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Installation and Operating Recommendations For GDM—Air Blown Coolers

MOUNTING

Location

The position of installation should not upset normal ventilation and comfort of personnel. Noise levels should remain within the local health and safety regulations. Ensure the free flow of cooling air and take care to avoid recirculation.

CAUTION—SAFETY:

Do not remove fan guard whilst motors are connected to power supply.

Mounting in close rooms

In closed rooms sufficient ventilation must exist to prevent excessive room temperature. It may be necessary to install extractor fans and ducts to provide adequate ventilation.

Mounting in the open air

Installation in the open air may result in high efficiency for cooler installations. Low ambient temperatures increase oil viscosity, which may cause excessive pressures, therefore a by-pass valve should be provided or alternatively, an additional oil heating system with pumped circulation may be installed. Electric motors must be protected against the weather.

Mounting in dirty areas

Mounting in heavily polluted ambient air will result in dirt deposits on the cooling surfaces causing reduced cooling efficiency. Therefore in dusty or oily environments, regular cleaning should be provided (see maintenance).

Manner of mounting

The mounting is usually with the radiator vertical by means of feet or similar. If the radiator must lie horizontal arrange fan underneath blowing up so debris can fall away when fan stops.

INSTALLATION

General

GDM air blown cooler installations are usually installed in the return flow of the fluid circulation system. (A separate Off-Line cooler/pump circulation system may also be used see Pump Range).

Preferably the fluid should enter the cooler at the lowest connection. For smaller sizes where 2 pass radiators are fitted, the 2 radiators should be connected in series always entering the radiator at the lowest connection. Supply and exit pipes should be connected to the cooler installation so as to be free from strain or vibrations. In order to diminish possible transference of vibrations, especially in mobile installations, vibration damping mountings should be supplied and the connections made with flexible pipes.

To avoid undue strain on the cooler connections, support any flats with a spanner when tightening the flexible fittings.

Impact pressures or intermittent pressure surges must not exceed the permissible maximum pressure.

Maximum working pressures

Refer To Cooler Data Sheet

Keep well below the stated limits if there are cycle variations, or frequent fluctuations of pressure in the cooler line, as often found on presses and other rapid cycling systems. (see also precautionary measures).

Mounting of coolers with shaft or pulley driven fan

On **GDM** coolers fitted with shaft or pulley drive, the Direction of rotation must conform with the arrow of direction on the cooler installation.

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Electrical Connection

Attention to the prescribed voltage and frequency is necessary to insure conformance with the technical data on the running plate.

After making the electrical connection ensure the direction of the fan conforms with the direction of the rotation on the cooler installation. Direct-On-Line (D.O.L.) starting of the electric motors can be used as standard, due to the low motor powers and small fan inertias.

Hydraulic Connection

Simple 2 port motors are generally used for most ranges. This type of motor is drained internally and therefore the outlet port must not be pressurised, i.e. do not restrict the flow from the motor outlet to tank (if a control valve is used with the motor, a simple 3 way valve on the motor inlet is preferred). If the motor outlet line must be pressurised, a 3 port, external drain motor can be fitted. (Please Consult GDM Heat Transfer). When removing hydraulic motors, the ports and connections should be sealed immediately to prevent ingress of dirt.

Regulation

The fluid temperature should be controlled by the switching on and off of the fan motor. The motor switching is governed by a thermostat (available on request) to be mounted at the fluid tank near the return flow.

PRECAUTIONARY MEASURES

Often in hydraulic systems and sometimes in lubricant oil systems peak pressures may arise in excess of the permissible operating pressure. They are traceable only by an oscillograph, being rapidly transient conditions. In such cases an Off-Line, or pumped cooler should be used (see Pump Range). Experience has proven that spring loaded by-pass or pressure relief valves are not suitable for reducing impact and intermittent pressures.

Circulating Pumps

When a pump is fitted, observe these conditions to minimise noise and cavitation:

1. Flexible hose and swept elbows.
2. Large bore inlet pipe.
3. Flooded suction.
4. Minimum suction length, i.e. position next to tank.
5. No kinking of pipe at any time.

Always ensure inlet/suction port is flooded before starting. Do not start the pump motor until the fluid is warm since the design pressure and power may be exceeded, causing motor trip out. Also ensure that the dust plugs and pipes are removed from the pump when resting for rotation of electric motor. **Reverse rotation of a pump may result in the shaft seal blowing/ leaking.**

Fan Motor Units

Some fan motor units are fitted with a drain hole, this should be orientated to the lowest point to enable any condensate to exit.

OPERATING RECOMMENDATIONS

Starting Operation

After filling the installation with fluid, it should be purged of air. To do this the installation should be started briefly and the fluid outlet connection (or bleed plug if fitted) opened slightly until bubble free fluid overflows.

Control

If the required temperature is not attained soon after starting, or the fluid temperature rises gradually during cooler running, the following should be checked:

1. Speed of rotation and direction of the fan.
2. Electrical connection, polarity, etc.
3. Fluid quantity, fluid flow.
4. Cooling air flow in and out.
5. Blocked or dirty radiator.
6. Entering temperature of air and oil.

MAINTENANCE

GDM Cooler installations require no particular maintenance. Except occasional cleaning of the radiator. This is especially necessary in wet, dirty, oily ambient conditions.

Cleaning on the air side by means of compressed air or water is recommended. The direction of application of the cleaning stream should be parallel to the fins in order not to damage them. The cleaning efficiency of water can be improved by additives. Be careful that the cleaning additives are not aggressive to the cooler materials of construction. Oil and grease soiling may be washed off with hot soapy water. Again care should be taken not to damage the fins.

Cleaning The Oil Side

In case of inside cleaning, the disconnected cooler can be flushed with a degreasing agent. After this the degreasing agent must be blown out by means of compressed air, and the cooler must be flushed thoroughly with oil. Before it is connected to the circuit again. Take care that the degreasing agent does not have a corrosive effect on aluminium.

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