IGE INDUSTRIAL GAS ENGINEERING CO., INC.
130 EAST QUINCY STREET
WESTMONT, ILLINOIS 60559
Phone (630) 968-4440 – Fax No. (630) 968-0283

GENERAL INSTRUCTIONS FOR "THERMO" HIGH TEMPERATURE FANS

RECEIVING

Before starting this fan for the first time, with drive motor and fan electrically isolated, rotate the fan shaft by hand to be sure that there are no restrictions to its free turning.

Do not lift a housing type fan by the casing outlet or inlet flange connections as they are not designed for the heavy loads required to lift the entire fan structure.

If the Fan is not put into service immediately, proper storage methods should be used. Bearings and exposed metal should be protected from moisture or foreign material exposure. The Fan shaft should be rotated (min. 180°) on a periodic basis to prevent corrosion of the internal parts of the bearings.

INSTALLATION

When mounting the Fan, all mounting holes must be used.

Customer must provide a suitable gasket at Fan mounting flange on sealed applications. On vacuum applications I.G.E. will provide a "O" ring seal for mounting flange to mount against customers machined flat surface.

Fan housing inlet and outlet connections require a slip connection or expansion joint to allow for thermal expansion. Inlet and outlet connections are not designed to support duct work.

CAUTION: Uninsulated Fans should be insulated or guarded by customer to prevent physical contact with Hot surfaces which could cause injury or a dangerous condition.

If the fan is to be belt driven and the fan and motor sheaves are not I.G.E. factory mounted, the fan sheave and motor sheave must be balanced and when mounted, must be in alignment with the matched vee belts of the proper tension. Improper alignment or belt tension can cause excessive horsepower (high amperage) as well as damage to the drive belts and bearings.

All electrical connections or electrical grounding of the fan equipment must be to the prevailing local and National Electrical Codes.

CAUTION: Do not install or operate water cooled fan units on a hot furnace (over 200°F.) without constant water flow. It is important to use an adequate pressure relief valve (75 PSI or lower) directly connected to the water inlet or outlet pipe on a closed water system. Confined water, exposed to heat, could result in a dangerous condition.

OPERATION

CAUTION: Industrial Gas Engineering fans are constructed for a special purpose. It is important not to exceed their limitations as a dangerous condition may result. Do not operate this fan if it is not equipped with safety guards as required by O.S.H.A. regulations. O.S.H.A. conforming guards are available for all I.G.E. fans from I.G.E. and are furnished upon request.

AIR COOLED FANS: On air cooled fan units, the fan shaft and bearings are cooled by the operation of the fan. Do not stop the fan if the internal furnace temperature exceeds 200°F. Air cooling ports must never be obstructed as bearing damage could result. If the ambient air temperature in the area where the fan is to be mounted exceeds 120°F, the I.G.E. engineering department should be consulted.

Note: Air-cooling efficiency depends solely on the negative pressure created by the rotation of the Fan wheel in the furnace interior. The I.G.E. engineering dept. should be consulted for applications where the furnace is completely sealed or where the furnace is under a positive absolute pressure.

WATER COOLED FANS, FORCED AIR COOLED FANS: On water cooled or forced air cooled fan units, the fan shaft and bearings are cooled by maintaining the flow of water or air through the unit. The water or air should be kept on at all times when the internal furnace temperature exceeds 200°F. The temperature differential between water inlet and water outlet should not exceed 15°F. When water cooled fan units that are to be mounted outdoors in areas that may be subjected to temperatures below 32°F, an antifreeze solution (non-alcohol base) must be added to the water recirculating system. The forced air cooling supply must be of at least 2 lbs. pressure at 70°F to 75°F for adequate cooling. For approximate water flow rates or C.F.M. of air required please consult the factory.

Cooling water temperature should not exceed 85°F. at water inlet or damage to bearings may result. Water should be free from sludge or foreign matter which will cause blockage in the water cooled plug and could cause damage to Fan and/or create a dangerous condition.

NOTE: Water cooled fan units and air cooled fan units are not interchangeable.

CAUTION: This Fan was carefully balanced as a complete unit before shipment. Do not operate this Fan if vibration from an out of balance condition is evident. An unbalanced wheel will cause premature failure of the Fan and/or could create a dangerous condition. It is recommended that the amplitude of vibration be checked on a periodic basis and the balance corrected as required. Vibration displacement levels are shown below:

FAN RPM	Vibration displacement- Mils (peak to peak)			
	smooth	fair	rough (danger-correction required)	very rough
600	2.0	4.0	8.0	12-20
900	1.5	2.75	6.0	8-10
1200	1.0	2.0	4.5	6-8
1800	.75	1.5	3.5	5-7

Fan should not exceed temperature or RPM limitations that the Fan was designed for. Fans should not be subjected to abrupt temperature change as damage from thermal shock may result.

MAINTENANCE

For maximum life and trouble free service of this fan, a periodic maintenance schedule is recommended.

LUBRICATION: The bearings furnished with this fan have been lubricated at the factory for the initial run in period. Greasing intervals and grease selection as recommended by the bearing manufacturer are described in the attached bearing manufacturer instruction tags. If a grease is to be used other than shown on these tags, it is advisable to consult the bearing manufacturer for suitability. Do not over grease.

FAN DRIVES: If this fan is belt driven, the belt tension should be checked eight hours after the initial start up and adjusted accordingly. It is important that proper belt tension be obtained. High belt tension can cause fan and motor bearing failures. Loose belts can slip causing wear and problems with sheaves, bearings, shafts and motors. Belt tension should be tensioned to the belt manufacturer's recommendations. When replacing worn belts, replacement belts should be a new matched set.

Check vibration displacement level on a periodic basis. Monitor at Fan bearings.

Check mounting bolt and set screw tightness.

CAUTION: Avoid physical contact with any Fan member or component as these surfaces may cause injury due to heat.

INSPECTION

CAUTION: Before inspecting the fan or the system, it will be necessary to shut down and stop the fan during inspection. The fan system must be electrically isolated and adequately electrically grounded according to the National Electrical Codes. Disconnect switches and other controls must be locked in the "off" position. Precautions must be taken to prevent the electrical power to be accidently applied to the fan system.

When inspecting the Fan, all materials and welds should be checked for wear, corrosion or cracking that may reduce material strength and could cause failure damage and/or a dangerous condition.

FAN REPAIRS AND SPARE PARTS

CAUTION: Only I.G.E. factory repairs or alterations are authorized on this equipment as a dangerous condition could result if repairs or alterations are not made at the I.G.E. factory.

I.G.E. has complete repair facilities and replacement parts are available for all of its fan equipment on an economical and prompt basis.

INDUSTRIAL GAS ENGINEERING CO., INC.

Engineers — Manufacturers

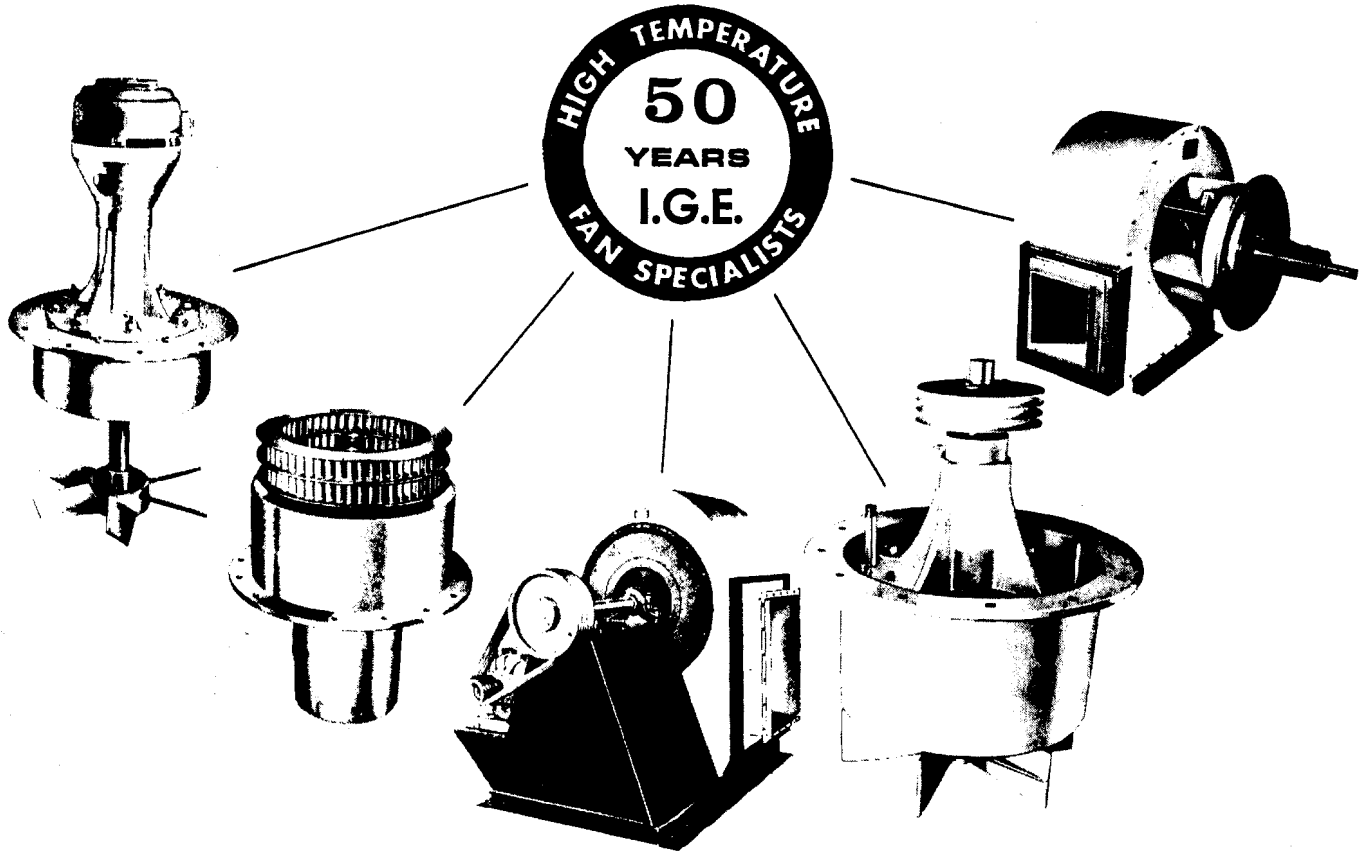
of

"THERMO"

High Temperature Fans

for all applications

to 2200° F. (1204.44° C.)



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CAUTION

THIS UNIT CONTAINS A MINERAL WOOL OR CERAMIC FIBER PRODUCT.

Recommended Handling Procedures

1. Minimize airborne fiber. A NIOSH- or MSHA-approved high efficiency air purifying respirator mask (3M 8710 or equivalent) should be used if airborne concentrations exceed 2 fibers/cc. For airborne concentrations greater than 5 fibers/cc., consult the I.G.E. factory.

2. Wear long-sleeved, loose fitting clothing, gloves and eye protection when handling wool or fiber products. Do not wear contact lenses.

3. Wash exposed skin areas gently with soap and warm water after handling wool or fiber product.

4. Avoid taking unwashed work clothes home. Wash work clothes separately from other clothing. Rinse washing machine thoroughly after use.

5. Particular care should be taken when working with "used" ceramic fiber material which has been in service at elevated temperatures (greater than 1600° F.) since such product may undergo partial conversion to cristobalite-a form of crystalline silica that can cause respiratory disease. The intended threshold limit value (on a time weighted average basis) for cristobalite is 0.05 mg/m^3. A NIOSH- or MSHA-approved high efficiency air purifying respirator mask (3M 8710 or equivalent) should be used in situations exceeding such levels.

6. All wool or fiber used in I.G.E. products is asbestos free.

LUBRICATION INSTRUCTIONS

Bearings have been factory prelubricated with high quality grease. The relubrication interval depends on bearing operating conditions: speed, temperature,and environment, for typical relubrication schedule see table below:

Speed	Temperature	Cleanliness	Greasing Interval
100 RPM	Up to 120 F	Clean	6 to 12 Months
500 RPM	Up to 150 F	Clean	2 to 6 Months
1000 RPM	Up to 210 F	Clean	2 Weeks to 2 Months
1500 RPM	Over 210 F	Clean	Weekly
Any Speed	Up to 150 F	Dirty	1 Week to 1 Month
Any Speed	Over 150 F	Dirty	Daily to 2 Weeks
Any Speed	Any Temp.	Very Dirty	Daily Daily to 2 Weeks
Any Speed	Any Temp.	Extreme Conditions	Daily to 2 Weeks

Bearings can be relubricated either while stationary or running. However, for safety aspects, relubrication is suggested while the fan is shut off. Always follow plant safety procedures and OSHA requirements.

For abnormal operating conditions consult bearing manufacturer.

RECOMMENDED GREASES

(For Normal Service)

Manufacturers	Grease
MOBIL OIL	MOBILITH AW 2
	MOBIL GREASE HP
EXXON OIL	UNIREX N2
TEXACO	PREMIUM RB
SHELL OIL	ALVANIA 2
	ALVANIA EP 2

ALL OF THE ABOVE ARE LITHIUM BASE GREASES.

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