

MARSH MASTER

OPERATING & MAINTENANCE MANUAL



<http://www.marshmaster.com>

COAST MACHINERY, LLC

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Rev. 7/14/2015

FOREWORD

Your Marsh Master machine is designed to give you years of dependable service. We designed the machine to be as simple, reliable, and easy to operate and maintain as possible-marsh and swamp service require it.

To keep the Marsh Master operating efficiently, familiarize yourself with the contents of this manual. It contains instructions for the safe operation, use, and servicing of the machine.

The descriptions and specifications contained in this manual are subject to change. Coast Machinery, LLC reserves the right to modify specifications or design, and to upgrade its equipment at any time as part of a continuing process of refinement.

Thank you for the confidence you have placed in the Marsh Master. Care for it properly, and it will give you many years of dependable service.

MANUFACTURERS LIMITED WARRANTY

MACHINE WARRANTY (Includes Engine and Hydraulics)

Coast Machinery, LLC warrants to the original purchaser, for a period of one (1) full year from date of delivery, that goods manufactured by Coast Machinery, LLC will be free from defects of workmanship and materials, provided such goods are operated and maintained in accordance with Coast Machinery, LLC's written manuals or other instructions. No warranty is made with respect to items supplied by Coast Machinery, LLC on special order of purchaser. Coast Machinery, LLC's sole obligation is to repair or replace, at Coast Machinery, LLC's option, parts that do not conform to this warranty.

LABOR WARRANTY

For one (1) full year from date of delivery, Coast Machinery, LLC, at its option, will repair, pay for outside service, or pay the customer straight time for the particular warranted repairs.

REPAIR PARTS

Repair parts supplied by Coast Machinery, LLC are warranted for a period of ninety (90) days from installation. Coast Machinery, LLC's sole obligation is limited to the replacement of the warranted part with no obligation to provide labor in installing such part.

ALL ABOVE WARRANTIES DO NOT COVER THE FOLLOWING:

- Maintenance items, adjustments, or required maintenance as per written manuals or other instruction.
- Transportation cost of machine for necessary repairs.
- Repairs required as a result of failure due to normal wear, accidents, misuse, abuse, negligence, or improperly installed repair parts.
- Products altered or modified in a manner not authorized by Coast Machinery, LLC in writing.
- Provision of substitute equipment or service during periods of malfunctions or non-use.

This warranty is expressly in lieu of all other stated or implied warranties and of all other obligations and liabilities on the part of Coast Machinery, LLC, including liabilities for direct, indirect, immediate, special or consequential damages arising out of the failure of any machine or part of it to operate properly, including the cost of expense of providing substitute equipment or service during periods of malfunctions or non-use.

NOTE: This warranty cannot be expanded, changed, or modified by any representative of Coast Machinery, LLC without written approval from the President of Coast Machinery, LLC.

SAFETY PRECAUTIONS

The following symbol is used throughout this manual as indicated to warn of hazards or unsafe practices that could result in severe personal injury or death.



WARNING!
SERIOUS INJURY CAN OCCUR!



WARNING!
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- Machine emits toxic gases. Severe respiratory damage or asphyxiation can result. Provide adequate ventilation. Consult with your regulatory agency for exposure limits. Keep engine properly tuned.



WARNING!
SERIOUS INJURY CAN OCCUR!

- Machine can emit excessive noise. Consult with your regulatory agency for exposure limits. Hearing loss can result. Wear hearing protection.



WARNING!
SERIOUS INJURY CAN OCCUR!

- Hot engine coolant. Scalding can result. Do not open radiator cap or service cooling system until radiator and engine is cool to the touch.



WARNING!
SERIOUS INJURY CAN OCCUR!

- Machine is unstable on jack. Use jack on machine in designated locations **ONLY**. Block machine up with jack stands.



WARNING!
SERIOUS INJURY CAN OCCUR!

- Leaking hydraulic fluid under pressure can penetrate skin. Severe infection or death can result. Never use your hands to locate a leak. Use cardboard to locate leak.



WARNING!
SERIOUS INJURY CAN OCCUR!

- Battery acid causes severe burns. Avoid contact. Wash immediately, and get medical attention if contact occurs.



WARNING!
SERIOUS INJURY CAN OCCUR!

- Keep away from fan.

SAFETY

The Marsh Master is an amphibious track vehicle designed for wetland terrain. It should not be used in rocky, hard terrain. It is a powerful machine that should be operated and maintained with respect and caution. Misuse or carelessness can result in serious personal injury, damage to the machine, or both. Safety precautions must be observed at all times.

This section outlines basic safety procedures that apply to operation, maintenance, and machine adjustment.

OPERATOR QUALIFICATIONS

Inexperienced personnel should not operate the Marsh Master. It is important that qualified personnel study and understand this manual before attempting to operate the machine. Particular attention should be given to the “Controls” section.

GENERAL SAFETY

- Prior to operating the machine, become fully familiar with the controls and the function of each.
- Turn the engine off when making any adjustments on the tracks, control linkages, or hydraulic components.
- Do not operate the machine from any position other than the front seats.
- Make periodic checks for hydraulic or fuel leaks.
- Make sure all passengers are seated before putting the machine in motion.
- Do not overfill fuel tanks. Leave an air space of at least 2” at the top of the tank for expansion.
- Remove portable fuel tanks from the machine when replenishing fuel supply.
- If any fuel is spilled in the buggy, clean up immediately. Spilled fuel could potentially migrate into the pontoons, creating an explosive atmosphere.
- Keep hands and feet clear of the tracks while under way.
- Avoid extreme grades 35° maximum angle when ascending or descending and 25° maximum angle on a side hill.
- Extra caution should be used when maneuvering in congested areas.

- Do not start or stop the machine abruptly. Bring the machine to a smooth stop by moving the control levers slowly.
- Extra caution should be taken when loading or unloading the Marsh Master from the trailer or when operating on steep, slick surfaces such as slimy boat ramps. On steep, hard surfaces, the machine may lose traction and slide.
- Use extra caution when climbing onto or walking on slick muddy tracks.
- Do not operate the machine in poorly ventilated areas. Never run the machine in a closed building.



WARNING!
SERIOUS INJURY CAN OCCUR!

DO NOT ENCLOSE THE CAB OR ADD SEAT BELTS.

- The Marsh Master is an amphibious machine. For this reason, we strongly advise customers to not modify the cab by adding hard doors or seat belts.
- If the machine were to capsize, an enclosed cab with hard doors or seat belts could cause the operator or passenger to become trapped.
- If enclosing a cab, we recommend using a vinyl cab enclosure that can easily be exited.



WARNING!
SERIOUS INJURY CAN OCCUR!

LEAVE VINYL DOORS OPEN WHEN ENTERING, EXITING, OR OPERATING OVER WATER.



LOAD CAPACITY

Marsh Master load limits can vary depending on model, components and special options. Therefore, each Marsh Master is equipped with a metal data plate on the driver's side console panel that has the load capacity stamped on it for that particular unit. The machine also has metal tags on the upper square tubing of the cab above the driver's head and in the rear cargo area. It is imperative to stay within the confines of these load limits. The picture below demonstrates where the metal data plate is located on the Marsh Master.



Maximum load capacity stated on the data plate is for a standard base machine with a full capacity of diesel and hydraulic oil, but with no options, attachments, or personnel aboard. Any additional weight added to the base machine must be subtracted from the limit.



IT IS THE OPERATOR'S RESPONSIBILITY TO STAY WITHIN THE CONFINES OF THE LOAD LIMIT STATED ABOVE.

If there are any questions regarding load limits, contact Coast Machinery, LLC.

LOAD DISTRIBUTION

On all Marsh Masters, the total weight of personnel and cargo should be evenly distributed so that the buggy is as well-balanced as possible. Loads should be kept as low as possible to keep the center of gravity of the machine low and reduce the possibility of roll over.

Do not carry heavy objects (over 100 pounds) on the overhead rack.

The decks are intended to be used as a walking platform or a seating surface (**See Operations section for instructions on rear passenger seating**). Never transport materials on the rear decks or allow rear passengers to stand on the decks while the machine is in motion.

In a situation when a large amount of material must be transported to the jobsite, we recommend using a large John boat hull, airboat hull, barge-type skid or multiple machines. Trailers can be used in some situations if the area allows.



WARNING!
SERIOUS INJURY CAN OCCUR!

WHEN THE MACHINE IS BEING USED TO TRANSPORT PERSONNEL IN THE REAR BED AREA, ANY REAR ATTACHMENTS SUCH AS THE ANCHOR MASTER, BACKHOE, CUTTER, SPRAY RIG, ETC. SHOULD BE REMOVED.



WARNING!
SERIOUS INJURY CAN OCCUR!

THE OPERATOR IS RESPONSIBLE FOR ENSURING THAT THE LOAD IS DISTRIBUTED PROPERLY FOR THE SAFE OPERATION.

TEST PROCEDURE PRIOR TO WELDING, CUTTING OR DRILLING PONTOON

POTENTIAL HAZARD: Marsh Master pontoons are sealed chambers, and the possibility for an explosive mixture to be present exists. This mixture can be caused by a generation of methane gas or a fuel such as gasoline or diesel fuel entering the pontoon through a crack.



WARNING!
SERIOUS INJURY CAN OCCUR!

**IT IS IMPERATIVE THAT THE PONTOON BE CHECKED
FOR EXPLOSIVE ATMOSPHERE PRIOR TO WELDING,
CUTTING, OR DRILLING THE PONTOONS!!!!**

STEP 1: Remove the drain plug from the pontoon. It is located between the #7 and #8 outside bogey wheels. A small amount of water (<1 gallon) may drain from the pontoon. It is normal for a small amount of water to form due to condensation in the pontoons.

STEP 2: Using an ATX612 Multi-Gas Monitor or equal, insert the gas pick up tube at least 6 inches into the drain opening in the pontoon. Avoid getting any water into the pickup tube as water can damage the instrument.

Note: *The Gas Monitor instrument must be “bump” tested before each use. It must also be calibrated monthly. The person using the instrument must be trained in the use of the instrument. If there is any question concerning the instrument, contact the instrument manufacturer or Hagemeyer/Vallen, our local supplier, at 225-673-5670.*

STEP 3: Turn the instrument on and take a reading. The instrument will alarm at 10 % LEL (lower explosion limit). If you get an alarm or a reading above 2 percent LEL, go to Step 4. If you get a reading of 0 or 1, the pontoon is safe to weld, cut, or drill. Keep the instrument running at all times when welding.



WARNING!
SERIOUS INJURY CAN OCCUR!

**THE HEAT FROM WELDING CAN GENERATE GAS
FUMES. STOP WELDING IMMEDIATELY IF YOU GET AN
ALARM, AND GO TO STEP 4.**

STEP 4: Purge the pontoon with air as follows. Insert an air hose into the pontoon through the drain opening. Slowly bleed air into the pontoon allowing the pontoon to purge. After 1 hour of purging, test again. If you get a reading above 2 percent LEL, try purging another hour and test again. If you cannot get a low enough reading by purging this way, proceed to Step 5.

STEP 5: Remove the tracks and top slides from the machine. Removing the top slides will give you 16 bolt hole openings in the top of the pontoon to bleed through. Connect an air hose with a regulator and shut-off valve to the drain port of the pontoon. Slowly bleed air into the pontoon so that it comes out of the top bolt holes. Make sure the pressure in the pontoon does not exceed 2 psi. Purge for several hours, and then retest LEL. Purge as necessary to obtain a reading of 0 to 1 LEL. When you obtain a safe reading of less than 1 percent LEL, the pontoon is safe for welding, drilling, or cutting. Be sure to keep the instrument connected and running when welding.

OPERATION

Your Marsh Master is specifically designed for wetland terrain. It is not intended for use on hard terrains such as upland clay, gumbo mud, rock, cement, ice, frozen ground, or gravel. The suspension system is rigid and depends upon soft terrain for cushion. Rock and gravel can severely damage the wheels, sprockets, and other track components and should be avoided.

Your Marsh Master can be used in swamp terrain and will crawl over stumps and logs. However, prudent operation in swamp terrain is required. When operating in this type of environment, travel slowly and lighten your load if possible.

Your Marsh Master will perform best where it is very soft and wet. Water helps the Marsh Master perform. When running in water about 15 inches deep, the machine will operate at its best. It is almost floating, but still getting traction. In this condition, there is very little load on the undercarriage. Don't be afraid of deep water; the Marsh Master is very stable in the fully amphibious mode, and is designed to seamlessly transition from land to water. Water also keeps the tracks running clean and prevents mud from clogging the tracks.

The Marsh Master will not operate in sticky, heavy, clay soils. This type of mud builds up on top the pontoon, and will eventually clog the tracks and lift them up off of the pontoons. If the track raises high enough off of the pontoon, it can scrape the side of the body and cause serious damage. The best solution is to find water or pour water on top of the tracks, and slowly work the machine until the packed mud begins to loosen and work out. This buildup can also occur with snow and ice.

The Marsh Master is not an ATV- it is a marsh buggy. Experience and good judgment are required to know what terrains the machine is capable of handling.

ENTERING & EXITING THE BUGGY

Always use three points of contact when entering or exiting the machine.



OPERATOR AND PASSENGER SEATING

All operators and passengers must be seated before operating the machine. The standing position can contribute to a loss of balance of the operator and/or passengers if they are not adequately prepared for the machine's movement. Also, the standing position raises the center of gravity, reducing the stability of the machine.

The operator is responsible for assuring that he and all passengers are seated before operating the vehicle.



WARNING!
SERIOUS INJURY CAN OCCUR!

DO NOT STAND WHILE THE MACHINE IS IN MOTION. STANDING UP WHILE THE MACHINE IS IN OPERATION CAN CONTRIBUTE TO A LOSS OF BALANCE, OR AN UNSTABLE MACHINE.



TRACK CONTROL LEVERS

The left lever controls the left track and the right lever controls the right track. The drive system is in neutral when the levers are in the detent position.

To make the machine move forward, slowly move both levers forward. The farther the levers are advanced, the faster the machine travels. With the levers all the way forward you are essentially in high gear. If conditions are such that the engine begins to lug, gear down by simply pulling back on the levers. Maximum pulling power is with the control levers slightly forward.

To reverse the machine, pull the levers back from the neutral position.

To turn the machine, simply advance one lever more than the other.



WARNING!
SERIOUS INJURY CAN OCCUR!

ALWAYS MOVE THE LEVERS SLOWLY. NEVER JERK THEM FROM FORWARD TO REVERSE OR REVERSE TO FORWARD. DAMAGE TO THE MACHINE OR INJURY TO THE OPERATOR OR PASSENGERS COULD OCCUR.



Control Lever Lockout



THROTTLE

The throttle controls the engine speed. Normal operating speed ranges between 1800 to 2200 RPM. When running a cutter, 1800-2000 RPM is the recommended range.

INSTRUMENT PANEL

ENGINE HOUR METER

The engine hour meter records the number of hours the machine has been operated. This information is useful in determining when to service the machine. It is located on the tachometer.

ENGINE OIL PRESSURE GAUGE

Engine Oil Pressure Gauge registers the engine oil pressure. Normal engine oil pressure ranges from 50 psi at idle to 100 psi at full throttle. The engine is equipped with a low oil pressure shut down switch to prevent engine damage due to lack of oil or loss of pressure due to extreme operating angles.

VOLTAGE GAUGE

The voltage gauge shows the condition of the charging system. Normal condition is 12 to 14 volts. Less than 12 volts indicates a discharging condition.

ENGINE COOLANT TEMPERATURE GAUGE

The engine coolant temperature gauge registers the engine's coolant temperature. Normal engine coolant temperature ranges 180-220°F. Temperature above 220°F indicates an overheating engine, and at 230°F a warning light will come on. Overheating may arise due to low coolant level, clogged radiator, a loose engine belt, malfunctioning cooling fans, or other engine malfunctions. If overheating occurs, shut the engine down, and determine the cause. Do not continue to operate an overheated engine. Serious damage could occur.

ENGINE TACHOMETER

Tachometer registers RPM of engine.

HYDRAULIC FLUID TEMPERATURE GAUGE

Hydraulic fluid temperature gauge indicates temperature of hydraulic fluid. Normal range is 110°F - 180°F. A warning light will come on if temperature reaches 195°F. Shut the machine down and check 1) the hydraulic fluid level 2) obstruction of the hydraulic oil cooler inlet screen or oil cooler fins and 3) make sure the cooling fan(s) is operating properly.

NOTE: At no time should the machine be operated above 180°F continuously, or at 220°F intermittently.

FUEL GAUGE

Fuel level indicator. It is important to keep clean fuel in system and never allow fuel system to run dry. Allowing a diesel to run dry will require priming the engine. See engine section for instructions on priming and bleeding the injection system.



PROCEDURE FOR STARTING DIESEL

- Pull throttle lever all the way back.
- Turn key to on position. Glow plug, oil pressure, and battery lights will illuminate.
- When glow plug light goes off (about 7 seconds on cold start), push override button down, and turn the key to the start position. When engine is warm, or on warm days, the glow plug light may not come on. Engine is ready to start immediately.
- Release key to on position when engine starts.
- Release override button when oil pressure light goes off (approx. 5 seconds after engine starts).

USE OF OVERRIDE SYSTEM

Marsh Master engines are equipped with a low oil pressure shutdown. When oil pressure drops below 7.5 psi the engine will kill. If this occurs, the engine can be restarted by holding the auto override button down. Continue to hold the override button down to keep the engine running. This should be done only in emergency situations. Low oil pressure can be caused by low oil level, extreme operating angle, or mechanical failure within the engine. Determine the cause before overriding the shutdown. If the override must be used in an emergency situation, keep engine speeds as low as possible and the run time as short as possible.

▲ CAUTION ▲ : If the override system is used and no oil pressure exists, severe engine damage can occur.

LOADING & UNLOADING THE BUGGY



- Make sure that the tilt-pin has been removed from the trailer.



- Always run the machine at idle when loading and unloading the machine.
- The Marsh Master is equipped with a four point tie down system.
 - Always cross over the straps.



- We recommend that you **DO NOT** use a trailer with steel ramps
 - There is very little friction between the aluminum cleats and the steel ramps.
 - This may cause the machine to slide.
 - Placing a strip of rubber between the tracks and the deck will help with this problem.

PROCEDURES FOR AMPHIBIOUS OPERATION

ENTERING WATER

Entering water must be performed with CAUTION.

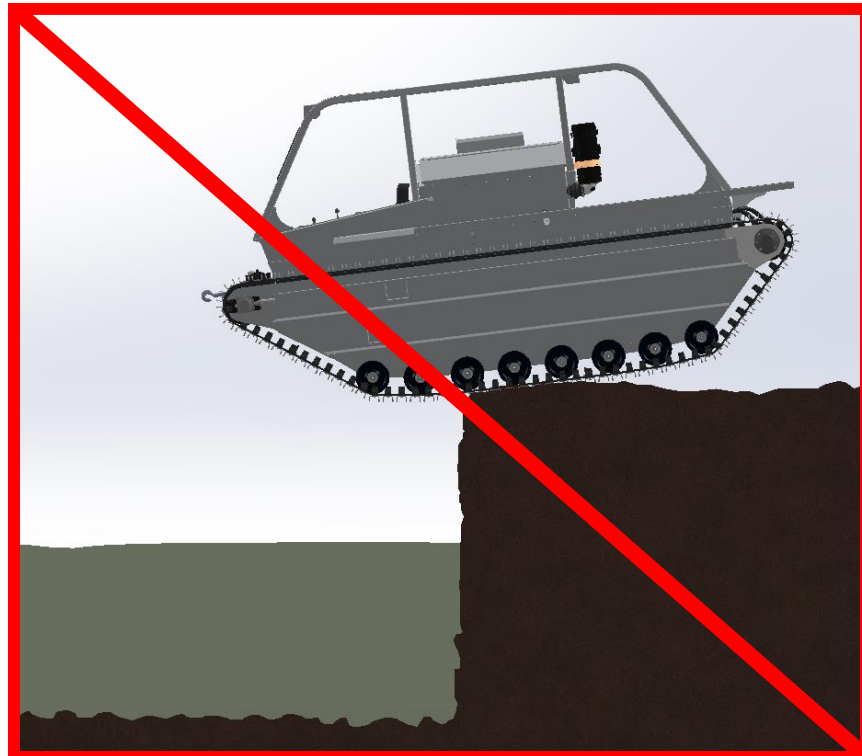
The pontoons should always be checked prior to operating in water. See section for Pontoon Maintenance in this manual.

The operator must select a suitable entry point that allows the machine to go straight down the bank. Both tracks should enter the water at the same time. This allows both the left and right pontoon to provide equal flotation. Avoid entering the water at an angle, which puts much of the load on only one pontoon.

The load should be lightened before entering the water, and the machine should be operated at slow speeds.

Avoid high banks with steep drop-offs, and select a suitable entry point with sloping banks.

NOTE: An approved flotation device must be available for everyone on board.



OPERATING IN WATER

Once in the water, the operator should continue to use extreme caution. Running the tracks will propel the Marsh Master through the water. There is a natural tendency to run the tracks at a fast speed to try and swim the machine faster. Running the tracks quickly will not make the machine swim faster; it can actually make it move slower. Run the tracks at $\frac{1}{4}$ speed until the machine begins to move forward. At this point, provided that the operator is confident that there are no underwater obstacles beneath the surface in the buggy's path, track travel speed can be increased to half speed.

Running the tracks to propel the machine presents a danger because there are often many unseen objects below the surface of the water. When the machine encounters these objects, it tends to run up on them. If only one track runs up on the object, then the machine will tilt at an angle. If the angle becomes too great, or the momentum of the tilting motion becomes too great, the buggy can capsize. For this reason, the operator should not continue over such an object, but slowly back off of it and find a way around. If the operator is running the tracks too fast, this tilting action can happen quicker than the operator ability to react, increasing the likelihood of capsizing the machine. Good judgment must be used if encountering such a situation.



WARNING!
SERIOUS INJURY CAN OCCUR!

AVOID ANY SITUATION THAT TILTS THE MACHINE OR PUTS MORE WEIGHT ON ONE PONTOON THAN THE OTHER WHEN THE MACHINE IS FLOATING.

In situations where there are currents, cross-winds, or long distance travel, we recommend using a small outboard motor (4-40 hp) or our proprietary hydraulic Prop Drive system. The Marsh Master has a 21" transom.



WARNING!
SERIOUS INJURY CAN OCCUR!

AVOID RAIN-SWOLLEN RIVERS, AND ANY RIVER WITH ANYTHING OTHER THAN A SLOW MOVING CURRENT.

EXITING WATER

Exiting from water must be performed with CAUTION.

The operator should select a suitable exit position where both tracks leave the water at the same time, and the machine climbs straight up the bank.

The load should be lightened before climbing the bank, and the machine should be operated at very slow speeds.

The operator should avoid exiting water by climbing up a steep bank. Though the machine may have enough traction to pull itself out of the water, too steep of a bank will put the machine at an angle that can drop the rear transom below the water level. At this point, the water can swamp the machine and create a very dangerous situation.

The operator is responsible for assuring the proper positioning and operation of machine to ensure safe operation when entering or exiting water.



WARNING!

SERIOUS INJURY CAN OCCUR!

SERIOUS INJURY OR LOSS OF LIFE COULD OCCUR IF THE MACHINE TURNS OVER WHEN ENTERING, EXITING, OR OPERATING IN WATER. OVERLOADING, IMPROPER LOAD DISTRIBUTION, WRONG ANGLE OF ENTRY OR EXIT, A LEAKING PONTOON OR FAILURE TO INSTALL DRAIN PLUGS COULD CAUSE THE MACHINE TO TURN OVER.



WARNING!

SERIOUS INJURY CAN OCCUR!

EXCESSIVE OR UNEVEN LOADING CAN MAKE FOR AN UNSAFE AND DANGEROUS SITUATION, PARTICULARLY WHEN ENTERING, EXITING, OR OPERATING IN WATER. SERIOUS INJURY OR LOSS OF LIFE COULD OCCUR IF THE MACHINE IS LOADED IMPROPERLY. HEAVY LOADS POSITIONED HIGH CAN SIGNIFICANTLY RAISE THE CENTER OF GRAVITY AND CAN CAUSE A DANGEROUS SITUATION. POSITION AND SECURE LOADS AS CLOSE TO THE BOTTOM OF THE BUGGY AS POSSIBLE.

OPERATION PROCEDURES FOR CLIMBING OR DESCENDING A STEEP GRADE

Climbing or descending a steep grade must be performed with **EXTREME CAUTION**.

The grade should not exceed a 35° maximum angle. If travelling along the side of a hill, the maximum angle is 25°.

The tracks should be positioned to go straight up or down the grade. Never approach a grade at an angle.

When climbing a grade, the machine should be operated at $\frac{3}{4}$ to full throttle, but with very slow track speed for maximum torque and power.

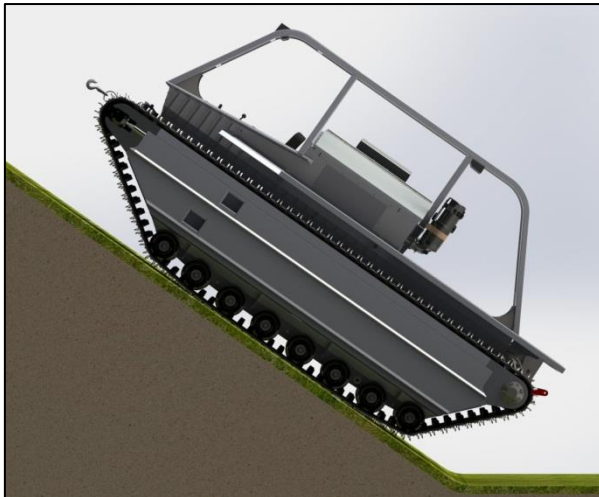
Avoid turning the machine sharply when ascending, descending, or running along a side hill, ditch bank, or uneven ground. Turn slowly to avoid plowing the downhill track.



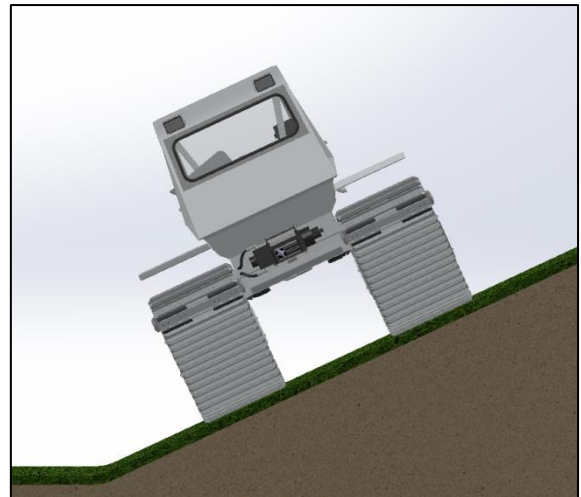
WARNING!
SERIOUS INJURY CAN OCCUR!

**SERIOUS INJURY OR LOSS OF LIFE COULD OCCUR
IF MACHINE IS NOT OPERATED PROPERLY WHEN
OPERATING ON A STEEP GRADE DUE TO LOSS OF
TRACTION AND/OR A CHANGE IN CENTER OF
GRAVITY.**

SAFE OPERATING ANGLES



35° MAXIMUM ANGLE



25° MAXIMUM ANGLE

TROUBLESHOOTING A THROWN TRACK

HOW TO AVOID THROWING A TRACK

When traveling through heavy brush, or stump-filled areas, track very slowly, take as direct a path as possible, and turn very slowly if necessary. This type of environment provides many obstacles that you will either have to climb over or straddle.

- * Avoid thick stands of cypress knees that can bend or break track cleats and increase track-throw probability.



In a situation when climbing over or straddling an obstacle, avoid turning the machine until it has been crossed. When you are on an obstacle, the track is point-loaded, meaning that all of the weight of the machine is concentrated at one point. This point is where the track is engaging the obstacle. Turning under this condition will increase the risk of throwing the track.



Avoid turning the machine sharply when ascending, descending, or running along a side hill, ditch bank, or uneven ground. Turn slowly to avoid plowing the downhill track.



HOW TO REALIGN A THROWN TRACK

- Using a 1-5/16" wrench, loosen the bearing take-up nuts to allow as much slack as possible in the belts.
- Jack up the machine, getting the load off the track.
 - Jacking the machine up is not necessary to put the track back on, but it will make the job easier.
 - Lift the machine using the jack plate at the center of the buggy.
- Attach a come-along to the thrown track.
 - If the track is thrown to the outside:
 - Attach one hook of a come-along to the outside end of a track cleat in front of the sprocket.
 - Attach the other hook to the outside end of a cleat on the other track.
 - If the track is thrown to the inside:
 - Attach one hook of a come-along to the inside end of a track cleat in front of the sprocket.
 - Attach the other hook to some object, such as a tree or another buggy, that can serve as an anchor.
 - Avoid attaching the hooks to the rubber belts, as this will likely damage them.
- Tighten the come-along to put tension on the thrown track.
- Start the engine, and slowly run the track backwards with the engine at idle.
 - The track will pop and jump, but once the sprocket grabs a drive lug, the track will roll back on.
 - The concept is just like putting a bicycle chain back on. Once a sprocket tooth grabs a link of a bicycle chain, the chain will roll back on.

- Use procedure for adjusting track tension found in the maintenance section of this manual once the track is realigned.

Recommended tools to bring on every trip:

- High-lift jack
- 3' x 3' plywood for jack
- Two 1-5/16" wrenches
- Come-along
- Long pry bar

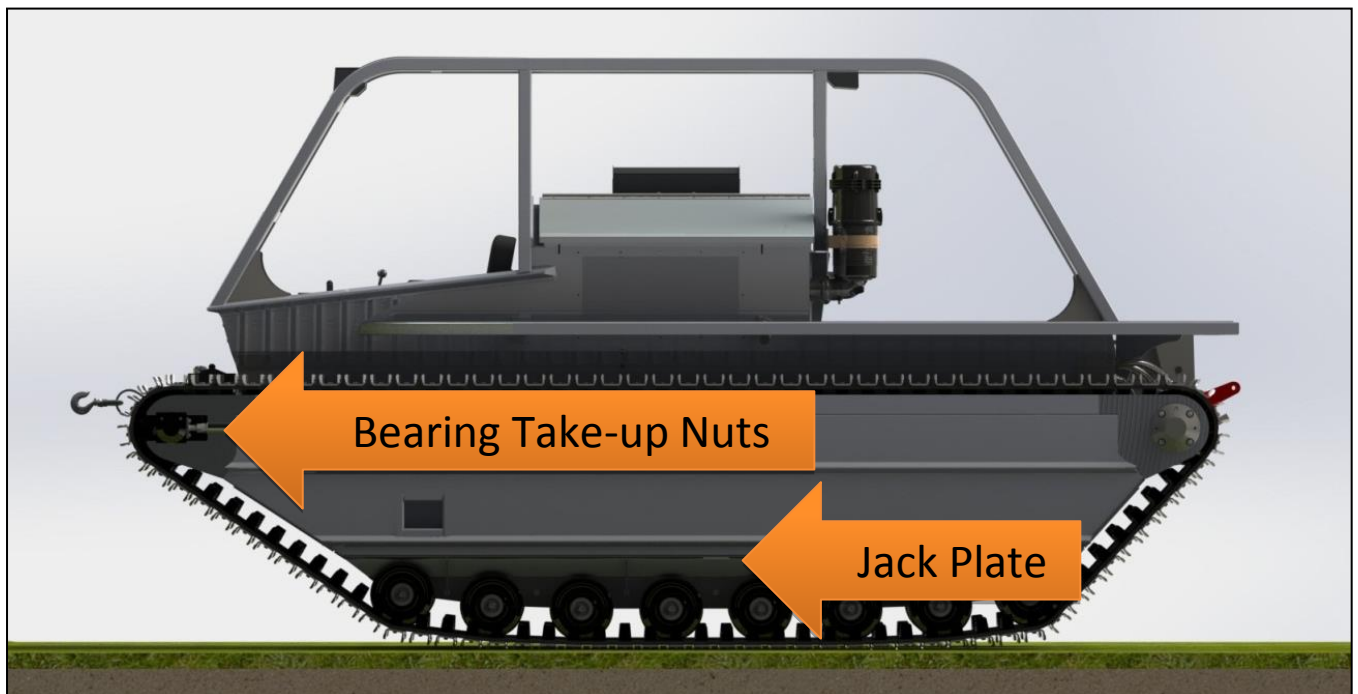
▲ CAUTION ▲: Never attempt to re-align track without two people. If machine begins to move or slip off jack, the operator must immediately kill the engine. The second person must stay clear of the machine should this occur. Special caution must be taken not to damage body or track parts when applying force.

- If you do not have a come-along, then a long pry bar is an alternative to force the track back over.
 - Be careful not to damage the pontoon with the pry bar.
 - Use extreme caution when using the pry bar near the drive sprockets.



WARNING!
SERIOUS INJURY CAN OCCUR!

THE PERSON USING THE PRY BAR MUST USE CAUTION WHEN APPLYING FORCE NEAR THE DRIVE SPROCKETS. IT IS POSSIBLE FOR THE BAR TO GET CAUGHT IN THE SPROCKETS AND KICK BACK, CAUSING SERIOUS INJURY OR LOSS OF LIFE.



AUXILIARY TOOL CIRCUITS

LOW-FLOW AUXILIARY CIRCUIT

All MM-2 models come standard with a 6-8 gpm auxiliary tool circuit for running ancillary open center hydraulic tools. This tool circuit will produce approximately 7 gpm at 2000 rpm. Tools are to be attached using the quick connects located at the rear of the engine compartment, on the passenger side of the buggy.

NOTE: Make sure all connections are free of foreign materials such as dirt, sand, mud, etc. These contaminants could damage the hydraulic system.

To activate the low-flow tool circuit:

- Locate the selector valve handle below the driver's seat.
- Lift the valve cover plate.
- Lift the locking safety clip.
- Push the lever down to the "AUXILIARY" position.



NOTE: The selector valve handle **MUST** be up, in the "WINCH" position, if no tools are hooked up to the low-flow auxiliary circuit, or if the circuit is not in use.

- If the handle is in the down position with no tools connected to the quick connects, the fluid will dead head and trip an Off Loading Valve (circuit breaker), which prevents overload and overheating.
- To reset the Off Loading Valve, the handle must be pulled back to the up position or the engine must be shut off.
- If the low-flow auxiliary system pressure reaches 3000 psi, this will also trip the Off Loading Valve.



WARNING!
SERIOUS INJURY CAN OCCUR!

IF TOOLS ARE STILL CONNECTED BUT NOT IN USE, RETURN THE SELECTOR VALVE TO THE "WINCH" POSITION. ALLOWING THE HYDRAULIC FLUID TO RUN CONTINUOUSLY THROUGH THE TOOLS MAY POTENTIALLY CAUSE THEM TO INCREASE IN TEMPERATURE. THE RAISED TEMPERATURE COULD BE DANGEROUS WHEN THE OPERATOR RETURNS TO THE TOOL.

HIGH-FLOW AUXILIARY CIRCUIT

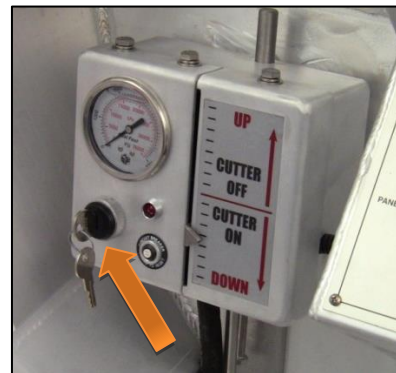
Marsh Master C models come with a 15-25 gpm high-flow tool circuit. This circuit will produce approximately 22 gpm at 2000 rpm. The quick connects for the high-flow circuit are located on the same manifold as the standard low-flow quick connects.

For MM-2C models with the 3-point hitch, the high-flow circuit is primarily set up for the use of the Cutter. If you are running the cutter, then please see the cutter manual for operating details. If you are using the high-flow circuit for tools other than the cutter, follow these operating instructions:

- Start the engine, and set the engine speed at idle.
- Push the control lever fully forward to lower the crank arms.
 - This is a safety feature installed for the cutter system.
 - Having the 3-point hitch at too high of a position will flip a switch that disables the high-flow circuit.



- Turn the cutter key switch to the “on” position.

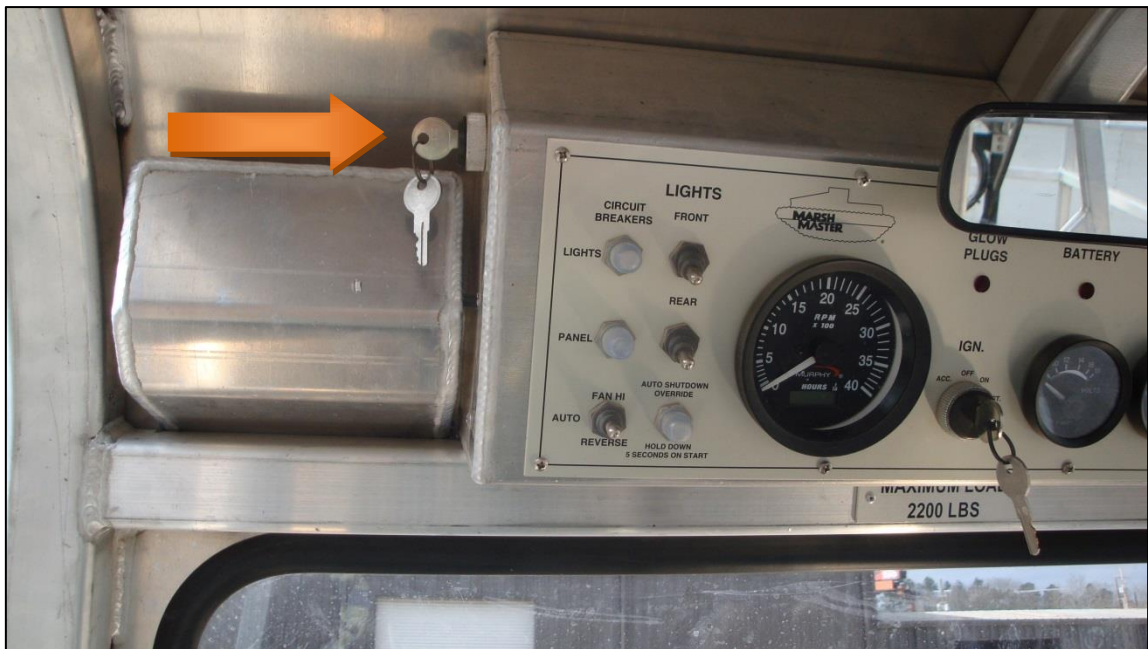


- Depress the foot pedal.
 - The foot pedal acts as an on/off switch for the valve that directs the fluid to the high-flow quick connects.



- Bring the engine speed up to 1800-2200 rpm.
 - As engine speed comes up, you will see the hydraulic pressure rise on the cutter gauge.
 - It will level out at 500-800 psi depending upon fluid temperature.
- The relief is set at 3500 psi, but do not let it run continuously if it reaches this point.

The MM-2C-LH model does not have a 3-point hitch; therefore it is not capable of running a cutter. The cutter control box found in the above mentioned models is not found in the MM-2C-LH model. The key switch that controls the high-flow circuit is located on the left side of the instrument panel. Simply turn the switch to “on” to run the high-flow circuit.



WINCH OPERATION

The Marsh Master is equipped with a Superwinch hydraulic winch. Read and familiarize yourself with the Superwinch manual before using the winch.

- The valve to control the winch is located on the front passenger side of the cab.
 - Pull out and lift up to reel the winch cable in.
 - Pull out and push down to let the cable out.
- To activate the winch system, the auxiliary circuit selector valve must be in the up, “WINCH”, position.

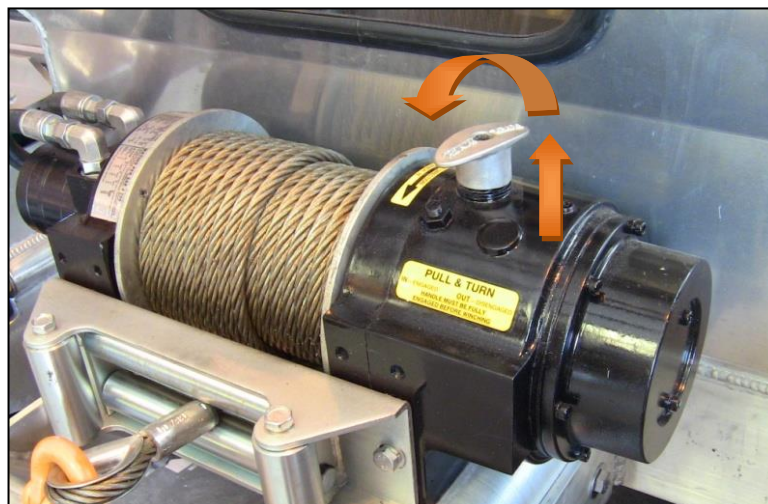


LETTING THE CABLE OUT

When letting the winch cable out, you have two options. You can use the hydraulics to run the motor, which is a two-man operation, or you can free-spool the motor, which is a single-person operation.

When hydraulically releasing the cable, always make sure that someone is pulling on the cable to create tension. This tension is necessary to keep the cable from making a “bird’s nest” in the winch housing.

To set the winch to free-spool, lift and twist the knob located on the driver’s side of the winch.



The winch has 10,000 lb. of pulling force. This force is typically more than sufficient to handle the task at hand. However, in extreme situations such as winching up a steep bank or if the machine is stuck badly, the use of a snatch block may be necessary. A snatch block will essentially double the pulling force of the winch. This device can also be used as a guide when you need to pull from a different angle.

When hauling, or winching with the cable, make sure that there is no slack in the line when tension is applied. Smoothly apply tension to the line. Rapidly jerking the load will put an impact load on the winch gears, causing severe damage.



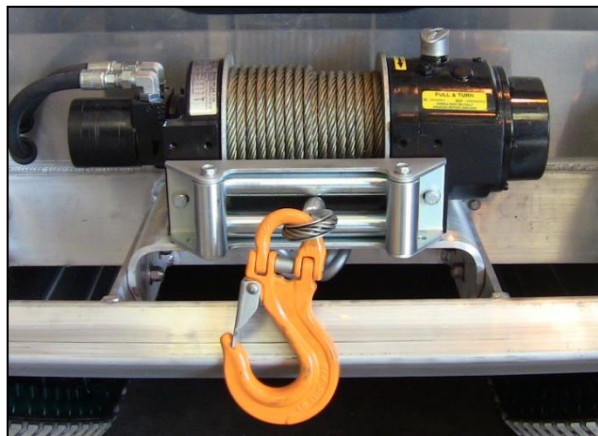
WARNING!
SERIOUS INJURY CAN OCCUR!

**WIRE ROPE CAN BRAKE WITHOUT WARNING.
ALWAYS KEEP A SAFE DISTANCE FROM THE WINCH
AND WIRE ROPE WHILE UNDER LOAD.**

Even though it is equipped with a brake, the winch should not be used to lift or suspend people or heavy loads in the air. It is to be used for recovery purposes only.

WINCHING IN THE CABLE AFTER USE

When you are finished using the winch, you need to pay attention to how the cable is reeled in. Simply winching the cable in with no one to guide it will create a “bird’s nest”, which causes many problems. It is important that someone guides the cable in by putting tension on the cable and knocking it over so that each turn on the drum is adjacent to the previous one. This orderliness helps to prevent damaging the cable, and makes the next use of the cable go better.



WARNING!
SERIOUS INJURY CAN OCCUR!

**THE CABLE CAN CUT OR BURN HANDS WHEN BEING
HANDLED. WE RECOMMEND THAT THE PERSON
HANDLING THE CABLE USE GLOVES.**



WARNING!

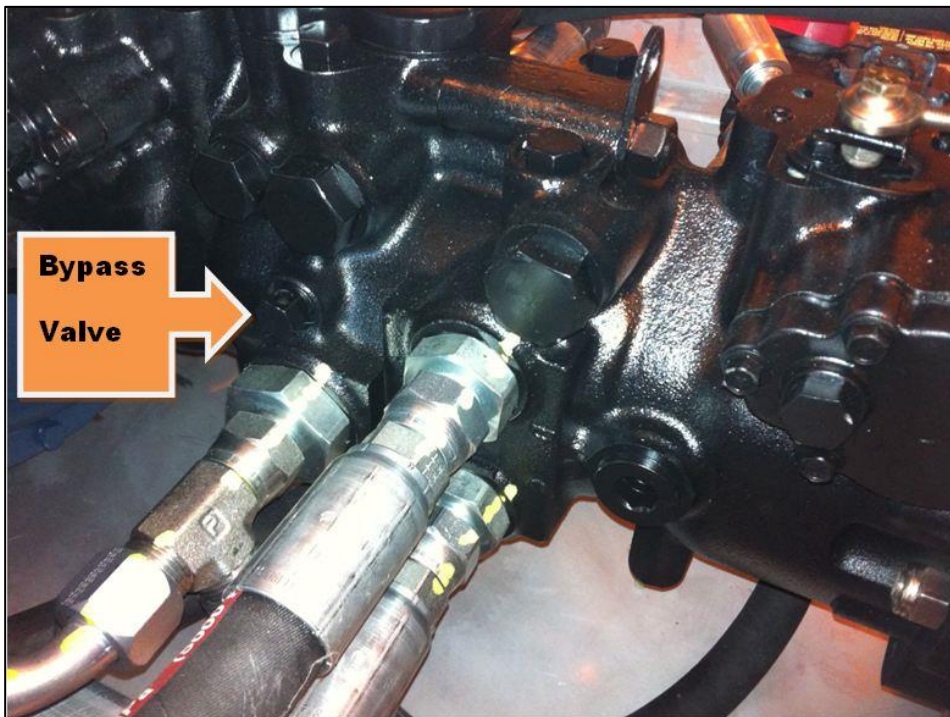
SERIOUS INJURY CAN OCCUR!

THE WINCH IS VERY POWERFUL, AND CAN SEVERELY INJURE ANY BODY PART THAT GETS CAUGHT IN THE SPOOL OR OTHER MOVING PARTS. USE A TOOL, SUCH AS THE HANDLE OF A HAMMER, TO KNOCK THE CABLE TO THE SIDE. NEVER PUT YOUR HANDS IN THE SPOOL AREA WHEN WINDING OR UNWINDING THE CABLE. NEVER GRAB THE CABLE BY THE STOP BLOCK OR ANY POINT BEHIND THE HOOK.

EMERGENCY TOWING

The Marsh Masters can be towed short distances in case of extreme emergency.

- Locate by-pass valve on each side of hydraulic pump. This is the bolt with a hole through the head. (See Sundstrand manual for details).
- Back out 2 turns to open by-pass.
- Tow unit to suitable or safe work area.
- Re-tighten by-pass valves before running machine.



Marsh Master Pre-Operation Field Checklist

Safety

1. ____ Have the operator and all passengers been trained on proper technique for boarding and exiting of the Marsh Master per the operator's manual?
2. ____ Have the pontoon plugs been pulled, and the pontoons been checked for leaks in accordance with the procedure in the manual?
3. ____ Are all the body and pontoon drain plugs installed?
4. ____ Is the operator trained & experienced with the Marsh Master, read the manual, and fully familiar with the machine and its capabilities?
5. ____ Is the operator trained & experienced operating the Marsh Master in amphibious situations? Does the operator fully understand how to properly enter and exit the water, and swim the machine?
6. ____ Has the operator calculated all additional weight such as the Anchor Master, personnel, climbing gear, hardware, etc., and ensured that the total is within the load limit stamped on the Marsh Master?
7. ____ Has all gear been stowed in the rear bed area prior to entering the water?
8. ____ Has the operator done a pre-trip assessment of the area in which the Marsh Master is to be used?
9. ____ Have any potential hazards been identified, and a plan made to deal with those hazards? (such as a rain-swollen river with a strong current, steep banks, stumps & logs)
10. ____ Do the operator and passengers have all their PPE?
11. ____ Are the operator and passengers wearing life jackets when operating in or near water?
12. ____ Is machine equipped with a fire extinguisher and first aid kit? (Not supplied by Coast Machinery)
13. ____ Is the operator familiar with operating and safety procedures related to use of the winch?
14. ____ Are all passengers seated in accordance with the manual?
15. ____ Does the operator understand the safe procedure for reinstalling a jumped track?

Maintenance

1. ____ Have all track bearings been greased?
2. ____ Do the track belts have proper tension?
3. ____ Have all fluid levels been checked?
4. ____ Is there any visible engine or hydraulic oil leakage?
5. ____ Is the radiator clean?
6. ____ Is the winch in good working order?
7. ____ Has the winch cable been checked for frays, is rolled up properly on the drum, and ready for service?
8. ____ Are there any broken or bent track cleats that need attention?
9. ____ Is there an operation manual box with manual installed on the Marsh Master?
10. ____ Are any tools required to install a jumped track on board?

MAINTENANCE

DAILY PROCEDURES

- Check Engine Oil
- Check Hydraulic Fluid
- Check Radiator Fluid
- Check Radiator for Restricted Air Flow
- Clean Air Intake Screens
- Check Fuel Level
- Grease Track Bearings: 2 front on each track
- Check Track Tension

EVERY 25 HOURS

- Service Engine Air Cleaner

FIRST 50 HOURS

- Change break-in Engine Oil and Filter (See Engine Manual)

EVERY 50 HOURS

- Check Pontoons for Leakage (Remove Drain Plugs)

EVERY 300 HOURS

- Top Off Bogey Tubes with Fresh Oil
- Change Engine Oil and Filter (See Engine Manual)
- Change Hydraulic Filters (Filters on all C models have a service indicator)
- Check Oil in Rear Shaft for Moisture (Shaft should be filled half-way with oil)

EVERY 500 HOURS

- Change Bogey Tube Oil(See maintenance section)
- Change Engine Air Filter and Engine Coolant

EVERY 900 HOURS

- Drain hydraulic system and refill

TORQUE SPECIFICATIONS

TRACK BOLTS

BOLT SIZE: 5/16" – 18 X 1 3/4"
TORQUE: 100 in.-lb. -with Blue Loctite #242
Material: Stainless Steel

SPROCKET BOLTS

BOLT SIZE: 1/2" – 13 X 7-7/8" –with Red Loctite #271
TORQUE: 40 ft. lb.
Material: Stainless Steel

CONTROL ROD BOLTS

BOLT SIZE: 1/4" – 28 X 3/4"
TORQUE: 8 – 10 ft.-lb. -with Red Loctite #271
Material: Grade 8 Zinc Plated

BOGEY WHEEL NUTS

NUT SIZE: 7/8" – 9
TORQUE: 100 ft. lbs.
Material: Stainless Steel Nylock
IMPORTANT: Use Never-Seez on shaft thread to prevent stainless-on-stainless galling.

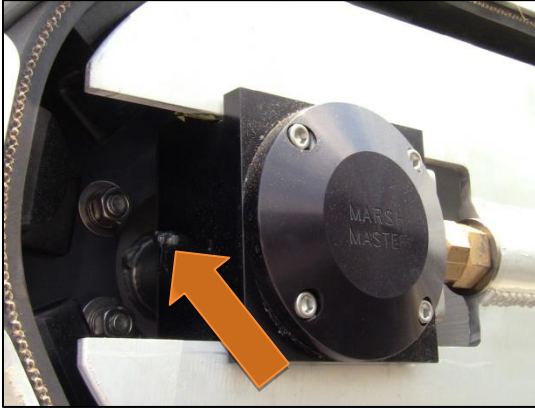
OTHER BOLTS

All other fasteners on Marsh Masters are 18-8 Stainless Steel. We recommend using Never-Seez when using stainless fasteners and bolts in combination due to the tendency for stainless-on-stainless galling.

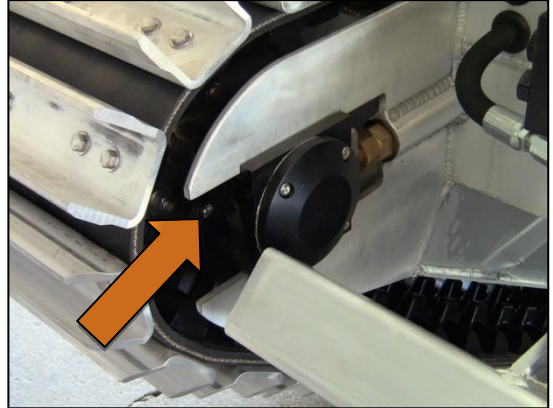
BOLT SIZE	TORQUE
1/4"	8 – 10 ft. lbs.
5/16" (excluding track bolts)	15-18 ft. lbs.
3/8"	25-30 ft. lbs.
1/2"	55 – 65 ft. lbs.

SERVICE POINTS

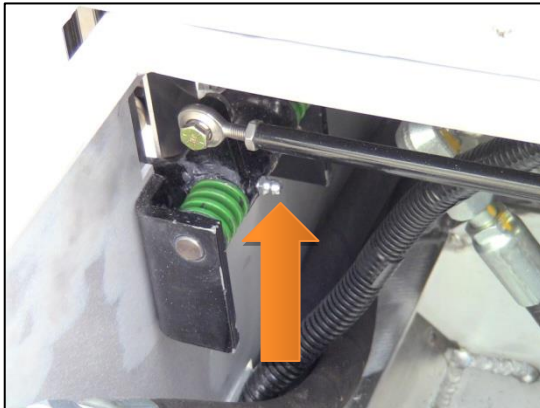
Outside Front Track Bearing Daily



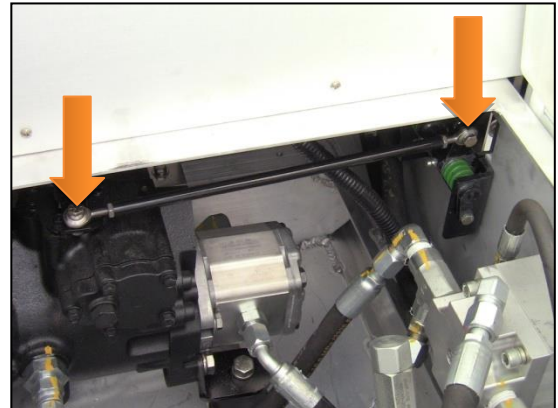
Inside Front Track Bearing Daily



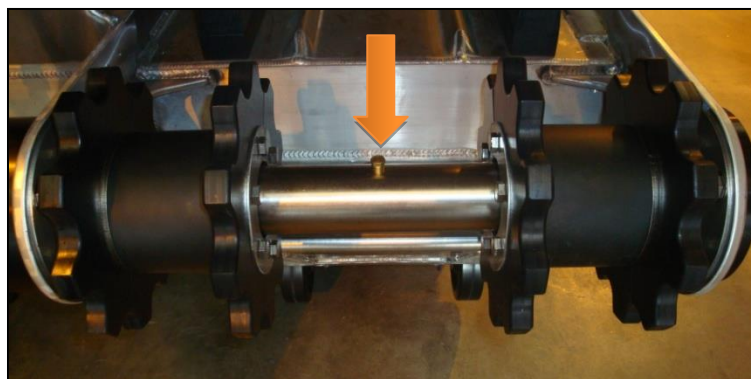
Control Linkages-Grease Monthly



Lubricate with Light 3 in 1 Oil Monthly.



Rear Shaft Filled Halfway with 30 Weight Oil



Engine radiator must be kept clean to prevent engine from overheating.



TEST PROCEDURE PRIOR TO WELDING, CUTTING OR DRILLING PONTOON

POTENTIAL HAZARD: Marsh Master pontoons are sealed chambers, and the possibility for an explosive mixture to be present exists. This mixture can be caused by a generation of methane gas or a fuel such as gasoline or diesel fuel entering the pontoon through a crack.



WARNING!
SERIOUS INJURY CAN OCCUR!

**IT IS IMPERATIVE THAT THE PONTOON BE CHECKED
FOR EXPLOSIVE ATMOSPHERE PRIOR TO WELDING,
CUTTING, OR DRILLING THE PONTOONS!!!!**

STEP 1: Remove the drain plug from the pontoon. It is located between the #7 and #8 outside bogey wheels. A small amount of water (<1 gallon) may drain from the pontoon. It is normal for a small amount of water to form due to condensation in the pontoons.

STEP 2: Using an ATX612 Multi-Gas Monitor or equal, insert the gas pick up tube at least 6 inches into the drain opening in the pontoon. Avoid getting any water into the pickup tube as water can damage the instrument.

Note: *The Gas Monitor instrument must be “bump” tested before each use. It must also be calibrated monthly. The person using the instrument must be trained in the use of the instrument. If there is any question concerning the instrument, contact the instrument manufacturer or Hagemeyer/Vallen, our local supplier, at 225-673-5670.*

STEP 3: Turn the instrument on and take a reading. The instrument will alarm at 10 % LEL (lower explosion limit). If you get an alarm or a reading above 2 percent LEL, go to Step 4. If you get a reading of 0 or 1, the pontoon is safe to weld, cut, or drill. Keep the instrument running at all times when welding.



WARNING!
SERIOUS INJURY CAN OCCUR!

**THE HEAT FROM WELDING CAN GENERATE GAS
FUMES. STOP WELDING IMMEDIATELY IF YOU GET AN
ALARM, AND GO TO STEP 4.**

STEP 4: Purge the pontoon with air as follows. Insert an air hose into the pontoon through the drain opening. Slowly bleed air into the pontoon allowing the pontoon to purge. After 1 hour of purging, test again. If you get a reading above 2 percent LEL, try purging another hour and test again. If you cannot get a low enough reading by purging this way, proceed to Step 5.

STEP 5: Remove the tracks and top slides from the machine. Removing the top slides will give you 16 bolt hole openings in the top of the pontoon to bleed through. Connect an air hose with a regulator and shut-off valve to the drain port of the pontoon. Slowly bleed air into the pontoon so that it comes out of the top bolt holes. Make sure the pressure in the pontoon does not exceed 2 psi. Purge for several hours, and then retest LEL. Purge as necessary to obtain a reading of 0 to 1 LEL. When you obtain a safe reading of less than 1 percent LEL, the pontoon is safe for welding, drilling, or cutting. Be sure to keep the instrument connected and running when welding.

PONTOON MAINTENANCE

PROCEDURE TO CHECK PONTOONS FOR LEAKS

- Turn off engine.
- Locate drain plug at bottom outside edge of pontoon.
- Remove plug using a 1 1/16" socket with breaker bar, and allow any water to drain.



- Air inside the pontoon will expand, especially on a warm day.
 - If air rushes out when the plug is pulled, then the pontoon is leak free.
 - If no air comes out, then we recommend pressure checking the pontoon.
 - Never assume if no water comes out that no leaks are present. The leak may be in the bottom of the pontoon, allowing the water to drain back out over time.
- With the drain plug removed, attach the pressure tester to the drain plug boss.
- Attach an air hose to the tester.
- Quickly open and close the ball valve, putting no more than 2 psi of air into the pontoon
 - **CAUTION:** More than 2 psi can damage the pontoon.
- Let it sit for a few minutes while observing the gauge.
 - A drop in pressure indicates a leak.
 - Use a squirt bottle with soap and water to find the leak.
- Perform test procedure to check pontoon atmosphere, and then repair the pontoon.
- After the repair is complete, repeat the pressure test to ensure that the pontoon is completely sealed.



- Using Loctite #545 thread sealant, reinstall the pontoon drain plug. Do not over tighten.



WARNING!
SERIOUS INJURY CAN OCCUR!

**EXPLOSION HAZARD: SERIOUS INJURY OR DEATH
COULD OCCUR IF FLAMMABLE LIQUIDS OR GASES
ACCUMULATE IN THE PONTOON CHAMBER, AND A
SOURCE OF IGNITION PENETRATES THE PONTOON.**



WARNING!
SERIOUS INJURY CAN OCCUR!

**DO NOT CUT, DRILL, WELD OR PERFORM ANY HEAT
OR SPARK GENERATING ACTIVITY UNTIL THE
PONTOON CHAMBER ATMOSPHERE HAS BEEN
TESTED BY A COMPETENT PERSON USING A
PROPERLY CALIBRATED EXPLOSIVE METER.
(FLAMMABLE GAS DETECTOR)**

Before doing any work on pontoon, contact the manufacturer to review the work procedure planned.

TRACK MAINTENANCE

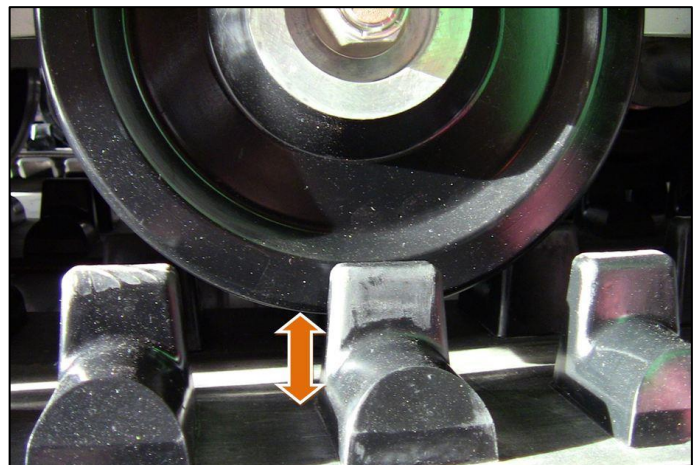
Two items are required to keep the Marsh Master tracks properly maintained.

- 1) Proper belt tension/alignment
- 2) Proper bearing lubrication. Poor bearing lubrication will result in short bearing life.

CHECKING TRACK TENSION

Method 1: Primary Test

- Place jack at jack plate. Jack up one side of machine until the track is off the ground.
- Examine the track clearance between the bottom of the 5th bogey wheel and the top of the rubber belt.
- The distance should be between 1/2" to 1".



Method 2: Field Test

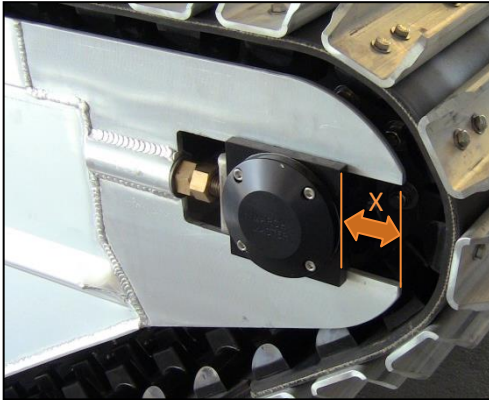
- Place your foot on the track in front of the buggy, and apply pressure.
- Properly tensioned tracks will spring back.
- Improperly tensioned tracks will be floppy and have no rebound.



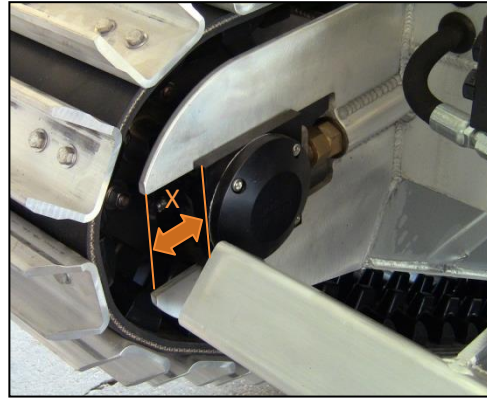
ADJUSTING TRACK TENSION

- To adjust the track tension, you must first unlock the bearing take-up nuts by loosening the lead nut (the one farthest to the front).
- With the lead nut out of the way, loosen or tighten the other nut to obtain the correct track tension, as noted in the previous section.
- Once the track is properly tensioned, make sure that the distance from the bearing housing to the front of the bearing pad is the same on both sides of the track. (See pictures below)
- Re-lock the bearing take-up nuts, but do not over tighten them.

Outside



Inside



TRACK CLEAT REPLACEMENT

- When a track is bent, it can usually be straightened in a hydraulic press.
- The only time that it cannot be straightened is if the cleat is twisted or cracked.
- Roll the cleat in need of replacement to the rear sprockets.
 - The rear sprockets will hold the drive lugs in place as you remove the cleat.
- Remove the cleat, and either straighten or replace it.



- Apply blue Loctite #242 to the threads of the drive lugs, not the bolts.
- Install the cleat, tightening the bolts to 100 in.-lb.

OTHER TRACK MAINTENANCE ITEMS INCLUDE:

Check periodically for loose bolts or broken or bent cleats. Replace or repair immediately.

Remove any wire, fishing line, grass, or other materials, which wind up on the sprocket shafts.

VENTED BOGEY TUBES

CHECKING BOGEY TUBES

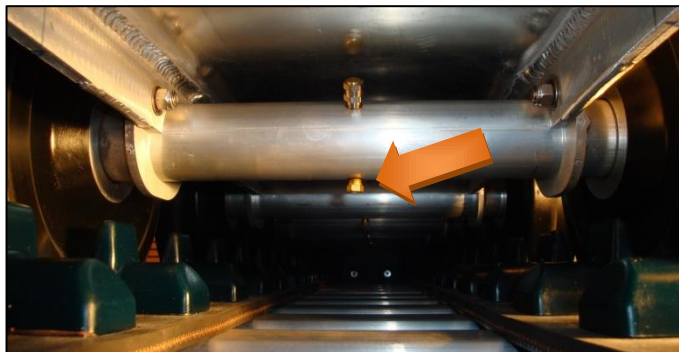
- Jack the machine up until the track is off the ground.
- Grab each wheel, pulling upward.
 - If the shaft moves, then it is a bad tube.
 - If the bogey tube moves, the mounting bolts are either loose or have come out.

NOTE: A bad bogey tube will squeak.

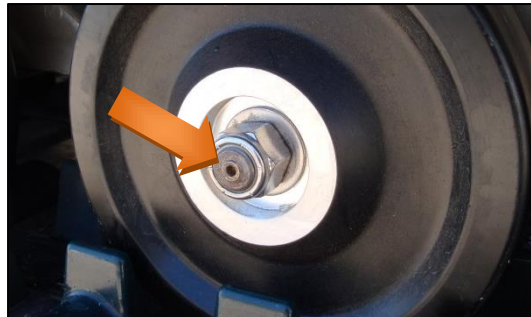
BOGEY TUBE SERVICE PROCEDURE

Required every 500 hours

- Make sure the oil in the tubes is at least 70°F.
- It is best to change the oil in the tubes when the machine is level.
- Place a container to catch the oil under the tube and remove the bottom plug.



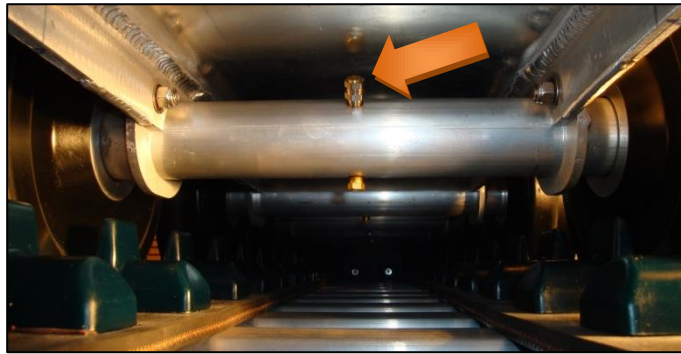
- Remove the 1/8" pipe plug from the end of the shaft of the tube.
 - Requires 3/16" Allen wrench.



- Once the oil has drained, refasten the bottom plugs using Loctite #545 thread sealant, and discard the used oil.
- Insert the Alemite fitting into the end of the shaft where the plug was.
 - Napa part #715-1016
 - Coast part #SPNL-0227



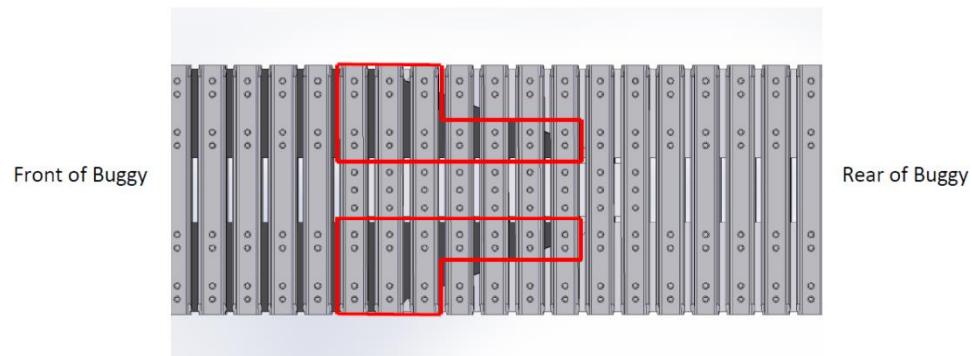
- Use the Alemite Lever-Operated Oil Gun Model 4035 to pump SAE 50 synthetic oil into the tube until oil comes out of the top vent.
 - Typically 30-32 pumps (4-4.5 FL.OZ.) per tube.



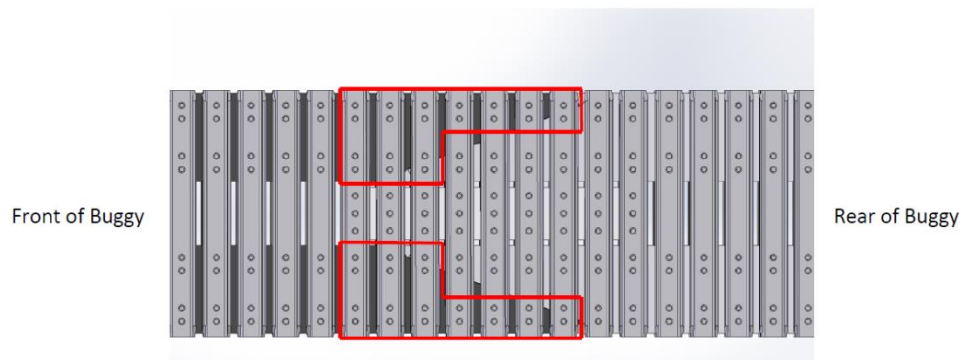
- Once the tube is full, remove the Alemite fitting, and immediately insert the 1/8" pipe plug using Loctite #545 thread sealant.
- Repeat this process for every tube on the machine.

- Remove the bolts that fasten the drive lugs attached to the front end of the belt.
 - You will need to take note of which way the belts are meshed

Male Front End Mesh



Female Front End Mesh



- With a little prying, the tracks should now be loose enough so that they fall on their own.
 - You may want to tie a rope to the tracks so that you can let them down easily.



WARNING!
SERIOUS INJURY CAN OCCUR!

THE TRACKS ARE HEAVY AND WILL FALL RAPIDLY!

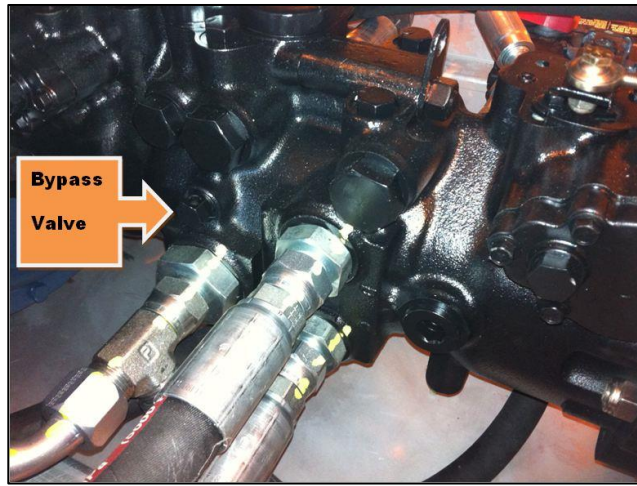
- Start the engine, and run the track backwards to clear the rear sprocket.



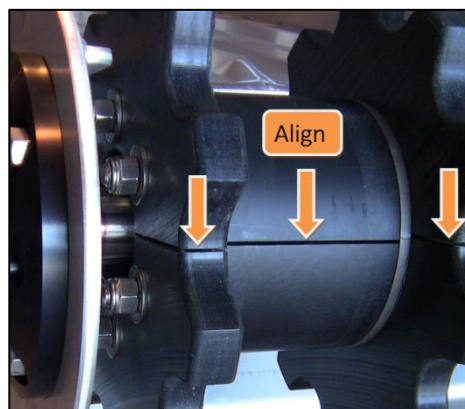
WARNING!
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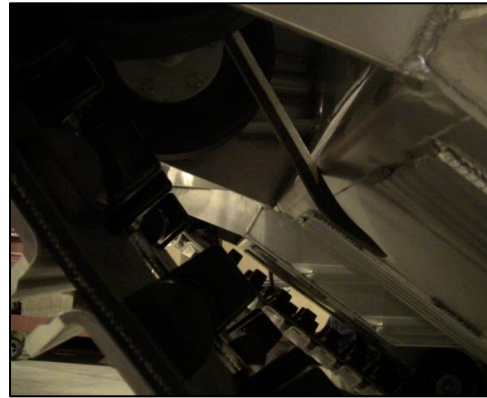
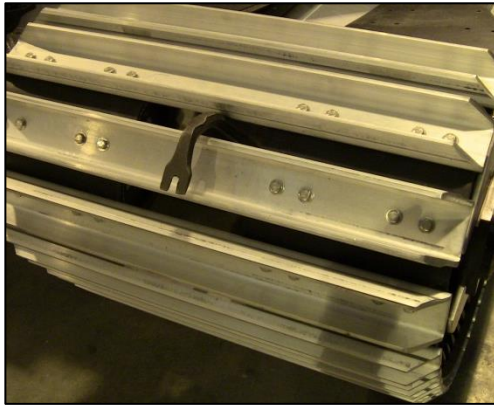
- Under the seat on the side opposite of the track you are working on, look for the 5/8" hex head bolt with a pinhole midway down the length of the pump.



- Open the bypass/towing valve by turning counter clockwise 2 turns max. (See Sundstrand manual p. 7 for details)
 - Now the rear shaft will rotate freely by hand.
- Remove the nylock nuts, washers, and bolts from the rear sprockets.
- Remove the rear sprockets and rear shaft spacers.
 - While the shaft is exposed, inspect the sprocket bolt holes for wear, and the weld along the rings for any cracks.
- Install the new sprockets, making sure the split in the sprocket is aligned with the split in the spacer located between the sprockets.



- Once the bolts are through the sprocket, coat the full length of the threads with red Loctite #271
- Put the nylock nuts and washers back on the bolts and torque to 40 ft.-lb.
- Lay the front end of the tracks back on the front idler shaft
- Place a pry bar through the cleats, over the front shaft and against the angled face of the pontoon.
 - This will hold the front end in place.



- Before starting the machine, close the bypass/towing valve by turning the 5/8" hex head bolt clockwise until it bottoms out.
- Lay the rear track back on the sprocket, and use the engine to run the track back onto the pontoon.
- Use C-clamps to hold each end of the belt together



- Put the washers, lock washers, and bolts back into the belts to hold the splice together.
 - Do not put the drive lugs on yet.

- Once all of the bolts have been run down through the belt, remove the C-clamps.
- Run the track forward so that the drive lugs can be reassembled in the gap between the track and the pontoon at the front of the buggy.
- Apply 2 drops of blue Loctite #242 to both inserts in each drive lug and reinstall.
 - Torque to 100 in.-lb.
- Use procedure for adjusting track tension found in a previous section of this manual to re-tension the tracks.

CONTROLS ADJUSTMENT

The controls may need adjustment after the machine has been run for many hours. Over time, the steering may veer to the left or right. This change can be caused by worn spools in the drive pump. The veering may also be a result of loose engine or pump mounting bolts. The vibration of the machine may have loosened the bolts, and caused the motor and pump to move to a slightly different position. These issues should be addressed before adjusting the controls.

Detent Adjustment

When looking from the side, the left and right control levers should be parallel and line up. The levers typically lean back about 5° off vertical as seen in the picture below. The detent position of the control levers is controlled by the length of the vertical control rods. To change the length of the control rod:

1. Remove the driver's side console panel, or the control lever plate to access the detent control rods.
2. Remove the nut and bolt connecting the control rod to the control arm.
3. Loosen the nut on the rod end.
4. Turn the rod end.
 - a. Clockwise to shorten.
 - b. Counter-clockwise to lengthen.
5. Tighten the jam nut on the rod end.
6. Reconnect the control rod to the control arm by fastening the bolt and nut.
7. Refasten the panel/plate that was removed to access the control rods.



Neutral Band Adjustment

If the Marsh Master veers to one side when tracking with the control levers fully forward, then the drive pump control rods need to be adjusted. In other words, the neutral band needs adjustment. Another symptom for needing adjustment is if the tracks don't begin to move at the same time when moving both control levers forward or backward. This adjustment can be done in the shop, but the final adjustment must be done in the field to ensure that the machine is tracking straight. As with the detent position, the neutral band is adjusted by changing the length of the drive pump control rods.

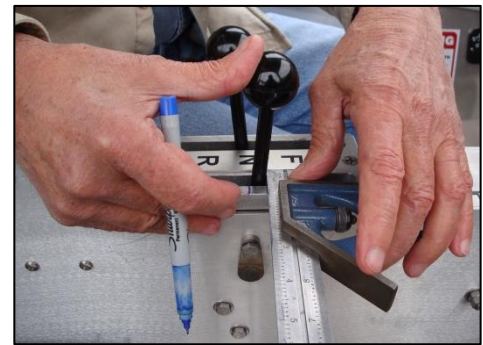


WARNING!
SERIOUS INJURY CAN OCCUR!

DO NOT ADJUST THE DRIVE PUMP CONTROL RODS WHEN THE ENGINE IS RUNNING. SHUT THE ENGINE OFF BEFORE DISCONNECTING ANY OF THE DRIVE PUMP CONTROL RODS.

Follow the procedure below to adjust the neutral band and make the machine track straight:

1. Before adjusting the controls, make sure that there is ample room for the machine to sway from side to side, and front to back.
2. Crank the engine, and let it idle.
3. Put a square up against the console and the front of the left control lever,
4. Make a line with a pen to mark the detent position.
5. Move the lever forward, sliding the square along with it, until the pump begins to engage.
 - a. The track will begin to move, and you will hear a difference in the sound of the pump.
6. Leave the square at the point where the pump began to engage, and release the lever back to detent.
7. Draw a line to mark the engagement point.
8. Move the square to the back of the left control lever.
9. Draw a line.
10. Move the lever backward until the pump begins to engage, and draw a line.
11. Turn off the engine.
12. Measure the distance between the front two lines and the back two lines.
 - a. These two measurements should be the same. If so, move on to step 18.
 - b. If the front two lines are closer together than the back two, then the control rod is too short and needs to be lengthened.
 - c. If the back two lines are closer together than the front two, then the control rod is too long and needs to be shortened.
13. With the engine off, lift the driver's seat and remove the nut and bolt that connect the left control rod to the pump control arm.
14. Turn the rod end to either lengthen or shorten the control rod in accordance with the measurements from step 12.
 - a. Typically requires $\frac{1}{2}$ turn to 2 full turns.
15. Reconnect the control rod to the pump control arm, fastening the bolt and nut.
16. Erase the front and back lines from steps 7 and 10.



17. Repeat steps 2-16, omitting steps 4 and 9, until the measurements from step 12 are the same.

- a. Do not erase the marks once the final adjustment has been made.

18. Move the square to the right side, and apply steps 2, 4-11 to the right lever.

- a. The front line on the left and right should be aligned for proper controls adjustment.
- b. If the right line is further back than the left line, then the pump control rod is too short and needs to be lengthened.
- c. If the right line is further forward than the left line, then the pump control rod is too long and needs to be shortened.



19. With the engine off, lift the passenger's seat and remove the nut and bolt that connect the right control rod to the pump control arm.

20. Turn the rod end to either lengthen or shorten in accordance with the location of the line in step 18.

21. Reconnect the control rod to the pump control arm, fastening the bolt and nut.

22. Erase the lines from step 18.

23. Repeat steps 18-22 until the lines are in line.

At this point, the controls should be very close to the correct position. The machine must now be field tested to check whether or not it is actually tracking straight. Use the following procedure to finalize the adjustment:

1. Start the engine, and bring it up to 2000 rpm.
2. Pick a straight, flat path with no obstacles, and make sure that the tracks are clear of anything.
3. Push both control levers fully forward.
4. Pick a point off in the distance directly in front of the buggy, and watch it.
 - a. If the machine continues to head straight at the point, then the controls are good.
 - b. If the machine veers to the left of the point, then the left track is running too slowly.
 - i. In this case, the pump control rod on the driver's side needs to be adjusted.
 - ii. The pump is not being fully stroked, so the rod needs to be shortened.
 - c. If the machine veers to the right of the point, then the right track is running too slowly.
 - i. In this case, the pump control rod on the passenger's side needs to be adjusted.
 - ii. The pump is not being fully stroked, so the rod needs to be shortened.
5. Stop the machine, bring it to idle, and turn off the engine.
6. Lift the seat cover and adjust the control rod in accordance with the notes of step 4.
7. Repeat steps 1-6 until the machine tracks straight.

ENGINE-VM 754 TE3

Check engine oil daily.

Change engine oil and filter every 300 hours. (See enclosed parts manual)

TO CHANGE OIL AND FILTER

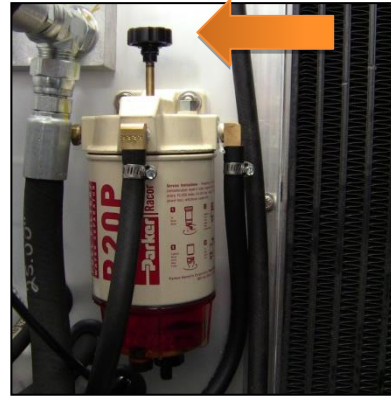
- Run the engine at idle for 5-10 minutes to allow the oil to thin out.
- Turn off engine.
- Remove plug from the bottom of the machine to access the oil pan drain plug.
- Remove oil pan drain plug.
- Drain oil.
- Remove and replace oil filter.
- Refasten oil pan drain plug.
- Refasten plug on the bottom of the machine.
- Fill engine with oil through filler cap located on top of valve cover.

NOTE: Oil can be any SAE 15W-40 that meets API-CD specifications.

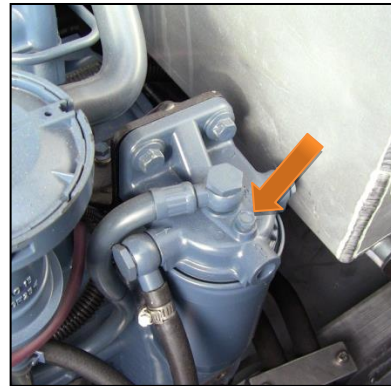
Engine Oil Capacity:	2 gallons (use the dip stick to check for proper amount)
Oil Filter:	Donaldson P554770 or equivalent
Primary Fuel Filter:	Racor R20P or equivalent
Secondary Fuel Filter:	Donaldson 550587 or equivalent
Primary Air Filter:	Donaldson P772579 or equivalent
Secondary Air Filter:	Donaldson P775300 or equivalent

PRIMING AN ENGINE THAT HAS RUN OUT OF FUEL

- Turn the fuel primer knob counter clockwise to free the pump.

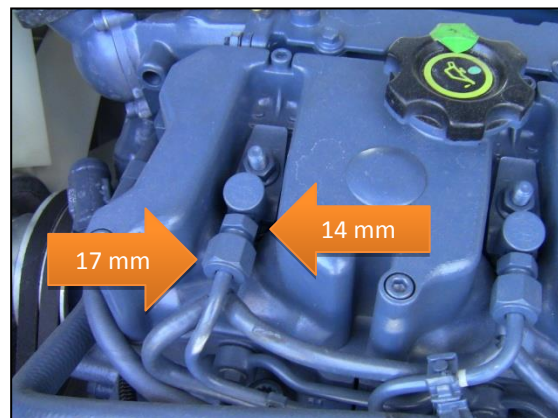


- Crack the 10mm bleeder on the engine's secondary filter head.



- Pump the primer until all the air bubbles are gone and clear fuel is coming out.
- Retighten the bleeder and the fuel primer knob, and attempt to crank the engine.
 - If the engine cranks, then you are finished.
 - If the engine does not crank after 10 seconds, continue on to the next step.

- Holding back up with a 14 mm wrench, crack the 17 mm injector line closest to the radiator, and turn the engine over for 5-6 seconds.



- If the engine does not crank, retighten the first injector, and move to the next injector, repeating the process until the engine cranks.

ENGINE/HYDRAULIC OIL COOLING

AKG RADIATOR/OIL COOLER SCREEN

The AKG radiator/oil cooler is a single unit that houses two cooling systems. These two systems cool the engine and the hydraulic oil. The unit is located at the rear of the engine compartment. It is critical that air is allowed to flow through the fins of this device with minimal resistance. Therefore, the screen will need to be cleaned periodically. The time interval between cleaning really depends upon the operating environment. In all models, air is pulled into the engine compartment through the radiator/oil cooler. You will need to reverse the direction to blow out the screen.

- Lift the radiator/oil cooler screen so that the radiator/oil cooler is not blocked.
- Use compressed air to blow the fins from the inside of the engine compartment out.

HYDRAULIC FAN

MM-2LX models are equipped with a hydraulically driven cooling fan. This fan is mounted on the passenger side engine cover. The hydraulic fan pulls a vacuum on the engine compartment, so the hoods **MUST BE KEPT SHUT** to maintain proper cooling. All air flow through the AKG radiator/oil cooler is produced solely by this fan.

When the fan switch is on “Hi” mode, the hydraulic fan runs at full speed. This mode may be necessary when the hydraulic oil temperature rises faster than the engine temperature. This situation may occur when using the auxiliary system to install numerous anchors.

When the fan switch is on “Auto” mode, the hydraulic fan speed is automatically proportioned to maintain proper engine temperature. The fan will start off at low speed upon initial startup. When the engine reaches 195°F the fan will switch to high speed (notice the red line on the Engine Temp gauge). As you run the buggy, the fan will cycle back and forth between high and low speed; this cycling is normal. (see Instrument Panel section for more on engine temperature)



The hydraulic fan also has a reversing feature for blowing out the radiator. This feature is critical when running or cutting in dry reeds such as phragmites. To put the fan in reverse:

- Lower the engine speed to idle.
 - The engine speed may need to be slightly above idle for some machines to fully switch from forward to reverse.
- Flip and hold the switch to the “Rev” position.
- Bring the engine speed up to 2000 rpm.
- Hold for about 10 seconds.
- Lower the engine speed back to idle.
- Release the fan switch, and set to auto.

This reversing process should be repeated every 30 minutes, depending on the environment.



HYDRAULIC SYSTEM

The hydraulic system requires very little maintenance. It is very important to keep the hydraulic fluid clean, and check the reservoir periodically for proper fluid level. The fluid level should be maintained at the full mark on the dipstick. Use Mobil DTE 25M ISO VG46 Hydraulic Oil or equal. Change the hydraulic filters every 300 hours, and change the hydraulic oil and filter at 900 hours. The system holds approximately 7 gallons of oil in A models, and 9 gallons of oil in C models.

CAUTION: Hydraulic components depend on the system hydraulic fluid for internal lubrication. The smallest amount of contamination in the system will cause accelerated wear, reduced tracking power, or total failure. When changing a high-pressure hydraulic hose, it is imperative to use a 4 wire, 5000 psi hose with high-pressure fittings that meets the SAE 100R13 standard. It is also imperative to use all necessary precautions to keep contaminants from getting in the system. Thoroughly clean the fittings off before disconnecting, cap the hoses and motor fitting, and blow out the new hoses with high-pressure compressed air, or wash out with soap and water before installing. If available, use a filtering system to filter the hydraulic oil prior to reconnecting the drive hoses.

PROCEDURE TO DRAIN HYDRAULIC RESERVOIR AND REPLACE FILTER ELEMENT.

- Stop Engine.
- Let hydraulic fluid cool.
- Attach hydraulic system drain hose to the male quick connect of the low-flow auxiliary circuit.
 - The Parker number for the female quick connect fitting to be used on the drain hose is FF-371-6FP
- Place the free end of the drain hose into a 5 gallon bucket, or suitable container for used hydraulic oil.
 - Have an extra 5 gallon bucket ready.



- Put selector valve handle in down position.
 - Valve is located on front of driver's seat.



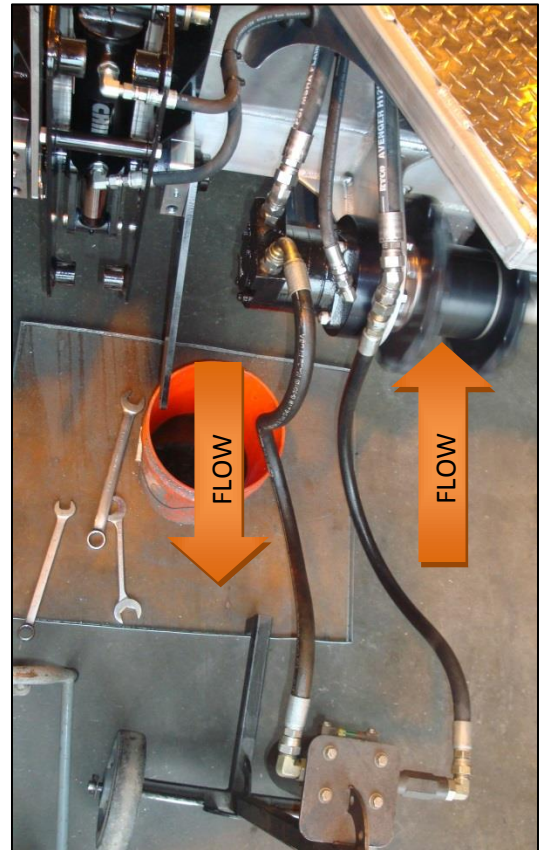
- Crank engine and let idle.
 - The hydraulic pump will pump fluid into the bucket at a rate of 3-4 gpm.
 - Stop the engine as necessary, and switch the bucket with the second one.
- As soon as the oil flow begins to sputter and stop, shut the engine down.
 - Do not run the engine after the oil flow stops.
- Disconnect the drain hose from the quick connects.
- Pull the selector valve handle back to the up position.
- Remove the main oil filter and replace with a new filter (A Models: Coast # 2AH5-E, Donaldson # P16-4375; C Models: Coast # 2CH5-E, Donaldson # P16-4378). Coat the gasket with a thin coat of oil before screwing the filter on.
- Remove drain plug at bottom of oil reservoir. Drain remaining fluid.
- Replace plug. Use Loctite #545 thread sealant on plug threads.
- Fill the reservoir with Mobil DTE 25M ISO VG46 or equal.
- Crank the machine, allowing motor cases and hoses to refill.
- Kill the machine, and add oil, bringing level back to full.

DRIVE SYSTEM FILTRATION

When a component of the hydraulic drive system fails or is opened, there is a high risk of contamination. The smallest amount of contamination can diminish the performance of the machine or cause premature failure. In a closed loop system, it is essential to pre-filter the fluid to re-establish its proper cleanliness.

PROCEDURE TO FILTER DRIVE SYSTEM

- **Clean the area around the hose fittings thoroughly.**
- Disconnect the rearmost hose of the drive motor.
- Attach the inlet hose of the filtration system to the drive motor and the outlet hose to the drive hose.
 - Make sure that the hose coming from the drive motor is the inlet hose to the filtration system.
 - The filter will have an arrow to indicate the direction of flow.
- If the tracks are still on, jack the buggy up.
- Run the track **FORWARD** for 5-10 minutes with the engine at 1800 rpm and the control lever fully forward.
- Reattach the hoses, taking every precaution to ensure that nothing gets into the fittings.
- If the pump or high pressure hoses on both sides have been replaced, then you would need to repeat this process for both sides.
- Check the hydraulic oil level in the reservoir, and replace any lost fluid.



NOTE: Operating room cleanliness is the rule!

ORDERING REPAIR PARTS

(1-800-827-5320)

The components used on the Marsh Master have been carefully selected for performance, reliability, and safety. Use only Coast Machinery or equivalent replacement parts.

WHEN ORDERING PARTS PLEASE FURNISH ALL OF THE FOLLOWING:

- Machine Type
- Machine Model Number
- Machine Serial Number
- Date Manufactured (Month and Year)
- All of the above can be found on the machine date plate.
- Also include:
 - Company name
 - Shipping address
 - Billing address
 - Name of person ordering
 - Telephone number
 - Purchase order number
 - Part number, description, and quantity of each item