



OPERATOR'S MANUAL FOR
HSE-SERIES
HOT WATER
PRESSURE WASHERS



C US
201473

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!

TABLE OF CONTENTS

INTRODUCTION	3
IMPORTANT SAFETY WARNINGS	4-7
RISK OF ELECTRIC SHOCK OR ELECTROCUTION	4
RISK OF EXPLOSION OR FIRE	5
RISK OF ASPHYXIATION	5
RISK OF INJECTION OR SEVERE CUTTING INJURY	6
RISK OF BURNS	6
RISK OF BURSTING	6
RISK FROM MOVING PARTS	6
RISK OF BODILY INJURY	7
FEATURES	8-11
HSE-SMALL FRAME	8-9
HSE-LARGE FRAME	10-11
INSTALLATION & PREPARATION	12-15
ATTIRE	12
SETUP	12
POWER CORD CONNECTION	12-13
BURNER FUEL TANK	13
ADJUSTABLE PRESSURE DUAL LANCE	14
DUAL LANCE CONNECTION	14
WATER SUPPLY	14
UNLOADER	15
HEAT DUMP VALVE	15
PRE-START INSPECTION PROCEDURES	15
NOTES	16
OPERATING INSTRUCTIONS	18-20
FLUSHING THE SYSTEM	18
START-UP/COLD WATER OPERATION	18
HOT WATER OPERATION	19
STEAM OPERATION	19
CLEANING WITH DETERGENTS	19
SHUTDOWN	20
STORAGE & MAINTENANCE	20-21
SPECIFIC MAINTENANCE	20
WINTERIZING	21
TROUBLESHOOTING	22-24
MAINTENANCE CHART	25
ACCESSORIES	26
OPTIONS	27
STATEMENT OF WARRANTY	28

INTRODUCTION

Congratulations on the purchase of your new Mi-T-M HSE-Series 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.

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 that 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

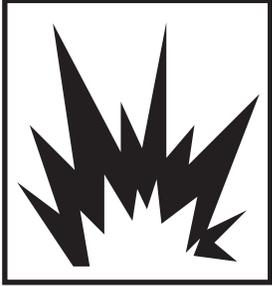
IMPORTANT SAFETY INSTRUCTIONS

WARNING: When using this product, basic precautions should always be observed, including the following:
READ ALL SAFETY WARNINGS BEFORE USING PRESSURE WASHER

HAZARD	POTENTIAL CONSEQUENCE	PREVENTION
<p style="text-align: center;">RISK OF ELECTRIC SHOCK OR ELECTROCUTION</p> <div style="text-align: center;">  </div>	<p>Serious injury or death could occur if the pressure washer is not properly grounded. Your pressure washer is powered by electricity and may cause electric shock or electrocution if not used properly.</p> <p>Electrical shock may occur from electrical cord.</p> <p>Electrical shock may occur if pressure washer is not operated properly.</p> <p>Serious injury or death may occur if electrical repairs are attempted by unqualified persons.</p>	<p>This product must be grounded. Make sure the pressure washer is equipped with a GFCI built into the power supply cord. If this is not available, the pressure washer must be plugged into a receptacle that is protected by a GFCI. Disconnect when not in use.</p> <p>If your unit is equipped with a GFCI, DO NOT drop the GFCI as damage could result. If the GFCI is accidentally dropped, be certain to test the GFCI before using to ensure it is working properly. (Follow instructions on GFCI for test procedures.)</p> <p>Always be certain the unit is receiving proper voltage. Before plugging the unit into a compatible power source, be certain the switch is in the "OFF" position. Disconnect when not in use.</p> <p>Do not modify plug provided with the product. If it will not fit the outlet, have a proper outlet installed by a qualified electrician. Do not use any type of adapter.</p> <p>Check power cord for signs of crushing, cutting or heat damage. If replacement of plug or cord is needed, use only identical replacement parts.</p> <p>Do not use extension cords with this pressure washer.</p> <p>Keep all connections dry and off the ground. Do not allow electrical cords to lay in water or in such a position where water could come in contact with them. Do not touch plug with wet hands.</p> <p>Do not pull on the electrical cord to disconnect from the outlet.</p> <p>Do not direct spray on or into electrical installations of any kind! This includes electrical outlets, light bulbs, fuse boxes, transformers, the unit itself, etc.</p> <p>Do not allow metal components of the pressure washer to come in contact with live electrical components.</p> <p>Never operate the pressure washer with safety guards/covers removed or damaged.</p> <p>Any electrical wiring or repairs performed on this pressure washer should be done by Authorized Service Personnel in accordance with National and Local electrical codes.</p> <p>Before opening any electrical enclosure, always shut off the pressure washer, relieve pressure and unplug the pressure washer from the power source. Allow the pressure washer to cool down. Never assume the pressure washer is safe to work on just because it is not operating. It could restart at any time! Service in a clean, dry, flat area.</p>

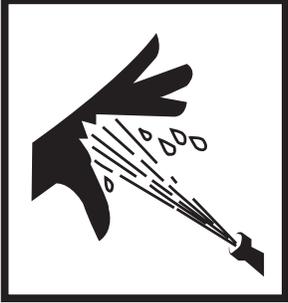
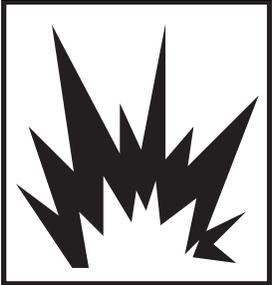
IMPORTANT SAFETY INSTRUCTIONS

READ ALL SAFETY WARNINGS BEFORE USING PRESSURE WASHER

HAZARD	POTENTIAL CONSEQUENCE	PREVENTION
<p style="text-align: center;">RISK OF EXPLOSION OR FIRE</p> <div style="text-align: center;">   </div>	<p>Serious injury or death may occur from normal sparks in the multiple ignition sources or burner exhaust.</p> <p>Serious injury or death may occur as a result of improper fueling.</p> <p>Serious injury or death may occur if system safety's are not properly maintained.</p>	<p>Always operate pressure washer in a well ventilated area free of flammable vapors, combustible dust, gases or other combustible materials.</p> <p>Do not store the pressure washer near an open flame or any equipment such as a stove, furnace, water heater, etc., which utilizes a pilot light or sparking device.</p> <p>Do not use this pressure washer to spray flammable material!</p> <p>Do not smoke while filling burner fuel tank.</p> <p>Never fill the burner fuel tank while the pressure washer is running or hot. Allow to cool two minutes before refueling.</p> <p>Do not refuel indoors or in a poorly ventilated area.</p> <p>Always refuel slowly to avoid the possibility of spilled fuel which may cause a risk of fire.</p> <p>Burner Fuel Tank: Use No. 1 or No. 2 fuel oil/diesel or kerosene. Do not use gasoline.</p> <p>Do not operate the unit if diesel fuel is spilled. Wipe the pressure washer clean and move it away from the spill. Avoid creating any ignition until the diesel fuel has evaporated.</p> <p>This pressure washer has a Safety Relief device which should never be altered, modified, removed or made inoperative. If the device fails, replace immediately with only genuine manufacturer replacement part.</p>
<p style="text-align: center;">RISK OF ASPHYXIATION</p> <div style="text-align: center;">  </div>	<p>Serious injury or death may occur from inhaling burner exhaust or dangerous vapors.</p>	<p>Never operate this pressure washer in an enclosed area. Always make certain there is adequate ventilation (fresh outside air) for breathing and combustion. This will prevent the buildup of dangerous carbon monoxide gases. Beware of poorly ventilated areas, or areas with exhaust fans which can cause poor air exchange.</p> <p>Follow all safety instructions provided with the materials you are spraying. Use of a respirator may be required when working with some materials. Do not use this pressure washer to dispense hazardous detergents.</p>

IMPORTANT SAFETY INSTRUCTIONS

READ ALL SAFETY WARNINGS BEFORE USING PRESSURE WASHER

HAZARD	POTENTIAL CONSEQUENCE	PREVENTION
<p style="text-align: center;">RISK OF INJECTION OR SEVERE CUTTING INJURY</p> 	<p>Serious injury or death could occur from high pressure spray penetrating the skin.</p>	<p>Keep clear of nozzle and spray! Never put your hand, fingers or body directly over the spray nozzle.</p> <p>Never point the high pressure discharge spray at yourself or anyone else.</p> <p>This product is to be used only by trained operators.</p> <p>Always keep operating area clear of all persons.</p> <p>DO NOT allow children to operate this unit.</p> <p>SEEK EMERGENCY MEDICAL CARE if the spray appears to have penetrated the skin! DO NOT TREAT AS A SIMPLE CUT!!</p> <p>High pressure hoses and fuel lines should be inspected daily for signs of wear. If evidence of failure exists, promptly replace all suspect hoses and fuel lines to prevent the possibility of injury from the high pressure spray. If a hose or fitting is leaking, NEVER PLACE YOUR HAND DIRECTLY ON THE LEAK.</p> <p>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.</p> <p>Before removing the spray nozzle or servicing the unit, ALWAYS shut off the unit and trigger the gun to release trapped pressure. (Even after you shut off the unit, there is high pressure water left in the pump, hose and gun until you release it by triggering the gun.)</p>
<p style="text-align: center;">RISK OF BURNS</p> 	<p>Serious injury may occur from touching the heat exchanger. This area can remain hot for some time after the pressure washer is shutdown.</p>	<p>Never allow any part of your body to contact the heat exchanger.</p> <p>Do not leave unit unattended after shutdown until it is completely cooled down as described in the "SHUTDOWN" procedures listed on page 20 of this manual.</p>
<p style="text-align: center;">RISK OF BURSTING</p> 	<p>Serious injury may occur from a pressure washer malfunction or exploding accessories if incorrect system components, attachments or accessories are used.</p> <p>Serious injury or death may occur if attempting to start the pressure washer when the pump is frozen.</p>	<p>Never make adjustments to the factory set pressures.</p> <p>Never exceed manufacturers maximum allowable pressure rating of attachments.</p> <p>Do not allow any hoses to make contact with heat exchanger to prevent the possibility of bursting. Avoid dragging the hoses over abrasive surfaces such as cement.</p> <p>Use only manufacturer recommended repair parts for your pressure washer.</p> <p>In freezing temperatures, the unit must always be warm enough to ensure there is no ice formation in the pump. Do not start the pressure washer if it has been transported in an open or underheated vehicle without first allowing the pump to thaw.</p>
<p style="text-align: center;">RISK FROM MOVING PARTS</p> 	<p>Serious injury may occur to the operator from moving parts on the pressure washer.</p>	<p>Never make adjustments to the unit while it is connected to the power source.</p> <p>Do not operate the unit without all protective covers in place.</p> <p>Follow the maintenance instructions specified in the manual.</p>

IMPORTANT SAFETY INSTRUCTIONS

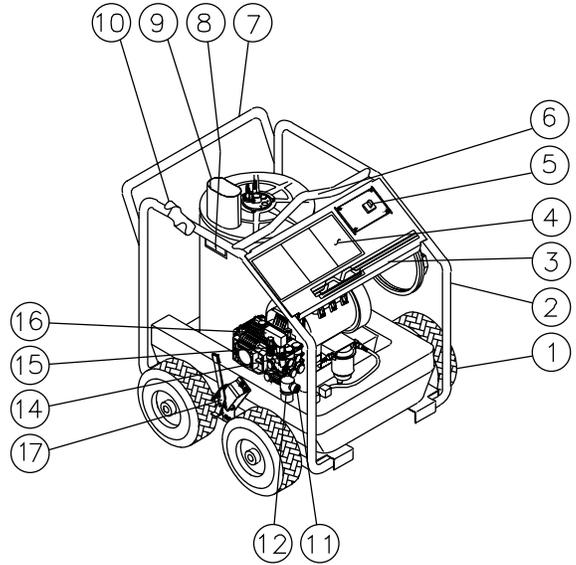
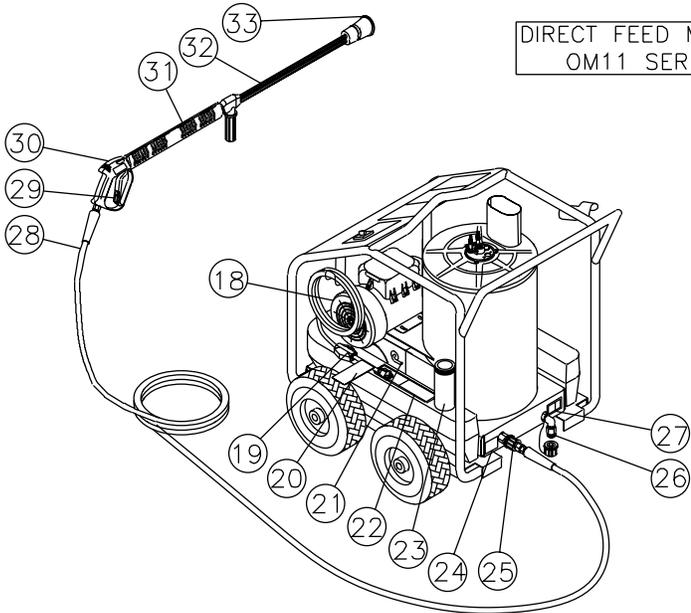
READ ALL SAFETY WARNINGS BEFORE USING PRESSURE WASHER

HAZARD	POTENTIAL CONSEQUENCE	PREVENTION
<p style="text-align: center;">RISK OF BODILY INJURY</p> <div style="text-align: center;">  </div>	<p>Serious injury or death may occur from detergents contacting the skin.</p> <p>Serious injury can occur from loose debris being propelled at a high speed from the spray gun.</p> <p>Injury may occur if the operator loses his balance caused by the thrust of water traveling through the spray nozzle.</p> <p>Injury may occur from the pressure washer.</p>	<p>SEEK EMERGENCY MEDICAL CARE if you are using cleaning agents and the spray appears to have penetrated the skin! DO NOT TREAT AS A SIMPLE CUT! Be prepared to tell a physician exactly what kind of detergents you were using by reading the Material Safety Data Sheet (MSDS) provided with your detergent.</p> <p>Never use any solvents or highly corrosive detergents or acid type cleaners with this pressure washer.</p> <p>Protective equipment such as rubber suits, gloves and respirators are advisable, especially when using cleaning detergents.</p> <p>Keep all detergents out of the reach of children!</p> <p>ALWAYS wear protective goggles when operating the unit to shield the eyes from flying debris and detergents.</p> <p>DO NOT direct spray toward fragile materials such as glass for shattering could occur.</p> <p>If the pressure washer is equipped with an Auto start/stop feature, the unit will shutdown until the gun is triggered. To prevent accidental high pressure discharge, do not leave unit unattended while in this mode.</p> <p>Stay alert-watch what you are doing. Do not operate the unit when fatigued or under the influence of alcohol or drugs.</p> <p>NEVER squeeze the trigger unless securely braced.</p> <p>DO NOT overreach or stand on unstable support.</p> <p>Wet surfaces can be slippery, wear protective foot gear and keep good footing and balance at all times.</p> <p>NEVER trigger the gun while on a ladder or roof.</p> <p>ALWAYS hold on firmly to the gun/lance assembly when starting and operating the unit. Failure to do so can cause the lance to fall and whip dangerously.</p> <p>Know how to stop the pressure washer and bleed pressures quickly. Be thoroughly familiar with controls.</p> <p>DO NOT leave pressurized unit unattended. Shut off the pressure washer and release trapped pressure before leaving.</p> <p>DO NOT operate the unit if you see any fuel, oil or water leaks from the machine. DO NOT resume operation until the unit has been inspected and repaired by a qualified service person.</p> <p>Place unit in a clean, dry, flat area for servicing. Before servicing the unit: turn the unit off, relieve the water pressure from the trigger gun, and allow the unit to cool down. Service in clean, dry, flat area. If applicable, block wheels to prevent unit from moving.</p> <p>Do not move the unit by pulling on the hose.</p>

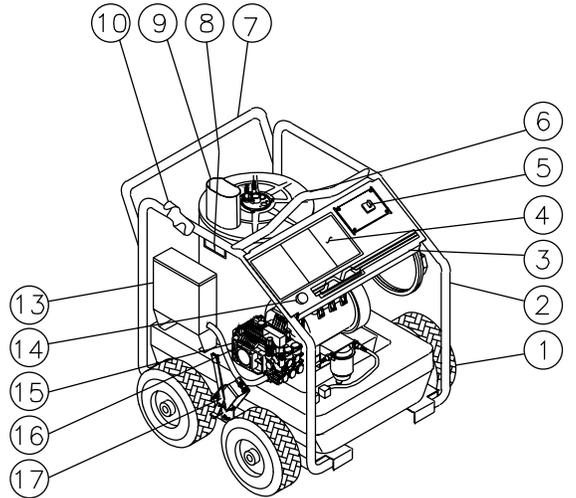
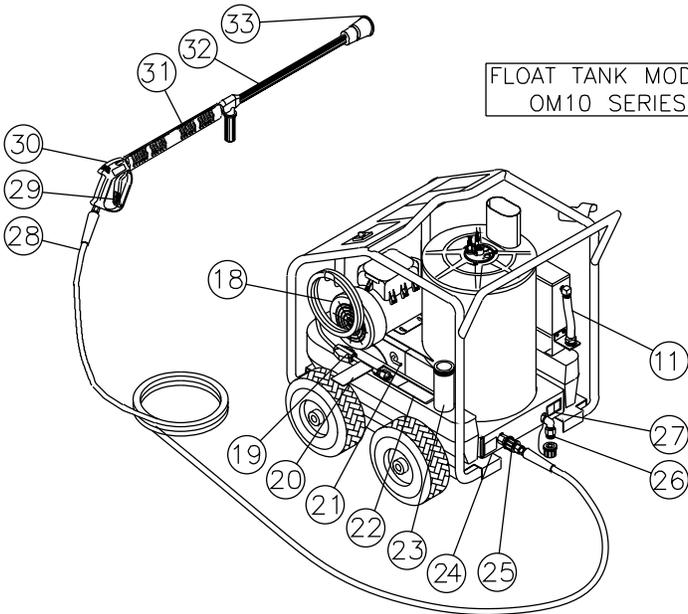

!SAVE THESE INSTRUCTIONS!


HSE-SMALL FRAME FEATURES

DIRECT FEED MODELS
OM11 SERIES



FLOAT TANK MODELS
OM10 SERIES



0MHSE001-113000-KS

FEATURES LISTING

1. Pneumatic Wheels
2. Protective Rollcage
3. Control Panel
4. Decal-Warning/Caution/Operation (E/S)
5. Switch-Off/Pump/Burner (Steam Optional)
6. Center Balanced Lifting Eye
7. Convenient Push/Pull Handle
8. Decal-Warning: Hot (E/S)
9. Heat Exchanger Exhaust
10. Wand Holder
11. Water Inlet
12. Water Strainer w/Bowl Type Filter
13. Water Float Tank
14. Detergent Metering Valve
15. Low Pressure (Direct Feed)
High Pressure (Float Tank)
High Pressure Pump w/Unloader
16. Pressure Switch
17. Brake
18. TEFC Pump Motor
19. Electric Cord w/GFCI
20. Decal- Hang Tag (E/S)
21. Burner Air Regulation
22. Decal-Caution: Risk of Fire (E/S)
23. Burner Fuel Tank
24. Decal- Data Plate
25. High Pressure Outlet
26. Coil Drain Plug
27. Decal-Warning: Risk of Explosion (E/S)
28. High Pressure Hose
29. Trigger Safety Lock
30. Trigger Gun
31. Insulated Lance
32. Adjustable Pressure Dual Lance
33. Nozzle

SPECIFIC UNIT INFORMATION

BODY/FRAME: One piece, welded construction, full roll cage with solid steel axles, lifting hook and convenient push/pull handle.

PORTABILITY: Four pneumatic tires for easy mobility.

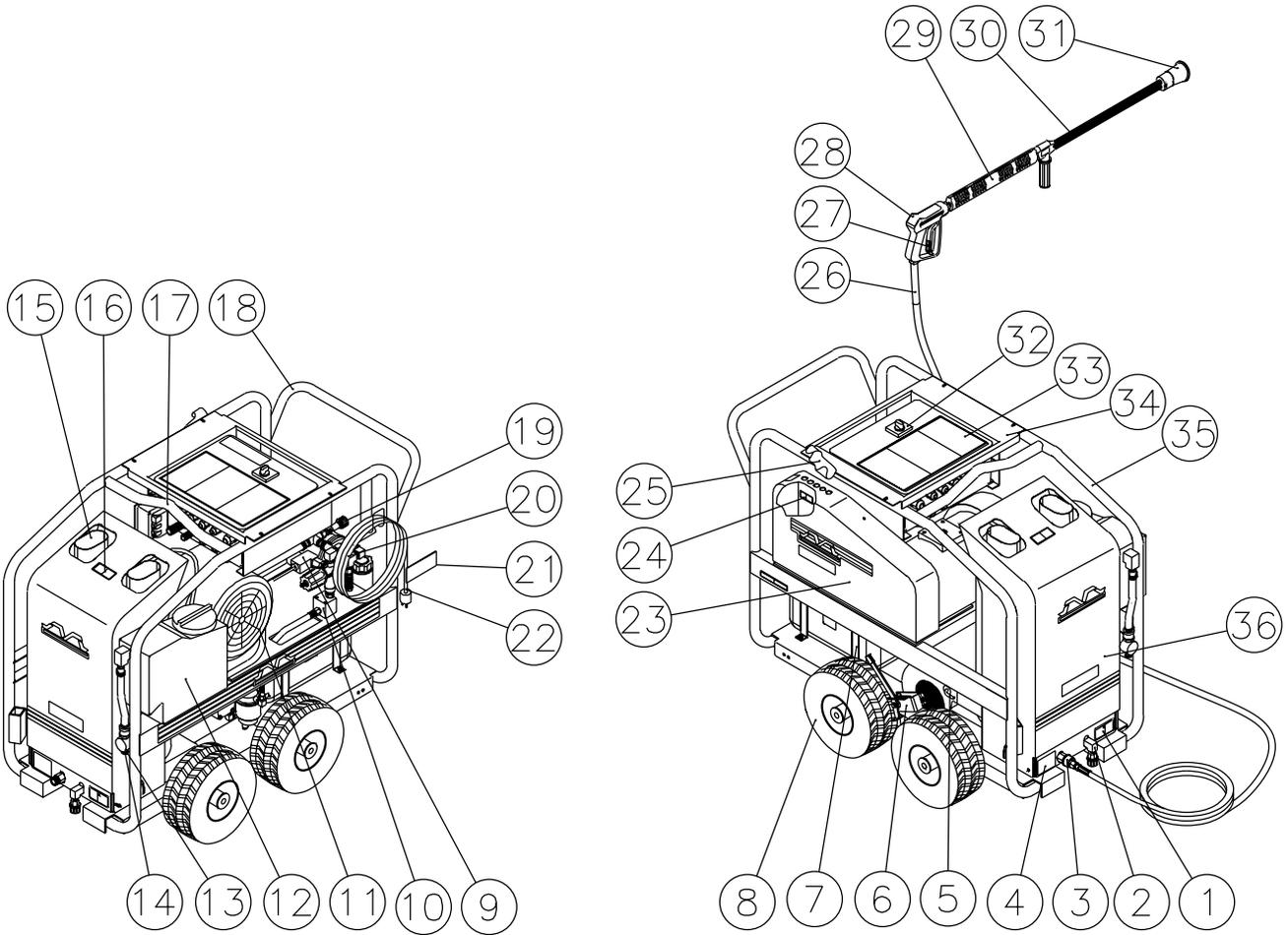
FINISH: Powder coated

HIGH PRESSURE HOSE: 3/8" x 50'

TRIGGER GUN ASSEMBLY: Trigger controlled, safety lockoff, insulated lance.

DUAL LANCE: Insulated, with adjustable pressure.

HSE-LARGE FRAME FEATURES



0MHSE015-120100-KS

FEATURES LISTING

1. Decal- Warning: Risk of Explosion (E/S)
2. Coil Drain
3. High Pressure Outlet
4. Data Plate
5. Burner Air Regulation
6. Brake
7. Burner Fuel Tank
8. Pneumatic Wheels
9. Pressure Switch
10. High Pressure Hose w/Unloader
11. TEFC Pump Motor
12. Water Float Tank
13. Water Strainer w/Bowl
14. Water Inlet
15. Heat Exchanger Exhaust
16. Decal- Warning: Hot (E/S)
17. Center Balance Lift Eye
18. Convenient Push/Pull Handle
19. Detergent Metering Valve
20. Decal- Caution: Risk of Fire (E/S)
21. Decal- Hang Tag (E/S)
22. Electric Cord
23. Beltguard
24. Decal- Warning: Beltguard in Place (E/S)
25. Wand Holder
26. High Pressure Hose
27. Trigger Safety Lock
28. Trigger Gun
29. Insulated Lance
30. Adjustable Pressure Dual Lance
31. Nozzle
32. Switch (On/Off/Burner)
33. Decal- Warning/Caution/Operation (E/S)
34. Control Panel
35. Protective Roll Cage
36. Protective Cover Assembly

SPECIFIC UNIT INFORMATION

BODY/FRAME: One piece, welded construction, full roll cage with solid steel axles, lifting hook and convenient push/pull handle.

PORTABILITY: Four pneumatic four-ply tires for easy mobility.

FINISH: Powder coated

HIGH PRESSURE HOSE: 3/8" x 50'

TRIGGER GUN ASSEMBLY: Trigger controlled, safety lockoff, insulated lance.

DUAL LANCE: Insulated, with adjustable pressure.

INSTALLATION & PREPARATION



ATTIRE:

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 respiratory mask) may be required when using detergent cleaning agents with this washer.



DANGER

RISK OF EXPLOSION OR FIRE!
DO NOT PLACE UNIT IN AN AREA WHERE FLAMMABLE GAS VAPORS MAY BE PRESENT. A SPARK COULD CAUSE AN EXPLOSION OR FIRE!

RISK OF UNIT BURSTING!
DO NOT STORE/OPERATE UNIT IN FREEZING ENVIRONMENTS!



WARNING

RISK OF ASPHYXIATION!
USE THIS PRODUCT ONLY IN WELL VENTILATED AREAS! DO NOT OPERATE IN AN ENCLOSED AREA. THE EXHAUST CONTAINS CARBON MONOXIDE, A POISONOUS, ODORLESS AND INVISIBLE GAS. BREATHING THIS GAS CAN CAUSE SERIOUS INJURY, ILLNESS & POSSIBLE DEATH.

SET-UP:

1. This unit should only be placed on a level surface to ensure proper lubrication for the water pump while operating. NEVER spray water directly on the unit.
2. Do not use unit in an area:
 - with insufficient ventilation.
 - where there is evidence of oil or fuel leaks.
 - where flammable gas vapors may be present.
3. Engage brake to prevent the unit from moving while operating.
4. Do not allow the unit to be exposed to rain, snow or freezing temperatures. If any part of the unit becomes frozen, excessive pressure may build up in the unit which could cause it to burst resulting in possible serious injury to the operator or bystanders.
5. Pump oil level should be checked before each use. Make certain the oil is on the "Full" mark on the dipstick or in the center of the oil sight glass. If the level appears to be low, fill with Mi-T-M pump oil #AW-4085-0016.



DANGER

RISK OF ELECTROCUTION!

THIS UNIT MUST BE CONNECTED TO A PROPERLY GROUNDED OUTLET. DO NOT USE AN ADAPTER OR REMOVE THE THIRD GROUNDING PRONG.

POWER CORD CONNECTION:

1. Make certain the motor switch is in the "OFF" position.
2. Ensure electrical supply is identical to the specifications listed on the pressure washer data plate.
3. **GROUNDING INSTRUCTIONS:** This product must be grounded. If it should malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.
4. **DANGER:** Improper connection of the equipment-grounding conductor can result in a risk of electrocution. Check with a qualified electrician or service personnel 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. Do not use any type of adaptor with this product.
5. **GROUND FAULT CIRCUIT INTERRUPTER PROTECTION:**
 - a. **SINGLE PHASE:** If this pressure washer is provided with a Ground Fault Circuit Interrupter (GFCI) built into the plug or the power supply cord, test the GFCI each time it is plugged into an outlet according to instructions on the GFCI. DO NOT use the pressure washer if the test fails! The GFCI provides additional protection from the risk of electric shock. Should replacement of the plug or cord become necessary, use only identical replacement parts that include GFCI protection.

CONTINUED

INSTALLATION & PREPARATION

POWER CORD CONNECTION CONT'D.:

5. b. *SINGLE PHASE:* If this pressure washer is not provided with a GFCI, this pressure washer should only be connected to a receptacle that is protected by a Ground Fault Circuit Interrupter (GFCI) to comply with the National Electric Code (NFPA 70) and to provide additional protection from the risk of electric shock.
- c. *THREE PHASE:* These pressure washers are not provided with GFCI protection.
6. **EXTENSION CORDS:** *Mi-T-M DOES NOT RECOMMEND THE USE OF EXTENSION CORDS!* If use of an extension cord is unavoidable, it must be plugged into a GFCI found in circuit boxes or protected receptacles. When using an extension cord, consult a qualified electrician to determine the proper wire gauge needed for the length of the extension cord.
SINGLE PHASE: Use only 3-wire extension cords that have 3-prong grounding-type plugs and 3-pole cord connectors that accept the plug from the product.
THREE PHASE: Use only 4 wire extension cords that have 4-prong grounding type plugs and 4-pole cord connectors that accept the plug from the product.
Use only extension cords that are intended for outdoor use. These extension cords are identified by a marking "Acceptable for use with 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 connect and disconnect the extension cord from the receptacle before connecting and disconnecting the product from the extension cord.
7. Ensure the area between the pressure washer cord and outlet is kept dry.
8. Insert the male plug into a grounded AC outlet. **DO NOT use an adapter OR remove the grounding plug!!**

**WARNING**
RISK OF ELECTROCUTION!
TO REDUCE THE RISK OF ELECTROCUTION, KEEP ALL CONNECTIONS DRY AND OFF THE GROUND. DO NOT TOUCH PLUG WITH WET HANDS.

BURNER FUEL TANK:

1. Review "Risk of Explosion or Fire" pg. 5, before fueling.
2. Locate the Safety Decals on your unit and heed their warnings.
3. Fill the burner fuel tank with good quality, clean No. 1 or No. 2 fuel oil/diesel or kerosene. Do not use gasoline!

**DANGER**
RISK OF FIRE!
-DO NOT SMOKE WHILE FUELING!
-DO NOT FILL THE FUEL TANK WHILE UNIT IS RUNNING OR HOT. ALLOW UNIT TO COOL FOR TWO MINUTES BEFORE REFUELING.
-DO NOT FILL FUEL TANK TO POINT OF OVERFLOWING. ALLOW APPROXIMATELY 1/4" OF TANK SPACE FOR FUEL EXPANSION.

**WARNING**
RISK OF EXPLOSION OR FIRE!
ALWAYS STORE FUEL AWAY FROM THE WASHER WHILE THE UNIT IS RUNNING OR HOT.

INSTALLATION & PREPARATION

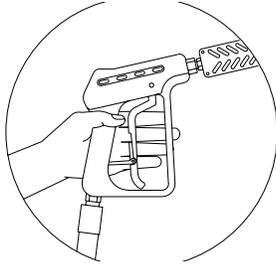


WARNING

RISK OF INJECTION CAUSING SEVERE INJURY!

THE TRIGGER GUN SHOULD ALWAYS BE LOCKED IN THE OFF POSITION WHEN NOT IN USE!

NEVER LOOK DIRECTLY AT THE NOZZLE UNLESS IT IS DISCONNECTED FROM THE TRIGGER GUN/DUAL LANCE ASSEMBLY!

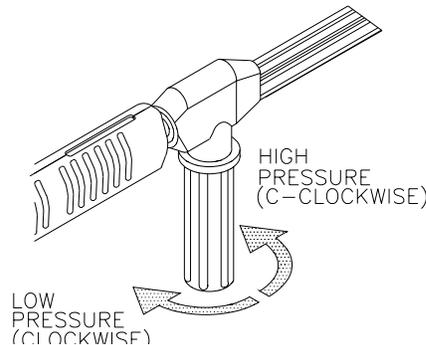


OMGEN323

ADJUSTABLE PRESSURE DUAL LANCE:

This unit features an Adjustable Pressure Dual Lance which allows the user to select a high or low pressure "fan" spray. Simply rotate the adjustable grip on the dual lance to achieve the desired pressure selection.

1. Selection of high pressure can be achieved by turning the adjustable grip on the Dual Lance assembly **counterclockwise** as shown in the figure below.
2. Selection of low pressure can be achieved by turning the adjustable grip on the Dual Lance **clockwise** as shown in the figure below.



OMGEN215

DUAL LANCE CONNECTION:

1. Be certain the trigger gun is locked in the "OFF" position.
2. Connect the dual lance assembly to the trigger gun assembly at this time (if applicable). Be certain the connection is securely tightened.



STRAINER.TIF/D1

WATER SUPPLY:

1. Select a water supply hose which is a quality grade of garden hose measuring at least 3/4" ID and no longer than 50 feet.
2. If your unit is equipped with a water strainer, ensure it is clean and free of any obstructions. Periodic cleaning of the water strainer will help 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.
 - a. Unscrew the strainer bowl from the unit.
 - b. Remove strainer screen and clean or replace.
3. Connect one end of the water supply hose to the water inlet of the unit. Connect the other end of the hose to your pressurized water supply.

NOTE: If there is a high mineral content in your water, it is recommended that a water softener be used to prevent the possibility of excessive scale buildup inside the heat exchanger coil.

4. Follow the incoming water requirements listed below:
 - a. Water pressure must be between a minimum of 20 pounds per square inch (PSI) and a maximum of 125 PSI.
 - b. Incoming GPM must be approximately one gallon more than the outgoing GPM stated on the pressure washer nameplate. (You can check GPM by timing how long it takes to fill a 5 gallon container.)
 - c. Incoming water temperature must not exceed 125°F. Excessive pump damage may result if the water temperature exceeds this acceptable level.
5. Never allow the unit to operate without the incoming water line attached and the water supply completely turned on.

INSTALLATION & PREPARATION

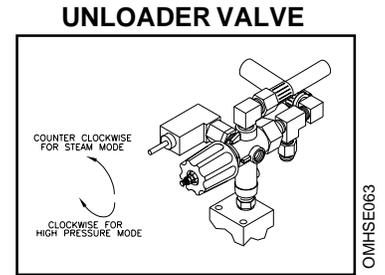
UNLOADER:

Standard Models:

The unloader has been preset at the factory.

Steam Option Models:

The unloader has an adjustment knob which has a minimum/maximum setting. Move the unloader clockwise to the maximum setting for Cold/Hot water operation. Move counterclockwise to minimum setting for Steam operation.



HEAT DUMP VALVE:

To ensure the water temperature does not exceed acceptable levels, never allow the pressure washer to operate in the bypass mode (with the unit running and the trigger closed) for more than three minutes.

A "heat dump valve" has been added to this unit to protect the pump. This valve will open and release water if the water temperature in the pump has exceeded 140° F. This will allow fresh, cool water to enter the system, therefore preventing premature failure of pump packings.

PRE-START INSPECTION PROCEDURES:

Before starting the unit, perform the following procedures:

1. Inspect the electrical cords for cuts. If a cut is found, **DO NOT TOUCH OR USE CORD!** Replace cord before starting unit.
- 2.. Check the oil level in the pump.
3. Inspect the water inlet strainer. Clean or replace if necessary. See "Water Supply", #2, pg 14.
4. Check all hose connections to ensure they are securely tightened.
5. Inspect for system water leaks, oil leaks and fuel leaks. If a fuel leak is found, **DO NOT START UNIT!** See "Risk of Explosion or Fire", pg. 5. Be sure that all damaged parts are replaced and that the mechanical problems are corrected prior to operation of the unit. If you require service, contact Customer Service.
6. Inspect high pressure hoses for kinking, cuts and leaks. If a cut or leak is found, **DO NOT USE HOSE!** Replace hose before starting unit. See "Risk of Injection or Severe Cutting Injury", pg. 7. Be sure that all damaged parts are replaced and that the mechanical problems are corrected prior to operation of the unit. If you require service, contact Customer Service.

END OF PREPARATION INSTRUCTIONS

NOTES

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



CAUTION

RISK OF UNIT DAMAGE.

BE CERTAIN THE HOSE, GUN & DUAL LANCE ASSY. ARE NOT CONNECTED TO THE UNIT WHILE FLUSHING THE SYSTEM. FLUSHING ALLOWS MINERAL DEPOSITS TO BE RELEASED FROM THE SYSTEM WHICH WOULD OBSTRUCT OR DAMAGE THE GUN AND NOZZLE ASSEMBLY RESULTING IN COSTLY REPAIRS.

FLUSHING THE SYSTEM:

This unit has a steel coil which, after setting, will cause the water remaining in the coil from the previous usage to turn brown or black. This water must be flushed from the system before start-up. This procedure should be performed **without** the high pressure hose, gun and dual lance assembly installed.

DIRECT FEED MODELS:

1. Turn on the water supply.
2. Low pressure water will begin flowing from the water outlet. This allows the unit to flush any particles from the system. The unit is flushed when the water is clear.
3. Once the system is flushed, turn off the water supply and connect the high pressure hose to the water outlet of the unit.
4. Connect the trigger gun and dual lance assembly to the high pressure hose.
5. Turn on the water supply.

FLOAT TANK MODELS:

1. Turn on the water supply.
2. Move the switch to the "Pump" position. Low pressure water will begin flowing from the water outlet. This allows the unit to flush any particles from the system. The unit is flushed when the water is clear.
3. Once the system is flushed, move the switch to the "OFF" position and connect the high pressure hose to the water outlet of the unit.
4. Connect the trigger gun and dual lance assembly to the high pressure hose.



DANGER

RISK OF INJECTION CAUSING SEVERE INJURY!

-KEEP CLEAR OF NOZZLE! NEVER PLACE HAND OR FINGERS IN FRONT OF NOZZLE!

-DO NOT DIRECT DISCHARGE STREAM AT PEOPLE OR PETS!

-AUTO START/STOP FEATURE WILL SHUTDOWN THE PRESSURE WASHER UNTIL GUN IS TRIGGERED. TO PREVENT ACCIDENTAL HIGH PRESSURE DISCHARGE, DO NOT LEAVE UNIT UNATTENDED WHILE IN THIS MODE.

START-UP/COLD WATER OPERATION:

1. Refer to the "Safety Precautions" pgs. 4-7 before starting the unit.
2. Locate the Safety Decals on your unit and heed their warnings.
3. Ensure that the Switch is in the "OFF" position.
4. Pointing the trigger gun in a safe direction, unlock the trigger gun and squeeze the trigger. Brace yourself for possible gun kickback when the pump starts.
5. Move the Switch to the "Pump" position.
6. Once the unit has started, perform the following procedures with the gun open:
 - a. Inspect for system water leaks, oil leaks and fuel leaks. If a fuel leak is found, TURN UNIT OFF IMMEDIATELY! See "Risk of Explosion or Fire", pg. 5. Be sure that all damaged parts are replaced and that the mechanical problems are corrected prior to operation of the unit. If you require service, contact Customer Service.
 - b. Inspect high pressure hoses for kinking, cuts and leaks. If a cut or leak is found, DO NOT TOUCH HOSE AT LEAK!!! TURN UNIT OFF IMMEDIATELY! Replace hose before starting the unit. See "Risk of Injection or Severe Cutting Injury" pg. 6. Be sure that all damaged parts are replaced and that the mechanical problems are corrected prior to operation of the unit. If you require service, contact Customer Service.
7. At this point, the unit is operating as a cold water pressure washer. Trigger the gun several times and try adjusting the water pressure by rotating the grip on the dual lance. NEVER place hand or fingers in front of the nozzle or look directly into the nozzle! High pressure water creates a risk of severe injury!
8. 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.

NOTE: *If this unit is equipped with an Auto Start/Stop feature, the pressure washer will shutdown if the gun is not triggered after a designated amount of time. The pressure washer will start again once the gun is triggered. The Auto Start/Stop feature is preset at the factory for shutdown at 90 seconds. It can be adjusted by an Authorized Service Technician to shutdown from no usage after a minimum of 3 seconds to a maximum of 5 minutes.*

9. Your pressure washer can deliver high pressure spray and a variety of spray patterns using cold water. If you wish to use the Hot Water, Steam application or Cleaning with Detergents, see page 19 for the correct procedures.



CAUTION

RISK OF DAMAGE.

DO NOT ALLOW SPRAY PATTERN TO REMAIN ON A FIXED AREA FOR AN EXTENDED PERIOD OF TIME. POSSIBLE DAMAGE MAY OCCUR TO THE AREA.

OPERATING INSTRUCTIONS

HOT WATER OPERATION:

1. Follow the steps 1-8 outlined for "START-UP/COLD WATER OPERATION".
2. Move the Switch to the "Burner" 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 the 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 high limit switch will cause combustion to cease when the temperature of the discharged water exceeds the temperature setting of the switch. Combustion will begin again when the water temperature drops below the minimum setting.

At this point, the unit is operating as a hot water pressure washer. Be extremely cautious when adjusting the pressure and controlling the trigger gun/dual lance assembly to avoid the possibility of burns.

STEAM OPERATION:

1. Follow steps 1-8 outlined for "START-UP/COLD WATER OPERATION".
2. Ensure the quick-connect at the end of the dual lance is cool enough to touch, then remove the high pressure nozzle and replace it with the steam nozzle.
3. Turn unloader knob completely counterclockwise to the minimum setting.
4. Turn the Burner/Steam switch to "Steam".

NOTE: The burner will shut down if the switch is moved to "Steam" without first setting the unloader to minimum or operating in the high pressure mode.)

At this point, the unit will operate as a steam pressure washer. Be extremely cautious when adjusting the pressure and controlling the trigger gun/dual lance assembly to avoid the possibility of burns.

CLEANING WITH DETERGENTS:

NOTE: This feature is designed for use with mild detergents only. Since the cleaning solution travels through various parts of the pressure washer, do not use corrosives as they will cause extensive damage as well as pose a considerable safety hazard.

1. Refer to "Risk of Bodily Injury / Detergents" pg. 7. Be certain to wear protective safety attire as stated on pg. 12.
2. Prepare detergent solution according to label directions. (Never pump acids, alkalines, abrasive fluids or solvents through the unit. 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.)
3. Fully immerse the *strainer end* of the clear vinyl detergent hose into the detergent solution.
4. **DIRECT FEED:** Be certain the adjustable grip on the dual lance is turned completely **clockwise** for low pressure detergent operation.

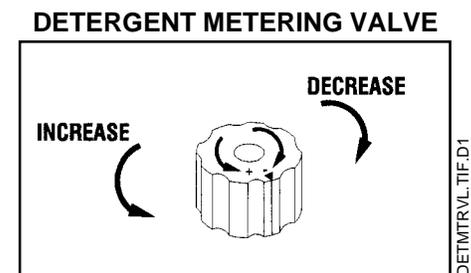
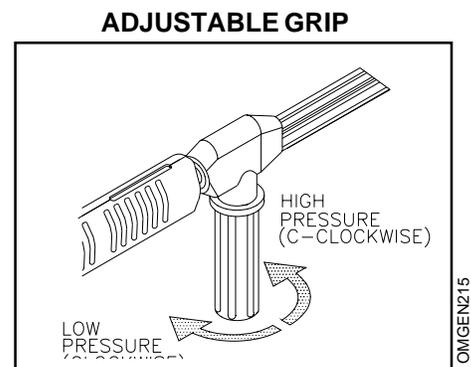
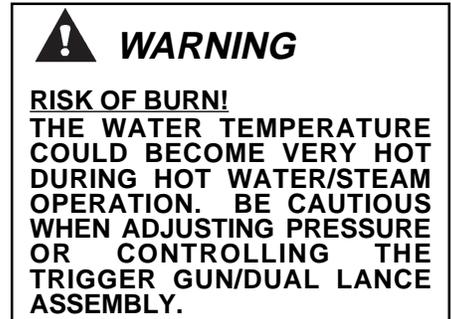
NOTE: This injection system is designed to apply detergents under low pressure only. It will not allow detergent solutions to be introduced into the system unless the dual lance is set in the low pressure mode.

FLOAT TANK: Adjust the amount of detergent desired. Turn the metering valve completely counterclockwise to set at maximum siphon rate.

5. To apply solution; unlock the trigger gun and squeeze the trigger. In a few moments a detergent/water mixture will exit the nozzle. 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. Allow to soak briefly. Avoid working on hot surfaces or in direct sunlight to minimize the chances of the detergent drying, which may result in damaging surfaces. Be certain to apply cleaning solution to a small section at a time.
6. To rinse; lock the trigger gun in the "OFF" position,
DIRECT FEED: Rotate the adjustable grip on the dual lance **counterclockwise** for high pressure.

FLOAT TANK: Turn the detergent metering valve to the "OFF" position. Unlock the trigger gun and spray. It will take about 30 seconds to purge all detergent from the line. For best rinsing results, start at the top and work down.

7. Siphon a gallon of water through the detergent injection system after each use. This prevents the possibility of corrosion or detergent residue causing mechanical problems during the next use.





DANGER

RISK OF INJECTION CAUSING SEVERE INJURY!

AUTO START/STOP FEATURE WILL SHUTDOWN THE PRESSURE WASHER UNTIL THE GUN IS TRIGGERED. TOTAL SHUTDOWN REQUIRES "OFF/PUMP/BURNER/STEAM" SWITCH TO BE MOVED TO THE OFF POSITION.

TO PREVENT ACCIDENTAL HIGH PRESSURE DISCHARGE, DO NOT LEAVE UNIT UNATTENDED UNTIL "OFF/PUMP/BURNER/STEAM" SWITCH IS IN THE OFF POSITION.

OPERATING INSTRUCTIONS

SHUTDOWN:

1. Move the Switch to the "Pump" position.
2. Squeeze the trigger and discharge the water for a period of three minutes to cool the heat exchanger and high pressure hose. (Insufficient cool down period of the high pressure hose will cause excessive wear and eventual rupturing of the hose.)
3. Move the Switch to the "OFF" position. (Auto Start/Stop Option will shut the unit down, but total shutdown requires Switch to be moved to the "OFF" position.)
4. Turn off the water supply and trigger the gun momentarily to relieve trapped pressure.
5. Disconnect and drain the high pressure hose, gun, and dual lance. Wipe the unit clean and store in a non-freezing environment.

STORAGE & MAINTENANCE

SPECIFIC MAINTENANCE:

PUMP: Change the pump oil after the first 50 hours of operation. After initial change, every 3 months or 250 hour intervals are recommended. If oil appears dirty or milky, changes may be required in greater frequency. Use Mi-T-M pump oil (#AW-4085-0016) and fill only to the center of the oil sight glass. **DO NOT** overfill.

QUICK COUPLERS: There are o-ring seals inside the couplers which will deteriorate. To replace, simply install a replacement o-ring to correct the leak. (Additional o-rings can be purchased from your dealer.)

NOZZLE: 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 the maximum. The frequency of replacement will depend upon such variables as mineral content in the water and number of hours the nozzle is used.

BURNER AIR ADJUSTMENT: The air shutter has been factory preset for proper operation between sea level and 2000 feet elevation at standard conditions (60°F ambient water and air temperatures). To assure maximum combustion efficiency at colder temperatures and higher altitudes, it will be necessary to adjust the air supply to the combustion chamber. A smoke spot test is recommended during any air shutter adjustment. This will aid in maximizing the burner efficiency and avoid the inefficient operation and excessive sooting of the combustion chamber.

1. The machine must be running and the burner on.
2. Take a smoke spot test to determine if more or less air is required for proper combustion.
 - a. If the test is greater than a #3 smoke, turn the shutter arm counterclockwise to increase the air flow into the combustion chamber.
 - b. If the test is yellowish in color, turn the shutter arm clockwise to decrease the air flow into the combustion chamber.
3. Hold onto the air shutter adjusting arm and loosen the locking nut. Move the shutter in 1/8" increments and retighten the locking nut after each 1/8" movement.
4. Trigger the gun on and off slowly to make sure there is proper ignition. Slight or no puffing on the ignition, and a smoke spot test of 0-3 is good.
5. Repeat steps 2 and 3 until step 4 is attained.

LEAKS: 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.*

STORAGE & MAINTENANCE

WINTERIZING:

- For storage and transportation purposes in subfreezing ambient temperatures, it will be necessary to winterize this unit. This unit must be protected to the lowest incurred temperature for the following reasons:
 - If any part of the pumping system becomes frozen; excessive pressure may build up in the unit which could cause the unit to burst resulting in possible serious injury to the operator or bystanders.
 - The pumping system in this unit may be permanently damaged if frozen. FREEZE DAMAGE IS NOT COVERED BY WARRANTY.

If you must store your unit in an area where the temperature may fall below 32°F, you can protect your unit by following the procedure outlined below.

- Gather the following items:
 - Two 5 gallon containers.
 - One gallon of antifreeze. (Use an environmentally safe antifreeze.)
 - Water supply.
 - Three foot hose, 1/2-3/4 I.D. with a 3/4 inch male garden hose fitting.
- Procedure:
 - To start winterizing, unit must be run according to the "Start-up Cold Water Operation" listed on page 18.
 - After running, shut off the unit and water supply.
 - Relieve system pressure by pointing the trigger gun in a safe direction and squeezing the trigger until water flow ceases to exit the Dual Lance Assy.
 - Lock the trigger gun in the OFF position and adjust the Dual Lance to the low pressure mode.

NOTE: Proper winterizing is based on the recommended manufacturer's instructions listed on the "Protection Chart" shown on the back label of most antifreeze containers.

DIRECT FEED MODELS:

- Remove the water supply hose from the unit and attach the 3 foot hose securely to the inlet connection.
- Shut off the detergent injector (if applicable).
- Fill one 5 gallon container with water.
- Holding the 3 foot hose in an upright position, completely fill the hose with water. Then plug the open end of the hose with your thumb or finger. Place the plugged end into the 5 gallon container of water.
- Start the unit. Trigger the gun several times until all the air is worked out of the system (unit is primed).
- With the trigger gun held open, siphon enough water out of the 5 gallon container until there is just enough water left to mix with the antifreeze.
- Point the trigger gun into the empty container. (Be certain to wear safety attire for protection from splashing.)
- Trigger the gun until the antifreeze begins to exit the trigger gun. Release the trigger for 3 seconds, then trigger the gun for 3 seconds. Continue cycling the trigger gun several times until all the antifreeze mixture is siphoned from the container.
- Stop the unit.
- Detach the 3 foot hose from the unit and drain any excess antifreeze back into the 5 gallon container.

FLOAT TANK MODELS:

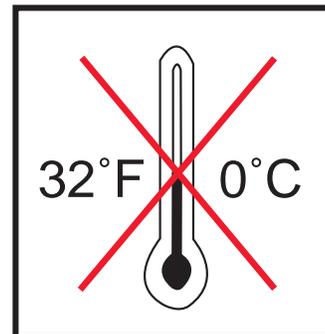
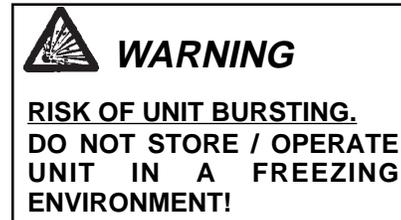
- Remove lid from float tank.
- Start the unit and squeeze the trigger gun until the float tank is almost empty.
- Stop the unit.
- Mix antifreeze and water in a container that can be used for pouring the solution into the float tank.
- Start the unit. Point the trigger gun into the empty container. Trigger the gun until the antifreeze begins to exit the trigger gun. Continue cycling the trigger gun several times until all the antifreeze mixture is siphoned from the container.
- Stop the unit.

-
- Disconnect the hose and trigger gun from the unit and drain any excess antifreeze back into the 5 gallon container.
 - Drain hose, trigger gun and dual lance assembly and store with the unit in a safe non-freezing area.
 - Store antifreeze solution for next use or dispose of according to state EPA laws.

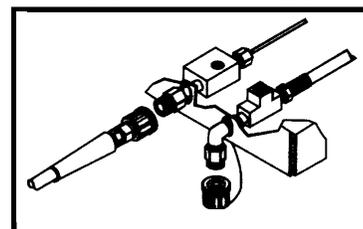
3. OPTIONAL PROCEDURE:

- Shut the unit and water supply off.
- Relieve system pressure by pointing the trigger gun in a safe direction and squeezing the trigger until water flow ceases to exit the nozzle.
- Disconnect and drain the hose, trigger gun and dual lance assembly.
- Remove the coil drain plug from the heat exchanger inlet.
- Start the unit and allow it to run until all the water exits the unit. Once the water has stopped flowing from the unit, turn off.

NOTE: When using this procedure, use caution as ice chips can form from drops of water which could cause the unit to burst if starting before completely thawed.



COIL DRAIN PLUG



34-0807-032197-BAR

TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	REMEDY
Pump motor will not run.	Circuit overload.	Check wall breaker or fuse.
	GFCI tripped.	Reset.
	Motor overload.	Reset thermal overload button on pump motor or inside electrical control panel.
	Auto Start/Stop Option in use.	Point gun in a safe direction and squeeze trigger.
No discharge at nozzle when trigger mechanism is squeezed.	Inadequate water supply.	Ensure hose is 3/4" diameter and incoming water supply is turned on.
Low or fluctuating pressure.	Kink in water inlet hose.	Remove kink.
	Kink in high pressure discharge hose.	Replace kinked high pressure hose.
	Water inlet screen obstructed.	Remove screen, clean or replace.
	Pump sucking air. (Prime eliminated)	Tighten all water intake connections Eliminate leaks in intake line.
	Adjustable Grip on Dual Lance is not in high pressure mode.	Turn grip counterclockwise to move to high pressure.
	Obstructed or worn spray nozzle.	Remove, clean or replace.
	Damaged or obstructed valve assy. on pump.	Remove, clean or replace.
	Pump packings worn.	Replace packings.
	Unloader/Bypass valve not operating correctly.	Repair or replace.
	Scale buildup in heat exchanger coil.	Descale coil.
Water is leaking from Heat Dump Valve.	Water inlet temperature is too high.	Incoming water temperature must be less than 125°.
	Water temperature is too high.	Do not allow unit to operate in bypass mode (with the trigger gun closed) for more than three minutes.
	Defective valve.	Replace.
Oil appears milky or foamy.	Water in oil.	Change pump oil. Fill to proper level.
Oil leaking from unit.	Worn seals or o-rings.	Contact Customer Service.
Detergent will not siphon .	Detergent strainer is not completely submerged in detergent solution.	Check, submerge if necessary.
	Detergent strainer obstructed.	Inspect, clean or replace.
	Detergent hose cut, obstructed or kinked.	Inspect, clean or replace.
	Detergent adjusting knob turned to closed position.	Open adjusting knob. Refer to "Cleaning with Detergents" pg. 19.
Detergent will not siphon into the Low Pressure Mode.	Adjustable grip on dual lance is not in low pressure mode.	Turn grip clockwise to move to low pressure.
	Too many high pressure hose extensions attached to the water outlet.	Use one extension maximum.
	Nozzle assembly is plugged.	Clean or replace.
	Ball & Spring in Venturi stuck.	Remove, clean or replace.

TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	REMEDY
Water flows back into detergent container.	Check valve missing or corroded.	Remove, clean or replace.
Water flows from the nozzle when the trigger gun is locked in the "OFF" position.	Trigger gun is malfunctioning.	Repair or replace.
Water is leaking under heat exchanger coil.	Coil drain plug is not installed.	Install.
	Safety Relief device is relieving caused by an unloader or pressure switch malfunction.	<ol style="list-style-type: none"> 1. Detect and correct unloader or pressure switch problem. 2. Replace safety relief device. NEVER run unit without safety relief device. Doing so can cause an explosion!
Burner will not ignite	Switch is not in "Burner" position.	Check switch position.
	No voltage.	Contact Customer Service.
	Out of fuel.	Refuel. (Reset burner primary control on cad cell options.)
	Fuel tank inlet tube screen obstructed.	Remove, clean or replace tube.
	Trigger gun is closed.	Open trigger gun for pressure.
	Pressure switch override.	Pressure should be over 250 PSI to allow burner to come on.
	High limit switch override.	Unit will automatically reignite when cool.
	Flexible coupler broken.	Replace.
	Dirty or clogged fuel filter/water sep.	Drain or replace as necessary.
	Fuel pump sucking air.	Tighten all fuel intake connections. Eliminate leaks in intake line.
	Fuel pump inoperative.	Check pressure, replace if needed.
	Dirty or clogged fuel nozzle.	Replace.
	Improper burner air adjustment.	Adjust as explained on page 20.
	Ignition transformer failure.	Replace.
	Ignition electrodes damaged or worn.	With unit running and trigger gun closed, look through burner sight glass to ensure there is sparking across electrodes.
	Fuel solenoid valve failure.	Replace.
Steam Option:	Steam Mode.	Verify Burner/Steam switch is in "Steam" mode.
	Steam mode: Pump Head PSI too high.	Reduce pressure to 350PSI.
Cad Cell Option:	Primary control lock-out.	Reset.

TROUBLESHOOTING

SYMPTOM	PROBABLE CAUSE	REMEDY
Burner motor will not run.	Switch is not in "Burner" position.	Check switch position.
	No voltage.	Contact Customer Service.
	Motor overload.	Motor automatically resets when cool.
	Fuel pump seized.	Allow motor to cool. Repair or replace.
	Blower Fan seized.	Allow motor to cool. Repair or replace.
Burner runs erratically.	Water in the fuel oil.	Drain fuel filter/water separator. Drain fuel tank, and replace with clean fuel.
	Dirty fuel filter/water separator.	Replace element.
	Dirty fuel nozzle.	Replace.
	Improper air adjustment setting.	Adjust as explained on page 20.
	Fuel pump malfunctioning.	Replace.
Burner runs, but will not heat.	Poor or improper fuel supply.	Check fuel to ensure it is correct. Drain tank and replace filter if necessary and refill with proper fuel.
	Low fuel pump pressure.	Check fuel pump pressure, adjust or replace if needed.
	Dirty fuel nozzle.	Replace.
	Improper air adjustment setting.	Adjust as explained on page 20.
	Scale build up in heat exchanger coil.	Consult Mi-T-M Customer Service.
Burner discharges white smoke.	Low on fuel.	Refuel. If white smoke persists, consult Customer Service.
	Poor or improper fuel supply.	Check fuel pump pressure, adjust or replace if needed.
	Dirty fuel nozzle.	Replace.
	Improper air adjustment setting.	Adjust as explained on page 20.
	Cold combustion chamber start-up.	Run burner for several minutes.
	Excessive air supply.	Adjust as explained on page 20.
Burner discharges black smoke.	Insufficient air supply.	Adjust as explained on page 20.
	Combustion chamber loaded with unburned fuel.	Consult Mi-T-M Customer Service.

MAINTENANCE CHART

PROCEDURE	DAILY	3 MONTHS	6 MONTHS	9 MONTHS	12 MONTHS
Inspect electrical cord	X				
Test GFCI	X				
Test voltage and amp draw					X
Check water pump oil level	X				
Change water pump oil **		X	X	X	X
Oil leak inspection	X				
Fuel leak inspection	X				
Water leak inspection	X				
Hose inspection	X				
Water inlet filter inspection	X				
Check fuel filter/water separator	X				
Inspect belt		X	X	X	X
Replace high pressure nozzle***		X	X	X	X
Replace fuel filter/water separator					X
Inspect fuel pump filter*					X
Replace fuel nozzle*					X
Check burner air adjustment		X	X	X	X
Check burner electrodes*					X
Test water pressure*		X	X	X	X
Test fuel pressure*		X	X	X	X
Test water temperature*		X	X	X	X
Descale coil****					X

* Must be performed by an authorized service technician.

** The pump oil must be changed after the first 50 hours of operation and every 250 hours or 3 months, whichever comes first.

*** High pressure nozzle should be replaced whenever pressure is less than 85%.

**** Scale buildup will vary with mineral content in the water and amount of usage. Descaling can range from weekly to yearly maintenance.

OPTIONS

		HSE-1002-0M10	HSE-1502-0M10	HSE-2003-2M10	HSE-2504-0M10	HSE-2504-0M30	HSE-3004-0M10	HSE-3004-0M30	HSE-3504-0M10	HSE-3504-0M30
HX-0049	Hour Meter Contador Hora	X	X	X	X	X	X	X	X	X
HX-0050	Auto Start/Stop Automático Empezar/Parar	X	X							
HX-0051	Auto Start/Stop Automático Empezar/Parar			X						
HX-0052	Auto Start/Stop Steam Automático Empezar/Parar Vapor	X	X							
HX-0054	Auto Start/Stop Steam Automático Empezar/Parar Vapor			X						
HX-0055	Auto Start/Stop Steam Automático Empezar/Parar Vapor	X	X							
HX-0056	Auto Start/Stop Cad Automático Empezar/Parar Cadmium			X						
HX-0057	Auto Start/Stop Steam/Cad Automático Empezar/Parar Vapor/Cadmium	X	X							
HX-0059	Auto Start/Stop Steam/Cad Automático Empezar/Parar Vapor/Cadmium			X						
HX-0070	Auto Start/Stop Automático Empezar/Parar				X	X	X	X	X	X
HX-0071	Auto Start/Stop Steam Automático Empezar/Parar Vapor				X	X				
HX-0072	Auto Start/Stop Steam Automático Empezar/Parar Vapor						X	X	X	X
HX-0074	Auto Start/Stop Cad Automático Empezar/Parar Cadmium				X	X	X	X	X	X
HX-0075	Auto Start/Stop Steam/Cad Automático Empezar/Parar Vapor/Cadmium				X	X				
HX-0076	Auto Start/Stop Steam/Cad Automático Empezar/Parar Vapor/Cadmium						X	X	X	X
HX-0085	480 Volt 480 Voltio					X				
HX-0086	480 Volt 480 Voltio							X		
HX-0087	480 Volt 480 Voltio									X
HX-0088	Skid Feet Máquina Pie				X	X	X	X	X	X

ACCESSORIES

		HSE-1002	HSE-1502	HSE-2003	HSE-2504	HSE-3004	HSE-3504
15-0006	SUPPLY HOSE 3/4"	X	X	X	X	X	X
50-0136	HOSE REEL 13" (HOLDS 100' OF HOSE)	X	X	X	X	X	X
50-0137	HOSE REEL 16" (HOLDS 200' OF HOSE)	X	X	X	X	X	X
50-0140	BRACKET FOR HOSE REEL (22" BAR)	X	X	X			
852-0138	JUMPER HOSE FOR HOSE REEL (4000 PSI)	X	X	X	X	X	X
850-0174	EXTENSION HOSE 50' (3000 PSI)	X	X	X	X		
850-0199	EXTENSION HOSE 50' (4500 PSI)	X	X	X	X	X	X
AW-3005-0003	SANDBLASTER CARBIDE NOZZLE*		X				
AW-3005-0035	SANDBLASTER CARBIDE NOZZLE*			X			X
AW-3005-0004	SANDBLASTER CARBIDE NOZZLE *	X			X	X	
AW-3010-0003	SANDBLASTER CERAMIC NOZZLE*		X				
AW-3010-0035	SANDBLASTER CERAMIC NOZZLE *			X			X
AW-3010-0004	SANDBLASTER CERAMIC NOZZLE *	X			X	X	
AW-4085-0016	PUMP OIL	X	X	X	X	X	X
AW-7002-4045	ROTATING NOZZLE* (2000 PSI)	X					
AW-7004-0045	ROTATING NOZZLE* (3000 PSI)				X	X	
AW-7010-0001	ROTATING NOZZLE* (3600 PSI)		X	X			X
AW-7003-1500	ROTATING BRUSH *	X	X	X	X	X	X
AW-7015-1200	EXTENSION WAND 12' ** (3000 PSI)	X	X	X	X	X	
AW-7015-1800	EXTENSION WAND 18' ** (3000 PSI)	X	X	X	X	X	
AW-7015-2400	EXTENSON WAND 24' ** (3000 PSI)	X	X	X	X	X	
AW-7020-8000	ROTARY SURFACE CLEANER 20" ** (4000 PSI)	X	X	X	X	X	X
AW-7020-8001	ROTARY SURFACE CLEANER 28" ** (4000 PSI)	X	X	X	X	X	X
AW-7025-8000	POWER BROOM 25" (5 - 80 NOZZLES)*/**	X	X	X	X	X	
AW-7035-8000	POWER BROOM 35" (7 - 80 NOZZLES)*/**	X	X	X	X	X	

*Requires 17-0028 1/4" Female Quick Connect

**Requires 17-0004 3/8" Female Quick Connect

***PSI and GPM must be specified when ordering.

All Purpose Cleaner, Paint Surface Prep, House & Deck Wash and Heavy Duty Degreaser are specially formulated detergents for use with all HSE pressure washers and are packaged in One (1), Five (5) and Fifty-five (55) gallon containers. Contact Customer Service Department at (800) 553-9053 for more information.

hseaces.tbl

STATEMENT OF WARRANTY

Mi-T-M warrants all parts, (except those referred to below), of your new HSE-Series Pressure Washer to be free from defects in materials and workmanship during the following periods:

For Five Years from the date of original purchase:
High Pressure Pump

For Three Years from the date of original purchase:
Heat Exchanger Coil

For Two Years from the date of original purchase:
Frame
Guard or Shields

Plumbing
Pulleys

For One (1) Year from the date of original purchase:
Control Switches
Starter Contactor

GFCI Cord
Overload

For Six (6) months from the date of original purchase:
Ignition Transformer

Burner Motor

For Ninety (90) days from the date of original purchase:
Regulating Valve
Safety Switches
Fuel Pump

Electrodes
Fuel solenoid

For Thirty (30) days from the date of original purchase:
High Pressure Hose
Strainers / Filters

Trigger Gun
Dual Lance

Defective parts not subject to normal wear and tear will be repaired or replaced at our option during the warranty period. In any event, reimbursement is limited to the purchase price paid.

EXCLUSIONS

1. The motor is covered under separate warranty by its respective manufacturer and is subject to the terms set forth therein.

2. Normal wear parts:

Pump Packings	Spray Nozzles
Pump Valves	Detergent Valves
Fuel Filters	Quick Couplers

3. This warranty does not cover parts damaged due to normal wear, misapplication, misuse, operation at other than recommended speeds, pressures or temperature. Parts damaged or worn because of the use of caustic liquids or by operation in abrasive or corrosive environments or under conditions causing pump cavitation are not warranted. Failure to follow recommended operating and maintenance procedures also voids warranty.

4. The use of other than Genuine Repair Parts will void warranty.

Parts returned, prepaid to our factory or to an Authorized Service Center will be inspected and replaced free of charge if found to be defective and subject to warranty. There are no warranties which extend beyond the description of the face hereof. Under no circumstances shall the manufacturer bear any responsibility for loss of use of the unit, loss of time or rental, inconvenience, commercial loss or consequential damages.