| API BASCO DEFAULTS (UNLESS OTHERWISE SPECIFIED) | |
|---|---|
| ALL DIMENSIONS IN INCHES UNLESS DENOTED AS METRIC (mm)<br>1" = 1 INCH = 25.4mm<br>3rd ANGLE | TOLERANCES (unless specified) PER TEMA STANDARDS<br>ALL BOLT HOLES STRADDLE VERTICAL CENTERLINES. |

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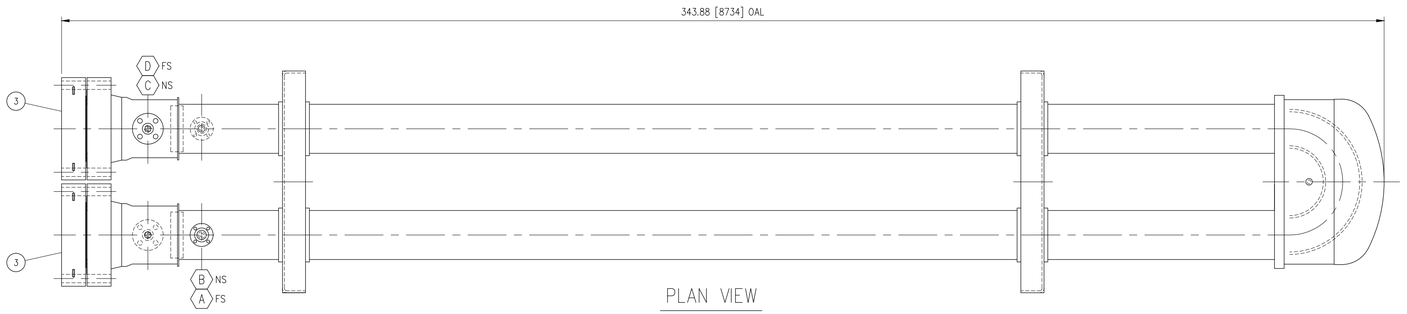
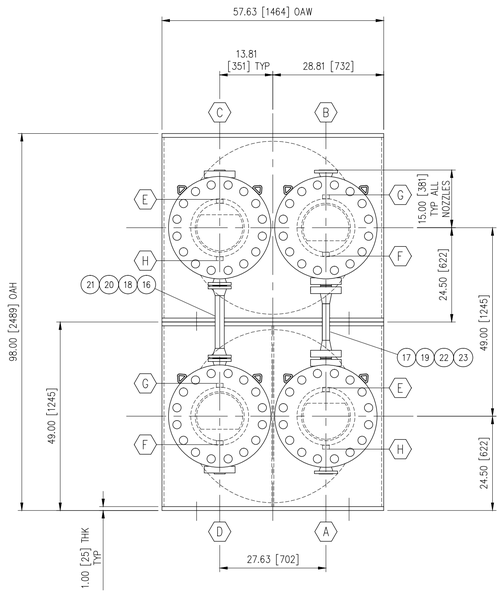
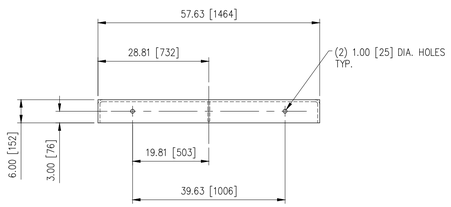
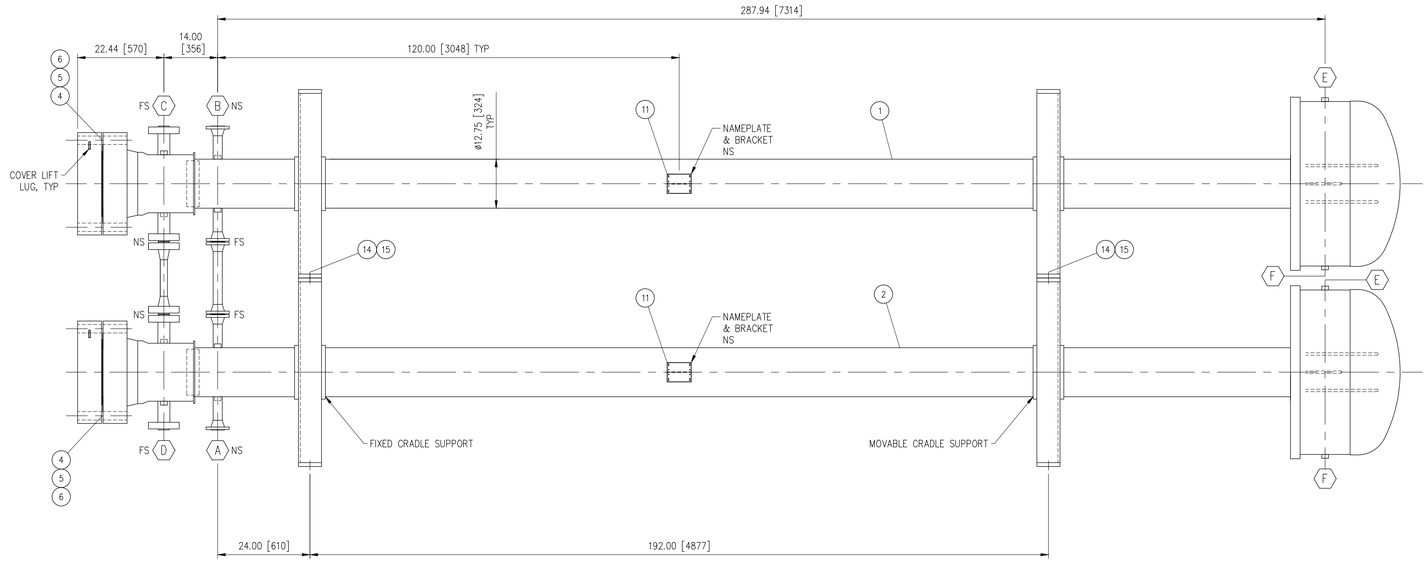



PLAN VIEW




NOTES:
1.) QUANTITY: ONE (1) TOTAL
2.) EXTERNAL FINISH: SHELL SIDE: SANDBLAST PER SSPC-SP-6
PRIME COAT: KEM HI-TEMP 850 @ 1-1.5 MILS DFT. COLOR: LIGHT GRAY.
TOP COAT: KEM HI-TEMP 850 @ 1-1.5 MILS DFT. COLOR: STEEL GRAY
EXTERNAL FINISH: TUBE SIDE: ALUMINUM OXIDE BLAST
3.) INTERNAL FINISH: BLAST PER STD SHOP PRACTICE.
4.) ESTIMATED WEIGHTS:
EMPTY: 29755 LBS [13497 KGS] (STACKED)
FLOODED: 35400 LBS [16057 KGS] (STACKED)
COVER: 985 LBS [447 KGS] (EACH)

| No | Revision | By | Date | Chk |
|---|---|---|---|---|
| 2 | REVISED LENGTH OF STUD | WH | 10-31-14 | JCS |
| 1 | REVISED BOLTING FOR TUBESIDE INTER. PIPING TO ZINC PLTD, TEST SS | WH | 7-23-14 | JCS |

| Item | Qty | Description | Mat'l | Specification | Size | Dwg No | Part No |
|---|---|---|---|---|---|---|---|
| 24 | 1 | LOOSE KIT: SPARE GASKETS | | | | | 2679-12-312-000 |
| 23 | 16 | HVY HEX NUT: 1 1/8-8 UN | ZINC PLTD | SA-194 2H | | | 4026-46-0219-00 |
| 22 | 8 | STUD: 1 1/8-8UN X 7.00 LG | ZINC PLTD | SA-193 B7 | | | 4022-46-5619-00 |
| 21 | 16 | HVY HEX NUT: 5/8-11 UNC | | SA-194 2H | | | 4026-37-0203-00 |
| 20 | 8 | STUD: 5/8-11UNC X 3.50 LG | | SA-193 B7 | | | 4022-37-2802-01 |
| 19 | 1 | INTERCONNECTING PIPING: 1 1/2" | | | A | | 2044-15-000-046 |
| 18 | 1 | INTERCONNECTING PIPING: 2" | | | A | | 2044-02-000-069 |
| 17 | 2 | GASKET: 1 1/2"-2500# ANSI | CGI | 316SS SPIRAL WND | | | 4012-45-1115-15 |
| 16 | 2 | GASKET: 2"-150# ANSI | CG | 304SS SPIRAL WND | | | 4012-01-1115-32 |
| 15 | 8 | SUPPORT HVY HEX NUT: 7/8-9UNC | | SA-194 2H | | | 4026-41-0103-00 |
| 14 | 4 | SUPPORT STUD: 7/8-9UNC X 4.50 LG | | SA-193 B7 | | | 4022-41-3602-00 |
| 13 | 0 | PAINT: HEM HI-TEMP 850 (STEEL GRAY) | | | | | 4051-02-0199-02 |
| 12 | 0 | PAINT: HEM HI-TEMP 850 (LIGHT GRAY) | | | | | 4051-99-0299-04 |
| 11 | 2 | NAMEPLATE (ASME) | | STN STL | | | 4072-01-0106-01 |
| 10 | 6 | PIPE PLUG: 3/4 NPT ROUND | | SA-105 | | | 4020-95-0309-00 |
| 9 | 4 | PIPE PLUG: 3/4 NPT ROUND | | SA-182 F316 | | | 4020-95-0311-00 |
| 8 | 2 | SHIPPING COVER: 1 1/2-2500# | | PLASTIC | | | 4075-15-2512-00 |
| 7 | 2 | SHIPPING COVER: 2-150# | | PLASTIC | | | 4075-02-1512-00 |
| 6 | 128 | HVY HEX NUT: 2-8 UN | ZINC PLTD | SA-194 2H | | | 4026-60-0219-00 |
| 5 | 64 | STUD: 2-8 UN X 18.00 LG | ZINC PLTD | SA-193 B7 | | | 4022-60-9919-00 |
| 4 | 4 | GASKET: | CGI | 316SS SPIRAL WND | | | 4012-10-1115-40 |
| 3 | 4 | CHANNEL COVER | | STL W/SS OL | A | | 3018-10-901-011 |
| 2 | 1 | BOTTOM CORE ASSEMBLY | | STN STL/STEEL | C | | 2070-12-312-001 |
| 1 | 1 | TOP CORE ASSEMBLY | | STN STL/STEEL | C | | 2070-12-312-000 |

| NOZZLE SCHEDULE | | | |
|---|---|---|---|
| TAG | SIZE | TYPE | SERVICE |
| A | 2" | 150# ANSI RFWN | SHELL SIDE INLET |
| B | 2" | 150# ANSI RFWN | SHELL SIDE OUTLET |
| C | 1 1/2" | 2500# ANSI RFLWN | TUBE SIDE INLET |
| D | 1 1/2" | 2500# ANSI RFLWN | TUBE SIDE OUTLET |
| E | 3/4" | 6000# NPT | SHELL SIDE VENT |
| F | 3/4" | 6000# NPT | SHELL SIDE DRAIN |
| G | 3/4" | 6000# NPT | TUBE SIDE VENT |
| H | 3/4" | 6000# NPT | TUBE SIDE DRAIN |
| J | | | |
| K | | | |
| L | | | |
| M | | | |
| N | | | |

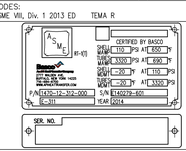
| DESIGN DATA | | |
|---|---|---|
| | SHELL SIDE | TUBE SIDE |
| DESIGN PRESSURE | 110 PSIG / 7.6 BarG | 3320 PSIG / 228.9 BarG |
| TEST PRESSURE | 153 PSIG / 10.5 BarG | 4743 PSIG / 327 BarG |
| DESIGN TEMP | -20/650T -29/343C | -20/690T -29/366C |
| CORR. ALLOWANCE | .125 [3] | NONE |
| RADIOGRAPHY | NONE | FULL PER CODE |
| PWHT | NONE | NONE |

TUBE/TUBE SHEET JOINT = STRENGTH WELDED

| MATERIALS OF CONSTRUCTION | | |
|---|---|---|
| PART | SHELL SIDE | TUBE SIDE |
| TUBES | SA-249 316 | |
| TUBESHEETS | SA-240 316 | |
| BAFFLE/FINS | STEEL | |
| HEADS | SA-516 70 | SA-516 70N W/316 OVERLAY |
| SHELL | SA-53 B / SA-516 70 | SA-182 F316 |
| NOZZ FLGS | SA-105 | SA-182 F316 |
| CPLGS | SA-105 | SA-182 F316 |
| BOLTS/NUTS | SA-193 B7 / SA-194 2H ZINC PLTD | |
| GASKETS | .316SS SPIRAL WOUND CGI | |
| O-RINGS | | |
| BODY FLGS | SA-516 70 | SA-182 F316 |

DIMENSIONS & DATA CERTIFIED FOR

CUST. ORDER: 008317 PATRIOT FUELS BIODIESEL, LLC
BASCO ORDER: E140279-601
BY: whowitt DATE: 07/11/2014
CODES:
ASME VIII, Div. 1 2013 ED TEMA R

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DRAWN 07/11/2014 BY: whowitt | CHECK JCS
SCALE 1:20 | CONTRACT NO E140279-601

Basco
An API Heat Transfer Company

SUPER-1 COOLER
12 X 312 AW HAIRPIN (STACKED)

SIZE D | DWG NO 1470-12-312-000 | REV 2