

# FLO FAB

202-001

## Heat Exchangers

SUPERSEDES: 202-001 May 1, 1981

EFFECTIVE: October 1, 1995

### Installation:

1. Provide sufficient clearance at the head end of unit to remove tube bundle from shell.
2. Provide thermometer wells and pressure gauge connections in all piping to and from unit, as close to unit as practical.
3. Arrange piping with valves and by-passes so that both shells and tube bundles may be isolated from the system for inspection and repairs.
4. Provide air vent cocks so that the tube bundle or shell may be vented.
5. Stable foundations must be furnished to adequately support the unit.
6. All piping should be independently supported to prevent excess strains on the unit.
7. Exchangers should be set level and square so that piping connections do not require forcing.
8. Make sure the system on which the exchanger is being used, is clean before starting operation in order to prevent tubes plugging with foreign material.
9. Adequate steam supply is of prime importance and care should be taken to ensure that the required quantity at the correct pressure is available at the heater. The sizing of steam pipes and control valves should be ample to reduce pressure loss to a minimum, and valved by-passes should be provided around control valves to assure continuity of operation in case of failure of control equipment.
10. Continuous and complete removal of condensate and air is essential for satisfactory performance. The steam trap selected should have a capacity at least three times the condensing rate of the exchanger. It should be capable of handling air as well as condensate, and a valved by-pass and strainer should be provided. When an automatic steam control valve is used to regulate the steam supply, a vacuum breaker is recommended to prevent a vacuum forming in the steam space, when the steam valve closes.

### Operation:

1. When placing unit in operation, open vent connections and when all air is vented, start to circulate the cold medium only. The hot medium – steam or hot liquid, should then be introduced gradually until the exchanger is up to temperature.
2. Start operation gradually – do not admit hot fluid suddenly when empty or cold. Do not shock exchanger with cold fluid when unit is hot.
3. When shutting unit down, the flow of the hot medium should be stopped first.
4. Drain all fluids when shutting down if there is a possibility of freezing or corrosion.
5. Do not operate unit under conditions in excess of those for which it was designed.

### Maintenance:

1. Provide means for periodically cleaning either by–
  - (a) Use of suitable cleaning compound
  - (b) Mechanical means, if use of solvent is unsatisfactory.
2. Regularly inspect interior and exterior condition of all tubes, and keep them clean. Dirty fouled tube surfaces will reduce exchanger capacity. Complete stoppage of flow in some tubes may result in overheating, with resulting damage to these tubes.
3. Do not open exchanger for inspection until all pressure is off and unit completely drained.
4. Do not handle tube bundles with hooks or other tools which might damage tubes. Tube bundles are frequently very heavy, but the tubes are small and of relatively light gauge and are easily damaged.
5. Make periodic inspection of control equipment and relief valves to ensure their proper continuous operation.
6. Check and clean, frequently, steam trap and strainer on condensate outlet line. Improper operation of these parts will result in an accumulation of condensate in the steam space which may result in serious damage to the tube bundle.

**Cleaning:**

Shell and tube bundle should be flushed out periodically. If cleaning is necessary, remove head and bundle to clean inside of shell and outside of tubes. Replace gaskets if necessary.

If unit is installed in a hard water area, inside of tubing can be cleaned as follows:

1. Break water connections and plug bottom opening.
2. Fill the tubes with a solution of 1 part muriatic acid to 10 parts of water and allow to stand for 2 hours:  
CAUTION: A longer period may cause damage to the copper tubing.
3. Drain off and flush thoroughly with clean water.
4. Re-assemble unit.

**Note:**

Commercially available cleaners may also be used.

**Replacement Parts:**

When ordering replacement parts specify:

1. Complete Model Number
2. Date of Manufacture
3. Special Materials if Required

Normally, the only replacement parts required would be:

- 1 – Tube Bundle
- 1 – Set of Gaskets

Replacement heads are also available if required.

**FLO FAB**

860 Boul industriel  
bois-des-filion, Qc  
J6Z 4V7  
Tel: (450) 621-2995  
Fax: (450) 621-4995