Oil Cooler

Description

Figure 1, shows a standard design of oil cooler arranged for installation in a horizontal position. Most coolers are installed in this position, but a vertical position is sometimes used due to space limitations. When installed in a horizontal position, either shell nozzle may be used as the oil inlet, but it is preferable to use the lower water nozzle as the inlet to facilitate venting. With the cooler installed in a vertical position the water inlet chamber should be at the top and it is desirable to have the oil inlet at the lower end of the shell.

After entering the shell, the oil passes through the tube bundle as directed by the transverse baffles. The number of these baffles is determined by the allowable pressure drop, the amount of oil handled, the viscosity of the oil, the number of tubes, and the size and length of the shell.

The flow of the cooling water through the tubes is usually in two passes; although, a four pass arrangement is sometimes used to meet special conditions.

The tubes are rolled into the tubeplates at both ends, and the design is of the removable tube bundle type. To provide for a difference of expansion between the tubes and the shell, a packed gland is provided on the reverse end between the shell and the reverse end tubeplate guide ring. The guide ring is shrunk on the tubeplate and to insure a tight joint the two are silver soldered together. The gland is packed with a soft grade of asbestos packing. Obviously in order to maintain a tight joint, the packing should always be in good condition and it should also be properly compressed by the gland ring "10" with the aid of the studs in the end of the shell flange.

The inlet chamber is normally made of cast iron with water inlet and outlet openings on the side as indicated in Figure 1.

As shown in the illustration, the tubeplate guide ring "6" forms the reverse chamber. The lock ring "8", made in two pieces, fits in a square section groove cut in the guide ring. This lock ring holds in place guide ring flange "7" to which the reverse chamber cover is bolted.

Transverse baffles "12" are held in place by means of stay rods "13" and distance pieces "14".

The eyebolt "2" in the inlet chamber is of sufficient strength to be used for lifting the tube bundle with the chamber in place. Before removing the tube bundle the parts on the reverse end must be removed in the following order:- (1) reverse chamber cover "9", (2) lock ring "8", (3) guide ring flange "7", (4) gland flange "10", (5) gland packing "11".

Vent and drain connections are provided on the shell, and inlet chamber.

Materials normally used are as follows:-

Inlet Chamber - - - - - - - - - - - Cast Iron

Tubeplates & Guide Ring - - - - Muntz Metal
Tubes - - - - - Usually Muntz Metal or Admiralty Metal
Steel for all other parts.

List of Parts

The following list covering major parts, has been compiled to facilitate ordering repair parts by item number and name when the serial number of the oil cooler is given:-

1. Inlet Chamber
2. Inlet Chamber Eyebolt
3. Shell
4. Tubeplate, Inlet
5. Tubeplate, Reverse
6. Reverse Tubeplate Guide Ring
7. Reverse Tubeplate Guide Flange
8. Lock Ring
9. Reverse Chamber Cover
10. Gland Ring Flange
11. Gland Packing
12. Transverse Baffles
13. Transverse Baffle Stay Rods.
14. Transverse Baffle Distance Pieces
15. Tubes

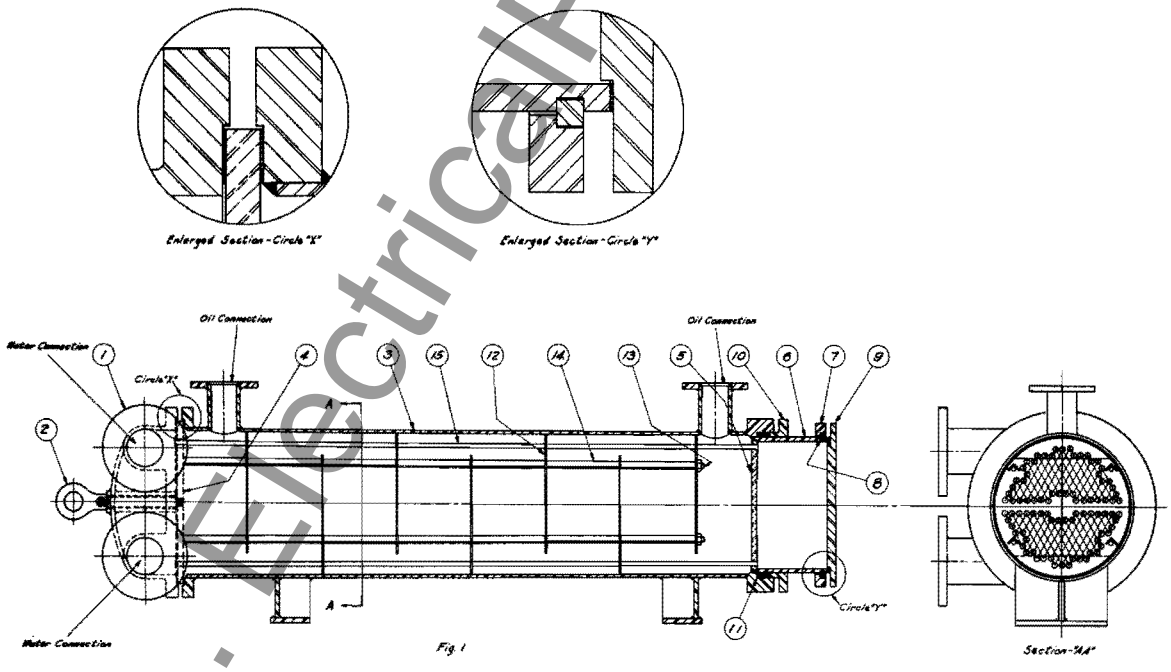

Fig. 1

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