

R.W. Fernstrum & Company
 1716 11th Avenue
 Menominee MI 49858
 Phone: 906-863-5553

BAY DIESEL CORP
SPIRIT OF WASHINGTON

Date: 08/27/19
 Rec #: BN082719A
 QUOTE: 13693

Engine Make	Engine Model	HP & RPM (KW & RPM)	Engine Duty	Sea Water Temperature	Minimum Speed at Full Power	Heat Rejection BTU/MIN	Fresh Water Flow Rate G P M	Units Required	GRIDCOOLER® Keel Cooler Model	Net Wt. Pounds Each	Fluid Capacity US Gallons Each
JOHN DEERE	6135 AFM85	500 HP 2,000 RPM	PROPULSION	90 °F	0 & 2KNOTS						
JACKETWATER & GEAR CIRCUIT :						21,290	93	1	D28135W-Z	633	17
Temperature into JW and gear circuit: 170°F								OR	0 KNOTS		
								1	D28135W	558	17.69
									0 KNOTS		
								1	D2481W-Z	351	9.54
								OR	2 KNOTS		
								1	D2481W	313	10.05
									2 KNOTS		
JOHN DEERE	6135 AFM85	300 EKW 1,800 RPM	GENERATOR	90 °F	0 KNOTS						
JACKETWATER & GEAR CIRCUIT :						20,605	85	1	D24147W-Z	548	15.67
Temperature into JW circuit 170° F.								OR			
								1	D24147W	509	16.18

50% Ethylene glycol included in the cooling system.

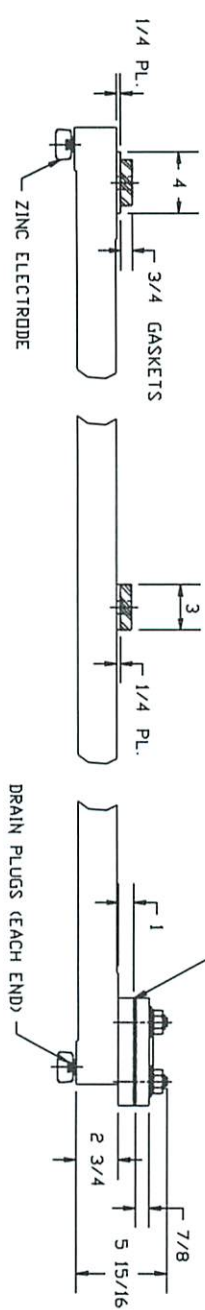
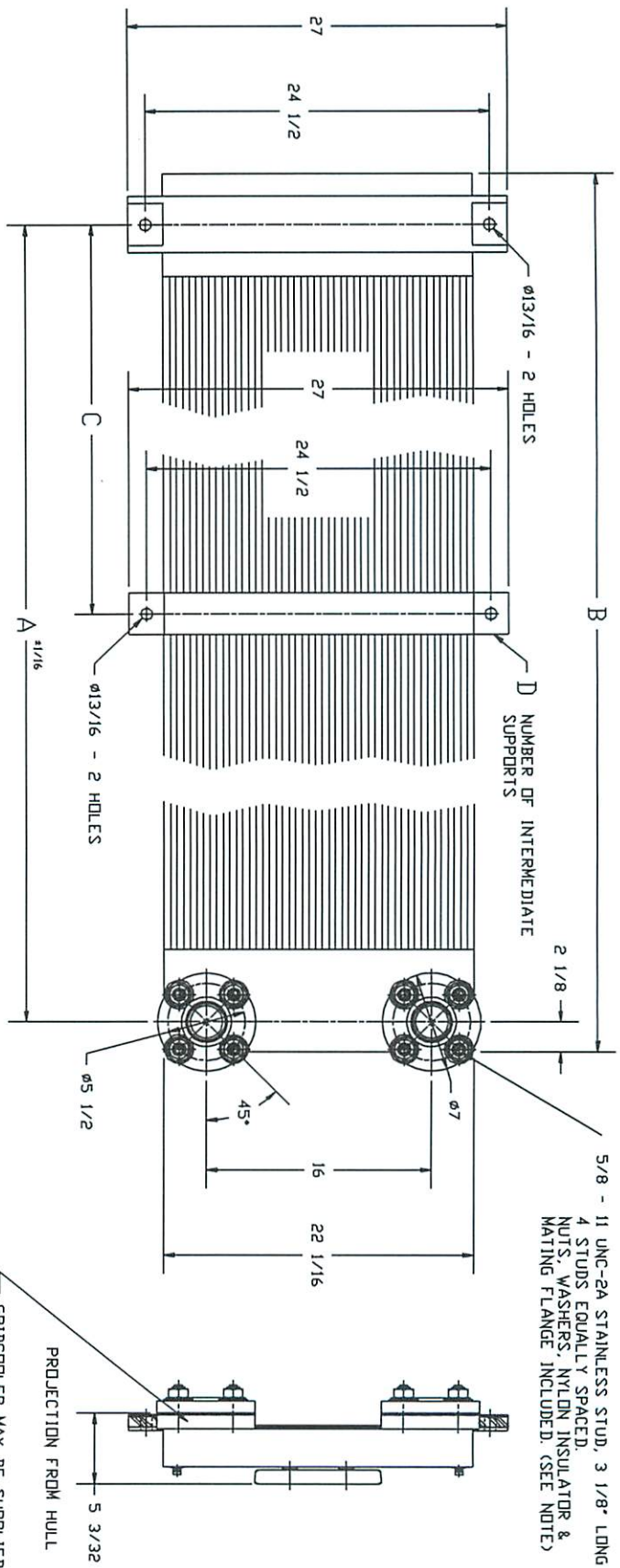
*** Recommendations are based on full rated power in still water (0 knot hull speed), but with a thermal or convection current flow past the cooler tubes of 1/2 mile per hour. The keel cooler should be installed so as to permit free circulation of water past the cooler tubes. We do not recommend recessing units on the bottom of a flat bottom boat, unless that section of the hull where the keel cooler is to be mounted is at a minimum of 20 degrees (from forward to aft).

Note: When pressure testing the GRIDCOOLER unit, do not exceed 35 psi, or 2.41 bar.

For more information on the FERNSTRUM® GRIDCOOLER Keel Cooler visit our website at www.fernstrum.com.

Flanged coolers

EXHIBIT A



(ALL DIMENSIONS ARE IN INCHES)

NOTE - MATING FLANGE CONSISTS OF A CARBON STEEL (A105) 150# SLIP-ON FOR 2 1/2" PIPE WITH A 2.94 I.D.

GRIDCOOLER MAY BE SUPPLIED WITH 2 - 7" DIA. FLANGES (90/10 COPPER NICKEL) OR 1 OVAL FLANGE WITH 2 - 5.5" DIA. BOLT CIRCLES.

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MODEL	D2499W-Z	D24105W-Z	D24111W-Z	D24117W-Z	D24123W-Z	D24135W-Z	D24147W-Z	D24159W-Z	D24172W-Z	D24184W-Z
A	99	105	111	117	123	135	147	159	172	184
B	104 3/4	110 3/4	116 3/4	122 3/4	128 3/4	140 3/4	152 3/4	164 3/4	177 3/4	189 3/4
C	33	35	37	39	41	45	49	53	43	46
D	2	2	2	2	2	2	2	2	3	3

Genset

TOLERANCES		REVISIONS		GRIDCOOLER INSTALL. DIMENSIONS	
GRD/IN BRD	DECIMAL	NO	DATE	BY	
±	FRACTIONAL	1			
±	FRACTIONAL	2			
±	ANGULAR	3			
±	ANGULAR	4			
±	ANGULAR	5			

R.W. FERNSTRUM & COMPANY
MENDONNEE, MICHIGAN

GRIDCOOLER INSTALL. DIMENSIONS

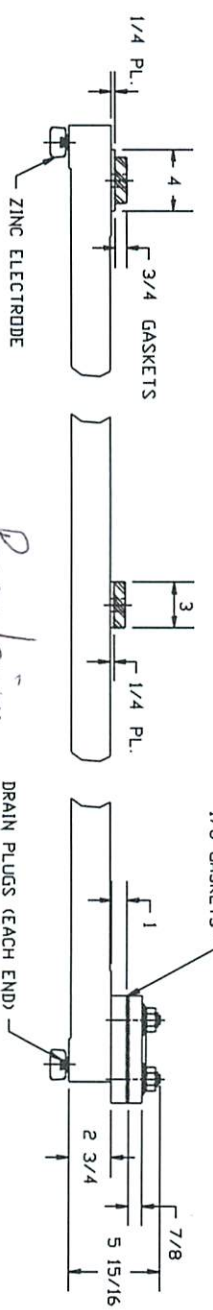
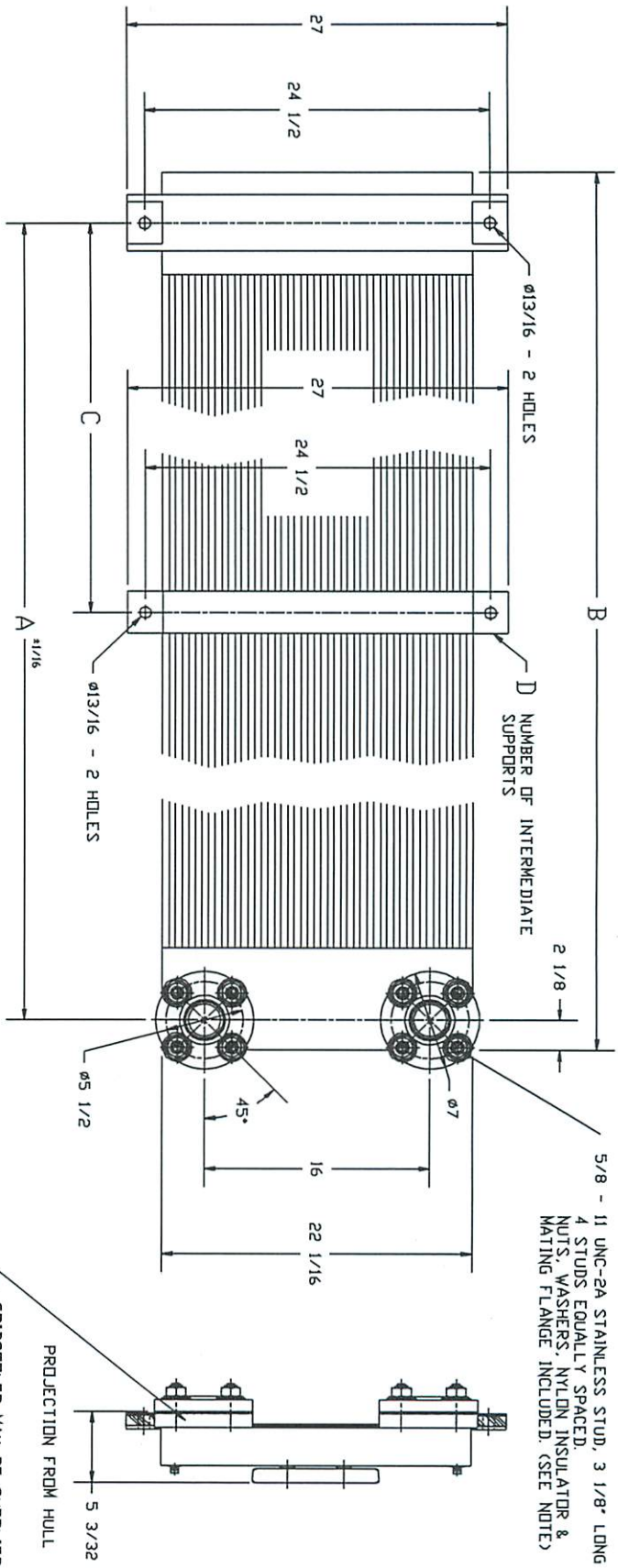
SCALE: 1/8

DATE: 3-15-99

BY: [Signature]

DATE: 3-15-99

PROJECT: D2400W-Z-6



Propulsion

NOTE - MATING FLANGE CONSISTS OF A CARBON STEEL (A105) 150# SLIP-ON FDR 2 1/2" PIPE WITH A 2.94 1.D.

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MODEL	D2427W-Z	D2433W-Z	D2439W-Z	D2445W-Z	D2451W-Z	D2457W-Z	D2463W-Z	D2469W-Z	D2475W-Z	D2481W-Z	D2487W-Z	D2493W-Z
A	27	33	39	45	51	57	63	69	75	81	87	93
B	32 3/4	38 3/4	44 3/4	50 3/4	56 3/4	62 3/4	68 3/4	74 3/4	80 3/4	86 3/4	92 3/4	98 3/4
C								34 1/2	37 1/2	40 1/2	43 1/2	46 1/2
D	NONE			BLANK			BLANK			1	1	1

TOLERANCES		REVISIONS		GRIDCODLER INSTALL. DIMENSIONS	
DECIMAL	FRACTIONAL	NO	DATE	BY	
1		1			
2		2			
3		3			
4		4			
5		5			

R.W. FERNSTRUM & COMPANY
 MENDOTA, MICHIGAN
 DRAWN BY: SLUCAS
 SCALE: 1/8
 DATE: 3-15-99
 CHECKED: []
 APPROVED: []
 MATERIAL: []
 DRAWING NO: D2400W-Z-5