

# FedEx Straight Box Truck

## Blind Spot Camera & Backup Sensor Installation



# Monitor Mounting in a Box truck

- There may be many different years, makes and models of Straight box Trucks you encounter. Be sure that the mounting location does not block the driver's view of the road.

The example shown is an Isuzu NPR Box Truck attached to the windshield.



In most cases the RVS-MOUNT ("Fan" style w/double sided tape) will work best for the installation. It can be attached to the dash (with screws in addition to the 3M tape) or attached to the windshield using the 3M tape. **Note:** The windshield must be cleaned thoroughly with Isopropyl or denatured alcohol.



RVS-MOUNT

(Requires screws in addition to the 3M tape if attached to the dash)

3M tape



Ford Medium and High Roof Transit Vans can use the "U" bracket and mount overhead on the map light housing in many cases. (See examples on the following pages). Other high roof vans



RVS-422 "U" bracket

# Monitor Mounting Overhead Using the “U” Bracket

- The example shown is a Ford Transit Van with the monitor mounted overhead on the map light housing using the “U” bracket.
- There may be Straight Box Trucks that would allow overhead mounting as well. Be sure that the mounting point is solid and would not vibrate



# Side Cameras – Straight Box Truck

## Flush Mounting

- Note: You must have a flat surface on the fender or body panel for flush mounting. Always double check on both sides of the panel (if possible) to verify before drilling any holes. Mount the left and right camera at the same height as the driver's side camera.
- The location of the camera and angle of 8° will need to be set before drilling the holes. Once determined, mark the hole locations.
  - Check the and adjust the camera angle with the flat lens portion of the camera. "Level" apps are available for smart phones.
  - Mark the screw holes.
  - The camera cable will require a 3/4" hole. Use the foam sealing tape to mark the cable hole
  - The camera will be mounted to the fender with 3mm Metric (or #4 SAE) machine screws, nuts and washers. Machine screws will require 1/8" holes.
  - Or if there is no access to the backside of the fender, use the #4 sheet metal screws. **Pre-drill 5/64"** holes in the fender. Note: You will want to hand tighten the screws.
  - Coat the cable hole with brush on primer.
  - Apply the foam sealing tape to the fender.
  - Verify the screw holes are correct, then peel the camera side if the 3M tape.
  - Attach the camera.
  - Route camera cables to interior of van and make the connections.



The example shown is a 2004 Sterling with access on the backside of the body panel.



# Side Cameras – Straight Box Truck – (cont.)

- View from the inside of the body panel showing the camera secured with machine screws, nuts and washers.
  - If there is a rubber grommet in the A pillar/kick panel area of the truck body, you may be able to route the camera cable through this location.
  - If not, route the cables toward the engine compartment and look for an existing grommet there to be able to run to the interior of the cab. If there is no existing grommet, you will need to drill a 3/4" to run all 3 cables through. Insert a 3/4" snap grommet or rubber grommet to protect the cables. Seal completely with silicone.
- Note: Freightliner M2s have a grommet where the rocker meets the kick panel.



# Rear Camera Installation – Straight Box Truck

The RVS-770 rear backup camera will be mounted in the center, above the rear door opening, if possible. It may need to be offset due to the location of existing running lights. In this case, mount between the center light, and either left or right center light, or below the center light. Make sure the camera does not block any of the existing lights.

- Note: Always avoid mounting the camera above a light to avoid the light washing out the camera's view.
- Use 10-24 x 1" machine screws, nylon insert lock nuts and washers to secure the bracket to the van body.
- Drill a 3/4" hole above or below the bracket for the cable and grommet.
- Brush primer around the grommet hole and allow to dry.
- Insert the rubber grommet that is on the camera cable into the opening, making sure that it is seated properly.
- Use thread locker on the screws that secure the camera to the mounting bracket. Do not tighten the screws completely until the system is powered up.
- Once the system is powered up, you will need to adjust the angle of the camera.
- Adjust so you can see the edge of the bumper.
- Adjust the sun shield so it shades the camera as much as possible without blocking any of the view.
- Route the camera cable along with the upper sensor cables across to the driver side being sure to secure the cable so it cannot contact the door, door spring, cables, cable bracket on door or door roller wheels.



# Backup Sensor Locations - Straight Box Truck

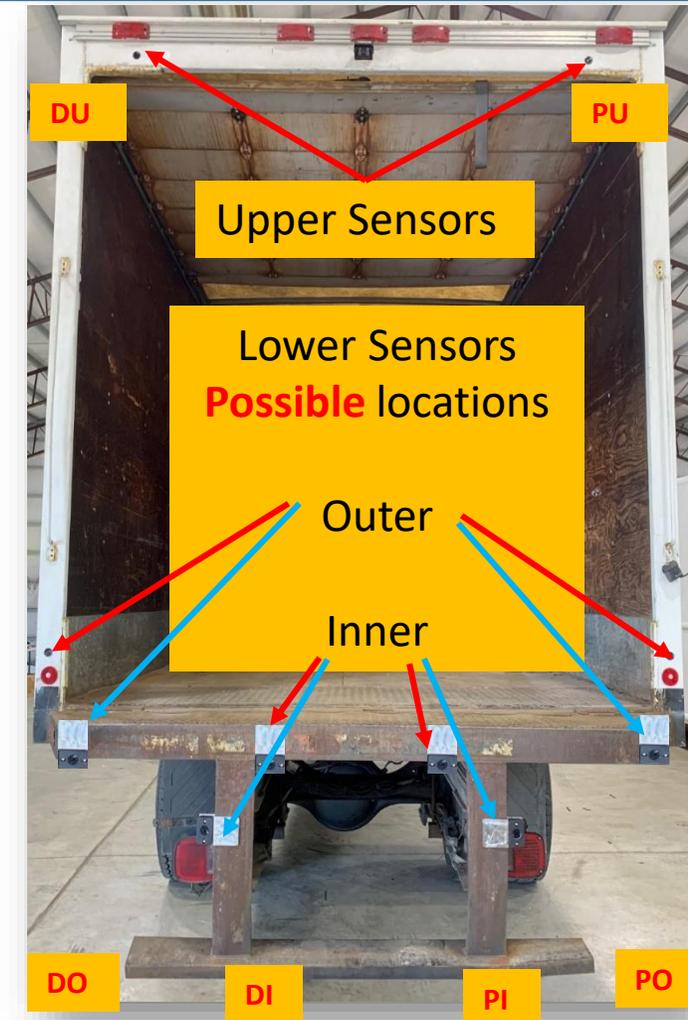
This system is designed to use 6 backup sensors. 2 upper and 4 lower

- The 2 upper sensors mount near the upper outside corners of the cargo body.
  - These are sensors DU and PU.
- The 4 lower sensor locations will vary and be determined by:
  - The cargo box design.
  - Bumper design.
  - Underride Crash Bar design.
  - Pull out Ramp if equipped.
  - Liftgate if equipped.
    - Note: Always use the rubber blocks with the offset mounting bracket when mounting sensors to the bumper or crash bar.

Upper Sensors	Lower Sensors
DU=Driver Upper	DO=Driver Outer
PU=Passenger Upper	DI=Driver Inner
	PI=Passenger Inner
	PO=Passenger Outer

Each sensor will be labeled for the corresponding mounting location

DU			PU
DO	DI	PI	PO
Backup sensor placement order			



# Backup Sensor Installation - Straight Box Truck

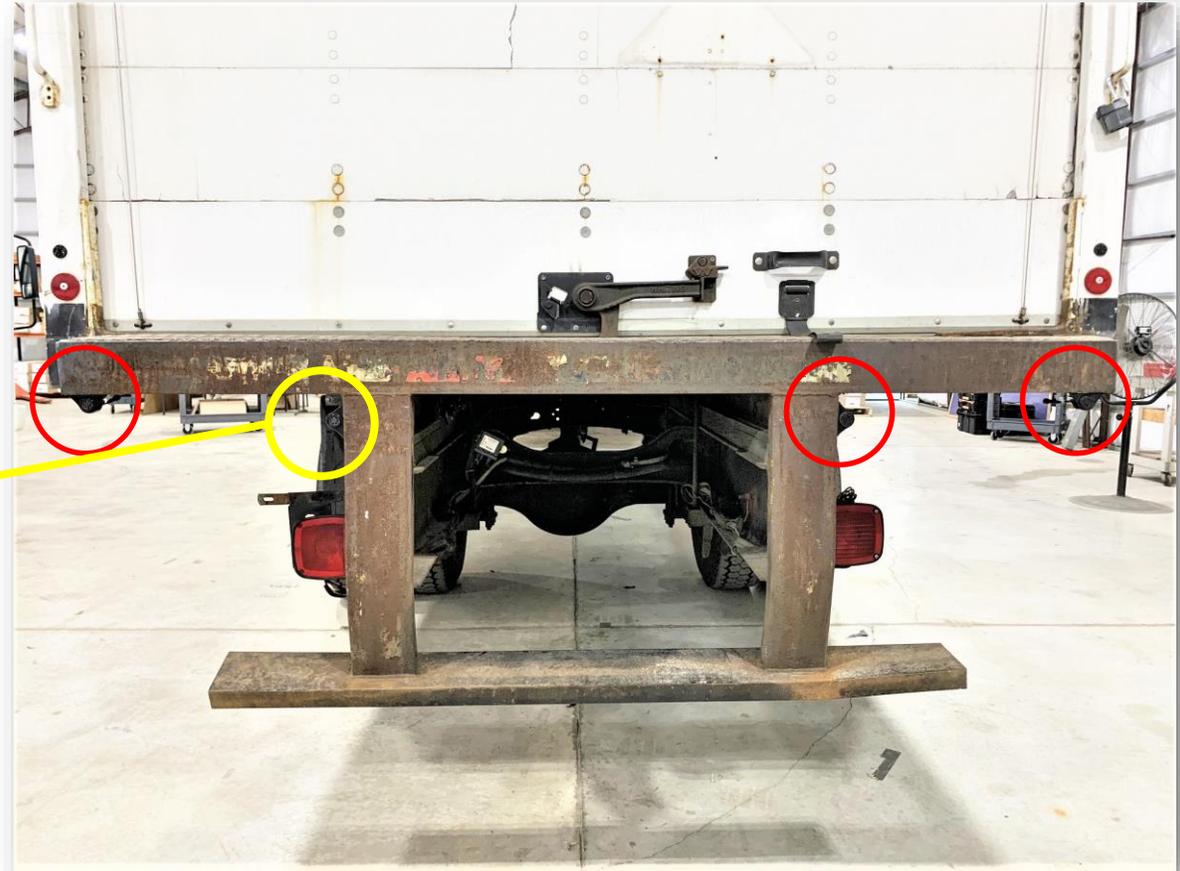
## For sensors flush mounted in the cargo body:

- Drill a 1" (25mm) hole for each sensor.
- Treat the cut sensor opening with brush on primer.
- Use the supplied rubber boots.
- Be sure to properly align the sensor in the hole. They are marked with an arrow on the backside and the "Hood" should be positioned at the top on the front side.
- Secure the upper cables along with the camera cable so as to be clear of the door spring, cables and rollers. Route the cables to the driver's side.

## Lower sensors not installed in the cargo body:

- Use the RVS supplied "mantel clock" style black brackets or the supplied offset mounting brackets along with the rubber sensor mounting blocks.
- Be sure to properly align the sensor in the hole (see above).
- Mount the sensor blocks to the brackets with supplied hardware.
- Secure the lower cables to existing wiring or framing or route through existing channel to the driver's side.
- Route the upper cables to the along with the monitor extension cable up through the floor.
- Drill a 1" hole in the floor as close to the corner as possible. Make sure the cables cannot be damaged by the door or cargo. See the **Upper Backup Sensor & Camera Cable Routing to and Through Floor** page.
- Loom all exposed cables.

# Using the “Mantel Clock” Style Mounting Brackets

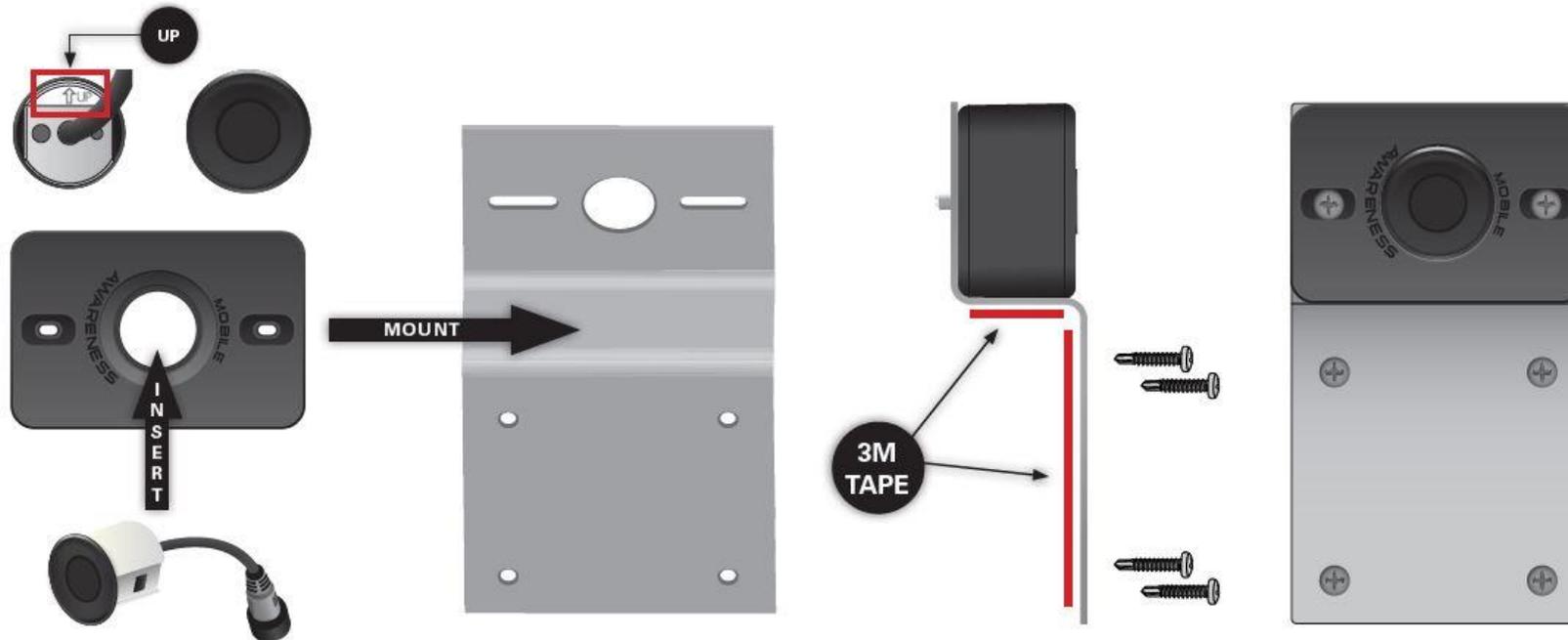


# Installation of Backup Sensors Using Offset Brackets

The backup sensor bracket assembly can be installed vertically or horizontally. Once this is determined, insert the sensor into the rubber “Enhanced Sensor mount” so the arrow on the back is pointed upward. **Note:** Sensors will not function correctly if the orientation is wrong. Using the RVS included hardware, attach the rubber block to the “Offset Bracket”.

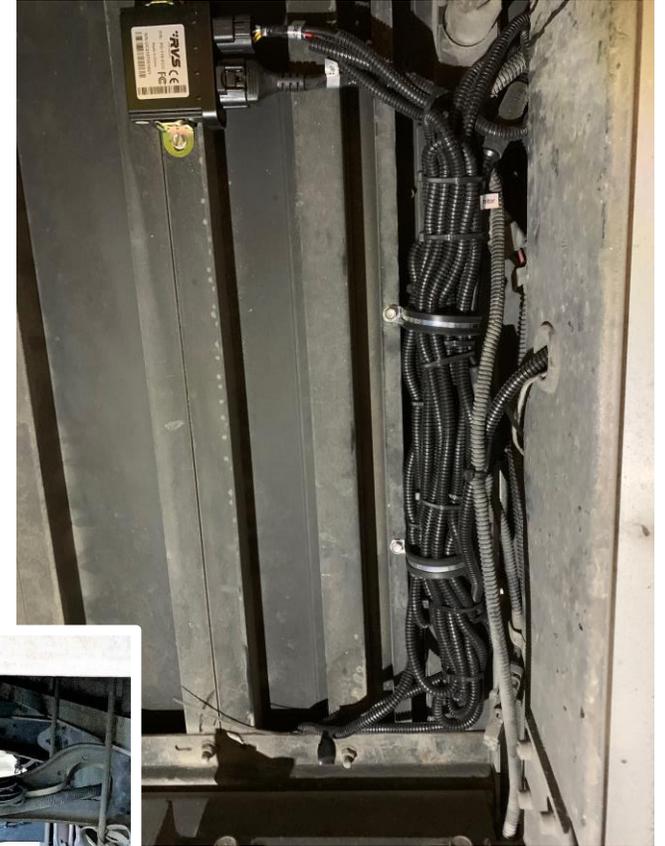
Attaching Backup Sensor/Offset Bracket assembly to the vehicle will be performed in one of two ways:

- Installation on bare **Stainless Steel**, the brackets can be installed with the 3M tape only. **Note:** The mounting surface must be cleaned thoroughly with isopropyl or denatured alcohol and let dry. Firmly press the bracket in place.
- Installation on painted, powder coated or rusty steel requires screws in addition to the 3M tape.



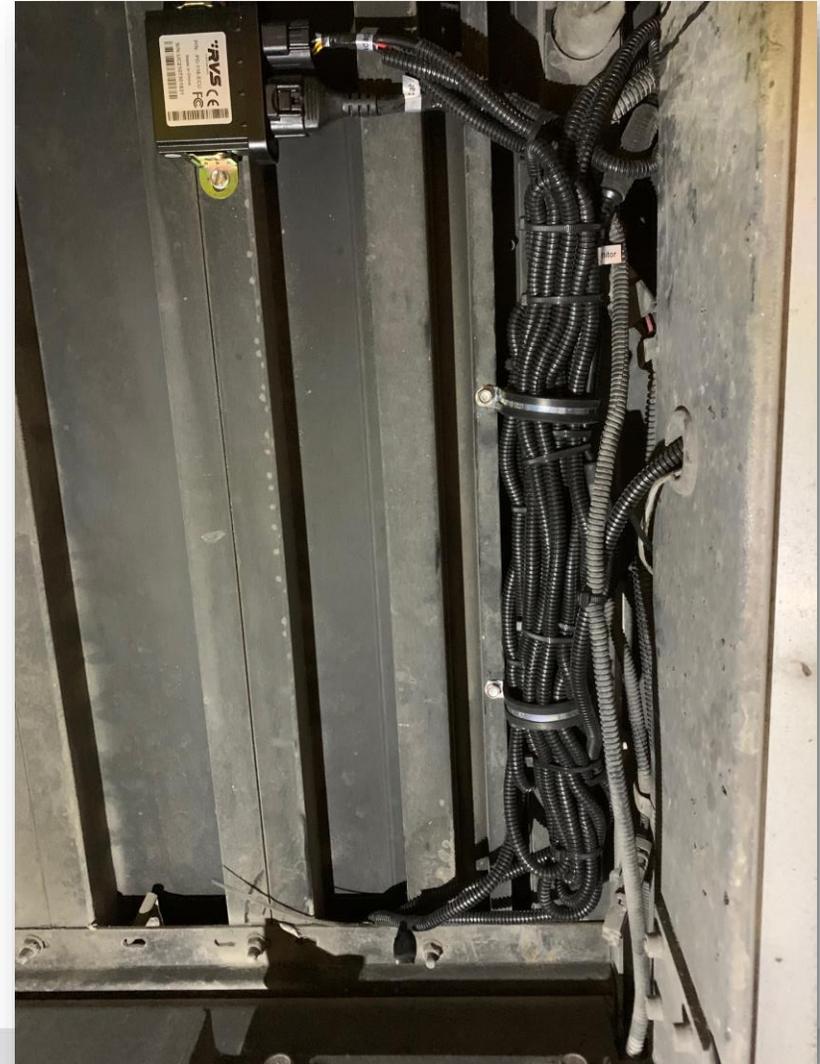
# Backup Sensor ECU – Straight Box Truck

- The ECU will be located on the underside of the floor in the rear driver's side corner or in the center of the frame between the frame rails.
- If you cannot route the cables through the cargo box framing, drill a 1" hole in the floor near the back wall. Check for wires and any substructure before drilling. See **Upper Backup Sensor & Camera Cable Routing to and through Floor** pages.
- Secure the ECU to the underside framing with 1/4-20 bolts, nuts and washers or #14 self drilling screws and washers if attaching to the substructure such as the wood floor.
  - Or, if there is no other choice, use heavy duty zip ties if attaching to existing wire harness(s).
- Bundle the excess lower sensor cables and secure with cable clamps to the floor or floor framing securely to an existing wire loom using multiple zip ties.
- **Note:** Be sure the watertight connectors are fully seated and locked into the ECU.



# Backup Sensor ECU Mounting – (continued)

Depending on how the underside of the cargo box is laid out, you will have to determine how to secure the backup sensor ECU. Either by bolting it to under floor framing or screwing it to the underside of the floor or securing it to an OEM wire harness(s). If attaching to an OEM wire harness, bundle the excess cable, and then secure the ECU and cable behind the OEM harness, if possible, for added protection.



# Upper Backup Sensor & Camera Cable Routing to and Through Floor

## Routing Cables Through Trailer Framing

**This is the preferred method of running the cables.**

Whenever possible run the camera and upper backup sensor cables up through the wire run in the vertical framing of the cargo box.

This is where the body builder runs the wiring for the upper lighting and camera if equipped.

A metal or fiberglass fish tape is usually required to do this.



# Upper Backup Sensor & Camera Cable Routing to and Through Floor – (continued)



- Overhead door roller channel.
- Rear door frame.
- Drill 1" hole through the floor between the rear door frame and door roller channel. Insert snap bushing.
- Route the camera and #1 and #2 sensor cables down against door frame. Securing with loom clamps or zip ties w/eyelets and 3/4" self drilling screws every 18" to 24" as shown in photo.
- Pass the camera and upper sensor cables up through the hole and route to the sensors.



# Routing The Cables Across The Top of The Rear Door

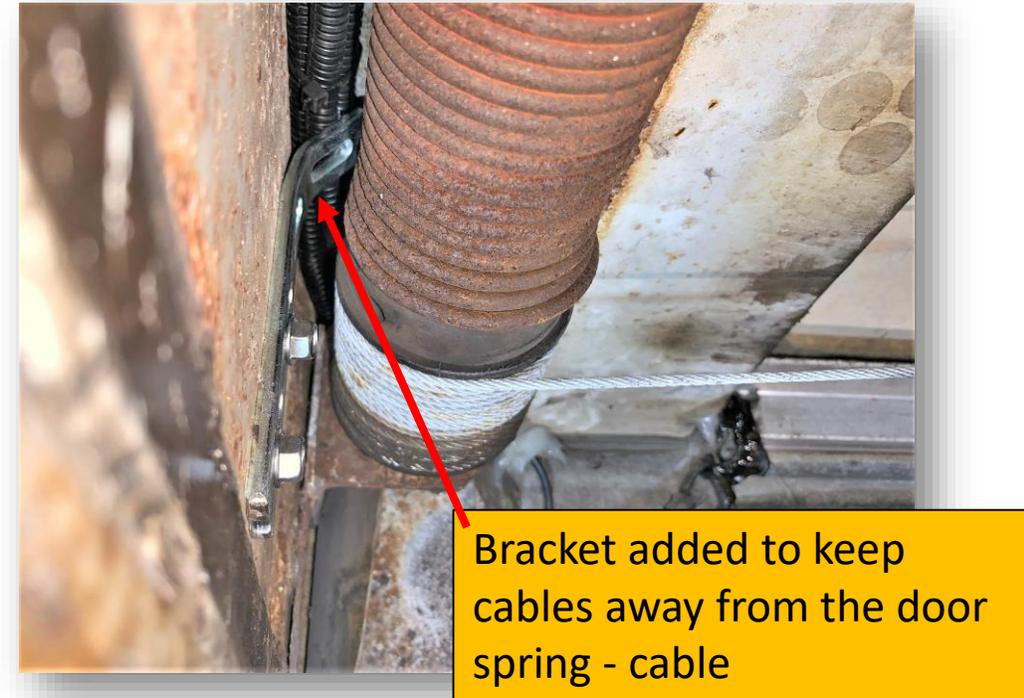
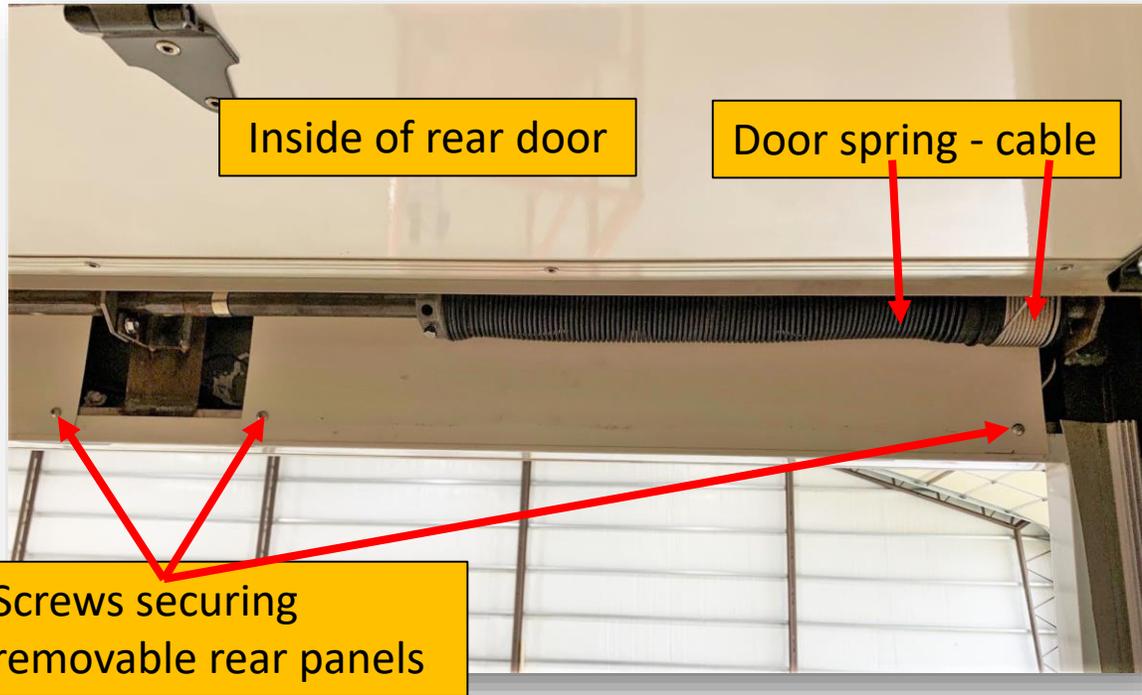
When routing the camera and sensor cables across the back of the cargo box, there are basically 3 types you will encounter.

- Open or partially open channel framing – Open framing will have a channel you can lay the cables in to route across to the driver's side. You can drill holes in the channel for securing with zip ties.
- Sealed with removable panels – Remove the panels and route behind the panels.
- Sealed panels – This type requires the cables to be exposed. Cables must loomed and securely attached in a way that the door, door spring or door cable cannot come in contact with the camera and/or sensor cables.

Once it is determined how the cables are to be routed across, you then need to determine how the cables will route around the upper corner and down to the floor. This is where you have to be careful routing around the door spring and cable.

**Note:** Keep in mind that these doors open multiple times everyday. The camera and sensor cables must not come in contact with the door cable.

# Routing The Cables Across The Top of The Rear Door – (continued)



When running the camera and sensor cables across the back of the cargo box, route behind removable panels if possible.

**Note:** If the RVS cables are in contact with the door cable, they could be rubbed through. These doors are opened and closed many times and it may be necessary to add a bracket of some kind to keep the RVS cables away from the door spring cable.

# Completing the Installation

## Verify all cameras function properly:

- Rear camera displays full screen when the vehicle is put in reverse.
- Left side camera displays full screen with the left turn signal.
- Right side camera displays full screen with the right turn signal.
- Verify that the left and right camera view work properly when the brake pedal is pressed.

## Verify that the backup sensors are located properly and function properly.

(Testing is easiest with 2 people. If a 2nd person is not available, place an object in front of each sensor to test. A tall ladder may work for the upper sensors).

- Verify that each sensor is properly positioned
- Verify that each sensor shows it is triggering visually on the monitor.
- Verify that you can hear that each sensor is triggering audibly.

- Verify that the default monitor view is set to the left and right camera split screen.
- Verify that the rear camera is adjusted to see the edge of the bumper.
- Verify that the rear camera sun shield is adjusted so that it shades the camera as much as possible w/o blocking any of the view.
- Verify that the rear camera grid lines are adjusted properly.
- Verify that the monitor turns off when the vehicle key is in the off position.
- Be sure to leave the following in the vehicle:
  - The RVS laminated “Quick Start” and “Trouble Shooting” guides.
  - The RVS operation guide booklet.
- Be sure to perform the AMODS post inspection.
- Be sure that the vehicle is as clean or cleaner than you found it! NO metal shavings, wire clippings, ends of zip ties, TOOLS, etc....

# Product Information and Technical Help



A Safe Fleet Brand

For product information

Please call

800-764-1028



For installation help

Please call

800-775-2527



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