

# TEMP-A-CURE™



Today's high performance car packs a lot of power in a smaller package. In order to save both weight and space, the typical OEM cooling system is designed for "normal" driving conditions. When driven hard for extended periods, the cooling system may prove less than adequate. Earl's offers the solution to marginal cooling systems—race proven light-weight and efficient oil coolers designed to fit in the smallest practical space.

Any performance vehicle can benefit from the TEMP-A-CURE difference. Tow vehicles, motor homes, passenger cars and even motorcycles can realize extended engine and/or transmission efficiency and life with an Earl's TEMP-A-CURE oil cooler.

Racing cars have always required oil coolers. Since World War II, most racing cars, world wide, have utilized brazed aluminum "modular" oil coolers. The basic design of the modular oil cooler dates back to the early 1930s when it was developed for use with the Rolls Royce Merlin engine that powered the Spitfires and Hurricanes that won the Battle of Britain. This type of cooler with its internal turbulator plates and dense air fins provides maximum liquid side and air side surface area. The large collector tanks ensure minimum flow restriction. The fully brazed construction results in the most efficient possible thermal transfer path between liquid and air. All of this adds up to the most thermally efficient liquid-to-air heat exchanger available.

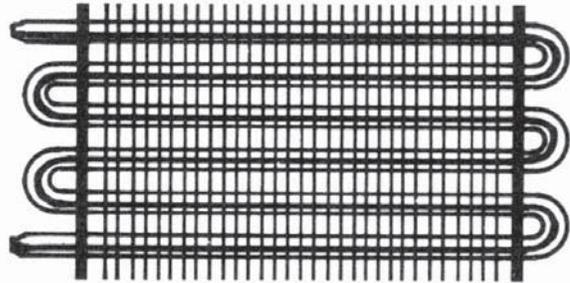
### EARL'S TEMP-A-CURE OIL COOLERS OFFER THE FOLLOWING ADVANTAGES:

1. Manufactured in the U.S.A. from aircraft spec aluminum alloy, using the latest vacuum brazing technology.
2. Corrugated screen internal turbulator plates increase both thermal efficiency and mechanical strength resulting in the most efficient, smallest and lightest practical package (typically half the size of traditional tube & fin cooler).
3. Manufactured from thin aluminum plates for fastest possible heat transfer.
4. Inlet and outlet fittings seal with an o-ring to the top plate assembly for worry free performance.
5. Designed for the range of oil flows and air speeds encountered in high performance automobiles.
6. Available in three widths with inlet and outlet fittings, male AN -6 to -16
7. Every cooler is pressure checked to 175 psi. Periodic samples are burst tested to 350 psi.

### TEMP-A-CURE™

#### EARL'S DESIGN

For many years, professional racers have been using modular style oil coolers almost exclusively. Virtually every Formula One, Indy and GTP or Trans-Am car depends on these type units for engine and transaxle cooling. Temp-A-Cure coolers have been developed specifically for use in all types of engines and transmissions subjected to temperature extremes, including competition and high performance uses. They are designed for the range of air speeds and oil flows normally encountered in automotive use, but built to aircraft standards of quality. They are constructed of high grade aluminum and are completely furnace brazed to insure the most thermally efficient joint possible between the oil tubes and air fins. The internal design of the oil tubes and the large area collector tanks provide maximum surface area with minimum pressure drop. The highly concentrated air fins offer maximum heat transfer to the outside air.



#### TYPICAL TUBE & FIN DESIGN

The tube and fin cooler has little to offer in the way of efficient oil cooling. Its typical serpentine design has a large pressure drop due to the tube length and to the restricted bends. The tube and fin cooler cannot approach the cooling efficiency of Earl's Fin density and oil side to air side mechanical bond.

**TEST COMPARISON PG.122**

#### AIR VELOCITY: THE CRITICAL FACTOR IN HEAT DISSIPATION

EARL'S TEMP-A-CURE OIL COOLERS are designed to efficiently use all of the air that passes through them. The center chart below shows that a Temp-A-Cure cooler of comparable size is between two and three times more efficient in terms of heat rejection as a typical tube and fin type cooler. ("B")

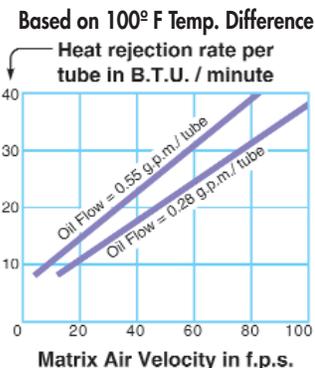
Cooler "A" in our chart below is of a popular stamped dish plate design; where the dish plates are the only components—no fins and no corrugated screen. This design, while extremely attractive to the manufacturer, sacrifices efficiency of heat transfer for ease of assembly.

The right hand chart below represents testing to determine pressure drop. It shows that the Temp-A-Cure cooler can handle a larger volume of oil (four times the volume!) with less than half the pressure drop of a typical tube and fin style oil cooler.

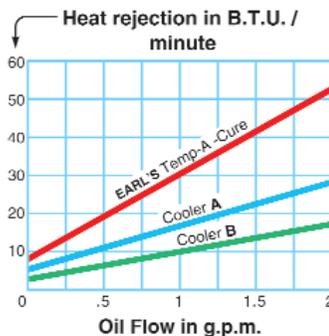
Earl's Temp-A-Cure oil coolers are properly termed "air to liquid heat exchangers". In order to operate efficiently, they must be mounted in a stream of moving air at ambient temperature. It is not a good idea to mount the oil cooler behind the water radiator where it will receive only heated air. It is not enough to lead air to the cooler—the heated air must have somewhere to go after it passes through the core. Remember, air always obeys the immutable laws of fluid dynamics. Simply put, air will only flow from a region of relatively high pressure to a region of relatively low pressure. Any attempt on our part to convince it to do otherwise is doomed to failure.

**BTU RATINGS PG.122**

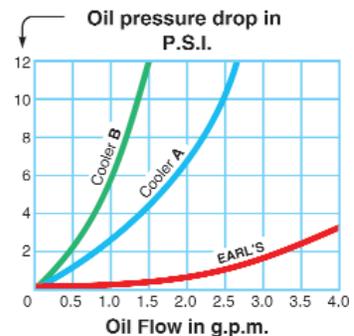
To obtain the heat rejection rate for a given Earl's Cooler, multiply the dissipation value from the chart by the number of tubes in the cooler.



Comparable heat rejection rates based on SAE 10 weight oil at 200° F. inlet temperature and 7 square inches of matrix area. Contact Earl's for specific comparison data.

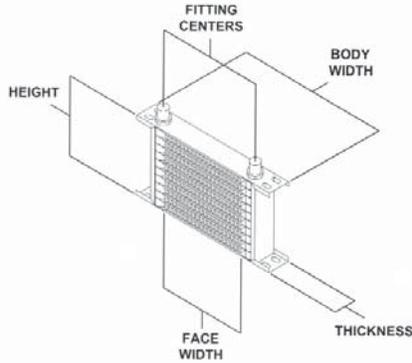


Comparable oil pressure drop across matrix with SAE 10 oil at 200° F. inlet temperature.



# TEMP-A-CURE™ OIL COOLERS

## COOLING SYSTEMS



# TEMP-A-CURE™

TEMP-A-CURE oil coolers are designed to suit any application. The chart below will assist you in choosing the correct model for your needs.

**NOTE:** All of our Temp-A-Cure Coolers are available with male AN fittings -6 to -16

Cooler fitting instructions pg. 65 & typical plumbing of cooler pg. 123

FACE WIDTH (BETWEEN TANKS)	4"	4"	9"	9"	11"	11"
FITTING CENTERS	5-1/8"	5-1/8"	9-3/4"	9-3/4"	12-1/8"	12-1/8"
BODY WIDTH	8-1/4"	8-1/4"	13"	13"	14"	14"
THICKNESS	2"	2"	2"	2"	2"	2"



ROW # & HEIGHT	FITTING SIZE	GRAY-NARROW	BLACK-NARROW	GRAY-WIDE	BLACK-WIDE	GRAY-EXTRA WIDE	BLACK-EXTRA WIDE
7 Row Height 2"	<b>Core Only</b>	20700ERL	20700AERL	40700ERL	40700AERL	80700ERL	80700AERL
	-6 AN Male	20706ERL	20706AERL	40706ERL	40706AERL	80706ERL	80706AERL
	-8 AN Male	20708ERL	20708AERL	40708ERL	40708AERL	80708ERL	80708AERL
	-10 AN Male	20710ERL	20710AERL	40710ERL	40710AERL	80710ERL	80710AERL
	-12 AN Male	20712ERL	20712AERL	40712ERL	40712AERL	80712ERL	80712AERL
	-16 AN Male	20716ERL*	20716AERL*	40716ERL*	40716AERL*	80716ERL*	80716AERL*
	12mmx1.5 female	20745ERL	-	-	-	-	-
10 Row Height 3"	<b>Core Only</b>	21000ERL	21000AERL	41000ERL	41000AERL	81000ERL	81000AERL
	-6 AN Male	21006ERL	21006AERL	41006ERL	41006AERL	81006ERL	81006AERL
	-8 AN Male	21008ERL	21008AERL	41008ERL	41008AERL	81008ERL	81008AERL
	-10 AN Male	21010ERL	21010AERL	41010ERL	41010AERL	81010ERL	81010AERL
	-12 AN Male	21012ERL	21012AERL	41012ERL	41012AERL	81012ERL	81012AERL
	-16 AN Male	21016ERL*	21016AERL*	41016ERL*	41016AERL*	81016ERL*	81016AERL*
	12mmx1.5 female	21045ERL	-	-	-	-	-
13 Row Height 4"	<b>Core Only</b>	21300ERL	21300AERL	41300ERL	41300AERL	81300ERL	81300AERL
	-6 AN Male	21306ERL	21306AERL	41306ERL	41306AERL	81306ERL	81306AERL
	-8 AN Male	21308ERL	21308AERL	41308ERL	41308AERL	81308ERL	81308AERL
	-10 AN Male	21310ERL	21310AERL	41310ERL	41310AERL	81310ERL	81310AERL
	-12 AN Male	21312ERL	21312AERL	41312ERL	41312AERL	81312ERL	81312AERL
	-16 AN Male	21316ERL*	21316AERL*	41316ERL*	41316AERL*	81316ERL*	81316AERL*
16 Row Height 5"	<b>Core Only</b>	21600ERL	21600AERL	41600ERL	41600AERL	81600ERL	81600AERL
	-6 AN Male	21606ERL	21606AERL	41606ERL	41606AERL	81606ERL	81606AERL
	-8 AN Male	21608ERL	21608AERL	41608ERL	41608AERL	81608ERL	81608AERL
	-10 AN Male	21610ERL	21610AERL	41610ERL	41610AERL	81610ERL	81610AERL
	-12 AN Male	21612ERL	21612AERL	41612ERL	41612AERL	81612ERL	81612AERL
	-16 AN Male	21616ERL*	21616AERL*	41616ERL*	41616AERL*	81616ERL*	81616AERL*
19 Row Height 5-7/8"	<b>Core Only</b>	21900ERL	21900AERL	41900ERL	41900AERL	81900ERL	81900AERL
	-6 AN Male	21906ERL	21906AERL	41906ERL	41906AERL	81906ERL	81906AERL
	-8 AN Male	21908ERL	21908AERL	41908ERL	41908AERL	81908ERL	81908AERL
	-10 AN Male	21910ERL	21910AERL	41910ERL	41910AERL	81910ERL	81910AERL
	-12 AN Male	21912ERL	21912AERL	41912ERL	41912AERL	81912ERL	81912AERL
	-16 AN Male	21916ERL*	21916AERL*	41916ERL*	41916AERL*	81916ERL*	81916AERL*

### OIL COOLER ADAPTERS

TEMP-A-CURE™ Coolers are manufactured with removable, interchangeable fittings that feature a contoured port side with an O-ring seal for worry free performance. You can stock your most common cooler cores and fittings, and mix and match to each customer's needs. This means you can lower your inventory, increase customer service, and increase inventory turns all at the same time!



PART NO.	AN FTG. SIZE	PORT FTG. SIZE
585106ERL	-6	-10
585108ERL	-8	-10
585110ERL	-10	-10
585112ERL	-12	-10

**NOTE: Fitting instructions pg. 65**

### ALUMINUM MOUNTING BRACKETS

Here is the strongest, most convenient and the best method for mounting an Earl's TEMP-A-CURE™ cooler. Manufactured from a custom aluminum extrusion and then ball burnished to a high luster, this bracket securely holds the TEMP-A-CURE™ cooler preventing vibration damage. The bracket is pre-drilled for ease of mounting to any surface, and comes complete with tension rods and the proper aircraft hardware. Check the chart below and choose the kit that matches the face height (number of rows) on your cooler. With proper installation the TEMP-A-CURE™ cooler will give a long service life.

NARROW COOLER PART NO.	WIDE COOLER PART NO.	EXTRA WIDE COOLER PART NO.	DESCRIPTION
1707ERL	1807ERL	1607ERL	Alum. Mounting Bracket Kit 7 Row Cooler
1710ERL	1810ERL	1610ERL	Alum. Mounting Bracket Kit 10 Row Cooler
1713ERL	1813ERL	1613ERL	Alum. Mounting Bracket Kit 13 Row Cooler
1716ERL	1816ERL	1616ERL	Alum. Mounting Bracket Kit 16 Row Cooler
1719ERL	1819ERL	1619ERL	Alum. Mounting Bracket Kit 19 Row Cooler
1725ERL	1825ERL	1625ERL	Alum. Mounting Bracket Kit 25 Row Cooler
1734ERL	1834ERL	1634ERL	Alum. Mounting Bracket Kit 34 Row Cooler
1742ERL	1842ERL	1642ERL	Alum. Mounting Bracket Kit 42 Row Cooler
1750ERL	1850ERL	1650ERL	Alum. Mounting Bracket Kit 50 Row Cooler
1760ERL	1860ERL	1660ERL	Alum. Mounting Bracket Kit 60 Row Cooler



### STEEL MOUNTING BRACKETS

The benefits of the TEMP-A-CURE design are provided in part by using very thin brazing sheet in the construction of the tubes. Occasionally, in an especially rough competition application, vibration and shock will cause a fatigue crack between the plates resulting in seepage. Improper mounting has been found to be the cause of most of these incidents of fatigue.

Earl's Research & Development Department designed a saddle mounting bracket that securely mounts any size TEMP-A-CURE cooler. We strongly recommend the use of these brackets for all Off Road applications.

PART NO.	FACE HEIGHT
1907ERL	2"
1910ERL	2.8"
1913ERL	3.8"
1916ERL	4.8"
1919ERL	5.6"
1925ERL	7.6"
1934ERL	10.3"
1942ERL	12.6"
1950ERL	15.2"
1960ERL	18.0"



(Will fit all 3 widths)

### UNIVERSAL MOUNTING KIT - PART NO. 1901ERL

This kit includes four special ties and four vibration isolators for mounting the cooler directly to the front of the vehicle's radiator.