General
PIPE CLEANERS

OPERATOR'S MANUAL FOR
JM-2512
TRAILER

CAUTION
RISK OF INJURY! READ ENTIRE MANUAL BEFORE OPERATING!
THIS MANUAL IS AN IMPORTANT PART OF THE TRAILER
AND MUST REMAIN WITH THIS UNIT!

37-1418-032725

TABLE OF CONTENTS

⚠ WARNING

⚠ WARNING: This product can expose you to chemicals including Lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

INTRODUCTION

Thank you for purchasing a General Trailer Jet. This manual is designed to provide information to help you to understand, use and maintain the General J-2512 Typhoon trailer.

The contents of this manual are based on the latest product information available at the time of publication. The Manufacturer reserves the right to make changes in price, color, materials equipment, specifications or models at any time without notice.

IMPORTANT!

A "DANGER, WARNING or CAUTION" safety warning will be used to designate and emphasize Safety Warnings that must be followed when operating this Trailer. Accompanying the safety warnings are "Signal Words" which designate the degree or level of hazard seriousness. The "Signal Words" used in this manual are as follows:

DANGER: INDICATES AN IMMINENTLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, WILL RESULT IN DEATH OR SERIOUS INJURY.

WARNING: INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS INJURY.

CAUTION: INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED MAY RESULT IN MINOR OR MODERATE INJURY OR DAMAGE TO THE TRAILER.

The symbols set below are "Safety Alert Symbols". These symbols are used to call attention to items or procedures that could be dangerous to you or other persons using this equipment.

ALWAYS PROVIDE A COPY OF THIS MANUAL TO ANYONE USING THIS EQUIPMENT. READ ALL INSTRUCTIONS IN THIS MANUAL AND ANY INSTRUCTIONS SUPPLIED BY MANUFACTURERS OF SUPPORTING EQUIPMENT BEFORE OPERATING THIS TRAILER AND ESPECIALLY POINT OUT THE "SAFETY WARNINGS" TO PREVENT THE POSSIBILITY OF PERSONAL INJURY TO THE OPERATOR.

Once the unit has been delivered, immediately write in the serial number of your unit in the space provided below.

SERIAL NUMBER _____

Inspect for signs of obvious or concealed freight damage. If damage does exist, file a claim with the transportation company immediately. Be sure that all damaged parts are replaced and that the mechanical and electrical problems are corrected prior to operation of the unit. If you require service, contact your dealer.

Please have the following information available for all service calls:

1. Model Number
2. Serial Number
3. Date and Place of Purchase

IMPORTANT SAFETY WARNING

SAFETY

⚠ WARNING: DO NOT OPERATE TRAILER UNTIL THIS MANUAL HAS BEEN READ AND UNDERSTOOD.

Thoroughly read and understand all instructions before operating this trailer.

General Wire Spring will not be liable for any changes made to our standard machines, or any components not purchased from General Wire Spring.

Never make adjustments on machine while it is in operation.

Do not operate Jetter with the hose reel valve in the off position for extensive periods of time as this may cause damage to the pump.

The best insurance against an accident is precaution and knowledge of the machine.

Read engine safety instructions provided.

Never run pump dry. Inlet water supply must be cold and clean fresh water.

RISK OF ASPHYXIATION

Use this product only in a well ventilated area. Operate outdoors.

Avoid installing machines in small areas or near exhaust fans. Exhaust contains poisonous carbon monoxide gas; exposure may cause loss of consciousness and may lead to death. It also contains chemicals known, in certain quantities to cause cancer, birth defects or other reproductive harm.

Carbon monoxide exhaust and/or gasoline fumes from this equipment can create a hazardous atmosphere in confined spaces, which include, but are not limited to manholes, septic tanks, closed garages or other areas which may not be properly ventilated. In particular, excess gasoline fumes can create an explosion hazard. Such hazardous atmospheres can cause severe injury or death. Do not operate this equipment in any confined space or area without adequate ventilation. Operate this equipment only when located outdoors or in an open, well-ventilated area.

RISK OF EXPLOSION OR FIRE

Flammable liquids can create fumes which can ignite causing property damage or severe injury.

Do not add fuel when the product is operating.

Do not spray flammable liquids.

Do not place machine near flammable objects as the engine is hot.

Gasoline is extremely flammable and is explosive under certain conditions. Allow engine to cool for 2 minutes before refueling. If any fuel is spilled, make sure the area is dry before testing the spark plug or starting the engine. (Fire and/or explosion may occur if this is not done.)

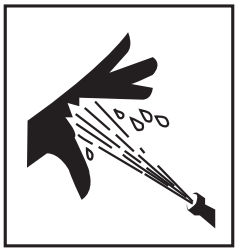
Gasoline engines shall be refueled:

- outdoors;
- with the engine on the equipment stopped;
- with no source of ignition within 10 feet of the dispensing point; and
- with an allowance made for expansion of the fuel should the equipment be exposed to a higher ambient temperature.

Do not overfill the fuel tank. (There should be no fuel in the filler neck). In an overfilling situation, additional precautions are necessary to ensure that the situation is handled in a safe manner. After refueling make sure the tank cap is closed properly and securely.

IMPORTANT SAFETY WARNING

RISK OF INJECTION OR SEVERE CUTTING INJURY



High pressure stream of water that this equipment can produce can pierce skin and its underlying tissues, leading to serious injury and possible amputation.

Insure the jet hose has been placed in the pipe (suggested minimum of 6 feet) before engaging the water pressure to prevent the hose from coming out of the pipe prematurely and causing injury.

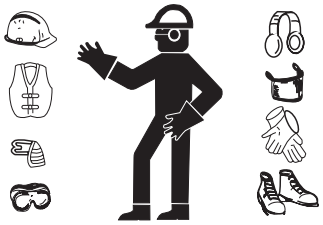
Always shut off the hose reel valve before pulling the hose out of the pipe, Mark the hose a minimum of 6 feet from the end to help insure the hose is not accidentally pulled out of the pipe while still under pressure. Shut off the water pressure when the hose mark is encountered. Portions of the system can still be under pressure even if the machine is not operating.

RISK OF BURNS

Do not touch engine during operation. The muffler and other parts of the engine get hot and can cause severe burns.

RISK OF BODILY INJURY

High pressure spray can cause particles to become airborne and fly at high speeds. High pressure developed by these machines will cause personal injury or equipment damage. Use caution when operating. Do not direct discharge stream at people or severe injury or death will result. Do not allow children to operate the General's Jet Set™ at any time.



Before starting machine, be sure to wear personal protective equipment such as safety goggles or face shield, and protective clothing such as rubber gloves, coveralls or raincoat, rubber boots with metatarsal guards, and hearing protection.

Drains and sewers carry bacteria and other infectious microorganisms or materials which can cause severe illness or death. Avoid exposing eyes, nose, mouth, ears, hands, cuts and abrasions to waste water or other potentially infectious materials during drain and sewer cleaning operations. To help protect against exposure to infectious materials, wash hands, arms and other areas of the body as needed with hot soapy water. If necessary, flush mucous membranes with water. Also, disinfect potentially contaminated equipment by washing surfaces with a hot, soapy wash using a strong detergent.

Dress properly. Do not wear loose clothing or jewelry. Contain long hair. Keep your hair, clothing and gloves away from moving parts. Loose clothes, jewelry or long hair can be caught in moving parts.

Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use tool while tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating power tools may result in serious personal injury.

Do not overreach. Keep proper footing and balance at all times. Proper footing and balance enables better control of the tool in unexpected situations.

Be careful when cleaning drains where cleaning chemicals have been used. Avoid direct contact with skin and eyes. Drain cleaning chemicals can cause serious burns as well as damage the hose.

Only use this tool in the application for which it was designed. Follow the instructions on the proper use of the machine. Other uses or modifying the drain cleaner for other applications may increase risk or injury.

IMPORTANT SAFETY WARNING

RISK FROM MOVING PARTS

Never operate machine with belt guard removed. Fingers can get caught between belt and pulley. Never operate machine with belt guard removed. Fingers can get caught between belt and pulley.

RISK OF ELECTROCUTION OR ELECTRICAL SHOCK

Keep water spray away from electric wiring or fatal electric shock may result.

TOOL USE AND CARE

1. Do not force tool. Use correct tool for your application. The correct tool will do the job better and safer at the rate for which it is designed.
2. Keep bystanders, children and visitors away while operating machine. Distractions can cause you to lose control.
3. Store idle tools out of reach of children and other untrained persons. These tools are dangerous in the hands of untrained users.
4. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the tool's operation. If damaged, have the tool serviced before using. Many accidents are caused by poorly maintained tools.
5. Use only accessories that are recommended by the manufacturer for your model. Accessories that may be suitable for one tool may become hazardous when used on another tool.
6. Tool Service must be performed only by qualified repair personnel. Service or maintenance performed by unqualified repair personnel could result in injury.
7. When servicing a tool, use only identical replacement parts. Follow instructions in Maintenance section of this manual. Use of unauthorized parts or failure to follow maintenance instructions may create a risk of injury.

⚠ WARNING ⚠

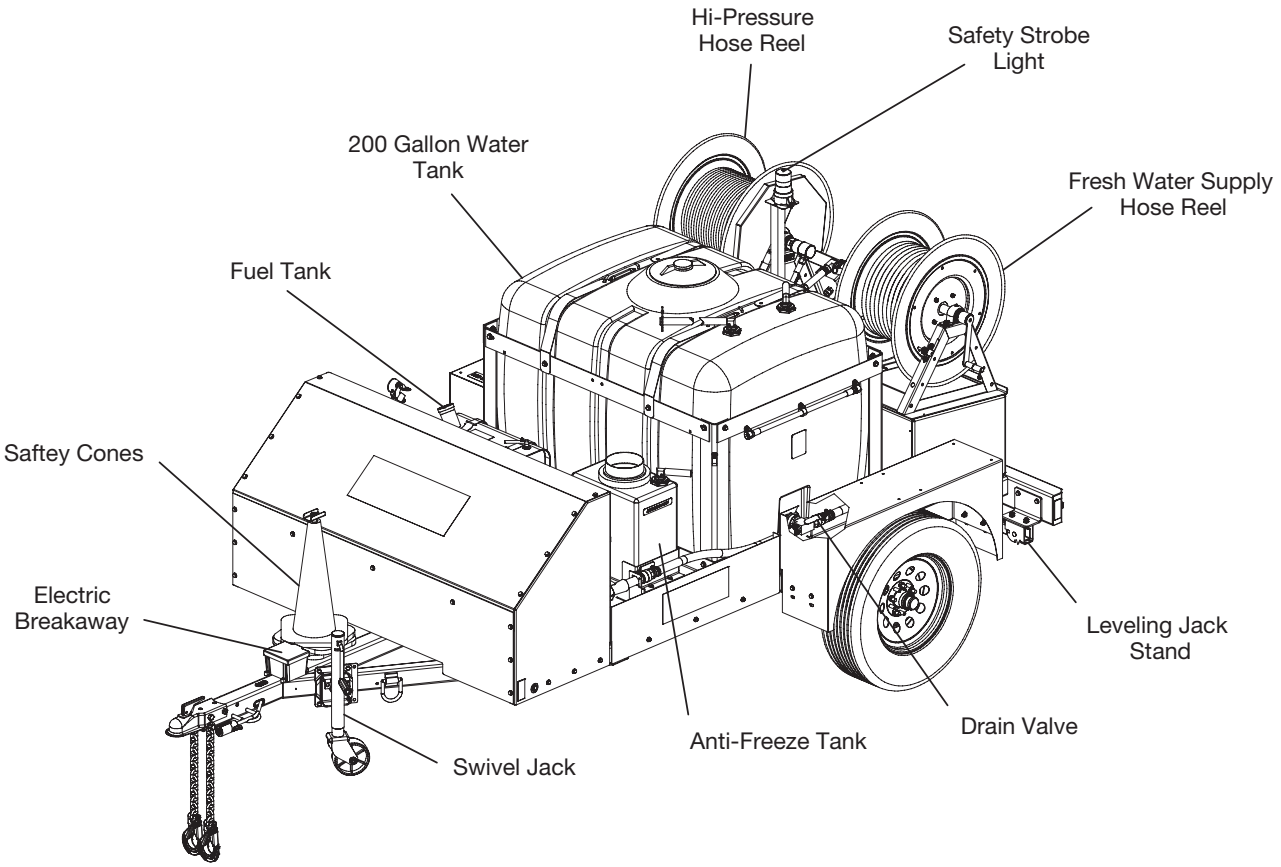
THE FOLLOWING PAGES CONTAIN OPERATING INSTRUCTIONS.

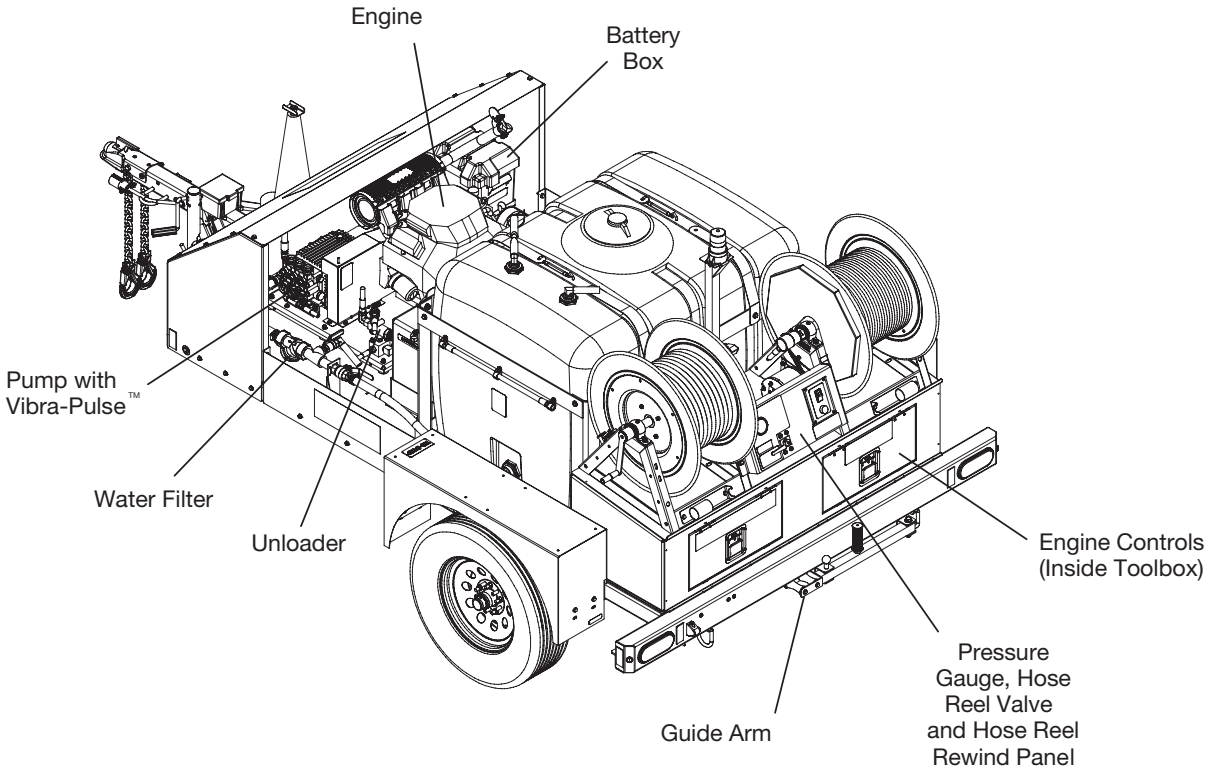
DO NOT ATTEMPT TO TOW YOUR TRAILER UNTIL YOU HAVE READ AND UNDERSTOOD ALL SAFETY PRECAUTIONS AND INSTRUCTIONS LISTED IN THIS MANUAL.

INCORRECT OPERATION CAN CAUSE SERIOUS INJURY!!

DO NOT ALTER OR MODIFY THIS TRAILER IN ANY MANNER!

FEATURES


Hi-Pressure Hose Reel
Safety Strobe Light
200 Gallon Water Tank
Fresh Water Supply Hose Reel
Fuel Tank
Saftey Cones
Electric Breakaway
Leveling Jack Stand
Drain Valve
Anti-Freeze Tank
Swivel Jack


Engine
Battery Box
Pump with Vibra-Pulse™
Water Filter
Unloader
Engine Controls (Inside Toolbox)
Guide Arm
Pressure Gauge, Hose Reel Valve and Hose Reel Rewind Panel

PRE OPERATION INSTRUCTIONS

BEFORE TOWING TRAILER

Upon arrival, inspect the unit and parts for damages. Note any damage to machine or components for claims against freight carrier.

Jets have antifreeze in the pump to protect it from freezing conditions during shipment and storage. If machine will be stored and operated in a cold climate, follow Winterizing Instructions.

⚠ WARNING: BEFORE USING A TOW VEHICLE WITH A TRAILER, VERIFY THAT THE VEHICLE IS DESIGNED FOR THE LOAD. USING A VEHICLE THAT IS TOO SMALL IS VERY DANGEROUS. BE CERTAIN THAT IT CAN HANDLE THE M.G.T.W. (MAXIMUM GROSS TRAILER WEIGHT) AND THE TONGUE WEIGHT FOR SAFE TOWING AND BRAKING.

SELECTING THE PROPER TOWING EQUIPMENT

WEIGHT

When selecting the proper towing equipment, the two most important factors that must be considered are the M.G.T.W. (Maximum Gross Trailer Weight) and the Tongue Weight. The M.G.T.W. is the total weight of the trailer plus the payload in the trailer. The tongue weight is the downward pressure exerted at the coupler. The easiest way to measure the gross trailer weight is to place the loaded trailer on a vehicle scale making sure that the scales are supporting the entire weight of the loaded trailer.

The easiest method to measure tongue weight (up to 300 lbs.) is to place the jack stand (trailer tongue) on a bathroom scale making sure the trailer is level. For heavier tongue weights, place a board across the bathroom scale and a solid object of the same thickness as the scales with a piece of pipe between each. The trailer tongue should be level and in its normal towing position. Multiply the scale reading by three (3) to obtain the tongue weight. Make sure the tow vehicle is able to tow the load.

- Be sure hitch capacity is equal to or greater than the load when mounted on the vehicle.
- Be sure the size and rating of the hitch ball is equal to or greater than the load.
- Make sure the safety chain(s) rating is equal to or greater than twice the maximum gross trailer weight rating of your trailer.
- It is against the law to carry passengers in the back of any trailer.
- Any alterations or changes made to the trailer void any express or implied warranties on the trailer or towing equipment.

TOW VEHICLE

Make sure the vehicle you are using to tow the trailer is capable of towing the weight. Check the vehicle Owner's Manual for towing capability of the towing vehicle or contact the car dealer for this information. Make sure the tow vehicle is able to tow the load. Vehicle brake capacity is extremely critical and the tow vehicle must be able to handle the additional weight of the trailer. Radiator and transmission cooling must also be considered.

TOW HITCH CAPACITY

Hitch Class	Maximum Tow Capacity	Maximum Tongue Weight
Sub Class I	1000 Lbs.	100 Lbs.
Class I	2000 Lbs.	200 Lbs.
Class II	3500 Lbs.	300 Lbs.
Class III and 4	5000 Lbs. Plus	500 Lbs. Plus

ELECTRICAL TRAILER WIRING

All trailers must have taillights, brake lights and turn signals connected to the towing vehicle's electrical system. It is also recommended that a heavy duty turn signal flasher and emergency flasher (if separate) be installed since the trailer lights place an extra load on car flasher units.

PRE OPERATION INSTRUCTIONS

TOWING HEAVY TRAILER LOADS

Trailer Brakes. In all cases refer to your vehicle's owner manual and the trailer operating manual to be certain you have an adequate braking system to handle the vehicle/trailer combination. Also, State requirements, road and weather conditions and grade of road, etc. should be considered for trailer braking.

Additional equipment. The following items may be helpful for towing heavy loads. Consult your vehicle's owner manual or dealership for recommended towing accessories.

- Overload Springs
- Overload or air shocks
- Transmission Oil Cooler
- Engine Oil Cooler
- Coolant Recovery System
- Heavy Duty Fan
- Side View Mirrors
- Sway Control

WHEELS

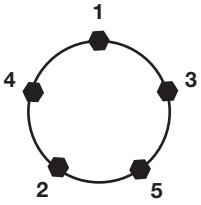
Check wheels for hole elongation or “out of round”. This condition can be caused by lug nuts not being tight or being too tight. Trailer wheels can be damaged by pot holes or curb jumping. You may not be aware of the road shock to the wheels without periodic checks. Replace any wheel that is bent. Replace any wheel if you see elongation of the bolt holes.

WARNING: FOR A NEW TRAILER, THE WHEEL LUG NUTS SHOULD BE TIGHTENED TO THE PROPER TORQUE SPECIFICATION BEFORE USE, AFTER 10 MILES, 25 MILES AND 50 MILES OF OPERATION. RECHECK EVERY 3 MONTHS OR 3000 MILES OF OPERATION THEREAFTER. FAILURE TO CHECK THE LUG NUTS FOR PROPER TIGHTNESS CAN RESULT IN AN ACCIDENT DUE TO A WHEEL FALLING FROM THE TRAILER.

WARNING: NEVER OPERATE A TRAILER OR TOW VEHICLE THAT HAS A LOOSE, MISSING OR BROKEN LUG NUT. THE TRAILER IS DESIGNED FOR SAFE OPERATION WITH ALL LUG NUTS INSTALLED AND ALL AT THE PROPER TORQUE RATING. OPERATING THE TRAILER WITH ONE OR MORE BROKEN OR MISSING LUG NUTS GREATLY INCREASES THE LOAD ON THE REMAINING NUTS AND CAN CAUSE FAILURE OF THE REMAINING NUTS THAT CAN RESULT IN AN ACCIDENT DUE TO A WHEEL FALLING FROM THE TRAILER.

WHEEL LUGS

Wheel lug nuts must be tightened with a torque wrench. Refer to the chart below for proper torque.



1. Start all bolts or nuts by hand to prevent cross threading.
2. Tighten bolts or nuts following sequence at right.
3. The tightening of the fasteners should be done in stages. Following the recommended sequence, tighten fasteners per wheel torque chart below.
4. Wheel nuts/bolts should be torqued before first road use and after each wheel removal. Check and re-torque after the first 10 miles, 25 miles and again at 50 miles. Check periodically thereafter.

WHEEL TORQUE REQUIREMENTS

TORQUE SEQUENCE			
WHEEL SIZE	**1ST STAGE**	**2ND STAGE**	**3RD STATE**
15"	20-25	50-60	90-120

BALL COUPLER HITCHES

Coupler assembly includes a latch lever and latch lever safety pin or hitch pin. Be sure the latch lever is locked and the pin properly secured before moving your trailer. The pin can be engaged fully only if ball is properly seated in the coupler.

PRE OPERATION INSTRUCTIONS

HITCH BALLS

These come in a variety of diameters and capacities. The GVWR (Gross Vehicle Weight Rating) capacity is always stamped on the ball. Use a 2" ball. Always be sure the hitch ball at least matches the GVWR of your trailer. Always be sure the diameter of the hitch ball matches the coupler diameter. Never attempt to tow your trailer with improper size ball. Always keep ball greased to avoid excessive wear. Replace worn hitch ball promptly.

TIRES

Before mounting tires onto wheels make certain that the rim size matches and that the tire will carry the rated load. If the load is not equal on all tires due to trailer weight distribution, use the tire rated for the heaviest wheel position.

Tire inflation pressure is the most important factor in tire life. Inflation pressure should be as recommended by the manufacturer for the load. Pressure should be checked cold before operation. Do not bleed air from tires when they are hot. Check inflation pressure weekly during use to insure the maximum tire life and tread wear. The following tire wear diagnostic chart will help you pinpoint the causes and solutions of tire wear problems.

Balancing recommended. Preferred balancing method is to center off of stud holes, since 13" through 16.5 wheels are not hub piloted.

	**CENTER WEAR**	Over inflation.	Adjust pressure to particular load per tire catalog.
	**EDGE WEAR**	Under inflation.	Adjust pressure to particular load per tire catalog
	**SIDE WEAR**	Loss of camber or overloading.	Make sure load doesn't exceed axle rating. Align at alignment shop.
	**TOE WEAR**	Incorrect toe-in.	Align at alignment shop.
	**CUPPING**	Out of balance.	Check bearing adjustment and balance tires.
	**FLAT SPOTS**	Wheel lockup and tire skidding.	Avoid sudden stops when possible and adjust breaks.

Note: Tire wear should be checked frequently because once a wear pattern becomes firmly established in a tire it is difficult to stop, even if the underlying cause is corrected.

SAFETY CHAINS

Your trailer is equipped with safety chains that meet the requirements of D.O.T. Regulations 393.70.

Always attach the chains by crossing them, forming a “cradle”. If your coupler disengages for any reason, the “cradle” will keep the hitch from dragging on the ground. You’ll be able to make an easier and safer stop.

SAFETY CHAIN HOOK-UP

Abrasion (possibly from dragging on the ground) or unusual stress (like the situation described above) can weaken the links, making them unsafe for trailering. If you detect any of these conditions, replace the safety chains! If chains are too long, twist to shorten, and prevent dragging.

BURNISHING THE BRAKES

Brakes on a new trailer may tend to “grab” or pulsate. This is normal. To correct the situation, pull the trailer

with the trailer brake control slightly engaged a short distance (about 1000 ft. or until trailer does not grab or pull to one side anymore). This action smooths down the brake bands.

Note: Do not lock up the wheels.

BREAKAWAY SWITCH MOUNTED ON AN A-FRAME

Attach breakaway switch cable securely in a straight line to the tow vehicle. Locate attachments so little "slack" is left in the cable, but enough slack to allow for turning without disengaging the pin. The cable will activate brakes the instant a trailer becomes disengaged. Brake adjustment is critical to stopping a disengaged trailer.

CHECK BREAKAWAY SYSTEM & BRAKES BEFORE EACH TRIP

1. Disconnect 12V plug from tow vehicle.
2. Pull breakaway pin.
3. While pin is pulled, move tow vehicle forward. Brake should be on and wheels locked.
4. Replace pin and secure to tow vehicle. Do not loop over hitch ball.
5. Plug 12V connector into tow vehicle receptacle.
6. Test brakes with brake controller.

⚠ WARNING: NEW TRAILERS SHIP WITH THE BREAKAWAY BATTERY DISCONNECTED TO PRESRVE BATTERY LIFE. BATTERY MUST BE CONNECTED BEFORE USE.

Note: When disconnecting trailer from tow vehicle, make sure to replace safety pin.

BRAKE ADJUSTMENT

Brakes should be adjusted (1) after the first 200 miles of operation after the brake shoes and drums have "seated", (2) at 3000 mile intervals and (3) as use and performance require. The brakes should be adjusted in the following manner:

1. Jack up trailer and secure on adequate capacity jack stands. Check that wheel and drum rotate freely.
2. Remove adjusting hole cover from adjusting slot on bottom of brake backing plate.
3. With screwdriver or standard adjusting tool, rotate the star wheel of the adjuster assembly to expand the brake shoes. Adjust the brake shoes out until the pressure of the linings against the drum makes the wheel very difficult to turn.
4. Then rotate star wheel in opposite direction until wheel turns freely with slight lining drag.
5. Replace the adjusting hole cover and lower wheel to ground.
6. Repeat above procedure on all brakes.

⚠ CAUTION: NEVER CRAWL UNDER YOUR TRAILER UNLESS IT IS RESTING ON PROPERLY PLACED JACK STANDS.

Do not lift or place supports on any part of the suspension system.

BRAKE CLEANING & INSPECTION

Your trailer brakes must be inspected and serviced at yearly intervals or more often as use and performance require. Magnets and shoes must be changed when they become worn or scored thereby preventing inadequate vehicle braking.

Clean the backing plate, magnet arm, magnet and brake shoes. Make certain that all the parts removed are replaced in the same brake and drum assembly. Inspect the magnet arm for any loose or worn parts. Check shoe return springs, hold down springs and adjuster springs for stretch or deformation and replace if required.

⚠ CAUTION: ASBESTOS DUST HAZARD. SINCE SOME BRAKE SHOE FRICTION MATERIALS CONTAIN ASBESTOS, CERTAIN PRECAUTIONS NEED TO BE TAKEN WHEN SERVICING BRAKES:

-AVOID CREATING OR BREATHING DUST.
-AVOID MACHINING, FILING OR GRINDING THE BRAKE LININGS.
-DO NOT USE COMPRESSED AIR OR DRY BRUSHING FOR CLEANING. (DUST CAN BE REMOVED WITH A DAMP BRUSH).

PRE OPERATION INSTRUCTIONS

UNHITCHING THE TRAILER

When unhitching the machine from towing vehicle, always follow these steps:

1. Place wheel chocks around trailer wheels.
2. Lower hitch jack, pin clamp securely.
3. Disconnect ball hitch by raising lever and jacking up hitch. Disconnect safety chains and light cord before driving away.
4. Fold down and lock leveling jack stands.

SETUP PROCEDURES

These machines are meant to be used at or near the working area and under operator supervision. If machine must be located out of sight of the operator, special controls may be required for proper machine operation and operator safety.

Always locate the jet in the driest and safest place possible. Avoid high traffic areas and use flashers and safety cones. Position the jet so that the hose can be pulled directly off of the reel for use. Remember that jetting is most effective when you jet against the water flow.

Avoid areas where water can be sprayed at machine.

Locate the equipment on a solid level area with slopes for drainage. When operating upon unlevel ground, position trailer with hitch end at the downhill side.

⚠ WARNING: TRAILER MUST BE LEVEL FOR LOW WATER SHUTDOWN TO OPERATE CORRECTLY. WHEN TRAILER IS ON AN INCLINE WITH HITCH END AT THE DOWNHILL SIDE AND TANK IS EMPTY, ENOUGH WATER CAN BE HELD IN THE LOWER FRONT CORNER OF TANK TO KEEP FLOAT SWITCH IN THE OPERATING POSITION.

For non-manhole use, allow extra space for handling the hose before it is wound back on the reel or run the hose directly to the pipe inlet using extra hose guards to protect the hose from cutting when going around corners.

⚠ WARNING: DO NOT UNHITCH OR OPERATE TRAILER JET UNHITCHED ON UNLEVEL GROUND.

Before using the jet, make sure there are no impurities in the incoming water supply. Turn the water source on for at least 15 seconds, to remove any possible debris in the water before connecting hose to water supply.

The inlet screen located inside the filter should be cleaned before each use. To clean the inlet screen, unscrew cap beneath the filter, remove the screen and rinse thoroughly with water. Then replace screen.

Connect one end of a garden hose to the water faucet — water supply not to exceed 100 PSI (6.9 bar). (See component identification drawings.) If run without an adequate water supply, the pump will cavitate. Cavitation causes the pump to vibrate, causing damage to the pump.

NOTE: Lack of water supply can lead to seal damage, causing a loss of pressure and will void the warranty to the pump.

Maximum temperature from the water source should not exceed 140°F (60°C). Using water hotter than 140°F (60°C) can cause damage to the pump and void the warranty. If jet is being used to clear ice blockages, see ice blockage instructions.

Check that traffic has not made the hose weak, worn or damaged. Check the hose for pinching for kinking. Check hose before starting and replace any damaged hose. Tighten all fluid connections securely. Check gasoline and oil level of engine. See enclosed manufacturer's manual for engine and oil types.

OPERATING INSTRUCTIONS

WHILE TOWING TRAILER:

⚠ WARNING: NEVER ALLOW A PERSON TO RIDE IN OR ON A TRAILER THAT IS BEING TOWED. ALL STATES PROHIBIT PASSENGERS IN TOWED VEHICLES. A PERSON CAN FALL OFF AND BE STRUCK BY ANOTHER VEHICLE OR RUN OVER BY THE TOWED TRAILER. FAILURE TO OBSERVE THIS WARNING CAN RESULT IN DEATH.

Before hitching and towing on public roads, check that the tow vehicle uses a 2" ball on a hitch rated class II minimum. Make sure keeper engages ball to secure hitch. Adjust if necessary.

SAFETY PRECAUTIONS DURING USE

Loading Trailer. The trailer should be loaded so that the downward tongue weight is approximately 10% of the gross trailer weight. Hitch only to the hitch points recommended by the tow vehicle manufacturer.

Following and stopping distance. The stopping distance increases when towing a trailer. A rule of thumb for the minimum distance that should be maintained between you and the preceding car on dry pavement is one car and trailer length (2 car lengths) for every 10 MPH you are traveling. The distance should be increased accordingly depending on road and weather conditions. Avoid sudden stops if possible. Operate tow vehicle smoothly - no jerky turns, starts or stops. When possible, avoid operating the tow vehicle near ditches, embankments and holes and reduce speed when crossing uneven or rough terrain.

Passing. Accelerating and passing should be done slowly to allow extra distance for passing. Signal well in advance when passing and returning to the proper lane. Allow for the extra length of the trailer before changing lanes. Never change lanes abruptly as this may cause the trailer to sway and push the tow vehicle into a "jack knife" condition.

Turning. Allow for the extra length of the trailer. Drive slightly beyond normal turning point to avoid running over curbs and soft shoulders. Turning radius increases when towing. Reduce speed when turning, crossing slopes and on rough, slick or muddy surfaces.

Uphill and Downhill Grades. Reduce speed and use a lower transmission gear for steep or long up or down hill grades. Maintain safe distance from other vehicles.

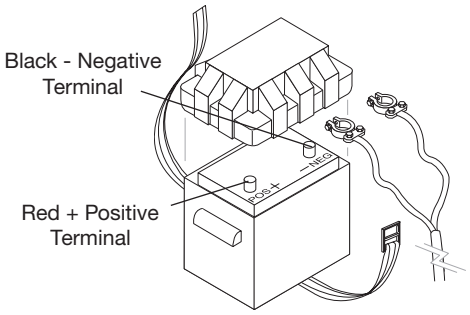
Parking. When tow vehicle is idle, engage brakes and park lock securely.

- Avoid parking on uphill or downhill grades.
- Place transmission in "PARK".
- Apply parking brake.
- Use wheel chucks.
- In parking lot, avoid parking close to other vehicles. Turning radius is greater and it may be impossible to get out of a parking space after a few other vehicles have parked around your vehicle.

⚠ ALWAYS TURN OFF TOW VEHICLE ENGINE BEFORE MAKING ADJUSTMENTS OR REPAIRS TO AN ATTACHED TRAILER.

BATTERY INSTALLATION

Red Cable is attached to battery (+) positive terminal, black cable is connected to battery (-) negative terminal.



VEHICLE TOWING CAPACITY

Refer to your vehicle owner's manual for listed trailer towing capacity.

Trailer towing capacity should equal GCWR minus vehicle weight, cargo weight, people weight and vehicle fluids weight.

Check axle load rotatings.

The following two rules may limit your vehicle's towing capacity and the tank fill level when towed. Determine towing capacity as described below and follow guidelines in using the lowest value from the 2 rules.

1. Trailer Hitch: Check rating of vehicle's trailer hitch. Class II — 3,500 lbs. towing capacity or greater is required.

OPERATING INSTRUCTIONS

⚠ WARARNING: CLASS 1 HITCHES OFTEN USE A 1-7/8" BALL, WHICH IS UNSAFE TO COUPLE TO A 2" HITCH. A CLASS II HITCH WITH A 2" BALL MUST BE USED TO TOW AN EMPTY TRAILER ONLY.

2. Vehicle GCWR (Gross Combined Weight Rating): Towing capacity = GCWR minus vehicle weight minus cargo weight minus passenger weight.

   The GCWR is provided on your vehicle or in vehicle manual.

The hitch jack should always be tilted up when towing to avoid damage to caster wheel. Pin jack clamp securely.

Always use safety chains.

Always use trailer lights.

PRE START-UP

1. Read engine warning and operating instructions. Failure to follow instructions can cause serious injury and damage to equipment. Be familiar with all pre-operation checklists.
2. Check all hoses for wear and damage. Tighten all connections securely.
3. Check oil level of pump.
4. Check engine fuel and oil levels.
5. Attach nozzle to jetter (See nozzle selection guide).
6. Insert end of the jet hose 5 to 6 feet into the drain line. Then turn the valve on.
7. To begin, turn the water faucet on fully and fill tank.
8. Unit is equipped with low water shutdown. Make sure the 200 gallon tank is at least half full before starting engine or engine will not start.

⚠ WARNING: NEVER OPERATE JETTER HOSE WITH NOZZLE OUTSIDE OF DRAIN LINE.

POWER REWIND OPERATING PROCEDURES

To Rewind Jet Hose on Reel

- Release reel lock.
- Turn ignition switch to ON position.
- Use panel mounted switch to rewind hose.

NOTE: Turn power switch to OFF when rewind in not in use to avoid accidentally activating rewind.

VIBRA-PULSE™

Pulsation makes the hose vibrate, helping the jet go longer distances and around tight bends easier. The pulse control valve is located on the front of the pump. Simply turn the valve on to engage the pulse. The pulse causes a pressure drop when it's engaged. If you are still having difficulty getting a hose around a tight bend, switch to a smaller diameter hose. Turn the pulse off before turning machine off.

JETTING PROCEDURE

The J-2512 trailer jet is designed to clear 4 inch to 12 inch lines. The hose reel is designed for outdoor applications.

For safety reasons, always operate with two people when the drain opening is away from the jet location. One person should stay near the jet to control the machine operation, while the other person works the hose and nozzle.

The jet hose should always be replaced at the first sign of wear, well before it is worn through to the wire braid.

The nozzles are designed to match the pressure and flow performance of your jet. They are the key to efficient operation because they convert all of the engine and pump power to water pressure to pull the hose down the line, cut the debris off the walls of the pipe and to flush the line clean.

Nozzle holes will wear after several months of continuous use. If the system operating pressure gradually drops, try a new nozzle to check for wear. Check for clogged nozzles occasionally by removing the nozzle

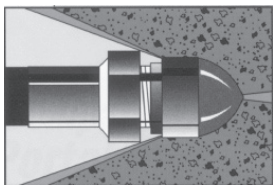
from the hose and holding up to the light. Clean by inserting nozzle cleaning tool if necessary. Clogged nozzles will cause poor jet performance and reduced cleaning power even though the gauge pressure will show higher.

NOZZLES

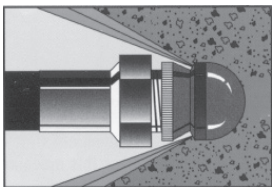
A number of types of nozzles are available for drain cleaning. Each has a different spray pattern. Some nozzles may have a hole in the front to cut though the stoppage. All will have holes in the back to drive the hose down the line and clean the walls of the pipe. A tight spray pattern (15°) has more driving power for long runs, a wide spray pattern (40°) does a better job of cutting the grease off the walls of the pipe. A combination of nozzles may be required to clear a line. Always turn off the machine and hose reel valve before changing nozzles.

Make sure the nozzle you are using matches the pump size. A 2500 PSI (190 bar) pump requires a different nozzle orifice than a 1500 PSI (104 bar) pump. Mismatching nozzles with pump size will either cause too little pressure which may not clear the drain, or too much pressure which may damage the machine.

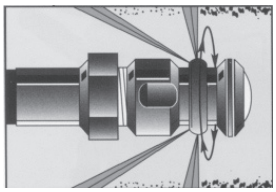
Check nozzles before and after each use for clogged holes which can cause pressure to increase to dangerously high levels and damage the pump. A clogged hole can be cleared by simply using the NCT Nozzle Cleaning Tool.



Powerful **penetrating nozzle** cuts through grease and ice.



Wide spray **flushing nozzle** cleans inside of pipe thoroughly.



Rotary nozzle scours walls of pipe crystal clear. Useful as a finishing tool. After the line has been clean use rotary nozzle to more thoroughly clean wall of pipe.

ROTARY NOZZLES

Rotary nozzles are useful as a finishing tool. After the line has been cleared, you may switch to the rotary nozzle to more thoroughly clean the walls of the pipe. Use these nozzles only in a predominantly straight run since they are longer than regular nozzles and may get caught in tight bends.

NOZZLE SELECTION GUIDE			
	1/8"	**1/4"**	**3/8"**
15° No Forward Jet	31	41	51
15° w/Forward Jet	32	42	52
30° No forward Jet	33	-	-
40° No Forward Jet	-	44	54
Spring Leader (JNSL)	4	5	6
Rotary Nozzle	-	4	-

HOSE SELECTION GUIDE

Select the proper hose diameter for the line to be cleaned. When using new hose, run water through it to clean it out before attaching the nozzle. (*Inside Diameter)

HOSE SIZE (ID*)	PIPE SIZE	TYPICAL APPLICATIONS
3/8"	3" TO 6"	Floor drains, septic lines, long runs
1/2"	4" TO 12"	Sewer mains and manholes

OPERATING INSTRUCTIONS

GAS ENGINE START-UP

1. Make sure that the hose reel valve is turned on and water is flowing.
2. Move choke lever to the ON position.

   NOTE: Do not use choke if engine is warm or ambient air temperature is high.
3. Move throttle to to high speed by turning knob counter-clockwise.
4. Turn ignition key to start engine.
5. As the engine warms up, gradually move the choke lever to the OFF position.

START-UP

1. Release the rewind reel lock so reel can spin freely.
2. Select and install nozzle (See nozzle selection guide).
3. Slide hose through guide arm and into drain opening.

⚠ CAUTION: ALWAYS INSERT JET HOSE 5-6 FEET INTO PIPE OPENING BEFORE ACTIVATING HOSE REEL VALVE. NEVER STAND IN FRONT OF PIPE OPENING WHEN NOZZLE IS NEAR PIPE OPENING. WORK HOSE UPSTREAM WHENEVER POSSIBLE.

4. Start drain cleaning after water tank filling and engine starting procedures have been followed. Advance engine to full throttle.
5. Turn hose reel valve ON and let out hose as nozzle pulls into pipe. Untwist hose kinks as necessary before hose enters the pipe. Always proceed slowly and cautiously.
6. Pull back 1-2 feet for every 4-5 feet of progress, to make sure that the hose is not burying itself or tying itself up in an open cavity or larger pipe.
7. Continue working on the line while watching and feeling for speed changes as the nozzle makes its way into a blockage.
8. When working over a manhole, you will often see dirty water, chunks of grease or debris flow past as the nozzle penetrates a blockage. When backed up water flows, the line is probably open. Continue working up the line to open restrictions as needed.
9. When obstruction or corners are encountered, it may be necessary to manually rotate the hose to allow it to feed through the obstructed area. The rotation will cause the jetting nozzle to jump over or around those areas. When it becomes necessary to manually rotate the hose to clear obstructions, any rotations in one direction must be followed by an equal number in the opposite direction to prevent kinking of the hose.
10. At times, it will be necessary to move the hose slightly in and out of the drain line to assist the jetting nozzle in clearing stubborn clogs, obstructions or tight corners.
11. After the line has been cleared, pull the hose back slowly to re-clean and scour the pipe walls. When working through heavy blockages and long lines, you may have to flush debris back to the machine every 5-10 feet. Repeat until water runs clean from the pipe.
12. Do not let engine run at full throttle with hose reel valve OFF for longer than five minutes.
13. The J-2512 can be used with hoses longer than 400 ft. but you will find the jetting process to be slower because of the pressure loss from extra hose length. Unless longer operation is common, we recommend that hose extensions be added only when needed.
14. When finished, turn hose reel valve OFF before removing nozzle from pipe.

⚠ HINT: WRAP WHITE TAPE AROUND HOSE (A MINIMUM OF 6 FT. FROM END RECOMMENDED) TO WARN WHEN NOZZLE IS NEAR PIPE OPENING.

15. Wind hose back onto reel and install hose end in holder. Lock reel. Store all parts in locking toolbox compartment.
16. Follow Shut Down Instructions.

Reminder: Engine key switch must be OFF to prevent battery drain when not in use. Reverse setup instructions, drain tank and disconnect fill hose. Replace manhole cover or pipe caps and clean up machine before leaving job site.

OPERATING INSTRUCTIONS

TIPS FOR EASIER OPERATION

The following techniques can be tried if going gets slow:

- Grab the hose into an "S" shape and twist the hose to help it get around corners and off of pipe edges.
- Turn hose reel valve off and pull hose back out of line. Look for traces of clay or other material to determine if nozzle is burying itself outside of pipe.
- Try different nozzle or different pipe openings.
- Walk to nearby building and manholes and listen for water sound to determine if hose is going where it should. The hose may tie itself up in a manhole and need help going into the next pipe. Use a pole or pipe to guide hose so entering the manhole can be avoided.

SHUT-DOWN INSTRUCTIONS

After drain cleaning or spray washing is completed, run clear water through the system. Always leave hose reel valve in open position when turning off engine. Turn off engine. Turn off water supply. Remove water supply hose from faucet. If you are in a cold climate, see Winterizing.

ICE BLOCKAGES

High pressure water can be used to clear an ice blockage. For example, a 3000 PSI (207 bar) gas jet can clear a 4" (102 mm) line at an approximate rate of one foot per minute. The smaller electric jet will take twice as long. Ambient air temperature will effect these times. Use a nozzle with a forward jet. DO NOT allow the incoming water supply to exceed 140°F (60°C) or it could cause damage to the pump. Remember to follow the cold weather precautions found in the Winterizing section.

SPRAY WAND

Follow the same procedures listed previously for safety, setup, operation and maintenance. Connect the high pressure hose to the spray gun and to the unloader valve outlet. To operate the spray wand, turn the water on, then squeeze the trigger to purge air from the system. Continue to squeeze trigger as you start the machine.

Use caution when pressure washing. Wear goggles and rubber gloves and boots. Do not point spray at anyone including yourself. Do not put your hand in front of water spray. It can penetrate the skin and cause a need for amputation. Direct spray at close range can be powerful enough to cause damage.

NOTE: Typical industry standard stipulates you hold the high pressure spray nozzle approximately 6-8" from the surface to be cleaned. When cleaning with a detergent, apply from bottom up with an even left to right movement. Rinse from top down with a similar motion. This will reduce potential streaking.

The dual-lance wand will draw detergents through the spray wand in conjunction with the optional detergent injector mounted on the machine.

Turn nozzle clockwise to reduce detergent flow.

ADJUSTING PRESSURE UNLOADER VALVE

The machine is equipped with a regulating pressure unloader to prevent pressure overload in the event that the nozzle is plugged or the ball valve or trigger is shut off. When the machine is in the bypass mode, the pump will continue to run. However running in bypass mode for extended periods—more than 5 minutes—will cause damage to the pump. Excessive temperatures will damage the pump and void the warranty.

The machine also comes with thermal overload protection. When water temperature in pump increases to 140°F (60°C), the thermal relief valve will release hot water and allow cool water to enter pump from fresh water supply.

⚠ CAUTION: DO NOT OVERTIGHTEN UNLOADER. TIGHTEN LOCK NUT AFTER ADJUSTMENTS ARE MADE.

To adjust unloader, loosen lock nut and turn the knob clockwise to increase pressure and counterclockwise to decrease pressure.

STORAGE

AFTER USE:

1. Inspect trailer for wear or damage.
2. Ensure that all fasteners and fittings are tight.
3. Verify the stop, tail and turn signals are working properly.
4. Check wires for good connections and possible fraying or wearing of insulation.
5. Check and properly maintain the trailer, hitch, jack, ball and coupler.
6. Inspect hitch and ball for damage. Ball or hitch can be damaged in parking, hitting curbs, dragging when crossing ditches or railroad tracks.
7. Check and properly tighten all bolts on trailer, hitch, ball and coupler (including wheels).
8. Check safety chains for wear and do not allow them to drag on ground or roadway.
9. Check tow vehicle tires for wear and proper inflation (check vehicle's owner manual for proper level of inflation of tires for towing a trailer).
10. Check trailer tires for wear and proper inflation. Replace only with a tire of the same size and capacity ratings.
11. For proper tow vehicle maintenance while towing a trailer, check vehicle's owner manual and manufacturer's specifications.

PREPARATION FOR STORAGE

If your trailer is to be stored for an extended period of time or over the winter, it is important that the trailer be prepared properly.

1. Remove the emergency breakaway battery and store inside, out of the weather. Charge the battery at least every 90 days.
2. Jack up the trailer and place jack stands under trailer frame so that the weight will be off the tires. Never jack up or place jack stands on the axle tube.
3. Lubricate mechanical moving parts that are exposed to weather, such as the hitch and suspension parts.

WINTERIZING

To protect your machine from severe damage caused by water freezing inside the components, it is important to winterize it whenever it is subjected to freezing temperatures.

The best way to protect the system is to keep it out of the cold. Barring that, the next best way is to flush the system with antifreeze. To do so, follow these steps to properly operate the winterizing system. This system is designed to protect your equipment during cold weather conditions of 32°F or below.

1. After operation, drain 200 gallon tank by opening valve.
2. Close fresh water inlet valve.
3. Remove high pressure nozzle. Connect water supply to the high pressure hose using the interconnection coupler provided.
4. Start engine and let it idle.
5. Open anti-freeze outlet valve. Anti-freeze will begin to flow through the system.
6. Rotate valve as soon as you see anti-freeze flow into the clear hose going to the 200 gallon tank. Anti-freeze will then flow into the yellow anti-freeze tank.
7. Shut off engine after winterizing. Close valve.
8. Drain water from inlet by removing filter bowl. Replace filter bowl after draining.
9. Drain water from plumbing by opening valve.

AFTER WINTERIZING-NORMAL OPERATION

Use the following steps to return to normal operation after winterizing your equipment.

1. Close drain valve.
2. Connect supply hose to water faucet and begin filling 200 gallon tank.

3. Quickly rotate valve when clear water begins to flow into yellow anti-freeze tank. Clear water should now flow into the 200 gallon tank.
4. Open valve.
5. After 200 gallon tank is filled, system is ready for NORMAL operation.

NOTE: Owner should monitor dilution and level of anti-freeze for maximum protection.

AFTER PROLONGED STORAGE — INSPECTION PROCEDURES

BEFORE REMOVING TRAILER FROM JACK STANDS:

1. Remove all wheels and brake drums. Note which spindle and brake that the drum was removed from so that it can be reinstalled in the same location.
2. Inspect suspension for wear.
3. Check tightness of hanger bolt, shackle bolt and U-bolt nuts.
4. Check brake linings, brake drums and armature faces for excessive wear or scoring.
5. Check brake magnets with an ohmmeter. The magnets should check 3.2 ohms. If shorted or worn excessively, replace.
6. Lubricate all brake moving parts using a high temperature brake lubricant.

⚠ CAUTION: DO NOT GET GREASE OR OIL ON BRAKE LININGS OR MAGNET FACE.

7. Remove any rust from braking surface and armature surface of drums with fine emery paper cloth. Protect bearings from contamination while so doing.
8. Inspect grease seals for wear or nicks. Replace if necessary.
9. Lubricate hub bearings. Refer to procedure in manual.
10. Reinstall drums and adjust bearing per instructions in manual.

TYPE OF FUEL

Use only clean, fresh, unleaded regular grade gasoline.

⚠ CAUTION: DO NOT MIX OIL WITH GASOLINE.

WATER TANK FILLING

Fill the water tank from a clean water source. Always flush rust out of hydrants before connecting water supply hose to top of tank. Your water supply hose may remain connected for further filling.

Note: if the next four instructions are not followed, cavitation of the pump could occur and reduce operating efficiency and severely damage the pump.

1. Use water temperatures under 140°F.
2. Insure that the water filter is clean (check daily or as needed).
3. Make sure filter valve (between the tank and the pump) is fully open during operations. This valve stops tank flow to allow strainer service.
4. The pump drain valve must be closed. It must not drip when the engine is off and the filter valve is open.

MAINTENANCE

This trailer was produced with the best available materials and quality craftsmanship. However, you as the owner, have certain responsibilities for the correct care of the equipment. Attention to regular preventative maintenance procedures will assist in preserving the performance of your equipment. Regular inspection is the key to preventing breakdowns and prolonging the life of the equipment. Follow this simple procedure religiously.

⚠ CAUTION: SHUT OFF GAS ENGINE BEFORE ATTEMPTING ANY REPAIRS OR MAINTENANCE.

Maintenance Schedule		
Tire Air Pressure	Inflate to proper pressure indicated on sidewall.	Every Trip
Wheel Lugs, Bolts and Nuts*	Tighten to proper torque specifications.	Every 3000 mi or 3 mos.
Wheel*	Check for damage and or out-of-round.	Every 6000 mi or 6 mos.
Coupler Ball	Check for sufficient lube.	Every Trip
	Check lock mechanism.	
	Check for unusual wear.	
Safety Chains at Hitch Ball	Check for abrasion, distortion and general integrity of links.	Every Trip
Coupler	Check for proper fastening and hitch pin in position and secure.	Every Trip
Brakes	Check for proper adjustment and operation.	Every Trip
Breakaway Switch	Test switch operation and connections.	Every Trip
Breakaway Battery	Pull switch pin, check charge indicator light.	Every trip
Load Distribution	Check load distribution and security.	Every Trip
Leveling Jacks	Check fastenings. Lube.	Every Trip
Welds	Check all weld beads for cracks or separations.	Every 6000 mi. or 6 mos.
Hinges	Grease with a Lithium grease.	Every 3000 mi. or 3 mos.
Tie Down Devices	Check for fracturing, distortion and improper anchoring.	Every 3000 mi. or 3 mos.
Electrical: Lights and Signals	Check to make sure all are working properly. Replace burned out bulbs.	Every trip
Pump Crankcase Oil Change**	Check oil level on dipstick or sight glass daily. Change oil according to column on right.	1st 3 mos. or 50 hours; then every year or 500 hours
Engine Oil Change ***	Check oil level on dipstick daily. Change oil according to column on right.	1st 3 mos. or 50 hours; then every 6 mos. or 100 hours
Air Filter Cleaning	Check filter is clean of dirt weekly. Change filter according to column on right.	1st 3 mos. or 50 hours; then every 3 mos. or 50 hours
Fuel Filter Change	Check filter is clean of dirt weekly. Change filter according to column on right.	Every 6 mos. or 100 hours.
Spark Plug Change	Change.	Every 6 mos. or 100 hours.
Oil Rewind Drive Chains	Check and oil.	Every 50 hours
Grease Rewind Engagement	Check and grease.	Every 25 hours

**Check lug nuts for tightness before initial trip, at 25 miles, and 100 miles. Recheck at least every 3 months or 3000 miles.*

***Fill to full mark on dipstick or to middle of sight glass.*

****Refer to engine manufacturer's specifications for correct oil viscosity when adding to engine oil.*

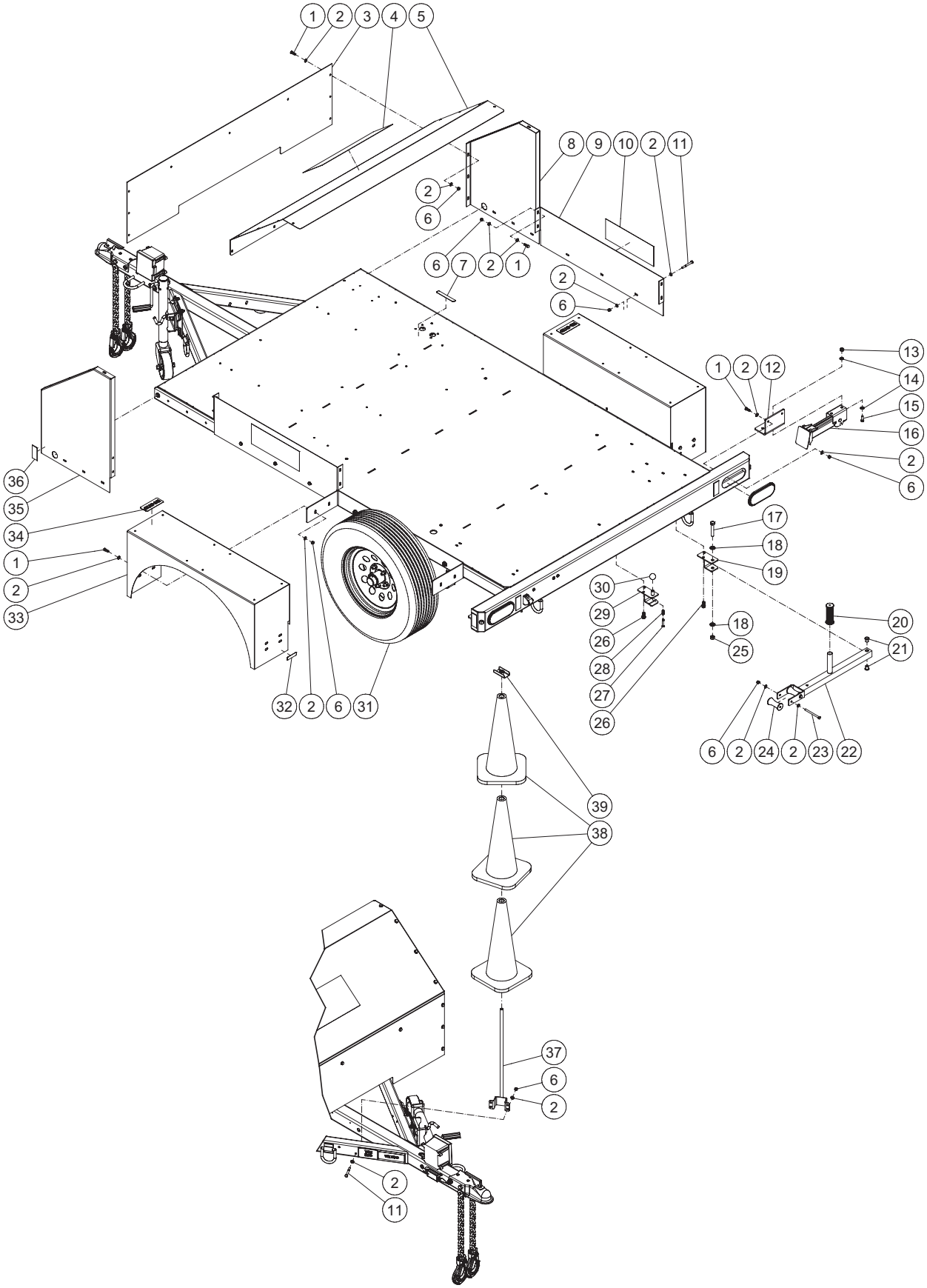
TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	REPAIR
Engine will not start.	Low oil level.	Fill to proper levels.
	Low water level in 200 gallon tank.	Fill to 1/2 full minimum.
	No fuel.	Fill fuel tank.
Low Pressure.	Worn or oversized nozzle.	Replace worn nozzle. Check nozzle size.
	Clogged water supply hose, inlet strainer, or kinked hose.	Clean or replace strainers.
	Worn or damaged piston cups.	Replace piston cups.
	Worn or damaged inlet or discharge valve.	Replace worn valve poppets or valve springs.
	Dirt or foreign particles in valve assembly.	Remove any dirt particles.
	Air leak in inlet plumbing or inaccurate gauge.	Locate air leak. Re-seal connection or replace damaged gauge.
	Cavitation.	Check suction lines on inlet of pump for restrictions.
	Unloader.	Check for proper operation.
	Worn or plugged relief valve on pump.	Clean, reset and replace worn parts.
	Worn or damaged hose.	Repair/replace hose.
	Broken valve spring.	Replace spring.
	Pulse valve on.	Turn off pulse valve.
	Improper adjustment of unloader.	Adjust as necessary.
Rough Operation with Loss of Pressure.	Restricted inlet plumbing or air leak in inlet plumbing.	Replace clogged inlet fittings. Check supply hose and ensure adequate water supply.
	Damaged piston, cup or pump valve.	Replace any damaged pump parts and clean out any foreign particles.
	Clogged nozzles.	Clean or replace nozzles.
Water leakage at intake manifold or crankcase.	Worn manifold seals, pistons or O-rings. Or, condensation inside crankcase.	Replace seals, sleeves or O-rings. Change oil at regular intervals.
	Inadequate water supply to pump creating a vacuum lock.	Ensure adequate tap water supply. Clear inlet filter.
Short Piston Cup Life.	Scored cylinders from pumping acids.	Replace cylinders. DO NOT PUMP ACID SOLUTIONS.
	Abrasive particles in fluid being pumped.	Replace water and detergent strainers if damaged or missing. Install additional filter if fine abrasives are still evident.
	Operator(s) running pump without water supply.	DO NOT ALLOW WASHER TO BE RUN WITHOUT PROPER WATER SUPPLY.
	Hot water in pump.	Do not run in bypass for more than 5 minutes. Do not let water supply exceed 140oF (60oC).

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	REPAIR
Noisy Operation.	Worn bearings.	Replace bearings, refill crankcase oil with recommended lubricant.
	Cavitation.	Check inlet lines for restrictions and/or proper sizing.
Pump Noisy.	Low oil level.	Add oil.
	Worn or dirty valves.	Replace or clean.
	Bad bearings.	Inspect bearings; replace as required.
Irregular Spray Pattern.	Worn or partially clogged nozzle.	Clean or replace nozzles.
Excessive Wear.	Worn or loose bearings.	Replace bearings. Check bearing seals, spacers and retainers. Replace any worn parts.
High Crankcase Temperature.	Wrong grade of oil.	USE SAE90 Gear Oil.
	Improper amount of oil in crankcase.	Adjust oil level to proper amount.
Oil Leaks.	Worn pistons and/or leaking crank seals, crankcase cover seal or drain plugs.	Replace seals, sleeves or O-Rings.
Unloader Cycles.	Fitting leaking downstream.	Tighten/replace fitting.
	Piston or valve spring broken or worn.	Replace parts as necessary.
	Clogged nozzle.	Clean or replace.
Fluid Leaking From Unloader.	O-ring worn or cut.	Replace part as necessary.
Unloader Will Not Come to Pressure.	Foreign particle in valve.	Replace or clean.
	Nozzle worn or wrong size.	Replace part as necessary.
	Piston or valve worn.	Replace part as necessary.
Extreme Pressure Spikes.	Adjusting nut turned completely into unloader.	Back off adjusting nut.
	Clogged nozzle.	Clean or replace.

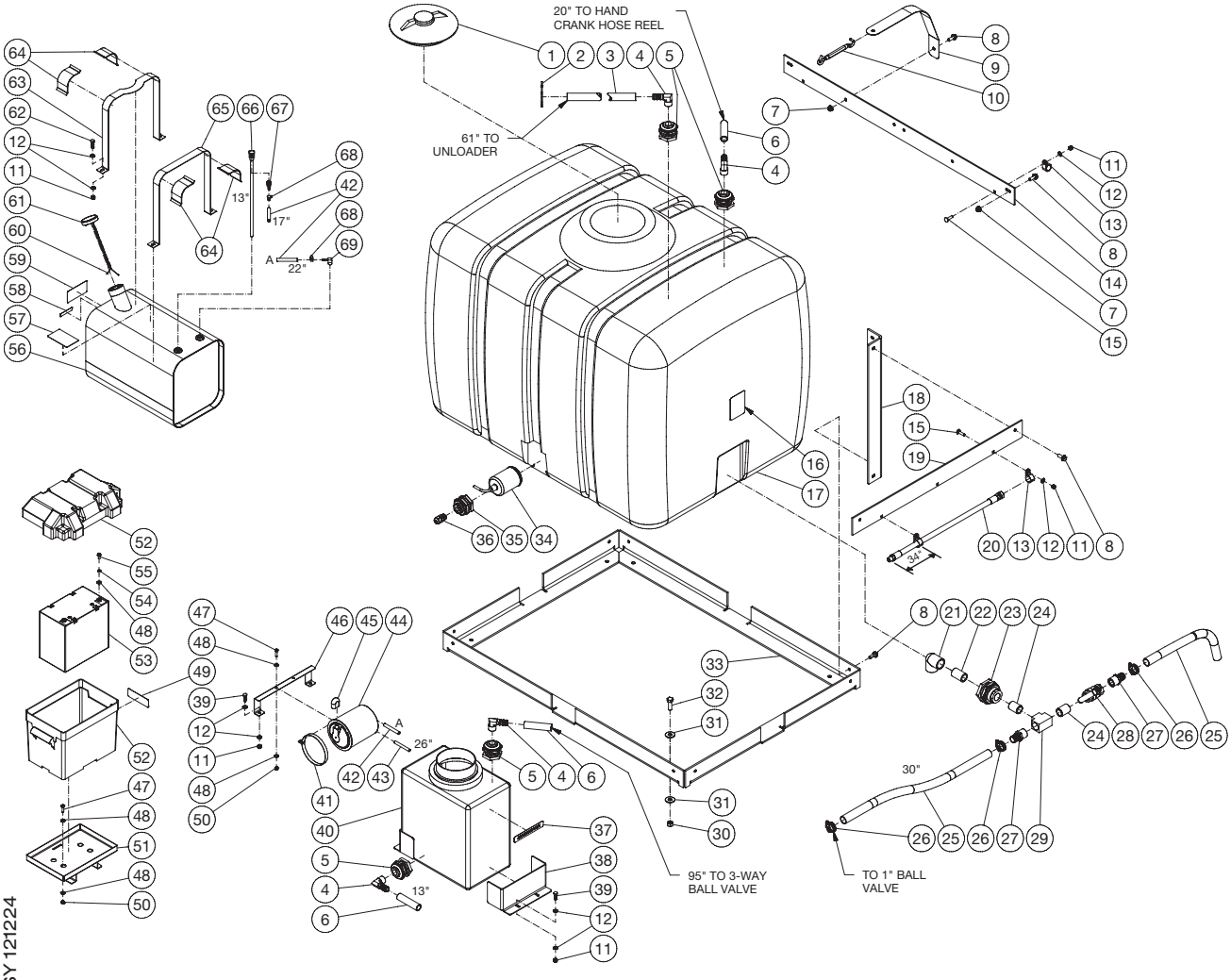
TRAILER ASSEMBLY JM-2512



JM-2512 - TRAILER ASSY 110223

JM-2512 - TRAILER ASSY 110223			
TRAILER ASSEMBLY			
ITEM	TITLE	PART #	QTY
1	BOLT	JM27-0067	33
2	WASHER	JM28-0003	98
3	FRONT COVER	JM56-0125	1
4	DECAL - FRONT PANEL (SEE JM71-0005)	N/A	1
5	FRONT PANEL	JM20-1236A64	1
6	LOCKNUT	JM30-0157	49
7	DECAL - PUMP OIL DRAIN (SEE JM71-0005)	N/A	1
8	RIGHT PANEL	JM20-1705A64	1
9	MIDDLE PANEL	JM20-1706A64	2
10	DECAL - SIDE PANEL (SEE JM71-0005)	N/A	2
11	BOLT	JM27-0074	14
12	BRACKET	JM20-1707A18	2
13	LOCKNUT	JM30-0159	4
14	WASHER	JM28-0004	8
15	BOLT	JM27-0117	4
16	STABILIZER ARM	JM61-1035	2
17	BOLT	JM27-0227	1
18	WASHER	JM28-0006	2
19	HOSE GUIDE MOUNT	JM20-1248A18	1
20	HANDLE GRIP	JM7-0167	1
21	SLEAVE BEARING	JM33-0518	2
22	HOSE GUIDE	JM20-1247A18	1
23	BOLT	JM27-0079	2
24	ROLLER	JM51-0043	2
25	NUT	JM30-0163	1
26	BOLT	JM27-9530	4
27	SHOULDER SCREW	JM27-0895	1
28	SPRING	JM49-0165	1
29	HOSE GUIDE CATCH	JM20-1249A18	1
30	BALL KNOB	JM7-0223	1
31	TRAILER	JM61-0020	1
32	DECAL - TANK DRAIN (SEE JM71-0005)	N/A	1
33	FENDER	JM20-1155A18	2
34	DECAL	JM34-1740	2
35	LEFT PANEL	JM20-1704A64	1
36	REFLECTOR - AMBER	JM61-1126	2
37	SAFETY CONE HOLDER	JM20-1257A18	1
38	SAFETY CONE	JM61-1034	3
39	HANDLE NUT	JM20-1258A18	1
-	DECAL SET	JM71-0005	1

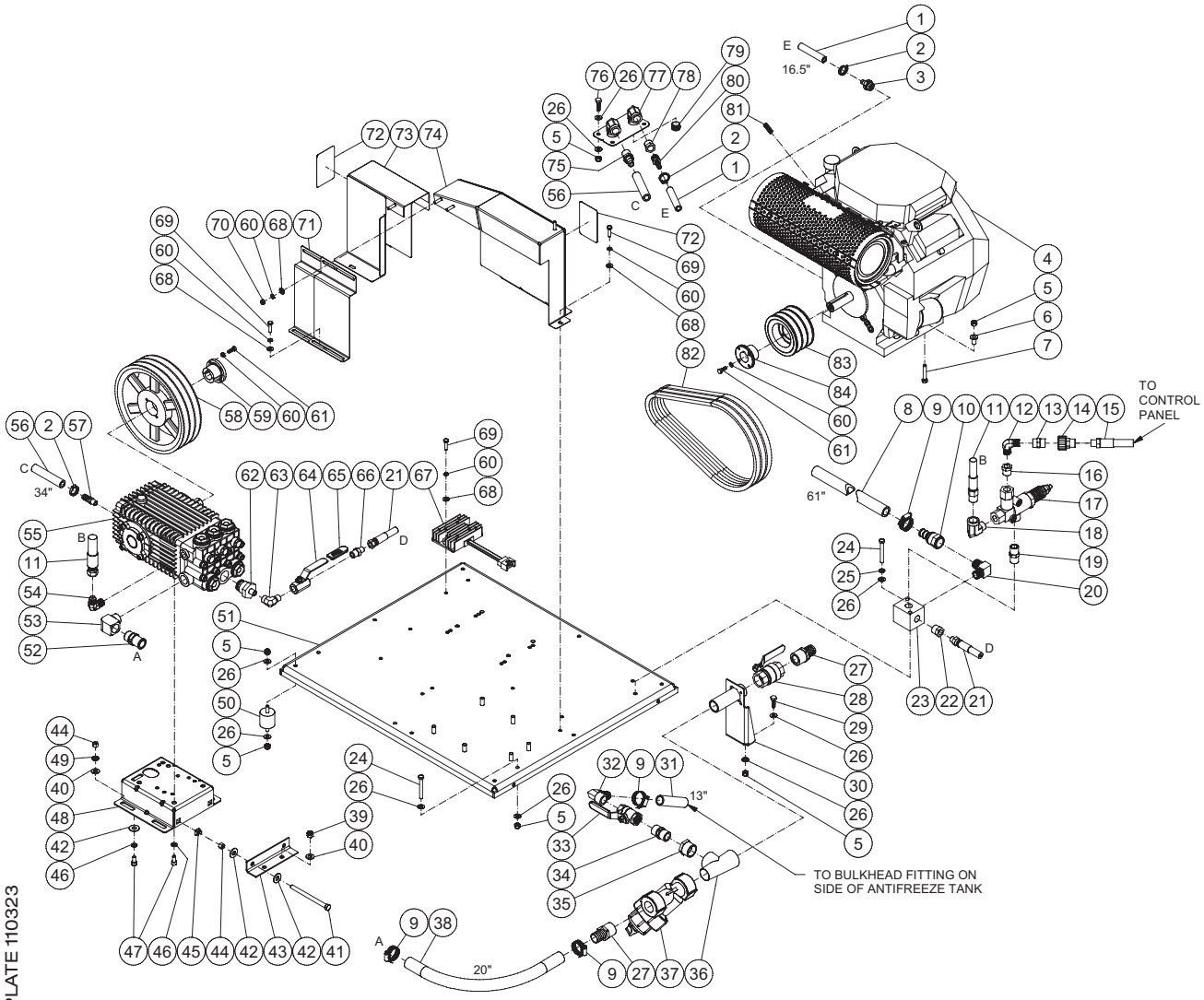
TANKS ASSEMBLY



JM-2512 - TANKS ASSY 121224

JM-2512 - TANKS ASSY 121224			
TANKS ASSEMBLY			
ITEM	TITLE	PART #	QTY
1	LID	JM33-0492	1
2	CABLE TIE	JM33-0022	1
3	HOSE *(SIX FEET REQUIRED)	JM15-0033	1
4	HOSE BARB ELBOW	JM23-0482	4
5	BULKHEAD	JM55-0010	4
6	HOSE *(ELEVEN FEET REQUIRED)	JM15-0304	3
7	NUT	JM30-3030	20
8	BOLT	JM27-8923	20
9	TANK STRAPS	JM20-1154A18	4
10	TURNBUCKLE	JM31-5035	2
11	LOCKNUT	JM30-0157	15
12	WASHER	JM28-0003	25
13	CLIP	JM33-0291	5
14	TOP RAIL	JM20-1045A18	2
15	BOLT	JM31-0050	4
16	DECAL - DRAIN VALVE (SEE JM71-0005)	N/A	1
17	TANK	JM12-0139	1
18	CORNER BRACKET	JM20-1044A18	4
19	BRACE	JM20-1153A18	2
20	HOSE	JM15-0314	1
21	ELBOW	JM55-1209	1
22	TOE NIPPLE	JM55-1279	1
23	BULKHEAD (INC. 25-0482 GASKET)	JM55-1286	1
24	NIPPLE	JM23-0094	2
25	HOSE *(FIVE FEET REQUIRED) (0GH)	JM15-0172	1
-	HOSE *(TEN FEET REQUIRED) (0GHS)	JM15-0172	1
26	HOSE CLAMP	JM42-0018	3
27	HOSE BARB	JM23-0091	2
28	BALL VALVE	JM22-0344	1
29	BRASS TEE	JM23-0149	1
30	NUT	JM30-0163	4
31	WASHER	JM28-0025	8
32	BOLT	JM27-0218	4
33	FRAME BASE	JM20-1151A18	1
34	FLOAT	JM32-0527	1
35	BULKHEAD (INC. 25-0506 GASKET)	JM55-0886	1
36	STRAIN RELIEF	JM32-0437	1
37	DECAL (SEE JM71-0005)	N/A	1
38	BRACKET	JM20-1259A18	2
39	BOLT	JM27-0067	6
40	TANK	JM12-0235	1
41	CARB CANISTER STRAP	JM20-1187A01	2
42	FUEL HOSE *(FOUR FEET REQUIRED)	JM15-0008	1
43	FUEL HOSE *(THREE FEET REQUIRED)	JM15-0261	1
44	CARB CANISTER	JM62-0212	1
45	BREATHER VENT COVER	JM62-0218	1
46	CARB CANISTER MOUNT	JM20-1197A18	1
47	BOLT	JM27-0016	6
48	WASHER	JM28-0002	14
49	DECAL - RISK OF INJURY (SEE JM71-0005)	N/A	1
50	LOCKNUT	JM30-0155	6
51	BATTERY TRAY	JM20-1135A18	1
52	BATTERY BOX	JM33-0093	1
53	BATTERY	JM32-0059	1
54	LOCKWASHER	JM29-0006	2
55	BOLT	JM27-8001	2
56	FUEL TANK	JM12-0277A09	1
57	DECAL- CAUTION: GASOLINE ONLY (SEE JM71-0005)	N/A	1
58	DECAL - CARB/EPA	N/A	1
59	DECAL- CALIFORNIA EMISSIONS	N/A	1
60	FUEL CAP CATCH	JM12-0228	1
61	FUEL CAP	JM12-0229	1
62	BOLT	JM27-0068	5
63	TANK STRAP	JM20-1630A18	1
64	RUBBER PAD	JM33-0565	4
65	TANK STRAP	JM20-1631A18	1
66	FUEL PICK-UP	JM33-0352	1
67	BARB	JM23-0051	1
68	CLAMP WORM	JM42-0004	2
69	ELBOW	JM23-0054	1
-	DECAL SET	JM71-0005	1
*MUST ORDER IN ONE FOOT LENGTHS			

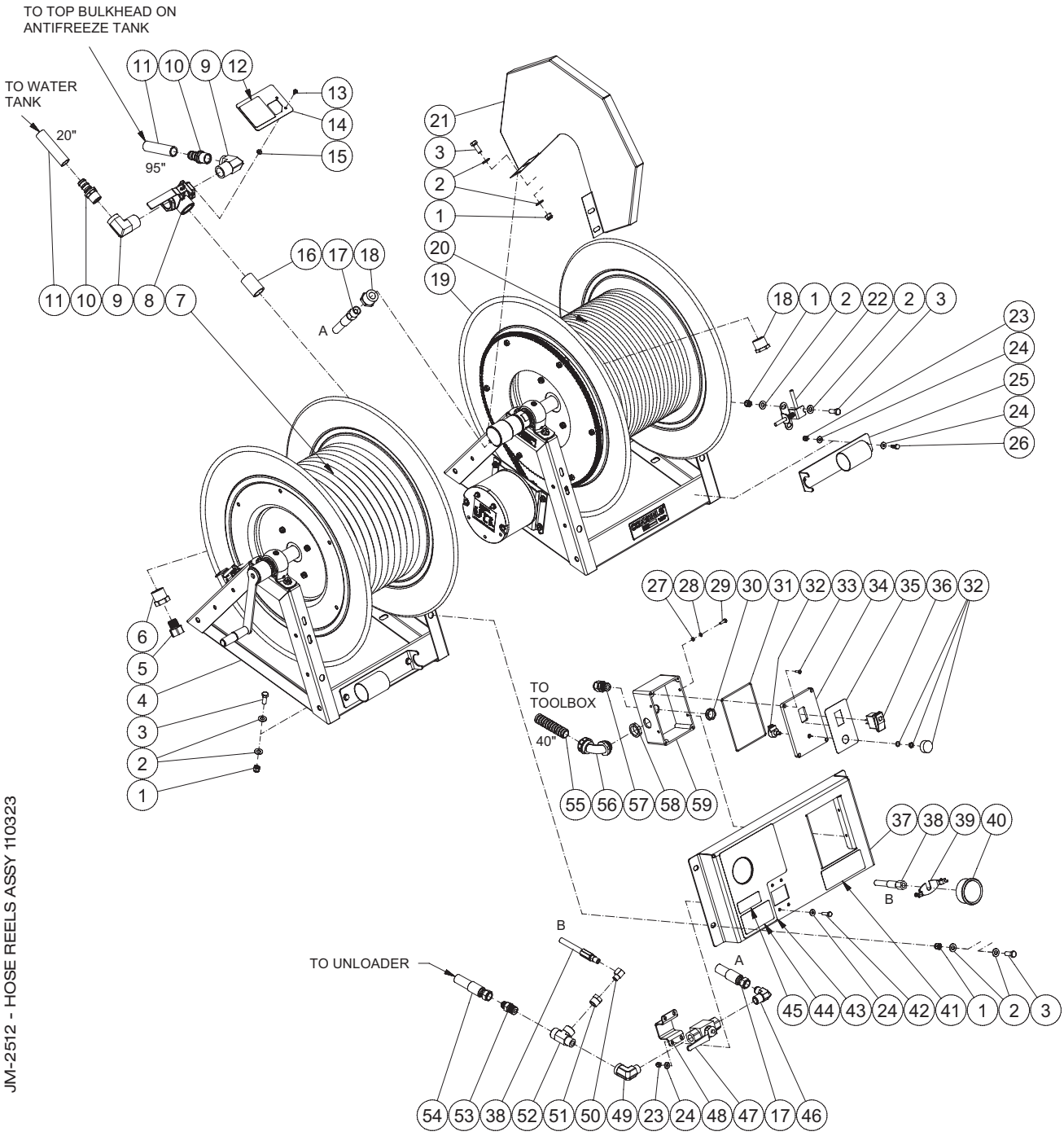
ISOLATION PLATE



JM-2512 - ISOLATION PLATE 110323

JM-2512 - ISOLATION PLATE 110323			
ISOLATION PLATE			
ITEM	DESCRIPTION	PART #	QTY
1	HOSE *(TWO FEET REQUIRED)	JM15-0020	1
2	HOSE CLAMP	JM42-0011	3
3	HOSE BARB	JM23-0502	1
4	ENGINE	JM851-0393	1
5	LOCKNUT	JM30-0157	28
6	SHIM	JM33-0169	4
7	BOLT	JM27-0070	4
8	HOSE *(SIX FEET REQUIRED)	JM15-0033	1
9	HOSE CLAMP	JM42-0018	3
10	HOSE BARB	JM23-0358	1
11	HIGH PRESSURE HOSE	JM15-0315	1
12	ELBOW	JM24-0131	1
13	SCREW NIPPLE	JM23-0494	1
14	SCREW COUPLER	JM23-0490	1
15	HIGH PRESSURE HOSE	JM15-0314	1
16	REDUCER	JM24-0282	1
17	UNLOADER	JM8-0032	1
18	ELBOW	JM24-0006	1
19	NIPPLE	JM23-0012	1
20	ELBOW	JM23-0363	1
21	HOSE	JM15-0225	1
22	REDUCER	JM24-0053	1
23	MANIFOLD BLOCK	JM51-0034	1
24	BOLT	JM27-0073	4
25	LOCKWASHER	JM29-0007	2
26	WASHER	JM28-0003	34
27	HOSE BARB	JM23-0091	2
28	BALL VALVE	JM22-0344	1
29	BOLT	JM27-0067	2
30	1" PIPE BRACKET	JM20-0951A18	1
31	HOSE *(TWO FEET REQUIRED)	JM15-0304	1
32	HOSE BARB ELBOW	JM23-0482	1
33	BALL VALVE	JM22-0279	1
34	NIPPLE	JM23-0026	1
35	BUSHING	JM23-0150	1
36	STREET TEE	JM24-0117	1
37	WATER FILTER	JM19-0247	1
38	HOSE *(TWO FEET REQUIRED)	JM15-0172	1
39	LOCKNUT	JM30-0159	2
40	WASHER	JM28-0004	6
41	BOLT	JM27-0133	2
42	WASHER	JM28-0023	5
43	TENSION BRACKET	JM20-0584A18	1
44	NUT	JM30-0006	6
45	CLIP NUT	JM30-6025	2
46	LOCKWASHER	JM29-0054	4
47	BOLT	JM27-8884	4
48	PUMP HAT	JM5-0153A18	1
49	LOCKWASHER	JM29-0008	4
50	ISOLATOR	JM14-0110	8
51	ISOLATION PLATE	JM5-0309A18	1
52	BARB	JM23-0090	1
53	ELBOW	JM23-0081	1
54	ELBOW	JM24-0092	1
55	PUMP	JM3-0372	1
56	HOSE *(TREE FEET REQUIRED)	JM15-0305	1
57	HOSE BARB	JM23-0120	1
58	SHEAVE	JM10-0154	1
59	BUSHING	JM9-0017	1
60	LOCKWASHER	JM29-0006	15
61	BOLT	JM27-0015	4
62	CAP VALVE	JM46-1432	1
63	ELBOW	JM24-0004	1
64	BALL VALVE	JM22-0494	1
65	HANDLE GRIP	JM7-0227	1
66	NIPPLE	JM24-0085	1
67	RECTIFIER	W/ ENGINE	1
68	WASHER	JM28-0002	11
69	BOLT	JM27-0016	8
70	NUT	JM30-0002	3
71	BELTGUARD COVER	JM20-0589A18	2
72	DECAL - WARNING; RISK OF INJURY (SEE JM71-0005)	N/A	2
73	BELTGUARD	JM20-0690A18	1
74	PUMP BELTGUARD	JM6-0092A18	1
75	HOSE BARB	JM23-0005	1
76	BOLT	JM27-0068	4
77	OIL DRAIN PLATE	JM20-1253A18	1
78	REDUCER BUSHING	JM23-0016	1
79	PLUG	JM24-0338	2
80	HOSE BARB	JM23-0073	1
81	SPRING	JM49-0176	1
82	BELT	JM11-0052	3
83	SHEAVE	JM10-0155	1
84	BUSHING	JM9-0010	1
-	DECAL SET	JM71-0005	1
*MUST ORDER IN ONE FOOOT LENGHTS			

HOSE REEL ASSEMBLY



JM-2512 - HOSE REELS ASSY 110323

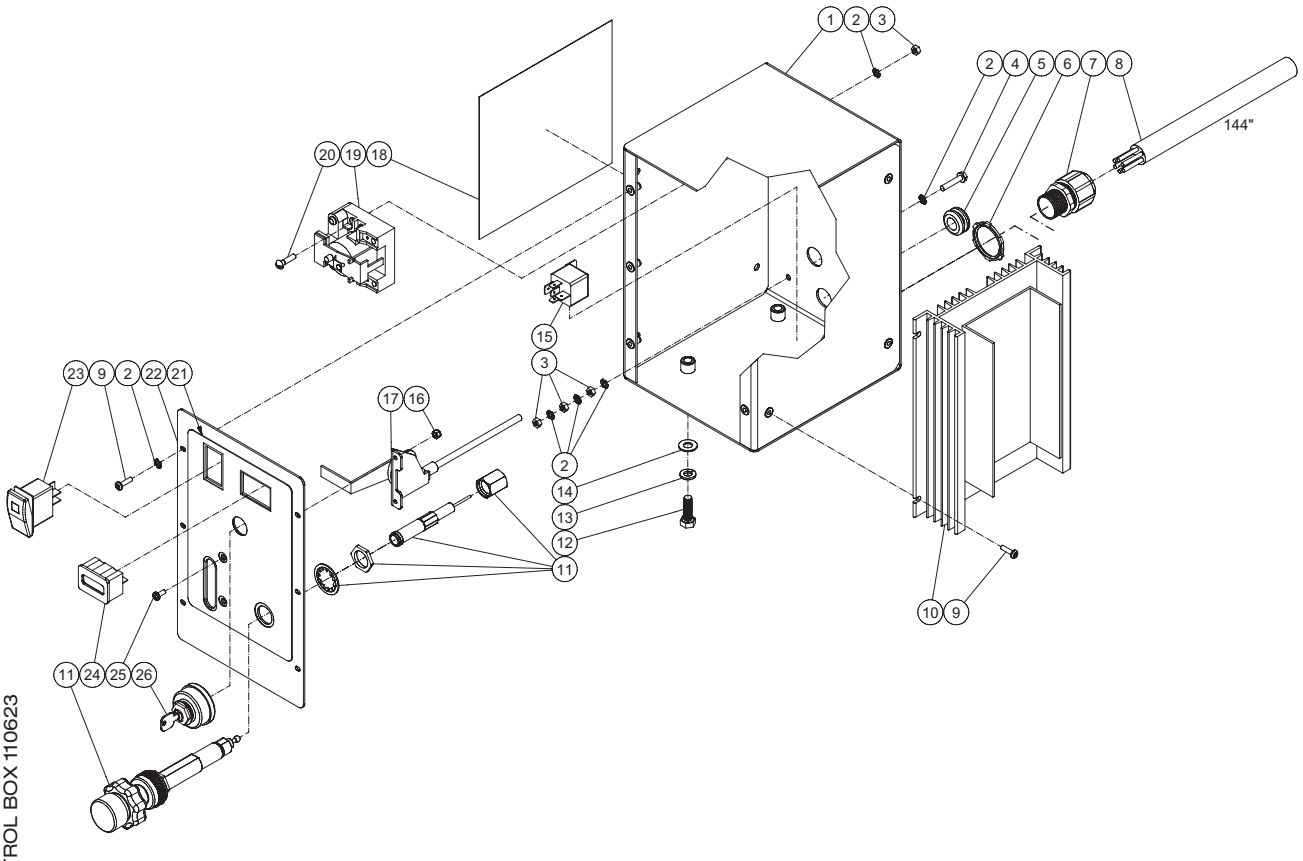
JM-2512 - HOSE REELS ASSY 110323

HOSE REEL ASSEMBLY

ITEM	DESCRIPTION	PART #	QTY
1	LOCKNUT	JM30-0159	16
2	WASHER	JM28-0004	32
3	BOLT	JM27-0117	16
4	HAND CRANK HOSE REEL	JM50-0193	1
5	SWIVEL	JM23-0095	1
6	REDUCER	JM23-0226	1
7	GARDEN HOSE	JM15-0316	1
8	BALL VALVE	JM22-0321	1
9	ELBOW	JM24-0322	2
10	BARB	JM23-0008	2
11	HOSE *(TEN FEET REQUIRED)	JM15-0304	2
12	DECAL - TANK SELECTION (SEE JM71-0005)	N/A	1
13	SCREW	JM27-9533	2
14	BRACKET	JM20-1285A18	1
15	WASHER	JM28-0001	2
16	NIPPLE	JM24-0324	1
17	HIGH PRESSURE HOSE	JM15-0263	1
18	REDUCER	JM24-0303	2
19	ELECTRIC HOSE REEL	JM50-0194	1
20	GARDEN HOSE (0GH)	JM15-0322	1
-	HP HOSE	JM15-0336	1
21	GEAR GUARD	JM50-0197A18	1
22	LOCK PIN ASSY	JM43-0141	1
23	LOCKNUT	JM30-0155	8
24	WASHER	JM28-0002	16
25	HOSE RETAINER	JM20-1240A64	2
26	BOLT	JM27-0015	4
27	NUT	JM30-6001	4
28	STAR WASHER	JM28-1009	4
29	BOLT	JM27-9526	4
30	ELECTRICAL LOCKNUT	JM32-0108	1
31	GASKET	JM26-0450	1
32	VARIABLE SPEED CONTROL	JM32-1100	1
33	SCREW	JM27-5035	4
34	CONTROL BOX LID	JM20-1256A18	1
35	DECAL-SPEED CONTROL (SEE JM71-0005)	N/A	1
36	ROCKER SWITCH W/LAMP	JM32-0969	1
37	CONTROL PANEL	JM20-1241A64	1
38	HIGH PRESSURE HOSE	JM15-0309	1
39	U CLAMP	JM13-0211	1
40	PRESSURE GAUGE	JM22-0465	1
41	DECAL - GENERAL JET-SET TYPHOON (SEE JM71-0005)	N/A	1
42	BOLT	JM27-0016	4
43	DECAL - HOSE REEL CONTROL PANEL (SEE JM71-0005)	N/A	1
44	DECAL - SILVER STICKER	N/A	1
45	DECAL - PROP 65	N/A	1
46	90 ELBOW FITTING	JM24-0074	1
47	BALL VALVE	JM22-0463	1
48	BALL VALVE HOLDER	JM20-1254A18	1
49	ELBOW	JM24-0006	1
50	ELBOW	JM23-0014	1
51	REDUCER	JM24-0053	1
52	STREET TEE	JM24-0242	1
53	NIPPLE	JM24-0054	1
54	HIGH PRESSURE HOSE	JM15-0314	1
55	CONDUIT *(FOUR FEET REQUIRED)	JM32-0486	1
56	CONDUIT ELBOW	JM32-0487	1
57	STRAIN RELIEF	JM32-0437	1
58	CONTROL BOX	JM20-1255A18	1
-	DECAL SET	JM71-0005	1

*MUST ORDER IN ONE FOOT LENGTHS

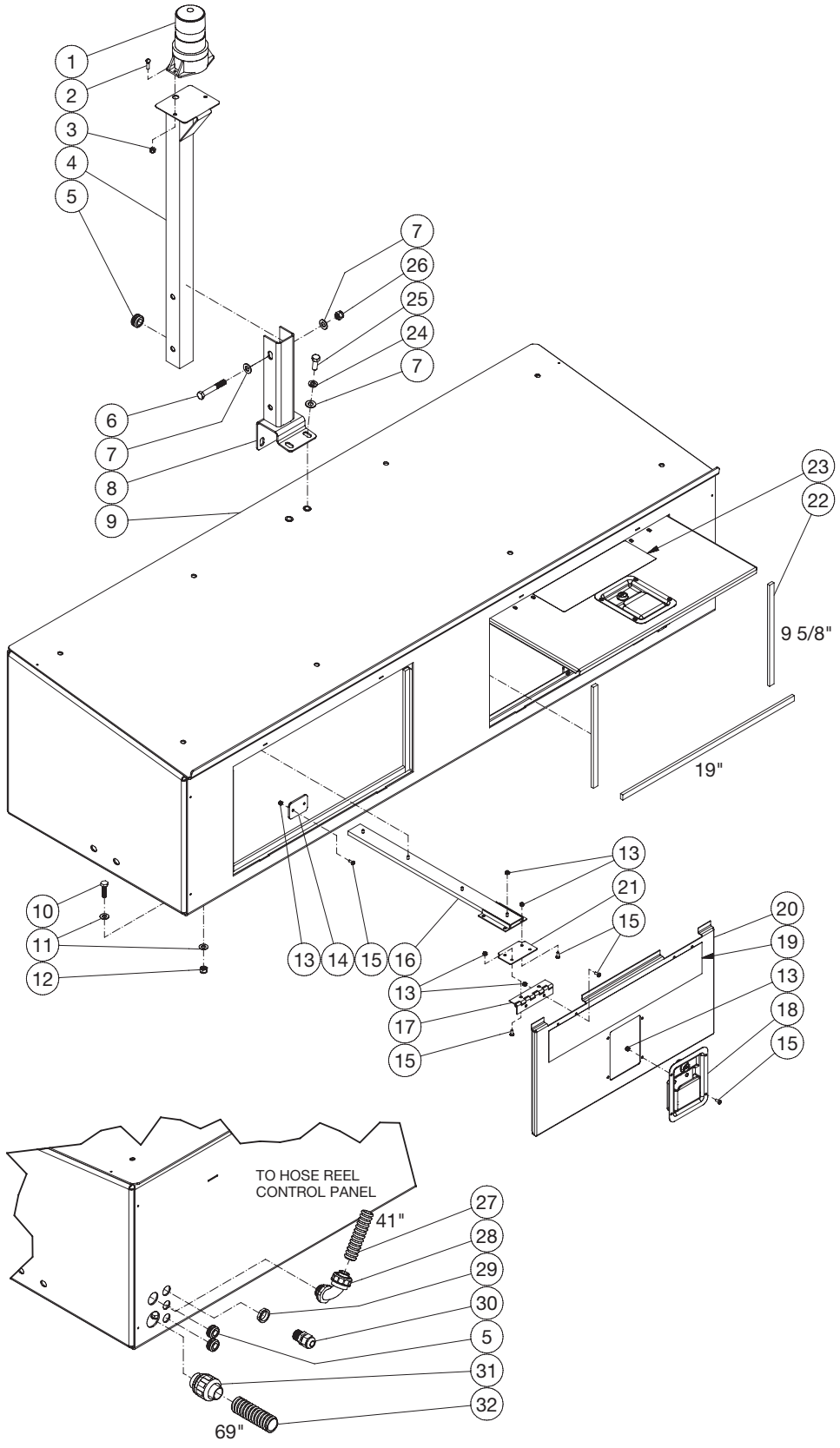
ENGINE CONTROL BOX



JM-2512 - ENGINE CONTROL BOX 110623

JM-2512 - ENGINE CONTROL BOX 110623			
ENGINE CONTROL BOX			
ITEM	DESCRIPTION	PART #	QTY
1	ENGINE CONTROL BOX	JM20-1250A18	1
2	STAR WASHER	JM28-1009	12
3	NUT	JM30-6001	5
4	BOLT	JM27-8807	1
5	GROMMET	JM33-0001	5
6	NUT	JM32-0515	1
7	CORD RELIEF	JM9-0048	1
8	CORD *(TWELVE FEET REQUIRED)	JM32-1339	1
9	SCREW	JM27-8942	10
10	VARIABLE SPEED CONTROL BOARD	JM32-1100	1
11	THROTTLE CABLE - PUSH/PULL	JM33-0622	1
12	BOLT	JM27-0067	4
13	LOCKWASHER	JM29-0007	4
14	WASHER	JM28-0003	4
15	RELAY	JM32-1247	1
16	LOCKNUT	JM30-8152	2
17	CHOKE CONTROL	JM33-0514	1
18	PLASTIC ZIPLOCK BAG	JM41-0184	1
19	RELAY CONTROL	JM32-0791	1
20	SCREW	JM27-8912	2
21	DECAL - ENGINE CONTROLS	N/A	1
22	ENGINE CONTROL PANEL	JM20-1251A18	1
23	ROCKER SWITCH W/LAMP	JM32-0969	1
24	HOUR METER	JM32-0668	1
25	SCREW	JM27-2770	2
26	KEY SWITCH	N/A	1
-	DECAL SET - JM-2512	JM71-0005	1
*MUST ORDER IN ONE FOOT LENGTHS			

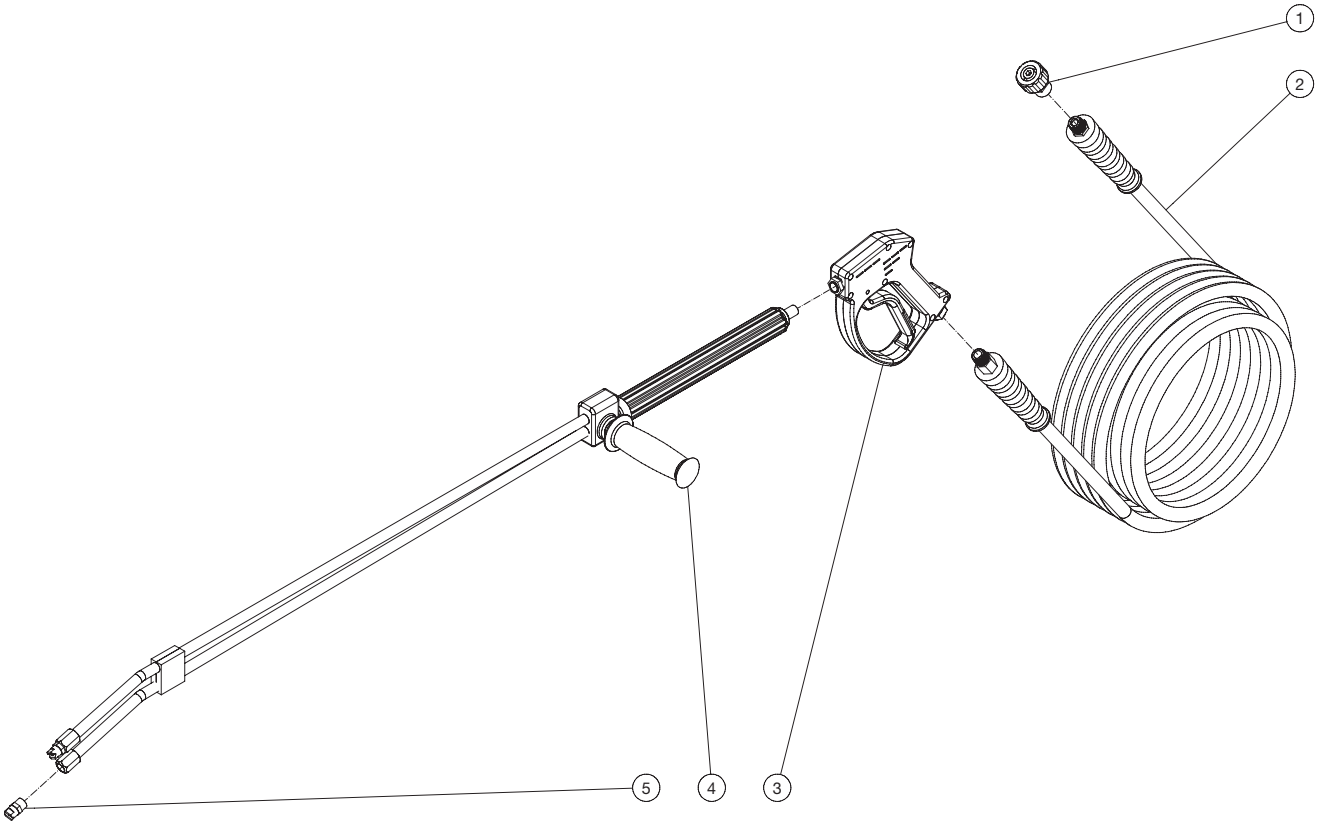
TOOLBOX ASSEMBLY



JM-2512 - TOOLBOX ASSY 102720

JM-2512 - TOOLBOX ASSY 102720			
TOOLBOX ASSEMBLY			
ITEM	TITLE	PART #	QTY
1	STROBE LIGHT	JM32-1085	1
2	SCREW	JM27-8912	2
3	LOCKNUT	JM30-0136	2
4	LIGHT POST	JM20-1243A64	1
5	GROMMET	JM33-0001	3
6	BOLT	JM27-0123	2
7	WASHER	JM28-0004	8
8	LIGHT POST MOUNT	JM20-1242A64	1
9	TOOLBOX	JM20-1262A64	1
10	BOLT	JM27-0068	6
11	WASHER	JM28-0003	12
12	LOCKNUT	JM30-0157	6
13	LOCKNUT	JM30-8152	52
14	STRIKER PLATE	JM20-1245A18	2
15	SCREW	JM27-2770	36
16	SLIDE	JM33-0515	4
17	HINGE	JM43-0105	4
18	PADDLE LATCH	JM33-0516	2
19	DECAL - MARKETING	N/A	1
20	DOOR	JM20-1244A64	2
21	DOOR HINGE MOUNT	JM20-1246A18	4
22	WEATHERSTRIP *(SEVEN FEET REQUIRED)	JM26-0378	1
23	DECAL - WARNING/OPERATION (SEE JM71-0005)	N/A	1
24	LOCKWASHER	JM29-0008	4
25	BOLT	JM27-0117	4
26	LOCKNUT	JM30-0159	2
27	CONDUIT *(FOUR FEET REQUIRED)	JM32-0486	1
28	CONDUIT ELBOW	JM32-0487	1
29	ELECTRICAL LOCKNUT	JM32-0108	1
30	STRAIN RELIEF	JM32-0437	1
31	STRAIGHT CONDUIT FITTING	JM32-0996	1
32	CONDUIT FLEX *(SIX FEET REQUIRED)	JM32-0908	1
*MUST ORDER IN ONE FOOT LENGTHS			

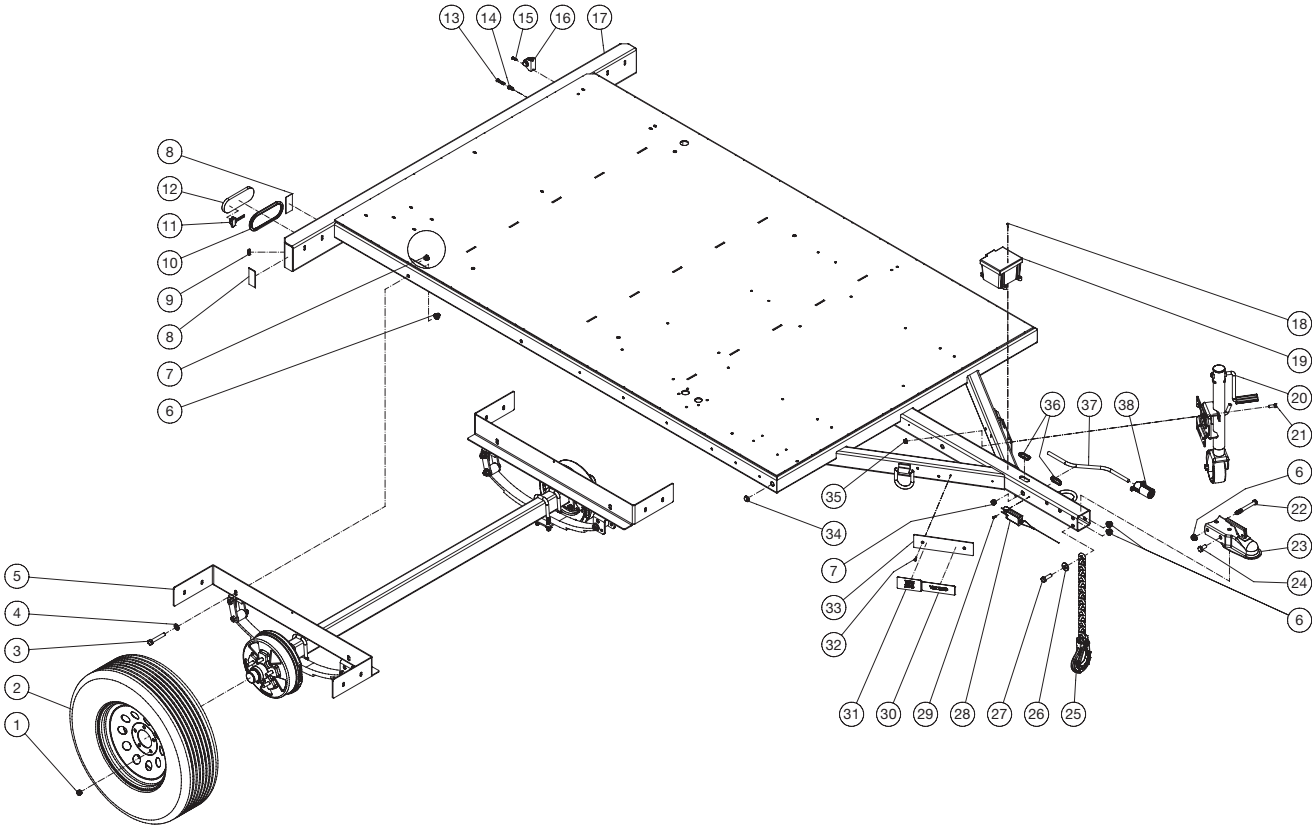
GUN/WAND/HOSE ASSEMBLY



JM-2512 - GUN_WAND_HOSE ASSY 012523

JM-2512 - GUN_WAND_HOSE ASSY 012523			
GUN / WAND / HOSE ASSEMBLY			
ITEM	TITLE	PART #	QTY
1	SCREW COUPLER	JM23-0490	1
2	HOSE	JM15-0166	1
3	GUN	JM16-0446	1
4	DUAL LANCE	JM16-0417	1
5	NOZZLE 2514 1/4” MEG	JM18-0431	1
-	JACK ROD (NOT SHOWN)	JM61-1036	1
-	NOZZLE SET (NOT SHOWN)	JM18-0437	1

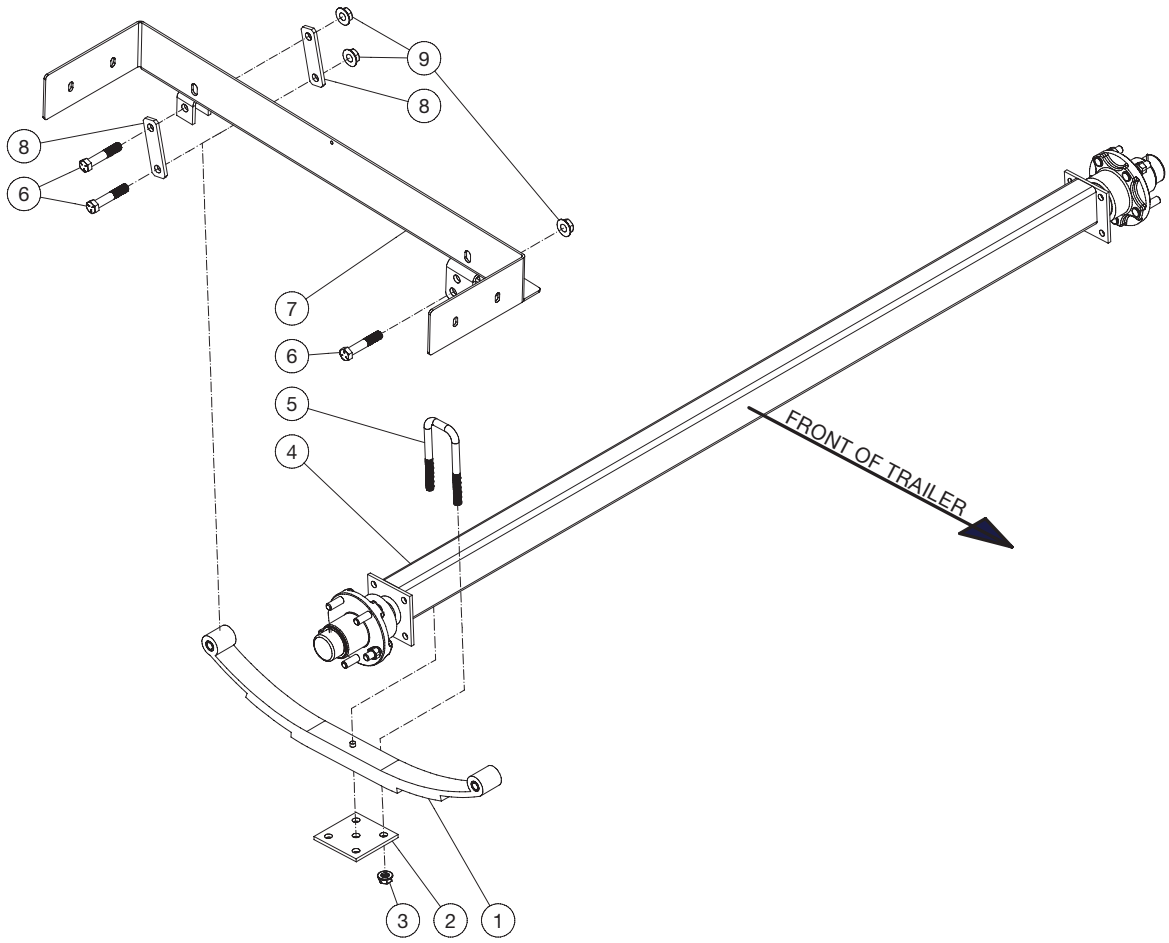
TRAILER ASSEMBLY (JM16-0020)



61-0020 100424

			61-0020 100424
TRAILER ASSEMBLY (JM16-0022)			
ITEM	TITLE	PART #	QTY
1	LUG NUT	JM61-1121	10
2	WHEEL & TIRE	JM61-1011	2
3	BOLT	JM27-0227	4
4	WASHER	JM28-0006	4
5	SUSPENSION ASSY	N/A	1
6	NUT	JM30-0801	9
7	GROMMET	JM61-1140	2
8	REFLECTOR - RED	JM61-1127	4
9	MARKER LIGHT - RED	JM61-1125	2
10	GROMMET	JM61-1123	2
11	TAIL LIGHT WIRING PLUG	JM61-1136	2
12	TAIL LIGHT	JM61-1128	2
13	SCREW	JM27-2075	2
14	THREADED INSERT	JM61-1129	3
15	SCREW	JM61-1132	2
16	LIGHT	JM61-1131	1
17	FRAME	N/A	1
18	RIVET	JM53-0010	2
19	BREAKAWAY SYSTEM (INC. BATTERY AND JM61-1139)	JM61-1138	1
20	JACK	JM61-1041	1
21	BOLT	JM27-0117	4
22	BOLT	JM27-0229	1
23	COUPLER	JM61-1133	1
24	BOLT	JM27-0216	2
25	SAFETY CHAIN (SOLD AS PAIR)	JM61-1134	1
26	FENDER WASHER	JM61-1135	2
27	BOLT	JM27-0218	2
28	BREAKAWAY SWITCH	JM61-1139	1
29	BOLT	JM27-3062	1
30	VIN DECAL	N/A	1
31	TIRE DECAL	N/A	1
32	RIVET	N/A	2
33	PLATE	N/A	1
34	MARKER LIGHT - YELLOW	JM61-1124	2
35	NUT	JM30-0800	4
36	GROMMET	JM61-1130	4
37	WIRE HARNESS	JM61-1151	1
38	7 WAY TRAILER PLUG	JM61-1150	1

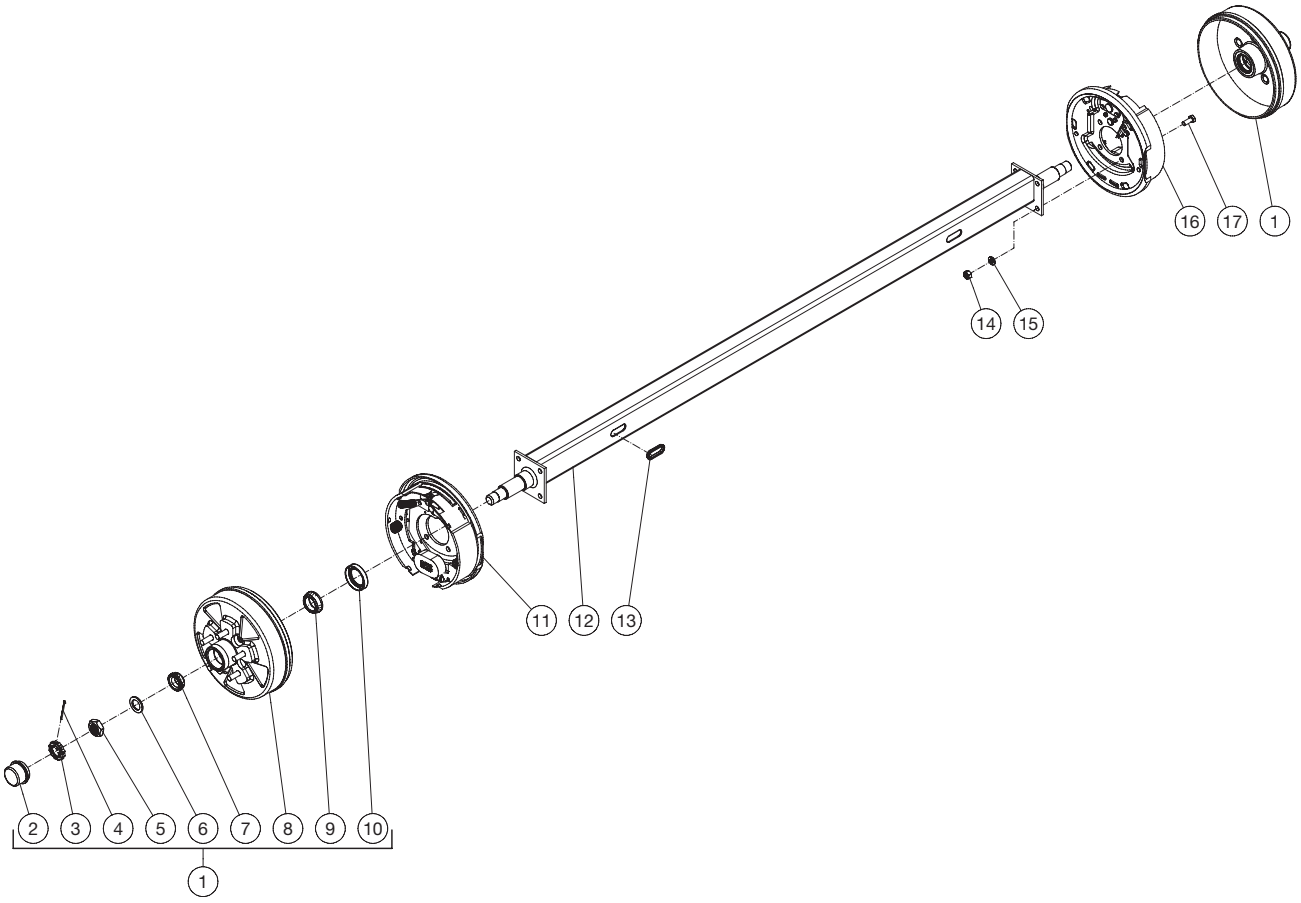
TRAILER SUSPENSION ASSEMBLY



SINGLE AXLE SUSPENSION 110123.

SINGLE AXLE SUSPENSION 110123.			
TRAILER SUSPENSION ASSEMBLY			
ITEM	TITLE	PART #	QTY
1	LEAF SPRING	JM61-1105	2
2	PLATE	JM61-1107	2
3	NUT	JM30-0801	8
4	AXLE ASSY - ELEC	JM61-1102	1
5	U-BOLT	JM61-1137	4
6	BOLT	JM27-0250	6
7	SPRING BRACKET - PASSENGER	JM61-1104	1
-	SPRING BRACKET - DRIVER	JM61-1103	1
8	SHACKLE	JM61-1106	4
9	NUT	JM30-0802	6

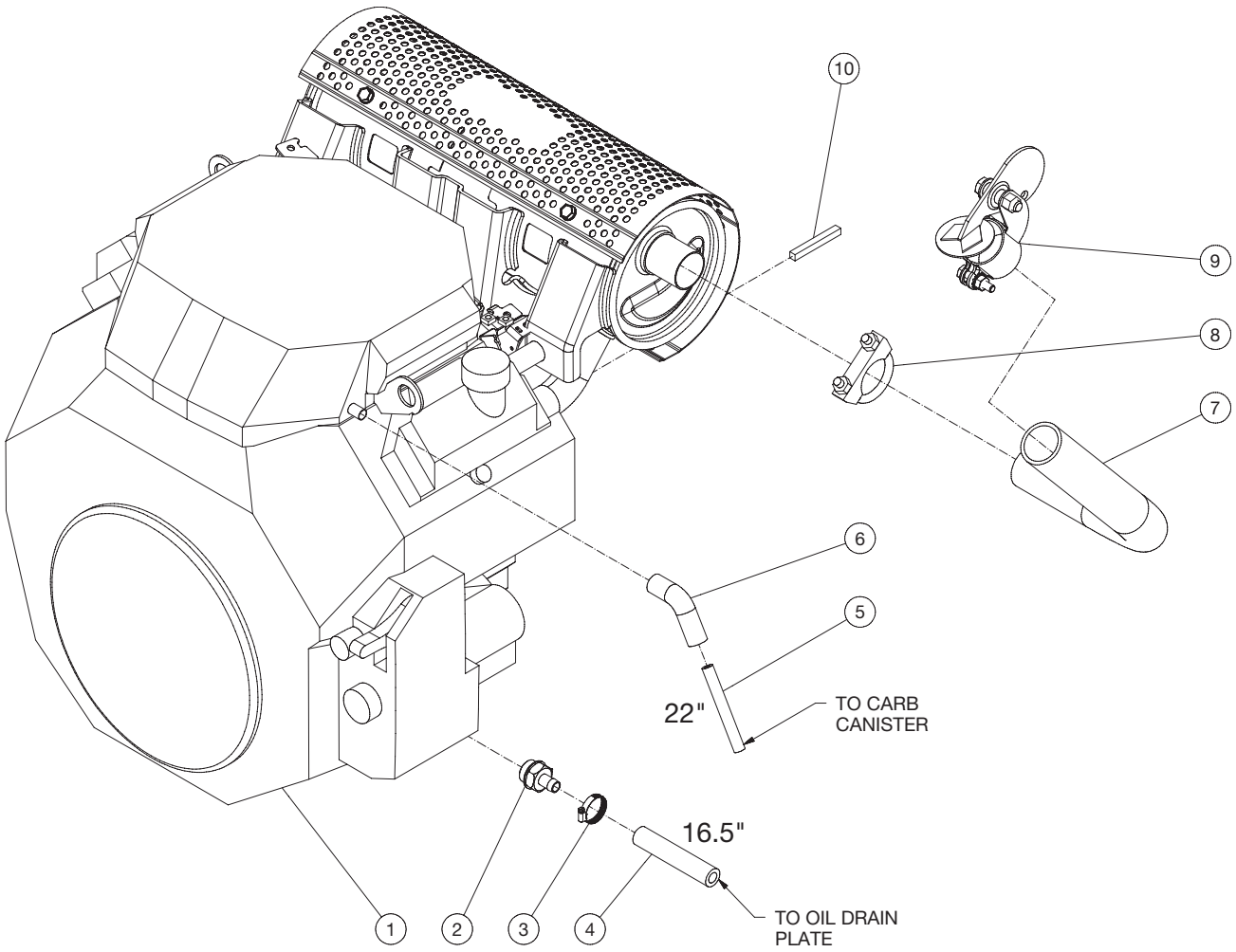
ELECTRIC BRAKE AXLE ASSEMBLY (JM61-1102)



61-1102 100924

			61-1102 100924
ELECTRIC BREAK AXLE ASSEMBLY			
ITEM	TITLE	PART #	QTY
1	DRUM ASSY	JM61-1145	2
2	CAP	JM61-1115	1
3	SPINDLE LOCK	JM61-1118	1
4	COTTER PIN	JM61-1120	1
5	NUT	JM61-1119	1
6	WASHER	JM61-1143	1
7	BEARING	JM61-1116	1
8	BRAKE DRUM	JM61-1144	1
9	BEARING	JM61-1117	1
10	SEAL	JM61-1114	1
11	BRAKE ASSY - LEFT	JM61-1146	1
12	AXLE TUBE	JM61-1112	1
13	GROMMET	JM61-1130	2
14	NUT	JM30-0009	8
15	LOCKWASHER	JM29-0009	8
16	BRAKE ASSY - RIGHT	JM61-1147	1
17	BOLT	JM27-0191	8

ENGINE ASSEMBLY (JM851-0393)

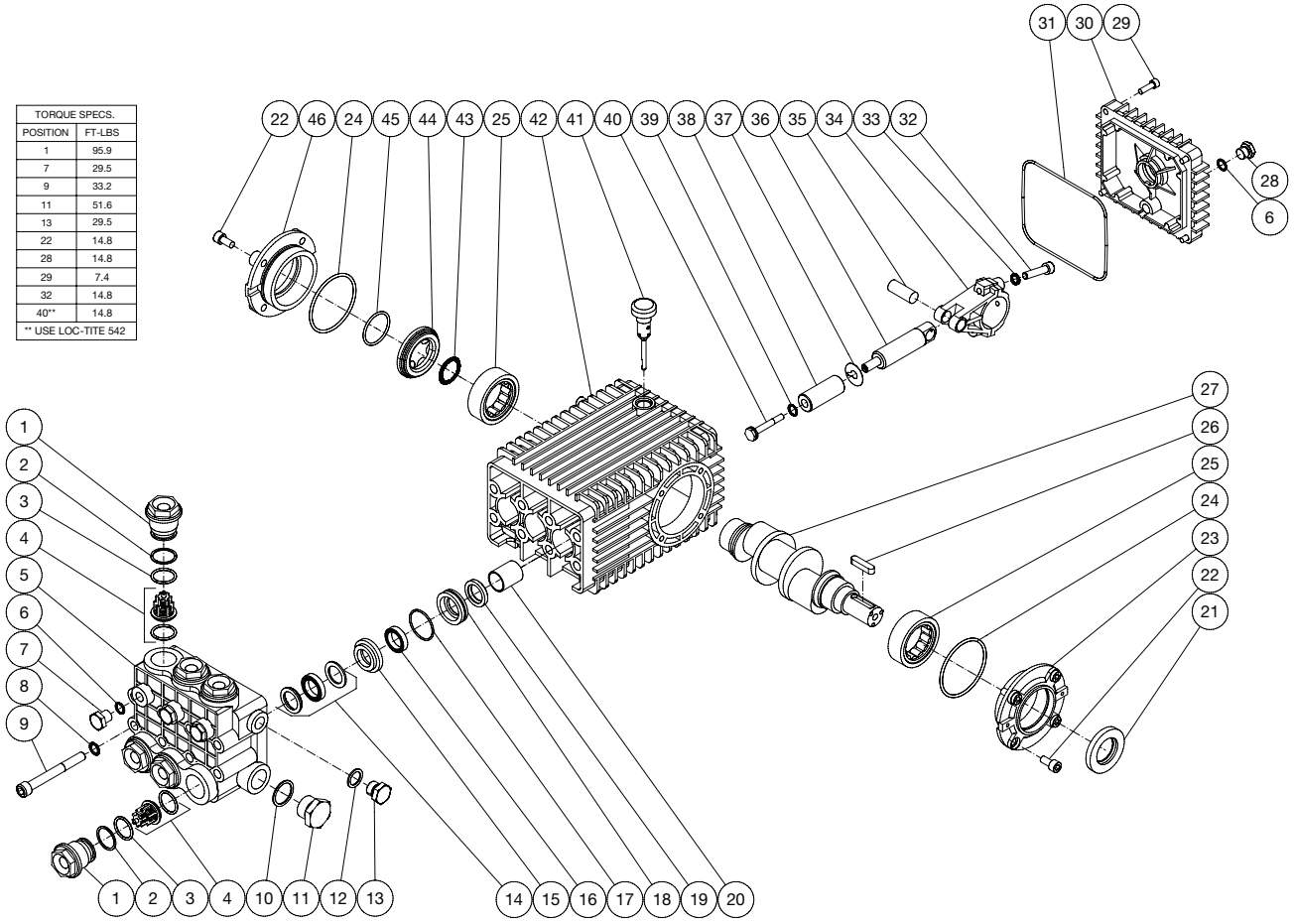


851-0393 010719

			851-0393 010719
ENGINE ASSEMBLY			
ITEM	TITLE	PART #	QTY
1	ENGINE	JM1-0187	1
2	HOSE BARB	JM23-0502	1
3	HOSE CLAMP	JM42-0011	1
4	HOSE	JM15-0020	1
5	FUEL HOSE	JM15-0261	1
6	AIR CLEANER ADAPTER	JM62-0229	1
7	EXHAUST PIPE	JM45-0120	1
8	EXHAUST CLAMP	JM45-0082	1
9	RAIN CAP	JM33-0441	1
10	KEY	JM43-0078	1

PUMP (JM3-0372)

TORQUE SPECS.	
POSITION	FT-LBS
1	95.9
7	29.5
9	33.2
11	51.6
13	29.5
22	14.8
28	14.8
29	7.4
32	14.8
40**	14.8
** USE LOC-TITE 542	

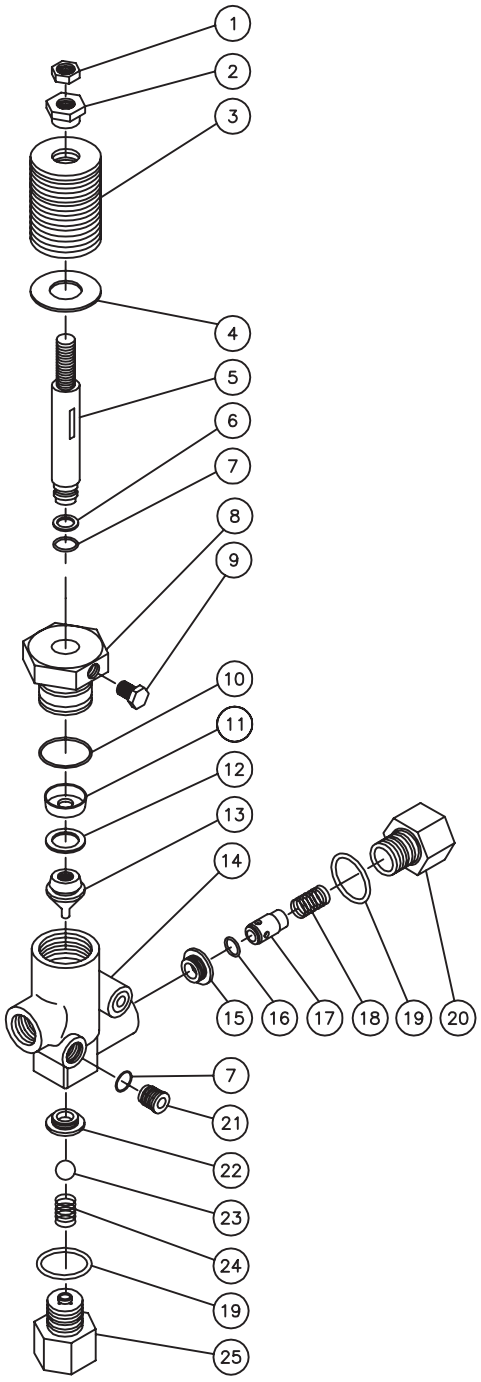


3-0372 120924

3-0372 120924			
PUMP			
ITEM	TITLE	PART #	QTY
1	VALVE CAP	JM46-1222	6
2	RING	JM25-0592	6
3	O-RING	JM25-0139	6
4	VALVE ASSEMBLY (SEE KIT)	JM70-0439	6
5	MANIFOLD	JM46-1508	1
6	O-RING	JM25-0310	4
7	PLUG	JM39-0222	3
8	LOCKWASHER	JM29-0155	8
9	BOLT	JM27-9595	8
10	GASKET	JM28-1051	1
11	PLUG	JM39-0221	1
12	WASHER	JM28-1002	1
13	PLUG	JM39-0018	1
14	HIGH PRESSURE SEALS (SEE KIT JM70-0607 & JM70-0608)	N/A	3
15	HIGH PRESSURE RING (SEE KIT JM70-0608)	N/A	3
16	LOW PRESSURE SEAL (SEE KIT JM70-0607 & JM70-0608)	N/A	3
17	O-RING (SEE KIT JM70-0608)	JM25-0015	3
18	LOW PRESSURE SEAL (SEE KIT JM70-0608)	N/A	3
19	OIL SEAL (SEE KIT JM70-0432)	JM26-0047	3
20	BUSHING	JM9-0029	3
21	OIL SEAL	JM26-0049	1
22	BOLT	JM27-8431	8
23	CRANKCASE COVER OPEN	JM46-1217	1
24	O-RING	JM25-0013	2
25	BEARING	JM48-0085	2
26	KEY	JM46-0602	1
27	CRANKSHAFT	JM46-1210	1
28	PLUG	JM39-0017	1
29	BOLT	JM27-8812	4
30	CRANKCASE COVER	JM46-1212	1
31	O-RING	JM25-0339	1
32	BOLT	JM27-8435	6
33	LOCKWASHER	JM29-1014	6
34	CONNECTING ROD	JM46-1211	3
35	CONNECTING ROD PIN	JM43-0118	3
36	PLUNGER ROD	JM46-1213	3
37	SLINGER WASHER	JM46-1214	3
38	PLUNGER	JM46-1509	3
39	O-RING	JM25-0698	3
40	BOLT / PISTON	JM46-1216	3
41	OIL DIP STICK	JM46-0144	1
42	CRANKCASE	JM46-1209	1
43	RETAINER CLIP	JM46-1887	1
44	OIL LEVEL INDICATOR	JM46-1913	1
45	O-RING- COVER	JM25-0142	1
46	CRANKCASE COVER	JM46-1208	1

KIT #	DESCRIPTION	ITEMS	# OF ASSEMBLIES	# OF CYLINDERS
JM70-0432	OIL SEAL KIT	19	3	3
JM70-0439	VALVE KIT	4	6	3
JM70-0607	LOW/HIGH PRESSURE SEALS	14, 16	3	3
JM70-0608	PACKING KIT	14-18	1	1

UNLOADER (JM8-0032)

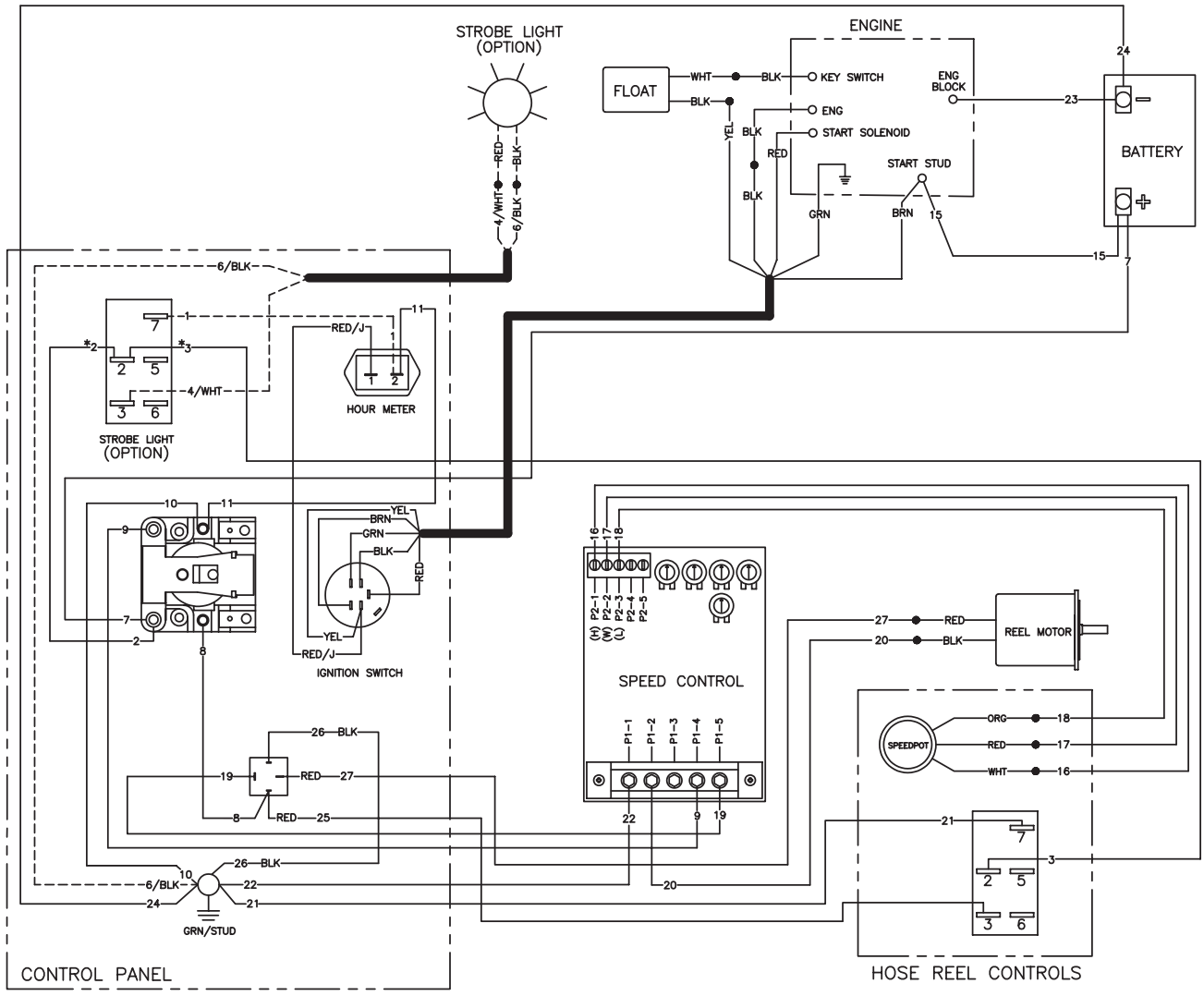


8-0032 061113

8-0032 061113 MLK			
UNLOADER ASSEMBLY (JM8-0032)			
REF.#	DESCRIPTION	PART #	QTY.
1	LOCKNUT	JM30-3058	1
2	ADJUSTING NUT	JM8-0089	1
3	SPRING WASHERS - ORANGE	JM8-0009	15
4	WASHER	JM28-0250	1
5	VALVE STEM	JM8-0037	1
6	BACKUP RING (SEE KIT JM70-0044)	JM8-0038	1
7	O-RING (SEE KIT JM70-0044)	JM25-0009	5
8	VALVE CAP	JM8-0036	1
9	SET SCREW	JM8-0084	1
10	O-RING (SEE KIT JM70-0044)	JM25-0008	1
11	CUP (SEE KIT JM70-0044)	JM8-0034	1
12	BACK-UP RING (SEE KIT JM70-0044)	JM8-0040	1
13	PISTON	JM8-0039	1
14	VALVE BODY	JM8-0164	1
15	OUTLET SEAT	JM8-0006	1
16	O-RING (SEE KIT JM70-0044)	JM25-0011	1
17	OUTLET VALVE	JM8-0004	1
18	SPRING	JM49-0016	1
19	O-RING (SEE KIT JM70-0044)	JM25-0010	2
20	OUTLET RETAINER	JM8-0003	1
21	BRASS PLUG	JM8-0011	4
22	VALVE SEAT	JM8-0005	1
23	BALL	JM8-0041	1
24	SPRING	JM49-0015	1
25	INLET RETAINER	JM8-0165	1

REPLACEMENT KITS			
KIT#	DESCRIPTION	ITEMS	QTY
JM70-0044	UNLOADER KIT	6, 7, 10-12, 16, 19	2, 5, 1, 1, 1, 1, 2

WIRING DIAGRAM



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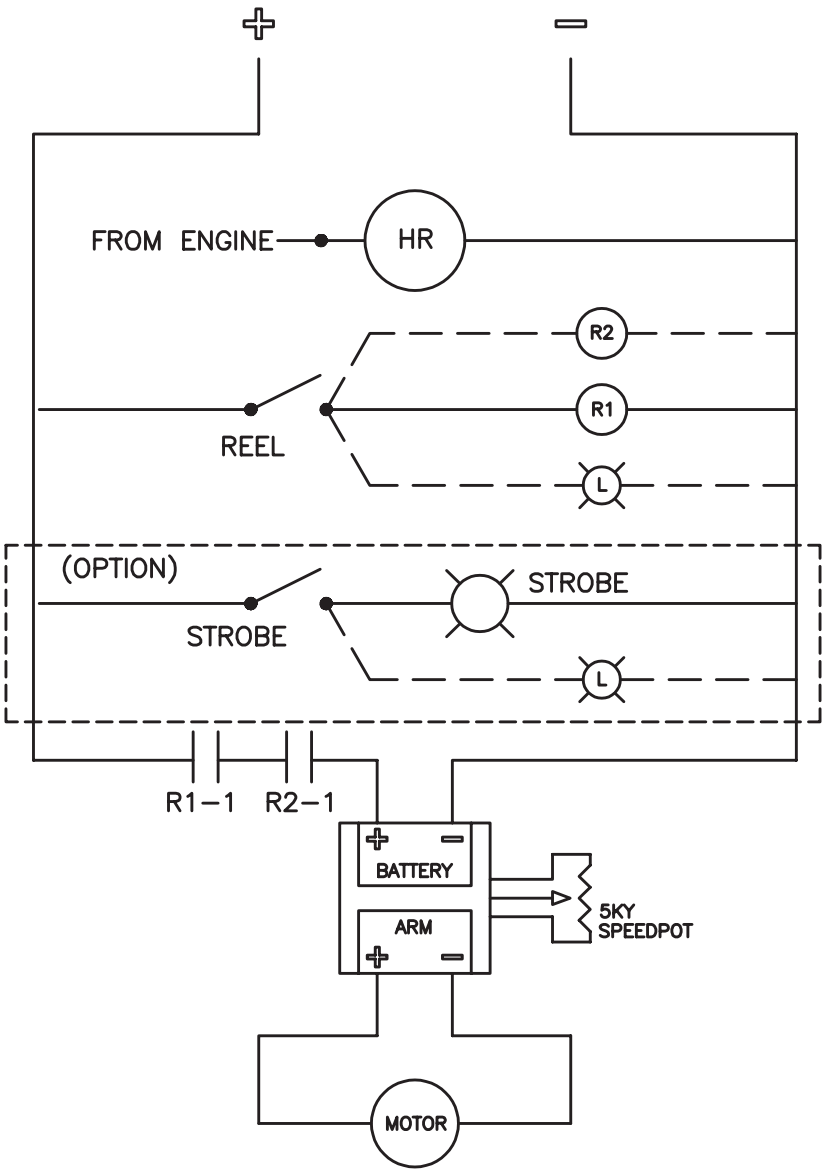
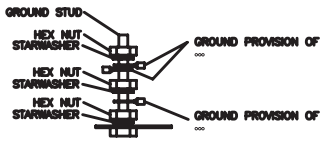
WIRING SCHEMATIC



GROUNDING PROVISIONS



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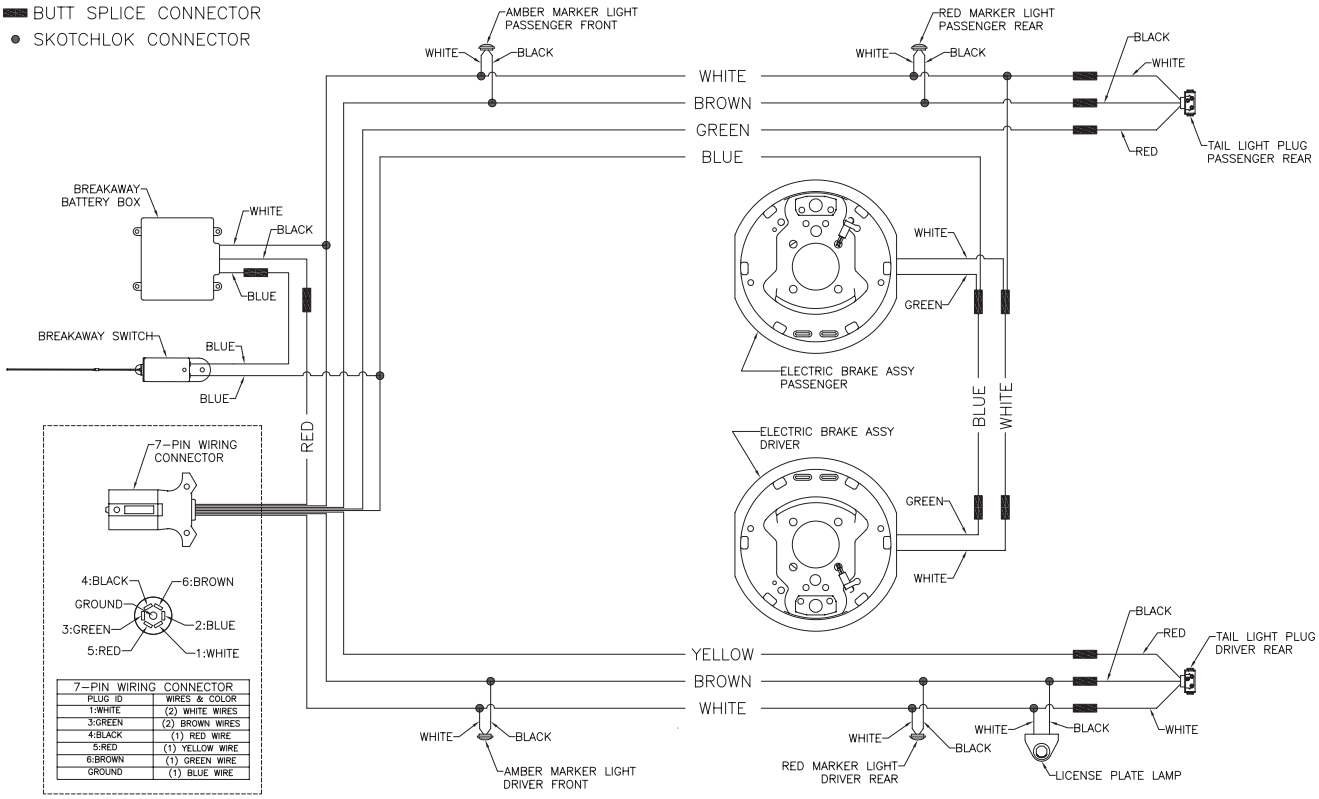
WIRING DIAGRAM (JM61-0020)



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