XINTEX®

OWNERS INSTALLATION MANUAL FOR THE MODEL

MB-1

GASOLINE FUME DETECTOR WITH AUTOMATIC BILGE BLOWER CONTROL

WARNING ⚠

This Gasoline Vapor detection device is meant to serve as a supplemental warning system. IT IS NOT meant to replace standard safety practices which should be carried out around explosive gases (i.e., inspect engine compartment, check for loose fuel fittings, smell for gasoline fumes, etc.)

INTRODUCTION

Your MB-1 Gasoline Vapor Detector and Automatic Bilge Blower Control is the latest state of the art device of its kind from Xintex. Completely manufactured in America, it is a simple yet highly effective detector of engine compartment fuel fumes. The MB-1 actually does something by actuating your bilge blower to purge fume build-up. In addition to gasoline fumes, it will detect unburned hydrocarbons resulting from faulty exhaust systems and hydrogen vapors emitted when batteries overcharge. Your MB-1 features three exciting breakthroughs for fume detection systems.

1. First splash proof sensor. The MB-1 sensor is encased in a proprietary material that allows gasoline vapors to pass through, but resists incidental water splashes. Not intended to be submerged, this feature offers high resistance to the occasional 'sloshing' of bilge water, or splash water from hoses that will destroy ordinary sensors.
2. First fume detector with Var-a-Brite 'Power On' indicator lamp. This feature brightens the lamp in daylight, while dimming the light intensity in darkness.
3. First gasoline fume detector with self-contained 10 ampere 12 VDC relay that automatically turns on the blower when fumes are sensed.

INSTALLATION

The MB-1 is packaged with the following components. Please check to be sure that you have everything needed for your installation.

1 ea. 2" dia display module

1 ea. mounting bracket with washers & nuts

1 ea. gasoline sensor (brown) with pre-calibrated cable length

2" DISPLAY INSTRUMENT INSTALLATION:

1.0 The MB-1 should be mounted at the instrument panel, in a convenient location so that visual and audible indicators may be observed easily. If a 2" instrument blank is not available in the panel, drill a 2-1/16" dia. hole to accommodate the installation of the MB-1. Slip the instrument through the hole and secure with the bracket and nuts supplied with this unit. Do not make electrical connections at this time. They will be addressed later in paragraph 3.0 to 3.2.

SENSOR INSTALLATION

2.0 Gasoline vapors are heavier than air and tend to settle in the lowest part of the bilge. The gas sensor should be located in the bilge just above the "slosh height" to insure that oily bilge water cannot contaminate the sensor. Rule-of-thumb; Install no lower in the bilge than the height of the starter solenoid. DO NOT install sensor in a location close to the manifold or exhaust system, as high heat radiation may damage sensor.

2.1 Route sensor wire with plug connector to the back of the instrument display housing. Plug sensor wire into the Mate-N-Lok connector located in the back of the housing. NOTE: ***DO NOT CUT EXCESS SENSOR WIRE TO DRESS OUT INSTALLATION,*** but coil excess wire in an out-of-the-way location. The sensor has been calibrated with length of wire supplied. To shorten length of wire will destroy sensor calibration. If additional sensor wire is needed, contact manufacturer.

An adhesive gasket on the sensor permits "sticking" it to the bulkhead before securing with mounting screws.

3.0 ELECTRICAL CONNECTIONS DISPLAY HEAD.

CAUTION NOTE: Improper hook-up will damage unit and void warranty! All wiring connections shall be made using #16 Gauge stranded copper wire conforming to ABYC standards for marine use. Maximum fuse or circuit breaker shall not exceed .5 (1/2) ampere.

3.1 The BLACK wire (see fig. 1) on the control head shall be connected to a suitable ground connection on the instrument buss.

3.2 The RED wire (see fig. 1) on the control head shall be connected to a .5 Amp. (1/2 Amp.) circuit breaker or a .5 Amp. (1/2 Amp.) fuse at the instrument buss.

3.3 The two YELLOW wires are connected to the manual blower switch. One yellow wire is connected to the +12 VDC connected *TO* the switch, and the second yellow wire is connected to the terminal at the switch which feeds the +12 VDC current from the switch TO the blower. (See figure 1) The relay contained within the MB-1 control unit becomes a 'parallel' switch to the manual switch. This permits normal operation of the blower by using the manual switch, while permitting the MB-1 to also operate the blower automatically whenever gasoline fumes are detected. Properly connected, they will not interfere with one another.

3.4 CAUTION ABOUT YOUR BLOWER POWER REQUIREMENTS AND FUSE OR CIRCUIT BREAKER

As noted in 3.2 above, the *MB-1 system* requires only a 1/2 (.5) ampere fuse or circuit breaker. The relay within the MB-1 will handle bilge blowers up to 10 amperes at 12 VDC. With a maximum 10 ampere capacity, be sure the bilge blower in your vessel does not exceed 10 amperes, and BE SURE the circuit breaker or fuse now connected to the blower does NOT EXCEED 10 amperes. Failure to comply with this limitation could result in over-loading the relay causing a fire. For more than 10 ampere blower control, contact manufacturer.

4.0 OPERATION

After installation has been completed, the MB-1 is ready for operation.

The display panel on the MB-1 contains three windows. The left window is a green power on indicator. The right window is an opening for the Var-a-Brite light intensity detector. The center window is the red warning indicator.

When the MB-1 is connected to the power buss via a fuse, it will be on and in monitor mode at all times, indicated by the green power on LED. If the MB-1 is connected through a breaker, the system will be off until the breaker is turned on.

4.1 Upon powerup, the green power on LED will come on and the red warning LED and blower control may light momentarily to indicate a warm-up period for the sensor. The alarm horn will not come on during this period.

Should a vapor build up reach 10-20% of LEL (Lower Explosion Limit) the red warning LED will light indicating a detection of fumes. The blower control will also be activated. Should this condition last for longer than 10-15 seconds, the alarm horn will sound. This alarm will continue as long as vapors are present. The alarm horn may be silenced by pressing the "MUTE" switch, but the red warning LED and blower control will remain on until the vapor problem has been corrected. NOTE: THE PROBLEM SHOULD NEVER BE CONSIDERED CORRECTED UNTIL THE RED WARNING LIGHT GOES OUT.

4.2 If the Red LED begins to glow softly and/or intermittently, it is an indication that gasoline vapor build-up is beginning to occur and you can anticipate a full alarm momentarily.

TESTING THE SYSTEM

5.0 The MB-1 can be tested for electrical continuity by pressing and holding the Test switch on the panel face. When pressing the Test pad, the Red LED and blower will operate instantly. Continue holding and the horn will sound in 10-15 seconds. Upon releasing the switch, the Red LED and blower will shutdown immediately. Remember, you must Mute the horn.

5.1 Next, unplug the sensor wire from display head while the unit is powered up. The Red LED will light and the blower control will operate instantly. In 10-15 seconds, the horn will sound. This fail-safe circuit provides a warning in the event a wire leading from the sensor has broken or the sensor has failed. Should any of these functions not operate as indicated above, remove the entire system from service immediately and return to the factory for repair or replacement.

FUNCTIONAL TESTING OF THE SENSOR

WARNING ⚠ DO NOT USE A GASOLINE SOAKED RAG OR A CONTAINER PARTIALLY FILLED WITH GASOLINE TO TEST THE SENSOR. THE GASOLINE COULD IGNITE RESULTING IN SERIOUS INJURY OR DEATH. IN ADDITION, THE ISOLATED HIGH CONCENTRATIONS OF FUMES MAY DAMAGE THE SENSOR AND RENDER IT INOPERATIVE.

5.2 HOW TO TEST THE SENSOR.

Use a Butane lighter with the striker wheel removed. With the MB-1 system powered up, hold the lighter to the sensor and press down on the lever to release the Butane. In 3 or 4 seconds, the Red LED and the blower will operate. In 10-15 seconds, the horn will sound. After removing the lighter from the sensor, the Red LED and blower will shutdown in a few seconds. Press Mute to silence the horn.

Whenever the MB-1 alarms, the horn may be muted with the "MUTE" button, but THE PROBLEM SHOULD NOT BE CONSIDERED CLEARED UNTIL THE ALARM LIGHT GOES OUT.

IMPORTANT – IN THE EVENT OF AN ALARM:

Immediately have all passengers and crew exit the passenger compartment. If an explosion or fire should occur, the probability of injury will be greatly reduced if no one is in a confined area of the vessel.

NOTE: It is important to understand, however, that an alarm would not have occurred unless a problem existed. Carefully check all fuel lines, gas lines, and other potential sources of gas leaks.

MAINTENANCE

6.0 The MB-1 requires very little maintenance. Periodic testing of the system as performed in paragraphs 5.0 and 5.1 should be conducted. The MB-1 system is designed for continual operation. If your boat is connected to shore power while dock-side, continuous operation results in extended lifespan of the sensor.

CAUTION: While it is reasonable to assume the sensors will have useful lives of 9 years or more, it is advisable to replace the sensors every 3 years due to harsh environmental conditions encountered in marine applications.

7.0 TROUBLESHOOTING

The most likely problem that will be encountered is continuous alarming. If this should occur, and you are positive that there are no gas fumes present, check for recent use of solvent, paint or paint thinner, polish, etc. If none of these vapors are present, the next step is to thoroughly check the sensor wires for loose connections, broken wires, and water or oil contamination. Since the sensors are part of a normally closed system, non-continuous wires will cause an alarm.

8.0 REPAIRS

MB-1 systems are not user serviceable. The unit must be returned to the factory for any repairs.

9.0 SPECIFICATIONS

Operating Voltage: +7 min. to +15 VDC max.

Alarm point – 10–20% LEL @ 70° F

Sensor stability 0° – 130° F (–18°–54°C)

Sensor fail alarm

Sensor wire lead 20 feet – standard, other lengths available (Do not lengthen or shorten supplied length of cable.)

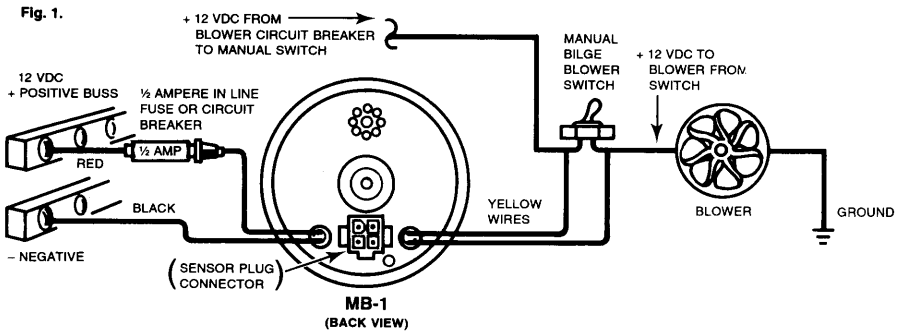
Current Draw: Monitoring Mode 200 mA max

Alarm Mode 220 mA max.

Alarm Horn 85 DB

Var-a-Brite light intensity control

Fig. 1.



CAUTION: ⚠ The self-contained relay within the MB-1 control has a MAXIMUM rating of 10 amperes @ 12 VDC. Be sure to check that the circuit breaker or fuse now protecting the bilge blower does NOT exceed 10 amperes. If the bilge blower motor has a power demand GREATER than 10 amperes, consult with a qualified marine electrician or contact Xintex for advice.

MORE IMPORTANT INFORMATION YOU SHOULD KNOW ABOUT GASOLINE FUME DETECTORS.

Gasoline fume detectors employ a device which changes its electrical properties in the presence of gasoline (hydrocarbon) vapors. The circuitry measures the changing electrical voltage and if 10–20% of the LEL (lower explosive level) is detected, the appropriate alarms are activated. These sensors will also "see" other materials which contain hydrocarbons. All products or derivative products of petroleum contain hydrocarbons. The styrene used in making fiberglass is a hydrocarbon, as are hydrogen fumes from batteries, paint removers, paint thinners, gasket sealing materials, acetone, benzene, plus many more. Many common household cleaning materials contain hydrocarbons. Men's aftershave lotions and ladies' perfume may activate a gasoline fume detector.

A clean engine compartment will not contain these "foreign" hydrocarbons. However, a new fiberglass boat may require one year to purge the styrene which is leaching from the fiberglass if not properly ventilated. A bursted exhaust line, painting, or spilled cleaning agent may activate the alarm. Always assume the alarm is real and take proper action. Remember, hydrogen gas from defective or overcharged batteries is just as explosive as gasoline vapors, as are other hydrocarbon vapors.

MORE SAFETY PRODUCTS FROM FIREBOY/XINTEX:

- **Portable Clean Agent Fire Extinguishers**
- **Automatic Clean Agent Fire Extinguishers**
- **Manual/Automatic Clean Agent Fire Extinguishers**
- **M-1/M-2a Gasoline Fume Detectors**
- **MB-1/MB-2 Gasoline Fume Detectors with Blower Control**
- **S-1 Propane/LPG Detector**
- **S-2A Two channel Propane/LPG Detectors with Solenoid Control**
- **CMD-2M Carbon Monoxide Detector**
- **WTG-1 Liquid Level Monitors**