



Stratus™ Installation Guide For Help Call

1-904-281-5744

Installation of Stratus is as easy as 1 • 2 • 3.

****Be sure to read the entire manual first to minimize any mistakes.**

First: You need to know where to mount your sensors, Microprocessor and Display unit.

Second: Connect the Power Harness and Digital Display.

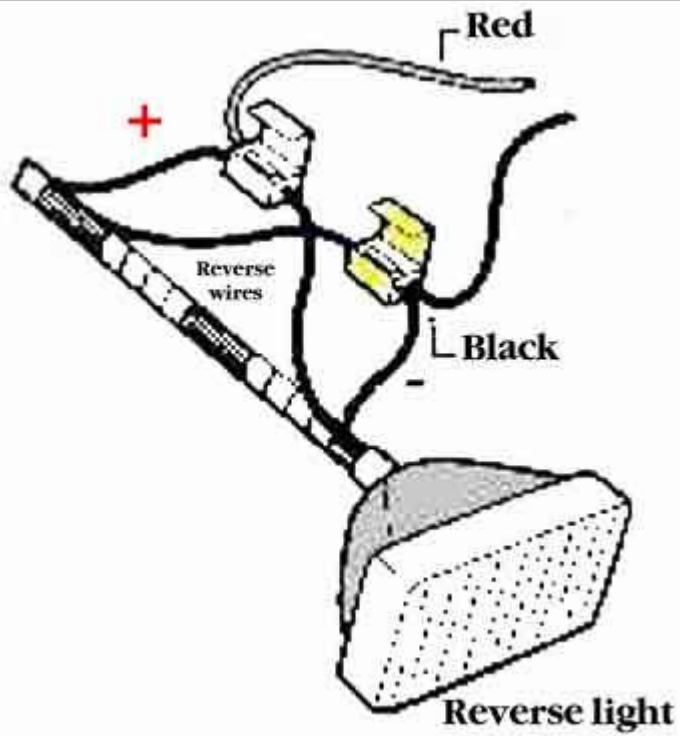
Third: Install the sensors.

Installation of Stratus is so easy it is hard to go wrong, but if things do. Don't panic. We have a comprehensive Troubleshooting page and our support team is ready to help.

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Connecting power



Locate the reverse light wires in the taillight assembly and connect the computer red and black computer module wires as shown.

Stratus Which Sensor to Use and Where to Mount It

Before You Begin

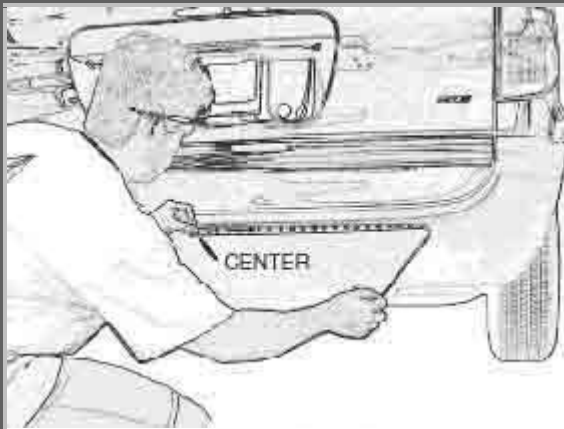
Inspect behind the bumper in the approximate mounting area to check for any possible obstructions. For example check for 5 mph collision struts or hardened metal braces that could prohibit drilling.

A proper installation will take into consideration two factors:

1. Placement: height and distance either side of bumper center.
2. Angle: accurate detection depends on the correct sensor angle.

The sensor needs 1" clearance space behind the bumper to be fully inserted. Some bumpers have an outside cover or fascia and a metal backing. You may have to drill through both layers to insure you have enough clearance in order to fit sensors.

CAUTION: Be careful of hot exhaust parts and/or sharp edges under the bumper.



Step 1: **Where to Mount Your Sensors**

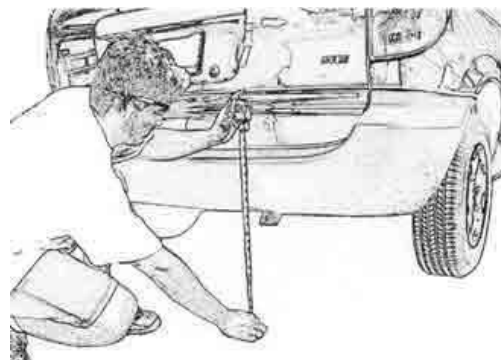
Determine the center of your bumper and mark the center using a grease pencil.

From the center of the bumper, measure outwards to the location where you plan to mount your sensors. Mark the location with your grease pencil as shown in step 3b.

Ideal Range From Bumper's Center: 12" to 24"

Sensors should be mounted **NO LOWER THAN 18"** from the ground and **NO HIGHER THAN 30"**. That is in ideal conditions.

The best height to mount the sensors





exactly vertical is 24 inches. If you go below or above this preferred height. You can usually use the curve of the bumper to angle the sensor up or down 5 to 10 degrees.

Using a grease pencil, mark the final the mounting location for the sensors.

As a recap the mounting location should be 12" - 24" off center and 18" - 30" in height.
With preferred height at 24 inches.

Stratus Installation Guide – Installing the Sensors

Step 1: Digital Display

The **Stratus** Display has 3 adjustment positions; Hi, Low and Off, therefore you should mount the unit where it can be easily accessed for adjustment. Route the plug to the area where you will install the control module. Make sure that any panels or moving parts will not pinch it. Clean the mounting area with alcohol. Remove the backing strip from the 3M Tape or Trim a 12 inch strip of 3M tape supplied with the control unit and firmly press the Display into place.

Step 2: The Sensor Wires

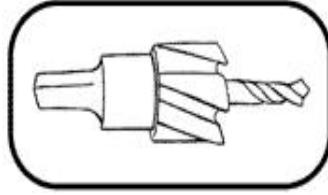
Determine where the sensor wires will enter into the trunk area, control unit placement area or passenger compartment. Many vehicles have factory grommets to allow routing of wires from the outside to the inside of the vehicle. It is sometimes necessary to enlarge or drill a hole for sensor wire routing.

If you are drilling a hole through a metal body panel to route your sensor wires into the trunk/cargo area, be sure to coat the all hole's edges with Zinc Galvanize to prevent rusting. Finish by fitting the hole with a rubber grommet, or by using automotive grade silicone to prevent moisture from entering the vehicle.



Step 3: The Sensor Holes

Using the **Stratus** hole saw (part # ST-13), cut the sensor holes.



Always wear approved safety glasses when drilling.

Caution should be used when cutting holes, as the Hole Saw, metal shavings and token shaped piece where hole is created will be very hot, and may have sharp edges.

When drilling bumpers, only use the **Stratus** approved cutting tool (part #ST-13). Use electrical tape on the location you will drill. This will eliminate the drill bit from scratching outside the drill hole area if you do slip.

If drilling a metal bumper, coat edges of holes with Zinc Galvanize and allow a few minutes to dry. The **Stratus** tool is specifically designed for cutting through automotive bumper material, whether chrome steel, plastic, or a combination of both. The sensor port created by the Stratus cutting tool matches the **Stratus** sensor shaft with great precision.

Always create a dimple in the bumper prior to drilling to prevent slippage of the cutting tool.

Holes created in metal bumpers may have sharp burrs or edges, which can abrade your sensor wires. Remove burrs (if any) with a semi-circular metal file or a drill-buffing bit. Use care not to oversize sensor holes if filing. Make sure the sensors fit is not too tight. This could affect the accuracy of the sensor.

Step 4: Route the sensor's wires through the bumper holes.

Before you tie-strap your wires in place and secure the sensor's mounting, you will first want to test the system.

Push the sensors into their mounting holes with light finger pressure on the outer edges of the sensor, making sure they are firmly seated, **and facing the right direction (see diagram below)**

Follow the testing procedures in your booklet before continuing to Step 5. In the event that your sensors do not respond accordingly, please refer to your troubleshooting guide at the end of this instruction set.

Step 5: Pass the sensor wires into the rear compartment of the vehicle

Once the wires are passed through, ensure you have the right amount of slack

needed to route the sensor wires to where the control box will be mounted. Make sure moving parts or panels will pinch no wires.

Strap tie the sensor wires underneath the bumper, away from any areas, which are very close to the exhaust system, or moving suspension parts. Do not pull or yank on the sensor wire where it exits the sensor shaft, as you may damage the inner connections. You may use slit-loom for a more factory appearance.

Step 6: Plug the sensor wires, Display and Stratus power harness into the control module before mounting.

Step 7: Mount the control box.

The control module comes with 3M Tape for this purpose. Clean the pre-selected mounting area with alcohol or mild solvent to ensure good adhesion. When surface is dry, peel off the backing of the pad and stick the control box in place.

Step 8: Replace all inner panels removed during installation.

.Stratus™ Installation Guide – Testing the Installation

The key to successful testing starts with the right test environment.

The ideal test environment should be:

Flat / Level ground

Free from obstructions 8 feet from the rear of the vehicle

Free from obstructions to the sides of the bumper (left and right) for a least 3 feet

Free from objects lying on the ground in the area described above.

Immediately after power up you will see Digital Display light up. If there are no obstructions behind the vehicle (within 5 feet), and no obstructions on the ground, the audible beeping should now be silent.

Test the unit with the engine OFF

Set the vehicle's Emergency Brake and block the tires whenever possible.

Turn the vehicle's ignition key to the ON position (but do not start engine)

Select Reverse Gear. You should see Digital Display light up, indicating you have engaged reverse gear, and the system is scanning for objects in the detection field.

Roll down the windows, so you can hear the Audible beeping from outside the vehicle (set Audible beeping to Hi Volume if desired)

For testing purposes, you may wish to hold a piece of flat, reflective material in your hand (such as medium sized piece of cardboard or metal).

From a distance of about 8 feet, slowly begin walking toward the vehicle, holding the reflector perpendicular to the bumper. At approximately 5 feet, the Audible beeping should begin to beep slowly, indicating that you have been detected.

Continue slowly approaching the bumper. At a distance of approximately 4 feet

from the vehicle, the beeping will quicken to three times per second, indicating you have been detected in the closer range.

As you approach 1 foot from the rear bumper, the warning tone will turn solid, indicating you have been detected in the extreme danger zone.

Stratus Installation Guide – Troubleshooting and Tech Tips

Condition	Possible Cause / Corrective Action
<p>No Light on Digital Display at Power-Up</p>	<ul style="list-style-type: none"> • Is power harness plugged into Control Module? • Inspect connection for power wire. • Verify you have a good ground connection. • Is Display plugged in? Is Display in "Off" position? • Have you tapped in to the proper reverse light wire?
<p>Digital Display reading when no obstacle behind vehicle</p>	<ul style="list-style-type: none"> • Check for objects within 5' of bumper. • Are sensors mounted too low or pointed at the ground or are holes too tight? • Is testing surface level, or is vehicle on a rough surface such as gravel.
<p>Digital Display reading 1.20-1.90 and Warning sound is constant</p>	<ul style="list-style-type: none"> • Check for objects in close proximity to sensors. • Are sensors mounted too low or pointed at the ground? • Is testing surface level, or is vehicle on a rough surface such as gravel.
<p>Digital Display reading 000</p>	<ul style="list-style-type: none"> • Check for objects in close proximity to sensors. • Are sensors mounted too low or pointed at the ground or are holes too tight? • Unplug 1 Sensor at a time, checking for response. Switch sensor jacks and recheck. <p>Cover sensor with sponge if sensor still reads 000 replace sensor.</p>

Intermittent False Alarm

- Check for objects within 6' of bumper.
- Are sensors mounted too low or pointed at the ground?
- Is testing surface level, or is vehicle on a rough surface such as gravel?
- Sensors are fitted to tight

Stratus™ Installation Guide – Recommended Tools for Installation

- High torque drill with 1/2" drive
- Grease Pencil and Center Punch for marking drill point
- 1/8" carbide tipped drill bit for starting pilot hole (only used on some vehicles)
- Stratus Hole Saw (part number ST-13)
- Buffing Bit for Drill
- Pliers for Scotch-Lok Connectors
- Phillips head tip for drill (Used to set self tapping ground screw)
- Multi-Meter (note - do not use a common test light to probe wires)
- Zinc Galvanize for metal bumpers
- Safety goggles
- Measuring Tape
- Electricians tape
-

You may also wish to have on hand:

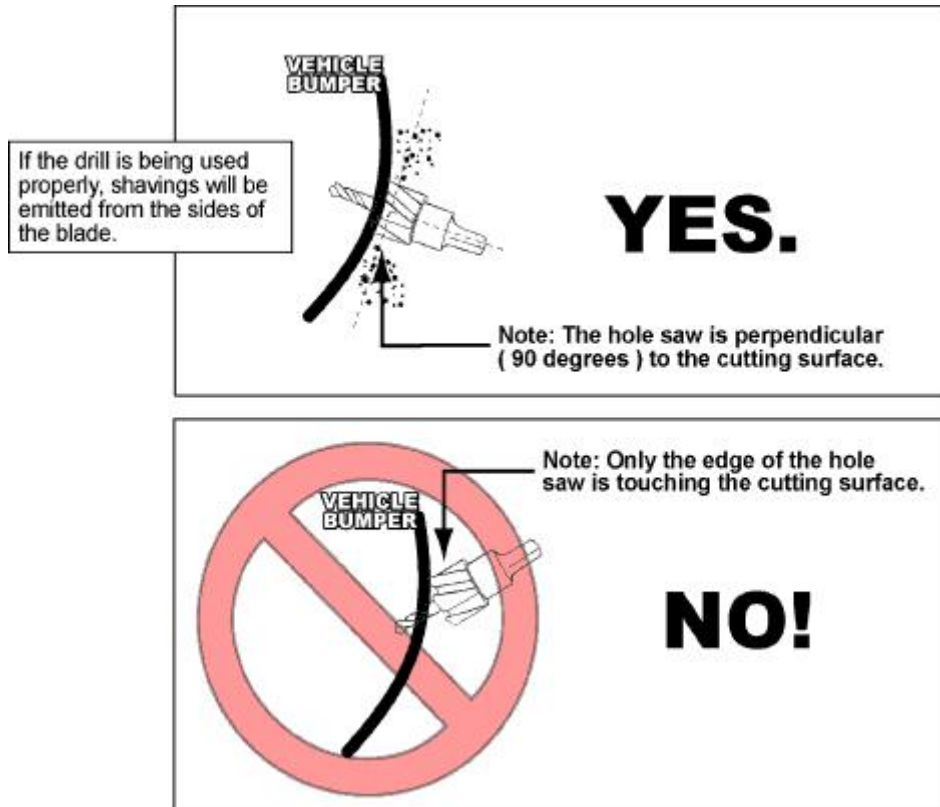
- Panel tool (Optional - for situations requiring plastic, inner panels to be removed)
- 3/8" Slit Loom (use slit loom to shroud sensor wires for a more factory appearance)
- Wire pulling tool (for routing wires from vehicle's underside through to passenger compartment)
 - Semi-circular metal file (for smoothing hole edges when necessary)

Stratus Drilling Guide

1. Always follow OSHA safety guidelines for the operation of power tools and wear safety goggles for your protection.
2. The only approved hole saw for Stratus installation is the Stratus hole saw. (Part no.St-13)
3. Make sure there are no obstructions behind the bumper where you want to drill the sensor ports. Always look before you drill and measure twice.
4. Start by creating a dimple with a center punch at the spot you marked

earlier with a grease pencil. This will give the pilot drill more stability and accuracy.

5. For metal bumpers apply a cutting lubricant on the bumper surface. (I.e. WD-40)
6. Use a low drill speed of 300-400 RPM.
7. Hold the drill perpendicular (90°) to the bumper to make sure the full surface of the blade is touching during the cutting process.
8. Do not rock the drill bit. Hold it steady.

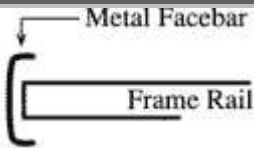


Stratus Bumper Characteristics and Composition

When installing the **Stratus** Reverse Sensing System it is helpful to understand the components of a basic bumper. Understanding the bumpers design and materials will better prepare you to select an optimum installation location for your sensors. There are four common designs used in bumper systems today.

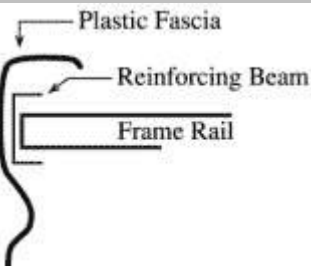
1. Metal face bar (typically stainless steel, used mostly on light trucks)
2. Plastic fascia and reinforcing beam (used mostly on foreign vehicles)
3. Plastic fascia, reinforcing beam and foam or honeycomb energy absorbers (used on most domestic vehicles)

Plastic fascia, reinforcing beam and mechanical energy absorbers



Metal Face bars

This system consists of a single metallic bumper that is used as the primary energy absorber in a collision. This system is generally used on light trucks. On this type of bumper installing the sensors in the bumper is fast and easy. Care should be taken to ensure that there are no obstructions behind the bumper. Please see Drilling Guide for tips on use of the hole saw for creating sensor ports.



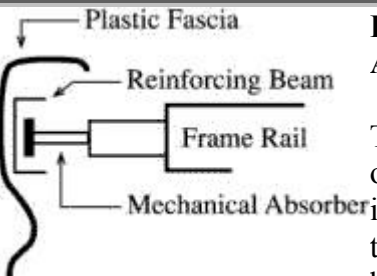
Plastic Fascia and Reinforcing Beam

This bumper system consists of the plastic fascia and a reinforcing beam that is directly fastened to the frame of the vehicle, and is primarily used in Europe and Japan where the regulations on bumpers are less stringent.

When installing the sensors on this type of bumper it is important that before you begin you must make sure that there is at least 1 inch of clearance between the plastic fascia and the reinforcing beam.

If there is not enough clearance you may use the hole saw to create sensor ports in both the plastic fascia and the reinforcing beam. Once again care should be taken to assure that there are no obstructions behind the bumper (i.e. Shocks).

The plastic fascias are generally made from polypropylene, polyurethane, or polyethylene. All three materials are very pliable which makes them easy to drill

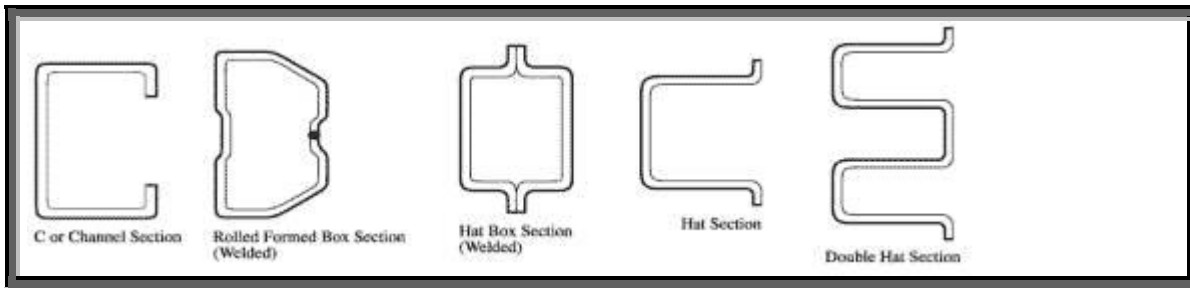


Plastic Fascia, Reinforcing Beam, and Mechanical Absorber

This type of system is not as common as the rest. It consists of the Plastic fascia with a reinforcing beam directly behind it, followed with the mechanical absorbers. When installing the sensors on this type of bumper it is important to look behind the plastic fascia at where the mechanical absorbers are located. It is important not to drill in the mechanical absorber locations.

Reinforcing Beams

The reinforcing beam is one of the key factors in bumper systems that act as an energy absorber in a collision. They protect the frame in the event of an impact. There are several styles of beams that you might see behind the fascia of your vehicles bumper.



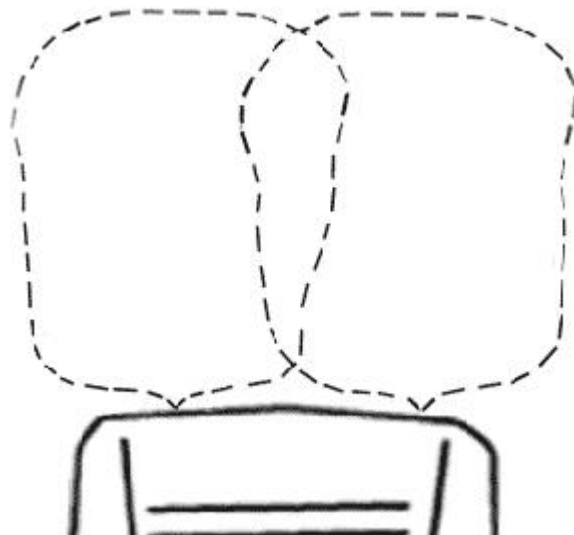
Stratus™ Detection Pattern Reference Guide

Riding the Waves

The Stratus Reverse Sensing System uses proven ultrasonic technology to detect objects that are behind your vehicle. The sensors, which are flush mounted in to your vehicles bumper, emit sound waves that travel through the air. When these sound waves strike an object, the wave is reflected (echoed) back to the sensor. The sensor then sounds a warning signal to alert the driver of an obstacle in their path.

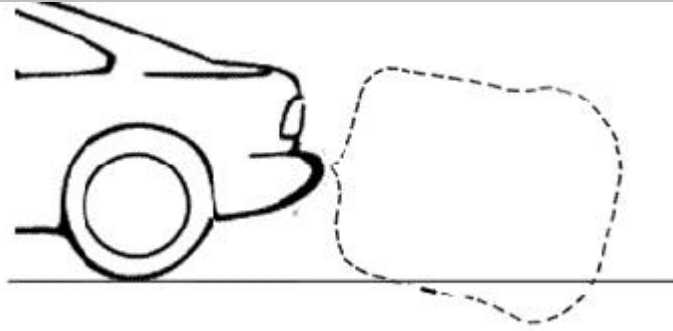
Ultrasonic Detection Pattern

The waves are released from the sensor in an expanding pattern. Since most bumpers are angled in a downward fashion, matching the correct sensor type the angle of the bumper is very important.



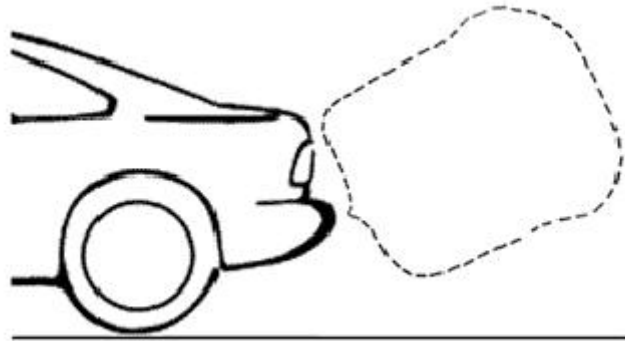
Alignment Too Low

If the sensor angle is too low, the system will detect the ground.

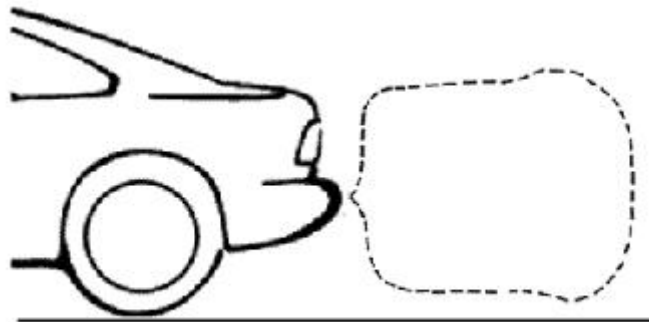


Alignment Too High

If the angle of the sensor is too high, the system could be missing objects that are lower to the ground.



Correct Alignment



Important

If you have a bike rack installed your Stratus System should not detect it; however, If a bike is placed on the rack the sensors may detect it. In this instance you may want to turn off your system. Your sensors may also detect an externally mounted spare tire. This will depend on the location of the sensors. If the spare tire extends more than 2" past your

bumpers face, we do not recommend installing the reverse sensing system.

Tips:

1. If you pick up excess road detection simply increase your sensor

If you need to lower coverage, simply reduce sensor angle.