

Operator Daily Maintenance Checks **Aquatic Weed Harvesting Equipment**

BEFORE HARVESTING CHECKS:

- Check engine oil level
- Check hydraulic fluid level.
- Grease #1 conveyor bearings.
- Check fuel level.
- Inspect cutters for damaged or missing parts.
- Check vessel for hydraulic leaks, cracked hoses, etc.
- Start engine and check for unusual noises and leaks.
- Allow the engine to warm up 4-5 minutes.
- Test all Harvester functions.
- Before leaving the dock area check normal unloaded floatation.
- Check for mud under the #2 Storage conveyor.
- Make sure there are enough life jackets.
- Someone should know where you are going, when you will return.
- Have radio/cell phone.

AFTER HARVESTING CHECKS:

- Idle the engine for 4-5 minutes before shutting down.
- Shut down engine.
- Secure vessel to dock or shore
- Clean harvester.
- Check shafts and pitman rods for fishing line.
- Inspect cutters for damaged or missing parts.
- Check vessel for hydraulic leaks.
- Lock storage compartments.

ENGINE MAINTENANCE

- Check Engine oil level each day, at start of work shift.
- Inspect the clear fuel oil strainer every day for debris.

CHANGE THE ENGINE OIL AND FILTER AT START OF SEASON.

- Run Engine for ½ hour to warm old oil.
- Place a large bucket or an Engine oil drain pan under the Engine platform.
- Remove oil drain connection cap.
- Connect the clear oil drain hose to the drain fitting (make sure the end of the hose is in or directly over the drain pan).
- Drain used Engine oil.
- Replace drain cap making sure it is not cross threaded.
- Remove used Engine oil filter. Try not to damage the filter noise gasket.
- Fill a new Engine oil filter halfway with new Engine oil.
- Make sure to oil the gasket. Carefully slide the new filter into the Engine housing and spin it into place. Make sure it fits squarely and is not askew.
- Tighten the new filter into place using a filter wrench.
- Remove Engine oil filler cap and fill Engine with new oil. Refer to Engine manual for proper type and quantity of oil.

OTHER ENGINE MAINTENANCE

- Check and replace Engine air filter as needed.
- Inspect the fan belt for tension, mouse damage, and winter nests.
- Change the Engine internal fuel filter.
- Change Engine external Fuel filter.
- Inspect air inlet and outlet for debris, bird nests, cotton wood tree seed fluff, etc. Clean as necessary.

CUTTER HEAD ASSEMBLY

- **Spring Loaded Hold-Downs:** Adjust tension by turning the cam bolt. For less tension turn clockwise, for more tension turn counter-clockwise. The part that touches the cutter blade is a **Plastic Wear Bar**. Replace plastic bar when it is noticeably worn and contact with blade can no longer be made by adjusting cam bolt.
- **Shims** achieve the proper height between the **Spring Loaded Hold Downs** and the knife assembly. They are thin flat metal bars that are installed between the **Spring Loaded Hold downs** and the **Wear Plate**. Inspect for worn or missing shims and replace.
- The **Wear Plate** is also a thin flat metal strip that has a lip on it. It is located between the shim and the cutter frame. Inspect for wear, especially on the lip. Replace as needed.
- **Wear Bars** are the white **UHMW (Ultra High Molecular Weight)** plastic strips above and below the triangular shaped **Drive Plate**. Inspect for wear on plastic. The **Wear Bars** ensure that proper contact (almost touching) is made between the cutter knives and the shear fingers beneath them.
- Inspect the triangular shaped **Drive Plate** for wear along the contact point with the **UHMW wear bars**. Replace if wear shows $1/16^{\text{th}}$ to $1/8^{\text{th}}$ inch deep. Keep the $1/4$ inch bolts that hold the **Drive Plate** to the knife assembly tightened.

- **The Weed Shield is a protective plate that covers the Drive Plate slot to keep weeds and gravel from becoming caught. Inspect Weed Shield plastic wear strip and replace if excessively worn.**
- **The Pitman Rod attaches to the Drive Plate with a 5/8 inch rod end bearing, and is attached to the Eccentric on the drive end. Make sure the Eccentric maintains proper clearance between it and the motor. Grease rod end bearings twice daily and inspect for wear. If the rod end bearing appears sloppy it is time to be replaced. They are usually replaced more than once per season.**
- **There are Pitman Rods and Rod End Bearings driving the Vertical Cutters too. Inspect and maintain in the same manner.**
- **There is a Vertical Drive Lever for each vertical cutter. Inspect shafts for wear and make sure they are tightly fastened.**
- **UHMW blocks act as hold-downs on the vertical cutters. Check for wear and replace as needed.**
- **Horizontal Shear Fingers are the cast steel rock guard that protect the knife assembly. Make sure they are not bent and straighten if needed. Shear Fingers rarely become damaged; if there seems to be a height difference, it may indicate that part of the cutter frame is bent. If so, it will have to be straightened out.**
- **Vertical Shear Fingers are formed steel guards. Inspect for proper alignment and material wear, and straighten or replace as needed.**
- **The Rubber Flap helps direct weeds onto the pick-up conveyor. Inspect underside and replace when it becomes very worn.**

CONVEYOR MESH MAINTENANCE

GENERAL

- Conveyor mesh should be adjusted to 6" - 8" of gap when pulled up from the conveyor frame.
- The mesh will stretch during the first year of operation.
- Standard mesh stretches more than heavy duty mesh.
- Increase or decrease conveyor mesh tension by adjusting conveyor take-up accordingly.

STANDARD MESH REPLACEMENT

- Straighten pin ends on each side of where damaged section meets undamaged mesh, and remove each pin.
- Remove damaged section and measure length.
- Install the new mesh section of same length. Insert two new pins to connect each end of new section with existing mesh. Bend the pins using a vice grips or channel lock pliers.

HEAVY DUTY MESH REPLACEMENT

- Similar to above procedure, except for style of pins.
- Grind pins in damaged section and remove damaged mesh.
- Install new mesh using new pins.
- Thread on pin nut after mesh is installed.
- Peen threads sticking out of pin nut to keep it from backing off.

CONVEYOR DRIVE BEARINGS

- Grease bearings at every conveyor shaft end. Grease #1 Conveyor Bearings twice daily and #2 and #3 conveyor bearings once per day. Grease #1 Conveyor Center Support Bearing twice daily and #2 Conveyor Center Support Bearing once per day.

HYDRAULIC TANK & FLUID MAINTENANCE

- **Open pet cock at the bottom of the tank and drain a small amount – about a cup full – of oil from the bottom of the sump every morning. Close pep cock. Check oil for debris and excessive water.**
- **Inspect hydraulic fittings and hoses for obvious leaks every morning before shift, and during the noon time greasing.**
- **Check hydraulic fluid level in sight gauge every morning and during the noon greasing. Add fluid as needed.**
- **Check hydraulic temperature throughout the day. The normal temp range is 130 to 170 degrees F.**
- **Change Hydraulic “Spin – On” filter every season, or every 250 hours, whichever comes first.**
- **Replace the old filter with a new clean filter that has been pre-filled with new hydraulic fluid.**
- **Pull and clean magnet at every filter change.**
- **Change hydraulic oil every season or every 1,000 hours, whichever comes first. Check your manual for the proper fluid to use in replacement.**
- **Pull suction strainer out of tank and clean when you change the hydraulic fluid.**
- **Always change oil with the same fluid. Do not mix mineral oil and vegetable based oils as they are not compatible and mixing can damage hydraulic components.**

PADDLE WHEEL / GEARBOX MAINTENANCE

- **Inspect Paddle Wheels daily for any severe dents or damage. Straighten out dents and make sure paddles spin freely without hitting the side of the barge.**
- **Make sure Paddle Wheels are fastened tightly to Gear Boxes.**
- **Frequently inspect other fasteners around Gear Box for proper tension.**
- **Inspect all fittings and drive components for damage.**

CHANGE GEAR LUBE ONCE PER SEASON

- **When harvester is out of the water for the season, place a bucket under Paddle Wheel Gear Box.**
- **Remove top plug.**
- **Remove bottom plug and drain approximately one quart of old gear lube.**
- **Remove side plugs.**
- **Install bottom drain plug, use thread seal on plug.**
- **Fill with new 85-140 Gear Lube in top hole until oil comes out of the side plug holes.**
- **Seal side plugs and install.**
- **Seal top plug and install.**
- **Make sure all plugs are sealed tightly.**
- **Check allen head bolts and hub bolts for proper tension.**

HYDRAULIC MOTOR MAINTENANCE

CHANGE THE SEAL

- Remove drive shaft chain coupling guard.
- Remove drive shaft coupling chain.
- Remove coupling sprocket from Hydraulic Motor.
- Take the Hydraulic Motor to a clean work bench.
- Put motor into a vice and remove the shaft key by gently tapping it out with a screw driver and hammer.
- Clean the shaft and inspect for any damage or burrs
- Remove the motor flange bolts.
- Remove old seals and O-rings.
- Lubricate new seals and O-rings with clean hydraulic fluid and carefully install.
- Replace flange into proper position.
- Use loctite on the flange bolts and torque to 250 inch-pounds.
- Reinstall the key.
- Return motor to machine. Reattach coupling sprocket.
- Align to drive shaft and reinstall coupling chain
- Reinstall chain coupling guard.

HYDRAULIC CYLINDER MAINTENANCE

CHANGE THE SEAL

- Place ram assembly (cylinder) in vice.
- Remove paint from top end of rod.
- Loosen and remove seal gland nut.
- Remove rod from housing (Use pipe through pin hole to assist in pulling rod out).
- Watch for stop rings and washers while removing the rod, as they may fall loose.
- Flush cylinder housing with solvent.
- Inspect housing with flashlight for debris or damage.
- Remove seals from rod and gland nut.
- Wipe rod with clean rags and inspect for damage. It should be very smooth.
- Install stop rings and washers on rod.
- Drop rod back into cylinder housing.
- Slide first seal onto rod and slide down to seal seat, using a long flat head screw driver.
- Install remaining seals, making sure they are properly seated.
- Install new wiper seal in gland nut.
- Slide seal and gland nut onto cylinder rod.
- Tighten gland nut with a pipe wrench.

SHORE CONVEYOR CHECKS

- Check Conveyor tires for wear and damage regularly.
- Check Conveyor lights for proper operation. This includes right and left turn signals, brakes and flashers.
- Check the conveyor for corrosion.
- Check the A-Frame winch wire to keep the wraps smooth and in alignment.
- Note that Shore Conveyors with Power Packs have the same hydraulic maintenance requirements as the harvesters and transports.
- Always use wheel chocks on the Shore Conveyor when the unit is not hooked up to the towing vehicle. Wheel chocks *must* be used to stabilize the Shore Conveyor when it is in the collection position.
- Visually inspect the pintle chain and conveyor flights daily for damage.
- Grease lower shaft bearings once daily.
- Grease upper shaft bearings once per week
- NEVER CLIMB TO THE TOP OF THE CONVEYOR IF THE END OF THE UNIT IS NOT LOCKED DOWN!

TRAILER CHECKS

- Check Trailer Tires for wear and damage regularly.
- EZ Lube hubs with clean grease at least once per season.
- Check brake shoes and drums at least once per season.
- Check trailer lights for proper operation, including right and left turn signals, brakes and flashers.
- Check the trailer bed for corrosion.
- Check break away battery for proper charge.
- Keep trailer guides free of rocks and dirt.
- Check winch wire to keep the wraps smooth and aligned properly.
- Always check conditions of the ramp before launching the harvester or transport.
- Note that Trailers with Power Packs have the same hydraulic maintenance requirements as the Harvesters and Transports.
- Always chock the trailer wheels when the trailer is no hooked up to the towing vehicle.
- Make sure your license plate and DOT paperwork are up to date.