LubriMist® Model VFP
Oil Mist Generating System
Installation and Operating Manual

Lubrication Systems Company
1740 Stebbins Dr.
Houston, Texas 77043
USA
Ph 713.464.6266
Fax 713.464.9871
www.lsc.com

Printed in the United States of America.

LubriMist® Model VFP
Oil Mist Generating System
Installation and Operating Manual

Table of Contents

P/N 77740203
REV 2
April 2005

THE LEADER IN OIL MIST TECHNOLOGY

Model 'VFP' *LubriMist*® Oil Mist Generator

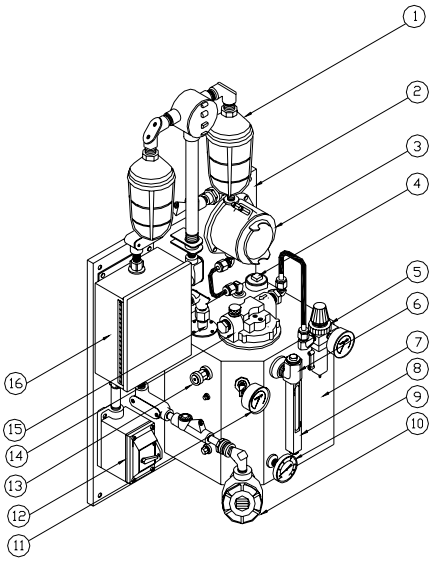
INSTALLATION AND OPERATION MANUAL

Introduction

A *LubriMist*® Oil Mist System is a centralized lubrication system that generates, conveys, and automatically delivers lubricant to bearings, gearboxes, chains, and sliding surfaces in various industrial machinery and equipment. This publication provides instruction and information for the *LubriMist*® Oil Mist Generator Unit Model "VFP." Design, application, and distribution of *LubriMist*® Oil Mist are covered in other publications. Call the Lubrication Systems Company office nearest you for additional information.

Description

The "VFP" panel mounted *LubriMist*® oil mist generator is designed for use in intermediate size centralized oil mist lubrication systems. The equipment is designed to meet the requirements for installation in Class 1, Group D, Division 2 Hazardous Areas, and is Certified for ATEX CAT 3G EEx nC IIC. The "VFP" is equipped with a three gallon capacity oil reservoir and important monitoring features. All *LubriMist*® oil mist generators utilize proprietary Vortex mist generation technology, which delivers superior reliability and performance. Model "VFP" is available in 40, 100, 300 and 500 Bearing Inch capacities which provide an oil mist supply range of 0.36 to 15.0 SCFM. Standard monitoring and control features include an oil level gauge, low oil level switch, mist pressure gauge, mist pressure switch, pressure relief valve, immersion oil heater with thermostat and an oil temperature gauge. All electrical devices are wired to the junction box which houses terminal strips and a common, dry contact, remote alarm relay. The low oil level and mist pressure switches operate the highly visible, red/green, operating status lights. Also included as standard equipment is an integral inlet air supply filter/regulator with gauge. The "VFP" also comes equipped with an on/off power switch to facilitate electrical connection and unit maintenance/inspection.
The unit is constructed of heavy gauge stainless steel. The "VFP" can be packaged in *LubriMist*® weather-tight enclosures; either aluminum or fiberglass construction. In addition, the "VFP" can be mounted on a rigid, stable, galvanized stand with or without a back-up oil mist generator. Please refer to the model code table below to define the unit you have obtained.



LEGEND

1 OPERATING STATUS LIGHTS
2 MOUNTING PANEL
3 MIST PRESSURE SWITCH
4 MIST OUTLET-2 INCH NPT
5 AIR PRESSURE REGULATOR WITH GAUGE AND AUTO DRAIN AIR FILTER
6 FILL PORT
7 THREE GALLON RESERVOIR
8 OIL LEVEL GAUGE
9 OIL TEMPERATURE GAUGE
10 IMMERSION OIL HEATER WITH THERMOSTAT
11 MIST PRESSURE GAUGE
12 POWER SWITCH
13 PRESSURE RELIEF VALVE
14 VORTEX OIL MIST GENERATING HEAD
15 LOW OIL LEVEL SWITCH
16 ELECTRICAL ENCLOSURE

Figure 1: Model VFP Oil Mist Generator

MODEL NO. (Standard Model Shown)

VFP - 40 / 100 / 300 / 500 - A - A - X - X - X

GENERATOR SIZE	RESERVOIR OIL HEATER	MIST PRESSURE MONITOR	ENCLOSURE	MOUNTING STAND	BACK-UP UNIT	LOCAL STATUS LIGHTS	ACCESSORIES
40 - 40 BI	A - Immersion Oil Heater w/Thermostat & Thermometer – 120VAC / 375 Watts	A - High/Low Mist Pressure Switch	X - None; To be Panel Mounted	X - None	X - None	(Blank) Red & Green Vapor Tight Status Lights (70 Watts Max. Bulb Wattage)	1 Auto Fill to Main OMG Using Kenco Oiler
100 - 100 BI	B - Immersion Oil Heater w/Thermostat & Thermometer – 240VAC / 410 Watts		A - Aluminum, Single Door Cabinet	S - Included	A - Model "VO" Back Up Unit w/Heater Option Included (Mounting Stand Required)	NL - Not Included	2 Warm Ambient Using Air Cooler & Sunshade (A)
300 - 300 BI			B - Fiberglass, Single Door		B - Model "VFP" Back-Up Unit w/Heater In (Mounting Stand & Fiberglass Enclosure Required)		3 Cold Ambient Using Cabinet with Insulation
500 - 500 BI							4 Low Oil Temp Switch (A)

(A) OPTION NOT ATEX CERTIFIED

Option Description	Option Code	Description	Standard Model Code	Temp Code	Ambient Rating See Notes (2) & (3)	Volts / Amps (See Note 4)							
						Primary Unit Heater Code Option	Volts AC	Amps Reference back-up unit and local status light option codes below to determine amperage. Ratings include primary and back-up units as applicable. Back-up units include reservoir oil heaters. See Notes (4) & (5).					
Generator Size	40	40 Bearing Inch	**40**										
	100	100 Bearing Inch	**or 100**										
	300	300 Bearing Inch	**or 300**										
	500	500 Bearing Inch	**or 500**										
Reservoir Oil Heater	A	Explosion Proof Immersion Oil Heater w/Thermostat & Thermometer – 120 VAC – 375 Watt	A			A	**120**	**3.7**	**6.8**	**6.8**	**3.2**	**6.3**	**6.3**
	B	Explosion Proof Immersion Oil Heater w/Thermostat & Thermometer – 240 VAC – 410 Watts				B	**240**	**2.0**	**3.7**	**3.7**	**1.7**	**3.5**	**3.5**
Mist Pressure Monitor	A	High/Low Mist Pressure Switch	**A**										
Enclosure	X	None; To be Panel Mounted	**X**		-**20**C< T amb <+**40**C								
	A	Aluminum, Single Door Cabinet			-**20**C< T amb <+**40**C								
	B	Fiberglass, Single Door Cabinet			-**30**C< T amb <+**49**C								
Mounting Stand	X	None	**X**										
	S	Included											
Back-Up Unit	X	None	**X**					X			X		
	A	Model "VO" Back-Up Unit w/ Heater Option Included (mounting stand required). See notes (1) (2) & (4)							A			A	
	B	Model "VFP" Back-Up Unit w/ Heater In Fiberglass Encl. (mounting stand required). See notes (1) (2) & (5)								B			B
Local Status Lights	(blank)	Red and Green Vapor Tight Status Lights. See note (1) & (3) (100 watt maximum bulb wattage)	**(blank)**	**T2**				**W/ Status Lights**					
	NL	Not Included		**T4**							No Status Lights		

Notes
(1) Immersion Oil Heaters for Back-up Units and the Local Warning Lights are provided at the voltage as the primary VFP Reservoir Oil Heater Option.
(2) Ambient Rating is -20C<AMB<+40C for all assemblies where "VO" back-up Unit is included regardless of VFP enclosure selection. VO back-up Units are furnished without enclosures.
(3) Ambient Rating is -20C<AMB<+40C for all assemblies where Local Warning Lights are included, regardless of fiberglass enclosure option selection.
(4) Model "VO" back-up units are energized through a three-position switch so that only the VFP (primary) or VO (back-up) can be energized at any time. "VO" back-up oil mist generators are LubriMist Model VO-***-BXX. See LubriMist Model VO Tagging Instruction for back-up Unit amps.
(5) Model "VFP" Back-Up units are energized through a separate two-way switch than on the "VFP" Primary Oil Mist Generator. Either or both units may be energized at any time. Model "VFP" back-up units are in fiberglass enclosures and are furnished without Local Status Lights.
(6) Y.O.M. is Year Of Manufacture.
(7) Complete "VFP" Model Code designations may include optional suffixes for add on accessories. List all that apply. Space is blank when none are selected.
Option – 1: Kenco Oiler for Auto Fill to main OMG.
Option – 2: Warm Ambient Using Air Cooler & Sunshade (NOT ATEX).
Option – 3: Cold Ambient – Using Cabinet Using Cabinet Insulation.
Option – 4: Low Oil Temperature Switch (NOT ATEX)

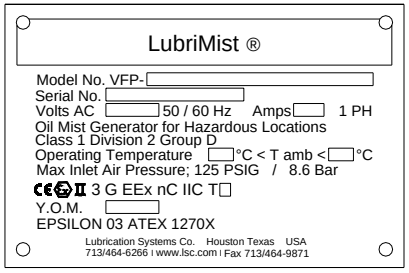


Figure 2 : Tagging and Labeling

THE LEADER IN OIL MIST TECHNOLOGY

EU Certificate of Conformity

The Manufacturer: Lubrication Systems Company
1740 Stebbins Dr.
Houston, Texas 77043
USA

Hereby declares that

The product: LubriMist® Model VFP Oil Mist Generator

Is in conformity with the following Directives:

European Directive 94/9/EC CAT 3 ATEX

European Directive 73/23/EEC as amended by European Directive 93/68/EEC "Low Voltage Directive"

European Directive 89/336/EEC as Amended by European Directive 93/68/EEC "EMC Directive"

The Manufacturer declares that the machine described above is protected for use in potentially explosive atmosphere. The apparatus marking shall include the following code:

CE Ex II 3 G EEx nC IIC T2 → For units with status lights

CE Ex II 3 G EEx nC IIC T4 → For units without status lights

Epsilon Compliance, UK. Certificate Number EPSILON 03ATEX1270X

The following Harmonized European Standards have been applied:

EN 62326: 1997: 1997 + Amendments A1 & A2 *Electrical Equipment For Measurement, Control And Laboratory Use - EMC Directive* (Emissions Only, Immunity covered by component CE test)

EN 61010-1: 2001 *Safety Requirements Electrical Equipment For Measurement, Control And Laboratory Use.*

EN 50021: 1999 *Electrical Apparatus for Potentially Explosive Atmospheres – Type of Protection "n".*

Signed By: Charles Ehlert

Title: Director of Quality and New Product Development

Date: September 1, 2004

NOTE: This Certificate of Conformity applies only to ATEX tagged LubriMist® Model VFP Oil Mist Generators.

Safe Operating Electrical Conditions*

- Indoor/outdoor Use
- Ambient temperature range
  - o -20°C to +40°C (-4°F to +104°F) for panel mounted models
  - o -20°C to +40°C (-4°F to +104°F) for models in aluminum enclosures
  - o -30°C to +49°C (-4°F to +120°F) for models in fiberglass enclosures
  - o -20°C to +40°C (-4°F to +104°F) for all models with back-up units
- Altitude to 2000m (6561 ft.)
- Relative humidity not exceeding 80%
- Mains supply fluctuations not exceeding 10%
- Over voltage category II IEC 60364-4-443
- Pollution degree 2

***** Actual ambient operating temperature for the proper production of oil mist depends on various factors such as oil viscosity grade, ambient temperature, etc. Please call LSC for further information.

Mechanical Operating Conditions

- Operating regulated air pressure range: 15 psig (1 bar) to 65 psig (4.5 bar)
- Maximum instrument air inlet pressure: 125 psig (8.6 bar)
- Minimum instrument air inlet pressure: 65 psig (4.5 bar)
- System Output Mist Pressure 20 inches Water Column (508 mm Water Column)

Installation

IMPORTANT: All ATEX approved construction must be installed in accordance with the requirements of BS EN60079-14: 1997 – Part 14 Electrical installations in hazardous areas (other than mines).

Mounting/Location

Mount the "VFP" to a wall or column in an upright position using the four mounting holes on the unit panel or enclosure. If your model is on a stand, secure the stand to a level surface using appropriate mounting bolts. See figures 5, 8, and 9 for mounting hole location. The oil level gauge on the front of the reservoir should be in full view and the oil fill port, located on the top front of the oil reservoir, should be easily accessible. Allow space for oil filling and for adjusting the oil heater thermostat. If your unit is enclosed in a cabinet, allow for opening of the door.

There are no ventilation requirements as long as the unit meets the operating conditions.

Mist Distribution System Connection

Connect the oil mist distribution system to the oil mist outlet (2"NPTF) located on the top of the reservoir or at the 2" dresser coupling if your model is enclosed in a cabinet. Do not use Teflon tape or conventional pipe dope on the pipe thread. LSC's part number 77600947 should be use on the pipe thread, which is a non-hardening thread lubricant.

Compressed Air Supply

Connect a clean, dry compressed air supply to the integral air filter/regulator (1/4" NPT) located on the right side of the unit. Note: Maximum air supply pressure is 125 PSIG (8.6 BAR) and minimum air supply pressure is 65 PSIG (4.5 BAR).

This LubriMist® Oil Mist Generator has been designed and factory tested with LubriMist® Synthetic Oil (LSO). LSC recommends LSO for this oil mist generator in order to insure optimum performance.

Electrical

Electrical connection should be made by a qualified electrician. All "VFP" electrical components are wired to a terminal strip located in the electrical enclosure. Refer to Figure 7for diagrams of the electrical component configuration, incoming power connection, and common remote alarm connection.

Warning:
If the equipment is not used in the manner described in this manual the protection provided by the equipment may be impaired.
THIS INSTRUMENT MUST BE EARTHED. See **Figure 6 Earth Ground Connection.**
EXPLOSION HAZARD – For units used in hazardous areas do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous**.**

IMPORTANT:
Electrical power service must have adequate circuit protection. See Figure 2 *Tagging and Labeling* for selection.

Electrical connection should be made by a qualified electrician and comply with local wiring regulations.

Remote Alarm Contacts

A dry FORM C contact is available to operate remote annunciation to indicate a unit fault or loss of power. The relay contact is part of the same hermetically sealed relay that operates the red and green unit status lights. Each time the unit status lights operate, the remote alarm contacts also operate.

WARNING:
Ensure that all previously connected sources of electrical power are disconnected before opening the ac power enclosure and attempting to connect to the remote alarm contacts. Ensure that source power for the remote alarm circuit is disconnected before attempting to connect the remote alarm signal.

Terminal connections for the remote alarm contacts are located in the AC power enclosure. The alarm relay contact arrangement in the diagram below is shown in the shelf position. The relay is normally energized and de-energized to alarm.

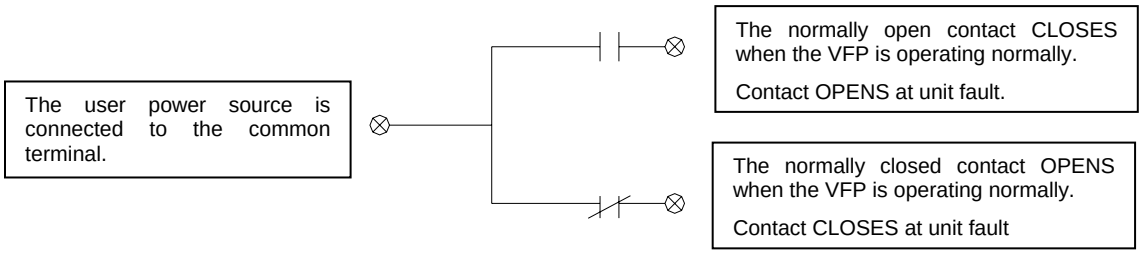


Figure 3: Remote Alarm Contacts

Start-Up

Prior to start-up recheck all connections and insure that all fittings are tight and electrical connections are properly made. Insure that the oil mist distribution system, reclassifiers and application point connections, vents and drains are properly installed.

To Start the *LubriMist*® Model "VFP"

1. Remove the oil cap located on the front of the reservoir (Item 6, Figure1) and fill the oil reservoir taking care not to exceed the "high" level mark on the oil sight gauge. Oil selection should be made based on lubrication and viscosity requirements dictated by the machinery components being serviced. DO NOT USE MOTOR OIL or any oil containing viscosity modifying additives. Replace the fill cap. See Figure 4 for fill capacities.

While filling the oil supply reservoir, monitor the oil level gauge. **DO NOT OVER FILL.** An air space must be maintained above the oil level for mist generation and flow between the mist generator and the mist outlet. If your system includes auto drain legs allowance must be made to collect the return oil volume. Overfilling will result in oil overflowing out of the fill connection and onto the ground, and it will impede oil mist generation.

2. Turn on the air supply to the air filter/regulator. Adjust the regulated air pressure by turning the air filter/regulator knob (Item No. 5, Figure 1) until the desired mist pressure reading is achieved. The mist pressure gauge (Item No. 11, Figure 1) should read 20" H_20 for "mist" reclassifier systems and 35" H_20 for "condensing" and "spray" reclassifier systems. Regulated air pressure must not be below 10 PSIG. If under 10 PSIG, the Vortex mist head may not produce oil mist. If this condition exists, a lower capacity mist head should be installed or additional lube points (greater flow) should be added to the system.
3. Turn on the electrical power. The green light should illuminate indicating normal/satisfactory operation. If the red light is illuminated refer to the "Trouble Shooting" section of this manual.
4. Monitor the oil temperature using the oil temperature gauge (Item 9, Figure1). The oil heater should maintain the oil at 110°F (43°C). Adjustments to the oil temperature can be made by adjusting the oil thermostat located inside the wiring enclosure of the oil heater (Item 10, Figure1). A temperature gauge is located on the reservoir for manual verification of proper temperature setting.

CAUTION:
Adjustments to the oil heater thermostat require that the oil heater terminal enclosure cover be removed. To avoid electrical shock and explosion hazard, turn off electrical power before removing the cover and making adjustments. The cover should be reinstalled and securely fastened before power is re-initiated to the unit.

Prior to making any adjustments to the oil mist generator make sure that the system is located in a non-hazardous area and/or that the proper work permit has been obtained if required. There is a possibility of creating an ignition source i.e. spark. Only a qualified person should make adjustments.

5. If adjustments to the High-Low Mist Pressure Switch are necessary remove the adjusting screw for the corresponding switch, see section ***Adjusting High-Low Mist Pressure Switch***, and turn the adjustment screw clock wise or counterclockwise until the desired switch pressure is reached. The high-pressure switch has been factory set at 30 inches H_2O, while the low-pressure switch has been set at 10 inches H_2O.

Operation

The daily operation of the "VFP" oil mist system has been reduced to checks of the generator and lubricated equipment. Except for emergencies, routine adjustment of the generator is not required. The "VFP" oil mist system, once installed and balanced, supplies a constant amount of oil mist to a number of lubrication points. The "VFP" is equipped with operational status lights, which indicate normal operation when the green light is illuminated and red when a malfunction has occurred. The monitored operating variables are low oil level in the "VFP" reservoir and high or low oil mist pressure in the mist distribution system.
Any change in oil mist pressure or regulated air pressure (supply pressure) from initial set points is an indication that some mist system component or compressed air supply system may have malfunctioned. Adjustments of the "VFP" controls to offset the failure symptom may lead to more serious problems before correction of the root cause can be made. Please refer to the "Trouble Shooting" section of this manual for suggested corrective actions.

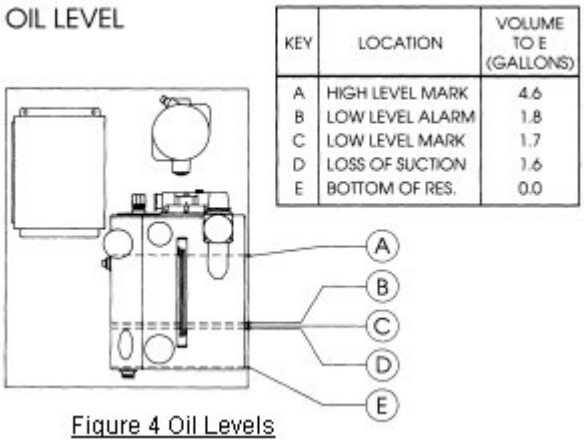
Daily Check

1. Check reservoir oil level and fill as required.
   A. To fill the reservoir, first turn off the electrical power using the power supply switch and then close the compressed air supply.
   B. Fill the "VFP" reservoir through the oil fill port located at the front of the reservoir. Refer to item 6. Figure 1. Do not overfill.
   C. Turn electrical power on and reset air supply pressure to attain proper oil mist pressure.
2. Check the regulated air pressure and mist header pressure. Changes or fluctuations in mist pressure readings indicate broken or plugged lines or reclassifier fittings in the distribution system. These problems must be corrected before adjusting the regulated air supply.
3. Check reservoir oil temperature to insure that the oil heater is operating properly.

Maintenance

The following maintenance procedures should be performed at least on a semi-annual basis to help insure proper system operation. If your "VFP" is installed in an extremely dusty or humid environment or if you are concerned about the quality of your compressed air supply, the maintenance schedule should be accelerated. Consult with the nearest LSC office/service center for further discussion and recommendations.

1. Replace air filter element.
2. Inspect and clean interior of the "VFP" reservoir. Use lint-free rags to wipe the reservoir.
3. Inspect and clean the oil suction screen. Use cleaner that is compatible with the oil and also use lint-free rags.
4. Check the high and low set points of the mist pressure switch.
5. Check the operation of the remote alarm circuit if one has been installed.
6. Make an overall assessment of the "VFP" and mist distribution system and correct obvious deficiencies and problems.



KEY	LOCATION	VOLUME TO E (GALLONS)
A	HIGH LEVEL MARK	4.6
B	LOW LEVEL ALARM	1.8
C	LOW LEVEL MARK	1.7
D	LOSS OF SUCTION	1.6
E	BOTTOM OF RES.	0.0

Figure 4 Oil Levels

IMPORTANT: DO NOT DISASSEMBLE THE VORTEX MIST HEAD.

Replacement of filter/regulator element kit

A qualified person should make replacement of spare parts.
The filter element kit part number 77500472 should be cleaned or replaced whenever noticeable drop in pressure occurs. To replace or clean the filter element, shut off and vent all air line pressure to the unit being cleaned. Before removing the bowl, turn adjusting screw counterclockwise until it stops. Carefully remove the bowl. Remove filter element baffle and retainer. Wipe parts clean with soapy water or denatured alcohol.
Caution! Never use solvents like carbon tetrachloride, trichloroethylene, acetone, or paint thinner to clean any parts. If using compressed air to blow dry, be sure to wear appropriate eye protection. Torque bowl before using. Torque bowl and element retainer hand tight, (5 to 10 inch/lbs).

Warning:
Shutting off the air line supply will stop oil mist from being delivered to its lubricating point destination.
Do NOT leave oil mist generator unattended while replacing the filter element.

EXPLOSION HAZARD – Substitution of components may impair suitability for II 3G EEx nC IIC T4

EXPLOSION HAZARD – Substitution of components may impair suitability for Class I, Division 2**.**

EXPLOSION HAZARD – Static Discharge Hazard. Clean Plastic Surfaces With Damp Cloth Only.

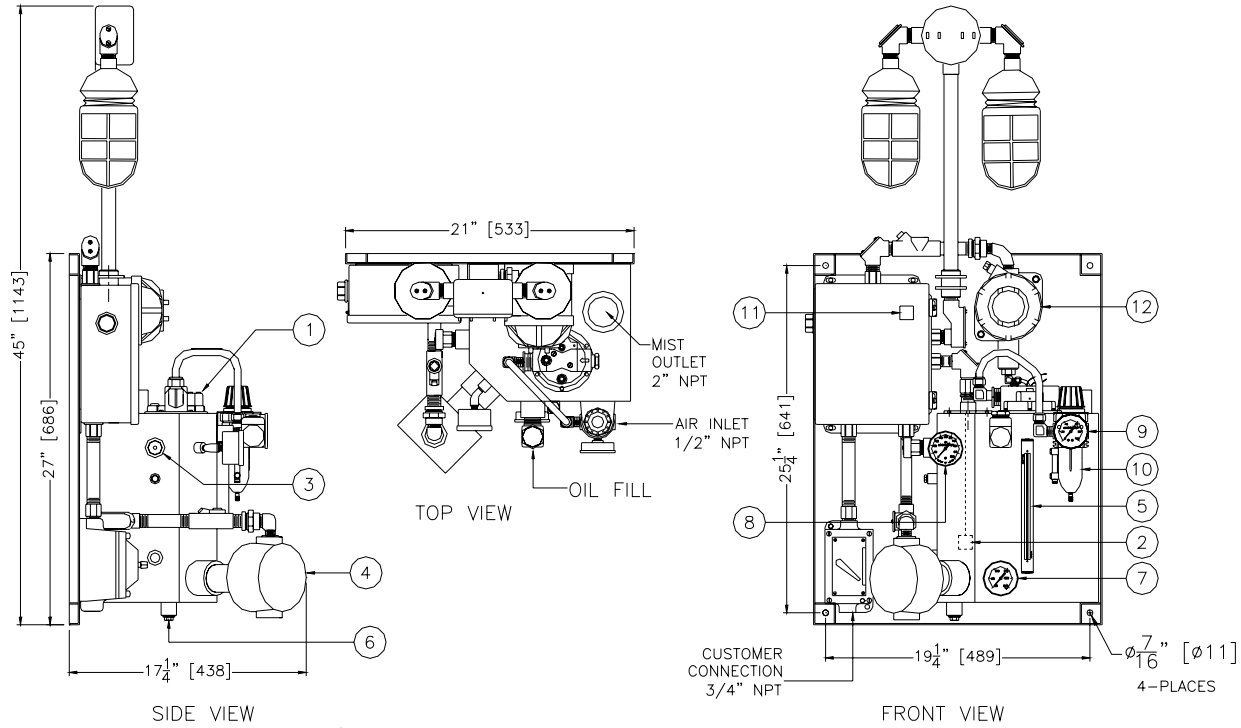


Figure 5: **Model "VFP" LubriMist Oil Mist Generator**

THE LEADER IN OIL MIST TECHNOLOGY

Parts List

ITEM NO.	PART NO.	DESCRIPTION
1	77-500-046 77-000-006 77-000-036 77-500-058	**Mist Head** 40 BI Mist Head 100 BI Mist Head 300 BI Mist Head 500 BI Mist Head
2	77-500-050	Low Oil level Switch Assembly
3	77-780-269	Relief Valve
4	77-600-685 77-500-364	Oil Heater w/Thermostat and Explosion Proof Enclosure 120VAC / 375 W / Single Phase Oil Heater w/Thermostat and Explosion Proof Enclosure 240VAC / 410 W / Single Phase
5	U-10923-B8	Oil Level Gauge
6	77-500-795	Oil Drain Plug
7	U-10924-A	Thermometer
8	U-902-S	Mist Pressure Gauge, 0-100 in H_2O
9	U-902-R	Regulated Air Pressure Gauge, 0-100 PSIG
10	77-500-473	Integral Air Filter/Regulator
11	77-500-721	Remote Alarm Relay
12	U-699-3X	High-Low Mist Pressure Switch

Spare Parts List

PART NO.	DESCRIPTION
77-500-048	Low Level Oil Switch
77-600-685	Oil Heater w/Thermostat and Explosion Proof Enclosure 120VAC / 375 W / Single Phase
77-500-364	Oil Heater w/Thermostat and Explosion Proof Enclosure 240VAC / 410 W / Single Phase
77-500-473	Integral Air Filter/Regulator
77-500-472	Replacement Kit for Filter/Regulator
77-780-269	Pressure Relief Valve
U-902-R	Regulated Air Pressure Gauge
U-902-S	Mist Pressure Gauge
U-10924-A	Thermometer
77-500-721	Remote Alarm Relay
U-699-3X	High-Low Mist Pressure Switch
77-500-046 77-000-006 77-000-036 77-500-058	**Mist Heads** (See Model Code for Proper Selection) 40 BI Mist Head 100 BI Mist Head 300 BI Mist Head 500 BI Mist Head

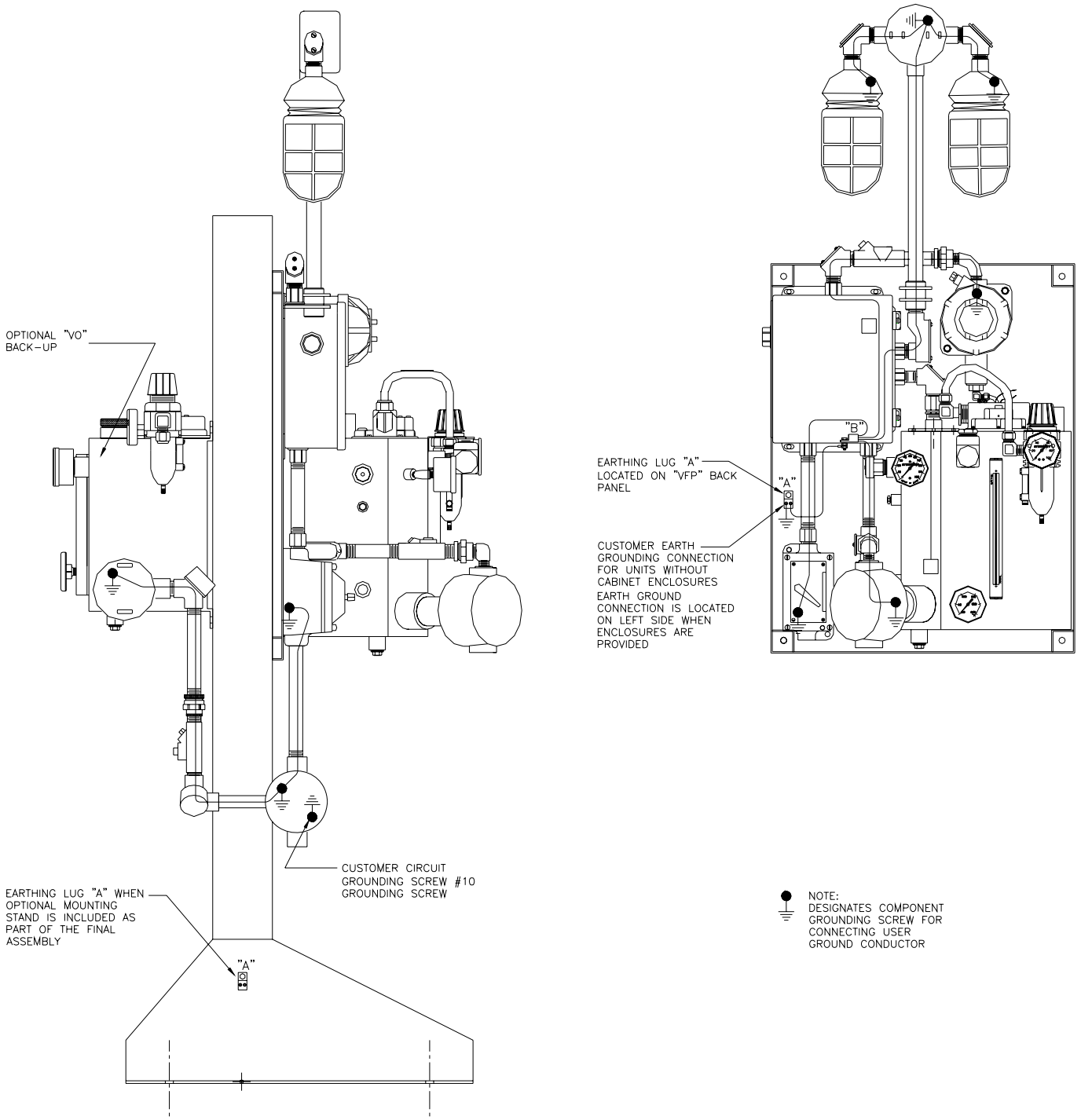


Figure 6 Earth Ground Connection

Electrical:

THE LEADER IN OIL MIST TECHNOLOGY

All components are wired to the terminal strip in the electrical enclosure as indicated below. All contacts are shown in their shelf position.

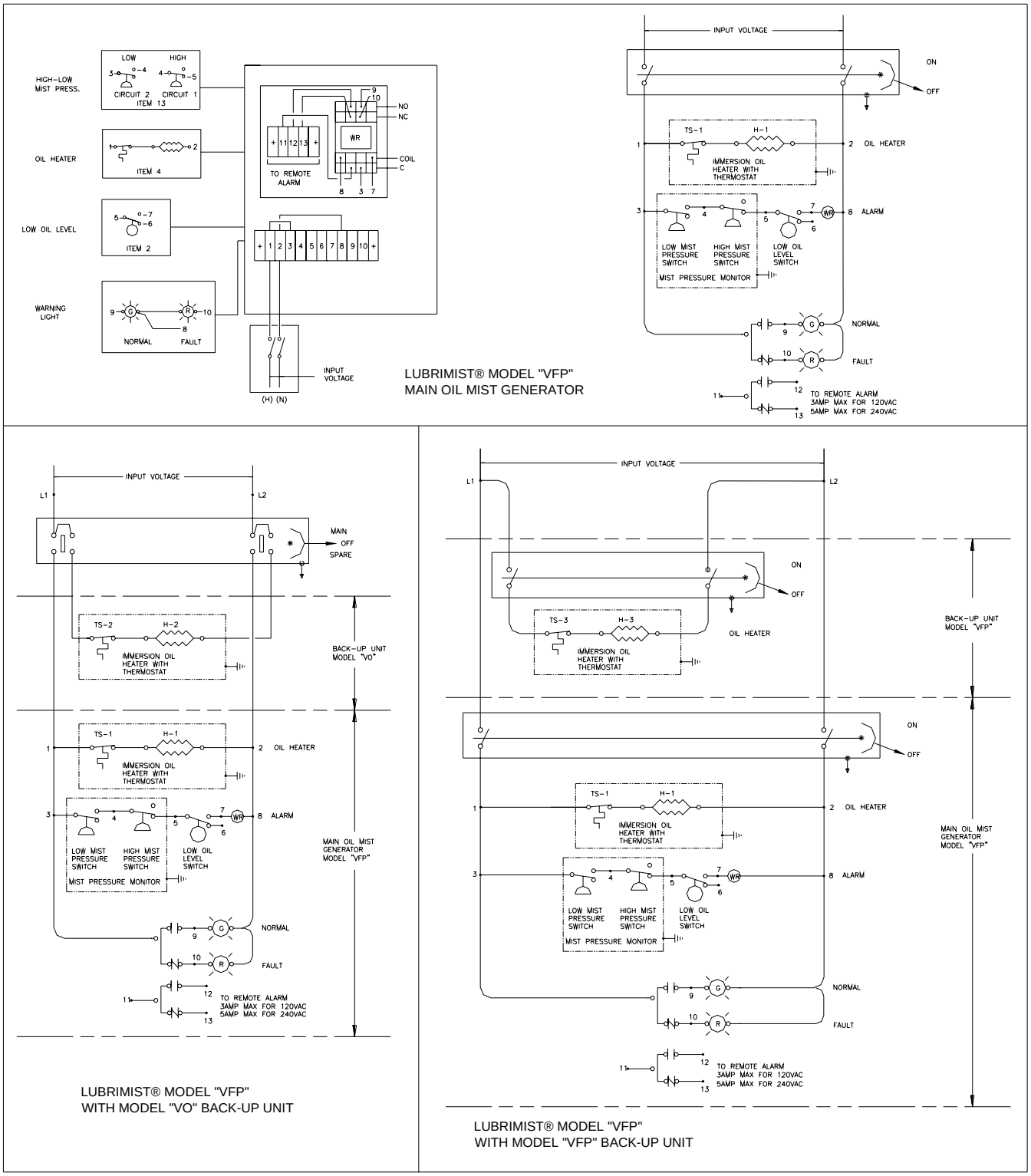


Figure 7 Electric Schematic

Adjusting High-Low Mist Pressure Switch

(U6993X)

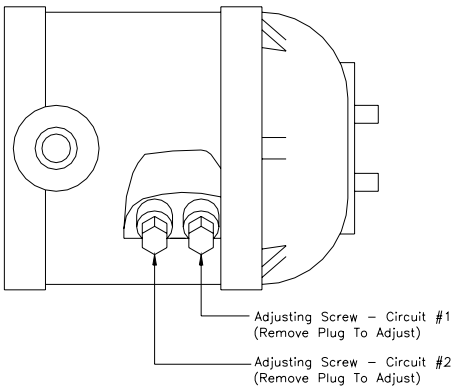
Max. Continuous Current 10 AMPS for 120/240 VAC.
NEMA 7 Enclosure

Wire Code		
LEAD	PRESSURE	
	CIRCUIT #1	CIRCUIT #2
NORMALLY OPEN	RED	YELLOW
COMMON	PURPLE	BROWN
NORMALLY CLOSED	BLUE	ORANGE

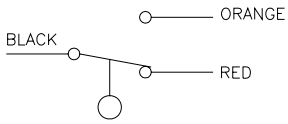
Adjustment Instructions:
To increase - Counter Clockwise
To decrease - Clockwise

Circuit #1 is for the High Pressure Switch (HPS) set at 30 inches H_2O.

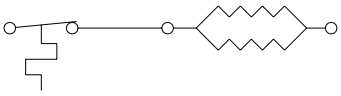
Circuit #2 is for the Low Pressure Switch (LPS) set at 10 inches H_2O.



Low Oil Level Switch (77500049)
Contacts rated 20 W – 120/240 VAC
(Hermetically sealed reed)



Immersion Oil Heaters
120VAC / 375 W / Single Phase (77600685)
240VAC / 410 W / Single Phase (77500364)
Thermostat set at 110°F (43°C)
NEMA 7 enclosure



Trouble Shooting Guide

Normal operation is indicated by an illuminated green status light. A red light illuminates when a fault condition occurs. The “VFP” alarms for low oil level as well as high and low mist pressure. If the red light is illuminated, the following system checks should be made:

1. Check oil level by making a visual check of the oil level gauge (Item 8, Figure 1). If oil level is below the low alarm level set point (see Figure 3), add oil.
2. Check mist pressure by making a visual check of the mist pressure gauge (Item 11, Figure 1). The high and low mist pressure alarm limits are factory set at 30” and 10” H_20 pressure respectively. Normal operating pressure for “mist” reclassifier systems is 20” H_20. Although adjusting the regulated air supply may clear a mist pressure alarm, it must be recognized that mist pressure alarms are most likely caused by situations external to the oil mist generator. The following should be investigated:

   A. Low pressure may indicate a leak in the distribution system, a missing reclassifier or a broken line.

   B. High mist pressure may indicate plugged mist fittings, restricted bearing housing vents or an open air by-pass valve in the mist generating head.

   C. No mist pressure could indicate loss of air supply to the mist generator.

   D. Surging mist pressure usually is caused by an oil pocket or trap in the distribution header or fluctuating air supply.

If neither the red or green status lights are illuminated, ensure that the electrical power has not been turned off. If the circuit breaker is tripped, have electrical personnel check for shorts in the circuit. If power is “ON” to the “VFP” and there are no other apparent problems, check for burned out light bulbs or faulty warning relay. Note: a qualified and knowledgeable person familiar with basic electrical systems who is able to read, understand and troubleshoot using electrical wiring diagrams should conduct electrical checks.

Please note that this oil mist generator contains very sensitive instruments and during shipping they may be exposed to severe vibrations that may offset the factory set limits. To verify the proper operation of the high-low mist pressure switch and oil level switch follow the following steps:

Verifying the operation of the High and Low Pressure Switch (HPS and LPS)

Use an ohmmeter to verify switch contact operation. Vary the Mist Pressure as switch-setting adjustments are made.
Switch settings should be as follows:
High Mist Pressure - 30 in H_2O Ascending
Low Mist Pressure - 10 in H_2O Descending

Verifying the proper operation of the Low Oil Level Switch

Using a digital multimeter set the ohmmeter to OHM; connect the black (common) to the Common (COM) on the level switch. Connect the red wire from the ohmmeter to the Normally Close switch wire. The meter should show no resistance in the shelf position. Move the float up and down to verify a change in meter reading. Then connect the red lead from the ohmmeter to the Normally Open switch wire. The meter should show infinite amounts of resistance in the shelf position. Move the float up and down to verify normally open and normally closed in shelf position.

Enclosure

Fiberglass enclosure is shown. Dimensions for the aluminum enclosure are the same

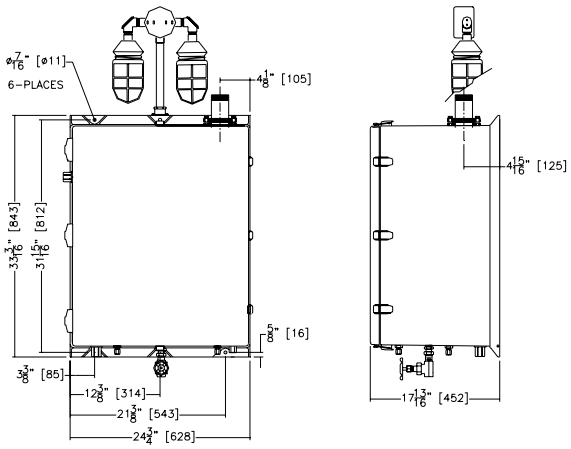


Figure 8

Mounting Stand

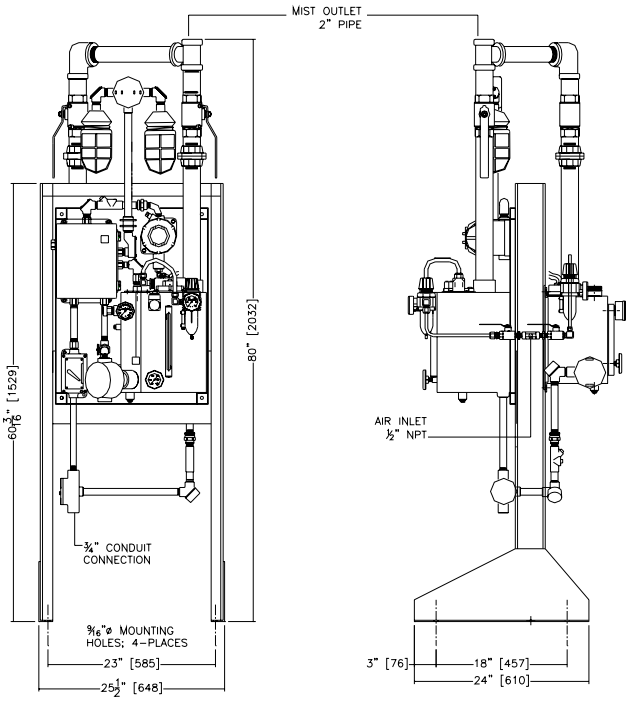


Figure 9

Back-up unit

The back-up oil mist generator, if your unit is so equipped, is intended for intermittent, short-term use while servicing or maintaining the "VFP" unit. The back-up unit is *LubriMist*® model "VO" or "VFP", equipped with an immersion oil heater and the same capacity Vortex mist generating head as the main "VFP."

Start-up Procedures for the back-up unit:

To service, maintain or repair the main "VFP", the back-up unit should be started per the following procedures:

1. Check the oil level in the back-up unit. The oil level should be at least half way up the oil level gauge. Add oil to the reservoir through the fill port as required. Do not fill above the HIGH level mark on the level gauge.
2. Close the air supply valve at the inlet air connection on the main "VFP" unit and allow the mist pressure to fall to zero.
3. Turn on the electrical power to the back-up unit using the power switch on the main "VFP" panel.
4. Close the 2" ball valve at the mist outlet of the main "VFP".
5. Open the 2" ball valve at the mist outlet of the back-up unit.
6. Open the air supply valve at the inlet air connection to the back-up unit.
7. Check the mist pressure gauge of the back-up unit and adjust the air regulator to attain the proper mist pressure setting.

Note that the back-up generator is not wired to the operating status light circuit meaning while the back-up unit is in operation supplying oil mist it should be inspected on a daily basis.

To change from operating the back-up unit to the main "VFP," reverse the order of steps 2 through 6 above, and re-commission the VFP main oil mist generator.

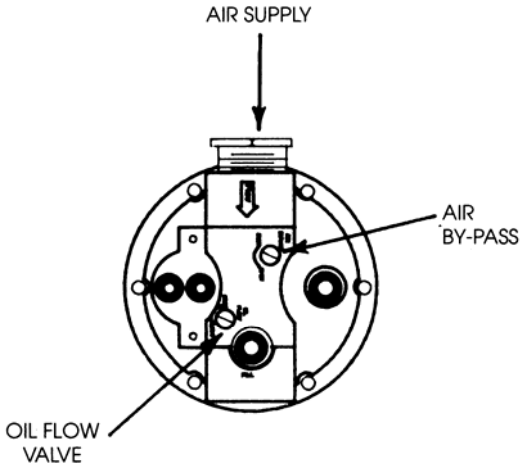
Controlling the Oil Mist

LubriMist® Vortex oil mist generation technology allows for maximum control and adjustment of oil mist properties. There are three basic controls. (Refer to Figure No. 10)

1. The INTEGRAL AIR FILTER/REGULATOR is used to adjust the volume of air flow to the Vortex chamber, which in turn controls oil mist volume (refer to Item 5, Figure 1). The volume of oil mist is proportioned to each bearing or application point by the reclassifier. With the air by-pass valve (described below) closed, the air pressure regulator setting must be high enough for oil mist production. Regulated air pressure should be adjusted to maintain proper mist pressure. Since changes in regulated air pressure affect the volume of oil mist produced, it also affects oil consumption.
2. The OIL FLOW VALVE controls oil mist density (oil/air ratio). Its normal position is fully closed. By turning it counterclockwise toward "Less" (opening the bypass) the mist density can be reduced when leaner density oil mist is desired. It should not be opened more than three turns. Adjustments to the oil flow valve do not affect oil mist pressure in the distribution lines or in the generator (see Figure No. 10 for location).

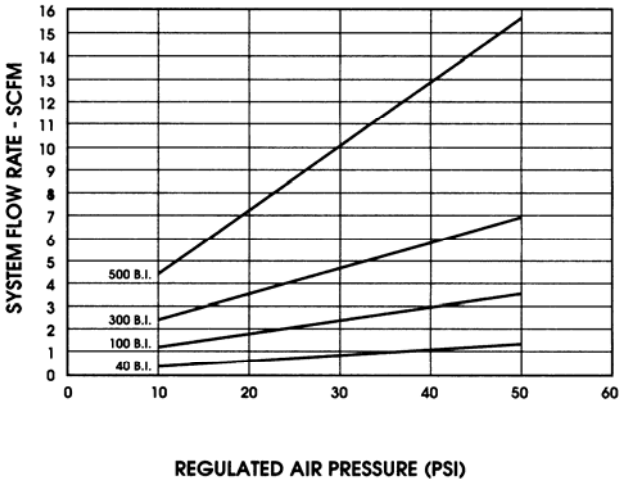
   Note: The oil/air ratio or mist density is also dependent on the characteristics of the oil, oil temperature and supply air temperature. Density decreases with lower temperatures and higher oil viscosity.
3. The AIR BY-PASS VALVE controls mist pressure without increasing oil output. Its normal position if fully closed, but by turning it counter clockwise toward "Open" more air will be added to the oil mist leaving the generator thus increasing mist pressure. Velocity of mist through the distribution lines and reclassifiers will also increase when this valve is opened (see Figure No. 10 for location).

   Note: The oil/air ratio or mist density is reduced by opening the air by-pass valve. However, oil output is not affected.



Top view of generator head showing controls for oil flow and air by-pass valves.

Figure 10 – Controlling the Mist



Air Flow through LubriMist™ Vortex Mist Heads
Air by-pass closed
(Discharging to atmosphere)

Figure 11 Air Flow

Misting Oil

All LubriMist Model VFP Oil Mist Generators are tested prior to shipment using LubriMist® Synthetic Oils (LSO). See the following pages for MSDS information. Please note that Material Safety Data Sheets for grades of LSO along with other useful information is available on our website www.lsc.com.

THE LEADER IN OIL MIST TECHNOLOGY

MATERIAL SAFETY DATA SHEET
Lubrication Systems Company

PAGE: 1
REVISION: 11/24/03
MSDS NO.: 30868

LubriMist® Synthetic Oil – 68

SECTION 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

LubriMist® Synthetic Oil – 68
CHEMICAL FAMILY:
Petroleum Product Additive
PRODUCT DESCRIPTION:
Lubricant containing phthalate and adipate diesters, and other materials judged not to affect the potential health or environmental impact of the product.

CONTACT ADDRESS:
Lubrication Systems Company
1740 Stebbins Drive, Houston, TX 77043

** EMERGENCY TELEPHONE NUMBERS:	(24 Hours)	**
** CHEMTREC	800- 424-9300	**
** CHEMTREC outside USA	703-527-3887	**
** Infineum USA L.P.	800-726-2015	**

NON EMERGENCY TELEPHONE NUMBER: (8am-5pm M-F)
FOR GENERAL PRODUCT INFORMATION CALL: 800-800-LUBE

SECTION 2 COMPOSITION/INFORMATION ON INGREDIENTS

The composition of this mixture may be proprietary information. In the event of a medical emergency, compositional information will be provided to a physician or nurse.
This product is not hazardous as defined in 29 CFR1910.1200

SECTION 3 HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS
EYE CONTACT:
Will cause slight eye discomfort, but will not injure eye tissue.
SKIN CONTACT:
Low order of toxicity.
INHALATION:
Negligible hazard at ambient temperature (-18 to 38 Deg C; 0 to 100 Deg F)
Avoid breathing vapors or mists.
INGESTION:
Minimal toxicity.

SECTION 4 FIRST AID MEASURES

EYE CONTACT:
Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

Continues on page 2

MATERIAL SAFETY DATA SHEET
Lubrication Systems Company

PAGE:	2
REVISION:	11/24/03
MSDS NO.:	30868

LubriMist® Synthetic Oil –

==========

SKIN CONTACT:

Immediately flush with large amounts of water; use soap if available. Remove contaminated clothing, including shoes, after flushing has begun. If this material is injected into or under the skin, or into any part of the body, regardless of the appearance or size of the wound, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

INHALATION:

Using proper respiratory protection, immediately remove the affected victim from exposure. Administer artificial respiration if breathing is stopped. Keep at rest. Call for prompt medical attention.

INGESTION:

First aid is normally not required.

==========

SECTION 5 FIRE-FIGHTING MEASURES

==========

FLASH POINT:	480 Deg F. METHOD: PMCC ASTM D93 NOTE: Typical
FLAMMABLE LIMITS:	NOTE: Not Available
AUTOIGNITION TEMP.:	NOTE: Not available

GENERAL HAZARD

Low Hazard, liquid can burn upon heating to temperatures at or above the flashpoint. Toxic gases will form upon combustion. "Empty" containers retain product residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, parks, static electricity, or other sources of ignition; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Empty drums should be completely drained, properly bunged and promptly re-turned to a drum reconditioner, or properly disposed of.

FIRE FIGHTING

Use water spray to cool fire exposed surfaces and to protect personnel.
Isolate "fuel" supply from fire.
Use foam, dry chemical, or water spray to extinguish fire.
Respiratory and eye protection required for fire fighting personnel.

DECOMPOSITION PRODUCTS UNDER FIRE CONDITIONS

Fumes, smoke, Carbon Monoxide (CO) and Oxide of Nitrogen (Toxic)

==========

SECTION 6 ACCIDENTAL RELEASE MEASURES

==========

LAND SPILL

Eliminate sources of ignition. Prevent additional discharge of material, if possible to do so without hazard. For small spills implement cleanup procedures; for large spills implement cleanup procedures and, if in public area, keep public away and advise authorities. Also, if this product is subject to CERCLA reporting (see Section 15 REGULATORY INFORMATION) notify the National Response Center.

==========

Continues on page 3

MATERIAL SAFETY DATA SHEET
Lubrication Systems Company

PAGE:	3
REVISION:	11/24/03
MSDS NO.:	30868

LubriMist® Synthetic Oil – 68

==========

Prevent liquid from entering sewers, watercourses, or low areas. Contain spilled liquid with sand or earth. Recover by pumping or with a suitable absorbent. Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.

WATER SPILL

Remove from surface by skimming or with suitable adsorbents. If allowed by local authorities and environmental agencies, sinking and/or suitable dispersants may be used in non-confined waters. Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.

==========

SECTION 7 STORAGE AND HANDLING

==========

ELECTROSTATIC ACCUMULATION HAZARD:

No, but use proper bonding and/or grounding procedure.

STORAGE TEMPERATURE, Deg F:

Ambient

LOADING/UNLOADING TEMPERATURE, Deg F:

140 Maximum

STORAGE/TRANSPORT PRESSURE, mmHg:

Not available

LOADING/UNLOADING VISCOSITY, cSt:

Not available

STORAGE AND HANDLING:

Keep container closed. Handle and open containers with care. Store in a cool, well ventilated place away from incompatible materials. Do NOT handle or store near an open flame, heat or other sources of ignition. Protect material from direct sunlight. This material is not a static accumulator, but use proper bonding and/or grounding procedures. Do NOT pressurize, cut, heat, or weld containers. Empty product containers may contain product residue. Do NOT reuse empty containers without commercial cleaning or reconditioning.

==========

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

==========

EXPOSURE CONTROLS

The use of local exhaust ventilation is recommended to control process emissions near the source. Laboratory samples should be handled in a lab hood. Provide mechanical ventilation of confined spaces. See respiratory protection recommendations.

PERSONAL PROTECTION

For open systems where contact is likely, wear safety glasses with side shields, long sleeves, and chemical resistant gloves. Where contact may occur, wear safety glasses with side shields.

==========

Continues on page 4

MATERIAL SAFETY DATA SHEET
Lubrication Systems Company

PAGE: 4
REVISION: 11/24/03
MSDS NO.: 30868

LubriMist® Synthetic Oil – 68

==========

Where concentrations in air may exceed the limits given in this Section and engineering, work practice or other means of exposure reduction are not adequate, NIOSH approved respirators may be necessary to prevent overexposure by inhalation.

WORKPLACE EXPOSURE GUIDELINES

A SUPPLIER RECOMMENDS THE FOLLOWING OCCUPATIONAL EXPOSURE LIMITS:
5 mg/m3 for synthetic lubricants. .

==========

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

==========

SPECIFIC GRAVITY at Deg F:	0.96 at 60 Typical
DENSITY at Deg F:	8.0 lbs/gal at 60
VAPOR PRESSURE, mmHg at Deg F:	Negligible at ambient
SOLUBILITY IN WATER, wt. % at Deg F:	Negligible
VISCOSITY OF LIQUID, cSt at Deg F:	68 at 104 Typical 7.6 at 212 Typical
SP. GRAV. OF VAPOR, at 1 atm (Air=1):	Greater than air
FREEZING/MELTING POINT, Deg F:	Less than ambient
EVAPORATION RATE, n-Bu Acetate=1:	Negligible
BOILING POINT, Deg F:	604 IBP

==========

SECTION 10 STABILITY AND REACTIVITY

==========

STABILITY:

Stable

CONDITIONS TO AVOID INSTABILITY:

Avoid overheating.

HAZARDOUS POLYMERIZATION:

Will not occur

CONDITIONS TO AVOID HAZARDOUS POLYMERIZATION:

None

MATERIALS AND CONDITIONS TO AVOID INCOMPATIBILITY:

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS:

Not applicable

==========

SECTION 11 TOXICOLOGICAL INFORMATION

==========

Please refer to Section 3 for available information on potential health effects.

==========

Continues on page 5

MATERIAL SAFETY DATA SHEET
Lubrication Systems Company

PAGE:	5
REVISION:	11/24/03
MSDS NO.:	30868

LubriMist® Synthetic Oil – 68

SECTION 12 ECOLOGICAL INFORMATION

No specific ecological data are available for this product. Please refer to Section 6 for information regarding accidental releases and Section 15 for regulatory reporting information.

SECTION 13 DISPOSAL CONSIDERATIONS

Please refer to Sections 5, 6 and 15 for disposal and regulatory information.

SECTION 14 TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION (DOT):
This product is not DOT regulated.

SECTION 15 REGULATORY INFORMATION

TSCA:

All of the components of this product are listed on the TSCA Inventory.

CERCLA:

If this product is accidentally spilled, it is not subject to any special reporting under the requirements of the Comprehensive Environmental Response, Compensation and Liability Act. We recommend you contact local authorities to determine if there may be other local reporting requirements.

SARA TITLE III:

Under the provisions of Title III, Sections 311/312 of the Superfund Amendments and Reauthorization Act, this product is classified into the following hazard categories:
Not Hazardous.
This product does not contain Section 313 Reportable Ingredients.

SECTION 16 OTHER INFORMATION

HAZARD RATING SYSTEMS:

This information is for people trained in:
National Paint & Coatings Association's (NPCA)
Hazardous Materials Identification System (HMIS)
National Fire Protection Association (NFPA 704)
Identification of the Fire Hazards of Materials

	NPCA-HMIS	NFPA 704	KEY
HEALTH	1	0	4 = Severe
FLAMMABILITY	1	1	3 = Serious
REACTIVITY	0	0	2 = Moderate
			1 = Slight
			0 = Minimal

Continues on page 6

MATERIAL SAFETY DATA SHEET
Lubrication Systems Company

PAGE:	6
REVISION:	11/24/03
MSDS NO.:	30868

LubriMist® Synthetic Oil – 68

==========

CAUTION: HMIS ratings are based on a 0-4 rating scale with 1 representing minimal hazards or risks, and 4 representing significant hazards or risks. Recommended HMIS ratings should not be used in the absence of a fully implemented HMIS hazard communication program.

REVISION SUMMARY:
This is a first edition.

==========

REFERENCE NUMBER:	SUPERSEDES ISSUE DATE:
HDHA-B10906	March 22, 2002

==========

This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty or guarantee is made as to its accuracy, reliability or completeness.
It is the users responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use. We do not accept liability for any loss or damage that may occur from the use of this information nor do we offer warranty against patent infringement.

==========

LAST PAGE