Thank you for purchasing a MINI-TRAC™ foam marking system. By following this installation, use, and maintenance guide carefully, your unit will provide years of satisfactory service.

Richway Industries Ltd. makes a continuing effort to improve its products. As such, we reserve the right to make improvements without obligations to add them to machines already in the field.

Please take a moment to fill out the following for future reference:

Model #: _____

Serial #: _____

Date of Purchase: _____

Purchased From: _____

December 2000

Table of Contents

SAFETY FIRST

IMPORTANT

Do not operate without reading and understanding this owner's manual

Caution: To reduce the risk of explosion or fire

- This foam marker is designed to operate off of a 12volt DC power supply only.
- Do not attempt to operate machine without covers in place.
- Never operate this machine with a damaged electrical cord. Disconnect from electrical supply if machine is not working properly or cord is damaged.
- Disassembly or attempted repair if accomplished incorrectly can create electrical shock and/or short hazards. Only qualified personnel should perform repair service.
- Do not remove covers or attempt repairs while connected to electrical source.
- Never attempt to replace electrical wires and cables with smaller gauge or inferior wire and cable.
- Do not attempt to operate this machine without the appropriate fuse in place.
- Do not attempt to bypass fuse. If fuse is no longer serviceable, a real shock or short hazard may exist.
- Never replace original fuse with a higher amperage fuse.
- Inspect all components for damage after any electrical problem.
- Never operate this product in or near explosive atmospheres or where aerosol (spray) products are being used.
- Do not use air compressor to pump anything other than atmospheric air.
- Do not pump combustible liquids or vapors with this product or use in or near an area where flammable or explosive liquids or vapors may exist.
- Do not use this product near flames.

Caution: To prevent Injury

- Never operate machine while unattended.
- Inspect machine for damage after use.
- Close supervision is necessary when this product is used near children or invalids.
- Never allow children to operate this machine.
- All electrical components generate heat. To avoid serious burns never touch internal components immediately after use.
- The air compressor in this unit may be thermally protected and may automatically restart when the protector resets. Always disconnect power source before servicing.
- Wear safety goggles and all proper clothing when operating, servicing or refilling this machine. Always read and follow manufacturer recommendations when handling any chemicals.
- Inspect pressure relief valve periodically for proper operation.
- The pressure relief valve on the diaphragm compressor has been adjusted so that it will produce a 20-psi maximum output. Do not increase this pressure output.
- Richway foam markers are designed to operate at low pressure. Personal injury may result when air pressure exceeds 20 psi.
- The foam tank is pressurized with air from the compressor. Do not attempt, for any reason, to remove tank cap while machine is turned on.
- After machine is turned off pressure remains in the system. Remove tank cap slowly allowing pressure to exhaust.
- Agricultural chemical mist or liquid or liquid can cause permanent eye, skin or lung damage or death. Always wear proper protective clothing, goggles, aspirator, gloves or other protective garments as recommended by the labels of the chemicals used.

INSTALLATION

To install MINI-TRAC foam markers, several components must be connected. Each application may be slightly different. The following is a guide to help you choose the best locations for installing its components.

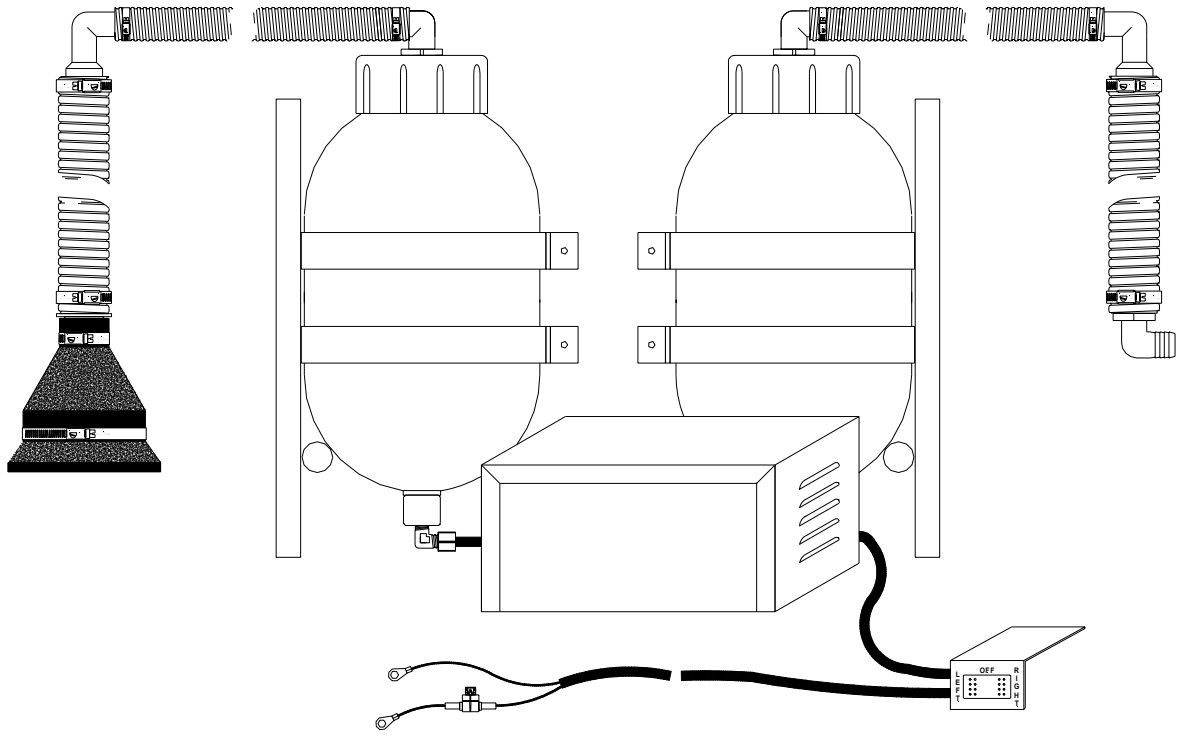


FIGURE 1 - MTD-06CH Foam Marker with Collector Head

TANKS

When considering a location for mounting the tanks, it is important that the assembly is accessible for easy filling. The tanks should be mounted near the boom hinges, one on each side.

Mount the MINI-TRAC three-gallon tank stands to a vertical frame member. If none is present on your sprayer, or if clearance is a problem, an optional universal-mounting bracket is available. This bracket allows you to offset your tank(s) or mount them on a horizontal frame member or platform.

A complete parts breakdown is shown in Appendix 1, page 20.

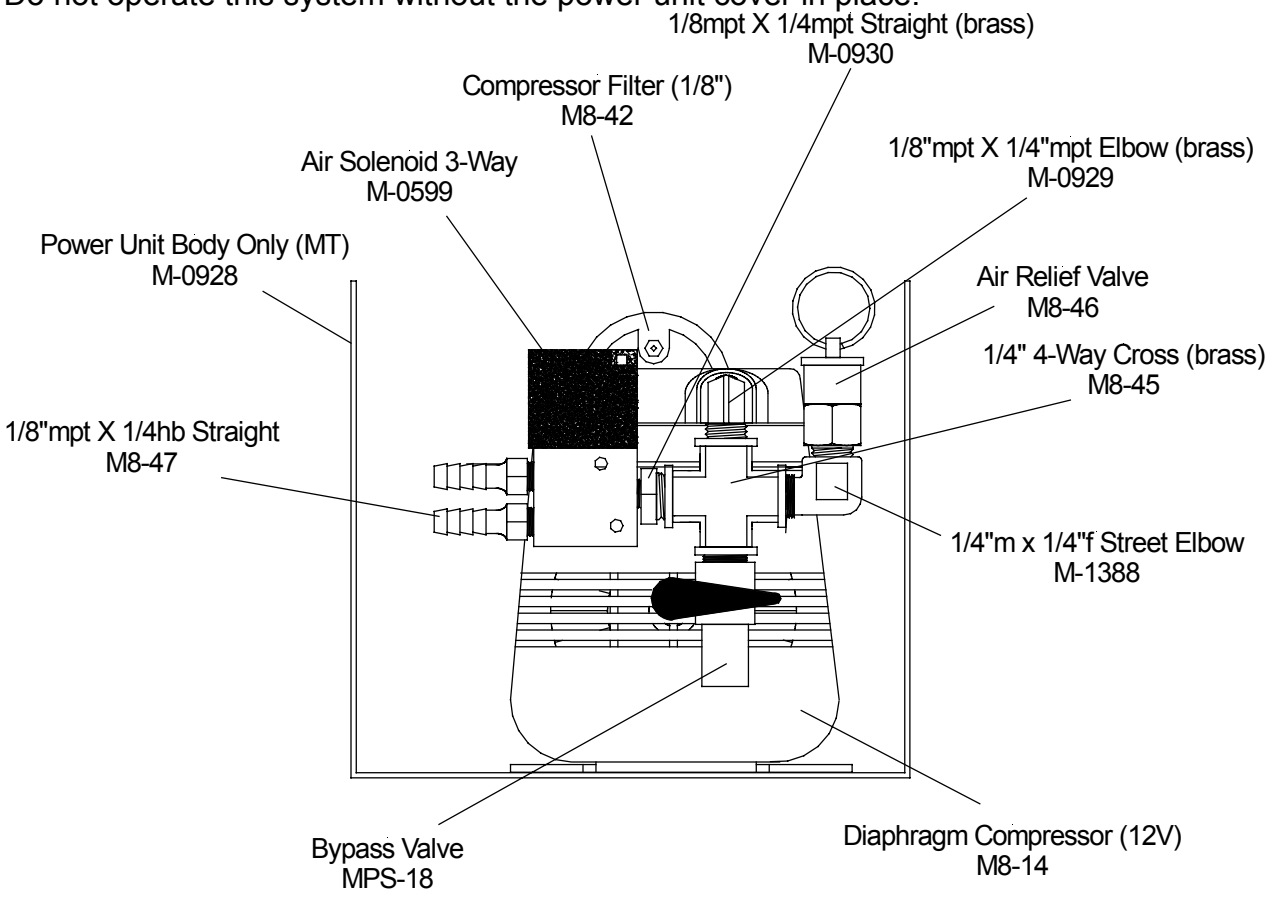
POWER UNIT

The compressor should be mounted in a relatively contaminant free area to insure efficient and trouble-free use. It will be necessary to access the power unit to connect and disconnect the electrical cable, adjust the bypass valve and to clean filters.

Avoid mounting the power unit in area where fertilizer and chemical over spray or spills are likely. If the power unit must be mounted in a very dusty location, the filters will require frequent cleaning.

Attach the power unit body to a rigid platform or frame member with fasteners of an appropriate size.

Do not operate this system without the power unit cover in place.



Power unit cover removed for illustration purposes only. Do not operate without power unit cover in place.

FIGURE 2 - MTD-06 Power Unit

FOAM HOSE

Attach the boom end elbow assembly to one end of the 1 inch ID foam hose with a #16 hose clamp, provided. This assembly is then fastened to the end of your boom. Use nylon cable ties, available at most hardware stores, to secure the foam hose at 2-3 foot intervals. These ties assure positive clamping without damaging the hose.

Be sure to leave enough slack to fold and extend the spray boom. Cut the foam hose to a length that will allow the easy use of the tank cap. Attach the foam hose to the tank outlet elbow with a #16 hose clamp. The cap assembly should then attach to the top of the tank. Repeat this procedure for the other 1/2 of your boom.

After foam hose, elbows and caps are in place, secure the 1 1/2" drop hoses onto the boom end elbows with the #28 hose clamp provided. The drop hose should be trimmed so the discharge end is left approximately one foot above the ground or to desired length.

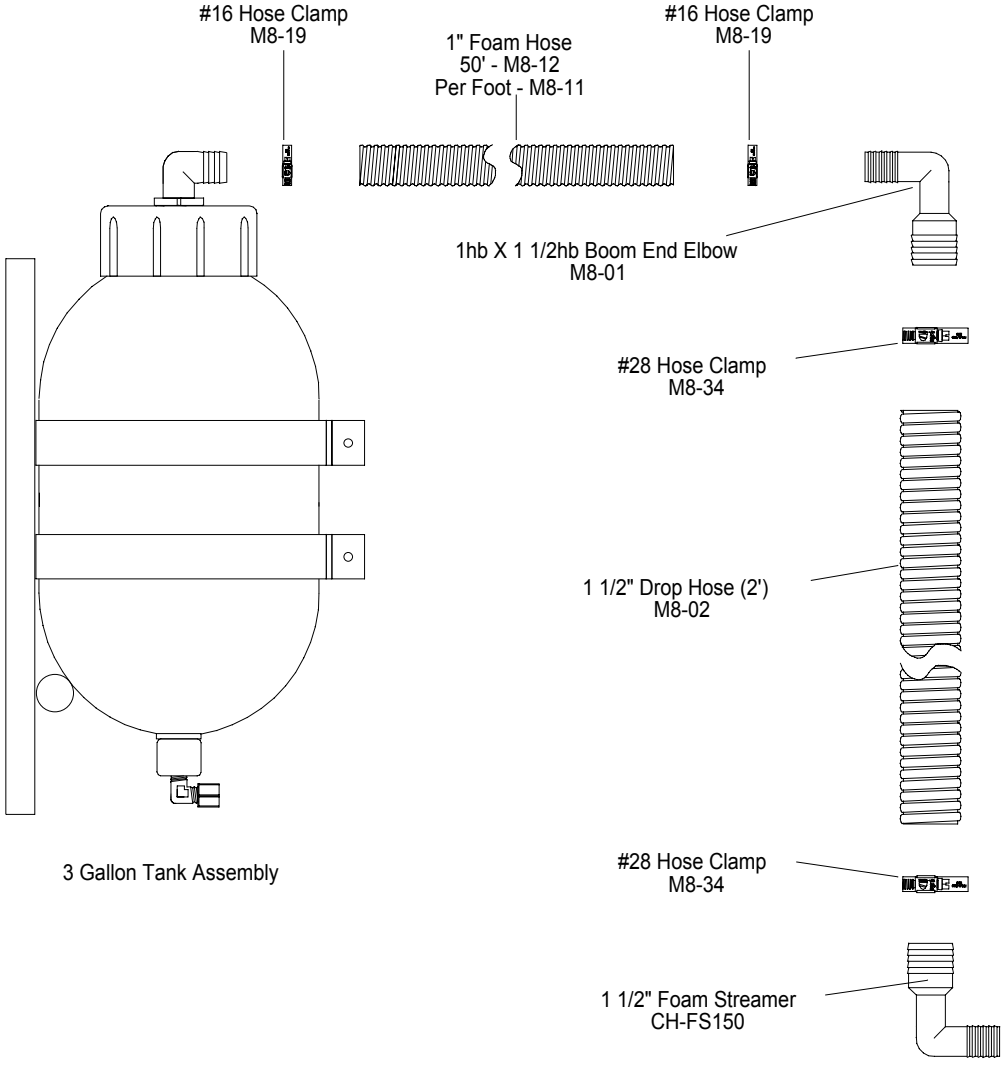


FIGURE 3 - MTD-06 Foam Hose Installation

COLLECTOR HEADS

Collector heads are optional equipment on MINI-TRAC foam markers. Collector heads, when attached to drop hose, will produce a larger, denser, foam ball. The resulting foam ball will be more visible due to its size, and will last longer on the ground. However, the heavier foam from collector heads normally will not stay on top of vegetation when post-emergent spraying. You may chose to use the Foam Streamers under these or similar conditions.

FOAM STREAMERS™

Foam Streamers are standard equipment with all MTM-06 foam markers. When placed on the drop hose, these attachments produce a stream of foam. This will be particularly effective in “over the top” post emergent crop conditions.

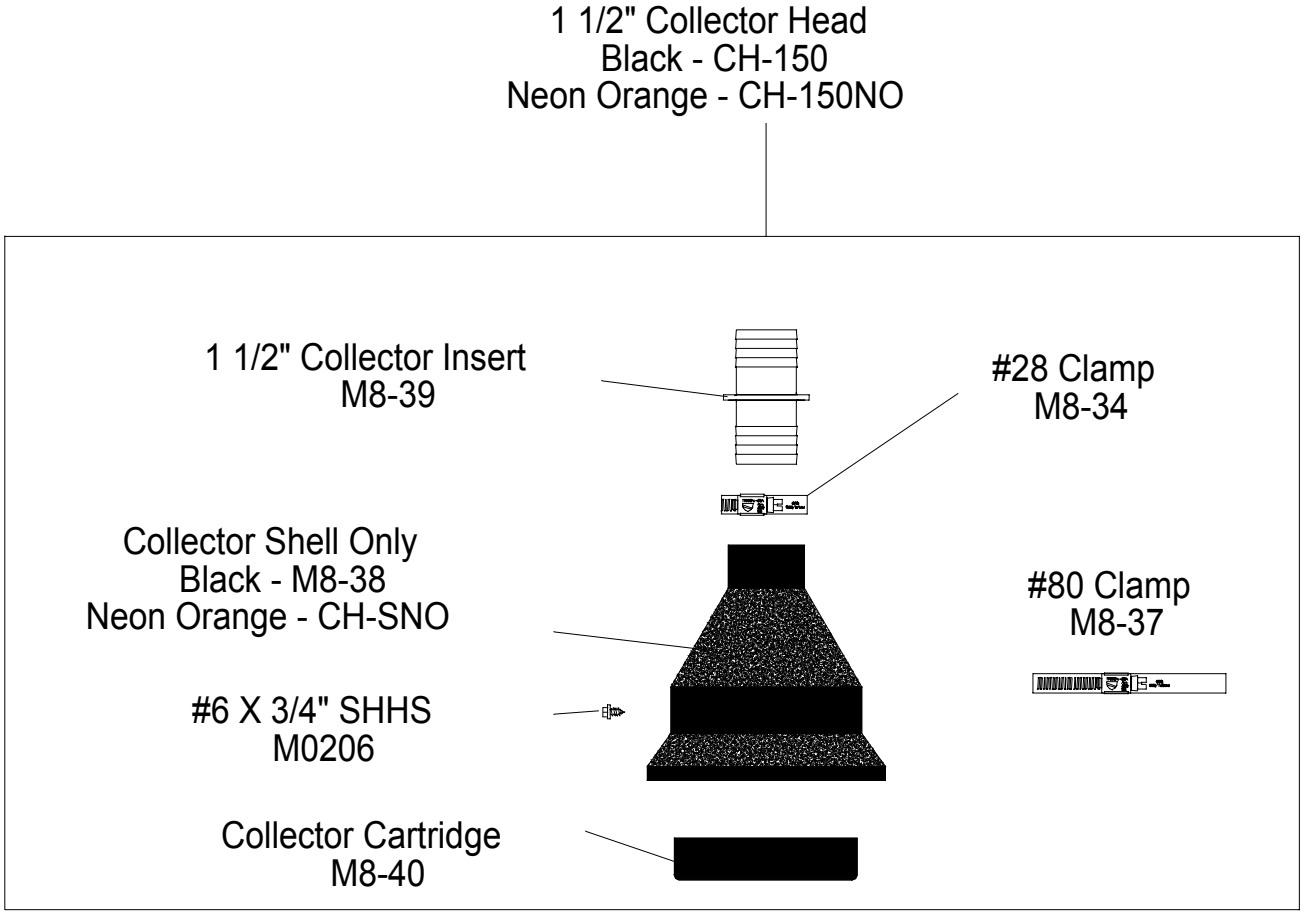


FIGURE 4 - Collector Heads

AIRLINE

Cut appropriate lengths of 3/8" OD air tubing, provided, to route from inside the power unit to each tank.

Push the airline through the rubber grommet onto the hose barb fittings inside the power unit and route to each tank. To ease installation, it may be necessary to heat the airline tubing. Securing airline with nylon cable ties or metal cable clamps with a plastic coating provide a convenient way of routing airline to prevent pinholes or pinching.

Note: Before attaching airlines to hose barb fittings inside power unit, place male 3-pin electrical plug through grommet. This will allow for easier electrical connection/disconnection when attaching/removing sprayer. See Figure 6 page 11.

Splice each airline and install a disk check valve at a convenient location between the tank and power unit.

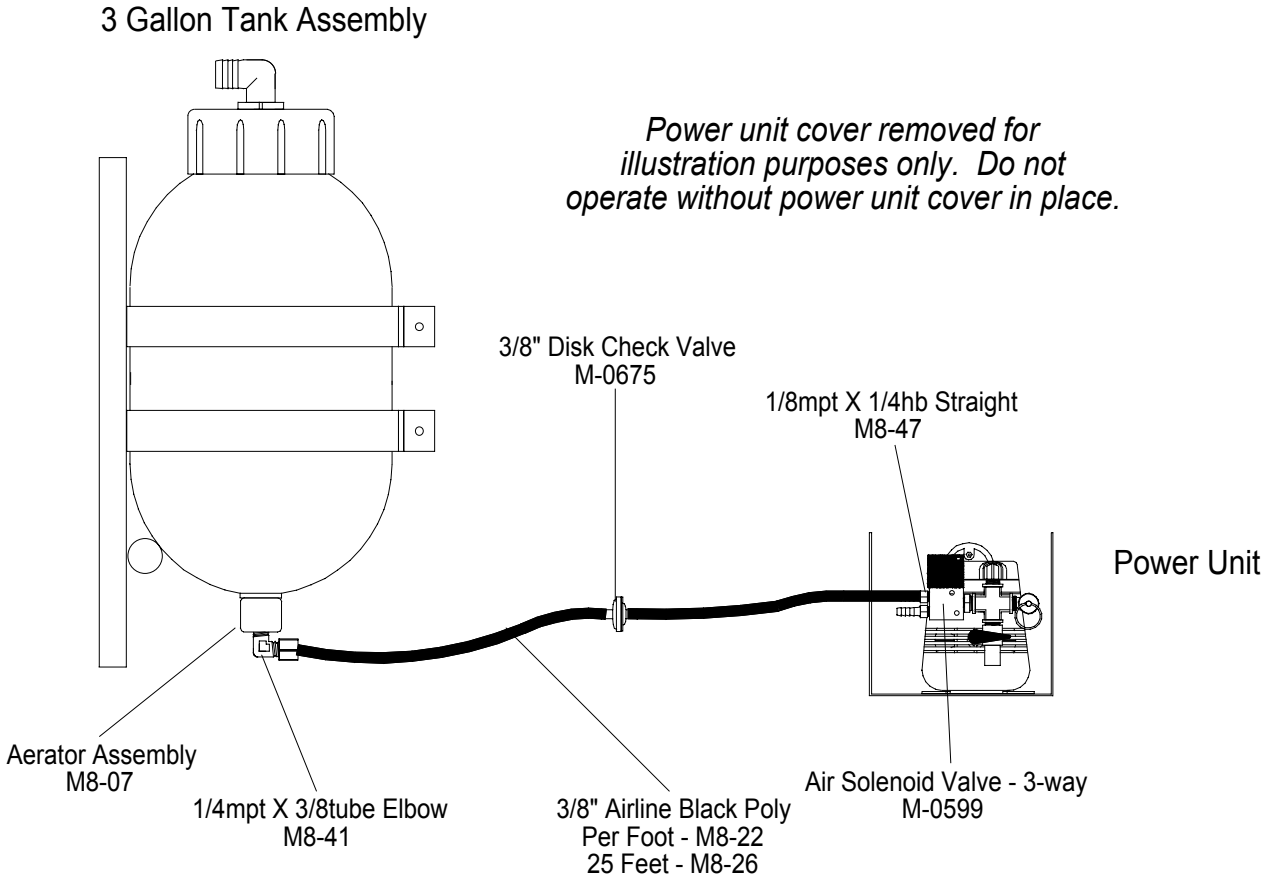


FIGURE 5 - MTD-06 Airline Installation

WIRING

⚠ CAUTION

- This machine is designed to operate off 12 volt DC power only
- Do not operate this machine without covers in place.
- Never operate this machine with a damaged electrical cable.
- Only qualified personnel should perform repair service.
- Do not remove covers or attempt repairs while connected to electrical source.
- Never attempt to replace electrical wires and cables with smaller gauge or inferior products.
- Do not operate machine without the appropriate fuse.
- Do not attempt to bypass fuse.
- Never replace fuse with a higher amperage fuse.
- Inspect all components for damage after any electrical problem.
- Never operate this machine in or near explosive atmosphere or where aerosol products are used.

Before making any power connections, remove the negative (-) (ground) terminal from the battery. Care must be taken against accidental grounding while making connections. To prevent damage from abrasion on sharp edges, route the power cable out of the way and secure it using plastic coated clamps and/or plastic cable ties. When electrical cable must pass through holes through cab or firewalls, protect to prevent cable damage.

If a greater length of wiring cable is needed, extensions are available from your Richway dealer. Use of other cables, especially those with non-insulating coverings or inappropriate gauge wire can void warranty, damage other systems or components, cause poor performance, blow fuses, over heat and cause rapid compressor motor failure.

The Mini Trac Model MTD-06 is equipped with a 20-ampere fuse. DO NOT use a fuse with a higher ampere rating in this system.

To prevent accidental grounding of circuit, do not connect two-wire battery cable until all other electrical connections have been checked for accuracy.

First, attach the white wire of the power cord directly to the positive (+) post of the battery by use of the cable mounting bolt. Next, attach the black wire of the power cord directly to the negative (-) battery terminal bolt. Re-install the ground cable onto the negative terminal of the battery and secure.

Note: MTD-06 model MINI-TRAC foam markers normally draw 8 to 10 amperes.

When connecting to an electrical system with two batteries wired in series, be certain to connect the battery terminals so that 12 volts is supplied. Connection to other than 12 volts will damage this system and void the warranty.

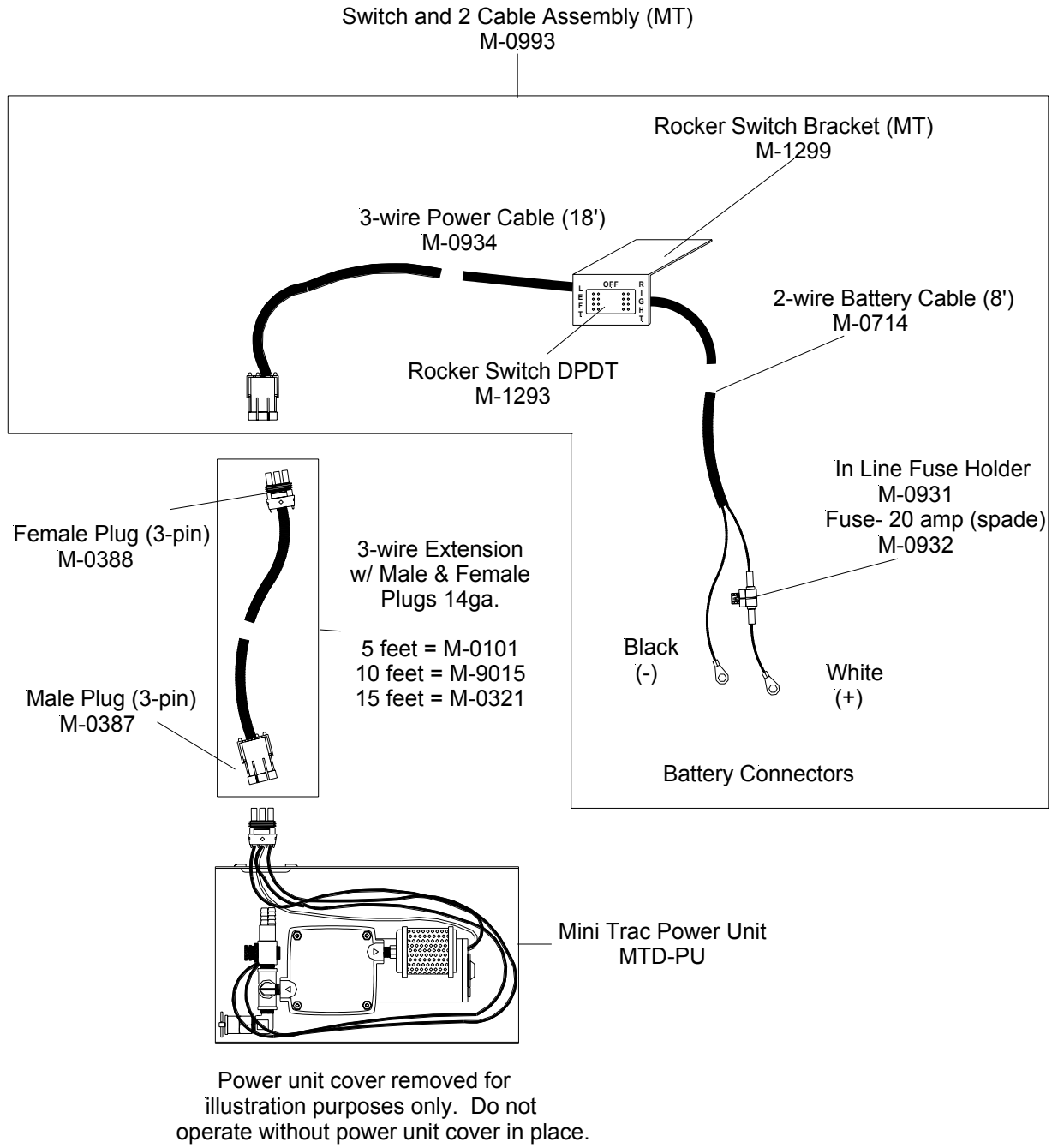
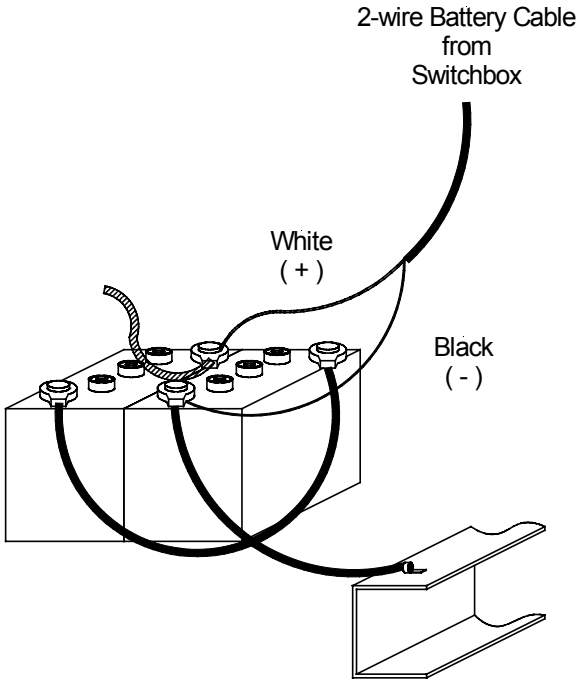
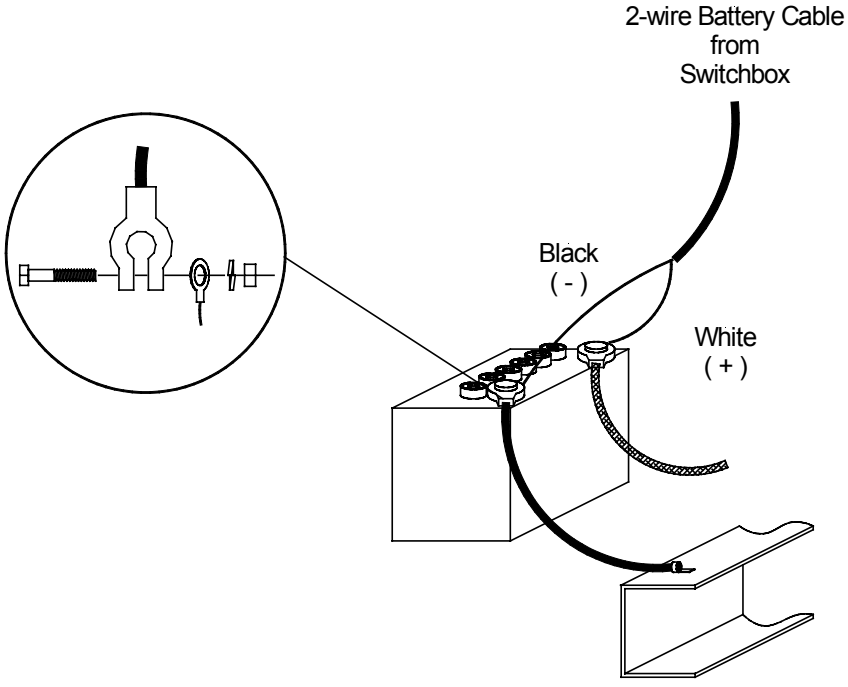


FIGURE 6 - MINI-TRAC Wiring



12 VOLT SYSTEM
(Two 6 VOLT BATTERIES)



ONE 12 VOLT BATTERY

FIGURE 7 - Battery Connections

OPERATION

⚠ CAUTION

- Do not attempt to operate machine without covers in place.
- Never operate machine while unattended.
- Inspect machine for damage after use.
- Close supervision is necessary when this product is operated near children or invalids.
- Never allow children to operate this machine.
- Wear safety goggles and all proper clothing when operating, servicing or refilling this machine.
- Agricultural chemical mist or liquid can cause permanent eye, skin or lung damage or death.
- Always read and follow manufacturer recommendations when handling any chemical.
- Never operate this product in or near explosive atmospheres or where aerosol products are being used.
- Do not use air compressor to pump anything other than atmospheric air.
- Do not pump combustible liquids or vapors with this product or use in or near an area where flammable or explosive liquids or vapors may exist.
- Do not use this product near flames.
- The foam tank is pressurized with air from the compressor. Do not attempt, for any reason, to remove tank cap while machine is turned on.
- After machine is turned off pressure remains in the system. Remove tank cap slowly to allow pressure to exhaust.

MIXING FOAM

Foam mixing takes some experience. Water sources differ and may require different amounts of concentrate to obtain the desired foam density. Water hardness, pH, impurities and temperature will all affect the rate of concentrate required for consistent long-lasting foam.

If hard water is a problem, commercial softening agents are available. You can make your own softening agent by dissolving a commercial water softening agent (available in most grocery stores) in hot water and adding this mixture to your tank each time you fill. Experimentation will reveal the correct amount to use.

Heat, humidity, wind, and crop cover will also affect the life of foam. Using a good quality marking agent, such as Goodmark, is important as well.

Goodmark - Premium life, "hot weather" foam concentrate, up to one-hour life in cooler weather, 20-40 minutes in hot weather, good hard water tolerance.

FILLING THE TANK

⚠ CAUTION

- The foam tank is pressurized with air from the compressor. Do not attempt, for any reason, to remove tank cap assembly while unit is in operation.
- After machine is turned off pressure remains in the system. Remove tank cap slowly to allow pressure to exhaust.
- Wear safety goggles and all proper clothing when operating, servicing or refilling this machine.
- Always read and follow manufacturer recommendations when handling any chemical.

1. Remove the cap at the top of the tank. BE SURE POWER UNIT IS TURNED OFF. Pressure may build in the tank. Remove tank cap slowly to prevent injury.

2. Starting with a small amount of water (1 gal), mix the foam concentrate according to the label directions. If considerably more concentrate is needed above the manufacturer's ratio to produce good foam, use of a softener or soft water may be required. Stiff foam will surge out at irregular intervals. Under this condition, water should be added until the foam becomes more wet.

   Good foam A blob of foam on your overturned palm should stay in place if properly mixed.

3. With the mixing ratio determined, fill the tank leaving about 2 inches of air space at the top of the tank to avoid getting foam that is too wet or runny when starting.

   Note: A convenient way of filling the three-gallon tank is to use a funnel with an attached hose that will reach to the bottom of the tank.

4. Replace tank cap assembly at the top of the tank.

   Note: It is worthwhile to determine the proper foam to water mixing ratios for your water source with the initial filling. Doing so will save time in the future and aid in consistent foam quality.

BYPASS VALVE

CAUTION

All electrical components generate heat. To avoid serious burns, never touch internal components immediately after use.

The bypass valve is used to regulate the amount of air sent to the foam marker tanks. It is attached to the compressor inside the power unit. To decrease the foam drop frequency, open valve slightly. For maximum foam drop close bypass valve completely. See Figure 2, page 6.

MAINTENANCE

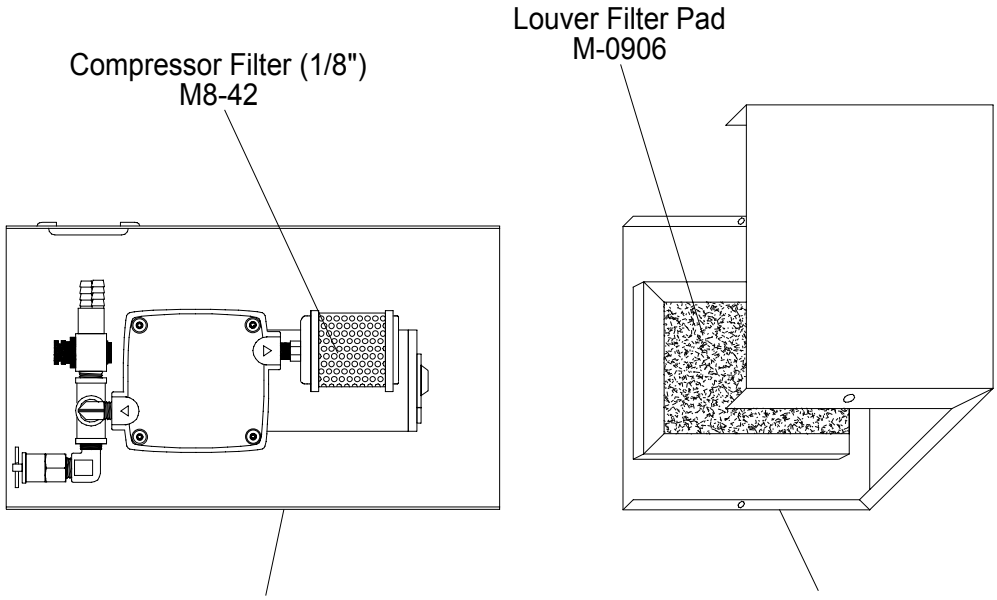
⚠ CAUTION

- All electrical components generate heat. To avoid serious burns, never touch internal components immediately after use.
- The air compressor in this unit may be thermally protected and may automatically restart when the protector resets. Always disconnect power source before servicing.
- Wear goggles and all protective clothing when operating, servicing or refilling this machine. Always read and follow manufacturer recommendations when handling any chemical.
- Do not remove covers or attempt repairs while connected to electrical source.
- Disassembly or attempted repairs if accomplished incorrectly can create hazards. Only qualified personnel should perform repair service.

The Richway MINI-TRAC foam marking system needs little maintenance, but regular routine cleaning of the air filters is essential.

Every 40 operating hours, or more often if extremely dusty, remove the compressor intake filter and clean it by back blowing through the fitting with air pressure up to 80 psi.

The air intake filter must be kept clean. A dirty filter prevents proper operation of the marking system and will overload the motor.



Power unit cover removed for illustration purposes only. Do not operate without power unit cover in place.

FIGURE 8 - Power Unit Filters

CHECK VALVES

During operation the check valves allow air to enter the tank from the compressor through the airline. When the compressor is turned off, these valves prohibit water from leaking back to the compressor through the airline. It is therefore essential, that these check valves function correctly.

A check valve element is located inside the aerator assembly at the bottom of the tank. To gain access, remove the aerator cap fitting. Replace the check valve element yearly. A second, disk type, check valve installed between the compressor and tank provides added assurance that solution will not reach the compressor. Test its operation periodically.

Symptoms of check valve failure are:

A. Traces of liquid in the airline. Remove fitting and inspect airline tubing periodically.

B. Fluid leakage detected at the bypass bleeder valve or pressure relief valve, especially during initial compressor start up.

C. Failure of the compressor to operate when switch is activated may be due to water trapped in the compressor. Remove fittings and blow out compressor with compressed air.

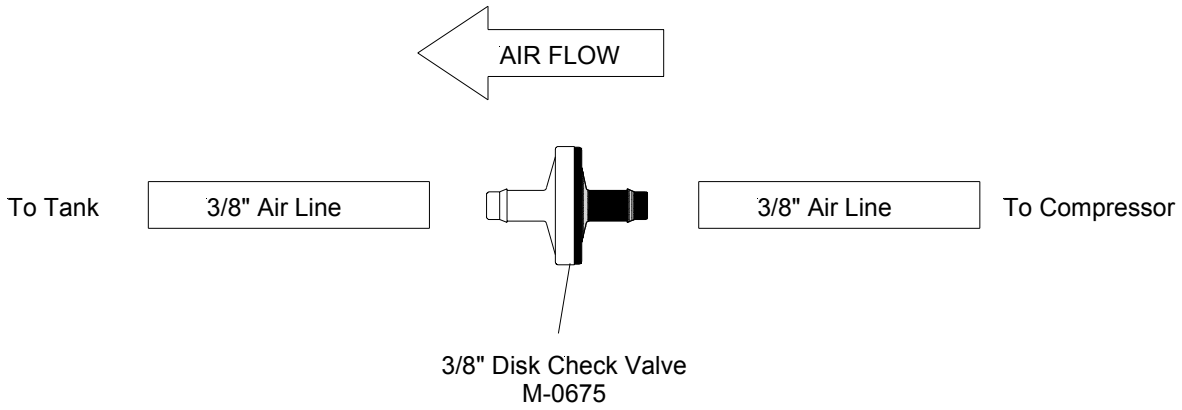


FIGURE 9 - 3/8” Disk Check Valve

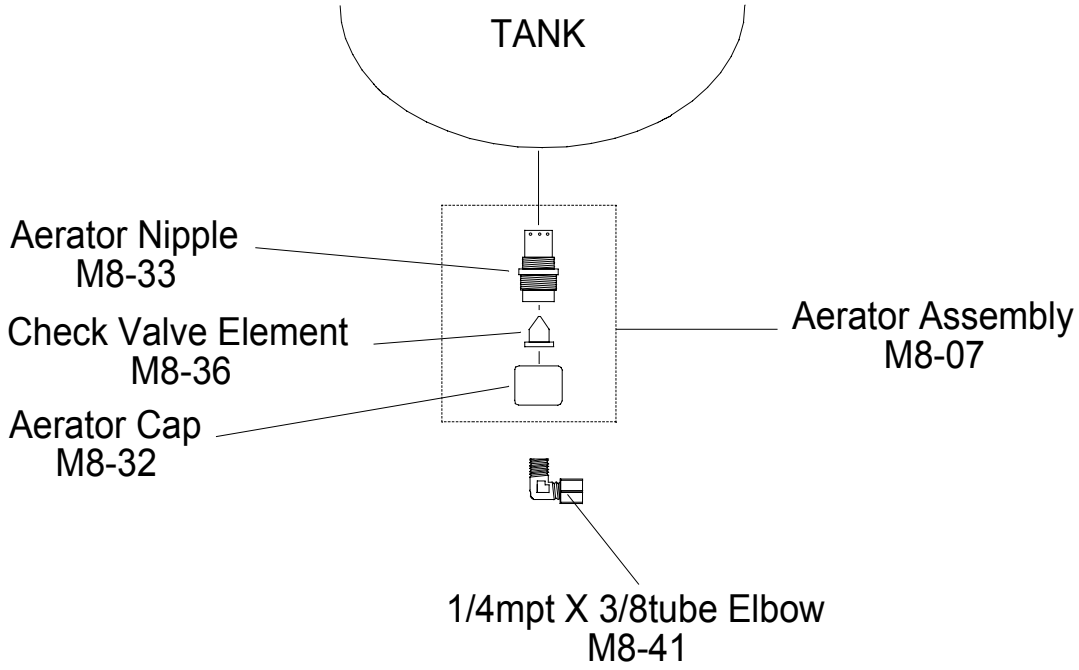


FIGURE 10 - Check Valve Element

COMPRESSOR

The compressor used on MINI-TRAC foam markers should provide years of service if properly cared for. Dust and other contaminants should be prevented from contact with compressors. If the power unit is mounted where exposed to the elements, protect against the elements when not in use.

The MTD-06 uses a diaphragm compressor. It is important to place this unit in a location where it will not be subjected to contaminants. Dust will accelerate wear, lower efficiency, and shorten compressor life.

WARNING! The pressure relief valve on the diaphragm compressor has been adjusted to produce a 15-psi maximum output. Do not attempt to increase this pressure output. Richway foam markers are designed to operate at low pressure. Personal injury may result when operating pressure exceeds 15 psi.

TANK AND HOSES

At the end of each season, remove the fitting at the bottom of the tank; flush the tank with water, and drain. Check the airline and foam hoses for holes and replace as required. Replace the check valve element and test disk check valve for proper operation.

TROUBLE-SHOOTING

If you do not get foam:

1. Be sure that the compressor and disk check valves are connected properly and that it is blowing air into the tank. To be sure the airline does not have a hole in it or is not pinched, remove airline at the tank and check for airflow into the tank.

2. Be sure you have enough foam concentrate in the tank. Very hard water may require a great amount of concentrate to produce good foam. Not having enough foam concentrate in the tank may make good foam, but may not make enough foam. Be sure to use a high quality concentrate such as Goodmark.

3. It is also possible that the foam hoses leading from the tank to the end of the boom are pinched.

4. If the foam mixture in the tank is several days old, it is possible that the solution is no longer able to foam or produces little foam. Drain tank, rinse, and start with a fresh solution.

PROBLEM: Blown fuses - dirty compressor filter; shorted electric cable. Small gauge wire added to extend harness. Check for loose or corroded electrical connections; replace as required.

PROBLEM: Low foam output - not enough foam concentrate in tank; hole in airline or dirty compressor filters; too much foam concentrate. Check electrical connections on dual 6-volt battery systems.

PROBLEM: Wet foam - not enough foam concentrate; water in foam hose (usually dries out in short time); tank too full - leave 2" of air space at top. On shorter boom lengths it may be necessary to place a stainless steel sponge into the elbow of the female coupler on the tank.

PROBLEM: Surging - if foam is "surging" out under considerable pressure, you are probably using too much concentrate.

PROBLEM: Less than 45 minutes of "FOAM TIME" per tank - not enough concentrate being used.

PROBLEM: Foam does not last on the ground - use more concentrate or a higher quality foam concentrate such as Goodmark.

PROBLEM: Foam produced with long time between drops - too much concentrate, add water.

APPENDICES

APPENDIX 1 - MTD-06 TANK ASSEMBLY

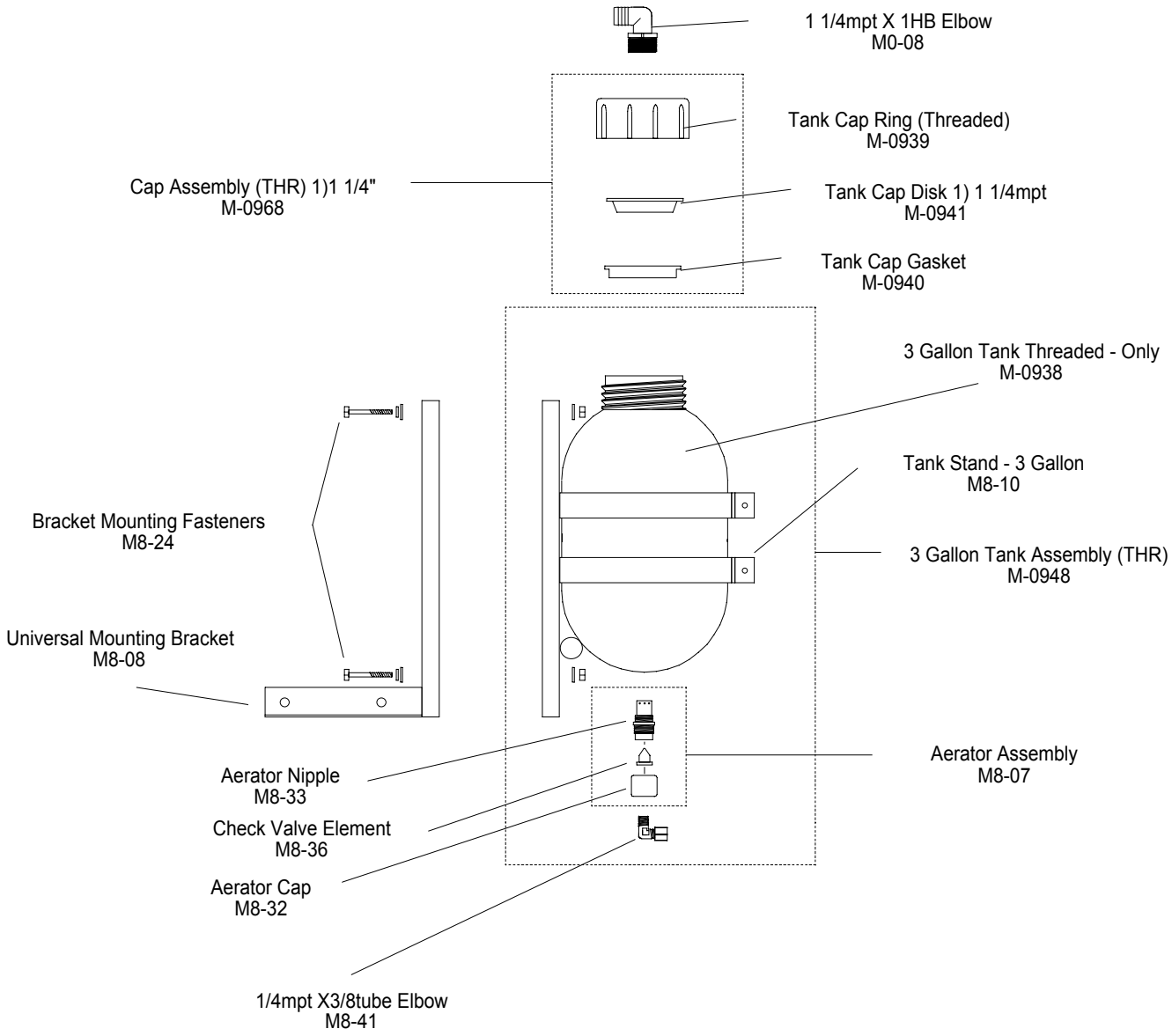


FIGURE 11 - 3 Gallon Tank Assembly

APPENDIX 2 - MTD-06 WIRING DIAGRAM

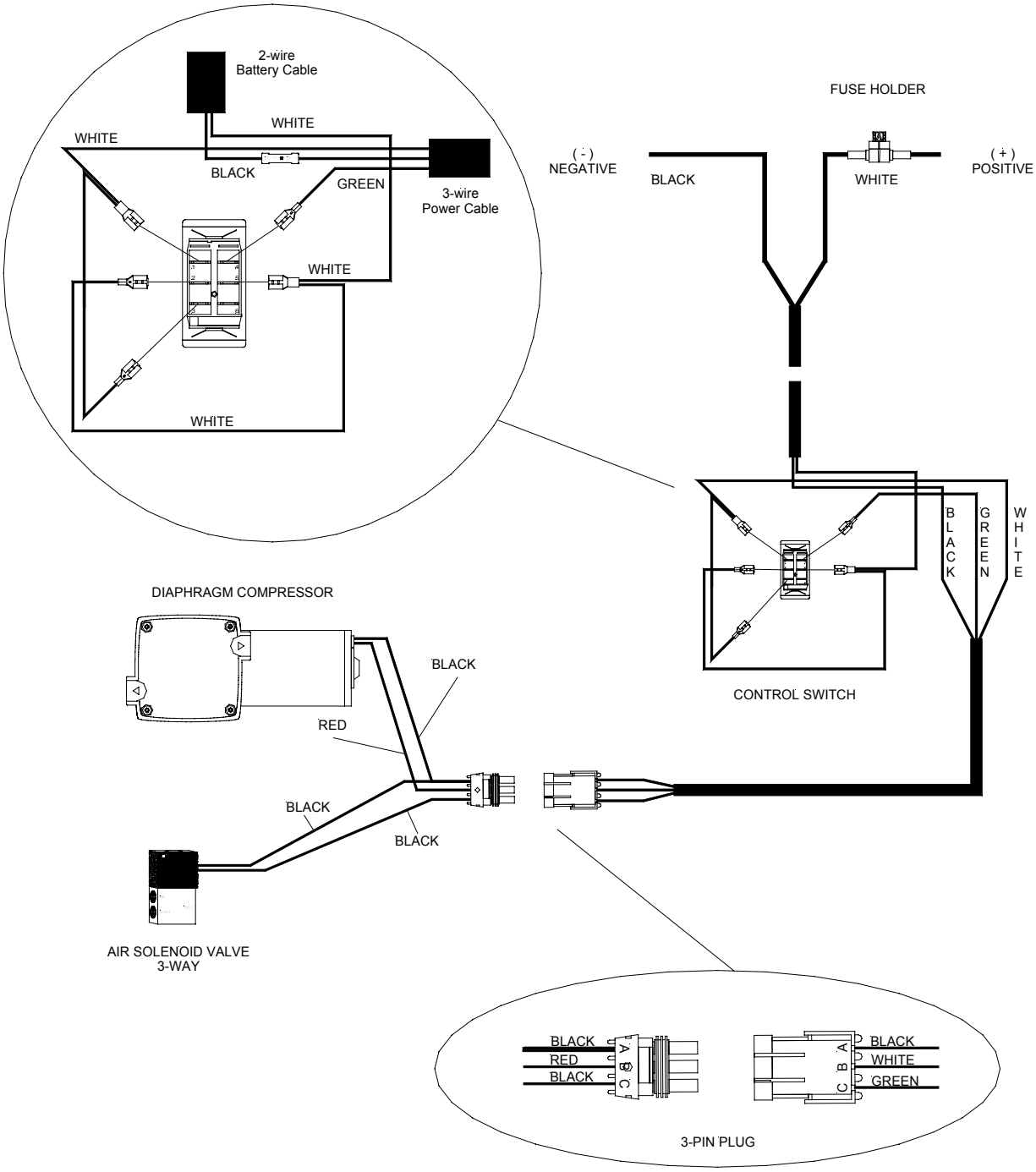


FIGURE 12 - Wiring Diagram

WARRANTY INFORMATION

Limited Warranty

Richway Industries, Ltd., foam marking systems and components are warranted against defects in materials and workmanship for a period of 1 year from date of shipment.

During this warranty period, Richway will repair or replace at no charge, those parts or components which upon receipt by Richway, following warranty analysis, prove to be defective. Reimbursements of shipping charges are not included.

This warranty does not apply to parts or products not manufactured by Richway Industries, Ltd. The warranty of such items is limited to the actual warranty extended to Richway Industries, Ltd., by its supplier.

Further, this warranty does not cover part or component failures or damage due to misapplication, misuse, abuse, breakage, or improper installation, storage or handling, abnormal conditions of temperature, water, dirt, corrosive or other contaminants.

Products covered by this warranty must be used in compliance with all federal, state, and local regulations.

Disclaimer of Other Warranties

The foregoing limited warranty is in lieu of all other warranties, expressed or implied, including merchantability or fitness for a particular purpose. In no event shall Richway Industries, Ltd., be liable for indirect, consequential or special damages of any nature, whatsoever.

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