

Introduction / Comments:

Install Instructions Brake Light Topper-Ford Lightning

Note:

Read all instructions prior to installation. Review the Adrian Steel **GENERAL PRECAUTIONS PAGES (56638)** before attempting installation. Only personnel familiar with using electrical best practices should perform this install. Reference **ELECTRICAL BEST PRACTICES MANUAL (54479)** before attempting installation.



Installation Instructions Topper 3rd Brake Light - Ford Lightning

Routing Overview



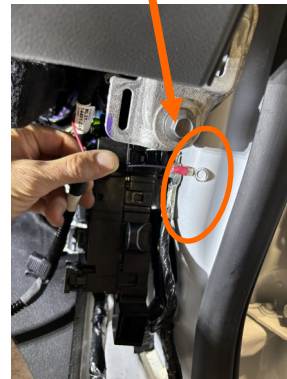
Grommet at end of truck bed for harness to run through



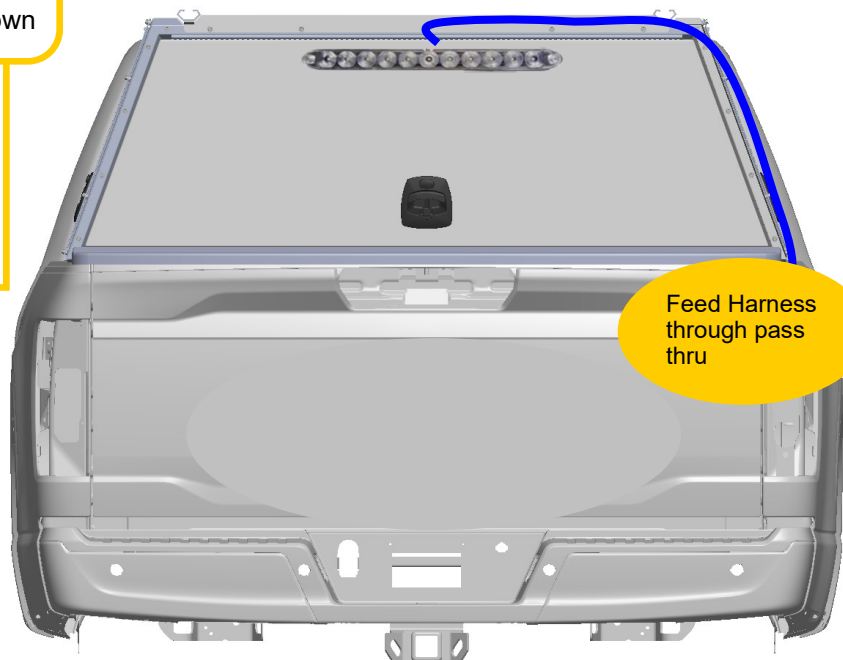
View from passenger side topper door—looking down



CHMSL Circuit OEM Wire. Gray/Orange Wire



Self Tapper Into Sheet Metal



Color	Key - Items
Orange	Power and Ground Location
Blue	Harness Routing
Yellow	Bed Wire Pass Thru



Step 1: Locate the brake light harness 71680.

Remove the fuse from the inline fuse holder until the end of the install.

Open the passenger side door. Remove the trim panels circled in red.



Step 2:

Locate the body control module on the righthand side of the vehicle body. There will be 3 connectors with one of them being brown.

Locate the brown connector (C211), pin 3. This wire will be Gray / Orange. This is the BOO (Break On/ Off) circuit wire for the brake light. Use a meter to be sure this is the correct wire (OEM's tend to change wire colors).

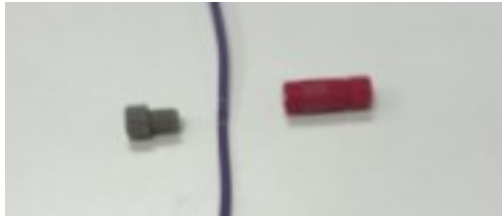
Separate the wire from the bundle (by your finger or a trim tool) to prepare it to be connected with the brake light harness.

Locate the posi-tap in the brake light harness bag.



Posi-tap

The red wire in the pictures is referencing the brake light harness.
The blue wire in the picture is referencing the OEM brake light signal wire.

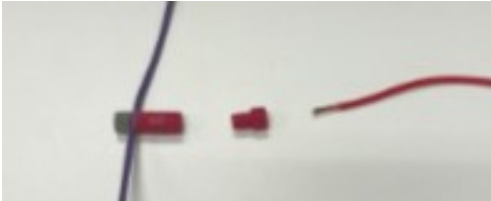


Step 3: Remove the grey cap on the posi-tap.

Push the OEM brake signal wire into the insert on the grey cap.



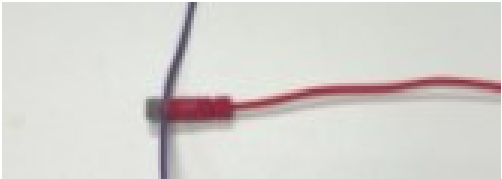
Twist the grey cap back onto the posi-tap with the OEM wire secured. The pin point on the posi-tap will puncture the OEM wire and obtain the signal.



Remove the red cap on the posi-tap.



Insert the blunt cut end of the brake light harness through the red cap.

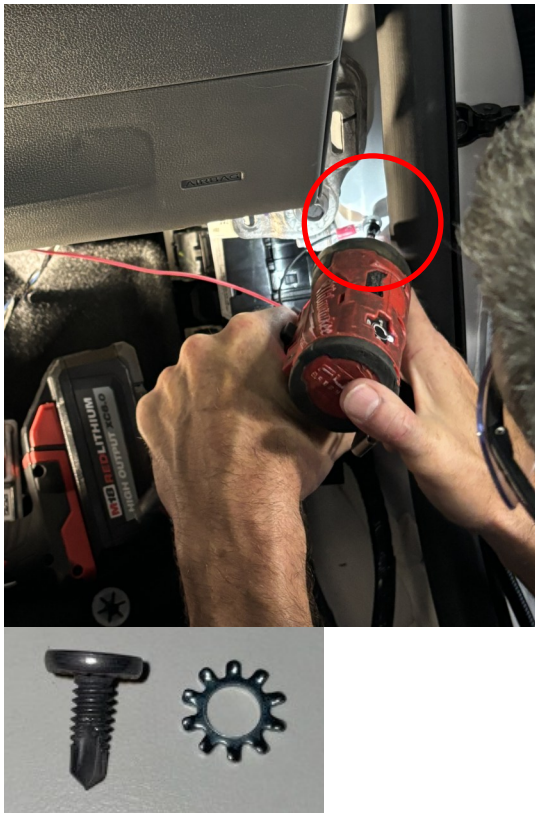


Twist the cap back onto the posi-tap with the brake light harness secured.



The picture to the left is the actual installed posi-tap onto the OEM wire.

Be sure the connection is secure.



Step 4: On the passenger's side: locate the cut outs for the trim panels in the sheet metal near the OEM chassis ground.

Locate the cut out that is higher on the frame than the OEM ground, shown in the picture to the left.

Locate the fastener bag BAG72914 and find the small tek screw and the star washer.

Insert the ring terminal through the star washer then through the ground ring terminal on the brake light harness.

Screw the tek screw into the frame like shown in the picture to the left.

Be sure not to over tighten or under tighten the screw. Be sure there is a good connection by checking the connectivity of the ground with a multimeter. You can do this seeing if there is a resistance (Setting " Ω " on meter) between the OEM copper ground and the new ring terminal.



Step 5: Once good connection to ground has been made, start routing the harness inside the trim near the door towards the backseat of the vehicle.

Ensure the harness is completely tucked and secured under trim supports so that wires are not pinched once trim pieces are reinstalled

Use the image to the left as reference.



Step 6: Once Harness 71905 has been routed to the backseat remove the trim piece shown to the left to access the gray plastic cover under the seat that we will be routing our Harness through. Plastic cover circled in red.

Use a step drill bit to drill a 11/16" sized hole to allow the harness to be routed through it to the underside of the vehicle. Once harness has been completely routed through plastic cover silicone the hole for water sealing.

Note: Run 71905 end with 3 connectors from underside of vehicle, through cut hole, towards front of vehicle. Leave all excess wiring under vehicle.



Step 7: Begin routing harness to the back of the vehicle on the passenger's side while staying away from the rear passenger's side wheel. Find mounting points on the vehicle's frame or thicker OEM harnesses to secure harness with zip ties.

Once harness has been routed and secured to the back of the vehicle, move to the bed of the truck.



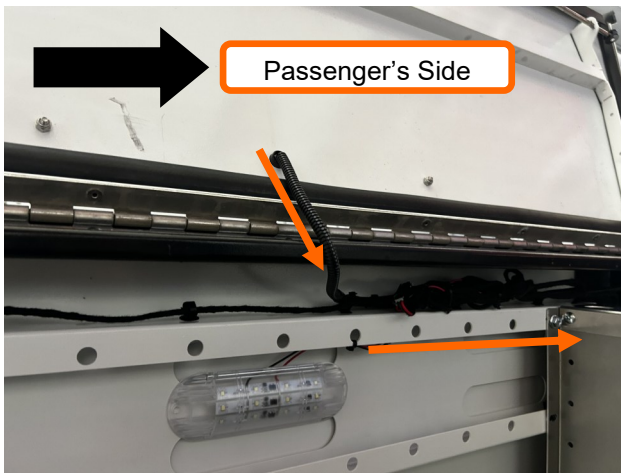
Step 8: Locate the rear passenger's side bed area. There is a circle shaped pass thru. Route the harness through this pass thru and continue up the side of the topper.

Tuck any excess wiring into the empty cavity underneath the bed frame.

Use the supplied Tek screw and P-clip to secure the wire harness to the frame.

Excess wiring
tucked under
the bed frame





Step 6: Routing continued

Continue routing the brake light harness inside the topper, to the light.

The harness should run along the passenger's side rear cavity, then across the top cavity to the light (Orange and blue lines shown in pictures).

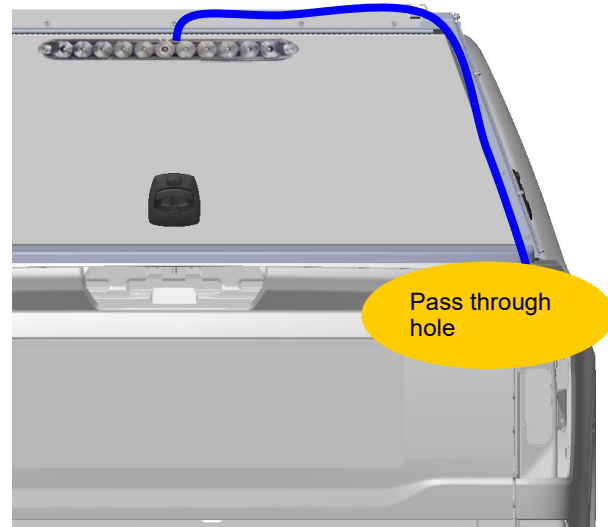
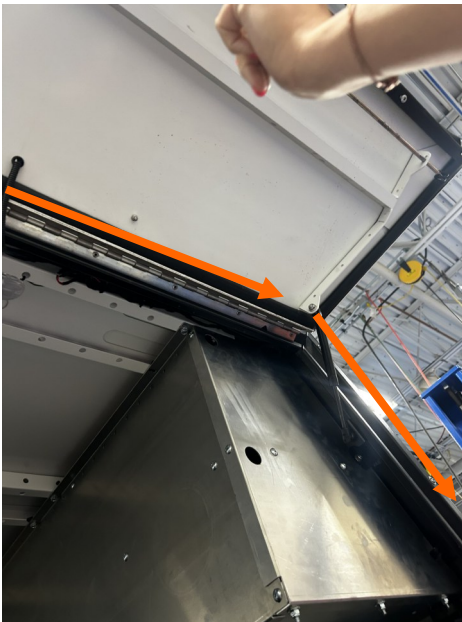
Be sure to leave extra wire from the brake light to the topper rails before securing. This ensures the wires won't break when the topper door opens and closes.

Secure harness using stud mount zip ties.

Connect the harness to the light:

Plug the connectors together. Pull connectors lightly to ensure they do not come apart.

Be sure the red wire on the harness connects to the black wire on the light. Then the black wire on the harness connects to the white wire on the light.



Insert the fuse into the inline-fuse holder on the brake light harness.

The install is now complete.

Check that the brake light comes on when the brake pedal is pushed, then back off once pedal is released.

Introduction / Comments:

Install Instructions For Walk-in Topper Backup Camera For F150

Note:

Read all instructions prior to installation. Review the Adrian Steel **GENERAL PRECAUTIONS PAGES (56638)** before attempting installation. Only personnel familiar with using electrical best practices should perform this install. Reference **ELECTRICAL BEST PRACTICES MANUAL (54479)** before attempting installation.

ATTENTION:

1. The tailgate (removed for walk-in topper installation) will have the OEM camera still installed in the tailgate/end-gate handle. **It is important to use the camera that is installed in the same vehicle – or calibration errors can and will be registered on vehicle diagnostic– which will require a dealer service visit.**
2. Follow OEM back up camera removal instructions and **note the orientation of the camera.**



Install Instructions For Walk-in Topper Digital Backup Camera

Section 1: Table of Contents

Table of Contents:

Page 1: Cover Page/Introduction.....	1
Section 1: TOC & Safety Precautions Information	2
Section 2: Cable Kit Part Identification	3-5
Section 3: Tools Needed.....	6
Section 4: General Vehicle Layout	7
Section 5: General Wiring Diagram	8
Section 6: Application Specifics: F150.....	9
Section 7: General installation	13
Section 8: Routing harness.....	15
Section 9: Testing and Finish.....	20

Safety Precautions Information

These symbols are used in the document to warn installer to make sure there is understanding beyond general precautions used when working on electrical installations.

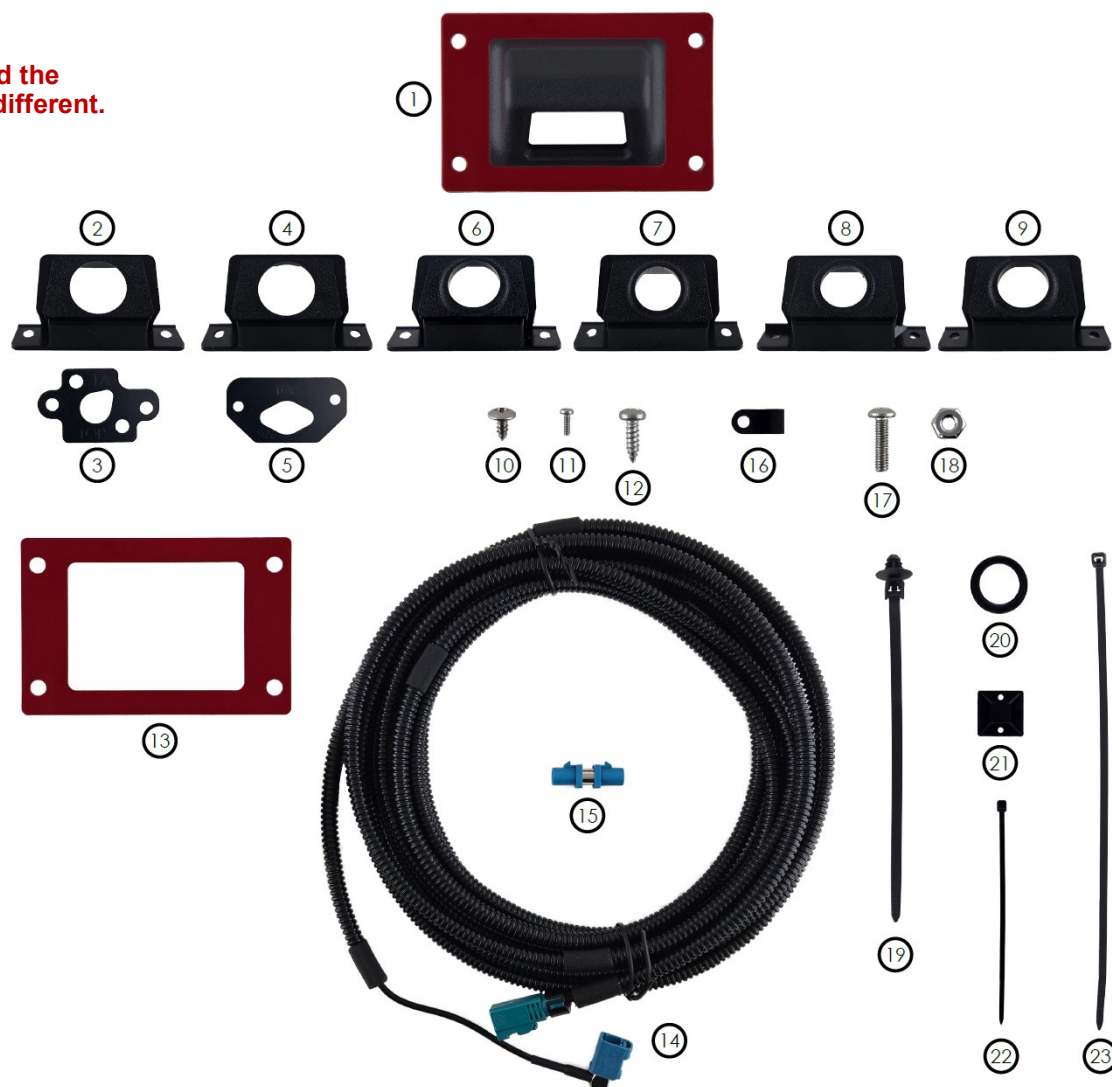
	ANSI Z535.6-2006 refers to the use of blue when “addresses practices not related to personal injury”.
	Yellow labelling level of personal injury = could result in minor injury.
	Red labelling level of personal injury = could / will result in death.

Section 2: Part Identification:

ASCW-LVDS KIT (77217) Contents (Item Reference Diagram Below):

Item	Description	Quantity	Item	Description	Quantity
1	MAIN HOUSING	1	13	DOUBLE-SIDED 1.25mm GASKET	2
2	CAMERA INSERT PLATE 1A	1	14	15' LVDS EXTENSION HARNESS	1
3	CAMERA INSERT 1A	1	15	MALE TO MALE FAKRA ADAPTER	1
4	CAMERA INSERT PLATE 2A	1	16	BLACK P-CLIPS	2
5	CAMERA INSERT 2A	1	17	8-32 5/8" PHP SCREW	4
6	CAMERA INSERT 3	1	18	8-32 NYLOCK NUTS	4
7	CAMERA INSERT 4	1	19	0.25" FIR TREE CABLE TIE	6
8	CAMERA INSERT 5	1	20	SNAP BUSHING WITH 15.3MM I.D.	1
9	CAMERA INSERT 6	1	21	VHB ADHESIVE CABLE TIE BASE MOUNT	2
10	#6 X 5/16" TRUSS HEAD SCREW	2	22	4" CABLE TIES	2
11	M2 X 6MM PHP SCREW	2	23	8" CABLE TIES	6
12	#8 X 0.5" TAPPING PHP SCREW	6			

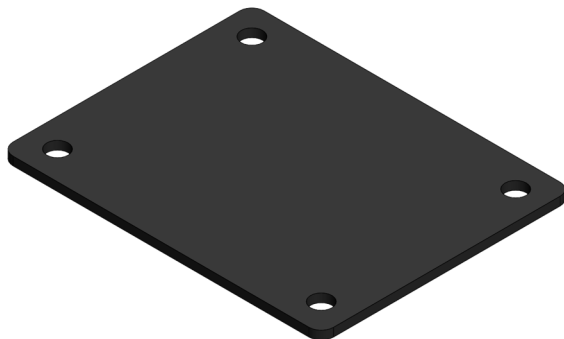
PLEASE NOTE:
The **ITEM NUMBER** and the
INSERT NUMBER are different.



ASCW-LVDS KIT (77217)

Section 2: Part Identification (Continued):

Enclosure Back Plate (77212):



MY 24-25 F-150 and F-150 Hybrid ONLY adapter (77432)



ASCW-LVDS KIT (77432)

Section 2: Part Identification (Continued):

Make	Model	Year	Notes	INSERT
Ford	F-150	2021-2025	With or Without OEM 360	4 (ITEM7 above)
Ford	Super Duty (F-250, F-350)	2023-2025	Digital and Analog Options	4
Ford	Maverick	2023-2025	Digital and Analog Options	4
Chevrolet	Silverado 1500	2023-2025	Digital	1A
Chevrolet	Colorado	2025	Digital	1A

NOTES:

1. There will be several pieces in the kit that are unused. These are for future platforms that will be validated.
2. F-150 MY 21-23 and Lightning will not use the 77432 Adapter.

Section 3: Tools Needed

①



②



③



④



⑤



1. Diagonal Cutters
2. Drill driver
3. 3/4" Hole or Step Drill (Unibit)
4. #2 Phillips head Screwdriver
5. 10mm Nut driver

Section 4: General Vehicle Layout

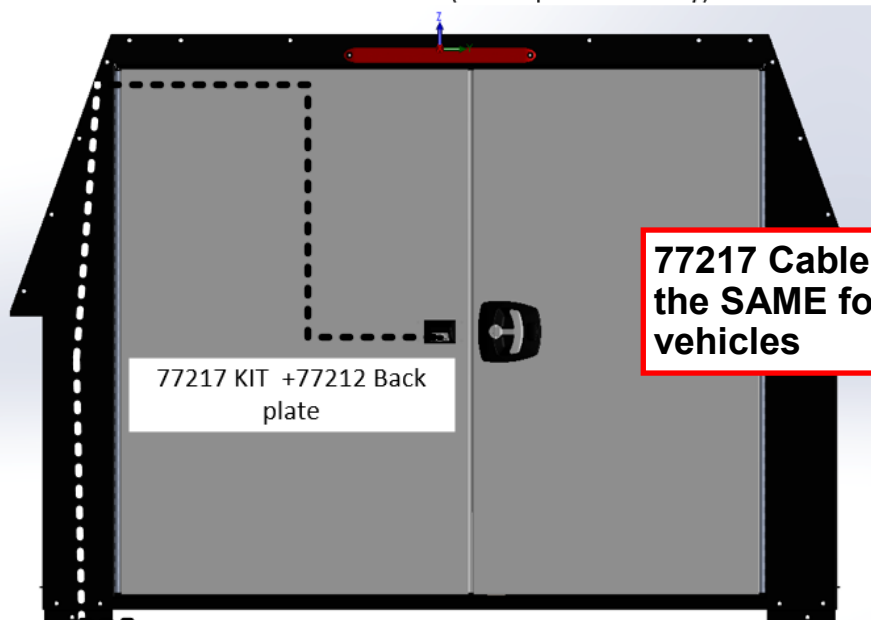
Rear side of
Adrian Top



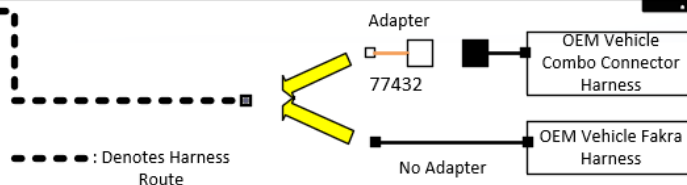
Ford F150
[LVDS only]

Notes:

All Options and Trim Levels include digital [LVDS]. F-150 + HYB have a combo connector and therefore need adapter.
Only the Lightning uses the old type Fakra connector (no adapter necessary).



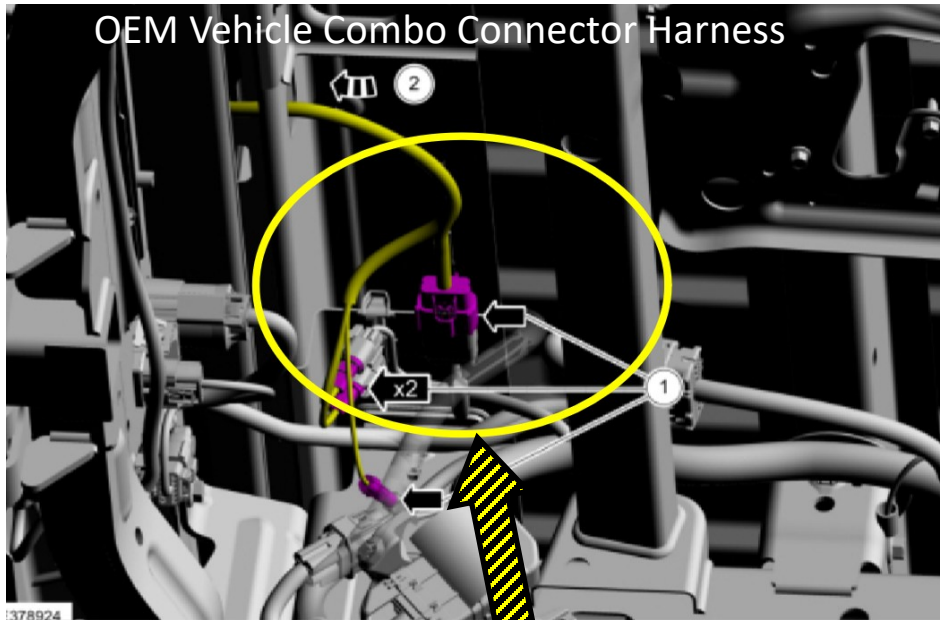
**77217 Cable routing is
the SAME for all
vehicles**



MY 24 & 25 F-150 + F-150 Hybrid

MY 24 & 25 Lightning
Pre-MY 24 F-150 + Hybrid

Section 5: General Wiring Diagram

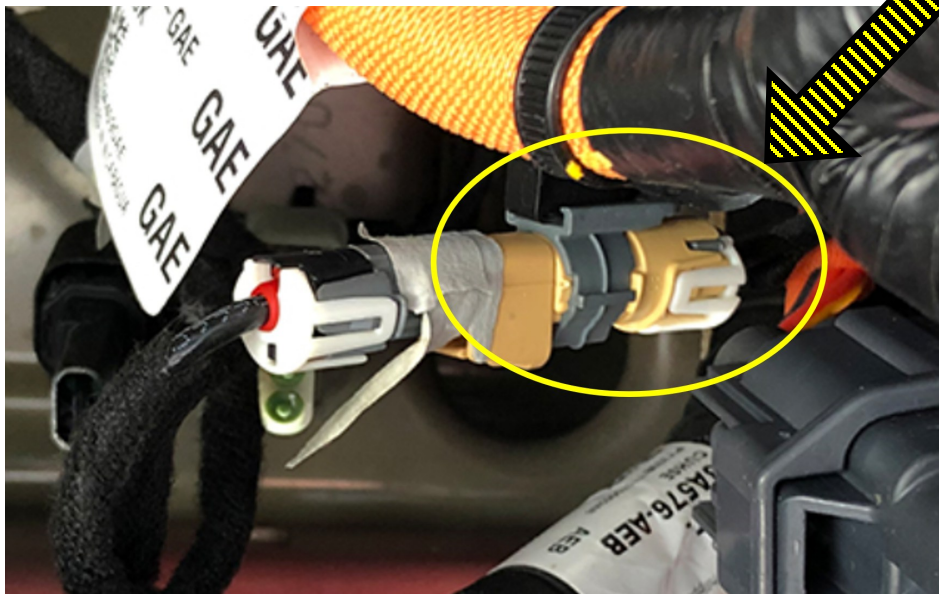


MY 24 & 25 F-150
+ F-150 Hybrid

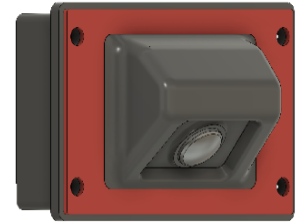
77432 Adapter



MY 24 & 25 Lightning &
Pre-MY 24 F-150 + Hybrid



Camera installed in Enclosure
(77432) & Back cover (77212)



Right Angle

Loomed Coaxial Cable



OEM Vehicle Fakra Harness

Section 6: Application Specifics: F150 / Super Duty

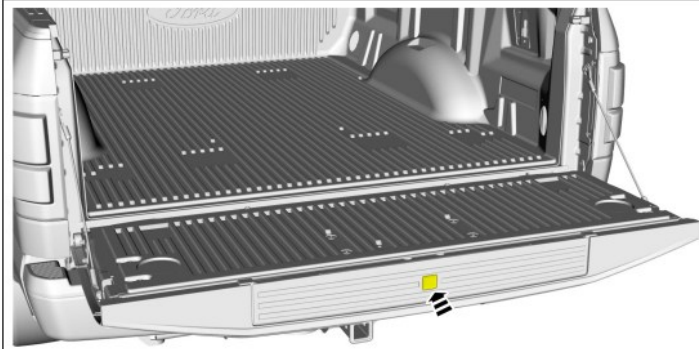
Step 6-1.

Follow Ford F-150 Service manual instructions to remove camera from the tailgate. Details extracted from instructions are as follows to the right:

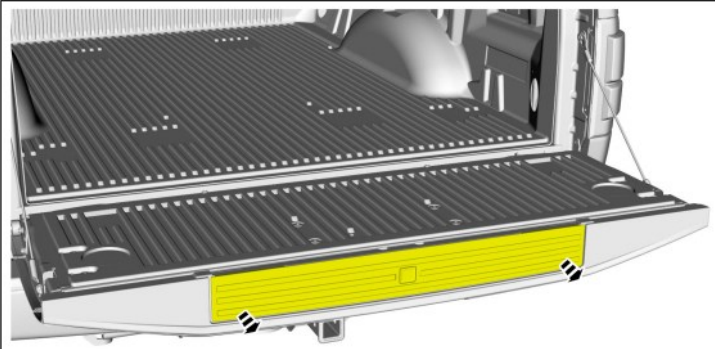
1. Open the tailgate.
2. **Vehicles With: Tailgate Step:**
 - Push the tailgate step release button.
 - Open the tailgate step.



Caution: Make sure camera orientation for up is noted when removing from release handle.



E196243



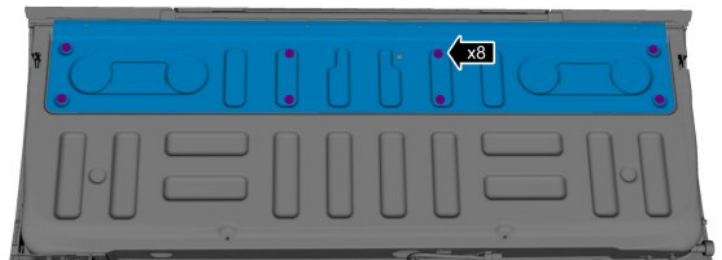
E196244

c. All vehicles

- If equipped. Remove the bedliner tailgate cover. *Torque: 22 lb.in (2.5 Nm)*
- If equipped. Remove the tailgate access panel bolts and the tailgate access panel. *Torque: 22 lb.*



E196058



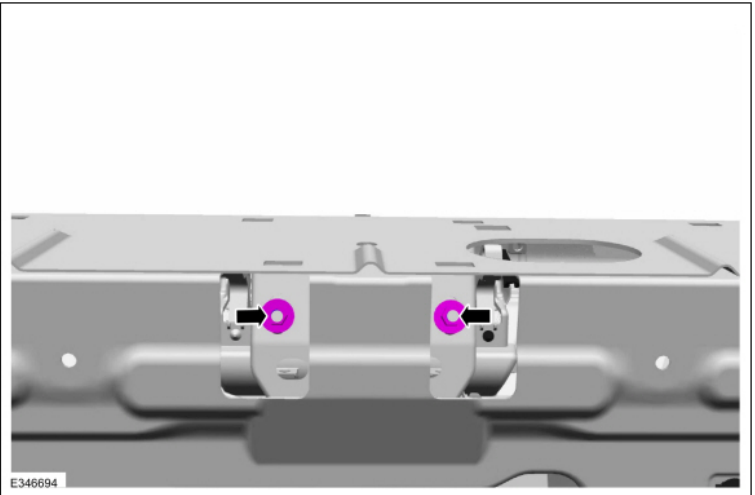
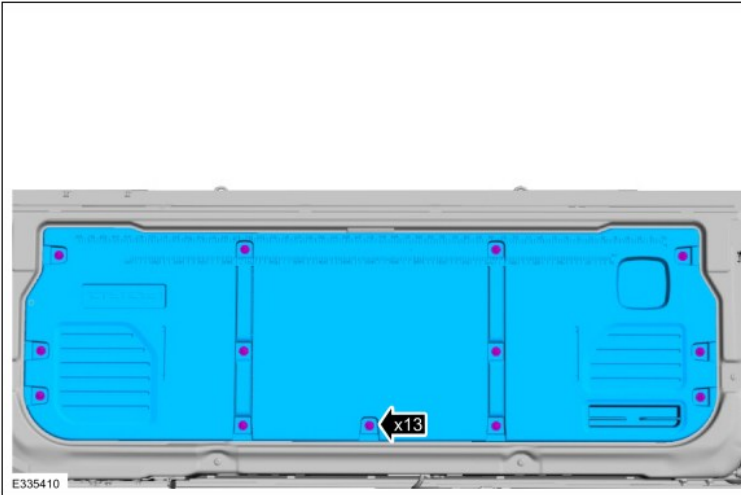
E196059

Section 6: Application Specifics: F150 / Super Duty

- If equipped. Remove the workspace tailgate access panel bolts and the workspace tailgate access panel. *Torque: 71 lb.in (8 Nm)*
- Remove the tailgate moulding. Refer to: Tailgate Moulding (501-08 Exterior Trim and Ornamentation, Removal and Installation).
- Remove the tailgate handle nuts. *Torque: 80 lb.in (9 Nm)*

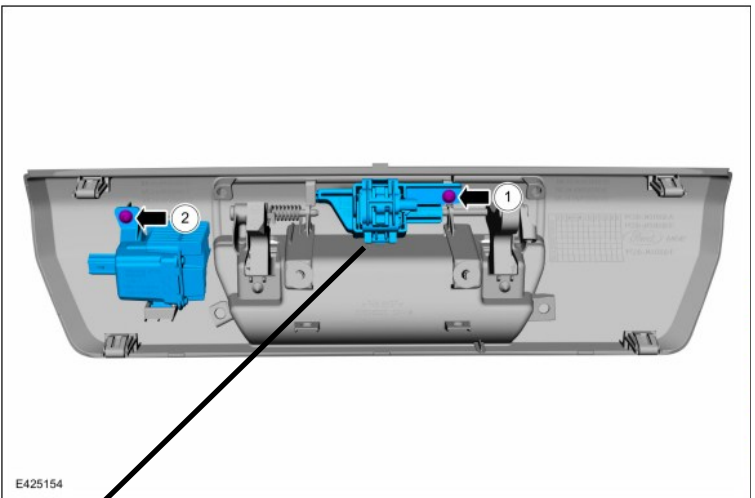
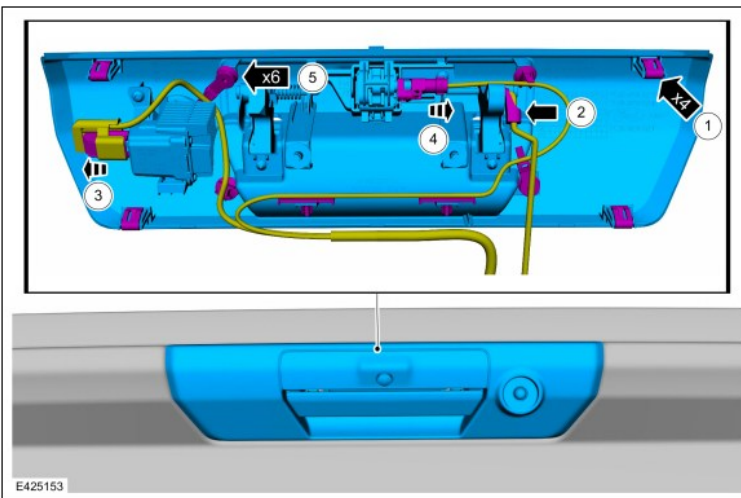


Caution: Make sure camera orientation for up is noted when removing from release handle.

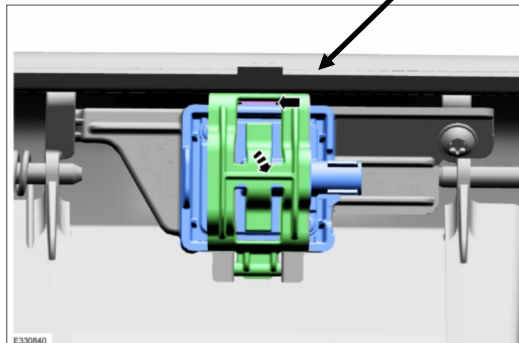


TOP VIEW

- Remove the tailgate release handle.
 - Release the retaining clips and position the tailgate release handle from the tailgate.
 - Disconnect the tailgate handle to tailgate control assembly rod.
 - Disconnect the rear camera electrical connector
 - Remove the screw and the rear bracket and camera.



- Release the tab, and remove the bracket and the rear parking aid camera.



Caution: Make sure to notice camera orientation for UP when removing from release handle.

Section 6: Application Specifics: F150 / Super Duty

Step 6-2.

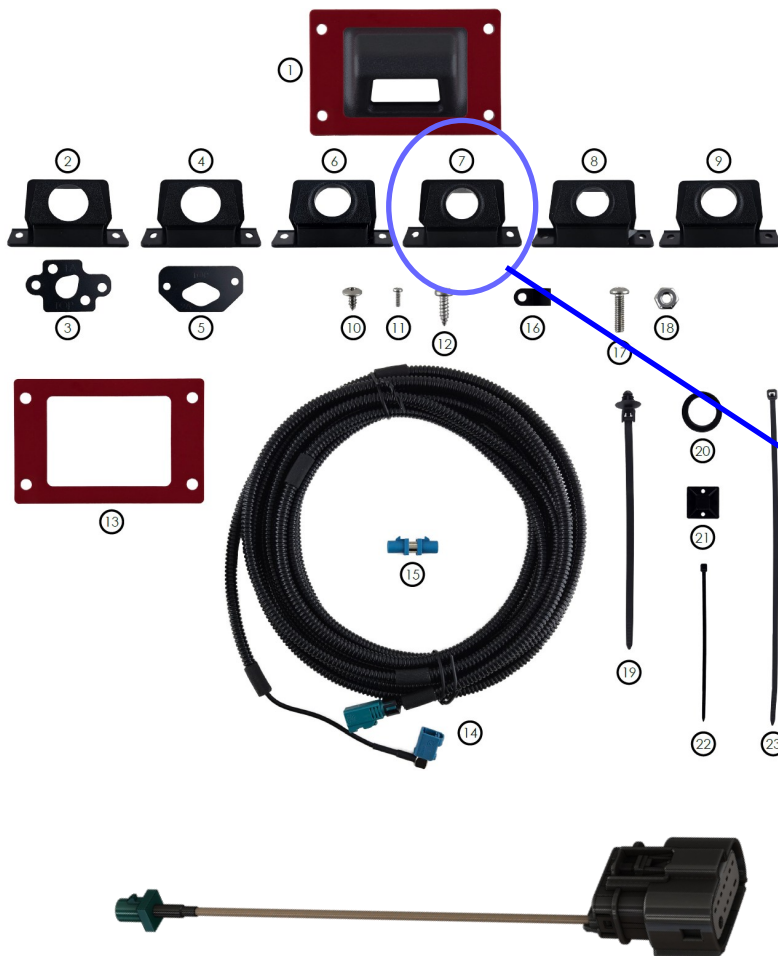


Caution: Make sure camera orientation for up is noted from previous disassembly.

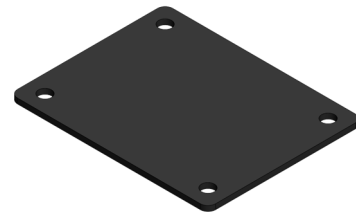


- If the camera DOES not look like this (a single pin round coaxial snap-on connection) –**STOP**– you will need an analog back up camera kit. Please contact your Adrian representative.

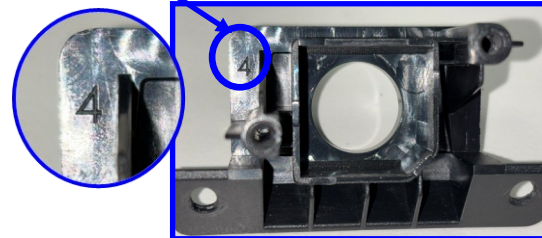
Step 6-3.



- Remove Digital Backup Camera kit from shipping package and make sure all pieces are present (contains bracketry for multiple vehicle platforms)



- Enclosure Back Plate (77212)



- Identify CAMERA INSERT “4” bracket (molded into the BACK SURFACE of part) [Part number BOM ID #7]

- MY24-25 (Only) F-150 and Hybrid adapter (77432)

Section 6: Application Specifics: F150 / Super Duty

Step 6-4.



Caution: Use a hand screwdriver to tighten these screws— do not over-torque.



- Again, identify the orientation of the enclosure on the door, and the orientation of the inner bracket inside the enclosure and make sure the proper OEM orientation has been maintained when all are in the installed position on the door.
- The BOM ITEM #10: #6 X 5/16" Truss Head Screws will be used to firmly mount the camera into the bracket.

Step 6-5.

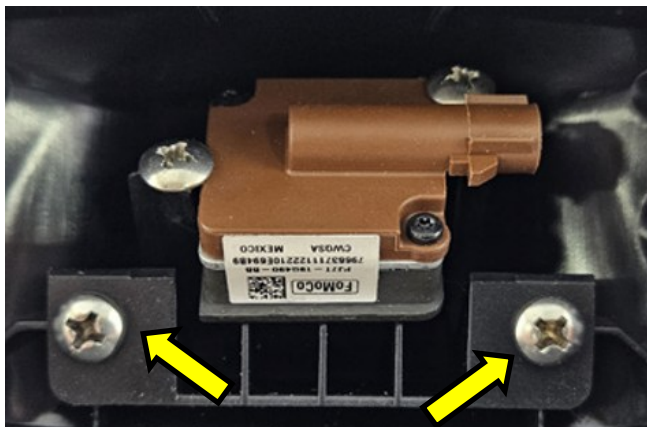


- The camera should fit the bracket with very little gap between the lens and the hole in the bracket. The OEM camera should fit into this bracket squarely and not be loose when twisted or rocked within the bracket. (if so-you might have the wrong bracket) bracket should fit into the enclosure at an angle, top first, lightly snapping in.

Step 6-6.



Caution: Use a hand screwdriver to tighten these screws— do not over-torque.



- The inner bracket's holes should align with the enclosure's screw bosses. Use BOM ITEM #12: #8 X 0.5 TAPPING PHP SCREWS to secure the inner bracket to the inside of the enclosure.
- DO NOT insert the 15' LVDS EXTENSION HARNESS to the back of the camera yet

Section 6: Application Specifics: Ford Maverick

Step 6-1.

Follow Ford Maverick manual instructions to remove camera from the tailgate. Details extracted from instructions are as follows to the right:

1. Open the tailgate.

2. **Vehicles With: Tailgate Step:**

- Push the tailgate step release button.
- Open the tailgate step.



Caution: Make sure camera orientation for up is noted when removing from release handle.

c. **All vehicles**

- If equipped. Remove the bedliner tailgate cover. *Torque: 22 lb.in (2.5 Nm)*
- If equipped. Remove the tailgate access panel bolts and the tailgate access panel. *Torque: 22 lb.*



d. You will need a 10mm socket and extender to reach the 10mm Nuts you need to unfasten to remove camera housing



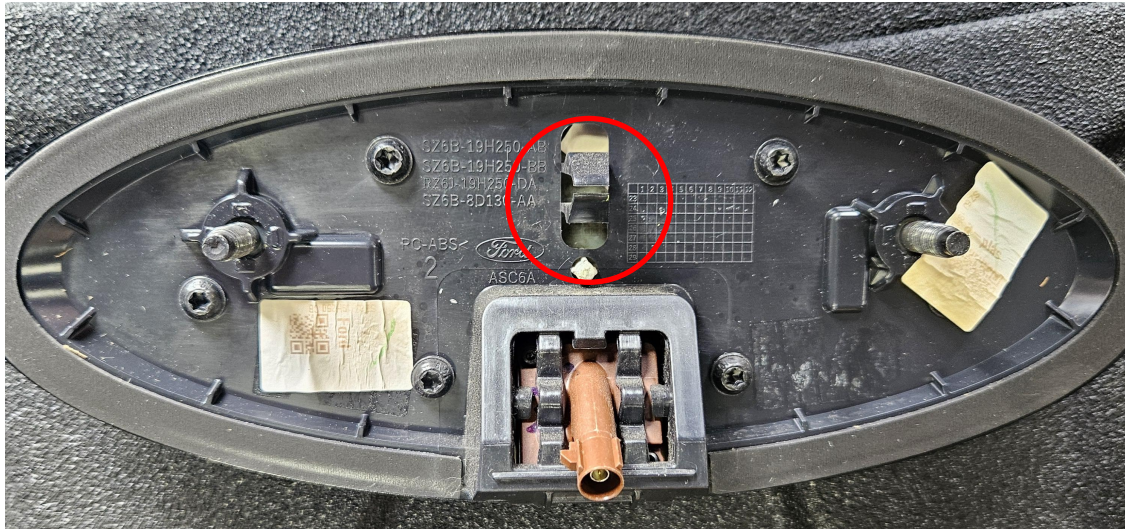
Section 6: Application Specifics: Ford Maverick

Step 6-2.

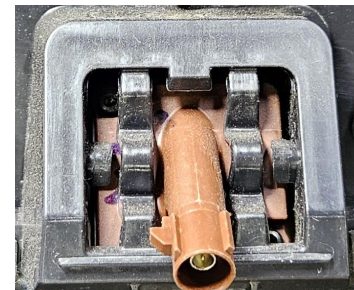
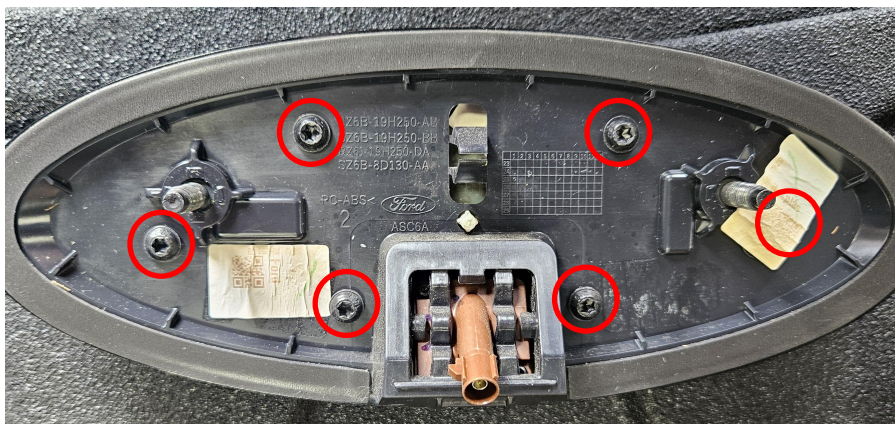
There is one clip holding in the camera housing. Using a trim tool you can remove it



Caution: Make sure camera orientation for up is noted when removing from release handle.



Step 6-2. Unscrew the six T20 torx bit screws circled. You will need a small knife to cut the seal along the edge of the housing. Remove camera from housing



Section 6: Application Specifics: Ford Maverick

Step 6-2.

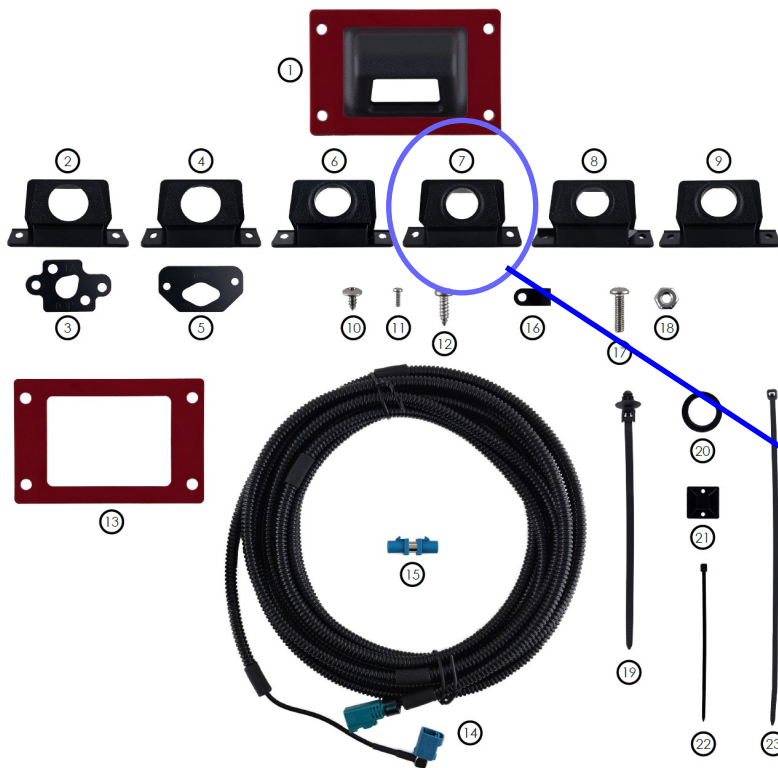


Caution: Make sure camera orientation for up is noted from previous disassembly.

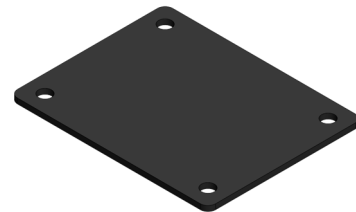


- If the camera DOES not look like this (a single pin round coaxial snap-on connection) –**STOP**– you will need an analog back up camera kit. Please contact your Adrian representative.

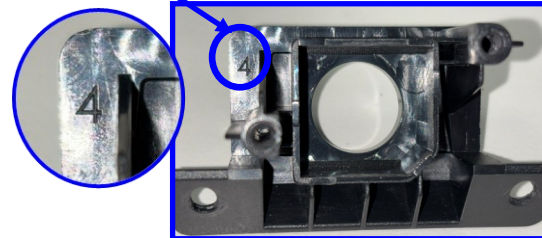
Step 6-3.



- Remove Digital Backup Camera kit from shipping package and make sure all pieces are present (contains bracketry for multiple vehicle platforms)



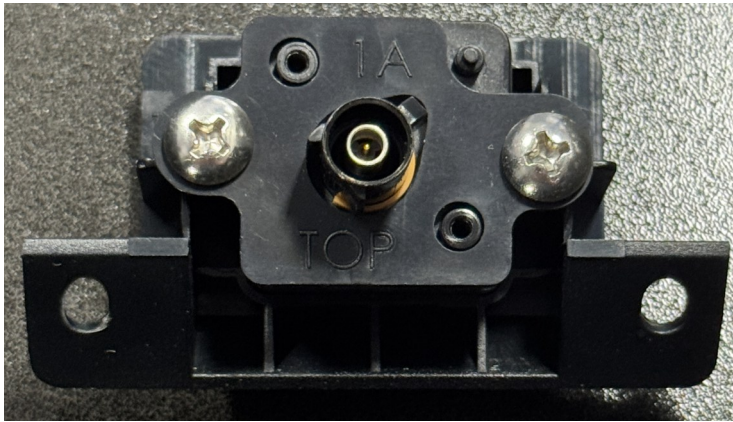
- Enclosure Back Plate (77212)



- Identify CAMERA INSERT “4” bracket (molded into the BACK SURFACE of part) [Part number BOM ID #7]

Section 6: Application Specifics: Colorado

Step 6-4.



Caution: Use a hand screwdriver to tighten these screws— do not over-torque.

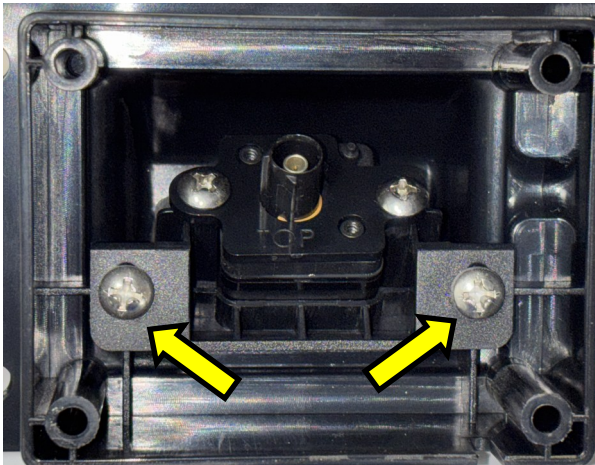
- Again, identify the orientation of the enclosure on the door, and the orientation of the inner bracket inside the enclosure and make sure the proper OEM orientation has been maintained when all are in the installed position on the door.
- The BOM ITEM #10: #6 X 5/16" Truss Head Screws will be used to firmly mount the camera into the bracket.

Step 6-5.



- The camera should fit the bracket with very little gap between the lens and the hole in the bracket. The OEM camera should fit into this bracket squarely and not be loose when twisted or rocked within the bracket. (if so-you might have the wrong bracket) bracket should fit into the enclosure at an angle, top first, lightly snapping in.

Step 6-6.



Caution: Use a hand screwdriver to tighten these screws— do not over-torque.

- The inner bracket's holes should align with the enclosure's screw bosses. Use BOM ITEM #12: #8 X 0.5 TAPPING PHP SCREWS to secure the inner bracket to the inside of the enclosure.
- DO NOT insert the 15' LVDS EXTENSION HARNESS to the back of the camera yet

Section 6: Application Specifics: Chevrolet Silverado 1500

Step 6-1.

Follow Chevy Silverado 1500 Service manual instructions to remove camera from the tailgate. Details extracted from instructions are as follows to the right:

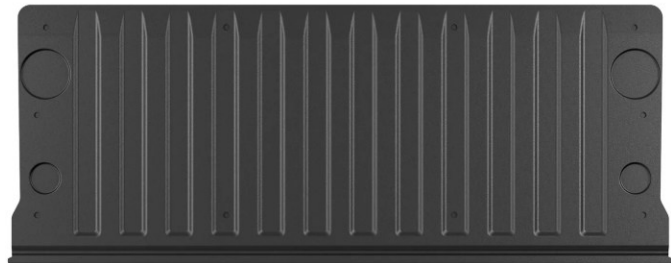
1. Open the tailgate.
2. **Vehicles With: Tailgate Step:**
 - Push the tailgate step release button.
 - Open the tailgate step.



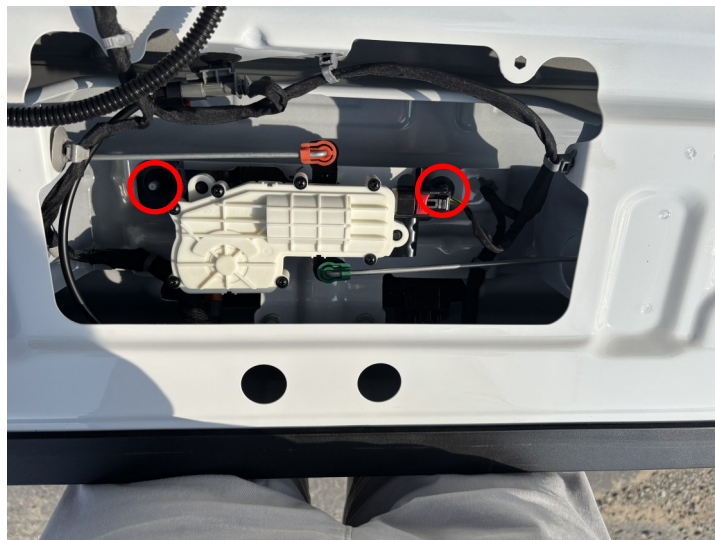
Caution: Make sure camera orientation for up is noted when removing from release handle.

c. All vehicles

- If equipped. Remove the bedliner tailgate cover. *Torque: 22 lb.in (2.5 Nm)*
- If equipped. Remove the tailgate access panel bolts and the tailgate access panel. *Torque: 22 lb.*



d. Remove bolts circled



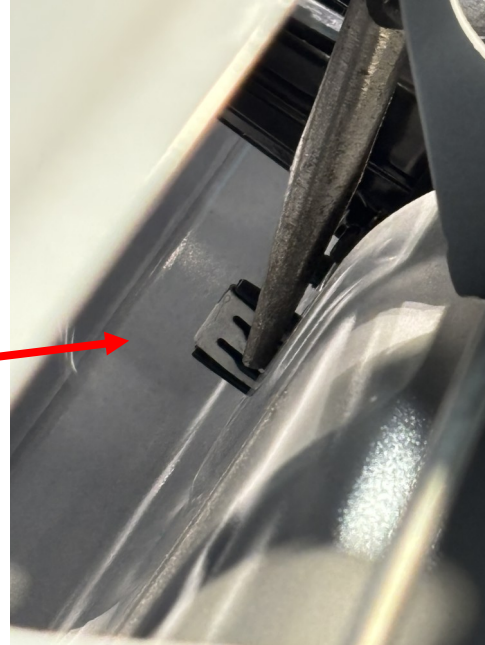
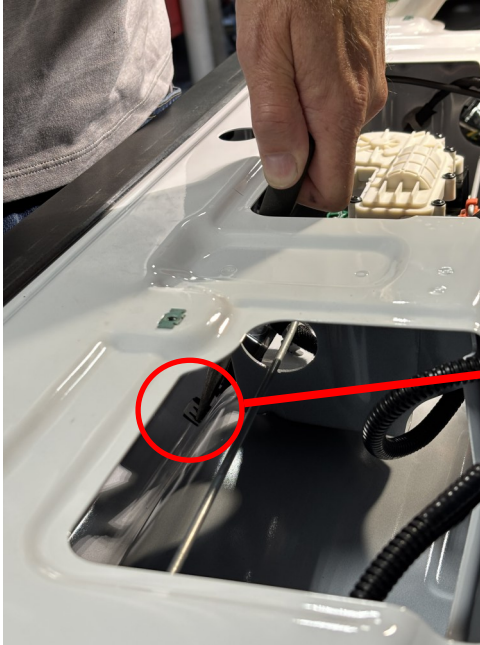
Section 6: Application Specifics: Chevrolet Silverado 1500

Step 6-2.

You will need to depress the clip holding in the camera housing with a tool as shown below



Caution: Make sure camera orientation for up is noted when removing from release handle.



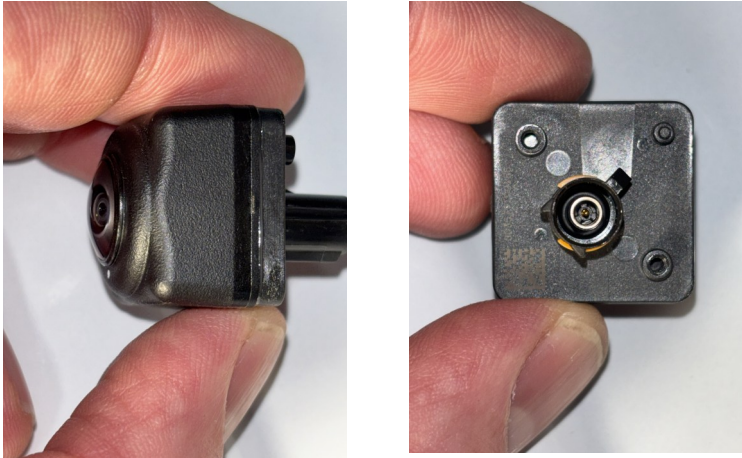
Step 6-2.

Remove camera housing. Unscrew the two screws circled. Remove camera from housing



Section 6: Application Specifics: Silverado 1500

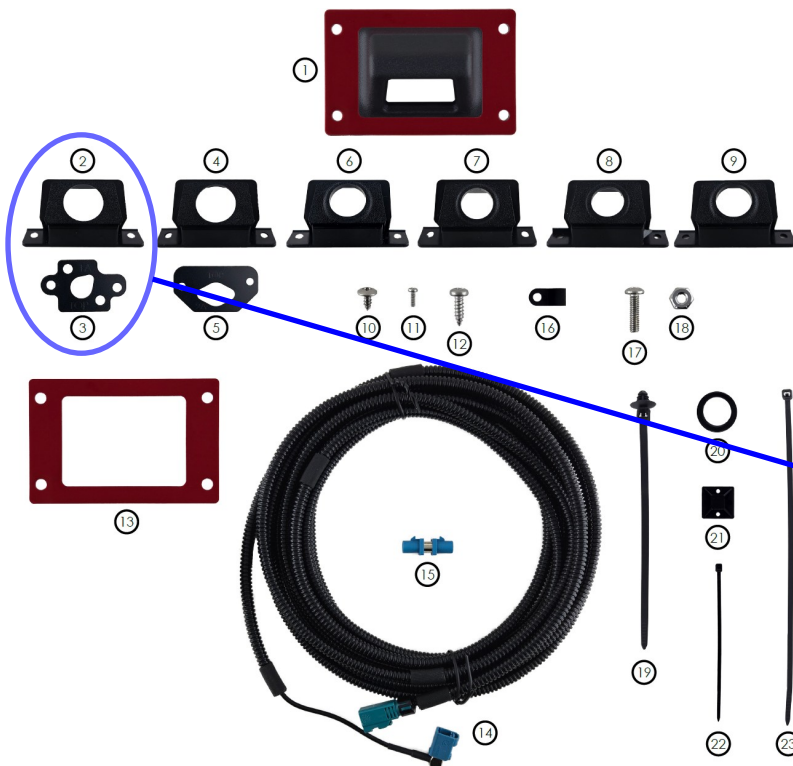
Step 6-3.



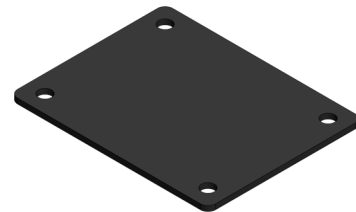
Caution: Make sure camera orientation for up is noted from previous disassembly.

- If the camera DOES not look like this (a single pin round coaxial snap-on connection) –**STOP**– you will need an analog back up camera kit. Please contact your Adrian representative.

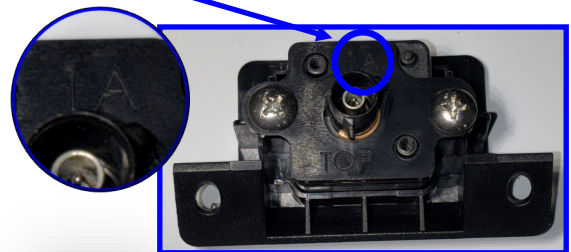
Step 6-3.



- Remove Digital Backup Camera kit from shipping package and make sure all pieces are present (contains bracketry for multiple vehicle platforms)



Enclosure Back Plate (77212)



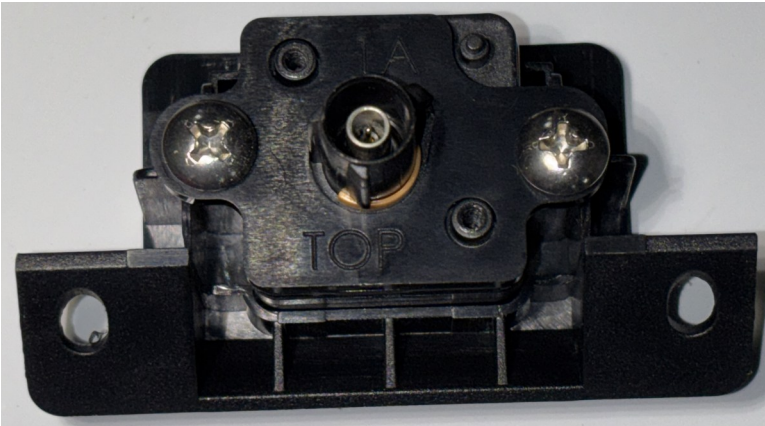
- Identify CAMERA INSERT "1A" bracket AND CAMERA INSERT PLATE "1A" (molded into the BACK SURFACE of part) [Part number BOM ID #2 and #3]

Section 6: Application Specifics: Silverado 1500

Step 6-4.



Caution: Use a hand screwdriver to tighten these screws— do not over-torque.



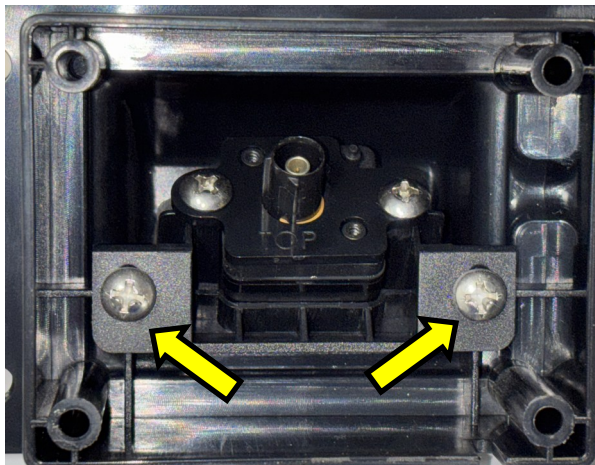
- Again, identify the orientation of the enclosure on the door, and the orientation of the inner bracket inside the enclosure and make sure the proper OEM orientation has been maintained when all are in the installed position on the door.
- The BOM ITEM #10: #6 X 5/16" Truss Head Screws will be used to firmly mount the camera into the bracket.

Step 6-5.



- The camera should fit the bracket with very little gap between the lens and the hole in the bracket. The OEM camera should fit into this bracket squarely and not be loose when twisted or rocked within the bracket. (if so-you might have the wrong bracket) bracket should fit into the enclosure at an angle, top first, lightly snapping in.

Step 6-6.



Caution: Use a hand screwdriver to tighten these screws— do not over-torque.

- The inner bracket's holes should align with the enclosure's screw bosses. Use BOM ITEM #12: #8 X 0.5 TAPPING PHP SCREWS to secure the inner bracket to the inside of the enclosure.
- DO NOT insert the 15' LVDS EXTENSION HARNESS to the back of the camera yet

Section 6: Application Specifics: Chevrolet Colorado

Step 6-1.

Follow Chevy Silverado 1500 Service manual instructions to remove camera from the tailgate. Details extracted from instructions are as follows to the right:

1. Open the tailgate.
2. **Vehicles With: Tailgate Step:**
 - Push the tailgate step release button.
 - Open the tailgate step.



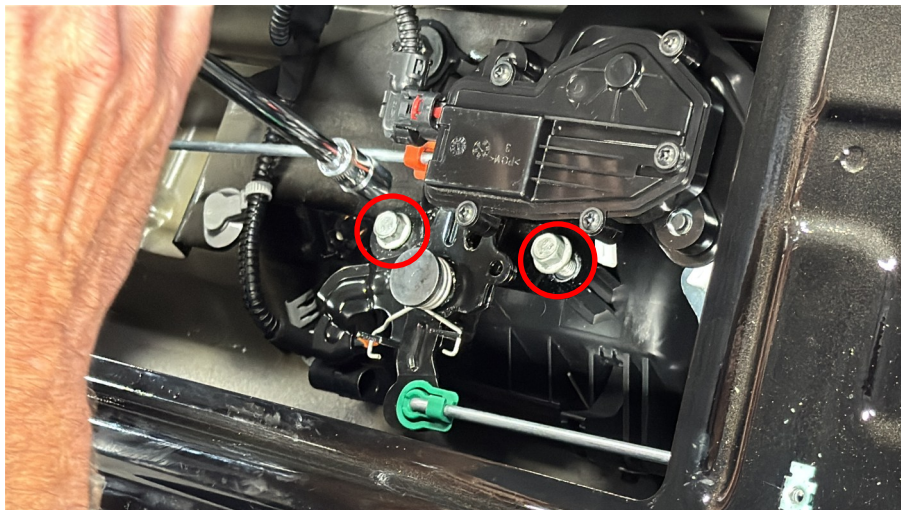
Caution: Make sure camera orientation for up is noted when removing from release handle.

c. All vehicles

- If equipped. Remove the bedliner tailgate cover. *Torque: 22 lb.in (2.5 Nm)*
- If equipped. Remove the tailgate access panel bolts and the tailgate access panel. *Torque: 22 lb.*



d. Remove bolts circled



Section 6: Application Specifics: Chevrolet Colorado

Step 6-2.

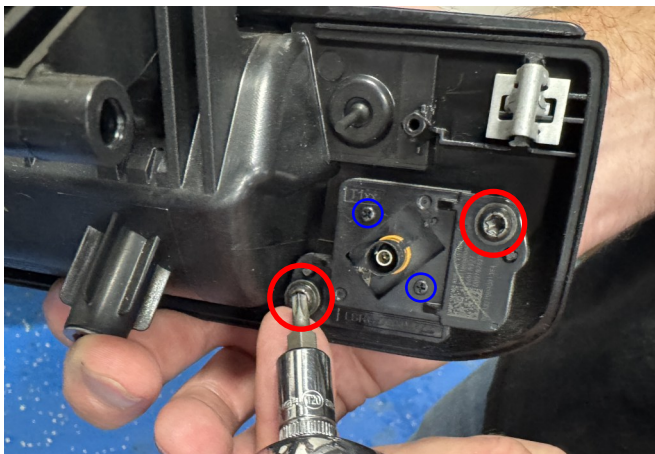
There are two clips holding in the camera housing. Using a trim tool you can remove them



Caution: Make sure camera orientation for up is noted when removing from release handle.

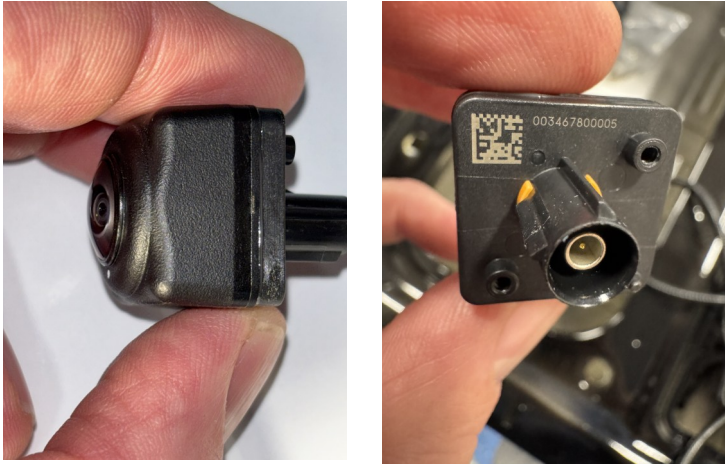


Step 6-2. Unscrew the two T20 torx bit screws circled. Unscrew the two Phillips head screws. Remove camera from housing



Section 6: Application Specifics: Colorado

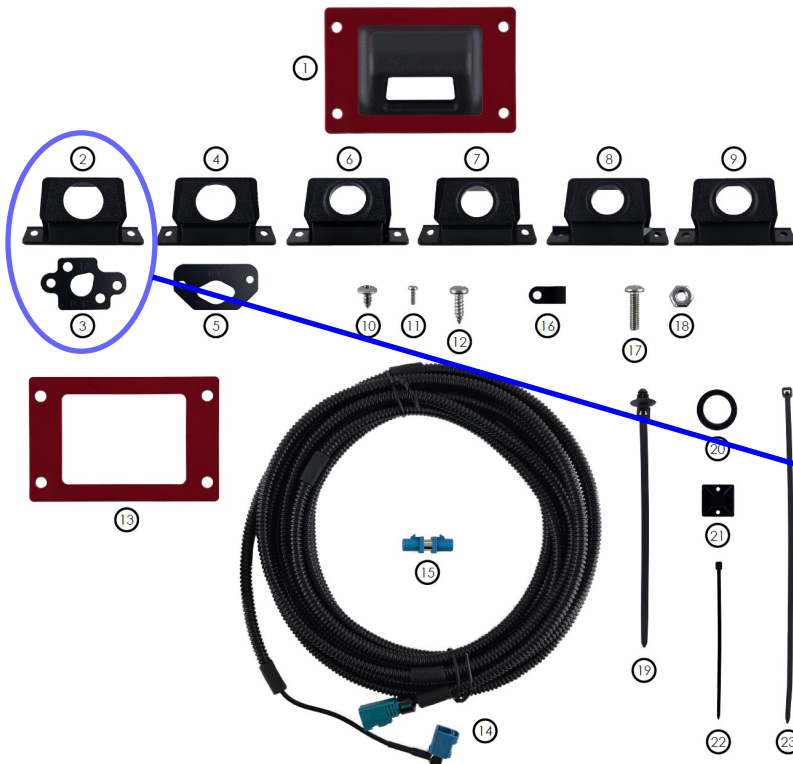
Step 6-3.



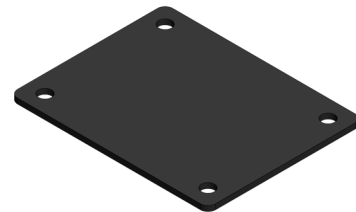
Caution: Make sure camera orientation for up is noted from previous disassembly.

- If the camera DOES not look like this (a single pin round coaxial snap-on connection) –**STOP**– you will need an analog back up camera kit. Please contact your Adrian representative.

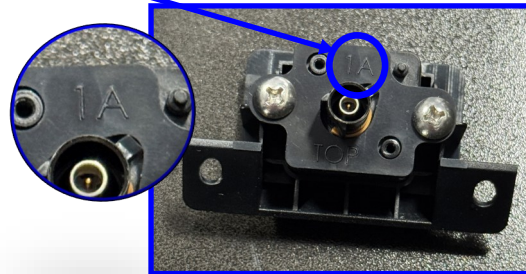
Step 6-3.



- Remove Digital Backup Camera kit from shipping package and make sure all pieces are present (contains bracketry for multiple vehicle platforms)



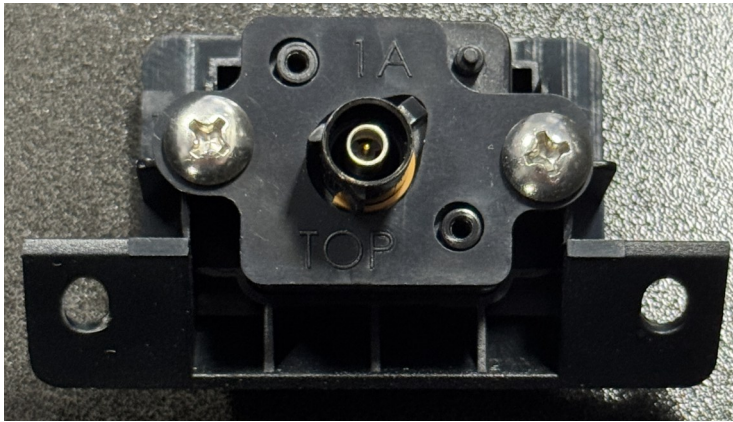
Enclosure Back Plate (77212)



- Identify CAMERA INSERT "1A" bracket AND CAMERA INSERT PLATE "1A" (molded into the BACK SURFACE of part) [Part number BOM ID #2 and #3]

Section 6: Application Specifics: Colorado

Step 6-4.



Caution: Use a hand screwdriver to tighten these screws— do not over-torque.

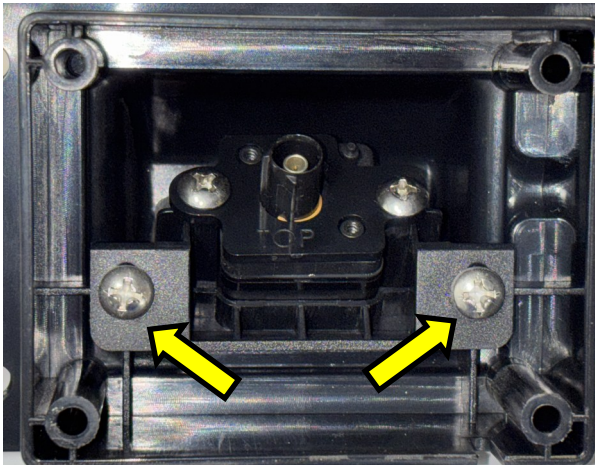
- Again, identify the orientation of the enclosure on the door, and the orientation of the inner bracket inside the enclosure and make sure the proper OEM orientation has been maintained when all are in the installed position on the door.
- The BOM ITEM #10: #6 X 5/16" Truss Head Screws will be used to firmly mount the camera into the bracket.

Step 6-5.



- The camera should fit the bracket with very little gap between the lens and the hole in the bracket. The OEM camera should fit into this bracket squarely and not be loose when twisted or rocked within the bracket. (if so-you might have the wrong bracket) bracket should fit into the enclosure at an angle, top first, lightly snapping in.

Step 6-6.



Caution: Use a hand screwdriver to tighten these screws— do not over-torque.

- The inner bracket's holes should align with the enclosure's screw bosses. Use BOM ITEM #12: #8 X 0.5 TAPPING PHP SCREWS to secure the inner bracket to the inside of the enclosure.
- DO NOT insert the 15' LVDS EXTENSION HARNESS to the back of the camera yet

Section 7: General installation

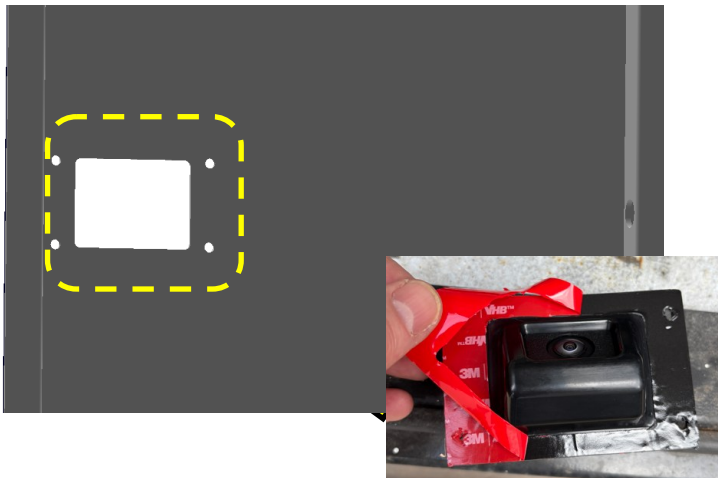
Step 7-1.

Camera installed in
Enclosure



- This assembly will be mounted into the walk-in door opening with the camera tilting at an angle downward toward the ground.
- There is red tape liner protecting the outward facing adhesive covered surface.

Step 7-2.



- Clean and let dry the surface around the square hole in the door on the inside of the door.
- **NOTE: The minimum double sided tape application temperature is 50° F (10°C).**
- Be sure to use 50:50 mixture of isopropyl alcohol (IPA*) solution to remove any dirt or oils. Allow to dry.
- The red gasket liner on the enclosure assembly will be removed before placement.

Step 7-3.



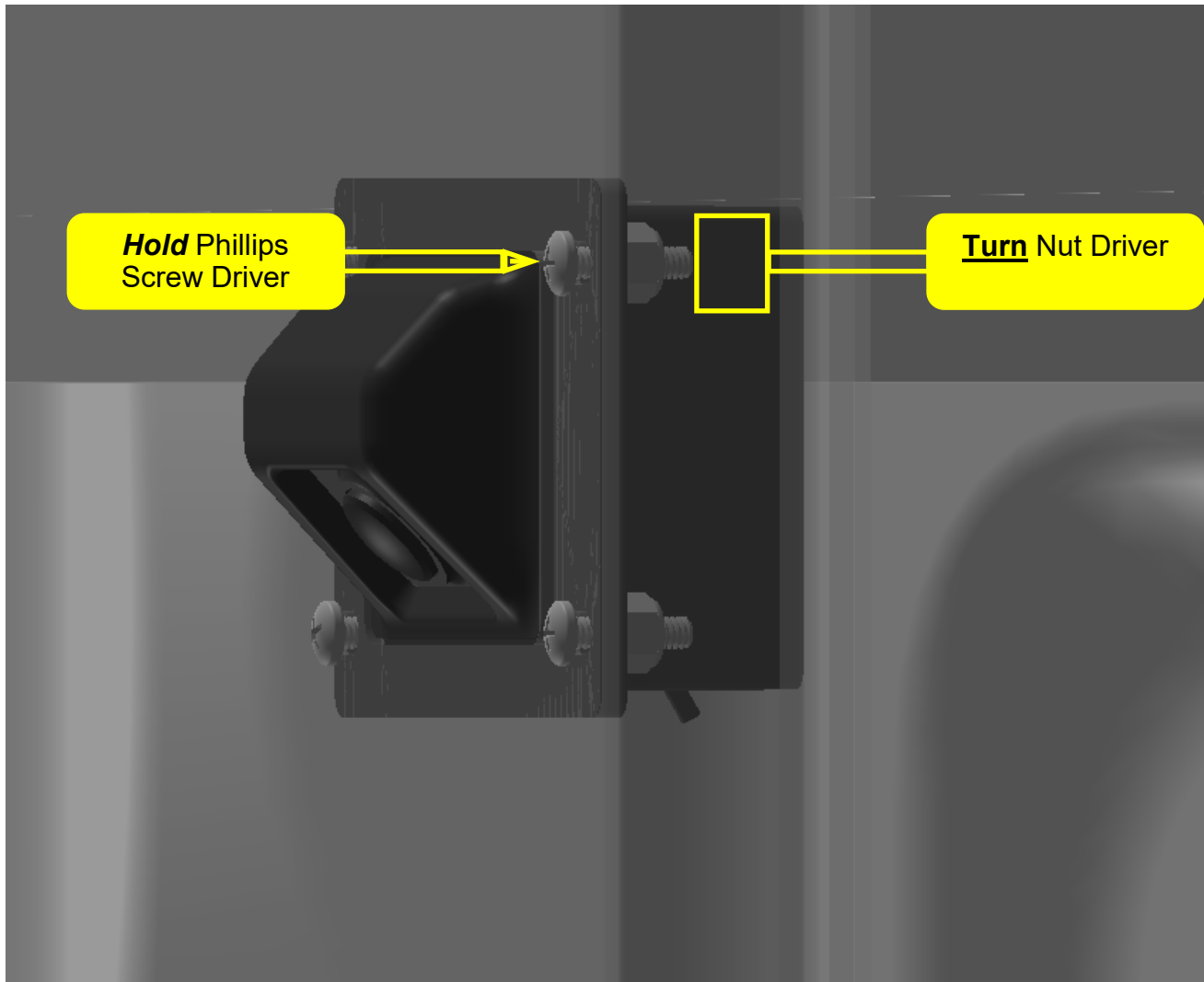
- This is VHB tape, so do not push to stick it unless the 4 screw holes are aligned.
- It is recommended that at least two corner screws BOM ITEM #17: 8-32 5/8" PHP SCREWS are present while installing the enclosure,
- Carefully aligning the enclosure protrusion through the hole in the door, make sure enclosure flange is flush before pushing for the adhesive to stick.

Section 7: General installation

Step 7-4.



Caution: Use a hand driver to tighten these nuts— do not over-torque



- Add the other two screws and make sure enclosure assembly is completely aligned before applying light pressure to the enclosure and gasket to the door.
- The enclosure should not be warping, binding, or pinching the plastic material into the side of the square hole. It should be interfacing flatly between the enclosure back flange, the gasket, and the door material for water tightness.
- **Hold** a Phillips head screwdriver to the screws on the outside of the door, while **turning** a hand nut driver to tighten the nylock nuts with very light torque on the back side (this prevents the turning screw heads from marking the outside paint or wrap of the walk-in door).
- Finish the nuts torquing lightly **HAND TIGHTEN** until snug (to avoid over compressing the plastic).

Section 8: Routing harness

Step 8-1.



Caution: The loom covered coaxial cable should not be bent at harsh angles, kinked or pinched during the installation.

Extension Harness Connection to OEM Camera Connection:

Because the extension harness right-angle connector is equipped with a seal, the connection between the connector and the OEM camera may require firm pressure to fully seat.

The connection should make a "click" sound when the connector is fully seated and locked.

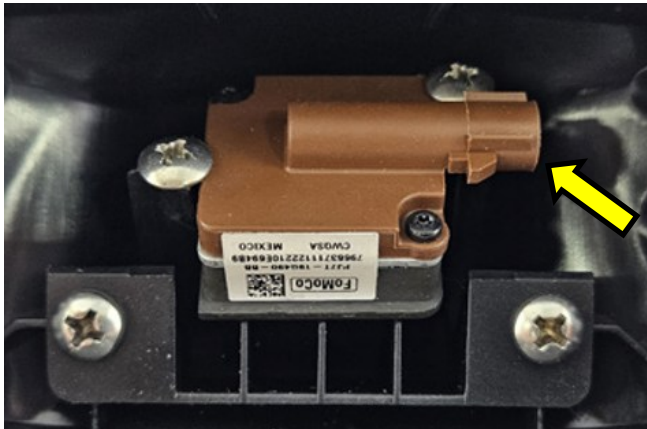
Fully Seated Connection



Not Fully Seated Connection

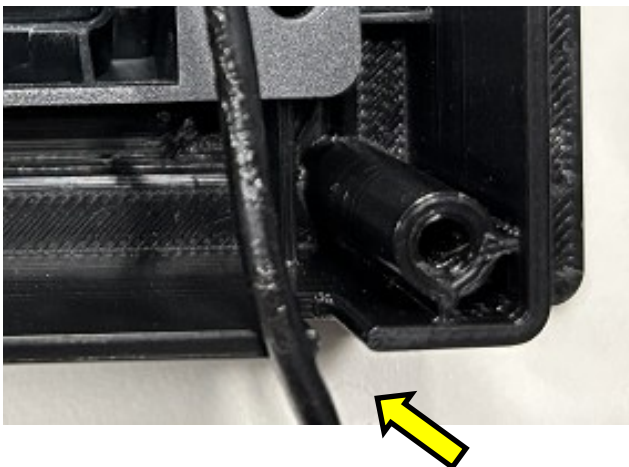


Step 8-2.



- Right angle end (shown above) of the BOM ITEM #14: 15' LVDS EXTENSION HARNESS will fit directly onto the OEM camera installed the enclosure with a small click. Be sure to use the push-pull-push test to ensure clip retainer is engaged.

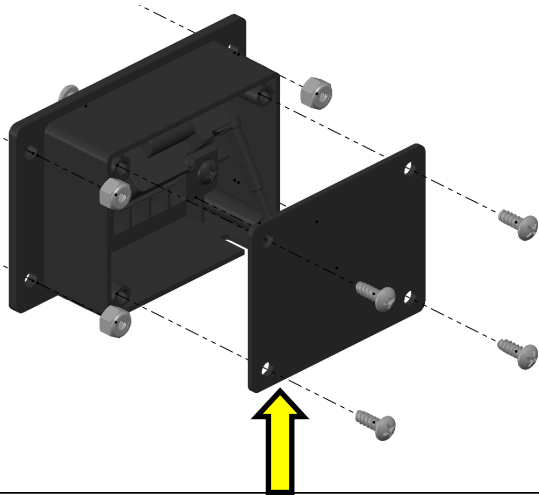
Step 8-3.



- The right angle swivel connection will be adjusted so that the coaxial wire can be routed out of the slot in the bottom of the box.

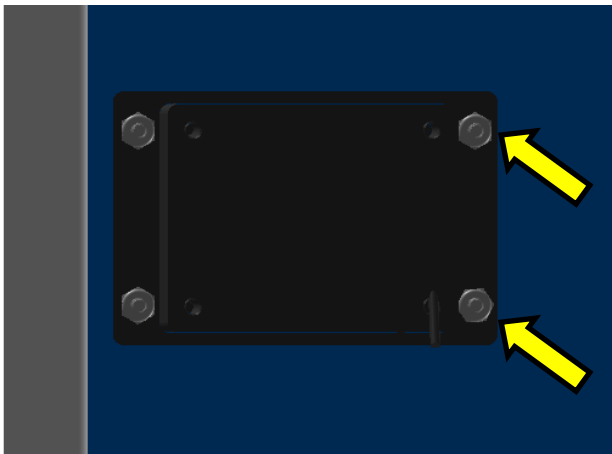
Section 8: Routing harness

Step 8-4.



- Install the aluminum back plate cover [77212] of the enclosure while keeping the coaxial harness wire in the allotted channel for exiting the enclosure.
- Use BOM ITEM #12: #8 X 0.5 TAPPING PHP SCREWS to secure the back plate to the enclosure.
- **HAND TIGHTEN** the back cover.

Step 8-5.

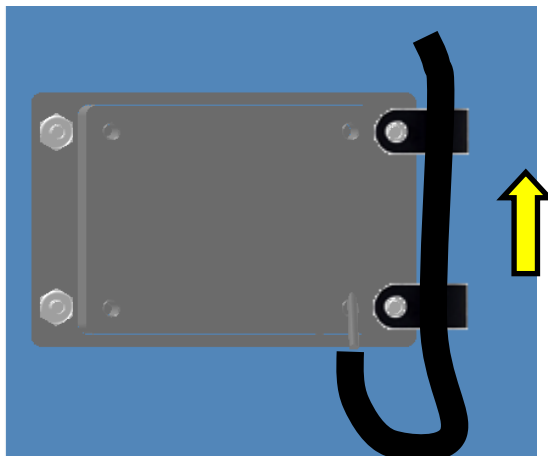


- Remove the bottom and top driver's side nuts from the enclosure mounting screws and obtain a black plastic P-clips BOM ITEM #16: BLACK P-CLIPS from the kit package.



- The tape will be assisting in keeping the enclosure in place now.

Step 8-6.



Caution: The loom covered coaxial cable should not be bent at harsh angles, kinked or pinched during the installation.

- These P-clips will be oriented like in the diagram so that wire is leaving the slot, then the looming cover on the coaxial cable begins, a small drip loop is formed, and then is fastened by the clips to the enclosure screws going upward to the top of the door.
- Again fasten the nuts with light torque while holding screws on the outside of the door to prevent spinning.
- During HAND TIGHTENING, ensure the P-clips stay in position and do not twist and damage the cable and loom.

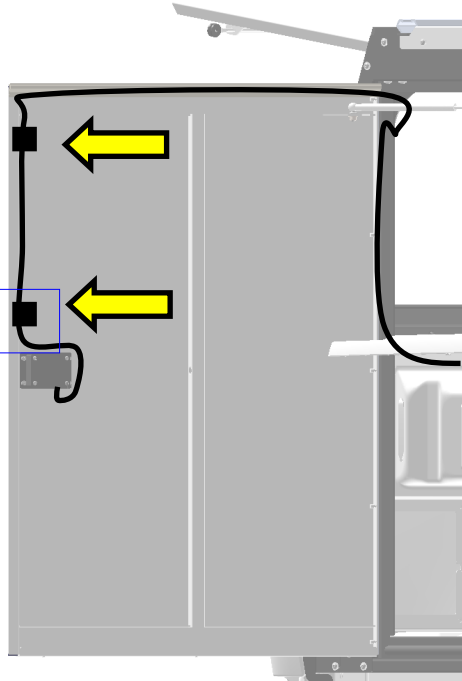
Section 8: Routing harness

Step 8-7.



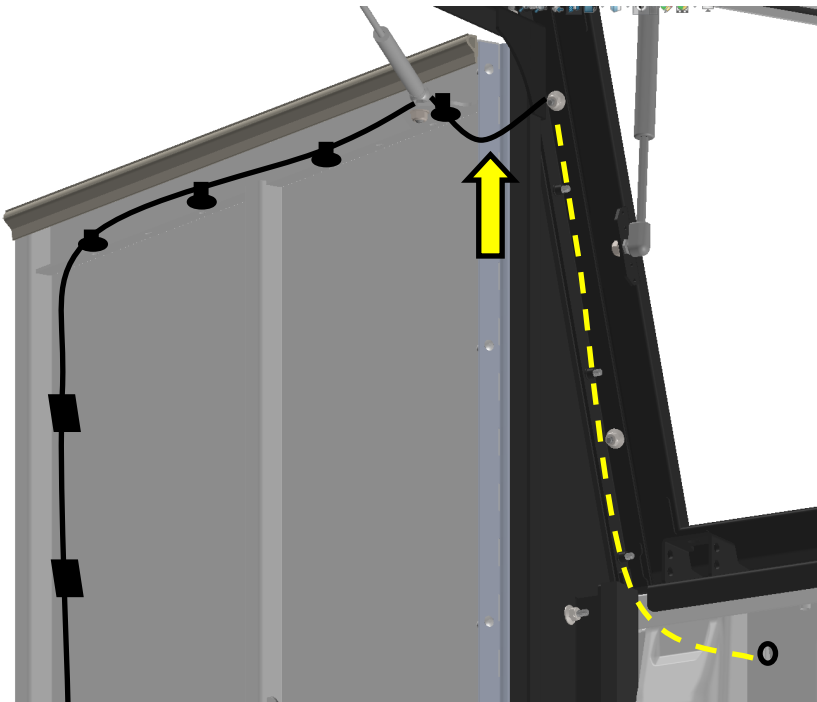
Caution: The loom covered coaxial cable should not be bent at harsh angles, kinked or pinched during the installation.

Door edge square tube



- From the P-Clip, the cable will be routed to the top of the door along the door's edge square tube.
- **NOTE: The minimum double sided tape application temperature is 50° F (10°C).**
- Be sure to use 50:50 mixture of isopropyl alcohol (IPA*) solution to remove any dirt or oils. Allow to dry.
- Apply the VHB adhesive mounts BOM ITEM #21: VHB ADHESIVE CABLE TIE BASE MOUNT.
- For excellent bonding, apply 15 lbs. of pressure for a few seconds.
- The adhesive will continue to bond for a few hours, do not stretch the cable too tightly between the squares when affixing cable ties.
- After the adhesive squares are affixed, use the BOM ITEM #22: 4" CABLE TIES

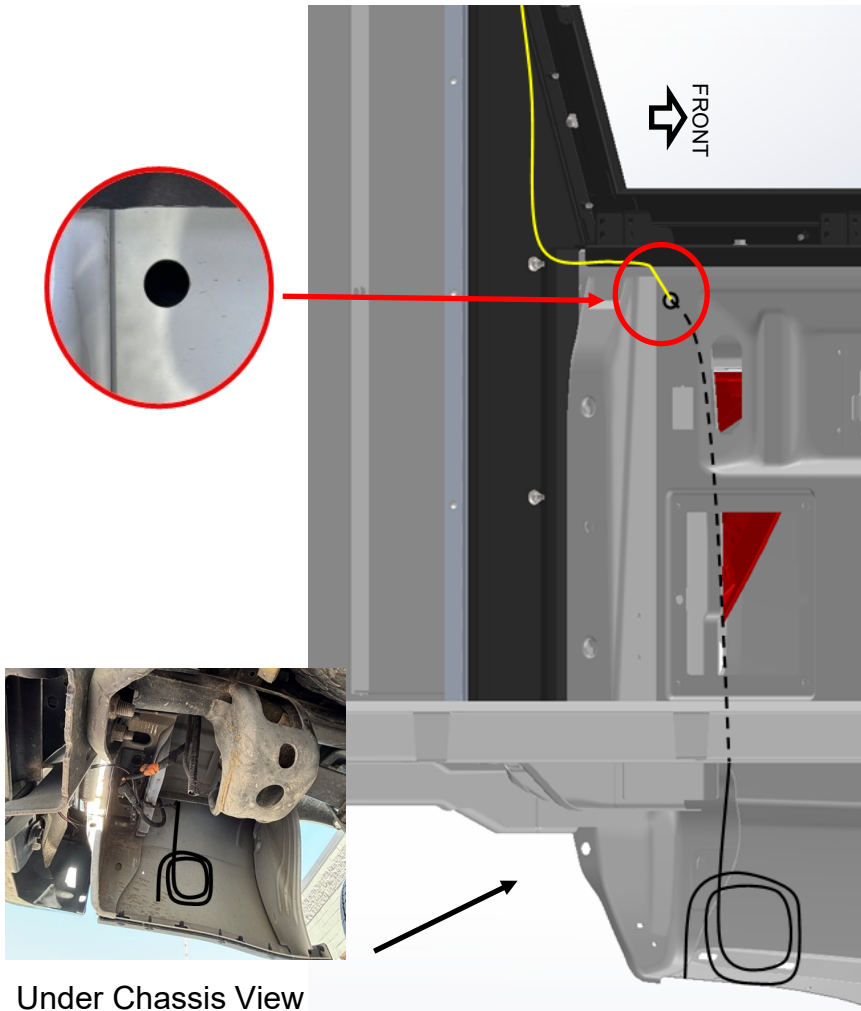
Step 8-8.



- Upon reaching the top of the door the cable will be neatly guided to the hinge side of the door. Fastening about every 10-12 inches to a Christmas tree cable mount in to the quarter inch holes in the top of the door bracket BOM ITEM #19: 0.25" FIR TREE CABLE TIE.
- The cable will be brought to the end of the door and a small amount of loop will be left in the space between the end mounting hole on the door bracket and the affixing point in the corner of the cap.

Section 8: Routing harness

Step 8-9.



Under Chassis View



Note: Make sure the hole size stays well controlled due to the stiff nature of the snap bushing— do not over drill.

- (Red Circle Area) If necessary, utilize the Step Bit and drill to widen the existing 18.4mm hole to 3/4" (19mm).
- It is best practice to add etching paint to prevent any corrosion if the hole is enlarged.
- At this point the snap bushing in the kit BOM ITEM #20: SNAP BUSHING WITH 15.3MM I.D. can be pushed into the hole on the side of the bed wall and the cable can be fed down into that hole.
- Be sure the cable end will stay clean as it travels down the interior of the sidewall down to the bottom of the truck.
- Pull the cable all the way through so that there is just enough cable left inside of the topper/bed area to begin to finish routing.
- Use about three - 8" cable ties from the kit to hold the cable to exiting non-moving structures on the inside corner of the cap and ensure they are out of the way to prevent anything from snagging.

Step 8-10.



FRONT

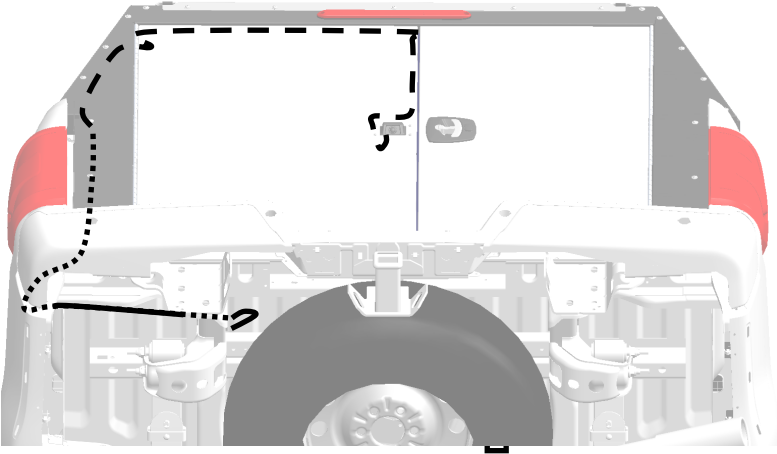


The wire MUST be tied up above the frame rail to avoid damage from ice and road debris.

1. UNDER the vehicle, by the rear bumper, BE AWARE of the hot exhaust systems, and route the harness above the frame rail and follow other wiring harnessing to the open OEM Mating connector for the adapter or the coaxial cable that has been left from the removal of the tail/end gate.

Section 8: Routing harness

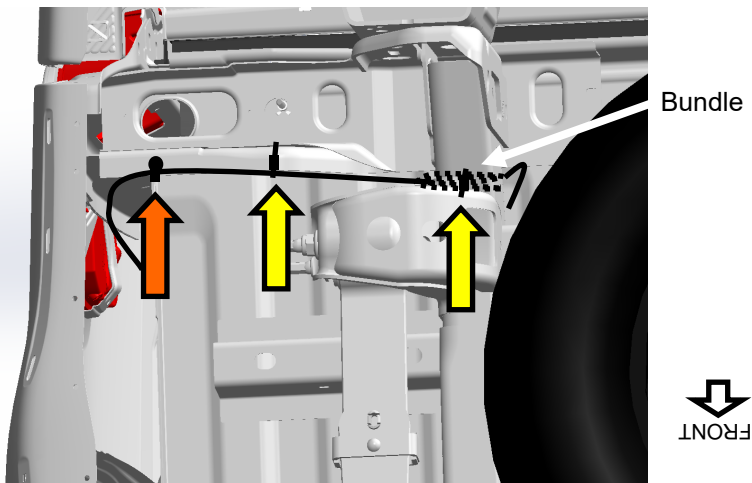
Step 8-11.



- The wire **MUST** be tied up above the frame rail to avoid damage from ice and road debris.

Step 8-12.

Under Chassis View



- It will be helpful to find a 1/4" hole [Area of Orange Arrow] in the trucks underbody sheet metal and utilize one of the Christmas tree cable mounts to secure the cable where it drops down from the hole on the topside bed wall.
- When routing is established, connect the coaxial cable and bundle/ loop any extra cable to tie high above the bottom of the truck.

- The installation is completed– please test and finish install by making sure cable will not be pinched or damaged during customer use.

Section 9: Testing and Finish

The camera installation should now be checked:

- Start vehicle.
 - Check around for safety.
 - Hold the brake, shift the vehicle into reverse and observe the back-up camera monitor in the vehicle. The image should be very similar to original image from the OEM tailgate installed backup camera.
 - If there any doubts, please ensure to validate with FMVSS111 procedure to ensure compliance.
- ◇ If the vehicle does not activate the backup camera while in reverse, check that there is no damage to the harnessing, and reassure all connections have been made securely.
- ◇ Lastly, ensure all harness is properly secured and cable ties are trimmed.
- ◇ The install is now complete!

