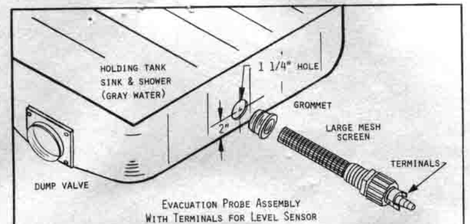
thermasan

WASTE DESTRUCTION SYSTEM

INSTALLATION & OWNERS MANUAL FOR BL2-500

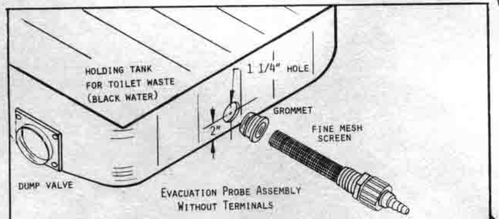
THERMASAN 2-500 SYSTEM IS FOR VEHICLES WITH TWO HOLDING TANKS. ONE FOR SINK AND SHOWER WASTE (GRAY WATER) AND THE OTHER FOR TOILET WASTE (BLACK WATER). THIS UNIT WILL DISPOSE OF APPROXIMATELY ONE GALLON OF BOTH SINK AND SHOWER AND TOILET WASTE FOR EVERY 15 MILES OF DRIVING. (DEPENDING ON DRIVING CONDITIONS). IT HAS A TWO PUMP METERING INJECTION ASSEMBLY. ONE PUMPS FROM THE SINK AND SHOWER TANK AND THE OTHER FROM THE TOILET WASTE TANK. THE HOSES ARE CONNECTED TOGETHER ON THE OUTLET OF THE PUMPS TO MIX THE CONTENTS AND ELIMINATE ANY ODORS WHILE PUMPING INTO THE EXHAUST.



Evacuation Probe Assembly
With Terminals for Level Sensor

Locate the holding tank that contains sink & shower waste (gray water). Select a flat area on the side approximately halfway between front and rear and on a center line 2" from the bottom as shown. If side not accessible, locate in rear but away from dump and inlet valves.

1. Drill a hole using a 1 1/4" holesaw and insert rubber grommet.
2. Lubricate inside of grommet with soap or a silicone and insert probe with nylon hex against rubber grommet and rotate terminals to a 1:00 & 7:00 position.
3. Lubricate inside of either gray hose that runs to metering injection assembly and install it onto probe. Secure with hose clamp. (Caution: Keep clamp from contacting terminals on probe).

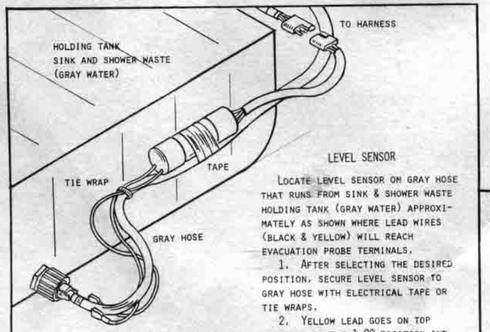


Evacuation Probe Assembly
Without Terminals

Locate the holding tank that contains toilet waste (black water). Select a flat area on side of holding tank halfway between front and rear and on a center line 2" from the bottom as shown. If side not accessible, locate in rear but away from dump and inlet valves.

1. Drill a hole using a 1 1/4" holesaw and insert rubber grommet.
2. Lubricate inside of grommet with soap or a silicone and insert probe with nylon hex against rubber grommet.
3. After installing probe, lubricate inside of either of the gray hoses that runs to metering injection assembly and install it onto probe. Secure with hose clamp.

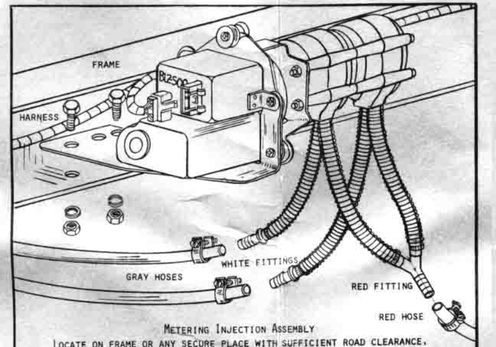
The evacuation probe is designed to remove approximately 75% of contents because of insoluble matters. For this reason, it is recommended to dump your holding tank occasionally.



Level Sensor

Locate level sensor on gray hose that runs from sink & shower waste holding tank (gray water) approximately as shown where lead wires (black & yellow) will reach evacuation probe terminals.

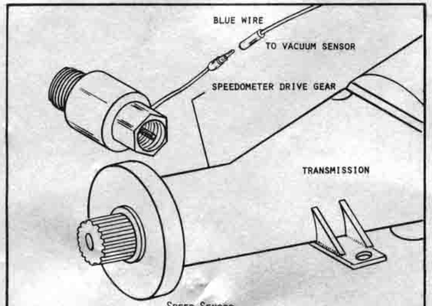
1. After selecting the desired position, secure level sensor to gray hose with electrical tape or tie wraps.
2. Yellow lead goes on top terminal in the 1:00 position and the black lead on the bottom at the 7:00 position.
3. Connect plug on opposite end to main harness.



Metering Injection Assembly

Locate on frame or any secure place with sufficient road clearance. Metering injection assembly can be mounted in any position. The closer assembly is located to evacuation probe the better the results.

1. After selecting the desired position, use the mounting bracket to lay-out hole pattern or mark two places 1 7/8" apart or 3" apart. Drill two 7/16" holes.
2. Secure in place with two No. 3/8" x 1" bolts.
3. Connect red fitting to red sanijector hose and white fittings to gray evacuation hoses. Secure with hose clamps.
4. Plug electrical connector from harness to back of red can.



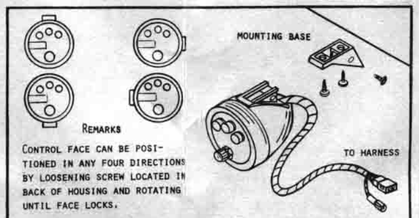
Speed Sensor

Speed sensor operates from the transmission by sensing the speed gear to speedometer. It will turn your Thermasan on and off at approximately 30 mph.

1. Locate speedometer cable connection to transmission and remove. Install sensor to transmission "finger tight only." Reconnect speedometer cable to sensor again "finger tight only." Any excess tightening may damage sensor.
2. Connect to blue wire from vacuum sensor.

Remarks

Certain transmissions and speedometer cable connections require a special adapter for proper installation of the speed sensor. For further information, see insert for adapters.



Remarks

Control face can be positioned in any four directions by loosening screw located in back of housing and rotating until face locks.

BL Control Head Assembly

Locate control head where it will not obstruct driver's movements or vision but will be in easy reach.

1. After locating desired position, remove mounting base from control by removing screw located on side of mounting base. Use the base to lay-out hole pattern.
2. Drill two holes using a 9/64 (No. 28) drill bit and mount base using two No. 8 x 3/4 self-tapping screws.
3. Mount control by sliding onto mounting base and snap into position and replace screw on side of base.
4. Route control harness behind dash and connect to main harness.

Vacuum Sensor Assembly

Mount to fire wall or a place free of obstructions and in reach of selected vacuum connection.

Sensor can be mounted in any direction on metal or wood.

1. Lay out hole pattern with sensor bracket and drill two holes using 9/64 (28) drill bit. Mount with two No. 8 x 3/4 self-tapping screws.

Locate the proper vacuum source by the following:

A. Connect to a source direct from the intake manifold. Be sure it will hold a constant vacuum (normally 18" at idle) and does not leak.

B. Connecting to PCV hose will operate sensor but is susceptible to leaks from faulty PCV valve. Also sludge can bypass valve and clog inline restrictor located in sensor hose. For this reason locate sensor in a higher position than vacuum source.

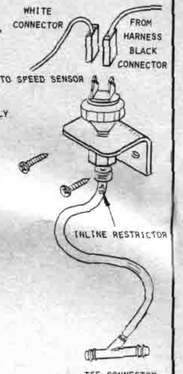
(Caution: Inline restrictor cannot be removed from hose.)

C. - Some engines are equipped with a thermal vacuum switch located on the intake manifold to assist emission controls and should not be used. Check your vehicle Owner's Manual.

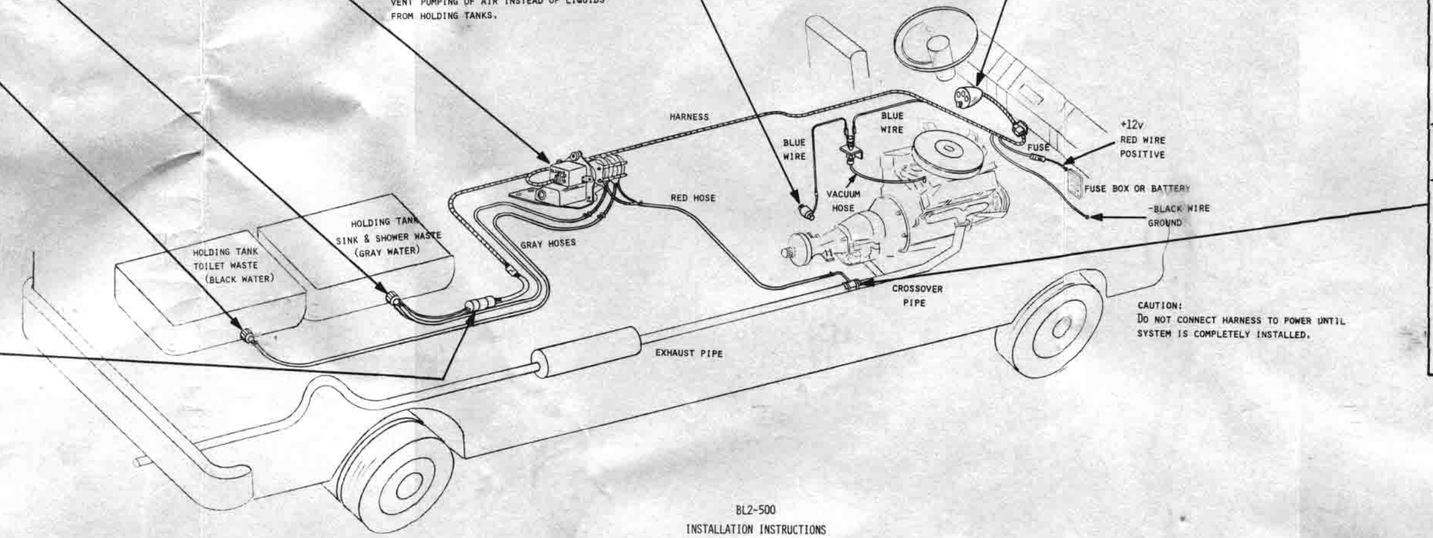
D. Do not locate in hose to air cleaner, air brake reservoir, or vacuum advance.

2. If tee connector is too small, simply remove it from the hose and install larger tee that is supplied with hardware package.
3. After sensor is installed, locate blue wire from harness (with black connector) and connect to either one of the terminals.
4. Connect blue wire with white connector (that comes with package) to other terminal and route to speed sensor on transmission.

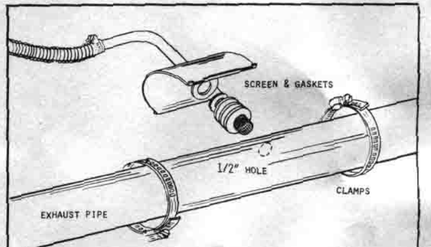
(Vacuum sensor operates on and off approximately between 16 1/4" and 17" of vacuum).



Note:
Tie wrap harness and hoses approximately every 18" apart (do not pinch or bend hoses as to restrict flow).
Do not route hoses & harness on sharp edges or where vibration could cause chafing. Tape together all excess harness. All hose clamps must be tightened to prevent pumping of air instead of liquids from holding tanks.



CAUTION:
Do not connect harness to power until system is completely installed.



Sanijector Assembly

Locate sanijector as close to engine as possible but in an area where air flow will pass over sanijector for proper cooling and behind any catalytic pollution control devices. Always install in front of muffler and select a flat or straight section of pipe.

1. Drill a 1/2" hole in one side of exhaust pipe.
2. Install sanijector as shown and secure with two clamps to seal gaskets around screen and exhaust pipe.
3. Route red hose to red fitting on metering injection assembly. Secure with clamp.

(Caution: Keep hose away from exhaust pipe for maximum life)

Tools Required

1. Screwdrivers, flat & cross recessed.
2. 9/16 wrench or adjustable wrench.
3. Drill motor.
4. 9/64, 7/16, & 1/2 drill bits.
5. 1 1/4" holesaw.
6. Knife.
7. Electrical tape.

BL2-500
Installation Instructions

CONGRATULATIONS

The Thermasan system will offer you independence from routine dumping of your holding tank. Thermasan is a unique device designed to destroy waste through the heat in the exhaust pipe by controlled sensors. Thermasan carries the National Sanitation Foundation seal of approval and any engine that will meet Federal and State emission standards will meet the same with a Thermasan unit installed.

OPERATING TIPS AND MAINTENANCE

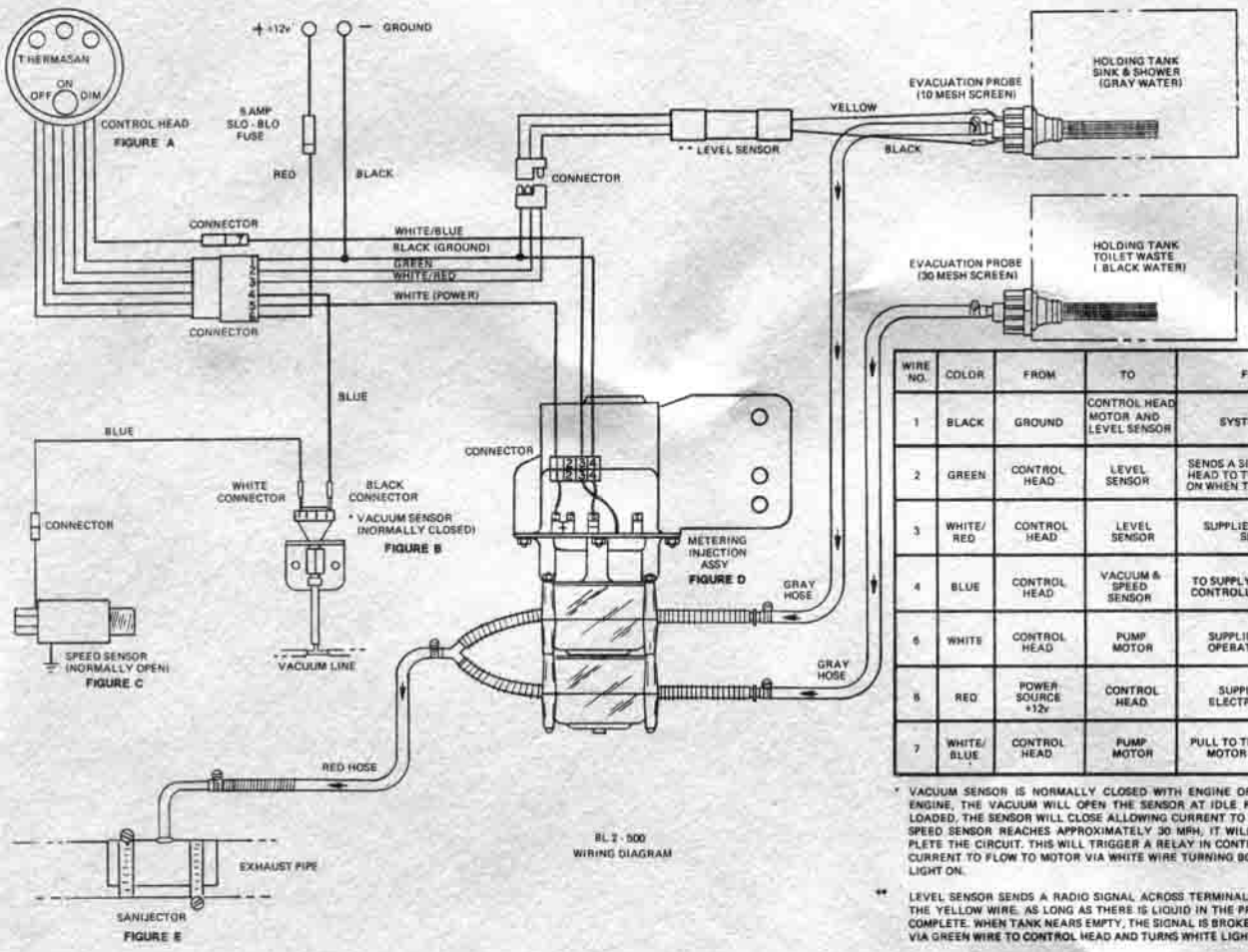
1. Normal Operation of the Thermasan System.
   A. Green light on indicates system is ready.
   B. Red light on indicates system is operating. It will come on when driving at a steady speed (above 35 mph) and when going uphill. It will go off when slowing down or going downhill. Red light will not come on at speeds below 30-35 mph.
   C. Red light will blink when switch is pulled out to check pump operation.
   D. White light on indicates liquid level is below evacuation probe. White light off indicates liquid level is above evacuation probe. White light will flicker when liquid level is nearing evacuation probe and system can be turned off. It may flicker when turning or driving on rough roads and should be left on.

   Note:

   Red and green lights may be dimmed by turning on/off switch to right. White light will not dim.
2. We recommend operating the unit whenever you are driving with waste in the holding tank. When waste level is below the probe, Thermasan will pump air instead of waste and will not damage pump.
3. Do not put napkins, kleenex or other wet strength articles or combustible materials such as kerosene, alcohol, or gasoline in your holding tank.
4. Occasional draining of your holding tank at an approved dumping station is recommended to remove foreign particles and insoluble matter. The evacuation probe and hoses should be inspected and cleaned, if necessary, while the tank is empty.
5. For preventive maintenance, we recommend that you replace the pump hose assembly and the sanijector screen and gaskets assembly annually. This is a simple replacement, and parts can be ordered through your Thermasan dealer or directly from Thermasan Customer Relations.
6. All bearings are lifetime sealed and do not require lubrication. Furthermore, adjustment to the system are not necessary.
7. The Thermasan system will not rust the exhaust system and has no effect on engine performance.
8. For winter storage, we recommend dumping your holding tank and flushing out the hoses with an R.V. anti-freeze, leaving some anti-freeze in the hoses.
9. If odors are detected on some exhaust systems, it may indicate that contents in holding tank need to be diluted by the addition of water or Aqua Kem or both.

ALL THERMASAN PRODUCTS ARE SUBJECT TO THE FOLLOWING WARRANTY:

1. Thermasan products are warranted to the original owner for a period of one (1) year from the date of purchase, 60 days for units installed on rental vehicles. The warranty may provide for repair, exchange of parts or replacement of defective unit as necessary, including labor, upon the condition that the necessary repairs, etc., are performed through a Thermasan Approved Service Center.
2. Units returned under this warranty will be inspected. Damages which, in Thermasan's judgement, occur from misuse, negligence, accident or any other unreasonable use shall invalidate this warranty. In addition, where the product has been tampered with or altered in any way or if the serial number or date of manufacture stamp has been effaced, altered or removed, this warranty is void.
3. Should an owner possess a unit believed to be defective, he must insure that said unit or easily removable part is returned to a Thermasan Approved Service Center for inspection. The Service Center will determine whether or not the warranty claim is valid. If the Service Center finds the unit or part defective and is a proper warranty claim, repairs will be made free of charge and returned prepaid to the owner. The Thermasan unit or part may be returned to Thermasan Corporation, 800 Baker Road, Dexter, Michigan 48130, in lieu of returning such to a Thermasan Approved Service Center.
4. No other express warranty is given and no person or representative is authorized to make any warranties or assume any liability by words or action which shall constitute a warranty other than what is contained herein.



BL 2 - 500
WIRING DIAGRAM

WIRE NO.	COLOR	FROM	TO	FUNCTION
1	BLACK	GROUND	CONTROL HEAD MOTOR AND LEVEL SENSOR	SYSTEMS GROUND
2	GREEN	CONTROL HEAD	LEVEL SENSOR	SENDS A SIGNAL TO CONTROL HEAD TO TURN WHITE LIGHT ON WHEN TANK NEARS EMPTY
3	WHITE/ RED	CONTROL HEAD	LEVEL SENSOR	SUPPLIES CURRENT TO SENSOR
4	BLUE	CONTROL HEAD	VACUUM & SPEED SENSOR	TO SUPPLY CURRENT TO THE CONTROLLING SENSORS
6	WHITE	CONTROL HEAD	PUMP MOTOR	SUPPLIES CURRENT TO OPERATE PUMP MOTOR
8	RED	POWER SOURCE +12v	CONTROL HEAD	SUPPLIES SYSTEMS ELECTRICAL CURRENT
7	WHITE/ BLUE	CONTROL HEAD	PUMP MOTOR	PULL TO TEST AND MONITORS MOTOR REVOLUTIONS

* VACUUM SENSOR IS NORMALLY CLOSED WITH ENGINE OFF. AFTER STARTING ENGINE, THE VACUUM WILL OPEN THE SENSOR AT IDLE RPM. WHEN ENGINE IS LOADED, THE SENSOR WILL CLOSE ALLOWING CURRENT TO SPEED SENSOR, WHEN SPEED SENSOR REACHES APPROXIMATELY 30 MPH, IT WILL GROUND AND COMPLETE THE CIRCUIT. THIS WILL TRIGGER A RELAY IN CONTROL HEAD ALLOWING CURRENT TO FLOW TO MOTOR VIA WHITE WIRE TURNING BOTH MOTOR AND RED LIGHT ON.

** LEVEL SENSOR SENDS A RADIO SIGNAL ACROSS TERMINALS ON THE PROBE VIA THE YELLOW WIRE. AS LONG AS THERE IS LIQUID IN THE PROBE, THE CIRCUIT IS COMPLETE. WHEN TANK NEARS EMPTY, THE SIGNAL IS BROKEN SENDING A SIGNAL VIA GREEN WIRE TO CONTROL HEAD AND TURNS WHITE LIGHT ON.

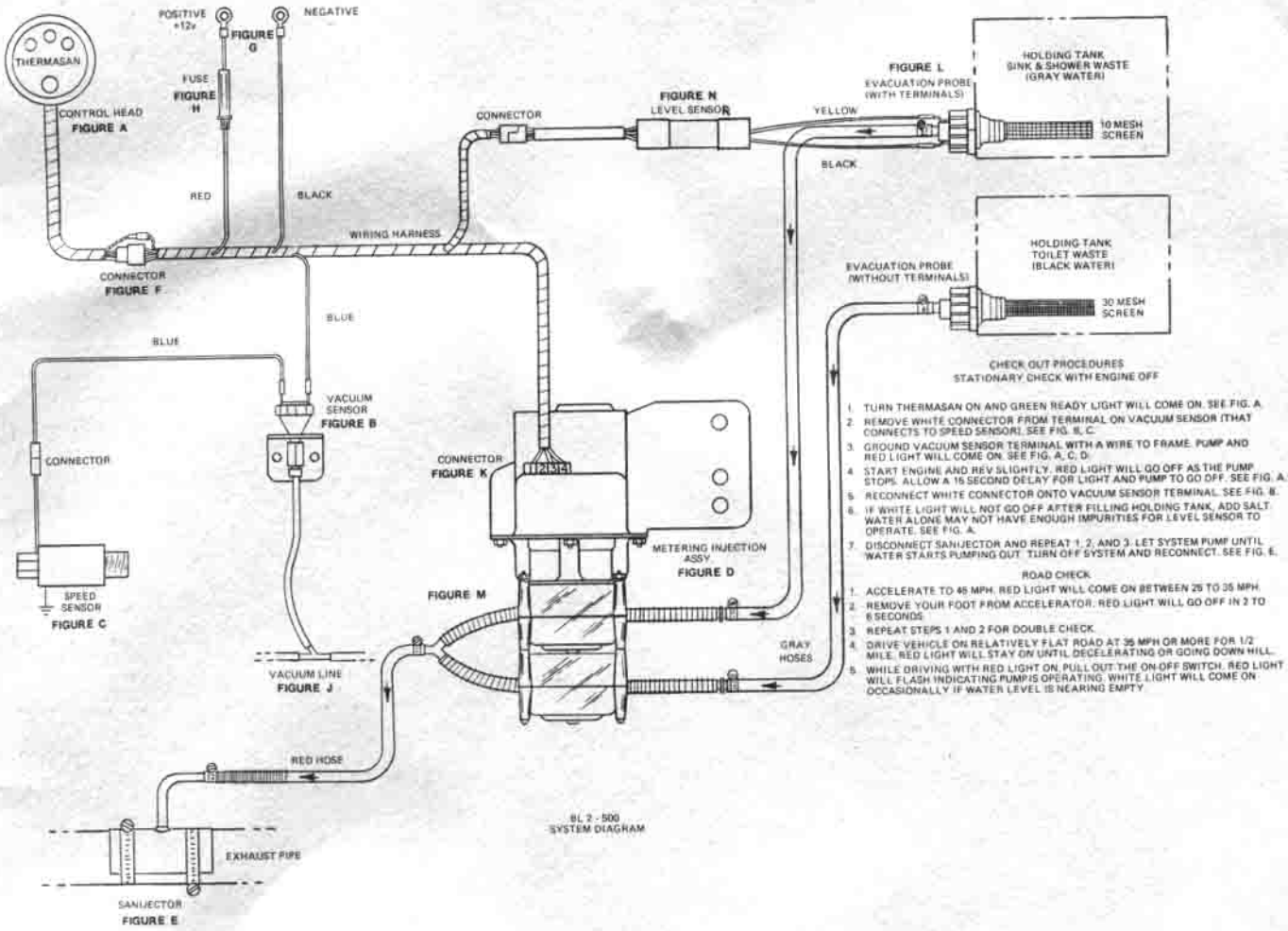
CHECK OUT PROCEDURES
STATIONARY CHECK WITH ENGINE OFF

1. Turn Thermasan on and green ready light will come on. See Figure A.
2. Remove wire from terminal on vacuum sensor that connects to speed sensor. See Figure B, C.
3. Ground vacuum sensor terminal with a wire to frame. Pump and red light will come on. See Figure A, B, D.
4. Start engine and rev slightly. Red light will go off as the pump stops. Allow a 15 second delay for light and pump to go off. See Figure A.
5. Replace blue wire on vacuum sensor terminal. See Figure B.
6. Disconnect sanijector and repeat 1, 2, & 3. Let system pump until water starts pumping out. Turn off system and reconnect. See Figure E.

ROAD CHECK

1. Accelerate to 45 mph. Red light will come on between 25 to 35 mph.
2. Remove your foot from accelerator. Red light will go off in 2 to 6 seconds.
3. Repeat steps 1 & 2 for double check.
4. Drive vehicle on relatively flat road at 35 mph or more for 1/2 mile. Red light will stay on until decelerating or going down hill.
5. While driving with red light on, pull out the on-off switch. Red light will flash indicating pump is operating. White light will come on ocassionally if water level is nearing empty.

thermasan
WASTE DESTRUCTION SYSTEM



CHECK OUT PROCEDURES

STATIONARY CHECK WITH ENGINE OFF

1. TURN THERMASAN ON AND GREEN READY LIGHT WILL COME ON. SEE FIG. A.
2. REMOVE WHITE CONNECTOR FROM TERMINAL ON VACUUM SENSOR (THAT CONNECTS TO SPEED SENSOR). SEE FIG. B, C.
3. GROUND VACUUM SENSOR TERMINAL WITH A WIRE TO FRAME. PUMP AND RED LIGHT WILL COME ON. SEE FIG. A, C, D.
4. START ENGINE AND REV SLIGHTLY. RED LIGHT WILL GO OFF AS THE PUMP STOPS. ALLOW A 15 SECOND DELAY FOR LIGHT AND PUMP TO GO OFF. SEE FIG. A.
5. RECONNECT WHITE CONNECTOR ONTO VACUUM SENSOR TERMINAL. SEE FIG. B.
6. IF WHITE LIGHT WILL NOT GO OFF AFTER FILLING HOLDING TANK, ADD SALT. WATER ALONE MAY NOT HAVE ENOUGH IMPURITIES FOR LEVEL SENSOR TO OPERATE. SEE FIG. A.
7. DISCONNECT SANIJECTOR AND REPEAT 1, 2, AND 3. LET SYSTEM PUMP UNTIL WATER STARTS PUMPING OUT. TURN OFF SYSTEM AND RECONNECT. SEE FIG. E.

ROAD CHECK

1. ACCELERATE TO 45 MPH. RED LIGHT WILL COME ON BETWEEN 25 TO 35 MPH.
2. REMOVE YOUR FOOT FROM ACCELERATOR. RED LIGHT WILL GO OFF IN 2 TO 6 SECONDS.
3. REPEAT STEPS 1 AND 2 FOR DOUBLE CHECK.
4. DRIVE VEHICLE ON RELATIVELY FLAT ROAD AT 35 MPH OR MORE FOR 1/2 MILE. RED LIGHT WILL STAY ON UNTIL DECELERATING OR GOING DOWN HILL.
5. WHILE DRIVING WITH RED LIGHT ON, PULL OUT THE ON-OFF SWITCH. RED LIGHT WILL FLASH INDICATING PUMP IS OPERATING. WHITE LIGHT WILL COME ON OCCASIONALLY IF WATER LEVEL IS NEARING EMPTY.

HOW TO USE OUR TROUBLE-SHOOTING GUIDE

The Thermansan Trouble-Shooting Guide is designed to give fast and easy solutions to Service Problems. To use the Guide, simply select the particular symptoms observed and match them with the Problem Index below. After replacing with a service part, recheck the system. Take a test drive to be certain everything is functioning properly.

PROBLEM INDEX FOR BL2 - 500 SYSTEM

Problems Indicated by the Control Head:

Symptom No. 1. No lights with system turned on.
Symptom No. 2. Green Ready light but no red Reaction light (above 35 mph.).
Symptom No. 3. Red Reaction light but no green Ready light.
Symptom No. 4. Ready and Reaction lights come on but unit does not pump waste.
Symptom No. 5. Reaction light stays on when decelerating (above 35 mph.).
Symptom No. 6. Empty light does not come on when holding tank is empty.
Symptom No. 7. Empty light does not go off when liquid level is above evacuation probe.
Symptom No. 8. Reaction light does not flash when on/off switch is pulled out.
Symptom No. 9. Reaction light flashes when on/off switch is pushed in.
Symptom No. 10. Reaction light stays on and pump runs when on/off switch is turned off.
Symptom No. 11. Reaction light comes on and pump runs when on/off switch is turned off (above 35 mph.).
Symptom No. 12. Reaction light flickers.

Odor Problems

Symptom No. 13. Odors noticeable inside vehicle while driving or outside vehicle after stopping.

	SYMPTOM	PROBABLE CAUSE	REMEDY	SEE DIAGRAM FIGURE
No. 1	No lights with system turned on.	1. Electrical connector on harness is disconnected 2. Red wire to battery or black ground wire is disconnected. 3. Fuse blown. 4. Corroded connectors or poorly installed wiring. 5. Defective on/off switch.	1. Reconnect 2. Reconnect. 3. Replace with 5 amp Slo-Blo 4. Locate and correct. 5. Replace control head.	F G H F,G A
No. 2	Green Ready light but no red Reaction light (above 35 mph.).	1. Blue wire not connected to vacuum sensor from harness. 2. Blue wire not connected to speed sensor from vacuum sensor. 3. Faulty relay in control head. 4. Poor vacuum source or vacuum sensor hose plugged. 5. Faulty vacuum sensor. 6. Faulty speed sensor. 7. Red light burned out.	1. Reconnect. 2. Reconnect 3. Replace control head. 4. Check and relocate or replace hose. 5. Replace. 6. Replace. 7. Replace.	B B,C A B,J B C A
No. 3	Red Reaction light but no green Ready light.	1. Wire disconnected on green light in control head or light burned out.	1. Reconnect or replace.	A
No. 4	Ready and Reaction lights come on but unit does not pump waste.	1. Connector disconnected at pump or connector pins not engaged or corroded. 2. White wire broken. 3. Evacuation probe clogged or hose between pump and tank plugged. 4. Pump hose burst or hooked up backwards. 5. Sanijector clogged. 6. Defective motor.	1. Locate and correct with pins fully engaged. 2. Locate and repair. 3. Disassemble probe or hose and clean 4. Disassemble hose and replace or install correctly. 5. Clean and replace screen and gaskets. 6. Replace.	K L M E D
No. 5	Reaction light stays on when decelerating (above 35 mph.).	1. Vacuum sensor hose plugged, burned off, kinked or leak in line. 2. Vacuum sensor in wrong vacuum source. 3. Faulty vacuum sensor.	1. Locate and clean or replace. 2. Test for strong vacuum and relocate 3. Replace.	B,J J B
No. 6	Empty light does not come on when holding tank is empty.	1. Liquid trapped in evacuation probe nozzle. 2. Evacuation probe nozzle clogged. 3. Faulty level sensor. 4. Burned out white light.	1. Operate few minutes to clear nozzle. 2. Disassemble and clean. 3. Disconnect yellow wire from evacuation probe. If white light does not come on replace level sensor. 4. Replace.	L L L,P,N
No. 7	Empty light does not go off when liquid level is above evacuation probe.	1. Air trapped in evacuation probe nozzle. 2. Level sensor wire disconnected. 3. Faulty level sensor. 4. Liquid not conducting (if pure water in holding tank after installation or repair).	1. Operate a few minutes. This will clear nozzle. 2. Reconnect. 3. Ground yellow and black wire together if white light does not go off replace sensor. 4. Add salt to holding tank.	 L L,N A
No. 8	Reaction light does not flash when on/off switch is pulled out.	1. Connector disconnected at pump. 2. White wire (power) loose in connectors. 3. White/blue wire disconnected. 4. Defective motor 5. White wire terminals corroded.	1. Reconnect. 2. Push firmly in place. 3. Reconnect. 4. Replace motor. 5. Clean terminals	K F,K F,K K F,K
No. 9	Reaction light flashes when on/off switch is pushed in.	1. Faulty on/off switch. 2. Faulty speed switch.	1. Replace control head. 2. Replace speed sensor.	A C
No. 10	Reaction light stays on and pump runs when on/off switch is turned off.	1. Faulty relay or on/off switch in control head. 2. Wired incorrectly.	1. Replace control head. 2. See wiring diagram for correct wiring.	A
No. 11	Reaction light comes on and pump operates when on/off switch is turned off (above 35 mph.).	1. White/red wire is reversed with red wire in harness connector.	1. White/red wire should be in socket No. 3 and red wire should be in socket No. 6. See wiring diagram.	F
No. 12	Reaction light flickers	1. Speed sensor loose at transmission (Intermittent flicker). 2. Faulty speed sensor (Steady Flicker). 3. Loose blue wire.	1. Hand tighten 2. Replace. 3. Locate and reconnect.	C C B,C
No. 13	Odors noticeable inside of vehicle while driving or outside of vehicle after stopping.	1. Dry traps in sink or bathroom. 2. Holding tank contents too concentrated 3. Pump rate too high for type of holding tank system. 4. Worn or damaged sanijector hose. 5. Sanijector junction leak. 6. Vacuum sensor and speed sensor not controlling system.	1. Add water to traps. 2. Add water and/or Aqua-Kem to holding tank. 3. Consult your dealer for changing from one pumping rate to another 4. Replace. 5. Remove sanijector and replace gaskets and screen. 6. Inspect and correct system operation	 E E B,C