



**Manufacturers of
Heat Exchangers
and Oil Coolers**

**for VEHICLE-INDUSTRIAL
and MARINE APPLICATIONS**

**SEN-DURE
PRODUCTS, INC.**

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QUALITY POLICY

PRODUCTS

offer the
following
benefits:

1. Proven design manufactured to your requirements as to heat transfer and easy fit-up. Optimized for water, oil, air, hydraulic and other fluids.

2. Cooperative design with your engineers results in a heat exchanger for your exact heat transfer requirements. Connections and support brackets can be tailored for compact and simple installation. This will reduce "plumbing" on installation to a minimum.

3. Production capabilities range from single units to OEM quantities.

The SEN-DURE goal is to be recognized as the leader in the Heat Transfer industry and to be identified by our customers as the one that all others are measured against.

To meet the goal SEN-DURE is fully committed to the continuous improvement of our products and services in accordance with ISO-9000 standards.

SEN-DURE realizes that providing products of consistently high quality and reliability is the key to success and it is essential that management/employee attitude and behavior support this policy.



Supplying
Small and Large
Corporations
throughout the
WORLD

The excellent reputation Sen-Dure enjoys world-wide has been earned through 70 years of faithful service to its customers. Sen-Dure looks forward to continuing this service with experienced technical assistance and high quality SENSible and DURable products.

SEN-DURE

INDIVIDUAL HEAT EXCHANGERS

Typical Stock Heat Exchangers

Ring Flange construction, available in 1, 2, 3 and 4 pass tube arrangements. A variety of fluid connections can be furnished. Brackets are rotatable to fit installation needs.



Stock heat exchangers are available in copper and bronze construction designated by the "-5" number. The "-7" number applies to units made of copper and bronze with internal tubes and tube sheets made with 90/10 Cupro Nickel.

Copper/Bronze Part No.	90/10 Cupro Nickel Tubes	Copper/Bronze Part No.	90/10 Cupro Nickel Tubes	Copper/Bronze Part No.	90/10 Cupro Nickel Tubes
SINGLE PASS ONLY		1,2,3, 4 PASS, ETC.		1,2,3, 4 PASS, ETC.	
2A-10"-5	2A-10"-7	4R-12"-5	4R-12"-7	6R-17"-5	6R-17"-7
2A-15"-5	2A-15"-7	4R-17"-5	4R-17"-7	6R-24"-5	6R-24"-7
2A-20"-5	2A-20"-7	4R-21"-5	4R-21"-7	6R-36"-5	6R-36"-7
2A-28"-5	2A-28"-7	4R-28"-5	4R-28"-7	6R-48"-5	6R-48"-7
1, 2, 3, 4 PASS, ETC.		4R-35"-5	4R-35"-7	1,2,3, 4 PASS, ETC.	
3R-12"-5	3R-12"-7	4R-40"-5	4R-40"-7	8R-24"-5	8R-24"-7
3R-17"-5	3R-17"-7	5R-17"-5	5R-17"-7	8R-36"-5	8R-36"-7
3R-23"-5	3R-23"-7	5R-26"-5	5R-26"-7	8R-48"-5	8R-48"-7
3R-28"-5	3R-28"-7	5R-33"-5	5R-33"-7		
3R-35"-5	3R-35"-7	5R-40"-5	5R-40"-7		
		5R-50"-5	5R-50"-7		

EXAMPLE OF PART NO. CALLOUT 5R-36-2P-5 D K

- 1) Tube Side Ftg.
- 2) Shell Side Ftg.
- 3) Material
- 4) No. of Passes
- 5) Bundle Length
- 6) Diameter of Shell

HOSE CONNS. ON HEAT EXCHANGERS SHELL & TUBE SIDE (CODE LETTERS INDICATE SIZE OF CONN.)

CODE LETTER	OUTSIDE DIAMETER SIZE OF HOSE CONN.
R	1"
S	1-1/8"
W	1-1/4"
A	1-3/8"
B	1-1/2"
C	1-5/8"
D	1-3/4"
E	1-7/8"
F	2"
G	2-1/8"
N	2-1/4"
H	2-1/2"
P	2-5/8"
Q	2-7/8"
O	3"
U	3-1/8"

CODE LETTER	FEMALE N.P.T. THREAD SIZE
V	1/2"
T	3/4"
J	1"
K	1-1/4"
L	1-1/2"
M	2"
Y	2-1/2"
X	3/8"
Z	3"

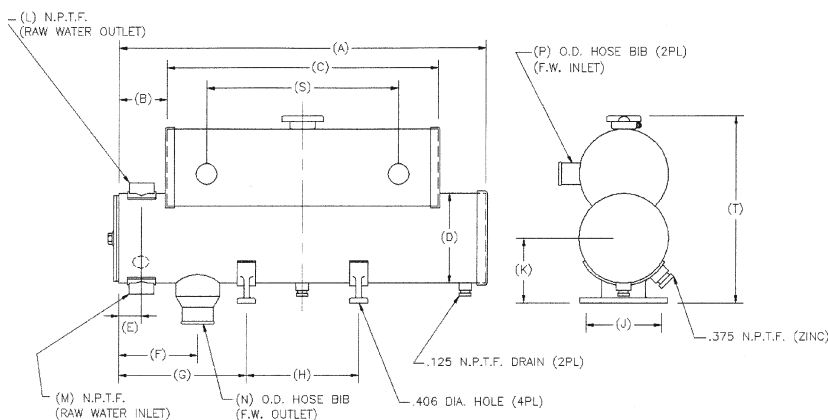
VERTICAL COMPACT - 2 PASS

JABSCO: 3/8" pump - 5 G.P.M. @ 1500 R.P.M.
1/2" pump - 10 G.P.M. @ 1700 R.P.M.
1" pump - 25 G.P.M. @ 1700 R.P.M.
Other water fitting sizes on special order.

Dimensions of "COMPACT" Model					
Compact Exchanger Model	O.A. Height	Shell Dia.	Tank Dia.	Salt Water Fitting	Jacket Water Fitting
2T-10-2P	16	2-1/8"	4"	3/8" N.P.T.	3/8" N.P.T.
2T-15-2P	21	2-1/8"	4"	3/8" N.P.T.	3/8" N.P.T.
3T-12-2P	19	3-1/8"	5"	1/2" N.P.T.	1/2" N.P.T.
3T-17-2P	24	3-1/8"	5"	1/2" N.P.T.	1/2" N.P.T.
4T-12-2P	22	4-1/8"	6"	1" N.P.T.	INLET 1" HOSE OUTLET 1" N.P.T.
4T-17-2P	27	4-1/8"	6"	1" N.P.T.	



HORIZONTAL INTEGRAL TANK - 2 PASS



BUNDLE	A	B	C	D	E	F	G	H	J	K	L	M	N	P	T
4V12	15.00	2.75	11.00	4.12	.875	4.00	7.00	6.00	3.50	2.75	1.00	1.00	*	*	8.12
4V17	20.00	2.75	15.00	4.12	.875	4.25	7.00	10.00	3.50	2.75	1.00	1.00	*	*	8.12
4V21	24.00	3.00	18.00	4.12	.875	4.25	7.00	10.00	3.50	2.75	1.00	1.00	*	*	8.12
5V13	16.00	3.50	12.00	5.12	.875	4.00	6.00	8.00	3.81	3.56	1.00	1.00	*	*	9.00
5V19	23.00	3.50	17.50	5.12	.875	4.00	6.50	10.00	3.81	3.56	1.00	1.00	*	*	10.75
5V22	25.00	3.50	18.00	5.12	.875	4.00	6.00	10.00	3.81	3.56	1.00	1.00	*	*	10.75

* To be determined by customer.

Important! It is a requirement that all heat exchangers, refrigeration condensers and oil coolers be electrically bonded to the vessel's bonding system.

SEN-DURE

FRESH WATER COOLING ACCESSORIES

SURGE TANKS

Order Must Specify:

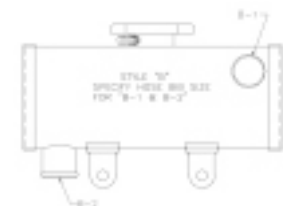
1. Style "A", "B", "C", or "D".
2. Hose bib size or N.P.T. size of inlet and outlet by utilizing style letter plus digit shown in illustrations.

Part No.

0046 – 3 qt. surge tank.
Approx. size 4-1/8" diam. by 10" long, 7 lb. pressure cap.
Select style "A", "B", "C", or "D".



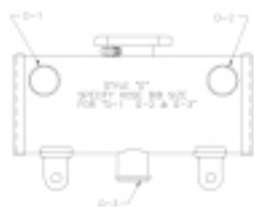
0030 – 4 qt. surge tank.
Approx. size 4-1/8" diam. by 15" long, 7 lb. pressure cap.
Select style "A", "B", "C", or "D".



0031 – 5 qt. surge tank.
Approx. size 5-1/8" diam. by 15" long, 7 lb. pressure cap.
Select style "A", "B", "C", or "D".



0032 – 8 qt. surge tank.
Approx. size 6-1/8" diam. by 15" long, 7 lb. pressure cap.
Select style "A", "B", "C", or "D".



RECOVERY TANK – COOLANT

Part No.

1490

Complete assembly ready for installation.



ZINC PENCILS FOR ELECTROLYSIS PROTECTION

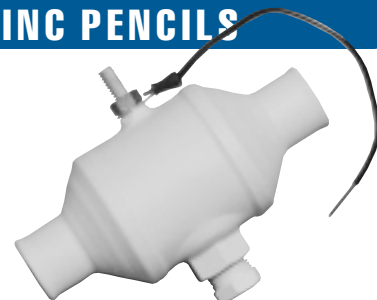
Part No.

0292-1	1/4" N.P.T.	Zinc 3/8" x 1-3/4" long
0292-2	1/4" N.P.T.	Zinc 3/8" x 3/4" long
0288-2	3/8" N.P.T.	Zinc 1/2" x 1" long
0288-4	3/8" N.P.T.	Zinc 1/2" x 1-1/2" long
0281	1/2" N.P.T.	Zinc 5/8" x 2" long
7066	1/8" N.P.T.	Zinc 1/4" x 2" long

IN-LINE ZINC PENCILS

Part No.

5140	3/4" Hose
5141	1" Hose
5142	1-1/4" Hose
5143	1-1/2" Hose
5144	1-3/4" Hose
5146	1/2" N.P.T.
5147	3/4" N.P.T.
5148	1" N.P.T.
5149	5/8" Hose



STRAINERS

Outboard Strainers



Bronze

Aluminum

0905	For seacock inlets up to 1/2"	5406
	Ideal for air conditioning, generators or head use.	
	6-1/8" x 3-1/4"	
0290	For seacock inlets up to 1-1/4"	5405
	Overall size 9" x 4-3/8"	
0291	For seacock inlets up to 1-1/2"	5404
	Overall size 12-1/4" x 5-1/4"	
0910	For seacock inlets up to 2-1/2"	5403
	Overall size 15" x 5-7/8"	
8487	For seacock inlets up to 4" (Removable Screen)	
	Overall size 9" x 18"	

Cast Bronze In-Line Strainers

Seacock up to 1"	0029S
Seacock up to 1-1/4"	0029

In-Line Strainer Parts

Gasket for #0029 Strainer	0203
Gasket for #0029S Strainer	0206
Locking Cap Screw for #0029 Strainer	0208
Locking Cap Screw for #0029S Strainer	0209
Basket & Cap Assy	
+ Gasket for #0029 Strainer	0219
Basket & Cap Assy	
+ Gasket for	
#0029S Strainer	0220



to order call 954.973.1260



FRESH WATER COOLING KITS & ACCESSORIES

CHEVROLET

305", 307", 327", 350" Chevy full system with Camelback or Center Rise exhaust manifolds.
Inboard only. Pump not included.....K9450

CHRYSLER

Chrysler Part No.

Chrysler 318".....2847886.....K3570
A 2 pass heat exchanger, increasing efficiency, block only.
Hose and fitting supplied.

FORD

302", 351" Ford full system with Camelback or Center Rise exhaust manifolds. Inboard only. Pump not included.K9449

VOLVO

MD 11C, 25 H.P.	K3009
MD-11C.....Diesel 25 HP.....	2768-1-5
MD 17C.....Diesel 36 HP.....	2769-1-5
MD6A-6B-7A.....Diesel 10 HP.....	K2158*#
MD-2B.....Diesel 25 HP.....	K2177*
MD-3B.....Diesel 36 HP.....	K2157*
MD-1B.....Diesel 10 HP.....	K2159*
MD-2.....Diesel 25 HP.....	K2700°
AQ 170.....Gas.....	2404-1-5
AQ200D/225D/255B.....Gas V8.....	K2835†
AQ 130/AQ115.....Gas.....	K2946
AQ200/225/260/290	
BB225/260.....Gas V8.....	K4108†
AQ175A.....Gas V6.....	K4109†
AQ200/225/255/260/290.....Gas V8 with Top Mounted Power Steering Pump.....	K4966†

‡ Not Saildrive.

* Engine must be equipped with hand cranking feature which is retained when fresh water cooling is installed except on Kit No. K2158.

*# To retain hand cranking feature, specify Kit No. K2158-9 for special P.T.O.

° Indicates electric salt water pump furnished.

† Indicates Half System.

YANMAR DIESEL

Model 2QM15.....	K3030
Model 2QM20.....	K2550
Model 3QM30.....	K2553
Model SB8 and SB12.....	K2687°
Model SB8 and SB12.....	K3545
Model YSB8 and YSM12.....	K2688°
Model YSM8 and YSM12.....	K3546
Model 1GM.....	K4443
Model 2GM.....	K4621
Model 3GM and 3HM.....	K4622
Model 3QM.....	K4623

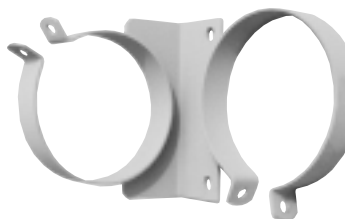
° Indicates electric salt water pump furnished.

UNIVERSAL

Atomic Four 69" 30 HP.....K1995

BRACKETS & CLAMPS

Steel Mounted for Oil coolers & Exchangers



Part No.

0245-2	for 2" diameter shell
6673	2" heavy duty clamp
0306-1	for 3" diameter shell
5278	for 4" diameter shell
7407	for 5" diameter shell
7408	for 6" diameter shell
7328	angle base for 3" dia.
7225	angle base for 4" dia.
6680	angle base for 5" dia.
6663	angle base for 6" dia.

GASKETS

For Heat Exchanger End Covers & Flanges

Part
No. Series

0493	2" Rubber 1-7/8" O.D.	center hole
0131	3" Cork 4-1/2" O.D.	1 Pass - 8 hole flange
0129	3" Cork 4-1/2" O.D.	2 Pass - 8 hole flange
0332	3" Rubber 2-3/4" O.D.	center hole
0132	4" Cork 5-1/2" O.D.	1 Pass - 8 hole flange
0130	4" Cork 5-1/2" O.D.	2 Pass - 8 hole flange
0259	4" Rubber 3-3/4" O.D.	1 pass - center hole
0138	4" Rubber 3-7/8" O.D.	2 pass - center hole
0134	5" Cork 6-3/4" O.D.	2 Pass - 10 hole flange
0135	5" Cork 6-3/4" O.D.	1 Pass - 10 hole flange
0396	5" Rubber 4-3/4" O.D.	center hole
0137	6" Cork 8" O.D.	1 Pass - 12 hole flange
0136	6" Cork 8" O.D.	2 Pass - 12 hole flange
5029	6" Rubber Gasket	5-3/4" O.D. - 1 pass
5068	Gum Rubber Washer	

PRESSURE CAPS

Part No.

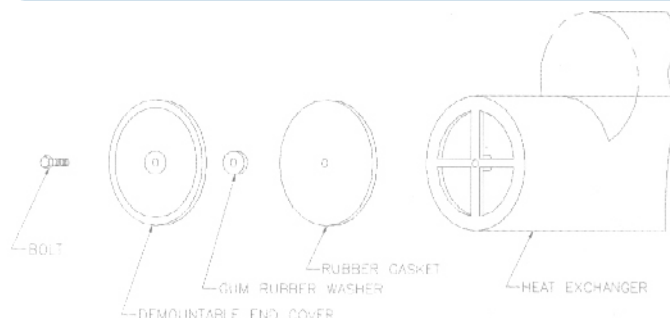
0078.....7 lb.

Part No.

6582.....15 lb.

END COVER ASSEMBLIES

Removable



5372	Assembly consists of:	2" Dia.
5373	Copper End Plate	3" Dia.
5374	Rubber Gasket	4" Dia.
5375	Gum Rubber Washer, Bolt.....	5" Dia.
5376	and Instructions.....	6" Dia.



COOLING FOR DIESEL ENGINES

“Custom Engine and Gear Cooling Equipment”

MARINE PROPULSION • GENERATORS • INDUSTRIAL APPLICATIONS

COOLING FOR DETROIT DIESEL ALLISON

G.M.D.D.A. Engine	Exhaust Manifold	SEN-DURE
4-53N	{ Port	3536-1-7
	{ Starboard	3537-1-7
4-53T	{ Port	2883-2-7
	{ Starboard	2923-2-7
4-71N	{ Port	3527-1-7
	{ Starboard	3526-1-7
4-71T	{ Port	3534-1-7
	{ Starboard	3537-1-7
6-71N or T	{ Port	3329-2-7
	{ Starboard	3411-2-7

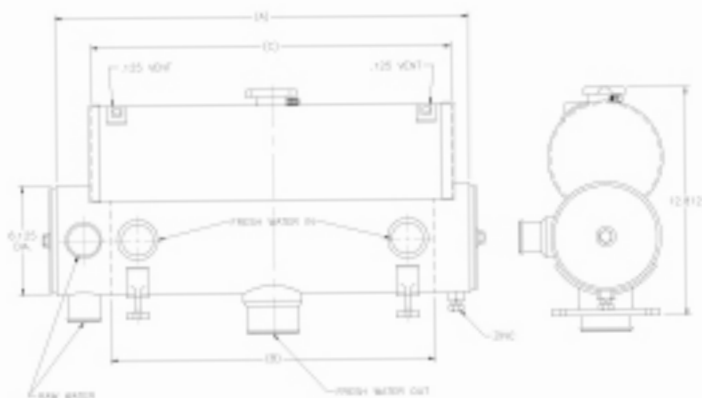
DETROIT DIESEL REPLACEMENT

Engine Size	D.D. #	Heat Exchanger
8.2	8923146	3281-1-7
	DX110304	4789-1-7
12V92TA	DX109775	12V92TA
12V92TA	23501253	4804-1-7
	23501217	9703-1-7
12V92TA	TANDEM	10056-1-7
16V92TA		10070-1-7
16V92TA	DD121765	10076-1-7
8V92TA		10493-1-7
671TA		10512-1-7
6V92TA	DD122321	10563-1-7
12V92T	DD122331	10569-1-7
16V92TA	DD122342	10585-1-7
12V71TA	DD122395	10624-1-7
16V92	23504999	10656-1-7
671TI		10765-1-7
6V92TA		10847-1-7
6V92TA	DD122859	10855-1-7
6V92TA	DD122859	10884-1-7
12V92TA		11008-1-7
12V92TA		11010-1-7
12V92TA		11012-1-7
16V-92	23504164	12007-1-7
6V-53	23502659	12010-1-7
16V92	23512102	12011-1-7
8V-92	TANDEM	12500-1-7
8V92	TANDEM	12694-1-7
	70627000	12852-1-7
6V53TI		12915-1-7
6V71TA		12921-1-7
	TANDEM	12930-1-7
	HEX	12940-1-7
8V92	TANDEM	13077-1-7
	23505716	13105-1-7
	23505711	13106-1-7
	8532343	13346-1-7

INDUSTRIAL APPLICATIONS

Engine	Exchanger	Engine	Exchanger
8.2	9221-1-7	6V-71TA	9438-1-7
6V-53	9440-1-7	8V-71TI	
6V-53T		6V-92	
		8V-92	
6V-71	9439-1-7	6V-92TA	9437-1-7
8V-71		8V-92TI	
		12V-71TA	
		16V-71N	

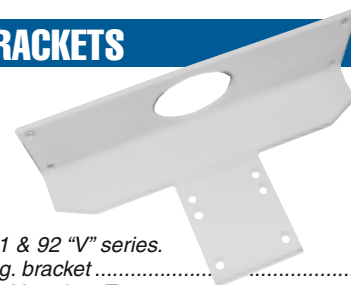
8V/12V NATURAL OR T.I. APPLICATIONS



Hose Bib	O.D. Size?*	SEN-DURE Part No.	A	B	C	Engine/RPM
Salt Water In-Out		11434-1	23"	18"	20"	8V-71N/1800, 8V-71N/2300 8V-71TI/2100, 12V-71N/1800
Fresh Water In		11435-1	29"	24"	26"	8V-71TI/2300, 12V-71N/1800 12V-71TI/2100
Fresh Water Out		11436-1	35"	30"	34"	12V-71TI

* Specify hose bib size

BRACKETS



Part No.

Bracket (exchanger mtg.) for 71 & 92 "V" series.
Attaches directly to fan hub mtg. bracket 7538
Bracket (exchanger mtg.) for 65V-53 & 53T
Attaches directly to front of engine block 7526
Holes drilled to individual unit specifications.

OIL COOLERS HYDRAULIC, TRANSMISSION and ENGINE



CLASS I



HOW TO SELECT PART NUMBERS

2" OIL COOLERS

Oil Fittings are standard 3/8" N.P.T.

- Step 1 – Choose a number for the tube bundle length (5" lg, 6" lg, 9" lg, 12" lg).
 Step 2 – Choose a number for the end fitting and oil connection sizes.
 Step 3 – Choose a number for the type of material (Copper, Cupro-Nickel).

EXAMPLES

- 1125-1-5 1 - Tube bundle, 5" long.
 ↑ ↑
 ⑦ ② ③ 2 - End fitting 3/4" dia. hose with 3/8" NPT oil connections.
 3 - Copper Tubes

- 1132-151-7 1 - Tube bundle is 12" long.
 ↑ ↑ ↑
 ⑦ ② ③ 2 - End fitting is 1-1/2" dia. hose with 1/2" NPT oil connections.
 3 - Cupro-Nickel Tubes

ADD A "Z" TO LAST NUMBER SPECIFYING ZINC

3" OIL COOLERS

Oil Fittings are standard 1/2" N.P.T.

- Step 1 – Choose a number for the tube bundle length (6" lg, 9" lg, 12" lg).
 Step 2 – Choose a number for the end fitting and oil connection sizes.
 Step 3 – Choose a number for the type of material (Copper, Cupro-Nickel).

EXAMPLES

- 1187-40-7 1 - Tube bundle, 6" long.
 ↑ ↑ ↑
 ⑦ ② ③ 2 - End fitting 1-1/2" dia. hose with 1/2" NPT oil connections.
 3 - Cupro-Nickel Tubes

- 1209-700-5 1 - Tube bundle is 9" long.
 ↑ ↑ ↑
 ⑦ ② ③ 2 - End fitting is 1" NPT with 3/4" NPT oil connections.
 3 - Copper Tubes

ADD A "Z" TO LAST NUMBER SPECIFYING ZINC

Step 1

Step 2

Step 3

- 1125 → 5" Long Tube Bundle
 1126 → 6" Long Tube Bundle
 1129 → 9" Long Tube Bundle
 1132 → 12" Long Tube Bundle

End Fitting Size	OIL CONNS.		
	3/8 NPT	1/2 NPT	3/4 NPT
3/4" Hose	-1	-11	-100
1" Hose	-2	-21	-200
1/2" NPT	-3	-31	-300
5/8" Hose	-4	-41	-400
3/4" NPT	-5	-51	-500
1" NPT	-6	-61	-600
1-1/4" NPT	-7	-71	-700
1-1/2" NPT	-8	-81	-800
1-1/8" Hose	-10	-101	-1000
1-1/4" Hose	-12	-121	-1200
1-3/8" Hose	-14	-141	-1400
1-1/2" Hose	-15	-151	-1500
1-5/8" Hose	-16	-161	-1600

-5 -7
 CU CU/NI

Step 1

Step 2

Step 3

- 1187 → 6" Long Tube Bundle
 1209 → 9" Long Tube Bundle
 1928 → 12" Long Tube Bundle

End Fitting Size	OIL CONNS.		
	3/8 NPT	1/2 NPT	3/4 NPT
1" Hose	-1	-10	-100
2" Hose	-2	-20	-200
1-3/8" Hose	-3	-30	-300
1-1/2" Hose	-4	-40	-400
1-1/4" Hose	-5	-50	-500
1-3/4" Hose	-6	-60	-600
1" NPT	-7	-70	-700
1-1/2" NPT	-8	-80	-800
2-1/4" Hose		-85	-850
2" NPT	-9	-90	-900
2-1/2" Hose		-95	-950
1-1/4" NPT	-11	-111	-1000

-5 -7
 CU CU/NI

2 2/3" oil coolers overall length is determined by tube bundle and end caps. Pressure rated 150 PSIG oilside.

CLASS II

HIGH PRESSURE COOLERS

Made of 90/10 Cupro Nickel tubes, 375 PSIG oil side.



PART NO.	BUNDLE	OIL CONN.	WATER CONN.
2251-1-07	2" X 9"	.500 N.P.T.F.	1.250 N.P.T.F.
2251-2-07	2" X 9"	.500 N.P.T.F.	1.250 O.D. H.B.
2251-3-07	2" X 9"	.500 N.P.T.F.	1.000 N.P.T.F.
2252-1-07	2" X 12"	.500 N.P.T.F.	1.250 N.P.T.F.
2252-2-07	2" X 12"	.500 N.P.T.F.	1.250 O.D. H.B.
2252-3-07	2" X 12"	.500 N.P.T.F.	1.000 N.P.T.F.
2252-4-07	2" X 12"	.500 N.P.T.F.	1.500 O.D. H.B.
2253-1-7	3" X 9"	1.000 N.P.T.F.	2.000 N.P.T.F.
2253-2-7	3" X 9"	1.000 N.P.T.F.	1.250 N.P.T.F.
2253-3-7	3" X 9"	1.000 N.P.T.F.	1.500 N.P.T.F.
2253-4-7	3" X 9"	1.000 N.P.T.F.	2.000 O.D. H.B.
2254-1-7	3" X 12"	1.000 N.P.T.F.	2.000 N.P.T.F.

PART NO.	BUNDLE	OIL CONN.	WATER CONN.
2254-2-7	3" X 12"	1.000 N.P.T.F.	1.250 N.P.T.F.
2254-3-7	3" X 12"	1.000 N.P.T.F.	1.500 N.P.T.F.
2254-4-7	3" X 12"	1.000 N.P.T.F.	2.000 O.D. H.B.
2254-5-7	3" X 12"	1.000 N.P.T.F.	1.500 O.D. H.B.
3664-1-7	4" X 9"	1.000 N.P.T.F.	2.000 N.P.T.F.
3664-2-7	4" X 9"	1.000 N.P.T.F.	2.000 O.D. H.B.
3664-3-7	4" X 9"	1.000 N.P.T.F.	3.000 N.P.T.F.
3666-1-7	4" X 12"	1.000 N.P.T.F.	2.000 N.P.T.F.
3666-2-7	4" X 12"	1.000 N.P.T.F.	2.000 O.D. H.B.
3666-3-7	4" X 12"	1.000 N.P.T.F.	3.000 N.P.T.F.
3666-4-7	4" X 12"	1.000 N.P.T.F.	2.500 O.D. H.B.
3668-1-7	4" X 15"	1.000 N.P.T.F.	2.000 N.P.T.F.

PART NO.	BUNDLE	OIL CONN.	WATER CONN.
3668-2-7	4" X 15"	2.000 N.P.T.F.	1.250 O.D. H.B.
3668-3-7	4" X 15"	3.000 N.P.T.F.	1.000 N.P.T.F.
11053-1-7	4" X 18"	1.000 N.P.T.F.	2.000 N.P.T.F.
11053-2-7	4" X 18"	1.000 N.P.T.F.	2.500 O.D. H.B.
11053-3-7	4" X 18"	1.000 N.P.T.F.	3.000 N.P.T.F.
12301-1-7	5" X 12"	1.000 N.P.T.F.	3.000 N.P.T.F.
12301-2-7	5" X 12"	1.000 N.P.T.F.	2.500 N.P.T.F.
12301-3-7	5" X 12"	1.000 N.P.T.F.	2.000 N.P.T.F.
12302-1-7	5" X 15"	1.000 N.P.T.F.	3.000 N.P.T.F.
12302-2-7	5" X 15"	1.000 N.P.T.F.	2.000 O.D. H.B.
12302-3-7	5" X 15"	1.000 N.P.T.F.	2.500 O.D. H.B.



DUAL and FUEL COOLERS



Specify part number for water hose bib or N.P.T. size.

2" DUAL OIL COOLERS TRANSMISSION/LUBE OIL

Oil Fittings are standard 3/8" N.P.T.

- Step 1** – Choose a number for the tube bundle length (5" lg, 6" lg, 9" lg, 12" lg).
- Step 2** – Choose a number for the end fitting and oil connection sizes.
- Step 3** – Choose a number for the type of material (Copper, Cupro-Nickel).

EXAMPLES

- 1225-1-5 1 - Tube bundle, 5" long.
 2 - End fitting 1" NPT with 3/8" NPT oil connections.
 3 - Copper Tubes
- 1229-800-7 1 - Tube bundle is 9" long.
 2 - End fitting is 1-3/4" dia. hose with 3/4" NPT oil connections.
 3 - Cupro-Nickel Tubes

Step 1

1225

5" Long

Tube Bundle

1226

6" Long

Tube Bundle

1229

9" Long

Tube Bundle

1232

12" Long

Tube Bundle

Step 2

End Fitting Size	OIL CONNS.		
	3/8 NPT	1/2 NPT	3/4 NPT
1" NPT	-1	-10	-100
1" Hose	-2	-20	-200
1-1/8" Hose	-3	-30	-300
1-1/4" Hose	-4	-40	-400
1-3/8" Hose	-5	-50	-500
1-1/2" Hose	-6	-60	-600
1-5/8" Hose	-7	-70	-700
1-3/4" Hose	-8	-80	-800

-5	-7
CU	CU/N

Step 3

RETURN FUEL OIL COOLERS FOR USE ON CUMMINS ENGINES



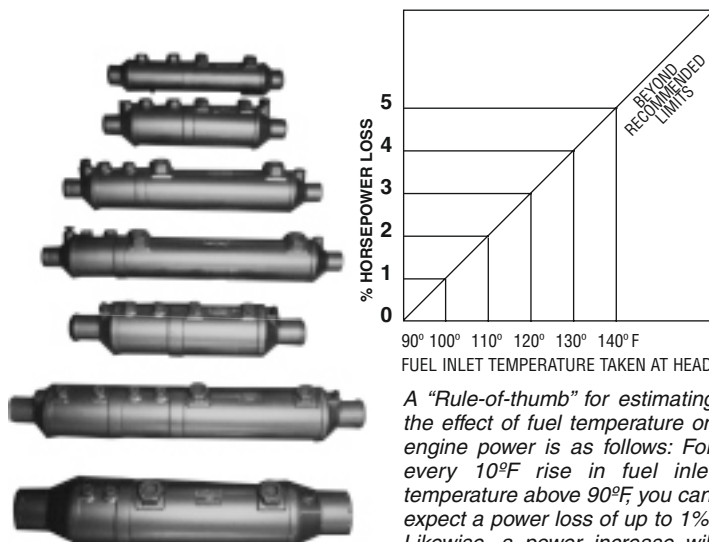
• **KEEPS FUEL TANKS COOLER**

For use on Cummins 470, 504, 555, and others. 1-1/4" water hose connections. 3/8" N.P.T. oil connections, 8" overall 90/10 Cupro Nickel Tubes.....Part No. 2751-1-7

For use on Cummins 300, 370, 903 and others. 1-1/4" water hose connections. 3/8" N.P.T. oil connections, 12" overall 90/10 Cupro Nickel Tubes.....Part No. 2752-1-7

SUPER COOLERS FOR FUEL, GEAR & LUBE OIL

These shell and tube coolers maintain return fuel to a temperature that prevents loss of horsepower due to fuel temperature increase, provide adequate injector cooling and eliminate hot fuel storage tanks. 90/10 Cupro Nickel tubes.



A "Rule-of-thumb" for estimating the effect of fuel temperature on engine power is as follows: For every 10°F rise in fuel inlet temperature above 90°F, you can expect a power loss of up to 1%. Likewise, a power increase will occur if the fuel temperature is reduced. The graph above shows the power loss, in percent, as fuel inlet temperature increases.

FUEL COOLERS FOR USE ON DETROIT DIESEL ALLISON 53, 71 & 92 Series

These special Super Return Fuel Coolers are designed to meet the special horsepower demands of these engines. They provide all of the cool fuel advantages required to obtain maximum horsepower available from these high performance engines.

D.D.A. Part No.	Sen-Dure Part No.
5136348.....For Direct Replacement Order.....	4898-1-7
.....For D.D.A.8.2 Engine.....	4469-1-7
.....4-71,6-71, 6V-71	
.....and 6V-53.....	9005-1-7
.....8V-71, 6V-92	
.....and 8V-92.....	9006-1-7
.....12V-71 and 12V-92.....	9007-1-7

For information on Return Fuel Oil Coolers for all diesel engines and our new Tandem Ultimate Return Fuel Oil Coolers, shown above, contact Sen-Dure Products Inc.



REPLACEMENT HEAT EXCHANGERS and OIL COOLERS

AMERICAN DIESEL

SEN-DURE NO.	SEN-DURE NO.
11906-3-7	12851-1-7
12386-1-7	12841-1-7

CHRIS CRAFT Heat Exchangers

Chris Craft Part No.	SEN-DURE NO.
283F & 327F	16.99-07698
427F	16.99-08003
431 C.I.D.	16.99-07434
307-327-350 Q	16.99-08336
454K	16.99-08763
305-350 K	16.99-08771

Chris Craft part numbers (prior to May 5, 1976) will start with "O" in place of "1".

CHRIS CRAFT Oil Coolers

Chris Craft No.	SEN-DURE NO.	Chris Craft No.	SEN-DURE NO.
16.99-08772	2204-1-5	16.99-08780	3390-1-5
16.99-08755	3388-1-5	16.99-08759	3391-1-5
16.99-08779	3389-1-5		

CHRYSLER

Chrysler 360"	3675141	3394-1-5
Engine block only	4142016	2165-5-7
Chrysler CM-6-55 Diesel		
Similar to 2165		9621-1-5
440		11607-1-5
440	3675677	11937-1-5
318		12150-1-5
460		12221-1-5
	4417135	12520-1-5

* CRUSADER Heat Exchangers

Thermo-Electron Crusader Part No.	SEN-DURE REPL. NO.	Thermo-Electron Crusader Part No.	SEN-DURE REPL. NO.
97307	1655-1-5		10502-1-5
97433-5	9364-1-5	97930A	10516-1-7
97433-7	9364-1-7	97931	10935-1-5
97434-5	9365-1-5		11804-1-5
97434-7	9365-1-7	98117-502	13433-1-5
97632-5	9638-1-5	98236	
97632-7	9638-1-7	97886	
97930	9374-1-5	97878	
97913	9965-1-5	98123	
98191	12505-1-5		

} CALL

CRUSADER Oil Coolers

	SEN-DURE NO.
Transmission oil cooler for 350", 220-270 HP 90° Elbow	9138-1-5
Crusader #97464, Dual oil cooler, (45° elbow)	9134-1-5
Crusader #97555, Dual oil cooler, (90° elbow)	9135-1-5
Crusader #97882	10907-1-5
Crusader #97878	10908-1-5
Crusader #97286	11606-1-5

* CUMMINS

Cummings No.	SEN-DURE No.	Cummings No.	SEN-DURE No.
3349303	13061-2-7	3912146	9660-1-07
3349370	13208-1-7	3914642	9778-1-7
339363	12717-1-7	3915159	10261-1-7
3866719	9778-2-7	3916002	9428-1-7
3897168	12610-1-7	3917117	10559-1-7
3910582	9445-1-7	3919724	10992-1-7
3910583	9446-1-7	3920784	11202-1-07
3911840	9376-1-7	3930791	12525-1-7
3912145	9656-1-7	3930793	12525-1-7

GRAY MARINE DIESEL Recore Heat Exchangers

	SEN-DURE NO.
7-7/16" H	6-71 240 Tubes
4-11/16" H	6-71 360 Tubes

I.H. PALMER Heat Exchangers

Copper Part No.	For Use On	90/10 Tubes Part No.
1014-1-5	V8-549	1014-1-7
1015-1-5	I.H. D-188	1015-1-7
1038-1-5	I.H. 240, 264	1038-1-7
1041-1-5	I.H. D-301 Opp. Rotation	1041-1-7
1042-2-5	I.H. D-301 Std. Rotation	1042-2-7
1048-1-5	PBV-8, 155 HP	1048-1-7
1064-1-5	I.H. D-301 Slant Star'd Eng.	1064-1-7
1065-1-5	D-301 Slant Port Eng.	1065-1-7
V8-345-5	I.H. V8-345	V8-345
1240-1-5	I.H. 345, 392	1240-1-7
1240-2-5	I.H. 345, 392	1240-2-7
1240-3-5	I.H. 345, 392	1240-3-7
1287-1-5	Albin Diesel	1287-1-7
1308-105	V8-304	1308-1-7
1413-1-5	PBD-466	1413-1-7
1422-1-5	PBD-330	1422-1-7
1423-1-5	PBD-220	1423-1-7
1427-1-5	I.H. 265	1427-1-7
1428-1-5	V8-302-351 Fords	1428-1-7
2223-1-5	Palmer PBD-330	2223-1-7
2868-1-5	Palmer PBD-466	2868-1-7

I.H. PALMER Oil Coolers

Copper Part No.	For Use On	90/10 Tubes Part No.
1114-1-5	V8-549	1114-1-7
1117-1-5	Palmer, 150 HP	1117-1-7
1138-1-5	Dual, V8-345, 392	1138-1-7
1138-2-5	Dual, V8-345, 392	1138-2-7
1138-5-5	Dual, V8-345, 392	1138-5-7
1138-6-5	Dual V8-345, 392	1138-6-7
1138-7-5	Dual V8-345, 392	1138-7-7
1149-1-5	V8-302	1149-1-7
1338-1-5	Tandem, V8-549	1338-1-7
1350-1-5	V8-549	1350-1-7
1414-1-5	PBD-466	1414-1-7
1414-2-5	PBD-466	1414-2-7
1424-1-5	PBD-330	1424-1-7
1534-1-5	Tandem	1534-1-7
2190-1-5	I.H. Palmer 188D	2190-1-7
2346-1-5	Palmer, 300 HP	2346-1-7

ISUZU

	SEN-DURE NO.
	10389-1-7
	11095-1-7
	11621-1-7
	11959-1-7

CALL {

KOHLER Heat Exchangers

Part No.	SEN-DURE NO.	Part No.	SEN-DURE NO.
285430	1027-1-5	286833	9443-1-7
285430-7	1027-1-7	29403	10120-2-7
240779	1040-1-5	267352	10125-1-7
240779-7	1040-1-7	249929	10712-1-7
266063	1056-1-5	249929	10713-1-7
269058	1056-1-7	EX55479	10453-1-7
241279	1326-2-7	249817	10461-2-7
286883	1399-2-7	267988	11174-1-7
259090	2121-2-7*		

* Heat exchanger only, no tank.



REPLACEMENT HEAT EXCHANGERS and OIL COOLERS



JOHNSON & TOWERS

Part No.	SEN-DURE NO.	Part No.	SEN-DURE NO.
Fuel Cooler 6-71	1541-1-7	Port	12992-1-7
Heat Exchanger	12125-1-7	Star	12996-1-7
Heat Exchanger	12266-1-7	3878P	12987-1-7
8-V92TIVP	11893-1-7	3878S	13076-1-7
8-V92TIVS	11894-1-7		
6-71 Core	12125-1-7		



LEHMAN HEAT EXCHANGERS

Part No.	SEN-DURE NO.	Part No.	SEN-DURE NO.
2C209	1003-9-5	2C240	10302-1-7
2C217	1003-9-7	2C246	10337-1-5
2C208	1050-9-5	2C239	10342-1-7
2C216	1050-9-7	2C227	10605-1-5
2C211	1262-9-5		13175-1-7
2C218	1262-9-7		13074-1-7
2C213	1342-9-5		12641-1-7
2C219	1342-9-7		12926-1-7
2C225	9188-1-7		13072-1-7
2C242	10302-1-5		13394-1-7

LEHMAN Oil Coolers

Part No.	SEN-DURE NO.	Part No.	SEN-DURE NO.
2C207	1129-2-6R-5	2C226	1132-12-6R-5
2C212	1129-2-6R-7	2C238	1132-21-6R-5
2C235	1132-2-6R-5	2C212Z	3457-1-5

MARINE POWER Heat Exchangers

	SEN-DURE NO.
CALL {	11487-1-5
.....	11488-1-5
.....	11987-1-5
.....	11988-1-5

MEDALIST

Customer No.	SEN-DURE NO.
298633-B	2737-1-5
299049	2837-1-5
299835-D	3346-1-5
299818	3347-1-5
.....	3564-1-5
300118	3638-1-5
301370	4790-1-5
302157	9729-1-5
808560	10271-1-5
302631	10272-1-5
302055	9730-1-5
808475	10052-1-5

MERCEDES BENZ

	SEN-DURE NO.
Mercedes Benz	OM636
	1201-1-5



MERCURY HEAT EXCHANGERS

Part No.	SEN-DURE NO.
502 Merc.	12005-1-5
7.4	12184-1-5
454 Rear Mount 4446A2	12308-1-5
	13056-1-5
814864A2	13204-1-5
	13224-1-5
	13343-1-5
	13405-1-5

MERCURY Oil Coolers

Part No.	SEN-DURE NO.	Part No.	SEN-DURE NO.
49770	1444-1-5	42731	4268-1-5
64865	1759-1-5	85152-1	4562-1-5
	1990-1-5	99356-1	4580-1-5
77912P	2532-2-5	99356-2	4580-2-5
89690	3065-3-5	99356-3	4580-3-5
89872P	3224-4-5	17319	9870-1-5
89872P	3266-3-5	89690-1	10414-1-5
90740	3266-3-5	63832-3	10735-2-5
96783	3713-1-5	816156P	10813-1-5
817577T	12665-1-5	Tand	12324-1-5
		Tand	13025-1-5

NISSAN

	SEN-DURE NO.
CALL {	11620-1-5
.....	11810-1-5
.....	12962-1-5
.....	13294-1-5

OMC

	SEN-DURE NO.
CALL	9631-1-5
CALL	12721-1-5



REPLACEMENT HEAT EXCHANGERS and OIL COOLERS

* ONAN HEAT EXCHANGERS

Part No.	SEN-DURE NO.
130-0820	1435-2-5
130-2556	4523-1-5
130-2954	9952-1-5
130-2116	9963-1-5
130-2387	9964-1-5
130-2343	12189-1-7
130-4702	12817-1-7
130-4333-01	13136-1-7
130-4702	13284-1-7
130-4433	13286-1-7
.....	13419-1-7
.....	13556-1-7

PENNISULAR DIESEL

	SEN-DURE NO.
CALL	13545-1-5
CALL	13559-1-5

* PERKINS HEAT EXCHANGERS

* PERKINS DUAL OIL COOLERS

Part No.	SEN-DURE NO.	Oil & Water Connections	Tube Length
NA004182	2405-1-7	3/4" x 3/8" x 1-1/2"	12"
NA004139	2356-1-7	3/4" x 3/8" x 1-1/8"	12"
NA004100	2299-2-7	3/4" x 3/8" x 1-1/2"	9"
NA003426	2103-1-7	3/4" x 3/8" x 1-3/4"	9"
NA000228	2031-1-7	3/8" x 3/8" x 1-1/8"	9"
NA001314	1566-1-7	3/4" x 3/8" x 1-1/8"	9"
NA004183	2452-1-7	3/4" x 3/8" x 1-5/8"	12"
NA004180	2454-1-7	3/8" x 3/8" x 1-5/8"	9"
NA004179	2457-1-7	3/8" x 3/8" x 1-1/4"	6"
NA004619	2664-1-7	3/8" x 3/8" x 1-1/4"	10"
CALL	3578-1-7	3/4" x 3/8" x 1-5/8"	9"

PLEASURECRAFT

	SEN-DURE NO.
351	11512-1-5
RA147028	13396-1-5

* WESTERBEKE Heat Exchangers

Part No.	SEN-DURE NO.	Part No.	SEN-DURE NO.
14156	1269-3-5	22406	2929-1-5*
13887	1279-3-5	24819	3641-1-5
11966	1380-1-5		3659-1-5
15065	1476-1-5	CALL {	3661-1-5
16455	1634-1-5	32318	4281-1-5
19058	1992-2-5	32501	4664-1-5
20519	2334-2-5	36903	11210-1-5
21903	2729-3-5*		

* Original Westerbeke casting required.

WESTERBEKE Oil Coolers

Part No.	SEN-DURE NO.	Part No.	SEN-DURE NO.
11518	1179-3-5	CALL	2083-1-5
11657	1190-1-5	24889	4265-1-5
20930	1226-4-5	24309	4618-1-5
CALL	1587-3-5	24581	K4687-5
16403	2006-1-5*		

*Original Westerbeke casting required.

WARNER GEAR — SEN-DURE Oil Cooler Interchange Chart

Warner	Shell	Hose Bib	N.P.T.F.	
Gear No.	Length	Size	Oil Conn.	SEN-DURE NO.
4872	5"	3/4"	3/8"	1125-1-5
4872A	9"	3/4"	3/8"	1129-1-5
4872B	12"	3/4"	3/8"	1132-1-5
4872F	5"	1"	3/8"	1125-2-3R-5
4872G	9"	1"	3/8"	1129-2-3R-5
4872H	12"	1"	3/8"	1132-2-3R-5
4872J	5"	1"	3/8"	1125-2-6R-5
4872K	9"	1"	3/8"	1129-2-6R-5
4872L	12"	1"	3/8"	1132-2-6R-5
4872NN	5"	1"	3/8"	1125-2-5
4872PP	9"	1"	3/8"	1129-2-5
4872QQ	12"	1"	3/8"	1132-2-5

ZF GEAR

	SEN-DURE NO.
..... Tandem	10625-1-7
..... 3x18	11421-1-7
..... 3x12	12087-1-7
..... 4x12	12102-1-7
..... Tandem	12107-1-7

CALL {



CRUSADER HEAT EXCHANGERS

SEN-DURE PART# 1655-1-5 CRUSADER PART# 97307	SEN-DURE PART# 9638-1-5 CRUSADER PART# 97632-5	SEN-DURE PART# 10516-1-7 CRUSADER PART# 97930A
SEN-DURE PART# 9364-1-5 CRUSADER PART# 97433-5	SEN-DURE PART# 9965-1-5 CRUSADER PART# 97913	SEN-DURE PART# 11804-1-5 CRUSADER PART# CALL
SEN-DURE PART# 9365-1-5 CRUSADER PART# 97434-5	SEN-DURE PART# 12505-1-5 CRUSADER PART# 98191	SEN-DURE PART# 13433-1-5 CRUSADER PART# 98117
SEN-DURE PART# 9374-1-5 CRUSADER PART# 97930	SEN-DURE PART# 10502-3-5 CRUSADER PART# CALL	SEN-DURE PART# 13554-1-5 CRUSADER PART# CALL



CUMMINS HEAT EXCHANGERS

25.68 SHELL 1.00 N.P.T.F. 4.12 DIA. 2.38 O.D. 1.75 O.D. ZINC	SEN-DURE PART# 9376-1-7 CUMMINS PART# 3911840	27.00 SHELL 5.12 DIA. 1.75 O.D. (2PL) 2.00 O.D. ZINC	SEN-DURE PART# 9656-1-7 CUMMINS PART# 3912145	29.38 SHELL 1.5 N.P.T.F. 5.12 DIA. 2.25 O.D. 2.00 O.D. ZINC	SEN-DURE PART# 12524-1-7 CUMMINS PART# 3930793
16.25 SHELL 4.12 DIA. 1.25 O.D. (2PL) 2.375 O.D. 1.75 O.D. ZINC	SEN-DURE PART# 9445-1-7 CUMMINS PART# 3910582	25.68 SHELL 4.12 DIA. 1.500 O.D. (2PL) 2.38 O.D. 1.75 O.D. ZINC	SEN-DURE PART# 9778-1-7 CUMMINS PART# 3914642 SEN-DURE PART# 9778-2-7 CUMMINS PART# 3866719	26.81 SHELL 1.0 N.P.T.F. 4.12 DIA. .75 N.P.T.F. 2.38 O.D. 1.75 O.D. ZINC	SEN-DURE PART# 12525-1-7 CUMMINS PART# 3930791
25.68 SHELL 4.12 DIA. 1.25 O.D. (2PL) 2.38 O.D. 1.750 O.D. ZINC	SEN-DURE PART# 9446-1-7 CUMMINS PART# 3910583	28.38 SHELL 1.50 N.P.T.F. 5.12 DIA. 1.25 N.P.T.F. 2.25 O.D. 2.00 O.D. ZINC	SEN-DURE PART# 10992-1-7 CUMMINS PART# 3919724	27.00 SHELL 1.75 O.D. (2PL) 5.12 DIA. 2.25 O.D. 2.00 O.D. ZINC	SEN-DURE PART# 12610-1-7 CUMMINS PART# 3897168



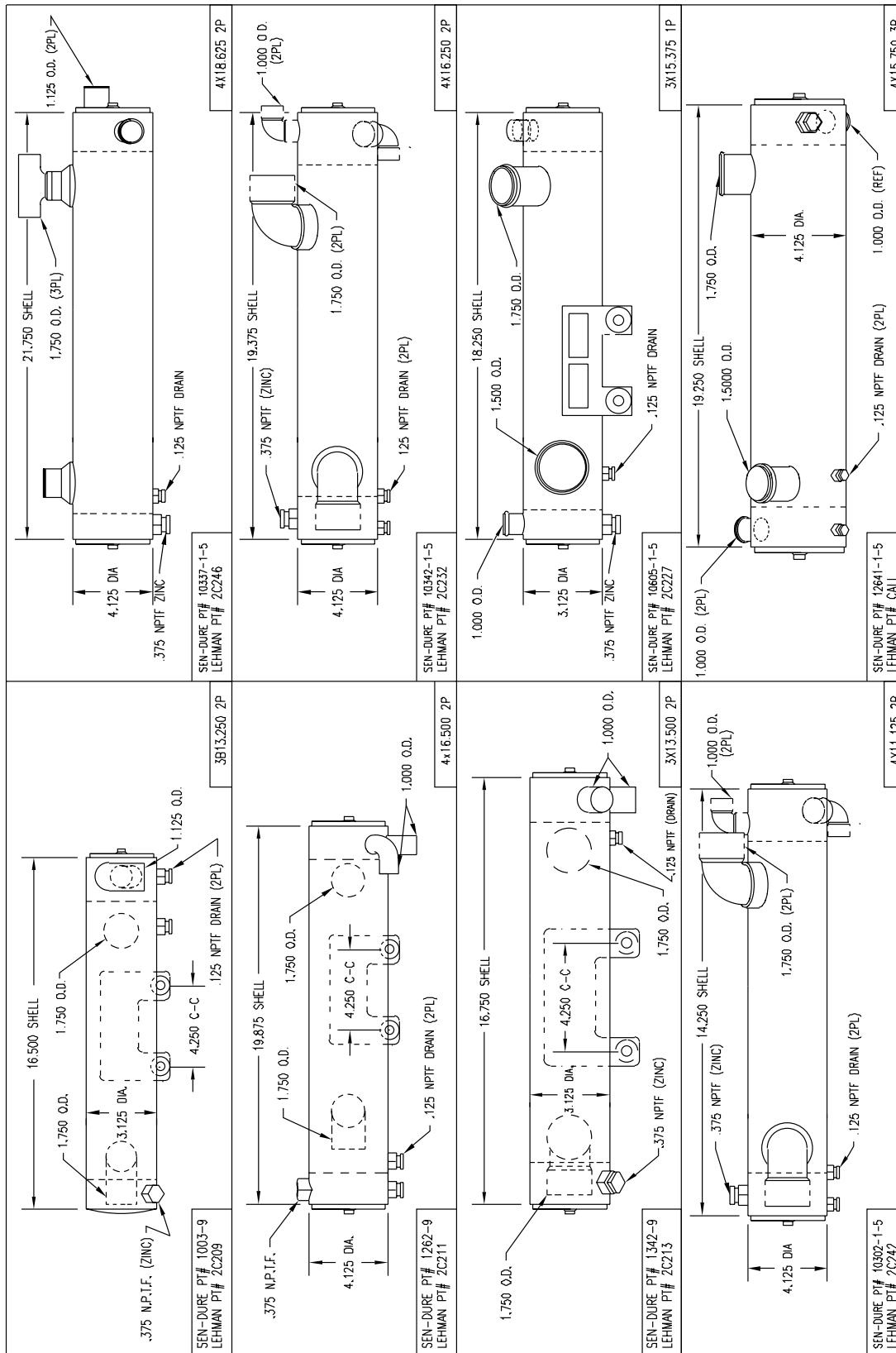
CUMMINS OIL COOLERS



JOHNSON TOWERS 6-71 HEAT EXCHANGERS

6V21.5 3P-7		6V21.5 3P-7		S-D# 12581-1-7
JT# JT2988P		JT# JT2988S		
6V21.5 3P-7		6V21.5 3P-7		S-D# 12582-1-7
JT# JT2988-1P		JT# JT2988-1S		
6V21.5 3P-7		6V21.5 3P-7		S-D# 12353-1-7
JT# JT3060P		JT# JT3060S		
6V21.5 3P-7		6V21.5 3P-7		11657-1-7
JT# JT3060-1P		JT# JT3060-1S		
6V21.5 3P-7		6V21.5 3P-7		12583-1-7
JT# JT3060-1P		JT# JT3060-1S		

LEHMAN HEAT EXCHANGERS





MERCURY HEAT EXCHANGERS

SEN-DURE PART# 2394-7-5 MERCURY PART# 75959	SEN-DURE PART# 1604-3-5 MERCURY PART# 62472	SEN-DURE PART# 2714-1-5 MERCURY PART# 78094
SEN-DURE PART# 2604-4-5 MERCURY PART# 77319	SEN-DURE PART# 2162-3-5 MERCURY PART# 74643	SEN-DURE PART# 2826-1-5 MERCURY PART# 79607
SEN-DURE PART# 1542-8-5 MERCURY PART# 61086	SEN-DURE PART# 1580-6-5 MERCURY PART# 63107	SEN-DURE PART# 3291-7-5 MERCURY PART# 91036
SEN-DURE PART# 1695-1-5 MERCURY PART# 61804	SEN-DURE PART# 4215-1-5 MERCURY PART# 99438	SEN-DURE PART# 2645-4-5 MERCURY PART# 78165



ONAN HEAT EXCHANGERS

 15.000 O.A.L. 2.000 DIA. X 8.875 LG. - 2 PASS .500 O.D. (3PL) SEN-DURE PART# 1047-3-5 ONAN PART# 130C629	 18.750 SHELL 1.750 O.D. (2PL) 4.000 DIA. X 16.000 LG. - 2 PASS SEN-DURE PART# 1392-1-5 ONAN PART# 130C796	 9.500 SHELL .500 NPTF (2PL) 2.000 DIA. X 9.375 LG. - 1 PASS SEN-DURE PART# 1435-2-5 ONAN PART# 130-0820	 29.000 SHELL .750 O.D. (2PL) 2.000 DIA. X 26.000 LG. - 1 PASS SEN-DURE PART# 1816-5-5 ONAN PART# 130-0911
 18.000 SHELL .500 O.D. (4PL) 2.000 DIA. X 16.000 LG. - 2 PASS SEN-DURE PART# 2008-2-5 ONAN PART# 130-0904	 29.250 APPROX OAL .750 O.D. HOSE BIB (2PL) 2.000 DIA. X 26.000 LG. - 1 PASS SEN-DURE PART# 2644-3-7 ONAN PART# 130-1189	 19.375 APPROX O.A.L. .500 O.D. (2PL) 2.000 DIA. X 16.750 LG. - 2 PASS SEN-DURE PART# 2647-5-7 ONAN PART# 130-1188	 15.250 APPROX O.A.L. .500 O.D. (4PL) 2.000 DIA. X 9.000 LG. - 2 PASS SEN-DURE PART# 3096-2-5 ONAN PART# 130-1394
 14.250 SHELL 1.500 O.D. 3.000 DIA. X 12.000 LG. - 2 PASS SEN-DURE PART# 3207-2-7 ONAN PART# 130-1527	 18.500 1.500 O.D. (2PL) 3.000 DIA. X 11.875 LG. - 2 PASS SEN-DURE PART# 4523-1-5 ONAN PART# 130-2536	 11.375 SHELL .625 O.D. (4PL) 2.000 DIA. X 7.187 LG. - 2 PASS SEN-DURE PART# 11940-1-5 ONAN PART# 130-3506	 12.000 SHELL 1.000 O.D. (4PL) 2.000 DIA. X 8.375 LG. - 2 PASS SEN-DURE PART# 12189-1-7 ONAN PART# 130-2343
 26.000 2.000 O.D. 4.000 DIA. X 17.000 LG. - 4 PASS SEN-DURE PART# 3976-2-5 ONAN PART# 130-2162	 15.125 .500 NPTF (2PL) 3.000 DIA. X 12.000 LG. - 1 PASS SEN-DURE PART# 4385-1-5 ONAN PART# 102-1238	 11.625 .750 NPTF (2PL) 2.000 DIA. X 8.875 LG. - 1 PASS SEN-DURE PART# 3977-1-5 ONAN PART# 102-1114	 31.750 2.000 O.D. 4.000 DIA. X 20.000 LG. - 3 PASS SEN-DURE PART# 2518-4-5 ONAN PART# 130-1111



PERKINS HEAT EXCHANGERS

	SEN-DURE PART# 1273-2-7 PERKINS PART# NA001402
	SEN-DURE PART# 1383-5-7 PERKINS PART# NA001405
	SEN-DURE PART# 1396-3-7 PERKINS PART# NA001407
	SEN-DURE PART# 1448-4-7 PERKINS PART# NA001406
	SEN-DURE PART# 1550-3-7 PERKINS PART# NA004490

	SEN-DURE PART# 1814-3-7 PERKINS PART# NA001545
	SEN-DURE PART# 2551-1-7 PERKINS PART# NA001868
	SEN-DURE PART# 2356-1-7 PERKINS PART# NA004139

PERKINS PART#	SEN-DURE PART#	OIL & WATER CONNECTIONS	TUBE LENGTH
NA004182	2405-1-7	3/4 X 3/8 X 1 1/2	12"
NA004139	2356-1-7	3/4 X 3/8 X 1 1/8	12"
NA004100	2299-2-7	3/4 X 3/8 X 1 1/2	9"
NA003426	2103-1-7	3/4 X 3/8 X 1 3/4	9"
NA000228	2031-1-7	3/8 X 3/8 X 1 1/8	9"
NA001314	1566-1-7	3/4 X 3/8 X 1 1/8	9"
NA004183	2452-1-7	3/4 X 3/8 X 1 5/8	12"
NA004180	2454-1-7	3/8 X 3/8 X 1 5/8	9"
NA004179	2457-1-7	3/8 X 3/8 X 1 1/4	6"
NA004619	2664-1-7	3/8 X 3/8 X 1 1/4	10"
CALL	3578-1-7	3/4 X 3/8 X 1 5/8	9"

OIL & WATER CONNECTIONS FOR OIL COOLERS

WESTERBEKE HEAT EXCHANGERS

SEN-DURE PART# 1296-1 WESTERBEKE PART# CALL	SEN-DURE PART# 2889-1 WESTERBEKE PART# 15799	SEN-DURE PART# 4281 WESTERBEKE PART# 32318
SEN-DURE PART# 1380-1 WESTERBEKE PART# CALL	SEN-DURE PART# 3193-1 WESTERBEKE PART# 14129	SEN-DURE PART# 11210-1 WESTERBEKE PART# 35903
SEN-DURE PART# 1992 WESTERBEKE PART# CALL	SEN-DURE PART# 3532-3 WESTERBEKE PART# 24308	SEN-DURE PART# 11210-2 WESTERBEKE PART# 35135
SEN-DURE PART# 2729-3-5 WESTERBEKE PART# 21903	SEN-DURE PART# 3618 WESTERBEKE PART# 24774	SEN-DURE PART# 12466-1 WESTERBEKE PART# CALL



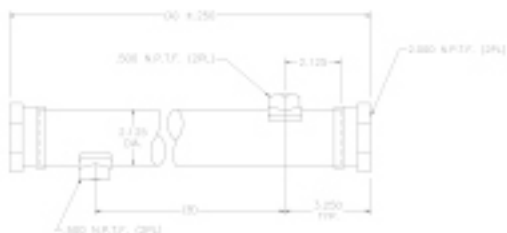
WESTERBEKE HEAT EXCHANGERS

SEN-DURE PART# 12460-1 WESTERBEKE PART# CALL	SEN-DURE PART# 13179-1 WESTERBEKE PART# 36899	SEN-DURE PART# 13306-1 WESTERBEKE PART# 35007
SEN-DURE PART# 12523-1 WESTERBEKE PART# CALL	SEN-DURE PART# 13203-1 WESTERBEKE PART# CALL	SEN-DURE PART# 13415-1 WESTERBEKE PART# CALL
SEN-DURE PART# 12579-1 WESTERBEKE PART# CALL	SEN-DURE PART# 13226-1 WESTERBEKE PART# CALL	SEN-DURE PART# 13533-1 WESTERBEKE PART# CALL
SEN-DURE PART# 12711-1 WESTERBEKE PART# CALL	SEN-DURE PART# 13283-1 WESTERBEKE PART# CALL	

SEN-DURE

INDUSTRIAL APPLICATIONS

WATER COOLED "AFTERCOOLERS" 2" Series



WORKING PRESSURE

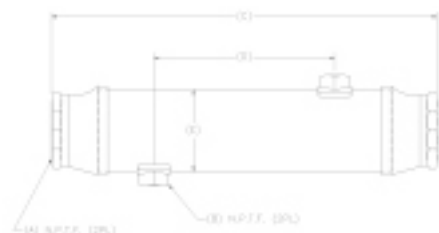
Tube Side 250 PSIG
Shell Side 125 PSIG

CONSTRUCTION

Tubes: 1/4" O.D. Copper Headers/Baffles: Copper
Shell: Copper End Caps: Cast Bronze

Part No.	A	B	Sq. Ft. Surf.	SCFM	Approx. Weight
1509-15	18-1/2"	12"	2.5	40	10 Lbs.
1509-24	27-1/2"	21"	4.0	65	13 Lbs.
1509-32	36-3/8"	29-7/8"	5.4	110	16 Lbs.
1509-50	54-3/8"	47-7/8"	8.5	170	23 Lbs.
1509-56	60-3/8"	53-7/8"	9.6	190	27 Lbs.

WATER COOLED "AFTERCOOLERS" 300 & 500 CFM



WORKING PRESSURE

Tube Side 250 PSIG
Shell Side 125 PSIG

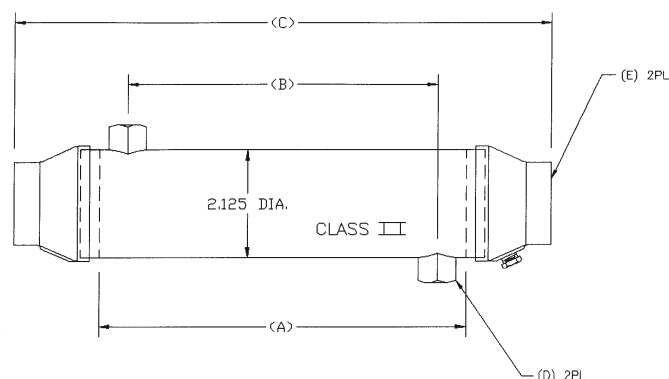
CONSTRUCTION

Tubes: 1/4" O.D. Copper Headers/Baffles: Copper
Shell: Copper End Caps: Cast Bronze

Part No.	CFM	A	B	C	D	E	Approx Weight
9052-1-5	300	2"	1/2"	41-3/4"	34"	3-1/8"	28 Lbs.
9053-1-5	500	3"	3/4"	47-1/2"	37-3/4"	4-1/8"	53 Lbs.

CONDENSER APPLICATIONS

- AIR CONDITIONING
- HEAT PUMP AND
- REFRIGERATION



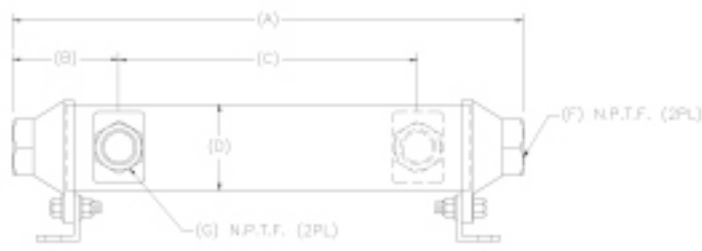
1. All joints silver brazed.
2. Shell - copper.
3. Tube Bundle - 1/4" O.D., 90/10 Cupro Nickel tubes.
4. Helium tested.
5. **INSTALLATION NOTE:** Unit must be bonded to vessel's electrical bonding system.

Part No.	R-12 BTUH*	R-22 BTUH*	A	B	C	D	Order Part No.	E
9222	9,000	15,000	6	4	9-5/8	3/8 NPT	9222-6-7	1" NPT
							9222-5-7	3/4" NPT
							9222-3-7	1/2" NPT
9223	13,500	22,500	9	7	12-5/8	3/8 NPT	9223-6-7	1" NPT
							9223-5-7	3/4" NPT
							9223-3-7	1/2" NPT
9224	18,000	30,000	12	10	15-5/8	3/8 NPT	9224-6-7	1" NPT
							9224-5-7	3/4" NPT
							9224-3-7	1/2" NPT
9225	27,000	45,000	18	16	21-5/8	1/2 NPT	9225-6-7	1" NPT
							9225-5-7	3/4" NPT
							9225-3-7	1/2" NPT

*with 10 gpm 90° sea water. Dimensions A, B, C, D — Inches.

DIRECT REPLACEMENT UNITS FOR W.W. GRAINGER*

Order Part No.	Max. SCFN	A	B	C	D	E	Grainger Part No.	F	G
11461-5-5	40	25"	3-1/4"	18-1/2"	2-1/8"	23-1/4"	Z22926	3/4"	1/2"
11461-6-5								1"	
11461-7-5								1-1/4"	
11462-5-5	65	29-5/8"	2-13/16"	24"	2-1/8"	27-13/16"		3/4"	1/2"
11462-6-5								1"	
11462-7-5								1-1/4"	
11463-5-5	110	36"	3-1/4"	29-1/2"	2-1/8"	34-1/4"	Z22927	3/4"	1/2"
11463-6-5								1"	
11463-7-5								1-1/4"	
11464-5-5	125	43-5/8"	2-13/16"	38"	2-1/8"	41-13/16"		3/4"	1/2"
11464-6-5								1"	
11464-7-5								1 1/4"	
11465-5-5	210	33"	4"	25"	3-1/8"	30-3/4"		1/2"	3/4"
11465-6-5								2"	
11465-7-5								1"	
11466-5-5	300	41"	4"	33"	3-1/8"	38-3/4"	Z42427	12"	3/4"
11466-6-5								2"	
11466-7-5								1"	



WORKING PRESSURE

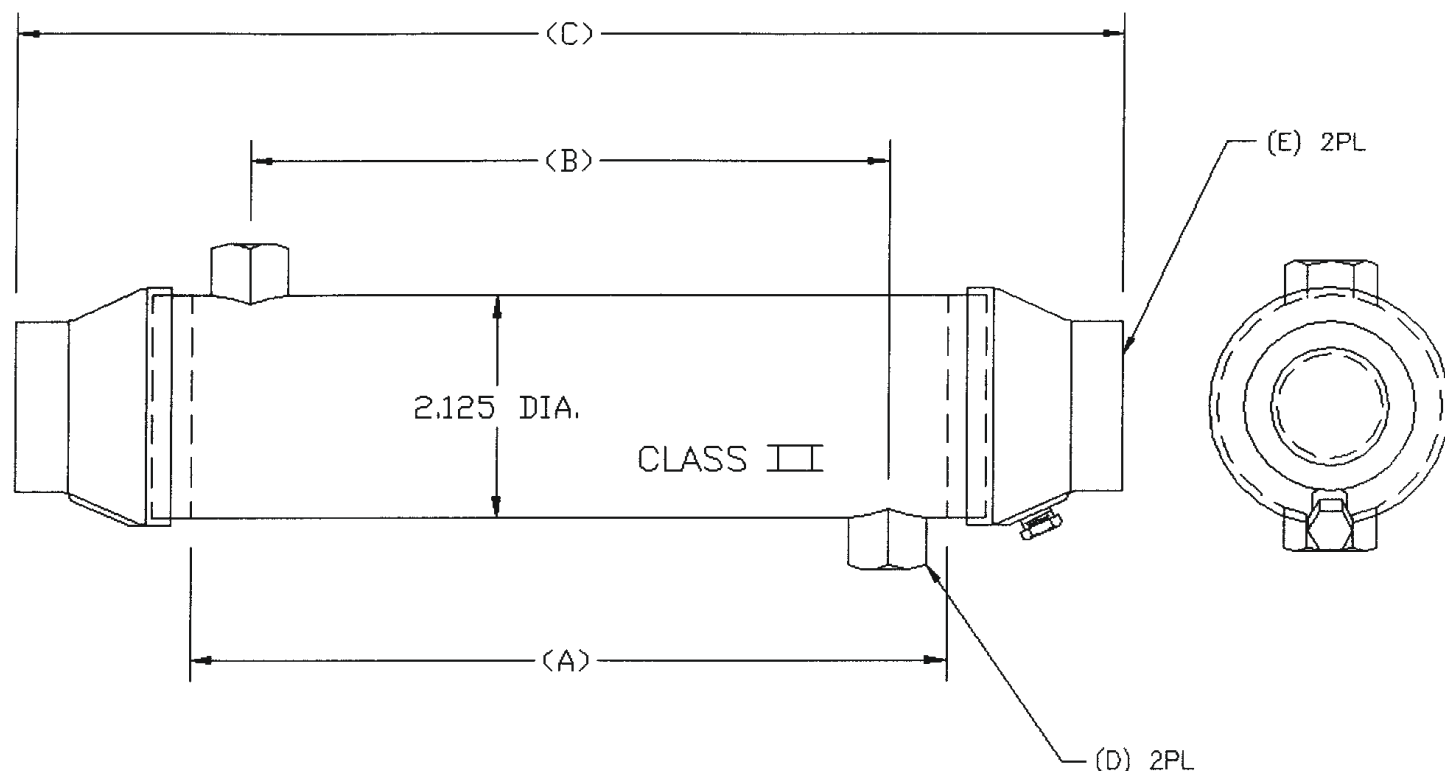
Tube Side: 250 PSIG
Shell Side: 250 PSIG

CONSTRUCTION:

Tubes: 1/4" O.D. Copper
Shell: Copper
Headers/Baffles: Copper
End Caps: Bronze / Copper



HEAT EXCHANGERS / REFRIGERATION



NOTES:

1. ALL JOINTS SIVER BRAZED
2. SHELL - COPPER WATER TUBE.
3. TUBE BUNDLE - 1/4" O.D. 90/10 CUPRO NICKEL TUBES.
4. HELIUM TESTED 250 PSI
5. INSTALLATION NOTE: UNIT MUST BE BONDED TO VESSEL'S ELECTRICAL BONDING SYSTEM.

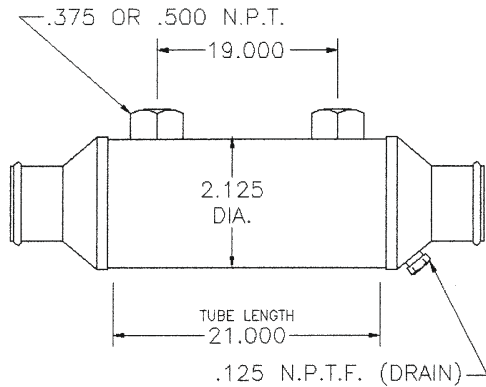
PART #	R-12 BTUH*	R-22 BTUH*	A	B	C	D	ORDER PART#	E
9222	9,000	15,000	6	4	9.625	.375 N.P.T.	9222-6-7	1.000 N.P.T.F
							9222-5-7	.750 N.P.T.F
							9222-3-7	.500 N.P.T.F.
9223	13,500	22,500	9	7	12.625	.375 N.P.T.	9223-6-7	1.000 N.P.T.F
							9223-5-7	.750 N.P.T.F
							9223-3-7	.500 N.P.T.F.
9224	18,000	30,000	12	10	15.625	.375 N.P.T.	9224-6-7	1.000 N.P.T.F
							9224-5-7	.750 N.P.T.F
							9224-3-7	.500 N.P.T.F.
9225	27,000	45,000	18	16	21.625	.500 N.P.T.	9225-6-7	1.000 N.P.T.F
							9225-5-7	.750 N.P.T.F
							9225-3-7	.500 N.P.T.F.

*WITH 10 GPM 90° SEA WATER. DIM A,B,C,D, - INCHES



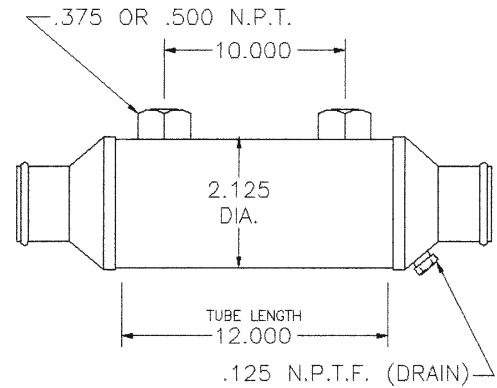
AUXILIARY BOOSTER COOLERS

1112 SERIES HEAT EXCHANGER



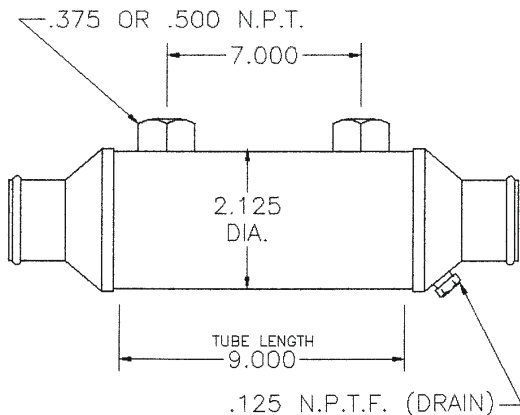
Part No.	End Fitting	Side Fitting
1112-1	1/2" NPT	3/8" NPT
1112-2	3/4" Hose	3/8" NPT
1112-3	3/4" NPT	3/8" NPT
1112-4	1" NPT	3/8" NPT
1112-5	1" Hose	3/8" NPT
1112-10	1/2" NPT	1/2" NPT
1112-20	3/4" Hose	1/2" NPT
1112-30	3/4" NPT	1/2" NPT
1112-40	1" NPT	1/2" NPT
1112-50	1" Hose	1/2" NPT

1121 SERIES HEAT EXCHANGERS



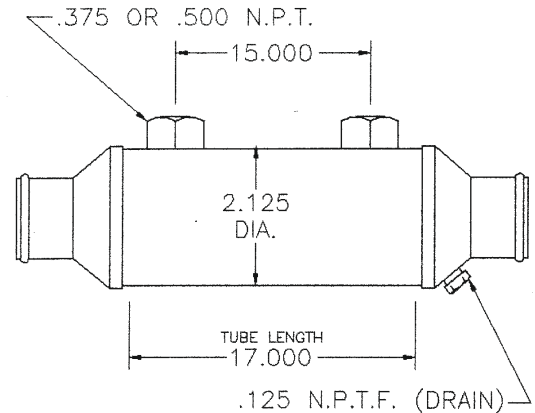
Part No.	End Fitting	Side Fitting
1121-1	1/2" NPT	3/8" NPT
1121-2	3/4" Hose	3/8" NPT
1121-3	3/4" NPT	3/8" NPT
1121-4	1" NPT	3/8" NPT
1121-5	1" Hose	3/8" NPT
1121-10	1/2" NPT	1/2" NPT
1121-20	3/4" Hose	1/2" NPT
1121-30	3/4" NPT	1/2" NPT
1121-40	1" NPT	1/2" NPT
1121-50	1" Hose	1/2" NPT

1113 SERIES HEAT EXCHANGER



Part No.	End Fitting	Side Fitting
1113-1	1/2" NPT	3/8" NPT
1113-2	3/4" Hose	3/8" NPT
1113-3	3/4" NPT	3/8" NPT
1113-4	1" NPT	3/8" NPT
1113-5	1" Hose	3/8" NPT
1113-6	5/8" Hose	3/8" NPT
1113-10	1/2" NPT	1/2" NPT
1113-20	3/4" Hose	1/2" NPT
1113-30	3/4" NPT	1/2" NPT
1113-40	1" NPT	1/2" NPT
1113-50	1" Hose	1/2" NPT

1136 SERIES HEAT EXCHANGER

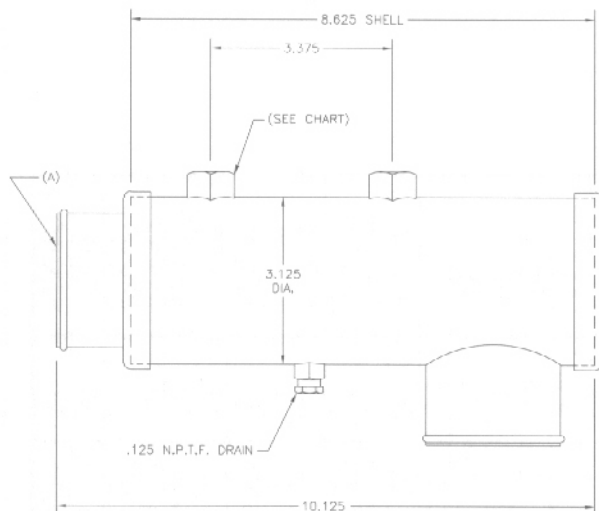


Part No.	End Fitting	Side Fitting
1136-1	1/2" NPT	3/8" NPT
1136-2	3/4" Hose	3/8" NPT
1136-3	3/4" NPT	3/8" NPT
1136-4	1" NPT	3/8" NPT
1136-5	1" Hose	3/8" NPT
1136-10	1/2" NPT	1/2" NPT
1136-20	3/4" Hose	1/2" NPT
1136-30	3/4" NPT	1/2" NPT
1136-40	1" NPT	1/2" NPT
1136-50	1" Hose	1/2" NPT

SEN-DURE

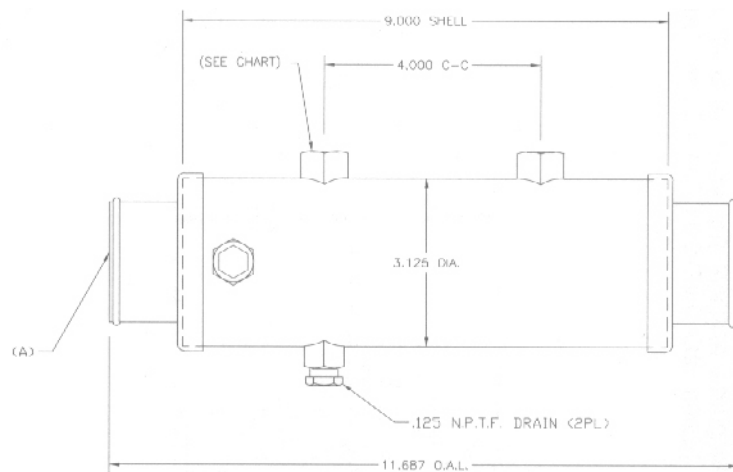
AUXILIARY BOOSTER COOLERS

13648 SERIES HEAT EXCHANGER



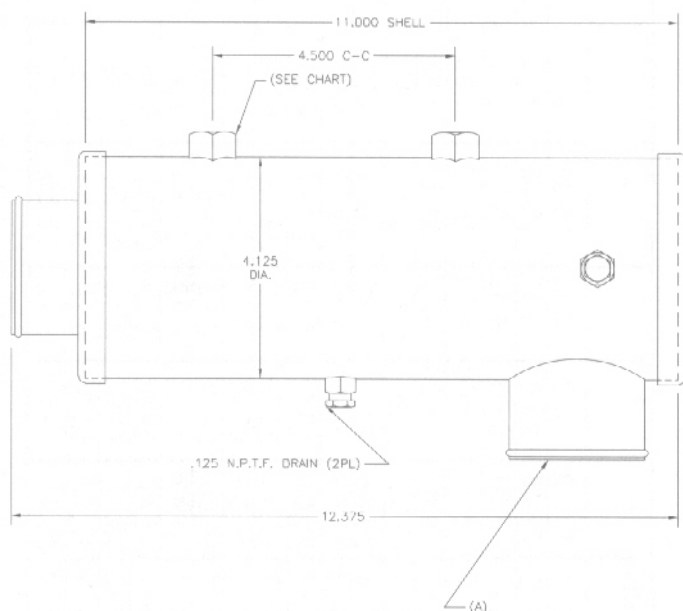
PART #	SHELL FTG. .250 N.P.T.F.	SHELL FTG. .375 N.P.T.F.	(A) 2PL
13648	-01	-1	1,250 O.D.
13648	-02	-2	1,500 O.D.
13648	-03	-3	1,750 O.D.
13648	-04	-4	1,875 O.D.
13648	-05	-5	2,000 O.D.
13648	-06	-6	2,250 O.D.

3528 SERIES HEAT EXCHANGERS



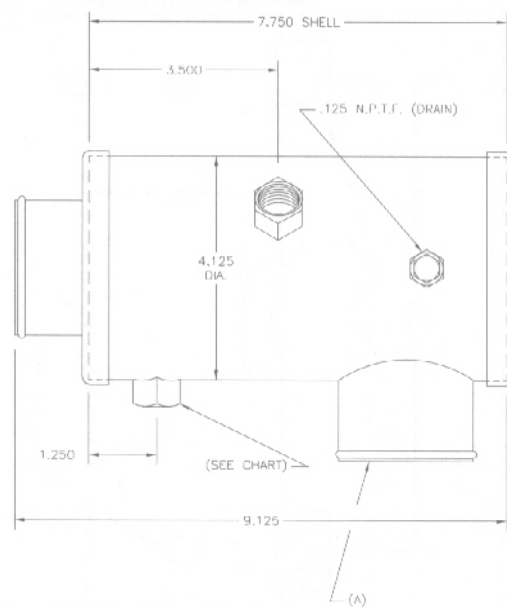
PART #	SHELL FTG. .250 N.P.T.F.	SHELL FTG. .375 N.P.T.F.	(A) 2PL	O.A.L.
3528	-01	-1	1,250 O.D.	11.687
3528	-02	-2	1,500 O.D.	11.687
3528	-03	-3	1,750 O.D.	11.687
3528	-04	-4	2,000 O.D.	11.687
3528	-05	-5	2,250 O.D.	11.687
3528	-06	-6	2,500 O.D.	11.687
3528	-07	-7	2,000 N.P.T.F.	12.500

13649 SERIES HEAT EXCHANGER



PART #	SHELL FTG. .250 N.P.T.F.	SHELL FTG. .375 N.P.T.F.	A (2PL)
13649	-01	-1	1,250 O.D.
13649	-02	-2	1,500 O.D.
13649	-03	-3	1,750 O.D.
13649	-04	-4	1,875 O.D.
13649	-05	-5	2,000 O.D.
13649	-06	-6	2,250 O.D.
13649	-07	-7	2,500 O.D.

12674 SERIES HEAT EXCHANGER



PART #	SHELL FTG. .250 N.P.T.F.	SHELL FTG. .375 N.P.T.F.	A (2PL)
12674	-01	-1	1,250 O.D.
12674	-02	-2	1,500 O.D.
12674	-03	-3	1,750 O.D.
12674	-04	-4	1,875 O.D.
12674	-05	-5	2,000 O.D.
12674	-06	-6	2,250 O.D.
12674	-07	-7	2,500 O.D.



6785 & 6791 N.W. 17th Avenue, Fort Lauderdale, FL 33309
Phone: (954) 973-1260 Fax: (954) 968-7213

ENGINE HEAT EXCHANGER **SIZING REQUIREMENTS**

Please [click here](#) to fill out our Engine Heat Exchanger Sizing Requirements Form and email it to us.

S E N - D U R E P R O D U C T S , I N C .



SEN-DURE PRODUCTS, INC.

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