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INSTALLATION AND OPERATING INSTRUCTIONS MODEL AF30A CEXI JOB NO. 960903

I. INSTALLATION INSTRUCTIONS

1. Examine vaporizer for shipping damage. A slight bending of aluminum fins does occur during loading & unloading. This does not affect operation of the unit in any way. Tighten bolts that may have loosened during shipping. Lift the unit from the truck by attaching slings to all 4 lifting eyes and to the top two legs at the bottom of the unit.

Remove all packing material prior to standing the unit up, particularly any packing used to keep the fan blade from spinning during shipment.

DOUBLE CHECK THE TIGHTNESS OF THE FAN BLADES TO THE HUB AND THE HUB TO THE MOTOR SHAFT.

2. Stand vaporizer upright by using a nylon sling attached to all 4 lifting eyes at the same time. The slings should be attached to the lifting eyes in such a manner as to exert equal force on the lifting eyes at all times. See attached sketch for the proposed lifting method.

3. Position unit on level concrete pad. Anchor the unit to the concrete pad through bolt holes provided in the foot pads.

4. Connect inlet connection (the connection pointing straight down) to a liquid nitrogen supply. Connect the outlet connection (the horizontal header) to the use point.

5. Connect a 240/480 volt, 3 phase, 60 hz electrical service to the top of the motor starter in the electrical enclosure on the unit. All electrical must conform to NEC requirements. All entries into the electrical box should be through the bottom or side of the box.

6. Turn on the power to the unit, turn the on off auto switch to the on position and observe fan rotation/air flow direction. Air should be blowing out the top of the unit. (normal air flow is air entering in the bottom of the unit and exiting at the top through the fan guard). Reverse the fan rotation if air flow is incorrect.

7. The fan shaft bearings and motor have zerk fittings which should be lubricated on a monthly basis or every 1000 hours. The zerk fittings have been piped down to allow access from the ground. The extension tubes on the zerk fittings have been charged with grease at the factory. The fan itself is a direct drive fan that should not require any maintenance.

8. Leak check all pressure connections at 1.25 times max. working pressure with gaseous nitrogen or CO₂.

II. OPERATING INSTRUCTIONS

1. The vaporizer is a forced convection ambient vaporizer that requires air flowing through the vaporizer to operate properly. The air flow direction is upwards through the unit.

2. The vaporizer is equipped with a control circuit that will turn the unit on and off based on temperature of the inlet header. As soon as the liquid hits the inlet connection of the vaporizer, the fan will turn on if the selector switch is in the Auto position. The unit must have the fan in either the Auto or the Manual Position to operate properly. If the switch is in the off position, the fan will not run and the low temperature cut off valve will not open. There will not be any flow through the unit.

3. The vaporizer fan should be kept running after the unit is no longer vaporizing to improve the defrost time (decrease the defrost time). Generally the vaporizer will defrost very rapidly if the fan is kept running until the headers or the fins are elevated above 32°f. The auto position of the selector switch will automatically turn the fan off once the temperature of the header comes up to the set point on the inlet controller.

4. Outlet gas temperature will be below ambient temperature by 5 to 50°f. The temperature will vary depending on how long the unit has been running and the accumulation of ice on the vaporizer heat transfer surface, and the flow rate through the unit.

5. The unit is equipped with a low temperature cut off system that senses the outlet gas temperature. If the outlet gas temperature drops below the temperature set on the temperature controller, the unit will close the solenoid valve and stop the flow of CO₂ through the unit. The set point for the low temperature cut off solenoid valve should be set at 25°F.

6. A pressure switch has been installed in the electrical enclosure that can be used to monitor the line pressure down stream of the vaporizer. The switch can be connected to an alarm in the control room to allow the user to see that the line pressure does not drop below what ever minimum pressure that the user wants as an alarm. This will allow the end user to know that the vaporizer has shut off on low temperature or that for some reason the CO₂ is not flowing through the unit.

III. VAPORIZER SPECIFICATIONS

Model AF30A

Induced Draft Ambient Vaporizer

Fluid

CO₂

| | |
|-------------------|---|
| Flow | 1100 lb. per hour |
| Inlet Connection | 1" mueller flange |
| Outlet Connection | 1" mueller flange |
| Fluid Passages | 6061/6063 aluminum |
| Surface Area | |
| Internal | 70.35 sq. feet |
| External | 1050 sq. feet |
| MAWP | 500 psig |
| Proof Pressure | 750 psig |
| Operating Press | 300 psig |
| Pressure Drop | 20 to 30 psig at full rated flow and 300 psig |
| Inlet Temp | 0°F |
| Outlet Temp | within 20°F of ambient temperature |
| Fan Type | Direct drive propeller |
| Fan Motor | TEFC |
| Horsepower | 3 |
| Air Flow | 22,000 scfm |
| Cleaning | For CO ₂ Service |
| Shipping Weight | 1,100 lb. approx. |
| Dimensions | 48" long by 48" wide by 168" tall |
| Power Required | 240/480 vac, 60 htz, 8/4 amps |

Suggested Set Points

| | |
|--|----------|
| Low Temperature Cut Off Temperature Controller | 25°F |
| Inlet Temperature Start Up | 35°F |
| Line Pressure Switch | 180 psig |