



**OPERATOR'S MANUAL FOR
HB & HU SERIES
HOT WATER
PRESSURE WASHERS**

**CAUTION
RISK OF INJURY!
READ MANUAL BEFORE OPERATING!**

**THIS MANUAL IS AN IMPORTANT PART OF THE PRESSURE WASHER
AND MUST REMAIN WITH THE UNIT WHEN YOU SELL OR RENT IT!**

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INTRODUCTION

Congratulations on the purchase of your new Mi-T-M hot water pressure washer! You can be assured your Mi-T-M hot water pressure washer was constructed and designed with quality and performance in mind. Each component has been rigorously tested to ensure the highest level of acceptance.

This operator's manual was compiled for your benefit. By reading and following the simple safety, installation, operation, maintenance and troubleshooting steps described in this manual, you will receive years of trouble free operation from your new Mi-T-M hot water pressure washer. The contents of this manual are based on the latest product information available at the time of publication. Mi-T-M reserves the right to make changes in price, color, materials, equipment, specifications or models at any time without notice.

! IMPORTANT !

These paragraphs are surrounded by a "SAFETY ALERT BOX". This box is used to designate and emphasize Safety Warnings that must be followed when operating this pressure washer.

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.



The symbols set to the left of this paragraph 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 BEFORE OPERATING THIS PRESSURE WASHER AND ESPECIALLY POINT OUT THE "SAFETY WARNINGS" TO PREVENT THE POSSIBILITY OF PERSONAL INJURY TO THE OPERATOR. ONLY TRAINED OPERATORS SHOULD USE THIS PRODUCT!

Once the unit has been uncrated, 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 the mechanical and electrical problems are corrected prior to operation of the unit. If you require service, contact Mi-T-M Customer Service.

CUSTOMER SERVICE
CALL OUR TOLL-FREE NUMBER
for the Sales or Service Center nearest you!
(800) 553-9053

Please have the following information available for all service calls:

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

IMPORTANT SAFETY WARNINGS



ELECTRICAL PRECAUTIONS:

GROUNDING INSTRUCTIONS: This product must be grounded. If it should malfunction or breakdown, grounding provides a path of least resistance for the electric current to reduce the risk of electric shock. This product is equipped with a cord having an equipment-grounding conductor and grounding plug. The plug must be plugged into an appropriate outlet that is properly grounded in accordance with all local codes and ordinances.

DANGER: Improper connection of the equipment-grounding conductor can result in a risk of electrocution. Check with a qualified electrician or service person if you are in doubt as to whether the outlet is properly grounded. Do not modify the plug provided with the product--if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

GROUND FAULT CIRCUIT INTERRUPTER PROTECTION: (for units provided with a GFCI)

This pressure washer is provided with a ground-fault circuit-interrupter (GFCI) built into the plug of the power supply cord. This device provides additional protection from the risk of electrical shock. Should replacement of the plug or cord become necessary, use only identical replacement parts that include GFCI protection.

GROUND FAULT CIRCUIT INTERRUPTER PROTECTION: (for units not provided with a GFCI)

To comply with the National Electric Code (NFPA 70) and to provide additional protection from the risk of electric shock, this pressure washer should only be connected to a receptacle that is protected by a ground fault circuit interrupter (GFCI). (Exception: 3 phase and over 250 volts.)

EXTENSION CORDS: For single phase units, use only 3-wire extension cords that have 3-prong grounding-type plugs and 3-pole cord connectors that accept the plug from the washer. For three phase units, use only 4-wire extension cords that have 4-prong grounding-type plugs and 4-pole cord connectors that accept the plug from the washer. Use only extension cords that are intended for outdoor use. These extension cords are identified by a marking "Acceptable for outdoor appliances; store indoors while not in use". Use only extension cords having an electrical rating not less than the rating of the product. Do not use damaged extension cords. Examine extension cord before using and replace if damaged. Do not abuse extension cord and do not yank on any cord to disconnect. Keep cord away from heat and sharp edges. Always disconnect the extension cord from the receptacle before disconnecting the product from the extension cord.



WARNING

**To reduce the risk of electrocution, keep all connections dry and off the ground.
Do not touch with wet hands.**

1. Mi-T-M DOES NOT RECOMMEND THE USE OF EXTENSION CORDS! If use of an extension cord is unavoidable, it must be of the correct amperage and voltage specifications and plugged into a GFCI found in circuit boxes or protected receptacles.
2. Observe ALL state, local and national codes providing for installation of electrical features of your pressure washer.
3. DO NOT drop the Ground-Fault Circuit-Interrupter (GFCI) as damage could result.
4. Check the power cord for damage before using. There is a hazard of electrical shock from crushing, cutting or heat damage.
5. Before plugging the unit into a compatible power source, BE CERTAIN the switch is in the "OFF" position. Disconnect the plug from the power source when not in use.
6. DO NOT use the unit in an area where flammable gas vapors may be present. An electric spark could cause an explosion or fire.
7. DO NOT direct water spray on or into electrical installations of any kind. This includes electrical outlets, light bulbs, fuse boxes, transformers, the units itself, etc. Severe electrical shock may occur.
8. Mi-T-M does not recommend that the owner attempt any electrical repairs to this unit!! If attempting any repairs on the unit, BE CERTAIN to unplug the cord from the wall receptacle before proceeding. Plug in again only to verify troubleshooting success.

IMPORTANT SAFETY WARNINGS



FIRE AND VENTILATION PRECAUTIONS:

1. Observe ALL state, local, and national codes provided for indoor installation of this unit. Consult your Mi-T-M serviceman or a qualified heating or furnace contractor for permanent installation.
2. NEVER fill fuel tank while unit is running or hot. Always refuel slowly using No. 1 or No. 2 fuel oil/diesel or kerosene. NEVER use gasoline. Avoid the possibility of spilled fuel causing fire.
3. When using indoors or in a closed area, ALWAYS make certain there is adequate air (oxygen) for combustion as well as ventilation to prevent the presence of poisonous carbon monoxide gases. Beware of poorly ventilated areas or exhaust fans which can cause inadequate combustion or motor overheating.
4. NEVER operate this machine in the presence of flammable vapors or combustible dust, gases or other combustible materials. (To prevent the possibility of explosion or fire.) When servicing this machine, be especially careful to properly dispose of any flammable materials. DO NOT spray flammable liquids.
5. DO NOT leave the machine unattended after shut-down until it is completely cooled down as described in "SHUT-DOWN" procedures pg. 10.
6. DO NOT store the unit near an open flame or any equipment such as a stove, furnace, water heater, etc., which utilize a pilot light or devices which can create a spark.



SPRAY PRECAUTIONS:



WARNING

Risk of injection or sever injury, keep clear of nozzle. Do not direct discharge stream at persons. This product is to be used only by trained operators.

1. KEEP AWAY FROM SPRAY: Because of the high pressure and velocity and temperature of the spray, fluids can penetrate the skin, causing serious injury.
 - a. NEVER point the gun at yourself or anyone else. NEVER put your hand, fingers or body directly over the spray nozzle. Keep operating area clear of all persons. Close supervision is necessary when operating near children.
 - b. If an accident does occur and the spray appears to have penetrated the skin, SEEK EMERGENCY MEDICAL CARE. DO NOT TREAT AS A SIMPLE CUT. If you are using cleaning agents be prepared to tell a physician exactly what kind.
2. ALWAYS wear protective goggles when operating the machine to shield the eyes from flying debris and detergents. Other protective equipment such as rubber suits, gloves and respirators are advisable, especially when using cleaning detergents of a corrosive nature.
3. Stay alert-watch what you are doing. Do not operate the product when fatigued or under the influence of alcohol or drugs.
4. NEVER squeeze the trigger unless securely braced. The thrust from the water traveling through the nozzle may be powerful enough to cause the operator to lose balance if unprepared. DO NOT overreach or stand on unstable support. Keep good footing and balance at all times. NEVER trigger a gun while on a ladder.
5. ALWAYS hold on firmly to the gun/wand assembly when starting and operating the unit. Failure to do so can cause the wand to fall and "whip" dangerously. NEVER operate the gun with the trigger "wired" in the open position. To prevent accidental discharge, the trigger gun should be securely locked when not in use.
6. DO NOT direct spray toward fragile materials such as glass. Shattering could occur resulting in serious injury to the operator or bystander(s).
7. NEVER allow children or adolescents to operate this unit.
8. Even after you shut off the washer, there is high pressure water left in the pump, hose and gun until you release it by triggering the gun. Before removing the spray nozzle or servicing the unit, ALWAYS shut off the unit and trigger the gun to release trapped pressure.

IMPORTANT SAFETY WARNINGS



DETERGENT CLEANING PRECAUTIONS:

1. Mi-T-M does not recommend the use highly corrosive detergents or acid type cleaners with this pressure washer. Use only Mi-T-M detergents. If a stronger cleaning agent is required, you **MUST** use the low pressure detergent injector accessory "AW-8300-0000". This accessory prevents the cleaning solution from traveling through the pump.
2. **KNOW YOUR DETERGENTS!** Be prepared to tell a physician exactly what you are using in the event of an emergency. Read all detergent labels and follow all appropriate instructions regarding preparation, use, safety, and transportation. Keep **ALL** detergents out of the reach of children.
3. **DO NOT** use this pressure washer to dispense hazardous detergents.
4. **DO NOT** alter the detergent injection feature in any manner not prescribed in this manual. Use only genuine Mi-T-M replacement parts for necessary repairs.
5. Avoid working on hot surfaces or in direct sunlight to minimize the chances of the detergent drying, which may result in damaging painted surfaces. Be certain to rinse a small section at a time.



MISCELLANEOUS SAFETY PRECAUTIONS:

1. **NEVER** alter or modify equipment, be sure any accessory items and system components being used will withstand the pressure developed. Use **ONLY** genuine Mi-T-M parts for repair of your power washer. Failure to do so can cause hazardous operating conditions and will void warranty.
2. When quick connecting high pressure hoses and spray nozzles, **BE CERTAIN** the "collar" on the female quick connect is locked securely to prevent accidental discharge.
3. When connecting the water inlet to water supply mains, local regulations of your water company must be observed. In some areas the unit must not be connected directly to the public drinking water supply. This is to ensure that there is no feedback of detergents into the water supply. (Direct connection is permitted if a backflow preventer is installed.)
4. **DO NOT** allow any part of your body or the high pressure hose to make contact with the heat exchanger, and avoid dragging the hose over an abrasive surface such as cement. This causes wear and eventual rupturing. High pressure hoses should be inspected daily for signs of wear. If evidence of failure exists, promptly replace all suspect hoses to prevent the possibility of injury from high pressure spray. If a hose or fitting is leaking, **NEVER** place your hand directly on the leak.
5. **DO NOT** operate if you see any fuel oil, pump oil or water leaks from the machine. **DO NOT** resume operation until the machine has been inspected and repaired by your Mi-T-M<P6MJ242><190><P255DJ0> serviceman.
6. **DO NOT** leave pressurized unit unattended. Shut off the unit and release trapped pressure before leaving.



ADJUSTMENT PRECAUTIONS:

1. **DO NOT** try to overtighten the pressure adjustment. Doing this may cause excessive pressure, intermittent unloader operation, and increased wear on parts.
2. Know how to stop the pressure washer and bleed pressures quickly. Be thoroughly familiar with controls.
3. Follow the maintenance instructions specified in this manual.

SAVE THESE INSTRUCTIONS

INSTALLATION & PREPARATION

SET-UP:

1. The unit should only be installed on a level surface which will not be exposed to rain, snow or freezing temperatures.

Mi-T-M DOES NOT RECOMMEND USING THIS WASHER INDOORS OR IN AN ENCLOSED AREA.

If indoor use is unavoidable, ALWAYS make certain there is adequate air (oxygen) for combustion as well as ventilation to prevent the presence of poisonous carbon monoxide gases. Beware of poorly ventilated areas or exhaust fans which can cause inadequate combustion or motor overheating.



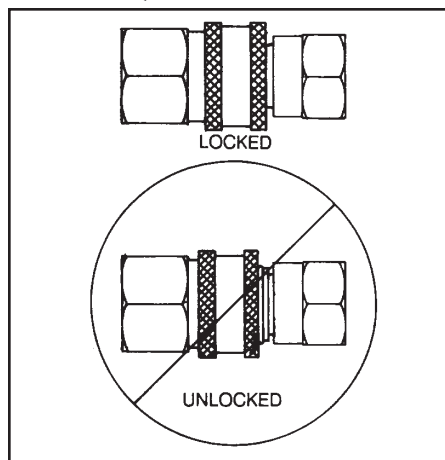
CAUTION: DO NOT place the unit in an area where flammable gas vapors may be present. A spark could cause an explosion or fire.

2. Once properly installed, check the oil gauge window on the pump crankcase. Make certain the oil is at the correct level indicated by the dot on the gauge. If the level appears to be low, use SAE 20 or SAE 30 non-detergent oil.

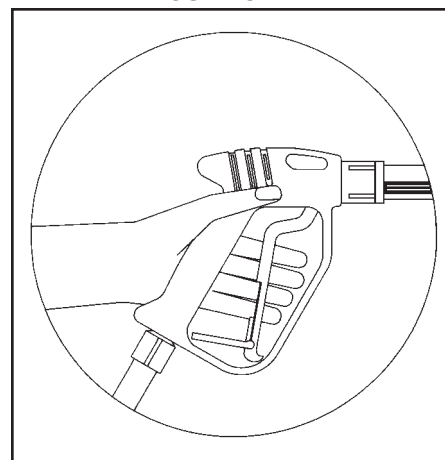
WATER SUPPLY:

1. The water supply hose should be connected to the inlet of the unit. Connect the other end of the hose to your pressurized water supply. (NOTE: Supply hose should be at least 3/4" ID and no longer than 50 feet.)
2. The incoming water pressure requirements listed below must be followed:
 - a. A minimum of 20 pounds per square inch (PSI)
 - b. A maximum of 125 PSI
 - c. Ensure incoming GPM is approximately one gallon more than the outgoing GPM stated on pressure washer nameplate.
3. The high pressure discharge hose should be quick-connected to the washer. Be sure all connections are securely tightened together. (See Figure 1, below.) The trigger gun should not be attached to the high pressure hose at this time. For safety reasons, the trigger gun should always be locked in the OFF position when

**FIGURE 1
QUICK CONNECT**



**FIGURE 2
GUN LOCK**



ELECTRICAL SUPPLY:

1. Make sure all switches are in the "OFF" position. Connect the power source securely. (NOTE: Ensure that incoming voltage has identical specifications as that on the pressure washer nameplate.)
2. If your unit comes equipped with a GFCI, it must be tested before each use. Follow the instructions listed on the GFCI for correct test procedures.



WARNING! If the GFCI fails the outlined test procedures, DO NOT OPERATE until the unit has been inspected by a qualified electrician or an authorized Mi-T-M service

INSTALLATION & PREPARATION

BURNER FUEL TANK:

1. Fill the fuel tank with good quality clean No. 1 or No. 2 fuel oil/diesel or kerosene.



CAUTION: DO NOT fill the fuel tank while unit is running. DO NOT fill fuel tank to the point of overflowing. Allow approximately 1/4" of tank space for fuel expansion.

2. Store fuel away from washer while unit is running.

NOZZLES/DUAL LANCE:

1. The nozzles that come equipped with your unit, vary upon the model you have received.
 - a. The HB-Series pressure washers have a 15° nozzle screwed into the bottom section of the dual lance and a 65° nozzle screwed into the top section of the dual lance.
 1. The 15° chiseling nozzle. While using this nozzle, the spray should be directed at a 45° angle to the surface and used like a scraper to remove paint, grease and dirt.
 2. The 65° low pressure/rinsing nozzle. The wide spray pattern distributed by this nozzle effectively rinses large cleaning areas. It may also be used to apply detergent when adding the optional "AW-8300-0000 Detergent Injector" accessory.
 - b. The HU-Series pressure washers are equipped with four different high pressure nozzles which quick-connect into the top section of the dual lance, and a 65° low pressure nozzle screwed into the bottom section of the dual lance.
 1. The 0° nozzle. This is a blasting nozzle. It delivers a very concentrated stream of water. Care should be used to avoid gouging wood or damaging fragile surfaces. It can be used to remove weeds from sidewalk cracks, stubborn stains from concrete, masonry, aluminum and steel, caked mud from equipment and cleaning lawn mower undersides.
 2. The 15° chiseling nozzle. While using this nozzle, the spray should be directed at a 45° angle to the surface and used like a scraper to remove paint, grease and dirt.
 3. The 25° nozzle. This nozzle is best suited for flushing dirt, mud and grime. Works ideally for wet-sweeping leaves from curbs and driveways, cleaning stable floors, washing swimming pool bottoms and degreasing engines.
 4. The 40° nozzle. This is a wash nozzle. Its wide spray pattern dispenses water over a large area and is recommended for rinsing and moderate washing. Use this nozzle to safely clean windows, vehicles, patio and roofs.
 5. The 65° low pressure/rinsing nozzle. The wide spray pattern distributed by this nozzle thoroughly applies detergent or effectively rinses large cleaning areas.
2. The rubber hand grip located at the center of the dual lance can be rotated to regulate high and low pressure. (See Figure 3, right.) Since the amp draw drops as the pressure drops, this feature is advantageous when using in a low amperage environment.

ATTIRE:

1. Proper attire is essential to your safety. It is advised to utilize whatever means necessary to protect eyes, ears, and skin. Additional safety attire (such as a respiratory mask) may be required when using detergent cleaning agents with this washer.

END OF PREPARATION INSTRUCTIONS

WARNING

**THE FOLLOWING PAGES CONTAIN OPERATING AND
MAINTENANCE INSTRUCTIONS**

**DO NOT ATTEMPT TO OPERATE THIS PRESSURE
WASHER UNTIL YOU HAVE READ AND UNDERSTOOD
ALL SAFETY PRECAUTIONS AND INSTRUCTIONS
LISTED IN THIS MANUAL.**

**INCORRECT OPERATION OF THIS UNIT CAN CAUSE
SERIOUS INJURY!!**

**DO NOT ALTER OR MODIFY THIS EQUIPMENT
IN ANY MANNER!**

OPERATING INSTRUCTIONS

PRIMING THE PUMP/START-UP:

1. Ensure all connections are secure. (NOTE: The trigger gun should NOT be connected to the high pressure hose at this time.) Turn on the water supply.
2. Point the high pressure discharge hose away from yourself or anyone else.
3. Move the pump switch located on the motor/control panel, to the "ON" or "PUMP" position. Water will begin flowing from the high pressure discharge hose which allows the unit to prime and purge any air from the system. (NOTE: Unit is primed when water flow is uninterrupted by air.)
4. Move the pump switch to the "OFF" position. Ensure trigger gun is locked in the "OFF" position and securely quick connect the gun/lance assembly to the high pressure hose.
5. Point the trigger gun away from yourself or anyone else and adjust to the low pressure mode by rotating the rubber grip on the lance counter-clockwise.
6. Move the pump switch located on the motor/control panel, to the "ON" or "PUMP" position. Disengage the safety lock-off on the gun and brace yourself. Squeeze the trigger to allow water to exit the dual lance.

At this point the unit is operating as a cold water pressure washer. It can be used very effectively in many applications where hot water is unnecessary. It is recommended the operator spend a few minutes "getting the feel" of the gun and wand assembly. Experiment to find the most comfortable way to hold the gun and wand. Trigger the gun several times and try adjusting the pressure mode from high to low by rotating the grip on the dual lance. Instructions for detergent application are outlined on page 11.

BURNER START-UP:

1. Follow the steps outlined above for cold water operation. Once all air is purged from the system, continue holding the trigger gun open in the low pressure mode.
2. Move the Heat/Burner switch located on the motor/control panel to the "ON" or "HEAT" position. On initial start-up, water will begin turning hot in approximately 20 seconds and will reach maximum temperature in approximately 2-1/2 minutes, provided trigger remains squeezed. The burner will stop firing when the trigger is released. NOTE: While spraying, it is normal for the burner to fire intermittently. The thermostat will cause combustion to cease when the temperature of the discharged water exceeds the temperature setting of the thermostat. Combustion will begin again once the water temperature drops below the setting of the thermostat.
3. The thermostat, which is located on the motor/control panel, should be turned completely clockwise for maximum temperature. However, should an application require less heat, simply adjust the knob counter-clockwise to the desired setting.

At this point the unit is operating as a hot water pressure washer. Since part of the dual lance is not insulated, be certain to control the lance using the rubber grip only, to avoid the possibility of burns. Instructions for detergent application are outlined on page 11.

SHUT-DOWN:

IMPORTANT: For safety and mechanical reasons you MUST follow the procedures outlined below.

1. Move the Heat/Burner switch, located on the motor/control panel, to the "OFF" or "PUMP" position.
2. Squeeze trigger and discharge water for a period of three minutes to cool heat exchanger and high pressure hose. (NOTE: Insufficient cool down period of the high pressure hose will cause excessive wear and eventual rupturing of the hose.)
3. Move the pump switch, located on the motor/control panel, to the "OFF" position.
4. Turn off water supply and trigger gun momentarily to relieve pressure.
5. Disconnect and store hoses. Unit should be wiped off and stored in a non-freezing environment.

OPERATING INSTRUCTIONS

CLEANING WITH DETERGENTS UNDER “HIGH” PRESSURE. (DOES NOT APPLY TO HB-1002-0M11)

Refer to “Detergent Cleaning Precautions” on pg. 6 before continuing.

IMPORTANT: This feature is designed for use with Mi-T-M detergents ONLY. Since cleaning solutions travel through the coil/heat exchanger and pump, DO NOT use corrosives as they may cause extensive damage as well as pose a considerable safety hazard. If a stronger chemical i.e. household bleach is required, you must use the low pressure detergent injector accessory “AW-8300-0000” which prevents the chemical from traveling through the pump.

1. Prepare detergent solution according to label directions.
2. Start the unit as directed in the “OPERATION” procedures outlined on the previous pages, and wet the surface to be cleaned.
3. Immerse the strainer of the “high” pressure detergent line into the detergent solution. Make certain the strainer end remains totally immersed in the liquid.
4. Your unit is equipped with either a ball valve or a detergent knob.
 - a. HB-Series: Open the ball valve which is located ahead of the detergent hose.
 - b. HU-Series: Turn the detergent knob on the control panel of the unit to either “A” or “B” detergent.
5. Turn the rubber grip on the dual lance completely clockwise to set in the high pressure mode. (See Figure 4, pg. 8.)
6. Brace yourself and squeeze trigger on gun. In a few minutes a detergent/water mixture will exit the high pressure nozzle. NOTE: Although this feature has been designed primarily for high pressure detergent injection, it can also be used as a “low pressure” injector simply by opening the dual lance valve counter-clockwise, which diverts flow from the high pressure nozzle to the low pressure nozzle.
7. To apply the solution, start spraying the lower portion of the surface being cleaned and move up, using long overlapping strokes. Applying from the bottom up helps avoid streaking.
8. To rinse, turn the detergent valve to the fully closed position. It takes approximately 30 seconds to purge all detergent from the line.
9. For best rinsing results, start at the top and work down.
10. It is always recommended that a gallon of water be siphoned through the high pressure injection system after each use. This prevents the possibility of corrosion or detergent residue causing mechanical problems during the next use.

IMPORTANT: The pump will lose its prime if one of the following occur:

1. The ball valve/detergent knob is kept in the “ON” position, when not using detergent.
2. The strainer is not totally submerged in solution when using detergent.

When the pump loses its prime, it can result in intermittent or no spray discharge at the nozzle, low pressure spray, and/or a “rattling” noise in the pump. This condition is called cavitation and will damage the pump over an extended time period.

STORAGE & MAINTENANCE

GENERAL MAINTENANCE GUIDELINES

1. There is a water screen at the water intake on the unit. It should be inspected, removed and cleaned as necessary or after every 20 hours of use. (See "Water Strainer Cleaning" pg. 13, item 1.)
2. ALWAYS be certain the unit is receiving proper voltage. Mi-T-M DOES NOT RECOMMEND THE USE OF EXTENSION CORDS! If the use of an extension cord is required consult your dealer. Be certain the cord is equipped with the appropriate ground prong plug to insure proper grounding. DO NOT allow electrical cords or connections to lay in water or in such a position where water could come in contact with them. (Refer to pg. 4.)
3. ALWAYS follow the "Shut-down" procedures outlined in the "OPERATION" section of this manual.
4. DO NOT allow unit to operate in bypass mode (with trigger closed) for more than three minutes without triggering the gun. Failure to follow this simple rule can cause premature failure of pump packings, resulting in costly pump repair.
5. DO NOT allow pump to run dry (without incoming water line attached and turned all the way on).
6. Promptly eliminate any leaks found in the pumping system by removing suspect parts, applying thread sealant to the threads and reinstalling. NOTE: If using teflon tape, be certain no tape gets inside any plumbing to prevent the possibility of a plugged spray nozzle.
7. Upon finishing the use of the detergent, be certain to run a gallon of clean water through the injection line to flush out any possibly corrosive agents as well as to prevent the possibility of detergent residue impairing any working parts. Clean the detergent strainer(s) after each use to insure proper operation for the next job.
8. Use only a good quality, clean No. 1 or No. 2 fuel oil/diesel or kerosene.
9. Have the screen in the fuel pump on the burner inspected and/or replaced at least once yearly.
10. DO NOT store the machine in a freezing environment. This can cause the coil/heat exchanger to rupture and "lock-up" conditions in the water pump. NEVER pour hot water on a frozen pump. A temperature change greater than 150°F can cause damage to the pump. If storage in freezing conditions is necessary, follow the winterizing procedures on page 14.
11. NEVER spray water directly into the unit or store the unit outdoors where it can be exposed to rain or other adverse weather conditions.
12. If the mineral content of the incoming water supply is high, it is recommended that a water softener be installed to avoid the accumulation of mineral deposits in the coil/heat exchanger. If this is not possible, it will be necessary to "descale" the coil occasionally. Consult your Mi-T-M dealer.
13. Due to the unknown and often corrosive characteristics of many detergents commonly used in the pressure washer cleaning industry, it is recommended to use only Mi-T-M detergents with this unit.

STORAGE & MAINTENANCE

SPECIFIC MAINTENANCE

1. **WATER STRAINER CLEANING:** Periodic cleaning of the water strainer is one easy way to prevent pump problems. As a strainer becomes obstructed it restricts proper flow of water to the pump. This can result in cavitation which will cause premature failure of pump packings. Using a small screw driver, remove screen and clean.
2. **QUICK COUPLERS:** There is an o-ring seal inside the female quick coupler which will deteriorate or be blown out occasionally. This may occur if the machine is allowed to pump without the hose or nozzle attached. Simply insert a replacement o-ring to correct the leak. Additional o-rings can be purchased from your dealer.
3. **HOSE:** Inspect high pressure hoses daily for signs of wear. If evidence of failure exists, promptly replace all suspect hoses to prevent the possibility of injury from high pressure spray.
4. **NOZZLES:** Water flow through the spray nozzle will erode the orifice, making it larger, resulting in a pressure loss. Nozzles should be replaced whenever pressure is less than 85% of maximum. The frequency of replacement will depend upon such variables as mineral content in water and number of hours being used.

DAILY INSPECTION PROCEDURES

Before starting the unit and after it is started check the following:

- Check oil level in pump.
- Inspect inlet water strainer.
- Inspect for system water leaks.
- Inspect for oil leaks.
- Inspect for fuel leaks.
- Inspect high pressure hoses for kinking, cuts and leaks.
- Inspect all electrical cords for cuts or breaks in covering.

DEALER MAINTENANCE

Your Mi-T-M dealer is qualified to perform the following maintenance procedures outlined below. Contract with him to service your pressure washer at least once every three months. Cost is minimal, and a small investment in preventative maintenance will add countless hours to the life of your power washer.

PROCEDURE	3 months	6 months	9 months	12 months
Pump oil change*	•			
Replace fuel filter		•		
Test water nozzles	•			
Replace fuel oil nozzle				•
Fuel pump filter inspection				•
Hose inspection	•			
Belt tension adjustment (for units with belts)	•			
Leak inspection	•			
Test voltage and amp draw	•			
Water pressure test	•			
Oil pressure test	•			
Burner inspection test	•			
Water temperature test	•			
Descale the coil**				•

*The pump oil must be changed after the first 50 hours of operation and every 250 hours, or three months, whichever comes first. (Use SAE 20 or 30 and fill only to the dot on the sight glass.)

**Scale build-up will vary with mineral content in water and amount of usage. Descaling can range from monthly to yearly maintenance.

STORAGE & MAINTENANCE

WINTERIZING

For transportation and storage purposes in sub-freezing weather conditions it will be necessary to “winterize” this unit. Following the instructions below can prevent costly repairs due to freeze damage. This unit should be protected to at least 0° F.

GATHER THE FOLLOWING ITEMS:

1. 5 gallon bucket
2. 1 gallon automotive antifreeze (ethylene glycol)
3. 1 gallon water
4. 3-1/2 foot (minimum 1/2 inch I.D.) hose with male garden hose end.
5. Long neck (transmission) funnel (for all models except HB-1002-0M11 & HU-1002-0M12).

PROCEDURES: **For HB-1002-0M11 and HU-1002-0M12:**

1. Mix antifreeze & water in 5 gallon bucket. NOTE: Proper winterizing is based on a 50/50 mixture of water & antifreeze. DO NOT use undiluted antifreeze for winterizing purposes.
2. Disconnect water supply hose from intake, attach short hose securely and submerge end into antifreeze solution
3. Squeeze the trigger gun to release any trapped pressure. Disconnect the hose from the gun, and hold the hose back into the bucket.
4. Turn motor switch on for 60 seconds or until antifreeze solution exits the hose. (Antifreeze solution will suds up.)
5. Remove inlet hose from the antifreeze. Continue running unit until “sputtering” occurs from the outlet hose.
6. Turn unit off. Drain and store hose gun and wand with the unit.

PROCEDURES: **For all other models:**

1. For HB-Series: Remove lid from float tank and ensure float tank is empty.
For HU-Series: Turn on pump switch and squeeze trigger gun until float tank is empty. (Water pressure will drop and water flow will begin sputtering.) Turn pump switch off. Pump should not run for an extended period of time without water in the float tank!
2. Mix the antifreeze and water in a container that can be used for pouring the solution into the float tank. NOTE: Proper winterizing is based on a 50/50 mixture of water & antifreeze. DO NOT use undiluted antifreeze for winterizing purposes.
3. FOR HB-Series: Pour the 50/50 mixture into the float tank.
FOR HU-Series: Remove the antifreeze plug located on the control panel and insert the long neck funnel. Slowly pour the 50/50 mixture into the funnel.
4. Squeeze the trigger gun to release any trapped pressure. Disconnect the hose from the gun, and hold the hose into the 5 gallon bucket.
5. Turn motor switch on for 60 seconds or until antifreeze solution exits the hose. (Antifreeze solution will suds up.) Continue running until float tank is near empty.
6. Turn unit off. Drain and store hose, gun and wand with the unit.

TROUBLESHOOTING

PROBLEM	CAUSE	REMEDY
Pump motor will not run. <u>motor.</u>	Circuit Overload.	Check wall breaker or fuse.
	GFCI tripped.	Reset.
	Motor overload.	Reset thermal overload button on pump
Pump runs but there is no spray.	Water turned off.	Check incoming water supply.
	Obstruction in nozzle.	Clean or replace.
	High pressure detergent valve is open without the end of the hose inserted into detergent (causes vacuum leak and eliminates prime).	Close valve or submerge detergent hose into solution. Reprime pump. Or consult Mi-T-M service dealer.
Pump runs but has low spray pressure. installed	Inadequate incoming water supply.	Increase hose diameter and provide sufficient water supply.
	Dual lance valve is open.	Dual lance valve must be closed and high pressure nozzle must be for maximum operating pressure.
	Wrong orifice size or worn high pressure nozzle.	Replace with correct or new nozzle.
	“HIGH PRESSURE “ spray nozzle not installed. (HU-Series only.)	Install “HIGH PRESSURE” nozzle. Or consult Mi-T-M service dealer.
Pump runs but there is erratic, fluctuating pressure; hose pulsates.	Not enough water is supplied.	Ensure water supply is turned all the way on.
	Inlet strainer is clogged.	Clean strainer screen.
	Air entering water lines.	Check all incoming hose connections for water-tight seals. Make certain detergent valve is closed. Or consult Mi-T-M service dealer.
Burner motor will not run, or will not heat	Motor overload.	Reset thermal overload button on burner motor.
	Switch not in “HEAT/BURNER” position.	Check switch position.
	Out of fuel.	Refuel.
Burner discharges black smoke.		Shut off machine and consult Mi-T-M service dealer.
Detergent will not siphon into “high pressure” injection line.	Strainer obstructed or not submerged in solution.	Check screen on strainer, submerge in solution.
	In line ball valve/detergent knob closed or obstructed.	Check valve knob position. Clean if necessary.
	Detergent hose cut or kinked.	Inspect hose, replace as necessary. Or consult Mi-T-M service dealer.

