

**HUSKY<sup>®</sup>**



**PL490**

**LIQUID MANURE  
LAGOON PUMP  
*OPERATOR'S MANUAL***

## **GUARANTEE**

All Husky Farm Equipment manufactured by Husky Farm Equipment Limited is guaranteed. Guarantee covers all the replacement cost or repair of all parts said to be defective from manufacture. Guarantee also covers labour installing said parts, if installed at Husky's Manufacturing plant. Time and use is the essence of the guarantee. If equipment is used on a private property for an individual's use, guarantee will be in effect for twelve months from date of invoice. If equipment is used for commercial use to do custom work for money then guarantee will be in effect for three months only from date of invoice.

## **EXEMPTIONS FROM GUARANTEE**

Cost of transportation of equipment to or from Husky Farm Equipment Limited either by customer or by Husky's service staff or cost of mail or of public transportation is not covered. Tires and electric or hydraulic motors are covered by manufacturer's warranty and although Husky may assist to get warranty, Husky will not be responsible other than that allowed by manufacture's warranty. Items subject to normal wear from use not covered by guarantee if faulty part is simply worn.

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# SERIAL NUMBER LOCATION

Always give your dealer the serial number of your Husky Liquid Manure Lagoon Pump when ordering parts or requesting service or other information.

The serial number plate(s) is located where indicated. Please mark the number in the space provided for easy reference.



# SERIAL NUMBER LOCATION

Model Type \_\_\_\_\_

Serial Number \_\_\_\_\_

Production Year \_\_\_\_\_

# 1 INTRODUCTION

Congratulations on your choice of a Husky Liquid Manure Lagoon Pump to compliment your farming operation. This equipment has been designed and manufactured to meet the need of most discerning operators. The highest quality components are used throughout, and each step of Husky manufacturing is inspected under strict quality control.

Safe, efficient and trouble-free operation of your Husky Liquid Manure Lagoon Pump requires that you and everyone else who will be operating or maintaining the machine read and understand all of the safety, operation, maintenance and trouble shooting information contained within this Operator's Manual.

Keep this manual handy for frequent reference and to pass on to new operators or owners. Call your Husky Dealer if you need assistance, information or additional copies of the manuals.



## OPERATOR ORIENTATION

The directions left, right, front and rear, as mentioned throughout the manual, are as seen from the tractor driver's seat and facing in the direction of travel.

## 2 SAFETY

### SAFETY ALERT SYMBOL

This Safety Alert Symbol Means  
**ATTENTION! BECOME ALERT  
YOUR SAFETY IS INVOLVED**



The Safety Alert symbol identifies important safety messages on the Husky Liquid Manure Lagoon Pump and in this manual. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

Why is SAFETY important to you?

#### 3 Big Reasons

**Accidents Disable and Kill  
Accidents Cost  
Accidents Can Be Avoided**

#### SIGNAL WORDS:

Note the use of the signal words **DANGER**, **WARNING** and **CAUTION** with the safety messages. The appropriate signal word for each message has been selected using the following guidelines

**DANGER** - An immediate and specific hazard which **WILL** result in severe personal injury or death if the proper precautions are not taken.

**WARNING** - A specific hazard or unsafe practice which **COULD** result in severe personal injury or death if the proper precautions are not taken.

**CAUTION** - Unsafe practices which **COULD** result in personal injury if the proper practices are not taken, or as a reminder of good safety practices.

# SAFETY

**YOU** are responsible for the SAFE operation and maintenance of your Husky Liquid Manure Lagoon Pump. **YOU** must ensure that you and anyone else who is going to operate, maintain or work around the Liquid Manure Lagoon Pump be familiar with the operating and maintenance procedures and related **SAFETY** information contained in this manual. This manual will take you step-by-step through your working day and alerts you to all good safety practices that should be adhered to while operating this equipment.

Remember, **YOU** are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Be certain that **EVERYONE** operating this equipment is familiar with the recommended operating and maintenance procedures and follows all the safety precautions. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

Pump owners must give operating instructions to operators or employees before allowing them to operate the Husky Liquid Manure Lagoon Pump and at least annually thereafter per OSHA regulation 1928.57.

Husky Liquid Manure Lagoon Pump owners must follow safety practices as recommended by the Agriculture Safety Associations across Canada .

The most important safety device on this equipment is a SAFE operator. It is the operator's responsibility to read and understand ALL Safety and Operating instructions in the manual and to follow these. All accidents can be avoided.

A person who has not read and understood all operating and safety instructions is not qualified to operate the machine. An untrained operator exposes themselves and bystanders to possible serious injury or death.

Do not modify the equipment in any way. Unauthorized modification may impair the function and/or safety and could affect the life of the equipment.

**Think SAFETY! Work SAFELY!**

## 2.01 GENERAL SAFETY

1. Read and understand the Operator's Manual and safety signs before operating, maintaining, adjusting or unplugging the manure pump.



2. Have a first aid kit available for use should the need arise and know how to use it.



3. Have a fire extinguisher available for use should the need arise and know how to use it.



4. Install and properly secure all shields and guards before operating.

5. Do not allow riders on the machine or tractor.

6. Stop tractor engine, disengage PTO clutch, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.

7. Never enter manure storage facility without appropriate respiratory equipment and an independent oxygen supply.

8. Review safety related items with all operators annually

## 2.02 OPERATING SAFETY

1. Read and understand the Operator's Manual and all safety signs before operating, servicing, adjusting or unplugging.
2. Do not allow riders on the Husky Liquid Manure Lagoon Pump or the tractor during operation, transport or filling.
3. Do not operate a PTO driven system unless the required shields are in place and secured.
4. Never wear loose fitting clothing, keep hands, feet, hair and clothing away from all moving and/or rotating parts, while working with machinery, use personal protective clothing and eye and ear protection as needed.
5. Stop tractor engine, disengage PTO clutch, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
6. Before applying hydraulic pressure to the system, make sure everyone is clear and that all connections are tight and all components are in good repair.
7. Never enter manure tank or manure storage facility without wearing appropriate breathing gear that carries an independent supply of oxygen.
8. Always use a tractor of sufficient size and weight to maintain vehicle stability during transport and during use.
9. Clean or install reflectors and SMV emblem before transporting and add extra lights for transporting during times of limited visibility.
10. Make sure parking brake on the tractor is set and block wheels so it cannot roll.
11. Make sure the PTO is not run on too great an angle it will cause vibration and could shear a pin in the PTO or it could cause the PTO to break and increase the danger of injury.
12. Review all safety instructions annually.

**Think SAFETY! Work SAFELY!**

## 2.03 MAINTENANCE SAFETY

1. Read and understand all the information contained in the Operator's Manual regarding maintenance, adjusting and operating Husky Liquid Manure Lagoon Pump.
2. Block the frame up securely and firmly if adjustments and maintenance to the Liquid Manure Lagoon Pump require raising the wheel and tire assemblies off the ground.
3. Exercise extreme caution when working around or with high-pressure hydraulic systems. Depressurize the system when connecting or disconnecting the hose couplers.
4. Wear heavy gloves and eye protection when searching for suspected hydraulic leaks. A high- pressure concentrated stream of hydraulic fluid can pierce the skin. If such an event happens, seek immediate medical attention as infection and toxic reaction could develop.
5. Do not attempt any adjustment or maintenance to any system of the Husky Liquid Manure Lagoon Pump when the implement is in motion.
6. Be very careful and exercise extreme caution when working around or near a rotating PTO shaft.
7. Do not operate PTO system unless the rotating shield and all other guards are in place.
8. Never wear ill-fitting, baggy or frayed clothing and never have unkempt long hair when working around or on any of the drive system components.
9. Stop the engine, place all controls in neutral, remove the ignition key, set the park brake and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging any system or component.
10. Never enter tank or manure storage facility without wearing appropriate breathing gear that carries an independent supply of oxygen. The buddy system is also a recommended procedure.

## 2.04 HYDRAULIC SAFETY

1. Make sure that all components in the hydraulic system are kept in good condition and are clean.
2. Replace any worn, cut, abraded, flattened or crimped hoses and metal lines.
3. Do not attempt any makeshift repairs to the hydraulic lines, fittings or hoses by using tape, clamps or cements. The hydraulic system operates under extremely high-pressure; 1600 to 2300 pounds per square inch. Such repairs will fail suddenly and create a hazardous and unsafe condition.

4. Wear proper hand and eye protection when searching for a high-pressure hydraulic leak. Use a piece of wood or cardboard as a backstop instead of hands to isolate and identify a leak.



5. If injured by a concentrated high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop from hydraulic fluid piercing the skin surface.
6. Before applying pressure to the system, make sure all components are tight and that lines, hoses and couplings are not damaged and kept in good repair.
7. Make sure all hydraulic hoses are not snagged on anything

## 2.05 TRANSPORT SAFETY

1. Make sure you are in compliance with all local regulations regarding transporting agricultural equipment on public roads and highways. Consult your local law enforcement agency for further information.
2. Ensure that the SMV (Slow Moving Vehicle) emblem and all reflectors and lights required by the local highways and transport authorities are in place and are clean and visible by overtaking and oncoming traffic.
3. Ensure that the Husky Liquid Manure Lagoon Pump is hitched positively and safely to the tractor drawbar. Use proper safety chain to secure a safe hitch hookup when transporting.
4. Transport according to local regulations covering maximum width, weight and length.
5. Do not exceed speed limits. Reduce speed on rough roads and surfaces.
6. Always use a tractor of sufficient size and weight to maintain vehicle stability during transport.
7. Always use hazard warning flashers on tractor when transporting unless prohibited by law.

**Think SAFETY! Work SAFELY!**

## 2.06 MANURE STORAGE

### FACILITY SAFETY

1. Never enter tank or manure storage facility without wearing appropriate breathing gear that carries an independent supply of oxygen .
2. Keep others, especially children, out of these structures.
3. Use special care when opening storage facilities to prevent yourself or others from falling in.
4. Stored manure gives off hydrogen sulfide gas. One breath can kill. Keep away. Keep others away.



5. Do not enter storage facility without oxygen supplying equipment. The surface always crusts and looks solid. It is not. Stay away.
6. Set and adjust agitator before placing in pit. Never enter pit to unplug. Remove first.
7. Always have a ladder in storage tank as a means of getting out should you inadvertently fall in.

## 2.07 STORAGE SAFETY

1. Store the Husky Liquid Manure Lagoon Pump on a firm, level surface.
2. Store away from areas of human activity. Do not permit children to play on or around the stored Liquid Manure Lagoon Pump.
3. Make sure the unit is sitting, or blocked up firmly and solid and will not tip or sink into a soft area.

## 2.08 TIRE SAFETY

1. Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion which may result in serious injury or death.
2. Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.
3. Have a qualified tire dealer or repair service perform required tire maintenance.
4. Check wheel bolt torque daily.

## 2.09 SAFETY DECALS

1. Keep safety decals and signs clean and legible at all times.
2. Replace safety decals if destroyed, missing, painted over or unreadable.
3. If a section of the pump is replaced that carries a safety decal, apply a new decal immediately.
4. Safety decals or signs are available from your Dealers Parts Department.

### HOW TO INSTALL SAFETY DECALS:

- P Be sure that the installation area is clean and dry.
- P Decide on the exact position before you remove the backing paper.
- P Remove the smallest portion of the split backing paper.
- P Wash area with soapy water and install decal while still soapy, then it can be smoothed out easily.
- P Place the sign in position and slowly peel back the remaining paper, smoothing the sign as it is applied.



### 3 SAFETY DECAL LOCATIONS

The types of decals on the equipment are shown in the illustration below. Good safety requires that you familiarize yourself with the various Safety Decals, the type of warning and the area, or particular function related to that area, that requires your SAFETY AWARENESS.

Think SAFETY! Work SAFELY!



<b>RIGHT</b>	<b>UP</b>	<b>OPEN</b>	<b>UP</b>	<b>RETRACT</b>	<b>RETRACT</b>
<b>ROTATE</b>	<b>DEFLECTOR</b>	<b>DISCHARGE</b>	<b>AXLE</b>	<b>RIGHT LEG</b>	<b>LEFT LEG</b>
<b>AGITATOR</b>		<b>&amp; AGITATOR</b>			
<b>LEFT</b>	<b>DOWN</b>	<b>CLOSE</b>	<b>DOWN</b>	<b>EXTEND</b>	<b>EXTEND</b>
					<b>R10332</b>

REMEMBER - If safety decals have been damaged, removed, become illegible or parts replaced without decals, new decals must be applied. New decals are available from your authorized dealer.

## 4 OPERATION

### 4.01 TO THE NEW OPERATOR OR OWNER

Husky Farm Equipment's Liquid Manure Pumps are designed to efficiently agitate and pump liquid manure from the storage facility to the hauling tank, transferring to alternative storage or to feed a high pressure irrigation pump for irrigating the manure. Many of the features incorporated into this machine are the result of suggestions made by customers like you. Read this manual carefully to learn how to operate the machine safely and how to set it to provide maximum efficiency. The manual will take you step-by-step through your working day. By following the operating instructions in conjunction with a good maintenance program, your Husky Liquid Manure Lagoon Pump will provide many years of trouble-free service.

#### General Information About the Husky PL490 Liquid Manure Lagoon Pump

Husky Farm Equipment Limited designs and manufactures all of its products so they can be operated safely. However the responsibility for safe operation rests with those who use and maintain these products.

The Husky PL490 liquid manure lagoon pump should be operated only by those who have been trained to do so, and who have read these operating instructions and operating manual.

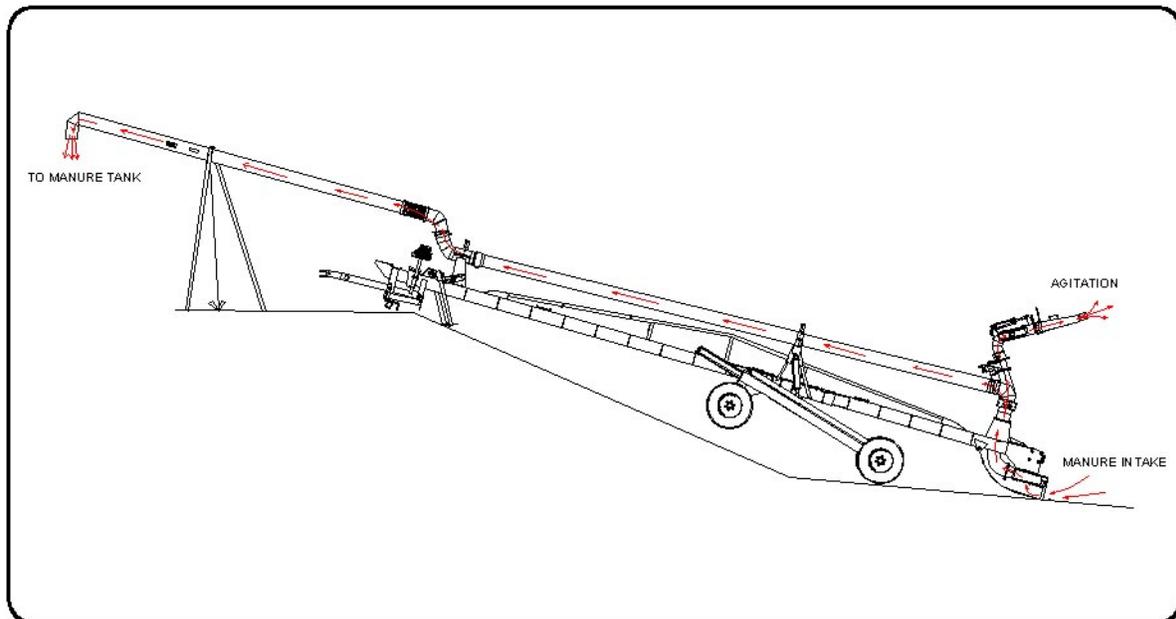
Failure to follow the instructions, procedures and safety precautions in this manual may increase the possibility of an accident or injury.

The Husky PL490 Liquid manure lagoon pump is designed to be driven with a farm tractor with a 1000 RPM PTO .

The PL490 liquid manure lagoon pump takes between 150 and 160 HP tractor to operate efficiently at 1000 RPM. A smaller tractor will operate the pump satisfactorily but will not come up to full RPM. Putting a larger tractor on the pump will not damage the pump.

### 4.02 HOW THE MACHINE WORKS

The Husky Liquid Manure Lagoon Pump uses a P.T.O. driven impeller or fan assembly to carry the manure in a pipe from the pit or storage area to a manure spreader, remote storage facility, truck or container of some description. A pipe attached to the top of the pump called a discharge pipe carries the manure.



**FIG. 1 PRINCIPLES OF OPERATION**

## 4.03 BREAK-IN FOR PL490

Although there are no operational restrictions on the pump when it is new, there are some mechanical checks that must be done to insure long term integrity of the unit. When using the pump for the first time, follow this procedure:

### A. Before Using

1. Lubricate all grease points.
2. Check level of small oil tank that supplies the gear box to be full
3. Re-torque wheel bolts to the values listed in Maintenance section.

### B. After 40 and 100 miles on the road or 2 hours and 5 hours of use:

1. Retorque wheel bolts to the specified values listed in Maintenance section.
2. Check all hardware. Tighten as required.
3. Check level of small oil tank that supplies the gear box to be full
4. Lubricate all grease points.

### C. Then go to the service schedule as outlined in the maintenance schedule.

## 4.03.1 TOWING

1. When towing the Husky Liquid Manure Lagoon Pump always put a safety pin in the draw bolt and use safety chains as required by the Department of Transport.
2. At high speed the pump may weave on the road, never travel at excessive speed.
3. Always check wheel bolts and bearings and tires before and during towing.
4. Tie a red flag, or red light at night on the end of the pump while towing or as required by the Department of Transport.
5. Use Slow Moving Vehicle sign if towing less than 25 M.P.H. or as required by the Department of Transport.

## 4.04 PRE-OPERATION CHECKLIST

Efficient and safe operation of the Husky Liquid Manure Lagoon Pump requires that each operator reads and understands the operating procedures and all related safety precautions outlined in this section. A pre-operation checklist is provided for the operator. It is important for both personal safety and maintaining the good mechanical condition of the Pump that this checklist be followed.

1. Lubricate the machine per the schedule outlined in the "Maintenance Section".
2. Use only a tractor of adequate power and weight to operate the Pump.
3. Ensure that the machine is properly attached to the tractor using a drawbar pin and a retainer such as a pin made for draw bolts is installed.
4. Ensure that the PTO driveline is securely attached on both ends, that there is proper overlap in length so that the PTO won't come apart or jam up, and that there is **equal bend on both ends of PTO** when working.
5. Check that PTO shields are in place and that it can rotate freely and telescope freely. Secure the PTO shield safety chain (if supplied) to the PTO guards.
  - A. Inspect all hydraulic lines, hoses, fittings and connectors. Tighten any loose fittings and replace any damaged components.
  - B. Use a clean cloth to wipe any accumulated dirt from the couplers before connecting to the tractor's hydraulic system.
  - C. Be sure the hydraulic reservoir in the tractor is filled to the required specification.
  - D. Be sure the tractor hydraulic system specifications match the requirements of the motors & cylinders
6. Check the tires and ensure that they are inflated to the specified pressure (See Specifications Section). Check the wheel bolt torques. Be sure to re-torque as required to the specified level.
7. Be sure that any lights, reflectors or SMV signs if installed are clean.

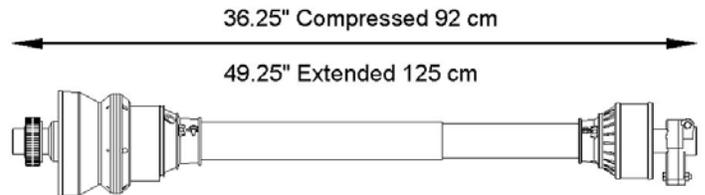
## 4.05 EQUIPMENT MATCHING

Special attention must be given to selecting a tractor with sufficient power to safely maneuver and run the pump.

As a general guideline, Table 1 lists the minimum horsepower requirements for the tractor when the unit is in normal operating conditions

**TABLE 1 TRACTOR HORSEPOWER REQUIREMENTS**

SIZE OF PUMP	APPROX. LITRES	RECOMMENDED TRACTOR HORESPOWER
3" Electric Pump	14000 LPM (300 Imp GPM)	5 HP Electric Motor
4" Electric Pump	20000 LPM (450 Imp GMP)	10 HP Electric Motor
6" K-31 Pump	14000 LPM (3000 Imp GPM)	60 to 70 Tractor HP
8" H-5000 Pump	23000 LPM (5000 Imp GPM)	90 to 100 Tractor HP
8" H-6000 Pump	31000 LPM (7000 Imp GPM)	150 to 160 Tractor HP
10" H-10000 Pump	44000 LPM (10000 Imp GPM)	150 to 160 Tractor HP
8" PL490 Lagoon Pump	31000 LPM (7000 Imp GPM)	150 to 160 Tractor HP
10" PL490 Lagoon Pump	44000 LPM (10000 Imp GPM)	150 to 160 Tractor HP
Propeller Agitator	100000 LPM (22000 Imp GPM)	100 to 150 Tractor HP



**FIG. 2 DRIVELINE DIMENSION**

If the dimension varies by more than 3 inches (76 mm) adjust the tractor drawbar. (Refer to tractor manual for details.)

### HYDRAULIC SYSTEM:

If using a hydraulic system, make sure that the system is set to supply the specified volume and pressure for the pump. If you have any questions about the type of hydraulic system in the tractor or its output, consult the tractor Operator's Manual. The motor requires 20 GPM (75 Litre/min) flow at 2000 PSI.

## 4.06 INSTALLATION OF THE PL490 LAGOON PUMP

1. The Husky Liquid Manure Lagoon Pump has a single point pintle hitch; use a good large draw pin with a safety pin to make sure it cannot come out.

2. When hooking up hydraulics follow these steps:

A. Inspect all hydraulic lines, hoses, fittings and connectors. Tighten any loose fittings and replace any damaged components.

B. Use a clean cloth to wipe any accumulated dirt from the couplers before connecting to the tractor's hydraulic system.

C. Be sure the hydraulic reservoir in the tractor is filled to the required specification.

D. Be sure the tractor hydraulic system specifications match the requirements of the pump.

3. **Do not attach the PTO to the tractor before the Lagoon Pump is in its final position.** Moving the lagoon pump with the PTO attached to the tractor could result in serious damage to the PTO, pump drive shaft or Tractor.

4. After hooking up to the tractor remove the jack stand (if equipped) so it is out of the way. Hook up the hydraulic hoses to the tractor that run to the pivoting axle and extendable legs. Raise the pump enough to clear the bank and back the pump into the lagoon (**do not raise the wheels straight up and push against the burm of the lagoon**). **Raise the stabilizer legs to the highest position (or remove them) if they are going to touch the lagoon burm, this will save them from bending.**

DO NOT back the pump up with the legs fully extended in the upright position. As soon as the pump is over the wall begin to

retract the legs. Keep the pump in the lowest position possible at all times.

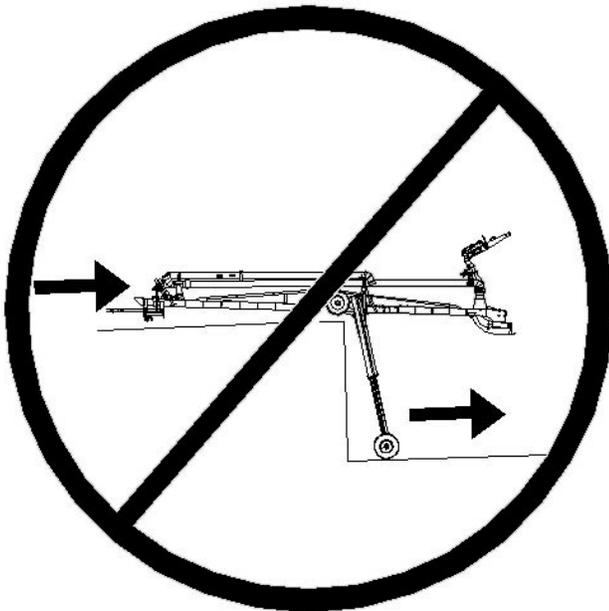
The pump can be operated at any point in the lagoon and does not need to be right on the bottom. Be careful that the tractor is not backed too close to the edge of the lagoon or it may slide into the Lagoon. If the side of the lagoon is slippery and dangerous the tractor may have to be anchored to something to keep it out of the lagoon.

5. Some Lagoons have a very steep bank and the pump may touch in the middle as it is backed into the lagoon. If this should happen be cautious that the pump is not damaged as it slides over the bank.

6. After the Husky Liquid Manure Lagoon Pump is in position extend the outrigger leg and make sure they are firmly on the ground to stabilize the pump.

7. Engage the parking brake or block the wheels

8. Hook up the Hydraulic hoses that operate the hydraulic controls. It will be necessary to tie the remote lever on the tractor in the open position so the oil will flow through the control bank. Operate the hydraulics until you are familiar with them making sure that the loading valve is in the closed position. The control bank on the pump comes equipped for an open centre hydraulic tractor. There is a plug provided to put into the right hand side of the hydraulic control bank on the pump if the tractor has a closed centre hydraulic system.



## 4.07 ATTACHING ACCESSORIES

1. After the pump is in place using the installation guideline section 4.06. Hook up the PTO to the pump and to the tractor, make sure the quick disconnect pin is latched properly on both ends, if equipped with safety collar check that pin has returned to running position. Check the shield on the PTO to make sure it is turning freely and in proper working condition. Fasten PTO safety chain to guard on Husky Liquid Manure Lagoon Pump and tractor if equipped. Never operate a machine unless the PTO shield is working properly.

2. **Adjust the tongue height on the pump until the PTO has equal bend on both knuckles. Failure to do so could result in serious vibration (and damage) to the pump.** (This will need to be assessed when the pump is in the lagoon.)

3. Check to make sure the rubber gasket is in place in the top of the pump, then install the discharge pipe and place the clamp on correctly. Install the bipod legs unto the discharge pipe. Make sure the safety pins are installed in the hooks of the bipod legs so they cannot come unhooked. Install the chain provided between the legs so the legs cannot slip out allowing the pipe to come down. Raise the pipe up to the level required to clear the top of the manure spreader. Solid footing is needed for the legs.

4. Tie the pipe down by installing an anchor chain onto the discharge pipe so it cannot lift up before pumping. The force of liquid coming out of the pipe will lift the pipe into the air which could cause damage or injury as it comes back down. The anchor could be heavy weights, stakes driven into the ground or a concrete block. The PL490 Liquid Manure Lagoon pipe would require approx. 1000 lbs. (454 kg) to hold it down; make sure the rope or chain used is tight so the pipe cannot lift high enough to unlatch the bipod legs. Never leave discharge pipe full of manure as it could freeze and split it .



**FIG 3. TIE PIPE DOWN**

## 4.08 OPERATION OF THE PL490 LAGOON PUMP

1. You are now ready to start the pump. Before starting make sure the valve for the loading pipe is closed which will open the agitator valve. Start the pump slowly until you are satisfied everything is functioning properly. Run the agitator spout to different positions in the lagoon to break up the solids. It will rotate about 300 degrees and also move up and down using the hydraulic control bank levers. You may need to raise the pump and run near the surface of the pit to agitate a thick crust.

2. After you have agitated the pit or until it starts to break up, then you can start hauling. It is not necessary to have the pit completely agitated before hauling as you will continue to agitate between loads as you haul the manure to the field.

3. When you are ready to pump, open discharge valve slowly. It is recommended that you throttle the tractor down the first time to make sure everything is OK.

4. Usually the pumping creates foaming in the manure spreader and when the spreader is nearly full the foam will rise above the fill hole so you can tell when the tank is full. If you want the tank full you may have to slow the stream down until the foam subsides.

5. The bearings on the bottom of the pump are tapered roller bearings. They are running in a gearbox filled with 75W90 gear oil and there is a oil line running up to the top of the pump to a container that can be inspected for oil level. If the container should fill up then there would be manure getting into the oil; if the container should empty then the oil would be leaking from the box. If the oil turns white then there is water mixed with the oil. If any of these should happen you will need service on the manure pump. The box will fill up some when warm as the oil expands this is normal. There are seals to protect the bearings. These 4 seals on each side of the gearbox will need greasing. The set on the top need greasing every day. The set on the bottom have a grease tube that is located at the front of the pump. These seals need to be greased every one (1) running hour.

6. The rest of the bearings are flanged bearings and they are enclosed away from the manure in the lagoon. These will need greasing everyday.

7. It is good practice to have a small canister sprayer and to spray the pump with a mixture of light oil and diesel fuel both before and after using.

## **4.09 REMOVING MANURE PUMP**

1. Remove the discharge pipe, bipod legs and safety clips from the pump.
2. Remove the P.T.O. from the pump.
3. Retract the stabilizer stands and put in highest position.
4. Slide the pump ahead on the skid plate to ensure that the wheel assemblies are free from the clay pit.
5. Lift the pump on the axle with the hydraulic cylinder. Leave the pit slowly to make sure all parts of the pump are clear.
6. Pump should not be left submerged in manure when not in use.

## **4.10 CLEAN-UP**

At the end of cleaning your manure facility, follow this procedure to clean the machine:

1. Wash the outside of the Husky Liquid Manure Lagoon Pump with a hose or pressure washer.
2. If the temperatures are below freezing, be sure the water has a chance to drain so pump will not freeze.
3. All Manure pumps are subject to the effects of acid in the manure, if the pump is removed from the pit it should be stored away from the pit area preferably inside. It is good practice to have a small canister sprayer and to spray light oil both before and after using.
4. When cleaning at the end of the season, a more thorough cleaning and inspection is required ( refer to Section 4.11)
5. Grease all fittings thoroughly to disperse water.

## **4.11 STORAGE**

### **4.11.1 PLACING IN STORAGE**

After the season's use, inspect all systems of the Husky Liquid Manure Lagoon Pump. Repair or replace any worn or damaged components to prevent any down time at the beginning of the next season. Since the machine works with manure, it is necessary to thoroughly wash the unit to prevent manure acids from working on the components while in storage. All manure, debris and residue should be removed. It is good practice to have a small canister sprayer and to spray light oil both before and after using.

1. Inspect all hydraulic hoses, lines, couplers and fittings. Tighten any loose fittings. Replace any hose that is badly cut, nicked, abraded or is separating from the crimped end of the fitting.
2. Lubricate all grease fittings (see Maintenance Section). Make sure that all grease cavities have been filled with grease to remove any water residue from the washing.
3. Check the bearings according to the maintenance section
4. Touch up all paint nicks and scratches to prevent rusting.
5. Select an area that is dry, level and free of debris for storage.

### **4.11.2 REMOVING FROM STORAGE**

Before starting to use the machine, the customer should do a thorough inspection and servicing. Follow this procedure:

1. Lubricate all grease fittings to remove any condensation that accumulated during the storage period.
2. Torque all wheel bolts and check tire pressure to the specified values.
3. Check the level of oil in the bearing box to be full.
4. Check PTO to be in working order.

## 5 SERVICE AND MAINTENANCE



### MAINTENANCE SAFETY

1. **Stop tractor engine, place all controls in neutral, set park brake, remove ignition key and wait for all moving parts to stop before servicing, repairing, adjusting or unplugging.**
2. **Be careful when working around a high-pressure hydraulic system. Wear the proper eye and hand protection when searching for leaks. Use a piece of wood or cardboard as a backdrop when searching for leaks.**
3. **Seek immediate medical attention if hydraulic fluid pierces the skin as toxic reaction and infection could develop.**
4. **Keep hands, feet, hair and clothing away from all moving or rotating parts.**
5. **Make sure that all shields and guards are in place before operating.**
6. **Clear the area of bystanders, especially children, when carrying out any maintenance or making adjustments.**
7. **Always securely support the frame with stands or large blocks when removing a tire or working under the machine.**
8. **Never enter a tank without wearing appropriate breathing equipment that carries an independent supply of oxygen. Keeps others out of tank.**

## 5.01 SERVICE

### 5.01.1 FLUIDS AND LUBRICANTS

#### 1. Grease

Use an SAE multi-purpose high temperature grease with extreme pressure (EP) performance and containing at least 1.5% molybdenum disulfide. Also acceptable is an SAE multi-purpose lithium base grease.

#### 2. Wheel Bearing Grease

Use an Esso EP2 or equivalent bearing grease at all times.

#### 3. Bearing Box Oil

Use a 75W90 oil.

#### 4. Storing Lubricants

Your machine can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture and other contaminants.

### 5.01.2 GREASING

Refer to section 5.01.1 for recommended grease. Use the Maintenance Checklist provided to keep a record of all scheduled maintenance.

1. Use only a hand-held grease gun for all greasing. Air powered greasing systems can damage the seals on bearings and lead to early bearing failure.

2. Wipe grease fitting with a clean cloth before greasing, to avoid injecting dirt and grit.

3. Replace and repair broken fittings immediately.

4. If fittings will not take grease, remove and clean thoroughly. Also clean the lubricant passageway. Replace with a new fitting if necessary.

5. The rear seals (4pcs) under the gearbox must be greased every one (1) hour while operating the pump. This is done by the grease gun located at the front left side of the pump. This will purge any water or manure that travels into the seals.

6. The upper gearbox seals are to be greased everyday or after 500,000 gallons of manure. This is done by applying grease through the exposed fitting.

7. At any point in which the Lagoon Pump is removed from the lagoon and put in storage, ALL fittings shall be greased. Enough grease shall be applied that the old grease is purged and only "clean" grease will be visible. This is to ensure that no water or manure is left in the seals or joints, which could cause problems in the future.

### 5.01.3 BEARINGS

The bearings in the gearbox are tapered roller bearings, and must be constantly lubricated with clean oil. There is a line running to the top of the pump to a container that is filled with oil. Should the oil in the container on top become milky, or should the oil disappear from the container, the operator should stop and remove the pump from the lagoon and find out what the problem is. This oil is to be changed yearly.

The bearings running up the main frame are inside the frame and should not be contaminated with manure. There is an inspection plate over each bearing, and a grease fitting on each bearing. As well there is a grease fitting on the knuckle located under each inspection plate. This fitting should be greased at the same time as the bearing

### 5.01.4 SERVICING INTERVALS

#### 1 HOUR

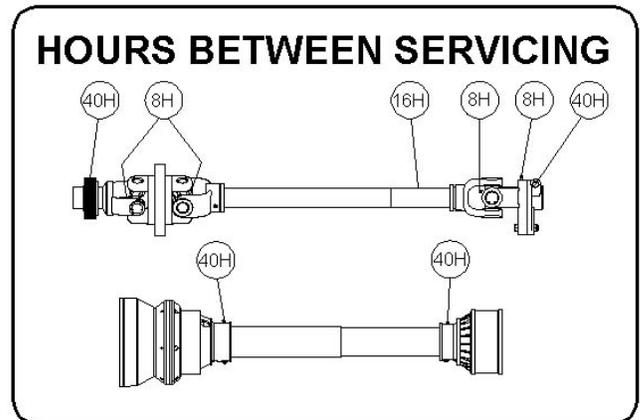
1. Grease the lower gearbox seal assembly (below gearbox) with the grease gun supplied at the front of the pump

#### 8 HOURS OR DAILY

1. Grease PTO Knuckles
2. Grease PTO Shield.
3. Check Bearing Box Oil Daily.
4. Grease upper gearbox seal assembly (above gearbox)
5. Grease drive shaft bearings and knuckles

#### ANNUALLY

1. Pull PTO apart grease telescope.
2. Grease PTO Shield.
3. Change Oil in Bearing Box
4. Change Seals & Stainless Steel Collar on Gearbox



**FIG. 5 PTO DRIVELINE SERVICING**

If the Husky PL490 Liquid Manure Lagoon Pump is used properly it should give many years of service. When worn parts are needed always call your dealer or the factory and get original parts.

# 5.01.5 SERVICING RECORD

See Lubrication and Maintenance sections for details of service. Copy this page to continue record.

ACTION CODE:  L CHECK LUBRICATE      C R CHANGE REPLACE      CL CLEAN

MAINTENANCE	HOURS													
	SERVICED BY													
<b>8 HOURS</b>														
L	PTO Driveline													
L	Driveshaft Knuckle & Brg													
L	Gearbox Seals													
<input checked="" type="checkbox"/>	Oil In Bearing Box													
<b>20 HOURS</b>														
L	PTO Driveline													
L	Driveshaft Knuckle & Brg													
L	Gearbox Seals													
<input checked="" type="checkbox"/>	Oil In Bearing Box													
<b>40 HOURS</b>														
L	PTO Driveline													
L	Driveshaft Knuckle & Brg													
L	Gearbox Seals													
<input checked="" type="checkbox"/>	Oil In Bearing Box													
<b>80 HOURS OR ANNUALLY</b>														
L	Wheel Bearings													
CL	Machine													
<input checked="" type="checkbox"/>	Bearings on Shaft													
L	Gearbox Seals													
C	Oil In Bearing Box													
<b>750 HOURS OR ANNUALLY</b>														
C	Oil In Bearing Box													
<input checked="" type="checkbox"/>	Bearings on Shaft													
C	SS Collar & Seals on Gearbox													

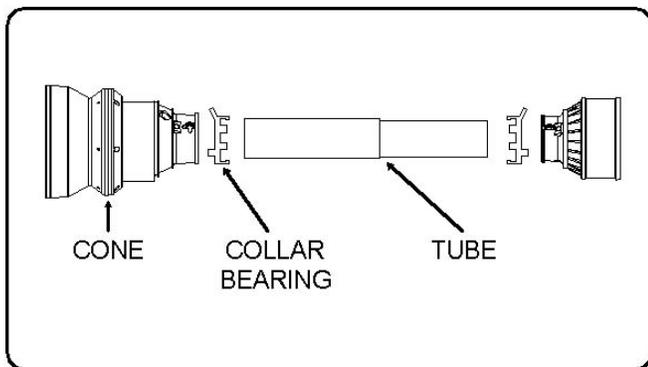
## 5.02 MAINTENANCE

The efficient and safe operation of your Husky PL490 Liquid Manure Lagoon Pump will depend to a great degree on your diligence in following the maintenance and adjustment procedures outlined in this section. If you follow these recommendations, your Pump should work to its maximum potential.

### 5.02.1 PTO SAFETY SHIELD MAINTENANCE

It is important that the shield components rotate freely over the PTO shaft. Lubricating both the shield bearings and also periodic cleaning will ensure safe operation of the rotating shield. To disassemble, clean and lubricate the shield, follow this procedure:

- A. Press down the collar bearing catches with a screw driver to release the cone. Pull the cone towards the tube to remove it.
- B. Spread the collar bearing and remove from the tube. Clean collar and the yoke bearing groove. After cleaning thoroughly, apply a good coat of grease to the bearing groove.
- C. Fit the collar bearing into the groove and the tube ensuring that the collar catches are centered over the matching holes. The tube and bearing must rotate freely in the bearing groove.
- D. Fasten the cone by lining up the cone grease fitting over the grease filling hole on the collar bearing. Make sure that all catches are fastened and that the shield turns freely over the shaft.



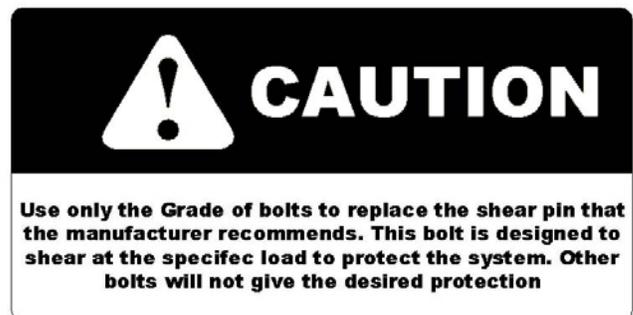
**FIG. 6 DRIVELINE SHIELD COMPONENTS**

### 5.02.2 PTO DRIVELINE SHEAR PIN

The PTO driveline is equipped with a shear pin to prevent damage to the mechanical drive should an object jam in the fan.

Follow this procedure when replacing the shear pin:

1. Stop tractor engine, place all controls in neutral, set parking brake, remove ignition key and wait for all moving parts to stop before dismounting.
2. Remove the ends of the shear bolt from each part of the yoke. It may be necessary to tap out the bolts with a punch if the end is distorted.
3. *What to check for on the brass bearing and thrust washer type of shear flange assembly:* Check that the brass bearing is not worn. Check that the thrust washer is in place and not worn or missing. Check the snap ring that it is correctly seated in the groove.
4. *What to check for on the ball bearing shear flange assembly:* Check that all the balls are in the cavity. Ensure that the grease fitting is in place and tight to hold all the balls in the proper location. If the shear flange was allowed to rotate several times, then the ball grooves on the inner and outer parts should be checked for wear or fracture.
5. Line up the bolt hole and install the shear bolt recommended by the manufacture.
6. Tighten the shear bolt securely in position.
7. Determine the cause of the bolt shearing. Remove the cause before using the machine again.



### **5.02.3 CHANGING BEARINGS**

During the life of the Husky Liquid Manure Lagoon Pump the bearings may become worn and need to be replaced. Proceed in this manner:

1. Stop tractor engine, place all controls in neutral, set parking brake, remove ignition key and wait for all moving parts to stop before adjusting or repairing the machine.
2. Remove the implement and PTO assembly and lay it to the side.
3. To service or replace bearings follow this procedure:
  - Remove the inspection covers.
  - Remove the locking collar & remove nuts off front bearing.
  - Remove the knuckle from both shafts.
  - Slide the shafts out as far as needed to replace bearing.
  - Unbolt bearing & replace with a factory approved bearing.
  - Slide the shaft back through the bearings, and onto knuckle.
  - Reassemble the front bearing and locking collar.
  - Re-grease all bearing fittings, and then replace inspection covers

### **5.02.4 GREASING WHEEL BEARINGS**

Follow this procedure when greasing the wheel bearings:

1. Be sure the pump is on flat ground.
2. Jack up the axle assembly and place stands or blocks under the frame.
3. Remove the hub cap, cotter pin, nut & hub to expose the bearings.
4. Re-grease the bearings. Use only ESSO EP2 or equivalent grease on these bearings.
5. If the grease appears to be dirty and contaminated, wash the bearings, axle and cavity using a good solvent.
6. Liberally apply grease to all the components keeping them free from any dirt.
7. Install the hub on the shaft and secure in position with the nut, cotter pin & hub cap.
8. Remove blocks or stands from under the frame.
9. Lower to the ground.

## 6 TROUBLE SHOOTING

The Husky Farm Equipment PL490 Liquid Manure Pump is a simple transportable pump that is used to transfer liquids. It is a reliable system that requires minimal maintenance.

In the following section, we have listed many of the problems, causes and solutions to the problems you may encounter. If you encounter a problem that is difficult, after having read through this troubleshooting section, please call your local Husky dealer or call the factory direct. Ask for service and have the serial number of your pump ready.

PROBLEM	CAUSE	SOLUTION
<b>Pump fan does not run</b>	Broken shear bolt  Broken shaft	Replace shear pin, Check for cause of failure & remove pin  Replace with new part
<b>Manure Won't Pump</b>	Slurry too thick  Lifting too far  Fan or pipe plugged	Add water & agitate  Decrease load out position  Unplug
<b>Manure leaking from swivel joint or discharge pipe connection</b>	Rubber gasket needs replacing	Replace with a new factory part
<b>Top valve will not work</b>	Jammed with manure  Roll Pins or snap rings are dislocated	Dismantle and clean  Replace missing part
<b>Agitator valves will not work</b>	Nut of thread on rod end  Cone plugged	Replace nut  Remove pump and unplug

## 7 SPECIFICATIONS

### 7.01 MECHANICAL

MODEL	3" ELEC.	4" ELEC.	K31	H5000	H6000	H10000	LAGOON	PROPELLER
LITRES PER MINUTE	1800	2700	14000	23000	27000	44000	27000	100000
U.S. GALLON/MIN	480	720	3600	6000	7000	12000	7000	24000
IMP.GALLON/MIN	400	600	3000	5000	6000	10000	6000	22000
LENGTH FEET	4' - 12'	4' - 12'	8' - 14'	8' - 14'	8' - 14'	8'-14'	40'	20' - 24'
DIAMETER	3 "	4 "	6 "	8 "	8 "	10 "	8 " or 10 "	N/A
SHIPPING WEIGHT	90 kg	105 kg	544 kg	721 kg	721 kg	748 kg	1850 kg	180 kg
H.P. REQUIRED	5-7 1/2	10.00	70.00	100.00	150.00	160	150.00	100.00
HOLE SIZE	15" X 21"	15" X 21"	24" X 32"	32" X 40"	32" X 40"	32" X 40"	OPEN	32" X 60"
FAN DIAMETER	9"	9"	17.5"	17.5"	17.5"	17.5"	17.5"	21" - 26" - 29"
INLET DIAMETER	5.5"	5.5"	12"	12"	12"	12"	12"	N/A
NUMBER OF BLADES	3.00	3.00	4.00	4.00	4.00	4	4.00	3.00
HOUSING DIMENSION	14" X 23"	15" X 25"	24" X 30"	23" X 32"	23" X 32"	24.5" X 38"	23" X 29"	N/A
OVERALL LENGTH	+ 58"	+ 58"	+ 50"	+ 55"	+ 55"	+ 55"	+ 0"	+6"
OVERALL WIDTH	42"	42"	69"	69"	69"	69"	102"	38"
OVERALL HEIGHT	30"	30"	60"	64"	64"	64"	116"	52"
TIRE SIZE	N/A	N/A	20570R/15	20570R/15	20570R/15	20570R/15	25570R/15	OPT.

### 7.02 TIRE OPTIONS

TIRE SIZE	TIRE TYPE	P.S.I.	KPA
4.80 X 4 X 8	HIGH SPEED TIRE	60.00	590.00
5.90 X 15	IMPLEMENT TIRE	35.00	240.00
20570R/15	AGRI - MAC	35.00	240.00
11L X 15	IMPLEMENT TIRE	35.00	240.00
25570R/15	AGRI - MAC	35.00	240.00
16.5L X 16.1	IMPLEMENT TIRE	35.00	240.00
18 X 22.5	USED TRUCK TIRE	65.00	448.00

### 7.03 WHEEL BOLT TORQUE

WHEEL BOLT SIZE	TORQUE FT. LBS		KG - METER	
	DRY	OILED	DRY	OILED
9/16 - 18 NF	120.00	90.00	16.50	12.44
5/8 - 18 NF	240.00	180.00	33.18	24.89
3/4 -18 NF	420.00	310.00	58.07	42.56

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# 9 PARTS BOOK

The Parts Book with a list of all the parts on your pump is enclosed with this manual at the time you purchase the pump new.

Contact your local dealer or the factory if you need a copy of the parts book or you need a new copy of this operator's manual

At the time of printing there is no charge for these books to an owner of Husky Liquid Manure Equipment.



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