# LUBEMASTER AUSTRALIA

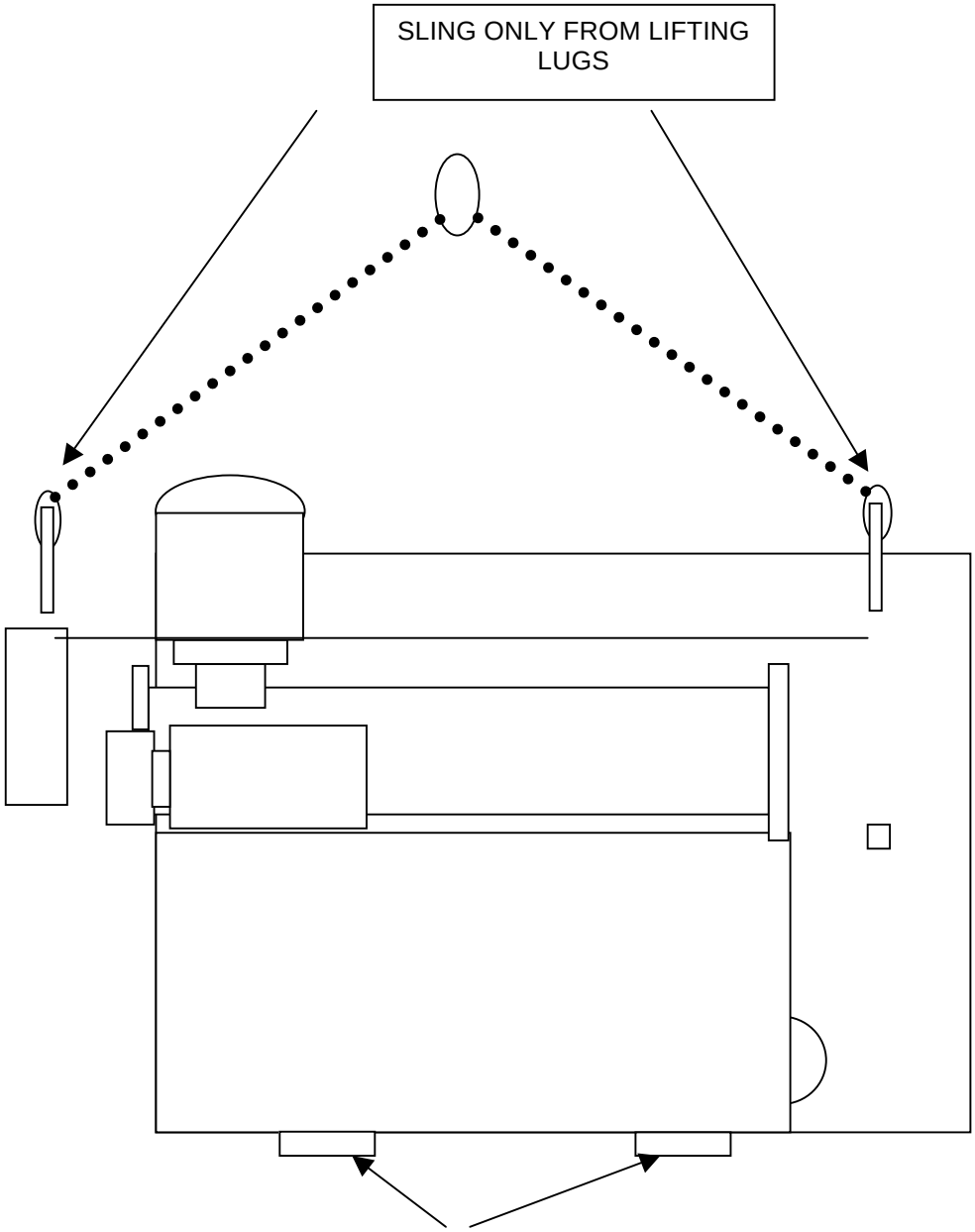
# LUBEMASTER Model OS600 on Skids

## OPERATING INSTRUCTIONS AND PARTS MANUAL

# INDEX

# 1. SAFETY PROCEDURES

## 1.1 SAFE LIFTING




CAUTION

FORKLIFT ONLY UNDER CHASSIS USING TYNE LOCATER.

**STEEL ON STEEL WILL SLIP**

MACHINE IS FRONT HEAVY.

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

**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 D/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 effect the operation of the Lubemaster, however it is recommended that the cover be placed over the machine when operating outdoors.

Check that leads cannot foul on wheels or frame when moving

Be sure that the machine is parked on level ground and cannot run downhill when operating.

## 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 eliminate the need for oil changing and disposal, and by preventing the build up of water and particles, pristine oil condition can be maintained at all times. 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.

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.

There are no elements to exchange with your Lubemaster system, simply wash out the centrifuge rotor, reassemble and put the machine back to work. There is a 125µm 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.

The onboard holding tank is designed to hold 200 litres of oil. The tank is 300 litre which allows room in the tank for foaming should it occur. The oil

level should never raise high in the top site glass as room for expansion must be left in the tank.

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 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, e.g. 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 cleaning each machine 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 Oil Solutions 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. KEY OPERATING CHECK POINTS

## 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.**

### Starting your Lubemaster

- Connect hoses, air and plug in power lead – consider safety with leads.
- Set delivery and return 3 way valves to allow the desired function and check all connections.
- Check pump rotation and reverse if necessary with phase rotation switch – be sure to stop pumps before changing rotation.
- Check that pressure rises immediately on start to approximately 100 psi.
- **Check that oil is flowing in the desired path and that BOTH 3 way valves are set correctly on the suction and return.**
- 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 -7.5kpa)
- 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 supply prior to commencing service.

**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 no more than 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 restrict flow – check that hose and fitting 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 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, a flow through situation 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 although the machine only requires 15 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 the Lubemaster reservoir, until contaminated oil is moved into the Lubemaster, to remove the sludge from the system and clean that oil first. Then switch over the suction and return valves after the centrifuge has reached operating speed.

**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 on the Lubemaster, taking care that the correct function is selected. If valves are not set correctly, oil can be removed entirely from the equipment being cleaned leaving it to run dry.

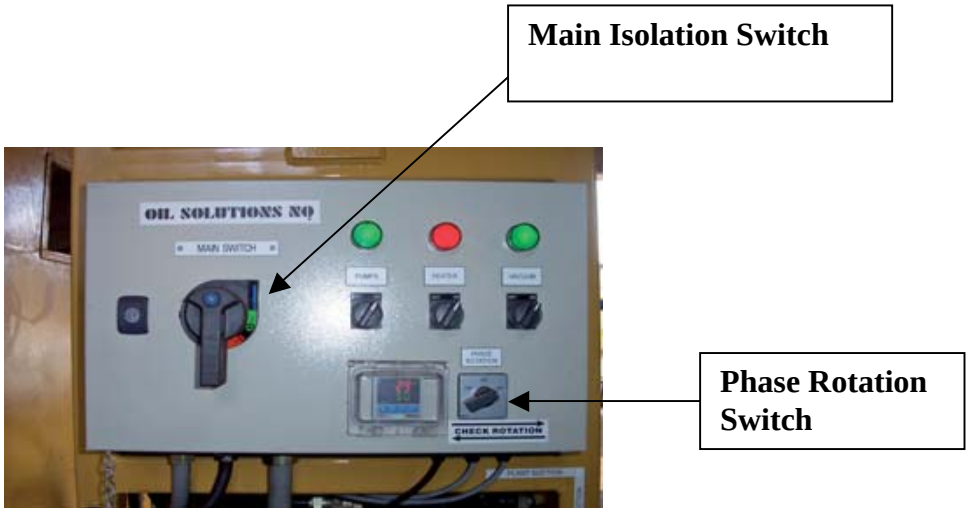
**DO NOT RETURN OIL TO THE LUBEMASTER TANK IF MACHINERY IS RUNNING, WITHOUT EXTREME CAUTION YOU CAN DRAIN THE OIL FROM THE MACHINE**

- **Double check that the desired 3 way valve settings are selected for both the suction and return**

- Open the suction and return valves on the equipment to allow oil supply to the Lubemaster and check for leaks.

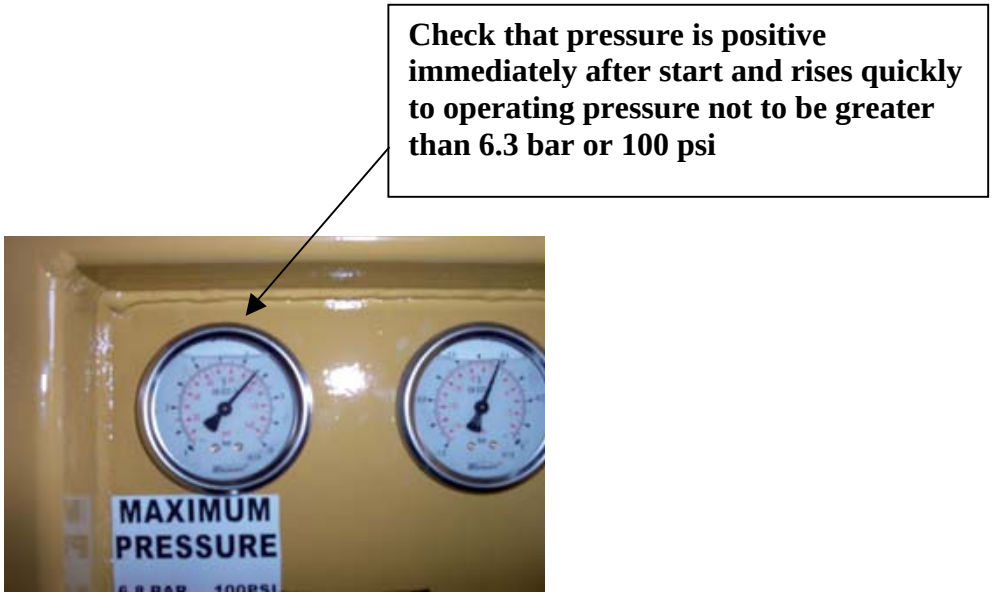
## 4.3 STARTING THE MACHINE

- 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 ½ a minute of starting the pumps – **DO NOT RUN PUMPS DRY FOR ANY MORE THAN 30 SECONDS –** Pump damage could result if pumps run dry.




- Check that pressure has built to about 100 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 100 psi and pressure should not be seen to be fluctuating. If pressure is not stable, cavitation or pump starvation could be occurring.

- 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 and 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 preset 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.

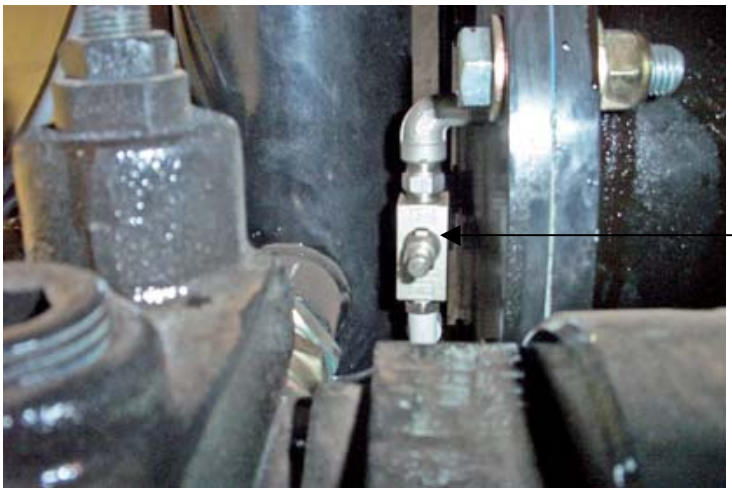
- Remember that the Lubemaster holds approximately 20 litres within its circuit, oil which may have an effect on the oil level of the equipment, particularly in smaller systems. – If possible, check that the equipment oil level is adequate and top up if necessary. –

**REMEMBER MACHINERY OPERATING WITHOUT OIL IS DESTINED FOR SERIOUS FAILURE.**

- With the heater turned on, set the temperature to the desired preset 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 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 speed and 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 (clock-wise) 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.




- For normal use, set the needle valve so that a vacuum of -0.5 to -7.5 Kpa 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 -8 Kpa. Any setting over -6.5 Kpa will create a very effective result and quickly remove water. For normal operation, a setting at around -5 to -7.5 Kpa 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**

- 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; e.g. 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 all 3 function switches, 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

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

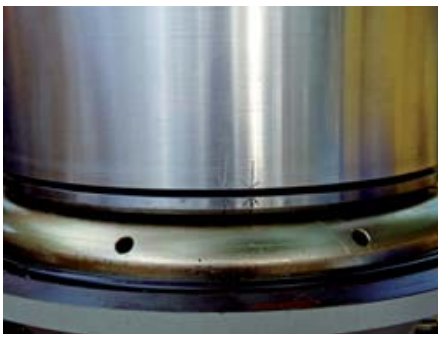
- Place rag around the base of the centrifuge to collect the small quantity of oil which may drip from inside the cover when removed.
- **DO NOT REMOVE THE CLAMP OR THE ROTOR COVER UNTIL THE ROTOR HAS COMPLETELY STOPPED SPINNING -** allow about 10 minutes standing time for the oil to drain from the rotor.
- 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 and locate the balance marks on the base.

- Place the separator plate on the base and be sure that it sits neat and free. Never force to align the separator
- Lightly oil the rotor sleeve and place it on the base, checking the 2 balance arrows align and that the “O” ring is not damaged as the sleeve fits into place. Do not force the assembly. Check that the 2 balance arrows align.



- Lightly oil the rotor cover, place it in place and carefully screw down the nut checking that all of the balance marks remain aligned 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.

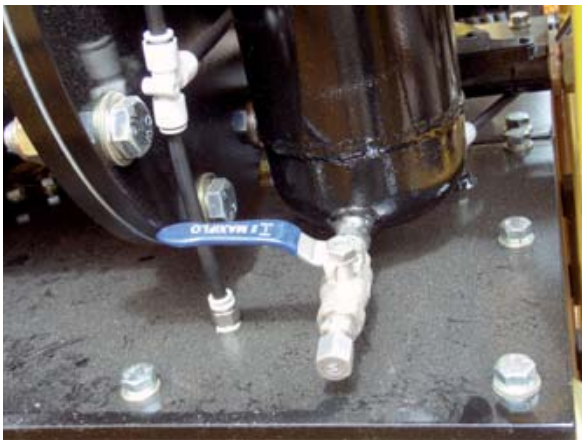

- Replace the clamp and hand tighten only.
- DO NOT FURTHER TIGHTEN THE COVER NUT OR THE CLAMP AFTER THE INITIAL TIGHTEN AS THEY DO BECOME LOOSE TO FEEL WHEN RUNNING – This looseness is normal and the slack should not be taken up as distortion can occur when machine is stopped which can overload components 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 at the ball cock on the water drain under the chamber. This chamber could contain up to 10 litres of oil.

- Drain the tank by removing the plug next to the front wheel – check that tank is empty before removing the plug. Be sure to seal the plug thread on reassembly.

- Inside of the holding tank can be cleaned if necessary by removing the square plate on the tank top behind the supply motor.
- A small amount of oil can remain in the drop pipe from the vacuum chamber to the return pump. It is recommended to flush the system at start up to remove this oil and prevent contamination.

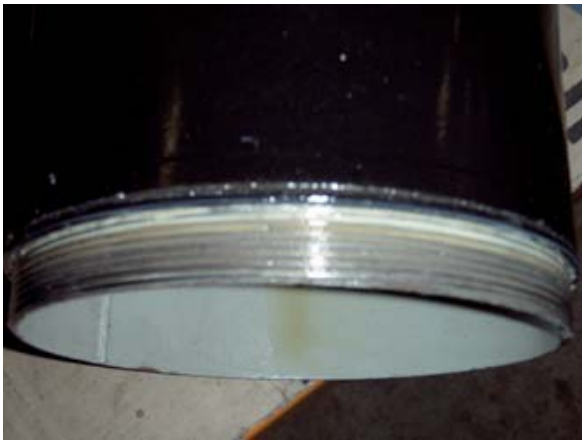
## 4.7 SERVICING THE SUCTION STRAINER

- Undo the complete suction strainer assembly by removing the nut on top of the short delivery hose beside the strainer.


- Tip the strainer assembly over a bucket to drain all remaining oil.
- Take the complete assembly to the cleaning station and unscrew the base from the main body.
- Take care not to damage the “O” ring above the male thread or damage the stainless strainer as it is removed from the main

body. The strainer is attached to the head end of the body; take care not to damage the strainer whilst dismantling.

- Wash the strainer free of all contamination and check it for any visible damage – replace the strainer if it is punctured or damaged.
- Wash and rinse the strainer body and short attached hose taking extreme care not to damage the thread.
- Replace the strainer screwing it fully onto the cap – hand tight only – do not use tools to tighten.
- Carefully grease the male thread and “O” ring and check the “O” ring for damage.
- Grease the “O” ring groove in the cap.



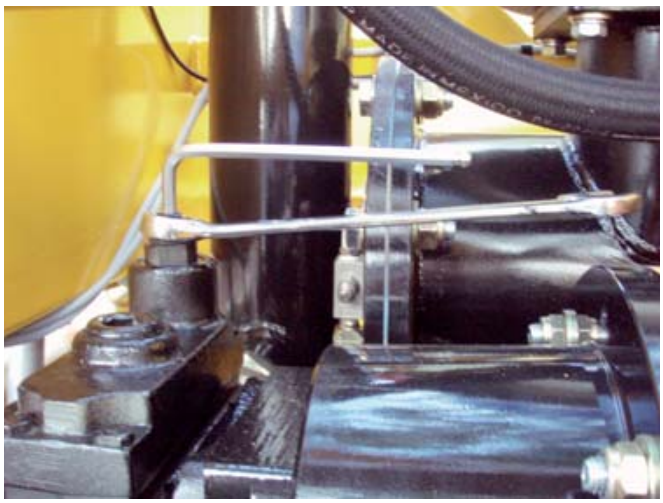
- Insert the strainer into the body and screw the cap to the base taking care not to damage the strainer whilst assembling and screw the base on until the “O” ring seats.
- Pinch cap to firm but not tight as the “O” ring will damage if over tightened, do not use tools to tighten the assembly.
- Replace the assembly back onto the machine, being sure to correctly position. Replace and tighten the hose nut before tightening the body clamp.

## 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 ¾” 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 adjustment is the same as that for the supply pump.

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

## 5. CUT OUT AND PROTECTION DEVICES

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 onboard holding tank has an inbuilt float switch which is designed to shut the system down completely if the tank 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. This is achieved by removing the tank top cover behind the main motor and removing some oil or draining some oil from the drain plug near the front wheel.

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.

**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 first turned on.
d. Both motors have individual thermal protection, which if motors draw excessive current; the overload may trip and shut the circuit down. If one motor trips, the entire system will shut down until manually reset. If one motor trips, either C1 or C2 will show a yellow indicator on the thermal overload which is reset by pressing the small red 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 | Part | Qty | Part No |
|---|---|---|---|
| **CENTRIFUGE** | OS600 | 1 | OS600 |
| | O-RING 155 X 4MM | 1 | 23155 |
| | JOINTING OIL OJ9 1M WIDE X 1.5MM | 0.03 | 05118900 |
| | GR 4.6 HEX B/N ZP | 4 | 12839 M12X65 |
| | 12MM HT FLAT WASHER | 4 | 12HTZPGW |
| | NUT NYLOC HEX STD Z/Y 12MM | 4 | 02093604 |
| | 25 STL M/F ELBOWS 90 | 1 | SEMF25 |
| **TOP PUMP/ MOTOR** | PUMP (A) | 1 | PMPH40 |
| | N100 NENFLEX HUB 7/8 BORE 3/16 KEY | 1 | N100-0.87HUB |
| | N100 NENFLEX HUB 28MM BORE 8MM KEY | 1 | N100-M24HUB |
| | N100 NENFLEX RUBBER SPIDER BLK | 1 | N100SPI-RUB |
| | WEG MPTOR 2.2KW 6 POLE 940RPM | 1 | WEG2.24P |
| | B2 FLANGE | 1 | PMPFB2 |
| | BELL HSG D100-112XSAE B | 1 | SBH100-B |
| | WASHER RND FLAT H/T GR8 ZY 3/8 | 4 | 38HTZPGW |
| | 3.5X2.2 ZP SPR WASH FLAT SEC | 6 | 10MSW |
| | LIQUIDTIGHT CONDUIT 20MM ELBOW | 1 | T&B9352 |
| | GEV38 S/ 1½ NPT COUPLING | 1 | 373052 |
| | SCREW CAP SKT HEAD UNC ½ X 1¼ | 4 | 4142 1/2UNCX1.1/4 |
| | GR 4.6 HEX B/N ZP M12X55 | 4 | 12837 |
| | NUT NYLOC HEX STD Z/Y 12MM | 4 | 02093604 |
| | 12MM HT FLAT WASHER | 8 | 12HTZPGW |
| | M12X35 HEX BOLTS | 2 | 12834 M12X40 |
| | 4.0X2.5 ZP SPR WASH FLAT SEC | 2 | 12MSW |
| **REAR PUMP/MOTOR** | PUMP (B) | 1 | PMPH40 |
| | N100 NENFLEX HUB 7/8 BORE 3/16 KEY | 1 | N100-0.87HUB |
| | N100 NENFLEX HUB 28MM BORE 8MM KEY | 1 | N100-M24HUB |
| | N100 NENFLEX RUBBER SPIDER BLK | 1 | N100SPI-RUB |
| | WEG MOTOR 2.2KW 4 POLE 1440RPM | 1 | WEG2.26P |
| | NUT NYLOC HEX DIN985 Z/Y 10MM | 4 | 02093507 |
| | WASHER RND FLAT H/T GR8 ZY 3/8 | 4 | 38HTZPGW |
| | CONDUIT FITTING 20MM ELBOW | 1 | T&B9352 |
| | B2 FLANGE | 1 | PMPFB2 |
| | BELL HSG D100-112XSAE B | 1 | SBH100-B |
| | SCREW CAP SKT HEAD UNC ½ X 1¼ | 4 | 4142 1/2UNCX1.1/4 |
| | M12X35 HEX BOLTS | 2 | 12834 M12X40 |
| | 3.5X2.2 ZP SPR WASH FLAT SEC | 2 | 10MSW |
| | GR 4.6 HEX B/N ZP M12X55 | 4 | 12837 |
| | NUT NYLOC HEX STD Z/Y 12MM | 4 | 02093604 |
| | 12MM HT FLAT WASHER | 8 | 12HTZPGW |
| | 40 STL M/F ELBOWS 90 | 2 | SEMF40 |
| | 40X32 SS BUSH RED BUSH | 1 | SSB4032 |
| | ELBOW 45 M/M 1¼ BSPT X 1⅝ JIC | 1 | CB38-2026 |
| **SWITCHBOX** | DUAL REVERSING PUMP STARTER | 1 | 99508-868316 |
| | 24VAC/DC SHINKO TEMP CONTROLLER | 1 | PRTSJCS-33ARM |

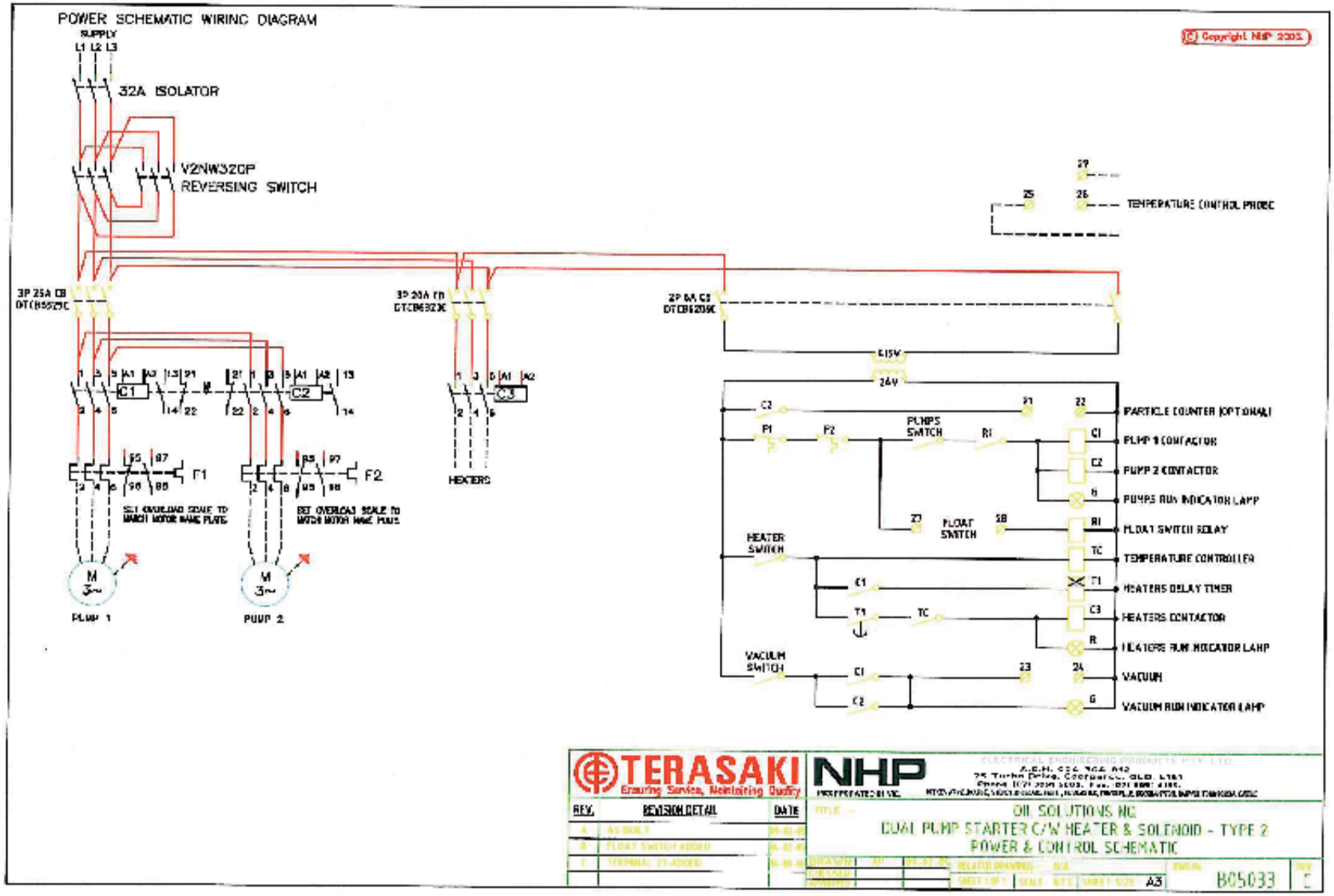
| Component | Part | Qty | Part No |
|---|---|---|---|
| **VACUUM CHAMBER** | CONFLEX MOUNT | 4 | M111255NM12-GRN |
| | WASHER RND FLAT H/T GR8 ZY 3/8 | 4 | 38HTZPGW |
| | 3.5X2.2 ZP SPR WASH FLAT SEC | 8 | 10MSW |
| | BOLT &NUT 4.6 HEX HD 12X30MM | 4 | 02840200 |
| | 12MM HIGH TENSILE FLAT WASHER | 4 | 12HTZPGW |
| | 4.0X2.5 ZP SPR WASH FLAT SEC | 4 | 12MSW |
| | 40 STL SOCKETS | 1 | SS40 |
| | 15 STL SOCKETS | 3 | SS15 |
| | 200 STL PL FLANGE TAB D BLIND | 2 | SFBD98 |
| | 200 STL PL FLANGE TAB D SOW | 2 | SFPD98 |
| | BOLT & NUT 4.6 HEX 16X55MM | 16 | M16X55 |
| | NUT NYLOC HEX ZY 16MM | 16 | 02093808 |
| | WASHER FLAT H/T GR8 Z/Y 5/8 | 32 | 00380902 (16MM) |
| | 15 STL MF ELBOWS 90 | 1 | SEMF15 |
| | ELBOW 90 M/M 3/4 BSP 1 5/16 JIC | 1 | CB56-1221 |
| | NIPPLE 1 1/2 BSP X 1 7/8 JIC | 1 | CB2-2430 |
| | NUT NYLOC HEX DIN985 Z/Y 10MM | 2 | 02093507 |
| | WASHER RND FLAT H/T GR8 ZY 3/8 | 4 | 38HTZPGW |
| | 15 SS HEX NIPPLE | 1 | SSN15 |
| | 15X08 STL SOCKET | 1 | SS1508 |
| | 20X15 SS HEX BUSH | 1 | SSB2015 |
| | 32 STL SOCKETS | 1 | SS32 |
| | 32 STL CAPS | 1 | SC32 |
| | 08 SS HEX NIPPLE | 2 | SSN08 |
| | 08 SS CAP HEX | 1 | SSC08 |
| | 08 BRASS BALL VALVE.SS LEVER | 1 | VBB08 |
| | 32X300MM GALV PIPE PIECE | 1 | SPN32X30G |
| | 32X15 STL HEX BUSH | 1 | SB3215 |
| | ELBOW 90 BSPT MM | 1 | CVJ-04-04 |
| **HEATER** | 10 BRASS BALL VALVE C/W SS | 1 | VBB10 |
| | 10 SS CAP HEX | 1 | SSC10 |
| | 32X25 STL BSP RED BUSH | 1 | SB3225 |
| | NIPPLE 1" BSP X 1 5/16 JIC | 1 | CB2-1621 |
| | ⅛ BSPT COUPLING | 1 | SMK20R1/8KPD |
| | 415V 4KW OIL IMMERSION HEATER 500MM | 1 | ILV-001ELE |
| | PT100 SPRING LOADED WITH 1.5M TEFLON | 1 | PT100 |
| | THERMOWELL 8X90X¼" BSPP X¼" BSP | 1 | THERMOWELL |
| | CLAMP 4" ZNC FLAT BAND | 1 | |
| **HOLDING TANK** | TANK | 1 | |
| | JOINTING OIL OJ9 1M WIDE X 1.5MM | 0.65 | 05118900 |
| | LEVEL GAUGE 76MM | 1 | SNA076B-S-0-12 |
| | LEVEL GAUGE 254MM | 1 | SNA254B-S-0-12 |
| | GR 4.6 HEX B/N ZP M10X30 | 34 | 12805 M10X30 |
| | WASHER RND FLAT H/T GR8 ZY 3/8 | 4 | 38HTZPGW |
| | 3.5X2.2 ZP SPR WASH FLAT SEC | 34 | 10MSW |
| | 40 STL F/F ELBOWS 90 | 1 | SE40 |
| | M10X110 HEX BOLTS ZP | 4 | 12819 M10X110 |
| | NUT NYLOC HEX DIN985 Z/Y 10MM | 4 | 02093507 |
| | WASHER RND FLAT H/T GR8 ZY 3/8 | 4 | 38HTZPGW |
| | 32 BSP STL SOCKET | 1 | SS32 |
| | 08 BSP STL SOCKET | 1 | SS08 |
| | 08X06 SS BUSH | 1 | SSB0806 |

| Component | Part | Qty | Part No |
|---|---|---|---|
| | 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 |
| | 40 FF SS TEE | 1 | SST40 |
| | 40 SS HEX PLUG | 1 | SSP40 |
| **FRAME** | UNIT ID NO.LABELS | 2 | |
| | SP2127 PP DP AS CLAMP | 1 | 514202127 |
| | 15X08 SS BUSH | 1 | SSB1508 |
| | 10X08 STL SOCKET | 1 | SS1008 |
| | NUT NYLOC HEX STD Z/Y 12MM | 1 | 02093604 |
| | NUT NYLOC HEX ZY 16MM | 1 | 02093808 |
| | 12MM HIGH TENSILE FLAT WASHER | 1 | 12HTZPGW |
| | 1/8 BSPT GREASE NIPPLE L29 | 1 | |
| | 08 STL SOCKET | 1 | SS08 |
| | REDUCING BUSH 1/4 X 3/8 | 1 | KQ2R08-10-X2 |
| | M10 X65 HEX BOLTS | 4 | 12812 M10X65 |
| | NUT NYLOC HEX DIN985 Z/Y 10MM | 4 | 02093507 |
| | WASHER RND FLAT H/T GR8 ZY 3/8 | 4 | 38HTZPGW |
| | SCREW S/S 304 CSK HD PHILIPS 5X12 | 8 | 00503030 |
| **SUCTION STRAINER** | SUCTION STRAINER 400LPM G3"125MU | 1 | SUS400-B48-PO |
| | FILTER HOUSING | 1 | SUS400H |
| | N70 NITRILE O-RING | 1 | BS259 |
| | 1½ X 1½ BSPT STRAIGHT NIPPLE | 2 | CB1-2424 |
| | 40 STEEL HEX NIPPLE | 2 | SN40 |
| | 40 SS HEX NIPPLES | 1 | SSN40 |
| | 40 STL F/F ELBOWS 90 | 1 | SE40 |
| | 40 SS F/F ELBOWS 90 | 2 | SSE40 |
| | 80X40 STEEL HEX BUSH | 1 | SB8040 |
| | 150 STL SOCKET | 0.5 | SS96 |
| **ELECTRICAL FITTINGS** | CABLE GLAND LOCKNUT 20MM | 3 | NICL20 |
| | CABLE GLAND LOCKNUT M25X1.5MM | 1 | NICL25 |
| | BRASS REDUCER M 25MM - F 20MM | 3 | CLI1264/2M |
| | METAL INSPECTION TEE 25MM | 1 | CLI1246/25 |
| | 10MM METAL GLAND 6-10.6MM | 1 | NICUN20A |
| | METAL GLAND M16X10MM 5-10MM | 3 | ALCUW16 |
| | CONDUIT FITTING 20MM ELBOW | 3 | T&B9352 |
| | CONDUIT FITTING 25MM ADAPTOR | 2 | T&B9363 |
| | CONDUIT FITTING 20MM ADAPTOR | 3 | TAB9362 |
| | 4MM 4 CORE RUBBER FLEX | 10 | ELEH004040 |
| | NYLON CABLE P CLIP 6.3MM BLK | 25 | CAAPCBK-6 |
| | NYLON CABLE P CLIP 7.6MM BLK | 15 | CAAPCBK-8 |
| | PVC CABLE 4MM 1CORE RED | 5 | BAM28320RD |
| | PVC CABLE 4MM 1CORE WHITE | 5 | BAM28320WE |
| | PVC CABLE 4MM 1CORE GRN/YEL | 5 | BAM28320GNYW |
| | PVC CABLE 4MM 1CORE BLUE | 5 | BAM28320BE |
| | LIQUATITE CONDUIT 20MM GREY | 2 | T&BLT020-G-30 |
| | LIQUATITE CONDUIT 25MM (3/4) | 0.5 | T&BLT025-G |
| | PVC 1 CORE .75MM BLUE | 0.5 | OLX24/020-1BLA1 |
| | PVC 1 CORE .75MM BROWN | 0.5 | OLX24/020-1BRA1 |
| | METAL SOLID ELBOW 25MM | 1 | CLI1245/25 |
| | #WASHER RED FIBRE 3/4 X1 | 3 | BLA05180103 |

| Component | Part | Qty | Part No |
|---|---|---|---|
| | #WASHER RED FIBRE 1"X1 1/2" | 1 | BLA05180501 |
| | 1.5 METRE X 25MM CONDUIT | 1 | TUBEC2501UL |
| | 10GX22 WAFER HD S/DR SCREW | 20 | CLI357WF22 |
| | CRIMP LUG 4MM M5 BARE COPPER | 12 | CAACAL4-5 |
| | CRIMP LUG 4MM M8 | 6 | CAACAL4-8 |
| **AIR/VACUUM SYSTEM** | 20PM M ADAPTOR ¼" | 1 | 20PMA |
| | 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 |
| | 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 |
| | ¼" 24V DC SOLENOID | 1 | VT307-5DZ-02 |
| | VS05 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 |
| | 15X08 SS HEX NIPPLES | 1 | SSN1508 |
| | TEE BSPT F X BSPT F X BSPT F | 1 | EPF-04-04-04 |
| | ¼" BSPT COUPLING | 1 | SMK20R1/4KPD |
| | S/S SCOURER PAD | 1 | SS01 |
| | 08 S/S NIPPLE | 1 | SSN08 |
| | DN2/400-1/4"BSP HOSE -1200 LG | 1 | SMS20M1/4-1200A |
| | BAR/PSI VACUUM GAUGE | 1 | SPG63(-1/+0)1-RBU |
| | DN2/400-¼" BSP HOSE 400LG | 1 | SMS20M1/4-400A |
| | BAR/PSI PRESSURE GAUGE | 1 | SPG63-10-1-RBU |
| | NYLON CABLE P CLIP 6.3MM BLK | 32 | CAA9CBK-6 |
| | SELF DRILLING SCREW 8GX25MM | 30 | CLI357WH25 |
| | BLACK 8MM HOSE | 2.5 | TE0806-5160BK |
| | PERFORMER BLUE AIR 10MM | 0.75 | 046P/010-03 |
| | ELBOW 90˚ BSPT M X BSPT M | 1 | CVJ-04-04 |
| | 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 1½ | 2 | 373135 |
| | NIPPLE 1 1/2 BSP X 1 7/8 JIC | 4 | CB2-2430 |

| Component | Part | Qty | Part No |
|---|---|---|---|
| | 1½ " HOSE ENDS | 4 | 24C5-24 RFJX |
| | ADAPT M/F 1½ BSPT X 1½ 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" HYD HOSE | 0.2 | |
| | HOSE FITTINGS 1 5/16 JIC F | 1 | RFJ-2116 |
| | ELBOW 90 MM 1/4 X 1/7 BSPT | 1 | CB53-0404 |
| | 1⅜ HYD HOSE | 0.5 | |
| | 1⅛ AQ HOSE | 0.8 | #FC300-20 |
| | COUPLING 1 1/8 ID X 1 5/8 JIC F | 4 | 20C5-20RFJX |
| | 1¼ BSP JIC M (1⅛) ELBOW | 2 | CVA-20-26 |
| | 1¼ BSP JIC M (1⅛) 45º | 1 | |
| | 32 STL M/F ELBOWS 90 | 1 | SEMF32 |
| | 32X500 GALV PIPE PIECE | 1 | SPN32X50G |
| | 32 SS SOCKETS | 1 | SS32 |
| | 32 S/S COUPLINGS | 1 | SSCP32 |
| | NUT NYLOC HEX DIN985 Z/Y 10MM | 4 | 02093507 |
| | WASHER RND FLT H/T GR8 ZY 3/8 | 4 | 00380885 |
| | ARMOUR WIRE SPRING | 0.8 | FCS-12 |
| | 32MM 3WAY L-PORT S/S BALL VALVE | 1 | SSBV32 |
| | 40MM 3WAY L-PORT S/S BALL VALVE | 1 | SSBV40 |
| **SAMPLE POINT** | 08 BRASS BALL VALVE | 1 | VBB08 |
| | 08 SS HEX NIPPLES | 1 | SSN08 |
| | 08 S/S CAPS HEX | 1 | SSC08 |
| **HOSE KITS** | 5M 1½" HOSE ASSY | 1 | HA06040 |
| | 5M 1¼" HOSE ASSY | 1 | HA06032 |
| | 10MM BLUE AIRLINE ASSEMBLY | 20 | AIRASSY1020 |
| **COVER** | YELLOW TOUGHSTUFF COVER | 1 | ECO6001 |
| **IN-LINE FILTER (OPTIONAL)** | 1½" IN-LINE FILTER | 1 | GA-2-230 |
| | 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. ELECTRICAL CIRCUIT



# LUBEMASTER AUSTRALIA PTY LTD

ABN 37 103 420 640

P.O. Box 7942,
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Garbutt Qld 4814 Australia

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email: lubemaster@oilsols.com


## LUBEMASTER CENTRIFUGAL/VACUUM DEHYDRATION OIL CLEANING MACHINE

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## 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

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Manufacturer: Lubemaster Australia Limited
472 Woolcock Street
Garbutt 4814
Queensland
Australia

Phone 61 7 47287777
Fax 61 7 47287799

We declare that the Lubemaster Centrifugal/ Vacuum Dehydration Oil Cleaning Machine in its various configurations as listed below.

| Part Name | Description |
|---|---|
| Lubemaster Oil Cleaning Machine | Complete and totally contained oil cleaning unit |
| Lubemaster Model No | OS600-SD-000 |
| Lubemaster Serial No | OS60040403300VHSD3P0906 |
| WEG Motors | 2.2KW, 415 volt 3 phase |
| NHP control box | Contactors overloads & overload protection |
| Construction Material | Steel, Pneumatic Tyres |

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.

| | |
|---|---|
| Start of CE Marking: 3rd October 2006<br>Place of Issue: Townsville, Australia | ----------<br>Robert C Smith, Managing Director |

CE Mark Declaration of Conformity.

# TERMS AND CONDITIONS

1. DEFINITIONS
The **Company** means Lubemaster Australia Pty. Ltd. and/or its marketing company Clean Oil Services Pty. Ltd. selling products to the Customer as identified in the Customer Invoice.
**Contract** means a contract for sale by Lubemaster Australia Pty. Ltd. and/or Clean Oil Services Pty. Ltd. to the Customer of the Products and/or services.

2. TITLE AND RISK
Title to the Products shall pass to the Customer only upon full payment to the Company of the purchase price as disclosed on the Customer Invoice. Risk in the Products shall pass to the Customer at the time of being despatched from the Company's manufacturing plant or warehousing facility.

3. WARRANTY
Unless specified otherwise, the Company Warrants to the Customer that Lubemaster branded Products (excluding Third Party Products) will be free from defects in materials and workmanship affecting normal use for a period of one year from invoice date.

This warranty does not cover damage, fault, failure or malfunction due to external causes, including accident, abuse, misuse, problems with electrical power, servicing not authorised by the Company, usage and/or storage and/or installation not in accordance with Product instructions, failure to perform required preventative maintenance, normal wear and tear, act of God, fire, flood, war, act of violence or any similar occurrence; any attempt by any person other than the Company personnel or any person authorised by the Company, to adjust, repair or support the Products and problems caused by use of parts and components not supplied by the Company. This warranty does not cover any external devices, accessories or parts added to the Product after the Product is shipped from the Company.

There is no implied warranty of fitness for any particular purpose and this Warranty is given in place of all warranties, conditions, terms, undertakings and obligations implied by statute, common law, trade usage, course of dealing or otherwise including warranties or conditions of merchantability, fitness for purpose, satisfactory quality and/or compliance with description, all of which are hereby excluded to the fullest extend permitted by law.

During the one year period beginning on the invoice date, the Company will repair or replace Products returned to its manufacturing facility or its authorised repair agent. The customer must prepay shipping and transportation charges, and insure the shipment or accept the risk of loss or damage during such shipment and transportation. The Company will ship the repaired or replacement products to the customer freight prepaid.

4. LIABILITY
The Company's total liability under any contract in respect of each event or series of connected events shall be limited to the Customer's purchase price from the Company.

The customer shall indemnify the Company and keep the Company fully and effectively indemnified against any loss of or damage to any property or injury to or death of any persons caused by any negligent act or omission or wilful misconduct of the Customer, its employees, agents or sub-contractors or by any breach of its contractual obligations arising out of these Terms and Conditions.

Any typographical, clerical or other error or omission in sales literature, quotation, price list, acceptance of offer, invoice or other documents or information issued by the Company shall be subject to correction without any liability on the part of the Company.

5. FORCE MAJEURE
The Customer acknowledges that the limitation of liability contained in this clause is reasonable and that the limitation provisions have been taken into account by the Company in pricing the Products.

Neither party shall be liable for any delay in performing any of its obligations under these Terms and Conditions if such delay is caused by circumstances beyond the reasonable control of the party so delaying, and such party shall be entitled to a reasonable extension of time for the performance of such obligations.