

# IN-LINE INTER- AFTERCONDENSER

Installation, Operation, Maintenance and Manual

Graham Corporation      20 Florence Avenue      Batavia, New York 14020  
Email: [equipment@graham-mfg.com](mailto:equipment@graham-mfg.com)      [www.graham.mfg.com](http://www.graham.mfg.com)  
Phone: 585-343-2216      Fax: 585-343-1097





## **SECTION I - INTRODUCTION**

The in-line inter-aftercondensers are utilized as the heat exchangers for the vacuum producing equipment serving surface condensers.

The package units generally consist of one of three styles (refer to drawings S-3942, S-3943 or S-3944). The inter-aftercondenser internals are basically identical except for the shell diameter, number of tubes and tube passes.

For general instructions for installation, operation and maintenance of shell and tube heat exchangers, refer to OMI-II-90.

## **SECTION II - REMOVING AND REPLACING DEFECTIVE STRAIGHT TUBES**

The suggested procedure listed below should be used for units with tubes expanded at both tubesheets and at the shell division plate. When removing tubes, the tube metal must be completely loosened from each tubesheet and then the tube will pass easily out through the tubesheet holes, division plate and baffle/support plates. Any attempt to drive the tube out before it is properly loosened will result in the possible swelling of the tubes so that it will not pass through the holes in the baffles and/or support plates. It is preferred to pull the tubes from the aftercondenser end of the unit (the return or outlet end).

**Note:**

***Graham Corporation***

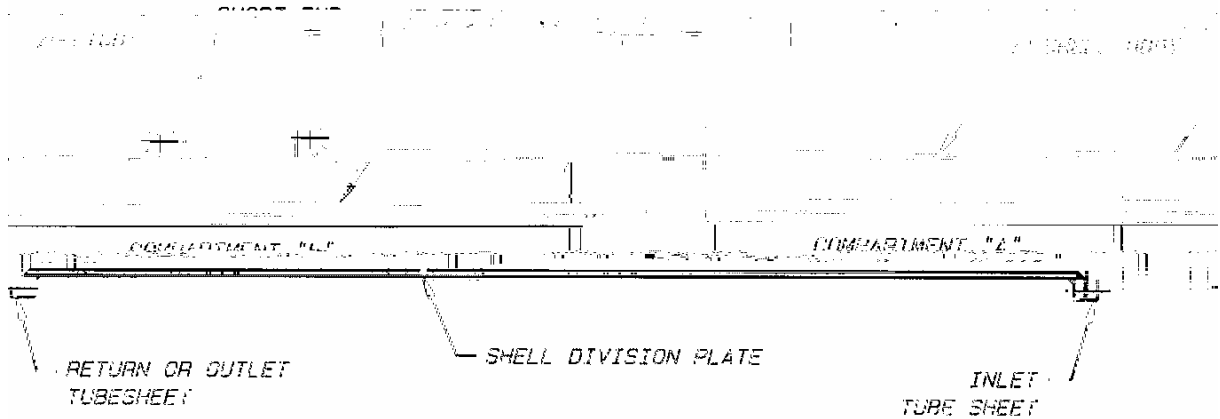
**Method B - Hydraulic Tube Puller Method**

- 1) Refer to Steps 1 and 2 of Method A.

**Graham Corporation**

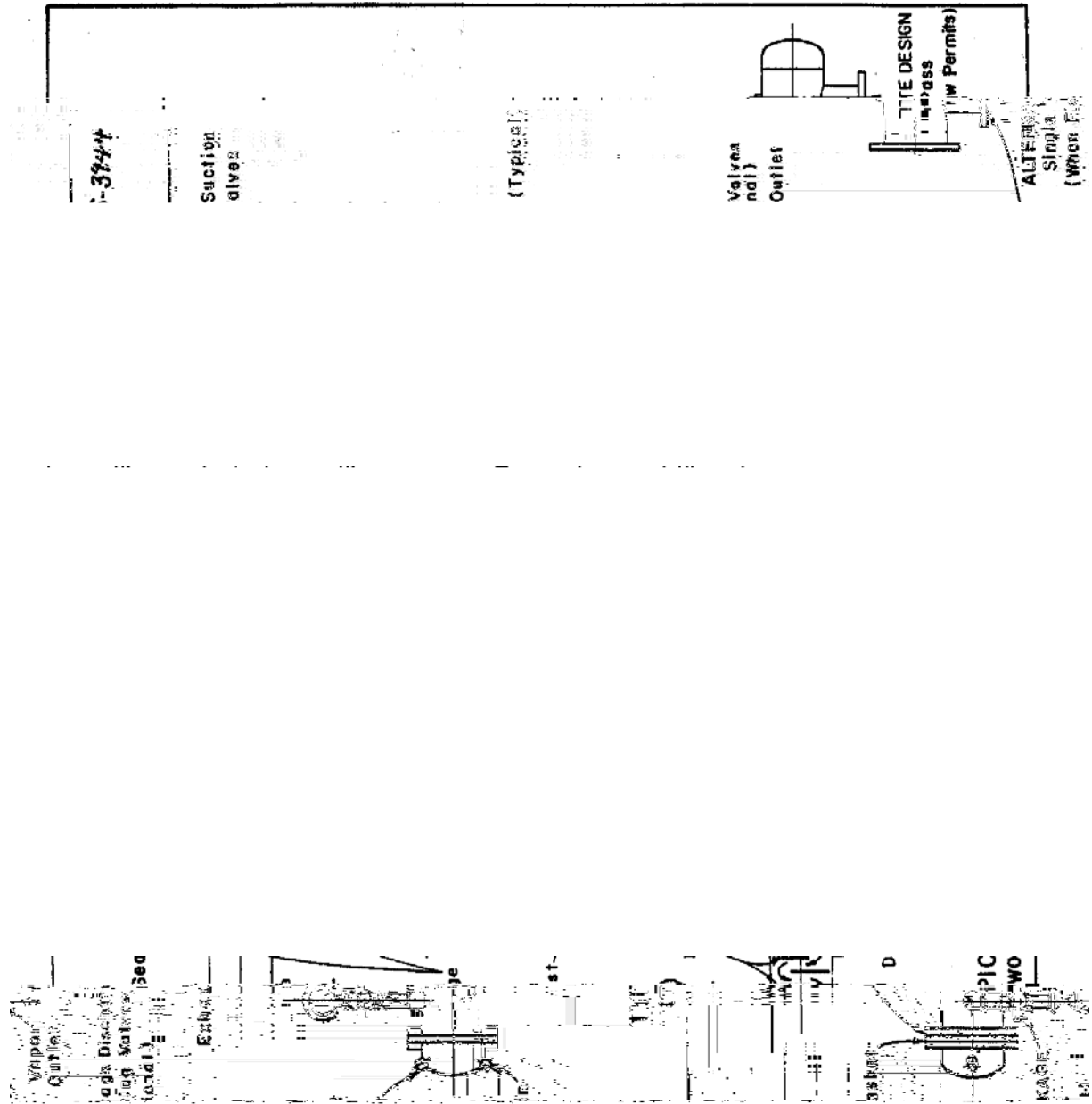
- 4) Hydrostatically pressure test short end (compartment A). Refer to the outline drawing or the nameplate for the correct test pressure to be applied to the shell side of unit.
- 5) Expand the tubes at the inlet tubesheet and hydrostatically test this compartment B to the pressure shown on outline drawing or per the nameplate.
- 6) Reassemble bonnet and/or channels using new gaskets and hydrostatically test the tube side to the test pressure shown on outline drawing or per the nameplate.

**SKETCH "A"**











### **SECTION III - REPAIR AND REPLACEMENT ORDERS**

When it is necessary to obtain spare parts, please address your communication to:

GRAHAM CORPORATION  
20 Florence Avenue  
Batavia, New York 14020

Telephone: 585 / 343-2216  
Spare Parts: 800 / 828-8150  
Fax: 585 / 343-1097  
E-MAIL: spares@graham-mfg.com  
WEBSITE: <http://www.graham-mfg.com>

**IMPORTANT** - The following information should be given in order to identify the spare parts required:

1. Serial number of unit (stamped on nameplate),
2. Name or description of part required,
3. Method of shipment (i.e. freight, express, etc.).

*Graham Corporation presents the information in this manual as good engineering practice. We cannot be held responsible for any damage*