

SUBMITTAL - # 3

PROJECT: Maine Medical Center
R - 6 - I. C. U. Renovations
22 Bramhall St.
PORTLAND, ME. 04102
JOB # 15221

GENERAL CONTRACTOR: Hebert Construction LLC
9 Gould Rd.
Lewiston, Me 04240

SUBMITTED BY: JOHNSON & JORDAN, INC
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SUBCONTRACTOR: N/A

SUPPLIER: Trane
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Westbrook, ME. 04092
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SPECIFICATION SECTION: Prints Dated: 4-27-2015: MH 600 Schedule

PARAGRAPH:

ITEM: AHU - 10, EF - 1, VAVs

 PHONE: (207) 883-8345 FAX: (207) 883-8619	
APPROVED _____	APPROVED AS NOTED _____
RE-SUBMIT _____	REVIEWED _____
SUBJECT TO ARCHITECTS APPROVAL _____	
DATE <u>6/24/15</u> BY <u>J.R.V.</u>	



Submittal

Prepared For: Jeff Valley

Date: June 24, 2015

Customer P.O. Number:
Customer Project Number:

Sold To: Johnson & Jordan

Job Number:
Job Name: MMC - R-6 ICU

Trane U.S. Inc. dba Trane is pleased to provide the enclosed submittal for your review and approval.

Product Summary

Qty	Product
2	Performance Climate Changer Tagged AHU-10 and EF-29
2	ABB Variable Speed Drives

The attached information describes the equipment we propose to furnish for this project, and is submitted for your approval.

Daniel Broderick
Trane
860 Spring Street, Unit 1
Westbrook, ME 04092
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Tag Data - Performance Climate Changer (Qty: 2)

Item	Tag(s)	Qty	Description	Model Number
A1	EF-29	1	Performance Climate Changer (CSAA)	CSAA012UA
A2	AHU-10	1	Performance Climate Changer (CSAA)	CSAA012UA

Product Data - Performance Climate Changer

Item: A1 Qty: 1 Tag(s): EF-29

Unit level options

Indoor unit Unit size 12
 6in. integral base frame
 UL listed unit
 Multiple composite handles/latches
 Field Provided (mtrs, lights, controls)
 IBC seismic Cert. Req. - Base mounted
 IBC 2009

Controls and VFD/starter

Field provided VFD

Warranty

Standard warranty only

Air mixing section (Pos #1)

Air mixing section
 Reduced length mixing box
 Door- right side
 Back damper - high velocity parallel
 Front full face opening
 2in. filter frame
 Pleated media - run set (Fld)

Heat Recovery Coil section (Pos #2)

Horizontal coil Medium
 Stainless steel drain pan Right side - drain connection
 Right side - coil supply
 Service panel coil connection side
 Unit coil height Type "UW" coil
 6 rows
 Galvanized steel coil casing

Access section (Pos #3)

Access/blank/turning section
 Medium
 Door- right side

Exhaust Fan section (Pos #4)

Exhaust fan
 Door- right side Thermal window - right side
 22.25in. direct-drive plenum, 80% width
 Nine blades Plenum fan
 Right side drive
 NEMA premium compliant ODP Voltage 460/3
 5 max applied hp
 Inverter balance with SGR
 Front rectangular discharge
 Flow meter
 Marine LED light
 Field provided VFD

Item: A2 Qty: 1 Tag(s): AHU-10

Unit level options

Indoor unit Unit size 12
 6in. integral base frame
 UL listed unit
 Multiple composite handles/latches
 Field Provided (mtrs, lights, controls)
 IBC seismic Cert. Req. - Base mounted
 IBC 2009

Controls and VFD/starter

Field provided VFD

Warranty

Standard warranty only

Air mixing section (Pos #1)

Air mixing section Mixing box w/filter

Door- both sides

Back damper - parallel blade

2in. filter frame Pleated media - run set (Fld)

Heat Recovery Coil section (Pos #2)

Horizontal coil Small

No drain pan

Right side - coil supply

Service panel coil connection side

Heating coil Hot water

Type "UW" coil 4 rows

.016" (0.406mm) copper tubes

1/2in. tube diameter (12.7 mm)

Galvanized steel coil casing

Access section (Pos #3)

Access/blank/turning section

Medium

Door- right side

Marine LED light

Face and bypass (Pos #4)

Internal face & bypass damper

Steam Coil section (Pos #5)

Horizontal coil

Right side - coil supply

Service panel coil connection side

Heating coil Steam

Type "NS" coil 1 row

Galvanized steel coil casing

Access section (Pos #6)

Access/blank/turning section

Medium

Door- right side

Humidifier by others

Blank Section for Humidifier section section (Pos #7)

Access/blank/turning section

Medium

Stainless steel drain pan

Drain connection - right side

Access section (Pos #8)

Access/blank/turning section

Medium large

Door- left side

Thermal window - left side

Marine LED light

Stainless steel drain pan

Drain connection - right side

Chilled Water Coil section (Pos #9)

Horizontal coil Medium large

Stainless steel drain pan Right side - drain connection

Right side - coil supply

Service panel coil connection side

Unit coil height Cooling coil Chilled water

Type "D1" coil

8 rows

.020" (0.508mm) copper tubes

5/8in. tube diameter (15.875 mm)

Stainless steel coil casing

Access section (Pos #10)

Access/blank/turning section
 Medium large
 Door- both sides
 Thermal window - both sides

Fan section (Pos #11)

Fan section Supply fan
 Door- both sides
 Window- both sides
 Perforated panels
 20in. direct-drive plenum, 80% width
 Nine blades Plenum fan
 Right side drive
 NEMA premium compliant ODP
 Voltage 460/3
 10 max applied hp
 Inverter balance with SGR
 Flow meter
 Marine LED light
 Field provided VFD

Filter section (Pos #12)

Filter
 Short Bag/Cartridge filter
 Door- right side
 Bag/cartridge filter frame
 12in. cartridge - 95% eff - run set (Fld)

Performance Data - Performance Climate Changer

Tags	EF-29	AHU-10		
Unit level options				
Position				
Length (in)	106.750	272.375		
Width (in)	66.500	66.500		
Rigging weight (lb)	1567.3	3565.6		
Installed weight (lb)	1643.3	3744.0		
Roof curb weight (lb)	0.0	0.0		
Actual airflow (cfm)	5300	5800		
Unit elevation (ft)	0.00	0.00		
Shipping split 1 weight (lb)	345.1	662.5		
Shipping split 2 weight (lb)	536.9	560.4		
Shipping split 3 weight (lb)	761.3	229.9		
Shipping split 4 weight (lb)	-	188.4		
Shipping split 5 weight (lb)	-	729.7		
Shipping split 6 weight (lb)	-	188.4		
Shipping split 7 weight (lb)	-	876.3		
Shipping split 8 weight (lb)	-	308.4		
Fan section				
Position	#4	#11		
Section length (in)	48.500	48.500		
Section weight (lb)	761.3	876.3		
Fan airflow (cfm)	5300	5800		
Elevation (ft)	0.00	0.00		
Overall ESP (in H2O)	1.750	2.500		
Total static pressure (in H2O)	3.885	6.444		
Maximum TSP @ 60 Hz (in H2O)	3.885	6.444		
Fan pressure drop (in H2O)	2.024	2.523		
Speed (rpm)	1767	2615		
Total brake horsepower (hp)	4.806	9.021		
Unit static efficiency (%)	67.53	65.31		

Tags	EF-29	AHU-10		
Motor hertz (Hz)	60	89		
Discharge 1 front - airflow (cfm)	5300	-		
Discharge 1 front - face velocity (ft/min)	1325	382		
Discharge 1 front - pressure drop (in H2O)	0.274	0.023		
Discharge 1 front - area (sq ft)	4.00	15.19		
Access section				
Position	#3	#3, #6, #7	#8, #10	
Section length (in)	14.000	14.000	26.500	
Section weight (lb)	114.9	114.9	188.4	
Coil section				
Position	#2	#2	#5	#9
Section length (in)	14.000	10.000	10.000	26.500
Section weight (lb)	421.9	312.5	211.5	729.7
Coil performance airflow (cfm)	5300	5800	5800	5800
Unit airflow (cfm)	5300	5800	5800	5800
Coil face area (sq ft)	12.30	12.30	9.00	11.81
Coil face velocity (ft/min)	431	472	644	491
Air pressure drop (in H2O)	0.581	0.293	0.250	1.043
Coil section pressure drop (in H2O)	0.581	0.293	0.250	1.043
Coil rigging weight (lb)	205.0	146.3	92.8	379.4
Coil installed weight (lb)	281.0	193.8	-	510.3
Top or single coil dry weight (lb)	205.0	146.3	92.8	379.4
Leaving dry bulb (F)	42.57	23.15	55.00	54.50
Leaving wet bulb (F)	42.39	-	-	54.40
Entering dry bulb (F)	74.00	-15.00	-15.00	88.00
Entering wet bulb (F)	62.00	-	-	74.00
Fluid type	Propylene glycol	Propylene glycol	-	Propylene glycol
Coil fluid percentage (%)	30.00	30.00	-	30.00
Entering fluid temperature (F)	32.00	42.00	-	45.00
Leaving fluid temperature (F)	43.78	31.60	-	59.00
Fluid temperature rise (F)	11.78	-	-	14.00
Fluid temperature drop (F)	-	10.40	-	-
Standard fluid flow rate (gpm)	50.00	50.00	-	59.04
Fluid pressure drop (ft H2O)	16.84	12.51	-	14.07
Steam pressure (psig)	-	-	5.00	-
Steam pressure drop (psig)	-	-	0.88	-
Coil condensate (lb/hr)	-	-	457.09	-
Fluid velocity (ft/s)	3.43	3.43	-	3.11
Fluid volume (gal)	8.06	5.71	1.67	13.98
Sensible capacity (MBh)	182.95	-	-	215.61
Total capacity (MBh)	271.82	239.95	440.31	382.28
Face and bypass				
Position		#4		
Section length (in)		19.000		
Section weight (lb)		234.0		
Bypass damper airflow (cfm)		5800		
Face damper airflow (cfm)		5800		
Bypass damper area (sq ft)		3.32		
Face damper area (sq ft)		9.26		
Bypass damper pressure drop (in H2O)		0.953		
Face damper pressure drop (in H2O)		0.068		
Total bypass damper pressure drop (in H2O)		0.953		
Total face damper pressure drop (in H2O)		0.068		
Module total pressure drop (in H2O)		0.953		
Filter section				

Tags	EF-29	AHU-10		
Position		#12		
Section length (in)		26.500		
Section weight (lb)		308.4		
Filter airflow (cfm)		5800		
Filter area (sq ft)		12.33		
Filter condition		Mid-life		
Filter pressure drop (in H2O)		0.761		
Filter section pressure drop (in H2O)		0.761		
Filter face velocity (ft/min)		470		
Air mixing section				
Position	#1	#1		
Section length (in)	30.000	36.000		
Section weight (lb)	345.1	350.1		
Opening 1 back - airflow (cfm)	5300	5800		
Opening 1 front - airflow (cfm)	5300	5800		
Opening 1 back - area (sq ft)	3.11	5.10		
Opening 1 front - area (sq ft)	15.19	15.19		
Opening 1 back - face velocity (ft/min)	1704	1136		
Opening 1 back - pressure drop (in H2O)	0.670	0.280		
Opening 1 back total pressure drop (in H2O)	0.670	0.280		
Back inlet type	Unducted	Unducted		
Greatest entry PD (in H2O)	0.670	0.280		
Filter condition	Mid-life	Mid-life		
Filter airflow (cfm)	5300	5800		
Filter area (sq ft)	13.33	16.67		
Filter face velocity (ft/min)	398	348		
Filter pressure drop (in H2O)	0.609	0.591		
Total mixing section pressure drop (in H2O)	1.279	0.871		
Front total pressure drop (in H2O)	0.000	0.000		
Back total pressure drop (in H2O)	0.670	0.280		

Mechanical Specifications - Performance Climate Changer
Item: A1, A2 Qty: 2 Tag(s): EF-29, AHU-10**GENERAL**

Per ASHRAE 62.1 recommendation, indoor air handling units will be shipped stretch-wrapped to protect unit from in-transit rain and debris.

Installing contractor is responsible for long term storage in accordance with the Installation, Operation, and Maintenance manual (CLCH-SVX07B-EN).

Unit shall be UL and C-UL Listed.

Air-handling performance data shall be certified in accordance with AHRI Standard 430.

Unit sound performance data shall be provided using AHRI Standard 260 test methods and reported as sound power. Trane, in providing this program and data, does not certify or warrant NC levels. These levels are affected by factors specific to each application and/or installation and therefore unable to be predicted or certified by Trane.

IBC Seismic Certification

The Trane Corporation has qualified the listed air-handling units as CERTIFIED for seismic applications in accordance with the following International Building Code (IBC) releases.

IBC 2000, 2003, 2006, 2009, 2012

All unit sizes of the Performance Climate Changer are included in this certification. A complete list of certified models, options, and installation methods are detailed in report number VMA-48642-01C as issued by The VMC Group.

Seismic Qualification Testing and structural analysis were conducted in accordance with and strict adherence to the standards set forth within ASCE 7 by the independent approval agency, The VMC Group. The above referenced equipment is APPROVED for seismic applications when properly installed and used as intended.

The basis of this certification is through a combination of testing of the active and energized components and non active components. Additional calculations were conducted to ensure components, accessories, and options remained intact and attached to the unit under seismic load conditions.

Trane Performance Climate Changer Air Handler Base Mounted is approved for seismic application when properly installed used as intended and contains a Seismic Certification Label. Certified Seismic Design Levels $I_p=1.0$ or 1.5 ; $SDS \leq 1.85g$; $z/h < 0.0$ (equipment at grade) or 1.0 (Equipment on Roof) ; soil classes A,B,C,D Seismic Risk Category I, II, III, IV, and Seismic Design Categories A,B,C,D,E,F are all covered under this certification. Certified Seismic Installation Methods - 1.) Rigid Mounting from unit base to rigid structure or 2.) Directly to curb/rail

Structural floors, housekeeping pads, supporting curbs, and supporting steel must be seismically designed and approved by the project or building Structural Engineer of Record to withstand the seismic anchor loads. Installation details such as special inspection, attachment to a curb, or attachment to a non-building structure must be outlined and approved by the Engineer of Record for the project or building. The installing contractor is responsible for the proper installation of the equipment and must observe the seismic installation requirements set forth by the Engineer of Record. Certificate of Compliance and Final Certification Report are available upon request.

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Unit Construction

All unit panels shall be 2" solid, double-wall construction to facilitate cleaning of unit interior. Unit panels shall be provided with a mid-span, no-through-metal, internal thermal break. Casing thermal performance shall be such that under 55°F supply air temperature and design conditions on the exterior of the unit of 81°F dry bulb and 73°F wet bulb, condensation shall not form on the casing exterior.

All exterior and interior indoor AHU panels will be made of galvanized steel.

Unit Paint

Unit to ship unpainted from factory. Unit to be painted by 3rd party finisher, or by painting contractor at job site.

Casing Deflection

The casing shall not exceed 0.0042 inch deflection per inch of panel span at 1.00 times design static pressure. Maximum design static shall not exceed +8 inches w.g. in all positive pressure sections and -8 inches w.g. in all negative pressure sections.

Casing Deflection

The casing shall not exceed 0.0042 inch deflection per inch of panel span at 8 inch static pressure. Total maximum static shall not exceed +8 inches w.g. in all positive pressure sections and -8 inches w.g. in all negative pressure sections.

Floor Construction

The unit floor shall be of sufficient strength to support a 300.0 lb load during maintenance activities and shall deflect no more than 0.0042 inch per inch of panel span.

Unit base

Manufacturer to provide a full perimeter integral base frame for either ceiling suspension of units or to support and raise all sections of the unit for proper trapping. Indoor unit base frame will either be bolted construction or welded construction. All outdoor unit base frames shall be welded construction. For indoor units, refer to schedule for base height and construction type. Contractor will be responsible for providing a housekeeping pad when unit base frame is not of sufficient height to properly trap unit. Unit base frames not constructed of galvanized steel shall be chemically cleaned and coated with both a rust-inhibiting primer and finished coat of rust-inhibiting enamel. Unit base height to be included in total height required for proper trap height.

Insulation

Panel insulation shall provide a minimum thermal resistance (R) value of 13 ft²-h-°F/Btu throughout the entire unit. Insulation shall completely fill the panel cavities in all directions so that no voids exist and settling of insulation is prevented. Panel insulation shall comply with NFPA 90A.

Drain Pan

In sections provided with a drain pan, the drain pan shall be designed in accordance with ASHRAE 62.1. To address indoor air quality (IAQ) the drain pan shall be sloped in two planes promoting positive drainage to eliminate stagnant water conditions. Drain pan shall be insulated, and of double wall construction. The outlet shall be the lowest point on the pan, and shall be of sufficient diameter to preclude drain pan overflow under normally expected operating conditions. All drain pans connections shall have a threaded connection, extending a minimum of 2-1/2" beyond the unit

base, and shall be made from the same material as the drain pan. Drain pan located under a cooling coil shall be of sufficient size to collect all condensate produced from the coil.

Refer to Product Data for specific information on which sections are supplied with a drain pan, the drain pan material and connection location.

Access Door Construction

Access doors shall be 2" double wall construction. Interior and exterior door panels shall be of the same construction as the interior and exterior wall panels respectively. All doors shall be provided with a thermal break construction of door panel and door frame. Gasketing shall be provided around the full perimeter of the doors to prevent air leakage. Surface mounted handles shall be provided to allow quick access to the interior of the functional section and to prevent through cabinet penetrations that could likely weaken the casing leakage and thermal performance. Handle hardware shall be designed to prevent unintended closure. Access doors shall be hinged and removable for quick easy access. Hinges shall be interchangeable with the door handle hardware to allow for alternating door swing in the field to minimize access interference due to unforeseen job site obstructions. Door handle hardware shall be adjustable and visually indicate locking position of door latch external to the section. Door hinges shall be galvanized.

All doors shall be a minimum of 60" high when sufficient height is available or the maximum height allowed by the unit height.

Door handles shall be provided for each latching point of the door necessary to maintain the specified air leakage integrity of the unit. Optionally for indoor AHUs and as standard on outdoor AHUs, outward swing doors are provided with a single handle linked to multiple latching points. An optional shatterproof window shall be provided in access doors where indicated on the plans. Window shall either be single pane, or thermal dual pane, as defined on schedule. Window shall be capable of withstanding unit operating pressures and shall be safe for viewing UV-C lamps.

Refer to Product Data for specific information on which sections are supplied with an access door, the door location, a single handle and a window.

Marine Light

A factory-mounted, weather resistant (enclosed and gasketed to prevent water and dust intrusion), light emitting diode (LED) fixture shall be provided in sections of the unit as specified for maintenance and service visibility. Fixture shall be complete with aluminum die cast housing, polycarbonate lens designed for maximum light output, and LEDs wired to a single switch within a factory provided service module. LED lighting shall provide instant-on "white" light and have a minimum 50,000 hour life. Fixtures shall be designed for flexible positioning during maintenance and service activities for optimal location. All lights within the unit shall be wired to a single switch within the factory provided service module. The service module shall include a GFCI receptacle separate from the load side of the equipment. Electrical contractor shall be required to provide a 120V supply to the factory-mounted service module for the marine light circuit (unless single-point power is provided) and for the GFCI receptacle circuit per NEC.

Service module shall be provided on the fan section.

Refer to the Product Data section of the submittal for sections with marine lights.

MIXING SECTION

A mixing section shall be provided to support the damper assembly for outdoor, return, and/or exhaust air.

Dampers

Dampers shall modulate the volume of outdoor, return, or exhaust air. The dampers shall be of double-skin airfoil design with metal, compressible jamb seals and extruded-vinyl blade-edge seals on all blades. The blades shall rotate on stainless-steel sleeve bearings. The dampers shall be rated for a maximum leakage rate of 3 cfm/ft² at 1 in. w.g. complying with ASHRAE 90.1 maximum damper leakage. All leakage testing and pressure ratings shall be based on AMCA Standard 500-D. Dampers may be arranged in a parallel or opposed-blade configuration.

The following specifications apply only to units with outside air and return air dampers, with actuators. The 5 year warranty applies only to these items.

This unit contains Economizer that meets or exceeds all mandatory requirements prescribed by Title 24, including but not limited to:

- 5 yr parts only warranty
- Successfully tested to 60,000 Actuations
- Less than 10 cfm/sq.ft. of damper leakage at 1" WG per AMCA 500L

Filters

Mixing sections shall be provided with a filter rack as indicated in the Product Data and As-Built sections of the submittal.

2-inch pleated media filters made with 100% synthetic fibers that are continuously laminated to a supported steel-wire

grid with water repellent adhesive shall be provided. Filters shall be capable of operating up to 625 fpm face velocity without loss of filter efficiency and holding capacity. The filters shall have a MERV 8 rating when tested in accordance with the ANSI/ASHRAE Standard 52.2.

Differential Pressure Gage

A factory-installed dial type differential pressure gage shall be piped to both sides of the filter to indicate status. Gage shall maintain a +/- 5% accuracy within operating temperature limits of -20°F to 120°F. Gage shall be flush mounted with casing outer wall. Filter sections consisting of pre- and post- filters shall have a gage for each.

FILTER SECTION

A section shall be provided to support the filter rack as indicated throughout the unit. Refer to Product Data and As-Built sections of the submittal for specific locations within each unit.

Primary Filters

Bag Filters

The filters shall be fine-fiber, all-glass media with spun backing to keep glass fibers from eroding downstream. The stitching method shall permit the bag to retain its pleated shape without the use of a wire-basket support. The filters shall be capable of operating up to 625 fpm face velocity without loss of filter efficiency and holding capacity. The filters shall be sealed into a metal header. A gasket material shall be installed on the metal header of the filter to prevent filter bypass where the metal headers meet the side-access racks. All bag filters shall be furnished with a 2-inch prefilter to extend bag filter life. The manufacturer shall supply a side-access filter rack capable of holding bag filters and prefilters.

Cartridge Filters

The filters shall be 12-inch cartridge filters constructed with a continuous sheet of fine-fiber media made into closely spaced pleats. The filters shall be capable of operating up to 625 fpm face velocity without loss of filter efficiency and holding capacity. The filters shall be sealed into a metal frame assembled in a rigid manner. A gasket material shall be installed on the metal header of the filter to prevent filter bypass where the metal headers meet on the side-access racks. All cartridge filters shall be furnished with a 2-inch prefilter to provide extended cartridge filter life. The manufacturer shall supply a side-access filter rack capable of holding cartridge filters and prefilters.

The cartridge filters shall have a MERV 15 rating when tested in accordance with the ANSI/ASHRAE Standard 52.2.

Differential Pressure Gage

A differential pressure gage shall be flush-mounted with casing outer wall with probes piped to both sides of the filter bank to indicate status. Combination filter frames will be provided with a separate differential pressure gage piped across each of the high-efficient and pre-filter banks. The gage shall be diaphragm-actuated dial-type and shall maintain a +/- 5 percent accuracy within operating temperature limits of the air handler. Range shall be 0 - 2.0 in. w.g,

COIL SECTION WITH FACTORY INSTALLED COIL

The coil section shall be provided complete with coil and coil holding frame. The coils shall be installed such that headers and return bends are enclosed by unit casings. If two or more cooling coils are stacked in the unit, an intermediate drain pan shall be installed between each coil and be of the same material as the primary drain pan. Like the primary drain pan, the intermediate drain pan shall be designed being of sufficient size to collect all condensation produced from the coil and sloped to promote positive drainage to eliminate stagnant water conditions. The intermediate pan shall begin at the leading face of the water-producing device and be of sufficient length extending downstream to prevent condensate from passing through the air stream of the lower coil. Intermediate drain pan shall include downspouts to direct condensate to the primary drain pan. The outlet shall be located at the lowest point of the pan and shall be sufficient diameter to preclude drain pan overflow under any normally expected operating condition.

In lieu of a door, an easily removable service panel shall be provided in sections as specified, to facilitate access to unit for periodic servicing, or for removal and replacement of coils. Removal of service panel will not impact the structural integrity of the unit.

Hydronic coils shall be supplied with factory installed drain and vent piping to unit casing exterior. Piping is to facilitate field installation of automatic venting or drain valves on coils, which are not supplied with unit. *Refer to the Product Data section of the submittal for the units and/or coils supplied with drain and vent piping.*

Casing penetrations supplied for hydronic drain and vents. Piping contractor shall provide extended piping.

Water Coils (UW, UU, UA, W, 5W, 5A, WD, 5D, D1, D2, P, or TT)

The coils shall have aluminum fins and seamless copper tubes. Copper fins may be applied to coils with 5/8-inch tubes.

Fins shall have collars drawn, belled, and firmly bonded to tubes by mechanical expansion of the tubes. The coil casing may be galvanized or stainless steel. Refer to the Product Data section of the submittal for the coil casing material. The coils shall be proof-tested to 300 psig and leak-tested under water to 200 psig. Coils containing water or ethylene glycol are not certified by AHRI. Propylene glycol and calcium chloride, or mixtures thereof, are outside the scope of AHRI Standard 410 and, therefore, do not require AHRI 410 rating or certification.

Coil connections are constructed of cast iron with female connections, steel block with female connections or steel pipe with male connections. Type P or TT coil connections do not extend out of unit casing. All other water coil types have connections that extend out beyond unit casing.

Tubes are 1/2" [13mm] OD 0.016" [0.406mm] thick copper.

Tubes are 5/8" [16mm] OD 0.020" [0.508 mm] thick copper.

NS Steam Heating Coil

The coils shall have aluminum fins and seamless copper tubes. Copper fins may be applied to coils with 1-inch tubes. The fins shall have collars drawn, belled, and firmly bonded to tubes by mechanical expansion of the tubes. The coil casing may be galvanized or stainless steel. Refer to the Product Data section of the submittal for the coil casing material.

Non-freeze, steam-distributing-type coils shall be provided. Steam coils shall be pitched in the unit for proper drainage of steam condensate from coils. The coils shall be proof-tested to 300 psig and leak-tested to 200 psig air pressure under water. Coil header connections are constructed of cast iron with female connections. Connections do not extend beyond unit casing. Inner tubes shall have orifices that ensure even steam distribution throughout the full length of the outer tube. Orifices shall be directed toward the return connections to ensure that the steam condensate is adequately removed from the coil. Coils are certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org.

Tube construction shall be a 11/16" OD, 0.031" [0.79mm] copper inner tube with a 1" OD, 0.031" [0.79mm] copper outer tube.

ACCESS/INSPECTION / TURNING SECTION

A section shall be provided to allow additional access/inspection of unit components and space for field-installed components as needed. An access door shall be provided for easy access. All access sections shall be complete with a double-wall, removable door downstream for inspection, cleaning, and maintenance. Interior and exterior door panels shall be of the same construction as the interior and exterior wall panels, respectively. All doors downstream of cooling coils shall be provided with a thermal break construction of door panel and door frame.

Fans that are selected with inverter balancing shall first be dynamically balanced at design RPM. The fans then will be checked in the factory from 25% to 100% of design RPM to insure they are operating within vibration tolerance specifications, and that there are no resonant frequency issues throughout this operating range. Inverter balancing that requires lockout frequencies inputted into a variable frequency drive to in order to bypass resonant frequencies shall not be acceptable. If supplied in this manner by the unit manufacturer, the contractor will be responsible for rebalancing in the field after unit installation. Fans selected with inverter balancing shall have a maintenance free, circumferential conductive micro fiber shaft grounding ring installed on the fan motor to discharge shaft currents to ground.

DIRECT-DRIVE PLENUM FAN SECTION

The fan type shall be provided as required for stable operation and optimum energy efficiency. The fan shall be a single-width, single-inlet, multiblade-type direct-drive plenum fan. *Refer to the Product Data section for fan quantity and number of blades selected within each unit.*

On units supplied with plenum fans, expanded metal door guard(s) shall be supplied on the access door(s) to the fan and those downstream access door(s) where unintended access to the plenum fan could occur. Door guard is intended to deter unauthorized entry and incidental contact with rotating components. *Refer to the Product Data section for fans with access door guard(s).*

Motor Frame

The motor shall be mounted integral to the isolated fan assembly and furnished by the unit manufacturer. The motor is mounted inside the unit casing on an adjustable base to permit adjustment of drive belt tension (not applicable for direct drive plenum fans). The motor shall meet or exceed all NEMA Standards Publication MG 1 requirements and comply with NEMA Premium efficiency levels when applicable except for fractional horsepower motors which are not covered by the NEMA classification. The motor shall be T-frame, squirrel cage with size, type, and electrical characteristics as

shown on the equipment schedule. *Refer to the Product Data section for selected fan motors within each unit.*

Two-Inch Spring Isolators

The fan and motor assembly (on sizes 10 to 120) shall be internally isolated from the unit casing with 2-inch (50.8 mm) deflection spring isolators, furnished and installed by the unit manufacturer. The isolation system shall be designed to resist loads produced by external forces, such as earthquakes, and conform to the current IBC seismic requirements.

Flow Meter

The fan shall have an airflow measurement system to measure fan airflow directly or to measure differential pressure that can be used to calculate fan airflow. The system shall predict airflow within +/-5 percent total accuracy (device & transmitter) when operating within the stable operating region of the fan curve. On units supplied with multiple direct drive fans, one transducer is supplied for the total array. The submitted fan airflow performance and noise levels shall not be affected by the installation of the device. Any device that provides an obstruction to the fan inlet will not be accepted. *Refer to the Product Data section for fans with flow meters.*

Face and Bypass Damper

Dampers shall be provided as scheduled to divert airflow around the coil. Dampers shall be of double-skin airfoil design with metal, compressible jamb seals and extruded-vinyl blade-edge seals on all blades. The blades shall rotate on stainless-steel sleeve bearings. Dampers are arranged in an opposed-blade configuration and mechanically linked with jackshafts. The dampers shall be rated for a maximum leakage rate of 5 cfm/ft² at 1 in. w.g. All leakage testing and pressure ratings shall be based on AMCA Standard 500-D.

Lifting Instructions

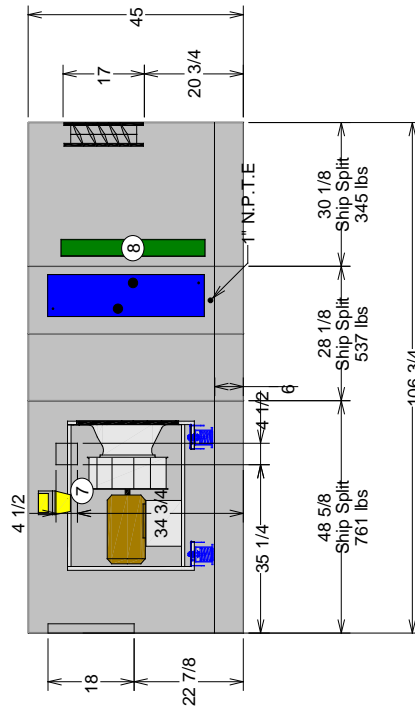
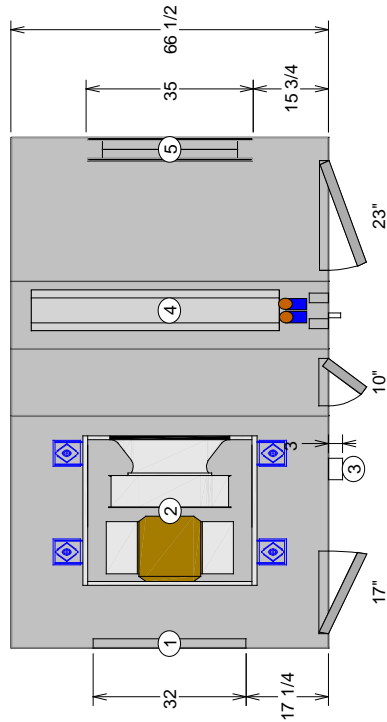
The air handling units must be rigged, lifted, and installed in strict accordance with the Installation, Operation, and Maintenance manual (CLCH-SVX07B-EN). The units are also to be installed in strict accordance with the specifications. Units may be shipped fully assembled or disassembled to the minimum functional section size in accordance with shipping and job site requirements.

Indoor units shall be shipped on an integral base frame (variable from the standard 2.5" to 8" height) for the purpose of mounting units to a housekeeping pad and providing additional height to properly trap condensate from the unit. The integral base frame may be used for ceiling suspension, external isolation, or as a housekeeping pad. Indoor sizes 3 to 30 will also be shipped with a shipping skid designed for forklift transport. Refer to the unit As-Built or Product Data section of the submittal for the base frame height of each unit.

All units will be shipped with an integral base frame designed with the necessary number of lift points for safe installation. All lifting lugs are to be utilized during lift. The lift points will be designed to accept standard rigging devices and be removable after installation. Units shipped in sections will have a minimum of four points of lift.

As-Built - Performance Climate Changer
Item: A1 Qty: 1 Tag(s): EF-29

- 1 Opening front
18.000 x 32.000
 - 2 Plenum fan - 22.25in.
width direct-drive plenum, 80%
width Supply fan 5 hp
460/3
 - 3 Light switch and/or
receptacle RH
 - 4 Cooling coil - 6 Coil type
UJW
 - 5 Damper back-parallel
blade
 - 6 17.000 x 35.000
1" N.P.T.E
 - 7 Manne light
 - 8 Flat filters -
- Doors
 17 width x 35 height
 10 width x 35 height
 23 width x 35 height



For maneuvering purposes, include 1.125 inches to each ship split length for overlapping panel flange. Flange will not add to overall installed unit length shown.

OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

Unit size: 12

Product group: Indoor unit

Integral base frame: 6in. integral base frame

Paint: Unpainted/field painted outdoor

Job Name:

Actual airflow: 5300 cfm

Sales Office:

Unit Casing: 2in Double Wall Foam

Proposal Number:

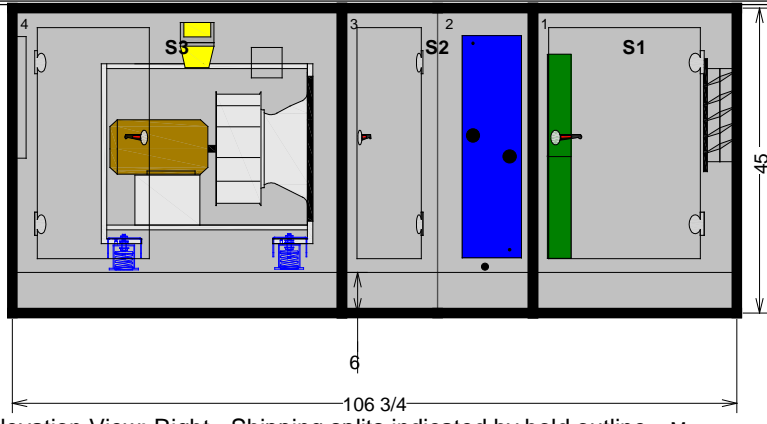
Rigging/Installed Weight: 1567.3 lb/ 1643.3 lb



TRANE
 Performance Climate Changer
 Air Handlers

As-Built - Performance Climate Changer

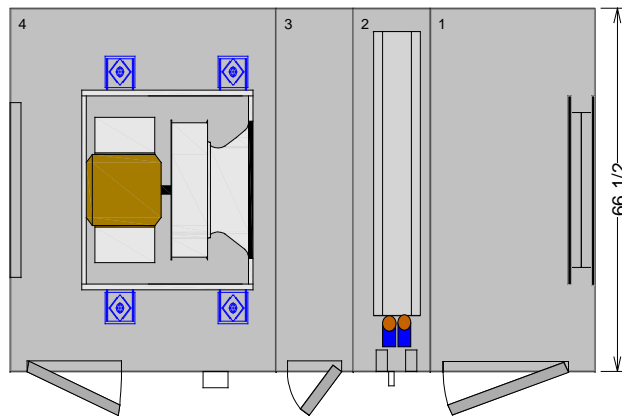
Item: A1 Qty: 1 Tag(s): EF-29



Overall Elevation View: Right - Shipping splits indicated by bold outline. - Measurements in inches

For maneuvering purposes, include 1.125 inches to each ship split length for overlapping panel flange. Flange will not add to overall installed unit length

Pos #	Module	Length	Weight
1	Air mixing section	30 1/8	345.09
2	Coil section	14 1/8	421.93
3	Access section	14 1/8	114.93
4	Fan section	48 5/8	761.34
		Installed Unit Weight	1643.30 lbs



Basic Overall Plan View: Top - Measurements in inches

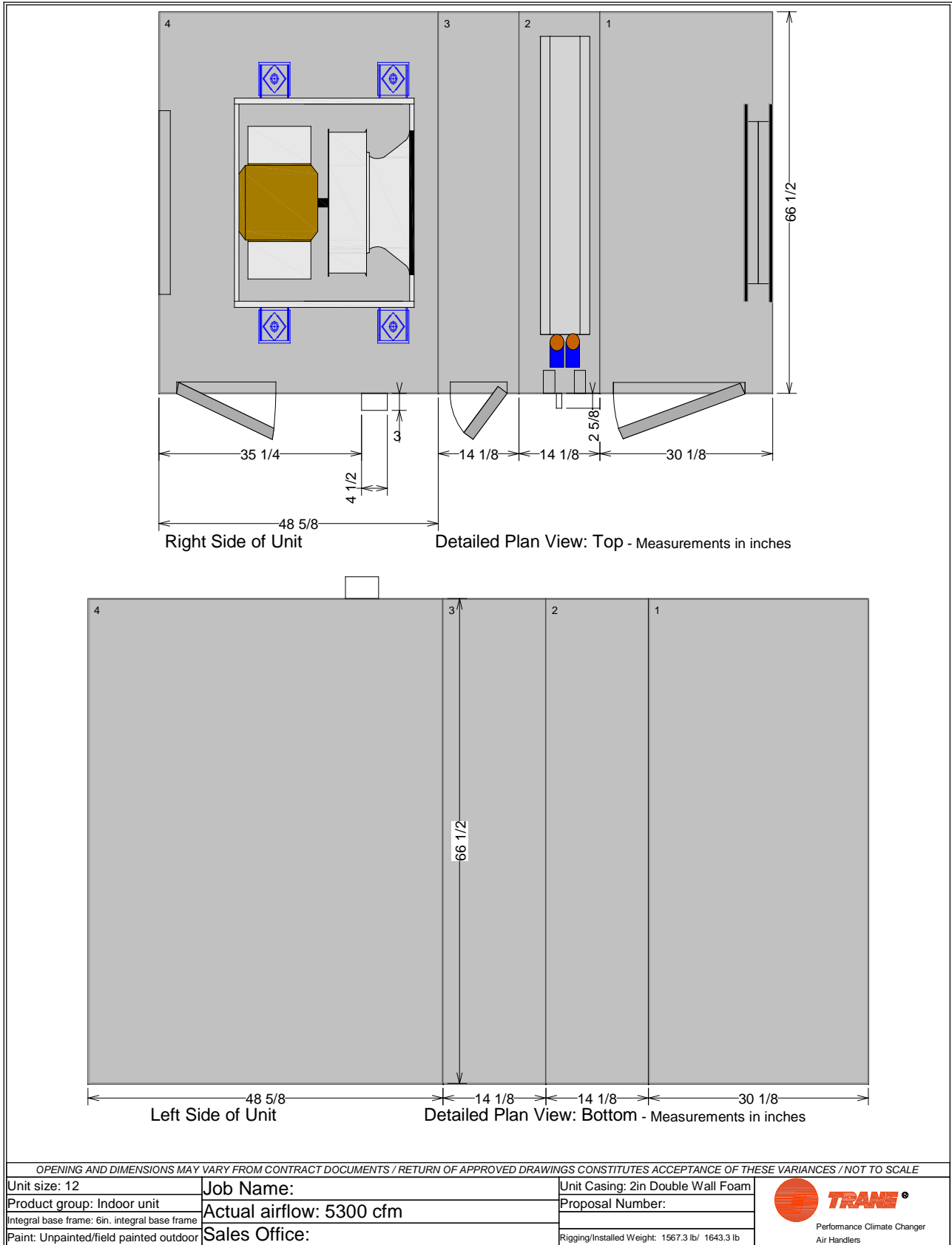
OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

Unit size: 12	Job Name:	Unit Casing: 2in Double Wall Foam
Product group: Indoor unit	Actual airflow: 5300 cfm	Proposal Number:
Integral base frame: 6in. integral base frame	Sales Office:	Rigging/Installed Weight: 1567.3 lb/ 1643.3 lb
Paint: Unpainted/field painted outdoor		



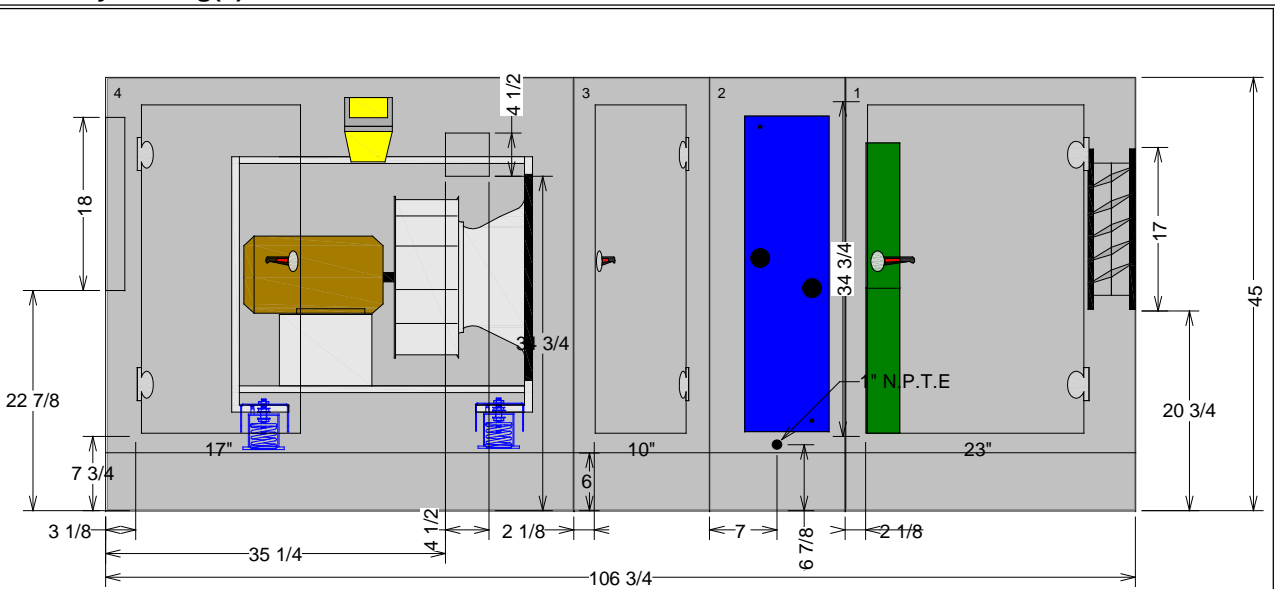
As-Built - Performance Climate Changer

Item: A1 Qty: 1 Tag(s): EF-29

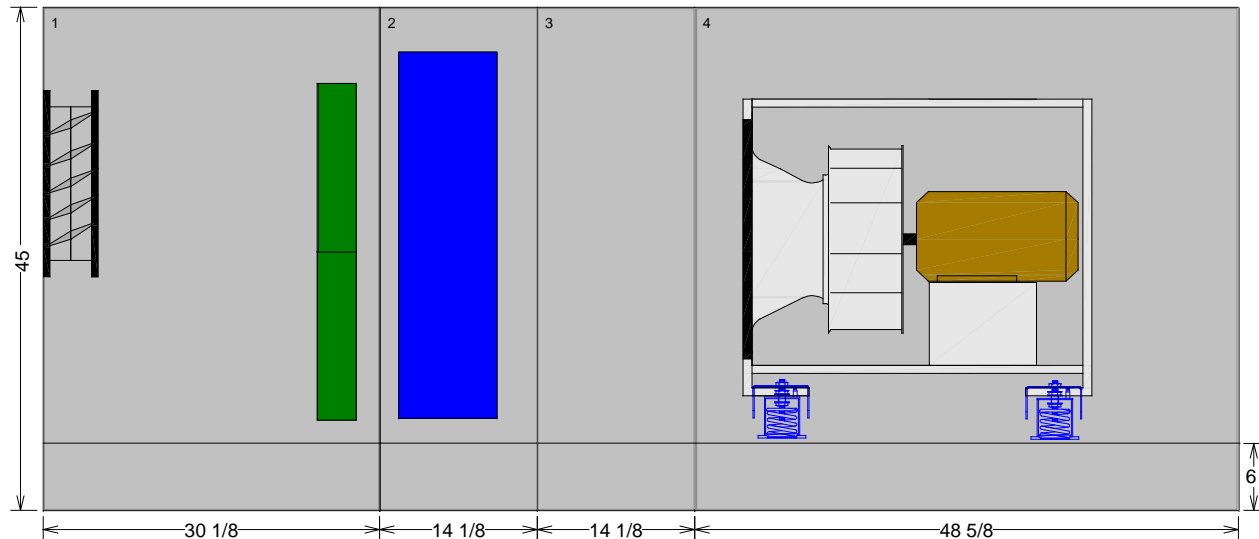


As-Built - Performance Climate Changer

Item: A1 Qty: 1 Tag(s): EF-29



Detailed Elevation View: Right - Measurements in inches



Detailed Elevation View: Left - Measurements in inches

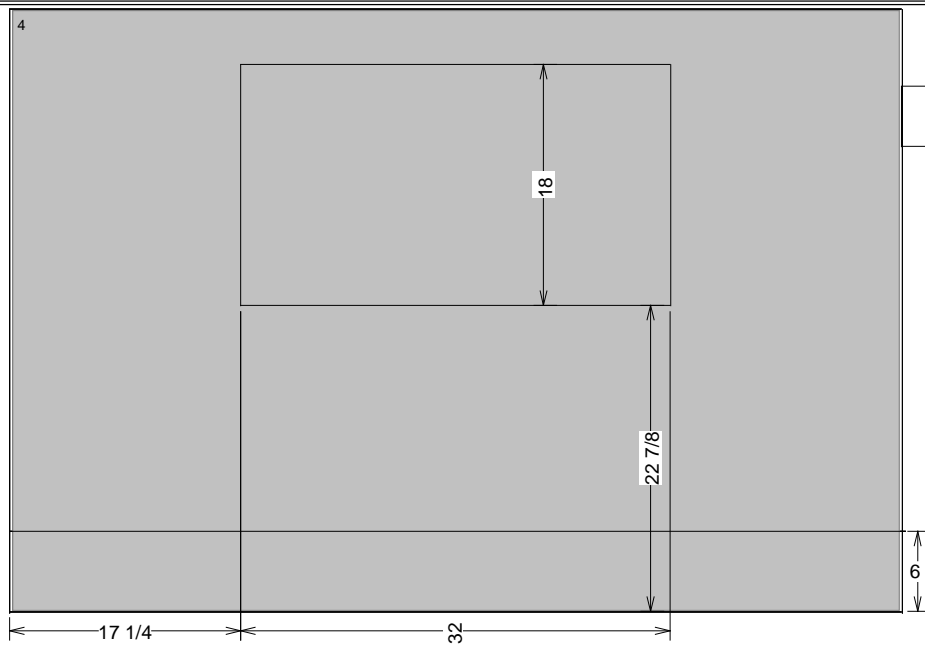
OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

Unit size: 12	Job Name:	Unit Casing: 2in Double Wall Foam
Product group: Indoor unit	Actual airflow: 5300 cfm	Proposal Number:
Integral base frame: 6in. integral base frame	Sales Office:	Rigging/Installed Weight: 1567.3 lb/ 1643.3 lb
Paint: Unpainted/field painted outdoor		

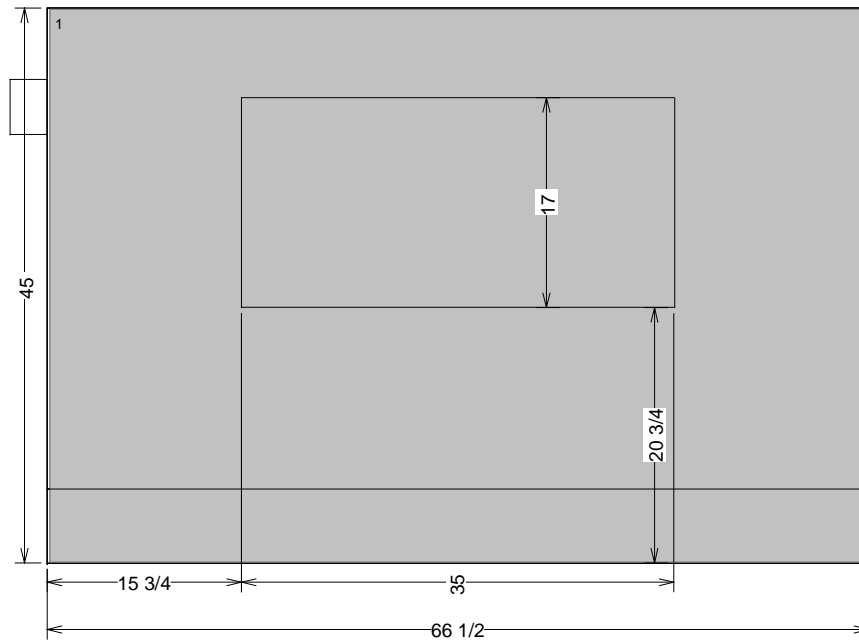


As-Built - Performance Climate Changer

Item: A1 Qty: 1 Tag(s): EF-29



Detailed Elevation View: Front - Measurements in inches



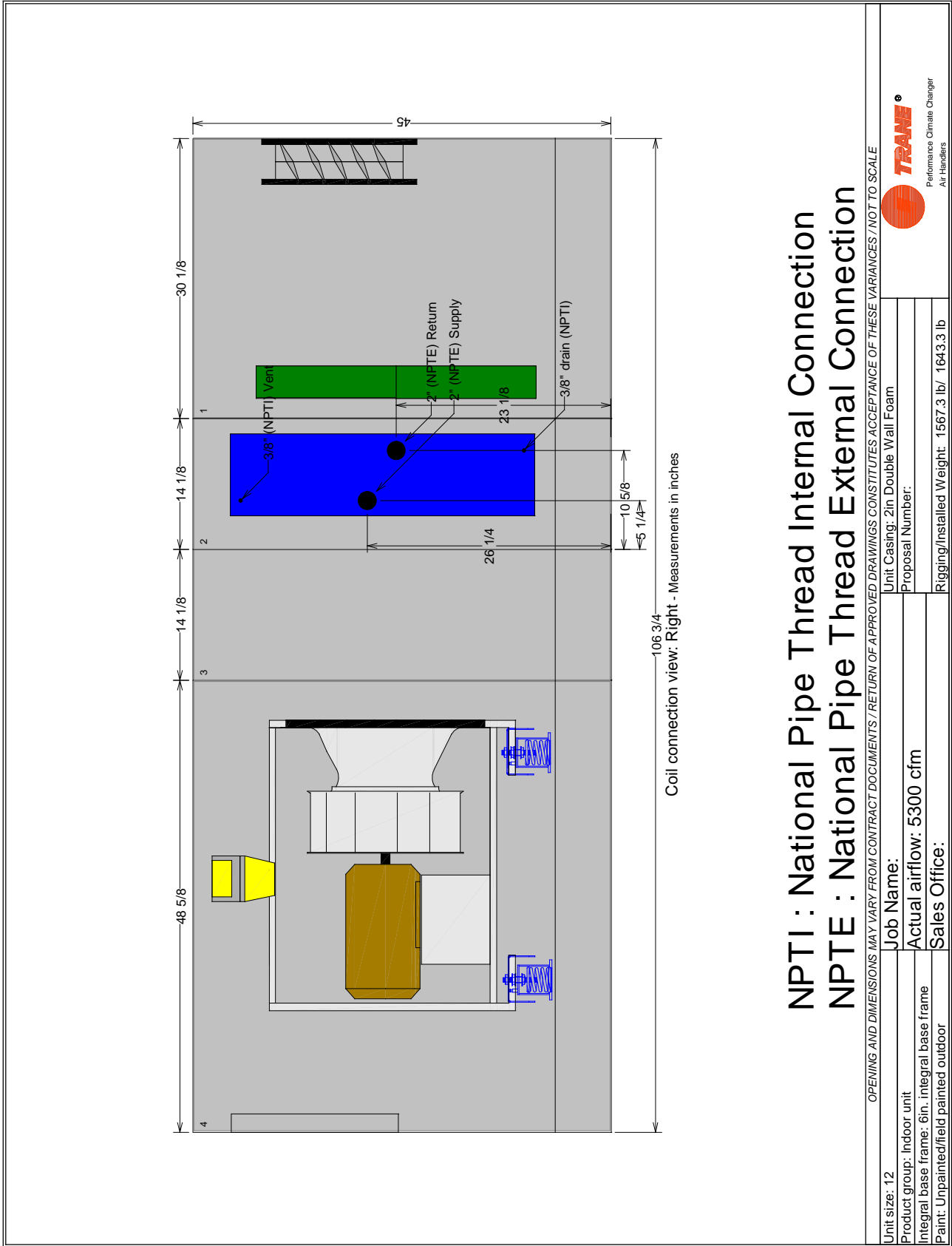
Detailed Elevation View: Back - Measurements in inches

OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

Unit size: 12	Job Name:	Unit Casing: 2in Double Wall Foam
Product group: Indoor unit	Actual airflow: 5300 cfm	Proposal Number:
Integral base frame: 6in. integral base frame	Sales Office:	Rigging/Installed Weight: 1567.3 lb/ 1643.3 lb
Paint: Unpainted/field painted outdoor		



As-Built - Performance Climate Changer
 Item: A1 Qty: 1 Tag(s): EF-29



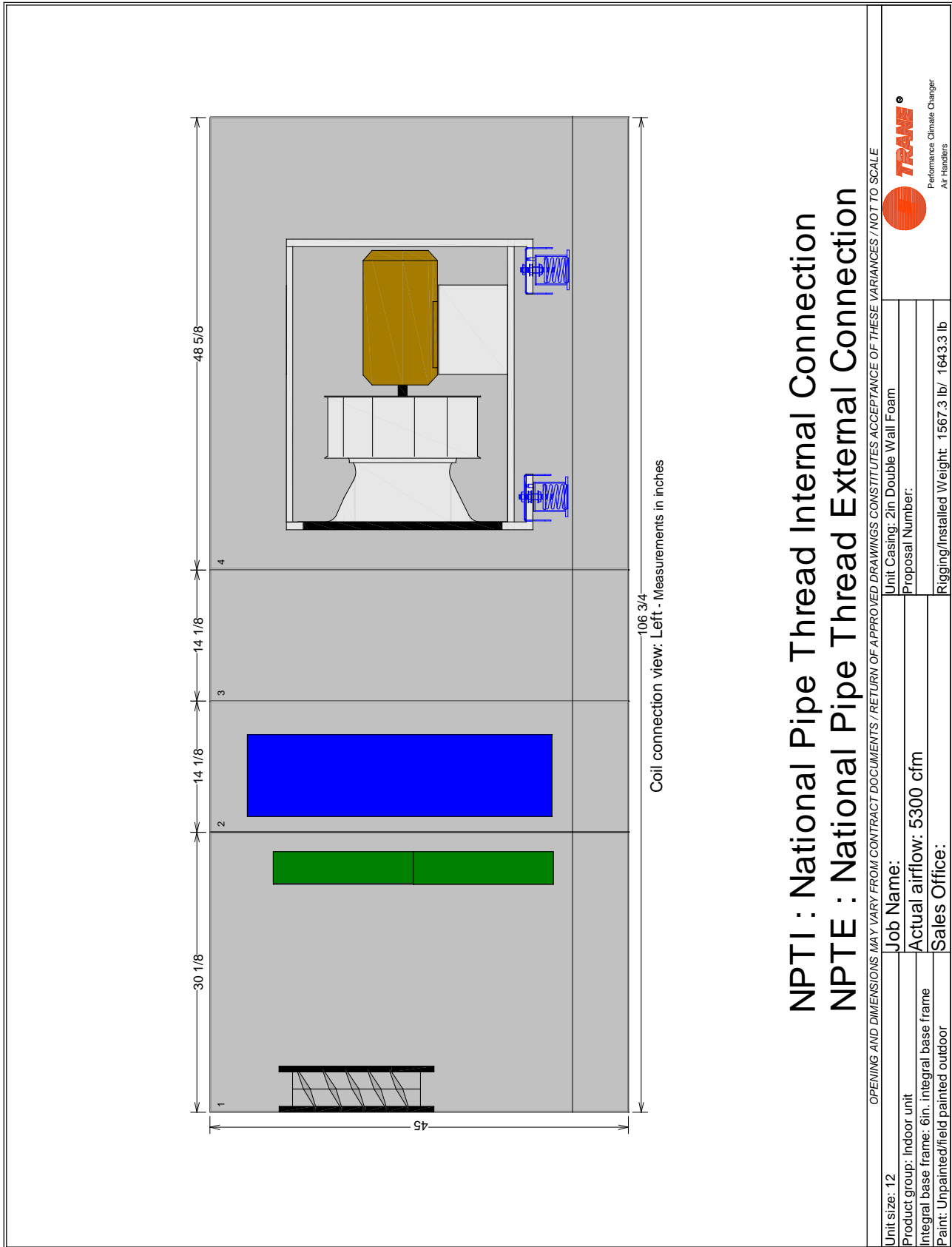
NPTI : National Pipe Thread Internal Connection
NPTE : National Pipe Thread External Connection

OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE



Unit size: 12	Job Name:	Unit Casing: 2in Double Wall Foam
Product group: Indoor unit	Proposal Number:	
Integral base frame: 6in. integral base frame	Actual airflow: 5300 cfm	
Paint: Unpainted/field painted outdoor	Sales Office:	Rigging/Installed Weight: 1567.3 lb/ 1643.3 lb

As-Built - Performance Climate Changer
 Item: A1 Qty: 1 Tag(s): EF-29



NPTI : National Pipe Thread Internal Connection
NPTE : National Pipe Thread External Connection

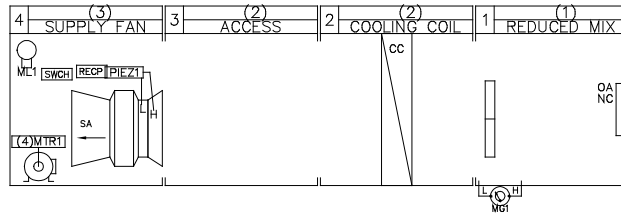
OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

Unit size: 12	Job Name:	Unit Casing: 2in Double Wall Foam
Product group: Indoor unit	Actual airflow: 5300 cfm	Proposal Number:
Integral base frame: 6in. integral base frame	Sales Office:	Rigging/Installed Weight: 1567.3 lb/ 1643.3 lb
Paint: Unpainted/field painted outdoor		



As-Built - Performance Climate Changer
Item: A1 Qty: 1 Tag(s): EF-29

WIRING DETAIL 1



PRELIMINARY

DRAWN BY: Unknown	Trane	CSIA-SCHEMATIC UNIT SIZE: 12 UNIT TAG:
DATE: 6/24/2015		
SOFTWARE_VERSION: 1.3.9		
DRAWING_VERSION:		

As-Built - Performance Climate Changer
Item: A1 Qty: 1 Tag(s): EF-29

MARINE LIGHT BOX

(SEPARATE BOX)

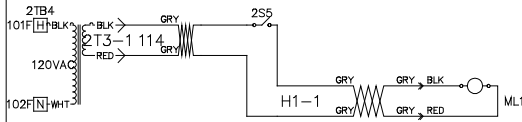


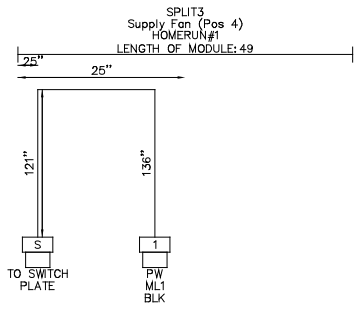
FIGURE # 1
(PWR)

PRELIMINARY

DRAWN BY: Unknown	Trane	CSIA-SCHMATIC UNIT SIZE: 12 UNIT TAG:
DATE: 6/24/2015		
SOFTWARE_VERSION: 1.3.9		
DRAWING_VERSION:		

As-Built - Performance Climate Changer
Item: A1 Qty: 1 Tag(s): EF-29

RACEWAY HOMERUN #1 DETAIL



PRELIMINARY

DRAWN BY: Unknown	Trane	CSIA-SCHMATIC UNIT SIZE: 12 UNIT TAG:
DATE: 6/24/2015		
SOFTWARE VERSION: 1.3.9		
DRAWING VERSION:		

P=Connector with male terminals
 J=Connector with female terminals
 → Or ← indicates direction of airflow

As-Built - Performance Climate Changer
Item: A1 Qty: 1 Tag(s): EF-29

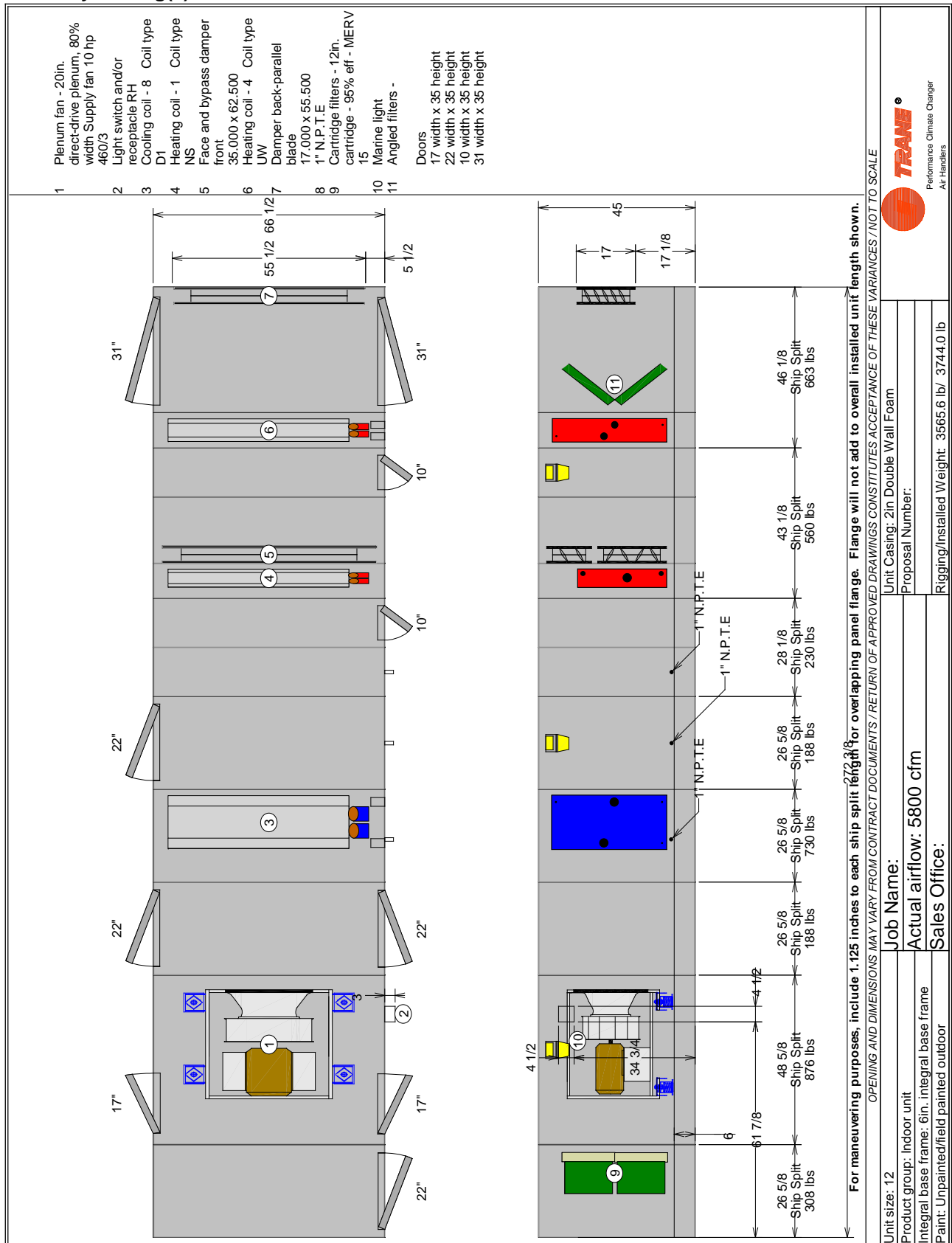
LEGEND DETAIL 1

POS#	DESCRIPTION	PT	LABEL	PWR HR-WIRE	SIGNAL HR-WIRE	POWER XFMR VA
0	150VA TRANSFORMER		2T3			
1	Minihelic Gauge		MG1			
4	Marine Light		ML1	H1-1		2T3-122
4	Flow meter		PIEZ1			

PRELIMINARY

DRAWN BY: Unknown	Trane	CSIA-SCHMATIC UNIT SIZE: 12 UNIT TAG:
DATE: 6/24/2015		
SOFTWARE VERSION: 1.3.9		
DRAWING VERSION:		

As-Built - Performance Climate Changer
Item: A2 Qty: 1 Tag(s): AHU-10



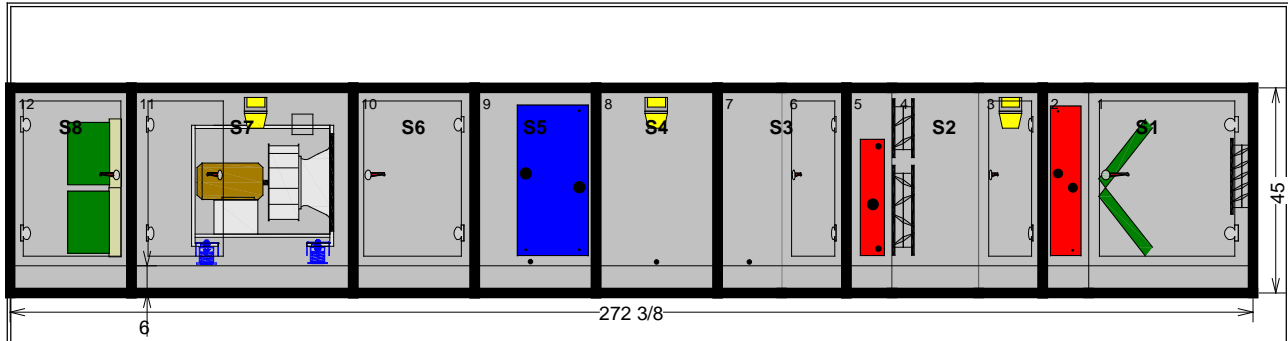
For maneuvering purposes, include 1.125 inches to each ship split length for overlapping panel flange. Flange will not add to overall installed unit length shown.

OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

Unit size: 12	Job Name:	Unit Casing: 2in Double Wall Foam
Product group: Indoor unit	Proposal Number:	
Integral base frame: 6in. integral base frame	Actual airflow: 5800 cfm	
Paint: Unpainted/field painted outdoor	Sales Office:	Rigging/Installed Weight: 3565.6 lb/ 3744.0 lb



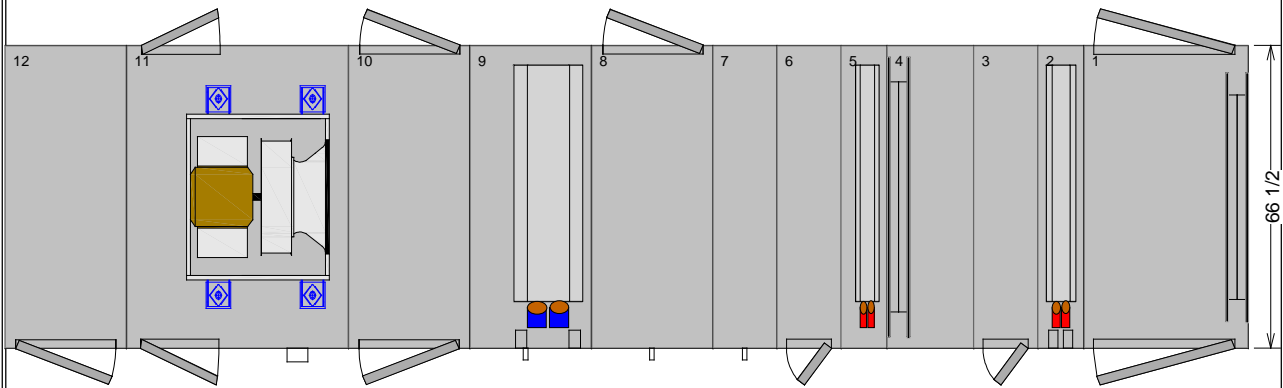
As-Built - Performance Climate Changer
Item: A2 Qty: 1 Tag(s): AHU-10



Overall Elevation View: Right - Shipping splits indicated by bold outline. - Measurements in inches


For maneuvering purposes, include 1.125 inches to each ship split length for overlapping panel flange. Flange will not add to overall installed unit length shown.

Pos #	Module	Length	Weight
1	Air mixing section	36	350.08
2	Coil section	10 1/8	312.47
3	Access section	14 1/8	114.93
4	Face and bypass	19	234.00
5	Coil section	10 1/8	211.47
6	Access section	14 1/8	114.93
7	Access section	14 1/8	114.93
8	Access section	26 5/8	188.39
9	Coil section	26 5/8	729.69
10	Access section	26 5/8	188.39
11	Fan section	48 5/8	876.34
12	Filter section	26 5/8	308.39
			Installed Unit Weight 3744.01 lbs

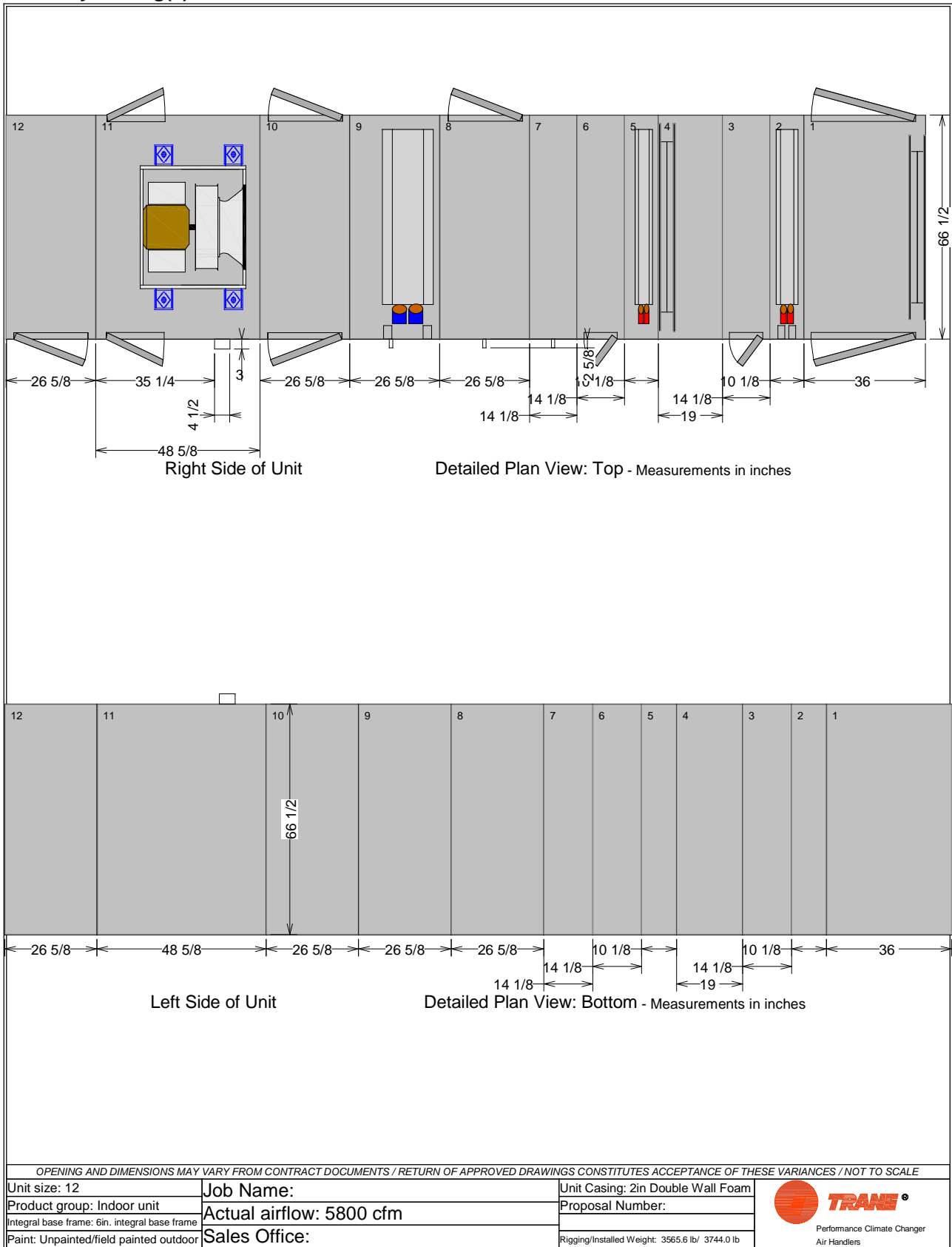


Basic Overall Plan View: Top - Measurements in inches

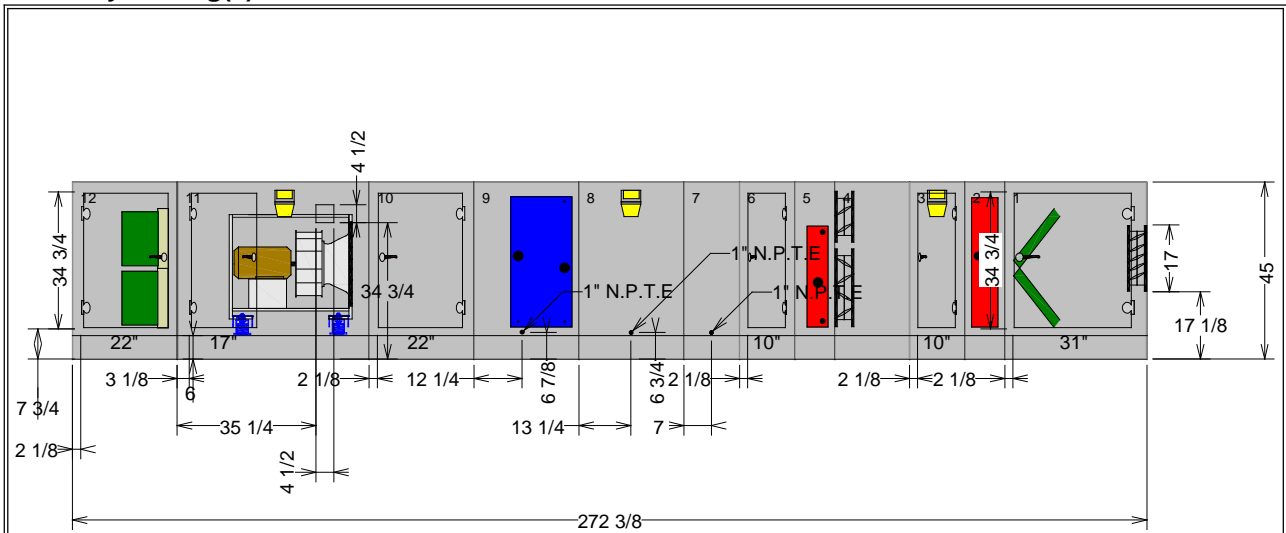
OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

Unit size: 12	Job Name:	Unit Casing: 2in Double Wall Foam	 Performance Climate Changer Air Handlers
Product group: Indoor unit	Actual airflow: 5800 cfm	Proposal Number:	
Integral base frame: 6in. integral base frame	Sales Office:	Rigging/Installed Weight: 3565.6 lb/ 3744.0 lb	
Paint: Unpainted/field painted outdoor			

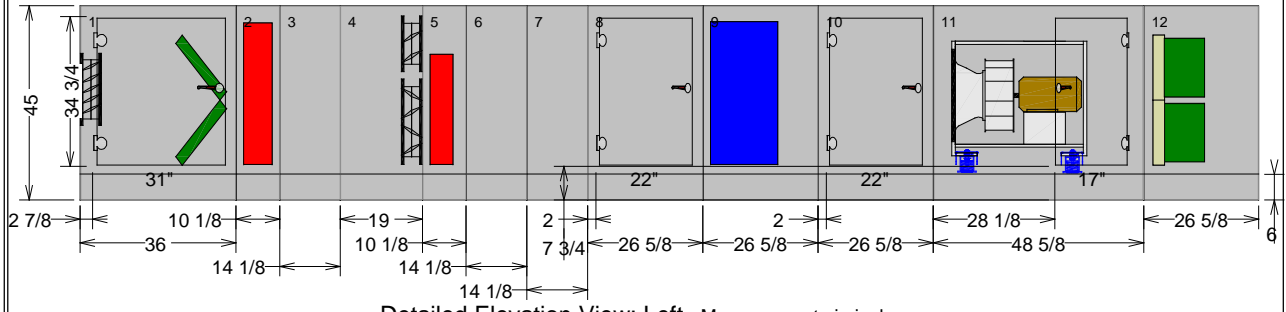
As-Built - Performance Climate Changer
Item: A2 Qty: 1 Tag(s): AHU-10



As-Built - Performance Climate Changer
Item: A2 Qty: 1 Tag(s): AHU-10



Detailed Elevation View: Right - Measurements in inches

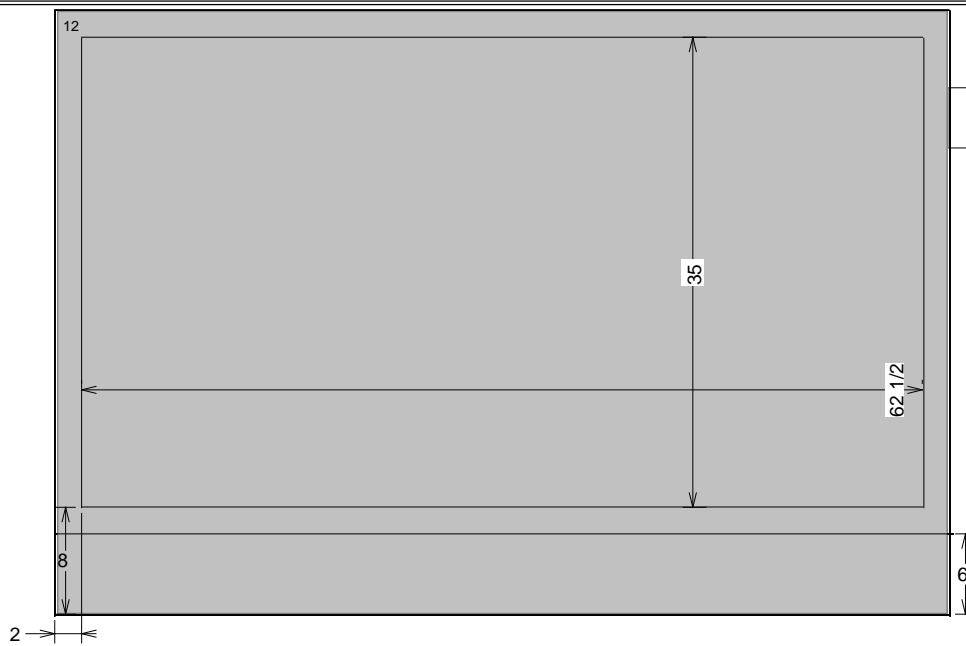


Detailed Elevation View: Left - Measurements in inches

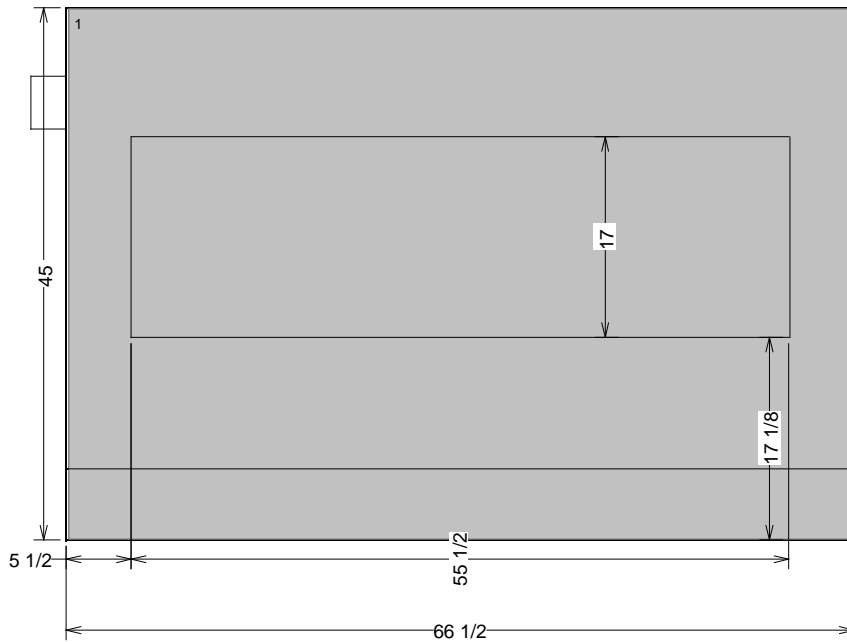
<p><i>OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE</i></p>		
Unit size: 12	Job Name:	Unit Casing: 2in Double Wall Foam
Product group: Indoor unit	Actual airflow: 5800 cfm	Proposal Number:
Integral base frame: 6in. integral base frame	Sales Office:	Rigging/Installed Weight: 3565.6 lb/ 3744.0 lb
Paint: Unpainted/field painted outdoor		



As-Built - Performance Climate Changer
Item: A2 Qty: 1 Tag(s): AHU-10



Detailed Elevation View: Front - Measurements in inches



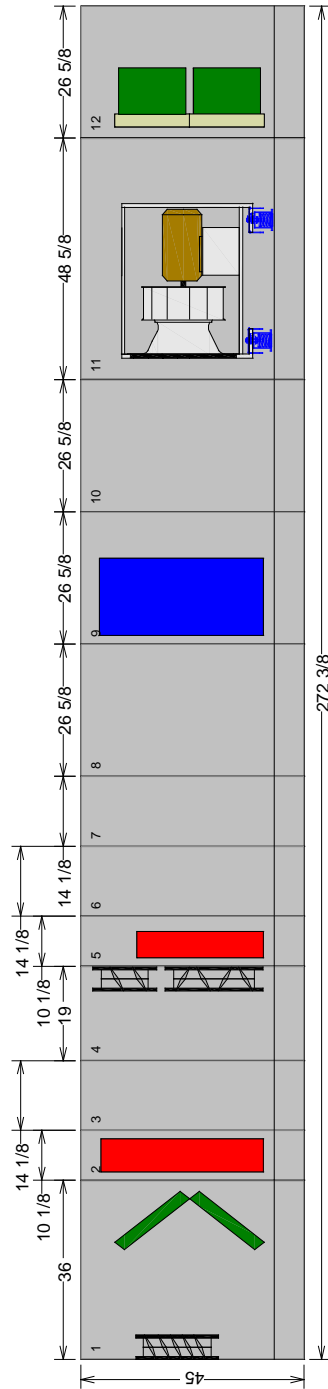
Detailed Elevation View: Back - Measurements in inches

OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

Unit size: 12	Job Name:	Unit Casing: 2in Double Wall Foam
Product group: Indoor unit	Actual airflow: 5800 cfm	Proposal Number:
Integral base frame: 6in. integral base frame	Sales Office:	Rigging/Installed Weight: 3565.6 lb/ 3744.0 lb
Paint: Unpainted/field painted outdoor		



As-Built - Performance Climate Changer
 Item: A2 Qty: 1 Tag(s): AHU-10



Coil connection view: Left - Measurements in inches

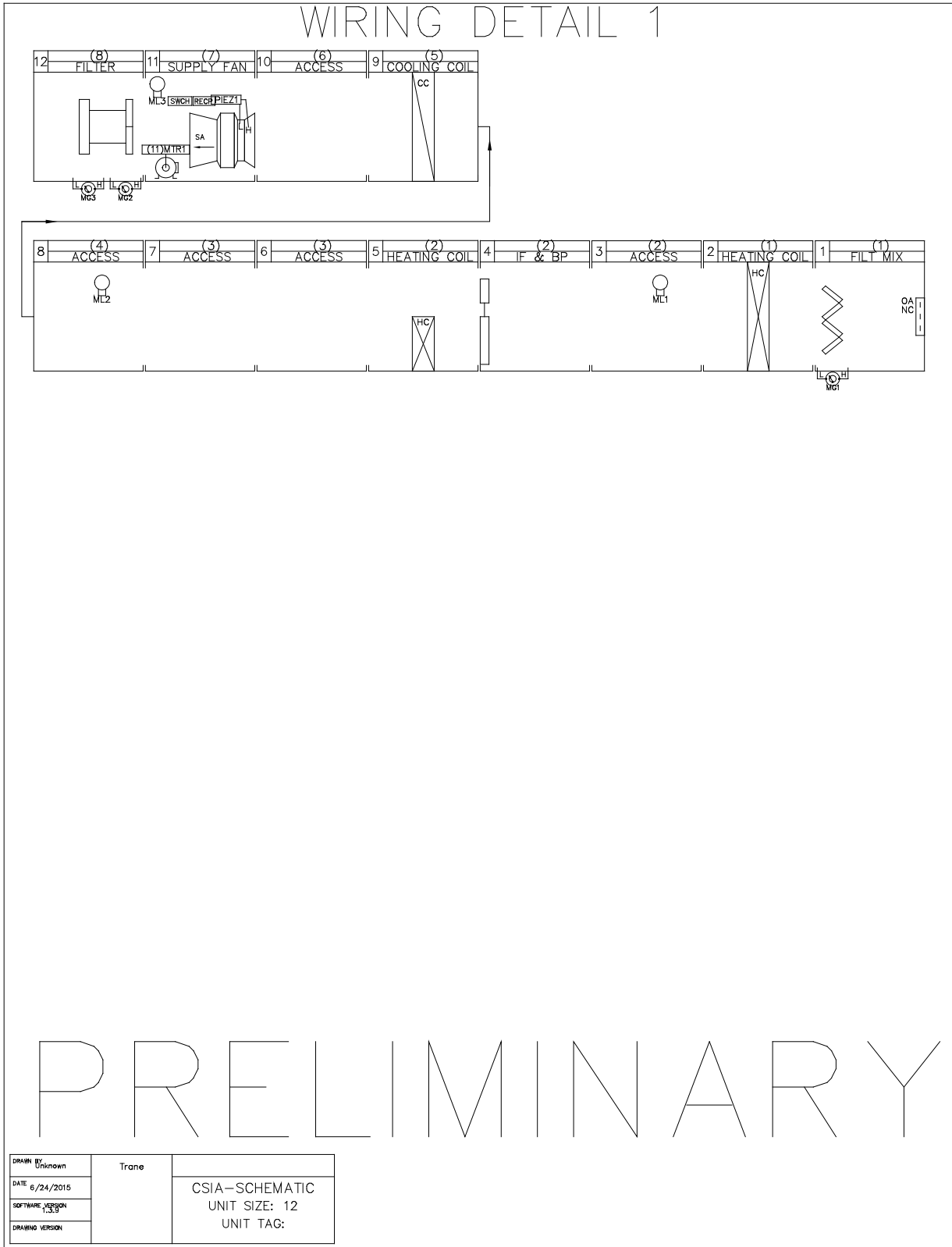
NPTI : National Pipe Thread Internal Connection
NPTE : National Pipe Thread External Connection

OPENING AND DIMENSIONS MAY VARY FROM CONTRACT DOCUMENTS / RETURN OF APPROVED DRAWINGS CONSTITUTES ACCEPTANCE OF THESE VARIANCES / NOT TO SCALE

Unit size: 12	Job Name:	Unit Casing: 2in Double Wall Foam
Product group: Indoor unit	Actual airflow: 5800 cfm	Proposal Number:
Integral base frame: 6in. integral base frame	Sales Office:	Rigging/Installed Weight: 3565.6 lb/ 3744.0 lb
Paint: Unpainted/field painted outdoor		



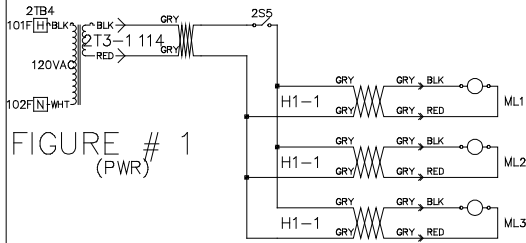
As-Built - Performance Climate Changer
 Item: A2 Qty: 1 Tag(s): AHU-10



As-Built - Performance Climate Changer
Item: A2 Qty: 1 Tag(s): AHU-10

MARINE LIGHT BOX

(SEPARATE BOX)

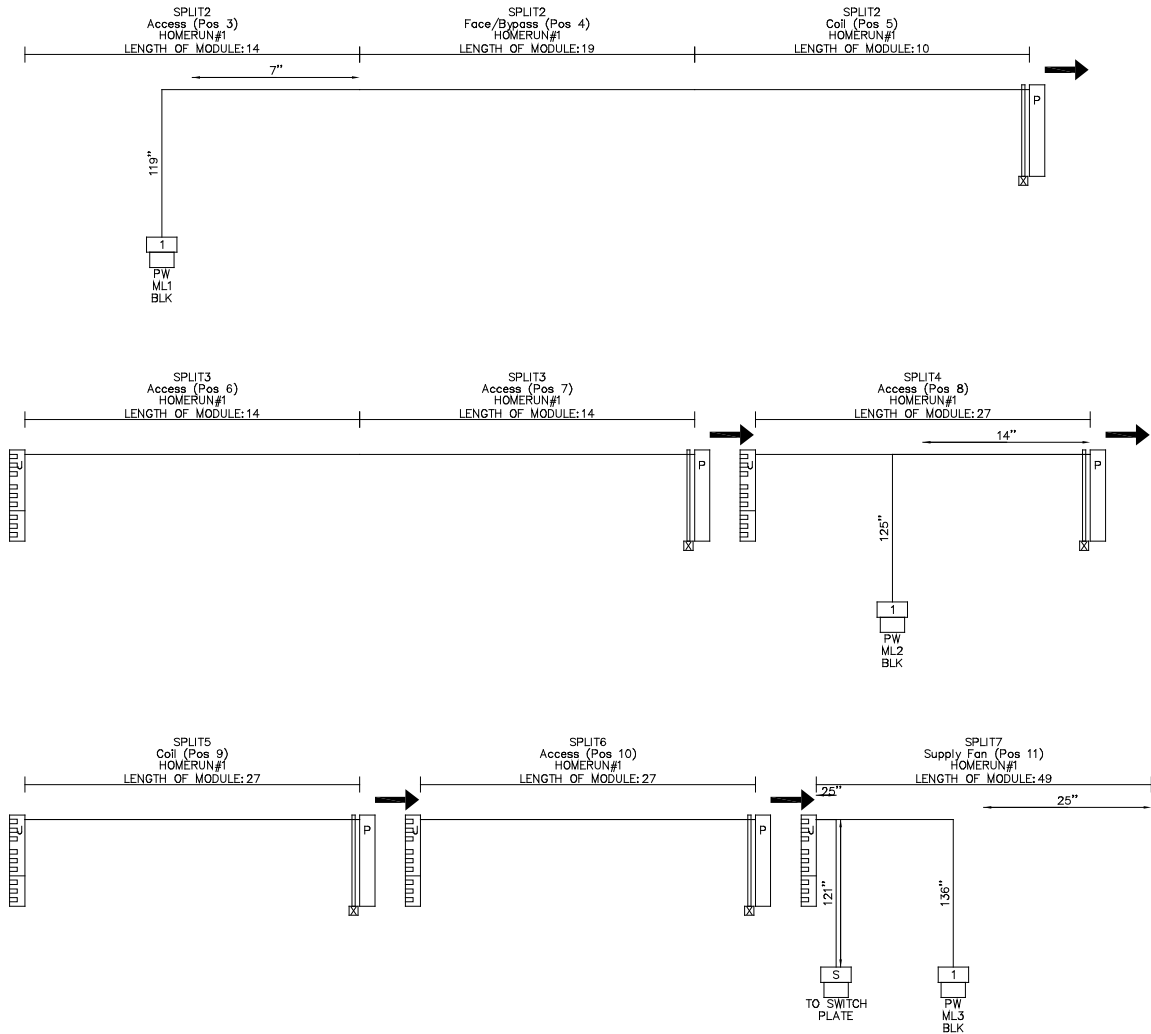


PRELIMINARY

DRAWN BY: Unknown	Trane	CSIA-SCHMATIC UNIT SIZE: 12 UNIT TAG:
DATE: 6/24/2015		
SOFTWARE_VERSION: 1.3.9		
DRAWING_VERSION:		

As-Built - Performance Climate Changer
Item: A2 Qty: 1 Tag(s): AHU-10

RACEWAY HOMERUN #1 DETAIL



PRELIMINARY

DRAWN BY: Unknown	Trane	CSIA-SCHMATIC UNIT SIZE: 12 UNIT TAG:
DATE: 6/24/2015		
SOFTWARE_VERSION: 1,3,9		
DRAWING_VERSION:		

P=Connector with male terminals
 J=Connector with female terminals
 → Or ← indicates direction of airflow

As-Built - Performance Climate Changer
Item: A2 Qty: 1 Tag(s): AHU-10

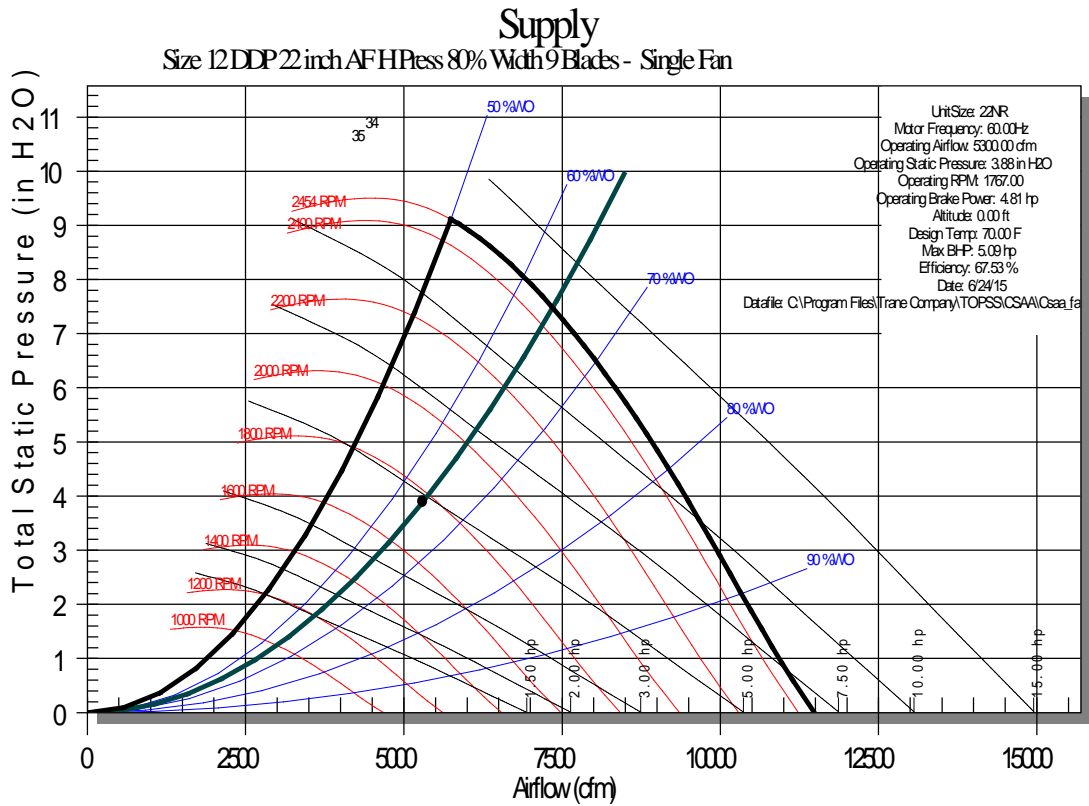
LEGEND DETAIL 1

POS#	DESCRIPTION	PT	LABEL	PWR		SIGNAL		POWER	
				HR-WIRE	HR-WIRE	HR-WIRE	HR-WIRE	XFMR	VA
0	150VA TRANSFORMER		2T3						
1	Minihelic Gauge		MG1						
3	Marine Light		ML1	H1-1				2T3-1	22
8	Marine Light		ML2	H1-1				2T3-1	22
11	Marine Light		ML3	H1-1				2T3-1	22
11	Flow meter		PIEZ1						
12	Minihelic Gauge		MG2						
12	Minihelic Gauge		MG3						

PRELIMINARY

DRAWN BY: Unknown	Trane	CSIA-SCHMATIC UNIT SIZE: 12 UNIT TAG:
DATE: 6/24/2015		
SOFTWARE VERSION: 1.3.9		
DRAWING VERSION:		

Fan Curve - Performance Climate Changer
 Item: A1 Qty: 1 Tag(s): EF-29



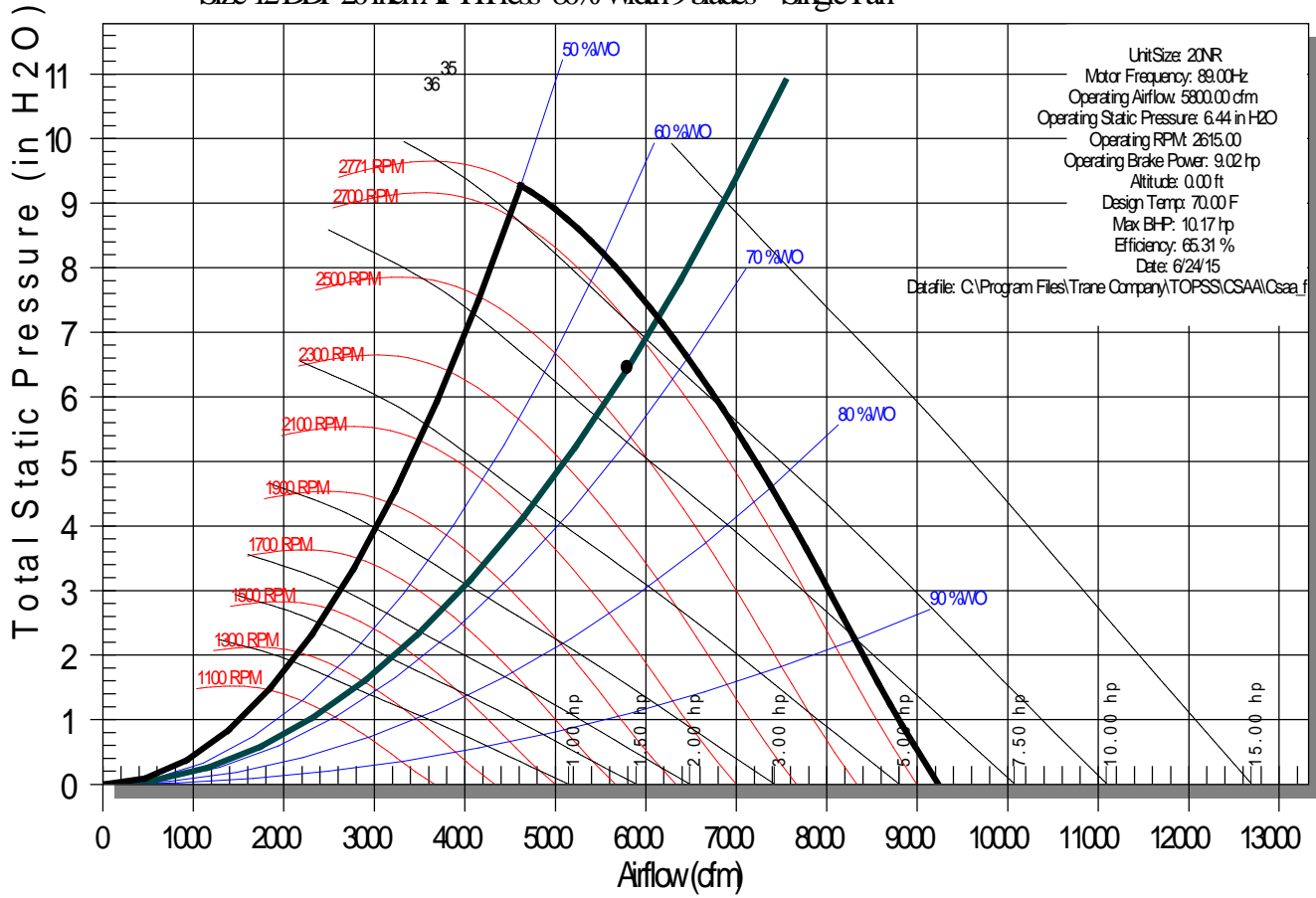
Size 12 DDP 22 inch AFH Press 80% Width 9 Blades

	63-hz	125-hz	250-hz	500-hz	1k-hz	2k-hz	4k-hz	8k-hz
Casing	73	69	76	67	68	55	52	48
Supply Front	81	75	81	73	73	69	67	63
Outdoor	71	70	77	69	66	67	65	56

Fan Curve - Performance Climate Changer
Item: A2 Qty: 1 Tag(s): AHU-10

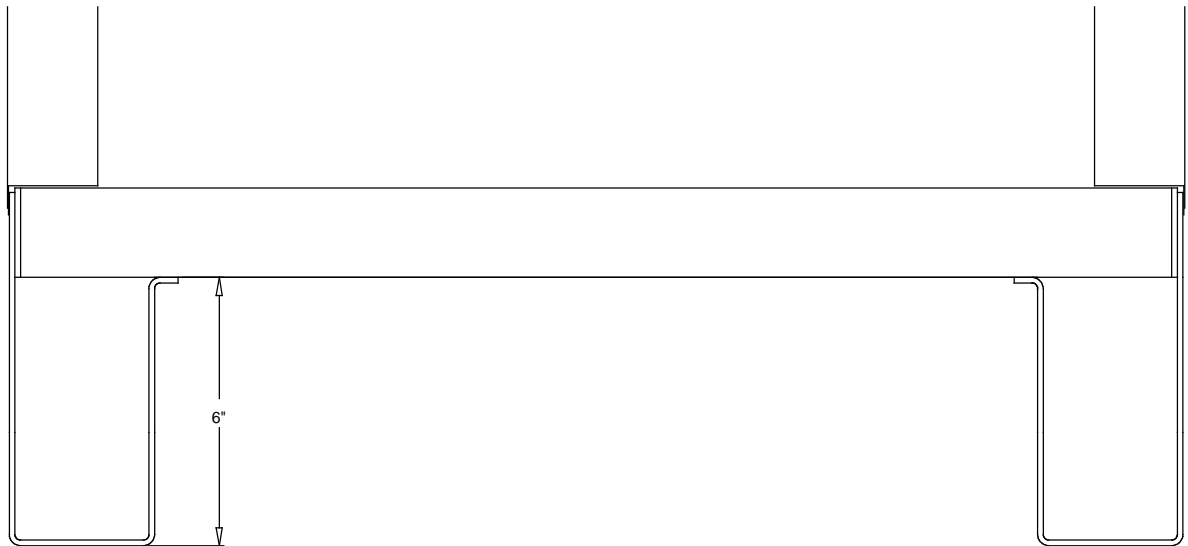
Supply

Size 12 DDP 20 inch AFHPress 80% Width 9 blades - Single Fan



Accessory - Performance Climate Changer
Item: A1, A2 Qty: 2 Tag(s): EF-29, AHU-10

Base Detail



Accessory - Performance Climate Changer
Item: A1, A2 Qty: 2 Tag(s): EF-29, AHU-10

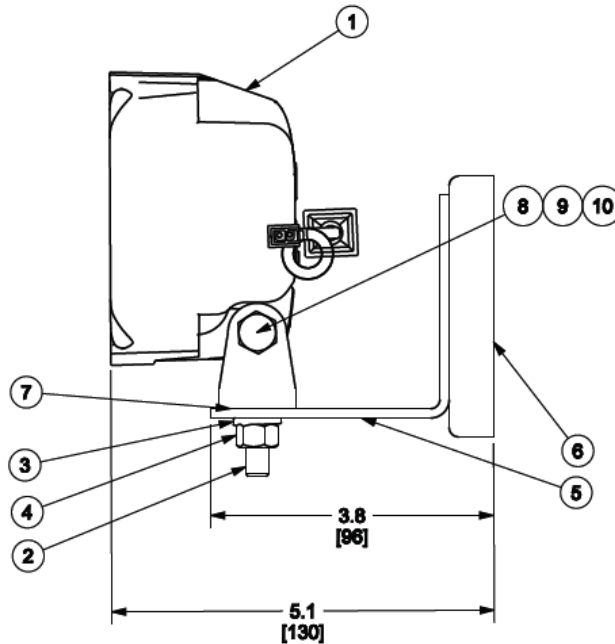
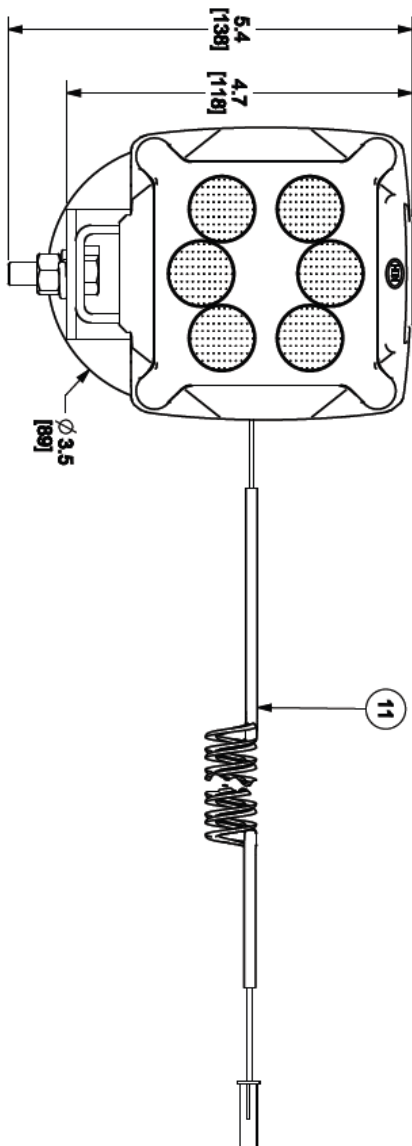
Marine Light

SPECIFICATIONS:

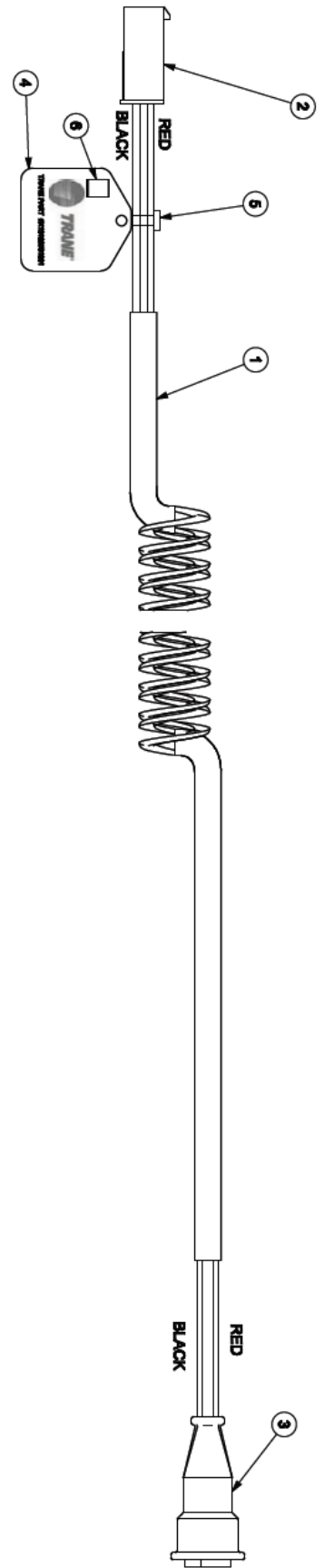
LIGHT SOURCE: 6 LED
 VOLTAGE: 18-32 VAC (50-60Hz)
 POWER CONSUMPTION: ~14 VA
 WIRE: 16 GA, RED AND BLACK
 LIFE: 50000+ HOURS
 TEMPERATURE RANGE: -40°C TO +50°C

CONNECTION: AC SUPPLY
 ENVIRONMENTAL PROTECTION: WATER/DUST INTRUSION
 IP RATING: IP68
 DIE CAST HOUSING: AA380 (ALUMINUM)
 POLYCARBONATE (PC)
 LENS: UL94V-0
 MS10 MAGNETIC FLUX DENSITY: 1400 GAUSS ± 100 GAUSS

ITEM	DESCRIPTION
1	LED WORKLAMP
2	5/16" x 1" HEX BOLT
3	5/16" SS WASHER
4	5/16" LOCK NUT
5	METAL BRACKET, MAGNET MOUNT
6	MAGNET ASSEMBLY (MS11) WITH DOUBLE SIDED TAPE
7	NYLON WASHER
8	5/16" x 1 1/2" HEX BOLT
9	5/16" HEX NUT
10	5/16" LOCKWASHER
11	COIL CORD



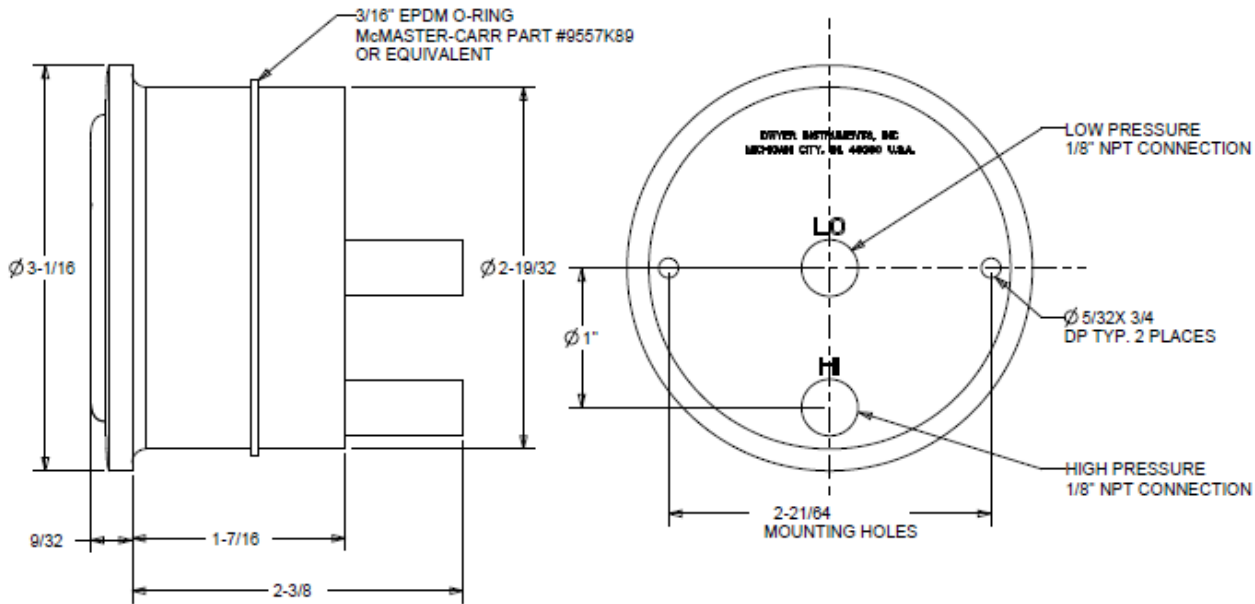
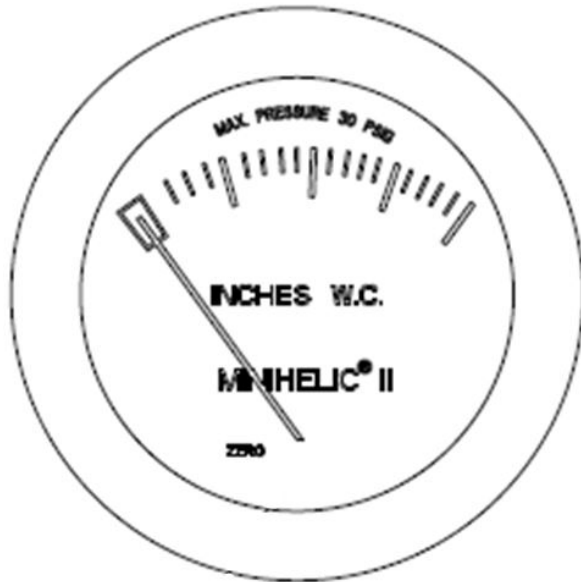
ITEM	DESCRIPTION
1	COILED CABLE 2-WIRE
2	CONNECTOR, 2-WAY MOLEX 50-36-1678
3	CONNECTOR, FEMALE DISCONNECT
4	LABEL TAG
5	TIE WRAP
6	LABEL 3D BAR CODE



Accessory - Performance Climate Changer
 Item: A1, A2 Qty: 2 Tag(s): EF-29, AHU-10

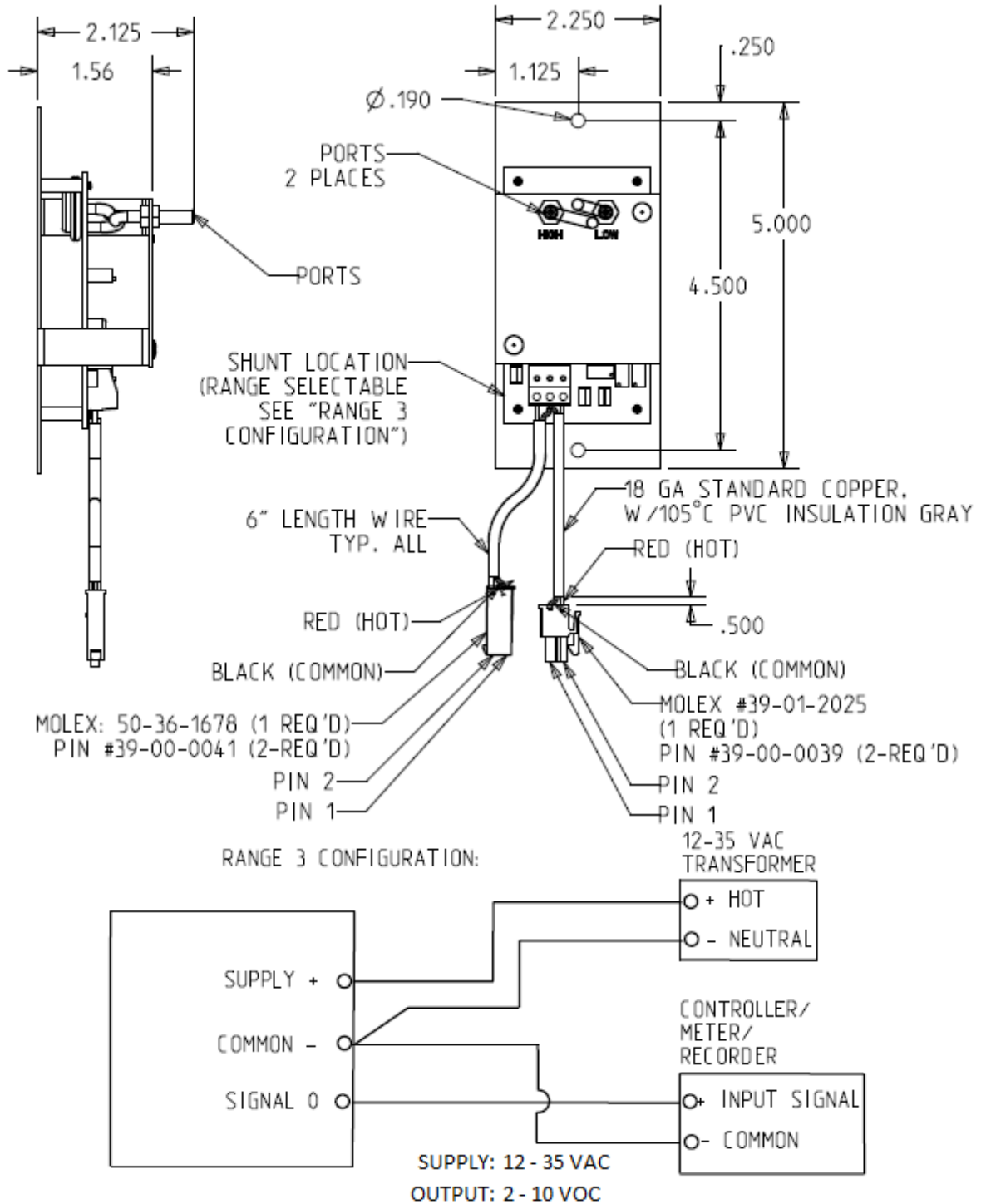
Dirty Filter Status

EXT	MODEL	RANGE
01	2-5002-NPT	0-2" WC
04	2-5005-NPT	0-5" WC



Accessory - Performance Climate Changer
 Item: A1, A2 Qty: 2 Tag(s): EF-29, AHU-10

Flow Meter



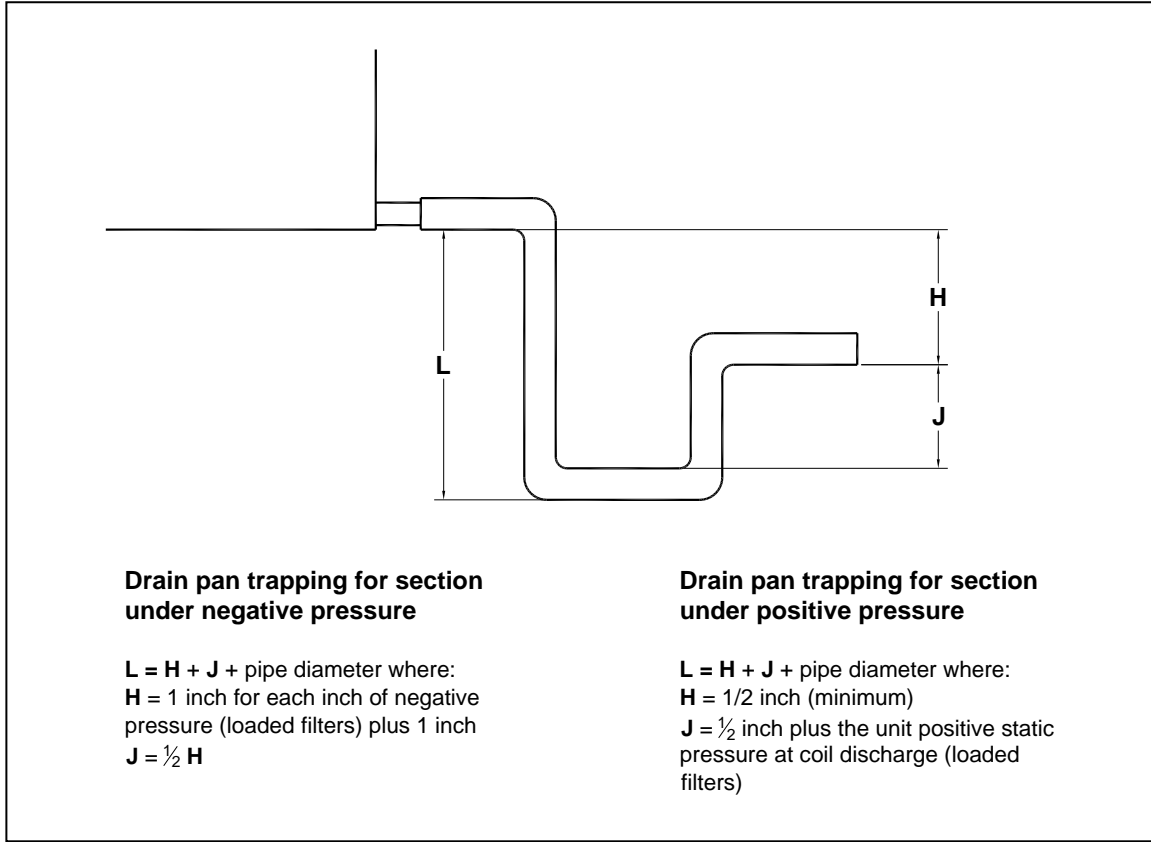
NOTE:

1. OVERPRESSURE: 10 PSID
2. PRESSURE CONNECTIONS 3/16 OD BARBED FITTING FOR 1/4 TUBING
3. OPERATING TEMP RANGE: 0 - 175 F
4. LOAD IMPEDANCE: 1 K OHMS MIN (VDC OUTPUT UNITS)
5. 3 WIRE OUTPUT
6. TERMINATION: UNPLUGGABLE SCREW TERMINAL BLOCK
7. PART TO BE LABELED WITH TRANE P/N
8. PART TO BE LABELED WITH 2D BARCODE PER ES.
9. COATING TO BE APPLIED TO CIRCUIT BOARD AS PER S65380048

Accessory - Performance Climate Changer

Trap Schedule

Item: A1, A2 Qty: 2 Tag(s): EF-29, AHU-10



Unit Tag(s)	Unit Size	Entering Ext. Static Pressure (in H2O)	Discharge Ext. Static Pressure (in H2O)	Drain pan Section Location	Recommended Trap Dimensions ¹			Selected Baserail Height (in) ¹
					H (in)	J (in)	L (in)	
EF-29 ²	Unit size 12	0.875	0.875	Coil section [2]	4.126	2.063	7.189	6.000
AHU-10 ²	Unit size 12	1.250	1.250	Coil section [9]	5.819	2.910	9.729	6.000

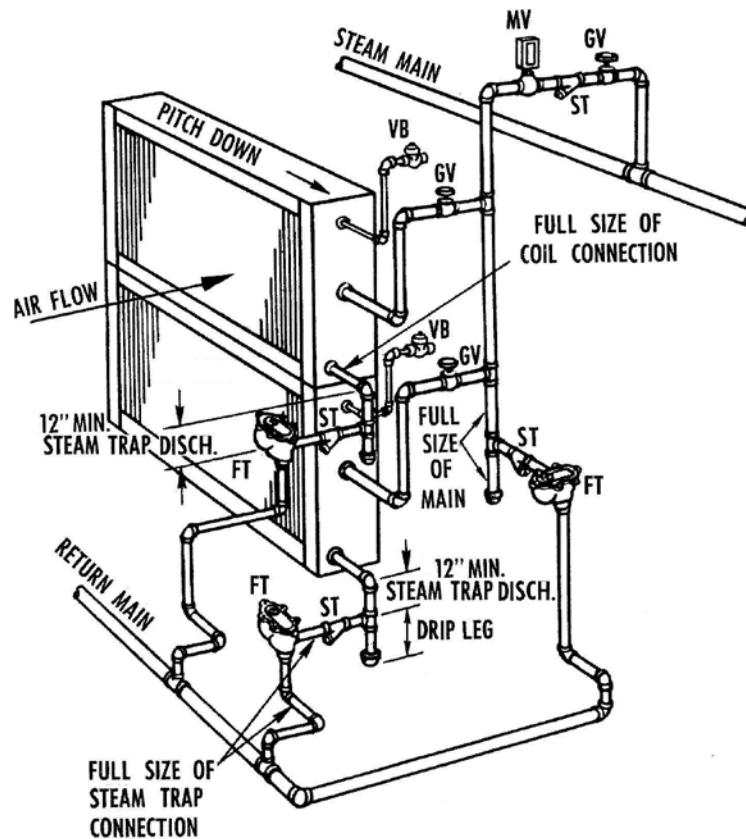
¹ To ensure proper condensate trapping the field installed housekeeping pad height is the responsibility of the contractor.

² The external static pressure used for fan selection was assumed to be divided 50% to entering duct external static pressure and 50% discharge external static pressure.

Accessory - Performance Climate Changer

Trap Schedule

Item: A2 Qty: 1 Tag(s): AHU-10



Unit Tag(s)	Unit Size	Steam Coil Location	Steam Trap Discharge (in)	Drip leg (in)	Total Trap Height (in) ³	Selected Baserail Height (in) ³
AHU-10	Unit size 12	Coil section [5]	12.000	6.000	18.000	6.000

³ To ensure proper condensate trapping the field installed housekeeping pad height is the responsibility of the contractor.

Accessory - Performance Climate Changer

Filter Schedule

Item: A1, A2 Qty: 2 Tag(s): EF-29, AHU-10

Unit Tag(s)	Unit Size	Filter Location	Filter Arrangement	Filter Depth	Filter Type	MERV Rating	Filter Quantity	Filter Size
EF-29	Unit size 12	Air mixing section [1]	-	2in. filter frame	Pleated media - run set	MERV 8	6	16in.x20in.
AHU-10	Unit size 12	Air mixing section [1]	-	2in. filter frame	Pleated media - run set	MERV 8	6	20in.x20in.
		Filter section [12]	Short Bag/Cartridge filter	Bag/cartridge filter frame	No prefilter		2	12in.x24in.
					12in. cartridge - 95% eff - run set	MERV 15	3	20in.x20in.

Field Wiring - Performance Climate Changer

MCA MOP Schedule

Item: A1, A2 Qty: 2 Tag(s): EF-29, AHU-10

Unit Tag(s)	Circuit	Circuit Description	Voltage/Phase/Hz	MCA (A)	MOP (A)
EF-29	1	Supply fan motor(s)	460/3/60	8.38	15.00
	2	Lights + switch	115/1/60	3.26	15.00
	3	Receptacle	115/1/60	10.00	15.00
AHU-10	1	Supply fan motor(s)	460/3/60	15.63	25.00
	2	Lights + switch	115/1/60	3.26	15.00
	3	Receptacle	115/1/60	10.00	15.00

Tag Data - Variable Speed Drives (Qty: 2)

Item	Tag(s)	Qty
B1	No Tag	2

Product Data - Variable Speed Drives**Item: B1 Qty: 2**

Field Installed Options - Part/Order Number Summary

This is a report to help you locate field installed options that arrive at the jobsite. This report provides part or order numbers for each field installed option, and references it to a specific product tag. It is NOT intended as a bill of material for the job.

Product Family - Performance Climate Changer

Item	Tag(s)	Qty	Description	Model Number
A1	EF-29	1	Performance Climate Changer (CSAA)	CSAA012UA

Field Installed Option Description	Part/Ordering Number
Pleated media - run set	

Item	Tag(s)	Qty	Description	Model Number
A2	AHU-10	1	Performance Climate Changer (CSAA)	CSAA012UA

Field Installed Option Description	Part/Ordering Number
Pleated media - run set	
1 extra set	
12in. cartridge - 95% eff - run set	



Submittal

Prepared For: Jeff Valley

Date: June 23, 2015

Customer P.O. Number: 205206

Customer Project Number:

Sold To: Johnson & Jordan

Job Number:

Job Name:

MMC - R-6 ICU

Trane U.S. Inc. dba Trane is pleased to provide the enclosed submittal for your review and approval.

Product Summary

Qty	Product
15	Variable Air Volume Single Duct Terminal Units

The attached information describes the equipment we propose to furnish for this project, and is submitted for your approval.

Daniel Broderick

Trane
860 Spring Street, Unit 1
Westbrook, ME 04092
Phone: (207) 828-1777
Cell:
Fax: (207) 828-1511

Table Of Contents

Product Summary	1
Variable Air Volume Single Duct Terminal Units (Items A1 - A15)	3
Tag Data	3
Product Data	3
Performance Data	4
Mechanical Specifications	5
Unit Dimensions	6
Accessory	11
Field Wiring	13

Tag Data - Variable Air Volume Single Duct Terminal Units (Qty: 15)

Item	Tag(s)	Qty	Description	Model Number
A1	VAV-R6-1	1	VCWF08	VCWF08
A2	VAV-R6-2	1	VCWF08	VCWF08
A3	VAV-R6-3	1	VCWF08	VCWF08
A4	VAV-R6-4	1	VCWF08	VCWF08
A5	VAV-R6-5	1	VCWF08	VCWF08
A6	VAV-R6-6	1	VCWF08	VCWF08
A7	VAV-R6-7	1	VCWF08	VCWF08
A8	VAV-R6-8	1	VCWF08	VCWF08
A9	VAV-R6-9	1	VCWF08	VCWF08
A10	VAV-R6-10	1	VCWF12	VCWF12
A11	VAV-R6-11	1	VCWF08	VCWF08
A12	VAV-R6-12	1	VCWF06	VCWF06
A13	VAV-R6-13	1	VCWF10	VCWF10
A14	VAV-R6-14	1	VCWF10	VCWF10
A15	VAV-R6-15	1	VCWF08	VCWF08

Product Data - Variable Air Volume Single Duct Terminal Units

All Units

Single duct with hot water heat
 3/8" (10 mm) closed cell insulation
 Shaft only - with control enclosure
 Left hand &/or same side connection (control &/or hot water coil)
 Disconnect switch

Item: A1, A2, A3, A4, A5, A6, A7, A8, A9, A11, A15 Qty: 11 Tag(s): VAV-R6-1, VAV-R6-2, VAV-R6-3, VAV-R6-4, VAV-R6-5, VAV-R6-6, VAV-R6-7, VAV-R6-8, VAV-R6-9, VAV-R6-11, VAV-R6-15

8" inlet size, 900 cfm (203mm inlet, 425 l/s)
 1 Row hot water coil

Item: A10 Qty: 1 Tag(s): VAV-R6-10

12" inlet size, 2000 cfm (305mm inlet, 944 l/s)
 1 Row hot water coil

Item: A12 Qty: 1 Tag(s): VAV-R6-12

6" inlet size, 500 cfm (152mm inlet, 236 l/s)
 1 Row hot water coil

Item: A13 Qty: 1 Tag(s): VAV-R6-13

10" inlet size, 1400 cfm (254mm inlet, 661 l/s)
 1 Row hot water coil

Item: A14 Qty: 1 Tag(s): VAV-R6-14

10" inlet size, 1400 cfm (254mm inlet, 661 l/s)
 2 Row hot water coil

Performance Data - Variable Air Volume Single Duct Terminal Units

Tags	VAV-R6-1, VAV-R6-11	VAV-R6-2, VAV-R6-3, VAV-R6-5, VAV-R6-6, VAV-R6-7, VAV-R6-8	VAV-R6-4	VAV-R6-9	VAV-R6-10	VAV-R6-12
Design cooling airflow (cfm)	220	180	205	235	1160	140
Min cooling airflow (cfm)	220	180	205	235	1160	140
Valve heating airflow (cfm)	220	180	205	235	1160	140
Cooling inlet diameter	8"	8"	8"	8"	12"	6"
Cooling inlet velocity (ft/min)	630	516	587	673	1477	713
APD @ cooling airflow (in H2O)	0.030	0.022	0.027	0.034	0.169	0.020
Discharge valve - NC ()	26	26	26	26	27	34
Radiated valve - NC ()	30	30	30	30	30	24
Operating weight (lb)	21.0	21.0	21.0	21.0	37.0	21.0
Max inlet SP (in H2O)	1.000	1.000	1.000	1.000	1.000	1.000
Hot water valves?	No	No	No	No	No	No
Coil heating capacity (MBh)	9.54	8.81	9.28	10.28	36.17	6.89
Room heat loss (MBh)	5.01	5.11	5.06	5.44	12.28	4.00
Room heating setpoint (F)	74.00	74.00	74.00	74.00	74.00	74.00
Primary EDB (F)	55.00	55.00	55.00	55.00	55.00	55.00
Unit LAT (F)	94.97	100.15	96.73	95.33	83.75	100.35
Heating ent fluid temp (F)	180.00	180.00	180.00	180.00	180.00	180.00
Heating delta T (F)	38.13	35.24	37.09	34.24	34.43	27.52
Heating Cv (Number)	0.94	0.94	0.94	0.97	2.06	1.09
Heating flow rate (gpm)	0.50	0.50	0.50	0.60	2.10	0.50
Coil fluid PD (ft H2O)	0.65	0.65	0.65	0.89	2.39	0.48

Tags	VAV-R6-13	VAV-R6-14	VAV-R6-15
Design cooling airflow (cfm)	525	805	210
Min cooling airflow (cfm)	525	805	210
Valve heating airflow (cfm)	525	805	210
Cooling inlet diameter	10"	10"	8"
Cooling inlet velocity (ft/min)	963	1476	602
APD @ cooling airflow (in H2O)	0.070	0.258	0.028
Discharge valve - NC ()	24	26	26
Radiated valve - NC ()	30	31	30
Operating weight (lb)	29.0	32.0	21.0
Max inlet SP (in H2O)	1.000	1.000	1.000
Hot water valves?	No	No	No
Coil heating capacity (MBh)	21.35	35.04	9.37
Room heat loss (MBh)	10.54	18.47	5.04
Room heating setpoint (F)	74.00	74.00	74.00
Primary EDB (F)	55.00	55.00	55.00
Unit LAT (F)	92.50	95.14	96.12
Heating ent fluid temp (F)	180.00	180.00	180.00
Heating delta T (F)	28.44	50.07	37.44
Heating Cv (Number)	0.92	3.69	0.94
Heating flow rate (gpm)	1.50	1.40	0.50
Coil fluid PD (ft H2O)	6.09	0.33	0.65
Main coil rows	-	2 ROW	-

Mechanical Specifications - Variable Air Volume Single Duct Terminal Units

Item: A1 - A15 Qty: 15 Tag(s): VAV-R6-1, VAV-R6-2, VAV-R6-3, VAV-R6-4, VAV-R6-5, VAV-R6-6, VAV-R6-7, VAV-R6-8, VAV-R6-9, VAV-R6-10, VAV-R6-11, VAV-R6-12, VAV-R6-13, VAV-R6-14, VAV-R6-15

General Unit Information

The unit casing is comprised of 22 gauge galvanized steel. Outlet connection is slip and drive.

Agency Listing - The unit is UL and Canadian UL listed as a room air terminal unit. UL Control # 9N65. All Trane terminal units are AHRI 880 - 98 certified.

General Unit Clearance

Allow adequate clearance to meet NEC on control box side of unit to meet NEC. A minimum of one and one half duct diameters of straight duct work, upstream of the air inlet connection, must be present for optimum airflow measurement performance. Upstream duct work should be the same diameter as the primary inlet connection. Allow access to the bottom of unit if Optional Bottom Access Door is selected.

Closed Cell Insulation

The interior of the unit is lined with closed cell insulation which assures condensation control, energy conservation and a closed cell construction to reduce noise. The insulation is agency listed and meets NFPA-90A and UL 181 standards. This insulation is 3/8" density closed cell insulation. The insulation R-value is 1.4, 4.4 lb/cu. ft. [70 kgs/cu. m.] density. All cut edges of insulation are completely encapsulated in metal to prevent erosion.

Air Valve Size - 06

Air Valve is 500.0 cfm 6" inlet.

Air Valve Size - 08

Air Valve is 900.0 cfm 8" inlet.

Air Valve Size - 10

Air Valve is 1400.0 cfm 10" inlet.

Air Valve Size - 12

Air Valve is 2000.0 cfm 12" inlet.

Air Valve Round

The air inlet connection is an 18 gauge galvanized steel cylinder sized to fit standard round duct. A multiple point, averaging flow sensing ring is provided with balancing taps for measuring within +/- 5% of unit cataloged airflow. An airflow versus pressure differential calibration chart is provided. The damper blade is constructed of a closed cell foam seal mechanically locked between two 22 gauge galvanized steel disks. The damper blade assembly is connected through a composite nylon stub axle to a cast zinc shaft supported by self lubricating bearings. The shaft is cast with a damper position indicator. The valve assembly includes a mechanical stop to prevent over stroking. At 4.0" w.g. air valve leakage does not exceed 1% of cataloged airflow.

1 Row Water Coil

Factory mounted on outlet. The coil has 144 fpf (fins per foot) [0.305 m.]. Full fin collars provided for accurate fin spacing and maximum fin-tube contact. The seamless copper tubes are mechanically expanded into the fin collars. Coils are proof tested at 450.00 psi and leak tested at 300.00 psi air pressure under water. Coil connections are sweat with left hand configuration. Right hand connections are optional. Coils are provided with an access for cleaning.

2 Row Water Coil

Factory mounted on outlet. The coil has 144 fpf plated (fins per foot) [0.305 m.]. Full fin collars provided for accurate fin spacing and maximum fin-tube contact. The seamless copper tubes are mechanically expanded into the fin collars. Coils are proof tested at 450.00 psi and leak tested at 300.00 psi air pressure under water. Coil connections are sweat with left hand configuration. Right hand coil connections are optional. Coils are provided with an access for cleaning.

Slip & Drive Connection

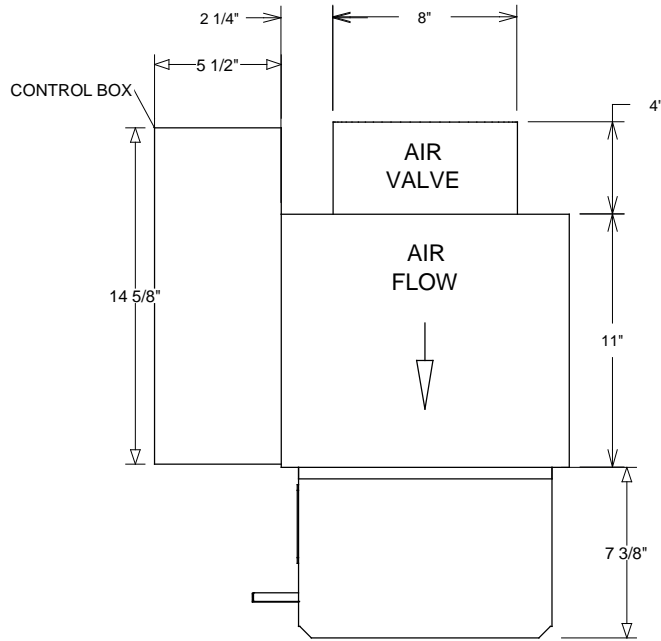
A slip and drive connection has two straight flanges on the top and bottom, and two drive connections on the left and right sides. This is a standard option on all VAV single duct terminal units.

Toggle Disconnect Switch (for VCCF & VCWF)

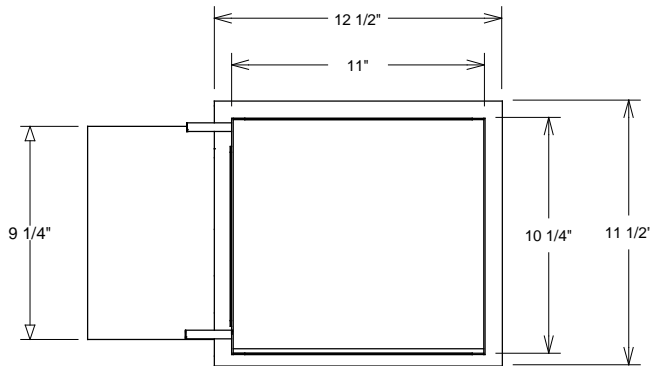
A switch, installed in a unit mounted controls enclosure, which breaks both power legs within the control box.

Unit Dimensions - Variable Air Volume Single Duct Terminal Units

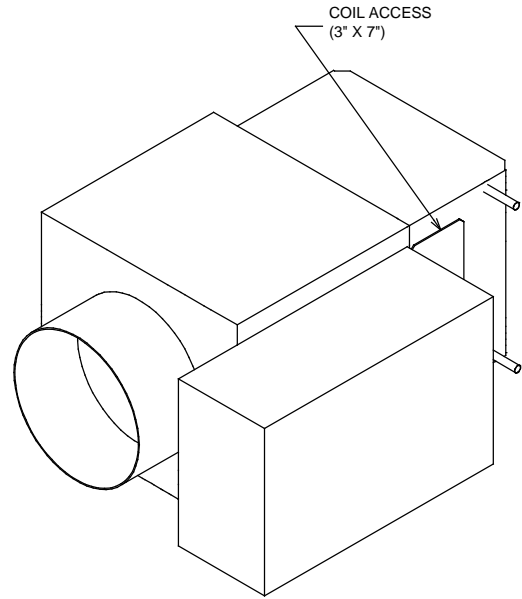
Item: A1 - A9, A11, A15 Qty: 11 Tag(s): VAV-R6-1, VAV-R6-2, VAV-R6-3, VAV-R6-4, VAV-R6-5, VAV-R6-6, VAV-R6-7, VAV-R6-8, VAV-R6-9, VAV-R6-11, VAV-R6-15



TOP VIEW



BACK VIEW



Customer Notes

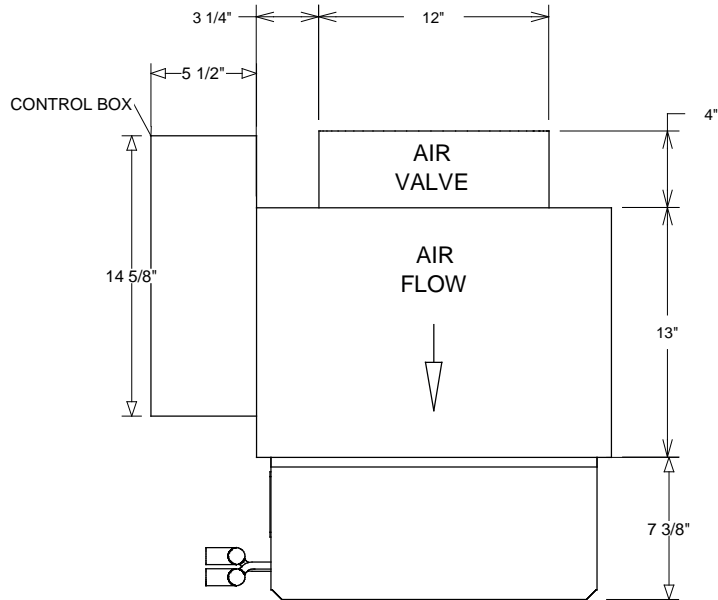
1. Air Inlet is centered in unit front panel.
2. Minimum of 1.5 duct diameters of straight duct required at inlet for proper flow reading.
3. Allow 36" on control side for servicing.
4. Unit is field-convertible from a left-hand connection (shown) to right-hand by rotating unit. Use port at the bottom for inlet and top for outlet on single row coils. For multi-row coils, always plumb in counter flow orientation. Water inlet always on the air flow downstream side of the hot water coil. Water outlet always on the upstream side of the hot water coil. Opposite side (coil and control) connections are available for VCWF only.
5. Coil furnished with stub sweat connections.
6. Coils are provided without internal insulation. If the unit is to be installed in a location with high humidity, external insulation around the heating coil should be installed as required.
7. Unit and hot water coil are standard slip & drive connection.
8. Detailed dimensions for the water coils can be found on the Accessory drawing.

Approximate Dry Weight	21.0 lb
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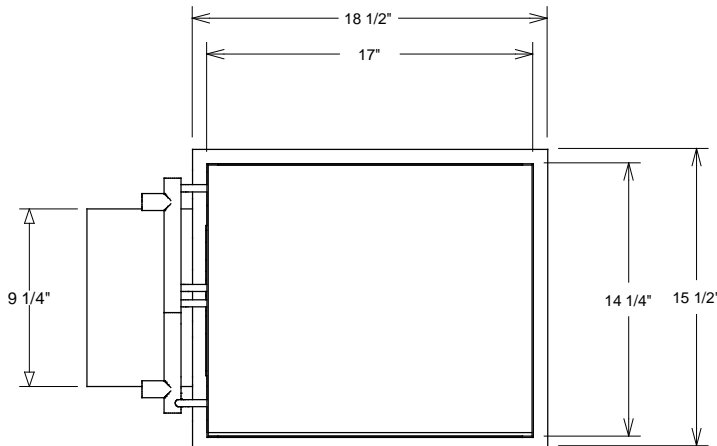
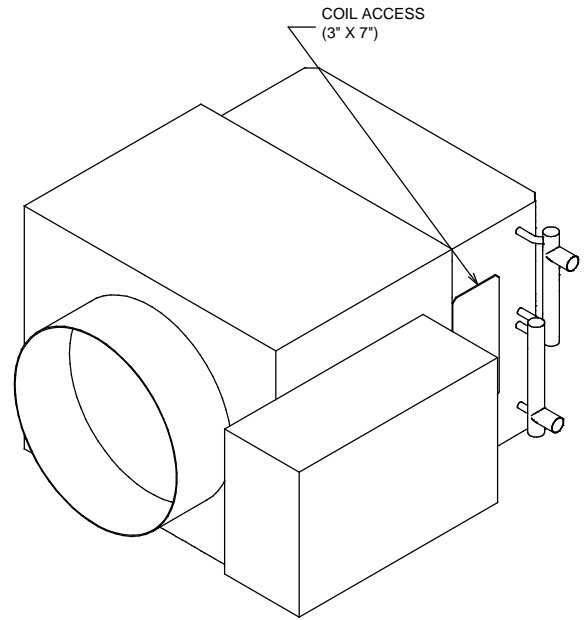
Weights reflected may vary ± 5.0 lb based upon options selected.

Unit Dimensions - Variable Air Volume Single Duct Terminal Units

Item: A10 Qty: 1 Tag(s): VAV-R6-10



TOP VIEW



BACK VIEW

Customer Notes

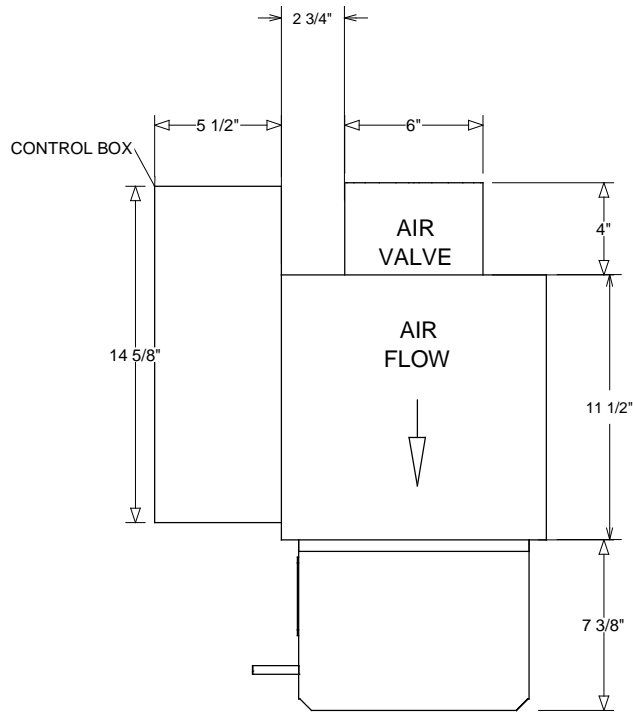
1. Air Inlet is centered in unit front panel.
2. Minimum of 1.5 duct diameters of straight duct required at inlet for proper flow reading.
3. Allow 36" on control side for servicing.
4. Unit is field-convertible from a left-hand connection (shown) to right-hand by rotating unit. Use port at the bottom for inlet and top for outlet on single row coils. For multi-row coils, always plumb in counter flow orientation. Water inlet always on the air flow downstream side of the hot water coil. Water outlet always on the upstream side of the hot water coil. Opposite side (coil and control) connections are available for VCWF only.
5. Coil furnished with stub sweat connections.
6. Coils are provided without internal insulation. If the unit is to be installed in a location with high humidity, external insulation around the heating coil should be installed as required.
7. Unit and hot water coil are standard slip & drive connection.
8. Detailed dimensions for the water coils can be found on the Accessory drawing.

Approximate Dry Weight	
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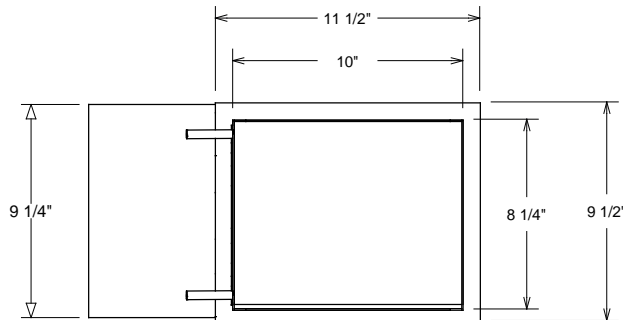
Weights reflected may vary ±5.0 lb based upon options selected.

Unit Dimensions - Variable Air Volume Single Duct Terminal Units

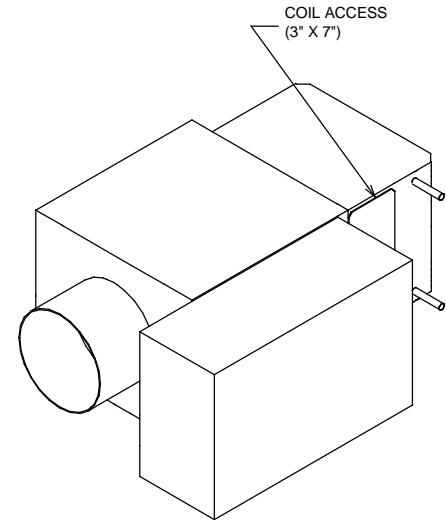
Item: A12 Qty: 1 Tag(s): VAV-R6-12



TOP VIEW



BACK VIEW



Customer Notes

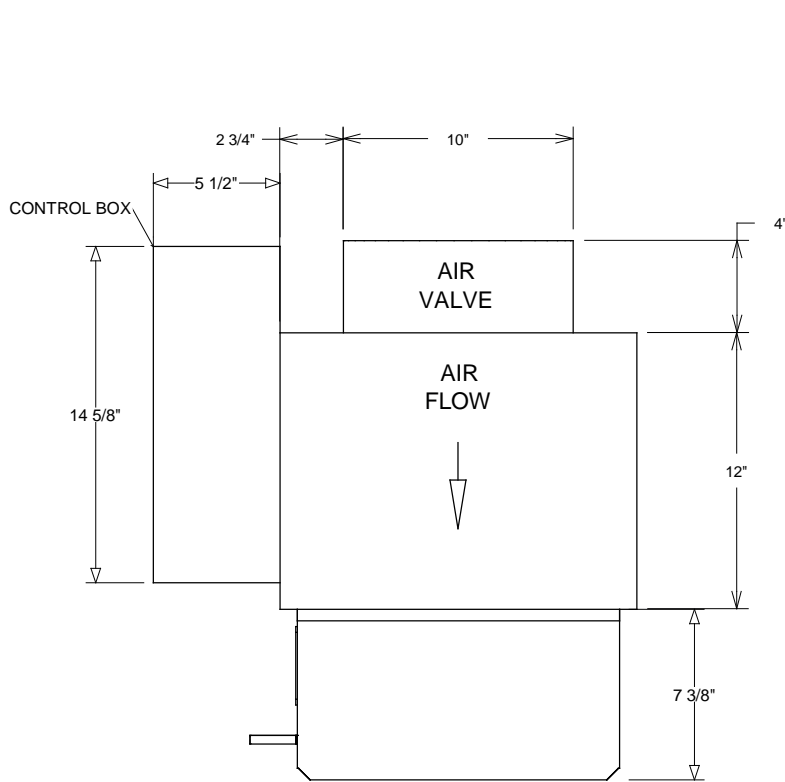
1. Air Inlet is centered in unit front panel.
2. Minimum of 1.5 duct diameters of straight duct required at inlet for proper flow reading.
3. Allow 36" on control side for servicing.
4. Unit is field-convertible from a left-hand connection (shown) to right-hand by rotating unit. Use port at the bottom for inlet and top for outlet on single row coils. For multi-row coils, always plumb in counter flow orientation. Water inlet always on the air flow downstream side of the hot water coil. Water outlet always on the upstream side of the hot water coil. Opposite side (coil and control) connections are available for VCWF only.
5. Coil furnished with stub sweat connections.
6. Coils are provided without internal insulation. If the unit is to be installed in a location with high humidity, external insulation around the heating coil should be installed as required.
7. Unit and hot water coil are standard slip & drive connection.
8. Detailed dimensions for the water coils can be found on the Accessory drawing.

Approximate Dry Weight	21.0 lb
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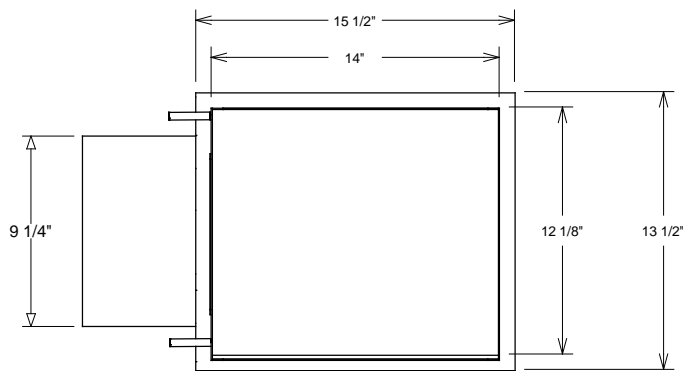
Weights reflected may vary ± 5.0 lb based upon options selected.

Unit Dimensions - Variable Air Volume Single Duct Terminal Units

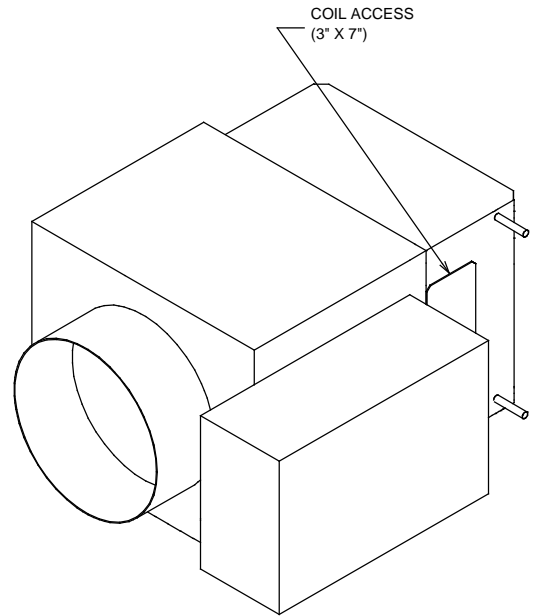
Item: A13 Qty: 1 Tag(s): VAV-R6-13



TOP VIEW



BACK VIEW



Customer Notes

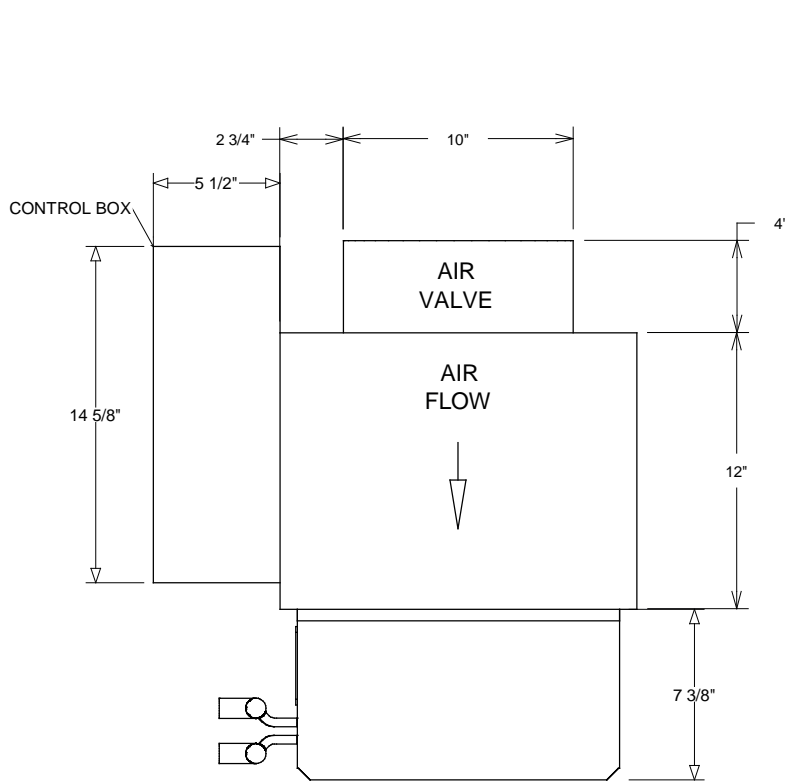
1. Air Inlet is centered in unit front panel.
2. Minimum of 1.5 duct diameters of straight duct required at inlet for proper flow reading.
3. Allow 36" on control side for servicing.
4. Unit is field-convertible from a left-hand connection (shown) to right-hand by rotating unit. Use port at the bottom for inlet and top for outlet on single row coils. For multi-row coils, always plumb in counter flow orientation. Water inlet always on the air flow downstream side of the hot water coil. Water outlet always on the upstream side of the hot water coil. Opposite side (coil and control) connections are available for VCWF only.
5. Coil furnished with stub sweat connections.
6. Coils are provided without internal insulation. If the unit is to be installed in a location with high humidity, external insulation around the heating coil should be installed as required.
7. Unit and hot water coil are standard slip & drive connection.
8. Detailed dimensions for the water coils can be found on the Accessory drawing.

Approximate Dry Weight	
------------------------	--

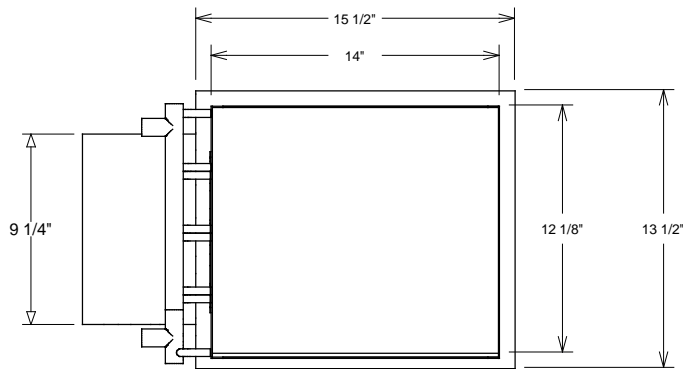
Weights reflected may vary ±5.0 lb based upon options selected.

Unit Dimensions - Variable Air Volume Single Duct Terminal Units

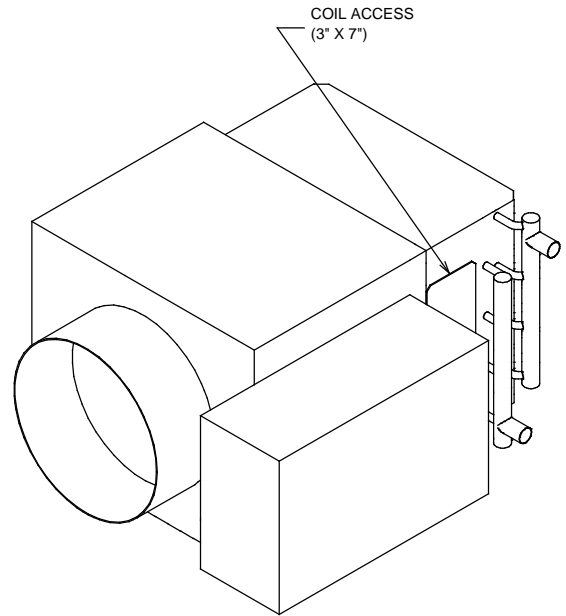
Item: A14 Qty: 1 Tag(s): VAV-R6-14



TOP VIEW



BACK VIEW



Customer Notes

1. Air Inlet is centered in unit front panel.
2. Minimum of 1.5 duct diameters of straight duct required at inlet for proper flow reading.
3. Allow 36" on control side for servicing.
4. Unit is field-convertible from a left-hand connection (shown) to right-hand by rotating unit. Use port at the bottom for inlet and top for outlet on single row coils. For multi-row coils, always plumb in counter flow orientation. Water inlet always on the air flow downstream side of the hot water coil. Water outlet always on the upstream side of the hot water coil. Opposite side (coil and control) connections are available for VCWF only.
5. Coil furnished with stub sweat connections.
6. Coils are provided without internal insulation. If the unit is to be installed in a location with high humidity, external insulation around the heating coil should be installed as required.
7. Unit and hot water coil are standard slip & drive connection.
8. Detailed dimensions for the water coils can be found on the Accessory drawing.

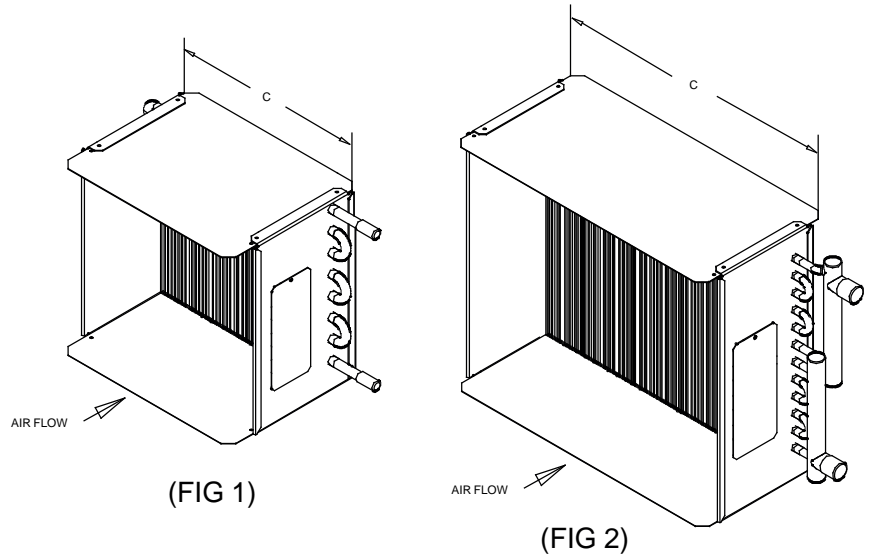
Approximate Dry Weight	
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Weights reflected may vary ±5.0 lb based upon options selected.

Accessory - Variable Air Volume Single Duct Terminal Units

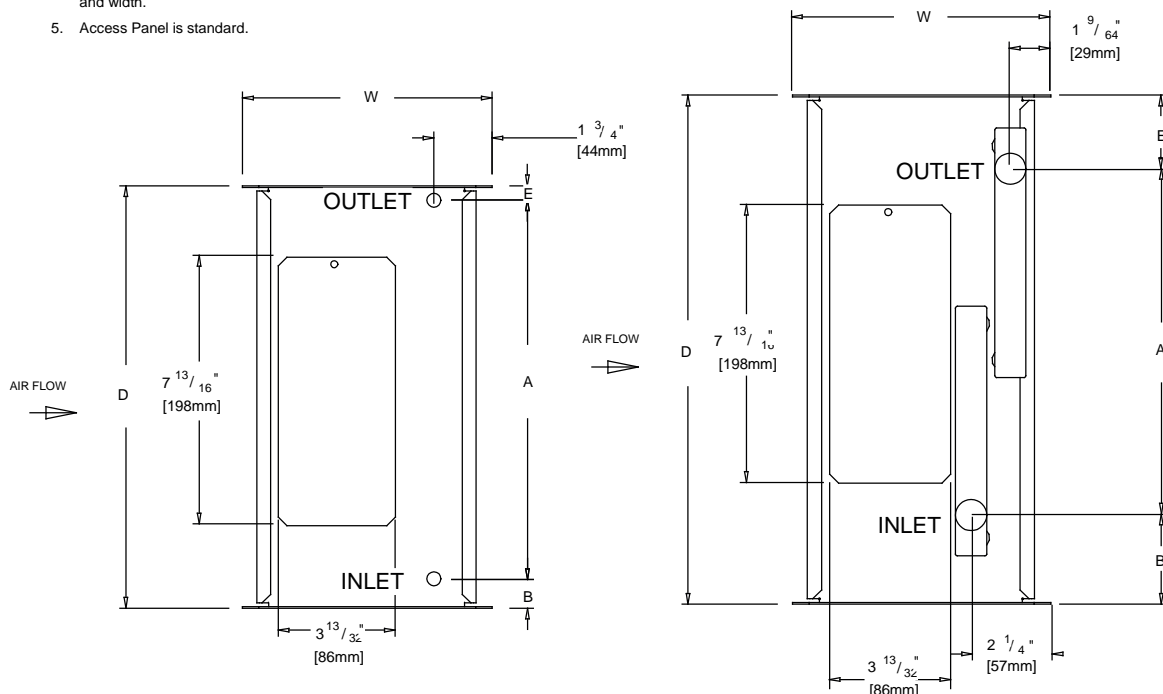
Item: A1 - A13, A15 Qty: 14 Tag(s): VAV-R6-1, VAV-R6-2, VAV-R6-3, VAV-R6-4, VAV-R6-5, VAV-R6-6, VAV-R6-7, VAV-R6-8, VAV-R6-9, VAV-R6-10, VAV-R6-11, VAV-R6-12, VAV-R6-13, VAV-R6-15

COIL INFORMATION FOR 1 ROW COIL ASSY										
VALV	CFM	LITERS per SECOND	COIL CONNECTION		A	B	C	D	E	W
04	225	106	3/8" [10mm] O.D.	SEE (FIG 1)	7" [178mm]	2 1/32" [17mm]	10" [254mm]	8 1/8" [206mm]	1/2" [13mm]	8 1/4" [210mm]
05	350	165	3/8" [10mm] O.D.		7" [178mm]	2 1/32" [17mm]	10" [254mm]	8 1/8" [206mm]	1/2" [13mm]	8 1/4" [210mm]
06	500	236	3/8" [10mm] O.D.		7" [178mm]	2 1/32" [17mm]	10" [254mm]	8 1/8" [206mm]	1/2" [13mm]	8 1/4" [210mm]
08	900	425	3/8" [10mm] O.D.		9" [229mm]	7/8" [22mm]	11" [279mm]	10 1/8" [257mm]	7/16" [11mm]	8 1/4" [210mm]
10	1400	661	3/8" [10mm] O.D.		11" [279mm]	7/8" [22mm]	14" [356mm]	12 1/8" [308mm]	7/16" [11mm]	8 1/4" [210mm]
12	2000	994	7/8" [22mm] O.D.	SEE (FIG 2)	9 3/4" [248mm]	2 1/2" [64mm]	17" [432mm]	14 1/8" [359mm]	2 1/16" [53mm]	8 1/4" [210mm]
14	3000	1416	7/8" [22mm] O.D.		15 3/4" [400mm]	1 1/2" [38mm]	19" [483mm]	18 1/8" [460mm]	1 1/16" [27mm]	8 1/4" [210mm]
16	4000	1888	7/8" [22mm] O.D.		15 3/4" [400mm]	1 1/2" [38mm]	23" [584mm]	18 1/8" [460mm]	1 1/16" [27mm]	8 1/4" [210mm]
16 x 24	8000	3776	7/8" [22mm] O.D.		15 3/4" [400mm]	1 1/2" [38mm]	27" [686mm]	18 1/8" [460mm]	1 1/16" [27mm]	8 1/4" [210mm]



CUSTOMER NOTES:

1. Location of coil connections is determined by facing air stream. L.H. Coil connections shown, R.H. opposite.
2. Coil furnished with stub sweat connections.
3. Use port at bottom for inlet and port at top for outlet on single row coils. Coil is rotated to achieve opposite hand connection.
4. Coil height and width is dependent upon unit height and width.
5. Access Panel is standard.

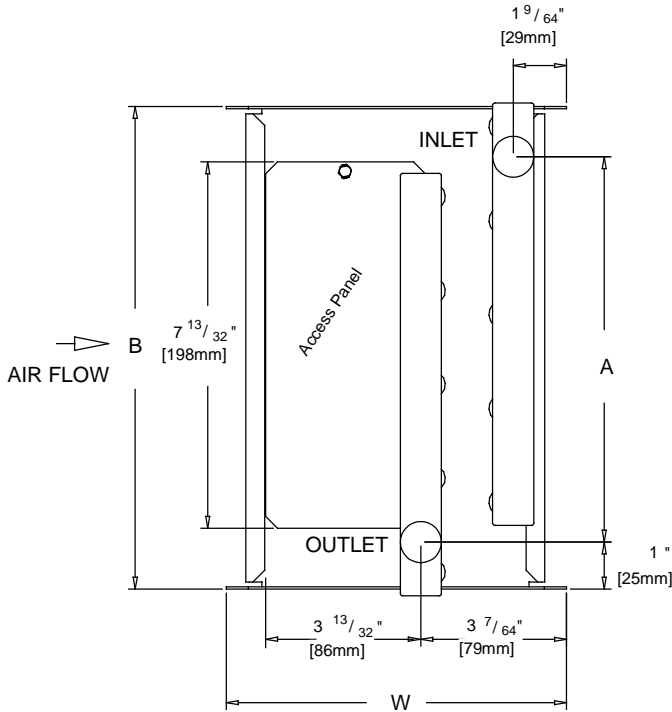
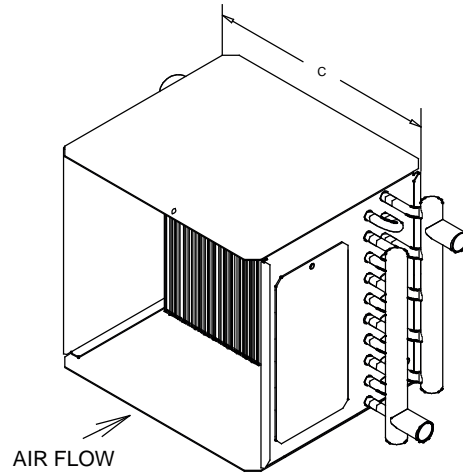


Accessory - Variable Air Volume Single Duct Terminal Units
Item: A14 Qty: 1 Tag(s): VAV-R6-14

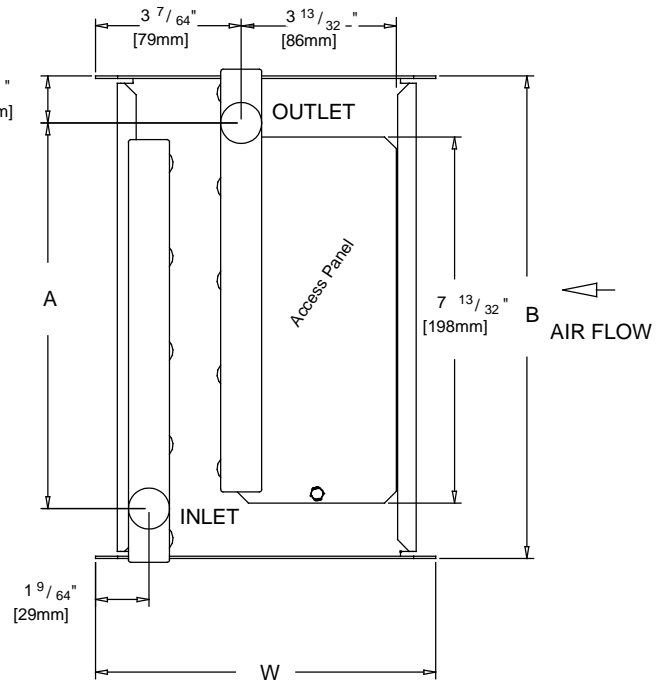
COIL INFORMATION FOR 2 ROW COIL ASSY							
INLT	CFM	LITERS per SECOND	COIL CONNECTION	A	B	C	W
				04	225	106	7/8" [22mm] O.D.
05	350	165	7/8" [22mm] O.D.	6 1/4" [191mm]	8 1/8" [206mm]	10" [254mm]	8 1/4" [210mm]
06	500	236	7/8" [22mm] O.D.	6 1/4" [191mm]	8 1/8" [206mm]	10" [254mm]	8 1/4" [210mm]
08	900	425	7/8" [22mm] O.D.	8 1/4" [210mm]	10 1/8" [257mm]	11" [279mm]	8 1/4" [210mm]
10	1400	661	7/8" [22mm] O.D.	10 1/4" [260mm]	12 1/8" [308mm]	14" [356mm]	8 1/4" [210mm]
12	2000	994	7/8" [22mm] O.D.	12 1/4" [311mm]	14 1/8" [359mm]	17" [432mm]	8 1/4" [210mm]
14	3000	1416	7/8" [22mm] O.D.	16 1/4" [413mm]	18 1/8" [460mm]	19" [483mm]	8 1/4" [210mm]
16	4000	1888	7/8" [22mm] O.D.	16 1/4" [413mm]	18 1/8" [460mm]	23" [584mm]	8 1/4" [210mm]
16 x 24	8000	3776	7/8" [22mm] O.D.	16 1/4" [413mm]	18 1/8" [460mm]	27" [686mm]	8 1/4" [210mm]

CUSTOMER NOTES:

1. Location of coil connections is determined by facing air stream. L.H. Coil connections shown, R.H. opposite.
2. Coil furnished with stub sweat connections.
3. For 2 row coils, always plumb in counter flow orientation: Water inlet always on airflow downstream of hot water coil. Water outlet is always on the airflow upstream side of hot water coil. See drawings for reference.
4. Coil height and width is dependent upon unit height and width.
5. Access Panel is standard.






LEFT HAND




RIGHT HAND

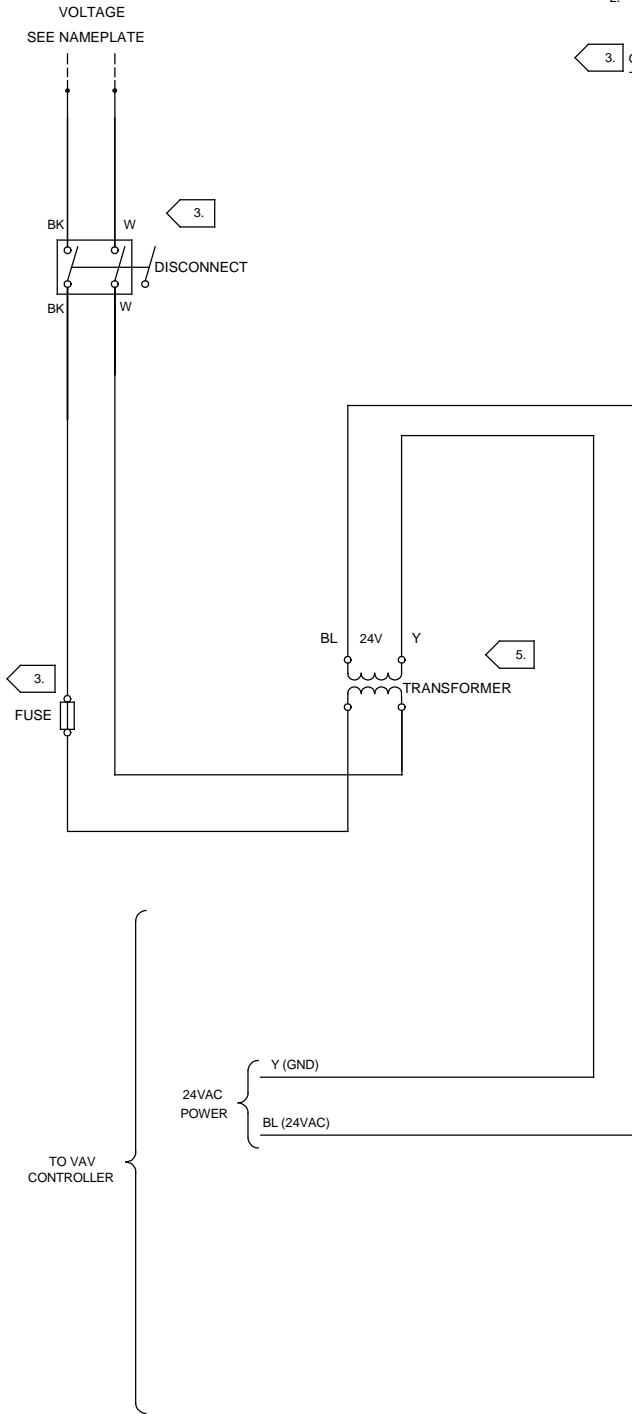
Field Wiring - Variable Air Volume Single Duct Terminal Units

Item: A1 - A15 Qty: 15 Tag(s): VAV-R6-1, VAV-R6-2, VAV-R6-3, VAV-R6-4, VAV-R6-5, VAV-R6-6, VAV-R6-7, VAV-R6-8, VAV-R6-9, VAV-R6-10, VAV-R6-11, VAV-R6-12, VAV-R6-13, VAV-R6-14, VAV-R6-15

- NOTES:
- 1.  FACTORY WIRING
 - 2.  FIELD WIRING
 - 3.  OPTIONAL OR ALTERNATE WIRING

2. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC), STATE AND LOCAL REQUIREMENTS.

3.  OPTIONAL DISCONNECT SWITCH AND FUSE ARE LOCATED EXTERNAL TO CONTROL BOX.



Submittal Schedule

This schedule includes the products supplied as part of this submittal.

Schedule			Motor Data ¹			Drive Data			
Item	Qty	Equipment ID	HP	FLA	Voltage	Product ID	HP	Amps	Voltage
1	1		5	7.6	460 VAC	ACS550-PD-08A8-4	5	8.8	480 VAC
2	1		10	14	460 VAC	ACS550-PD-015A-4	10	15.4	480 VAC

Notes: 1. AC Motor Data is per National Electrical Code Table 430.250 for typical motors used in most applications and is provided as typical data only. DC motor data is per typical industry standards. Actual motor data may vary.

Clarifications and Exceptions to Specification and Terms

The comments and clarifications that follow are offered in response to the specification items identified below. Please refer to the specification section and paragraph indicated. Any contract executed based on this proposal is done based acceptance of the exceptions noted herein.

Item ID	Title	Clarifications and Exceptions

Submittal Schedule Details for

Item	Tag / Equipment ID	Product ID
1		ACS550-PD-08A8-4

Item Description
Input Voltage: 480 VAC Rated Output Current: 8.8 AMPS - 110% 1 min - Normal Duty Construction: Drive with Disconnect Enclosure: NEMA 1 - IP21 Nominal Horsepower: 5 Frame Size: R1 Input Disconnecting Means: Disconnect Bypass: None Input Impedance: 5% for R1 to R5, 3% for R6 to R8 Short Circuit Current Rating: 100 kA Communication Protocols: Modbus RTU Other Options: Recommended Spare Parts Package :

Drive Input Fuse Ratings	
Amps (600 V)	Bussmann Type
15	KTK-R-15

Wire Size Capacities of Power Terminals				
Circuit Breaker	Disconnect Switch	Terminal Block	Overload Relay	Ground Lug
N/A N/A	#10 7 in-lbs	#10 12 in-lbs	N/A N/A	#10 35 in-lbs

Dimensions and Weights				
Height in / mm	Width in / mm	Depth in / mm	Weight lbs / kg	Dimension Drawing
28.7 / 729	7.8 / 198	11.2 / 283	32 / 15	3AUA0000008216 Sheet 1

Heat Dissipation & Airflow Requirements			
Power Losses		Airflow	
Watts	BTU/Hr	CFM	CM/Hr
127	433	26	44

Reference Drawings		
Power Wiring	Connection Diagram	Dimension Detail
PD00S014PW-A	PCPDS014CC-A	3AUA0000008216 Sheet 1

Submittal Schedule Details for

Item	Tag / Equipment ID	Product ID
2		ACS550-PD-015A-4

Item Description
Input Voltage: 480 VAC Rated Output Current: 15.4 AMPS - 110% 1 min - Normal Duty Construction: Drive with Disconnect Enclosure: NEMA 1 - IP21 Nominal Horsepower: 10 Frame Size: R2 Input Disconnecting Means: Disconnect Bypass: None Input Impedance: 5% for R1 to R5, 3% for R6 to R8 Short Circuit Current Rating: 100 kA Communication Protocols: Modbus RTU Other Options: Recommended Spare Parts Package :

Drive Input Fuse Ratings	
Amps (600 V)	Bussmann Type
30	KTK-R-30

Wire Size Capacities of Power Terminals				
Circuit Breaker	Disconnect Switch	Terminal Block	Overload Relay	Ground Lug
N/A N/A	#8 7 in-lbs	#6 12 in-lbs	N/A N/A	#6 35 in-lbs

Dimensions and Weights				
Height in / mm	Width in / mm	Depth in / mm	Weight lbs / kg	Dimension Drawing
32.6 / 829	7.8 / 198	11.6 / 295	42 / 19	3AUA0000008218 Sheet 1

Heat Dissipation & Airflow Requirements			
Power Losses		Airflow	
Watts	BTU/Hr	CFM	CM/Hr
232	792	52	88

Reference Drawings		
Power Wiring	Connection Diagram	Dimension Detail
PD00S014PW-A	PCPDS014CC-A	3AUA0000008218 Sheet 1

ACS550 Product Overview

Description

With drives ranging from 0.75 to 550Hp (0.75 to 355kW), the ACS550 AC Drive features a multi-lingual, full graphical control panel that also provides start-up, maintenance and diagnostic assistants. The assistants simplify drive set-up, operation, and fault diagnostics. The control panel can be mounted on the cover of the drive or remotely and has capabilities to upload and download drive configuration parameters.

All ACS550 drives are current rated devices. The HP ratings provided are for reference only and are based on typical 4-pole motors at nominal voltages (NEC Table 430.250). If full motor torque is required, ensure the drive has a continuous current rating equal or greater than the full load amp rating of the motor (if full motor torque is required). Motor power in kW ratings are provided where applicable and are based upon IEC 4-pole motor ratings.

The ACS550 is available in both "Normal Duty" ratings and "Heavy Duty" ratings. The Normal Duty rating provides a 110% short term overload rating for 1 minute of every 10 minutes. The Heavy Duty rating provides a 150% short term overload rating for 1 minute in ten minutes. 180% overload capacity is available for 2 seconds every 1 minute.

The ACS550 comes with an extensive library of preprogrammed application macros that, at the touch of a button, allow rapid configuration of inputs, outputs, and parameters for specific applications to maximize convenience and minimize start-up time.



ACS550 Standard Features

Standard Features

UL, cUL, CSA, CE (208-480V) and GOST-R
Full Graphic and Multilingual Display with Real-time clock and assistant
Start-Up Assistant with Verify
Motor ID Run
Motor Control
Sensorless Vector and Flux Vector
Scalar Control
Input Fuses and Disconnect (ACS550-U2, PD, R5-R8 PC and CC)
1st Environment, Restricted CE Approval for 200-480Vtypes (30 m motor cable for R1-R6 frame.
2nd Environment for R7 & R8
Two (2) programmable Analog Inputs
Six (6) programmable Digital inputs
Two (2) programmable Analog Outputs
Three (3) Programmable Form C Relay Outputs
Adjustable filters on Analog inputs and outputs
Input Speed Signals
Two (2) Current 0 (4) - 20 mA, 0 (2) - 10VDC
Increase/Decrease reference Contacts
Fieldbus adapters (communication modules)
Start/Stop
2 wire control (dry contact closure)
3 wire control (momentary dry contacts)
Adjustable Current Limit
Adjustable Torque Limit
Nine (9) Supervision Functions
Electronic Reverse
Power Loss Ride-Through
DC Injection Braking (in Scalar ONLY)
DC Magnetizing Start (provides maximum starting torque)
DC Hold
Flux Braking
Jog
Flux Optimization
Seven (7) Preset Speeds
Three (3) Critical Speed Lockout Bands
Self-Tuning Speed Controller
Automatic Reset Customer Selectable
Two (2) Independently Adjustable Accel and Decel Ramps
Linear or Adjustable "S" Curve Accel/Decel Ramps
Ramp to Stop or Coast to a Stop
Maximum Frequency Programmable up to 500 Hz
Two (2) Integral Programmable PID Setpoint Controllers
Mathematical Functions on Analog Reference Signals
DC Choke (R1 - R4 Frames) and AC Reactor (R5 Frames & above) Reactor
Integral Brake Chopper (R1 & R2 Frames)
Reference Trim
Mechanical Brake Control
Emergency Ramp Stop
Built-in Modbus RTU
Maintenance Calculator (v3.11a+)
Serial Communications Assistant (v3.11a+)
Drive Performance Optimization Assistant (v3.11a+)
User-defined Underload Curve (v3.11a+)
Coated Boards

Programmable Fault Functions

AI (1,2 Loss)
Encoder Error
Panel Loss
Assistant External Fault
Motor Thermal Protection
Stall Protection
Underload
Motor Phase Loss
Ground Fault
Communications Fault
Supervision of optional IO

Preprogrammed Protections:

Overcurrent
Short Circuit and Ground Fault
Overvoltage (Intermediate Circuit)
Undervoltage (Intermediate Circuit)
Input Phase Loss and Output Miswiring
Drive and Motor Overtemperature
Internal fault
Overspeed
Input power to Output (R1-R4)

Available options

I/O Options
3 Relay Extension Module OREL-01
115/230V Digital Interface Module OHDI-01
Pulse Encoder Interface OTAC-01
Fieldbus Adapter Modules
DeviceNet RDNA-01
Profibus-DP RPBA-01
ControlNet RCNA-01
CANopen RCAN-01
Ethernet/IP and Modbus/TCP RETA-01
Profinet IO and Modbus/TCP RETA-02
Dynamic Braking Units and Choppers
DriveWindow Light®-based Start-up & Programming
Fan Replacement Kits
NEMA 12 or 4X Remote Panel Mounting Kit
Flange Mounting Kits (R1 – R6)
FlashDrop
Drive with Disconnect or Circuit Breaker
Drive with Bypass
NEMA 3R Enclosure
NEMA 12 Enclosure



ACS550 Specifications

Input Connection

Input Voltage (U1, V1, W1)	(U1, V1, W1)208/220/230/240Vac 3-phase +10% / -15% 380/400/415/440/460/480Vac 3-phase +10% / -15% 500/525/550/575/600Vac 3-phase +10 / -15%
Input Frequency	48 to 63 Hz, maximum rate of change 17%/second
Line Imbalance	Max +/-3% of nominal phase to phase input voltage
Fundamental Power Factor Connection	0.98 (at nominal load) Terminals U1, V1, W1

Output Connection

Output Voltage	0 to U1, 3-phase symmetrical, UN at the field weakening point
Output Frequency	0 to 500 Hz
Frequency Resolution	0.01 Hz
Continuous Current	1.0 * I _{2N} (normal use)1.0* I _{2hd} (heavy-duty use)
Short Term Overload Capacity	I _{Nmax} = 1.1 * I _{2N} (1 min / 10 minutes) I _{Nhdmax} = 1.5 * I _{2hd} (1 min / 10 minutes)
Peak Overload Capacity	180% of I _{2hd} for 2 seconds each minute
Field Weakening Point	10 to 500 Hz
Switching Frequency	1, 4, 8 or 12kHz (Frame dependent)
Acceleration & Deceleration Time	0.0 to 1800 s
Efficiency	98% at nominal power level
Short circuit withstand rating Connection	100,000 AIC Terminals U2, V2, W2

Ambient Conditions, Operation

Air Temperature	-15° to 40°C (5° to 104°F), no frost allowed, above 40°C the maximum output current is de-rated 1% for every additional 1°C (up to 50°C (122°F) maximum limit)
Relative Humidity	Less than 95%, no condensation allowed
Contamination Levels	
IEC	60721-3-1, 60721-3-2 and 60721-3-3
Chemical Gasses	3C2
Solid Particles	3S2
Installation Site Altitude	0 to 1000 m (3300 ft) above sea level. At sites over 1000 m above sea level, the maximum power is de-rated 1% for every additional 100 m (330 ft). If the installation site is higher than 2000 m above sea level, please contact your local ABB distributor or representative for further information.

Altitude Ambient Conditions, Storage & Transportation (in Protective Shipping Package)

Air Temperature	-40° to 70°C (-40° to 158°F)
Relative Humidity	Less than 95%, no condensation allowed
Atmospheric Pressure	70 to 106 kPa (10.2 to 15.4 PSI)
Vibration Max	In accordance with ISTA 1A and 1B specifications
Shock (IEC 60068-2-29)	Max 100 m/s ² (330 ft/s ²) 11 ms (36 fts)
Free Fall	R1: 76 cm (30 in) R2: 61 cm (24 in) R3: 46 cm (18 in) R4: 31 cm (12 in) R5: 25 cm (10 in) R6: 15 cm (6 in)

Cooling Information

Cooling Method	Internal Fan
Power Loss	Approximately 3% of rated power

ACS550 Specifications (continued)

Maximum wire size for control terminals 1.5 mm² (146 AWG)

Analog Inputs

Two (2) Programmable Current Reference	0 (4) to 20 mA, 100 Ohms, single ended
Voltage Reference	0 (2) to 10 V, 312 kOhm, single ended
Accuracy	+/- 1%
Maximum Delay	12...32ms
Resolution	0.1%
Potentiometer Reference Power Supply Voltage	+10 VDC +/-2%
Maximum Load	10 mA
Applicable Potentiometer	1 kOhm to 10 kOhm

Analog Outputs

Two (2) Programmable Current Outputs	0 (4) to 20 mA
Signal Level	+/-3% Full Scale Range at 25°C (77°F)
Accuracy	500 ohms
Maximum Load Impedance	

Digital Inputs

Six (6) Programmable Digital Inputs	Isolated as one group
Isolation	12...24 VDC, (10 V Logic 0). PNP and NPN
Signal Level	15 mA at 24VDC
Input Current	5 ms +/- 1ms
Maximum Delay	
Internal 24 VDC Supply for Digital Inputs	24 VDC, +/- 10%
Voltage	250 mA
Maximum Current	Short Circuit Proof
Protection	

Relay Outputs

Three (3) Programmable Relay Outputs	
Maximum switching voltage	250 VAC / 30 VDC
Maximum switching current	6 A at 30VDC, 1500 VA at 230VAC, or 0.4A at 120VDC
Maximum Continuous Current	IC = 2 Amps RMS
Contact Material	Silver Nickel (AgN)
Isolation Test Voltage	4 kVAC, 1 minute
Output Updating Time	100 ms

Protections

Single Phase	Protected (input & output)
Overvoltage Trip Limit	1.3 * V1max
Undervoltage Trip Limit	0.65 * V1min
Overtemperature	115°C (239°F) R1 - R4 and R7 & R8, 125°C (257°F) R5 & R6
Auxiliary Voltage	Short Circuit Protected
Ground Fault	Protected
Microprocessor Fault	Protected
Motor Stall Protection	Protected
Motor Overtemperature	Protected (I2t)
Input Line Impedance	5% equivalent swing DC choke (R1-R4) 3% AC line Reactor (R5-R8)

Motor / Drive Capabilities

$$2 \leq \frac{I_m}{I_{2hd}} \leq 2$$

$$0.2 \leq \frac{P_m}{P_{Nhd}} \leq 0.2$$

ACS550 products carry third party certification as follows;

Product	Certification
ACS550-U1 240V & 480V	UL, cUL, CSA, CE, C-Tick and GOST-R
ACS550-U1 600 V	UL, cUL, CSA, C-Tick and GOST-R
ACS550-U2	UL, cUL and CE
ACS550-CC	UL and cUL
ACS550-PC and PD	UL and cUL

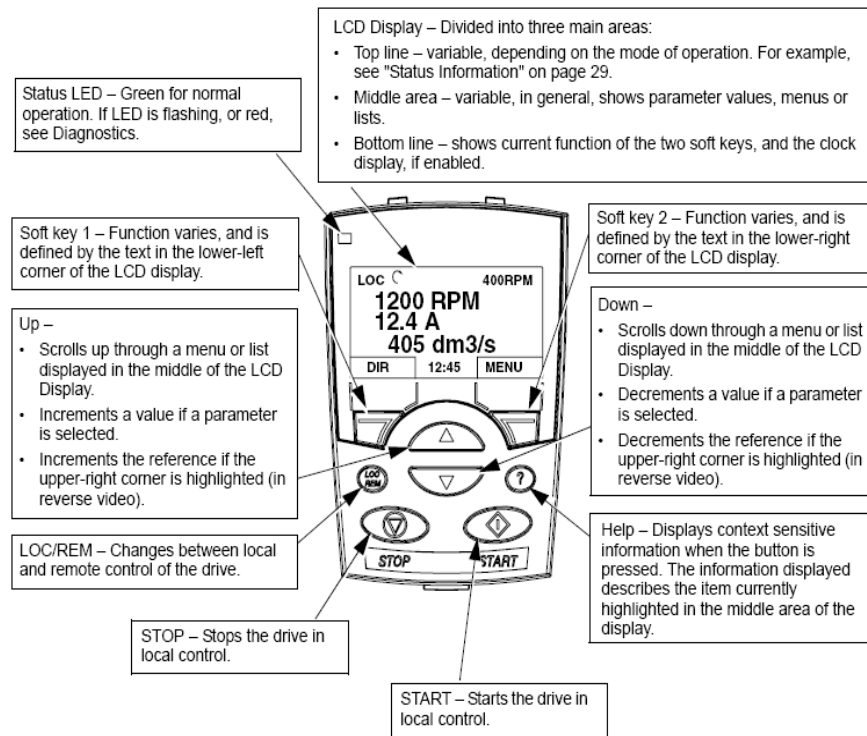
ACS550 Control Panel

Assistant Control Panel Features

The ACS550 Assistant Control Panel features:

- Intuitive to operate
- Start-up Assistant to ease drive commissioning
- Real Time Clock
- Diagnostic and Maintenance functions
- Full Graphic Display – **BIG BOLD letters**
- Displays 3 Operating parameters – Group 01
- Parameters are Alpha-numeric
- N. A. version supports 18 languages as standard
 - English, English (Am), German, Italian, Spanish, Portuguese, Dutch, French, Danish, Finnish, Swedish, Russian, Polish, Turkish, Czech, Hungarian, Korean, Chinese
- Dedicated Help key
- Key functions change (soft keys)
- Back-up and Restore
 - Parameters and/or motor data
- Changed Parameter Display
 - Creates unique short menu
 - Shows parameters that differ from default
- **Copy function**
 - **Parameters can be copied to the control panel memory for later transfer to other drives or for backup of a particular system.**

The following graphic summarizes the button functions and displays on the Assistant Control Panel.



Cable Connections

When installing input power and motor wiring, refer to the following, as appropriate:

Terminal	Description
U1, V1, W1*	3-phase power supply input
PE	Protective Ground
U2, V2, W2	Power output to motor

The ACS550 -x1-xxx-2 (208...240V series) can be used with a single phase supply, if output current is derated by 50%. For single phase supply voltage, connect power at U1 and W1.

For drives using braking (optional), refer to the following, as appropriate:

Frame Size	Terminal	Description	Braking Accessory
R1, R2	BRK+, BRK	Braking resistor	Braking resistor.
R3, R4, R5, R6	UDC+, UDC	DC bus	Contact your ABB representative to order either: -Braking unit or -Chopper and resistor

ACS550 Control Terminals

The following provides information for connecting control wiring at X1 on the drive.

X1	Identification	Hardware Description
1	SCR	Terminal for signal cable screen. (Connected internally to chassis ground.)
2	AI 1	Analog input channel 1, programmable. Default ² = frequency reference. Resolution 0.1%, accuracy $\pm 1\%$.
		J1:AI1 OFF: 0...10 V ($R_i = 312 \text{ k}\Omega$)
		J1:AI1 ON: 0...20 mA ($R_i = 100 \Omega$)
3	AGND	Analog input circuit common (connected internally to chassis gnd. through 1 M Ω).
4	+10 V	Potentiometer reference source: 10 V $\pm 2\%$, max. 10 mA ($1\text{k}\Omega < R < 10\text{k}\Omega$).
5	AI2	Analog input channel 2, programmable. Default ² = not used. Resolution 0.1%, accuracy $\pm 1\%$.
		J1:AI2 OFF: 0...10 V ($R_i = 312 \text{ k}\Omega$)
		J1:AI2 ON: 0...20 mA ($R_i = 100 \Omega$)
6	AGND	Analog input circuit common (connected internally to chassis gnd. through 1 M Ω).
7	AO1	Analog output, programmable. Default ² = frequency. 0...20 mA (load $< 500 \Omega$).
8	AO2	Analog output, programmable. Default ² = current. 0...20 mA (load $< 500 \Omega$).
9	AGND	Analog output circuit common (connected internally to chassis gnd. through 1 M Ω).
10	+24 V	Auxiliary voltage output 24 VDC / 250 mA (reference to GND), short circuit protected.
11	GND	Auxiliary voltage output common (connected internally as floating).
12	DCOM	Digital input common. To activate a digital input, there must be $\geq +10 \text{ V}$ (or $\leq -10 \text{ V}$) between that input and DCOM. The 24 V may be provided by the ACS550 (X1-10) or by an external 12...24 V source of either polarity.
13	DI 1	Digital input 1, programmable. Default ² = start/stop.
14	DI 2	Digital input 2, programmable. Default ² = fwd/rev.
15	DI 3	Digital input 3, programmable. Default ² = constant speed sel (code).
16	DI 4	Digital input 4, programmable. Default ² = constant speed sel (code).
17	DI 5	Digital input 5, programmable. Default ² = ramp pair selection (code).
18	DI 6	Digital input 6, programmable. Default ² = not used.
19	RO1C	Relay output 1, programmable. Default ² = Relay Maximum: 250 VAC / 30 VDC, 2 A Minimum: 500 mW (12 V, 10 mA)
20	RO1A	
21	RO1B	
22	RO2C	Relay output 2, programmable. Default ² = Running Maximum: 250 VAC / 30 VDC, 2 A Minimum: 500 mW (12 V, 10 mA)
23	RO2A	
24	RO2B	
25	RO3C	Relay output 3, programmable. Default ² = Fault (-1) Maximum: 250 VAC / 30 VDC, 2 A Minimum: 500 mW (12 V, 10 mA)
26	RO3A	
27	RO3B	

¹ Digital input impedance 1.5 k Ω . Maximum voltage for digital inputs is 30 V.

² Default values depend on the macro used. Values specified are for the default macro.

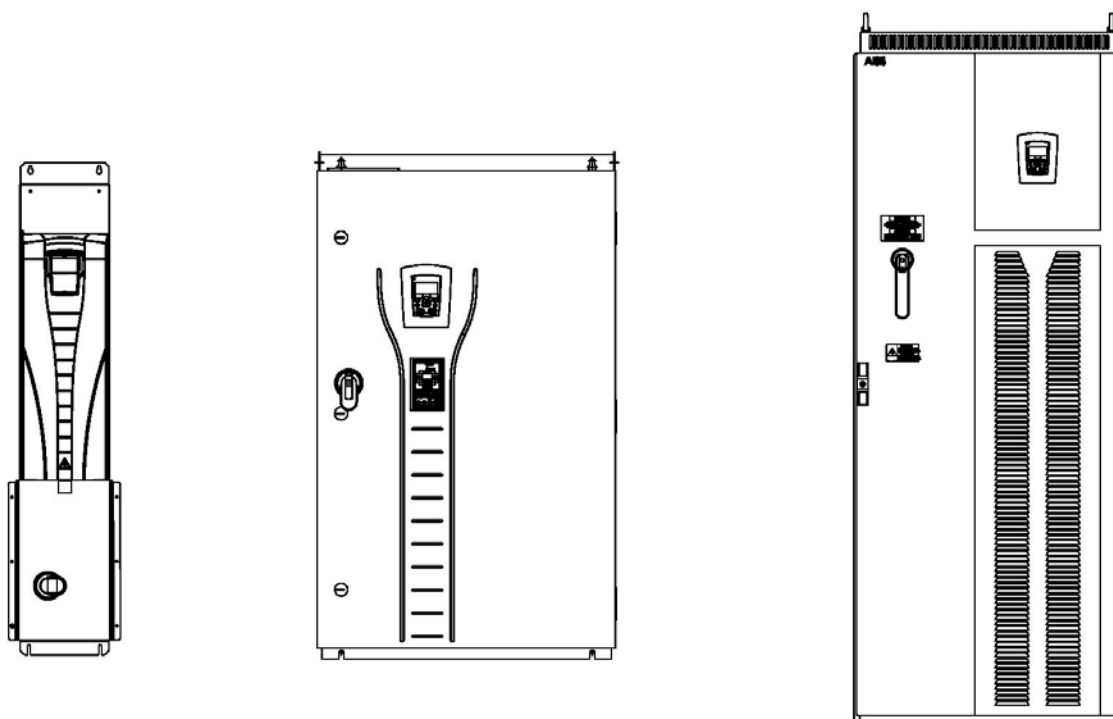
Package Drive with Disconnect Standard Features

ACS550 Package Drive with Disconnect - Overview

The ACS550 Package Drive with Disconnect is an ACS550 Variable Frequency Drive enclosed with either an input disconnect switch and fast acting fuses (ACS550-PD) or an input circuit breaker (ACS550-PC). The ACS550 Package Drive with Disconnect provides a door-mounted input disconnect operator (padlockable in the OFF position), electronic motor overload protection, local operator keypad with graphics display, and provisions for external control connections.

UL Type 1 (NEMA 1) and UL Type 12 (NEMA 12) Package Drive with Disconnect units are available from 1 to 100 HP at 208/240V, 1 to 550 HP at 480V, and 2 to 150 HP at 600V. UL Type 1 and UL Type 12 units are wall mounted from 1 to 200 HP and floor mounted from 250 to 550 HP. The operator keypad is mounted on the door of the enclosure.

For outdoor applications, UL Type 3R (NEMA) 3R enclosed ACS550-PC and -PD Drive with Disconnect packages are available from 1 to 100 HP at 208/240V, 1 to 200 HP at 480V and 2 to 150 HP at 600V. Construction is sheet steel with a tough powder coat paint finish for corrosion resistance. A 100 watt, thermostatically controlled space heater and thermostatic control of the force ventilated cooling system are standard. The operator keypad is mounted on the drive within the enclosure.



ACS550 Package Drive with Disconnect Exterior Views

Cable Connections

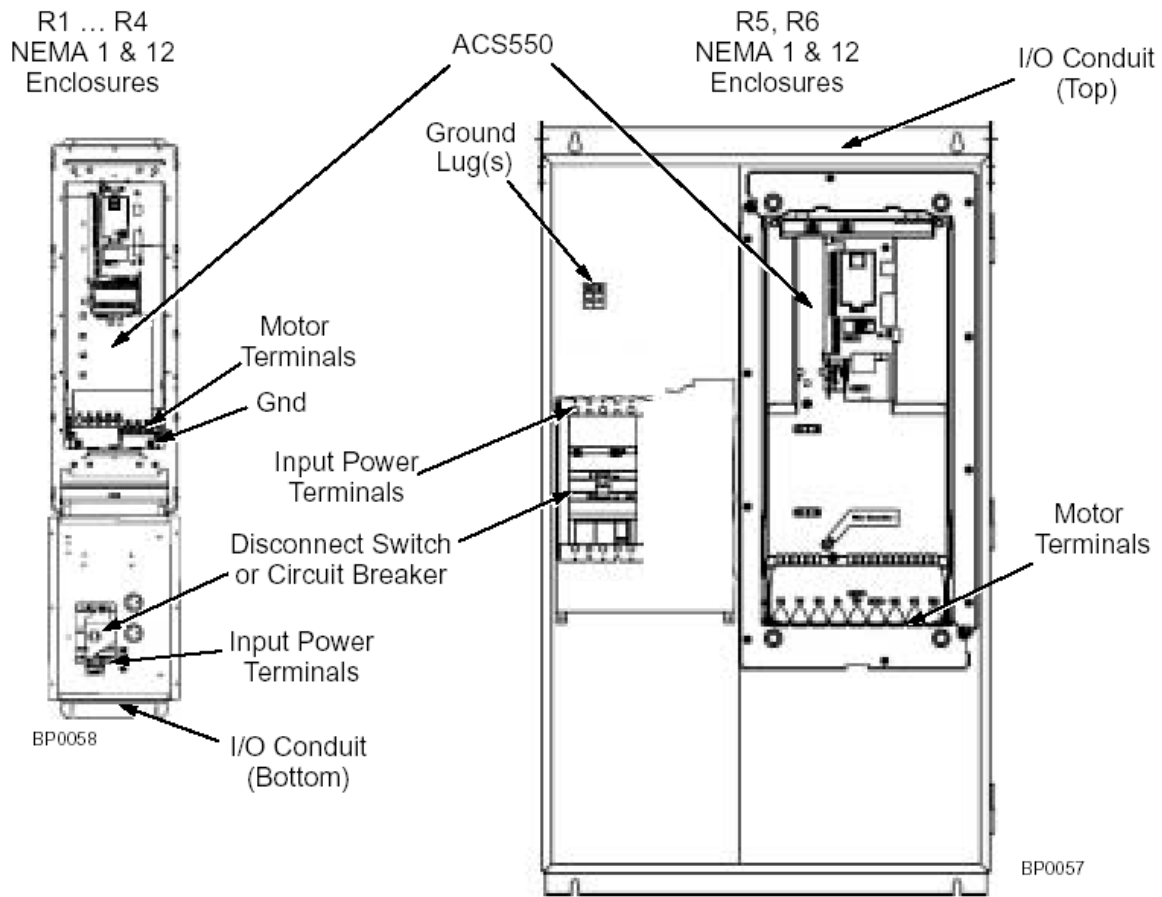
The following illustrations show the ACS550 Package Drive with Disconnect cable connection points for the various enclosure styles. The illustrations indicate the location of input and output power connections as well as equipment and motor grounding connection points.

ACS550-PC and PD packages are configured for wiring access from the bottom only on vertical wall mount units and from the top only on UL Type 1 and UL Type 12 standard wall mount and floor mount

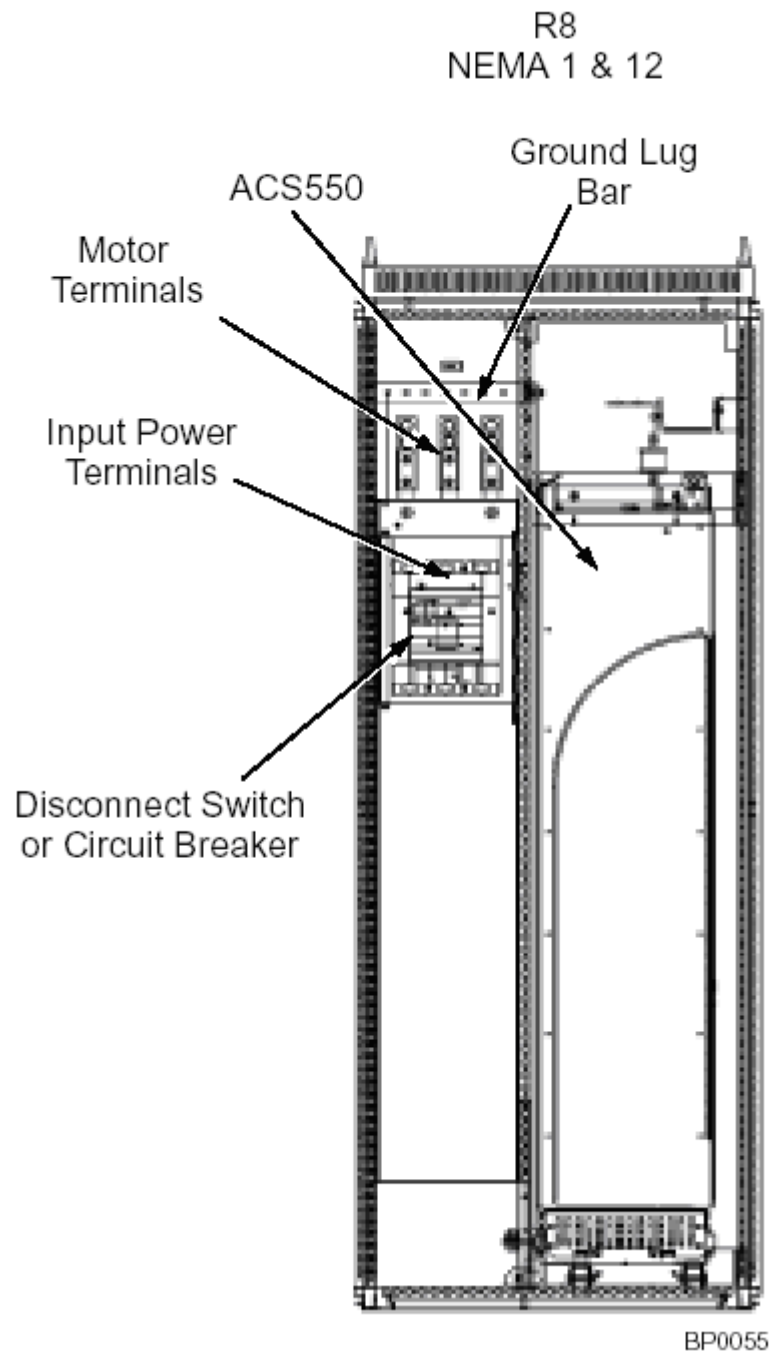
units. UL Type 3R enclosures are configured for top or bottom access. At least three separate metallic conduits are required, one for input power, one for output power to the motor and one for control signals.

Terminal Sizes

Power and motor cable terminal sizes are shown in the *Submittal Schedule Details* and in the *Wire Size Capacities of Power Terminals* Table. The information provided is for connections to an input circuit breaker or disconnect switch, a motor terminal block, overload relay and ground lugs. The table also lists torque that should be applied when tightening the connections.



Wall Mount Internal View



Floor Mount Internal View

Engineering Data and Ratings Tables

Fuses

Drive input fuses are recommended to disconnect the drive from power in the event that a component fails in the drive's power circuitry. Recommended drive input fuse specifications are listed in the *Submittal Schedule Details* and in the *Fuse Ratings Table*. Fuse rating information is provided for customer reference.

Item	Catalog Number	Drive Input Fuse Ratings	
		Amps (600V)	Bussmann Type
1	ACS550-PD-08A8-4	15	KTK-R-15
2	ACS550-PD-015A-4	30	KTK-R-30

Terminal Sizes / Cable Connection Requirements

Power and motor cable terminal sizes and connection requirements are shown in the *Submittal Schedule Details* and in the *Terminal Sizes / Cable Connection Requirements Table*. The information provided below is for connections to input power and motor cables. These connections may be made to an input circuit breaker or disconnect switch, a motor terminal block, overload relay, and/or directly to bus bars and ground lugs. The table also lists torque that should be applied when tightening terminals and spacing requirements where multiple mounting holes are provided in the bus bar.

Item	Catalog Number	Circuit Breaker	Disconnect Switch	Terminal Block	Overload Relay	Ground Lug
1	ACS550-PD-08A8-4	N/A N/A	#10 7 in-lbs	#10 12 in-lbs	N/A N/A	#10 35 in-lbs
2	ACS550-PD-015A-4	N/A N/A	#8 7 in-lbs	#6 12 in-lbs	N/A N/A	#6 35 in-lbs

Heat Dissipation Requirements

The cooling air entering the drive must be clean and free from corrosive materials. The *Submittal Schedule Details* and the *Heat Dissipation Requirements table* below give the heat dissipated into the hot air exhausted from the drives. If the drives are installed in a confined space, the heat must be removed from the area by ventilation or air conditioning equipment.

Item	Catalog Number	Power Losses		Airflow	
		Watts	BTU/Hr	CFM	CM/Hr
1	ACS550-PD-08A8-4	127	433	26	44
2	ACS550-PD-015A-4	232	792	52	88

Dimensions and Weights

Dimensions and weights of the drives provided are given in the *Submittal Schedule Details* and in the *Dimensions and Weights Table*. The table also lists the applicable dimension drawings that include additional detail. Dimension drawings may be provided in the back of this submittal.

Item	Catalog Number	Height mm / in	Width mm / in	Depth mm / in	Weight kg / lbs	Dimension Drawing
1	ACS550-PD-08A8-4	729 / 28.7	198 / 7.8	283 / 11.2	15 / 32	3AUA0000008216 Sheet 1
2	ACS550-PD-015A-4	829 / 32.6	198 / 7.8	295 / 11.6	19 / 42	3AUA0000008218 Sheet 1

Schematics and Wire Diagrams

Detailed wiring diagrams and schematics may be included for the products covered in this submittal. Please reference the following ABB part numbers for the drawings included with this submittal:

Item	Catalog Number	Power Wiring	Connection Diagram	Dimension Detail
1	ACS550-PD-08A8-4	PD00S014PW-A	PCPDS014CC-A	3AUA0000008216 Sheet 1
2	ACS550-PD-015A-4	PD00S014PW-A	PCPDS014CC-A	3AUA0000008218 Sheet 1

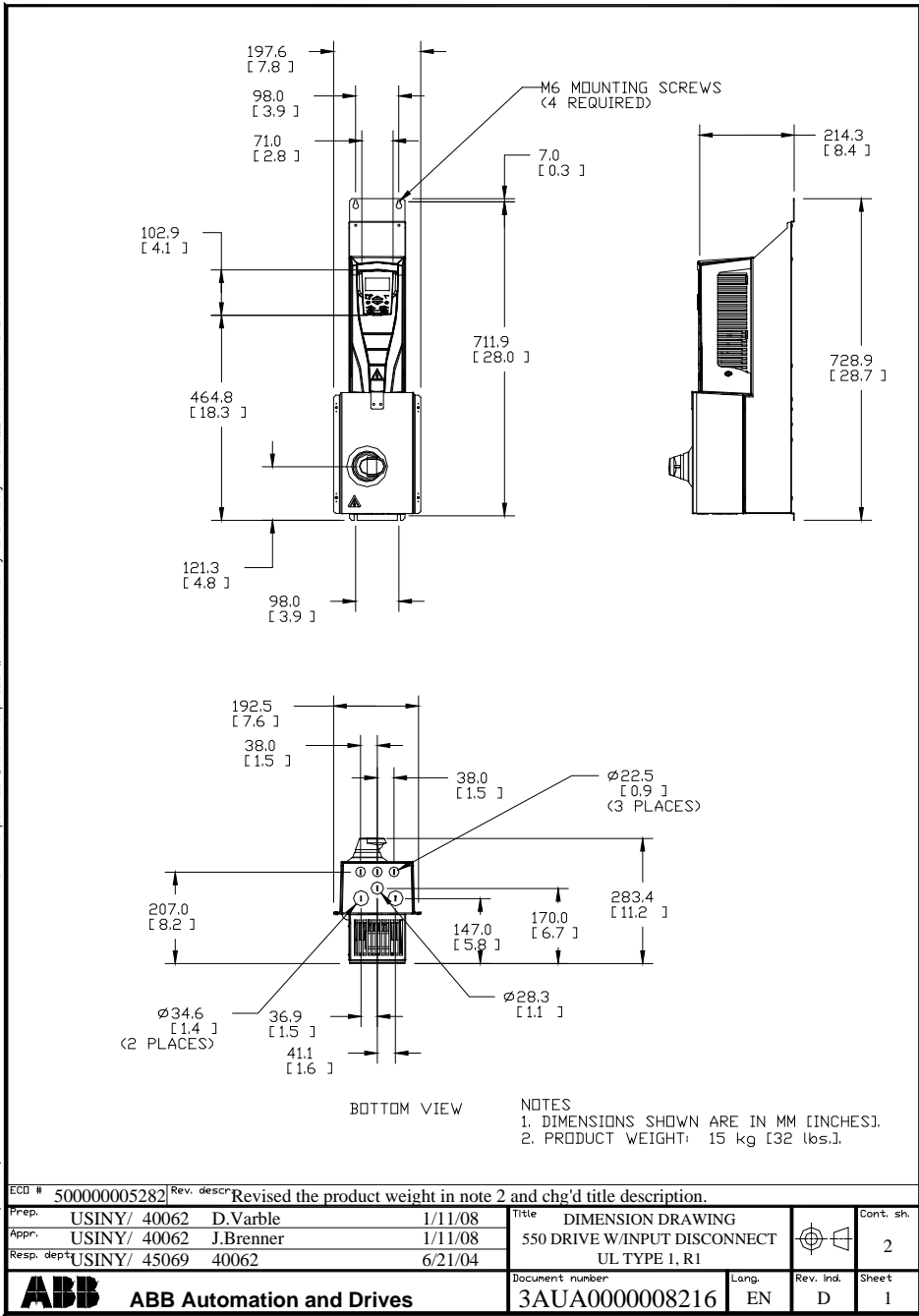
Product short Circuit Current Rating

Short circuit ratings shown below are as show on the device rating label.

Item	Catalog Number	Short Circuit Current Rating
1	ACS550-PD-08A8-4	100 kA
2	ACS550-PD-015A-4	100 kA

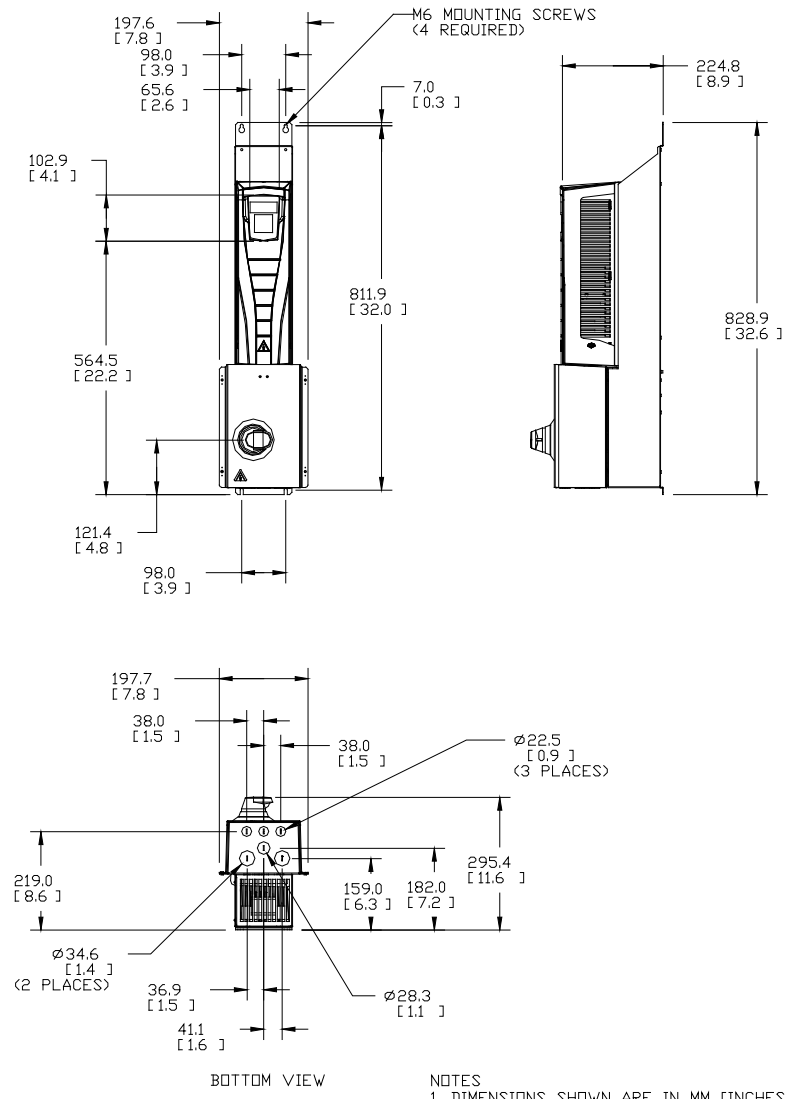
Dimension Drawing for

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 F-38UAD989502-d, rev. 1, 6-1-00



Dimension Drawing for

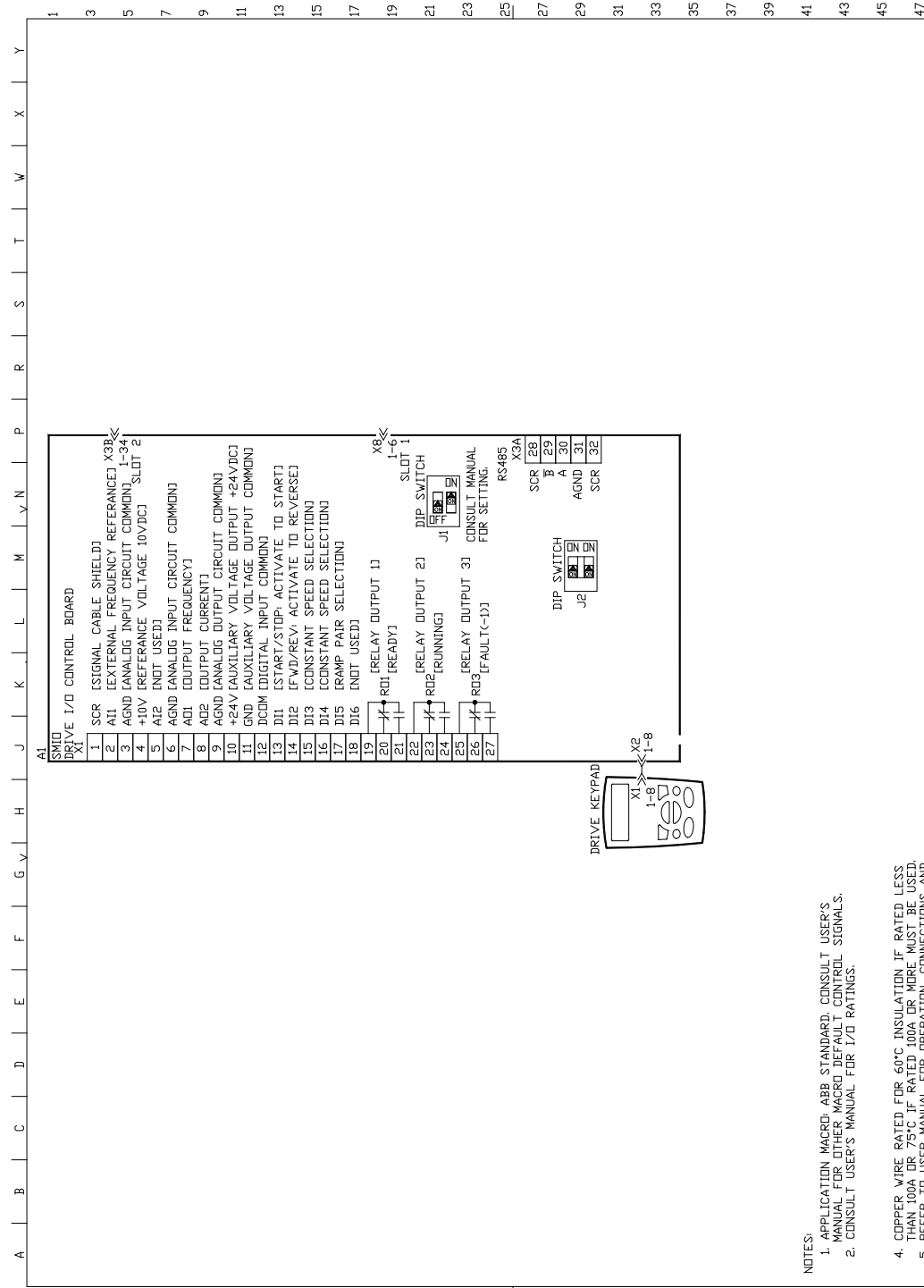
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 F-3BUA1986502-01, rev. 1, 6-1-00



NOTES
 1. DIMENSIONS SHOWN ARE IN MM [INCHES].
 2. PRODUCT WEIGHT: 19 kg [42 lbs.].

ECC # 50000005282		Rev. descr Revised the product weight in note 2 and chg'd title description.			
Prep.	USINY/ 40062	D.Varble	1/11/08	Title	DIMENSION DRAWING
Appr.	USINY/ 40062	J.Brenner	1/11/08		
Resp. dept	USINY/ 45069	40062	6/21/04		
ABB Automation and Drives				Document number	3AUA0000008218
				Lang.	EN
				Rev. ind.	D
				Sheet	1
				Cont. sh.	2

Connection Drawing for

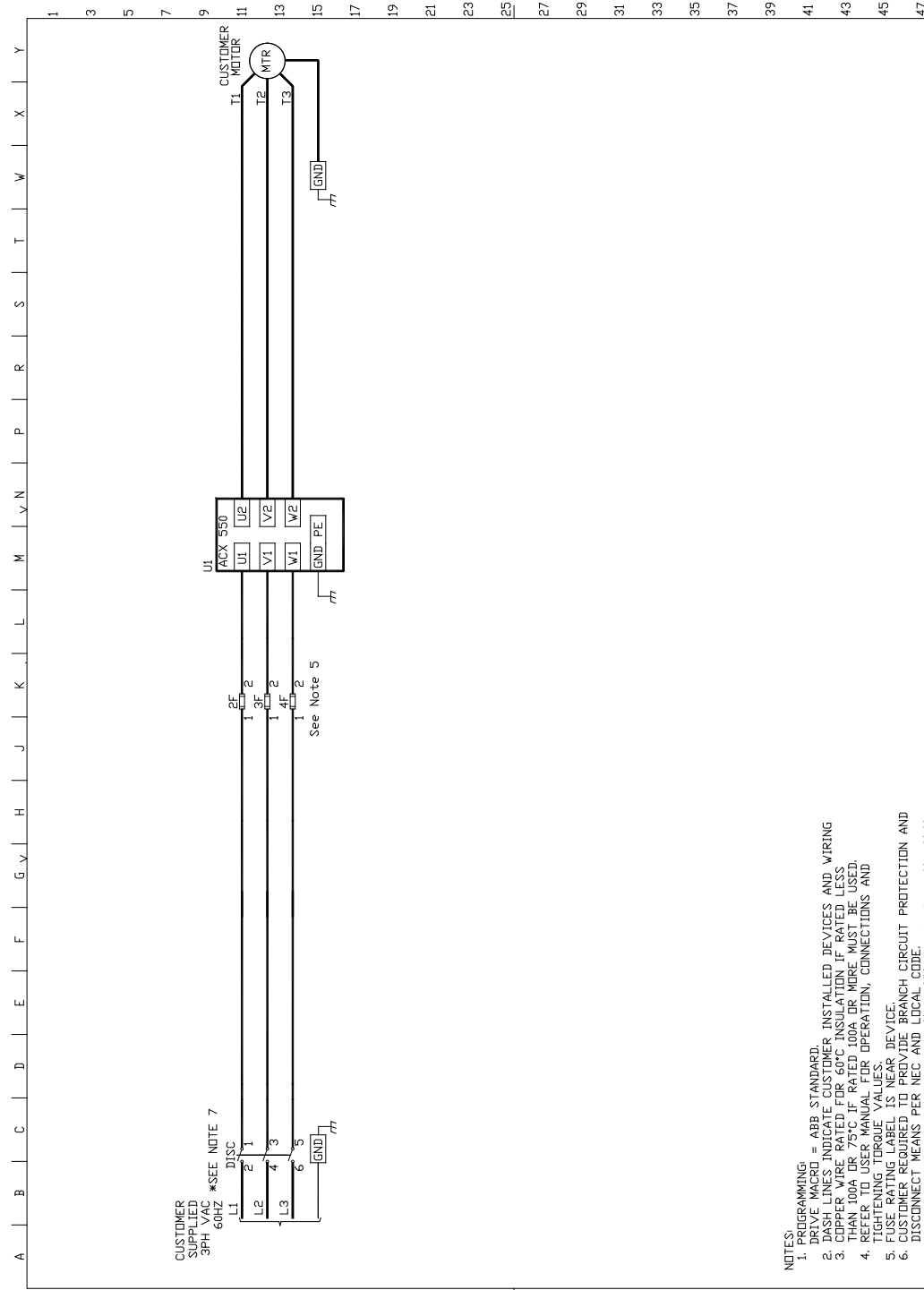


- NOTES:
1. APPLICATION MATED ABB STANDARD. CONSULT USER'S MANUAL FOR DIP SWITCH AND RELAY SIGNALS.
 2. CONSULT USER'S MANUAL FOR I/O RATINGS.

4. COPPER WIRE RATED FOR 60°C INSULATION IF RATED LESS THAN 100A OR 75°C IF RATED 100A OR MORE. MUST BE USED.
5. REFER TO USER MANUAL FOR OPERATION, CONNECTIONS AND TIGHTENING TORQUE VALUES.
6. CUSTOMER REQUIRED TO PROVIDE BRANCH CIRCUIT PROTECTION AND DISCONNECT MEANS PER NEC AND LOCAL CODE.

Rev	Description	Date	App'd	Project Name	Project No.	Project Date	Approved By	Prepared By	Check By	Reference Number	Sheet
L	ACS550 Drive I/O	06/23/09	DC	ACS550 Control Wiring Diagram	ACS550 DRIVE I/O	9/19/2007	Decree J. Truettner	Decree J. Truettner	Decree J. Truettner	ABB ACS550	3
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Power Drawing for



- NOTES:
1. PROGRAMMING = ABB STANDARD.
 2. DASH LINES INDICATE CUSTOMER INSTALLED DEVICES AND WIRING.
 3. THE DRIVE IS RATED FOR 100% DUTY. IF THE CUSTOMER LOAD IS MORE THAN 100% OF RATED LOAD OR MORE MUST BE USED.
 4. REFER TO USER MANUAL FOR OPERATION, CONNECTIONS AND TIGHTENING TORQUE VALUES.
 5. FUSE RATING LABEL IS NEAR DEVICE.
 6. CUSTOMER REQUIRED TO PROVIDE BRANCH CIRCUIT PROTECTION AND DISCONNECT MEANS PER NEC AND LOCAL CODE.
 7. SHORT CIRCUIT CURRENT: 100KA RMS SYMMETRICAL 480V MAXIMUM.

Rev	Description	Date	Appd	IC	IC Description	Project Name	Approved By	Prepared By	Date	Reference number	Sheet
L	SEE ECN 10003203	06/23/09			ACS550	ACS550 PACKAGED DRIVE INPUT SWITCH AND FUSES	J. Truesdiner	J. Truesdiner	9/19/2007	3AU0000014954	A
					Power	ABB Inc.	Rep. app'd				B

38U0980302-04 Rev. 0-01-09
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