energy Transfer Solutions, LLC

DuPont E315 Powerhouse
CT Replacement

Wilmington, DE

SUBMITTAL DATA
FOR: (RECORD)

REVISION: (1)

DATE: August 3, 2017

PURCHASER: E.I DuPont de Nemours & Co.
Wilmington, DE

ENGINEER: Pennoni Associates
Newark, DE

Equipment Summary

Four (4) Evapco Model UT-228-926-S Dual Cell Cooling Towers (TAG: CT-99-001-002, CT998-001-002)

Submitted By: Michael J. Haggarty Jr. P.E.
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Kennett Square, PA
19348

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Michael J. Haggarty Jr. P.E.
Energy Transfer Solutions, LLC.
425 McFarlan Road
Kennett Square, PA, 19348, USA
1-610-444-0333 Fax: 1-610-444-0332
Date: 5/23/17

Project: DuPont E315 CT Replacement

SCOPE OF WORK & QA CLARIFICATIONS
CT-997-001, CT-997-002, CT-998-001, CT-998-002

Four (4) EVAPCO Model UT-228-926-S induced draft counter-flow cooling towers, each unit with CTI Certified performance to cool 8,164 GPM of water from 95ºF to 85ºF at 78.00ºF entering wet bulb temperature.

Technical Data for each unit:

# Fan Motors (HP):	(4)	60.00
Air Flow (CFM):		554,389
Inlet Pressure Drop (psi):		2.8
Evaporated Water Rate (gpm):		65.3
Drift Loss:		0.001%
Operating Weight (lbs):		84,000
Shipping Weight (lbs):		50,340

Standard Features included with offer:

- CTI Certified performance
- IBC Compliant up to 1g & 60 psf.
- Louver Access Door
- Fan Motor: Inverter Duty Premium Efficient
- G-235 Galvanized Steel Casing

Options Included:

- 5-Probe Electronic Water Level Control
- 304 Stainless Steel Cold Water Basin
- Motor Davit with Base – 1 Per Motor
- Vibration Switch – 1 Per Motor
- Baldor Motor Brushes – Mounted on outside of Motor housing Shaft Grounding Rings for Use with VFDs – 1 Per Motor
- Bottom Suction Connections
- Bottom Equalizer Connection (4) 12 inches
- Bottom Inlet Connections
- Side Bypass Connections
- Custom External Service Platform
    - Custom Platform Per Attached Sketch
    - Requires Customer Provided External Support & Customer Supplied Stair Access\
    - Evapco Provided additional details for handrail system to Customer under separate submission.
- Super Low Sound Fan

- Water Silencers
- Heater Option
    - Steam Heater Option – Includes internal steam heater for each unit, Qty (2) total, (1) per cell. Temperature Controls of Steam Heaters are provided & installed by others including Thermostat, Temp Sensor & Bulb well and Low Water Cutoff, the Steam control Valve and steam specialties, traps etc. are also provided by others.
- Sump Sweeper Piping with High Flow Eductors – Factory installed sump sweeper piping including high flow educator nozzles, per Lakos recommended layout.
- Flanged Connections for Cooling Tower (SS Flanges 125lb – Shipped Attached)
    - Qty (10)/Unit Flanged Connections for pipe sizes greater than 4"
        - (2) 14" Inlets, (2) 14" Outlets, (2) 14" Equalizer, (2) 12" Bypass, (2) 6" Sump Sweeper Outlets
    - Qty (10)/Unit Flanged Connection for pipe sizes equal to or smaller than 4"
        - (2) 4" Sump Sweeper Inlets, (2) 4" Drain, (2) 4" Overflow, (2) 3" Steam Inlets, (2) 3" Steam Outlets

Items Discussed and Agreed to by DuPont/Design/Construction/Evapco:

1. Aegis grounding rings are provided. No action required. (I agree) – Changed to Baldor Motor Brushes.

2. Evapco dynamically balances with fan mounted in assembly of the cooling tower. Evapco balances to G6.3. DuPont requesting balance to G2.5 and will investigate if this is doable. Evapco vibration tests to ensure not exceeding 0.22 inches per second. -- Evapco will go one more round on the dynamic balance; however there is no guarantee that will get us to G2.5. No cost impact. (Agreed)

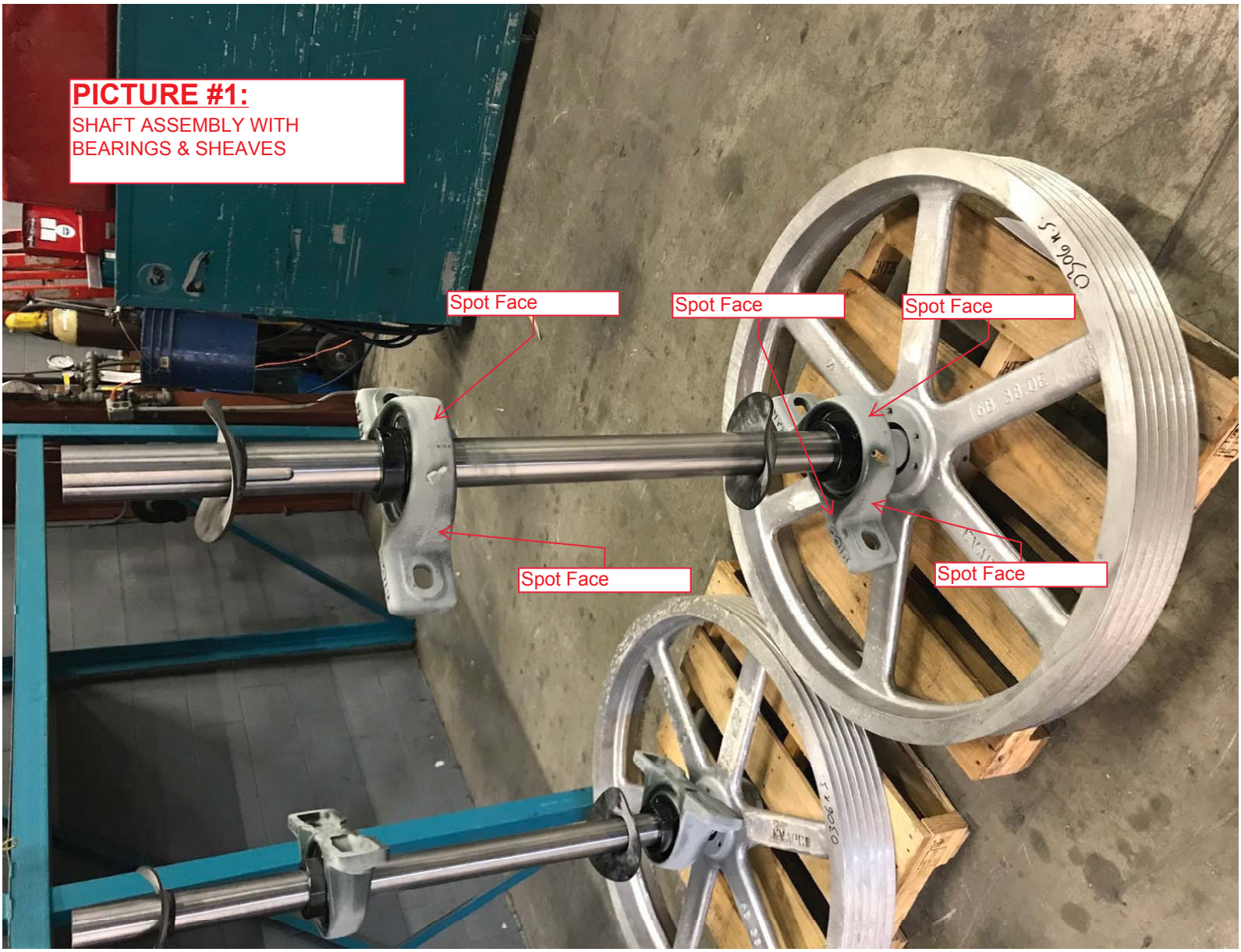
3. Evapco will support the fan shaft at both bearing locations and check runout does not exceed 0.003 TR at mid point. – Evapco will check runout to ensure it does not exceed 0.003 TR. (Agreed)

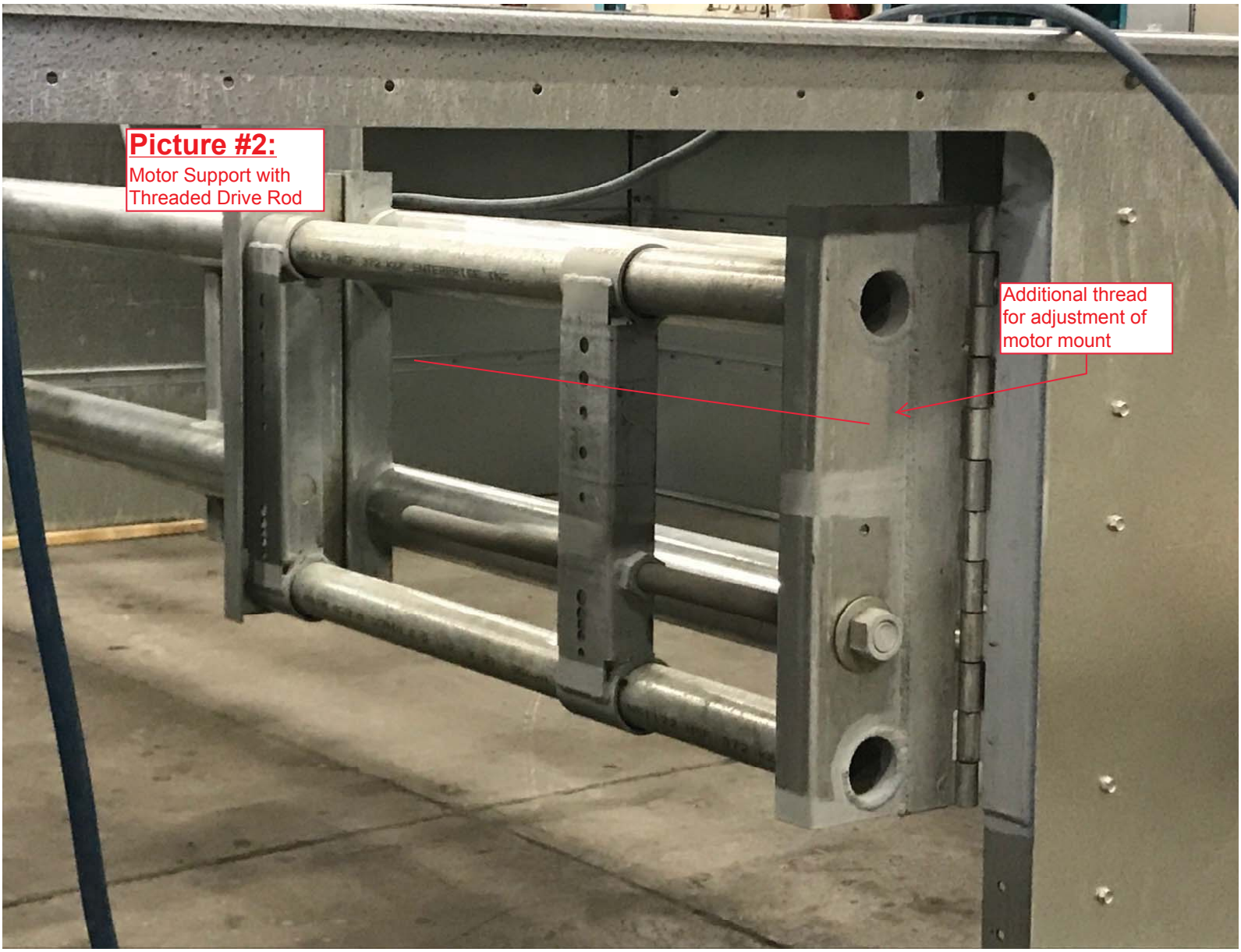
4. Ball bearings are being provided and are acceptable.

5. DuPont requires that all cut edges of CT casing be deburred to ensure to sharp edges are left on the unit. This is a very important safety issue for DuPont and must be addressed. -
- Evapco will double check all edges and deburr. (Agree, the edges need to be deburred)

6. Add second motor base adjustment threaded rod and locking nut. -- Evapco believes this is possible(Picture #2 Below); however it has not been built/tested. Prior to shipping Evapco would like to physically build one and verify there are no issues. There will be no additional cost for this item. (Agree)

7. Each CT Cell will be provided with a fitting for a thermowell for basin temperature sensing. The thermowell and temperature sensor will be supplied by A.C.E.


PICTURE #1:
SHAFT ASSEMBLY WITH
BEARINGS & SHEAVES
Spot Face
Spot Face
Spot Face
Spot Face
Spot Face


Picture #2:
Motor Support with Threaded Drive Rod
Additional thread for adjustment of motor mount

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Warranty and Startup

Date: August 3, 2017 **ETS Project #:** E1705-013
Project: Dupont E315 Powerhouse CT Replacement
Contractor: KBR - General Contractor, M. Davis & Son, Inc. - Mechanical Contractor
Manufacturer: Evapco, Inc.
Equipment: Cooling Towers
Quantity: Four (4) Dual Cell Units
Submitted For: Record - Rev #1

Please see attached Evapco, Inc. Limited Product Warranty for specific details. Warranty and startup coverage is as follows:

- Standard 1st year parts only warranty (troubleshooting and nuisance calls not included).
- Startup Service *is* included.

Optional Extended Warranties

- 1st year labor warranty *is* included by ETS LLC.
- 5-year Mechanical Equipment & Structural warranty *is* included.

COOLING TOWER EXPRESS WARRANTY – EXTENDED 5 YEAR/5 YEAR

Applies to Evapco Cooling Tower Model No. UT-228-926-S **Serial No.** 17-812002-05

MANUFACTURER'S EXPRESS WARRANTY

EVAPCO warrants the mechanical equipment components consisting of the fan(s), bearings, pulleys, shafts, belts, gear reducer(s), drive shaft(s), drive couplings, electric fan motor(s) and mechanical equipment supports to be free from defects in materials and workmanship for a period of **five (5) years** from the date of shipment by Evapco. Any component not listed above is warranted against defects in materials and workmanship for a period of **five (5) years** from the date installation is completed in accordance with good manufacturing practices, but not to exceed **sixty six (66) months** from the date of shipment from EVAPCO. This five (5) year product warranty includes all structural components, fill and fill supports, drift eliminators and their supports, air inlet louvers or screens and their supports. All electrical components are warranted against defects in material and workmanship for a period of **one (1) year** from date of installation is completed in accordance with good manufacturing practices, but not to exceed **eighteen (18) months** from the date of shipment from EVAPCO. **Labor costs associated with any repair work performed under the terms of the warranty are NOT included within the warranty**. Damage caused by misuse of the product, including without limitation failure to properly install or maintain the product, is NOT covered by the warranty. This warranty is predicated on unit operation and maintenance in accordance with EVAPCO's recommended operation and maintenance procedures.

In addition to the unit warranty above, EVAPCO warrants the thermal performance of the unit as shown on the certified drawings delivered to the customer for a period of one-year from the date installation is completed in accordance with good engineering practices, but in no event shall such warranty period exceed eighteen (18) months from the date the unit is shipped by EVAPCO. If after installation and start-up there is any question regarding thermal performance of the equipment, at the owner's request EVAPCO will send its engineers to the jobsite to conduct a performance test. This test may be observed by the owner and the consulting engineer or by their authorized representatives. If the results of the evaluation show the equipment to be deficient, EVAPCO will make the necessary repairs or alterations to correct the deficiency subject to the limitations set forth below. If the equipment is found to be performing in accordance with its certified capacity, the owner will reimburse EVAPCO for all direct expenses incurred in connection with such performance test.

LIMITATION OF LIABILITY

THE SOLE REMEDY FOR BREACH OF THE EXPRESS WARRANTIES DESCRIBED HEREIN SHALL BE REPAIR OR REPLACEMENT OF THE EQUIPMENT BY EVAPCO, OR REFUNDING THE PURCHASE PRICE SET FORTH ON THE PURCHASE ORDER. IT SHALL BE IN EVAPCO'S SOLE DISCRETION AS TO WHETHER REPAIR, REPLACEMENT OR REFUND IS THE OFFERED REMEDY. IF EVAPCO DECIDES TO MAKE REPAIRS, EVAPCO HAS THE OPTION OF COMPLETING ALL NECESSARY REPAIRS ITSELF, OR AUTHORIZING A THIRD PARTY TO PERFORM SUCH REPAIRS AT EVAPCO'S EXPENSE. EVAPCO IS NOT RESPONSIBLE FOR ANY REPAIR WORK PERFORMED BY A THIRD PARTY THAT EVAPCO DID NOT PRE-APPROVE IN WRITING. EVAPCO IS ONLY RESPONSIBLE FOR COSTS THAT PERTAIN TO REPAIR OR REPLACEMENT OF EQUIPMENT SUPPLIED BY EVAPCO (i.e., EVAPCO IS NOT RESPONSIBLE FOR REPLACEMENT OR MODIFICATION OF PIPING, SUPPORTING STEEL, ELECTRICAL WIRING, MOTOR STARTERS OR "IN AND OUT" COSTS SUCH AS THIRD PARTY LABOR, CRANE OR OTHER EQUIPMENT FEES).

NOTWITHSTANDING ANYTHING ELSE IN THIS DOCUMENT, EVAPCO'S LIABILITY OF ANY KIND WHATSOEVER SHALL NOT EXCEED THE PURCHASE PRICE SET FORTH ON THE PURCHASE ORDER. UNDER NO CIRCUMSTANCES SHALL EVAPCO BE LIABLE FOR LOST PROFITS, LOST SAVINGS, PERSONAL INJURIES, INCIDENTAL DAMAGES, ECONOMIC LOSS, PROPERTY DAMAGE, OR ANY OTHER CONSEQUENTIAL, INDIRECT, INCIDENTAL, OR PUNITIVE DAMAGES, EVEN IF EVAPCO HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. In addition, Evapco shall not be responsible for any injuries or damages of any kind whatsoever under any theory of tort to the extent the injuries or damage are caused by misuse of the product by buyer or any third party.

DISCLAIMER OF IMPLIED WARRANTIES

OTHER THAN THE EXPRESS MANUFACTURER'S WARRANTY DESCRIBED HEREIN, THE UNIT IS SOLD "AS IS" AND THERE ARE NO OTHER WARRANTIES. EVAPCO HEREBY DISCLAIMS AND EXCLUDES ALL IMPLIED WARRANTIES OF ANY KIND WHATSOEVER, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY, THAT THE UNIT IS FIT FOR A PARTICULAR USE OR PURPOSE, THAT THE UNIT IS FIT FOR A PARTICULAR APPLICATION OR ENVIRONMENT, AND ANY WARRANTIES THAT MIGHT OTHERWISE ARISE OUT OF A COURSE OF DEALING BETWEEN THE PARTIES OR USAGE OF TRADE.

EVAPCO, INC
P.O. Box 1300
Westminster, Maryland 21158, USA

Telephone (410) 756-2600
FAX (410) 756-6450

July 28, 2017

E.I. DuPont de Nemours & Co. Inc.
Experimental Station
200 Powder Mill Road
Wilmington, DE 19803

RE: Purchase Order # 6501730659
EVAPCO Order # 17-812002-812005
(4) UT- 228-926-S Cooling Towers
Project - DuPont E315 Powerhouse CT Replacement

Dear Customer:

Enclosed is the revised certified submittal data for the above referenced order. The revised submittal data is provided to show the following changes:

July 28, 2017
- **Added dimensions to external service platform drawing as requested.**

July 10, 2017
- **Tagged units on certified drawing(s).**
- **Relocated sump sweeper outlet connection(s).**

June 23, 2017
- **Motors provided with Baldor Brushes.**

June 08, 2017
- **Added (2) ¾ in FPT extra connections.**

April 19, 2017
- **Changed sweeper, inlet & outlet connections to flanged.**
- **Added a drawing to submittal for steam coil connection location.**
- **Relocated equalizer connections and added a sludge ring to the bottom.**
- **Changed make-up connection to 2".**

This order is being manufactured at our Taneytown factory using the highest quality materials and will be assembled in accordance with EVAPCO's strict quality control guidelines. All EVAPCO® products undergo a mechanical test prior to shipment to ensure proper field performance.

The basin sections of this order are in our production schedule for shipment on or before 10/2/2017 and 10/9/2017; however, the remaining sections (casings and fans) are in our production schedule for shipment on or before 1/15/2018, 1/22/2018 & 1/26/2018. If you experience any delays in the project, which would affect your shipment requirements, please contact your local EVAPCO representative, Energy Transfer Solutions, Inc. - Delaware, as soon as possible.

Thank you for selecting EVAPCO as your supplier. We appreciate your business and look forward to working with you in the future.

Sincerely,

EVAPCO, INC

Troy Reineck
Troy Reineck
Product Manager

ENCLOSURE(S)

cc: Energy Transfer Solutions, Inc. - Delaware - Greg Haggarty

July 28, 2017

EVAPCO® SUBMITTAL PACKAGE

PROJECT	DUPONT E315 POWERHOUSE CT	UNIT	(4) UT- 228-926-S COOLING TOWERS
CUSTOMER	E.I. DUPONT DE NEMOURS & CO. INC.	P.O.	6501730659
EVAPCO SERIAL NO.	17-812002-812005	ENGINEER	PENNONI ASSOCIATES

SUBMITTAL DATA ENCLOSED

DESCRIPTION	DOCUMENT NUMBER
PERFORMANCE AND MECHANICAL SPECIFICATIONS	AT12ST-ST
UNIT CERTIFIED DRAWING	T3BI282660-DRB-003 [C9]
UNIT CERTIFIED DRAWING	CUSTOMER PLAN VIEW
ACCESSORY DRAWING	SCT32826DA-001 [C4]
ACCESSORY DRAWING	MDAIBFTML-DC
ELECTRIC WATER LEVEL CONTROL	D2IX0000-A
ELECTRIC WATER LEVEL CONTROL	ELT3MW2C-001
SUMP SWEEPER PIPING ARRANGEMENT	LSWT32824DA-010 [C9]
EXTERNAL SERVICE PLATFORM	PLT32826-09 [C13]
VIBRATION SWITCH (SINGLE SPEED)	V1AU0000-EE
CERTIFICATE OF COMPLIANCE	IBCIDCOC001.pdf
WARRANTY	WARRANTY
GUARANTEE OF THERMAL PERFORMANCE	AOS2636

EVAPCO…TAKING QUALITY AND SERVICE TO A HIGHER LEVEL!

Date 6/23/2017

PERFORMANCE AND MECHANICAL SPECIFICATIONS

EVAPCO® COOLING TOWER

PROJECT:	DuPont E315 Powerhouse CT Replacement		
CUSTOMER:	E.I. DuPont de Nemours & Co. Inc.		
ENGINEER:	Pennoni Associates		
UNIT:	(4) UT- 228-926-S Cooling Towers		
CUSTOMER P.O.	17413BW	**EVAPCO SERIAL NO.**	17-812002-812005
CAPACITY:	Each Unit 8164 GPM	95 °F IN / 85 °F OUT / 78 °F E.W.B.	
FAN MOTOR:	Each Unit (4) 60 HP	**ELEC. SPEC.**	460/3/60
INLET PRESSURE:	2.5 PSIG	**DRIVES SIZED FOR 0" ESP.**	

UNIT TYPE	Factory assembled, induced draft, counterflow cooling tower.
CONSTRUCTION	All cold water basin components including vertical supports and air inlet louver frames are constructed of type 304 Stainless Steel. All factory basin seams in the cold water basin are welded for water tight construction. Casing, channels and angle supports are constructed of heavy gauge mill hot-dip galvanized steel. All galvanized steel is coated with a minimum of 2.35 ounces of zinc per square foot of area (G-235 designation). During fabrication, all galvanized steel panel edges are coated with a 95% pure zinc-rich compound.
IBC COMPLIANCE	The unit structure is designed, analyzed, and constructed in accordance with the latest edition of International Building Code (IBC) for: Ip = 1.00, Sds = .84, P = 119 psf.
PAN STRAINER*	All type 304 stainless steel construction with large area removable perforated screens.
ACCESS	Hinge mounted door in the upper casing for fan drive and water distribution system access. Removable louver panels on all four sides of the unit for pan and sump access.
FAN SHAFT	Solid shaft of ground and polished steel. Exposed surface coated with rust preventative.
FAN SHAFT BEARINGS	Heavy-duty, self-aligning ball type bearings with extended lubrication lines to grease fittings located on access door frame. Bearings are designed for a minimum L-10 life of 75,000 hours.
FAN MOTOR	Totally enclosed, ball bearing type electric motor(s) suitable for moist air service. Motor(s) are Premium Efficient, Class F insulated, 1.15 service factor design. Inverter rated per NEMA MG1 Part 31.4.4.2 and suitable for variable torque applications and constant torque speed range with properly sized and adjusted variable frequency drives.

FAN DRIVE	**The fan drive is a multi-groove, solid back, reinforced neoprene V-belt type with taper lock sheaves designed for 150% of the motor nameplate horsepower. Fan and motor sheaves are constructed of aluminum alloy.**
FILL	**Polyvinyl Chloride (PVC) of cross-fluted design. PVC sheets are bonded together for strength and durability. Fill is self-extinguishing for fire resistance, has a flame spread of 5 under A.S.T.M. designation E-84-81a, and is resistant to rot, decay and biological attack.**
WATER DISTRIBUTION SYSTEM	**Precision molded ABS, large orifice spray nozzles utilizing fluidic technology for superior water distribution over the fill media and to minimize water distribution system maintenance. Spray header and branches are Schedule 40 Polyvinyl Chloride (PVC) for corrosion resistance with steel connection to attach external piping. Branches have threaded end caps to facilitate debris removal.**
ELIMINATORS	**The eliminators are constructed entirely of Polyvinyl Chloride (PVC) in easily handled sections. Design incorporates three changes in air direction and limits the water carryover to a maximum of 0.001% of the circulating water rate.**
AIR INLET LOUVERS	**The air inlet louvers are constructed from UV inhibited polyvinyl chloride (PVC) and incorporate a framed interlocking design that allows for easy removal of louvers for access to the entire basin area for maintenance. The louvers have a minimum of two changes in air direction and are of a non-planar design to prevent splash-out, block direct sunlight and debris from entering the basin. (Patent Pending)**
SUPER LOW SOUND AXIAL PROPELLER FAN(S)	**Unit is provided with SUPER Low Sound Fan(s). Fans are high efficiency axial propeller type with non-corrosive FRP hub and blade construction. The one-piece molded heavy duty fan construction utilizes a forward swept blade design for superior sound quality. Each fan is statically balanced and installed in a closely fitted cowl with venturi air inlet for maximum fan efficiency. The fan cowl is covered with a heavy gauge hot dip galvanized steel fan guard.**
PASSIVATION	**All evaporative cooling equipment utilizing galvanized construction requires initial passivation to maximize the service life of the equipment. The sites water treatment vendor should be contacted several weeks prior to adding any water to the system to provide a passivation plan along with associated passivation plan costs.**
ELECTRONIC WATER LEVEL CONTROL PACKAGE	**Electronic water level control package with five (5) stainless steel water level sensors ((1) one high level, one (1) high level alarm, one (1) low level, one (1) low level alarm and one (1) ground) with a NEMA 4X enclosure mounted in a cleanable Schedule 40 PVC external standpipe with slow closing solenoid valve(s) and "y" strainer(s).**
WATER SILENCERS	**Internal PVC pan water silencers mounted in basin.**
***OMITTED ON UNITS FOR REMOTE SUMP OPERATION**	

SPECIAL REMARKS:

- **5-Probe Electronic Water Level Control Package.**
- **Bottom Suction Connection(s).**
- **(2) 14 in Flanged equalizer connection(s).**
- **Unit(s) provided with External Service Platform(s) with Vertical Ladder(s).**
- **Flanged inlet connection (ship mounted).**
- **Flanged outlet connection (ship mounted).**
- **Motor davit and base.**
- **Unit provided with 304 stainless steel steam coil. Pressure and temperature controls by others.**
- **SUPER Low Sound Axial Propeller Fan(s).**
- **Unit provided with vibration cutout switch(es), mounted (wiring and sensitivity adjustment by others).**
- **Water silencers.**
- **Unit provided with Schedule 80 PVC sump sweeper piping consisting of one (1) inlet and one (1) outlet connection per pan section with high flow eductors.**
- **(2) 12 in Flanged bypass connection(s).**
- **Bottom Inlet.**
- **IBC Compliant up to 1g.**
- **Louver access door.**
- **Delete flume box.**
- **Fan Motor(s) to be supplied with shaft grounding rings.**
- **(2) ¾ in FPT extra connections.**
- **Motors provided with Baldor Brushes.**

Evapco, Inc.
Sound Data

Sound Pressure Levels (SPL) in dB RE 0.0002 Microbar
Sound Power Levels (PWL) in dB RE 10^{-12} Watt

MODEL: UT 228-926-S
MOTOR: 60 Hp (45 kW)
MOTORS: 4
SPEED: Full Speed

Sound Reduction Options
Super Low Sound Fan
Water Silencer

MULTI-CELL DATA

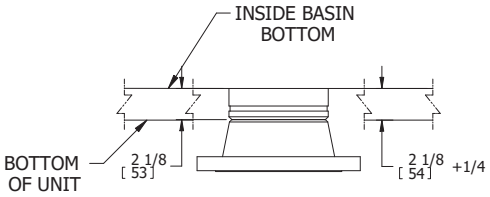
	SOUND PRESSURE LEVEL										
	End		Mtr. Side		End		Opp. Mtr. Side		Top		SOUND
	5 ft	50 ft	5 ft	50 ft	5 ft	50 ft	5 ft	50 ft	5 ft	50 ft	POWER
BAND	(1.5 m)	(15 m)	(1.5 m)	(15 m)	(1.5 m)	(15 m)	(1.5 m)	(15 m)	(1.5 m)	(15 m)	LEVEL
63 HZ	79	74	79	74	79	74	79	74	82	66	105
125 HZ	76	69	76	69	76	69	76	69	82	70	101
250 HZ	70	60	70	59	70	60	70	59	75	67	94
500 HZ	68	57	68	56	68	57	68	56	72	61	90
1 kHZ	68	54	67	54	68	54	67	54	70	58	87
2 kHZ	65	51	65	51	65	51	65	51	67	56	84
4 kHZ	64	48	63	46	64	48	63	46	65	53	81
8 kHZ	65	48	65	46	65	48	65	46	65	54	81
dBA	74	60	73	60	74	60	73	60	76	65	94

REMARKS: 1. Sound Pressure Levels are according to CTI Standard ATC-128.
2. Sound Power Levels are calculated according to the Small Units Section 8.
3. Sound from free-field conditions over a reflecting plane with +/- 2 db(A) tolerance.
4. Noise levels can increase with variable frequency drives depending on the drive manufacturer and the drive configuration.
5. Complete unit sound data with all fans operating and listed sound reduction option(s).

UNIT		EVAPCO, INC.	DWG #	REV.
COOLING TOWER			T3BI282660-DRB-003	2
MODEL #	SCALE		SERIAL #	DATE
AT-228-926-S	N.T.S.		17-812002-812005	07/10/2017

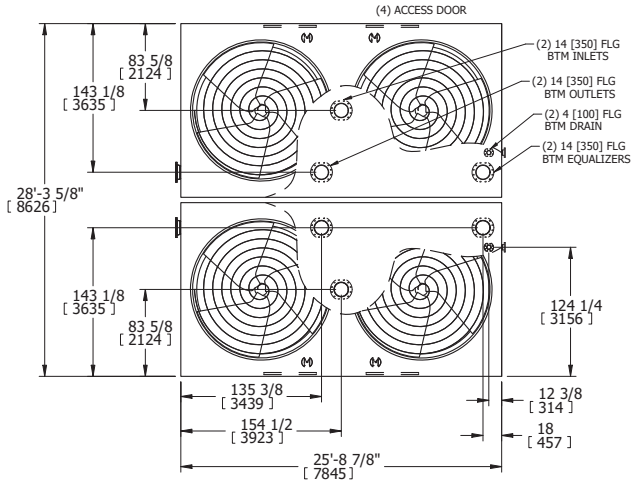
NOTES:
1. (M)- FAN MOTOR LOCATION
2. HEAVIEST SECTION IS FAN SECTION
3. MPT DENOTES MALE PIPE THREAD
   FPT DENOTES FEMALE PIPE THREAD
   BFW DENOTES BEVELED FOR WELDING
   FLG DENOTES 150# RF FLANGE
4. +UNIT WEIGHT DOES NOT INCLUDE
   ACCESSORIES (SEE ACCESSORY DRAWINGS)
5. MAKE-UP WATER PRESSURE
   20 psi MIN [137 kPa], 50 psi MAX [344 kPa]

CT-997-001
CT-997-002
CT-998-001
CT-998-002

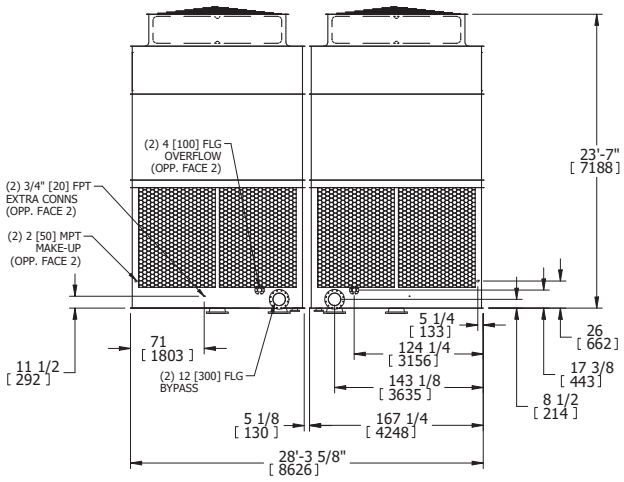


TYPICAL BOTTOM INLET CONNECTION DETAIL

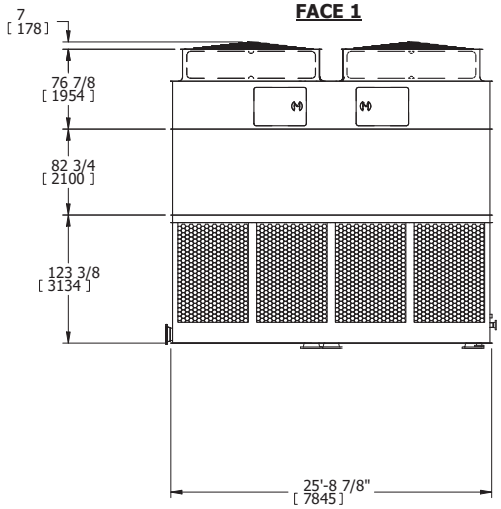
FACE 2
PLAN VIEW



FACE 1



FACE 2

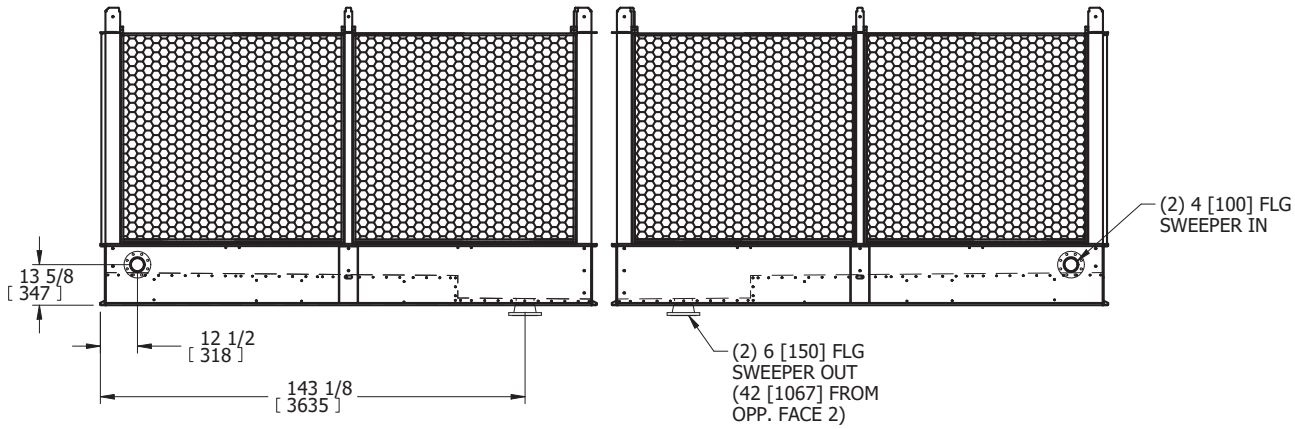


FACE 1

SHIPPING WEIGHT	OPERATING WEIGHT	HEAVIEST SECTION WEIGHT	NO. OF SHIPPING SECTIONS	DRAWN BY
57960 Lb+ [26290] Kg+	88400 Lb+ [40098] Kg+	11120 Lb+ [5044] Kg+	6	JTG

EVAPCO, INC.

TITLE	UNIT:	DWG. #
HIGH FLOW EDUCTOR ARR	28X24,26 INDUCED DRAFT UNITS	LSWT32824DA-010

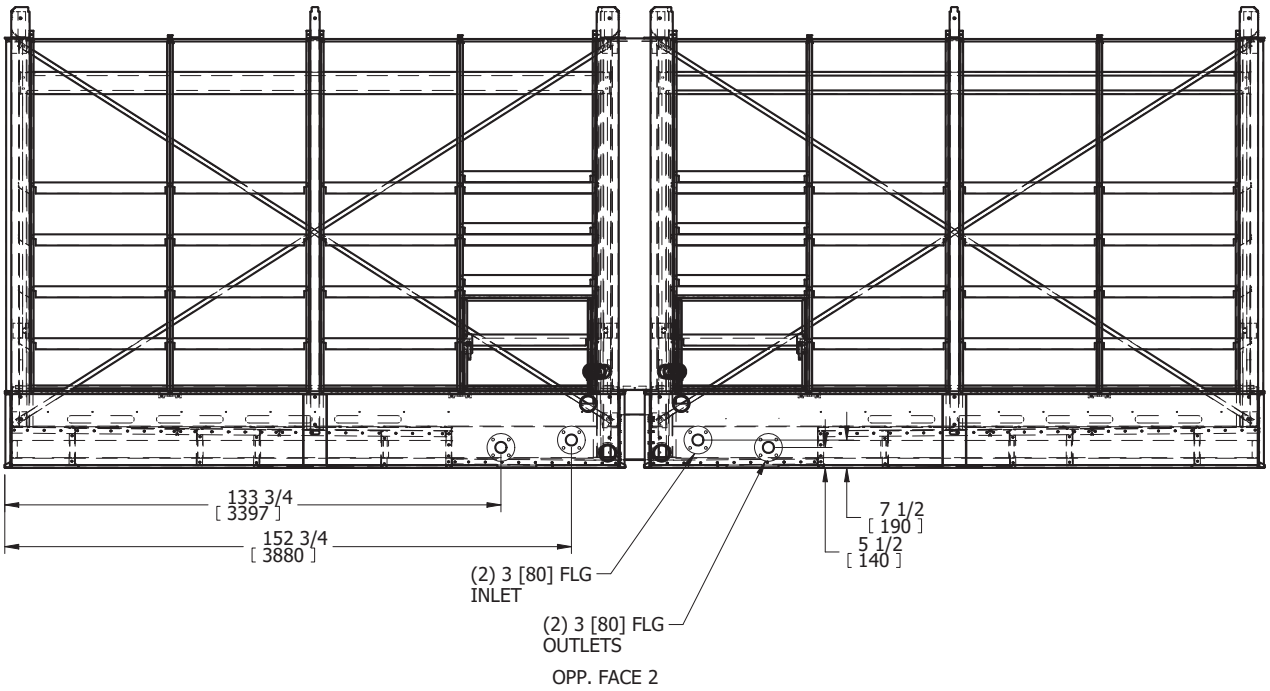


OPP FACE 2

NOTES:
1. FLG DENOTES 150# RF FLANGE
2. UNIT CONNS ARE NOT SHOWN FOR CLARITY.
3. DIMENSIONS LISTED ARE IN ENGLISH AND [METRIC].

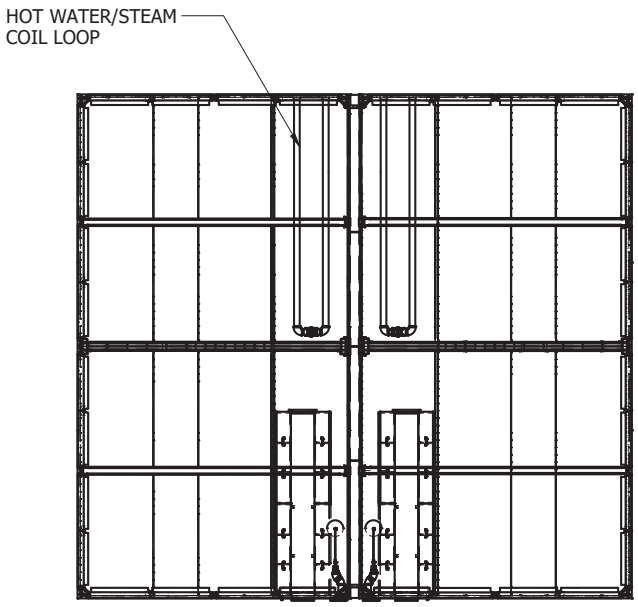
EVAPCO, INC.

TITLE	UNIT:	DWG. #
HOT WATER/STEAM COIL ARR.	28X26 INDUCED DRAFT TOWER	SCT32826DA-001



NOTES:
1. FLG DENOTES 150# RF FLANGE
2. HOT WATER/STEAM COIL CIRCUIT IS MADE WITH SCH 40 STEEL PIPE.
3. HOT WATER OR STEAM IS PROVIDED BY OTHERS.
4. THE HOT WATER/STEAM COIL IS SIZED TO MAINTAIN 40F PAN WATER TEMPERATURE AT 0F AMBIENT. TEMP/PRESSURE CONTROLS SUPPLIED BY OTHERS.

PART NO.	REV. NO.
068-20122F	-



STAINLESS STEEL OPTION

PART NO.	RAW MAT'L

NOTE:
1. ALL 1/4Ø HOLES SHOULD BE 11/32Ø
2. USE STAINLESS STEEL N.C. SET-UP SHEET

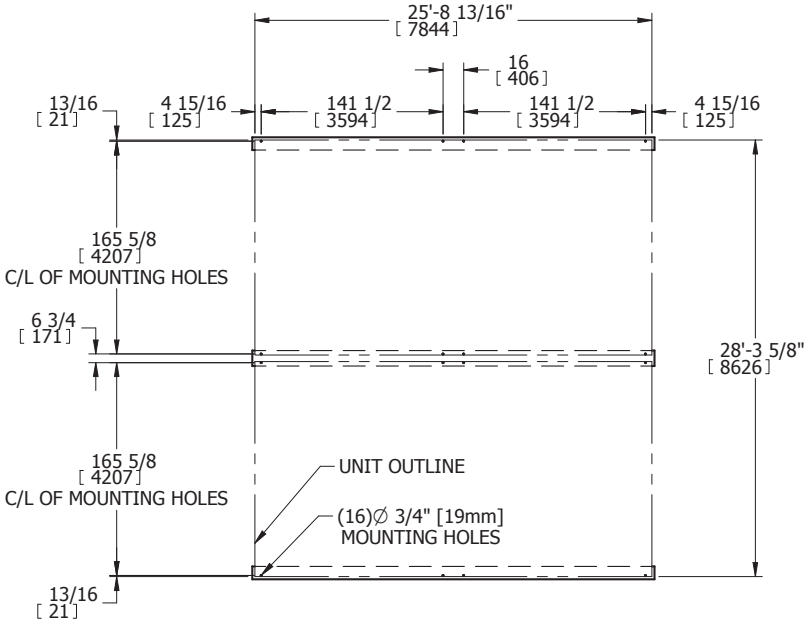
REVISIONS

EVAPCO, INC.

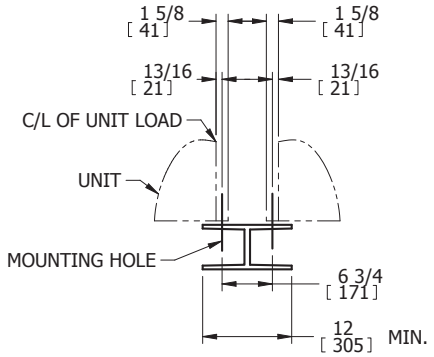
TITLE: AT3 28X26		
GA	RAW MAT'L	CUT SIZE
DATE 1/26/17	SCALE N.T.S.	N.C. INFO.
DRAWN BY RW	CH'KD BY	PART NO. 068-20122F / REV. NO. -
NEXT ASSEMBLY:		

EVAPCO, INC.

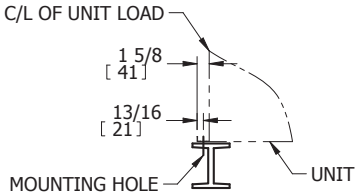
TITLE	UNIT:	DWG. #
STEEL SUPPORT CONFIGURATION	28x26 INDUCED DRAFT UNITS	SLIX2826-DB



PLAN VIEW



CENTER ARRANGEMENT



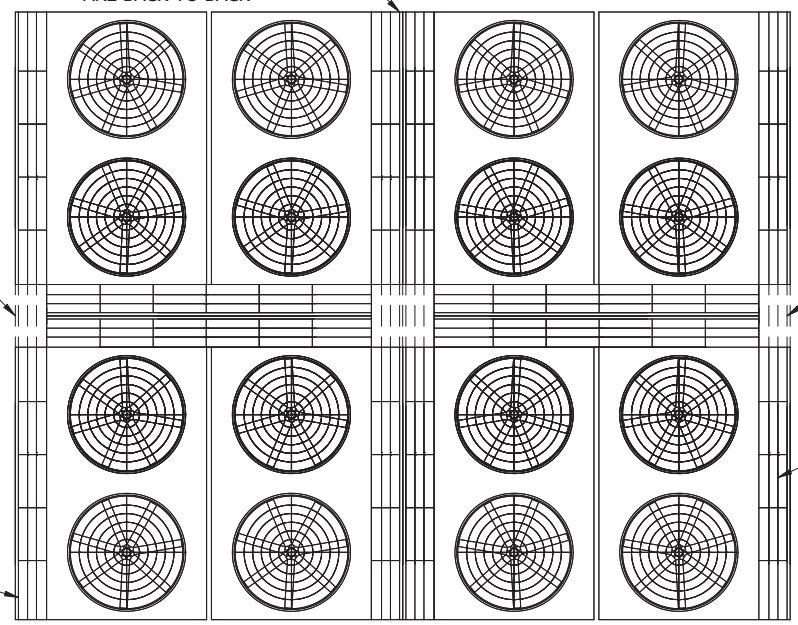
TYPICAL END VIEW

NOTES:

1. BEAMS SHOULD BE SIZED IN ACCORDANCE WITH ACCEPTED STRUCTURAL PRACTICES. MAXIMUM DEFLECTION OF BEAM UNDER UNIT TO BE 1/360 OF UNIT LENGTH NOT TO EXCEED 1/2" [13mm].
2. DEFLECTION MAY BE CALCULATED BY USING 55% OF THE OPERATING WEIGHT AS A UNIFORM LOAD ON EACH BEAM. SEE CERTIFIED PRINT FOR OPERATING WEIGHT.
3. SUPPORT BEAMS AND ANCHOR HARDWARE ARE TO BE FURNISHED BY OTHERS. ANCHOR HARDWARE TO BE ASTM-A325 5/8" [16mm] BOLT OR EQUIVALENT.
4. BEAMS MUST BE LOCATED UNDER THE FULL LENGTH OF THE PAN SECTION.
5. SUPPORTING BEAM SURFACE MUST BE LEVEL. DO NOT LEVEL THE UNIT BY PLACING SHIMS BETWEEN THE UNIT MOUNTING FLANGE AND THE SUPPORTING BEAM.
6. ANCHORING ARRANGEMENT SHOWN HAS A MAXIMUM WIND RATING OF 60 PSF [2.87 KPa] ON CASED VERTICAL SURFACES.
7. THE FACTORY RECOMMENDED STEEL SUPPORT CONFIGURATION IS SHOWN. CONSULT THE FACTORY FOR ALTERNATE SUPPORT CONFIGURATIONS.
8. UNIT SHOULD BE POSITIONED ON STEEL SUCH THAT THE ANCHORING HARDWARE FULLY PENETRATES THE BEAM'S FLANGE AND CLEARS THE BEAM'S WEB.
9. ALL 28 X 24 MODELS ARE MULTIPLE CELL UNITS. OPERATING WEIGHT OF EACH CELL IS FOUND BY DIVIDING TOTAL OPERATING WEIGHT BY THE NUMBER OF CELLS.
10. WHEN VIBRATION ISOLATION IS REQUIRED FOR MULTIPLE CELL UNITS, THE VIBRATION ISOLATORS (BY OTHERS) MUST BE LOCATED UNDER THE SUPPORTING STEEL BEAMS AND NOT BETWEEN THE SUPPORTING STEEL BEAMS AND THE UNIT.
11. THE CENTER BEAM SHOULD HAVE A MINIMUM WIDTH OF 12" [305mm].

EVAPCO, INC.

TITLE	UNIT:	DWG. #
PLAN VIEW	ALL 28 X 26 AT COOLING TOWER UNITS	17-812002-812005



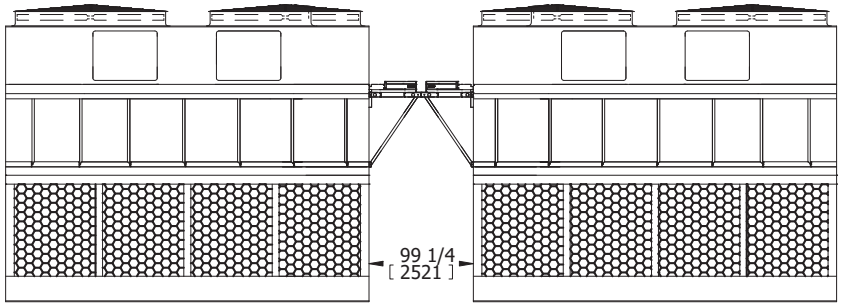
STAIRWAY SUPPLIED AND SUPPORTED BY OTHERS

FACE 2

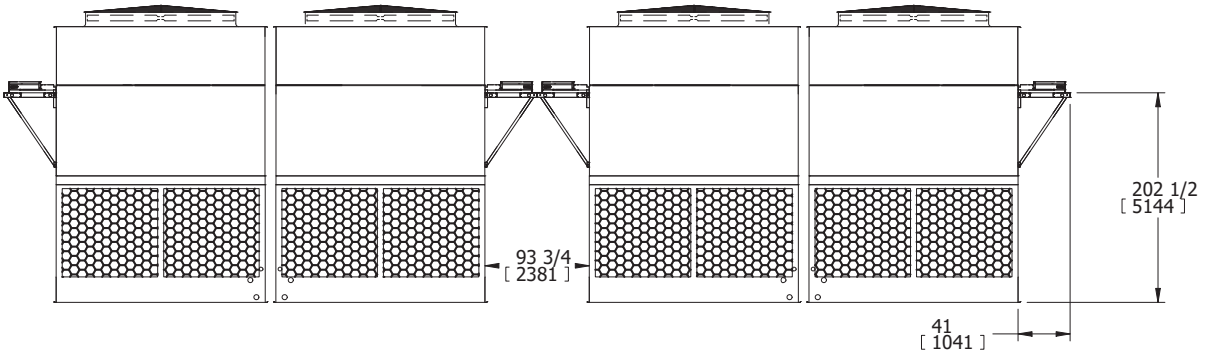
NOTE: NO HANDRAILING FACTORY SUPPLIED CUSTOMER WILL DESIGN THEIR OWN

EVAPCO, INC.

TITLE	UNIT:	DWG. #
EXTERNAL SERVICE PLATFORM	ALL 28 X 26 AT COOLING TOWER UNITS	PLT32826-09

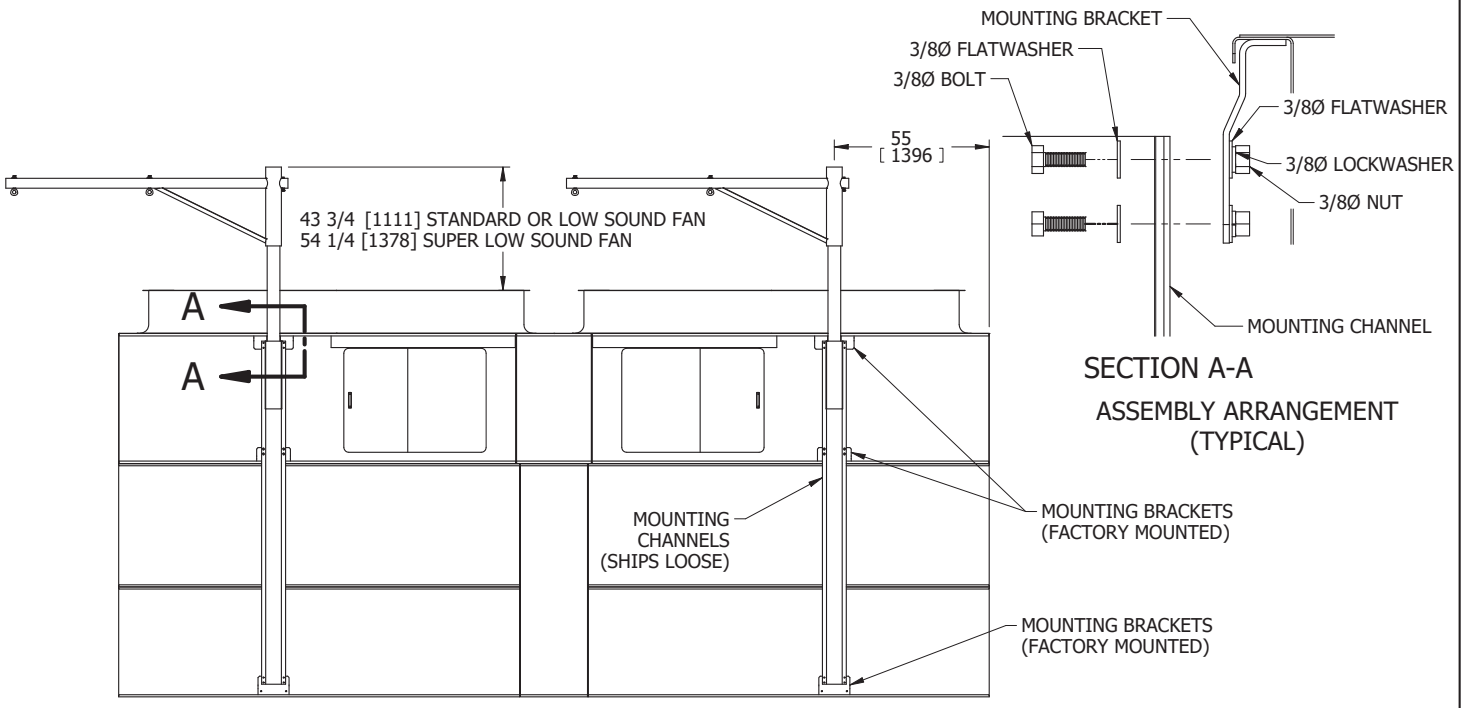


FACE 1



FACE 2

NOTES:
1. ALL PLATFORMS WILL SHIP LOOSE. FIELD INSTALLATION BY OTHERS IS REQUIRED.
2. HANDRAILING NOT SUPPLIED BY FACTORY
3. REFER TO RIGGING PACK FOR PLATFORM MOUNTING INSTRUCTIONS.
4. THE PLATFORM ASSY. WEIGHS 28750 LBS [13068KG]
5. ANY POSSIBLE PIPEWORK AND/OR OBSTRUCTIONS CONFLICTING WITH THE EXTERNAL SERVICE PLATFORM WILL BE THE CUSTOMER'S RESPONSIBILITY FOR RELOCATION.
6. PLATFORM SPANS BETWEEN CELLS WILL MEET IN THE CENTER. PLATFORMS WILL BE SUPPORTED BY COOLING TOWERS. OPEN AREAS WILL NEED EXTERNAL SUPPORT OTHERS.



SECTION A-A

ASSEMBLY ARRANGEMENT
(TYPICAL)

BELT DRIVE
FOR UNITS WITH AND WITHOUT PLATFORMS

NOTES:

A. Ⓜ= MOTOR

B. DAVIT IS DESIGNED FOR RAISING OR LOWERING EVAPCO FAN MOTORS OR FANS AND GEARS AS UNIT IS EQUIPPED. DO NOT USE FOR ANY OTHER PURPOSE.

C. DAVIT IS DESIGNED TO PIVOT FREELY AND CAN BE REMOVED FROM ITS MOUNTING BASE FOR STORAGE.

D. DIMENSIONS LISTED AS FOLLOWS: ENGLISH [METRIC]
IN [mm]

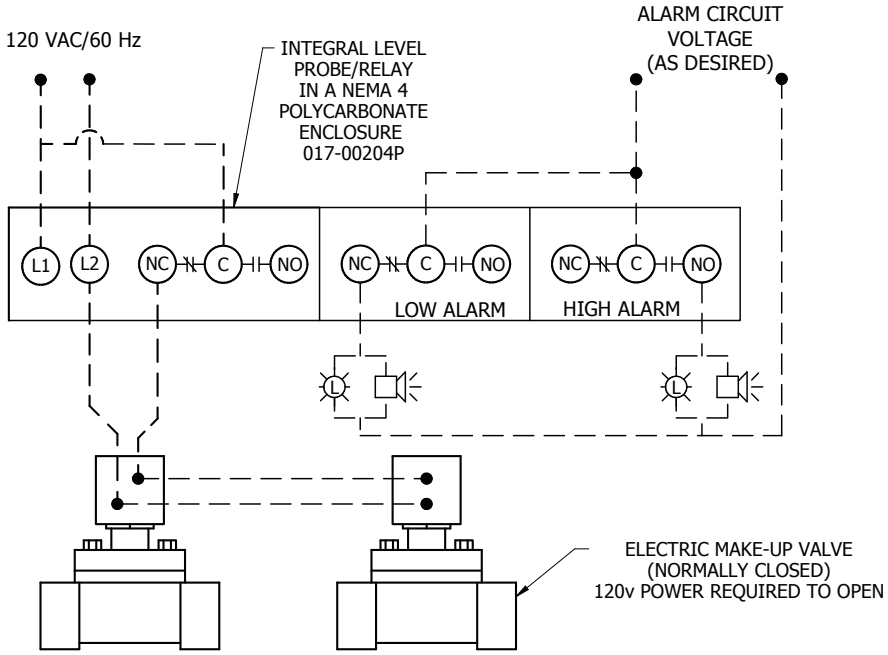
evapco

REMOVABLE DAVIT

MDAIBFTML-DC

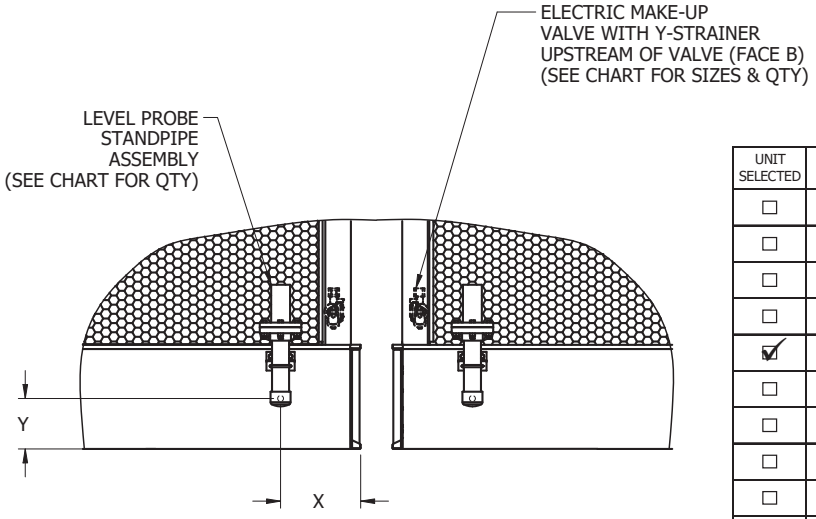
EVAPCO, INC.

TITLE	DESCRIPTION:	DWG. #
ELECTRIC WATER LEVEL CONTROL WIRING	INDUCED DRAFT TOWER - 5 PROBE, 2 VALVES	D2IX0000-A



NOTES:
1. DASHED LINES INDICATE WIRING BY OTHERS.
2. TYPICAL WIRING PER PROBE.

UNIT		DWG. #
COOLING TOWER	**EVAPCO, INC.**	ELT3MW2C-001
TITLE: ELECTRIC WATER LEVEL CONTROL LOCATION		SCALE: N.T.S. / DRAWN BY: JTG



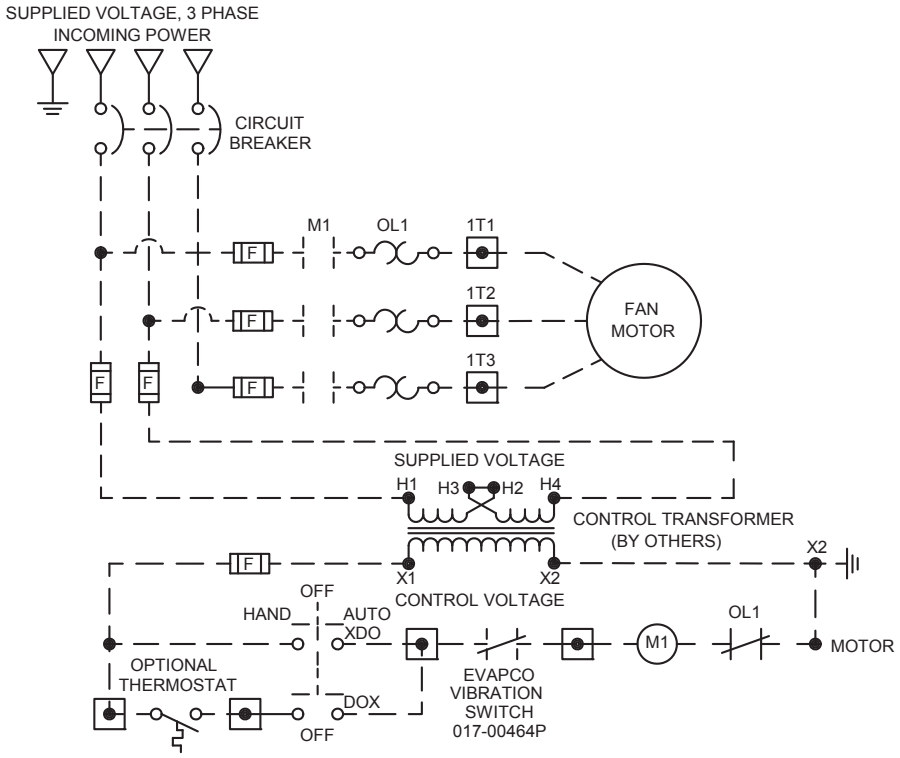
OPP. FACE 2
IND CELL OPER

UNIT SELECTED	BOX SIZE	VALVE			Y-STRAINER			STANDPIPE		
		QTY	SIZE	PART NO.	QTY	SIZE	PART NO.	QTY	X	Y
☐	17x9 - 12	2	1" [25]	017-00153P	2	1" [25]	017-00280P	2	1'-8" [508]	8 1/2" [216]
☐	17x14	2	1 1/2" [40]	017-00154P	2	1 1/2" [40]	017-00281P	2	1'-8" [508]	8 1/2" [216]
☐	24x18 - 20	2	2" [50]	017-00155P	2	2" [50]	017-00282P	2	1'-8" [508]	8 1/2" [216]
☐	28x24	2	2" [50]	017-00155P	2	2" [50]	017-00282P	2	1'-8" [508]	8 1/2" [216]
☑	28x26	2	2" [50]	017-00155P	2	2" [50]	017-00282P	2	2'-0" [610]	8 1/2" [216]
☐	4.8MX10.5	2	1" [25]	017-00153P	2	1" [25]	017-00280P	2	1'-8" [508]	8 1/2" [216]
☐	4.8MX14	2	1 1/2" [40]	017-00154P	2	1 1/2" [40]	017-00281P	2	1'-8" [508]	8 1/2" [216]
☐	6MX12	2	1 1/2" [40]	017-00154P	2	1 1/2" [40]	017-00281P	2	1'-8" [508]	8 1/2" [216]
☐	6MX18	2	2" [50]	017-00155P	2	2" [50]	017-00282P	2	1'-8" [508]	8 1/2" [216]
☐	12x8.5	2	1" [25]	017-00153P	2	1" [25]	017-00280P	2	1'-8" [508]	8 1/2" [216]
☐	15x8.5	2	1" [25]	017-00153P	2	1" [25]	017-00280P	2	1'-8" [508]	8 1/2" [216]

NOTES:
1. PIPING BY OTHERS.
2. LEVEL PROBE STANDPIPE ASSEMBLY, MAKE-UP VALVE AND Y-STRAINER TO SHIP LOOSE FOR FIELD MOUNTING BY OTHERS.
3. SEE CERTIFIED PRINT FOR MAKE-UP LOCATION.
4. STANDPIPE TO BE HEAT TRACED AND INSULATED FOR WINTER OPERATION (BY OTHERS).
5. THE ELECTRONIC WATER LEVEL CONTROL ON THIS UNIT WILL MAINTAIN THE PROPER OPERATING WATER LEVEL. HOWEVER, BEFORE INITIAL START-UP THE UNIT MUST BE MANUALLY FILLED TO WITHIN 1" OF THE OVERFLOW.
6. FOR EASE OF MAINTENANCE, A SHUT-OFF VALVE IS RECOMMENDED UPSTREAM OF Y-STRAINER.
7. DIMENSIONS LISTED AS FOLLOWS: ENGLISH FT-IN
   [METRIC] [mm]

EVAPCO, INC.

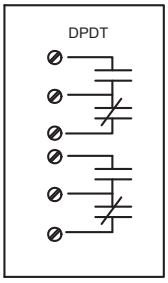
TITLE	DESCRIPTION:	DWG. #
VIBRATION SWITCH	SINGLE SPEED	V1AU0000-EE



SWITCH CONTACT RATING:

15 AMPS, 125, OR 480 Vac; 1/8 HP, 125 Vac; 1/4 HP, 250 Vac; 1/2 AMP, 125 Vdc; 1/4 AMP, 250 Vdc.

WIRING DIAGRAM:



NOTES:

1. DASHED LINES INDICATE WIRING(BY OTHERS)

ADJUSTMENT

ADJUST THE SWITCH SO THAT DURING FULL SPEED START-UP AND UNDER NORMAL CONDITIONS, THE CONTACTS DO NOT TRIP. FIRST, WITH THE MOTOR OFF, TURN THE ADJUSTMENT SCREW COUNTER-CLOCKWISE (MORE SENSITIVE DIRECTION) UNTIL THE SWITCH TRIPS. NEXT, TURN THE ADJUSTMENT SCREW CLOCKWISE 1/8 TURN (LESS SENSITIVE DIRECTION). RESET THE SWITCH BY DEPRESSING THE PUSH-BUTTON RESET LOCATED ON TOP OF THE SWITCH. START THE MOTOR ON FULL SPEED. IF THE MOTOR TRIPS THE SWITCH, THEN TURN THE ADJUSTMENT SCREW CLOCKWISE AN ADDITIONAL 1/8 TURN. RESET THE SWITCH AND START THE MOTOR AGAIN. REPEAT THE ABOVE PROCEDURE UNTIL THE MOTOR CONTINUES TO RUN.

BALDOR
A MEMBER OF THE ABB GROUP

BALDOR • RELIANCE

Product Information Packet

EVAPCO

B678921

60HP,1780RPM,3PH,60HZ,364T,A36062M,TEAO

Part Detail							
Revision:	M	**Status:**	PRD/A	**Change #:**		**Proprietary:**	No
Type:	AC	**Prod. Type:**	A36062M	**Elec. Spec:**	A36WG0762	**CD Diagram:**	416820-002
Enclosure:	TEAO	**Mfg Plant:**		**Mech. Spec:**		**Layout:**	611741-694
Frame:	364T	**Mounting:**	W7	**Poles:**	04	**Created Date:**	11-18-2010
Base:		**Rotation:**	R	**Insulation:**	F	**Eff. Date:**	12-06-2016
Leads:	3#4,6#6					**Replaced By:**	
Literature:		**Elec. Diagram:**					

Nameplate NP2422L

SPEC NO.	B678921		**CAT.NO.**			**FRAME**	364T		
HP	60	**VOLTS**	230/460	**PHASE**	3	**DESIGN**	B	**TYPE**	P
RPM	1780	**AMPS**	136/68	**HZ**	60	**AMB**	40	**SF**	1.15
DRIVE END BEARING	65BC03JGG30A		**DUTY**	CONT		**INSUL.CLASS**	F		
OPP D.E. BEARING	65BC03JGG30A		**ENCL**	TEAO	**CODE**	G			
SER.NO.									
	10-429P								
						MOTOR WEIGHT	867		

Parts List

Part Number	Description	Quantity
SA211778	SA B678921	1.000 EA
RA199007	RA B678921	1.000 EA
000613006PU	N/P (RELEASE QTY 10,000) UL CSA LABLE	1.000 EA
000692000CY	N/P	1.000 EA
000692000VD	LABEL WARNING	1.000 EA
NP2422L	E-PACT XT, EXTRA TOUGH IEEE-45, SS,	1.000 EA
004824003CAB	WILKO PAINT 772.61	0.250 GA
033775004EA	DRSCR #6-1/4 304 S.S.	4.000 EA
004824015A	GREASE POLYREX EM	1.000 LB
032018010CK	HHCS 3/8-16X1-1/4 PLTD.	4.000 EA
032018012DK	HHCS 1/2-13X1-1/2 PLTD.	2.000 EA
032018012DK	HHCS 1/2-13X1-1/2 PLTD.	4.000 EA
032018024CK	HHCS 3/8-16X3 PLTD.	3.000 EA
032018024CK	HHCS 3/8-16X3 PLTD.	3.000 EA
085922073B	BRKT 360 085922072WCC KB	1.000 EA
033512008LB	HHTTS 1/4-20X1 PLATED	4.000 EA
034000014AB	WSH ID.406 OD.812 TH.065	4.000 EA
034180034HA	KEY 5/8X5/8X4-1/4 L	1.000 EA
034690001AB	SQHDPLG, COND	1.000 EA
034690001AB	SQHDPLG, COND	1.000 EA
034690002AB	"unbulked" PPLG 1/4" PLTD.	1.000 EA
034690002AB	"unbulked" PPLG 1/4" PLTD.	1.000 EA
085922073B	BRKT 360 085922072WCC KB	1.000 EA
048897010DG	PLUG,ODE BRKT - 360	1.000 EA

Parts List (continued)

Part Number	Description	Quantity
065776000C	TERBD 320-400	1.000 EA
067053000B	GASK 320-400	1.000 EA
076708000BB	C/B - 360	1.000 EA
076709000A	C/B - 360	1.000 EA
410700004F	WSHR	1.000 EA
415000103D	T/LUG #4AWG-1/0AWG W/HOLE FOR .250 BOLT	1.000 EA
418150003A	GREASE FITTING CAP	1.000 EA
415038029A	250/280 MOUNTING BRKT	1.000 EA
415038029B	250/280 MOUNTING BRKT	1.000 EA
034017018AB	LCKW 5/8"	2.000 EA
033102018AG	NUT 5/8-11 PLATED	2.000 EA
032018012EK	HHCS 5/8-11X1-1/2L PLTD.	2.000 EA
HW4600G56	DOME SLINGER, 7.875 OD X 2.370/2.300 ID	1.000 EA
415045002E	SLGR	1.000 EA
418151057A	PLASTIC DRAIN,ODE BRKT	1.000 EA
034690001AB	SQHDPLG, COND	1.000 EA
421948032	LABEL, MYLAR	1.000 EA
604797064C	2"X4"-24"	2.000 EA
034600035AA	BUSH 3 TO 2-1/2 BLACK	1.000 EA
000692000FF	N/P	1.000 EA
415034014J	SPSCR	2.000 EA
604797064C	2"X4"-24"	1.000 EA
604797064C	2"X4"-24"	1.000 EA
604797064C	2"X4"-24"	1.000 EA

033512004LB	HHTTS 1/4-20X1/2 PLTD.	1.000 EA

REL. S.O.	FRAME	HP	TYPE	PHASE/ HERTZ	RPM	VOLTS
	364T	60	P	3/60	1780	230/460

AMPS	DUTY	AMB °C/ INSUL.	S.F.	NEMA DESIGN	CODE LETTER	ENCL.
136/68	CONT	40/F	1.15	B	G	TEAO

E/S	ROTOR	TEST S.O.	TEST DATE	STATOR RES.@25 °C OHMS (BETWEEN LINES)
492281	418141035YE	---	---	.0277/.110

PERFORMANCE

LOAD	HP	AMPERES	RPM	% POWER FACTOR	% EFFICIENCY
NO LOAD	0	20.1	1800	4.67	0
1/4	15.0	25.8	1795	58.6	93.0
2/4	30.0	37.5	1791	78.7	95.2
3/4	45.0	51.9	1786	85.0	95.3
4/4	60.0	68.0	1781	87.0	95.0
5/4	75.0	85.1	1775	87.5	94.3

SPEED TORQUE

	RPM	TORQUE % FULL LOAD	TORQUE LB.-FT.	AMPERES
LOCKED ROTOR	0	181	320	430
PULL UP	720	161	285	395
BREAKDOWN	1703	251	445	244
FULL LOAD	1781	100	177	68.0

AMPERES SHOWN FOR 460. VOLT CONNECTION. IF OTHER VOLTAGE CONNECTIONS ARE AVAILABLE, THE AMPERES WILL VARY INVERSELY WITH THE RATED VOLTAGE

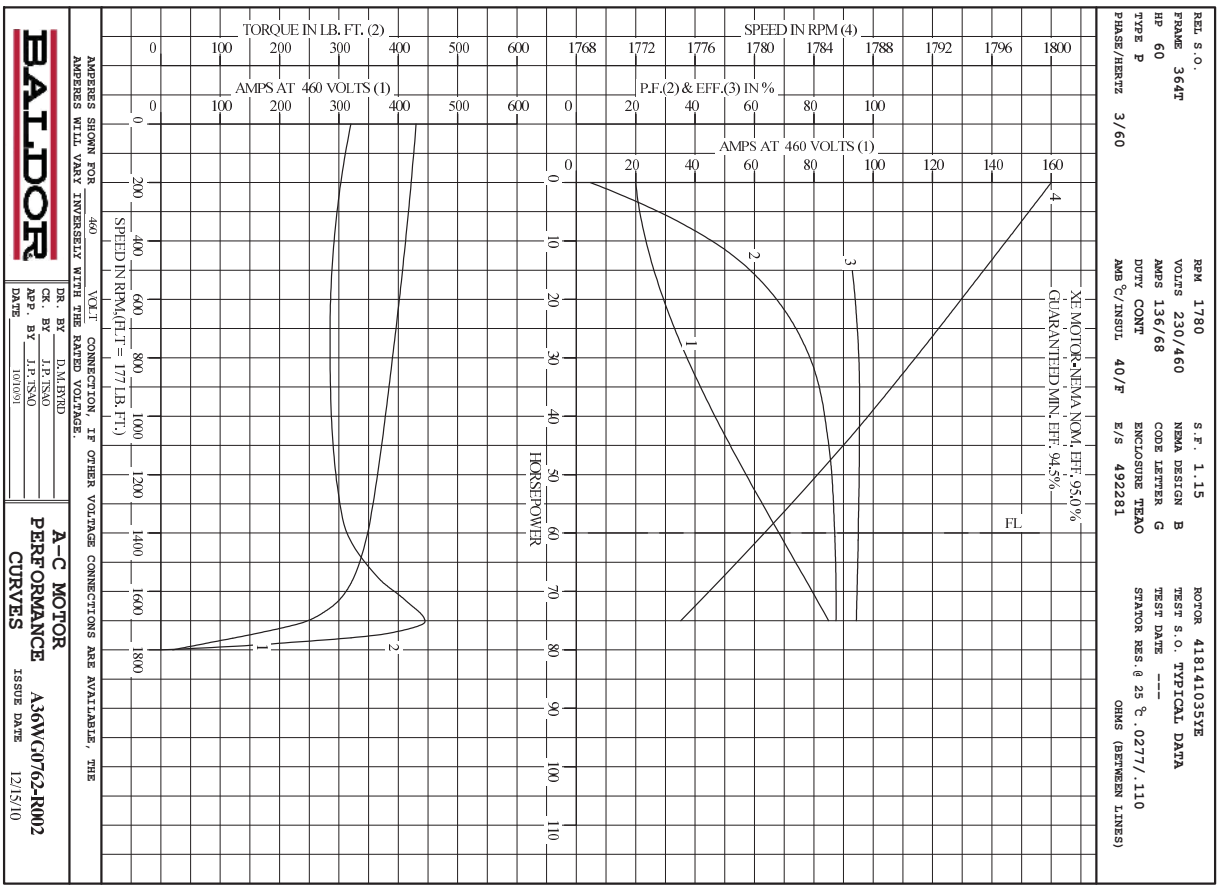
REMARKS: TYPICAL DATA
XE MOTOR-NEMA NOM. EFF. 95.0 %
GUARANTEED MIN. EFF. 94.5%

BALDOR

DR. BY D. M. BYRD
CK. BY J. P. TSAO
APP. BY J. P. TSAO
DATE 10/10/91

A-C MOTOR PERFORMANCE DATA

A36WG0762-R002
ISSUE DATE 12/15/10


REL S.O.
FRAME 364T
HP 60
TYPE P
PHASE/HERTZ 3/60
RPM 1780
VOLTS 230/460
AMPS 136/68
DUTY CONT
AMB °C/INSUL 40/F
S.F. 1.15
NEMA DESIGN B
CODE LETTER G
ENCLOSURE TEAO
S/S 492281
ROTOR 418141035YE
TEST S.O. TYPICAL DATA
TEST DATE ---
STATOR RES.@ 25 °C .0277/.110
OHMS (BETWEEN LINES)
SPEED IN RPM (4)
TORQUE IN LB. FT. (2)
AMPS AT 460 VOLTS (1)
P.F.(2) & EFF.(3) IN %
HORSEPOWER
SPEED IN RPM (FLT= 1777 LB. FT.)
XE MOTOR-NEMA NOM. EFF. 95.0%
GUARANTEED MIN. EFF. 94.5%
FL
AMPERES SHOWN FOR 460 VOLT CONNECTION, IF OTHER VOLTAGE CONNECTIONS ARE AVAILABLE, THE AMPERES WILL VARY INVERSELY WITH THE RATED VOLTAGE.
DR. BY D.M.BYRD
CK. BY J.P. TSAO
APP. BY J.P. TSAO
DATE 10/10/91
A-C MOTOR PERFORMANCE CURVES
A36WG0762-RM02
ISSUE DATE 12/15/10
Printed on 12/15/10 9:29 @ psecs-motoreng

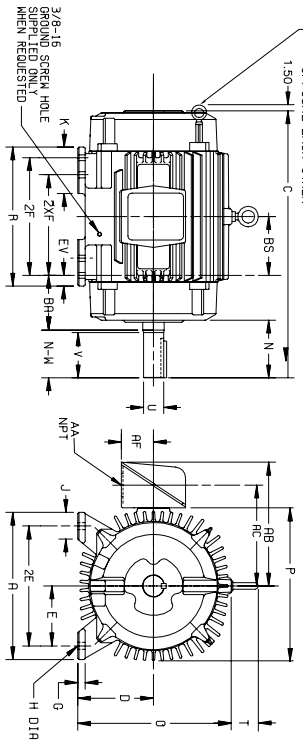
DUTY MASTER ALTERNATING CURRENT MOTORS

ENCLOSURE: TOTALLY ENCLOSED SQUIRREL-CAGE INDUCTION COOLING: NON-VENTILATED

MOUNTING: FOOT FRAMES 364T THRU 365TS CAST IRON CONSTRUCTION

WITH VERTICAL LIFTING

611741-694



DIMENSIONS ARE IN INCHES

FRAME	A	D(2)	E	G	H	J	K	O	P	CAST IRON TERMINAL BOX T	AA	AB	AC	AF
364T–365TS (1)	17.00	9.00	7.00	.88	.69	2.75	3.88	18.50	19.00	2.94	2.50	18.00	13.81	4.12

FRAME SIZE	C	BS	B	2F	(4) 2XF	N	N–W(6)	SHAFT AND KEY U(3)	SQ.	LGTH.	WEIGHT LBS.(5)
364T	29.70	6.12	15.00	----	11.25	6.25	5.88	2.375	.625	4.25	810
364TS	27.58	6.12	15.00	----	11.25	4.12	3.75	1.875	.500	2.00	805
365T	29.70	6.12	15.00	12.25	----	6.25	5.88	2.375	.625	4.25	835
365TS (1)	27.58	6.12	15.00	12.25	----	4.12	3.75	1.875	.500	2.00	830

(1) SPECIAL DIMENSIONS APPLYING TO THIS ORDER ON THIS LINE.

(2) "D" VARIES — +.00, –.06.

(3) "U" VARIES — +.000, –.001.

(4) ALL FRAMES HAVE EIGHT MOUNTING HOLES FOR DUAL MOUNTING.

(5) MOTOR WEIGHTS MAY VARY BY 15% DEPENDING UPON RATING.

(6) "N–W" VARIES +.00, –.25.

(7) OPTIONAL AUXILIARY CONDUIT BOX SUPPLIED ONLY WHEN SPECIFIED.

CONDUIT BOX LOCATED ON OPPOSITE SIDE WHEN F–2,W–1, W–4,W–5,W–7, OR C–1 MOUNTING IS SPECIFIED.

IF MOUNTING CLEARANCE DETAILS ARE REQUIRED, CONSULT FACTORY.

MAXIMUM PERMISSIBLE SHAFT RUNOUT WHEN MEASURED .003 T.I.R. 1.625 DIA.

FRAME_____ TYPE_____ CERTIFIED FOR~_____

ORDER~_____ ITEM~_____ HP~_____ RPM~_____ PH~_____ HZ_____ VOLTS_____

SALES ORDER~_____ APPROVED BY~_____ DATE_____

611741-694

CUSTOMER IS RESPONSIBLE FOR DETERMINING THAT BALDOR'S PRODUCT WILL PERFORM SUITABLY IN THE INTENDED APPLICATION.

REV. DESC: CHG CBOX "AA" DIMENSION TO 2-1/2"		
REV. LTR: A	VERSION: 01	TDR: 000000717435
FILE: \RAG\00008\959	REVISED: 09:52:24 10/19/2011	BY: RAGGDM
MTL: –		

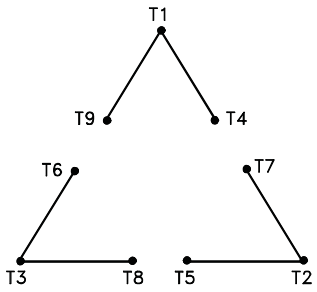
BALDOR

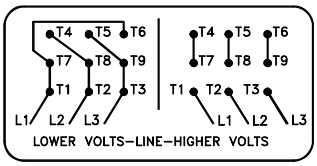
DIM SHT TENV XT FT 360T WITH VERTICAL LIFTING

SH 1 of 1

416820–002

A–C MOTOR
CONNECTION DIAGRAM
STANDARD 9 LEAD DELTA–CONNECTED





(N.P. 1575–B)

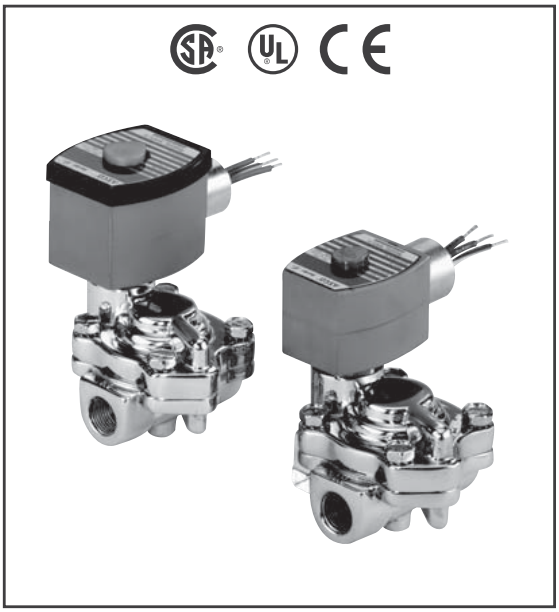
416820–002

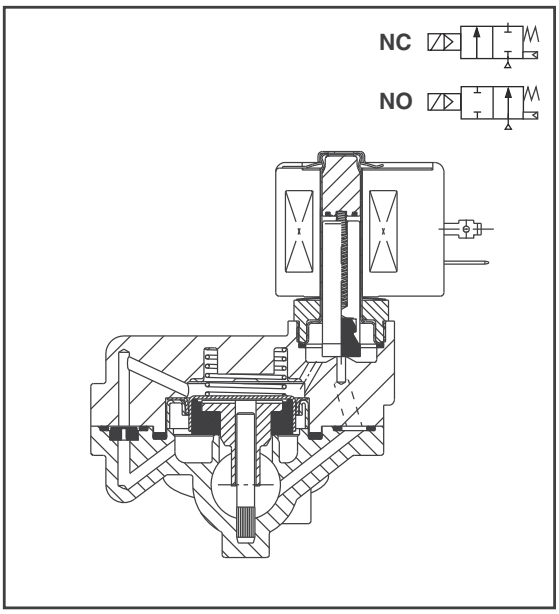
REV. DESC: LOADED TO BUS, C/R 335225			BALDOR
REV. LTR: –	VERSION: 00	TDR: 000000538207	
FILE: \MGA\00000\661		REVISED: 10:47:51 04/30/2010	CONN DIAG – STANDARD 9 LEAD, DELTA–CONNECTED
MTL: –		BY: RAGRA	SH 1 of 1

Features

- Pilot operated, normally open or normally closed
- Snubber slows disc closing speed to protect system against water hammer damage more effectively than other techniques
- Pressure spike due to water hammer is reduced to a point eliminating the need for suppressors or other controls in most water systems
- Fluid Controls Institute Inc. evaluations have classified these valves:

Pipe Sizes	FCI-82-1 Class
3/8", 1/2", 3/4"	CC
1", 1 1/4", 1 1/2", 2", 2 1/2"	BB





Construction

Valve Parts in Contact with Fluids	
Body	Brass
Disc	NBR
Seals	PTFE & NBR
Core Tube	305 Stainless Steel
Core and Plugnut	430F Stainless Steel
Springs	302 Stainless Steel
Piston	Stainless Steel or Brass
Shading Coil	Copper

Electrical

Standard Coil and Class of Insulation	Watt Rating and Power Consumption				Spare Coil Part No.			
		AC			General Purpose		Explosionproof	
	DC Watts	Watts	VA Holding	VA Inrush	AC	DC	AC	DC
F	11.6	6.1	16	30	238210	238710	238214	238714
F	16.8	16.1	35	95	272610	97617	272614	97617
F	22.6	-	-	-	-	238710	-	238714

Standard Voltages: 24, 120, 240, 480 volts AC, 60 Hz (or 110, 220 volts AC, 50 Hz). 6, 12, 24, 120, 240 volts DC. Must be specified when ordering.
Other voltages are available when required.

Solenoid Enclosures

Standard: RedHat II - Watertight, Types 1, 2, 3, 3S, 4, and 4X; RedHat - Type I.

Optional: RedHat II - Explosionproof and Watertight, Types 3, 3S, 4, 4X, 6, 6P, 7, and 9; RedHat - Explosionproof and Raintight, Types 3, 7, and 9. (To order, add prefix "EF" to catalog number.)

See Optional Features Section for other available options.

Nominal Ambient Temp. Ranges:

RedHat II/
RedHat AC: 32˚F to 125˚F (0˚C to 52˚C)
RedHat II DC: 32˚F to 104˚F (0˚C to 40˚C)
RedHat DC: 32˚F to 77˚F (0˚C to 25˚C)
(104˚F/40˚C occasionally)

Refer to Engineering Section for details.

Approvals:

CSA certified. UL listed, General Purpose Valves.
RedHat II meets applicable CE directives.

Refer to Engineering Section for details.

Specifications (English units)

Pipe Size (ins.)	Orifice Size (ins.)	Cv Flow Factor	Operating Pressure Differential (psi)			Max. Fluid Temp. °F		Brass Body	Const. Ref.	Watt Rating/ Class of Coil Insulation ③	
			Min. ①	Max. AC	Max. DC						
				Water ②	Water ②	AC	DC	Catalog Number		AC	DC
NORMALLY CLOSED (Closed when de-energized)											
3/8	9/16	3	5	150	125	180	150	8221G001	1	6.1/F	11.6/F
1/2	9/16	3.5	5	150	125	180	150	8221G003	1	6.1/F	11.6/F
3/4	3/4	5.5	5	150	125	180	150	8221G005	2	6.1/F	11.6/F
1	1	11.5	5	150	125	180	150	8221G007	5	6.1/F	11.6/F
1 1/4	1 1/8	13	5	150	125	180	150	8221G009	6	6.1/F	11.6/F
1 1/2	1 1/4	24	5	150	125	180	150	8221G011	7	6.1/F	11.6/F
2	1 3/4	36	5	150	125	180	150	8221G013	11	6.1/F	22.6/F
2 1/2	1 3/4	38	5	150	125	180	150	8221G015	12	6.1/F	22.6/F
NORMALLY OPEN (Open when de-energized)											
3/8	9/16	3	5	-	125	-	150	8221 021	15	-	16.8/F
3/8	9/16	3	5	150	-	180	-	8221G021	3	16.1/F	-
1/2	9/16	3.5	5	-	125	-	150	8221 023	15	-	16.8/F
1/2	9/16	3.5	5	150	-	180	-	8221G023	3	16.1/F	-
3/4	3/4	5.5	5	-	125	-	150	8221 025	16	-	16.8/F
3/4	3/4	5.5	5	150	-	180	-	8221G025	4	16.1/F	-
1	1	11.5	5	-	125	-	150	8221 027	17	-	16.8/F
1	1	11.5	5	150	-	180	-	8221G027	8	16.1/F	-
1 1/4	1 1/8	13	5	-	125	-	150	8221 029	18	-	16.8/F
1 1/4	1 1/8	13	5	150	-	180	-	8221G029	9	16.1/F	-
1 1/2	1 1/4	24	5	-	125	-	150	8221 031	19	-	16.8/F
1 1/2	1 1/4	24	5	150	-	180	-	8221G031	10	16.1/F	-
2	1 3/4	36	5	-	125	-	150	8221 033	20	-	16.8/F
2	1 3/4	36	5	150	-	180	-	8221G033	13	16.1/F	-
2 1/2	1 3/4	38	5	-	125	-	150	8221 035	21	-	16.8/F
2 1/2	1 3/4	38	5	150	-	180	-	8221G035	14	16.1/F	

① Valves require a 5 psi Minimum Pressure Differential to open. Once open, they remain open with 3 psi differential pressure.
② Refer to Steam/Hot Water Valve Series for Hot Water constructions.
③ On 50 hertz service, the watt rating for the 6.1/F solenoid is 8.1 watts.

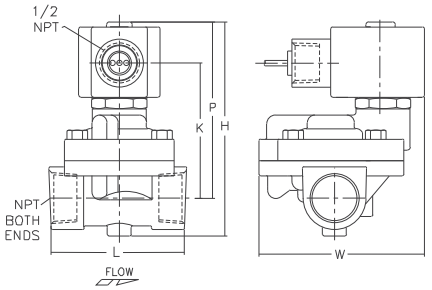
Response time upon energization: 3/8" - 1/2" (2-4 seconds), 3/4" - 1 1/4" (4-8 seconds), 1 1/2" - 2 1/2" (8-10 seconds)

Dimensions: inches (mm)

Const. Ref.		H	K	L	P	W
1	ins.	4.34	2.69	2.72	3.59	3.41
	mm	110	68	69	91	87
2	ins.	4.53	2.69	2.78	3.75	3.41
	mm	115	68	71	95	87
3	ins.	5.22	3.14	2.72	4.47	3.69
	mm	133	80	69	114	94
4	ins.	5.41	3.30	2.78	4.62	3.69
	mm	137	84	71	117	94
5	ins.	5.62	3.15	3.75	4.03	3.16
	mm	143	80	95	102	80
6	ins.	5.56	3.15	3.66	4.03	3.56
	mm	141	80	93	102	90
7	ins.	6.12	3.30	4.38	4.19	4.12
	mm	156	84	111	106	105
8	ins.	6.53	3.59	3.75	4.91	3.16
	mm	166	91	95	125	80
9	ins.	6.47	3.59	3.56	4.91	3.56
	mm	164	91	93	125	90
10	ins.	7.03	3.74	4.38	5.06	4.12
	mm	179	95	111	129	105
11	ins.	7.38	3.71	5.06	4.59	4.72
	mm	188	94	129	117	120
12	ins.	7.38	3.71	5.50	4.59	5.19
	mm	188	94	140	117	132
13	ins.	8.22	4.15	5.06	5.47	4.72
	mm	209	105	129	139	120
14	ins.	8.22	4.15	5.50	5.47	5.19
	mm	209	105	140	139	132
15	ins.	5.22	-	2.72	4.47	3.69
	mm	133	-	69	114	94
16	ins.	5.41	-	2.78	4.62	3.69
	mm	137	-	71	117	94
17	ins.	6.53	-	3.75	4.91	3.16
	mm	166	-	95	125	80
18	ins.	6.47	-	3.66	4.91	3.56
	mm	164	-	93	125	90
19	ins.	7.03	-	4.38	5.06	4.12
	mm	179	-	111	129	105
20	ins.	8.22	-	5.06	5.47	4.72
	mm	209	-	129	139	120
21	ins.	8.22	-	5.50	5.47	5.19
	mm	209	-	140	139	132

IMPORTANT: Valves may be mounted in any position.

Const. Ref. 1, 2



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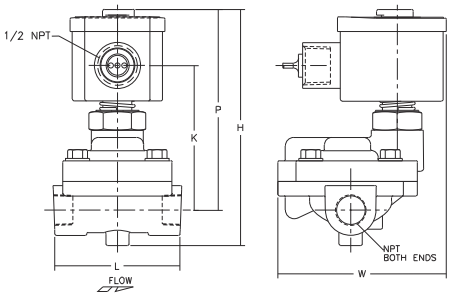

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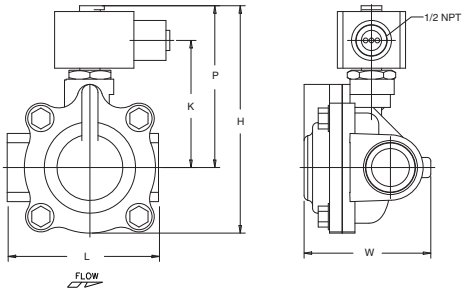

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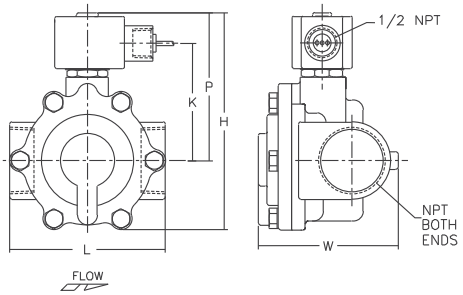

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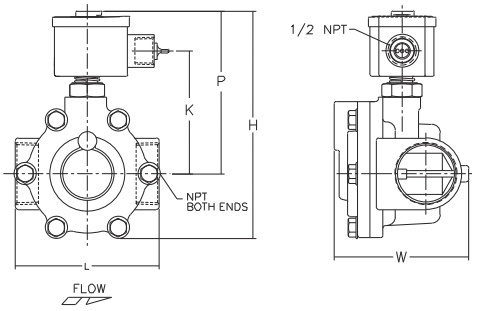

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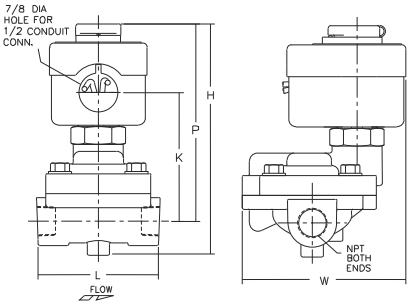

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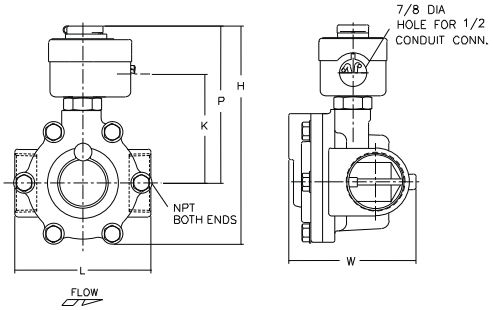

Certificate of Compliance

AT, USS, UAT, UT Cooling Towers
eco-ATWB/WB-E, ATWB and ESWA Closed Circuit Coolers
eco-ATC, ATC-E Evaporative Condensers

Are certified to meet or exceed the Seismic and Wind Load Provisions set forth in the applicable building codes for this project.

These products have been manufactured following all applicable quality assurance programs.

Applicable Building Codes:
IBC 2012
ASCE-7
NFPA 5000

Referenced Report:
VMA-43387

Approval Agency:
VMC Seismic Consulting Group

THE VMC GROUP
The Power of Together

EVAPCO...Specialists in Heat Transfer Products and Services.

ID IBC COC 001

Guarantee of Thermal Performance

EVAPCO® unequivocally guarantees the thermal performance of its equipment as shown on the certified drawings, when the equipment is installed in accordance with good engineering practice. If after installation and start-up there is any question regarding thermal performance of the equipment, at the owner's request EVAPCO will send its engineers to the jobsite to conduct a performance test. This test may be observed by the owner and the consulting engineer or by their authorized representatives. If the results of the evaluation show the equipment to be deficient, EVAPCO will make the necessary repairs or alterations to correct the deficiency at no cost to the owner. If the equipment is found to be performing in accordance with its certified drawing, the owner is expected to reimburse the company for its costs associated with this performance test. This guarantee is subject to all conditions and limitations set forth in the express warranty that applies to the equipment.

EVAPCO...Specialists in Heat Transfer Products and Services.