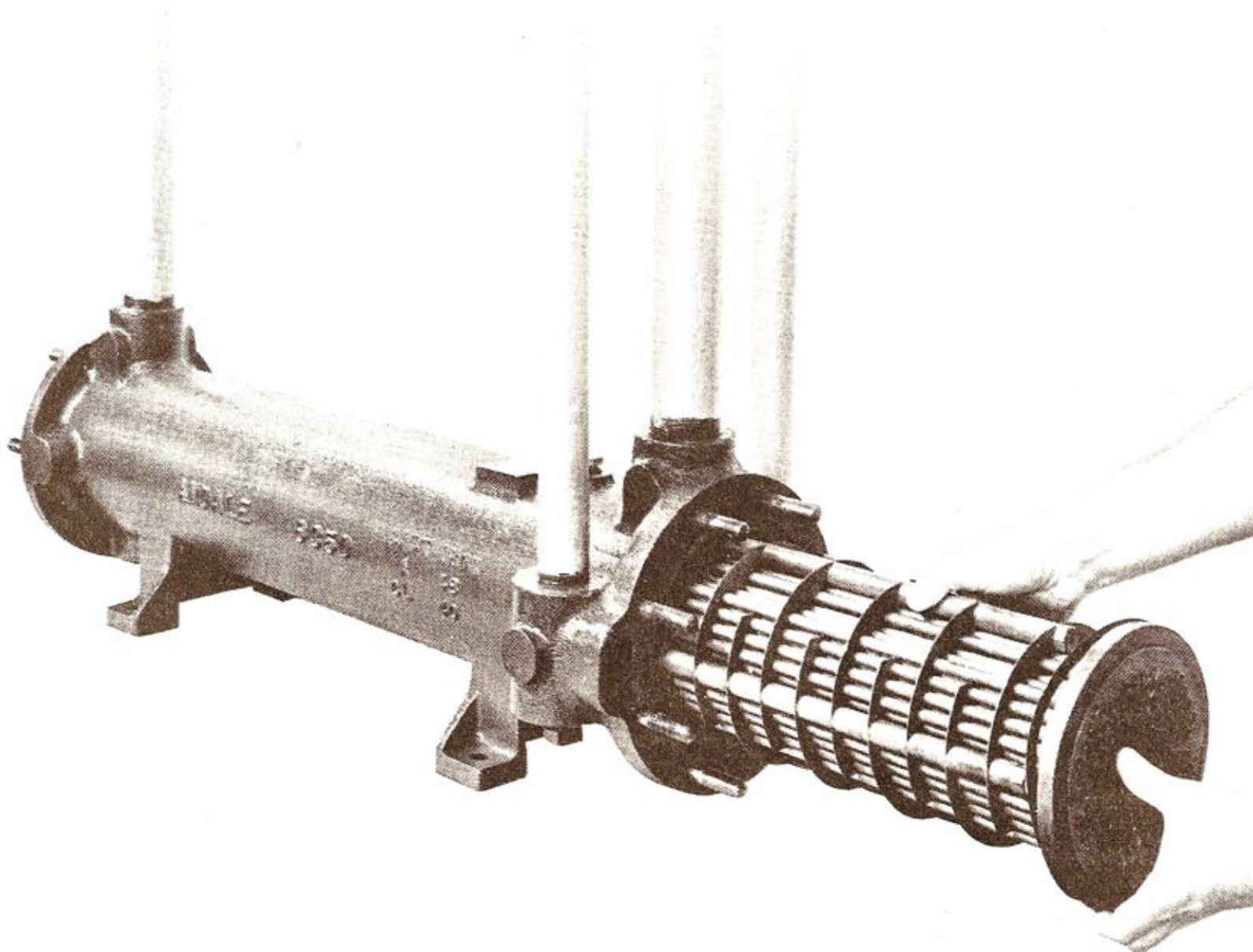


## **Tate Andale, Inc.    *Type 202 Oil Coolers***

**for maximum heat removing performance and efficiency**

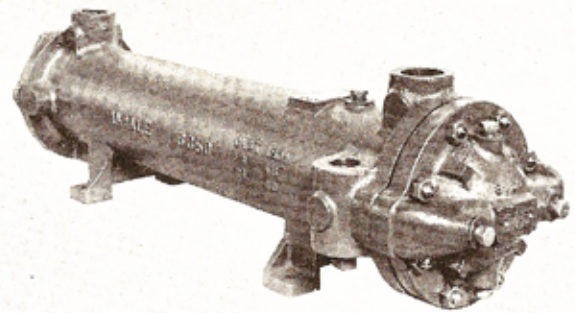
The Andale Type 202 Oil Cooler is a superior unit providing optimum oil cooling capability and economy plus maximum ease of maintenance. These unique oil coolers enable the tube bundle to be easily removed for servicing without breaking any of the piping connections.

Availability of a full range of body sizes and baffle arrangements assures you of the ideal oil cooler for your specific requirements. Further details on Andale Type 202 Oil Coolers are given on the reverse side. We welcome your most critical evaluation of these performance-proven coolers.



# Tate Andale, Inc.

## Type 202 Oil Coolers



For maximum oil cooling efficiency at pressures to 125 psig and fluid temperatures to 200°F., Andale offers a complete range of Type 202 Oil Coolers. These rugged units feature Andale's exceptional cooler design which permits the tube bundle to be removed for servicing while all piping connections—both water and oil—remain intact. This unique feature assures ease of maintenance without lengthy downtime. In addition, Andale Type 202 Oil Coolers can be inspected for leakage without disassembling the unit since all gasketed or packed joints are visible.

The water normally flows through the tubes and the oil flows through the shell (around the tubes) with the baffles directing the oil back and forth across the tubes. The baffle spacing is carefully selected to assure optimum oil velocity for efficient heat transfer.

### SUPERIOR DESIGN AND CONSTRUCTION

The Type 202 Oil Cooler has an externally packed floating tube sheet with synthetic rubber "O" rings held in the counterbore of the shell by a stud bolted adjustable gland. The "O" rings seal the clearance between the shell and the floating tube sheet and permit the bundle assembly to expand and contract freely with changes in temperature and without any oil leakage. This design affords positive protection against intermixing of the oil and water through the packing. If packing leakage should occur, it will take place externally and not into the water.

These Andale coolers have  $\frac{3}{8}$ " O.D. x 18 BWG seamless, cold drawn tubes in a machined bundle. If desired, Type 202 units can be furnished with  $\frac{5}{8}$ " O.D. tubing. The tube ends are expanded into carefully-machined aluminum bronze tube sheets and tested to  $1\frac{1}{2}$  times the working pressure to assure leakproof operation.

Every Type 202 component is precision machined to assure years of troublefree performance and exact replaceability of parts if ever required.

### A SELECTION OF MATERIALS

Highest quality materials to standard specifications are used throughout Type 202 Oil Coolers. Generally, these Andale coolers feature cast iron pressure parts with bronze internal components. For example, a cooler using fresh water as the cooling medium employs cast iron shell and heads, copper tubes with aluminum bronze tube sheets and brass baffles. For salt or brackish water, tubes of admiralty metal or 90/10 copper-nickel are suggested. All-bronze construction is available for special applications. The type of water to

be used and/or tube material preference should be specified.

### APPLICATION VERSATILITY

Although these coolers are designed primarily for oil cooler application, the exceptional performance they provide has extended their use to other services, as well. Type 202 units have been widely used as water-to-water heat exchangers, and have been employed in chemical applications with equally effective operation.

### A FULL RANGE OF SIZES AND BAFFLE ARRANGEMENTS

Andale offers Type 202 Oil Coolers in a wide range of sizes, with lengths from 20" to 92". (For smaller units, see Bulletin 281 on Type 202 Compact Oil Coolers). Each cooler is available with any one of several baffle arrangements to assure that your oil cooling requirements will be most effectively met.

The table below lists only a part of the complete Type 202 line. The lettered units are stocked coolers, while the numbered models—the larger frame coolers—are built on order to standard specifications.

Regardless of your oil cooling requirements, there is an Andale Type 202 Oil Cooler that meets those needs. We invite your further inquiry.

### TYPICAL PERFORMANCE

**OIL** Viscosity 500 SSU at 100°F.  
(shell side) —Enters Cooler at 145°F.  
Pressure Loss 10 psi

**WATER**  
(tube side) —Enters Cooler at 85°F.

Cooler Size	Approx. overall Dimensions Inches			Water GPM	Oil GPM	Oil Temp. from Cooler Deg. F.	Heat Extraction BTU/Hr.
	Length	Height	Width				
B	20	9	11	8	6	126	23,000
F	28	9	11	10	13	129	43,000
K	37	11	12	15	40	134	91,000
M	45	11	12	20	54	134	123,000
R	45	12	14	25	68	134	160,000
50	50	14	24	Please consult Andale with your performance requirements so that the proper recommendation can be made.			
57	77	20	34				
64	92	40	56				

# Tate Andale, Inc.

1941 Lansdowne Rd., Baltimore, Md. 21227-1789

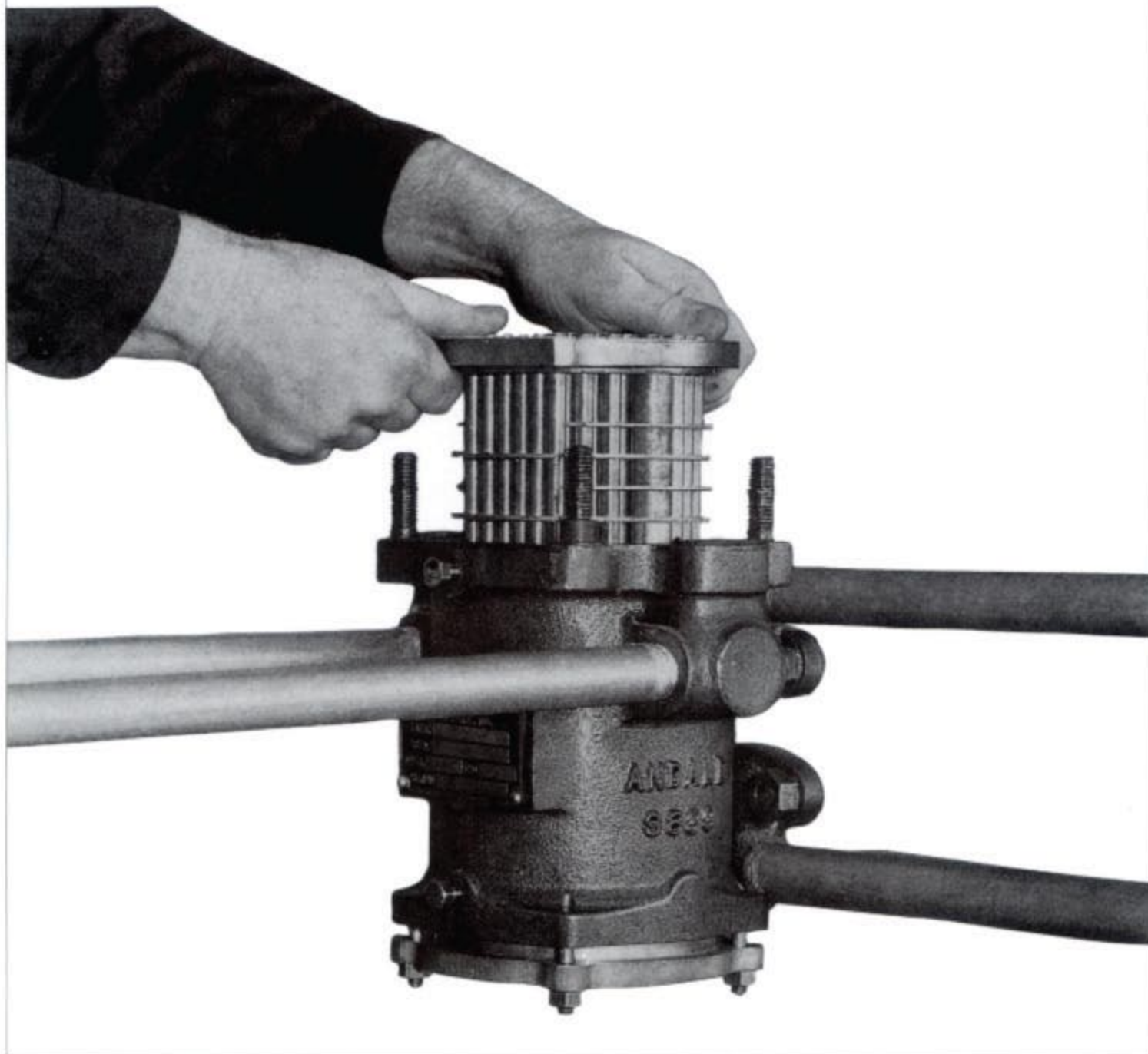
(410) 247-8700 • 1-800-296-TATE • Fax: (410) 247-9672

## Tate Andale, Inc. Type 202 Compact Oil Cooler

*The oil cooler you can service without breaking the lines.*

If a compact, high efficiency oil cooler with built-in serviceability interests you, so then should the Tate Andale Type 202 Compact. This is the oil cooler that permits rapid removal of the tube bundle for cleaning and inspection without disturbing the piping lines. The Tate Andale Type 202 Compact delivers maximum performance in limited space and provides exceptional versatility of installation.

A combination of superior features and availability of four classes of materials, as described on the reverse side, makes the Tate Andale Type 202 Compact your best oil cooler investment. Your further inquiry on this and any of the other quality Tate Andale Heat Exchangers is invited.



## Type 202 Compact Oil Coolers

The Tate Andale Type 202 Compact Oil Cooler is a precision-manufactured unit designed to provide long, trouble-free service at pressures to 125 psig and fluid temperatures to 200°F. Unitized construction of the Type 202 permits easy tube bundle removal so that the cooler can be serviced without breaking either the oil or the water connection. Furthermore, all gasketed or packed joints are visible and can be inspected for leakage without dismantling the unit.

Like most Tate Andale heat exchangers, the Type 202 Compact features an externally-packed floating head, which has its own set of studs—separate from those that hold the gland packing. This feature gives positive protection against oil dilution or contamination. Should any gasket leakage ever occur of either oil or water, it will be to the atmosphere and not into the other passage. Tube ends are expanded into the aluminum-bronze tube sheets to assure optimum leak-free performance. Floating tube bundle construction permits stress-free compensation for expansion or contraction caused by temperature changes.

### Choice of Mounting and Baffling

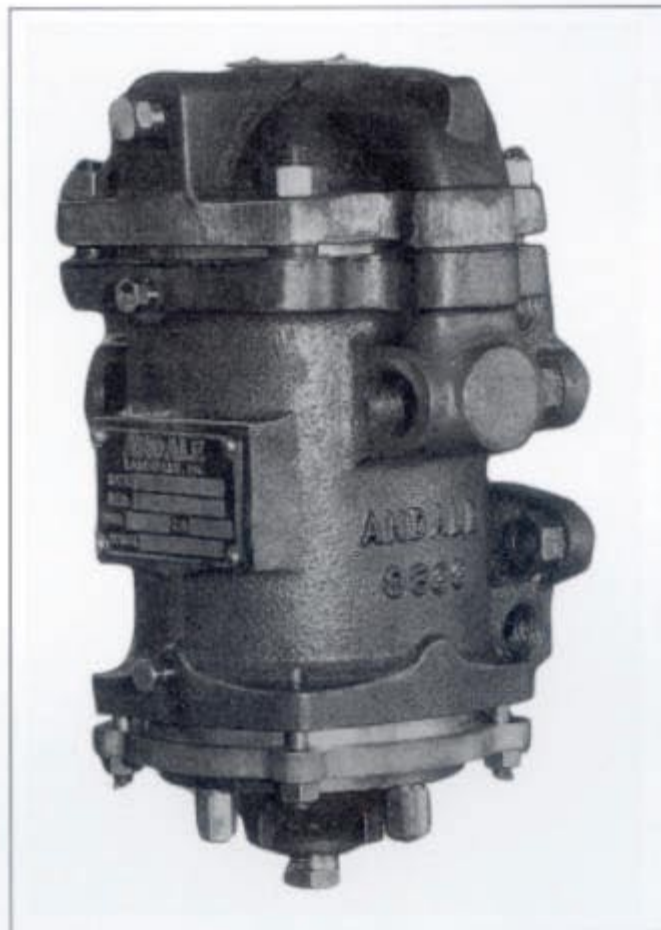
Two oil connection mounting plans are available to provide flexibility of installation. In addition to piping oil from either side of the unit, the upper and lower oil compartments can be arranged for direct oil connection through the back of the cooler.

To match the Type 202 Compact to your exact needs, any one of several baffle spacing arrangements may be provided. Each shell is bored to the predetermined tube bundle diameter. This eliminates bypassing of the shell side fluid around the baffles, and contributes to the exceptionally high efficiency and reproducibility for which Tate Andale heat exchangers are renowned.

### Four Classes of Materials

This highly efficient oil cooler may be furnished in any of four classes of materials to accommodate a variety of water conditions. These include:

- CLASS I** —for fresh water: cast iron shell and heads, copper tubes, aluminum bronze tube sheets and brass baffles.
- CLASS II** —for mildly corrosive water: cast iron shell and heads, 90/10 copper nickel tubes, aluminum bronze tube sheets and brass baffles.
- CLASS III** —for salt or brackish water: bronze shell and heads, 90/10 or 70/30 copper nickel tubes, aluminum bronze tube sheets and brass baffles.
- CLASS IV** —for salt or brackish water: steel shell, bronze heads, 90/10 or 70/30 copper nickel tubes, aluminum bronze tube sheets and brass baffles.



All Type 202 Compact Oil Coolers employ 1/4" O.D. x 20 BWG tubes in a machined bundle. Close tolerances of all Type 202 components permit exact replacement of any part if necessary. If desired, the unit may be furnished with a water strainer in the main head (Type 202S) to prevent clogging of the tubes.

### Typical Performance

- OIL** —Viscosity 500 SSU at 100°F.
- Enters Cooler at 145°F.
- Pressure Loss 10 psi
- WATER** —Enters Cooler at 85°F.

Cooler Size	Approx. Overall Dimensions Inches			Water GPM	Oil GPM	Oil Temp. from Cooler Deg. F.	Heat Extraction BTU/Hr.
	Width	Height	Depth				
AA-1	8	10	7	6	4.6	128	16,000
BB-1	9	11	8	10	7.2	129	24,000
BB-2	9	11	8	10	11.6	135	24,000
RR-1	12	17	10	25	16.0	124	69,500
RR-2	12	17	10	25	25.0	130	77,500
TT-1	17	20	13	40	25.0	120	129,000
WW-1	20	26	15	60	45.0	118	251,500