



CS2000 BELT DRIVE AIR HANDLING UNITS

INSTALLATION, OPERATION & MAINTENANCE

New Release

Form 115.27-NOM1 (200)



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PRE START-UP



Improper installation, adjustment, alterations, service or maintenance can cause injury and property damage, as well as possible voiding of factory warranty. For assistance or additional information, consult a qualified contractor.

RECEIVING AND INSPECTING

- Thoroughly examine the exterior and interior of all units for transportation damage to the cabinet, piping, blower(s), motor(s), coil(s), electric heat and electrical components. Interior damage may occur, even with no visible exterior damage. If damage is found, immediately file a claim with the carrier. Note the damage on the bill of lading before signing for the shipment.
- Check the bill of lading for verification that all items shown (including loose items) have been received. Notify the manufacturer's representative of any shortages or items shipped in error.

UNIT RIGGING AND PLACEMENT

- Install ductwork to comply with ASHRAE Fundamentals Handbook, SMACNA, NFPA 90A and local code.
- The installation must conform with local building codes and the NATIONAL ELECTRIC CODE.
- Locate unit support in accordance with the mechanical and structural plans. If so equipped, locate the isolator placement and correct size as shown on the submittal drawing.

- Ceiling suspension of horizontal units have factory provisions for thru bolt hanger rods, except double wall units (which require external rigging) (See Figures 1, 2 and 3). If floor mount isolators are required for either horizontal or vertical units, then factory or field provisions must be made for isolator attachment. Vertical units can be mounted directly to the floor or on a base rail. If a base rail is provided, isolators can be installed in mounting holes provided on this base rail.
- Do not handle the unit using coil stubout connectors, as damage may occur at brazed joint(s).

CLEARANCE

- All units, including those with electric heat, are listed for zero clearance to combustibles.
- Sufficient clearance for normal servicing of this equipment is recommended.
- All electrical panels must have 36" working space in front of panel to meet NATIONAL ELECTRICAL CODE; however, local inspectors may waive this requirement if the hinged cover has a 90° free swing.

PRE-STARTUP CHECK

- Prior to starting the unit, check torque of all set screws on the fan(s), sheaves and bearings where applicable.
Set screws may loosen during transportation. See Table 3.
- Sheaves must be in line. Use a straight edge to verify.

INSTALLATION

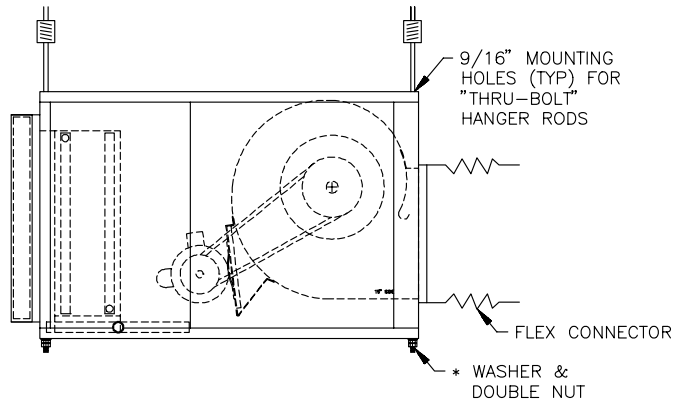


FIG. 1 – HORIZONTAL UNIT (ALL SIZES) WITH THRU ROD CONNECTION

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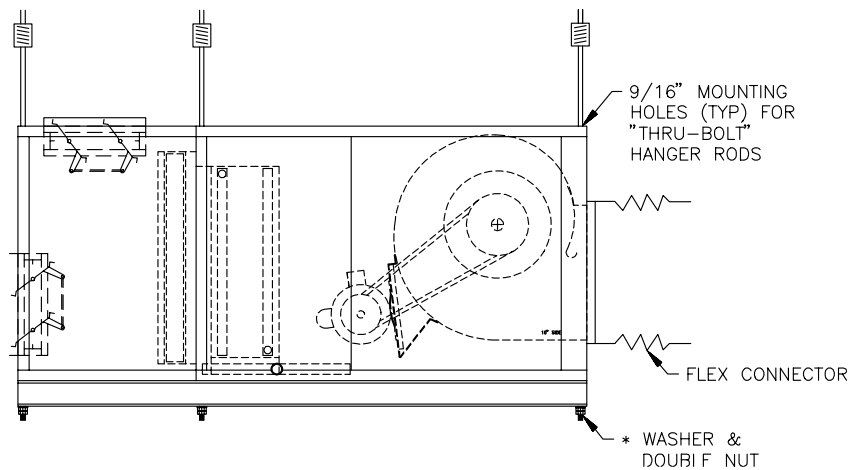


FIG. 2 – TYPICAL UNITS WITH FACTORY INSTALLED BASE RAIL. SUSPENSION WILL STILL BE THROUGH UNIT HOLES PROVIDED.

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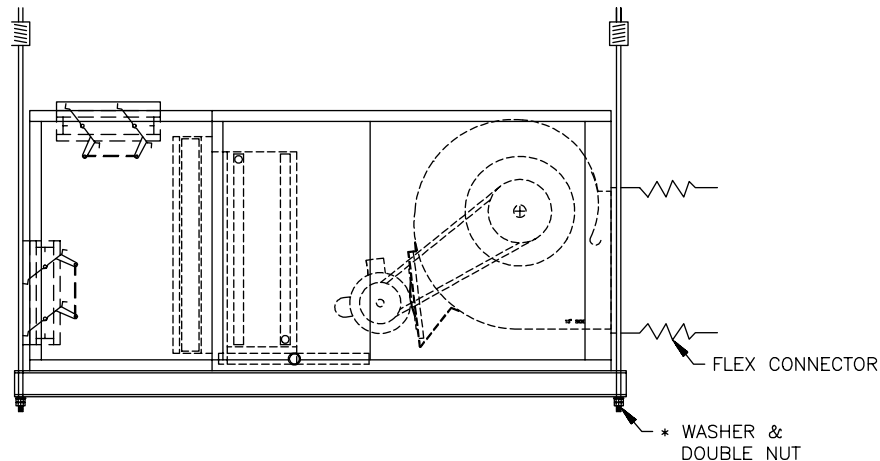
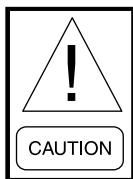


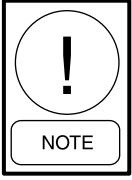
FIG. 3 – DOUBLE WALL UNIT WITH BASE RAIL. NOTE THAT SUSPENSION RODS ARE EXTERNAL TO THE UNIT CASING.

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It is critical to the installation of the AHU unit that the mechanical fastener used form a “mechanical lock” so that it is incapable of backing off due to vibration. Serious injury and/or property damage may occur if not properly addressed.

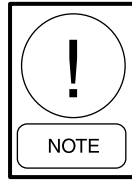
FIELD WIRING



Prior to installing any wiring, check the unit name plate for main power voltage, control voltage, transformer sizing and any fuse sizing. All field wiring must comply with National Electric Code and local code requirements.

- Tighten all wiring lugs and terminals prior to connecting power to the unit, as they may loosen during transportation.
- Route the power lines to the power distribution terminals inside the control enclosure. If a factory wired disconnect switch is installed, then connect the power lines to the line side of the switch.
- Mount and wire any field installed items as indicated on the factory supplied wiring diagram. When mounting field installed components, do not jumper out or rewire any factory wiring without written approval from York International. Violation will void warranty.

BELT TENSIONING



For safety, please turn off all power before checking belt tension.

- General belt tension rules for V-Belt drives:
 - Ideal tension is the lowest tension at which the belt will not slip under peak load conditions.
 - Check tension frequently during the first 24-48 hours of operation.
 - Over tensioning shortens belt and bearing life.
 - Keep belts free from foreign material which may cause slip.
 - Make V-Belt inspection on a periodic basis. Tension when slipping. Never apply belt dressing, as this will damage the belt and cause early failure.

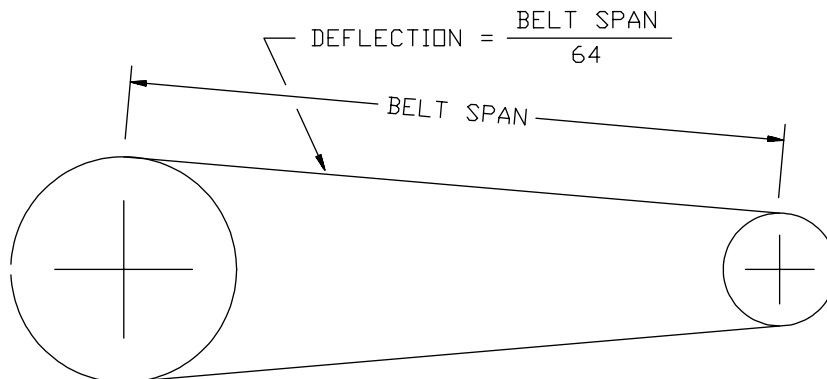


FIG. 4 – BELT TENSION

TABLE 1 – DEFLECTION FORCE - LBS.

BELT TYPE	BELT DEFLECTION FORCE			
	SMALLEST SHEAVE DIAMETER RANGE	RPM RANGE	SUPER GRIPBELTS AND UNNOTCHED GRIPBANDS	GRIPNOTCH BELTS AND NOTCHED GRIPBANDS
			NEW BELT	NEW BELT
A, AX	3.0 – 3.6"	1000 – 2500	5.5	6.1
		2501 – 4000	4.2	5.0
	3.8 – 4.8"	1000 – 2500	6.8	7.4
		2501 – 4000	5.7	6.4
	5.0 – 7.0"	1000 – 2500	8.0	9.4
		2501 – 4000	7.0	7.6
B, BX	3.4 – 4.2"	860 – 2500	N/A	7.2
		2501 – 4000	N/A	6.2
	4.4 – 5.6"	860 – 2500	7.9	10.5
		2501 – 4000	6.7	9.1
	5.8 – 8.6"	860 – 2500	9.4	12.6
		2501 – 4000	8.9	10.9

REPLACEMENT PARTS

- Replacement parts may be ordered from the YORK Airside Parts Center. Factory replacement parts should be used wherever possible to maintain agency listings. Should replacement parts not be purchased from the factory, use only parts duplicating the exact type, size, voltage and other operating characteristics of the original part. Any substitutions and/or modifications not authorized by the factory will void the unit warranty and could result in personal injury and/or property damage.

When ordering parts, the following information must be supplied to ensure proper part identification:

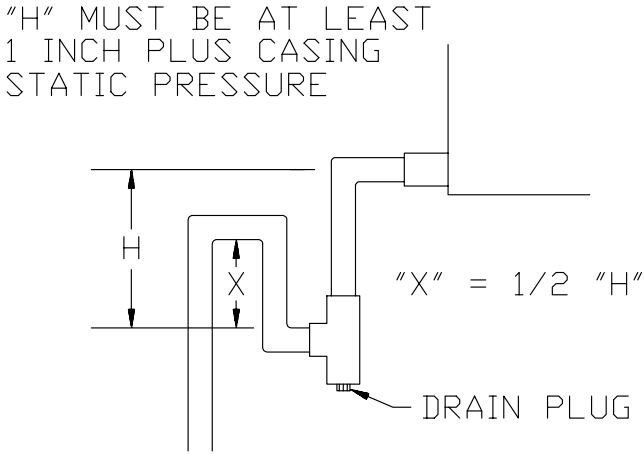
1. Unit model number
2. Unit serial number
3. Complete parts description, including any identification numbers

PIPING

- All piping must comply with applicable state and local codes.
- On water coils, the piping must be in a counterflow configuration; water inlet on the leaving air side of the coil and at the bottom of the coil to provide the necessary purging of air.
- All water piping should be designed and installed to meet the job requirements.
- Where applicable, freeze protection should be used.
- Supply and return water piping should be supported. Do not suspend piping, controls, and/or shutoff valves from coil headers.
- All refrigerant piping (split systems) should be designed and installed in accordance with ARI and ASHRAE. Leak testing should be performed before any startup procedures are initiated. On refrigeration systems, follow recommended system evacuation from the condenser unit manufacturer.

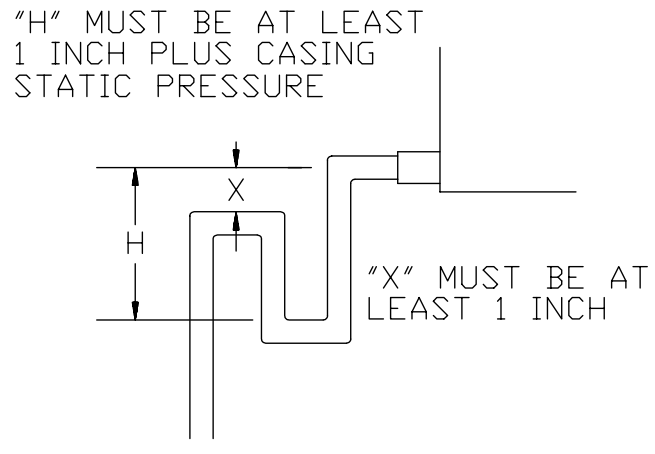
CONDENSATE DRAIN AND TRAPS

- Drain lines should be at least the same size as the drain pan connection. Properly sized traps should be used to allow the condensate from the coils to drain from the drain pan. See Figs. 5A - 5E below.



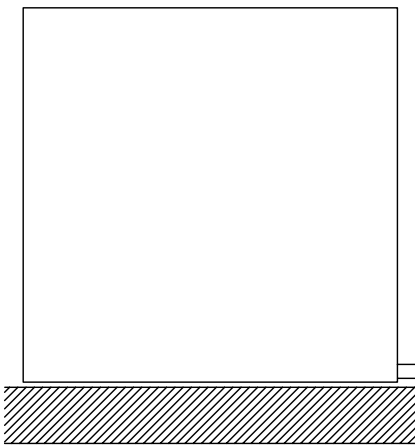
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FIG. 5A – TRAP DETAIL FOR NEGATIVE CABINET STATIC PRESSURE



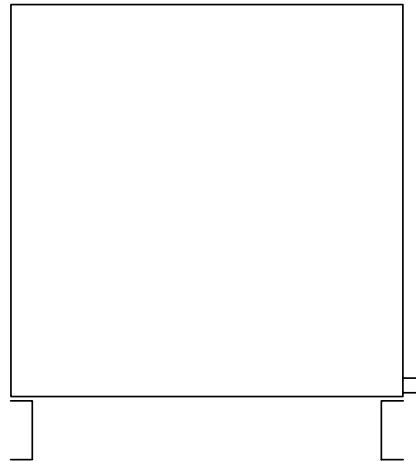
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FIG. 5B – TRAP DETAIL FOR POSITIVE CABINET STATIC PRESSURE



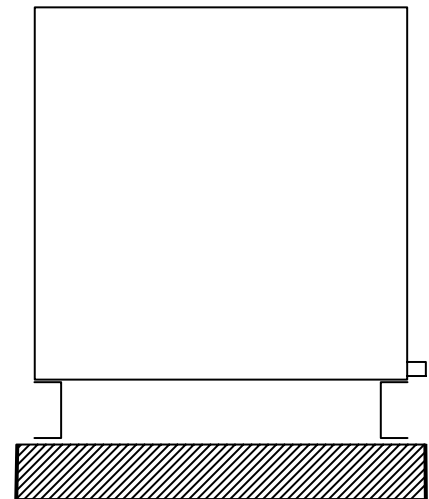
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FIG. 5C – NO BASE RAIL
Housekeeping pad required to accommodate trap height



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FIG. 5D – WITH BASE RAIL
Depending on static pressure, housekeeping pad may not be needed.



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FIG. 5E – WITH BASE RAIL
And housekeeping pad.

MAINTENANCE

BEARING RELUBRICATION

Frequency of bearing relubrication depends upon the operating conditions. The proper amount of lubricant in the bearings is very important. Both excessive and inadequate lubrication may cause failure. The bearings should be relubricated while they are rotating (if it is

safe to do so); the grease should be pumped in slowly until a slight bead forms around the seals. It is solely the owner's responsibility for maintaining a proper lubrication schedule. Failure to do so may cause substantial unit damage and voiding of the factory warranty. Note that only those bearings equipped with a grease fitting can be relubricated.

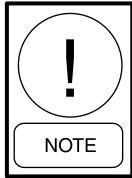
TABLE 2 – GENERAL MAINTENANCE

MAINTENANCE TO BE PERFORMED	EVERY 3 MONTHS OF OPERATION (MINIMUM)	ANNUALLY
Grease Fan Bearings	X	
Inspect & Clean Blower Wheel		X
Lubricate Fan Motor (if applicable)	Per Motor Manufacturer	
Check Belt Tension	X	
Check Electrical Connections		X
Check Bearings, Drives & Blower Wheel for Tightness		X

NOTE: Normal operation is based on 8 hours a day. If unit runs more than this, adjust accordingly. The table above is a generic guide intended for standard equipment used in common situations.

TABLE 3 – SET SCREW TIGHTENING

SET SCREW DIAMETER	MINIMUM RECOMMENDED TORQUE	
	INCH LBS.	FOOT LBS.
#10	28	2.3
1/4	66	5.5
5/16	126	10.5
3/8	228	19.0
7/16	348	29.0
1/2	504	42.0
5/8	1104	92.0



This manual is not intended to supplant regulations or local codes having jurisdiction. It is recommended that these items be reviewed and completed prior to initiating equipment start-up.

