HAWK8-505-A
Forward/Reverse Facing HawkEye

Introduction

The HAWK8-505-A forward/reverse Assistance System is an ultrasonic distance monitoring system. When the vehicle is in drive or reverse, the HAWK8-505-A electronically detects the area behind or in front of the vehicle and alerts the driver with an audible tone and a digital display if any objects are detected. HAWK8-505-A is designed to detect objects which can reflect ultrasonic sound waves such as walls, vehicles, and poles.

Installation Instructions

Disconnect vehicle battery before proceeding with installation.

WARNING
Disconnect the battery to prevent setting a check engine light.

IMPORTANT—READ BEFORE INSTALLATION

It is the installer's responsibility to route and secure all wiring harnesses where they cannot be damaged by sharp objects, mechanical moving parts and high heat sources. Failure to do so could result in damage to the system or vehicle and create possible safety concerns for the operator and passengers.

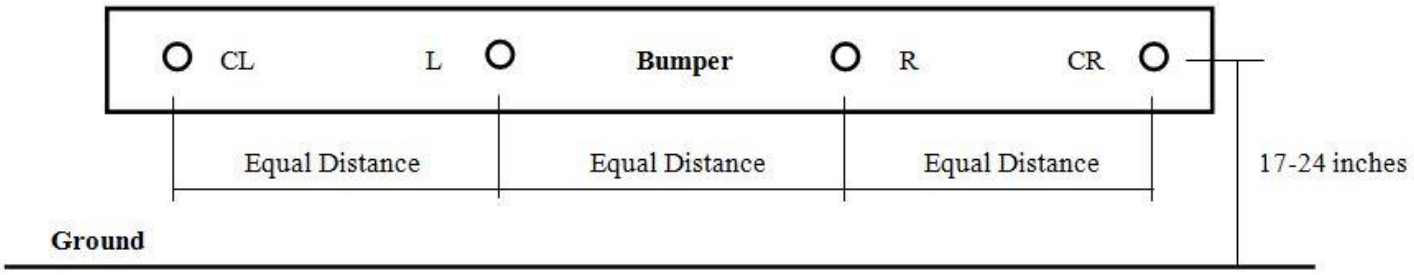
Avoid placing the module where it could encounter strong magnetic fields from high current cabling connected to motors, solenoids, etc. Avoid radio frequency energy from antennas or inverters next to the module. Avoid high voltage spikes in vehicle wiring by always using diode clamped relays when installing upfitter circuits.

Note: Excess cabling for the HAWK8-505-A system should be rolled up and located away from other vehicle electronics. Split this roll into roughly two equal coils and overlay them one on top of the other, such that the current flow changes direction from one coil to the next. This will minimize the inductive effects of coiling the wire, and will minimize possible interference with other vehicle electronics.

It is not necessary to cut any OEM wires during the installation of the HAWK8-505-A wire harness.

Rear Sensors

The procedure for positioning and mounting the sensors depends on the shape and curve of the rear bumper or mounting surface. The sensors must be mounted on a flat surface of the bumper (curved surfaces must not exceed 5°). Sensor height must be at least 17 inches from the ground or the sensors will not work properly.



NOTE: The preset of the sensitivity for the sensor heights is 17 inches above the ground. To avoid false alarm, sensor height must be at least 17 inches.

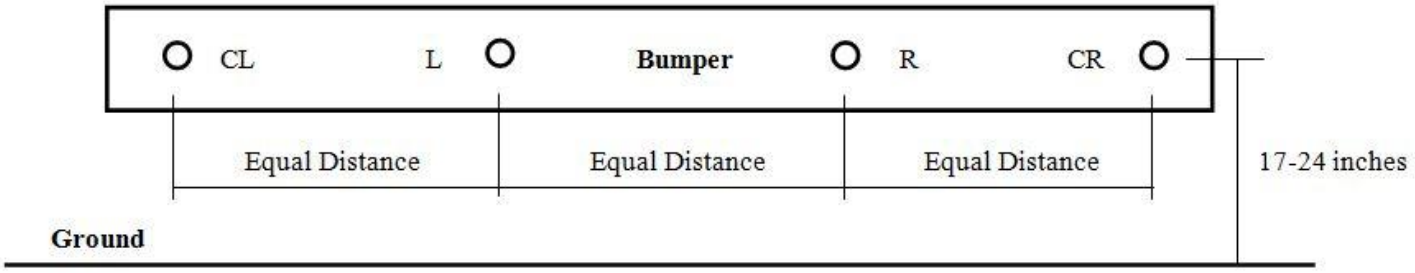
1. Measure horizontally from each corner of the bumper and mark a distance of 6 - 8 inches for both corner sensors.
2. Divide the remaining distance by 3 and mark the two center sensor locations such that the distance between each sensor is equal.
3. Drill four 1-inch holes in the bumper through the previous marks.
4. Install the four sensors through the holes in their proper location.

THE SENSORS MUST BE INSTALLED WITH THE DOT POINTING DOWN.

Front Sensors

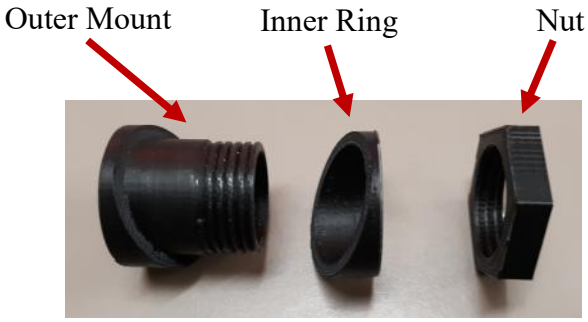
NOTE: The preset of the sensitivity for the sensor heights is 17 inches above the ground. To avoid false alarm, sensor height must be at least 17 inches.

1. Measure horizontally from each corner of the bumper and mark a distance of 6 - 8 inches for both corner sensors.
2. Divide the remaining distance by 3 and mark the two center sensor locations such that the distance between each sensor is equal.



3. Drill two **1 1/8-inch** holes in the bumper through the previous **outer** marks.
4. Drill two **1 inch holes** in the bumper through the previous **inner** marks.
5. Install the two inner sensors through the two inner holes (**1 inch**) in the bumper.
6. Install the two outer mounts (see picture below) through the holes (**1 1/8 inch**) in the bumper. Position the mounts so the sensors will point straight ahead and the two dots are positioned vertically
7. Route the connectors and sensors through the outer mounts. (the connector is a tight fit and may require gentle pressure and a twisting motion to fit through the outer mount)
8. Insert the inner ring on the inside of the bumper, making sure it mates with the curved section of the bumper.
9. Install and tighten the nut to secure. (**do not overtighten**)

THE SENSORS MUST BE INSTALLED WITH THE DOT POINTING DOWN.



Outer Sensor Mounts

MAIN HARNESSES – The Main Harnesses connects the Bumper/Sensor Harnesses to the Control Unit in the vehicle.

1. Connect the Gray 8-pin connector on the Main Harness to the connector located on the bumper.
2. Drill a 5/8" hole in the bottom of the front and rear of the vehicle.
3. Route the harnesses through the holes and seat the harness grommets securely in the holes.
4. Connect the 8 pin connector from the rear sensors to the mating cavity on the module labeled "Sensor1".
5. Connect the 8 pin connector from the front sensors to the mating cavity on the module labeled "Sensor2".
6. Secure the harnesses as necessary.

Control Module

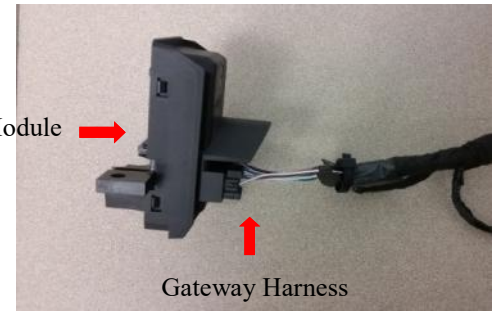
The control module must be located inside the box of the vehicle on the left-hand (driver) side. The control module should be attached in a vertical position to prevent water from getting into the module.

Control Module DIP Switches

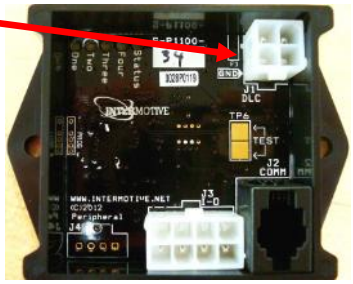
- Open the control module right cover using a screwdriver.
- The default setting is switches 1-3 are Off.

	Sensor 1	Sensor 2	Sensor 3	Sensor 4	DIP Switch Setting		
					1	2	3
Type A	9.9 Feet	9.9 Feet	9.9 Feet	9.9 Feet	OFF	OFF	OFF
Type B	7.0 Feet	7.0 Feet	7.0 Feet	7.0 Feet	OFF	OFF	ON
Type C	7.0 Feet	9.9 Feet	9.9 Feet	7.0 Feet	OFF	ON	OFF
Type D	5.5 Feet	7.0 Feet	7.0 Feet	5.5 Feet	OFF	ON	ON
Type E	9.9 Feet	9.9 Feet	9.9 Feet	9.9 Feet	ON	OFF	OFF
Type F	7.0 Feet	7.0 Feet	7.0 Feet	7.0 Feet	ON	OFF	ON
Type G	7.0 Feet	9.9 Feet	9.9 Feet	7.0 Feet	ON	ON	OFF
Type H	5.5 Feet	7.0 Feet	7.0 Feet	5.5 Feet	ON	ON	ON

Gateway Plug and Play Harness (4-pin connector)

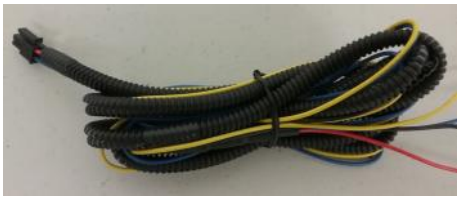


1. Locate the vehicles Gateway Module. It will be mounted below the lower left dash panel.
2. Remove the harness behind the Gateway module by pressing the locking tab and pulling outward.
3. Plug the Female side of the InterMotive Gateway Harness into the back of the Gateway module. Ensure the connection is fully seated and secured by the locking tab.
4. Plug the Male side of the InterMotive Data Link Harness into the Gateway harness.
5. Secure the HAWK8-505-A Gateway harness so that it does not hang below the lower dash panel.
6. Plug the free end of the Data Link harness into the mating 4-pin connector on the HAWK8-505-A module.



HAWK8-505 Module

PWR Harness (forward/reverse installation)



PWR Harness

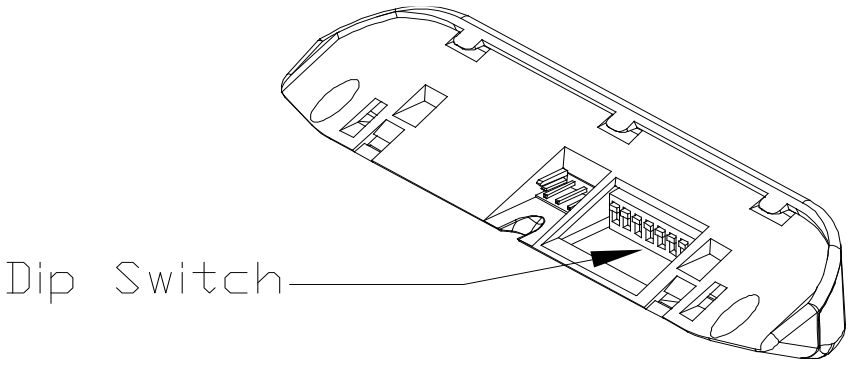
1. Route the PWR harness from the HAWK8-505 module (under the dash) to the Hawkeye Control Module.
2. Connect the ground eyelet to a known good ground point.
3. Connect the 4-pin, white connector to the HAWK8-505 module mating connector.
4. Connect the Black 4-pin connector to the mating cavity on the Control module labeled "PWR". Make sure the connector is fully seated.
5. Secure the harness as necessary.

LED Display Panel

The LED display panel provides system feedback to the driver. Prior to installing the panel, determine if any changes to the default settings are desired (see figure 1).

LED Display Panel DIP Switch

The default setting is, switches 1-6 are 'On' and switches 7-8 are 'Off'.

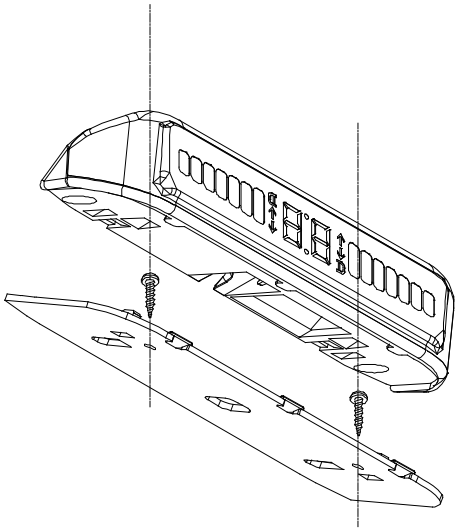


(Figure 4)

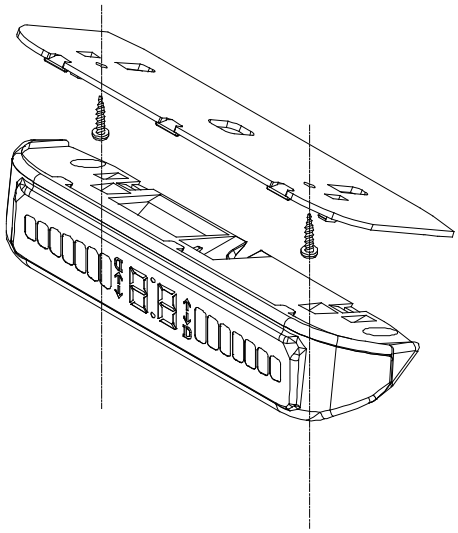
Dip Switch	Function	Note
1	Power	Must be ON
2	Data	Must be ON
3	Buzzer	ON = activate buzzer OFF = no buzzer sound
4	Buzzer Volume 1	ON = louder OFF = does not affect the loudness of buzzer volume
5	Buzzer Volume 2	ON and Dip Switch 4 ON = loudest OFF = does not affect the loudness of buzzer volume
6	Feet/Meter	ON = Feet OFF = Meter
7	LED Bar Display Swap	ON = to swap the LED bar display for LEFT/RIGHT sensor indicator when the display is installed upside down
8	Number Display Rotation	ON = to invert the displayed number when the display is installed upside down

LED Display Panel - Continued

1. Using 2 of the supplied screws (different types are provided, but only 2 are needed), secure the display bracket (figure 2a or 2b), then attach the display to the bracket. If desired, drill a hole through the dash to route the display wire harness.
2. Run the display wire harness along the left (driver) side to the back of the vehicle.
3. Connect the White 3-pin connector to the proper opening on the display panel. Make sure the connector is fully seated.
4. Secure the harness along the left side of the coach.
5. Connect the Black connector to the mating cavity on the Control Module labeled "Output".



(Figure 2a - Normal Position)



(Figure 2b - Inverted Position)

Reconnect Vehicle Battery

Post Installation

The following checks must be made after installation of the system. If any of the checks do not pass, do not deliver the vehicle. Recheck all connections as per the installation instructions.

Sensors

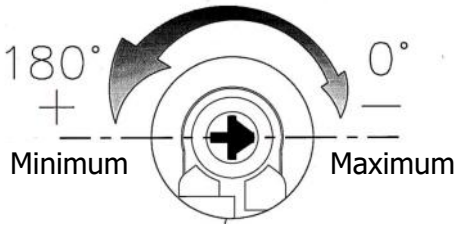
Important: Ensure no objects are present within 10 feet of the bumper while testing.

1. **Verify that the Park Brake is firmly set with the Engine Off and wheels blocked**. Turn the ignition key to "ACC" position and place the transmission in Drive or Reverse. **If transmission is in Drive, test the front sensors and if the transmission is in Reverse, test the rear sensors.**
2. With the aid of an assistant, verify that the sensors are connected into the proper openings on the bumper:
    - 2.1 Use a cloth to cover the two middle sensors. Holding a flat dense object (5" x 20"), approach the passenger side corner sensor from approximately 10 feet away. Verify that the LED Display shows proper distance and orientation. Repeat procedure for the driver side corner sensor.
    - 2.2 Remove covers from the middle sensors and block the corner sensors. Repeat procedure as in 2.1. Verify that the display shows proper distance and orientation.
3. If the system gives a warning without an object in the proper zone (false alarm):
    - 3.1 Check for proper sensor installation and orientation (dot on sensor must be facing down).
    - 3.2 The sensors may be detecting the ground. Note: The preset of the sensitivity for the sensor height is 17 inches above the ground. To avoid false alarm, sensor height must be at least 17 inches. If sensor height is correct, adjust sensitivity (see next page).

Adjusting System Sensitivity

1. Open the control module left cover using a screwdriver.
2. Use a cart or other mobile object with a piece of 3/4" plywood (18" x 24") on the side facing the sensors (figure 3). A dense material is required to reflect the ultrasonic waves.
3. Position the cart in the direct path of a sensor at the distance of 5 feet.
4. Insert a small screwdriver into the **right potentiometer for the rear sensors or the left potentiometer for the front sensors**, and gently turn the potentiometer counter-clockwise to the stopping point.

(figure 3)



Maximum Sensitivity Adjustment

Minimum Sensitivity Adjustment

Rear Sensors

1. With the **Engine Off, set the Park Brake, block the wheels**, and place the transmission in **reverse**. The display panel should now have a blank reading.
2. Slowly turn the right potentiometer clockwise until the display gives a numerical reading of the distance of the cart and has a consistent audible sound.
3. Reset the module by placing the vehicle in Park or by unplugging the module power connector. Removing the power from the module allows the module to recognize the new sensitivity adjustment.
4. Place vehicle in reverse or reinstall the module power connector. Move the cart away from the bus and note the display readings. Move the cart forward, measure the cart distance and compare the distance with the display reading.
5. Adjust the sensitivity further if needed. Turning the potentiometer clockwise increases the sensitivity and turning the potentiometer counter-clockwise reduces sensitivity. Repeat Post-Installation Testing. If necessary, readjust and retest.
6. Test the Front sensors. (next page)

Adjusting System Sensitivity (Continued)

Front Sensors

1. With the **Engine Off, set the Park Brake, block the wheels**, and place the transmission in Drive. The display panel should now have a blank reading.
2. Slowly turn the left potentiometer clockwise until the display gives a numerical reading of the distance of the cart and has a consistent audible sound.
3. Reset the module by placing the vehicle in Park or by unplugging the module power connector. Removing the power from the module allows the module to recognize the new sensitivity adjustment.
4. Place vehicle in Drive or reinstall the module power connector. Move the cart away from the bus and note the display readings. Move the cart forward, measure the cart distance and compare the distance with the display reading.
5. Adjust the sensitivity further if needed. Turning the potentiometer clockwise increases the sensitivity and turning the potentiometer counter-clockwise reduces sensitivity. Repeat Post-Installation Testing. If necessary, readjust and retest.
6. Replace cover on the back of the control module.

Reading the HAWK8-505-A Display

- The center of the display will show the distance of detected objects.
- Each side of the display has illuminated bars, which indicates the side and distance of the detected object. The photo below indicates there is an object approximately 5.3 feet in front or back of the right sensors.
- As the detected object becomes closer, more bars will illuminate and an audible beep will alert the driver.
- The audible beeps will increase in tempo as the detected object becomes closer.
- The audible sound will become a constant noise when the detected object is in range of a collision.

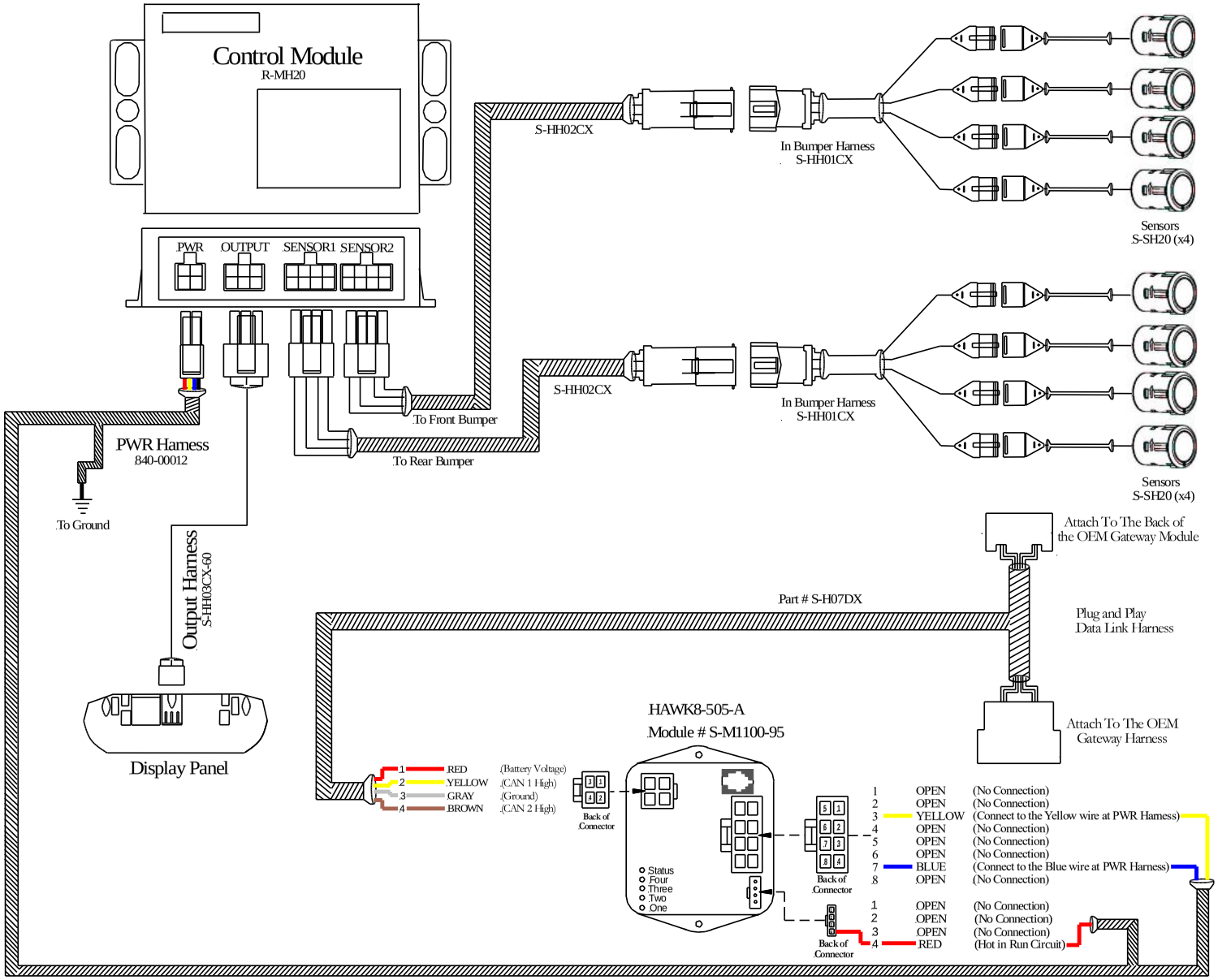
Illuminated bars

Distance to the object

CAUTION!

This system is not designed to prevent contact with small or moving objects. This system is designed to provide a warning to assist the driver in detecting large stationary objects when moving in forward or reverse at "parking speeds" of approximately 4 mph. The HAWK8-505-A Reverse Assista System may have reduced performance or be activated in inclement weather.

To help avoid personal injury, always use caution when using the HAWK8-505-A Assistance System.



Submit product registration at www.intermotive.net

If the HAWK8-505-A fails any step in the Post Installation Test, review the installation instructions and check all connections. If necessary, call

InterMotive Technical Support at (530) 823-1048.