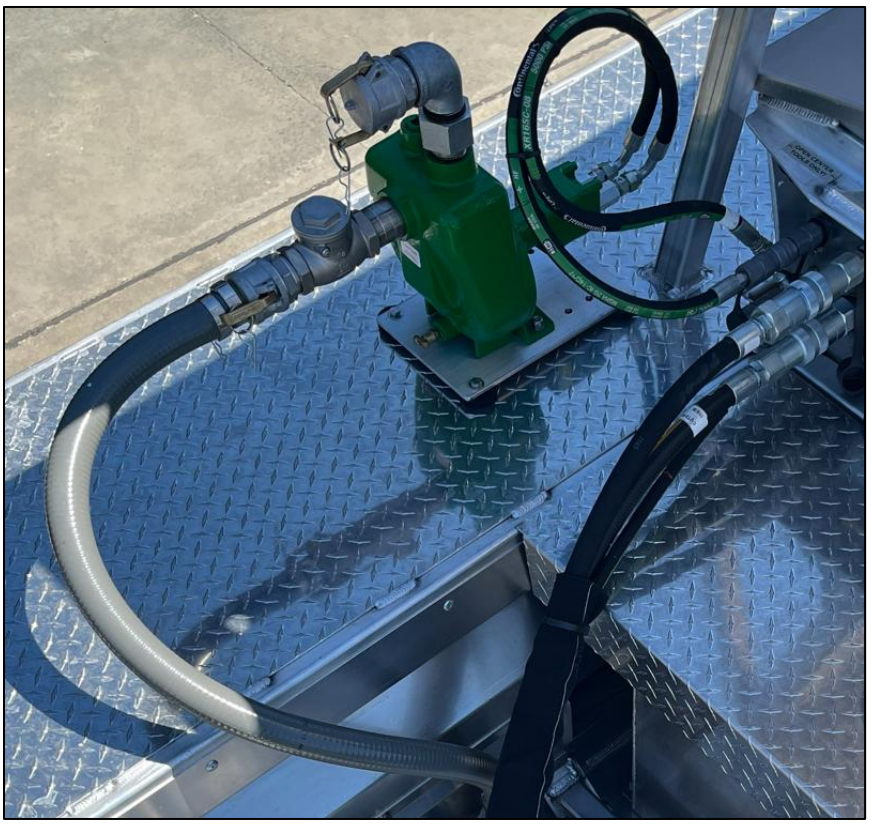
FIRE SUPPRESSION

MARSH MASTER®

OPERATING & MAINTENANCE MANUAL



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FORWARD

When equipped with the fire suppression system, the Marsh Master® offers a fully amphibious solution to fighting fires. The system can deliver a max flow of 20 gpm at a distance of approximately 35 ft. This model has a total of two 55 or 65 gallon (depending on the model) water tanks. One water tank is built into each of the machine's pontoons. The system is capable of drawing water from on-site sources to replenish the tanks or spray directly. The cutter can be used on the machine as long as the internal water tanks are empty while the cutter is attached. **USING THE CUTTER WITH THE WATER TANKS FULL WILL RESULT IN EXCEEDING THE CAPACITY OF THE MARSH MASTER.**

MANUFACTURER'S LIMITED WARRANTY

MACHINE WARRANTY

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.

REPLACEMENT PARTS WARRANTY

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. No warranty is given for electrical parts.

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.
- Electrical parts.

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

The fire suppression system is specifically designed and manufactured primarily for use on the Marsh Master® amphibious track vehicle. The fire suppression system should not be used in areas or applications where the Marsh Master® is not designed to operate (see your Marsh Master® manual). The fire suppression system is an attachment that should be operated and maintained with respect and caution. Misuse or carelessness can result in serious personal injury or death, damage to the machine, or both. Safety precautions must be observed at all times.

OPERATOR QUALIFICATIONS

Inexperienced personnel should not operate the fire suppression system. It is important that qualified personnel study and understand this manual along with the Marsh Master® manual specific to your machine, before attempting to operate the machine with the fire suppression system attached.

SAFETY WARNINGS

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

The table below lists warnings that must be read, understood, and followed prior to and during any activity that involves direct or indirect use and/or interaction with the fire suppression system. Many of these warnings are shown both here in this table and in the applicable sections throughout this manual.

	WARNING **SERIOUS INJURY OR DEATH CAN OCCUR!**	WHAT CAN HAPPEN	HOW TO AVOID
	READ AND UNDERSTAND THIS MANUAL AND THE **MARSH MASTER®** MANUAL (SPECIFIC TO YOUR MACHINE) PRIOR TO OPERATING THE MARSH MASTER® WITH THE FIRE SUPPRESSION SYSTEM ATTACHED	The risk of accident, injury, and equipment damage is greatly increased if the operator does not fully understand how to properly operate the fire suppression system in different situations.	New or inexperienced operators should read and understand this manual, and then regularly practice the operating techniques described in this manual.
	READ, UNDERSTAND, AND FOLLOW ALL DECALS AND PLACARDS AFFIXED TO THE FIRE SUPPRESSION SYSTEM	Failure to obey all warnings affixed to the fire suppression system could increase the risk of injury, property damage, or death.	Ensure that all warnings affixed to the fire suppression system are visible to all surrounding personnel.
	PERFORM A PRE-TRIP ASSESSMENT OF THE AREA IN WHICH THE FIRE SUPPRESSION SYSTEM IS TO BE OPERATED AND IDENTIFY ALL POTENTIAL HAZARDS (OBSTACLES, IMPEDIMENTS, DEBRIS, MANWAY COVERS, HIGH WATER, STRONG CURRENTS, SUBMERGED OBJECTS, STEEP BANKS, ETC…)	Not fully understanding the operating environment greatly increases the risk of accident, injury, and equipment damage AND increases the chance of leaving the operator and personnel stranded in a remote location.	When performing a pre-trip assessment, consult weather resources, people familiar with the area that you are operating the machine in, and when possible, practice with an experienced operator in similar environments prior to embarkment.
	VISUALLY INSPECT THE CONDITION OF THE FIRE SUPPRESSION SYSTEM, LOOKING FOR LOOSE FITTINGS, LEAKS, ABNORMAL WEAR, ETC….	A damaged fire suppression system could lead to malfunction of the system and the Marsh Master® resulting in an increased risk of injury, death, or further property damage.	Prior to starting the machine, visually confirm that there are no noticeable mechanical concerns associated with the fire suppression system. Resolve any issues found.
	WEAR PERSONAL PROTECTIVE EQUIPMENT SUCH AS, BUT NOT LIMITED TO, SAFETY GLASSES, GLOVES, HEARING PROTECTION, STEEL TOE BOOTS, LIFE JACKETS, ETC…. WHEN OPERATING OR SERVICING THE FIRE SUPPRESSION SYSTEM	Failure to do so may put personnel in an adverse situation increasing the risk of injury or death.	It is the operator's or maintenance personnel's responsibility to ensure that all people interacting with or around the fire suppression system are properly fitted with the correct personal protective equipment.

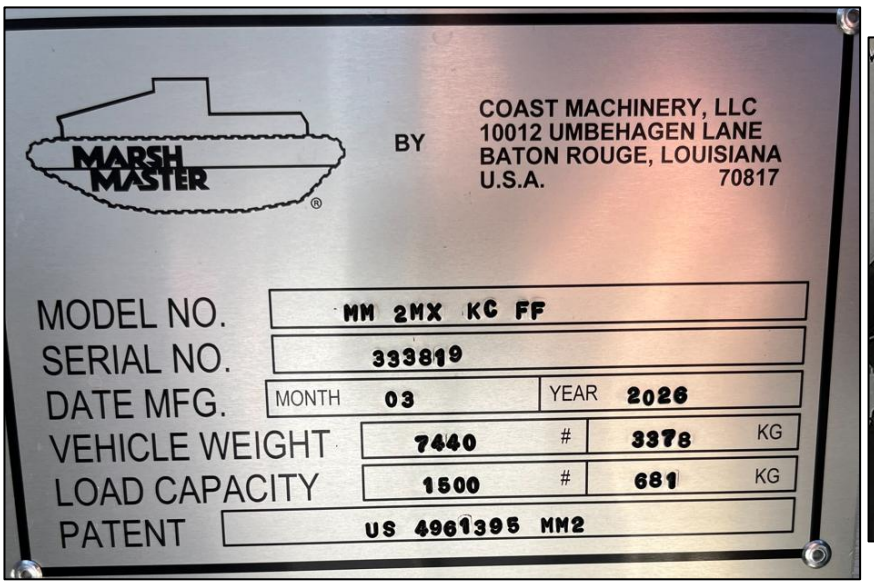
	ENSURE THAT THE MARSH MASTER'S® ENGINE IS OFF, WHEN PERFORMING MAINTENANCE OR ADJUSTMENTS TO THE FIRE SUPPRESSION SYSTEM	Failure to do so could result in personnel being at risk if the fire suppression system were to be engaged, increasing the risk of injury.	It is the operator and/or maintenance personnel's responsibility to ensure that the engine is turned off and the machine is in a stable environment prior to working on the fire suppression system.
	WHEN SWIMMING THE MACHINE WITH THE FIRE SUPPRESSION SYSTEM ATTACHED ALWAYS FOLLOW THE BEST PRACTICES FROM YOUR SPECIFIC MARSH MASTER® MANUAL.	Failure to follow the recommended best practices could result in putting the machine in an adverse operating condition increasing the risk of property damage, injury, or death	It is the operator's responsibility to evaluate the situation at hand and to follow the recommended operations from the specific machine's manual with regard to swimming the machine with the fire suppression system attached. When in doubt, err on the side of safety.
	KEEP HANDS CLEAR OF THE FIRE SUPPRESSION PUMP AND MOTOR COUPLING	Rotating machinery can pull fingers or clothing articles into area resulting in an increased risk of injury.	Always use extreme caution when maneuvering around the fire suppression system pump and motor area.
	NEVER LET THE FIRE SUPPRESSION PUMP RUN WHEN NOT IN USE	The fire suppression pump is a centrifugal, self-priming, pump that, when not spraying, will recirculate resulting in heat build up leading to an increased risk of damage to the pump and to personal injury from scalding hot water when swapping water hoses.	Always turn the fire suppression pump off when not using the system. It is the operator's responsibility to monitor the use of the fire pump and to control it's on/off status via the controls in the cab of the Marsh Master®.
	THE FIRE SUPPRESSION PUMP RUNS OFF OF A HYDRAULIC CIRCUIT, ALWAYS USE CAUTION WHEN CONNECTING AND DISCONNECTING THE PUMP TO THE MARSH MASTER®. SEE YOUR SPECIFIC MARSH MASTER® MANUAL FOR OPERATING THE LOW FLOW HYDRAULIC CIRCUIT.	Hydraulic hoses can be under pressure and at elevated temperatures when in use and/or shortly after use. Elevated pressures and temperatures increase the risk of personal injury when contacting these components during or shortly after operation.	Always were proper PPE when operating in the vicinity of the fire suppression pump. Never connect or disconnect the pump while it is in operation or while the hydraulic circuit on the Marsh Master® is engaged.

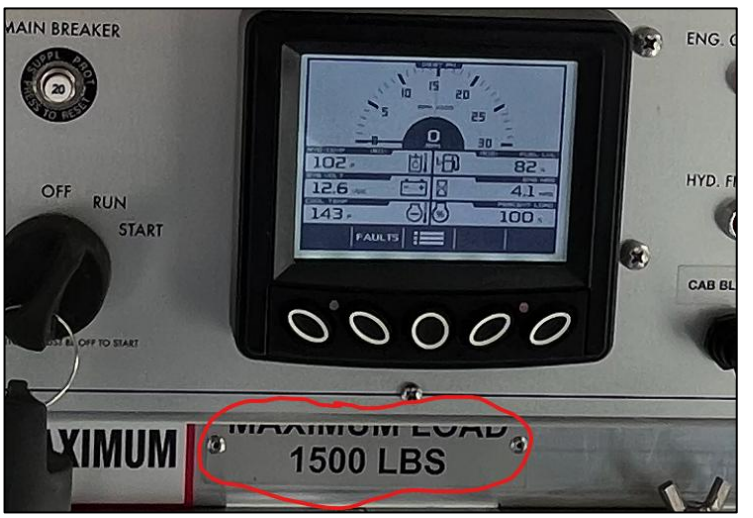
	THE WEIGHT OF THE WATER WHEN FILLING THE INTEGRAL WATER TANKS ON THE FIRE SUPPRESSION SYSTEM MUST BE ACCOUNTED FOR WHEN CALCULATING LOAD CAPACITY FOR THE MARSH MASTER®	Water weighs 8.34 lbs/gal; therefore, when the Marsh Master's® tanks are completely full, this amount of weight must be accounted for in staying under the placarded load capacity on the Marsh Master®. Failure to stay under the stamped load capacity will increase risk of property damage, personal injury, and even death.	It is the operator's responsibility to make sure that the weight of all attachments, accessories, personnel, and gear stays under the load capacity that is placarded on the Marsh Master®.
	FULL OR PARTIALLY FILLED WATER TANKS IMPACTS THE PERFORMANCE OF THE MARSH MASTER® AND MUST BE ACCOUNTED FOR WHEN OPERATING THE MACHINE IN ADVERSE ENVIRONMENTS	The Marsh Master's® performance will be adversely impacted as the loaded weight of the machine is increased. Therefore, when operating in certain environments with different grades and angles of operation, the risk of property damage and personal injury is increased as the weight of the loaded machine is increased.	It is the operator's responsibility to makes sure that the weight of all the attachments, accessories, personnel, and gear stays under the load capacity that is placarded on the Marsh Master® and that when the Marsh Master® is loaded down within the capacity that it is operated in accordance to the scope and environment as covered in the Marsh Master® operation and maintenance manual specific to your model machine.
	NEVER FILL THE FIRE SUPPRESSION WATER TANKS WITH ANYTHING OTHER THAN THE FIRE SUPPRESSION PUMP ON THE MARSH MASTER	The tanks that are integral to the Marsh Master's® pontoons are designed and manufactured such that they should only be filled with either the pump on the Marsh Master or a low-pressure hose (less than 100 psi). Using a high-volume / high pressure filling system can overpressure the water tanks resulting in a failure.	It is the operator's responsibility to ensure that only low-volume / low pressure filling devices be used when filling the internal water tanks on the Marsh Master®.

	ENSURE PROPER SUPPORT WHEN SPRAYING OFF THE BACK OF THE MARSH MASTER DECKS	The thrust that is generated from the discharge nozzle produces a force that can push the hose operator backwards. This force, if not prepared for can result in loss of balance increasing the risk of falling causing personal injury.	Always make sure that the hose operator is properly braced and ready for the hose thrust that is generated when spraying. Where possible, the hose operator should have their back braced against part of the Marsh Master to prevent loss of balance due to the "kick" of the hose. Proper footwear with tractive grip is also recommended.
	BEWARE OF SLIPPING HAZARDS	The Marsh Master deck is an aluminum, diamond plated decking. Wet or muddy decks increase the potential for slipping resulting in an increased risk of personal injury.	Always use three points of contact where possible when walking around the deck of the Marsh Master. Wear properly equipped non-slip footwear and maintain a clean, uncluttered deck.
	ALWAYS FLUSH TANKS WITH CLEAN FRESH WATER AFTER USING IN SALT OR BRACKISH WATER APPLICATIONS	If brackish or salt water is left in the internal pontoon tanks, corrosion will set it; thus, reducing the life of the internal water tanks. Corrosion increases the risk of tank failure resulting in an internal leak in the pontoon. This increases the risk of adverse operating parameters, increasing the risk of an incident.	It is the operator and maintenance personnel's responsibility to make sure the tanks are flushed with clean fresh water and completely drained out after each use. Especially in salt or brackish water environments.

LOAD CAPACITY

Unlike other attachments, the fire suppression system is built integral to the Marsh Master®. This means that the data plate and load capacity placard on your Marsh Master are stamped such that the weight of the **empty fire suppression system** is included. The Marsh Master® with the fire suppression system is considered an amphibious package **AS LONG AS** the load capacity of the Marsh Master® itself is not exceeded. When the integral water tanks are filled, the operator must account for this added weight of water and subtract this from the load capacity. It is the operator's responsibility not to exceed the load capacity of the Marsh Master®. See your Marsh Master® manual along with the placarding on your machine to determine the load capacity of your package and how to calculate your loaded weight. See example below regarding load capacity calculation. Note that the placards below are an example from a Marsh Master®, the operator is responsible for knowing what the specific machine's load capacity is stamped as.





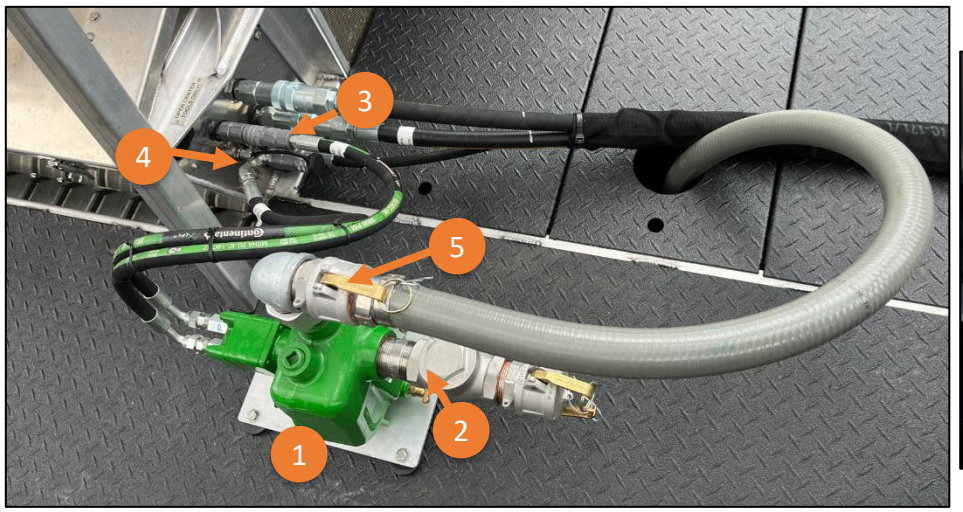
EXAMPLE: (65 GALLON WATER TANKS FULL)

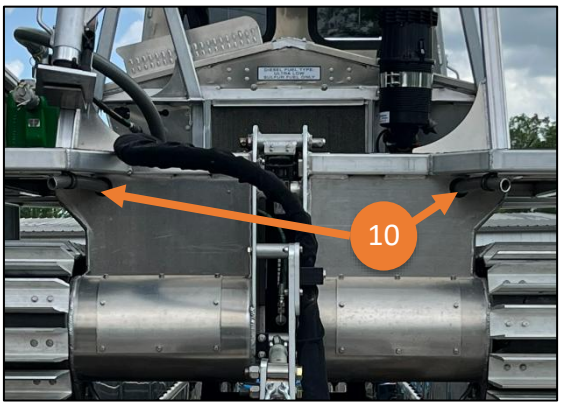
WEIGHT OF WATER IN FULL TANKS	=	2	X	8.34 LB/GAL	X	65 GAL	=	**1084 LBS**

REMAINING LOAD CAPACITY WHEN FULL	=	1500 LBS	-	1084 LBS	=	**416 LBS**

YOU HAVE 416 LBS LEFT BEFORE EXCEEDING LOAD CAPACITY. ACCESSORIES, ATTACHMENTS, GEAR, & PERSONNEL ALL COUNT TOWARDS EXCEEDING LOAD CAPACITY AND MUST BE ACCOUNTED FOR.

FIRE SUPPRESSION SYSTEM





Shown: FIRE SUPPRESSION SYSTEM COMPONENTS

1. HYDRAULIC MOTOR DRIVEN CENTRIFUGAL, SELF-PRIMING, FIRE SUPPRESSION PUMP
2. SUCTION PORT WITH SWING GATE VALVE AND CAMLOCK CONNECTION
3. SUPPLY PRESSURE QUICK CONNECT HOSE
4. RETURN HOSE, HARD MOUNTED TO TEE ON MANIFOLD
5. DISCHARGE PORT WITH CAMLOCK CONNECTION
6. LEFT TANK WATER LEVEL GAUGE
7. RIGHT TANK WATER LEVEL GAUGE
8. DRAFT HOSE WITH SUCTION STRAINER
9. DISCHARGE SPRAY HOSE WITH FOG AND STREAM ADJUSTABLE SPRAY NOZZLE
10. TANK VENT LINES, WILL DISCHARGE WATER WHEN TANKS ARE FULL
11. INTERNAL WATER TANK DRAIN PLUG, LOCATED CLOSE TO THE PONTOON DRAIN PLUG

FIRE SUPPRESSION SYSTEM DESCRIPTION

The fire suppression system consists of two tanks, one located in each of the two Marsh Master pontoons, a hydraulic driven, centrifugal, self-priming pump, a suction hose, a discharge hose with an adjustable spray nozzle, a draft hose, an in-cab tank level monitoring display and all associated plumbing integral to the Marsh Master® body. The fire suppression pump is driven by a hydraulic motor that uses the Low-Flow circuit on the Marsh Master® via quick connect fittings. The flow and pressure of the hydraulic fluid supplied to the fire suppression pump motor is controlled by the low flow circuit pump and relief valve setting specific to each Marsh Master®. This provides for a smooth-running system that is hydraulically protected from abrupt overloads when operating the fire suppression system.

ROTATING EQUIPMENT AT THE PUMP & MOTOR COUPLING INCREASE THE RISK OF INJURY. USE CAUTION WHEN IN THE AREA.

NEVER LEAVE THE FIRE PUMP RUNNING WITH THE DISCHARGE BLOCKED IN, THIS RESULTS IN RE-CIRCULATION, LEADING TO HEAT BUILD UP AND EARLY SEAL WEAR.

FIRE SUPPRESSION SYSTEM CAPACITY

The fire suppression system is designed to supply high flow through a fog and stream type adjustable nozzle that can be used when performing control burns and fire lines. The fire suppression system consists of two-65-or 55-gallon, aluminum water tanks that are built integral to the Marsh Master pontoons. The fire pump has a maximum flow of 120 gpm @ 20 psi discharge pressure, and a shutoff pressure of 120 psi. The flow and pressure are controlled both by engine rpms (hydraulic motor speed) and the nozzle operator. When spraying at maximum volume, the time to empty the tanks ranges from 2 to 5 minutes.

ALWAYS WEAR PROPER CLOTHING AND GEAR WHILE USING THE FIRE SUPPRESSION SYSTEM, ESPECIALLY WHEN NEAR ACTIVE FIRES.

WHEN SPRAYING, BE SURE TO BRACE YOURSELF FOR THE HOSE THRUST, ESPECIALLY IF STANDING ON THE DECK OF THE MARSH MASTER.

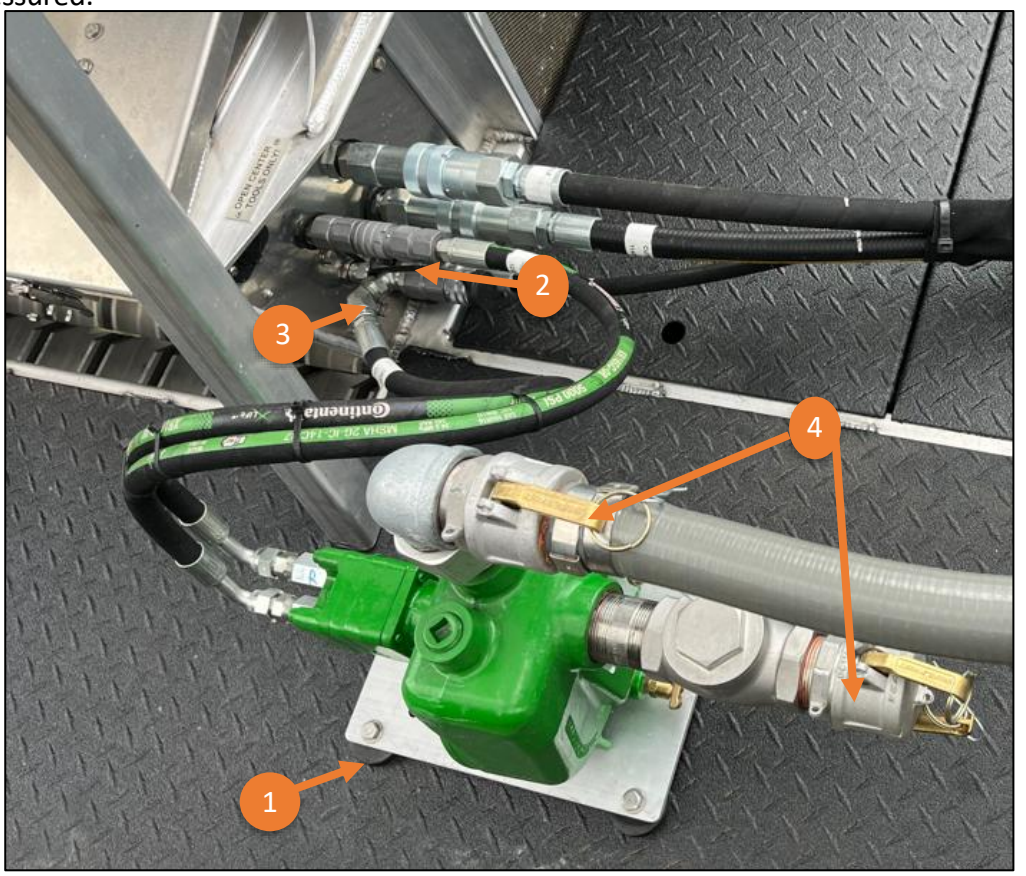
OPERATING SPEEDS

The fire suppression system is designed to operate with the Marsh Master's® Engine rpms between 1200 and 1800 (depending on engine - see your specific Marsh Master® manual). Do not exceed 2200 rpms when spraying. The faster the engine rpm's the higher the discharge pressure.

OPERATING ABOVE THE RECOMMENDED RPMS INCREASES THE RISK OF PROPERTY DAMAGE, EQUIPMENT MALFUNCTION LEADING TO SHORTENED EQUIPMENT LIFE.

INSTALLING AND REMOVING

The fire suppression system is not designed to be completely removed from the Marsh Master® as certain components of the system are integral to the body of the machine. However, the hydraulic driven fire suppression pump can be removed by disconnecting the pressure line quick connect and disconnecting the “hard plumbed” hose that is on the return tee of the quick connect manifold. The tee on the manifold will need to be capped once the hose is disconnected such that hydraulic oil doesn’t leak. The reason that the return port is “hard plumbed” is to protect the case seal on the hydraulic motor on the fire pump from being over pressured.



Shown: Fire Suppression Pump (Green Version)

1. WITH THE MARSH MASTER OFF AND THE PUMP FULLY DRAINED, UN-BOLT THE FOUR BOLTS THAT MOUNT THE FIRE SUPPRESSION PUMP TO THE DECK OF THE MARSH MASTER.
2. DISCONNECT THE PRESSURE (SUPPLY) QUICK CONNECT HOSE FROM THE MARSH MASTER QUICK CONNECT.
3. DISCONNECT THE RETURN HOSE FROM THE TEE ON THE RETURN MANIFOLD. BE READY TO CAP THE TEE AND PLUG THE HOSE WITH A DASH 8 JIC CAP AND PLUG SET.
4. DISCONNECT THE HOSES THAT ARE CONNECTED TO THE SUCTION AND DISCHARGE PORTS OF THE CENTRIFUGAL FIRE SUPPRESSION PUMP.

IF STORING THE PUMP IN BELOW FREEZING WEATHER MAKE SURE THAT THE PUMP CASING IS DRAINED COMPLETELY SUCH THAT FREEZING TEMPERATURES DON’T CRACK THE PUMP CASING.

FIRE SUPPRESSION OPERATION

Prior to turning on the fire pump, make sure that there is water in the pump casing. This is a centrifugal, self-priming, pump that must have water in the casing prior to turning on. **If you run the pump dry, you will damage the mechanical seal which will result in leaks and impact pump performance**. Also, make sure that the pump suction and discharge lines are connected according to how you are planning on using the pump. The fire pump can be used both to spray water out and to draft water into the internal tanks. If you are spraying water out, make sure that the fog and stream nozzle on the spray hose is closed and is under the control of an operator prior to activating the pump. Make sure the pump motor hydraulic lines are connected to the correct pressure and return ports of the Marsh Master®. Once you've confirmed that everything is hooked up, primed with water in the casing, and have an operator controlling the discharge hose, you are now ready to move into operating the system as described and depicted below.

Spraying Water Operation

1. With the Marsh Master at approximately 1500 rpms, turn the pump on by activating the Marsh Master's low flow auxiliary tool circuit. This is done via an in-cab push-pull button on the control panel or by manipulating a valve under the driver's seat depending on your specific Marsh Master® model.

NEWER MODEL MACHINES

THE LOW FLOW AUX CIRCUIT ON THE MARSH MASTER PROVIDES APPROXIMATELY 7 GPM HYDRAULIC FLOW AT 2000 ENGINE RPMS.

THE FIRE PUMP SHOULD TYPICALLY BE OPERATED BETWEEN 1500 AND 2000 ENGINE RPMS.

EARLY MODEL MACHINES

2. As soon as the pump is turned on, have the discharge hose operator in position and brace for the discharge hose as it pressures up. The hose operator can then slowly start to open the fog and stream nozzle to the desired spray parameters. Engine rpms can be adjusted to achieve the required flow and pressure for the discharge hose operator.

3. The tank levels are displayed in the cab of the machine and can be monitored by the cab operator. When spraying at maximum output on the pump, it only takes 2 to 5 minutes to empty the tanks.

TANK LEVEL DISPLAY, LEFT SIDE IS LEFT TANK, RIGHT SIDE IS RIGHT TANK. THE TWO TANKS ARE CONNECTED VIA A CROSSOVER LINE SO SWITCHING BETWEEN TANKS IS NOT REQUIRED.

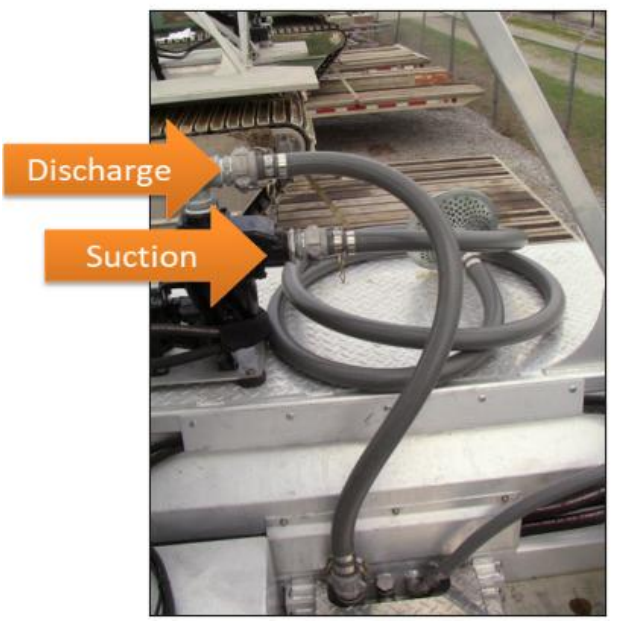
4. Once you've emptied the tanks or stopped spraying by closing off the spray nozzle, be sure to turn the low flow auxiliary circuit off in the cab of the Marsh Master®. Failure to turn the fire pump off will result in either running the pump dry or internal recirculation which builds up heat damaging the pump and increasing the risk of injury.

WARNING!
SERIOUS INJURY OR DEATH CAN OCCUR!

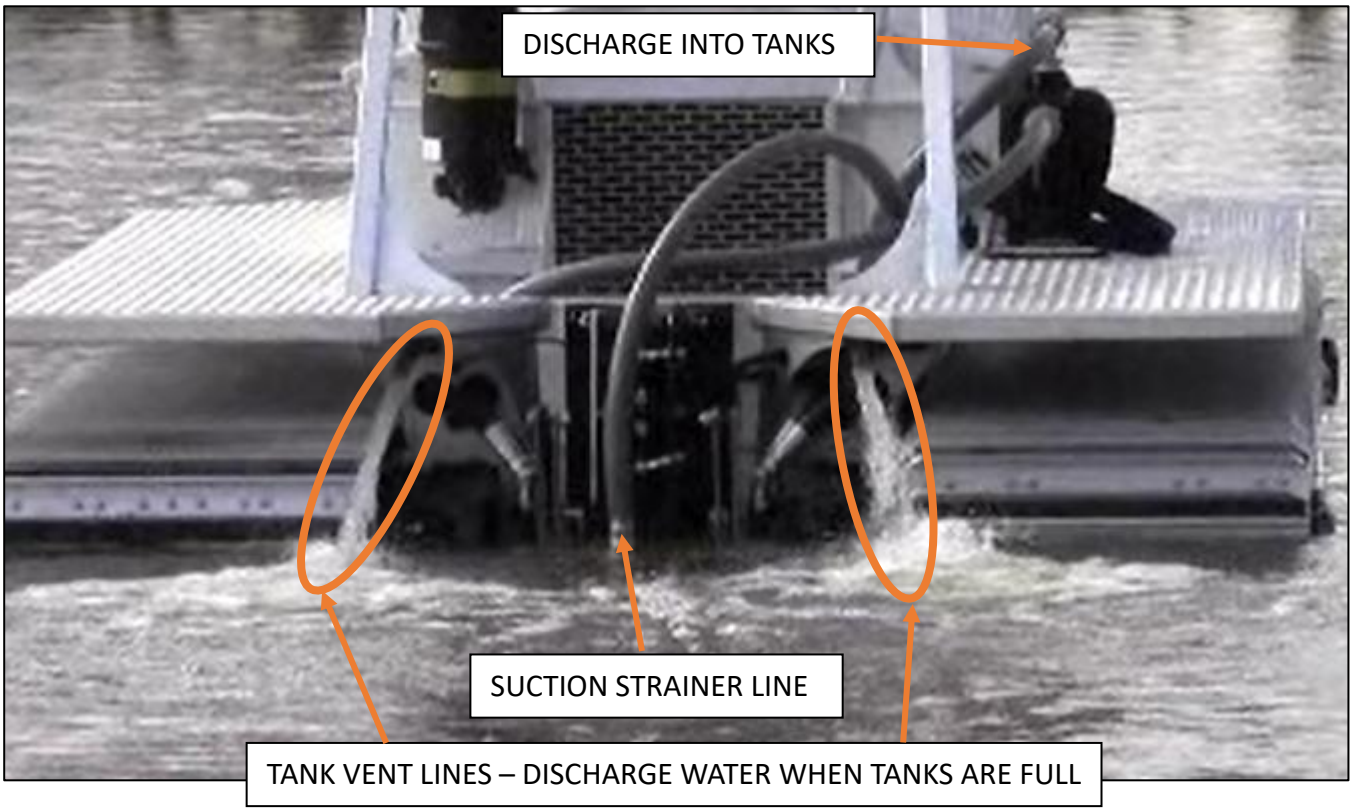
NEVER LET THE PUMP RUN WHEN NOT IN USE. THIS CAN DAMAGE THE PUMP OR HEAT THE WATER REMAINING IN THE PUMP CASE CAUSING POTENTIAL FOR SCALDING WHEN SWAPPING HOSES.

Drafting Water to Fill the Tanks

1. With the auxiliary low flow circuit in the off position (fire pump off), connect the cam-lock hose that runs to the internal water tanks to the discharge port of the fire pump and connect the cam-lock draft hose with the strainer to the suction port of the fire pump.



2. Make sure that the pump casing is full of water, then lower the suction strainer end of the hose into the water source that you are drafting from. Try and make sure that you aren't submerging the strainer into mud causing mud to be sucked into the tanks. A good place to draft from is the rear of the machine on top of the pull frame if floating in a body of water.



3. With the Engine at 1500 rpms, activate the low flow aux circuit (turn the fire pump on) and monitor the in-cab displays as the water level in the tanks rise. There is a cross-over line that connects the two tanks so there is no switching between tanks required. Once the level indicators show that the tanks are full, a steady discharge of water can be seen coming out of the rear of the marsh master where the tank vent lines are located. When the tanks are full, deactivate the low flow aux circuit.

WARNING!
SERIOUS INJURY OR DEATH CAN OCCUR!

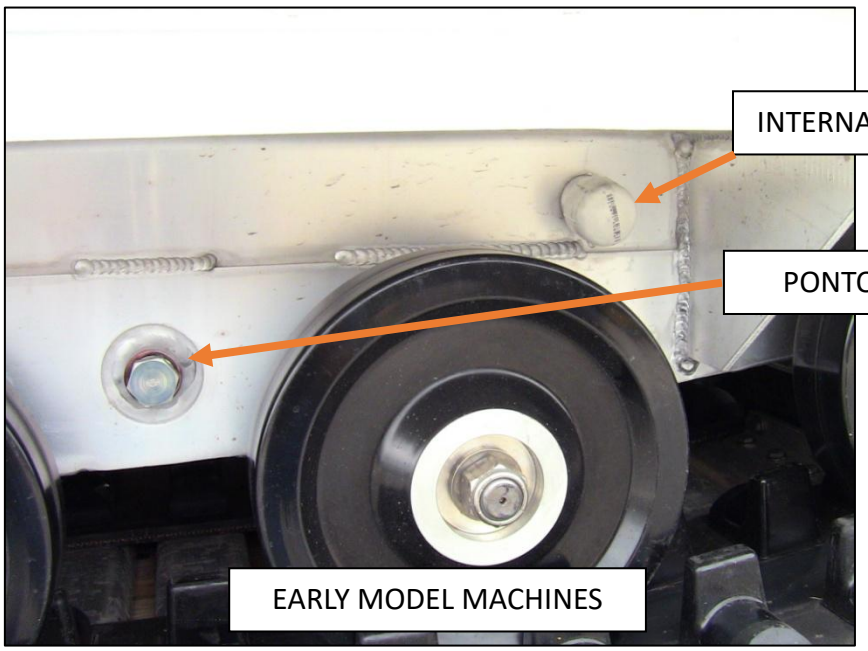
NEVER FILL THE INTERNAL TANKS WITH A HIGH VOLUME / HIGH PRESSURE PUMP. ONLY USE A LOW VOLUME PUMP THAT IS LESS THAN OR EQUAL TO THE FIRE PUMP ON THE MARSH MASTER®.

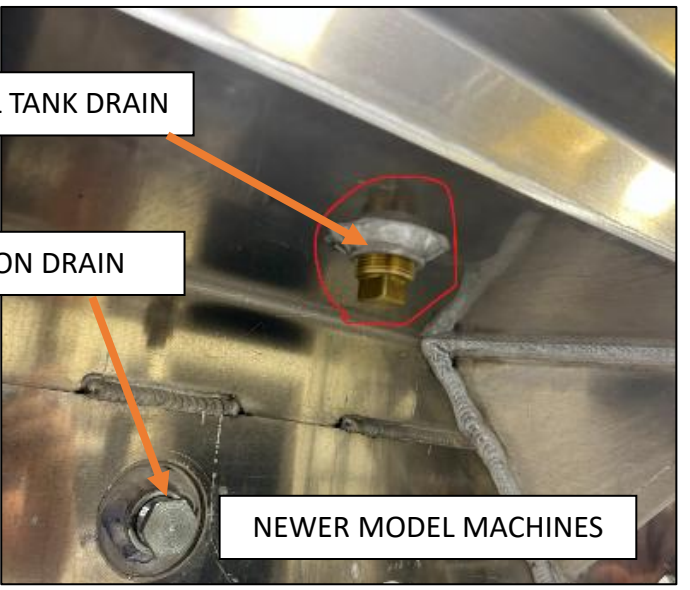
FIRE SUPPRESSION MAINTENANCE

Draining and Flushing the Tanks:

1. Drain the tanks completely by removing the drain plug that is located near the rear and bottom on the outside of each pontoon. This plug is located near the "pontoon drain plug" but should not be confused with the pontoon drain plug. Different models of Marsh Masters® have different tank drain plug configurations. See pictures below.

2. Re-install the internal tank drain plug and fill the tanks full of clean fresh water.





3. Run the buggy so that the water sloshes around and then drain the tanks

4. Repeat this process until clear, clean water is drained from the tanks. If mud has been sucked into the tanks this process could take several iterations.

WARNING!
SERIOUS INJURY OR DEATH CAN OCCUR!

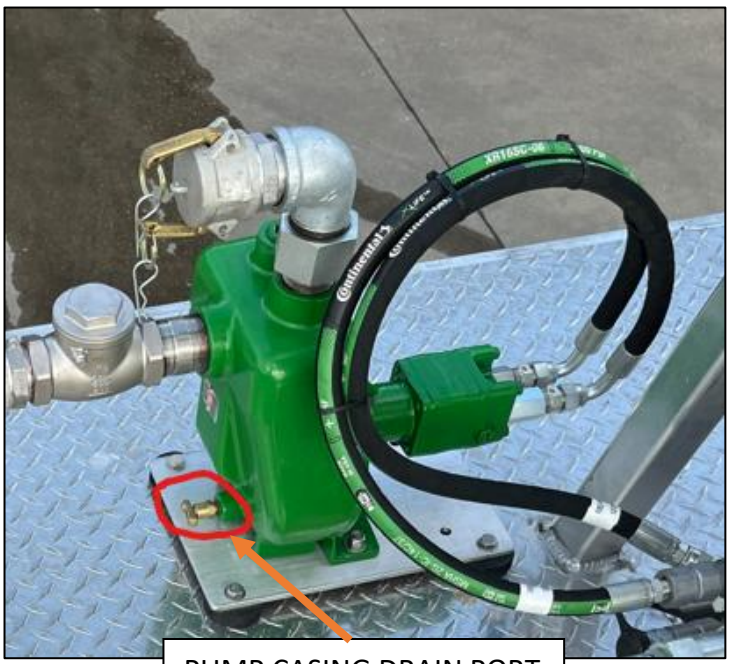
WHEN OPERATING IN SALT OR BRACKISH WATER ENVIRONMENTS, IT IS IMPERATIVE TO FLUSH THE FIRE TANKS WITH FRESH, CLEAN WATER TO PREVENT CORROSION FROM SETTING IN RESULTING IN REDUCED TANK LIFE AND AN INCREASE IN INTERNAL LEAKAGE INSIDE THE PONTOON.

Recommended Best Practices

- If the Marsh Master is being used for anything other than fire suppression, i.e. cutting, personnel transport, etc… make sure the tanks are completely empty prior to operating.

- The internal water tanks must be drained completely after each use.

- If the outside temperature is going to drop below freezing, it is imperative to drain the tanks and the tank lines. Also drain the fire pump casing by removing the drain plug or opening the petcock that is located on the bottom of pump casing.



PUMP CASING DRAIN PORT

WARNING!
SERIOUS INJURY OR DEATH CAN OCCUR!

FAILURE TO DRAIN THE PUMP CASING AND WATER TANKS WHEN THE TEMPERATURE GETS BELOW FREEZING WILL RESULT IN CRACKED PUMP CASINGS, CRACKED TANKS, AND CRACKED LINES.

TROUBLESHOOTING

- **The pump does not draw water:**
  - Possible Cause – The pump has lost prime or the water source is too far below the pump for the pump to generate the lift needed to retain prime.

  - Corrective Action – Fill the pump completely full of water, turn the pump on, increase the engine rpms to 2000 rpms (maybe higher if needed to achieve prime) to speed the pump up. Monitor pump suction / discharge lines for priming.

- **The pump does not draw water:**
  - Possible Cause - Suction line is plugged or collapsed. Clogged strainer.

  - Corrective Action - Examine and clean the suction line. Clean the strainer.

- **The pump is leaking:**
  - Possible Cause – Failed mechanical seal

  - Corrective Action – Examine the back of the pump where the hydraulic motor connects and look for leakage. If water is spraying from this area, contact Coast Machinery for parts and seal replacement instructions

- **The pump discharge is weak or abnormal**
  - Possible Cause – Restricted suction due to debris or clogging within the suction lines or tank. Internal wear between the pump impeller and pump volute casing.

  - Corrective Action – Thoroughly clean the pump, the pump suction line, and the internal water tanks. Inspect the pump internals for abnormal wear, repair and replace parts as needed. Contact Coast Machinery for parts.

- **The hydraulic motor on the fire pump is leaking hydraulic oil**
  - Possible Cause – the case seal has been compromised or a fitting on the hydraulic hoses has loosened.

  - Corrective Action – Examine where the leak is coming from, if determined from the hydraulic motor around the output shaft, contact Coast Machinery for replacement parts. If the leak is coming from the fittings, tighten fittings or repair and replace as necessary.

PARTS ORDERING

(1-800-827-5320)

The components used on the fire suppression system have been carefully selected for performance, reliability, and safety. Use only genuine Marsh Master® replacement parts.

WHEN ORDERING PARTS PLEASE FURNISH ALL OF THE FOLLOWING:

- Marsh Master Model Number
- Fire Suppression Pump Color (Green, Blue, Black, etc…)
- Your company name
- Shipping address
- Billing address
- Name of person ordering
- Telephone number
- Purchase order number
- Part description and quantity of each item

Thank you for choosing Coast Machinery, LLC, and the fire suppression system. If you have any questions regarding the fire suppression system please call Coast Machinery, LLC at 1-800-827-5320.