

## 1998 FES Plate Heat Exchanger

Mfg: FES

Model: 12WP-C4-1

Stock No. 30.AR1.90

Serial No. 33828.3

1998 FES Plate Heat Exchanger. Model: 12WP-C4-1, S/N: 33828.3. Hot side MAWP: 150 psi @ 185 °F, MDMT: -20 °F @ 150 psig, hydrotest pressure: 225 psig. Cold side MAWP: 250 psig @ 185 °F, MDMT: -20 °F @ 250 psig, hydrotest pressure: 375 psig. Plates: (406) 316 stainless steel. Total heat transfer area: approx. 5,798 sq. ft. Inlets/outlets: (4) 12 in. Overall dimensions: 128 in. L x 80 in. W x 102 in. H.

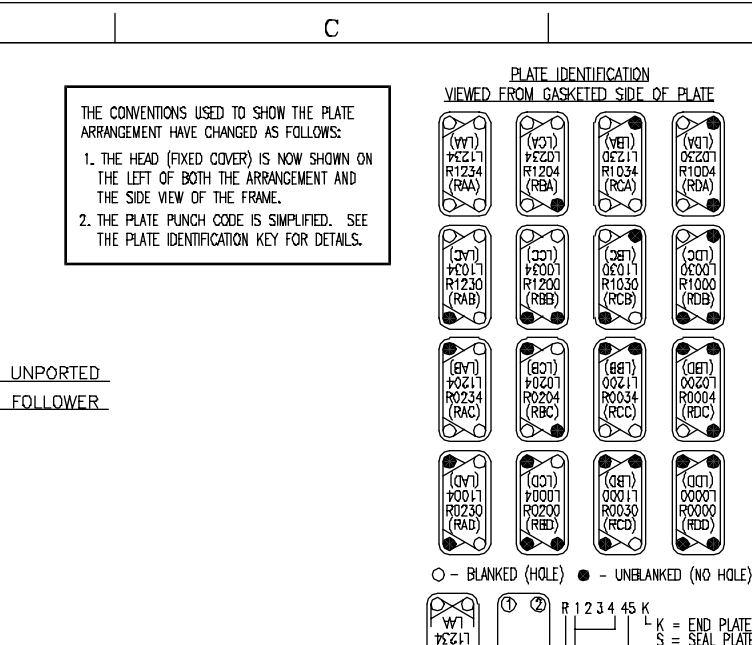
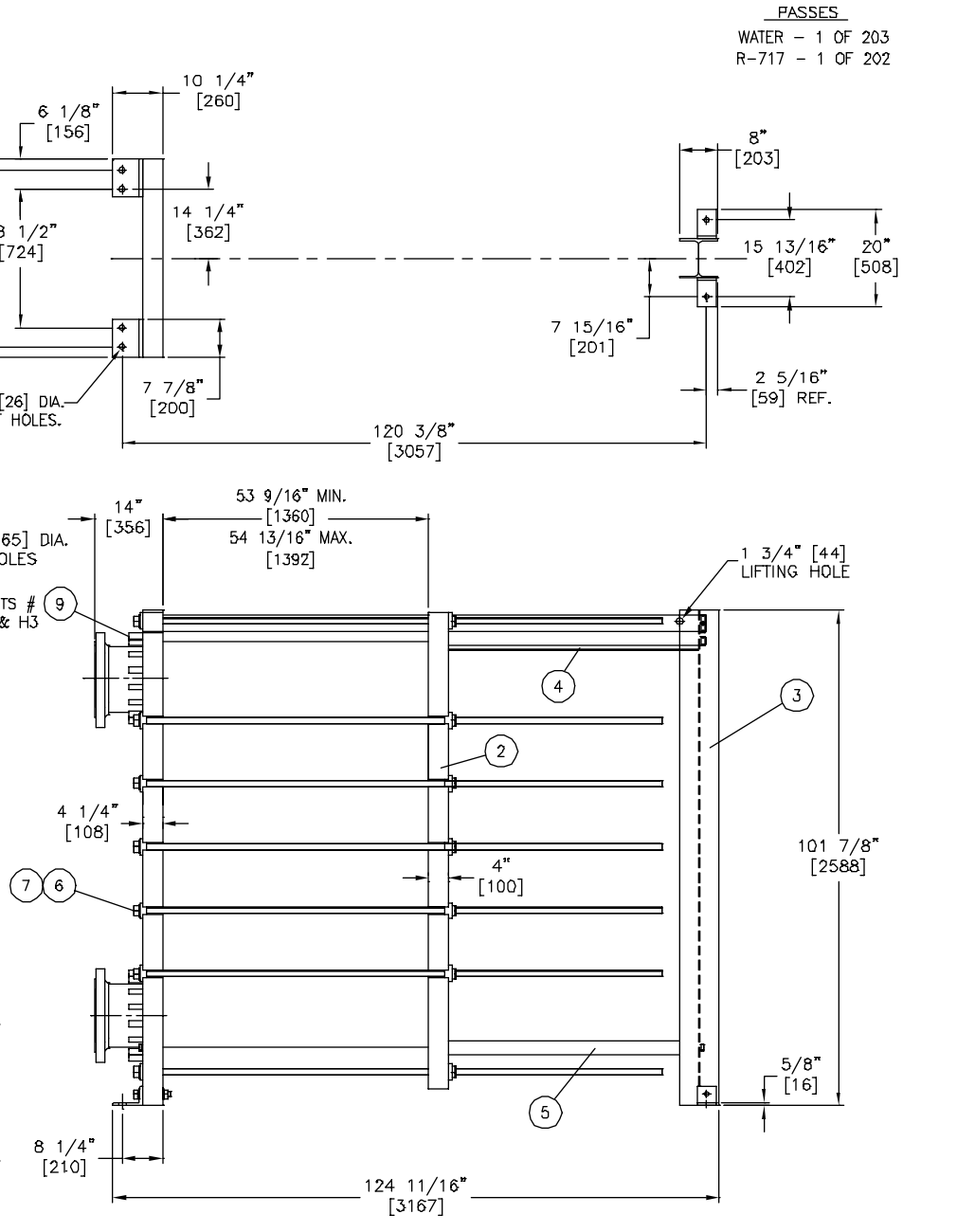
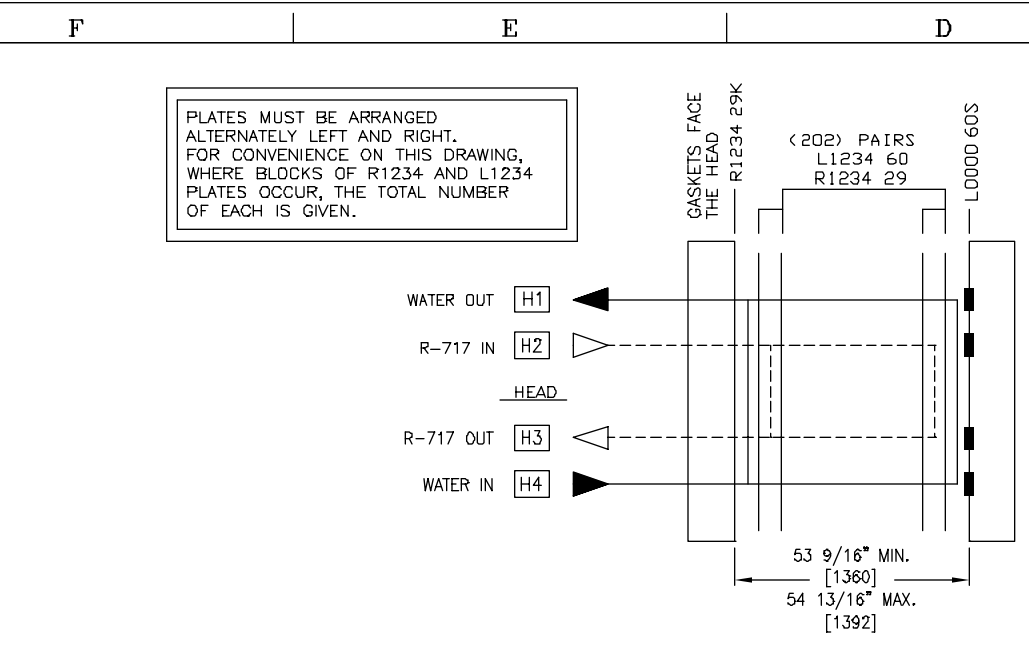
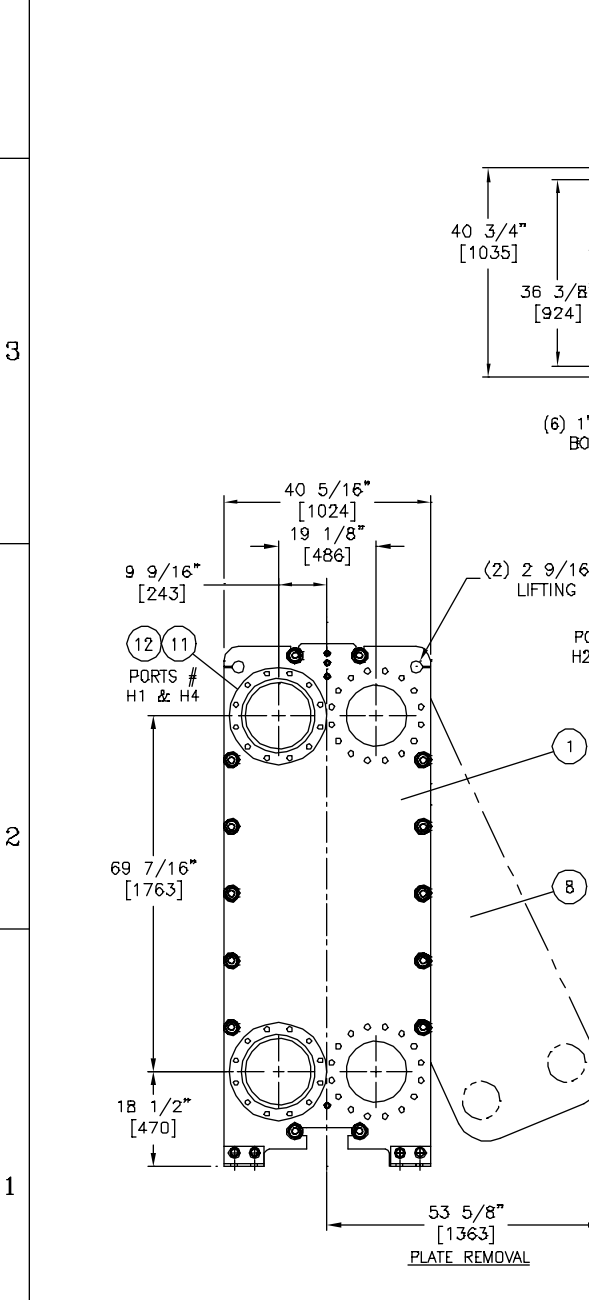
Previous operating conditions:

Liquid	Flow Rate	Temp (°F)	Delta P (psig)
Water	2,437,158 lb/hr	80 - 89.3	11.8
R-717	39,706 lb/hr	185 - 90.5	0.3

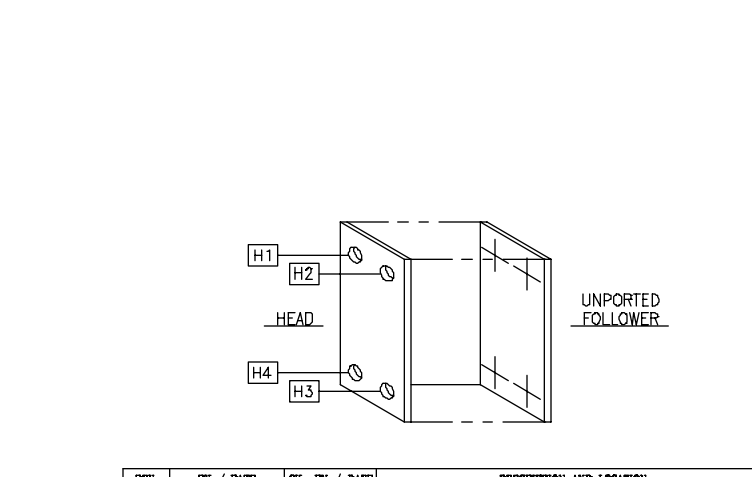


MATERIALS OF CONSTRUCTION		
ITEM NO.	DESCRIPTION	MATERIAL
1	HEAD	SA516 GR70
2	FOLLOWER	SA516 GR70
3	END SUPPORT	A36
4	TOP BAR	A36
5	BOTTOM BAR	C1018
6	M36 DIA. TIE BAR	SA193 GRB7
7	TIE BAR HEX NUTS	SA194 GR2H ZINC PLATED
8	HEAT TRANSFER PLATES	SA240 GR316
9	STUDS	SA193 GRB7
10	NOZZLES	316L STAINLESS STEEL
11	FLANGES	CARBON STEEL GALVANIZED

**APV**  
FACTORY SERVICE  
FOR PARTS AND SERVICE  
CALL OUR CUSTOMER  
SERVICE DEPARTMENT  
1-800-828-7391



- NOTES**
- THE INSTALLATION, OPERATION AND MAINTENANCE OF THIS HEAT EXCHANGER SHALL BE IN ACCORDANCE WITH THE APV PARAFLOW PLATE HEAT EXCHANGER INSTRUCTION MANUAL.
  - THIS MODEL HEAT EXCHANGER IS TIGHTENED USING A WRENCH ON THE TIE BAR HEX NUTS AT THE HEAD (FIXED COVER) END ONLY. CLEAN AND LUBRICATE THE THREADS BEFORE OPENING OR CLOSING USING A LUBRICANT COMPATIBLE WITH CARBON STEEL. APV RECOMMENDS NEVER-SLEEZ REGULAR GRADE. DO NOT USE COMMON GREASE. THE PLATE PACK IS TO BE TIGHTENED IN ACCORDANCE WITH THE INSTRUCTION MANUAL SUPPLIED. DO NOT TIGHTEN BELOW THE MINIMUM DIMENSION SHOWN.
  - THE CUSTOMER IS RESPONSIBLE FOR PROVIDING:
    - ANCHOR BOLTS PER ASTM A36 MINIMUM WITH A RECOMMENDED DIAMETER OF 7/8".
    - PROTECTION AGAINST START UP OR OPERATING PRESSURES EXCEEDING THE MAXIMUM ALLOWABLE WORKING PRESSURE.
  - NOZZLES ARE PROVIDED WITH A SMOOTH RAISED FACE FINISH.
  - BOLT HOLES STRADDLE CENTERLINES SHOWN.
  - DIMENSIONS ARE SHOWN IN INCHES. DIMENSIONS IN BRACKETS [ ] ARE IN MILLIMETERS.
  - STANDARD TOLERANCES:  
 FRAME AND FOUNDATION BOLT LOCATIONS: ±1/4 INCH [±6mm]  
 NOZZLE CENTERLINE AND FACE DIMENSIONS: ±1/8 INCH [±3mm]



DESIGN SPECIFICATIONS		
DESIGN CODE	ASME SECTION VIII DIV 1 1995 EDITION 1996 ADDENDA	
SECTION	HOT SIDE	COLD SIDE
MAX. ALLOWABLE WORKING PRESSURE	150 PSIG.	250 PSIG.
MINIMUM DESIGN METAL TEMPERATURE	-20 °F. @ 150 PSIG.	-20 °F. @ 250 PSIG.
HYDROTEST PRESSURE	225 PSIG.	375 PSIG.
MINIMUM OPERATING TEMPERATURE	-20°F.	
MAXIMUM OPERATING TEMPERATURE	185°F.	
SERIAL NUMBER	33828.1 THRU 33828.3	
HEAT TRANSFER AREA	5827.2 SQ. FT.	
FRAME SIZE	NO. 4-1	
MAXIMUM FRAME CAPACITY	205 PLATE PAIRS	
DRY WEIGHT	16,725 LBS.	
FLOODED (OPERATING) WEIGHT	20,690 LBS.	
TOTAL LIQUID VOLUME	477.9 GALS.	
FINISH	APV STANDARD PAINT 3196	
ACCESSORIES	304 STAINLESS STEEL HEAT SHIELD	

OPERATING CONDITIONS				
LIQUID	FLOW RATE	TEMP. °F.	ΔP(PSIG)	
WATER	2,437,156.2 lb/hr	80.0° → 89.3°	11.8	
R-717	39,706.3 lb/hr	185.0° → 90.5°	0.3	

NOZZLE SCHEDULE				
PORT	SIZE	TYPE	CLASS	SERVICE
H1	12"	SCH. 10S 316L S.S. STUB END W/ C.S. LAP JT. FLG. (SEE NOTE 4)	150# ANSI B16.5	WATER OUT
H2	12"	FLAT FACED CARBON STEEL STUDDED BOLT PATTERN	300# ANSI B16.5	R-717 IN
H3	12"	FLAT FACED CARBON STEEL STUDDED BOLT PATTERN	300# ANSI B16.5	R-717 OUT
H4	12"	SCH. 10S 316L S.S. STUB END W/ C.S. LAP JT. FLG. (SEE NOTE 4)	150# ANSI B16.5	WATER IN

**PLATES AND GASKETS**

(202) - 12WP-C4-60/29, 0.5mm 316 STAINLESS STEEL PLATE PAIRS,  
 (1) - 12SP-C4-29, 0.5mm 316 STAINLESS STEEL SINGLE END PLATE AND  
 (1) - 12SP-C4-60, 0.5mm 316 STAINLESS STEEL SINGLE SEAL PLATE WITH  
 (202) - 12WP-C4, NEOPRENE CLIP-IN FLOW GASKETS.  
 (1) - 12SP-C4, NEOPRENE CLIP-IN END GASKET.  
 (1) - 12SP-C4, NEOPRENE CLIP-IN FLOW GASKET.

**PLATES PROVIDED AS:**  
 (202) 12WP-C6-60/29, L1234/R1234 PLATE PAIRS.  
 (1) 12WP-C6-29, R1234K SINGLE END PLATE.  
 (1) 12WP-C6-60, L0000S SINGLE PLATE.

END USER:  
**STANFORD UNIVERSITY**  
 STANFORD, CA  
 (3) CONDENSERS

W.O. NO.: 33828

FES P.O. NO.: 059942    FES NO.:

**FES**  
 A SUBSIDIARY OF THERMO POWER CORP.  
 A THERMO ELECTRON COMPANY.  
 3475 BOARD ROAD  
 P.O. BOX 2306, YORK, PA 17405  
 Tel: (717) 767-8411/Fax: (717) 764-3627

Description:  
**MODEL 12WP-C4-1**  
**PLATE HEAT EXCHANGER**

Checked: Date:    Superweld:    Scale:    Sheet: 1 OF 1  
 N.T.S.

Approved: Date:    Drawn: Date:    Drawing No.:    Rev. -  
 DJ NEFF 12/31/97    33828D0001

GA B134M20A01    Cnd File: 33828D01    A    AUTO CND REL. 13

REV.	BY	DATE	CHK. BY	DATE	DESCRIPTION AND LOCATION