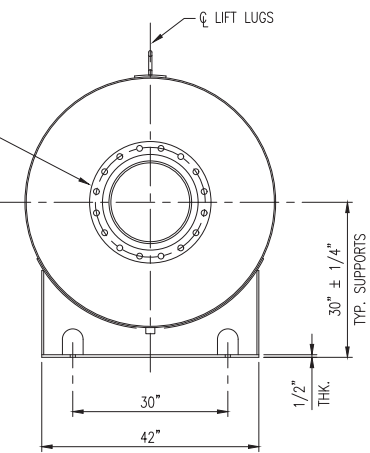
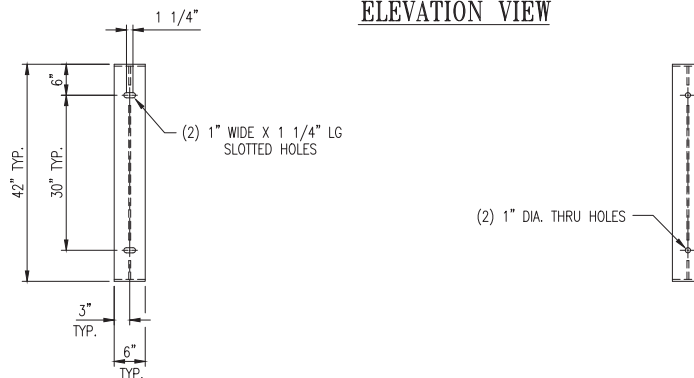


**ELEVATION VIEW**



**INLET END VIEW**




**NOTES:**

1. MATERIAL: ALL CARBON STEEL CONSTRUCTION.  
SHELL & HEADS: 1/4" THK. C.STL.  
PACK RETAINER: 14 GA. C.STL.  
ACOUSTIC PACK: CONTINUOUS STRAND FIBERGLASS
2. EXTERNAL FINISH:  
- PAINT WITH ONE (1) COAT RUST-OLEUM SPECIALTY HIGH HEAT SILICONE MODIFIED ALKYD @ 1.0 - 2.0 MILS DFT., COLOR: BBQ BLACK.
3. ONE (1) UNIT REQUIRED FOR THIS ORDER.
4. APPROXIMATE WEIGHT = 6,800 LB.
5. ALL FLANGE BOLT HOLES TO STRADDLE NATURAL VESSEL CENTERLINES.

**DRAFT GA ONLY NOT ACTUAL MACHINE**

DESIGN PRESSURE: ATM  
DESIGN TEMPERATURE: 800° F

**VIBRATION AND NOISE  
ENGINEERING CORPORATION**

  
ORCHARD PARK, N.Y.

CUSTOMER THE PENNSYLVANIA STATE UNIVERSITY	DRN BY MWM	CHK'D BY JJM
CUSTOMER PO E19-075903	DATE 04/14/20	
PART NO. 563-33A-158	REV 0	VIN 15844-1
TITLE HOT AIR VENT SILENCER OUTLINE DRAWING TAG: P.O. NO. E19-075903		

DO-NOT SCALE THIS

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SCALE: 1" = 18"

SIZE  
**C**

NO.	DESCRIPTION	BY	CK'D.	DATE
REVISIONS				

## Rotary Screw Air Compressor R75n (100 Hp) Air Cooled TAS (Total Air System)



Image for reference only

### Technical Information:

#### Available Flow (Capacity):

- 114-457 cfm @100 psig
- 114-447 cfm @110 psig
- 114-429 cfm @115 psig
- 114-418 cfm @125 psig
- 114-406 cfm @135 psig

**Weight:** 3462 lbs

**Compressed air outlet size:** 2.0" NPT

**Condensate drain outlet size:** 0.38"

**Dimensions - Facing control panel**

**(L x W x H):** 95" x 49.8" x 80"

**Sound Level per ANSI S5.1 Standard**

- Aircooled 69 dBA
- Watercooled 69 dBA

*Additional Engineering Data available upon request*

### Product Description:

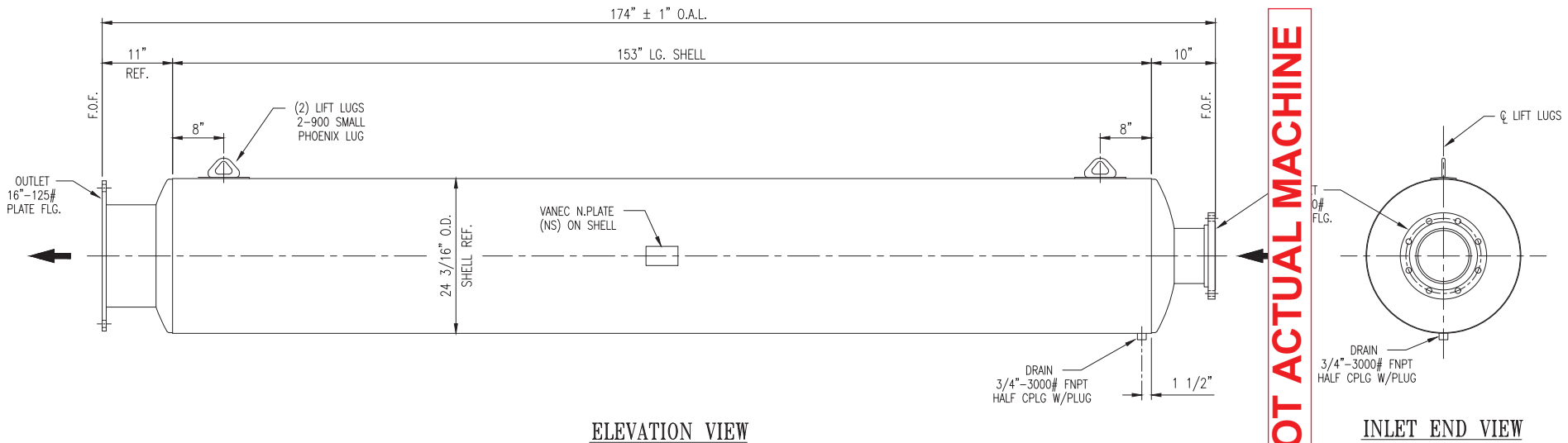
Ingersoll Rand's NEW R-Series 55-75 kW/75-100hp contact-cooled rotary screw air compressors offer the very best of time-proven designs and new technologies integrating advanced features such as our Progressive Adaptive Control™ Protection, V-Shield™ Technology, Sequential Cooling System, and Time-Proven Airends that ensure the highest levels of reliability, efficiency and productivity available today. Our NEW energy-efficient packages deliver performance and value that best fits your specific needs.

### Key Features & Benefits:

- **Progressive Adaptive Control™ (PAC™) Protection:** An integrated, intelligent system that continuously monitors key operating parameters and adapts to prevent unexpected downtime
- **V-Shield™ Technology:** A totally integrated, leak-free design using stainless steel pipes, long-life metal-flex hoses and superior elastomeric seals for repeatable leak-free connections
- **Sequential Cooling System:** Significantly improves reliability, efficiency, serviceability and noise level.
- **Xe-Series Controller:** The all new Xe-Series controller features an intuitive high resolution color display with web enabled communication and control.



Visit the Ingersoll Rand website for further information <http://www.ingersollrandproducts.com>




**DRAFT GA ONLY NOT ACTUAL MACHINE**

**NOTES:**

- MATERIAL: ALL CARBON STEEL CONSTRUCTION.  
 SHELL: 12 GA. C.STL.  
 HEADS: 10 GA. C.STL.  
 PACK RETAINER: 14 GA. C.STL.  
 ACOUSTIC PACK: CONTINUOUS STRAND FIBERGLASS
- EXTERNAL FINISH:  
 - PAINT WITH ONE (1) COAT RUST-OLEUM SPECIALTY HIGH HEAT SILICONE MODIFIED ALKYD @ 1.0 - 2.0 MILS DFT., COLOR: BBQ BLACK.
- ONE (1) UNIT REQUIRED FOR THIS ORDER.
- APPROXIMATE WEIGHT = 970 LB.
- ALL FLANGE BOLT HOLES TO STRADDLE NATURAL VESSEL CENTERLINES.

DESIGN PRESSURE: ATM  
 DESIGN TEMPERATURE: 350° F

**VIBRATION AND NOISE ENGINEERING CORPORATION**

  
 ORCHARD PARK, N.Y.

CUSTOMER THE PENNSYLVANIA STATE UNIVERSITY	DRN BY MWM	CHK'D BY JJM	
CUSTOMER PO E19-075903	DATE 04/14/20		
PART NO. 563-16A-144	REV 0	VJN 15844-3	
TITLE UNLOADING VENT SILENCER OUTLINE DRAWING TAG: P.O. NO. E19-075903			

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SCALE: 1" = 12"  
 SIZE C

NO.	DESCRIPTION	BY	CK'D.	DATE
REVISIONS				

# Certified Drawing for 30RAP

Project: PSU - START Lab  
Prepared By: Eric Spring

09/05/2019  
03:14PM

# DRAFT GA ONLY NOT ACTUAL MACHINE

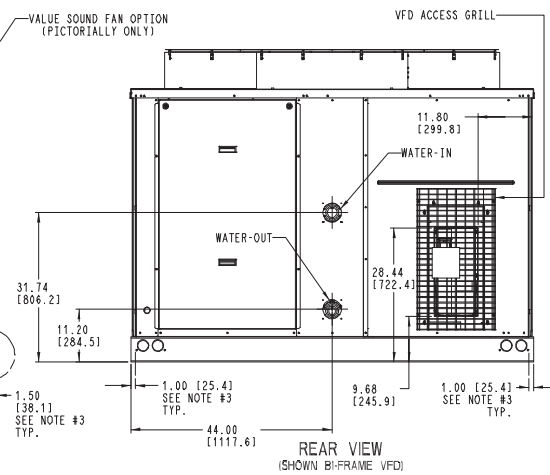
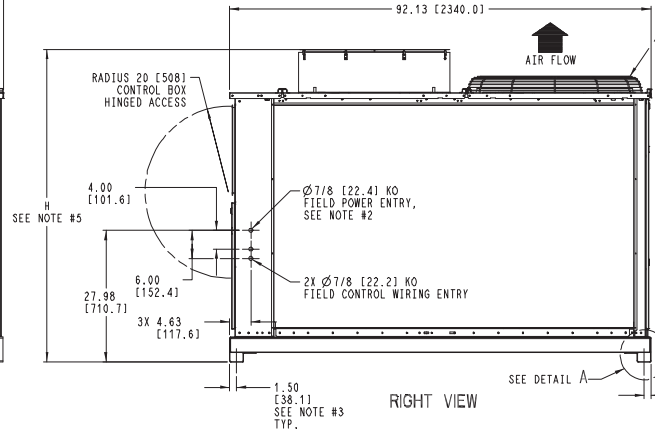
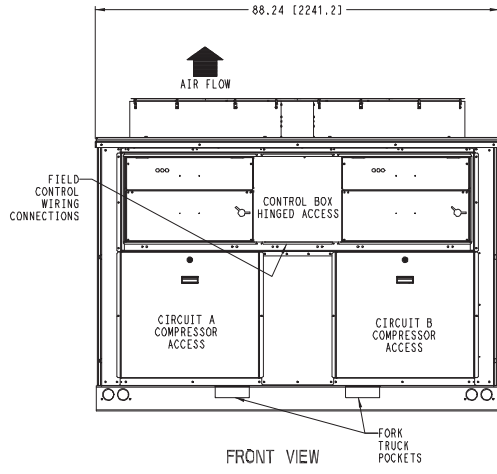
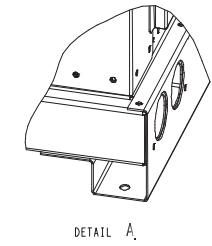
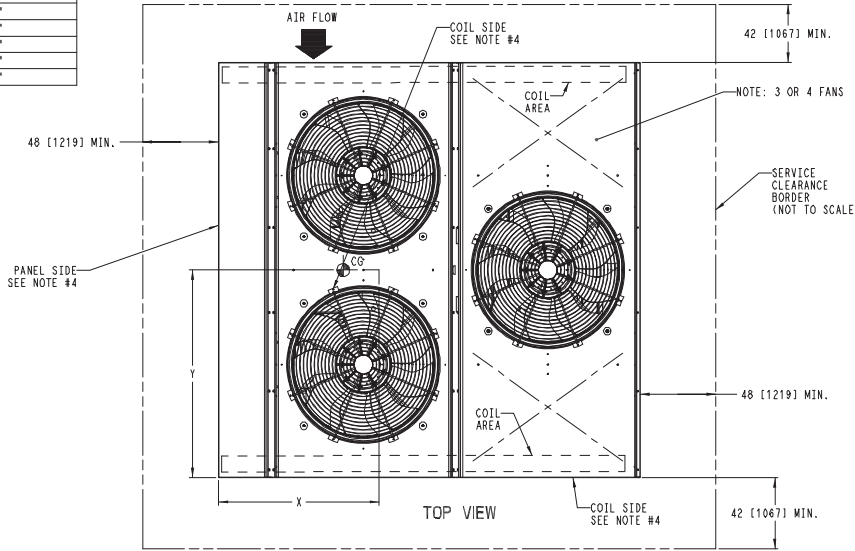
UNIT	CENTER OF GRAVITY		UNIT HEIGHT		WATER CONNECTION VICI/TALIC TFS CARBON STEEL WATER IN/OUT
	X	Y	H (STANDARD)	H (VALUE SOUND)	
30RA035	36.45 [926]	46.08 [1170]	66.5 [1689]	61.0 [1549]	2-1/2"
30RA040	36.24 [921]	44.03 [1118]	66.5 [1689]	61.0 [1549]	2-1/2"
30RA045	36.24 [921]	46.15 [1172]	78.5 [1994]	73.0 [1854]	2-1/2"
30RA050	36.00 [914]	44.00 [1118]	78.5 [1994]	73.0 [1854]	2-1/2"
30RA055	36.48 [927]	44.60 [1133]	78.5 [1994]	73.0 [1854]	2-1/2"
30RA060	36.50 [927]	44.56 [1132]	78.5 [1994]	73.0 [1854]	2-1/2"

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**NOTES:**

1. DO NOT CAP OR OTHERWISE OBSTRUCT THE LIQUID LINE TEMPERATURE RELIEF.
2.  $\phi 7/8$  [22.4] PILOT HOLE PROVIDED FOR LOCATING FIELD POWER WIRING. ACTUAL HOLE REQUIRED DEPENDS ON FIELD WIRE SIZING.
3.  $\phi 0.437$  [11.10] HOLE USED FOR MOUNTING UNIT.
4. UNIT MUST HAVE CLEARANCES AS FOLLOWS:  
TOP - DO NOT RESTRICT  
COIL SIDE - 42 [1067] FROM SOLID SURFACE.  
PANEL SIDE - 48 [1219] PER NEC.
5. SEE TABLE COLUMN H; DIMENSION FOR STANDARD FAN OR VALUE SOUND FAN OPTION.
6. CARRIER DOES NOT RECOMMEND INSTALLATION IN A PIT.
7. UNIT CAN BE HANDLED USING THE FORK TRUCK LIFT POCKETS (MINIMUM OF 60" FORK LENGTH).
8. WATER CONNECTIONS RECESSED 2-5/8 INCHES INSIDE UNIT. ALL WATER DRAIN AND VENTING HOLES ARE 1/4" NPT.

DIMENSIONS IN ( ) ARE IN MILLIMETERS



FOR GREENSPEED OPTION

DATE 09/07/15	SUPERCEDES G	30RAP035-060 UNIT ASSY	30RA555556	REV H
------------------	-----------------	------------------------	------------	----------



## Detailed Performance Summary For 30RAP

Project: PSU - START Lab  
Prepared By: Eric Spring

09/05/2019  
03:14PM

# DRAFT GA ONLY NOT ACTUAL MACHINE



### 30RAP with Greenspeed® Intelligence



#### Unit Information

Tag Name:.....**30RAP**  
Model Number:.....**30RAP060**  
Condenser Type:.....**Air Cooled**  
Compressor Type:.....**Scroll**  
Nameplate Voltage:.....**460-3-60** V-Ph-Hz  
Quantity:.....**1**  
Manufacturing Source:.....**Charlotte, NC USA**  
ASHRAE 90.1:.....**2013/2016, 2010, 2007**  
Refrigerant:.....**R-410A**  
Capacity Control Steps:.....**4**  
Minimum Capacity:.....**25.00** %  
Shipping Weight:.....**2924** lb  
Operating Weight:.....**2719** lb  
Refrigerant Weight (Circuit A):.....**19** lb  
Refrigerant Weight (Circuit B):.....**19** lb  
Unit Length:.....**89** in  
Unit Width:.....**93** in  
Unit Height:.....**79** in  
Minimum Outdoor Operating Temp:.....**-20.0** °F  
Chiller Pressure Drop\*:.....**50.2** ft H2O

\*Use Chiller Pressure Drop for sizing pumps. This value includes losses due to chiller piping, fittings, 40 mesh factory supplied strainer and BPHX.

Fluid Flow Min:.....**80.92** gpm  
Fluid Flow Max:.....**270.0** gpm  
\*Refer to Chiller Pressure Drop for sizing pumps.  
Evaporator Pressure Drop\*:.....**12.9** ft H2O  
\*Refer to Chiller Pressure Drop for sizing pumps.

#### Condenser Information

Altitude:.....**0.000** ft  
Number of Fans:.....**4**  
Total Condenser Fan Air Flow:.....**38,800** CFM  
Entering Air Temperature:.....**95.0** °F

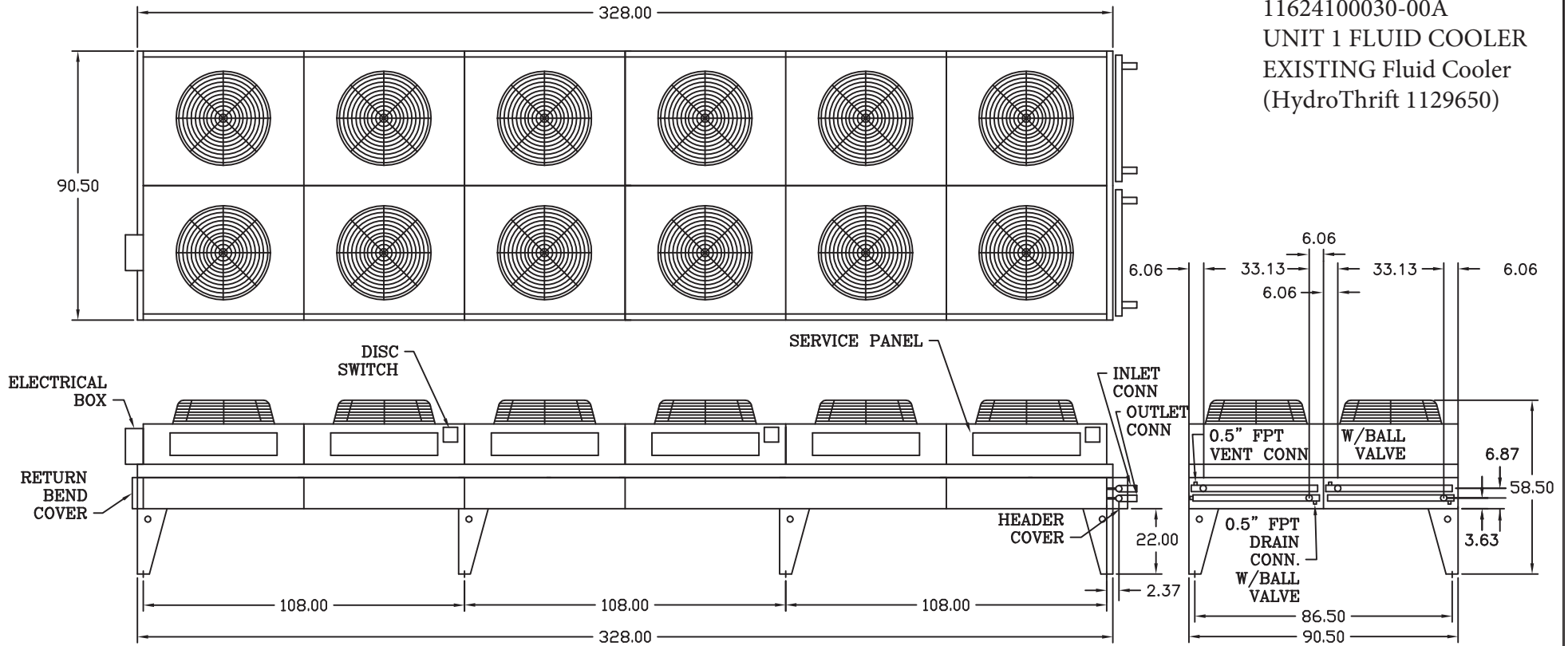
#### Performance Information

Cooling Capacity:.....**46.10** Tons  
Total Compressor Power:.....**56.87** kW  
Total Fan Motor Power:.....**5.365** kW  
Pump Power:.....**7.566** kW  
Total Unit Power (without pump):.....**62.23** kW  
Total Unit Power (with pump):.....**69.80** kW  
Efficiency (without pump) (EER):.....**8.889** BTU/Wh

#### Evaporator Information

Fluid Type:.....**Propylene Glycol**  
Brine Concentration:.....**50.00** %  
Fouling Factor:.....**0.000100** (hr-sqft-F)/BTU  
Leaving Temperature:.....**30.00** °F  
Entering Temperature:.....**39.00** °F  
Fluid Flow:.....**139.1** gpm

11624100030-00A  
 UNIT 1 FLUID COOLER  
 EXISTING Fluid Cooler  
 (HydroThrift 1129650)



**DRAFT GA ONLY NOT  
 ACTUAL MACHINE**

0.75" ANCHOR HOLES

**UNIT CONSTRUCTION**

**HOUSING:**

MILL GALVANIZED STEEL END PLATE  
 SIDE PLENUM AND SUPPORT LEGS

**COIL:**

COPPER TUBES AND CONNECTIONS  
 ALUMINUM FINS -  
 ROWS DEEP - 4

**FAN DATA**

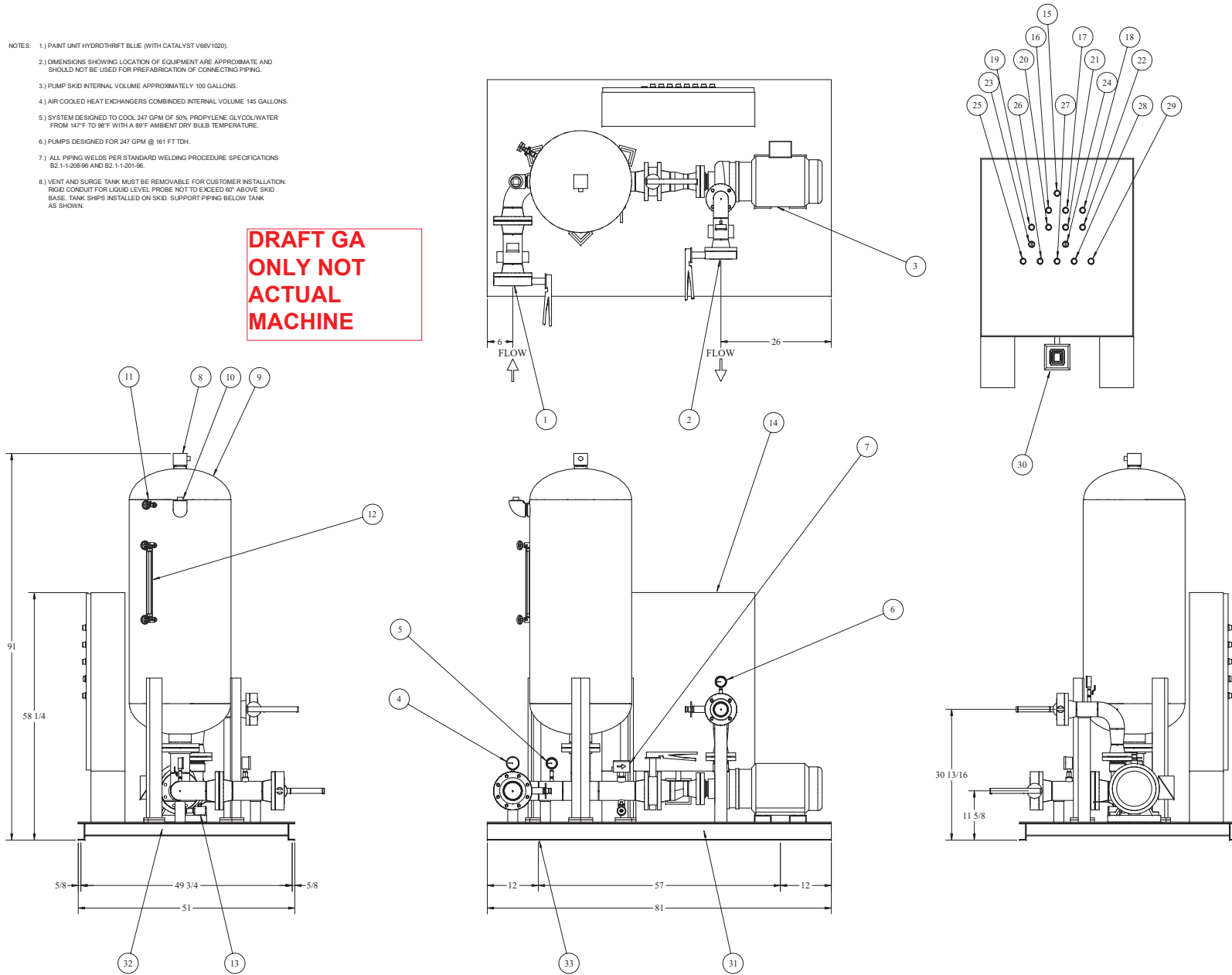
QUANTITY OF FANS - 12  
 FAN DIAMETER - 30  
 PITCH - 24"  
 NOMINAL SPEED - 1140 RPM  
 OVERALL SWL dB(A) - 99.8

CONNECTION SIZES (FACING HEADER END)		
	LEFT	RIGHT
INLET	2.125 OD	2.125 OD
OUTLET	2.125 OD	2.125 OD

DESIGN SPECIFICATIONS			UNITS	WORK TO DIMENSIONS DO NOT SCALE DRAWING					
SOLUTION	PG		-	SALES ORDER: 859829	LINE: 10	NO.	CHANGE DESCRIPTION	DATE	CHK'D
PERCENT	50		%	CUSTOMER P.O.:	1129650	REVISIONS			
BTU/HR	2721.85		MBH	CUSTOMER NAME:	PENN STATE UNIVERSITY				
PRESSURE DROP	24		PSIG	JOB NAME:	PENN STATE UNIVERSITY				
GPM	124		GPM	TAG UNIT:					
ENTERING AIR TEMP.	89		*F	MODEL:	FEVF26408-44				
ENTERING SOLUTION TEMP.	147		*F	ITEM NO.:	FEVF26408M-10				
LEAVING SOLUTION TEMP.	97.7		*F	NO. REQ'D:	1	DATE:	11/01/12	DRAWN:	ACD
INTERNAL COIL VOLUME	72.45		GAL	SHEET	1 OF 2		HYDRO THRIFT CORPORATION		REV. A
NOMINAL FIN SPACING	08		FPI	TOLERANCE:	±0.50"				
APPROXIMATE WEIGHT	5218		LBS						

- NOTES:
- 1.) PAINT UNIT HYDROTHRIFT BLUE (WITH CATALYST V68V1020).
  - 2.) DIMENSIONS SHOWING LOCATION OF EQUIPMENT ARE APPROXIMATE AND SHOULD NOT BE USED FOR PREFABRICATION OF CONNECTING PIPING.
  - 3.) PUMP SKID INTERNAL VOLUME APPROXIMATELY 100 GALLONS.
  - 4.) AIR COOLED HEAT EXCHANGERS COMBINED INTERNAL VOLUME 145 GALLONS.
  - 5.) SYSTEM DESIGNED TO COOL 247 GPM OF 50% PROPYLENE GLYCOL/WATER FROM 147°F TO 96°F WITH A 89°F AMBIENT DRY BULB TEMPERATURE.
  - 6.) PUMPS DESIGNED FOR 247 GPM @ 161 FT TDH.
  - 7.) ALL PIPING WELDS PER STANDARD WELDING PROCEDURE SPECIFICATIONS 92.1-1:2008 AND 92.1-1:2010-06.
  - 8.) VENT AND SURGE TANK MUST BE REMOVABLE FOR CUSTOMER INSTALLATION. RIGID CONDUIT FOR LIQUID LEVEL PROBE NOT TO EXCEED 90" ABOVE SKID BASE. TANK SHIPS INSTALLED ON SKID. SUPPORT PIPING BELOW TANK AS SHOWN.

**DRAFT GA  
ONLY NOT  
ACTUAL  
MACHINE**



ITEM	DESCRIPTION
1	4" 150 LB FLANGED CONNECTION FROM CUSTOMER EQUIPMENT
2	3" 150 LB FLANGED CONNECTION TO HEAT EXCHANGER
3	PUMP - 20 H.P. TEFC 460-3-60 GOULDS 8856 S 2.5 X 3 - 7 w/ 6.75" IMPELLER
4	TEMPERATURE GAUGE 0-200 F
5	PRESSURE GAUGE 30"hg-30 PSI
6	PRESSURE GAUGE 0-160 PSI
7	FLOW SWITCH - LOW FLOW ALARM
8	LIQUID LEVEL ELECTRODE FTG. - LOW LEVEL ALARM
9	100 GALLON VENT & SURGE TANK
10	2" FILL CONNECTION
11	VENT VALVE
12	SIGHT GLASS
13	3/4" NPT DRAIN
14	ELECTRICAL ENCLOSURE 42 X 36 X 8 NEMA 4
15	POWER ON INDICATING LIGHT
16	UNIT 1 FANS 1-4 RUN INDICATING LIGHT
17	UNIT 1 FANS 5-8 RUN INDICATING LIGHT
18	UNIT 1 FANS 9-12 RUN INDICATING LIGHT
19	PUMP RUN INDICATING LIGHT
20	UNIT 2 FANS 1-4 RUN INDICATING LIGHT
21	UNIT 2 FANS 5-8 RUN INDICATING LIGHT
22	UNIT 2 FANS 9-12 RUN INDICATING LIGHT
23	PUMP HAND-OFF-AUTO SELECTOR SWITCH
24	FANS HAND-OFF-AUTO SELECTOR SWITCH
25	PUMP OVERLOAD ALARM INDICATING LIGHT
26	LOW FLOW ALARM INDICATING LIGHT
27	LOW LEVEL ALARM INDICATING LIGHT
28	HIGH TEMPERATURE ALARM INDICATING LIGHT
29	ALARM RESET PUSHBUTTON
30	AUDIBLE ALARM
31	4" X 5.4 LB./FT. STRUCTURAL CHANNEL
32	3" X 4.1 LB./FT. STRUCTURAL CHANNEL
33	4) 5/8" DIAMETER MOUNTING HOLES

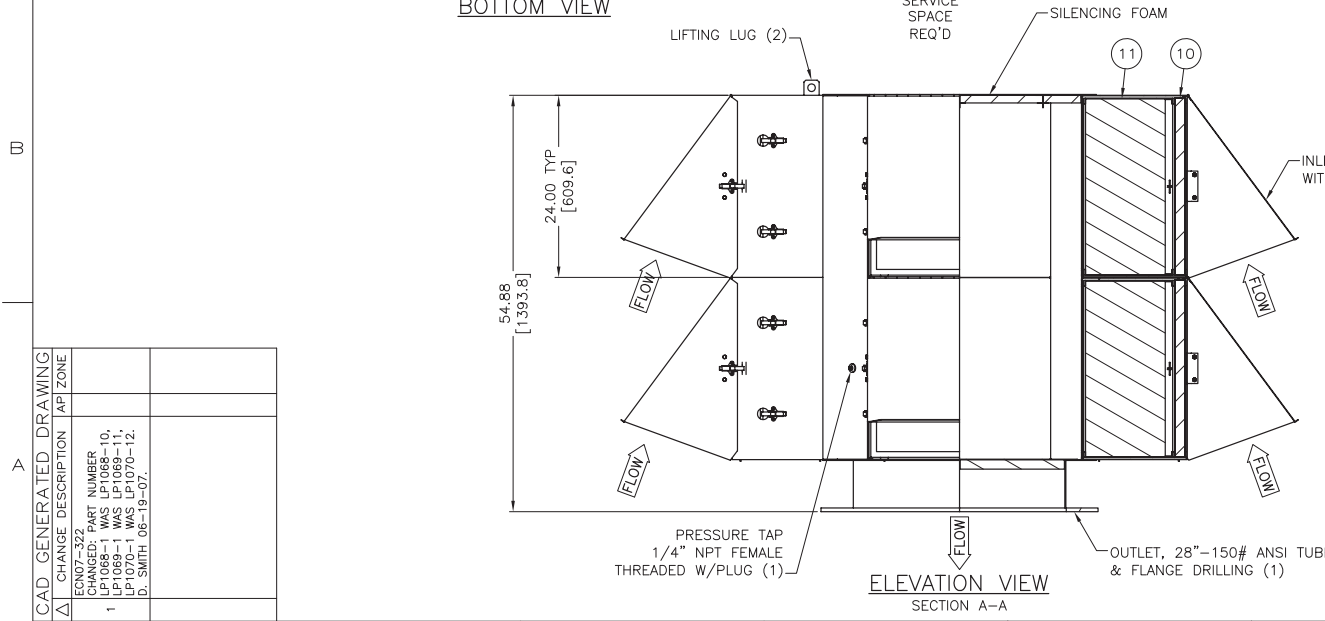
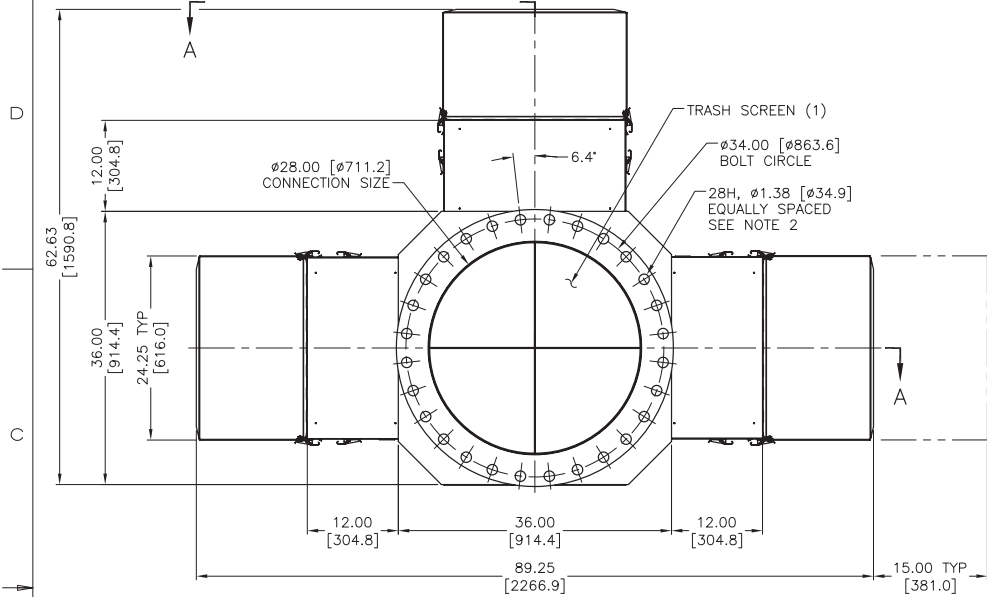
A	BY RS	RELEASED FOR FABRICATION
	DATE 1-25-16	
<b>HYDROTHRIFT CORPORATION</b>		
CUSTOMER	PURCHASE ORDER NUMBER	
C.H. REED INC	6060483	
CD-245-601	SCALE	3:32
PUMP AND CONTROL UNIT	1 OF 1	
TITLE	REVISION NUMBER	
GENERAL ARRANGEMENT	11624100010-00	A

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**XC- LP0947**



PARTS LIST				
QUAN.	UOM	PART NAME	PART NO. (SEE NOTE 1)	ITEM NO.
*	EA	AIR INTAKE FILTER/SILENCER	LP0947-1	1

SPARE PARTS LIST				
QUAN.	UOM	PART NAME	PART NO. (SEE NOTE 1)	ITEM NO.
6	EA	PANEL FILTER, 1ST STAGE	LP1068-1	10
6	EA	PANEL FILTER, 2ND STAGE	LP1069-1	11
1	EA	U-TUBE MANOMETER WITH MAGNETIC CLIPS, DWYER FLEX TUBE ©	LP1070-1	12

**SPECIFICATIONS**

MATERIAL: GALVANNEAL AND CARBON STEEL CONSTRUCTION.  
 EXTERIOR SURFACES: STANDARD BRUSH/WIPE CLEAN.  
 INTERIOR & EXTERIOR PAINT: FS ELLIOTT CHAMPION BLUE PER PROCESS SPEC PS-526. SEE NOTE 3.  
 DRY WEIGHT: 733 LB. (APPROXIMATE).  
 CAPACITY: 15,000 SCFM.

- NOTES**
- PART NUMBERS ARE FOR A QUANTITY OF ONE (1). ORDER QUANTITY REQUIRED.
  - BOLT HOLES AT OUTLET FLANGE TO BE ALIGNED TO STRADDLE CENTERLINES.
  - SEAL CAULK INTERIOR AND EXTERIOR SEAMS AFTER PAINTING.
  - PRESSURE DROP @ MAXIMUM FLOW (INCHES H<sub>2</sub>O): FILTER 0.74, PLENUM 0.79, TOTAL 1.53.
  - MANOMETER (ITEM 12) TO BE SUPPLIED BY FILTER VENDOR, SHIPPED SEPARATELY AND MOUNTED BY CUSTOMER.

CHANGE DESCRIPTION	API ZONE
ECN07-392	
CHANGED: PART NUMBER	
1 LP1068-1 WAS LP1068-10,	
LP1069-1 WAS LP1069-11,	
LP1070-1 WAS LP1070-12.	
D. SMITH 06-19-07.	

UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES  
 DIMENSIONS SHOWN IN BRACKETS [ ] ARE IN MILLIMETERS

**AIR INTAKE FILTER/SILENCER**  
 WITH MANOMETER

FIRST USED ON: POLARIS SERIES P700/P800 COMPRESSOR

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CK. D. SMITH	
DES. AP. N / R	
ENG. AP. M. ZOWACKI	
CAST. AP. N / A	
DATE 06-15-07	© 2007 ELLIOTT TURBOMACHINERY CO., INC. <b>CAD GENERATED DRAWING</b> <b>XC- LP0947</b>
S.O. FUTURE	
SCALE .12:1.00	
ASSY.	
SIMILAR TO	ASSOCIATE PLANT IDENTIFICATION ○ ○ ○
PROCESS SPEC	SHEET 1 OF 1