

Thank you for purchasing a TRAC MASTER 2000™ foam marking system. By following this installation, use and maintenance guide carefully, your unit will provide years of reliable service.

Richway Industries Ltd. makes a continued effort to improve its products. As such, we reserve the right to make design changes 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: _____

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SAFETY FIRST



IMPORTANT

Do not operate without reading and understanding
this owners 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 repairs, 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 with out 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 manufacturers 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 15 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 15 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 TRAC MASTER 2000 foam markers, several components must be connected. Every application may be slightly different. The following is a guide to help you choose the best locations for installing its components.

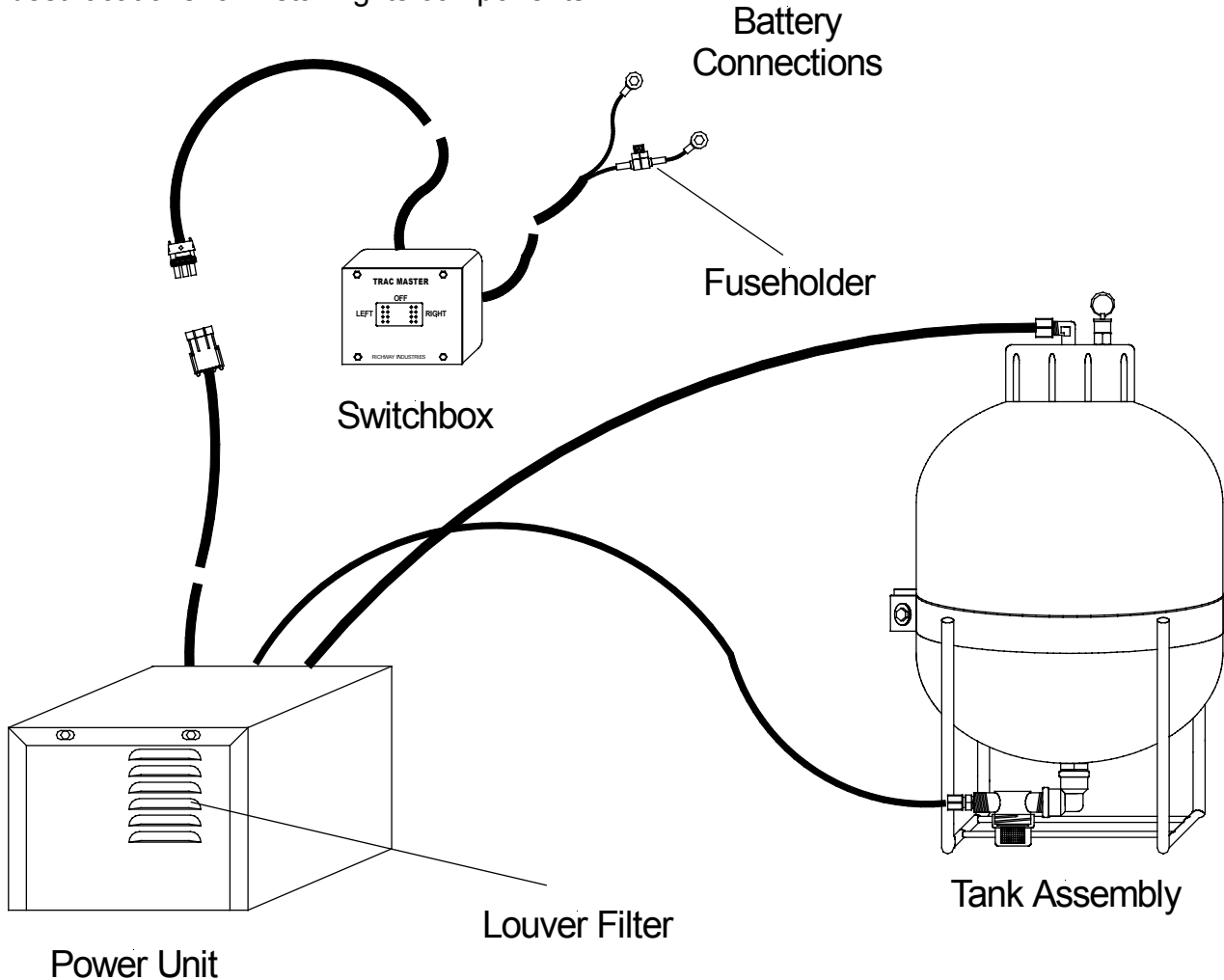


FIGURE 1 - TRAC MASTER Model TMD-2060 Foam Marker

TANK

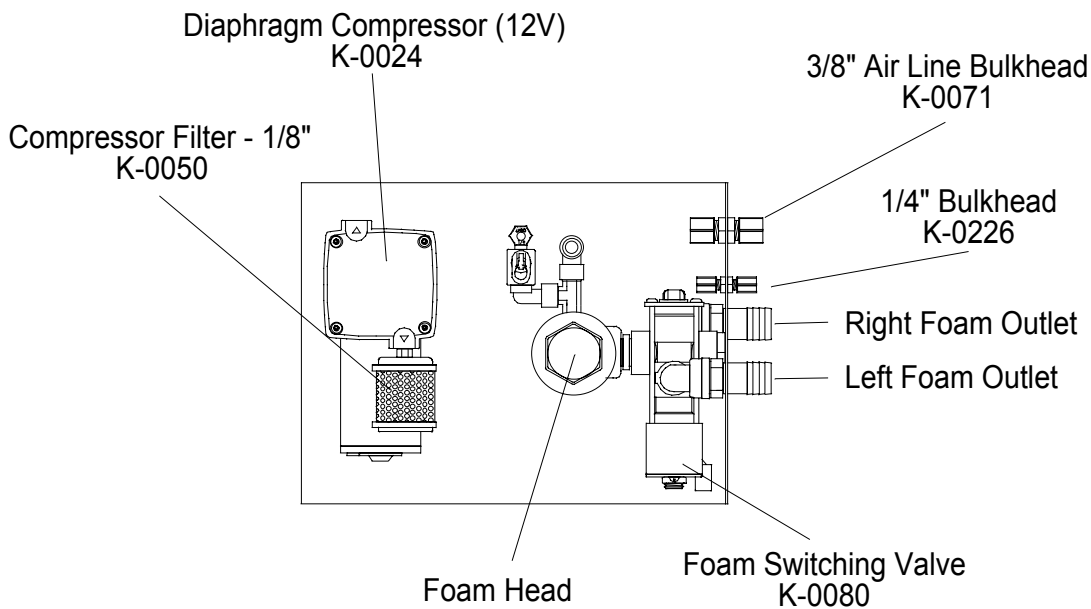
When considering a location for mounting the tank, it will be important that the assembly is accessible for easy filling. The TRAC MASTER 2000 tank stand is designed to be mounted to a horizontal frame member or platform. The tank and power unit need not be mounted adjacent to each other. For best performance, the tank should not be mounted more than three feet below power unit.

POWER UNIT

The TRAC MASTER D Series power unit must be mounted so that the cover is at the top. Failure to mount the unit in this manner will result in poor performance.

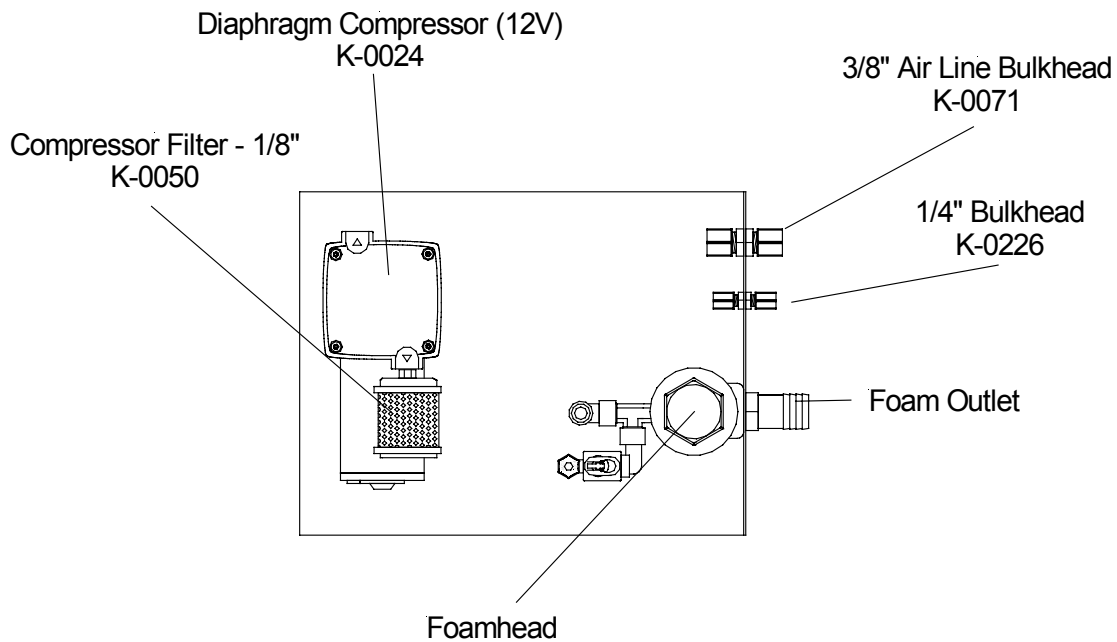
The power unit should be attached to a platform or frame using fasteners of an appropriate size.

IMPORTANT: The power unit should be mounted in a contaminant free area to insure an efficient, trouble-free compressor. The power unit may be mounted in the cab to keep filters clean. If the power unit is mounted outside, regular cleaning of primary and compressor filters is necessary.



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

FIGURE 2 - TRAC MASTER TMD Power Unit



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

FIGURE 3 – TRAC MASTER TMD Single Drop

SWITCH BOX

Mount the switch box in a location convenient to the operator. TMD switch boxes are equipped with an electrical plug assembly. This plug assembly allows for easy separation of the switch box from the power unit. After the switch box and power unit are installed, connect the plug assembly.

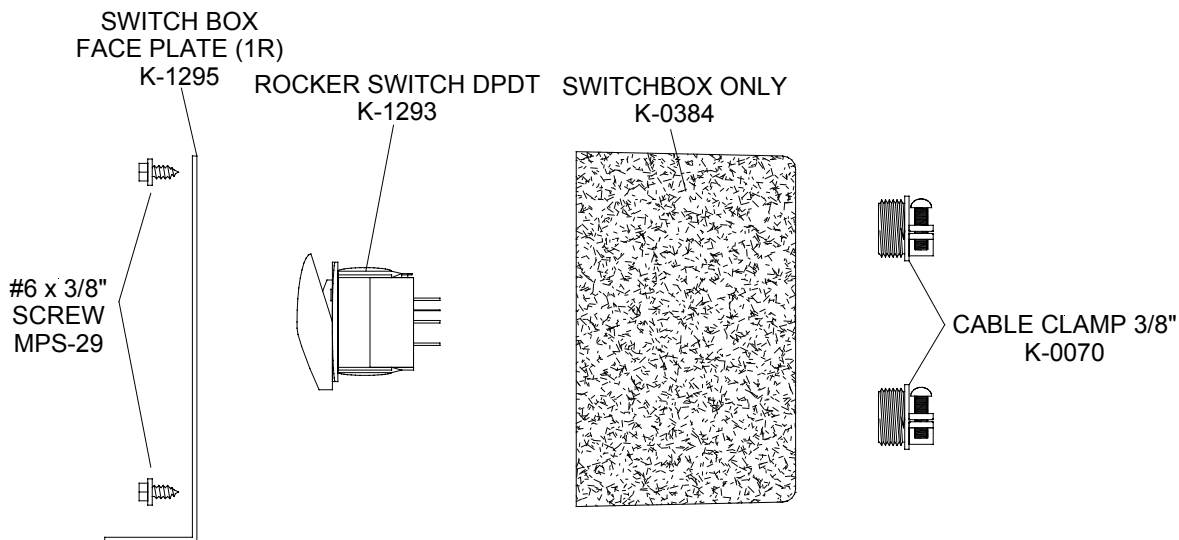


FIGURE 4 - TMD Switch Box

HOSE

To install foam hose attach a boom end elbow to one end of the 1" ID foam hose with a #16 hose clamp provided. This assembly is then fastened to the end of your boom. Beginning at the end of your boom, attach the foam hose using nylon cable ties, provided, to secure the foam hose at 3-6 foot intervals. These ties assure a positive clamping without damaging the hose.

Route the foam hose to the power unit box, where the foam outlets are located. Be sure to leave enough slack to fold and extend the spray boom. Repeat this procedure for the other 1/2 of your boom.

Single drop systems have a single foam outlet to equip broad cast spreaders and sprayers.

After the foam hose and elbows are in place, the 1 1/2" drop hoses are secured onto the boom end elbows with the #28 hose clamp provided. The drop hose should be trimmed so the discharge end is left approximately 1 foot above the ground or to desired length. If collector heads are to be used, it may be desirable to trim drop hoses higher. This will prevent loss of the collectors from impact with the ground.

FOAM STREAMERS™

Foam Streamers are standard equipment with all Trac Master 2000 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.

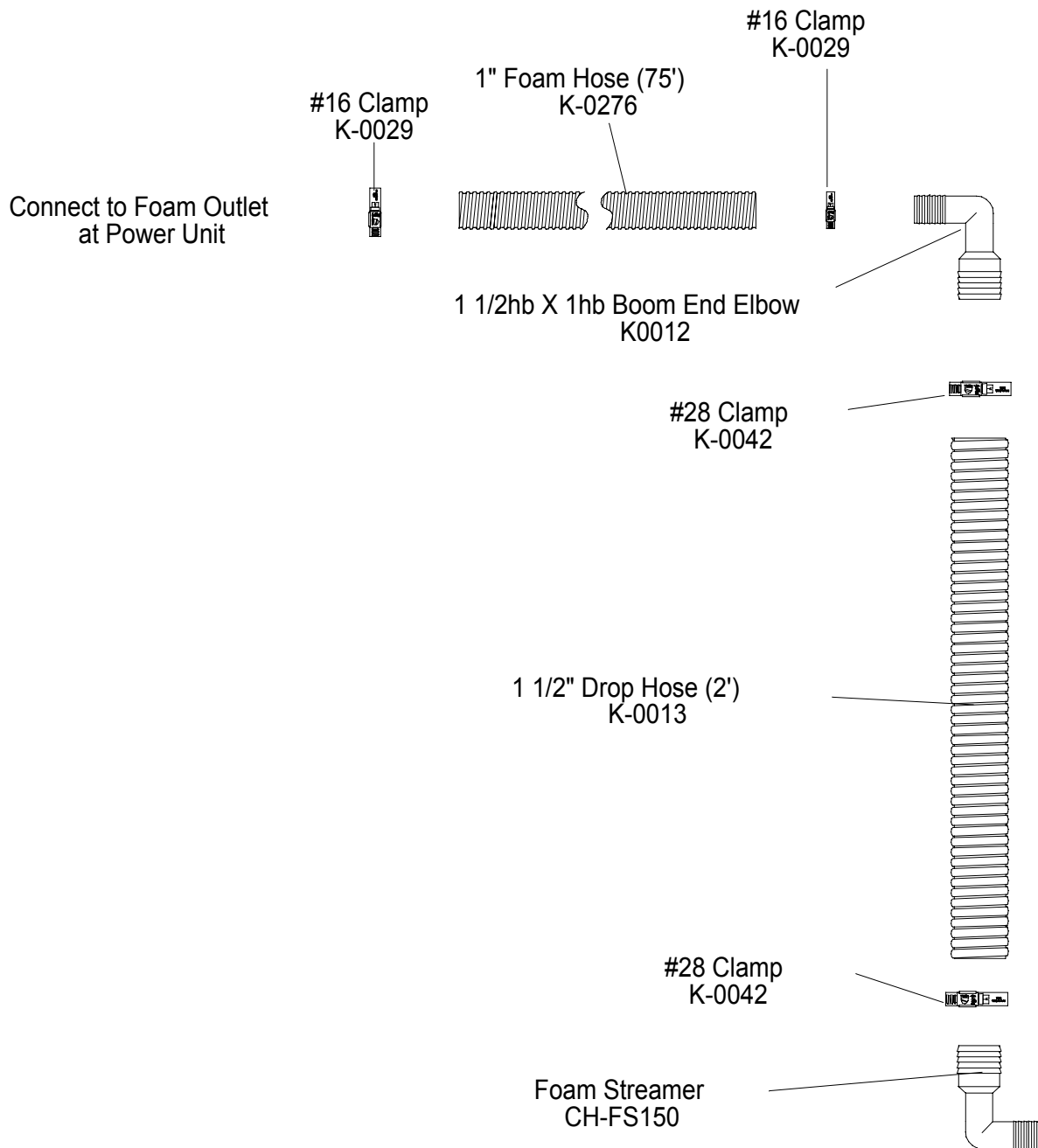


FIGURE 5 – TMD Foam Hose Assembly

COLLECTOR HEADS

Collector heads are standard equipment on TRAC MASTER 2000 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 choose to remove the collector heads and install foam streamers, under these conditions. (See Figure 4)

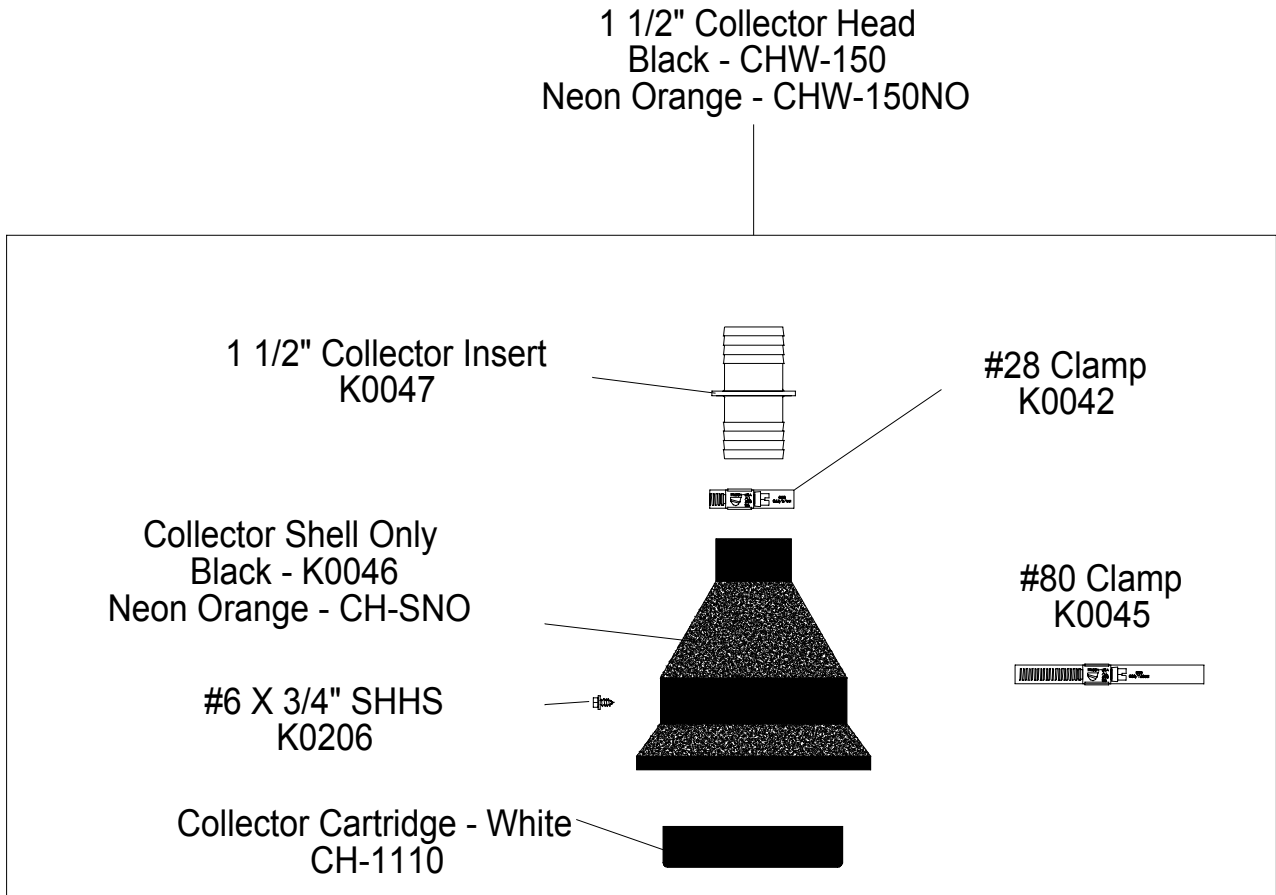


FIGURE 6 - Collector Head

SWITCHING VALVE

The foam switching valve is located inside the power unit. Install the foam hose onto the two 1" hose barb foam outlet connectors with #16 hose clamps (See Figure 2).

IMPORTANT: Do not over tighten fittings. If fittings are over tightened the valve housing may be damaged.

LIQUID LINE INSTALLATION

Route the 1/4" OD tubing from the power unit to the in-line filter outlet located at the bottom of the tank. It is important to protect the liquid line from sharp edges to prevent leakage.

AIRLINE INSTALLATION

Cut appropriate length of 3/8" OD tubing to route from power unit to the threaded tank cap. Be sure to provide slack for ease of cap removal during filling (see figure 5).

To install airline, loosen the compression nuts, insert hose, and hand tighten until hose is secure.

NOTE: Securing airline with nylon cable ties or metal cable clamps with a plastic coating provide a convenient way of routing airline to prevent pin holes or pinching.

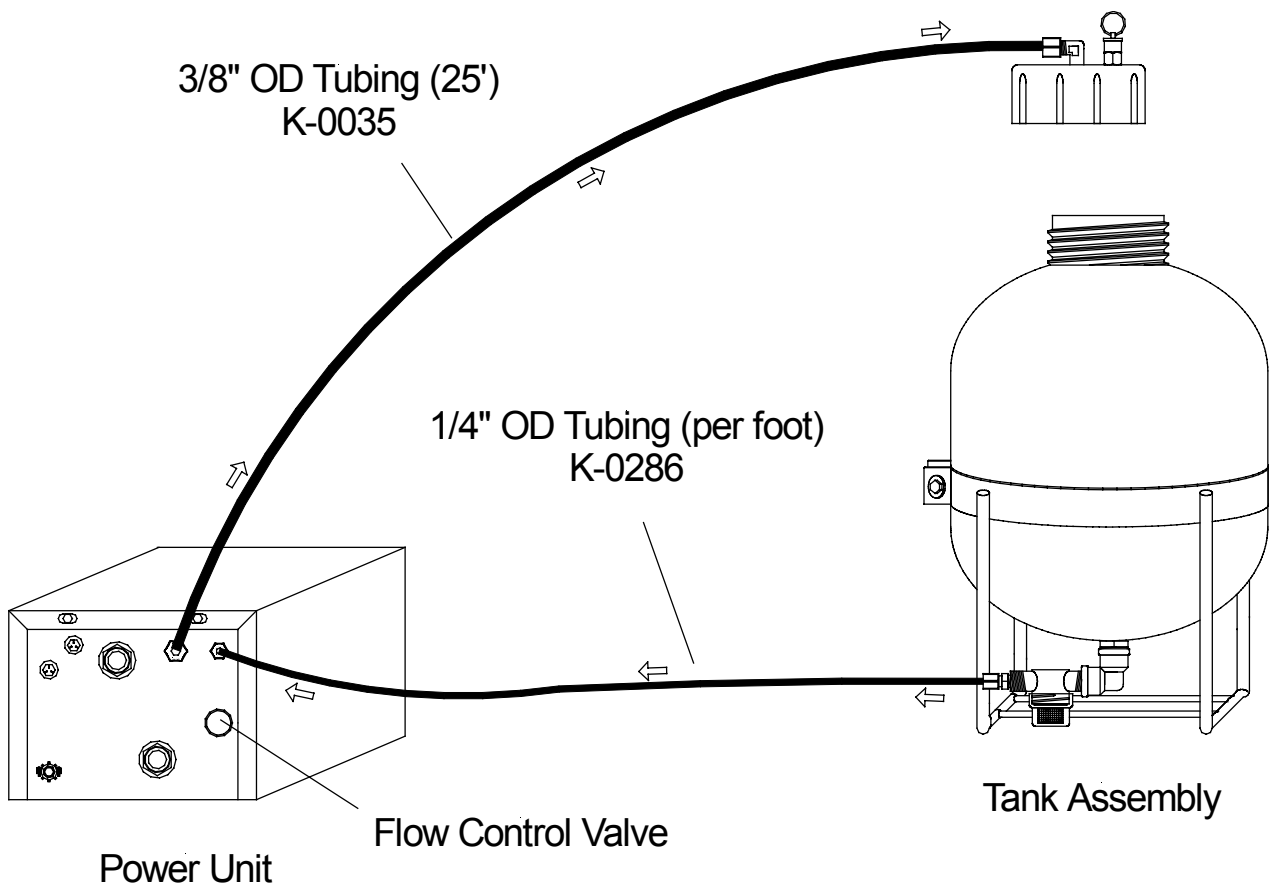


FIGURE 7 - TRAC MASTER D Series Liquid and Air Flow

WIRING



CAUTION

- This machine is designed to operate off of a 12 volt DC power supply 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.

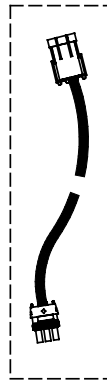
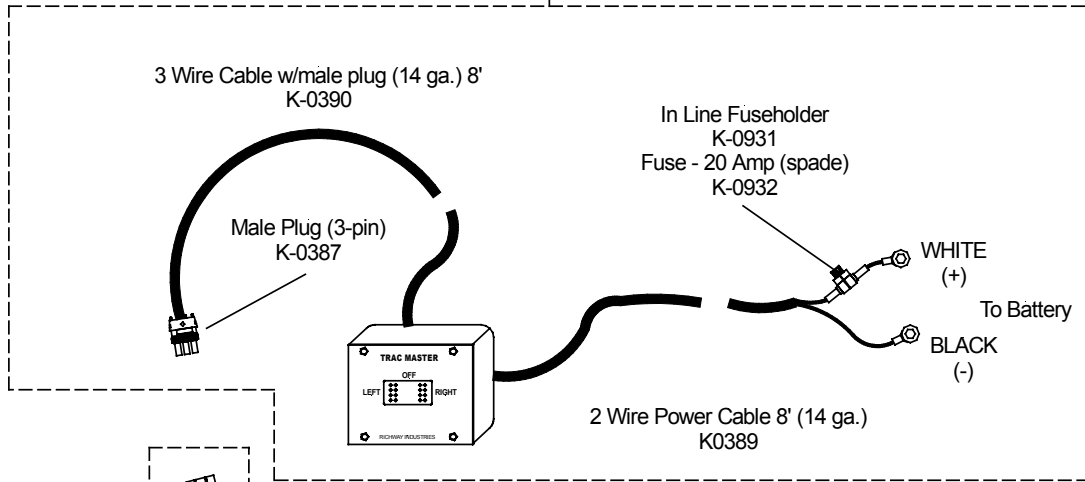
To prevent accidental grounding of circuit, do not connect two-wire battery cable until all other connections have been made and checked for accuracy. If a greater length of wiring cable is needed, additional lengths are available. When adding wire, be sure to use wire of the same or larger gauge. Using smaller wire can cause poor performance, blown fuses, and rapid compressor motor failure.

Route the two-wire battery cable from the switch box to the battery. Be sure it is out of the way and secure it using plastic coated clamps to prevent damage from rubbing off insulation by sharp edges. The white wire of the battery cable should be attached directly to the positive (+) post of the battery by use of the cable mounting bolt. The black wire of the battery cable should be attached directly to the negative (-) mounting bolt. Check all connections for accuracy before completing battery connections.

NOTE: TRAC MASTER foam markers normally draw 8-10 amperes.

When a connecting to an electrical system with two 6 volt batteries wired in series, be certain to connect the battery terminals so that a full 12 volts is supplied. If connected to 6 volts, the compressor will run slowly and the foam switching valve will not operate correctly.

Switch Box Complete - TM-2000
KC-9010



3-wire Extension w/
Male & Female Plugs 14ga.

5 feet = K-0101
10 feet = KC-9015
15 feet = K-0321

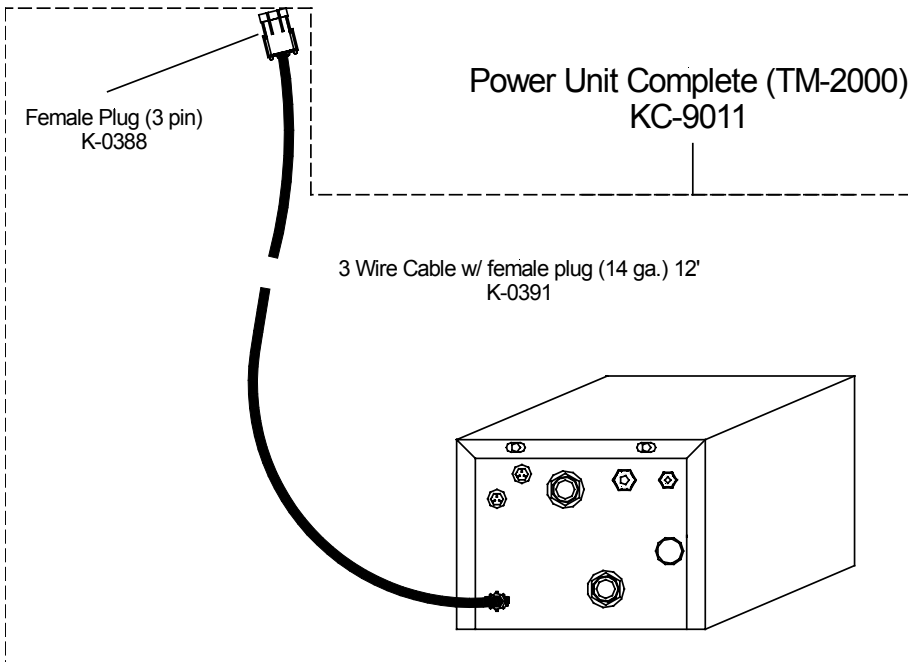
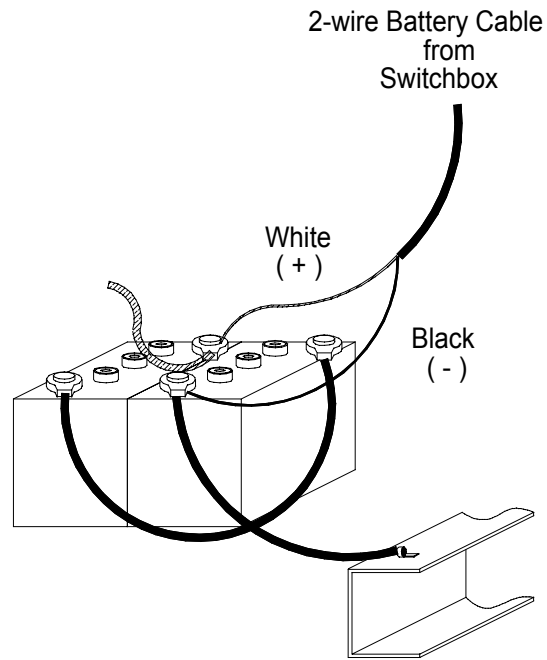
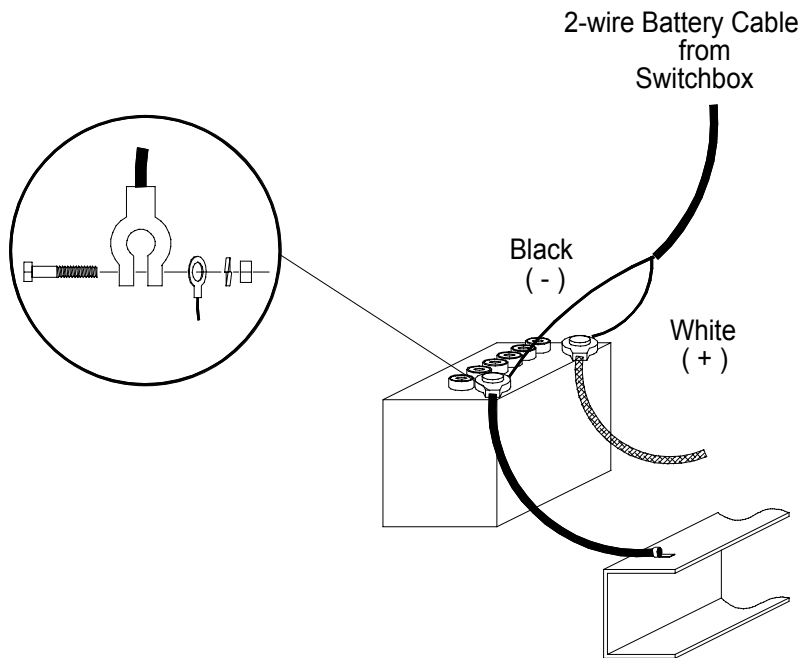


FIGURE 8 - TRAC MASTER TMD Wiring



12 VOLT SYSTEM
(Two 6 VOLT BATTERIES)



ONE 12 VOLT BATTERY

FIGURE 9 - TRAC MASTER 2000 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 manufacturers 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. Different water sources may require different amounts of concentrate to obtain the desired foam density. Water hardness, pH, and impurities will all affect the rate of concentrate required for a consistent long-lasting foam.

NOTE: It is worthwhile to determine the proper foam/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.

If hard water is a problem, commercial softening agents are available. You can make your own softening agent by dissolving a commercial water softening powder (available in most grocery stores) in hot water and adding a portion of this mixture to your tank each time you fill. Experimentation will reveal the correct amount to use. A good starting point is one and one half ounces per gallon of water.

Mix ratios for foam concentrates advertised as 80 to 1 or 160 to 1 must be adjusted for use with your water, such ratios are only a guideline.

NOTE: When mixing foam, warm water will improve performance.

Heat, humidity, wind and crop cover will also affect the life of foam. Using a good quality marking agent, such as GOODMARK, may be very important.

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 manufacturers recommendations when handling any chemical.
- Do not pump combustible liquids or vapors with this product.

1. BE SURE POWER UNIT IS TURNED OFF. Remove the cap from the top of the tank. Pressure is built in the tank. Remove coupler cap slowly, to exhaust any remaining pressure from the tank.

CAUTION!

Pressure is built in the tank. Remove tank cap slowly, to relieve any pressure that may be present.

2. Starting with a small amount of water (2 gal), mix the foam concentrate according to the label directions. If considerably more concentrate is needed above the manufacturer's suggested ratio (usually 2-5 ounces per gallon) to produce good foam, use of a softener or soft water may be required. If the foam is too stiff (dry), it 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.

NOTE: In windy conditions a wetter, heavier foam may be desired.

3. With the mixing ratio determined, fill the tank leaving about 4 inches of air space at the top of the tank. No agitation is present in the tank. You may find it necessary to partially fill the tank, add the foam concentrate. Then completely fill the tank.

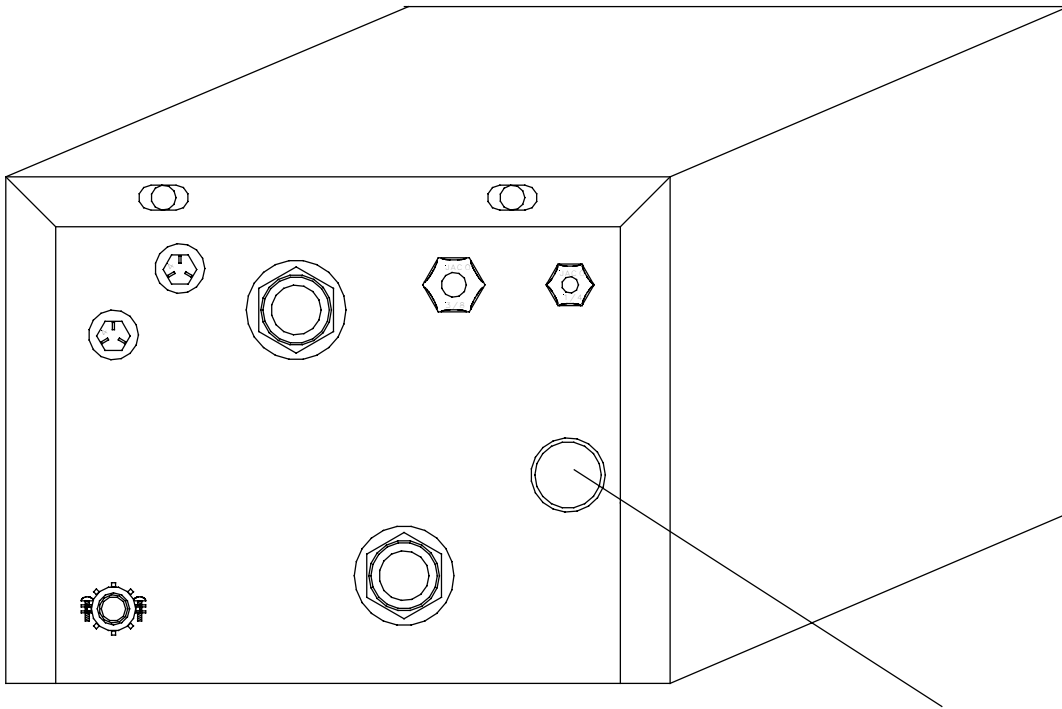
4. Replace cap at the top of the tank.

FLOW CONTROL VALVE

The flow control valve regulates the amount of foam solution flowing to the foamhead. To increase liquid flow, turn the adjusting knob counter-clockwise. This valve has been factory preset to 2 1/2 turns open. This setting provides for a moderate foam output.

Generally, increased liquid flow produces a wetter heavier foam. Dryer, stiffer, foam is produced at low liquid flow.

Power Unit



Flow Control Valve

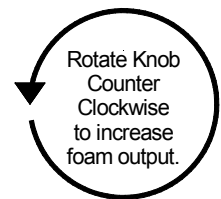
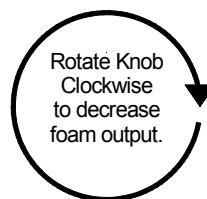


FIGURE 10 - Flow control Valve Adjustment

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 manufacturers 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.

Richway TRAC MASTER foam marking systems need little maintenance, but regular routine cleaning of the air filters is essential.

AIR FILTERS

Every 40 operating hours, or more often if extremely dusty, remove the compressor intake filter (See Figure 8) and clean it by back blowing through the fitting with air pressure up to 80 psi.

Clean the louvered primary filter located on the power unit box after every 100 hours of use (See Figure 1). Remove the filter and wash in warm soapy water or blow dust free with compressed air.

The air intake filters must be kept clean. Dirty filters prevent proper operation of the marking system and will overload the motor. This will blow fuses and possibly lead to compressor failure. Compressor filters must be replaced periodically.

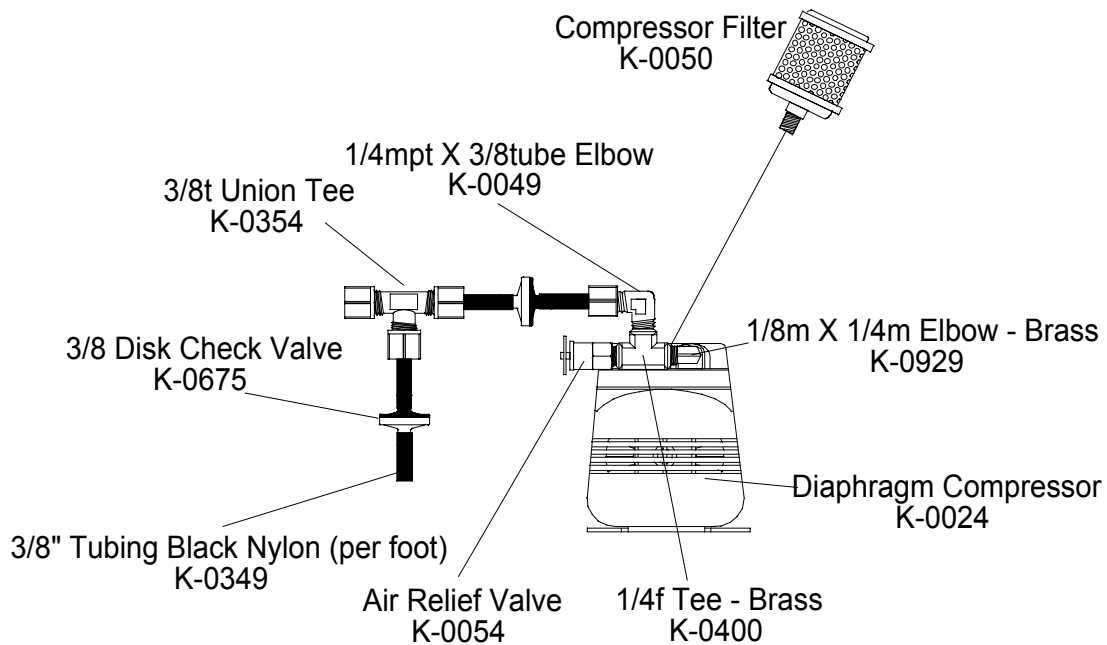


FIGURE 11 - TRAC MASTER TMD Compressor Assembly

DISK CHECK VALVES

During operation 3/8" disk check valves allow air to flow from the compressor through the airline. When the compressor is turned off, these valves prohibit foam solution from back flowing to the compressor through the airline. It is essential, that these check valves function correctly.

Symptoms of check valve failure are:

- A. Traces of liquid in the airline. Remove fitting and inspect airline tubing periodically.
- B. Fluid detected at the 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 the pump cap and clean all residue.

FOAMHEAD AND IN-LINE FILTER

The foamhead has been designed so that the elements inside may be cleaned as necessary. The screens inside this unit should be washed periodically with hot water.

The in-line filter element, located at the bottom of the tank, should be cleaned occasionally to insure sufficient liquid flow to the foamhead assembly (See Appendix 2).

IMPORTANT: The liquid lines and tank need to be drained completely prior to storage. If liquid in this system is allowed to freeze several components may be damaged.

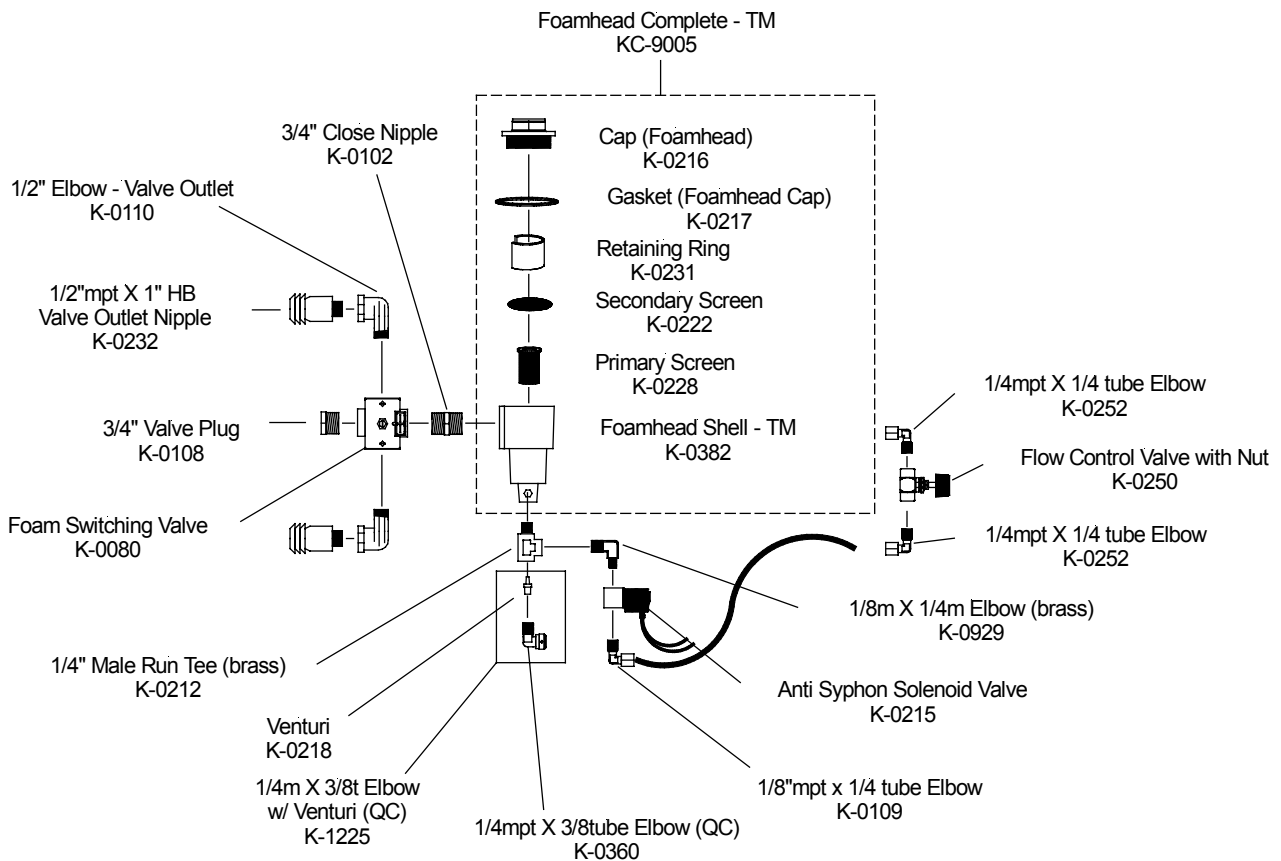


FIGURE 12 - TRAC MASTER TMD Foamhead / Valve Assembly

WINTERIZATION

The liquid lines and tank must be drained completely prior to storage. If liquid in this system is allowed to freeze, several components may be damaged. Follow the procedure below to prevent component damage.

1. Remove the in-line filter bowl at the bottom of the tank and completely flush the tank with warm water.
2. Replace in-line filter. Turn on machine and allow to operate until no foam is generated.
3. Add anti-freezing solution such as windshield washer solvent to tank.
4. Turn on machine and run until anti-freezing solution has been drained.
5. Check the airlines and liquid lines for holes and replace as required.

IMPORTANT

Be sure **to flush, then purge, all liquid from the system prior to storage in freezing temperatures.** The liquid lines and tank must be drained completely prior to storage. If liquid in this system is allowed to freeze, several components may be damaged.

TANK AND HOSES

At the end of the season remove the in-line filter bowl at the bottom of the tank and flush the tank with warm water. Check the airline, liquid line, and foam hose for holes and replace as required. **Be sure to flush then drain all liquid from the system prior to storage in freezing temperatures.**

TROUBLE-SHOOTING

If you do not get foam:

1. Be sure that the compressor is connected properly and that air is blowing into the tank. To be sure the airline and liquid lines do not have a hole in them or are not pinched, loosen the 3/8" bulkhead at the power unit, remove the airline and check for air-flow. Be sure the threaded tank cap is properly installed.
2. Be sure you have enough foam concentrate in the tank. Very hard water may require a great amount of concentrate to produce a 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. Check and clean the in-line filter.
5. Be sure the flow control valve is open. You may remove the liquid line from the bulkhead at the power unit and check for liquid flow.
6. Check anti-siphon valve for proper operation.
7. 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: not enough foam - not enough foam concentrate in tank; hole in airline; pinched air or liquid lines. Clogged in-line filter. Adjust liquid flow control valve.

PROBLEM: wet foam - not enough foam concentrate; reduce liquid flow

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

PROBLEM: 3 - 4 hours per 10 gallon tank - not enough concentrate being used. Reduce liquid flow.

PROBLEM: foam does not last on the ground - use slightly more concentrate or a higher quality foam concentrate such as GOODMARK. Use collector heads.

PROBLEM: blowing foam in windy weather - mix foam solution with slightly less foaming agent or more water to produce a wetter, heavier foam.

APPENDIX 1

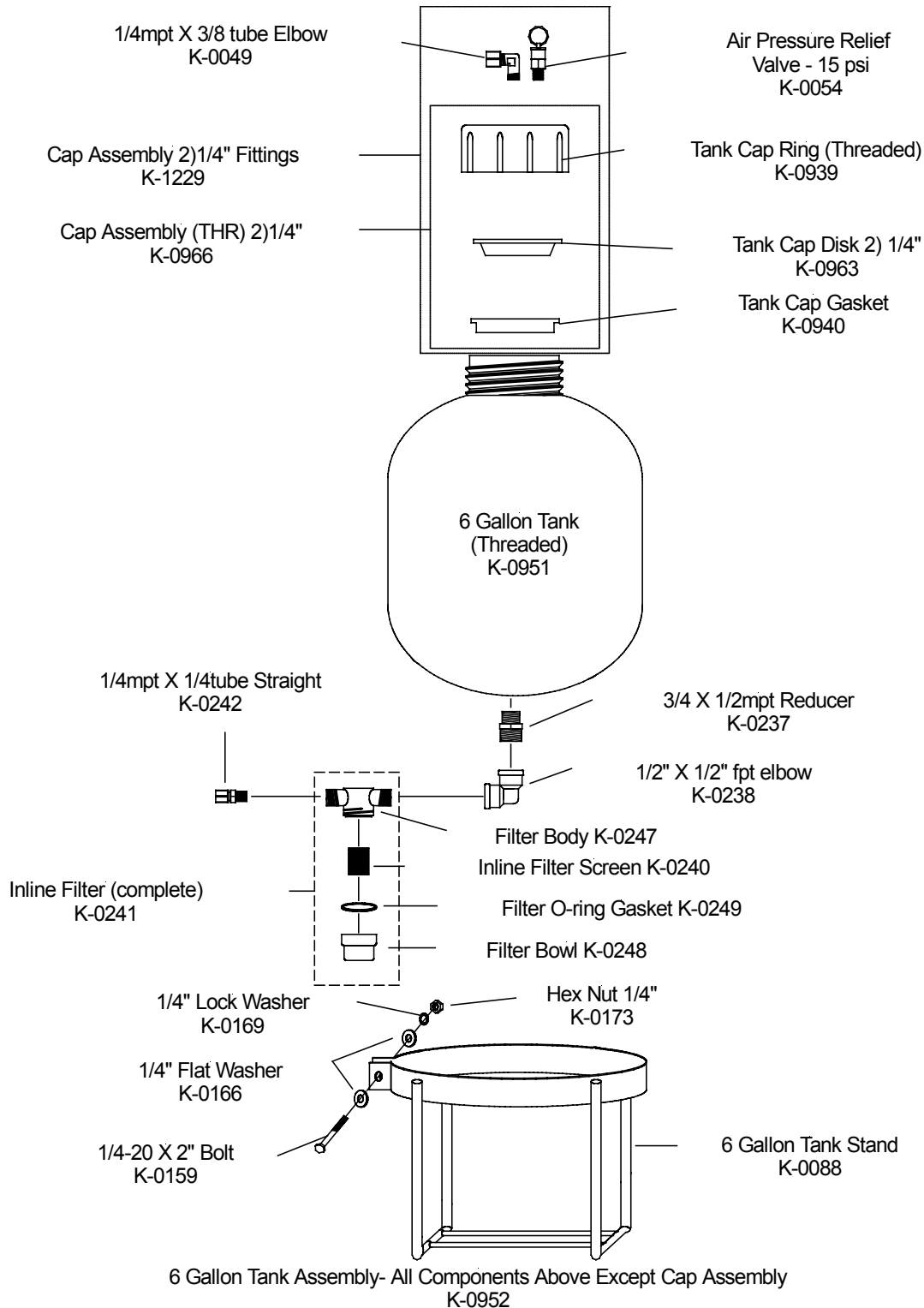


FIGURE 1 - TRAC MASTER 2000 Tank - 6 Gallon

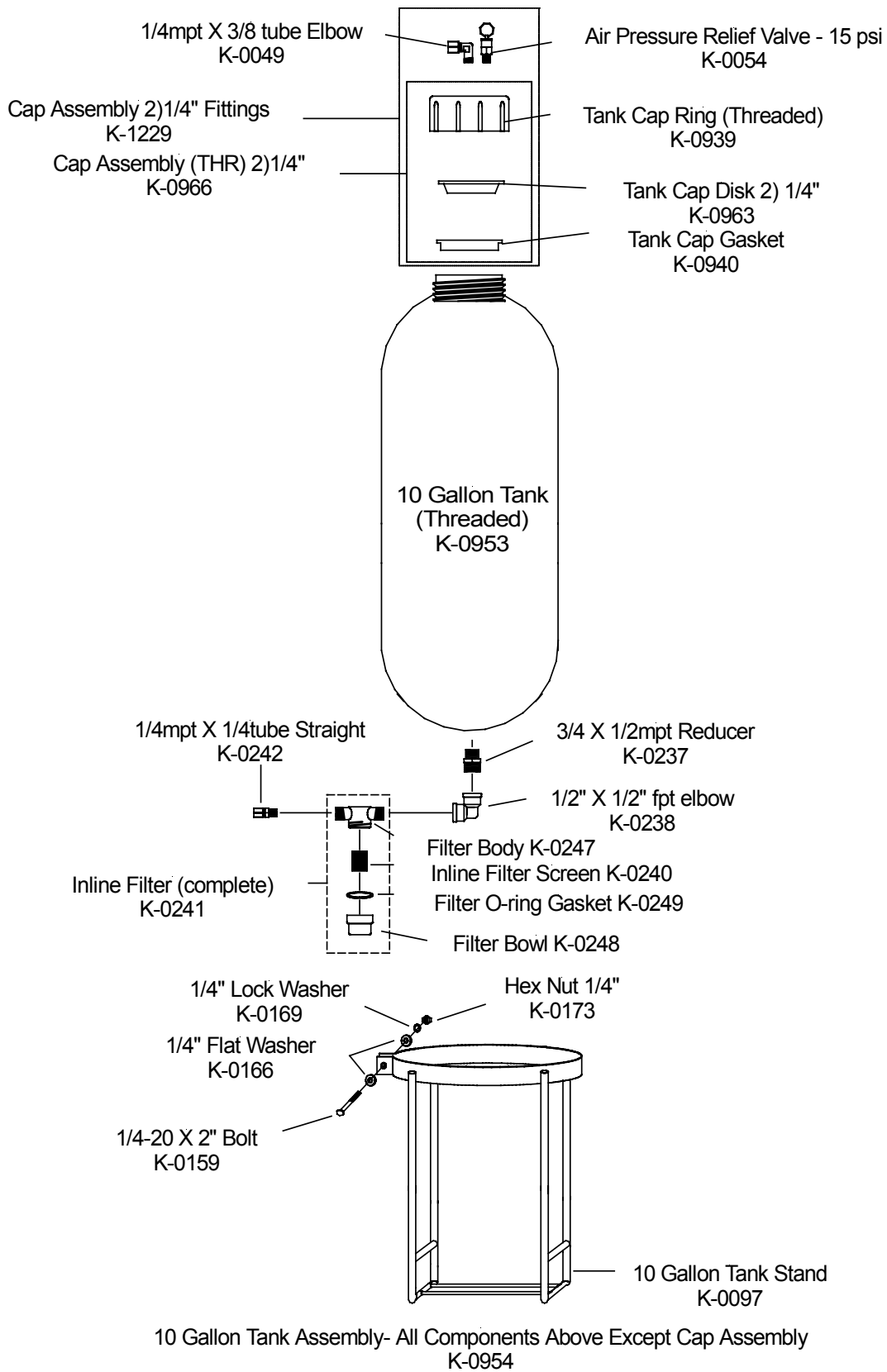


FIGURE 2 - TRAC MASTER 2000 Tank 10 Gallon

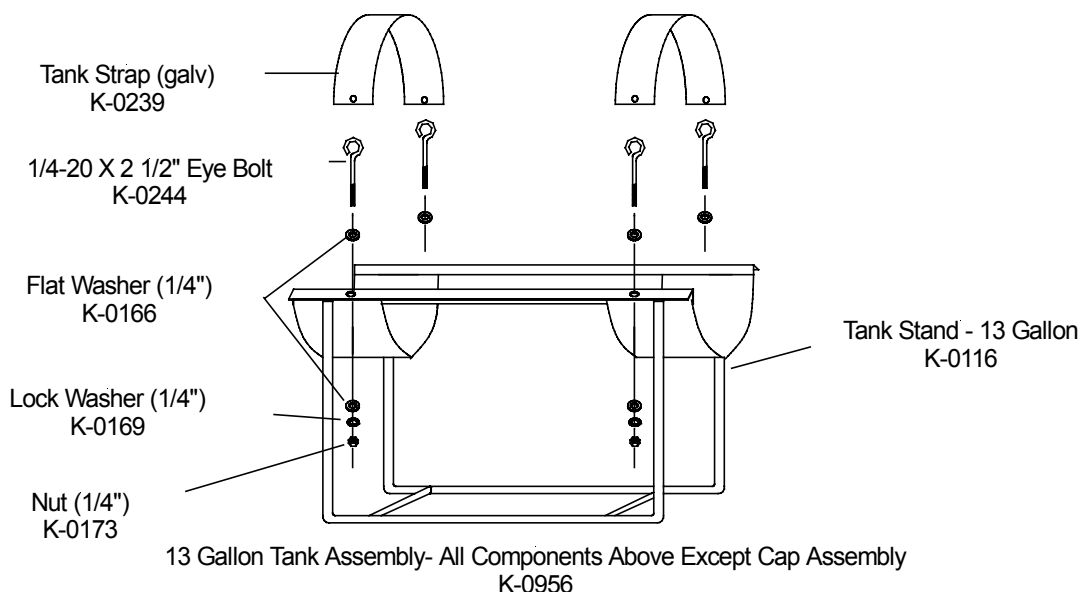
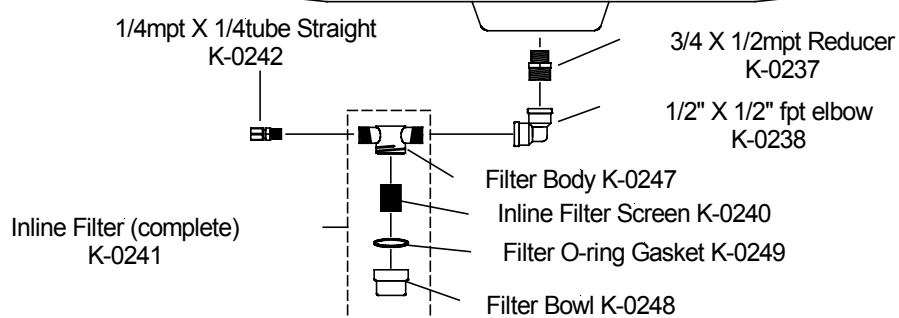
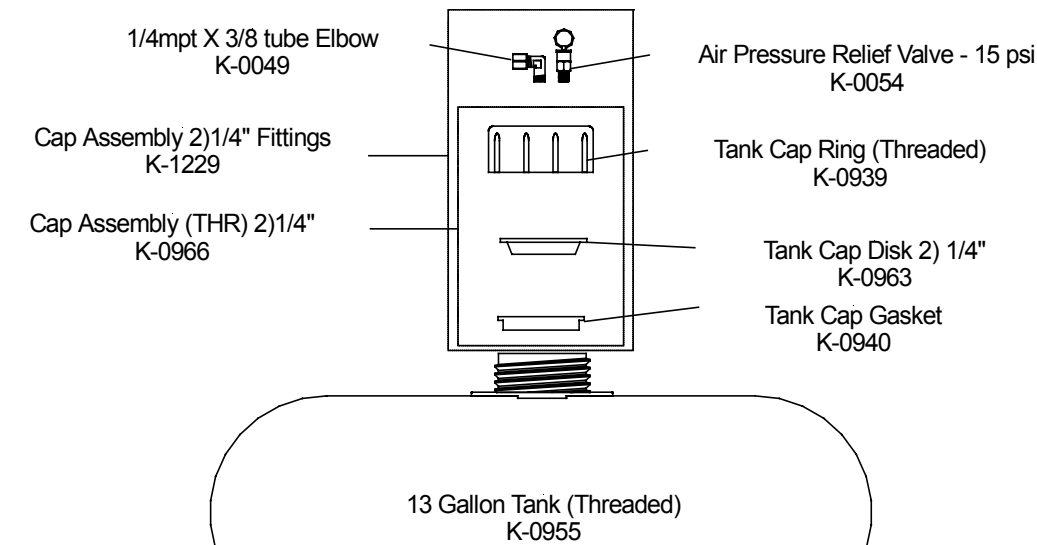


FIGURE 3 - TRAC MASTER 2000 Tank 13 Gallon

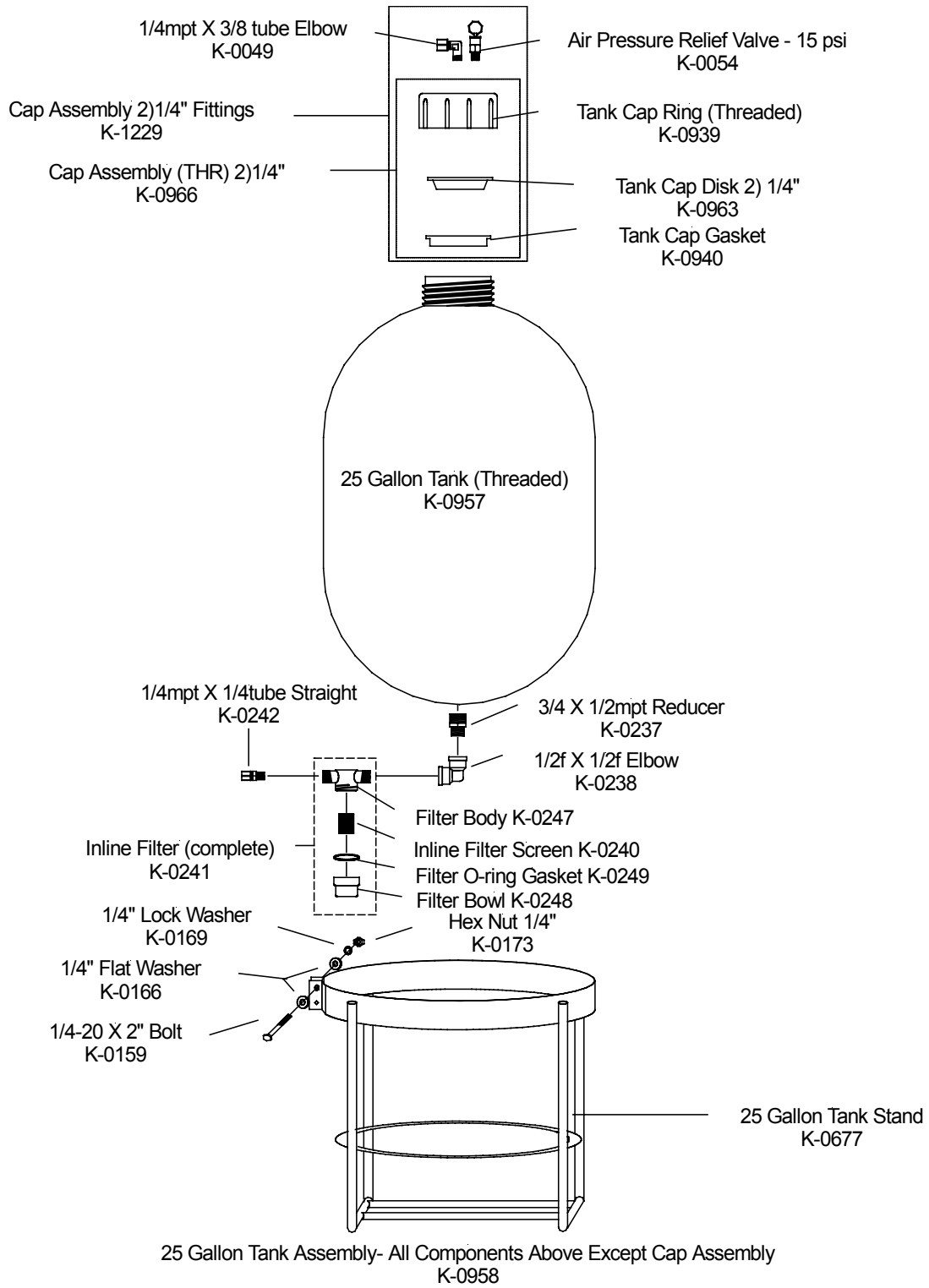


FIGURE 4 - TRAC MASTER 2000 Tank 25 Gallon

APPENDIX 2

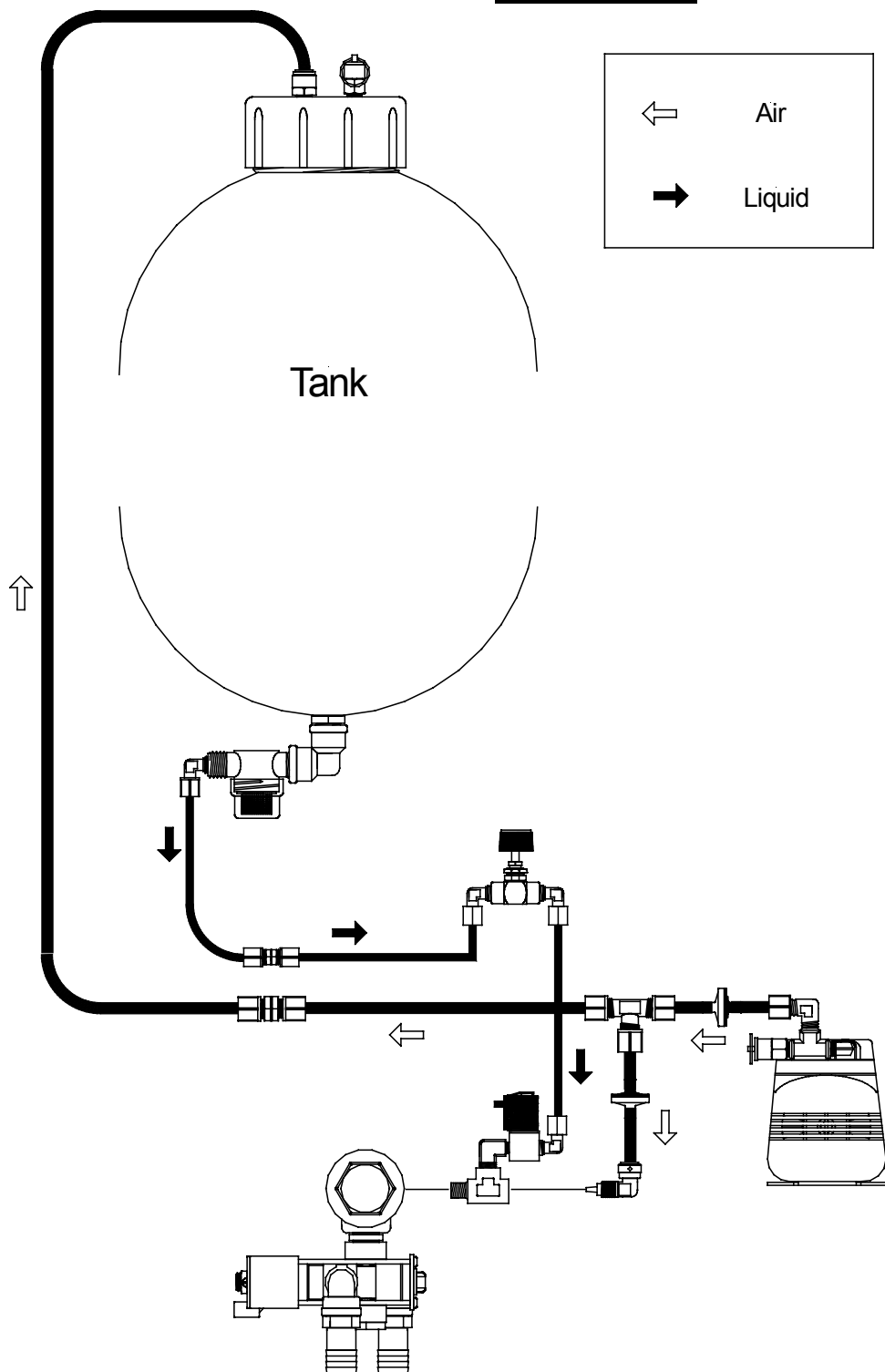


FIGURE 1 – TMD Air and Liquid Flow Diagram

APPENDIX 3

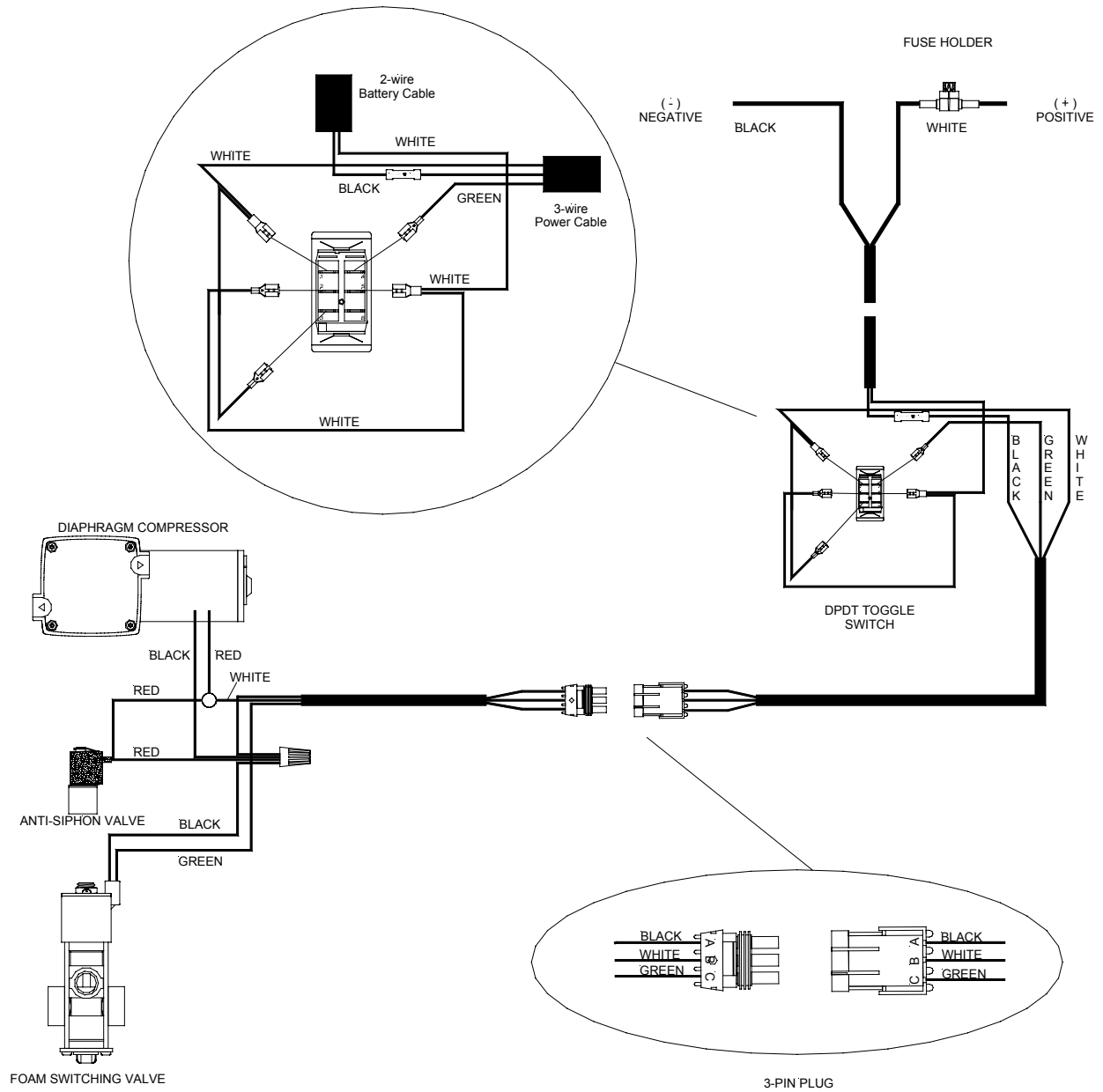


FIGURE 1 – TMD Wiring Diagram

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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