MODINE

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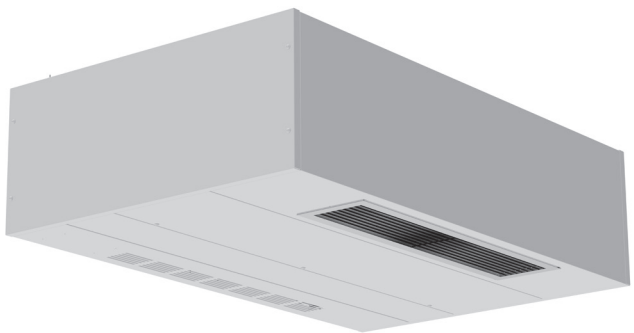
INSTALLATION AND SERVICE MANUAL
Floor and Ceiling Mounted Unit Ventilator
Models VFV, VFF, VCV, and VCF
Models ZFV, ZFF, ZCV, and ZCF



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⚠ WARNING

1. 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.
2. Units with DX evaporator coils (Model Digit 10=5) contain R-410A high pressure refrigerant. Hazards exist that could result in personal injury or death. Installation, maintenance, and service must only be performed by an HVAC technician qualified in R-410A refrigerant and using proper tools and equipment. Due to much higher pressure of R-410A refrigerant, DO NOT USE service equipment or tools designed for refrigerants other than R410A.

⚠ AVERTISSEMENT

1. 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 cancérogènes 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.
2. Les unités munies de serpentins évaporateurs DX (reportez-vous à la nomenclature du modèle) contiennent du fluide frigorigène à haute pression R-410A. Des dangers existent qui, s'ils se matérialisent, pourraient entraîner des blessures ou la mort. L'installation, l'entretien et le service ne doivent être effectués que par un technicien de CVC qualifié quant à l'usage du fluide frigorigène R-410A en utilisant les outils et l'équipement appropriés. En raison de la pression beaucoup plus élevée du fluide frigorigène R-410A, N'utilisez PAS des outils ou de l'équipement de service qui ne sont pas conçus spécifiquement pour le R-410A.

THIS MANUAL IS THE PROPERTY OF THE OWNER.
PLEASE BE SURE TO LEAVE IT WITH THE OWNER WHEN YOU LEAVE THE JOB.

IMPORTANT

1. 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.
2. Units with DX evaporator coils (Model Digit 10=5) contain the refrigerant R-410A. Review the R-410A Material Safety Data Sheet (MSDS) for hazards and first aid measures.
3. Refrigerant charging should only be carried out by an EPA-certified air conditioning contractor.

IMPORTANT

1. 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.
2. Les unités munies de serpentins évaporateurs DX (reportez-vous à la nomenclature du modèle) contiennent du fluide frigorigène R-410A. Pour les dangers et les mesures de premiers soins, consultez la fiche signalétique du R-410A.
3. L'ajout de frigorigène doit être confié à un spécialiste de la climatisation certifié par l'agence de la protection de l'environnement (EPA) du gouvernement américain.

INSPECTION ON ARRIVAL

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

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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 RIGOUREUSEMENT 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.

⚠ 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 complete 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 decommande non approuvée par le fabricant sera aux risques du propriétaire.

(SPECIAL PRECAUTIONS continued next page)
(PRÉCAUTIONS PARTICULIÈRES suite page suivante)

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 operate the units with steam pressure greater than 10 PSIG (68.9 kPa) Steam pressure must be 10 PSIG (68.9 kPa) or lower to avoid excessive discharge air temperatures that could cause burns or personal injury.
5. Do not overcharge the refrigeration system. This can lead to elevated compressor discharge pressure and possibly flooding the compressor with liquid.
6. When servicing the unit, some components may be hot enough to cause pain or injury. Allow time for cooling of hot components before servicing.
7. Do not attempt to reuse any mechanical or electrical component which has been wet. Such component 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. 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 faites pas fonctionner l'unité lorsque la pression de vapeur est supérieure à 10 lb/po² (68,9 kPa). La pression de vapeur doit être de 10 lb/po² (68,9 kPa) ou moins pour éviter des températures excessives de l'air d'évacuation qui pourraient causer des brûlures ou des blessures.
5. Ne surchargez pas le système de réfrigération. Cela peut entraîner une pression d'évacuation élevée du compresseur et possiblement son inondation.
6. 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.
7. Ne tentez pas de réutiliser un composant mécanique ou électrique qui a été mouillé. Ces composants doivent être remplacés.

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. All refrigeration checks must be made by a qualified R-410A refrigeration technician.
5. Do not release refrigerant to the atmosphere. When adding or removing refrigerant, all national, state/province, and local laws must be followed.
6. To check most of the Possible Remedies in the troubleshooting guide listed in *Table 33.1* and *Table 34.1*, refer to the applicable sections of the manual.
7. Unit performance will be significantly reduced at or above 7215ft (2200m) and should not be operated above this altitude.
8. 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.
9. 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 serpentin.
3. Ne laissez jamais l'appareil rempli d'eau dans un immeuble non chauffé sans lui ajouter de l'antigel.
4. Toutes les vérifications de réfrigération doivent être effectuées par un technicien de la réfrigération qualifié en matière de fluide frigorigène R-410A.
5. Ne rejetez pas de fluide frigorigène dans l'atmosphère. Respectez toutes les lois locales, provinciales/étatiques et nationales lors de l'ajout ou du retrait de fluide frigorigène.
6. Pour essayer la plupart des solutions possibles suggérées dans le guide de dépannage du Tableau 33.1 et Tableau 34.1, reportez-vous aux sections correspondantes du manuel.
7. 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.
8. 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.
9. Les enfants doivent être supervisés pour s'assurer qu'ils ne jouent pas avec l'appareil.

UNIT LOCATION

Table 5.1 - SI (Metric) Conversion Factors

To Convert	Multiply By	To Obtain	To Convert	Multiply By	To Obtain
"W.C.	0.24	kPa	CFH	1.699	m³/min
psig	6.893	kPa	Btu/ft³	0.0374	mJ/m³
°F	(°F-32) x 0.555	°C	pound	0.453	kg
inches	25.4	mm	Btu/hr	0.000293	kW/hr
feet	0.305	meters	gallons	3.785	liters
CFM	0.028	m³/min	psig	27.7	"W.C

SPECIAL DESIGN REQUESTS

Units are sometimes built units 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.

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 secured to a wood skid using metal brackets. Whenever possible, all lifting and handling of the unit should be done with the packing and skid in position. Due to the length of the unit, 72" (1829mm) forklift tines are recommended to avoid damaging the unit.

Remove the metal brackets prior to lifting the unit off of the skid. 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. A lifting device such as a forklift is needed to install this product.

A special key is provided with the unit for use with the tamper-proof cabinet locks on the top and front panels. 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 or ceiling structure is adequate for the required mounting provisions as outlined in the "INSTALLATION" section. For Ceiling Mounted units (Model Digit 2=C), check that ceiling is capable of supporting the weight of the unit.
2. Before installation, ensure that the correct electrical power supplies are 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 your Airedale representative immediately if discrepancies are noted.
5. Check to make sure that the units will have adequate clearance around them for servicing. For ceiling units, refer to *Figure 7.1.*
6. Note that units with cooling coils will have a condensate connection at the rear and suitable provisions should be made for draining. If multiple units tee into a common drain manifold, it must be sized to ensure free draining with all the units in operation.
7. For units with outside air, 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.

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

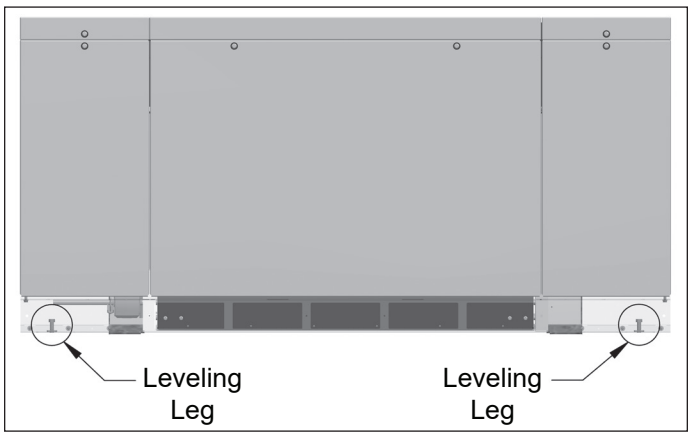
INSTALLATION - FLOOR MOUNTED (MODEL DIGIT 2=F) UNITS

Note: *(Ceiling Mounted Units proceed to the next section.)*

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.

1. Check the walls and floor for straightness and check to ensure that 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. 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.
3. Place the unit in position and use the leveling legs to ensure that the unit is level in both directions and also plumb. Remove the front kick panel to access the leveling legs (see *Figure 6.1*). Make sure that the foam gasket on the back of the unit forms a tight seal between the unit and the wall.
4. After adjusting for any irregularity in the location site, the cabinet must be secured to the back wall. The back of the cabinet has four holes, two on each side. The type of materials used for the walls will determine the type of fastener to use. Use 3/8" (9.5mm) diameter fasteners with 1-1/2" (38.1mm) diameter washers. Securing the cabinet to the wall helps to reduce movement and noise due to vibration. Drill the appropriate sized holes for the fasteners that are to be utilized, and insert the anchors that are to be used.
5. Make the condensate drain connection and the electrical connections to the unit. For standard units the condensate connection will be located in the left end compartment when left hand cooling is selected, and in the right end compartment when right hand cooling is selected. For units with a cooling piping package, condensate drain connection will always be located in the right end compartment.

Figure 6.1 - Leveling Leg Location



INSTALLATION - CEILING MOUNTED (MODEL DIGIT 2=C) UNITS

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.

1. It is recommended that the rear of unit be positioned at least 2" (50.8mm) away from a wall or structure to ensure bottom access panel containing filter and electrical box can fully open.
2. Remove both end panels to allow for access to the mounting holes. If installation does not allow for access through the end of the unit, remove bottom panels prior to placing unit on lifting device.
3. Place protective material on the supports of the lifting device to prevent scratching or denting of the unit. Place unit on the lifting device supporting the unit across its entire length.
4. Raise the unit to the mounting position. Use field supplied rods and fasteners with 1-1/2" (38.1mm) diameter washers to suspend the unit at the mounting holes located at the top of the unit (see *Figure 6.2*). The unit must be suspended at each of the (4) 1" (25.4mm) mounting holes. Do not suspend from any other locations. It is the responsibility of the installer to provide mounting hardware in accordance with local codes and sized appropriately for the given load.
5. Install unit level and plumb to prevent excessive vibration and premature failure. To ensure proper drainage unit must be level. Do not mount unit on a slope. Tighten all fasteners.
6. Make the condensate drain connection to the unit.

Figure 6.2 - Mounting Hole Locations

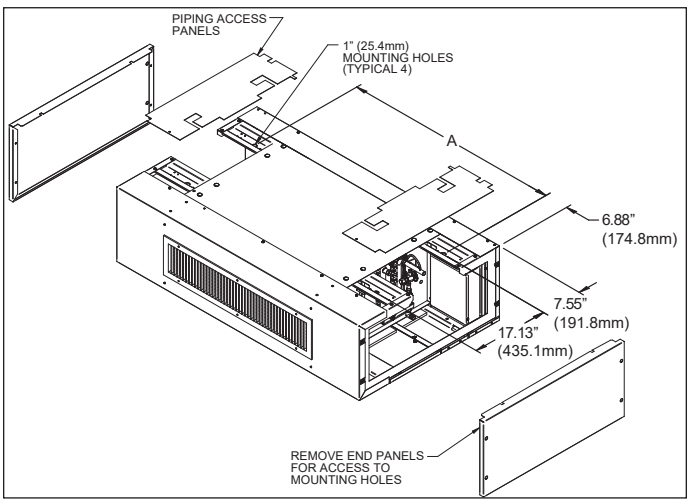


Table 6.1 - Mounting Hole Location Dimension A

Model Size	Dimension A
750	48.25" (1226mm)
1000	60.25" (1530mm)
1250	72.25" (1835mm)
1500	84.25" (2140mm)

INSTALLATION

Figure 7.1 - Recommended Service Clearance for Ceiling Mounted Units

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.

Units without Piping Package (Digits 21-22=NN)

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 (see *Figure 7.2* and *Figure 7.3*).
3. Include a circuit setter in the return line for water flow regulation.
4. A drain valve (hose bib) should also be provided for each coil to allow removal of water from the coil if located in an area subject to freezing.
5. It is advisable to use a pipe line strainer before each coil.
6. Provide adequate pipe hangers, supports, or anchors to secure the piping system independently of the coil.
7. See *Figure 19.1*, *Figure 19.2*, *Figure 21.1* & *Figure 21.2* for supply and return connections .

Units with Piping Package (Digit 21=D or H and 22=D or H)

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 3-way control valve is selected).
2. Piping package terminations are threaded drop ear connections, and are 3/4" for chilled water and 1/2" for hot water. Drop ear connections are attached to fixed plates, and along with the coil provide support for the piping package.
3. Piping package termination locations are set such that field piping can be routed through the bottom knock out, back knock out, or out the side of the unit.
4. See *Figure 23.1*, *Figure 23.2*, *Figure 25.1* & *Figure 25.2* for supply and return connections.

Figure 7.2 - Typical 2-Way Piping Installation

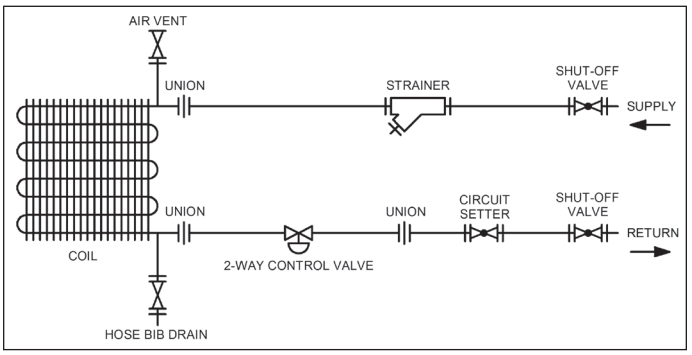
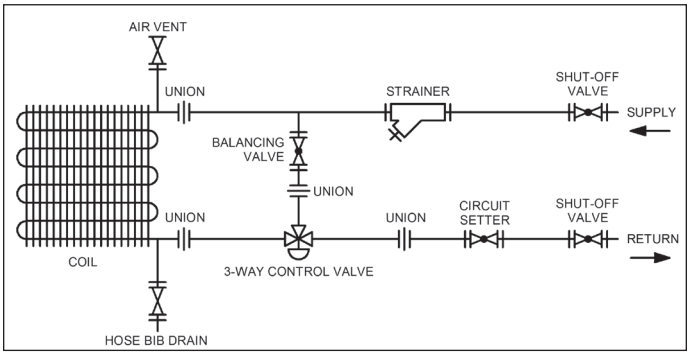


Figure 7.3 - Typical 3-Way Piping Installation



INSTALLATION

Piping Installation – Direct Expansion (DX) Coils

IMPORTANT

1. Units with DX evaporator coils contain the refrigerant R-410A. Review the R-410A Material Safety Data Sheet (MSDS) for hazards and first aid measures.
2. Refrigerant charging should only be carried out by an EPA-certified air conditioning contractor.

IMPORTANT

1. Les unités munies de serpentins évaporateurs DX (reportez-vous à la nomenclature du modèle) contiennent du fluide frigorigène R-410A. Pour les dangers et les mesures de premiers soins, consultez la fiche signalétique du R-410A.
2. L'ajout de frigorigène doit être confié à un spécialiste de la climatisation certifié par l'agence de la protection de l'environnement (EPA) du gouvernement américain.

Note: *R-410A refrigerant is the only approved refrigerant for this system. The unit should be piped up in accordance with good refrigeration and/or plumbing practices.*

See *Figure 20.1* through *Figure 20.2*, for suction and liquid line connections. For units with a heating pipe package, see, *Figure 24.1* through *Figure 24.4*, for suction and liquid line connections.

The outdoor condensing unit must be connected to the indoor unit coil using field supplied refrigerant grade (ACR) copper tubing that is internally clean and dry. Units should be installed only with the tubing sizes for the approved system combination as specified in *Table 27.1*.

Condensing unit is typically factory charged for a 15-foot (4.6m) lineset. For additional lineset lengths please refer to manufacturer's charging chart.

See the installation and maintenance manual provided with the condensing unit for installation, evacuation and system charge information.

Piping Installation - Steam Coils

⚠ CAUTION

Do not operate the units within steam pressure greater than 10 psig (68.9 kPa). Steam pressure must be 10 psig (68.9 kPa) or lower to avoid excessive discharge air temperatures that could cause burns or personal injury.

⚠ ATTENTION

Ne faites pas fonctionner l'unité lorsque la pression de vapeur est supérieure à 10 lb/po² (68,9 kPa). La pression de vapeur doit être de 10 lb/po² (68,9 kPa) ou moins pour éviter des températures excessives de l'air d'évacuation qui pourraient causer des brûlures ou des blessures.

1. Steam coils are supplied from the factory with 1" NPT connections
2. A steam trap should be provided with a trap of sufficient size and capacity to pass a minimum of two times the normal condensate released by the unit at the minimum differential pressure in the system.
3. See *Figure 22.1* and *Figure 22.2* for supply and return connections. For units with a heating pipe package, see *Figure 26.1* and *Figure 26.2* for supply and return connections.

Piping Insulation

Standard Units

Chilled water and condensate pipes should be insulated right up to the coil to prevent condensation which can damage objects located below the piping. Chilled water valves must also be insulated to prevent sweating. Hot water pipes should be insulated to reduce heat loss and to prevent overheating of the end compartment.

Units with Piping Package (not available on Ceiling Mounted units)

Chilled water piping package will not be insulated except when piping is routed through pipe tunnel. Chilled water piping package shall be positioned over drain pans to catch condensate that forms on piping.

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 component 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. When installing any wiring into the control box, 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.
4. 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.
5. 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.
6. A knockout with strain relief is provided on the electrical box for power wiring. Each unit is supplied with terminal strip for power connection.

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 9.1*).
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 9.1 - 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.
3. 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. L'absence d'écoulement d'eau risque de causer une condition de gel et d'endommager le serpentin.
3. Ne laissez jamais l'appareil rempli d'eau dans un immeuble non chauffé sans lui ajouter de l'antigel.

Note: *See Start-Up Sheet examples - Figure 13.1 and Figure 14.1.*

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. Check that the unit has no visible damage and that all the components are secure.
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. The unit and interconnecting piping have been evacuated correctly and the condensing unit service valves are open (DX Cooling units only).
8. Check that the plug is installed for the condensate connection that is not being used.
9. Check that the motor is secure and the shaft and blower set screws are tight. Rotate the blower shaft by hand.
10. Check that the filters have been properly installed.

UNIT START-UP PROCEDURE

Note: *For models with DX Cooling, see the installation and maintenance manual provided with the condensing unit for start-up information.*

1. (DX Cooling models only) Ensure that the condensing unit start-up procedure has been carried out, as detailed in the condensing unit installation and maintenance manual.
2. (DX Cooling models only) The compressor should be isolated by removing the connection at the Y1 terminal on the indoor unit. Main power can now be applied to the indoor and outdoor units. A system electrical check can now be carried out.
3. Switch the 3-speed switch to position 1, 2 or 3.
4. Switch the disconnect switch to the “ON” position.
5. Confirm that the blower motor is rotating in the correct direction and blowing air out of the supply air grill.
6. (Units with Chilled Water, Hot Water and Steam coils only) Ensure all valves are open to the unit.
7. (Units with Chilled Water and Hot Water only) Check water flow rates and pressure drops and compare to design.
8. Check that the dampers are not obstructed and move through their full range of motion.
9. 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 13.1 and Figure 14.1.*) in this manual for your records.
10. (DX Cooling models only) Shut unit down and disconnect the main power. The compressor signal Y1 (disconnected from the indoor unit in step 2) can now be re-connected and main power applied to the system.

Note: *(DX Cooling models only) The 24V power for the indoor unit control circuit is supplied from a unit factory-installed transformer. When the indoor and outdoor units are supplied from separate main supplies, care must be taken to ensure that the outdoor unit is isolated whenever the indoor unit power is removed. Failure to do so may result in freeze ups and other damage to the unit.*

SEQUENCE OF OPERATION

TYPICAL SEQUENCE OF OPERATION

The supply fan shall run at all times when unit is in occupied mode. When in unoccupied mode, the supply fan shall run only on a call for heating or cooling. The supply fan speed can be adjusted using the standard equipped manual 3-speed switch. If equipped with Modine Control System, the supply fan is programmed to run for 2 minutes (adjustable) after the heating or cooling cycle ends.

Freeze Stat (Optional)

On units equipped, an adjustable auto-resetting freeze stat is factory set to trip at 35˚F (1.7˚C) If the coil temperature reaches the limit and the freeze stat trips, it shall automatically reset when the coil temperature rises 5˚F above the setpoint. The freeze stat shall be wired so that upon tripping, power is removed from the supply fan, the outside air damper closes, and either the HW valve opens (model digit 3=V) or the face & bypass damper goes to full bypass (model digit 3=F).

Outside Air and Return Air Dampers (Optional)

The outside air and return air dampers control the mixture of return air and outside air drawn through the unit. Both dampers are linked together and are controlled by an actuator requiring a 2-6VDC proportional signal. At 2V, the dampers are positioned for full return air and no outside air. At 6V, the dampers are positioned for full outside air and no return air. The outside air damper shall open to a minimum position to provide ventilation requirements when the room is occupied. When in heating mode, if the space temperature is more than 4˚F from the heating setpoint, the outside air damper shall fully close. The outside air damper shall also be fully closed during unoccupied mode. If the unit is equipped with a CO2 sensor, the outside air damper shall modulate open proportionally to compensate for the CO2 levels in the room.

The dampers can act as economizers for free-cooling. If cooling is required and the outside air temperature is below the economizer outside air lockout temperature (60˚F (15.6˚C) recommended) and above 35˚F (1.7˚C) (adjustable), the outside air damper shall modulate open. On units with a Carel controller, the outside air damper shall fully open when the room temperature is above the setpoint by more than 1˚F (adjustable). Within 1˚F, the proportional band adjusts the outside air damper. When the unit is in free-cooling, water valves shall be fully closed, and if equipped, the face & bypass damper should move to full bypass position. The outside air lockout temperature on Carel units is factory set to 60˚F (15.6˚C) and is adjustable.

Chilled Water with Valve Control

Units with a chilled water coil and non-Carel controls desiring valve control shall use a non-spring return modulating valve operated by either a proportional (2-10VDC) or a tri-state (24VAC) signal. Units with a chilled water coil and Carel controls desiring valve control shall use a modulating valve requiring a tri-state signal. When the room temperature is above the cooling setpoint, the valve shall open proportionally according to the adjustable proportional band. The adjustable proportional band on the Carel controller is set to a default 1˚F (example: valve is 50% open when room temperature is 0.5˚F from setpoint). The Carel controller will not allow the chilled water valve to open when the outside air temperature is below 55˚F (12.8˚C).

Chilled Water with Face & Bypass Control

Units equipped with a chilled water coil and face & bypass control shall modulate the face & bypass damper via a spring return actuator, controlled by a proportional signal (2-5.5V). The face & bypass damper regulates the amount of return air and outside air passing through the chilled water coil. On a call for cooling, the damper shall open to the face of the coil proportionally based on how many degrees the room temperature is from the setpoint. The adjustable proportional band on the Carel controller is set to a default 1˚F (example: damper is 50% open when room temperature is 0.5˚F from setpoint). When the damper is in full bypass position (2V), all return and outside air bypasses the chilled water coil. When the damper is in full face position (5.5V), all return and outside air passes through the chilled water coil.

Direct Expansion (DX) Cooling Control

When the room temperature is above the cooling setpoint, the compressor will be energized. The compressor will de-energize when the room temperature falls below the cooling setpoint. If the factory installed low limit stat detects indoor evaporator coil temperatures below its set point, the compressor will be disabled.

Hot Water or Steam with Valve Control

Units with a hot water or steam coil and non-Carel controls and valve control shall use a spring-return, normally open modulating valve operated by a proportional signal (2-10VDC) or a tri-state (24VAC) signal. Units with Carel controls desiring valve control shall use a modulating control valve with a proportional signal. When the room temperature is below the heating setpoint, the valve shall open proportionally according to the adjustable proportional band. The adjustable proportional band on the Carel controller is set to a default 1˚F (example: valve is 50% open when room temperature is 0.5˚F from setpoint). If for any reason the supply air temperature drops below 55˚F (12.8˚C) (adjustable), the valve shall modulate open to maintain 55˚F (12.8˚C).

Hot Water with Face & Bypass Control

Units equipped with a hot water or steam coil and face & bypass control shall modulate the face & bypass damper via a spring return actuator, controlled by a proportional signal (2-5.5V). The face & bypass damper regulates the amount of return air and outside air passing through the heating coil. On a call for heating, the damper shall open proportionally based on how many degrees the room temperature is from the setpoint. The adjustable proportional band on the Carel controller is set to a default 1˚F (example: damper is 50% open when room temperature is 0.5˚F from setpoint). When the damper is in full bypass position (2V), all return and outside air bypasses the heating coil. When the damper is in full face position (5.5V), all return and outside air passes through the heating coil. If for any reason the supply air temperature drops below 55˚F (12.8˚C) (adjustable), the heating valve shall open (if equipped) and the face and bypass damper shall modulate to maintain 55˚F (12.8˚C).

SEQUENCE OF OPERATION

Hot Water and Chilled Water (2-Pipe) with Valve Control

Units with valve control to provide heating and cooling on a single water coil (2-pipe system) and not using Carel controls shall use a spring-return, normally open modulating valve operated by a proportional signal (2-10VDC) or a tri-state (24VAC) signal. Units with Carel controls shall use a modulating control valve with a proportional signal. On a call for heating or cooling (depending on the season), the valve shall open proportionally based on how many degrees the room temperature is from the setpoint. The adjustable proportional band on the Carel controller is set to a default 1˚F (example: valve is 50% open when room temperature is 0.5˚F from setpoint). If for any reason the supply air temperature drops below 55˚F (12.8˚C) (adjustable), the water valve shall modulate open to maintain 55˚F (12.8˚C). On 2-pipe units not having Carel controls or not connected to a network, an optional aquastat is recommended to prevent inadvertent changeover of heating/cooling modes. For the aquastat to be most effective, place the temperature bulb as far upstream on the supply inlet pipe as possible.

Hot Water and Chilled Water (2-Pipe) with Face & Bypass Control

Units with face and bypass control to provide heating and cooling on a single water coil (2-pipe system) shall modulate the face & bypass damper via a spring return actuator, controlled by a proportional signal (2-5.5V). The face & bypass damper regulates the amount of return air and outside air passing through the water coil. On a call for heating or cooling (depending on the season), the damper shall open proportionally based on how many degrees the room temperature is from the setpoint. The adjustable proportional band on the Carel controller is set to a default 1˚F (example: damper is 50% open when room temperature is 0.5˚F from setpoint). When the damper is in full bypass position (2V), all return and outside air bypasses the water coil. When the damper is in full face position (5.5V), all return and outside air passes through the water coil. If for any reason the supply air temperature drops below 55˚F (12.8˚C) (adjustable), the water valve shall open (if equipped) and the face and bypass damper shall modulate to maintain 55˚F (12.8˚C).

2-Position Control Valves

Optional spring-return, 2-position control valves can be used to control the end of cycle flow on both chilled and hot water coils. On a chilled water coil, a normally closed valve is used. On a hot water coil or 2-pipe changeover system, a normally open valve is used.

The 2-position valve used on a chilled water coil shall open on a call for cooling when the outside air temperature is greater than 55˚F (12.8˚C) (adjustable). When the outside air temperature is less than 55˚F (12.8˚C), the valve should remain closed and free cooling shall be utilized. The 2-position chilled water valve shall be closed when the 2-position hot water valve is open (when equipped). The valve is controlled by a 24VAC digital output.

The 2-position valve used on a hot water coil shall open on a call for heating. The valve shall always open when the outside air temperature drops below 40˚F (4.4˚C). This is to prevent the coil from freezing or nuisance tripping of the freeze stat. The 2-position hot water valve shall be closed when the 2-position chilled water valve is open (if equipped). The valve is controlled by a 24VAC digital output.

The 2-position valve used on a 2-pipe changeover system shall operate like the 2-position chilled water valve in cooling mode, and like the 2-position hot water valve in heating mode.

Condensate Pump (Optional)

On units equipped with a condensate pump, the pump shall begin to run once the condensate reaches a set level. The pump comes with an internal safety switch that can be wired either normally open or normally closed. The safety switch shall be wired such that the chilled water valve closes when it trips. On Carel units, the switch shall be wired normally closed into a digital input of the controller. If the unit is also equipped with a condensate pan float switch, both switches shall be wired in series.

Condensate Pan Float Switch (Optional)

On units equipped with a condensate pan float switch, the normally closed switch shall be wired such that the chilled water valve closes or the outdoor condensing unit is disabled (DX Cooling Models Only) upon tripping. On Carel units, the switch shall be wired normally closed into a digital input of the controller. If the unit is also equipped with a condensate pump, both the condensate pump limit switch and condensate pan float switch shall be wired in series.

CO_2 Sensor (Optional)

An optional CO_2 sensor with a range of 0-2000 ppm producing an output signal of 4-20mA is available to modulate the outside air damper. If equipped, the outside air damper shall modulate open proportionally to compensate for the CO_2 levels in the room. On Carel units, if the CO_2 level is 800 ppm or less (adjustable), the damper shall remain at its normal minimum position. If the CO_2 level increases above 800 ppm, the damper begins to open according to the proportional band. The proportional band is set to a default of 200 ppm and is adjustable. Using the default, once the CO_2 level reaches 1000 ppm, the damper shall be at its maximum ventilation position.

START-UP SHEET - EXAMPLE

Figure 13.1 - Start-Up Sheet - EXAMPLE Page 1

MODINE

Unit Ventilator Start-up Sheet

This document should be returned to Modine within 30 days of start-up to validate warranty.

Date		Job Reference		TAG ID	
Serial #		Unit Type		Room ID	
SPO #		Drawing #			
Installer		Sales Rep			

Installation Checks

Unit mounted level		Condensate drain installed correctly	
Unit floor mounted		Gravity flow or Pump assisted	
Unit ceiling mounted		All electrical connection tight	
Wall sleeve correct		All Mechanical connections tight	
Any visual damage		Supply, Return and Outside air vents unobstructed	

Dry Nitrogen Pressure Test (DX Units Only)	Initial Test Pressure	Psig
	Final Test Pressure	Psig
	Test Duration	Psig

Supply Fan Motor

Motor Size	HP		FLA		Make	
Amps	High		Medium		Low	
RPM	High		Medium		Low	

Main Voltage L1+N

XFMR Voltage Primary Secondary

Controller information

Make		Model		Program Version	
BACnet Card		MS/TP Address		Device Instance	
Loncard		Neuron ID			
Occupied Set point					
Unoccupied Set point					

Air Temperatures	***Cooling***		***Heating***	
Return Air Temp		ºF		ºF
Supply Air Temp		ºF		ºF
Out door Air Temp		ºF		ºF

Component Tests (If Applicable)

Airflow Switch tested		
Aqua Stat tested		
Chilled Water valve tested		
Condensate pump tested		
Remote shutdown link tested		
Face & Bypass damper tested		
Drain pan high limit switch tested		
Fresh air & and return air damper tested		
Electromechanically tested		
Filter change switch tested		
Smoke detector tested		
Freeze stat set at 35ºF and tested		
Freeze stat auto or manual reset		
Hot Water/Steam valve tested		
Fire stat / link tested		
OA / Return air Damper tested		

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START-UP SHEET - EXAMPLE

Figure 14.1 - Start-Up Sheet - EXAMPLE Page 2

MODINE

Unit Ventilator Start-up Sheet

Outdoor Unit Check List (DX Units Only)

Brand		Model		Serial Number	
Supply Voltage		Primary		Secondary	
Suction Pressure		Psig			
Liquid Pressure		Psig			
Superheat @ Compressor		°F			
Outdoor Air Temperature		°F			
Indoor Air Temperature		°F			

Technicians Notes:

Customer Feedback: Please relay any comments regarding quality and service

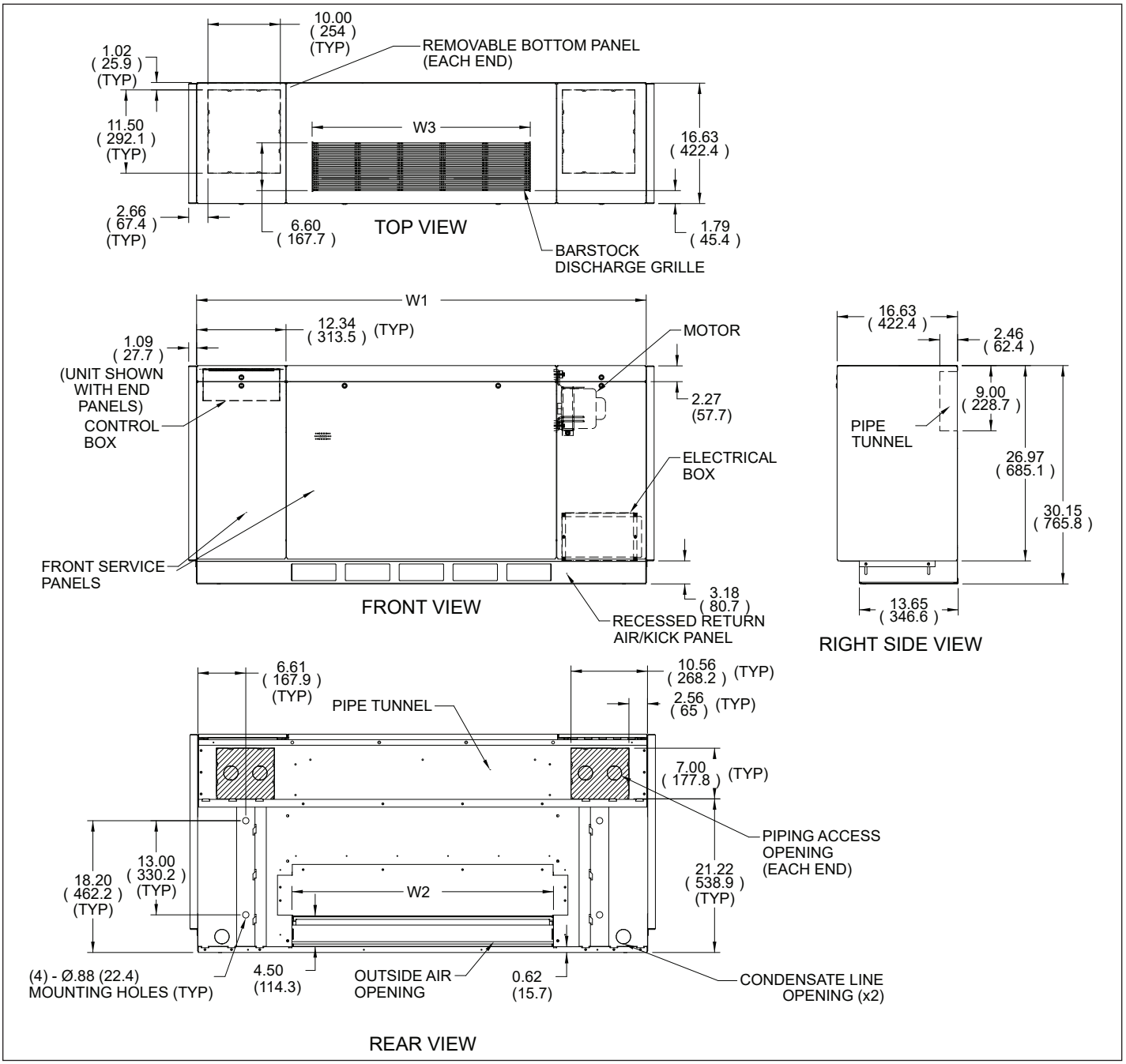
Service Technician	
Service Company	
Service Company Telephone	

DGILL 04-01-12

2

DIMENSIONAL DATA

Figure 15.1 - Dimensions - 16-5/8" Depth - Floor Mounted Unit



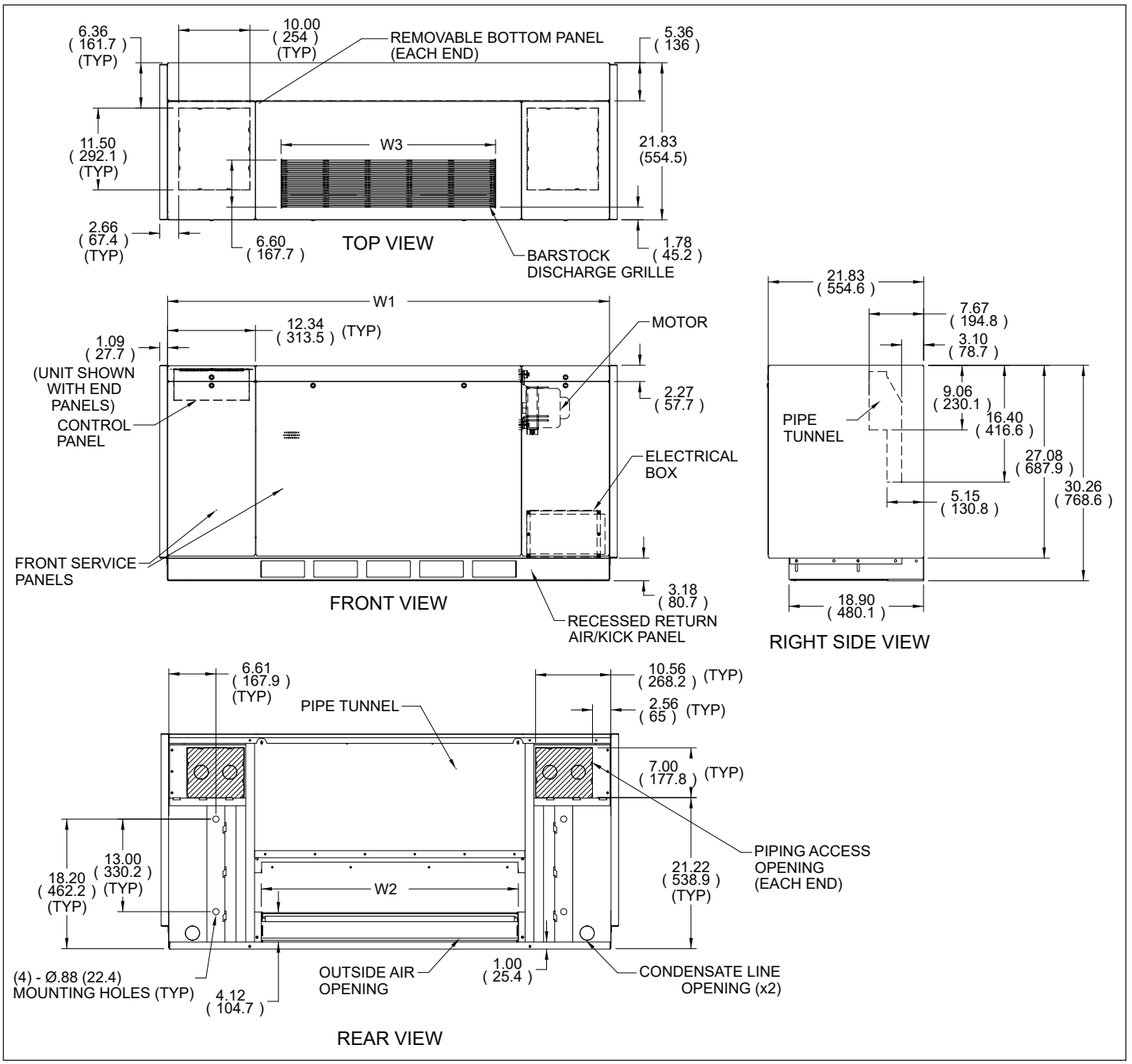
① Dimensions shown are inches (mm).

Table 15.1 - Unit Width Dimensions

Model Size	Dimensions		
	W1	W2	W3
750	62" (1574.8mm)	36" (914.4mm)	30" (762mm)
1000	74" (1879.6 mm)	48" (1219.2 mm)	42" (1066.8 mm)
1250	86" (2184.4 mm)	60" (1524 mm)	54" (1371.6 mm)
1500	98" (2489.2 mm)	72" (1828.8mm)	66" (1676.4m)

DIMENSIONAL DATA

Figure 16.1 - Dimensions - 21-7/8" Depth - Floor Mounted Unit



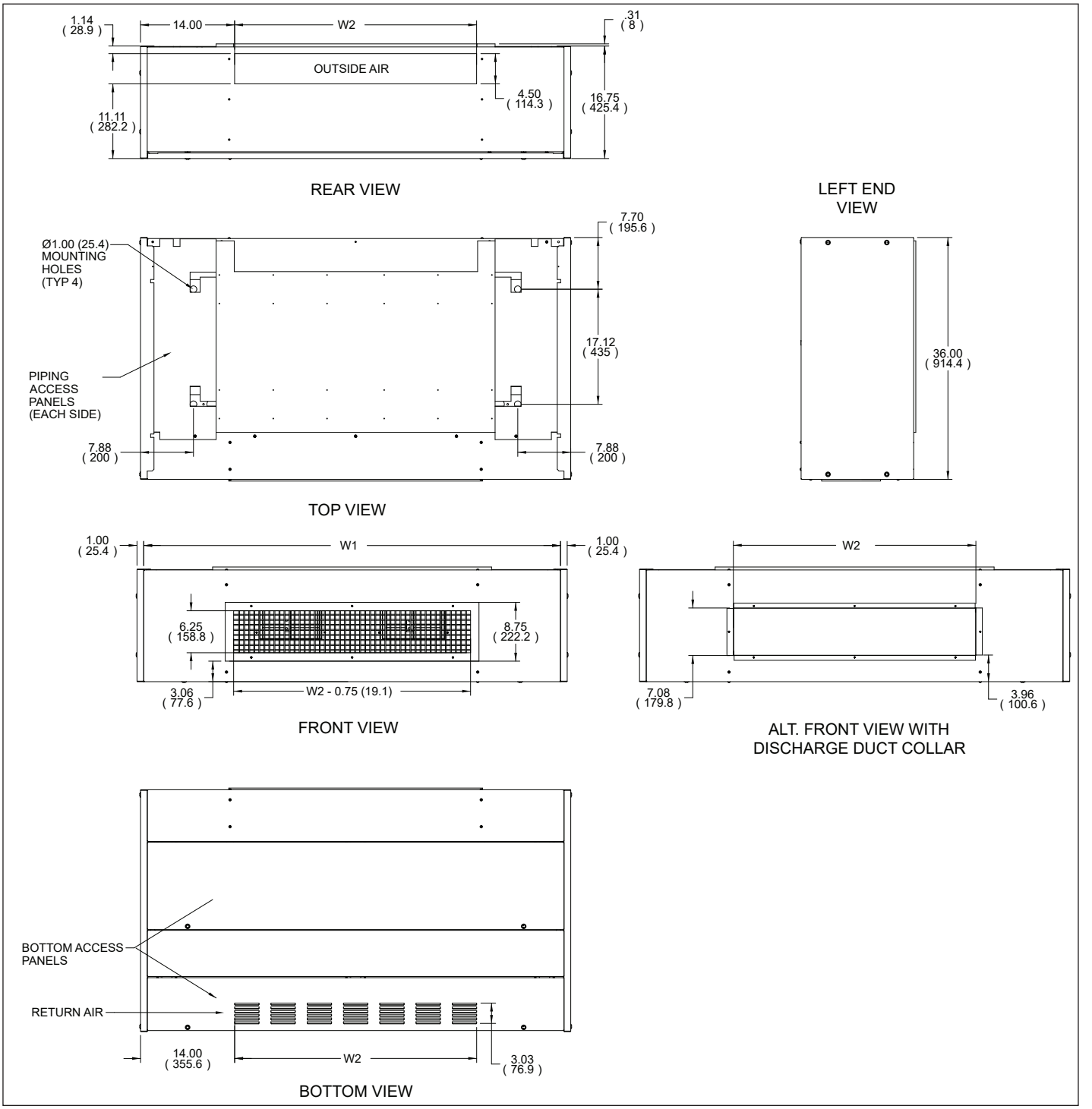
① Dimensions shown are inches (mm).

Table 16.1 - Unit Width Dimensions

Model Size	Dimensions (inches)		
	W1	W2	W3
750	62" (1574.8mm)	36" (914.4mm)	30" (762mm)
1000	74" (1879.6 mm)	48" (1219.2 mm)	42" (1066.8 mm)
1250	86" (2184.4 mm)	60" (1524 mm)	54" (1371.6 mm)
1500	98" (2489.2 mm)	72" (1828.8mm)	66" (1676.4m)

DIMENSIONAL DATA

Figure 17.1 - Dimensions - Front Discharge - Ceiling Mounted Unit



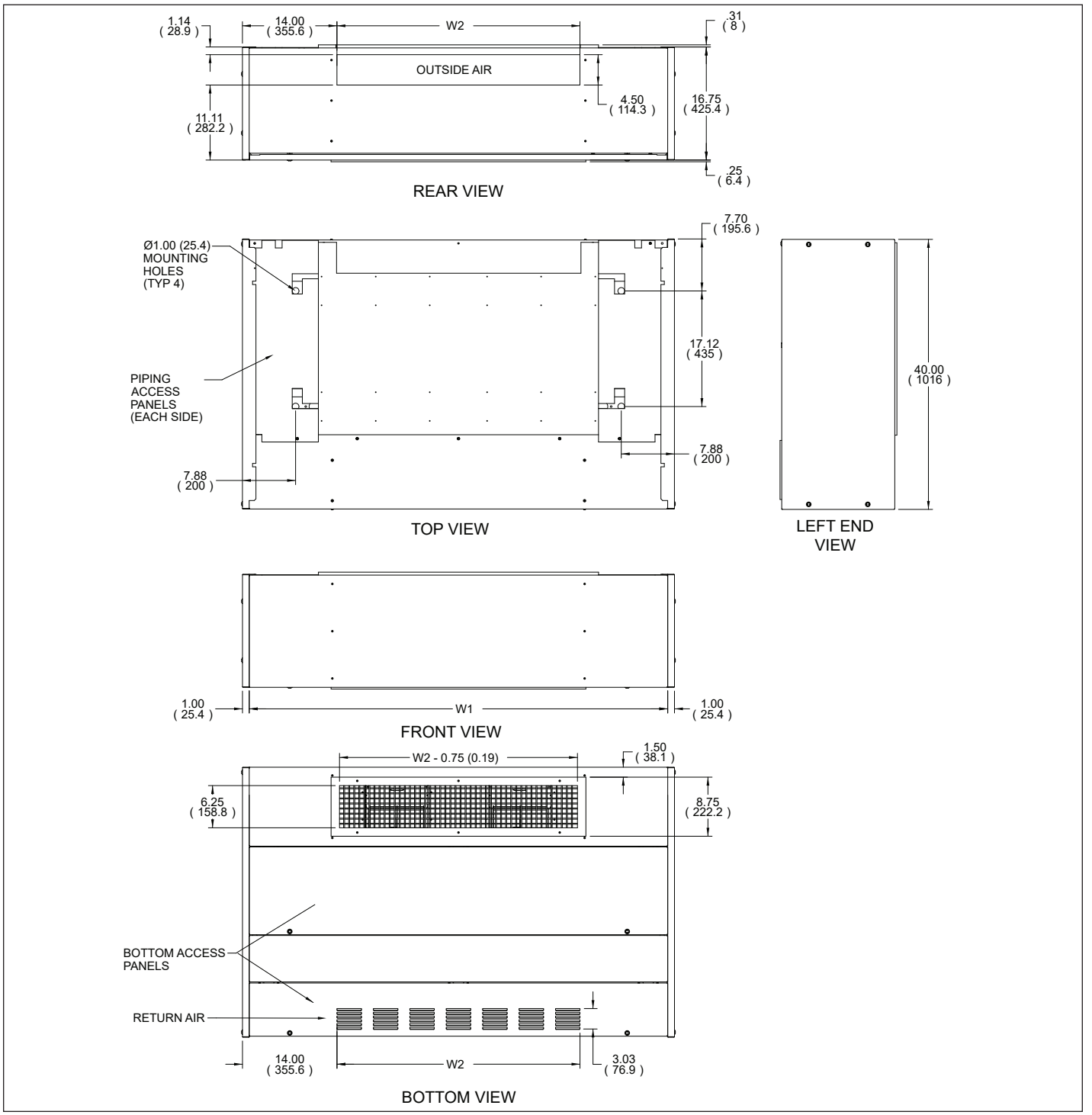
① Dimensions shown are inches (mm).

Table 17.1 - Unit Width Dimensions

Model Size	Dimensions (inches)	
	W1	W2
750	62" (1574.8mm)	36" (914.4mm)
1000	74" (1879.6 mm)	48" (1219.2 mm)
1250	86" (2184.4 mm)	60" (1524 mm)
1500	98" (2489.2 mm)	72" (1828.8mm)

DIMENSIONAL DATA

Figure 18.1 - Dimensions - Down Discharge - Ceiling Mounted Unit



① Dimensions shown are inches (mm).

Table 18.1 - Unit Width Dimensions

Model Size	Dimensions (inches)	
	W1	W2
750	62" (1574.8mm)	36" (914.4mm)
1000	74" (1879.6 mm)	48" (1219.2 mm)
1250	86" (2184.4 mm)	60" (1524 mm)
1500	98" (2489.2 mm)	72" (1828.8mm)

COOLING PIPING LOCATIONS - FLOOR UNITS ONLY

CHILLED WATER - NO PIPING PACKAGE

Figure 19.1 - Chilled Water Coil with or without Optional Reheat Coil

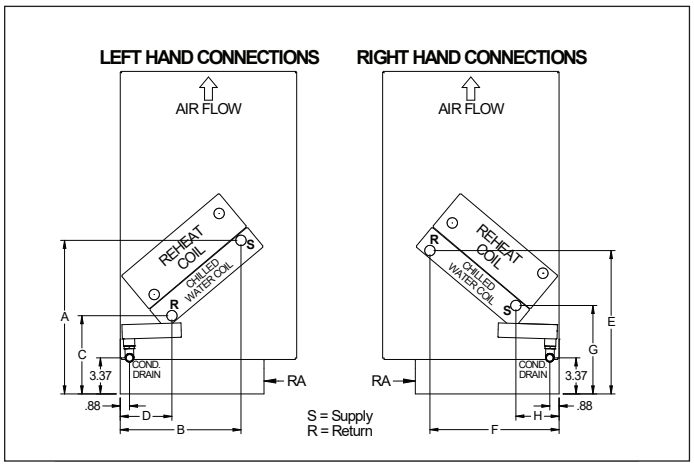
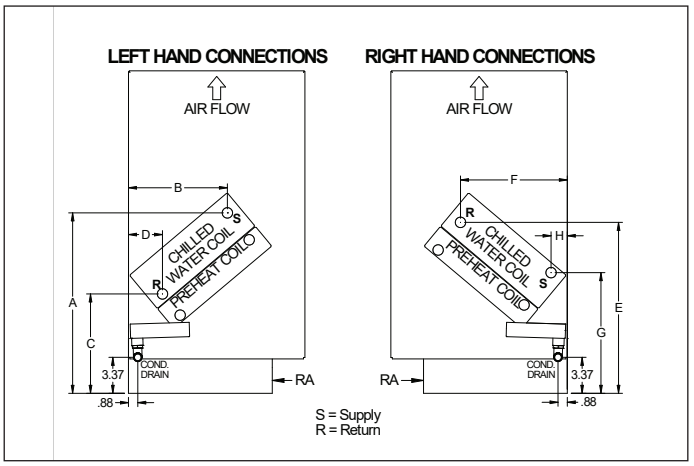


Figure 19.2 - Chilled Water Coil with Pre-Heat Coil



Note: *Supply and Return connection locations represent counterflow orientation (recommended). Unit should be piped in accordance with good plumbing practices.*

Table 19.1 - Piping Location Dimensions ①

Unit Depth		16 5/8"			21 7/8"		
Coil Rows		2	3	4	2	3	4
Dimensions (in.)	A	14.25"	15.00"	15.00"	14.25"	15.00"	15.00"
	B	11.25"	11.00"	11.00"	16.50"	16.25"	16.25"
	C	7.25"	7.50"	7.50"	7.25"	7.50"	7.50"
	D	4.75"	4.75"	4.75"	10.00"	10.00"	10.00"
	E	13.50"	13.50"	14.00"	13.50"	13.50"	14.00"
	F	12.25"	12.00"	11.75"	17.50"	17.25"	17.00"
	G	8.25"	8.75"	9.50"	8.25"	8.75"	9.50"
	H	4.00"	3.50"	3.00"	10.00"	8.75"	8.25"

① For Hot Water Reheat piping locations see *Figure 21.2*. For Steam Reheat piping locations see *Figure 22.2*.

Table 19.2 - Piping Location Dimensions ①

Unit Depth		16 5/8"			21 7/8"		
Coil Rows		2	3	4	2	3	4
Dimensions (in.)	A	17.50"	17.50"	16.75"	17.50"	17.50"	16.75"
	B	8.75"	8.75"	9.25"	14.00"	14.00"	14.50"
	C	10.50"	10.00"	9.25"	10.50"	10.00"	9.25"
	D	2.25"	2.75"	3.25"	7.50"	8.00"	8.50"
	E	16.50"	16.00"	16.00"	16.50"	16.00"	16.00"
	F	9.50"	10.00"	10.00"	14.75"	15.25"	15.25"
	G	11.50"	11.25"	11.25"	11.50"	11.25"	11.25"
	H	1.50"	1.50"	1.50"	6.75"	6.75"	6.75"

① For Hot Water Pre-Heat piping locations see *Figure 21.1*. For Steam Pre-Heat piping locations see *Figure 22.1*.

Note: *All dimensions shown on this page are in inches and are for reference only. For dimensions in mm, multiply inches by 25.4.*

COOLING PIPING LOCATIONS - FLOOR UNITS ONLY

DIRECT EXPANSION (DX) SIZE 750 ONLY - NO PIPING PACKAGE

Figure 20.1 - DX Cooling (Size 750) with or without Optional Reheat Coil

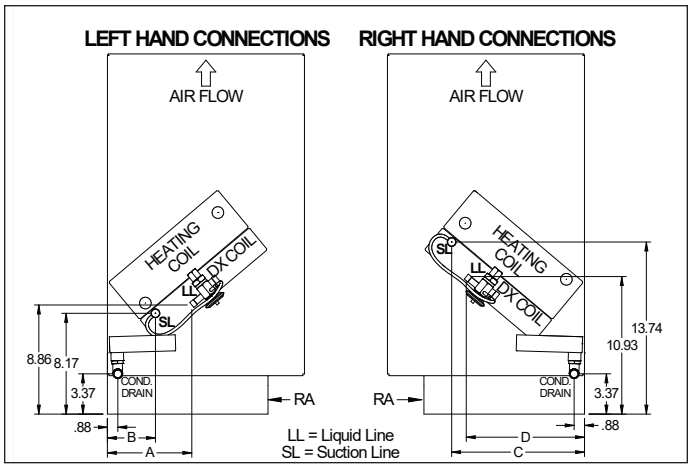


Figure 20.2 - DX Cooling (Size 750) with Pre-Heat Coil

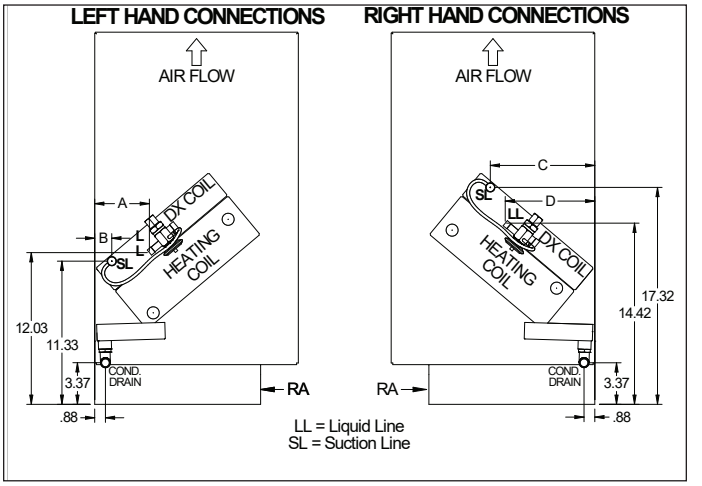


Table 20.1 - DX Cooling Coil Piping Locations ①

Unit Depth	Model Size	Dimensions (inches)			
		A	B	C	D
16 5/8	750	14.25"	11.25"	7.25"	4.75"
21 7/8	750	14.25"	16.50"	7.25"	10.00"

① For Hot Water Reheat piping location see *Figure 21.2*. For Steam Reheat piping location see *Figure 22.2*.
For Hot Water Pre-Heat piping location see *Figure 21.1*. For Steam Pre-Heat piping location see *Figure 22.1*.

DIRECT EXPANSION (DX) SIZE 1000-1500 - NO PIPING PACKAGE DX

Figure 20.3 - DX Cooling (Size 1000-1500) with or without Optional Reheat Coil

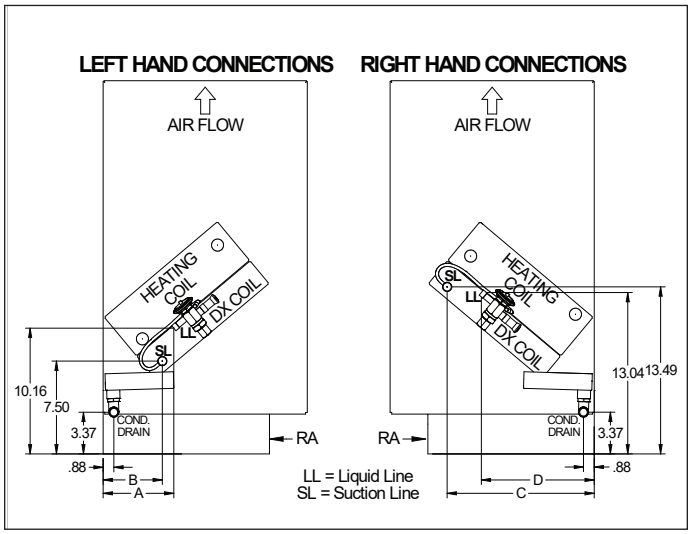


Figure 20.4 - DX Cooling (Size 1000-1500) with Pre-Heat Coil

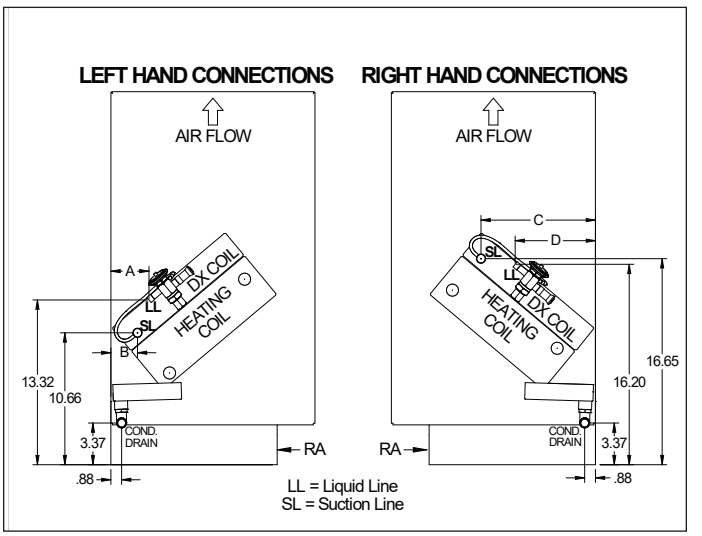


Table 20.2 - DX Cooling Coil Piping Locations ①

Unit Depth	Model Size	Dimensions (inches)			
		A	B	C	D
16 5/8	1000, 1250, 1500	7.50"	4.50"	11.75"	10.50"
21 7/8	1000, 1250, 1500	12.75"	9.75"	17.00"	15.75"

① For Hot Water Reheat piping location see *Figure 21.2*. For Steam Reheat piping location see *Figure 22.2*.

Table 20.3 - DX Coil with Pre-Heat Piping Locations ①

Unit Depth	Model Size	Dimensions (inches)			
		A	B	C	D
16 5/8	1000, 1250, 1500	4.50"	1.75"	8.75"	7.75"
21 7/8	1000, 1250, 1500	9.75"	7.00"	14.00"	13.00"

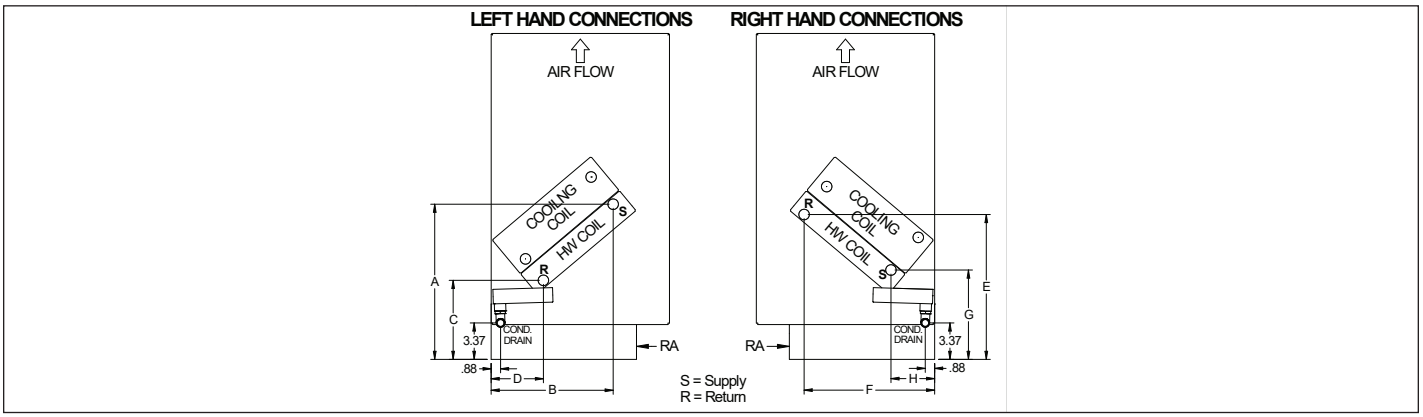
① For Hot Water Pre-Heat piping location see *Figure 21.1*. For Steam Pre-Heat piping location see *Figure 22.1*.

Note: *All dimensions shown on this page are in inches and are for reference only. For dimensions in mm, multiply inches by 25.4.*

HEATING PIPING LOCATIONS - FLOOR UNITS ONLY

HOT WATER HEATING COIL - NO PIPING PACKAGE

Figure 21.1 - Hot Water Only or Chilled Water/DX Cooling Coil with Hot Water Pre-Heat Coil



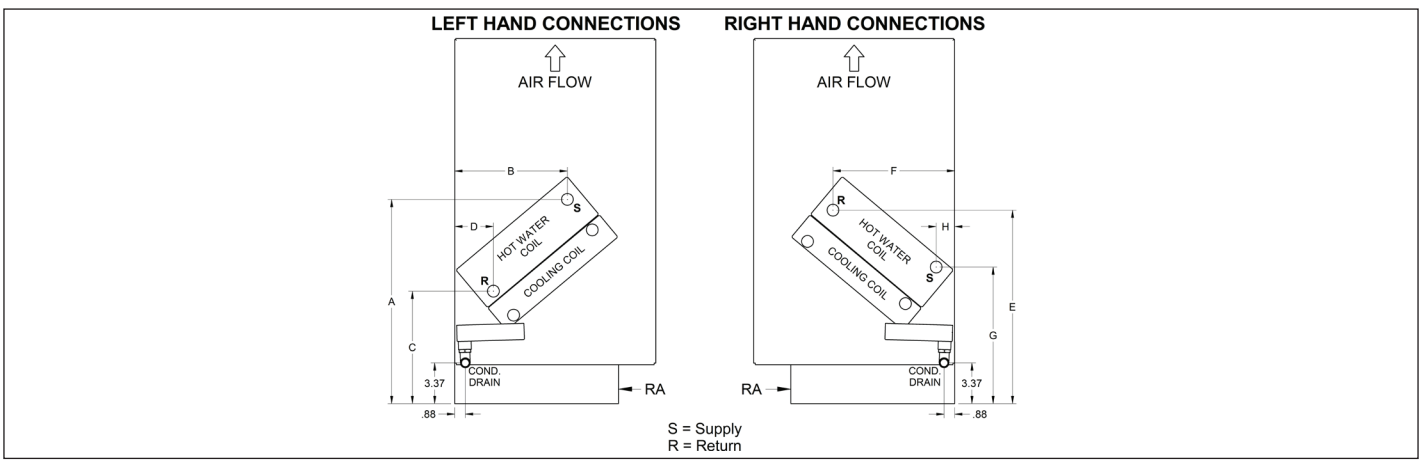
Note: *Supply and Return connection locations represent counterflow orientation (recommended). Unit should be piped in accordance with good plumbing practices.*

Table 21.1 - Hot Water Heating Coil Piping Locations ①

Unit Depth	Coil Rows	Dimensions (inches)							
		A	B	C	D	E	F	G	H
16 5/8	1-Row	14.25"	11.50" (292.1mm)	7.00" (177.8mm)	5.00" (127.0mm)	13.50" (342.9mm)	12.00" (304.8mm)	8.25" (209.5mm)	4.00" (101.6mm)
	2-Row	114.25"	11.25" (285.7mm)	7.25" (184.1mm)	4.75" (120.6mm)	13.50" (342.9mm)	12.25" (311.1mm)	8.25" (209.5mm)	4.00" (101.6mm)
21 7/8	1-Row	14.25"	16.75" (425.4m)	7.00" (177.8mm)	10.25" (260.3mm)	13.50" (342.9mm)	17.25" (438.1mm)	8.25" (209.5mm)	9.25" (234.9mm)
	2-Row	14.25"	16.50" (419.1mm)	7.25" (184.1mm)	10.00" (254.0mm)	13.50" (342.9mm)	17.50" (444.5mm)	8.25" (209.5mm)	9.25" (234.9mm)

① For Chilled Water piping location see *Figure 19.2*. For DX Cooling piping location see *Figure 20.2* and *Figure 20.4*.

Figure 21.2 - Hot Water Reheat Coil with Chilled Water/DX Cooling Coil



Note: *Supply and Return connection locations represent counterflow orientation (recommended). Unit should be piped up in accordance with good plumbing practices.*

Table 21.2 - Hot Water Reheat Coil Piping Locations ①

Unit Depth	Coil Rows	Dimensions (inches)							
		A	B	C	D	E	F	G	H
16 5/8	1-Row	17.50"	8.75"	10.25"	2.25"	16.75"	9.50"	11.50"	1.25"
	2-Row	17.50"	8.75"	10.50"	2.25"	16.50"	9.50"	11.50"	1.50"
21 7/8	1-Row	17.50"	14.00"	10.25"	7.50"	16.75"	14.75"	11.50"	6.50"
	2-Row	17.50"	14.00"	10.50"	7.50"	16.50"	14.75"	11.50"	6.75"

① For Chilled Water piping location see *Figure 19.1*. For DX Cooling piping location see *Figure 20.1* and *Figure 20.3*.

Note: *All dimensions shown on this page are in inches and are for reference only. For dimensions in mm, multiply inches by 25.4.*

HEATING PIPING LOCATIONS - FLOOR UNITS ONLY

STEAM HEATING COIL - NO PIPING PACKAGE

Figure 22.1 - Steam Heating Coil Only or Chilled Water/DX Cooling Coil with Steam Pre-Heat Coil

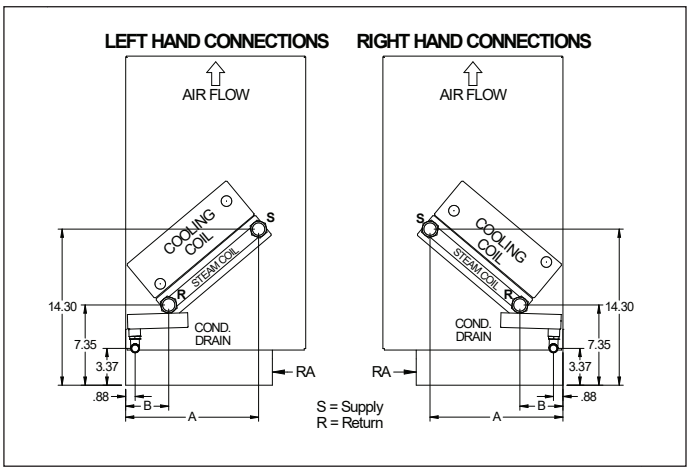


Table 22.1 - Steam Heating Coil Piping Locations ①

Unit Depth	Coil Rows	Dimensions (inches)	
		A	B
16 5/8	1-Row	12.25"	4.00"
21 7/8	1-Row	17.50"	9.25"

① For Chilled Water piping location see *Figure 19.2*. For DX Cooling piping location see *Figure 20.2* and *Figure 20.4*.

Figure 22.2 - Steam Reheat Coil with Chilled Water/DX Cooling Coil

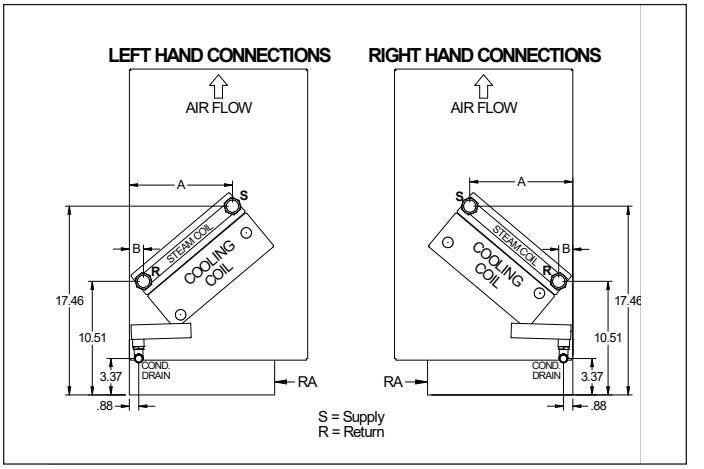


Table 22.2 - Steam Reheat Coil Piping Locations ①

Unit Depth	Coil Rows	Dimensions (inches)	
		A	B
16 5/8	1-Row	9.50"	1.25"
21 7/8	1-Row	14.75"	6.50"

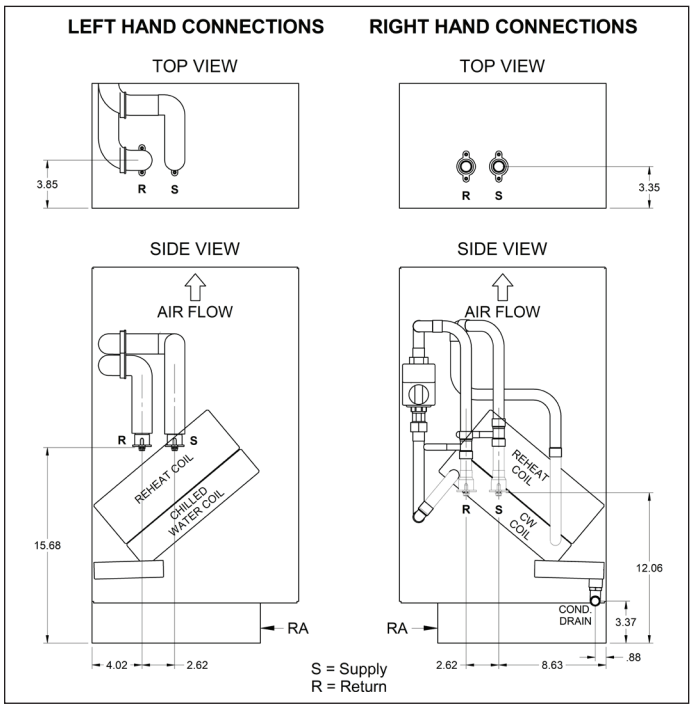
① For Chilled Water piping location see *Figure 19.1*. For DX Cooling piping location see *Figure 20.1* and *Figure 20.3*.

Note: *All dimensions shown on this page are in inches and are for reference only. For dimensions in mm, multiply inches by 25.4.*

COOLING PIPING LOCATIONS - FLOOR UNITS ONLY

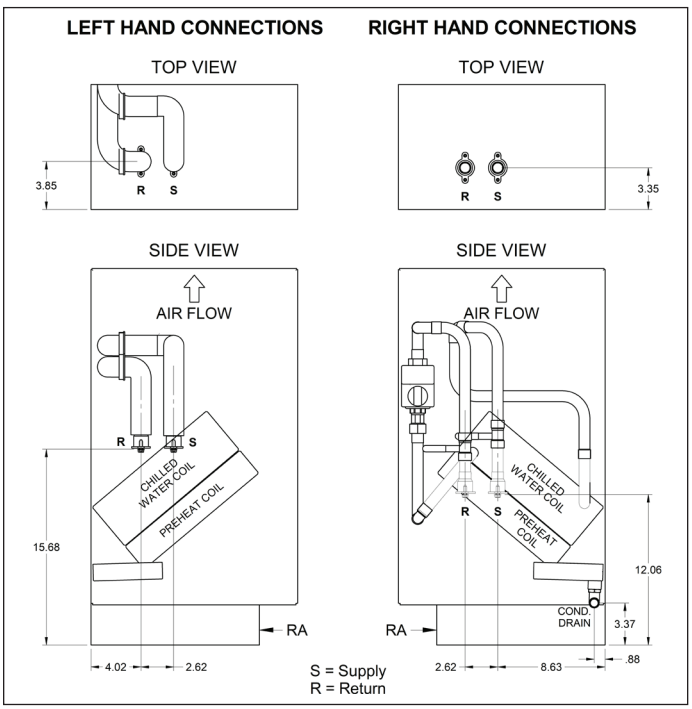
CHILLED WATER - WITH PIPING PACKAGE

Figure 23.1 - Chilled Water Coil with or without Optional Reheat Coil



① Condensate drain connection located in right end compartment.

Figure 23.2 - Chilled Water Coil with Pre-Heat Coil



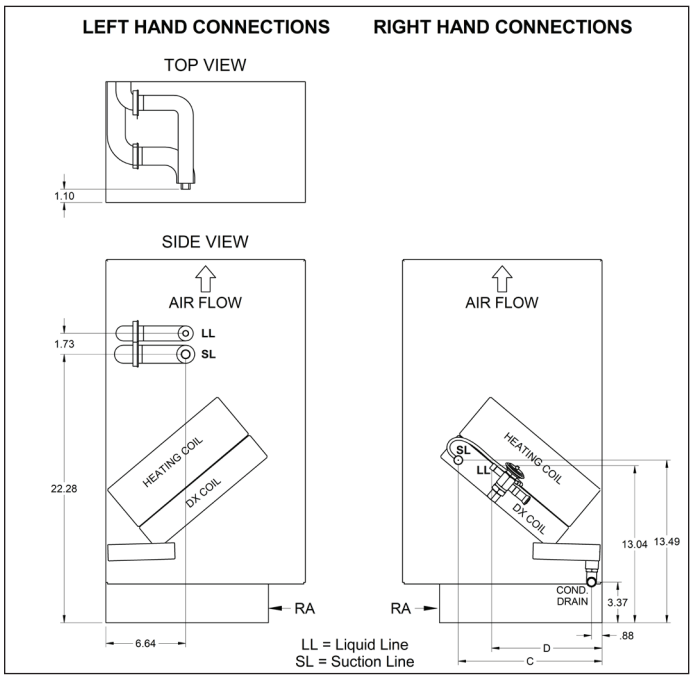
① Condensate drain connection located in right end compartment.

Note: *All dimensions shown on this page are in inches and are for reference only. For dimensions in mm, multiply inches by 25.4.*

COOLING PIPING LOCATIONS - FLOOR UNITS ONLY

DIRECT EXPANSION (DX) SIZE 750 ONLY - WITH PIPING PACKAGE

Figure 24.1 - DX Cooling Coil Only or DX Cooling with Reheat Coil

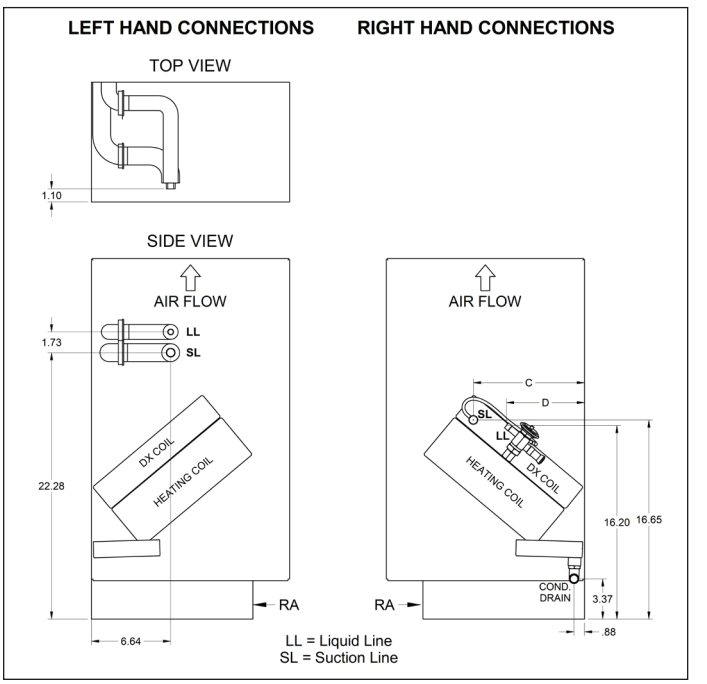


Unit Size: 750

① For Dimensions C and D refer to *Table 20.1*.

② Condensate drain connection located in right end compartment.

Figure 24.2 - DX Cooling Coil with Pre-Heat Coil Only



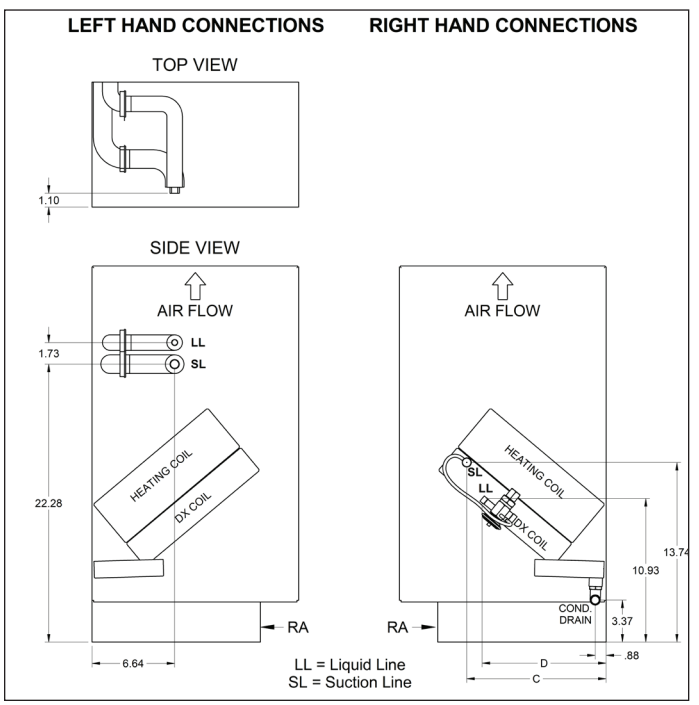
Unit Size: 750

① For Dimensions C and D refer to *Table 20.1*.

② Condensate drain connection located in right end compartment.

DIRECT EXPANSION (DX) SIZE 1000-1500 - WITH PIPING PACKAGE

Figure 24.3 - DX Cooling Coil Only or DX Cooling with Reheat Coil

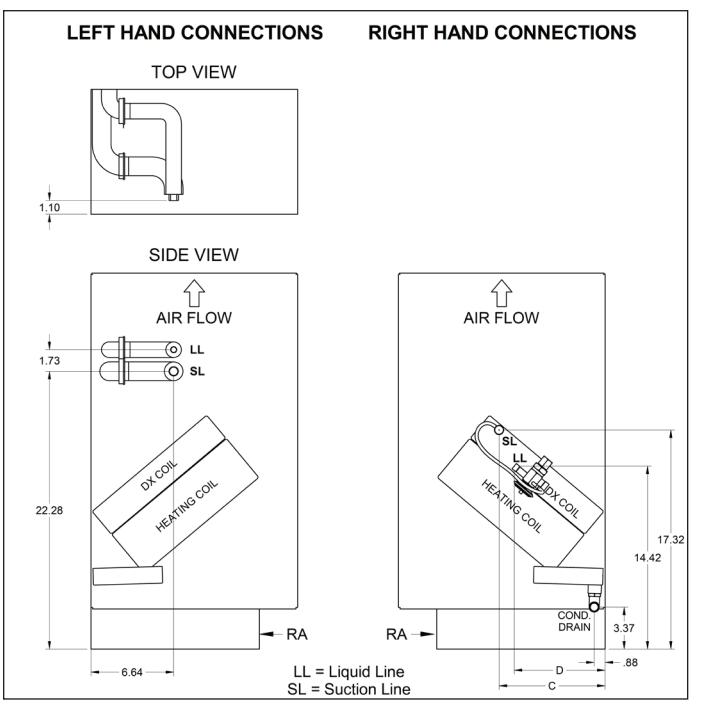


Unit Size: 1000 / 1250 / 1500

① For Dimensions C and D refer to *Table 20.2*.

② Condensate drain connection located in right end compartment.

Figure 24.4 - DX Cooling Coil with Pre-Heat Coil Only



Unit Size: 1000 / 1250 / 1500

① For Dimensions C and D refer to *Table 20.3*.

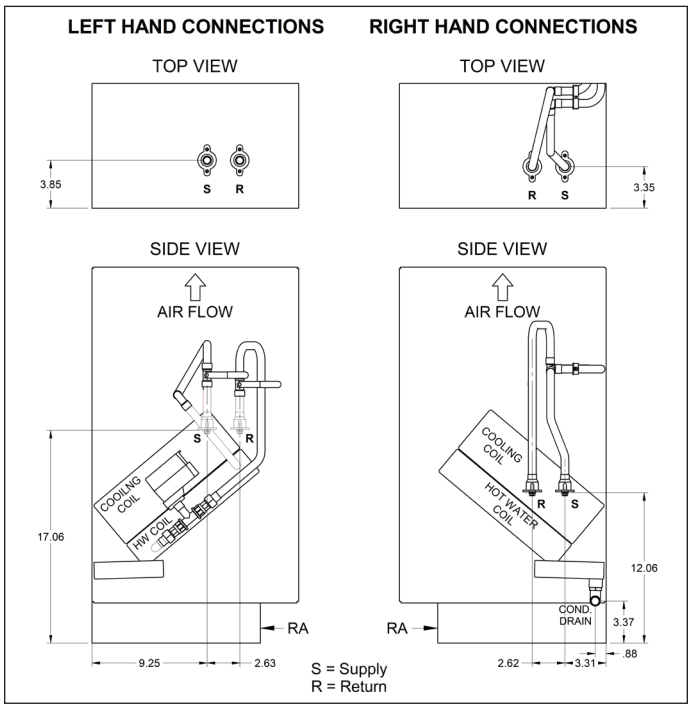
② Condensate drain connection located in right end compartment.

Note: *All dimensions shown on this page are in inches and are for reference only. For dimensions in mm, multiply inches by 25.4.*

HEATING PIPING LOCATIONS - FLOOR UNITS ONLY

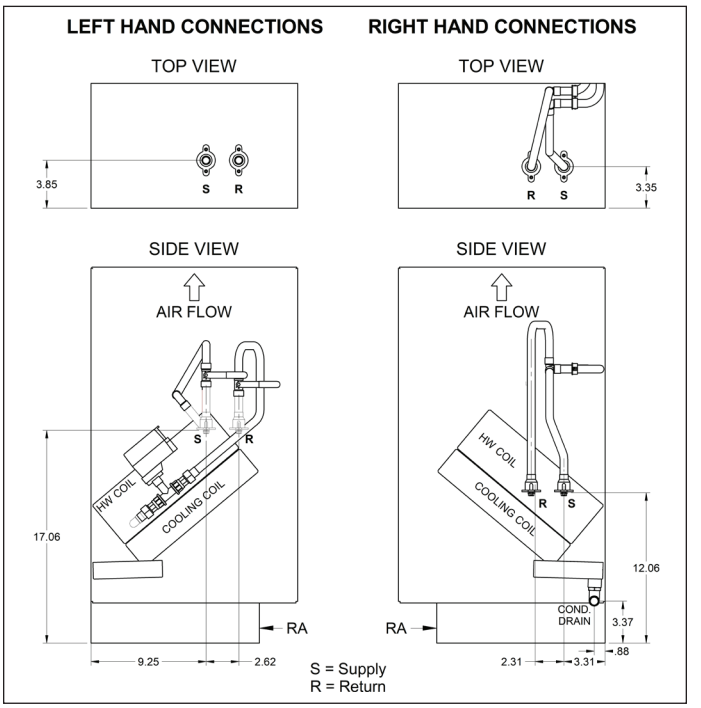
HOT WATER HEATING COIL - WITH PIPING PACKAGE

Figure 25.1 - Hot Water Heating Coil Only or Chilled Water/DX Cooling Coil with Hot Water Pre-Heat Coil



① Condensate drain connection located in right end compartment when unit is equipped with a cooling coil.

Figure 25.2 - Chilled Water/DX Cooling Coil with Hot Water Reheat Coil



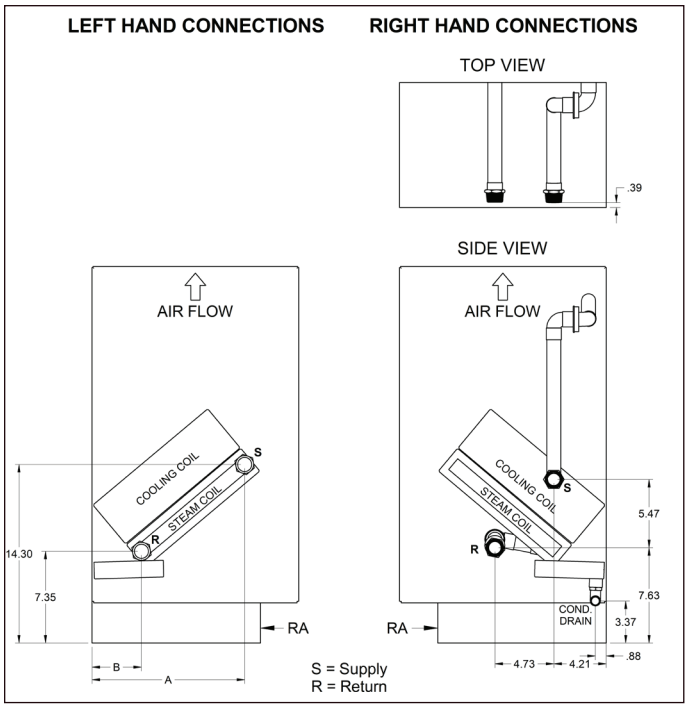
① Condensate drain connection located in right end compartment when unit is equipped with a cooling coil.

Note: *All dimensions shown on this page are in inches and are for reference only. For dimensions in mm, multiply inches by 25.4.*

HEATING PIPING LOCATIONS - FLOOR UNITS ONLY

STEAM HEATING COIL - WITH PIPING PACKAGE

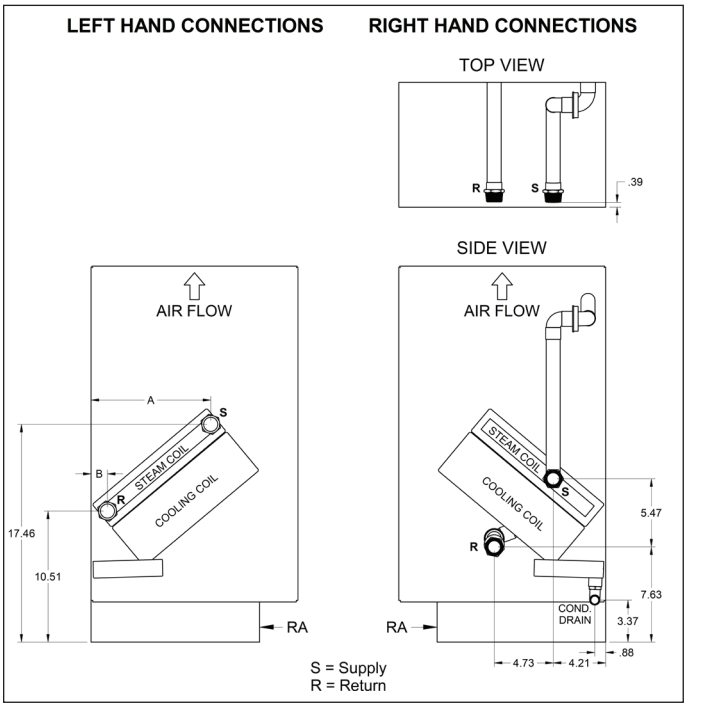
Figure 26.1 - Steam Heating Coil Only or Chilled Water/DX Cooling Coil with Steam Pre-Heat Coil



① Condensate drain connection located in right end compartment when unit is equipped with a cooling coil.

② For Dimensions A and B, refer to Table 19.1.

Figure 26.2 - Chilled Water/DX Cooling Coil with Steam Reheat Coil



① Condensate drain connection located in right end compartment when unit is equipped with a cooling coil.

② For Dimensions A and B, refer to Table 19.2.

Note: *All dimensions shown on this page are in inches and are for reference only. For dimensions in mm, multiply inches by 25.4.*

TECHNICAL DATA

Table 27.1 - Technical Data

DESCRIPTION			UNITS	Model Size			
				750	1000	1250	1500
SUPPLY FAN		Fan Type		Direct Drive Centrifugal			
		Fan Quantity	Qty	2	3	4	4
		Fan Diameter		8.06	8.06	8.06	8.06
		Fan Width		7.15	7.15	7.15	7.15
		Airflow (High/Medium/Low)	cfm	750/650/500	1000/750/600	1250/900/750	1500/1100/900
			l/s	354/307/236	472/354/283	590/425/354	708/519/425
SUPPLY FAN MOTOR	STANDARD MOTOR (Digit 16=4 or 5)	Motor Type		ECM - Electonically Commutated Motor			
		Motor Size (Qty 1)		1/3hp (0.25kW)	1/3hp (0.25kW)	1/3hp (0.25kW)	1/3hp (0.25kW)
		Max External Static Pressure	in.Wg	0.05	0.05	0.05	0.05
	HIGH STATIC MOTOR (Digit 16=2 or 3)	Motor Type (Premium High Static)		ECM - Electonically Commutated Motor			
		Motor Size (Qty 1)		1/2hp (0.37kW)	1/2hp (0.37kW)	1/2hp (0.37kW)	1/2hp (0.37kW)
		Max External Static Pressure	in.Wg	0.25	0.25	0.25	0.25
COIL WATER VOLUME		1 Row		0.32 gal (1.2 l/s)	0.38 gal (1.4 l/s)	0.44 gal (1.7 l/s)	0.5 gal (1.9 l/s)
		2 Row		0.51 gal (1.9 l/s)	0.63 gal (2.4 l/s)	0.76 gal (2.9 l/s)	0.88 gal (3.3 l/s)
		4 Row		0.92 gal (3.5 l/s)	1.17 gal (4.4 l/s)	1.42 gal (5.4 l/s)	1.66 gal (6.3 l/s)
COIL CONNECTIONS		Water Coils - Standard Units		Unions with 3/4” female solder joint			
		Water Coils - Units w/Piping Pkg		Chilled Water: 3/4” NPT drop ear, Hot Water: 1/2” NPT drop ear			
		Evaporator Coil		3/4” OD Suction, 1/2” OD Liquid			
		Steam Coil		1” NPT			
		Condensate Line		3/4” ID condensate line			
UNIT OPERATING WEIGHT (approximate)		Floor Mounted, 16 5/8” Units		410 lbs (186 kgs)	470 lbs (213 kgs)	525 lbs (238 kgs)	580 lbs (263 kgs)
		Floor Mounted, 21 7/8” Units		445 lbs (202 kgs)	510 lbs (231 kgs)	570 lbs (259 kgs)	630 lbs (286 kgs)
		Ceiling Mounted Units		510 lbs (231 kgs)	580 lbs (263 kgs)	645 lbs (293 kgs)	710 lbs (322 kgs)
AIR FILTERS		Quantity	Qty	1	2	2	2
		Dimensions	Inches	10 X 36	10 X 24	10 X 30	10 X 36
			mm	254 X 914	254 X 610	254 X 762	254 X 914

COMPONENT LAYOUT - FLOOR MOUNTED UNITS

Figure 28.1 - Exploded View

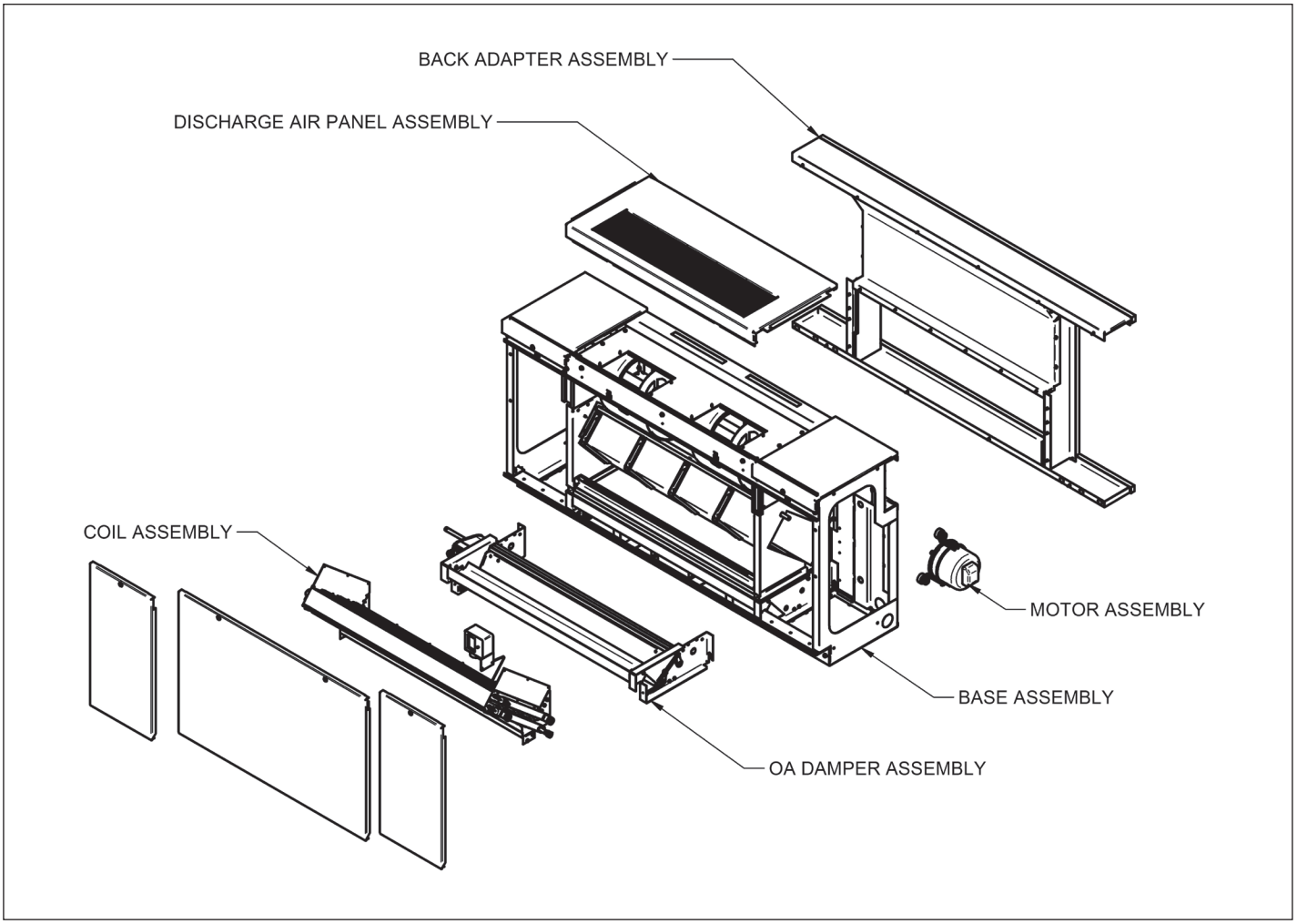
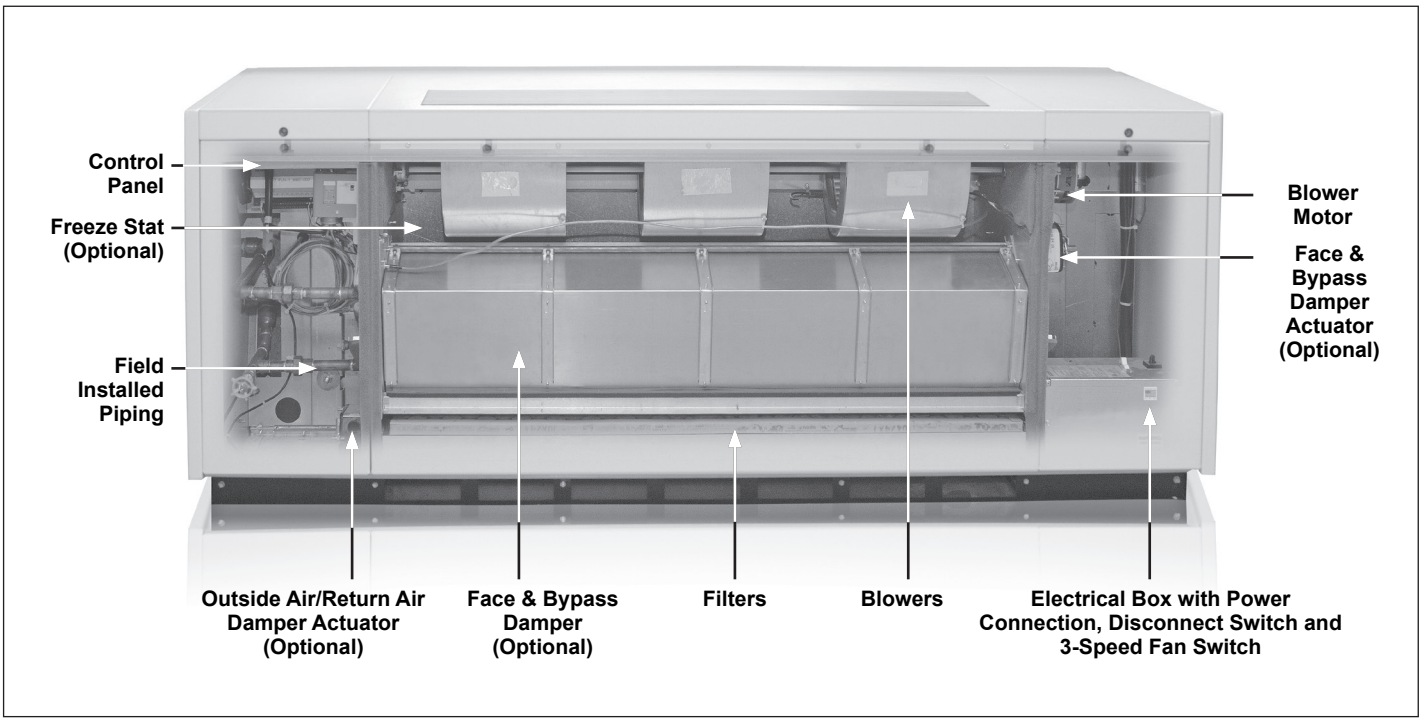
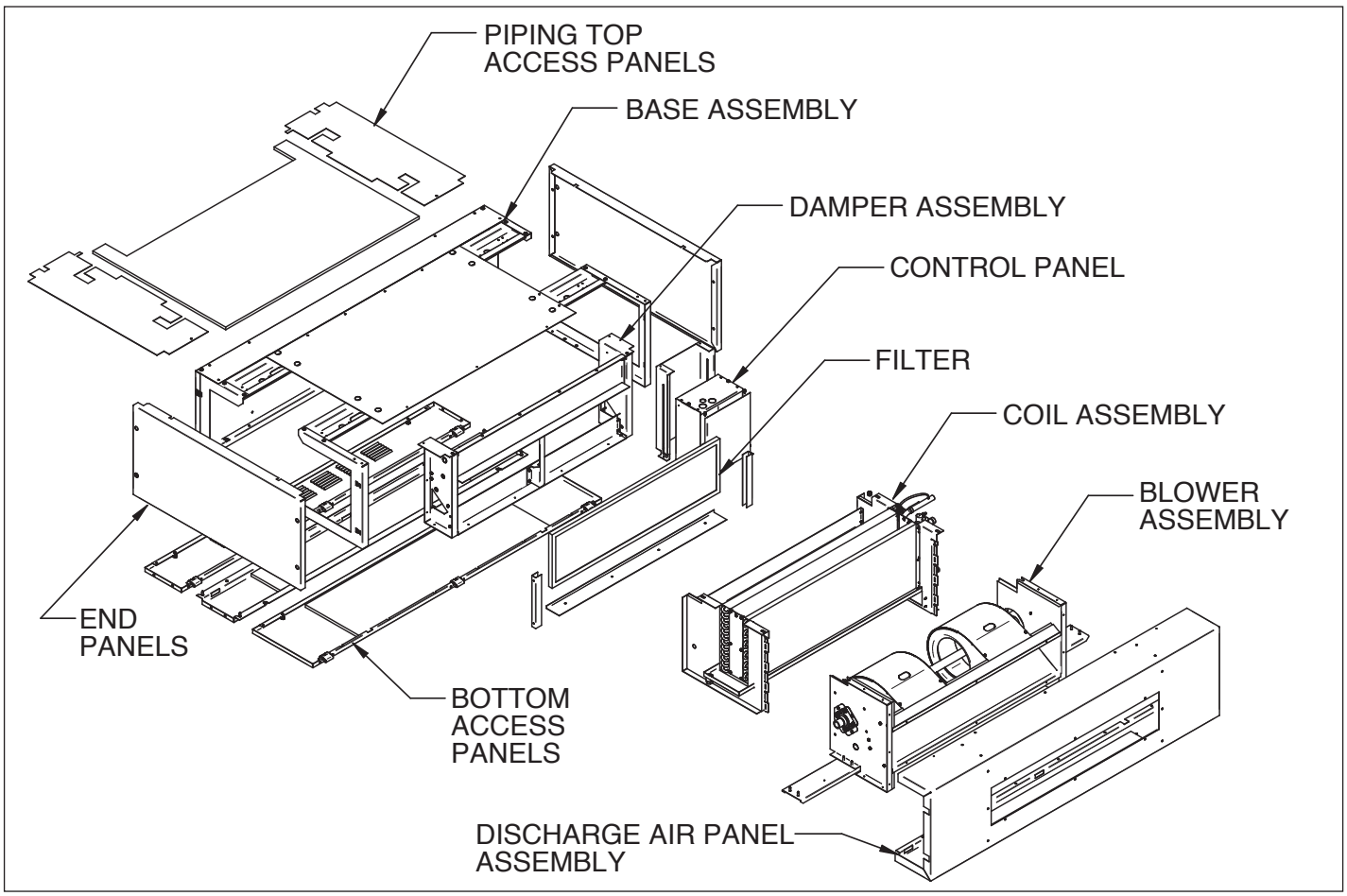


Figure 28.2 - Component Layout



COMPONENT LAYOUT - CEILING MOUNTED UNITS

Figure 29.1 - Exploded View



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.
3. Units with DX evaporator coils (refer to model nomenclature) contain R-410A high pressure refrigerant. Hazards exist that could result in personal injury or death. Installation, maintenance, and service must only be performed by an HVAC technician qualified in R-410A refrigerant and using proper tools and equipment. Due to much higher pressure of R-410A refrigerant, DO NOT USE service equipment or tools designed for refrigerants other than R410A.

⚠ 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 complete 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 decommande non approuvée par le fabricant sera aux risques du propriétaire.
3. Les unités munies de serpentins évaporateurs DX (reportez-vous à la nomenclature du modèle) contiennent du fluide frigorigène à haute pression R-410A. Des dangers existent qui, s'ils se matérialisent, pourraient entraîner des blessures ou la mort. L'installation, l'entretien et le service ne doivent être effectués que par un technicien de CVC qualifié quant à l'usage du fluide frigorigène R-410A en utilisant les outils et l'équipement appropriés. En raison de la pression beaucoup plus élevée du fluide frigorigène R-410A, N'utilisez PAS des outils ou de l'équipement de service qui ne sont pas conçus spécifiquement pour le R-410A.

⚠ CAUTION

1. Do not attempt to reuse any mechanical or electrical controllers which have been wet. Replace defective controller.
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 33.1* & *Table 34.1*, 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 Tableau 34.1, 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 Modine 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

Access to the unit is gained by opening the front panels and hinged top side covers using the key that is provided on Floor Mounted units or by opening the bottom access panels on Ceiling Mounted units.

MAINTENANCE

Maintenance Schedule

Every ONE (1) MONTH

With the Disconnect in the "OFF" position: check the filter(s) and replace if necessary. Slide the filter(s) out of the track and replace with new filter(s). See *Figure 32.1* & *Figure 32.3*. The filters are positioned under the coil assembly. Never run the unit without filters.

Every SIX (6) MONTHS (Before the heating and cooling season)

1. Check for correct fan operation, no excessive noise or vibrations.

With the Disconnect Switch in the "OFF" position:

2. Inspect all electrical circuits including optional components and sensors 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.
3. Check the filter(s) and replace if necessary. Slide the filter(s) out of the track and replace with new filter(s) (see *Figure 32.1* & *Figure 32.3*). The filters are positioned under the coil assembly. Never run the unit without filters.
4. Check the control wiring and sensors. Check the operation and sequencing of controls and ensure that all relevant set points are recorded.
5. Check all warning labels to ensure they can be read and that they have not been removed.
6. Inspect condensate hose for any possible clogs.
7. Check for general obstructions to inlet and discharge openings.
8. Fill the fan shaft bearing cup with oil. The fan shaft bearing is located in the housing at the opposite end of the fan shaft from the motor (see *Figure 32.1* and *Figure 32.3*). Additional bearing cup in middle of unit on 1250 and 1500 CFM units and is accessible through the front panel.

REPLACEMENT PARTS

When servicing, repairing or replacing parts on these units, locate the model serial plate on the unit and always give the complete Model Number and Serial Number from the unit. For a complete description of the model number, see Model Nomenclature, *Table 35.1*.

MAINTENANCE - COMPONENT LOCATION

Figure 32.1 - Filter Location - Floor Mounted Units

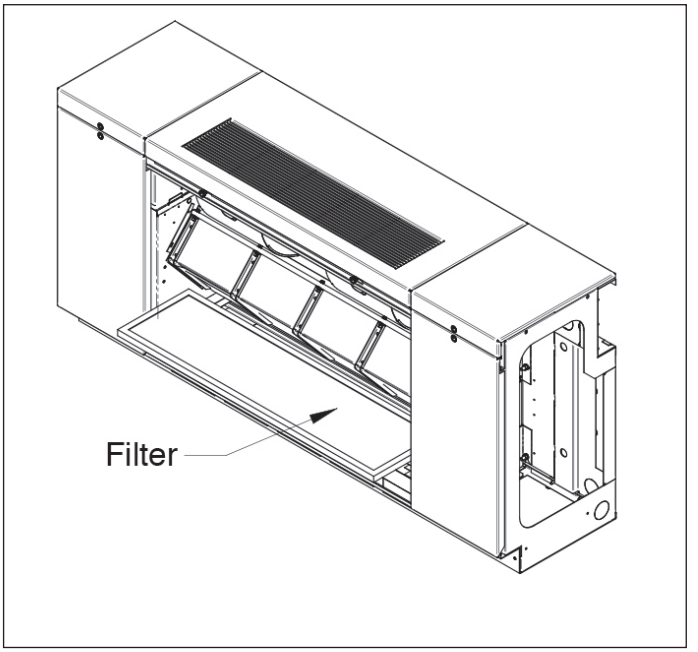


Figure 32.2 - End Shaft Bearing Cup Location

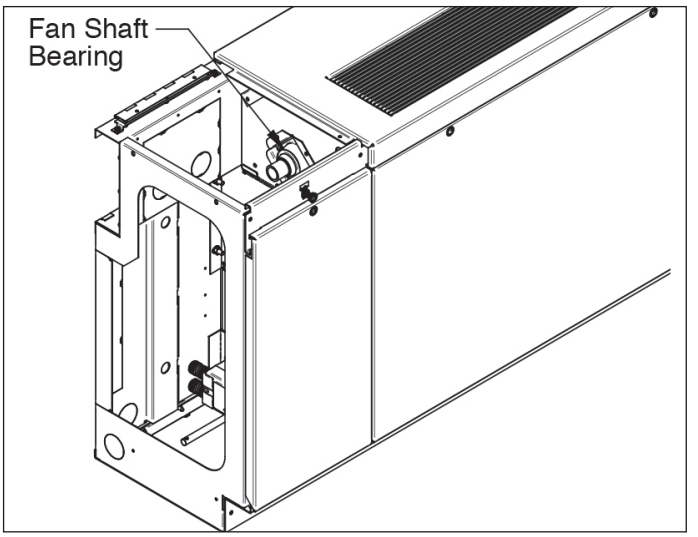


Figure 32.3 - Filter Location - Ceiling Mounted Units

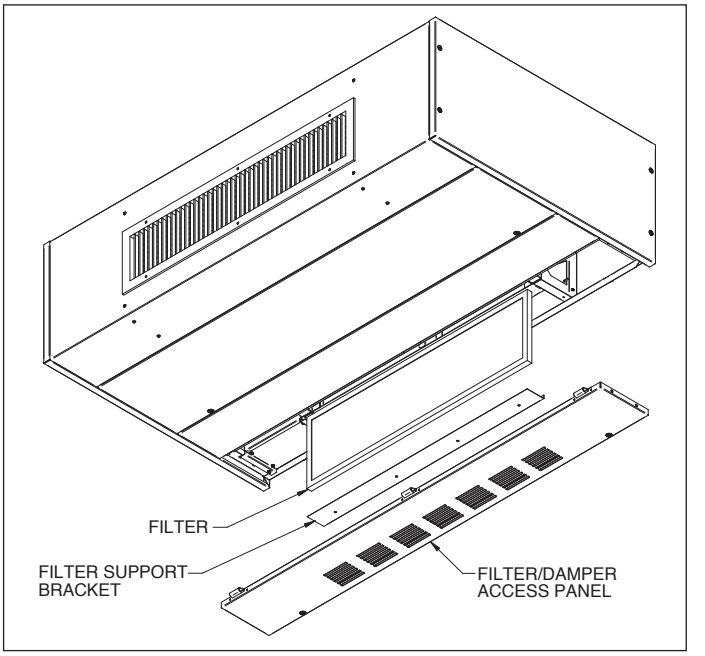
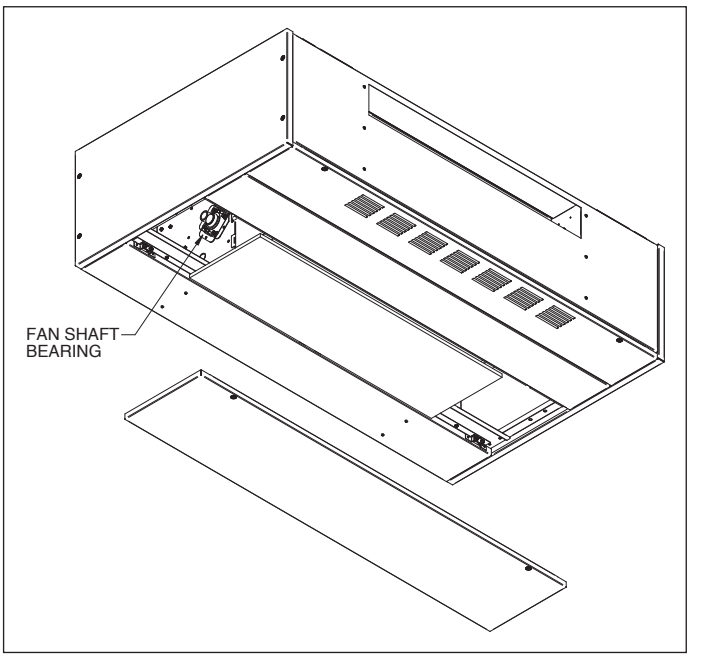


Figure 32.4 - End Shaft Bearing Cup Location



TROUBLESHOOTING

Table 33.1 - 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 (if equipped with a 4-position switch).	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.
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. DX Split Units Only: HP/LP pressure safety switch(es) tripped (open).	3. Inspect high and low system pressures and wiring. Check for dirty filters in Heat Pump mode.
	4. DX Split Units Only: Internal overload switch on compressor tripped (open).	4. Wait for compressor motor windings to cool down (This switch is automatic reset).
	5. Loose control wiring connections.	5. Inspect connections beginning with compressor output from the microprocessor.
	6. Tripped circuit breakers.	6. Reset the tripped circuit breaker(s).
	7. Low temperature unit lockout.	7. Consult microprocessor setpoints.
	8. DX Split Units Only: Compressor faulty.	8. Replace compressor.
	9. Condensate pan/pump float switch tripped.	9. 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. 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.

TROUBLESHOOTING

Table 34.1 - Troubleshooting - Continued

Trouble	Possible Cause	Possible Remedy
E. DX Split Units Only: Low Suction Pressure (LP Switch Tripped)	1. Low refrigeration charge.	1. Measure unit operating pressures. Add charge and check for leaks.
	2. Clogged filter(s).	2. Replace filter(s) as necessary.
	3. Clogged liquid line filter drier.	3. Replace drier with a direct replacement. Follow proper procedure.
	4. Improper expansion valve setting or valve malfunctioning.	4. Check operation and superheat settings.
	5. Low/restricted supply airflow.	5. Check diffusers, filters and supply motor to ensure appropriate airflow.
F. DX Split Units Only: Low Discharge Pressure	1. Low refrigeration charge.	1. Measure unit operating pressures. Add charge and check for leaks.
	2. Faulty compressor.	2. Replace compressor.
	3. Faulty reversing valve.	3. Evacuate system and replace reversing valve.
	4. Outdoor air sensor out of calibration.	4. Check outdoor air sensor for accuracy.
G. DX Split Units Only: High Suction Pressure	1. Excessive load.	1. Check occupancy of space.
	2. Expansion valve malfunctioning (overfeeding).	2. Check remote bulb is secure and vapor sealed, and regulate superheat.
	3. Faulty compressor.	3. Replace compressor.
H. DX Split Units Only: High Discharge Pressure	1. Improper installation of wall sleeve and louver.	1. Ensure splitter plate is in contact with the back of the louver blade and the unit to ensure no re-circulation of exhaust air takes place.
	2. Dirty condenser coils.	2. Clean condenser coil.
	3. System overcharged.	3. Remove excess refrigerant.
	4. Noncondensables in system.	4. Evacuate refrigerant circuit and recharge.
	5. Condenser fan speed is too slow (cooling mode).	5. Not applicable, refer to manufacturer's Technical Manual.
I. 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.
J. 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.
K. 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.

MODEL NOMENCLATURE

Table 35.1 - Model Nomenclature

1	2	3	4-7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
PT	S	CC	US	IA	DA	CO	HO	CA	CP	OA	SV	MT	EC	C	DG	FL	PC	PH

1 - Product Type (PT)

V or Z Ventilator

2 - Style (S)

F - Floor Mounted

C - Ceiling Mounted

3 - Cooling Control (CC)

V - Valve Control

F - Face and Bypass

4,5,6,7 - Unit Size (US)

0750 - 750 CFM

1000 - 1000 CFM

1250 - 1250 CFM

1500 - 1500 CFM

8 - Inlet Air (IA)

Floor Mounted 16 5/8" Deep

A - Rear OA, Open Pipe Tunnel

B - Rear OA, Closed Pipe Tunnel

D - No OA, Open Pipe Tunnel

Floor Mounted 21 7/8" Deep

E - Rear OA, Open Pipe Tunnel

F - Rear OA, Closed Pipe Tunnel

J - No OA, Closed Back, Closed PT

K- Rear OA, 2" Step-Down, Open PT

L- Rear OA, 2" Step-Down, Closed PT

(PT = Pipe Tunnel)

Ceiling Mounted Units

M - Bottom Return Air, Rear Outside Air

N - Bottom Return Air, Top Outside Air

P - Rear Return Air, Top Outside Air

Q - Rear Return Air, Bottom Outside Air

R - Bottom Return Air, No Outside Air

S - Top Return Air, No Outside Air

9 - Discharge Air (DA)

A - Floor Mounted Bar Grille with Screen

E - Ceiling Mounted Front Discharge with Duct Collar

F - Ceiling Mounted Front Disch. with Dbl. Defl. Grille

G - Ceiling Mounted Down Disch. with Dbl. Defl. Grille

10 - Cooling Option (CO)

0 - None

2 - 2-Row Chilled Water/Hot Water 2-Pipe

4 - 4-Row Chilled Water/Hot Water 2-Pipe

5 - Direct Expansion (DX) Cooling Only

11 - Heating Option (HO)

0 - Hot Water/Chilled Water 2-Pipe

1 - 1-Row Hot Water Coil

2 - 2-Row Hot Water Coil

3 - Steam Coil (1-Row)

N - None

12 - Coil Access (CA)

A - Right Hand Coil(s)

B - Left Hand Coil(s)

C - RH Cooling, LH Heating

D - LH Cooling, RH Heating

13 - Coil Positions (CP)

0 - Units with One Coil

1 - Preheat: Pos 1 Heating, Pos 2 Cooling

2 - Reheat: Pos 1 Cooling, Pos 2 Heating

14 - Outside Air Damper Assembly (OA)

C - Insulated Damper

E - No Damper (Recirculating Unit)

15 - Supply Voltage (SV)

A - 115/60/1 C - 230/60/1

B - 208/60/1 H - 277/60/1

16 - Motor Type (MT)

2 - High Static, EC Motor (3SS)

3 - High Static, EC Motor, 0-10vDC

4 - Standard EC Motor (3SS)

5 - Standard EC Motor, 0-10vDC
(Standard EC for Floor Mounted units only without external static.)

17 - Electrical Connection (EC)

A - Left Hand Side

B - Right Hand Side

18 - Control (C)

A - By Others, Field Installed

B - Factory DDC

C - Modine Controls System

D - Free Issue

19 - Design Generation (DG)

1 - First Generation

20 - Filters (FL)

A - 70-75% Arrestance (Standard)

B - MERV 10

C - MERV 13

21 - Cooling Pipe Package (PC) (Floor Mounted Unit Only)

D - 2-Way Valve, All Components

H - 3-Way Valve, All Components

N - None

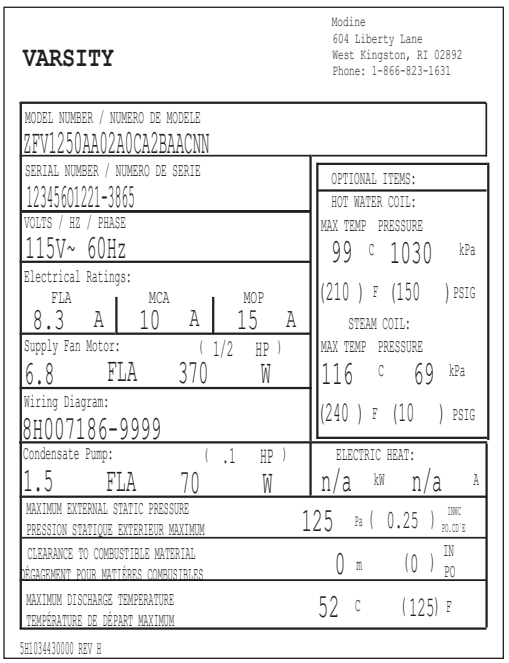
22 -Heating Pipe Package (PH) (Floor Mounted Unit Only)

D - 2-Way Valve, All Components

H - 3-Way Valve, All Components

N - None

Figure 35.1 - Serial Plate EXAMPLE



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

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