Part #600280 Rev #001





XHR750

Operators Manual



As a new customer of Thawzall we would like to welcome you! We are looking forward to providing you with technical support for your Thawzall unit. Whatever you need we are here to help.

Ways to contact us for support

By Phone : 1-888-757-3545

The main Technical support phone line is staffed monday-friday 7:00 AM to 3:30 PM excluding holidays.

After hours support

Calls received outside of regular hours are directed to the On-call technician. After hours support is reserved for issues that cannot wait until the next business day for resolution. If no answer please leave a message and we will get back to you as soon as possible.

By Email : info@thawzall.com

Feel free to email us at any time with technical questions or parts inquiries. Please include the year make and model of your unit if you have a specific question about your machine so we can better help you. If it is an emergency please call 1-888-757-3545

For more information please visit our website **www.thawzall.com**

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Operators Manual

For model: **XHR 750**

Please record the following information from your new Thawzall for future reference. This information is required for all warranty claims.

Purchase date: ____/ ___/

Machine model:

Machine serial number:_____

Serial number located on trailer tongue

Manufactured by Thawzall, LLC

A DIVISION OF TAMARACK INDUSTRIES 2736 Latoka Lane Unit B Alexandria, MN 56308 Phone 320.759.1588 Fax: 320.759.1583 Tech Support 888.757.3545 Website:www.Thawzall.com E-Mail: info@Thawzall.com

LIMITED WARRANTY

GENERAL:

Tamarack Industries hereby extends to the original purchaser of its THAWZALL ("Ground Defrosting, Thawing, Temporary Heat or Concrete Curing Products") a warranty against defects in materials and workmanship for a one year time period as indicated below.

The warranty is only valid on "Ground Defrosting, Thawing, Temporary Heat or Concrete Curing Products" purchased and used in accordance with placards and instructions (e.g. Operators Manuals) provided by Tamarack Industries. This warranty applies only to the original purchaser and is subject to the terms and conditions set forth below.

Tamarack Industries will repair or replace (at its discretion) a ground defrosting, thawing, temporary heat or concrete curing product (or component thereof) if it fails to conform to this warranty. In the event a ground defrosting, thawing, temporary heat or concrete curing product is to be repaired pursuant to this warranty, such repair work will be performed by Tamarack Industries or at its direction.

WARRANTY PERIOD:

The warranty relating to workmanship, materials and labor on THAWZALL ground defrosting, temporary heat or concrete curing products extends for one (1) year from the date of original invoice.

WARRANTY POLICY:

When claiming warranty, you must give Thawzall the VIN number of the machine and date of invoice or original invoice number of the machine or part and Thawzall will determine if the affected machine and part is within the warranty period:

- 1. To Start a claim, go to our website and complete a warranty claim and e-mail to warranty@ thawzall.com
- 2. Thawzall will issue an RMA # when required for the defective part and provide a pre-paid freight return tag or call tag issued through UPS. If the part(s) is not returned within 30 days from the RMA date, you will no longer be eligible for any credit towards the replacement part.
- 3. You will need to issue a PO for the replacement part and Thawzall will invoice you for the replacement part and freight.
- 4. Once Thawzall receives the defective part we will inspect and test the part or have our vendor inspect it. If the part is determined to be defective a credit will be issued for only the part cost. If it is determined that the part is NOT defective, you will be a charged for the time it took to inspect and test the part (Labor rate of \$100.00 per hour).

WARRANTY LIMITATIONS:

Thawzall Ground Defrosting, Thawing, Temporary Heat or Concrete Curing products must be installed (where applicable), operated and maintained in accordance with all instructions provided by Thawzall, LLC. Failure to follow our installation (where applicable), operating or maintenance procedures and/or use of unauthorized parts may void this warranty.

Purchasers and Users are responsible for the suitability of the products for their application. This warranty does not apply to:

1)Repairs or replacements necessitated by any cause beyond the control of Tamarack Industries including, but not limited to, any malfunction, defect or failure caused by or resulting from unauthorized service or parts; installation (where applicable), operating or maintenance contrary to furnished instructions; local water conditions, handling, shipping or transit accidents; modifications or repair by the user; abuse; misuse; neglect; accident; incorrect power line voltage; power line surge; light-ning damage; or fire, flood, or other Acts of God.

2)Repair or replacement in the ordinary course of expendable ground defrosting, thawing, temporary heat or concrete curing product part.

3)Elements and controls whose damage or failure is attributable to corrosion, scale, or dirt accumulations or to low water conditions.

Tamarack Industries is not liable for labor and other costs incurred in removal, reinstallation, or unauthorized repair of the Ground Defrosting, Thawing, Temporary Heat or Concrete Curing product or for damages of any type whatsoever including incidental or consequential damages.

There are no warranties which extend beyond the description contained herein and specifically liability for any breach of any implied warranty of merchantability or fitness for a purpose is excluded. The duration of any warranties which may be implied by law notwithstanding the previous sentence (including the warranties of merchantability and fitness) is limited to the term of this warranty. In no event shall Tamarack Industries be liable for special, incidental or consequential damages arising from ownership or use of any Ground Defrosting, Thawing, Temporary Heat, or Concrete Curing product, or for any delay in the performance of it obligations under this warranty due to causes beyond its control. Some states do not allow limitations on how long an implied warranty lasts and/ or do not allow the exclusion or limitation of consequential damages, so the above limitations and exclusion may not apply to you. This warranty gives you specific legal rights. You may have other rights, which vary from state to state.

This warranty set forth herein is in lieu of all other expressed or implied warranties. Tamarack Industries does not assume or authorize any party to assume for it any other obligation or liability.

IMPORTANT SAFETY RECOMMENDATIONS AND WARNINGS

OUTSIDE SAFETY FEATURES

Your Thawzall is equipped with DOT Certified outside LED lights, reflectors, safetychains and electronic.

Break-away brakes.

Make use of these features:

Before towing the trailer, be sure that all the lighting is connected and working Connect the safety chains to the towing vehicle

Connect the small cable from the break-away switch to the towing vehicle close the fuel valve at the top of the fuel tank on your Thawzall

PARKING YOUR THAWZALL

Avoid unexpected movement of your Thawzall:

Avoid parking on hills

Use blocks or wheel chocks to prevent movement always use the jack to support the hitch

TOWING YOUR THAWZALL

Tow safely:

NOTE: Torque all wheel lug nuts to 120 FT/LBS before towing.

At least a ³/₄ ton truck with a brake controller is recommended for towing the XHR750. Thawzall axles, wheels and tires are rated to travel at legal posted speeds on the highway. Connect safety-chains, lights and brake cable to towing vehicle.

Thawzall trailers are equipped with electronic break-away brakes in case the trailer should become disconnected from the towing vehicle. Trailer brakes will apply auto-matically. Failure to connect trailer in a safe manner could result in a serious accident or death. Always verify that the hitch ball size on the towing vehicle matches the size of the coupler on the Thawzall trailer

GENERAL OPERATING INSTRUCTIONS

Do not operate your Thawzall without receiving instruction and understanding the startup and shut down procedures thoroughly—if you do not understand these instructions, call Thawzall Technical Support—888.757.3545

Keep your machine in proper working condition. Unauthorized modifications to the machine may impair the function and/or the safety and affect the life of the machine.

Earth Grounding Rod must be installed before operating the machine

Do not use gasoline or kerosene This may cause engine damage which may result in serious injury or death. Only #1 fuel oil or a winter blend of fuel oil is recommended for the engine

Safety glasses. Always wear safety glasses when operating your Thawzall, especially when connecting and disconnecting hoses, fueling or maintaining the battery on the optional generator.

Caution and Warning decals. Carefully observe and maintain all of the caution and warning decals placed on your Thawzall machine. They are there to ensure proper operation of the Thawzall and your safety!

Never "hot-wire any of the electrical wiring on your Thawzall or optional generator. Wiring circuits are carefully designed to provide for safe Startup and operation of the furnace, pumps and hose reel. Any alteration may cause an unsafe condition and could cause any or all components to malfunction or operate out of sequence.

Operate only OUTDOORS! Never operate an engine or furnace inside a building without proper venting of the exhaust to the outside. Carbon monoxide poisoning and asphyxiation may occur if exhaust is inhaled.

HANDLE FUEL SAFELY

Avoid fires by handling fuel with care.

Diesel fuel used in the heater is extremely flammable!

Do not refuel the machine while smoking or while an open flame or sparks are near the refueling point! Do not refuel while the engine is running.

A clean machine is a safe machine. Prevent fires by keeping your Thawzall clean of accumulated trash, grease and debris. Clean up spilled fuel properly.

HANDLE CHEMICAL PRODUCTS SAFELY

Direct exposure to hazardous chemicals can cause injury. Potentially hazardous chemicals used in your Thawzall include, grease, paint and adhesives. Grease, paint and adhesives are especially toxic when heated.

Please read with care the Material Safety Data Sheets (MSDS) provided in this manual. They provide specific details on the products used in you Thawzall, physical and health hazards, safety procedures and emergency response techniques.

Check the MSDS sheets before operating your Thawzall so you will know the risks and first aid techniques in case of an accident.

Keep emergency phone numbers for doctors, ambulance service, hospital and fire department near your phone.

SAFETY INCLUDES PREVENTITIVE MAINTENANCE

Remove paint and adhesives before welding or heating.

Avoid heating near pressurized pipes and hoses, and near a fuel tank.

Dispose of waste properly. Improperly disposing of waste including grease, and plastics, filters and batteries, threaten the ecology of the environment. Do not pour fuel or oil on the ground, down a drain or into any water source. Inquire about the proper way to dispose of wastes in your area, at your recycling center.

HANDLING BATTERIES SAFELY

Battery gas can explode. Keep sparks and flames away from the battery on the generator on your Thawzall.Never place a metal object across the battery posts.Al-ways disconnect the grounded (-) battery clamp first and re-connect it last.Battery acid is poisonous and can burn skin and eat holes in clothing and cause blindness if splashed into the eyes Flush contaminated skin with water and baking soda. If acid is swallowed, drink water or milk and get medical attention immediately OR **CONTACT YOUR LOCAL POISON CONTROL CENTER IMMEDIATELY!**

STORING YOUR THAWZALL

To store your Thawzall for the summer months: Park on level ground and block wheels to prevent accidental movement.

See applicable service bulletins at the back of this manual for annual maintenance items.

Controls



1. TACTILE KEY'S

1.1. Used for screen navigation & button activation

- 2. TOUCHSCREEN
 - 2.1. Displays machine graphics & parameters
 - 2.2. Touch activation as described in Screen Operation Section

3. HMI INDICATORS

- 3.1. Ower Indication & Mode Status
- 3.2. USB Connected
- 3.3. Metwork Connected
- 3.4. CPU Processing
- 4. DIAL ENCODER
 - 4.1. Parameter Adjustment
- 5. ENTER (NOT USED)
- 6. HOME KEY

6.1. EEEReturns To Previous Screen

- 7. ESCAPE KEY
 - 7.1. Returns To Previous Screen
- 8. USB PORT
 - 8.1. Software Update & Factory Use

STARTUP OPERATION

PRE-MACHINE STARTUP

(PRE-STARTUP INSPECTION PERFORMED)

PRE-ALARM & ENGINE START SEQUENCE

- 1. At the Main Screen or Engine Screen press
- 2. HMI buzzer will begin to beep indicating the Engine is about to start.
- 3. HMI will begin to crank the engine until running or 10 seconds elapses.

ENGINE WARM UP SEQUENCE

- 1. HMI starts Blower Motor after BLOWER 1 DELAY has elapsed.
- 2. HMI starts Heater 1 after HEATER 1 DELAY has elapsed.
- 3. HMI will command engine to High Idle after HIGH IDLE ENGINE TEMP is reached.

HEAT CONTROL OPERATION

- 1. Once at High Idle the HMI will begin controlling heaters to achieve desired Heat Setting selected on Main Screen.
 - 1.1. LOW Setpoint Factory Default: 120DegF
 - 1.2. MED Setpoint Factory Default:190 DegF
 - 1.3. HIGH Setpoint Factory Default: 260 DegF

NOTE: The heat control also monitors the Engine Load Percentage which may cause the controller to lessen the Heater load for an interval of time. This is to optimize the performance of the equipment while protecting the wear of the engine.

ENGINE SHUTDOWN SEQUENCE

- 1. At the Main Screen or Engine Screen press
- 2. HMI will turn off Heaters
- 3. HMI will continue run the Blower Motor until LOW IDLE ENGINE TEMP is reached OR 5 minutes elapses.
- 4. HMI will then shutdown Engine.
- 5. HMI Message Center will display "Machine Ok"





SCREEN OPERATION

MAIN SCREEN - OVERVIEW



- 1. DISPLAY
 - 1.1.7 Engine Battery Voltage is display here. Data is transmitted over J1939 network from Engine.

1.1.1. NOTE: No Engine data is transmitted when the ignition is OFF.



- 1.3. Fuel Level is displayed here. Data is transmitter over J1939 from SKIM.
- 1.4. Engine Hours: 0.00 Engine Hours is displayed here. Data is transmitted over J1939 network from Engine.
- 1.5.Engine Oil Level is displayed with the following icon. Data is transmitted over J1939 network from SKIM.



1.6.Engine Wait is displayed with the following icon. Data is transmitted over J1939 network from Engine. *Refer to engine manufacturer for further information.*

💿 - Inactive 🐻 - Active

1.7.Engine Stop is displayed with the following icon. Data is transmitted over J1939 network from Engine. *Refer to engine manufacturer for further information.*



1.8.Engine Fault is displayed with the following icon. Data is transmitted over J1939 network from Engine. *Refer to engine manufacturer for further information.*





- 1.9. Gate Actuator position is displayed here.
 - 1.9.1. NOTE: 30% of the gate remains open when fully closed to prevent damage to the equipment.

1.10.**TEMP** Duct Temperature is displayed here in Fahrenheit.

2. NAVIGATION

2.1. Press adjacent tactile button or touch screen icon to navigate to SETUP SCREEN.

2.1.1. NOTE: This feature disappears when equipment is running.

2.2. Press adjacent tactile button or touch screen icon to navigate to MAINTENANCE SCREEN.

2.2.1. NOTE: This feature disappears when equipment is running.

2.3. Press adjacent tactile button or touch screen icon to navigate to INFORMATION SCREEN.

2.4. Press adjacent tactile button or touch screen icon to navigate to ENGINE SCREEN.

3. FUNCTIONS

3.1. System Start is activated here. This initiates the start sequence of the machine.

3.2. System Stop is activated here. This commands the shutdown sequence of the machine.



3.5. Heat Setting is selected by touching the center of the circle in the Heat Setting object. The chosen setting will illuminate with corresponding gradient color. Setting increments with each screen press and cycles back to LOW after HIGH.



3.5.1. NOTE: LOW is the default setting.

ENGINE SCREEN - OVERVIEW



DISPLAY (Notice display features carry over from Main Screen)
 1.1. Engine Temp is displayed in the field below this icon. Data is transmitted

1.1. •• Engine Temp is displayed in the field below this icon. Data is transmitted over J1939 network from Engine. *Refer to engine manufacturer for further information.*

1.2. Engine RPM is displayed in the field below this icon. Data is transmitted over J1939 network from Engine. *Refer to engine manufacturer for further information.*

1.3. Engine Oil Pressure is displayed in the field below this icon. Data is transmitted over J1939 network from Engine. *Refer to engine manufacturer for further information.*

1.4. Fuel Level is displayed in the field below this icon. Data is transmitter over J1939 from SKIM.

2. NAVIGATION (Notice navigation features carry over from Main Screen)

2.1. Press adjacent tactile button or touch screen icon to navigate to MAIN SCREEN.

3. FUNCTIONS (Notice function features carry over from Main Screen)

SETUP SCREEN - OVERVIEW



1. DISPLAY

All temperatures displayed in Fahrenheit 1.1.LOW TEMP SETPOINT is the LOW temperature setting.

1.2.MID TEMP SETPOINT is the MEDIUM temperature setting.

1.3. HIGH TEMP SETPOINT is the HIGH temperature setting.

1.4.HIGH IDLE ENGINE TEMP is the minimum "warm up" temperature the Engine must reach before proceeding to High Idle startup.

1.4.1. NOTE: High Idle setting is 1800 RPM

1.5.DUCT OVER TEMP is the max allowable temperature within the Duct before the machine will perform a commanded shutdown sequence.

1.6.LOW IDLE ENGINE TEMP is the minimum "cool down" temperature the Engine should reach before proceeding to Low Idle shutdown.

1.6.1. NOTE: If this temperature is not reached within 5 minutes, the Engine will proceed to Low Idle shutdown.

1.7.BLOWER 1 DELAY is the time delay after engine is started to engage the Blower Motor. Display is in seconds.

1.8.HEATER 1 DELAY is the time delay after the Blower Motor is engage to stagger the load demand in Low Idle. Display is in seconds.

2. NAVIGATION

2.1. Press adjacent tactile button or touch screen icon to navigate to OEM LOGIN SCREEN. (Factory Use ONLY)

2.2. Press adjacent tactile button or touch screen icon to navigate to CALIBRATION SCREEN.

DIAGNOSTICS SOFTWARE

DIAGNOSTIC SCREEN - OVERVIEW



1. DISPLAY

- Function ON/ Device Online
- 🧧 Function OFF/ Device Offline

1.1.OUTPUTS displays the status for a column of Digital functions being controlled

1.2.INPUTS displays the status for a column of Digital & Analog functions being monitored.

1.3.STATUS displays the online or offline status of networked devices.

2. NAVIGATION

2.1. Press adjacent tactile button or touch screen icon to navigate to INFORMATION SCREEN.

3. FUNCTIONS

- 🥯 Active
- 으 Standby
- 🥯 Disconnected

3.1. Log Export is activated here. Machine log will upload to compatible USB storage device.

3.2. Parameters Export is activated here. Machine parameters can be downloaded to compatible USB storage device. (Factory Use)

3.3. Parameters Import is activated here. Machine parameters can be downloaded to compatible USB storage device. (Factory Use)

INFORMATION SCREEN – OVERVIEW



1. This screen displays the symbols used within the application with a description of each.

1.1. NOTE: The software version is located in the bottom right of screen.

HARDWARE

CONTROL PANEL SYSTEMS

1. HA12938R0 – Swing Panel Harness 1.1.P12 – Indicates 24V CPU Power.



- 2. 600001 Back Panel
 - 2.1.R1-6 DC Control relays provide ON/OFF LED indication
 - 2.2. PS1 DC/DC Convertor provides indication of status
 - 2.2.1. BOOST Yellow (If load demand exceeds standard output)
 - 2.2.2. DC OK Green (If Power is with standard parameters)
 - 2.2.3. Uin < 9.6V Yellow (If input drops below standard input. Engine Start)

- 2.3.MMP1-5 provide indication of Trip Status with position of dial
- 2.4.LM1 provides indication of status
 - 2.4.1. Power On Green
 - 2.4.2. Relay On Yellow

CHASSIS SYSTEMS

- 1. 600188 Chassis Harness
 - 1.1.E-STOP Operator provides indication of status
 - 1.1.1. E-STOP pressed ON
 - 1.1.2. E-STOP pulled out OFF
- 2. EA12870R0 Air Flow Sensor
 - 2.1.Sensor provides indication of status
 - 2.1.1. Power/ Standby Red
 - 2.1.2. Relay Closed Green
- 3. Duct Temperature Sensor

3.1.Sensor provides indication of power when Green.

DISCONNECT SYSTEMS

1. 600002 – Disconnect Panel

1.1.Disconnect Handle provides indication of Trip Status with position of dial.

SERVICE SOFTWARE

MAINTENANCE SCREEN – OVERVIEW



1. DISPLAY

1.1.250 Hour is a column tracking the engine hours between services for maintenance required after 250 hours.

1.1.1. Press adjacent 🕑 to reset.

1.2.500 Hour is a column tracking the engine hours between services for maintenance required after 500 hours.



Troubleshooting

BASICS

SCREEN "OFF"

- Check Battery Disconnect is in "ON" position.
- Check voltage level of battery. Charge or replace if necessary.
- Check power connections.
- Check fuse in Electrical Panel.

SCREEN SLOW TO OPERATE AT START-UP IN COLD WEATHER.

• Turn "ON" Power at battery disconnect for 15 to 30 minutes before operation to warm up screen.

ENGINE WON'T START

- Check Fuel Level, automatic shut off at 6%, fill to over 10% to restart.
- Check E-Stop Pull Out
- Check Manual Reset of Overrev Solenoid on intake (Engine Air Intake Passenger Side)

MACHINE ERRORS AND ENGINE CODES DISPLAY IN MESSAGE CENTER

- Error Overrev Active HMI has Emergency Stopped the Engine due to "Overrev"
- Error Machine E-Stop Active Emergency Stop has been activated (Manual Reset Required)
- Error Driver Flow Sensor Active No flow detected in Driver Side Duct (Shutdown Sequence)
- Error Driver Over Temp Active Driver Side Duct exceeded 350degF (Shutdown Sequence)
- Error Driver Duct Transducer Active Transducer detected out of range (Check Connection)
- Error Fuel Sensor Active Transducer detected out of range (Check Fuel Level, Check Connection)
- Warning Low Voltage Active Check battery connections and charging circuit (Shutdown Sequence)
- Warning High Engine Temp Active (Above 210degF)– HMI will shut down heaters until condition is clear (Below 190degF)
- Warning ICNV Node Active Communication Loss (Check Connections)
- Shutdown Sequence Active Refer to Shutdown Sequence
- Machine OK Clear to Operate

ENGINE CODES

Displayed in J1939 message format (SPN # & FMI #) in Message Center - Refer to Manufacturer

TROUBLESHOOTING

SOFTWARE CODES

COMMANDED SHUTDOWN FAULTS

Faults that activate shutdown sequence without activating Intake Valve Shutoff

1. CODE: 'WARNING' 'Fuel Level Low'

1.1.CAUSE: Fuel Level dropped below 2%.

- 1.2.HOW TO CLEAR: Fuel Level must reach >10%.
- CODE: 'FAULT' 'Fuel Level Sensor'
 2.1.CAUSE: Fuel Sensor Signal not detected.
 2.2.HOW TO CLEAR: Correct signal.
 2.3.POSSIBLE ISSUES: Check wiring or replace sensor.
- CODE: 'CYCLE POWER' 'Duct Flow Shutdown'
 3.1.CAUSE: Flow Sensor input OFF while Blower Motor is ON.
 3.2.HOW TO CLEAR: Cycle Power.
 3.3.POSSIBLE ISSUES: MMP1 is tripped, inspect sensor indicators and wiring.
- CODE: 'CYCLE POWER' 'Duct Overtemp Shutdown'
 4.1.CAUSE: Duct temperature reached 300degF.
 4.2.HOW TO CLEAR: Cycle Power.
 4.3.POSSIBLE ISSUES: Duct is blocked, Gate Actuator closed too far, ambient temperature too high.
- CODE: 'FAULT' 'Duct Temp Sensor'
 5.1.CAUSE: Duct Temp Sensor signal not detected.
 5.2.HOW TO CLEAR: Correct signal.
 5.3.POSSIBLE ISSUES: Check wiring or replace sensor.
- CODE: 'FAULT' 'Check Oil Level'
 6.1.CAUSE: Oil Level Sensor input OFF indicating oil has dropped below safe level.
 6.2.HOW TO CLEAR: Correct signal.
 6.3.POSSIBLE ISSUES: Check Oil Level Gauge and wiring. Refer to Factory for troubleshooting Engine.
- CODE: 'FAULT' 'Skim IO Offline'
 7.1.CAUSE: SKIM IO is not detected on J1939 network.
 7.2.HOW TO CLEAR: Correct communication to device.
 7.3.POSSIBLE ISSUES: Check power indicators and wiring.
- CODE: 'FAULT' 'ICN-V Node 5 Offline'
 8.1.CAUSE: ICN-V is not detected on CANopen network.
 8.2.HOW TO CLEAR: Correct communication to device.
 8.3.POSSIBLE ISSUES: Check power indicators and wiring.

EMERGENCY SHUTDOWN FAULTS

Faults that activate immediate shutdown and activate Intake Valve Shutoff

- CODE: 'CYCLE POWER' 'E-Stop Shutdown'
 1.1.CAUSE: E-Stop operator pressed.
 1.2.HOW TO CLEAR: Correct Cause & Cycle Power.
- CODE: 'CYCLE POWER' 'Gas Detect Shutdown'
 2.1.CAUSE: Gas Detect Sensor signal ON indicating atmosphere is unsafe to operate.
 2.2.HOW TO CLEAR: Correct Cause & Cycle Power.
- CODE: 'CYCLE POWER' 'Engine Overrev Shutdown'
 3.1.CAUSE: Engine RPM exceeded safe operating speed indicating malfunction.
 3.2.HOW TO CLEAR: Correct Cause & Cycle Power.
 3.3.POSSIBLE ISSUES: Gas is in atmosphere or engine failure. Refer to Factory.
- CODE: 'CYCLE POWER' 'Undervoltage Shutdown'
 4.1.CAUSE: 3-Phase AC power dropped below tolerance.
 4.2.HOW TO CLEAR: Correct Cause & Cycle Power.
 4.3.POSSIBLE ISSUES: Genset or AVR malfunctioned. Refer to Factory.
- CODE: 'CYCLE POWER' 'Overvoltage Shutdown'
 5.1.CAUSE: 3-Phase AC power exceed upper tolerance.
 5.2.HOW TO CLEAR: Correct Cause & Cycle Power.
 5.3.POSSIBLE ISSUES: Genset or AVR malfunctioned. Refer to Factory.

MACHINE NOTIFICATIONS

Codes that serve to notify operator. Some may prevent machine start.

- CODE: 'STARTUP CYCLE'
 1.1.CAUSE Machine Startup has been activated by operator
 1.2.HOW TO CLEAR: No action necessary
- CODE: 'SHUTDOWN CYCLE'
 2.1.CAUSE: Machine Shutdown has been activated by operator
 2.2.HOW TO CLEAR: No action necessary
- CODE: 'ACTIVE ENGINE CODE' 'SPN## FMI##'
 3.1.CAUSE: Engine Error Occurred
 3.2.HOW TO CLEAR: Refer to Factory to troubleshoot Engine.
- CODE: 'WARNING' 'Low Voltage Detected'
 4.1.CAUSE: Voltage to HMI dropped below tolerance.
 4.2.HOW TO CLEAR: Correct Cause.
 4.3.POSSIBLE ISSUES: Check PS1 indicators, battery health, and wiring.
- CODE: 'WARNING' 'High Engine Temp'
 5.1.CAUSE: Engine Temp reached 210degF. This is to warn operator prior to engine ECM commanding shutdown.
 5.2.HOW TO CLEAR: Correct Cause.

- CODE: 'WARNING' 'Intake Valve Closed'
 6.1.CAUSE: Intake Shutoff Valve has not reset by controller. Engine will not start.
 6.2.HOW TO CLEAR: Cycle Power or wait for Intake Controller to reset valve.
- CODE: 'FAULT' 'Inspect Intake Valve'
 7.1.CAUSE: Intake Valve signal was not received during emergency shutdown
 7.2.HOW TO CLEAR: Correct Cause & Cycle Power.
 7.3.POSSIBLE ISSUES: Check wiring.
- CODE: 'FAULT' 'Actuator NOT Calibrated'
 8.1.CAUSE: Actuator Calibration procedure has not been performed.
 8.2.HOW TO CLEAR: Perform Calibration Procedure.
- CODE: 'FAULT' 'Actuator Position Sensor'
 9.1.CAUSE: Actuator Position Sensor signal not detected.
 9.2.HOW TO CLEAR: Correct Cause.
 9.3.POSSIBLE ISSUES: Check wiring or replace Actuator.
- 10. CODE: 'FAULT' 'Actuator Stalled Detected'
 10.1.CAUSE: No position change detected when operating Actuator.
 10.2.HOW TO CLEAR: Correct Cause.
 10.3.POSSIBLE ISSUES: Obstruction at Gate Actuator or Actuator out of Calibration.

HARDWARE

SYSTEM TROUBLESHOOTING

- ISSUE: No Power at HMI or P12 of HA12938R0 POSSIBLE CAUSES: 1.1.Battery Disconnect OFF
 - , 1.1.1. Turn ON
 - 1.2.30A Fuse blown (P14 "PDM" 600188)
 - 1.2.1. Needs to be replaced.
 - 1.3.CB1 Tripped
 - 1.3.1. Inspection by qualified personnel recommended.
 - 1.4.PS1 Failure
 - 1.4.1. Needs to be replaced.
 - 1.5.HMI Failure
 - 1.5.1. Needs to be replaced.
- 2. ISSUE: No Power at PS1
 - POSSIBLE CAUSES
 - 2.1.Battery Disconnect OFF
 - 2.1.1. Turn ON
 - 2.2.30A Fuse blown (P14 "PDM' 600188)
 - 2.2.1. Needs to be replaced.

- 3. ISSUE: No Power to LM1
 - POSSIBLE CAUSES:
 - 3.1.Disconnect OFF or Tripped at 600002 Panel
 - 3.1.1. Turn ON or Inspection by qualified personnel required.
 - 3.2. Fuse Blown in FB1
 - 3.2.1. Needs to be replaced.
 - 3.3.MMP1 Tripped
 - 3.3.1. Inspection by qualified personnel required.
 - 3.4.AVR Failure
 - 3.4.1. Refer to Factory
 - 3.5.Genset Failure
 - 3.5.1. Refer to Factory
- 4. ISSUE: No Power to Blower when MC-1 turns ON POSSIBLE CAUSES:
 - 4.1.Disconnect OFF or Tripped at 600002 Panel
 - 4.1.1. Turn ON or Inspection by qualified personnel required.
 - 4.2.MMP1 Tripped
 - 4.2.1. Inspection by qualified personnel required.
 - 4.3.AVR Failure
 - 4.3.1. Refer to Factory
 - 4.4.Genset Failure
 - 4.4.1. Refer to Factory
- 5. ISSUE: No Heat while machine running POSSIBLE CAUSES:
 - 5.1.MMP2...5 Tripped
 - 5.1.1. Inspection by qualified personnel required.
 - 5.2.MC2...5 Failure.
 - 5.2.1. Needs to be replaced.
 - 5.3.Heater Failure.
 - 5.3.1. Refer to Factory
- 6. ISSUE: Running Lights not ON while machine running POSSIBLE CAUSES:
 - 6.1.10A Fuse blown (P14 "PDM" 600188).
 - 6.1.1. Needs to be replaced.
 - 6.2.Light Failure.
 - 6.2.1. Needs to be replaced.
 - 6.3.R4 Failure (600001 Back Panel).
 - 6.3.1. Needs to be replaced.
- 7. ISSUE: Engine not Online
 - POSSIBLE CAUSES:
 - 7.1.Start has not been initiated.
 - 7.2. Emergency condition NOT cleared.
 - 7.2.1. See Message Center on HMI and refer to Software Codes.
 - 7.3.10A Fuse blown (P14 "PDM" 600188).
 - 7.3.1. Needs to be replaced.

7.4.Ignition Relay Failure (P14 "PDM" – 600188).

7.4.1. Needs to be replaced.

8. ISSUE: Engine Starter will not engage after Pre-Start alarm POSSIBLE CAUSES:

8.1. Wait to Start required by Engine ECM.

8.1.1. See indicators on HMI and refer to Screen Layout.

8.2.30A Fuse blown (P14 "PDM" – 600188).

8.2.1. Needs to be replaced.

8.3.Start Relay Failure (P14 "PDM" – 600188).

8.3.1. Needs to be replaced.

8.4.Engine Starter Failure.

8.4.1. Refer to Factor for troubleshooting Engine.

Engine maintenance

Top level maintenance is provided in this section. For detailed maintenance procedures for your Thawzall H750, please refer to the Cummins Operation and Maintenance Manual - QSB4.5 Engine supplied with your heater. There you will find a full range of maintenance procedures and maintenance scheduling.



Air Filter

Mechanical Indicator

CAUTION

Never operate the engine without an air filter. Intake air must be filtered to prevent dirt and debris from entering the engine and causing premature wear.

NOTE:

Do not remove the felt washer from the indicator. The felt washer absorbs moisture.

A mechanical restriction indicator is available to indicate excessive air restriction through a dry-type air cleaner. This instrument can be mounted in the air cleaner outlet or on the instrument panel. The red flag (1) in the window gradually rises as the cartage loads with dirt. After changing or replacing the cartage, reset the indicator by pushing the reset button (2).

Restriction or vacuum indicators need to be installed as close as possible to the turbocharger air inlet in order to obtain a true indication of restrictions. Vacuum Indicator

Vacuum switches actuate a warning light on the instrument panel when the air restriction becomes excessive.



Remove filter from filter enclose, inspect filter for dirt and if dirty replace.

Fuel Filter



Remove

Remove the spin-on fuel filter with fuel wrench.

Install

NOTE: Do not pre-fill on-engine fuel filter

CAUTION

Do not pre-fill an on-engine fuel filter with fuel. This system must be primed after the fuel filter is installed. Prefilling the fuel filter can result in debris entering the fuel system and damaging fuel system components Lubricate the O-ring seal with clean lubrication oil.

CAUTION

Use the correct fuel filter. See Cummins/Fleetguard/Nelson filter specifications for the correct part number.

Install the filter on the filter head. Tighten the filter until the gasket contacts the filter head surface. Tighten the fuel filter an additional $\frac{3}{4}$ turn after contact, or consult the filter manufacturer instructions.

Prime fuel system after filter installation.

WARNING

The fuel pump high-pressure fuel lines and fuel rail contain very high-pressure fuel. Never loosen any fittings while the engine is running. Personal injury and property damage can result.

To prime the engine use the OEM installed priming device. Typically, a priming pump is installed at or near the prefilter. See the OEM's instructions for the number of strokes (hand primer) or cycles time (electric priming pump) needed to prime the low pressure system.

NOTE: It is not necessary to vent air from the high pressure system before starting the engine.

NOTE: To prevent damage to the hand pump priming seals, clean the fuel pump head and priming pump with Quick Dry Spray Cleaner, Part Number 3824510, or equivalent, and compressed air prior to priming the fuel system.

Operate the engine and check for leaks.

Oil Filter



WARNING

To reduce the possibility of personnel injury, avoid direct contact of hot oil with your skin. Change the lubricating oil and filter at the specified oil change interval. See the maintenance schedule to find the correct change interval for your application.

NOTE: For most engines, use a container that can hold at least 20 liters (21qt) of lubricating oil. Some engines can be equipped with an increased capacity oil pan requiring a container that will hold 28 liters (30 Qt.) of lubricating oil.

Operate the engine until the water temperature reaches 60°C (140°F).

Shut off the engine

Remove the oil drain plug. Drain the oil immediately to be sure all the oil and suspended contaminants are removed from the engine

REMOVE

Clean the area around the lubricating oil filter head. Use the oil filter wrench, Par Number 3400158, to remove the filter. Clean the gasket surface of the filter head.

NOTE: The O-ring can stick on the filter head. Be sure it is removed before installing the new filter.

Install

Use the correct oil filter. See the Cummins/Fleetguard/Nelson specifications for the correct oil filter part number.

CAUTION

The lack of lubrication during the delay until the filter is pumped full of oil at start-up can damage the engine.

Use clean 15W-40 oil to coat the gasket surface of the filter.

Fill the filter with clean 15W-40 oil.

Apply a light film of lubricating oil to the gasket sealing surface before installing the filter.

NOTE: Be careful the no debris is poured into the filter. If using an oil supply with a metallic or plastic seal under the cap, be careful to peel the seal back. Punching the seal with a knife or sharp object can create debris in the oil container.

CAUTION

Mechanical overtightening of the filter can distort the threads or damage the filter sealing element seal. Install the filter on the oil filter head. Tighten the filter until the gasket contacts the filter head surface. Tighten ³/₄ turn after the gasket makes contact with the filter head.

Fill

Clean and check the lubricating oil drain plug threats and sealing surface. Use a new sealing washer, if damaged.

Install the lubricating oil pan plug.



Fill the engine with clean lubricating oil to the proper level.

Idle the engine to inspect for leaks at the drain plug and , if replaced, the oil filter seal.

NOTE: Engine oil pressure must be indicated on the gauge within 15 seconds after starting. If oil pressure is not registered within 15 seconds, shut off the engine immediately to avoid engine damage. Confirm that the correct oil level is in the oil pan.

Shut off the engine. Wait approximately 5 minutes to let the oil drain from the upper parts of the engine. Check the level again. Add oil as necessary to bring the oil level to the H (high) mark on the dipstick.

OIL LEVEL MAINTENCE CHECK

CAUTION

Never operate the engine with oil level below the L level or above the H level. Poor engine performance or engine damage can occur.

The engine must be level when checking the oil level to make sure the measurement is correct. Shut off the engine for an accurate reading.

Wait at least 15 minutes after shutting off the engine to check the oil level. This allows time for the oil to drain into the oil pan.



XHR750 Engine Maintenance Chart

Description	Operation	Every 250 Hours	Every 500 Hours	Monthly
Engine oil	Change		Х	
Engine Oil filter	Change		Х	
Engine Air Filter	Check	Х		
Engine Fuel filter	Change		Х	
Grease Axle Hubs	Service			Х
Torque Wheel Nuts (120 ft/lbs)	Check			Х

Service Parts

Description	Part Number/ Type
Engine Oil	15 W/ 40
Engine Oil Filter	11736 (Fleetguard LF3970)
Engine Air Filter	11739 (Fleetguard AF25962)
Engine Fuel Filter (Primary)	11738 (Fleetguard FS19732)
Engine Fuel Filter (Secondary)	11737

Refer to engine manual for greater detail

XHR750 Specifications

General Capacities and Component Specifications

Height (w/ heater vent)	91"
Width	90"
Length	191"
Weight (Fuel Empty/Full)	7360/8770 LBS
Engine	Cummins QSB 4.5 w/ Stamford 80 KVA generator
Air Ducts	2 x 16"
Heater Element	480V Electric

Trailer And Fuel tank

Axles	2- 5000 Lb. With Electric Brakes
Tires	ST225/75R-15 6 Bolt
Tire Inflation Pressure	50 PSI
Wheel Nut Torque	120 FT-LBS
Hitch	2-5/16" Ball or Pintle
Tie Downs	4 For Transporting
Fuel Tank Capacity	192 US Gallons
Ground Clearance	12"
Containment	110%

Performance Specifications

Nominal Heat Output	750,000 BTU/H
Fuel Requirement	#1 or #2 Diesel Fuel
Fuel Consumption	7 GPH MAX
Run Time	Min 27 Hrs @ 100%
Air Flow	Variable Max 10,500 CFM @ 20" W.C.



WHMIS (Pictograms)	WHMIS (Classification)	Protective Clothing	TDG (pictograms)
	B-3, D-2B		

Section 1. Chemical Product and Company Identification				
Product Name	DIESEL FUEL	Code	W104 SAP: 120, 121, 122, 287	
Synonym	Diesel 50. Diesel 50 S. #1 Diesel . #1 Diesel S. Diesel C. Seasonal Diesel	Validated o	n 3/2/2001.	
oynonym	Seasonal Diesel LS, Diesel AA, Domestic Marine Diesel, International marine Diesel, Seasonal Diesel Locomotive, Domestic Marine diesel LS, diesel -20°C (LS), LSD, Low Sulphur Diesel, dyed diesel, marked diesel, coloured diesel, Naval Distillate.			
Manufacturer	PETRO-CANADA P.O. Box 2844 Calgary, Alberta T2P 3E3	<u>In case of</u> Emergency	Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult	
Material Uses	Diesel fuels are distillate fuels suitable for use in high and medium speed internal combustion engines of the compression ignition type.		emergency number(s).	

Section 2. Composition and Information on Ingredients					
			Exp	osure Limits (ACGIH)	
Name	CAS #	% (V/V)	TLV-TWA(8 h)	STEL	CEILING
 Diesel oil. Proprietary additives. Aromatic content is 50% maximum (benzene: nil). * Notice of Intended Change (2000): 100 mg/m³, skin, A3. 	68334-30-5 Not available	>99.9 <0.1	Not established* Not established	Not established Not established	Not established Not established
Manufacturer Not applicable Recommendation					
Other Exposure Limits Consult local, state, provincial or territory authorities for acceptable exposure limits.					

Section 3. Hazards Identification.				
Potential Health Effects	Eye contact may cause mild eye irritation. Skin contact can cause moderate to severe irritation and produce drying, cracking, or defatting dermatitis. Inhalation of vapours can cause CNS depression with symptoms of nausea, headaches, vomiting, dizziness, fatigue, light-headedness, reduced coordination, unconciousness and possibly death. Inhalation can also cause irritation of nose and throat. Aspiration of liquid drops into the lungs may produce potentially fatal chemical pneumonitis (fluid in the lungs), severe lung damage, or respiratory failure. For more information, refer to Section 11.			

Section 4. First Ai	id Measures
Eye Contact	IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek medical attention.
Skin Contact	Remove contaminated clothing - launder before reuse. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Seek medical attention.
Inhalation	Evacuate the victim to a safe area as soon as possible. If the victim is not breathing, perform artificial respiration. Allow the victim to rest in a well ventilated area. Seek medical attention.
Ingestion	DO NOT induce vomiting because of danger of aspirating liquid into lungs. Seek medical attention.
Note to Physician	Not available

Section 5. Fire-fighting Measures				
Flammability	Class II - combustible liquid (NFPA).	Flammable Limits	LOWER: 0.7%, UPPER: 6%	
Flash Points	Diesel Fuel: Closed Cup: >40°C (>104°F) Marine Diesel Fuel: Closed Cup: >60°C (>140°F)	Auto-Ignition Temperature	225°C (437°F)	
Fire Hazards in Presence of Various Substances	Flammable in presence of open flames, sparks, or heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. This product can accumulate static charge and ignite. May accumulate in confined spaces.	Explosion Hazards in Presence of Various Substances	Containers may explode in heat of fire. Do not cut, weld, heat, drill or pressurize empty container. Vapour explosion hazard indoors, outdoors or in sewers. Runoff to sewer may create fire or explosion hazard.	
Products of Combustion	Products of Carbon oxides (CO, CO2), nitrogen oxides (NOx), sulphur oxides (SOx), sulphur compounds (H2S), water vapour (H2O) smoke and irritating vapours as products of incomplete combustion.			

DIESEL FUEL	Page Number: 2
Fire Fighting Media and Instructions	NAERG96, GUIDE 128, Flammable liquids (Non-polar/Water-immiscible). CAUTION: This product has a moderate flash point above 40°C: Use of water spray when fighting fire may be inefficient. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions.
	SMALL FIRES: Dry chemical, CO2, water spray or regular foam. LARGE FIRES: Water spray, fog or regular foam. Do not use straight streams. Move containers from fire area if you can do it without risk. Fires Involving Tanks or Car/Trailer Loads: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
	Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting devices or any discolouration of tank. ALWAYS stay away from the ends of tanks. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible withdraw from area and let fire burn. Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.

Section 6. Accidental Release Measures

NAERG96, GUIDE 128, Flammable Liquids (Non-polar/ Water-immiscible). ELIMINATE ALL IGNITION SOURCES. Avoid contact. Stop leak if without risk. Contain spill. Absorb with inert absorbents, dry clay, or diatomaceous earth. Avoid inhaling dust of diatomaceous earth for it may contain silica in very fine particle size, making this a potential respiratory hazard. Place used absorbent in closed metal containers for later disposal or burn absorbent in a suitable combustion chamber. DO NOT FLUSH TO SEWERS, STREAMS OR OTHER BODIES OF WATER. Check with applicable jurisdiction for specific disposal requirements of spilled material and empty containers. Notify the appropriate authorities immediately.
appropriate authorities infinediately.

Section 7. H	Section 7. Handling and Storage		
Handling	Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk. DO NOT reuse empty containers without commercial cleaning or reconditioning. Ground/bond line and equipment during pumping or transfer to avoid accumulation of static charge. DO NOT ingest. Do not breathe gas/vapour/spray. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately. Avoid contact with skin and eyes. Practice good personal hygiene. Wash hands after handling and before eating. Launder work clothes frequently. Discard saturated leather goods.		
Storage	Store in tightly closed containers in cool, dry, isolated, well-ventilated area, and away from incompatibles. Ground all equipment containing material.		

Section 8. Exposure Controls/Personal Protection

Engineering Controls	For normal application, special ventilation is not necessary. If user's operations generate vapours or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Make-up air should always be supplied to balance air removed by exhaust ventilation. Ensure that eyewash station and safety shower are close to work-station.
Personal Protection -	The selection of personal protective equipment varies, depending upon conditions of use.
Eyes	Eye protection (i.e., safety glasses, safety goggles and/or face shield) should be determined based on conditions of use. If product is used in an application where splashing may occur, the use of safety goggles and/or a face shield should be considered.
Body	Wear appropriate clothing to prevent skin contact. As a minimum long sleeves and trousers should be worn.
Respiratory	Where concentrations in air may exceed the occupational exposure limits given in Section 2 (and those applicable to your area) and where engineering, work practices or other means of exposure reduction are not adequate, NIOSH approved respirators may be necessary to prevent overexposure by inhalation.
Hands	Wear appropriate chemically protective gloves. When handling hot product ensure gloves are heat resistant and insulated.
Feet	Wear appropriate footwear to prevent product from coming in contact with feet and skin.

Section 9. Physical and Chemical Properties

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Physical State and Appearance	Bright oily liquid.	Viscosity	1.3-4.1 cSt @ 40°C (104°F)
Colour	Clear to yellow / brown. Low sulphur diesel fuels (<0.05 wt % sulphur) are colourless to light yellow (and may be dyed red for taxation purposes). Regular sulphur diesel fuels (0.05-0.50 % sulphur) may be colourless to yellow / brown and are usually dyed red for taxation purposes.	Pour Point	Variable, 0°C to -50°C (32°F to -58°F)
Odour	Petroleum oil like.	Softening Point	Not applicable.
Odour Threshold	Not available	Dropping Point	Not applicable.
Boiling Point	150-371°C (302-700°F)	Penetration	Not applicable.
Density	0.85 kg/L @ 15°C (Water = 1).	Oil / Water Dist. Coefficient	Not available
Vapour Density	4.5 (Air = 1)	lonicity (in water)	Not applicable.

DIESEL FUEL			Page Number: 3
Vapour Pressure	1.0 kPa @ 20ºC (7.5 mmHg @ 68ºF).	Dispersion Properties	Not available
Volatility	<0.1 (Butyl acetate = 1), less than gasoline.	Solubility	Insoluble in cold water, soluble in non-polar hydrocarbon solvents.

Section 10. Stability and Reactivity			
Corrosivity	Not available		
Stability	The product is stable under normal handling and storage conditions.	Hazardous Polymerization	Will not occur under normal working conditions.
Incompatible Substances / Conditions to Avoid	Reactive with oxidizing agents and acids.	Decomposition Products	May release COx, NOx, SOx, H2S, H2O, smoke and irritating vapours when heated to decomposition.

Section 11. Toxicological Information			
Routes of Entry	Skin contact, eye contact, inhalation, and ingestion.		
Acute Lethality	Acute oral toxicity (LD50): 7500 mg/kg (rat).		
Chronic or Other Toxic Effects Dermal Route:	Skin contact may cause moderate to severe irritation. Repeated exposure would produce drying and cracking or defatting dermatitis.		
Inhalation Route:	Inhalation of vapours can cause CNS depression with symptoms of nausea, headaches, vomiting, dizziness, fatigue, light-headedness, reduced coordination, unconciousness and possibly death. Inhalation can also cause irritation of nose and throat.		
Oral Route:	Aspiration of liquid drops into the lungs may produce potentially fatal chemical pneumonitis (fluid in the lungs), severe lung damage, or respiratory failure.		
Eye Irritation/Inflammation:	Eye contact may cause mild irritation, but no permanent damage.		
Immunotoxicity:	Not available		
Skin Sensitization:	This product is not expected to be a skin sensitizer, based on the available data and the known hazards of the components.		
Respiratory Tract Sensitization:	This product is not expected to be a respiratory tract sensitizer, based on the available data and the known hazards of the components.		
Mutagenic:	This product is not expected to be a mutagen, based on the available data and the known hazards of the components.		
Reproductive Toxicity:	This product is not expected to be a reproductive hazard, based on the available data and the known hazards of the components.		
Teratogenicity/Embryotoxicity:	This product is not expected to be a teratogen or an embryotoxin, based on the available data and the known hazards of the components.		
Carcinogenicity (ACGIH):	ACGIH Notice of Intended Changed (2000): proposed A3: animal carcinogen. [Diesel oil]		
Carcinogenicity (IARC):	This product is not known to contain any chemicals at reportable quantities that are listed as group 1, 2A or 2B carcinogens by IARC.		
Carcinogenicity (NTP):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by NTP.		
Carcinogenicity (IRIS):	Not available		
Carcinogenicity (OSHA):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by OSHA.		
Other Considerations	No additional remark.		

Section 12. Ecolog	Section 12. Ecological Information			
Environmental Fate	Not available	Persistance/ Not available Bioaccumulation Potential		
BOD5 and COD	Not available	Products of Not available Biodegradation		
Additional Remarks	No additional remark.			

Page Number: 4

Section 13. Disposal Considerations		
Waste Disposal	Preferred waste management priorities are: (1) recycle or reprocess; (2) incineration with energy recovery; (3) disposal at licensed waste disposal facility. Ensure that disposal or reprocessing is in compliance with government requirements and local disposal regulations. Consult your local or regional authorities.	

Section 14. Transport Information			
TDG Classification	Diesel Fuel UN1202 3 III	Special Provisions for Transport	Not applicable.

Section 15. Regulatory Information				
Other Regulations	This product is acceptable for use under the provisions of WHMIS-CPR. All components of this formulation are listed on the CEPA-DSL (Domestic Substances List).			
	All components of this formulation are listed on the US EPA-TSCA Inventory.			
	All components of this product are on the European Inventory of Existing Commercial Chemical Substances (EINECS).			
	This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.			
	Please contact Product Safety for more informa	tion.		
DSD/DPD (Europe)	Not evaluated.	HCS (U.S.A.)	CLASS: Irritating substance. CLASS: Target organ effects. CLASS: Combustible liquid having a flash point between 37.8°C (100°F) and 93.3°C (200°F).	
ADR (Europe) (Pictograms)	NOT EVALUATED FOR EUROPEAN TRANSPORT NON ÉVALUÉ POUR LE TRANSPORT FUIROPÉFN	DOT (U.S.A) (Pictograms)		
HMIS (U.S.A.)	Health Hazard 2* Fire Hazard 2 Reactivity 0 Personal Protection H	S.A.) Health 2 0 R Spot	Rating 0 Insignificant Hazard 1 Slight eactivity 2 Moderate cific hazard 3 High 4 Extreme	

Section 16. Other Information	
References Available upon request. * Marque de commerce de Petro-Canada - Trademark	
Glossary ACGIH - American Conference of Governmental Industrial Hygienists ADR - Agreement on Dangerous goods by Road (Europe) ASTM - American Society for Testing and Materials (BOD5 - Biological Oxygen Demand in 5 days CAN/CGA B149.2 Propane Installation Code CAS - Chemical Abstract Services CEPA - Canadian Environmental Protection Act CERCLA - Comprehensive Environmental Response, Compensation and Liability Act CFR - Code of Federal Regulations CHIP - Chemicals Hazard Information and Packaging Approved Supply List COD5 - Chemical Oxygen Demand in 5 days CPR - Controlled Products Regulations DOT - Department of Transport DSCL - Dangerous Substances Classification and Labeling (Europe) DSD/DPD - Dangerous Substances or Dangerous Preparations Directives (Europe) DSL - Domestic Substance List EEC/EU - European Inventory of Existing Commercial Chemical Substances EPCRA - Emergency Planning and Community Right to Know Act FDA - Feod and Drug Administration FIFRA - Federal Insecticide, Fungicide and Rodenticide Act HCS - Hazardous Communication System HMIS - Hazardous Material Information System	IRIS - Integrated Risk Information System LD50/LC50 - Lethal Dose/Concentration kill 50% LDL0/LCL0 - Lowest Published Lethal Dose/Concentration NAERG'96 - North American Emergency Response Guide Book (1996) NFPA - National Fire Prevention Association NIOSH - National Institute for Occupational Safety & Health NPRI - National Pollutant Release Inventory NSNR - New Substances Notification Regulations (Canada) NTP - National Toxicology Program OSHA - Occupational Safety & Health Administration PEL - Permissible Exposure Limit RCRA - Resource Conservation and Recovery Act SARA - Superfund Amendments and Reorganization Act SD - Single Dose STEL - Short Term Exposure Limit (15 minutes) TDG - Transportation Dangerous Goods (Canada) TDLo/TCL0 - Lowest Published Toxic Dose/Concentration TLm - Median Tolerance Limit TLV-TWA - Threshold Limit Value-Time Weighted Average TSCA - Toxic Substances Control Act USEPA - United States Environmental Protection Agency USP - United States Pharmacopoeia WHMIS - Workplace Hazardous Material Information System
For Copy of MSDS Fuels & Solvents: Western Canada, telephone: 403-296-4158; fax: 403-296-6551 Ontario & Central Canada, telephone: 1-800-668-0220; fax: 1-800-8 Quebec & Eastern Canada, telephone: 514-640-8308; fax: 514-640	Prepared by Product Safety - TAR on 3/2/2001. Data entry by Product Safety - JDW. 337-1228 -8385
For Product Safety Information: (905) 804-4752	













NOTES



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