

# SEEBOLD RACING DRIVER ASSIST SYSTEM

## I. Overview

The Seebold Racing Driver Assist System monitors three sensors and deploys the airbag if any of these sensors are activated. In addition, the system provides a comprehensive system diagnostic check, a manual sensor test mode, unit statistics, and a cumulative timer.

## II. Startup

Upon startup, the system runs the automatic system test and will cycle through a number of display screens.

These displays are:

1. Title Screen
2. Sensor Test
3. Sensor Status
4. Main and Auxiliary Battery Status
5. Unit Statistics
6. Recent Crash History
7. Cumulative Run Time Total

After the system test, the system will begin operating in Race Mode.

## III. Operational Modes

### A. Race Mode

Race Mode is the normal operation of the system. In race mode the air solenoid is enabled and the sensors are active. In this mode the screen will alternately flash between

SYSTEM ENABLED Race Mode
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and the sensor status screen:

Air Sol.	READY
Panic Sensor	READY
Roll Sensor	READY
Water Sensor	READY

In Race Mode, if BOTH the Main and the Auxiliary Batteries are below 10.6 Volts, the System Enabled screen will display that the battery voltages are low.

```
SYSTEM ENABLED
Race Mode
Main Batt. LOW:09.8V
Aux. Batt. LOW:10.2V
```

See section V for information about sensor activation.

## B. Manual Test Mode

The Manual Test mode permits the user to check the operation of each of the sensors. In manual test mode, the user may activate any of the three sensors while checking the screen to confirm that each sensor's activation is registered by the system. In Manual Test mode, crash and sensor statistics are not recorded and the airbag is disabled and will not deploy.

To enter the mode menu, press button **B**. To scroll to the second menu page, press button **B** again. The following screen will appear:

```
For Manual Test Mode
Hold C for 2 seconds
Hold C for less
To return
```

To run the Manual Test mode, hold button **C** for two seconds. To exit the mode menu and return to normal operation, press button **B** or **C** briefly.

While in the Manual Test mode the screen will alternately flash between

```
SYSTEM DISABLED
Manual Test Mode
```

and the sensor status screen:

```
Air Sol.     DISABLED
Panic Sens  ACTIVATED
Roll Sensor   READY
Water Sensor  READY
```

To exit the Manual Test mode, press buttons **B** or **C**. Upon exiting manual test mode, the following screen will appear:

```
MANUAL TEST MODE
DE-ACTIVATED.
```

The system will then return to normal Race Mode operation. The system is fully operational at this point.

#### **IV. Auto System Test**

The automatic system test runs each time the Seebold Racing Driver Assist System is powered on. Also, the user can run the automatic system test at any point during operation. To enter the mode menu, press button **B**. The following screen will appear:

```
For Automatic System
Test, Hold C for 2
seconds. For Test
Mode press B again.
```

To run the automatic system test, hold button **C** for two seconds and release.

The Automatic System Test:

1. Checks the Air Solenoid
2. Checks and tests each of the three sensors
3. Displays the sensors' status
4. Reads and displays the main and auxiliary battery levels
5. Displays the total crash statistics
6. Displays the most recent crash statistics
7. Displays the cumulative run time.

#### **V. Sensor and Air Solenoid Messages**

##### **A. Sensor Activation**

When a sensor is triggered, the sensor status screen will display **ACTIVATED** for that sensor. Below is a sample status screen with the *Panic Sensor* activated.

```
Air Sol.         READY
Panic Sens      ACTIVATED
Roll Sensor     READY
Water Sensor    READY
```

If the system is in Race Mode, the air solenoid will be triggered and the airbag deployed, and the system statistics will be updated. In the Manual Test Mode, the air bag will not be deployed and the statistics will not be updated.

Nota Bene: In Race Mode, if the water sensor triggers and deploys the airbag, the air solenoid will not be reset unless the unit is restarted.

## B. Disabled Sensor

During an automatic system check, the system confirms that each sensor is connected and working properly. If a sensor is not properly connected or defective, the screen will flash FAIL for the sensor in question. Below is a sample sensor test screen with a rollover sensor failure:

Auto System Test	
Panic Sensor	Pass
Roll Sensor	FAIL
Water Sensor	Pass

The Auto System check will pause on this screen for 30 seconds. If the problem is not resolved within this time, the problematic sensor will be disabled and will not be operational in Race Mode. This will not disable the entire system, but only the malfunctioning sensor. To resolve this issue, fix or replace the sensor and restart the system.

The system will then display the status of the sensors. The screen will display ACTIVE for all the sensors that passed the system check. And likewise the screen will display DISABLED for all the sensors that failed the system check. Those sensors that are disabled will not trigger the airbag in Race Mode. Below is a sample sensor status screen:

Sensor Status	
Panic Sensor	ACTIVE
Roll Sensor	DISABLED
Water Sensor	ACTIVE

## C. Air Solenoid Failure

During an automatic system check, the System checks the Air Solenoid and its connection. If the Air Solenoid is not properly connected or defective, the following screen will appear.

AIR SOLENOID FAILURE
System Not
Operational

The system will not function properly and will not enter Race Mode. To resolve this issue, reconnect or replace the Air Solenoid and restart the system.

## VI. On/Off

Button **A** allows the user to turn the Seebold Racing Driver Assist System off and on. To turn the system off, first press button **A**. The following screen will appear:

```
Hold C for 2 seconds
for System Off.
Hold for less
to return.
```

Then hold button **C** for two seconds and release. The unit will power off and display accordingly.

## VII. Statistics

### A. Unit Statistics

The Unit Statistics screen displays the total number of times that each sensor has been triggered. Below is a sample Unit Statistics screen.

```
Unit Statistics
Panic          5
Rollover      5      4
Water         5
```

### B. Recent Crash History

The Recent Crash History screen displays information about the most recent seven crashes. The first line displays the total number of crashes recorded by the system. The other three lines display the name of each sensor on the left. The seven columns following the name of sensor display the most recent seven crashes. In each column a number represents the order in which each sensor was triggered. A '0' indicated that the sensor was not triggered. A '1' indicated the sensor was triggered first, a '2', second, and a '3', third. The most recent crash appears in the rightmost column and the oldest appears in the leftmost column. Below is a sample Crash Statistics screen.

Crash Statistics	14	← Total Number of Crashes
Panic	1 0 2 1 0 0 1	← 1st Sensor Activated
Roll	0 0 1 0 0 1 2	← 2nd Sensor Activated
Water	0 1 0 0 1 0 3	← 3rd Sensor Activated

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