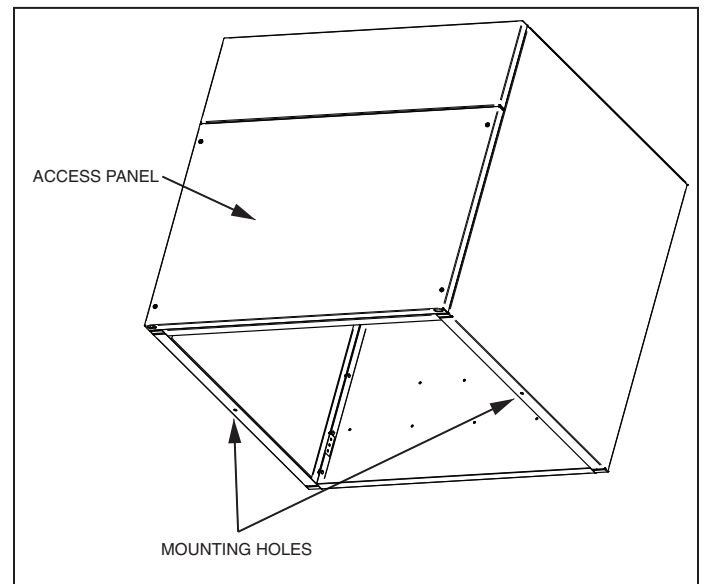
Optional Unit Discharge Accessories Plenum (Optional)

A field installed plenum is designed to discharge air directly into the space without ductwork to distribute air. Plenums are provided in 2" (51mm) height increments, and multiple discharge configurations.

The recommended procedure for installation is described as follows:

1. Unit must be secured to the floor before plenums are mounted on top to prevent injury.
2. Place plenum centered on the top of the unit.
3. Remove the front access panel, so interior base of plenum is available.
4. Mount the plenum by using sheet metal screws (by others) through mounting holes at bottom center of each side panel (see Figure 7.2). Be sure to use a minimum of one screw for each side panel even if you are not able to use holes provided.

Figure 7.2 - Plenum Installation (Top Discharge Shown)



INSTALLATION

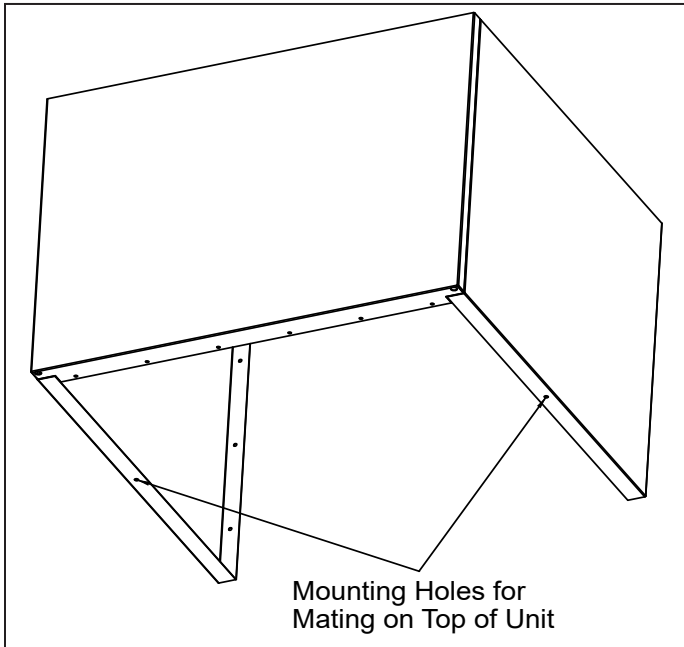
Duct Shroud (Optional)

A field installed duct shroud is designed to cover ductwork that is connected to the unit, until it is above a ceiling. Duct shrouds are provided as 14" (355mm), 26" (660mm), 38" (965mm) or 50" (1270mm) high.

The recommended procedure for installation is described as follows:

1. Unit must be secured to the floor before duct shroud can be mounted on top to prevent injury.
2. Place duct shroud centered on the top of the unit.
3. Mount the duct shroud by using sheet metal screws (by others) through mounting holes at bottom center of each side panel (see Figure 8.1). Be sure to use a minimum of one screw for each side panel even if you are not able to use holes provided.

Figure 8.1 - Duct Shroud Installation



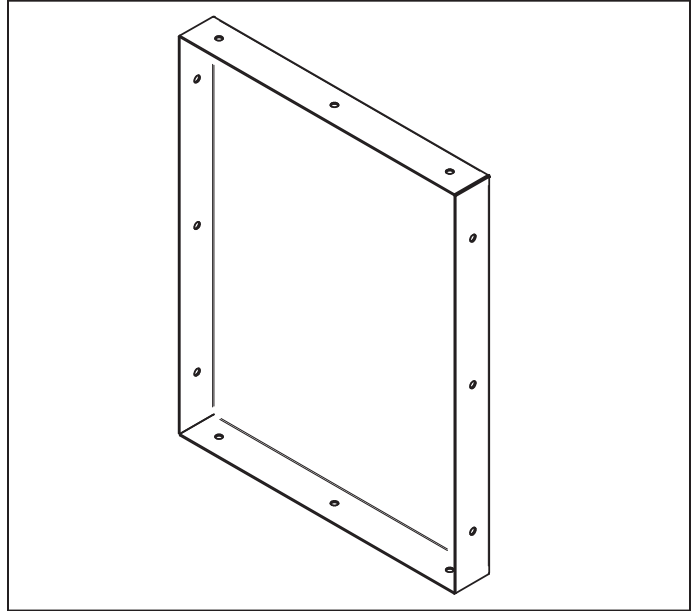
Filler Panel (Optional)

A field installed filler panel is designed to be installed above a rear extension, and behind a plenum or duct shroud so the sheet metal goes all the way to the ceiling, and to the wall.

The recommended procedure for installation is described as follows:

1. Mount the filler panel by using sheet metal screws (by others) through mounting holes on flanges (see Figure 8.2). Be sure to use a minimum of one screw, on two different sides for proper installation of each panel, even if you are not able to use holes provided.

Figure 8.2 - Filler Panel



INSTALLATION

Piping Installation - Chilled/Hot Water Coils

⚠ CAUTION

1. Units not approved for use in potable water systems.
2. Hot water supplied to the hot water heating option must not exceed 200°F (93°C) temperature or 125 PSIG (862 kPa) pressure.
3. Do not attempt to reuse any mechanical or electrical component which has been wet. Such component must be replaced.

⚠ ATTENTION

1. Ces unités ne sont pas approuvées pour l'usage dans des systèmes à eau potable.
2. La température de l'eau chaude alimentée en vertu de l'option de chauffage de l'eau chaude ne doit pas dépasser 200 °F (93 °C) ou une pression de 125 lb/po² (862 kPa).
3. Ne tentez pas de réutiliser un composant mécanique ou électrique qui a été mouillé. Ces composants doivent être remplacés.

All plumbing connections made in the field must comply with local building codes and be properly leak tested.

Units without Piping Package (Digit 21 & 22 = N)

1. Chilled water and hot water coils are supplied from the factory with unions. Field installed piping can be mounted to the supplied unions with 3/4" female sweat connections.
2. Install shut-off valves in lines to and from each coil to allow maintenance or replacement of unit without shutting down and draining entire system.
3. Include a circuit setter in the return line for water flow regulation.
4. It is advisable to use a pipe line strainer before each coil.
5. Provide adequate pipe hangers, supports, or anchors to secure the piping system independently of the coil.

Units with Piping Package (Digit 21 & 22 = 1,2,4,5)

1. Chilled water and hot water piping packages are supplied factory assembled and installed to the coil. All piping packages include the following: control valve, shut-off valves, strainer, circuit setter, PT ports, and balancing valve (when three-way control valve is selected).
2. Piping package terminations are threaded drop ear connections, and are 3/4" for chilled water and hot water. Drop ear connections are attached to fixed plates, and along with the coil provide support for the piping package.

High Humidity Units with Piping Package (Digit 9 = F,H, or J)

1. Chilled water piping packages are supplied factory assembled and installed to the outside air pretreatment chilled water coil. The piping package includes a two way, two position control valve, circuit strainer, circuit setter, PT ports, and drain port.
2. For high humidity units with an outside air pretreatment hot water coil for freeze protection (Digit 9 = J), a piping package is factory assembled and installed. The piping package includes a two way, two position control valve, circuit strainer, circuit setter, PT ports, and drain port.
3. Piping package terminations are threaded drop ear connections, and are 3/4" for chilled water and hot water. Drop ear connections are attached to fixed plates, and

along with the coil provide support for the piping package.

4. There is one supply and one return connection for chilled water piping. The piping package divides the flow between primary and pretreatment coils. Flow through each coil is balanced using the independent circuit setters. See Figure 9.3.
5. For high humidity units with an outside air pretreatment hot water coil for freeze protection (Digit 9 = J) and primary hot water coil (Digit 16 = 1 or 2), there is one supply and one return connection for hot water piping. The piping package divides the flow between primary and pretreatment coils. Flow through each coil is balanced using the independent circuit setters. See Figure 9.3.

Piping Insulation

Chilled water piping, condensate drain piping, and all associated piping system components not installed over the drain pan must be insulated to prevent condensation from forming. Hot water piping and components are recommended to be insulated to reduce heat loss.

Figure 9.1 - Typical 2-Way Piping Schematic

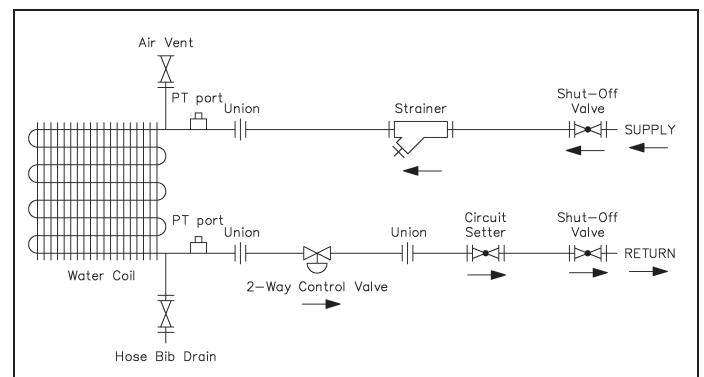


Figure 9.2 - Typical 3-Way Piping Schematic

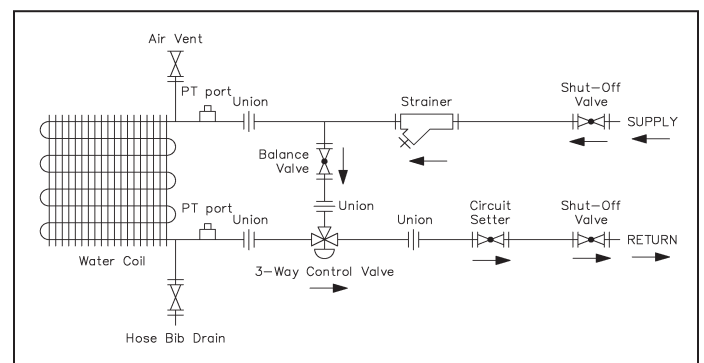
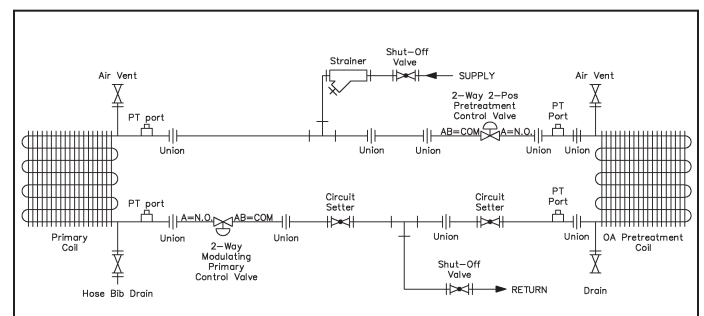


Figure 9.3 - OA Pretreatment Coil & Primary Coil Piping Schematic for High Humidity Units



INSTALLATION

Wiring

WARNING

1. Disconnect power supply before making wiring connections or working on this equipment. Follow all applicable safety procedures to prevent accidental power up. Failure to do so can result in injury or death from electrical shock or moving parts and may cause equipment damage.
2. All appliances must be wired strictly in accordance with the wiring diagram furnished with the appliance. Any wiring different from the wiring diagram could result in a hazard to persons and property.
3. Any original factory wiring that requires replacement must be replaced with wiring material having a temperature rating of at least 105°C.
4. Ensure that the supply voltage to the appliance, as indicated on the serial plate, is not 5% greater than rated voltage.

AVERTISSEMENT

1. Débranchez l'alimentation électrique avant d'effectuer des connexions ou de travailler sur l'appareil. Respectez toutes les procédures de sécurité qui s'appliquent pour éviter toute mise en marche accidentelle. Le non-respect de cette directive peut entraîner des blessures ou la mort causées par un choc électrique ou des pièces mobiles, en plus d'endommager l'appareil.
2. Tous les appareils doivent être branchés de manière strictement conforme au diagramme fourni. Tout câblage différent de celui du schéma peut créer des risques de dommages matériels ou de blessures.
3. Tout câblage usine d'origine exigeant un remplacement doit être remplacé par un câble d'indice thermique nominal de 221 °F (105 °C).
4. Assurez-vous que la tension d'alimentation de l'appareil, comme indiqué sur la plaque de série, n'est pas de 5 % supérieure à la tension nominale.

CAUTION

1. Ensure that the supply voltage to the appliance, as indicated on the serial plate, is not 5% less than the rated voltage.
2. Do not attempt to reuse any mechanical or electrical component which has been wet. Such components must be replaced.

ATTENTION

1. Vérifiez que la tension d'alimentation de l'appareil n'est pas inférieure de plus de 5 % à la tension nominale inscrite sur la plaque de série.
2. Ne tentez pas de réutiliser un composant mécanique ou électrique qui a été mouillé. Ces composants doivent être remplacés..

1. Installation of wiring must conform with local building codes, or in the absence of local codes, with the National Electric Code ANSI/NFPA 70 - Latest Edition. Unit must be electrically grounded in conformance to this code. In Canada, wiring must comply with CSA C22.1, Part 1, Electrical Code.
2. A wiring diagram is provided with each unit. Refer to this

diagram for all wiring connections. Electric wiring and circuit protection must be sized to carry the full load amp draw of the motor, starter and any controls that are used with the unit. Refer to the Model Serial plate for MCA and MOP values for the unit.

3. If the unit has plenum mounted heating and Modine Controls (Digit 8 = M), the supply air sensor is mounted in the plenum. The sensor needs to be wired to the control terminal strip as indicated on the unit wiring diagram.
4. For units with plenum mounted heat and a freeze protection stat, the stat wires are bundled inside the plenum. The wires need to be routed to the unit's control terminal strip and wired per the unit wiring diagram.
5. Control wiring may consist of both 24V analog control wiring and low current digital control signal wiring. To avoid signal interference, the two types should be run in separate conduits. If run in the same conduit, the digital signal wiring should be shielded at one end of the wiring run. Wiring should be twisted, stranded, and shielded communication wire.
6. Any damage to or failure of units caused by incorrect wiring of the units is not covered by warranty.
7. The electrical supply can be connected to the unit power lead extension at a customer supplied junction box. The wire gauge must be sized according to the National Electric Code or CSA code based on amp draw and length of run. Use only copper wire.
8. When installing any wiring into the electrical panel, extra cable must be left outside the panel to allow the panel to open fully. Failure to follow these instructions may cause damage to the wiring and/or the unit.

INSTALLATION

Wiring

Terminal Strip Connections

The terminal strip connections are designed to clamp down on the wires. To properly connect the wires to the terminal strip:

1. Push a small flat-head screwdriver into the square hole on the terminal. Press firmly until the screwdriver hits the back stop and opens the terminal (see Figure 11.1).
2. Remove approximately 3/8" (9.5mm) of insulation from the end of the wire and push the stripped wire into the oval hole in the terminal.
3. Remove the screwdriver. Pull on the wire to make sure that it is securely clamped in the terminal.
4. Make sure that the terminal clamp is in contact with bare wire (insulation removed).

Figure 11.1 - Terminal Strip



START-UP PROCEDURE

START-UP PROCEDURE

IMPORTANT

1. Start up and adjustment procedures, installation, and service of these appliances must be performed by a qualified installation and service agency.
2. No water-flow can cause a freeze condition resulting in damage to the coil.

IMPORTANT

1. Les procédures de démarrage et de réglage, l'installation et le service de ces appareils doivent être confiés à un centre d'installation et de service qualifié.
2. L'absence d'écoulement d'eau risque de causer une condition de gel et d'endommager le serpentín.

The unit has been factory tested and set for proper operation, but a full unit start-up is recommended.

See start-up sheet examples - Figure 14.1 and Figure 15.1.

Pre-Start Checks

1. Check that the supply voltage matches the unit supply voltage listed on the Unit Serial Plate. Verify that all wiring is secure and properly protected. Trace circuits to insure that the unit has been wired according to the wiring diagram.
2. For units equipped with the Modine Control System (Digit 8=M), all control parameters and setpoints have been factory set to the default values. To change setpoints, refer to the controls literature included with the unit.
3. Check that all field electrical and mechanical work has been performed according to all applicable Federal, State, and Local codes.
4. Check the supply voltage to the unit is within +/- 5% of the voltage on the unit serial plate.
5. Check that the system has been correctly flushed.
6. Check for any water leaks.
7. Check that the filters have been properly installed.

Unit Start-Up Procedure

1. Turn the disconnect switch to the "ON" position.
2. Follow the instructions in the Modine microprocessor book. The control parameters and setpoints have all been factory set to the default values.
3. Confirm that the blower motor is rotating in the correct direction and blowing air out of the supply air discharge.
4. Ensure all valves are open to the unit.
5. Check water flow rates and pressure drops, and compare them to design.
6. Check that the dampers are not obstructed and move through their full range of motion.
7. During the unit operation, measure and record all the information that is required to complete the Start-Up Sheets that are supplied with the unit. Copy the information onto the Start-Up Sheets, Figure 14.1 and Figure 15.1, in this manual for your records.

SEQUENCE OF OPERATIONS

Sequence of Operation

Modine Controls: With Modine Controls (Digit 8=M), a Carel microprocessor will control the unit and allow for networking and remote monitoring. The microprocessor will monitor the room temperature (either via an optional digital thermostat or return air sensor), supply air temperature and outdoor air temperature. Based on the temperature sensor readings, the unit is able to accurately control space temperature and humidity (if applicable). If a digital thermostat is selected, it can be used to set the temperature and humidity (if applicable) setpoints. In addition, the thermostat has an occupied override button to allow a temporary override until the next scheduled occupancy change.

Supply Fan: The fan will run continuously during occupied mode and will be intermittent on a call for cooling or heating during unoccupied mode. A built in fan purge time allows for maximum heating and cooling efficiency.

Cooling: When the temperature increases above the cooling setpoint, the cooling valve will modulate open and fan will be energized.

Heating: When the temperature decreases below the heating setpoint, the heating valve will modulate open and fan will be energized.

Dehumidification: Dehumidification is available for valve controlled units (Digit 3=V) with 4-Pipe cooling and heating coils. The unit controller will call for dehumidification if the space humidity is higher than the humidity setpoint and if the space temperature is within the satisfied range. On a call for dehumidification, the chilled water valve is opened to 100% and the hot water valve modulates to maintain a neutral supply air temperature. The supply fan will run on low speed.

During dehumidification operation, reheating is required in order to ensure that a neutral air temperature is provided to the space. Dehumidification will be inhibited if the space humidity falls below humidity set point, if the space temperature increases to the extent that cooling is required, or if the space is being overcooled from dehumidification.

For enhanced dehumidification capability, refer to the sequence described in section "High Humidity Dehumidification".

Economizer Damper with Exhaust Damper (Digit 9 = B, C, or E): The economizer damper controls the mixture of return air and outside air drawn through the unit. During occupied mode the damper will open to a minimum position to provide ventilation requirements to the space. The damper shall be fully closed during unoccupied mode. The economizer damper and motorized exhaust damper are tied to the same signal for airflow balancing.

Free cooling is available with the economizer damper when the outside air temperature is below the return air temperature and there is a space cooling demand. In free cooling, the economizer damper will open proportionally based on the demand with the chilled water valve shut off.

Powered Exhaust Fan and Damper (Digit 9 = C, D or E): The exhaust fan will run continuously in occupied mode and intermittent on a call for cooling or heating during unoccupied mode.

For units with a powered exhaust fan and economizer damper (Digit 9=C or E), the exhaust fan will increase proportionally from an adjustable minimum fan speed to an adjustable maximum fan speed based on the position of the economizer damper. The motorized exhaust damper and economizer damper are tied to the same signal for airflow balancing.

Energy Recovery Ventilator (Digit 9 = D or E): The ERV wheel is activated in occupied mode only. The wheel will deactivate if the unit is in free cooling mode (the outdoor air is cooler than the return air and a cooling demand is present).

In cooling mode, cool return air is drawn across the enthalpy wheel. This air is then exhausted external to the room. Warm, humid outdoor air is drawn across the other side of the ERV and as the enthalpy wheel turns, the outdoor air is cooled and dehumidified. This air is then mixed with the room air before hitting the primary cooling coil to be supplied into the space.

In heating mode, the wheel will operate the same as in cooling mode except the warm, moist air from the room is used to temper the cold, dry external outdoor air. The tempered outdoor air is mixed with the room air before hitting the primary heating source (if applicable).

High Humidity Dehumidification (Digit 9 = F,H, or J): All high humidity units are equipped with a 0-10V outdoor air fan, two position outdoor air damper, and a pretreatment cooling coil with two position valve. ERV and economizer options are not available.

High humidity units provide continuous dehumidification of the outside airstream during occupied mode via the pretreatment cooling coil. This dehumidified outside air is mixed with return air before being further dehumidified by the primary cooling coil. Refer to the Dehumidification section for information on the sequence of operation for dehumidification mode on the primary cooling coil. In occupied mode, the outside damper will be open and the fan will run continuously. In unoccupied mode, the damper will close and the fan will stop.

On high humidity units without freeze protection (Digit 9=F), when the outside air temperature is below 37°F (2.8°C) (adj.), the valve will open on the pretreatment cooling coil to prevent the coil from freezing.

On high humidity units with freeze protection (Digit 9 = H or J), when the outside air temperature is below 37° F (2.8°C) (adj.), the heating coil will open/enable to prevent freezing and the pretreatment cooling coil valve will not open until 20°F (-6.7°C) (adj.). The use of glycol may be used as a preventative measure for freezing.

Face and Bypass Damper (Digit 3 = D): In a face & bypass unit, the outside and return air can be separated to condition only the outside air or mixed air before passing through the coil in a draw through configuration. The face & bypass damper is modulated to maintain the set point temperature in the room. As demand in the space increases, the damper opens up to allow more air over the coil. As demand decreases, the damper closes to reduce air across the coil. The flow of water and coil temperature remain constant. The F&B damper will be in 100% bypass position when economizer cooling is active.

START-UP SHEET - EXAMPLE

Figure 14.1 - Start-Up Sheet - EXAMPLE Page 1



Airedale Sentinel - UVV & UVD Start up Sheet

Date	<input type="text"/>	Job ID	<input type="text"/>
Unit tag ID	<input type="text"/>	Unit model #	<input type="text"/>
Room ID	<input type="text"/>	Unit serial #	<input type="text"/> Last 4 digits <input type="text"/>
Order SPO	<input type="text"/>	Installer	<input type="text"/>
Diagram #	<input type="text"/>	Sales rep	<input type="text"/>

Installation Checks

Unit mounted level	<input type="text"/>	Splitter plate installed correctly	<input type="text"/>
Unit bolted to the floor or wall	<input type="text"/>	Any visual damage to the unit	<input type="text"/>
Condensate drain installed correctly	<input type="text"/>	Pump or Gravity Flow	<input type="text"/>
All electrical connection are tight	<input type="text"/>	Pump Model (If Applicable)	<input type="text"/>
Cabinet door, brackets and spring pin secure	<input type="text"/>	Pump Tested (If Applicable)	<input type="text"/>
		Wall sleeve installed correctly	<input type="text"/>

Mains Incoming Supply

L1 + L2	<input type="text"/>	V
L1 + N	<input type="text"/>	V

Controls Transformer

Primary	<input type="text"/>	V
Secondary	<input type="text"/>	V

Supply Fan Motor

Motor size	HP	<input type="text"/>	FLA	<input type="text"/>	Make	<input type="text"/>
Amps	High	<input type="text"/>	Medium	<input type="text"/>	Low	<input type="text"/>
Tap @ Lo	(+)15%	<input type="text"/>			Prog rev	<input type="text"/>
Motor Power Plug Link		<input type="text"/>				

Outdoor Fan - ECM

Motor size	HP	<input type="text"/>	FLA	<input type="text"/>	Make	<input type="text"/>
Amps	High	<input type="text"/>	Medium	<input type="text"/>	Low	<input type="text"/>
Tap @ Lo	(+)15%	<input type="text"/>			Prog rev	<input type="text"/>
Motor Power Plug Link		<input type="text"/>				

Controller Information

Make	<input type="text"/>	Model	<input type="text"/>
Program revision	<input type="text"/>	Program Rev SPO (Special)	<input type="text"/>
Thermostat type	<input type="text"/>	Time and date set	<input type="text"/>
BACnet card fitted	<input type="text"/>	Occupancy input type	<input type="text"/>
MS/TP address (MAC)	<input type="text"/>	CO2 standby control	<input type="text"/>
Device Instance (DI)	<input type="text"/>	Electromechanically tested	<input type="text"/>
LON card fitted	<input type="text"/>	Operation of motion sensor in Unocc	<input type="text"/>
Neuron ID	<input type="text"/>	Occupancy override type	<input type="text"/>

Setpoints

	Cool	<input type="text"/>	°F	Heat	<input type="text"/>	°F
Occupied Set point		<input type="text"/>	°F		<input type="text"/>	°F
Unoccupied Set point		<input type="text"/>	°F		<input type="text"/>	°F
Standby Set point		<input type="text"/>	°F		<input type="text"/>	°F

Component Test

Fire link / Smoke detector tested	<input type="text"/>	Occupancy Sensor Tested	<input type="text"/>
Remote Shutdown link tested	<input type="text"/>	Face & Bypass tested	<input type="text"/>
Override Key / Push button tested	<input type="text"/>	Filter change switch set	<input type="text"/>
3-Speed Fan Speed Switch tested	<input type="text"/>	Change over Aqua stat / sensor tested	<input type="text"/>
Time Clock Set	<input type="text"/>	Condensate high limits tested	<input type="text"/>

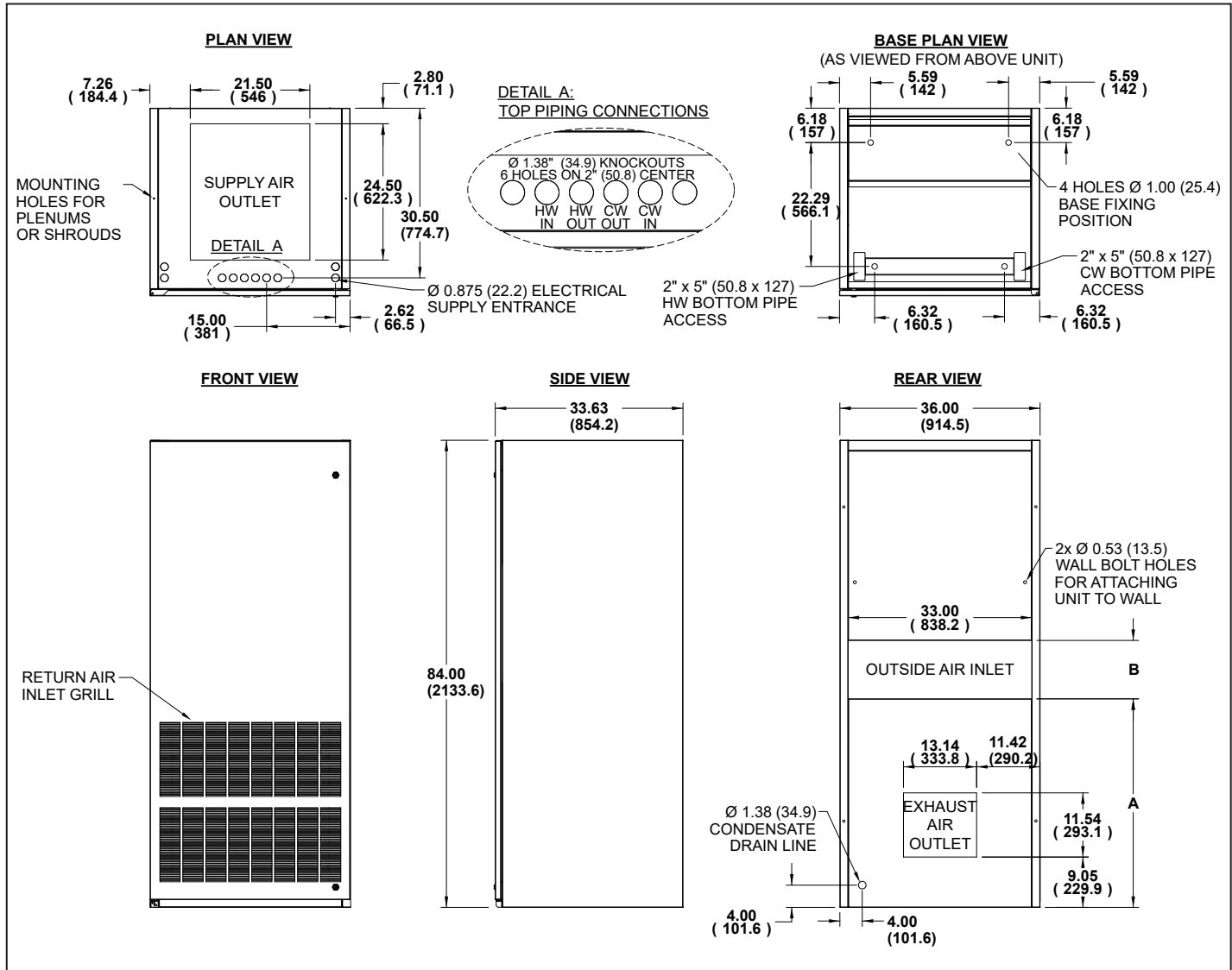
START-UP SHEET - EXAMPLE

Figure 15.1 - Start-Up Sheet - EXAMPLE Page 2

			S/N	0
Electric Heater				Over-Heat Safety(s) Tested
Amps - stage 1	<input type="text"/>	A	<input type="text"/>	A
Amps - stage 2	<input type="text"/>	A	<input type="text"/>	A
Total KW rating	<input type="text"/>	KW		<input type="text"/>
Wired Parallel, Delta, Wye	<input type="text"/>			
Air Temperatures		CW Cooling	Hot Water/Steam	Electric
Return Air Temp	<input type="text"/>	°F	<input type="text"/>	°F
Supply Air Temp	<input type="text"/>	°F	<input type="text"/>	°F
Outside Air Temp	<input type="text"/>	°F		
CO² Sensor				
Sensor reading	<input type="text"/>	ppm		
Economizer Damper				
Build correct	<input type="text"/>	Operation correct	<input type="text"/>	
		Damper 0-100% voltages	Min vdc <input type="text"/>	Max vdc <input type="text"/>
ERV Section				
ERV motor voltage	<input type="text"/>	Outside air ventilation damper correct	<input type="text"/>	
Energy wheel motor FLA	<input type="text"/>	Outside air ventilation fan motor RLA	<input type="text"/>	
Energy wheel motor RLA	<input type="text"/>	Exhaust air ventilation fan motor RLA	<input type="text"/>	
Water/Steam Actuator				
Operation correct	<input type="text"/>	Hot Water or Steam	<input type="text"/>	
PIC valve fitted	<input type="text"/>	PIC valve make and model	<input type="text"/>	
Chilled Water Valve				
Operation correct	<input type="text"/>	PIC Valve Fitted	<input type="text"/>	
PIC Valve Model	<input type="text"/>			
Low Limit Stat				
Manual or auto reset	<input type="text"/>	Freeze stat setting	<input type="text"/>	
Technicians Notes:				
Service Technician	<input type="text"/>			
Service Company	<input type="text"/>			
Service Company Phone	<input type="text"/>			

DIMENSIONS

Figure 16.1 - Dimensions – Base Unit UVV (Digit 9: Ventilation Configuration = A, B or C)



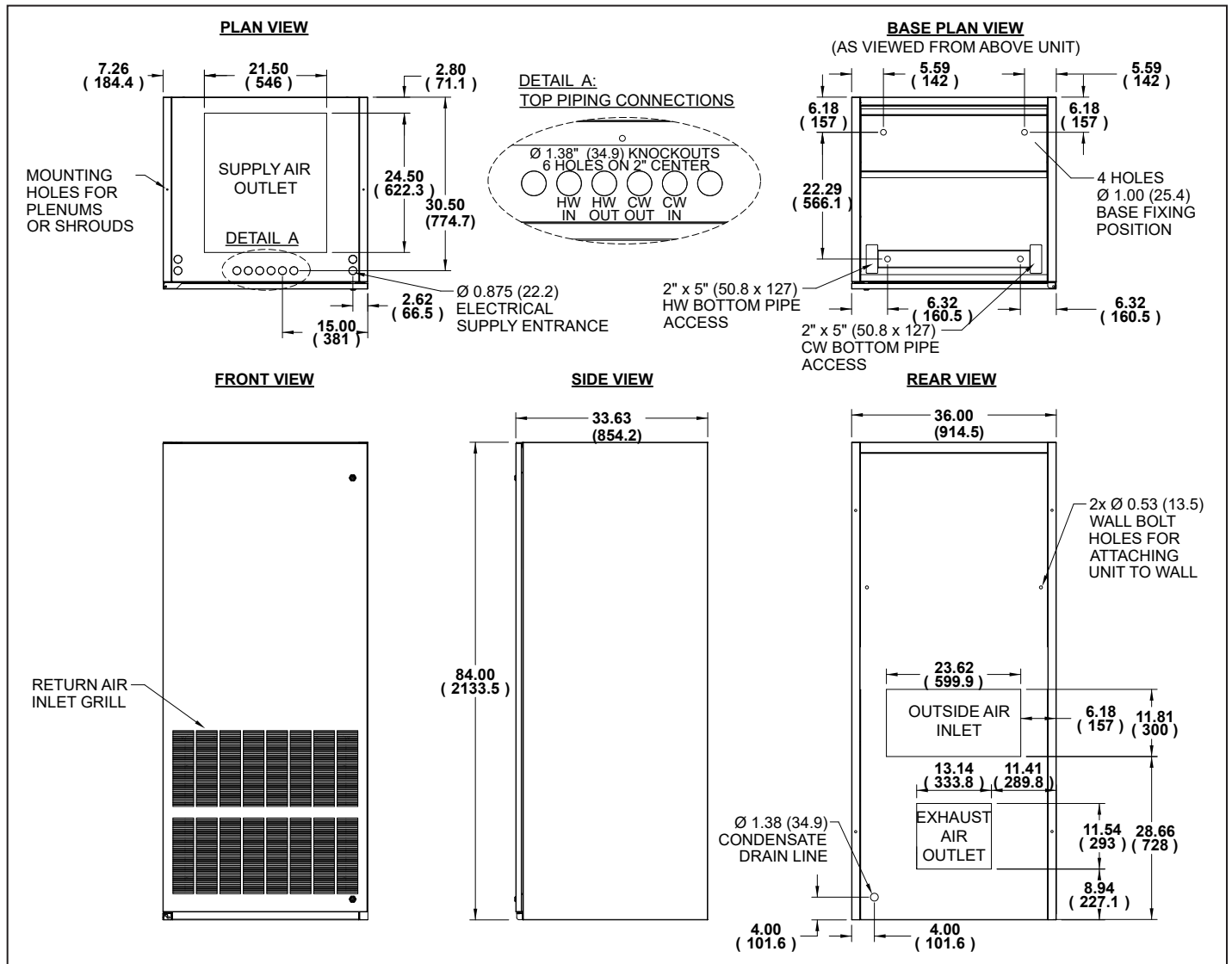
- Note:**
1. Base Unit UVV (Digit 9: Ventilation Configuration = A) will be provided with no Exhaust Air Outlet.
 2. Unit will be provided with top and bottom piping knockouts. Reference Digit 20 in unit nomenclature to determine where terminations are located.
 3. Dimensions shown are inches (mm).

Table 16.1 - Dimensions

Unit Size	A	B
30 / 40 / 50 / 60	40.50 (1028.7mm)	7.50 (190.5mm)
80	37.50 (952.5mm)	10.50 (266.7mm)

DIMENSIONS

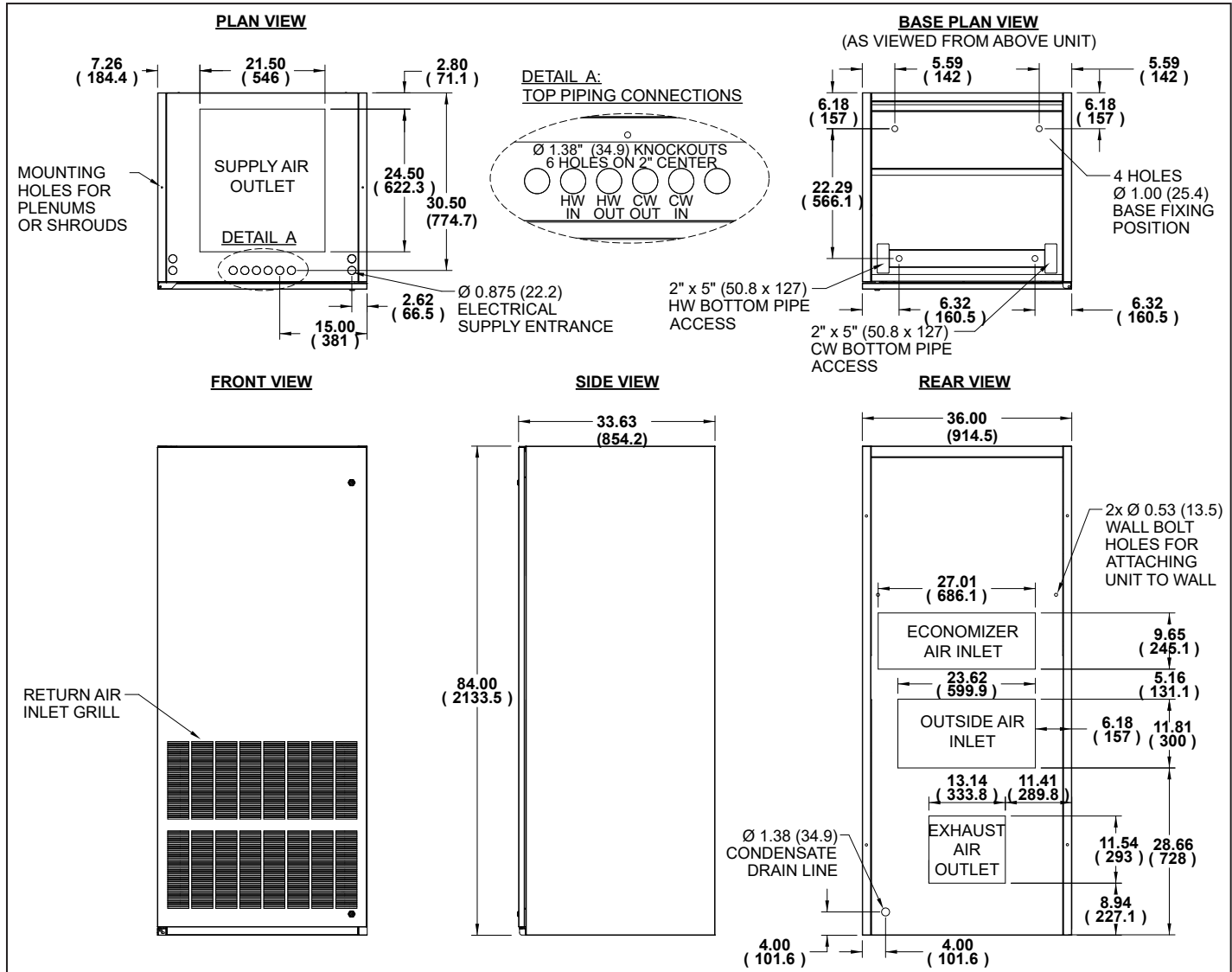
Figure 17.1 - Dimensions – Base Unit UVV (Digit 9: Ventilation Configuration = D)



Note: 1. Unit will be provided with top and bottom piping knockouts. Reference Digit 20 in unit nomenclature to determine where terminations are located.
 2. Dimensions shown are inches (mm).

DIMENSIONS

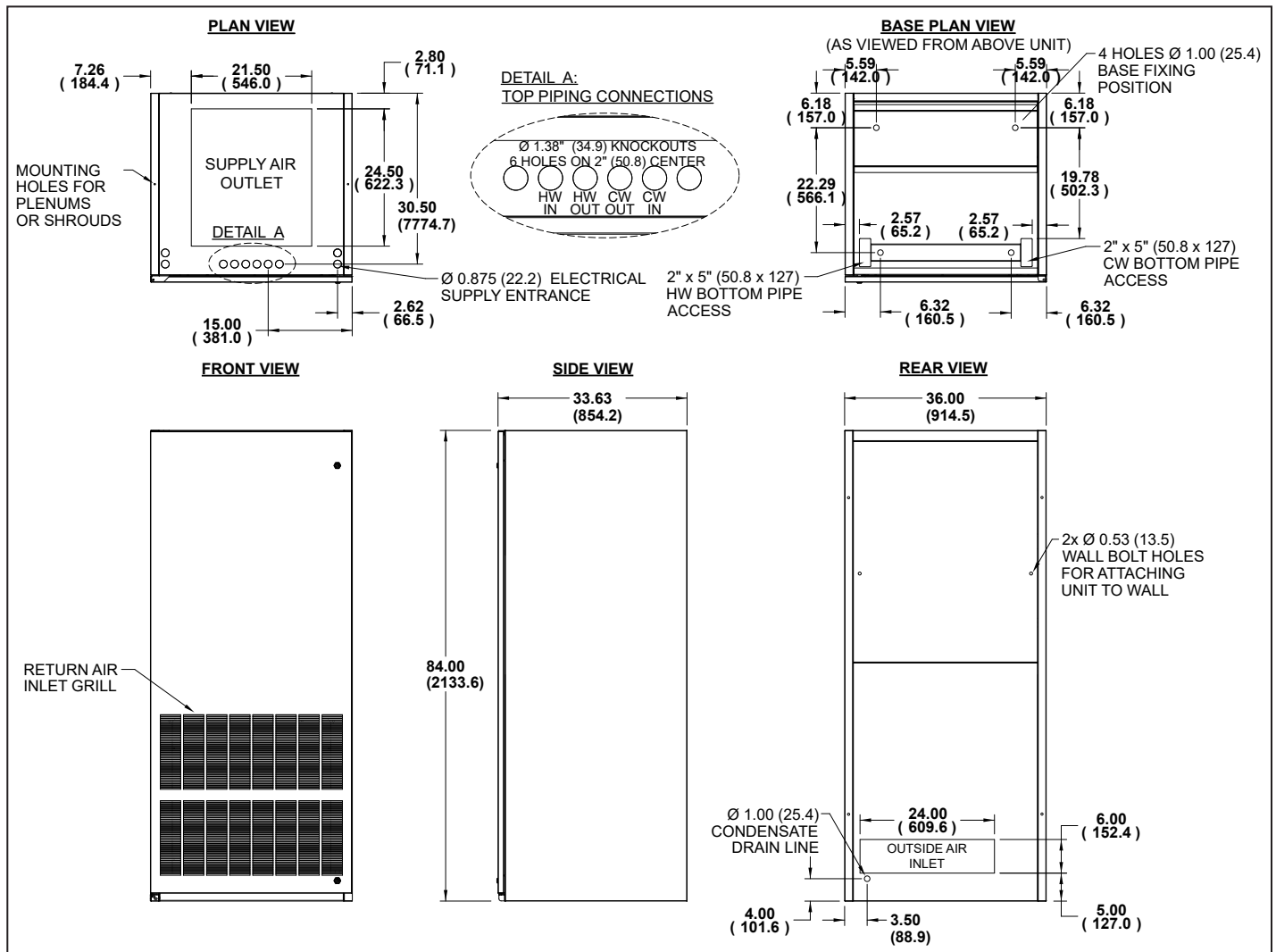
Figure 18.1 - Dimensions – Base Unit UVV (Digit 9: Ventilation Configuration = E)



Note: 1. Unit will be provided with top and bottom piping knockouts. Reference Digit 20 in unit nomenclature to determine where terminations are located.
 2. Dimensions shown are inches (mm).

DIMENSIONS

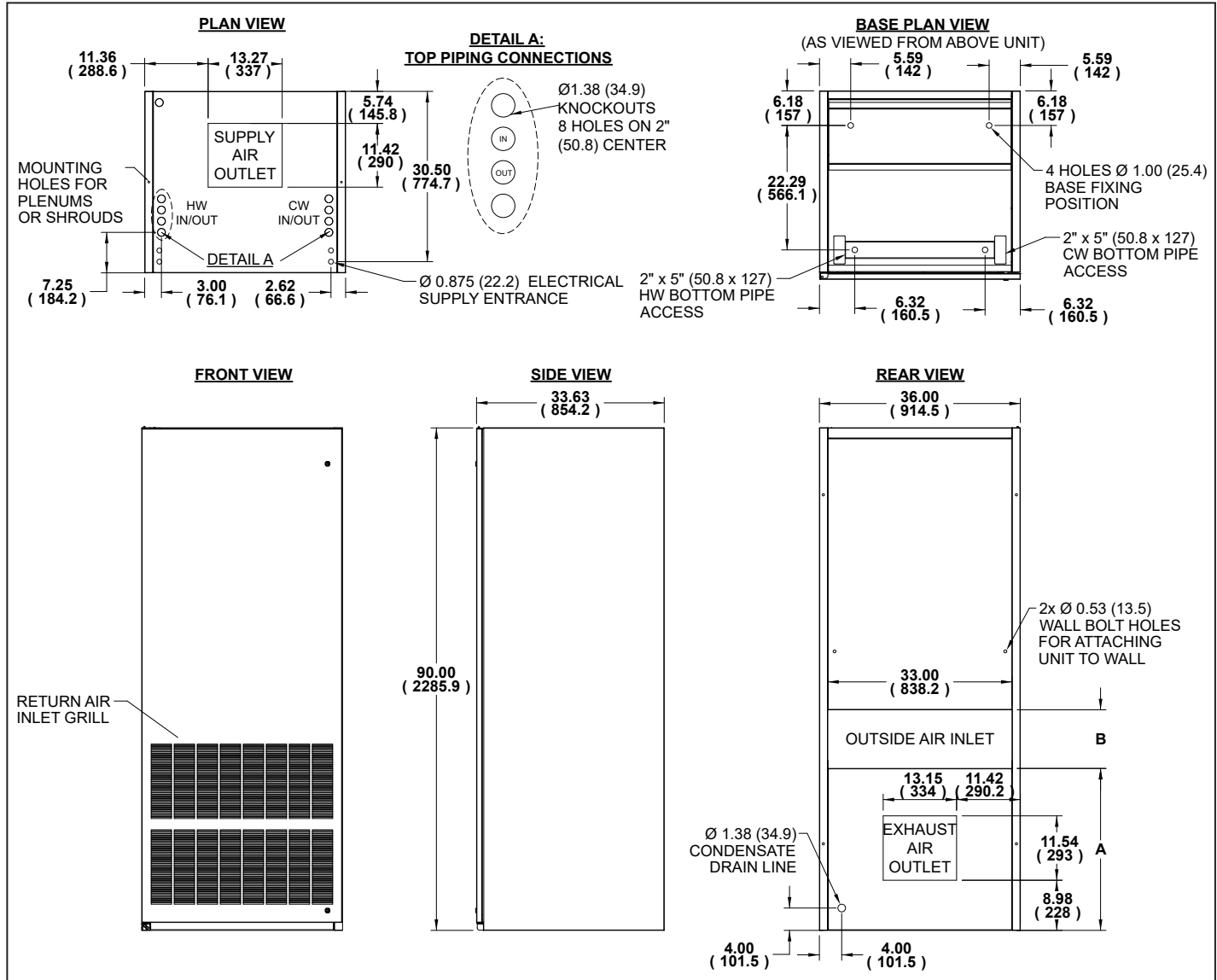
Figure 19.1 - Dimensions - Base Unit UVV - High Humidity - (Digit 9 = F, H, or J)



Note: 1. Unit will be provided with top and bottom piping knockouts. Reference Digit 20 in unit nomenclature to determine where terminations are located.
 2. Dimensions shown are inches (mm).

DIMENSIONS

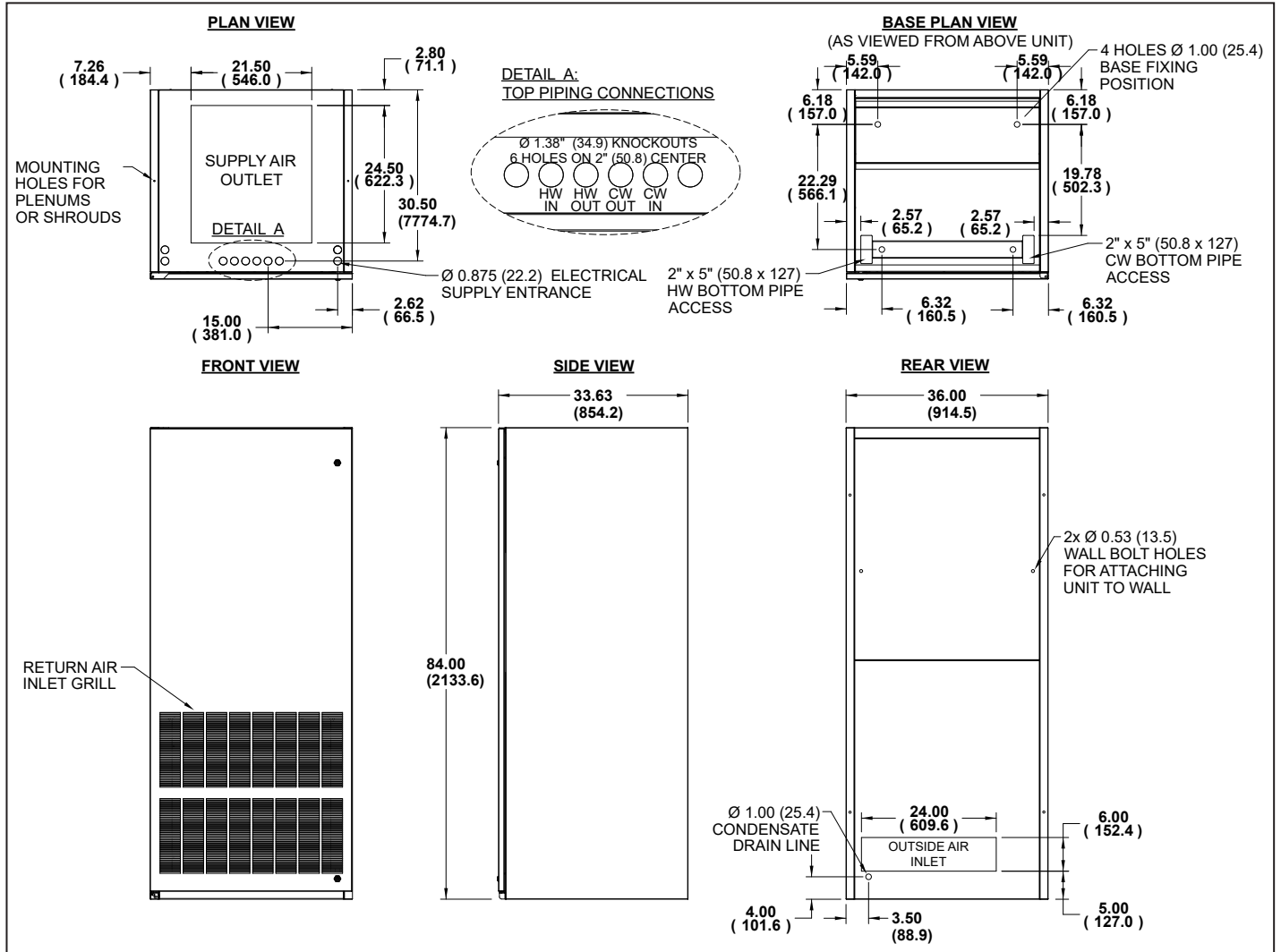
Figure 20.1 - Dimensions – Base Unit UVD (Digit 9: Ventilation Configuration A, B or C)



- Note:**
1. Base Unit UVD (Digit 9: Ventilation Configuration = A) will be provided with no Exhaust Air Outlet.
 2. Unit will be provided with top and bottom piping knockouts. Reference Digit 20 in unit nomenclature to determine where terminations are located.
 3. Dimensions shown are inches (mm)..

DIMENSIONS

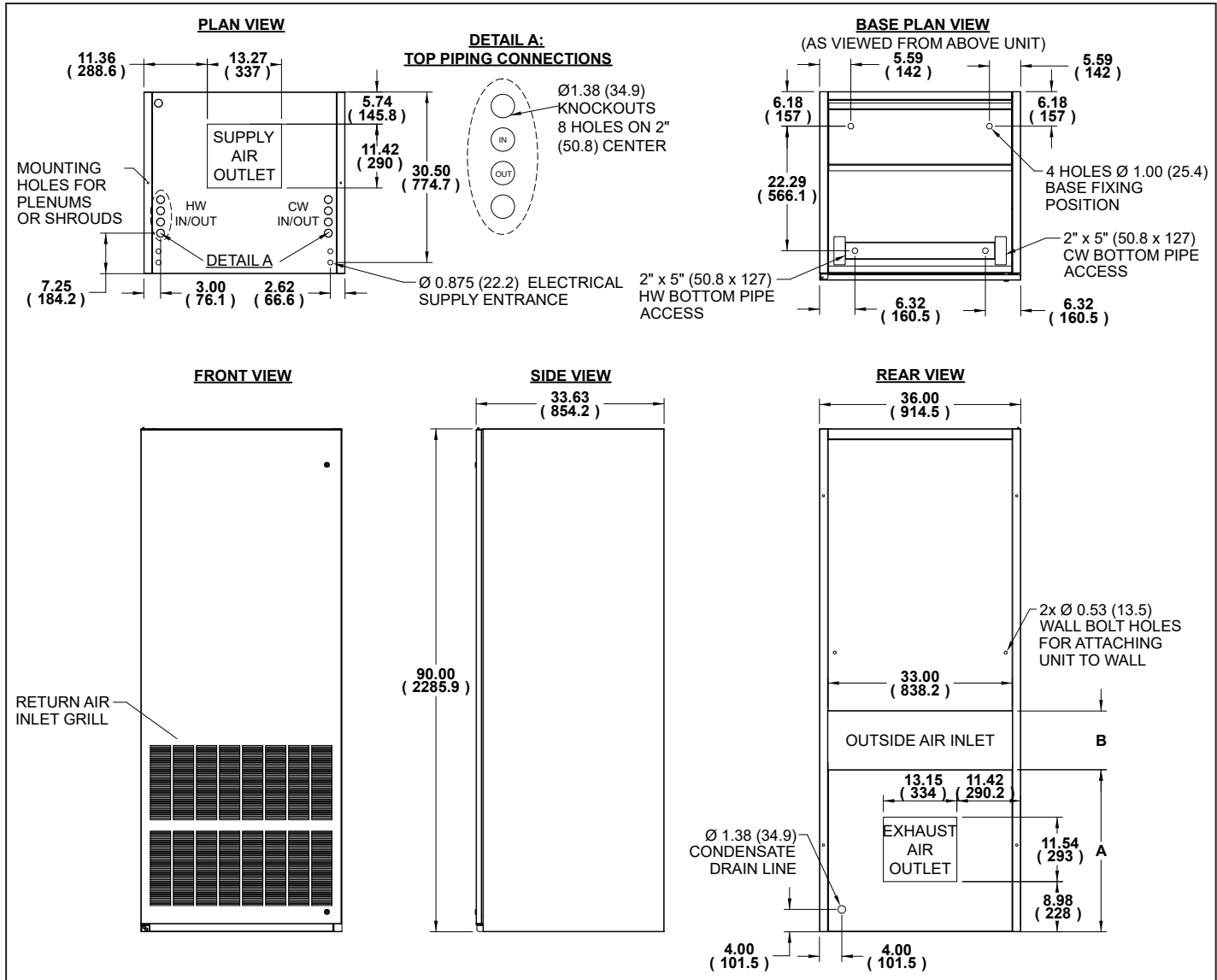
Figure 21.1 - Dimensions - Base Unit UVV - High Humidity - (Digit 9 = F, H, or J)



Note: 1. Unit will be provided with top and bottom piping knockouts. Reference Digit 20 in unit nomenclature to determine where terminations are located.
 2. Dimensions shown are inches (mm).

DIMENSIONS

Figure 22.1 - Dimensions – Base Unit UVD (Digit 9: Ventilation Configuration A, B or C)



- Note:**
1. Base Unit UVD (Digit 9: Ventilation Configuration = A) will be provided with no Exhaust Air Outlet.
 2. Unit will be provided with top and bottom piping knockouts. Reference Digit 20 in unit nomenclature to determine where terminations are located.
 3. Dimensions shown are inches (mm).

Table 22.1 - Dimensions

Unit Size	A	B
30 / 40 / 50 / 60	32.00 (812.8mm)	7.50 (190.5mm)
80	29.00 (736.6mm)	10.50 (266.7mm)

PERFORMANCE DATA

Table 23.1 - Technical Data - IP Units

	30		40		50		60		80	
Nominal Cooling Capacity	MBH	GPM	MBH	GPM	MBH	GPM	MBH	GPM	MBH	GPM
6 Row 'A' Coil (Digit 15 = 6) ①	32.0	6.4	40.0	8.0	46.6	9.3	57.7	11.5	78.5	15.0
Nominal Heating Capacity	MBH	GPM	MBH	GPM	MBH	GPM	MBH	GPM	MBH	GPM
1 Row 'A' Coil (Digit 15 = 6, Digit 16 = 1) ②	38.3	2.0	48.0	2.5	57.1	3.0	64.6	3.4	73.7	3.8
2 Row 'A' Coil (Digit 15 = 6, Digit 16 = 2) ②	41.5	2.2	54.6	2.8	69.9	3.6	79.3	4.1	105.8	5.5
1 Row Slab Coil (Digit 15 = 0, Digit 16 = 1) ②	33.4	1.7	40.8	2.1	48.6	2.5	55.2	2.9	64.8	3.4
2 Row Slab Coil (Digit 15 = 0, Digit 16 = 2) ②	44.1	2.3	56.3	2.9	70.1	3.6	77.8	4.0	90.1	4.6
6 Row 'A' Coil (Digit 16 = 6) ③	49.4	6.4	65.4	8.0	79.7	9.3	94.4	11.5	123.4	15.0
Coils - Qty and Size	Qty	ft ²	Qty	ft ²	Qty	ft ²	Qty	ft ²	Qty	ft ²
Chilled Water and Hot Water - 'A' Frame	2	4.36	2	4.36	2	4.36	2	4.36	2	4.36
Hot Water - Slab	1	3.33	1	3.33	1	3.33	1	3.33	1	3.33
Supply Fan & Motor	Direct Drive Centrifugal with ECM Motor									
Fan Quantity	1		1		1		1		1	
Motor Size (HP) (Qty 1)	1/2		1/2		1/2		3/4		1	
Nominal Airflow (CFM, High/Med/Low)	750 / 600 / 500		1000 / 750 / 600		1250 / 1000 / 750		1500 / 1250 / 1000		2000 / 1750 / 1500	
Rated/Max External Static Pressure (in WC)	0.5		0.5		0.5		0.5		0.5	
Powered Exhaust Fan & Motor (Optional)	Direct Drive Centrifugal with ECM Motor									
Fan Quantity	1		1		1		1		1	
Motor Size (HP)	1/2		1/2		1/2		1/2		3/4	
Max Exh. Airflow (CFM, High/Med/Low)	600 / 480 / 400		800 / 600 / 480		1000 / 800 / 600		1200 / 1000 / 800		1600 / 1400 / 1200	
Rated/Max External Static Pressure (in WC)	0.5		0.5		0.5		0.5		0.5	
Dedicated Outside Air Fan & Motor (Digit 9= F,H,J Only)	Direct Drive Centrifugal with ECM Motor									
Fan Quantity	1		1		1		1		OUTSIDE AIR FAN & MOTOR NOT AVAILABLE FOR SIZE 80 UNITS	
Motor Size (HP)	1/4		1/4		1/4		1/4			
Max Outside Airflow (CFM)	500		500		500		500			
Rated/Max External Static Pressure (in WC)	0.05		0.05		0.05		0.05			
Base Unit Weight										
Operating Weight (lbs) ④	550		550		550		550		550	
Filter	Qty	Size	Qty	Size	Qty	Size	Qty	Size	Qty	Size
Primary Coil - Quantity (MERV 8 or 13)	2	12 x 24	2	12 x 24	2	12 x 24	2	12 x 24	2	16 X 24
Outside Air Pretreat Coil - Quantity (MERV 8)	1	18 x 24	1	18 x 24	1	18 x 24	1	18 x 24	N/A	
Energy Recovery Wheel (Optional)	Data shown for all units									
Outdoor Air Volume	225		300		375		450		ERW NOT AVAILABLE FOR SIZE 80 UNITS	
Total Capacity Recovered - Cooling (MBH) ⑤	9.9		12.4		14.5		16.3			
Measured Cooling Effectiveness	77.8		73.3		68.8		64.4			
Total Capacity Recovered - Heating (MBH) ⑥	8.7		11.0		13.1		14.8			
Measured Heating Effectiveness	80.1		76.2		72.3		68.4			

① Cooling Capacity based on Air On 80/67°F (26.7/19.4°C) Dry/Wet Bulb, 45°F (7.2°C) Entering Water, 55°F (12.8°C) Leaving Water, High Fan Speed.
 ② Hot water heating capacity based on Air On 70/58.5°F (21.1/14.7°C) Dry/Wet Bulb, 180°F (82.2°C) Entering Water, 140°F (60°C) Leaving Water, High Fan Speed.
 ③ Hot water heating capacity based on Air On 70/58.5°F (21.1/14.7°C) Dry/Wet Bulb, 140°F (60°C) Entering Water, flow equal to cooling flow, High Fan Speed.
 ④ Weight is base unit only. Additional options and accessories not included.
 ⑤ Cooling capacity based on: Room 75/63°F (23.9/17.2°C) Dry/Wet Bulb, Ambient 95/78°F (35/25.6°C) Dry/Wet Bulb.
 ⑥ Heating capacity based on: Room 70/58.5°F (21.1/14.7°C) Dry/Wet Bulb, Ambient 35/33°F (1.7/0.6°C) Dry/Wet Bulb.
 ⑦ For conditions different to those shown, refer to Accuspec Breeze.

PERFORMANCE DATA

Table 24.1 - Technical Data - SI Units

	30		40		50		60		80	
Nominal Cooling Capacity	kW/hr	L/min	kW/hr	L/min	kW/hr	L/min	kW/hr	L/min	kW/hr	L/min
6 Row 'A' Coil (Digit 15 = 6) ①	9.4	24.2	11.7	30.3	13.7	35.2	16.9	43.5	23.0	56.8
Nominal Heating Capacity	kW/hr	L/min	kW/hr	L/min	kW/hr	L/min	kW/hr	L/min	kW/hr	L/min
1 Row 'A' Coil (Digit 15 = 6, Digit 16 = 1) ②	11.2	7.6	14.1	9.5	16.7	11.4	18.9	12.9	21.6	14.4
2 Row 'A' Coil (Digit 15 = 6, Digit 16 = 2) ②	12.2	8.3	16.0	10.6	20.5	13.6	23.2	15.5	31.0	20.8
1 Row Slab Coil (Digit 15 = 0, Digit 16 = 1) ②	9.8	6.4	12.0	7.9	14.2	9.5	16.2	11.0	19.0	12.9
2 Row Slab Coil (Digit 15 = 0, Digit 16 = 2) ②	12.9	8.7	16.5	11.0	20.5	13.6	22.8	15.1	26.4	17.4
6 Row 'A' Coil (Digit 16 = 6) ③	14.5	24.2	19.2	30.3	23.4	35.2	27.7	43.5	36.2	56.8
Coils - Qty and Size	Qty	M ²	Qty	M ²	Qty	M ²	Qty	M ²	Qty	M ²
Chilled Water and Hot Water - 'A' Frame	2	0.41	2	0.41	2	0.41	2	0.41	2	0.41
Hot Water - Slab	1	0.31	1	0.31	1	0.31	1	0.31	1	0.31
Supply Fan & Motor	Direct Drive Centrifugal with ECM Motor									
Fan Quantity	1		1		1		1		1	
Motor Size (Qty 1)	1/2		1/2		1/2		3/4		1	
Nominal Airflow (m ³ /min, High/Med/Low)	21.0 / 16.8 / 14.0		28.0 / 21.0 / 16.8		35.0 / 28.0 / 21.0		42.0 / 35.0 / 28.0		56.0 / 49.0 / 42.0	
Rated/Max External Static Pressure (kPa)	0.1		0.1		0.1		0.1		0.1	
Powered Exhaust Fan & Motor (Optional)	Direct Drive Centrifugal with ECM Motor									
Fan Quantity	1		1		1		1		1	
Motor Size (HP)	1/2		1/2		1/2		1/2		3/4	
Max Exh. Airflow (m ³ /min, High/Med/Low)	16.8 / 13.4 / 11.2		22.4 / 16.8 / 13.4		28.0 / 22.4 / 16.8		33.6 / 28.0 / 22.4		44.8 / 39.2 / 33.6	
Rated/Max External Static Pressure (kPa)	0.1		0.1		0.1		0.1		0.1	
Dedicated Outside Air Fan & Motor (Digit 9= F,H,J Only)	Direct Drive Centrifugal with ECM Motor									
Fan Quantity	1		1		1		1		OUTSIDE AIR FAN & MOTOR NOT AVAILABLE FOR SIZE 80 UNITS	
Motor Size (HP)	1/4		1/4		1/4		1/4			
Max Outside Airflow (m ³ /min)	14		14		14		14			
Rated/Max External Static Pressure (kPa)	0.012		0.012		0.012		0.012			
Base Unit Weight										
Operating Weight (kg) ④	249		249		249		249		249	
Filter	Qty	Size	Qty	Size	Qty	Size	Qty	Size	Qty	Size
Primary Coil - Quantity (MERV 8 or 13)	2	305x610	2	305x610	2	305x610	2	305x610	2	410x610
Outside Air Pretreat Coil - Quantity (MERV 8)	1	460x610	1	460x610	1	460x610	1	460x610	N/A	
Energy Recovery Wheel (Optional)	Data shown for all units									
Outdoor Air Volume (m ³ /min)	6		8		11		13		ERW NOT AVAILABLE FOR SIZE 80 UNITS	
Total Capacity Recovered - Cooling (kW/hr) ⑤	2.9		3.6		4.2		4.8			
Measured Cooling Effectiveness	77.8		73.3		68.8		64.4			
Total Capacity Recovered - Heating (kW/hr) ⑥	2.5		3.2		3.8		4.3			
Measured Heating Effectiveness	80.1		76.2		72.3		68.4			

① Cooling Capacity based on Air On 80/67°F (26.7/19.4°C) Dry/Wet Bulb, 45°F (7.2°C) Entering Water, 55°F (12.8°C) Leaving Water, High Fan Speed.

② Hot water heating capacity based on Air On 70/58.5°F (21.1/14.7°C) Dry/Wet Bulb, 180°F (82.2°C) Entering Water, 140°F (60°C) Leaving Water, High Fan Speed.

③ Hot water heating capacity based on Air On 70/58.5°F (21.1/14.7°C) Dry/Wet Bulb, 140°F (60°C) Entering Water, flow equal to cooling flow, High Fan Speed.

④ Weight is base unit only. Additional options and accessories not included.

⑤ Cooling capacity based on: Room 75/63°F (23.9/17.2°C) Dry/Wet Bulb, Ambient 95/78°F (35/25.6°C) Dry/Wet Bulb.

⑥ Heating capacity based on: Room 70/58.5°F (21.1/14.7°C) Dry/Wet Bulb, Ambient 35/33°F (1.7/0.6°C) Dry/Wet Bulb.

⑦ For conditions different to those shown, refer to Accuspec Breeze.

PERFORMANCE DATA - HIGH HUMIDITY PRETREAT COILS

Table 25.1 - Outside Air Pretreatment Chilled Water Coil Performance - IP Units ①

Fluid Type		45°F Water											
Outdoor Air Temp	°F	95DB/78WB				93DB/77WB				90DB/76WB			
Fluid Flow Rate	GPM	3.0	4.5	7.0	7.5	2.5	4.0	7.0	7.5	2.5	4.0	6.5	7.5
Outdoor Air Flow to Coil	CFM	150	300	400	500	150	300	400	500	150	300	400	500
Total Cooling Capacity	MBH	13.5	24.7	32.5	38.0	12.4	23.1	31.1	36.4	11.9	22.0	29.2	34.6
Sensible Cooling Capacity	MBH	7.1	13.4	17.6	20.8	6.7	12.6	16.9	19.9	6.2	11.8	15.6	18.6
Leaving Air Temp DB	°F	52.1	54.7	55.4	57.6	52.9	55.0	55.0	57.1	52.5	54.6	54.9	56.5
Leaving Air Temp WB	°F	52.0	54.7	55.1	57.0	52.7	55.0	54.7	56.5	52.5	54.6	54.9	56.3
Leaving Water Temp	°F	54.3	56.4	54.7	55.6	55.4	57.0	54.3	55.1	54.9	56.4	54.3	54.6
Water Pressure Drop	psi	0.8	1.8	4.0	4.5	0.6	1.4	4.0	4.5	0.6	1.4	3.5	4.5

Table 25.2 - Outside Air Pretreatment Chilled Water Coil Performance - SI Units ①

Fluid Type		45°F Water											
Outdoor Air Temp	°C	35DB/26WB				34DB/25WB				32DB/24WB			
Fluid Flow Rate	L/min	11.4	17.0	26.5	28.4	9.5	15.1	26.5	28.4	9.5	15.1	24.6	28.4
Outdoor Air Flow to Coil	m³/min	4	8	11	14	4	8	11	14	4	8	11	14
Total Cooling Capacity	kW/Hr	4.0	7.2	9.5	11.1	3.6	6.8	9.1	10.7	3.5	6.4	8.6	10.1
Sensible Cooling Capacity	kW/Hr	2.1	3.9	5.2	6.1	2.0	3.7	5.0	5.8	1.8	3.5	4.6	5.4
Leaving Air Temp DB	°C	11.2	12.6	13.0	14.2	11.6	12.8	12.8	13.9	11.4	12.5	12.7	13.6
Leaving Air Temp WB	°C	11.1	12.6	12.8	13.9	11.5	12.8	12.6	13.6	11.4	12.5	12.7	13.5
Leaving Water Temp	°C	12.4	13.5	12.6	13.1	13.0	13.9	12.4	12.8	12.7	13.5	12.4	12.5
Water Pressure Drop	kPa	5.5	12.4	27.6	31.0	4.1	9.7	27.6	31.0	4.1	9.7	24.1	31.0

Table 25.3 - Outside Air Pretreatment Hot Water Coil for Freeze Protection Performance - 180°F - IP Units ①

Fluid Type		180°F Water											
Outdoor Air Temp	°F	20				30				37			
Fluid Flow Rate	GPM	0.8	0.8	1.0	1.0	0.7	0.7	0.9	1.0	0.6	0.6	0.7	0.8
Outdoor Air Flow to Coil	CFM	250	350	425	500	250	350	425	500	250	350	425	500
Heating Capacity Total	MBH	20.2	22.9	26.6	28.0	18.1	20.2	24.0	26.3	16.0	17.6	20.4	22.8
Leaving Air Temp	°F	94.6	80.3	77.7	71.6	96.6	83.1	82.1	78.5	95.9	83.4	81.1	79.1
Leaving Water Temp	°F	129.4	122.3	126.8	124.0	128.4	122.3	126.7	127.4	126.8	124.4	121.8	123.0
Water Pressure Drop	psi	0.7	0.7	1.1	1.1	0.5	0.5	0.9	1.1	0.4	0.4	0.5	0.7

Table 25.4 - Outside Air Pretreatment Hot Water Coil for Freeze Protection Performance - 180°F - SI Units ①

Fluid Type		82°C Water											
Outdoor Air Temp	°C	-6.66				-1.11				2.775			
Fluid Flow Rate	L/min	3.0	3.0	3.8	3.8	2.6	2.6	3.4	3.8	2.3	2.3	2.6	3.0
Outdoor Air Flow to Coil	m³/min	7	10	12	14	7	10	12	14	7	10	12	14
Heating Capacity Total	kW/Hr	5.9	6.7	7.8	8.2	5.3	5.9	7.0	7.7	4.7	5.2	6.0	6.7
Leaving Air Temp	°C	34.7	26.8	25.4	22.0	35.9	28.4	27.8	25.8	35.5	28.5	27.3	26.1
Leaving Water Temp	°C	54.1	50.1	52.6	51.1	53.5	50.1	25.8	52.9	52.6	51.3	49.8	50.5
Water Pressure Drop	kPa	4.8	4.8	7.6	7.6	3.4	3.4	52.9	7.6	2.8	2.8	3.4	4.8

① Note: For conditions different to those shown, refer to Accuspec Breeze.

PERFORMANCE DATA - HIGH HUMIDITY PRETREAT COILS

Table 26.1 - Outside Air Pretreatment Hot Water Coil for Freeze Protection Performance - 140°F - IP Units ①

Fluid Type		140°F Water											
Outdoor Air Temp	°F	20				30				37			
Fluid Flow Rate	GPM	0.8	0.8	1.0	1.5	0.7	0.7	0.9	1.3	0.6	0.6	0.7	0.8
Outdoor Air Flow to Coil	CFM	250	350	425	500	250	350	425	500	250	350	425	500
Heating Capacity Total	MBH	14.5	16.2	19.2	20.1	12.5	13.9	16.8	18.6	10.8	11.9	13.7	15.4
Leaving Air Temp	°F	73.3	62.6	61.7	57.1	76.1	66.5	66.4	64.2	76.9	68.3	66.7	65.5
Leaving Water Temp	°F	103.9	99.6	101.5	99.7	104.3	100.4	102.7	102.9	103.9	100.4	100.9	101.4
Water Pressure Drop	psi	0.7	0.7	1.1	2.3	0.5	0.5	0.9	1.8	0.4	0.4	0.5	0.7

Table 26.2 - Outside Air Pretreatment Hot Water Coil for Freeze Protection Performance - 140°F - SI Units ①

Fluid Type		60°C Water											
Outdoor Air Temp	°C	-6.7				-1.1				2.8			
Fluid Flow Rate	L/min	3.0	3.0	3.8	5.7	2.6	2.6	3.4	4.9	2.3	2.3	2.6	3.0
Outdoor Air Flow to Coil	m ³ /min	7	10	12	14	7	10	12	14	7	10	12	14
Heating Capacity Total	kW/Hr	4.2	4.7	5.6	5.9	3.7	4.1	4.9	5.4	3.2	3.5	4.0	4.5
Leaving Air Temp	°C	22.9	17.0	16.5	13.9	24.5	19.1	19.1	17.9	24.9	20.1	19.3	18.6
Leaving Water Temp	°C	39.9	37.5	38.6	37.6	40.1	38.0	39.2	39.3	39.9	38.0	38.2	38.5
Water Pressure Drop	kPa	4.8	4.8	7.6	15.9	3.4	3.4	6.2	12.4	2.8	2.8	3.4	4.8

Table 26.3 - Electric Heat for Outside Air Chilled Water Pretreat Coil for Freeze Protection - IP Units ①

1.5 kW Electric Preheat Element									
Outdoor Airflow	CFM	150	200	250	300	350	400	450	500
Air Temperature Rise	°F	31.6	23.7	19.0	15.8	13.5	11.8	10.5	9.5

Table 26.4 - Electric Heat for Outside Air Chilled Water Pretreat Coil for Freeze Protection - SI Units ①

1.5 kW Electric Preheat Element									
Outdoor Airflow	m ³ /min	4.2	5.6	7	8.4	9.8	11.2	12.6	14
Air Temperature Rise	°C	0.2	4.6	7.2	9.0	10.2	11.2	11.9	12.5

① Note: For conditions different to those shown, refer to Accuspec Breeze.

MAINTENANCE

Maintenance

WARNING

1. Disconnect power supply before making wiring connections or working on this equipment. Follow all applicable safety procedures to prevent accidental power up. Failure to do so can result in injury or death from electrical shock or moving parts and may cause equipment damage.
2. When servicing or repairing this equipment, use only factory-approved service replacement parts. A complete replacement parts list may be obtained by contacting the factory. Refer to the rating plate on the appliance for complete appliance model number, serial number, and company address. Any substitution of parts or controls not approved by the factory will be at the owner's risk.

AVERTISSEMENT

1. Débranchez l'alimentation électrique avant d'effectuer des connexions ou de travailler sur l'appareil. Respectez toutes les procédures de sécurité qui s'appliquent pour éviter toute mise en marche accidentelle. Le non-respect de cette directive peut entraîner des blessures ou la mort causées par un choc électrique ou des pièces mobiles, en plus d'endommager l'appareil.
2. Pour l'entretien et les réparations de cet appareil, utilisez uniquement des pièces d'origine certifiées. Pour la liste complète des pièces de rechange, consultez Modine Manufacturing Company. Le numéro de modèle complet, le numéro de série et l'adresse du fabricant figurent sur la plaque signalétique fixée à l'appareil. Toute substitution de pièce ou de commande non approuvée par le fabricant sera aux risques du propriétaire.

CAUTION

1. Do not attempt to reuse any mechanical or electrical component which has been wet. Such component must be replaced.
2. When servicing the unit, some components may be hot enough to cause pain or injury. Allow time for cooling of hot components before servicing.

ATTENTION

1. Ne tentez pas de réutiliser un composant mécanique ou électrique qui a été mouillé. Ces composants doivent être remplacés.
2. Durant l'entretien de l'unité, certains composants peuvent être assez chauds pour causer de la douleur ou une blessure. Laissez les composants chauds se refroidir avant de procéder à tout entretien.

IMPORTANT

1. Start up and adjustment procedures, installation, and service of these appliances must be performed by a qualified installation and service agency.
2. No water-flow can cause a freeze condition resulting in damage to the coil.
3. To check most of the Possible Remedies in the troubleshooting guide listed in Table 30.1, refer to the applicable sections of the manual.

IMPORTANT

1. Les procédures de démarrage et de réglage, l'installation et le service de ces appareils doivent être confiés à un centre d'installation et de service qualifié.
2. L'absence d'écoulement d'eau risque de causer une condition de gel et d'endommager le serpentin.
3. Pour essayer la plupart des solutions possibles suggérées dans le guide de dépannage du Table 30.1, reportez-vous aux sections correspondantes du manuel.

The routine care and maintenance of this unit will increase longevity, provide for the proper operational performance, and reduce the probability of failure.

Once the unit is operational, it will be necessary to perform certain routine maintenance/service checks. Following is a Maintenance Schedule with the recommended checks. If your unit is equipped with special features, there may be additional checks that are required. Consult the factory for assistance.

The use of torque screwdrivers on panel, cover or component mounting screws is not recommended. Hand-start all screws. If electric drills are used – set at the lowest possible torque.

Access

1. Access to the unit is gained by opening the door using the door key that is provided.
2. Access to the optional powered exhaust fan is gained by removal of the sound trap panel in the bottom section of the unit.
3. Access to the supply fan is gained by carefully swinging open the control panel.

MAINTENANCE

Maintenance Schedule

Every THREE (3) MONTHS

Change the main filters by sliding the filter out of the track. The filters are positioned under the indoor coil. Do not run the unit without filters.

Every SIX (6) MONTHS

(Before the heating and cooling season)

1. With the Disconnect Switch in the "OFF" position, inspect all electrical circuits for loose connections and signs of overheating, arcing, chafing or other physical damage. The electrical control section should also be wiped clean of all dirt that may affect the unit operation.
2. Check for correct fan operation, no excessive noise or vibrations.
3. Wash the outside air filters (energy recovery wheel or economizer filters (Optional).
4. Check the electric heat (Optional). See procedure below.
5. Wash down the cabinet using mild detergent and treat any paint damage or rust as necessary.
6. Check the control wiring and sensors. Check the operation and sequencing of controls and ensure that all relevant set points are recorded.
7. Before heating season, it is highly recommended to drain the chilled water coil to prevent freezing. With the hot water coil being in the reheat position, the chilled water coil is more prone to freezing on the air side if not drained.


Every EIGHTEEN (18) MONTHS

1. Clean the Energy Recovery Wheel (if equipped). See procedure below:
The Energy Recovery Wheel is mounted in a fully assembled cartridge for easy installation, removal and maintenance.
Rotary counter-blow heat exchangers (heat wheels) with laminar airflow are "self cleaning" with respect to dry particles. Small particles may pass through, while larger particles that land on the surface are blown clear as the flow direction is reversed. For this reason, the primary need for cleaning is to remove films of oil based aerosols that have condensed on energy transfer surfaces.
 - a. Remove the bolts holding the ERV assembly to the right hand and left hand side panels and lower sound panel section. Disconnect the ERV plug and socket and slide the entire assembly out of the unit. It is recommended that two people are used for this operation.
 - b. Remove the top panel of the ERV assembly and disconnect the wheel motor plug and socket. Lift the wheel (attached to plate), top edge first, out of the ERV assembly. After detaching the wheel belt, unscrew the wheel fasteners and crossbar and remove the wheel from the plate.
 - c. Clean the wheel according to the Cleaning Airchange Energy Recovery Wheels instructions available on the Airchange website: www.airchange.com.
2. Check electric heat element for freeze protection on outside air chilled water pretreatment coil. (Digit 9=H)
 - a. Check that the electrical connections are secure.
 - b. Check the operation of the electric heat element.

REPLACEMENT PARTS

When servicing, repairing or replacing parts on these units, locate the model serial plate on the unit (see Figure 25.1) and always give the complete Model Number and Serial Number from the unit. For a complete description of the model number, see Model Nomenclature on page 28.

Figure 28.1 - Serial Plate EXAMPLE

		Modine Manufacturing Company 604 Liberty Ln West Kingston, RI 02892 Phone: 1-866-823-1631	
999999			
SENTINEL UNIT			
MODEL NUMBER / NUMERO DE MODELE UVC60BABCBBNN261R00TNNAN		OPTIONAL ITEMS: HOT WATER COIL: MAX TEMP PRESSURE 93 C 862 kPa (200) F (125) PSIG	
SERIAL NUMBER / NUMERO DE SERIE 999999S1221-1250		STEAM COIL: MAX TEMP PRESSURE 149 C 345 kPa (300 F) (50) PSIG	
VOLTS / PHASE / HZ 208V~ 60Hz			
Exhaust Fan Motor 5 FLA (1/2 HP) 370 W	ELECTRIC HEAT: n/a kW n/a A		
SUPPLY FAN MOTOR 5 FLA (3/4 HP) 560 W	EH FREEZE PROTECT: n/a kW n/a A		
WIRING DIAGRAM 9999	ENERGY WHEEL (n/a HP) n/a A n/a W		
CONDENSATE PUMP (n/a HP) n/a FLA n/a W	CIRCULATING PUMP (n/a HP) n/a A n/a W		
ELECTRICAL RATINGS FLA MCA MOP 10 A 15 A 20 A			
MAXIMUM EXTERNAL STATIC PRESSURE PRESSION STATIQUE EXTERIEUR MAXIMUM		125 Pa (0.25) ^{INWC} PO.CO'E	
CLEARANCE TO COMBUSTIBLE MATERIAL DÉGAGEMENT DE MATIÈRES COMBUSTIBLES		0 m (0) ^{IN} PO	
5H1019190000 REV H			

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TROUBLESHOOTING

⚠ WARNING

1. Disconnect power supply before making wiring connections or working on this equipment. Follow all applicable safety procedures to prevent accidental power up. Failure to do so can result in injury or death from electrical shock or moving parts and may cause equipment damage.
2. When servicing or repairing this equipment, use only factory-approved service replacement parts. A complete replacement parts list may be obtained by contacting the factory. Refer to the rating plate on the appliance for complete appliance model number, serial number, and company address. Any substitution of parts or controls not approved by the factory will be at the owner's risk.

⚠ AVERTISSEMENT

1. Débranchez l'alimentation électrique avant d'effectuer des connexions ou de travailler sur l'appareil. Respectez toutes les procédures de sécurité qui s'appliquent pour éviter toute mise en marche accidentelle. Le non-respect de cette directive peut entraîner des blessures ou la mort causées par un choc électrique ou des pièces mobiles, en plus d'endommager l'appareil.
2. Pour l'entretien et les réparations de cet appareil, utilisez uniquement des pièces d'origine certifiées. Pour la liste complète des pièces de rechange, consultez Modine Manufacturing Company. Le numéro de modèle complet, le numéro de série et l'adresse du fabricant figurent sur la plaque signalétique fixée à l'appareil. Toute substitution de pièce ou de commande non approuvée par le fabricant sera aux risques du propriétaire.

⚠ CAUTION

1. Do not attempt to reuse any mechanical or electrical component which has been wet. Such component must be replaced.
2. When servicing the unit, some components may be hot enough to cause pain or injury. Allow time for cooling of hot components before servicing.

⚠ ATTENTION

1. Ne tentez pas de réutiliser un composant mécanique ou électrique qui a été mouillé. Ces composants doivent être remplacés.
2. Durant l'entretien de l'unité, certains composants peuvent être assez chauds pour causer de la douleur ou une blessure. Laissez les composants chauds se refroidir avant de procéder à tout entretien.

IMPORTANT

1. Start up and adjustment procedures, installation, and service of these appliances must be performed by a qualified installation and service agency.
2. No water-flow can cause a freeze condition resulting in damage to the coil.
3. To check most of the Possible Remedies in the troubleshooting guide listed in Table 30.1, refer to the applicable sections of the manual.

IMPORTANT

1. Les procédures de démarrage et de réglage, l'installation et le service de ces appareils doivent être confiés à un centre d'installation et de service qualifié.
2. L'absence d'écoulement d'eau risque de causer une condition de gel et d'endommager le serpent.
3. Pour essayer la plupart des solutions possibles suggérées dans le guide de dépannage du Table 30.1, reportez-vous aux sections correspondantes du manuel.

Table 30.1 - Troubleshooting - General

Trouble	Possible Cause	Possible Remedy
A. Unit Not Operating - Power On	1. Unit mounted disconnect in the "OFF" position.	1. Turn the disconnect switch to the "ON" position.
	2. Unit mounted 3-speed selector switch in the "0" position.	2. Turn the 3-speed selector switch to the "1, 2, or 3" position.
	3. Unit switched OFF in the microprocessor.	3. Consult microprocessor documentation.
	4. Delay on start set incorrectly.	4. Consult microprocessor documentation.
	5. Unit not in occupied mode.	5. Consult microprocessor documentation, and consult microprocessor occupied setpoints.
	6. Fire/smoke alarm tripped.	6. De-energize and re-energize unit.
	7. Tripped circuit breakers.	7. Reset the tripped circuit breaker(s).
	8. Loose mains or control wiring.	8. With power OFF from distribution panel inspect the field wiring connections in the electrical panel.
	9. Occupancy sensor malfunction.	9. Inspect connections beginning with sensor input from the microprocessor.
	10. Hot water freeze protection (optional) stat tripped.	10. Manually reset at stat.

TROUBLESHOOTING

Table 31.1 - Troubleshooting - General

Trouble	Possible Cause	Possible Remedy
B. Unit Operating - No Mechanical Heating/Cooling	1. Heating/cooling not required.	1. Verify applicable set point with return air temperature.
	2. No output from microprocessor.	2. Consult microprocessor documentation.
	3. Loose control wiring connections.	3. Inspect connections beginning with supply fan output from the microprocessor.
	4. Tripped circuit breakers.	4. Reset the tripped circuit breaker(s).
	5. Low temperature unit lockout.	5. Consult microprocessor setpoints.
	6. Condensate pan/pump float switch tripped.	6. Check condensate pan/pump and piping for blockage.
C. No Indoor Fan	1. Motor tripped on internal overload.	1. Let motor cool down and reset - possible bad motor or blocked filter.
	2. Fan not required	2. Consult microprocessor documentation, or set thermostat to "ON". Check if unit is in unoccupied and standby mode.
	3. No power to the fan.	3. Check to make sure plugs are locked in place and all pins are secure. Check for 24V control signal.
	4. Current sensor fault.	4. Make sure sensor is functioning correctly.
D. Electric Preheat for Freeze Protection (Digit 9=H) Not Operating	1. Electric heat not required.	1. Consult microprocessor documentation.
	2. Faulty electric heat relay.	2. Check operation of relay and wiring connections.
	3. Automatic or Manual reset overheat cutout switch is tripped (open).	3. The manual switch requires manual reset. Check automatic reset switch is closed. Check current draw of heating elements and compare to nameplate. Check location of sensing probe. To avoid incidental tripping of switch, do not power off unit in electric heating mode. Check for dirty filters and confirm correct airflow.
	4. Faulty heating element(s).	4. Replace elements as necessary.
E. Hot Water / Chilled Water Valve Not Operational (Option)	1. Heating not required.	1. Consult microprocessor documentation.
	2. Loose wiring connections.	2. Inspect connections beginning with valve output from the microprocessor. Check to ensure 24V supply power is present at actuator.
	3. Faulty heating actuator.	3. Replace actuator if faulty.
	4. Isolation valves are open.	4. Check for additional external isolation valves.
	5. Check for DC control signal.	5. Check for 2-10VDC signal from microprocessor.
F. Condensate Leaking	1. Condensate drain not piped up.	1. Pipe condensate drain.
	2. Condensate pan/line plugged.	2. Clean drain pan and piping.
	3. Condensate pump (optional) faulty.	3. Check operation of condensate pump. Replace pump if necessary.
G. Microprocessor Not Working - Faulty Operation	1. Loose sensor wire connectors.	1. Inspect sensor connections at the microprocessor.
	2. Strategy file corrupted.	2. Consult microprocessor documentation.
	3. Loose control wiring.	3. Check 24V power supply wiring.

MODEL IDENTIFICATION

Table 32.1 - Model Number Designations

1,2	3	4,5	6	7	8	9	10	11	12,13	14	15	16	17	18,19	20	21	22	23	24
PT	CC	MBH	SV	G	C	VC	FL	CS	DM	PA	CO	HO	HP	00	PC	CP	PH	MC	N

1, 2 - Product Type (PT)

UV - Sentinel

3 - Cooling Control (CC)

V - Valve Control - Blow Thru

D - Face & Bypass - Draw Thru

4,5 - Nominal Capacity (MBH)

30 - 30,000 Btu/Hr

40 - 40,000 Btu/Hr

50 - 50,000 Btu/Hr

60 - 60,000 Btu/Hr

80 - 80,000 Btu/Hr

6 - Supply Voltage (SV)

A - 115/60/1

B - 208/60/1

C - 230/60/1

H - 277/60/1

7 - Generation (G)

A - Factory assigned

8 - Controls (CC)

M - Modine Controls System

B - By Others - Field Installed

F - Factory Installed Free Issue

9 - Ventilation Configuration (VC)

A - Economizer with No Exhaust

B - Economizer with Gravity Exhaust

C - Economizer with Powered Exhaust

The following apply ONLY to Digit 3=V:

D - ERV with OA Damper

E - ERV with OA Damper & Economizer

F - Outside Air Chilled Water Pretreat Coil with

Damper, No Exhaust ①

H - Outside Air Chilled Water Pretreat Coil with

Damper and Electric Preheat, No Exhaust ①

J - Outside Air Chilled Water Pretreat Coil with

Damper and Hot Water Preheat, No Exhaust ①

① Configurations with Digit 9=F, H, or J are designed for locations with outside air that has a high latent load (high humidity), typically in the Southeastern states.

10 - Filters (FL)

A - MERV 8 (Standard)

C - MERV 13

11 - Case Construction (CS)

A - 20Ga (Standard)

B - 16Ga

12 - Door Mounted Stat (DS)

N - None

H - Horizontal Stat

13 - Door Mounted Other (DO)

N - None

S - Occupancy Sensor

14 - Piping Arrangement (PA)

2 - 2 Pipe or 4 Pipe (3/4")

15 - Cooling Option (CO)

0 - None

6 - 6-row coil

16 - Heating Option (HO)

0 - None

1 - 1-row coil

2 - 2-row coil

6 - 6-row coil (2-Pipe CW/HW changeover)

17 - Heating Position (HP)

N - Not Applicable

R - Reheat

18, 19

Reserved for future use.

20 - Piping Connections (PC)

T - Top Connections

B - Bottom Connections

21 - Cooling Package (CP)

1 - 2-Way Valve

2 - 3-Way Valve

4 - PIC Valve 1.5-7.5 GPM

5 - PIC Valve 2.4-12 GPM

N - None

22 - Heating Package (PH)

1 - 2-Way Valve

2 - 3-Way Valve

4 - PIC Valve 1.5-7.5 GPM

5 - PIC Valve 2.4-12 GPM

N - None

23 - Motor Control (MC)

A - Standard

B - Three Speed Switch

C - 0-10VDC Modulating Fan(s)

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Reserved for future use.

As Modine Manufacturing Company has a continuous product improvement program, it reserves the right to change design and specifications without notice.

