

RFID Use & Installation Guide

<https://thereservetp.com/forms-and-requests/#rfid-request>

Welcome to The Reserve's Radio-frequency Identification (RFID) Guide. This brief illustrated guide will cover the following topics:

- 1) RFID Tags Are NOT Removable!
- 2) RFID Reader & Sticker Placement
- 3) RFID Placement: Rule of Thumb
- 4) Headlight RFID Installation Instructions

Using the following guide, RFID sticker installation is fairly simple. But remember, the RFID stickers are **ineffective upon removal**. Meaning, you have to get it right the first time! Replacement RFIDs are provided at a cost of \$5/sticker.

As a result, we STRONGLY suggest you experiment with RFID sticker placement by affixing the tag (prior to peeling the sticker backing) using temporary tape (eg Scotch tape) until optimal placement and function has been achieved.

RFID Tags Are NOT Removable!



INEFFECTIVE UPON REMOVAL

RFID stickers **break upon removal**. And that is a good thing. Because you are uniquely identified by that sticker, you wouldn't want someone to steal that sticker and use it to gain unauthorized access to The Reserve!

Access control means ensuring that only authorized users can get in.

Common access methods such as clickers, keycards, and passwords, can be shared with – or stolen by – unauthorized users. RFID stickers combat unauthorized access sharing. The device is designed to break when peeled, therefore rendering the credential ineffective. Since it does not come off in one piece, it cannot be used to steal access.

RFID Reader & Sticker Placement



RELATIVE PLACEMENT AND WHY IT MATTERS

The angle between sticker and antenna makes all the difference when installing vehicular RFID. The antenna emits passive energy in a particular direction. When a passive tag receives this energy, it stores this power to power up its chip. Once enough power is stored, the sticker transmits its signal forward.

This whole process takes a fraction of a second and repeats continually as long as the antenna can power the sticker.

This process is **directional**. This means that the tag and reader must face each other. The more they face each other, the better the read.

PLACE IT FACE TO FACE

Think of it like shining a flashlight at a mirror: your antenna is the flashlight, and the sticker is the mirror. You need the mirror to point in such a way that the light is reflected back at the reader.

It may help to think of it as RF energy “bouncing” off the sticker. If the energy bounced off the sticker, where would it go? Will most of it bounce back towards the reader, or will it simply bounce up into the sky?

The most intuitive way to remember this is to use the Rule of Thumb.

RFID Placement: Rule of Thumb

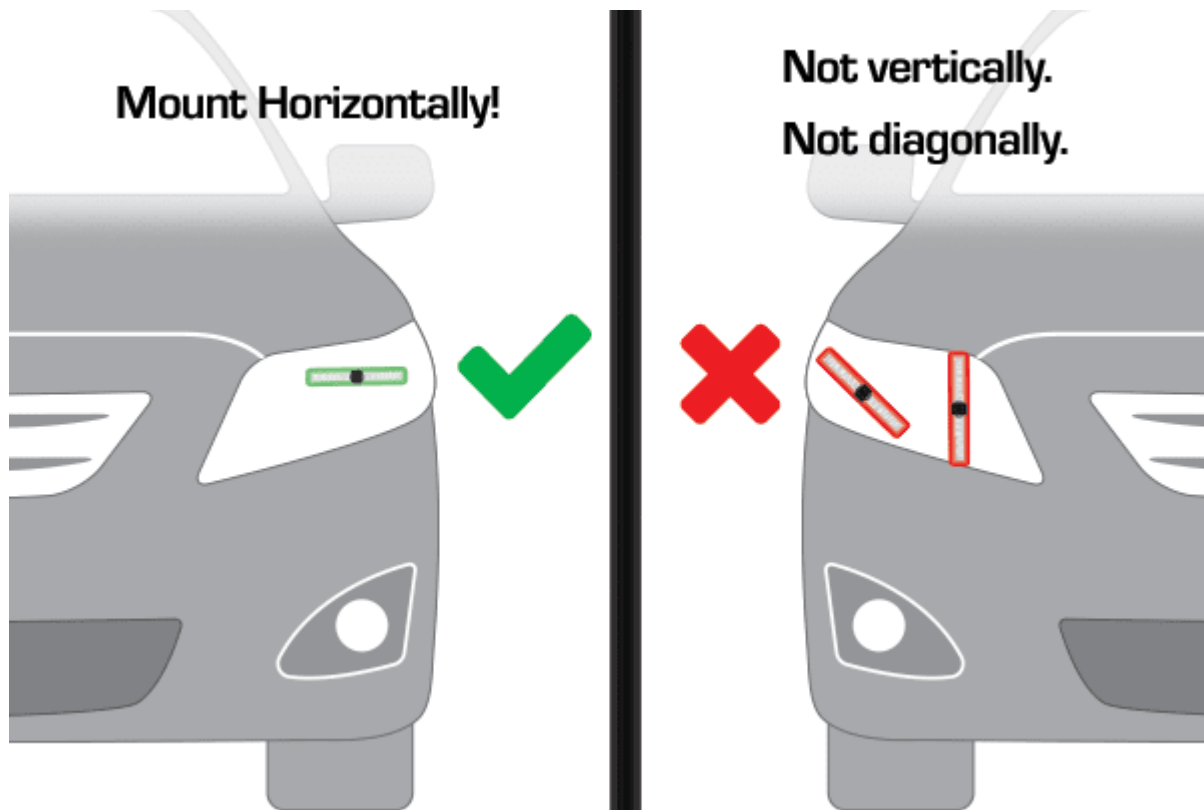


The angle between your RFID credential and the antenna is, by far, the most important factor to successful reads.

Where sticker placement is concerned, here are the guidelines:

1. **Place the sticker horizontally.**
2. **Place the sticker at least 2 inches from materials containing metal whenever possible.**
3. **Place the sticker so that it faces the antenna.**

Place Stickers Horizontally



Don't mount RFID stickers diagonally or vertically. It looks bad, and it won't work.

1. PLACE STICKERS HORIZONTALLY

Stickers must be placed horizontally.

The Two Inch Rule



2. THE TWO INCH RULE

The two inch rule is easy enough, and possible to follow on all but the smallest of headlights.

Some vehicles may make it challenging to follow the two inch rule. Some vehicles' headlights may be too small to allow for two inches on any side of the sticker. If that's the case, do your best to center the sticker as far from the metal as you can (most vehicle hoods and fenders are metal, while front bumpers are almost always not metal).

Stickers Facing Antenna: The Rule of Thumb



Stick your thumb on top of the center of where you want the sticker. Does it point toward the antenna? You're good to go!

3. STICKERS FACING ANTENNA: THE RULE OF THUMB

The goal is to face the sticker face-to-face with the antenna at the point it has to open the gate. **Your thumb** is a great tool for quickly assessing the directionality of a sticker.

Where Is Our Antenna?



The RFID Reader is on the driver's side, so make sure to mount the RFID sticker on the driver's side headlamp.

GETTING STARTED: WHERE IS YOUR ANTENNA?

When assessing where to place a RFID sticker for optimal efficiency, it is essential to know where the RFID Reader will be, relative to the entering vehicle.

Question 1: Which side?

This one is common sense. The RFID Reader is on the driver's side, so make sure to place the sticker on the driver's side headlamp.

How High Is Our Antenna?



A more standard-shaped headlight doesn't give you many options to go up or down — but for a particularly angular headlight you should take care to consider antenna height.

Question 2: How high is the antenna?

A typical sedan may not have many options, but vehicles with large or complex headlight shapes have more options for placing the RFID Sticker. In such cases, you may want to place the sticker on a fairly front-facing part of the headlamp (for a lower antenna) or toward the top (for a higher antenna.)

Here is a great time to use your **rule of thumb** to find a place where your RFID Sticker will point at the antenna. Keep the base of your hand flat against the headlight, and point your thumb out. If your thumb points toward where the reader will be, you're good.



This vehicle has very angular headlights, offering several possible mount points. Pictured above is an upward facing mount point to meet a high mounted antenna.

HEADLIGHT RFID INSTALLATION



RFID sticker installation is fairly simple. But remember that stickers are ineffective upon removal: meaning you have to get it right the first time! Replacement RFIDs are also subject to a \$5 charge.

As a result, we **STRONGLY** suggest you experiment with RFID sticker placement by affixing the tag (prior to peeling the sticker backing) using temporary tape (eg Scotch tape) until optimal placement and function has been achieved.

After determining the optimal placement for optimal sticker placement, follow these easy steps for permanently installing your RFID sticker in the desired location.

CLEAN HEADLIGHT PRIOR TO APPLYING RFID STICKER

Use window cleaner and a microfiber cloth (so as not to scratch up the headlight.)

Make sure the headlight is dry before proceeding with the installation.



TAG HANDLING



Do not bend the RFID Sticker as pictured above; this may reduce performance. Place the tag face down and hold it straight, then peel the backing away.

RFID tags need to be treated carefully. Bending the tag can lead to reduced performance.

When removing a tag, do NOT peel the sticker away from the backing. Instead, place the tag face down on a flat surface and pull the backing up, taking care to hold the RFID Sticker flat.

INSTALLATION

Optimal tag placement depends on the following factors:

- **Mount the tag at least 2 inches away from metal.**
- If possible while maintaining the 2 inch spacing, do not place the tag directly in front of the bulb.
- All other things being equal, mounting the tag in front of the high beam is preferable to the low beam.

Hold the RFID Sticker by the edges and hold it **horizontally** in place. Press down and smooth out the tag to remove air bubbles.