LUBEMASTER AUSTRALIA PTY LTD

LUBEMASTER Model OS600 MILL



OPERATING INSTRUCTIONS AND PARTS MANUAL

Client Model/Unit No OS600MILL-Serial No OS600M4040415VH7.5KW3F

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1 SAFETY PROCEDURES

1.1 SAFE HANDLING

TAKE CARE WHEN PULLING MACHINE TO AVOID TRIPPING BY THE FRONT WHEEL.

ALWAYS PUSH MACHINE IN PREFERENCE TO PULLING.



DO NOT PUSH THE MACHINE DOWN HILL, ON SLOPES OR ACROSS ROUGH, UNEVEN GROUND.

ALWAYS USE TWO PEOPLE TO MOVE THE MACHINE

NEVER TOW A LUBEMASTER BEHIND A VEHICLE

BE SURE POWER LEAD AND HOSES ARE ROLLED UP BEFORE MOVING THE MACHINE

TAKE CARE WHEN HANDLING THE ROTOR AS ANY DAMAGE CAN CAUSE AN IMBALANCE - IT IS A HIGHLY BALANCED APPARATUS.

1.2 ELECTRICAL SAFETY

REMEMBER - ELECTRICITY KILLS – IT CANNOT BE SEEN

DO NOT OPEN THE CONTROL PANEL/SWITCHBOX UNLESS AUTHORISED AND QUALIFIED TO DO SO.

NEVER MOVE THE LUBEMASTER WITH THE POWER CABLE CONNECTED OR TURNED ON

CIRCUIT VOLTAGE IS 415 VOLT 3 PHASE, 50hz

CONTROL VOLTAGE IS 24 VOLTS A/C.

BEFORE ENTERING THE POWER BOX, BE SURE THAT MAIN PLUG IS DISCONNECTED FROM POWER SUPPLY

ALWAYS OPERATE THE LUBEMASTER FROM AN RCD PROTECTED CIRCUIT

All Lubemaster components and equipment are built to IP66 specification, however commonsense prevails and it is not recommended to spray hoses, especially high-pressure washers, directly onto the control panel.

Outdoor exposure to the elements will not affect the operation of the Lubemaster.

Check that leads cannot foul on frame when moving

Be sure that the machine is set on level ground.

2. LUBEMASTER OVERVIEW

Thank you for choosing the Lubemaster centrifuge/vacuum dehydration oil cleaning system. Your system is designed to give simple trouble-free operation over long periods with very low maintenance requirements and minimal operating costs.

Lubemaster has been designed to reduce the need for oil changing and disposal, and by preventing the build-up of water and particles; pristine oil condition can always be maintained. If water levels are kept low, acid build up is prevented and oil additive degradation will be kept to a minimum, providing the correct oil is being used in the correct application.

OUR GOAL IS TO SERVICE THE OIL BEFORE IT GETS DIRTY AND KEEP IT IN SERVICE FOR LONGER

Your oil and machine life can be substantially extended by maintaining the condition of the oil inside the machinery with the Lubemaster oil cleaning system. Lubemaster will easily clean all oils throughout the common viscosity ranges and will maintain particles to sub-micron levels and water levels to below 50ppm, whilst in most cases, particularly fixed plant, your machinery continues operating.

For servicing your Lubemaster system, simply wash out the centrifuge rotor, reassemble and put the machine back to work. There is a stainless suction strainer in the suction circuit which will need washing periodically, the frequency depending on the condition of the oil being cleaned. This strainer is designed solely to protect the pump from large particles. Your Lubemaster centrifuge rotor is a delicate precision instrument which will spin at speeds of up to 5,500 rpm under normal operation. Consequently, the rotor is very highly balanced and must be handled with extreme care when dismantling and cleaning so as not to upset the balance of the rotor which can cause excessive vibration and premature wear.

The spinning rotor is also a very effective energy store which is potentially very dangerous should the rotor cover be removed whilst the rotor is still spinning. Take care and allow at least 5 minutes for the rotor to spin down and drain before dismantling for cleaning and never remove the rotor cover until the rotor has completely stopped.

Cleaning the rotor is the only regular ongoing service required during normal operation of the machine, if not changing oil grades. It is recommended that runs of equipment which use the same oil be planned so as to minimise the need for total cleaning and flushing of the entire machine. If machinery which uses different oil grades is being cleaned, eg from gear oil to hydraulic oil, the entire machine will need to be cleaned, drained and flushed so as to prevent cross contamination of the oil being cleaned.

Care needs to be exercised when changing oil grades as the Lubemaster holds approximately 20 litres of oil in its circuit which is enough oil to have a considerable effect if mixed with a different grade of oil, say moving from hydraulic to gear oil.

We do not recommend using your Lubemaster centrifugal cleaner on oils containing Molybdenum Disulphide as the Molybdenum is a metal which is denser than normal oil and hence will be removed from the oil by the centrifugal action. As a general rule, anything that settles if the oil is left standing will be removed by the centrifuge as it is denser or has a higher specific gravity.

We recommend that the residue from the rotor be examined after each cleaning as the residue is a very helpful tool to use as a condition monitoring method to inspect contaminant type and check for abnormal wear particles which can tell us a lot about the operation within the machine.

By careful identification of the residue removed from a system, the operator has an opportunity to take corrective action to prevent or reduce the amount of contamination which may be entering the system thus presenting the opportunity of improving the machines operating hygiene.

Your Lubemaster system offers a new concept in the way we think of our lubrication and contamination control, and the most effective operation requires a considerable change of thinking in the way we currently practice lubricant quality management.

Our staff at Clean Oil Services are dedicated to assisting you in ways to better manage your lubricants and virtually eliminate the need for oil disposal in all but engine situations. For assistance on your needs and potential use options, please contact our service department who are experienced in assisting you achieve the maximum benefit from your Lubemaster product and explore other options to maximise your lubricant management.

3. <u>KEY OPERATING CHECK POINTS</u>

SHORT OPERATING INSTRUCTIONS -

ALWAYS CHECK THE OIL LEVEL IN EQUIPMENT PRIOR TO CONNECTING YOUR LUBEMASTER AND AGAIN SHORTLY AFTER START.

TAKE CARE THAT THE LUBEMASTER CANNOT PUMP OIL DRY FROM OPERATING MACHINERY – CHECK THAT OIL IS RETURNING AND THAT A SUITABLE VOLUME OF OIL IS RETAINED IN THE MACHINE.

Starting your Lubemaster

- Connect hoses, air and plug in power lead consider safety with leads.
- Set delivery and return to allow the desired function and check all connections.
- Check pump rotation and reverse if necessary with phase rotation switch

 wait for the pumps to stop before changing rotation.
- Check that pressure rises immediately on start to approximately 90 psi.
- Check that oil is flowing in the desired path.
- Check all hose connections for leaks.
- Feel for rotor vibration in centrifuge and that speed is building.
- Turn on heater and set for desired temperature.
- Turn on vacuum and adjust to desired setting (-5 to -7.5 Bar)
- Check rotor vibration again for intense vibration.
- Watch for signs of oil or mist emissions from the vacuum generator.
- Check oil level in equipment and top up if necessary.
- Check that the pressure has stabilised; if pump is noisy and hammering and the pressure gauge is fluctuating, your Lubemaster is starving for oil. Either check the oil flow for restrictions or the suction strainer could be blocked. If required, service strainer as in section 3.7.

SHUTTING DOWN YOUR LUBEMASTER.

For servicing centrifuge –

Simply turn off all switches and isolate at the main power supply prior to commencing service.

Turn off the oil supply at the suction connection.

ALLOW TIME FOR THE ROTOR TO STOP SPINNING PRIOR TO COMMENCING ANY WORK ON YOUR LUBEMASTER

Clean the centrifuge in accordance with the instructions in section 3.5

FOR SHUTTING DOWN PRIOR TO RELOCATING -

Whilst the Lubemaster remains running;

- Turn off heater and vacuum switches at the main control panel.
- Turn off suction valve at equipment oil supply whilst Lubemaster remains running.
- Disconnect suction hose from plant end and elevate the hose to drain oil into the Lubemaster. Allow to suck disconnected for around 1 minute.
- Turn off pump at the 'PUMP' switch.
- Turn off the main isolation prior to servicing.
- Fully service and drain machine components if moving to a different oil grade or type
- Allow 10 minutes for the rotor to stop spinning and for the oil to drain from the rotor.
- Run the pumps for 30 seconds after drain time to empty drained oil from the vacuum chamber.
- Isolate and disconnect the oil return hose.
- Hang hoses to drain and service machine according to requirements for next use.

4. FULL OPERATING INSTRUCTIONS

IT IS GOOD PRACTICE TO TAKE FIVE AND FAMILIARISE YOURSELF WITH THE LUBEMASTER MACHINE, CONTROLS AND THE SYSTEM YOU ARE ABOUT TO ATTACH TO, PRIOR TO COMMENCING CONNECTION –

"MENTALLY - HOW ARE YOU GOING TO EXECUTE THIS TASK AND WHAT ARE THE POSSIBLE HAZZARDS"

4.1 CONNECTING POWER AND HOSES

- Position the Lubemaster machine on level flat surface, take precaution against rolling and check that all switches are turned to the off position.
- Fix the larger suction hose to the drain of the equipment to be filtered taking care that plumbing is adequate and will not reduce the flow below the supplied hose size and cause restriction check that hose connections are tight and sealed on both ends and that all hoses are placed in a safe manner and not detrimental to the safety of other workers in the area or a trip hazard.



It is advisable to suck the oil from the lowest point in the system being cleaned as the water and dirt will usually collect on the bottom of the system.

• Fix the return hose to the return on the equipment at a point as far from the suction as possible to create as much flow through the oil sump as possible – check that hose and fitting are tight and sealed on both ends.



It is good practice to try and connect hoses as far as possible away from each other (suction one end, return the other) to create wherever possible, as much flow through situation as possible within the system. This will have the effect of 'washing' the contamination oil toward the suction.

- Check that Lubemaster switches are turned off and plug in power supply and switch main supply on. Take care that the high voltage lead is positioned in a manner safe from possible damage or shorting. A 415 volt, 3 phase, 32 amp outlet is recommended as the machine requires 25 amps to operate.
- Connect air hose to air supply and plug into Lubemaster air jack and position hose in a secure safe position. Normal workshop air supply is adequate with approximately 15 cfm required at around 100 psi.
- Check the oil level in the machine prior to starting the Lubemaster Top up may be required.



Lubemaster OS600 holds approximately 15 litres of oil to fill the circuit; this amount will vary depending on the hose length and size – BE SURE TO CHECK OIL LEVELS AFTER PRIMING THE SYSTEM – Loss of oil level could result in equipment failure.



Some systems can have free water and sludge lying in the bottom of their reservoir. If you suck off the bottom of the reservoir and suck a volume of free water and sludge, you may be returning that sludge into circulation in the oil reservoir as the centrifuge is not working when pumping commences – This can have a detrimental effect on the oil quality in an operating system –

If this is a concern, drain the first few litres of oil into a reservoir, until heavily contaminated oil is removed

CAUTION is advised when employing this practice as oil is removed from the system and it could easily pump a small system below operating level and cause oil starvation.

4.2 SETTING THE SUCTION AND RETURN.

- Double check all fittings for tightness on both hose ends and check power lead for safe positioning.
- **CAUTION** Set suction and delivery valves to the desired position, taking care that the correct function is selected. If valves are not set correctly, oil can quickly be removed entirely from the equipment being cleaned leaving it to run dry.

4.3 STARTING THE MACHINE

- After checking all connections and that both suction and return valves are set to their desired position, start the pumps by activating the "PUMP" switch. Both pumps will immediately start.
- Check the rotation of the pumps to be sure they are not running reversed –
- If pump rotation is incorrect, turn off to stop the motors, reverse the phase rotation switch on the main control panel and restart the pumps which should now rotate in the correct rotation.



Immediately after start, check that the pressure gauge is showing a positive pressure reading indicating that the pump is generating positive flow. Pressure deflection may only be slightly positive at the commencement of operation until pump primes. Priming should occur within 1 minute of starting the pumps



Check that pressure is positive immediately after start and rises quickly to operating pressure not to be greater than 6.3 bar or 100 psi

- Check that pressure has built to about 90 psi operating pressure. Pressure could build to over 100 psi momentarily after start up but should not exceed 130 psi and should show a steady reduction as the system settles down and warms up.
- Slightly higher than normal set pressures may be experienced with cold gear oils and these pressures will drop as the oil warms up and becomes less viscous.
- System should settle down to a steady operating pressure at around 90 psi (6.2 Bar) and pressure should not be seen to be fluctuating. If pressure is not stable, cavitation or pump starvation could be occurring. Check for restrictions in plumbing or blocked suction strainer.
- Heavy oils (gear oils and above) can cause the pump relief valve to hammer, resulting in a louder than normal pump noise. This noise will reduce as the oil heats, reducing the viscosity and the oil becomes more pumpable.
- Once the pumps have stabilised and are running smoothly, turn on the heater which is controlled by a time delay switch and

will not start for 30 seconds. The controller will start and initially self-check by displaying a lightning bolt symbol in the top display and the numerals 850 on the second line. This display will last for approximately 20 seconds and is an indication that the operating functions are set correctly. Display will turn to the actual oil temperature on the top line and the pre-set temperature on the bottom line after the checks have been complete by again pressing the mode button.

4.4 POST START CHECKS AND SETTINGS

- NEVER START THE MACHINE AND WALK AWAY WITHOUT THOROUGHLY CHECKING THAT ALL SYSTEMS ARE FUNCTIONING CORRECTLY.
- After start, double check that the correct oil flow path is occurring, particularly when filtering as a dialysis whilst machinery is on line.
- Check all hoses and fittings for signs of leaking.
- After about 5 minutes of running, check the sight glass in the Lubemaster tank to ensure that the oil is not entering the holding tank – oil in the holding tank could be oil draining from the machinery.
- Remember that the Lubemaster holds approximately 20 litres within its circuit, oil which may have an effect on the oil level of the equipment, particularly in smaller systems. If possible, check that the equipment oil level is adequate and top up if necessary. –



REMEMBER MACHINERY OPERATING WITHOUT OIL IS DESTINED FOR SERIOUS FAILURE.

• With the heater turned on, set the temperature to the desired pre-set temperature by pressing the 'mode' button and then arrowing the temperature up or down until the desired thermostat setting is reached. Press the 'mode' button again and the temperature will read out the actual temperature on the top scale and the set thermostat set temperature on the bottom line.



- The thermostat set temperature may in time be exceeded due to the fluid friction of the oil passing through the system. This usually will not raise more than a couple of degrees above the set temperature. If it poses a problem, lower the set temperature to compensate; or turn the heater off.
- The heater indicator light will switch on and off as the heater cycles and the solenoid will be heard to click in and out. This is the normal function once operating temperature is reached.
- Shortly after the heater starts, the oil temperature should be noted to increase in temperature at the fittings supplying the oil to the centrifuge.
- The rotor rotation should be noticeable by feeling the rotor cover; vibration should be noticeable due to the rotor action which will increase in intensity as the rotor picks up speed. The lighter the oil's viscosity, the quicker the rotor will reach high operating speed and the higher the intensity of vibration

the higher the speed. A good intense high-speed vibration should be evident as operating conditions are reached, if the rotor is not spinning at high speed, the rotor may not be working, hence the machine is not functioning correctly.

- Once a good intense rotor speed is observed, consistent with the rotor spinning above 3,000 rpm, turn on the Vacuum switch which will activate the air supply to the vacuum generator and will immediately commence generating vacuum indicated by an anti-clockwise movement of the vacuum gauge.
- Turn the vacuum control valve either in or out depending on the required vacuum level. Turning the needle valve in (clockwise) will reduce the volume of air flowing through the chamber, thus achieving higher vacuum, whilst turning the needle out (anti-clockwise) will allow more air entry, hence reducing the vacuum levels.

At no time should the vacuum be operated with the needle valve fully closed as this completely prevents the flow of air which will render the vacuum system inoperative.



Vacuum control adjustment

- For normal use, set the needle valve so that a vacuum of -0.5 to -7.5 Bar is maintained which will effectively remove water from the oil. If very dry oil results are required such as in transformers, turbine systems or to remove large known volumes of water, increase the vacuum setting up to -0.8 Bar. Any setting over -6.5 Bar will create a very effective result and quickly remove water. For normal operation, a setting at around -5 to -7.5 Bar is adequate.
- After changing the needle valve setting, allow time for the vacuum to settle as any adjustment will take time to stabilise.
- Check again for oil leaks and that all functions are operating as expected
- On switching on the vacuum switch, water could be noted to run from the bottom of the air filter chamber near the solenoid. This is normal and is nothing to do with the vacuum dehydrator and is in fact, condensation being collected from the air supply and automatically drained.



Supply Air filter & water trap

• Air will also be heard to escape from the grey vacuum generator; this is normal and is the air being expelled from the vacuum system



AT NO TIME SHOULD EMISSIONS BE OBSERVED FROM THE VACUUM GENERATOR, IF VAPOURS OR OIL ARE OBSERVED, REDUCE THE VACUUM LEVELS AND/OR THE CENTRIFUGE OPERATING PRESSURE UNTIL THERE ARE NO SIGNS OF EMISSIONS. Continued operation whilst vapours are being emitted will lead to oil loss from the system.



Vacuum generator should not emit vapour or liquid

- After initial start-up it is recommended to stay with the operating machine for at least 15 minutes to give the system time to settle. Monitor performance closely. Do not leave the machine unattended until all functions have been observed to be operating satisfactorily.
- Double check for leaks and that the correct flow functions are observed.
- Check oil level in the machine if running and top up to compensate for any oil loss.

4.5 CLEANING THE CENTRIFUGE ROTOR

The centrifuge rotor will require periodic cleaning, the frequency of which will depend on the contamination levels in the oil being cleaned. Some highly contaminated systems will need daily cleaning; others will not need cleaning more than monthly. The dirt holding capacity of the rotor is designated by the rotor size; eg the OS600 rotor holds 6 kg 0f dirt, whilst the OS200 holds 2 kg.

Operators will quickly learn the optimum frequency of service as they become familiar with the Lubemaster operation in their applications.

It is not recommended to allow the rotor to completely fill with dirt. Whilst this will not harm the machine, the oil will simply pass through a full rotor which will not function to clean the oil. The fuller the rotor, the less effective it becomes, eventually filling until there is no space left for the dirt to collect.

- Stop the machine by turning off the 2 function switches for HEATER and VACUUM to allow the temperature to normalise across the heater element, although turning off the PUMP switch only will render the HEATER and the VACUUM functions inoperative.
- ISOLATE THE MACHINE BY EITHER LOCKING OUT THE MAIN SWITCH OR UNPLUGGING THE POWER SUPPLY SO THAT IT CANNOT BE ACCIDENTALLY STARTED.
- Turn off the oil supply suction.



If the suction selector is left set to the external source over a long time period of time and the oil supply is above the level of the Lubemaster, oil can leak through the system and drain out through the breather and vacuum generator which will spill overnight and will remove over 200 litres of oil from the equipment being cleaned

ALWAYS TURN OFF THE OIL SUPPLY AT THE SYSTEM WHEN LEAVING THE MACHINE STANDING FOR LONG PERIODS

- Place rag around the base of the centrifuge to collect the small quantity of oil which may drip from inside the cover when removed.
- DO NOT REMOVE THE CLAMP OR THE ROTOR COVER UNTIL THE ROTOR HAS COMPLETELY STOPPED SPINNING - allow about 10 minutes standing time for the oil to drain from the rotor.
- Remove the clamp from the rotor cover and remove cover by unscrewing the top nut all threads are right hand.
- Place a bucket handy to the rotor and lift the rotor off the spindle immediately into a bucket or container.
- Remember that the centrifuge base will now become a receptacle for airborne dust and must be kept covered whilst the rotor is removed otherwise dust will enter the circuit.
- Move the rotor to the cleaning station and unscrew the top nut of the rotor and remove the rotor shell taking care to support the rotor carefully and not to cut the "O" ring.
- Complete dismantling the rotor until all 4 components are separated



• Clean all sludge from all of the surfaces inside the rotor remembering to examine the sludge for abnormal particles.



- After cleaning all components, lightly oil the base and sit it upright in a clean area ready for assembly.
- Next clean the "O" ring and separator plate and lightly oil.
- Place the "O" ring on the base perimeter



- Place the separator plate on the base and be sure that it sits neat and free and sitting within the groove. Never force to align the separator
- Lightly oil the rotor sleeve and place it on the base, checking that the "O" ring is not damaged as the sleeve fits into place.
 Do not force the assembly. Check that the sleeve is fitting correctly in alignment with the base.



- Lightly oil the rotor cover, place it in place, carefully screw down the nut and take care that the "O" ring fits into position without getting damaged and that the whole assembly is fitting into place squarely.
- Using the spanner provided, firm the nut without over tightening the nut need only be screwed firmly into position, hand-tight with the spanner provided.



- Wipe the large base "O" ring and surrounding area free of contamination and lubricate the top and bottom rotor bearing surfaces.
- Place the rotor over the spindle, taking care not to trap the fingers as the rotor settles. Do not drop the rotor onto the bearings as bearing damage can result.



- Check that the rotor is correctly in place and will spin freely.
- Replace the rotor cover and screw the nut down hand tight only.



• Replace the clamp and hand tighten.



- DO NOT FURTHER TIGHTEN THE COVER NUT OR THE CLAMP AFTER THE INITIAL TIGHTEN AS THEY DO BECOME LOOSE TO FEEL WHEN RUNNING – This looseness is normal and the slack should not be taken up as distortion can occur when machine is stopped which can overload components and cause damage.
- Wipe all contamination from around the centrifuge
- Your Lubemaster should now be ready for restart

4.6 CLEANING MACHINE TO CHANGE OIL TYPE

When changing your Lubemaster to clean oil of a different grade than the previous oil cleaned, it is necessary to completely drain and clean all of the components which may retain the previous oil.

- Clean the machine externally. All components are rated to IP66 and can be washed, however it is not recommended to unnecessarily spray water on the power box.
- Whilst the machine remains running, turn off the suction at the plant and remove the suction hose, elevating the hose to allow remaining oil to be sucked out as much as possible. Do not run the machine dry for more than 1 minute.
- Turn off the machine and isolate by disconnecting the power supply or locking out the main switch.
- Remove the suction and delivery hoses and hang them up to drain taking care that they cannot collect dust.
- Remove the suction strainer by undoing the nut holding the strainer retainer bracket. Service the strainer as in section 3.7
- Clean the rotor as in section 3.6 and reassemble.
- Drain the heater housing via the drain cock on the bottom of the housing.



- Drain the vacuum chamber by making sure all of the oil has been pumped out of the chamber.
- A small amount of oil can remain in the return pump from the vacuum chamber. It is recommended to flush the system at start up with the new oil to remove this oil and prevent contamination.

4.7 SERVICING THE SUCTION STRAINER

- Isolate the oil supply to the suction hose turn off the valve at the hose connection and be sure no pressure is stored on the suction side of the system.
- Drain the oil from the strainer via the bottom ball valve
- Unscrew the cap from the top of the suction strainer
- Remove the strainer assembly over a bucket to drain all remaining oil.
- Take the complete strainer assembly to the cleaning station and unscrew the nut from the bottom spring





- Remove the strainer and wash the strainer and mounting assembly with solvent or diesel and hose off with water. check it for any visible damage – replace the strainer if it is punctured or damaged.
- Reassemble the strainer and body do not over tension the spring. Screw the nut up until there is a maximum of 10mm of the thread through the nut.
- Check the "O" ring on the strainer assembly for damage and replace if necessary.
- Wash and rinse the strainer body and replace the clean strainer assembly into the housing
- Check the "O" Ring on the cap, grease the thread and replace the cap taking extreme care not to cross thread and damage the thread. Turn by hand backward until you hear the click as the thread start is found. Do not use any tools to screw together, hand assemble only.
- Once the cap has seated on the "O" ring, nip up lightly with a spanner do not screw tight, the cap will seal on the "O" ring.

4.8 SETTING THE PUMP PRESSURE

Normally, it will not be necessary to alter the pumps pressure once they have been set although occasionally adjustment may be necessary.

NEVER EXCEED 100 PSI OPERATING PRESSURE AS EXCESSIVE PRESSURE CAN CAUSE THE ROTOR TO EXPAND AND DISTORT AND CONSEQUENTLY WILL BECOME INOPERATIVE.

The pressure is adjusted by firstly loosening the lock nut on the relief valve with a ³/₄" AF ring spanner and whilst holding the nut, screw in or out the adjusting screw with an Allen key until the desired pressure has been reached.



The rear return pump pressure should not need adjustment as the return is normally open ended requiring minimal pressure settings; however, if necessary, adjustment is the same as that for the supply pump.

Care should be exercised so as not to pressurise the equipment.

5. <u>CUT OUT AND PROTECTION DEVICES</u>

Lubemaster has several inbuilt devices designed to protect the system both electrically and mechanically.

Mechanical Protection –

There are two devices which will render the Lubemaster inoperative if activated as follows: –

a. The vacuum chamber has an inbuilt float switch which is designed to shut the system down completely if the chamber is fully filled. If the machine shuts down when the tank is full, the Lubemaster cannot be restarted until some of the oil has been removed from the tank to the lower limit of the float switch which will close the circuit and reactivate. There is a reason for this situation to happen – be sure to identify why the return oil has failed to function correctly and rectify the situation before trying to restart.

If there is a head of oil and the machine has stopped, the oil may have leaked through the 1st pump and filled the vacuum chamber

- Turn off the suction and crack the suction hose connection.
- Then turn on the pumps and severely rock the whole machine so as to splash the oil in the chamber until the float switch is re activated the motor starts. This may take several attempts to get the oil level low enough for the machine to run continuously.
 Once the motor starts, leave running until the vacuum chamber has been completely pumped out.
- Then reconnect the suction to resume normal operation.

b. The oil circuit also contains a pressure switch built into the vacuum chamber. This switch is designed to prevent the likelihood of

the circuit pressurising in the event of a return pump failure. If the system pressurises, the Lubemaster circuit will switch on and off at a frequent interval as the pressure increases and decreases. Normally a slight vacuum will be evident as the return pump sucks when operated without the vacuum turned on.

BE SURE TO IDENTIFY AND RECTIFY THE FAULT BEFORE ANY EFFORT IS MADE TO RESTART THE SYSTEM – IT STOPPED FOR A REASON – RESTARTING WITHOUT CORRECTIVE ACTION WILL ONLY LEAD TO WORSENING THE SITUATION.

Electrical Protection –

Several devices have been installed to protect the electrical circuit and equipment as follows –

- a. The main "PUMP" switch controls all other circuits. The heater or the Vacuum system cannot be activated without the pumps running.
- b. The control box cannot be opened with the main safety switch turned on. The main circuit switch must be in the off position to enable the front cover of the control box to be opened.
- c. The heater circuit is controlled by a timer which will prevent the heater from activating in order to give the pump time to fill the heater element with oil and prevent the heater coil running dry. Consequently, the heater will take approximately 30 seconds to activate when turned on.
- d. The motor has thermal protection, which if the motor draws excessive current or overheats; the overload may trip and shut the circuit down. If the motor trips, the entire system will shut down until manually reset. If one motor trips, C1 on the bottom of the contactor will show a yellow indicator on the thermal overload which is reset by pressing the small tab on the overload.
- e. All circuits are protected with individual inbuilt circuit breakers which will trip if overloaded. These devices will reset when switched off then on again however we advise that in the event of a trip, that the cause of the circuit overload be investigated as tripping is unusual without a reason and usually indicates a short or overloaded circuit.

6. PARTS LIST

Component	Stk Item	Qty	Stk Code
CENTRIFUGE	OS600 Centrifuge	1	OS600
	O-Ring 155 x 4mm	1	23155
	Rubber/Metal D/Plug Washer 12mm	4	2603
TOP MOTOR/PUMP		1	FH40UB
	N100 Nepflex Hub 7/8 Bore 3/16 Key	1	N100-0 87HUB
	N100 Nonflox Hub 28mm Boro 8mm Kov	1	
	N100 Norflex Pubber Spider Plk	1	
	WEG 2.2KW 6 Pole 940RPM Elec Mitr	1	WEG2.24P
	B2 Flange	1	FH40FL
	Bell Hsg D100-112XSAE B	1	SBH100-B
DEAD	Pump (B)	1	EHAOUB
	N100 Nonflox Hub 7/8 Pore 2/16 Key	1	
	N100 Nerflex Lub 22mm Berg 2mm Key	1	
	NTOO NEILIEX HUD 28mm Bore 8mm Key	1	N100-M24HUB
	N100 Nentlex PPE Spider Bik	1	N100SPI-RUB
SWITCHBOX	Single Reversing Pump Starter	1	99508-868316
	R/M1 24VAC/DC Shinco Temp		
	Controller	1	PRTSJCS-33ARM
		4	
NEALEN	10 BRASS BALL VALVE C/W SS		
	78 BSPT Coupling	1	
	415V 7.5KW Immersion neater 1000mm	1	99HE
	P1100 Spring loaded with 1.5m Tetion	1	
	Thermowell 8x90x1/4" bspp x1/4" BSP	1	Ihermowell
	20mm Annaconda 90º	1	
	Clamp 6" Znc Flat Band	1	
VACUUM			
CHAMBER	TANK	1	
	6MM "O" RING	1.65	
	160mm Perspex Sight glass	1	
	FLOAT SWITCH TOP MOUNT	1	TC3001
	8mm Push Fit Tube Elbow 1/4mm	1	KQ2L08-02S-X2
	1/4 BSP 10mm straight connector	1	KQ2H10-02S-X2
		·	
WHEELS & AXLES	Wheels	3	L8535BHW-XPA
	T276 Spring	1	
	PULL HANDLE MOUNTING BLOCK	1	
SUCTION	Suction Strainer 4001 PM G3"125MU	1	SUS400-B48-PO
STRAINER	Filter Housing	1	SUS400H
OTTAILET	NZ0 Nitrilo Orring	1	B\$250
	N/O Millie O-filig	I	00209
AIR/VACUUM	20PM M Adaptor 1/4"	1	20PMA
SYSTEM	8mm Push Fit Tube Elbow 1/4mm	4	KQ2L08-02S-X2
	8mm-1/4 BSP Straight Connector	2	KQ2H08-02S-X2
	8mm Y joiner	1	KQ2U08-00-X2
	12mm Push Fit Tube Elbow 1/2mm	1	KQ2L12-04S-X2
	12mm 3/8 BSP STRAIGHT CONN	1	KQ2L12-03S-X2
	SOCKET PLUG 3/8 BSPT ZP		
		1	NXT010-24-3

Component	Stk Item	Qty	Stk Code
	SOCKET PLUG 1/4 BSPT ZP	1	NXT010-24-2
	1/4 BSP 10mm Straight Connector	2	KQ2H10-02S-X2
	8mm Elbow 1/8 BSP	1	KQ2L08-01S-X2
	8mm Elbow M/F 90	2	KQ2L08-99-X2
	8mm 3/8 Straight Connector	1	KQ2H08-03S-X2
	Vacuum Ejector	1	ZL212-G
	Vacuum Ejector	1	ZH13DS-08-10-10
	Modular Air Filter RC1/2PT Auto Drain	1	AF40-04D
	Bracket AF40	1	AF40P-050AS
	Exhaust Cleaner	1	AMC310-03
	Water Mate	1	AMG250-03
	Speed Control	1	AS2000-02
	1/4" 24V DC Solenoid	1	VT307-5DZ-02
	3UM Breather	1	VS05
	Breather Base Assy	1	VS055
	15 STL HEX NIPPLE	1	SN15
	08 SS TEES	1	SST08
	8mm T Joiner	1	KQ2T08-00-X2
	1/4" BSPT Coupling	1	SMK20R1/4KPD
	DN2/400-1/4"BSP HOSE -1200 LG	1	SMS20M1/4-1200A
	BAR/PSI VACUUM GAUGE	1	SPG63(-1/+0)1-RBU
	DN2/400-1/4" BSP Hose 400LG	1	SMS20M1/4-400A
	Bar/PSI Pressure Gauge	1	SPG63-10-1-RBU
	Black 8mm Hose	2.5	TE0806-5160BK
	PERFORMER BLUE AIR 10mm	0.75	046P/010-03
	12mm airline	0.33	
	Socket Plug 3/8 BSPT Z/P	1	NXT010-24-3
	GEMS Press Switch	1	PS41-10-4MGB-C-HC
HOSES & FITTINGS	STEM 1 7/8 JIC F 24 HOSE	1	SFJ3024
	OIL/FUEL SUCTION & DEL HOSE	0.4	IOFS-038
	TUBE 38mm X5mm ZPL	0.5	1038X500ZP
	WV 38S Equal Elbow	1	373404
	EWVD 38S Adjustable Elbow	3	374573
	GEV38 SR-WD Coupling 11/2	2	373135
	NIPPLE 1 1/2 BSP X 1 7/8 JIC	4	CB2-2430
	1½ "Hose Ends	4	24C5-24 RFJX
	ADAPT M/F 11/2 BSPT X 11/2 BSPP	1	CB24-2424
	ADAPT 90 M/F 1 5/16 - 1 5/16 J	1	C46-2121
	HOSE CLAMP 48-51	4	TTBY48-51P
	1" JIC nut 90 Long Red Hose End	1	
	1" Hyd hose	0.2	
	1¾ Hyd Hose	0.5	
	32mm 3way L-Port S/S Ball Valve	1	SSBV32
	40mm 3way L-Port S/S Ball Valve	1	SSBV40
HOSE KITS	5m 11⁄2" Hose Assy	1	HA06040
	5m 1¼" Hose Assy	1	HA06032
	10mm Blue Airline Assembly	20	AIRASSY1020
IN-LINE FILTER	11/2" In-Line Filter	1	GA-2-230
(OPTIONAL)	10um Cartridge	1	TXX5-10
	AGB-2 By-Pass Assy 1.5 Bar	1	90.30.008.06
	DPM Indicator Visual 1.5 Bar	1	dpm-Visual-1.2GA

7. <u>ELECTRICAL CIRCUIT</u>





LUBEMASTER AUSTRALIA PTY LTD

ABN 37 103 420 640

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LUBEMASTER CENTRIFUGAL/VACUUM DEHYDRATION OIL CLEANING MACHINE



Declaration of Conformity for CE Marking

Machinery Directive 98/37/EC (Safety Annex II Under A) EMC Directive 89/336/EEC (Electromagnetic Compatibility) Low Voltage Directive 73/23/EEC

Manufacturer: Lubemaster Australia Pty Ltd 472 Woolcock Street Garbutt 4814 Qld Australia Phone 61 7 4728 7777

We declare that the Lubemaster Centrifugal/ Vacuum Dehydration Oil Cleaning Machine in its various configurations as listed below is in conformity with the essential requirements of the Machinery Directive 98/37/EEC (according to Annex II under A), the essential requirements of the Low Voltage Directive 73/23/EEC.

Part Name	Description
Lubemaster Oil Cleaning Machine	Complete and totally contained oil cleaning unit
Lubemaster Model No	OS600-MILL-000
Lubemaster Serial No	OS60040403VHMILL3S
WEG Motors	2.2KW, 415 volt 3 phase
NHP control box	Contactors overloads & overload protection
Construction Material	Steel, Pneumatic Tyres

Start of CE Marking: 3 rd October 2006	a
Place of Issue: Townsville, Austr	Robert C Smith, Managing Director

CE Mark Declaration of Conformity.