

## Overview

Starting in 2019 all Heavy Duty pickups (2500 DJ & 3500 D2) built with a box (sales code XBS) will have a digital camera system. HD pickups with factory box delete (sales code XBC) will have an analog camera system. See the document titled ANALOG CAMERA located on the Body Builder's Guide under ELECTRICAL WIRING INFORMATION > CAMERA SYSTEMS.

The surround view system (Sales Code is XAK) is available as an option on all 3500 through 5500 chassis cabs (DF/DD/DP) and 2500 and 3500 HD pickups (DJ/D2) with a box. (sales code XBS) Surround view is not available with box delete (XBC) pickup. See the document titled SURROUND VIEW located on the Body Builder's Guide under ELECTRICAL WIRING INFORMATION > CAMERA SYSTEMS.

Cargo View (sales code LPD) is an option on all Heavy Duty pickups (2500 DJ & 3500 D2) built with a box (sales code XBS). It is optional on all 3500 through 5500 chassis cabs (DF/DD/DP). However in order to get cargo view on a chassis cab, the vehicle must have either park view back up camera (sales code XAC) or surround view (sales code XAK) The system uses a camera located in the CHMSL to provide the cargo view.

With a digital system, all views will be available in the screen in the center stack. The table below outlines the radio and display options available on pickups with a digital camera system.

Sales Code	Radio System	Screen Size/Type	Nav/Connectivity	Camera Display
UAA	Uconnect® 3	5" Touch Screen	None	Center Stack Screen
UAM	Uconnect® 4	8.4" Touch Screen	None	Center Stack Screen
UAV	Uconnect® 4C	8.4" Touch Screen	Nav and Cellular	Center Stack Screen
UAX	Uconnect® 12.0	12" Touch Screen	Nav and Cellular	Center Stack Screen

## Vehicles Built Without Factory Surround View or Cargo View

If the vehicle was not built with Surround View (XAK) or Cargo View (LPD) it is not possible to add it.

## Pickups Without a Box

Pickups with factory box off (XBC) will have the analog back up camera system. The digital surround view (XAK) system and Cargo View (LPD) are not available.

### DIGITAL CAMERA SYSTEM (WITHOUT SURROUND VIEW)

---

## Pickup Box or Tail Gate Removal

Some HD pickups are approved for field box removal. See the document titled CERTIFIED FOR BOX REMOVAL located on the Body Builder's Guide under TECHNICAL INFORMATION. Box or gate removal on a truck with a digital (non-surround view) camera system is possible. (We do not recommend pick up box removal on vehicles with surround view)

We recommend removing the camera and coax camera cable from the tail gate and relocating them on the up fit. If you choose not to remove the camera and cable from the tail gate, the service parts can be purchased through your dealers Parts Department.

Chassis cabs equipped with surround view (XAK) will have a camera (P/N 68417514AA) and a 2.5 meter cable (P/N 68396016AB) shipped in cab of the vehicle. It may be possible to use the chassis cab loose ship components on a pickup with a digital camera system.



**Camera and Cable**

Due to connector differences, the connector on the 2.5 meter cable will not plug directly in to the connector on the vehicle without an adaptor. Adaptors are available at aftermarket. The link below will show the type of adaptor that will be needed.

[https://www.delock.com/produkte/1675\\_Connectors/89858/dokumente.html](https://www.delock.com/produkte/1675_Connectors/89858/dokumente.html)

Mount the camera to the up-fit per the instructions in the CAMERA MOUNTING section of this document. Please note that if the vehicle is a 2500, (DJ) it has a GVWR of 10,000 lbs and must meet FMVSS111. See the section below on FMVSS111. If the vehicle is a 3500, (D2) the GVWR is greater than 10,000 lbs. FMVSS111 is not a requirement.

Connect one end of the cable to the camera and the other end of the cable to the chassis connector left open when the box and/or gate was removed. If the chassis cab kit is used, the aftermarket adaptor must be used to make this connection.

---

### DIGITAL CAMERA SYSTEM (WITHOUT SURROUND VIEW)

---

## FMVSS111

FMVSS111 requires a backup camera on all vehicles with a GVWR of 10,000 lbs. or less. Starting May 1<sup>st</sup> 2018, up fitters must insure that vehicles model year 2018 and newer and have a GVWR of 10,000 lbs. or less meet FMVSS111.

FMVSS111 has certain system function requirements as well as image size and field of view requirements. If you are up fitting a vehicle with a GVWR of 10,000 lbs. or less you will need to familiarize yourself with those requirements. The camera system as shipped will meet the system function requirements. However, field of view and image size are effected by camera location and aim. You will need to select a camera location and mounting that allows the system to meet these requirements.

The NTEA has developed a test method and provided educational resources to help members understand FMVSS111 and verify that the system meets image size and field of view requirements. We recommend that you use the NTEA method to determine an appropriate camera location and angles.



NTEA members can purchase the kit through the NTEA web site.

<http://www.ntea.com/StoreCategory?Cat=PUBSGUIDES>

See items titled FMVSS 111 FIELD OF VIEW (REARVIEW CAMERA) CONFORMITY MANUAL (# 2296) or FMVSS 111 FIELD OF VIEW CONFORMITY MANUAL AND KIT. (# 2297)

---

### DIGITAL CAMERA SYSTEM (WITHOUT SURROUND VIEW)

---

## Camera Mounting

### General

Unless the up fit has been designed with a feature to mount the camera, a bracket or a mounting feature on the up fit will need to be developed. If practical, it is desirable to mount the camera in a location where the connector on the rear of the camera can be inside the up fit and shielded from the outside environment. If fabricating a bracket, it should be designed to offer as much protection to the camera and connector as possible. A mechanical layout of the camera is in **Appendix A**.

### Placement

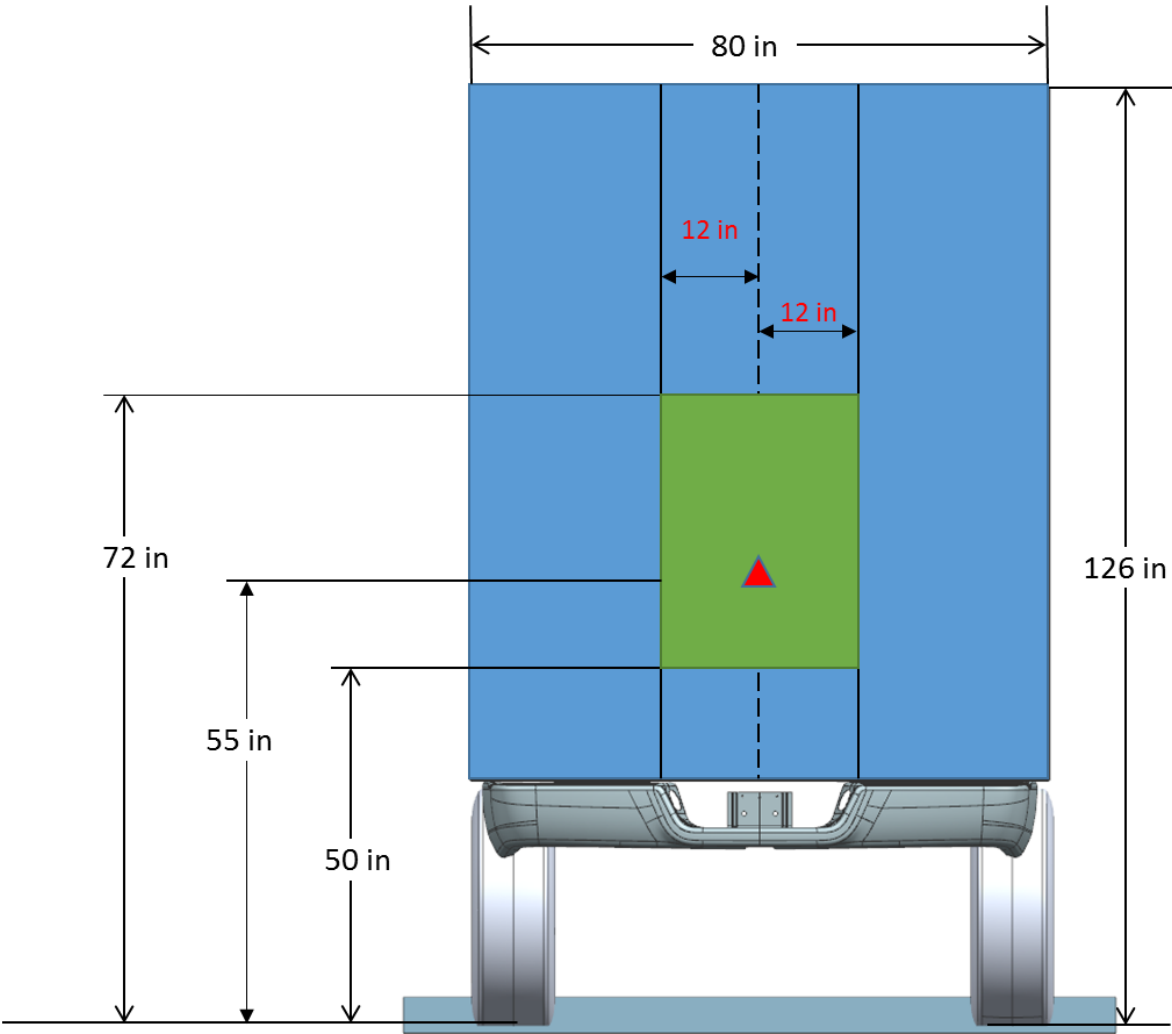
**ATTENTION:** *The camera placement zone shown below is intended to assist the upfitter in meeting the requirements of FMVSS111. Compliance to FMVSS111 will be the responsibility of the final stage manufacturer who certifies the vehicle.*

**NOTE:** This information is provided for directional purposes only, based on testing performed by FCA US LLC.

The recommended camera placement zone is defined in **Figure 1**. The diamond in the center of the green zone is the optimum placement location. Lateral dimensions are from the centerline of the vehicle and vertical dimensions are from the ground plain.

If the camera is mounted somewhere within the specified zone, the system is capable of meeting FMVSS111. Depending upon the up fit, it may be possible to meet FMVSS111 with the camera mounted in areas outside of the recommended zone. However, gaining compliance may be difficult and may require more development work.

**Figure 1**



**RECOMMENDED CAMERA MOUNTING LOCATION**

**DIGITAL CAMERA SYSTEM (WITHOUT SURROUND VIEW)**

---

## Aim

The camera should be mounted so the lateral (cross vehicle) centerline of the camera is parallel to the lateral (cross vehicle) centerline of the vehicle. In other words, the camera aimed straight rearward, not left or right.

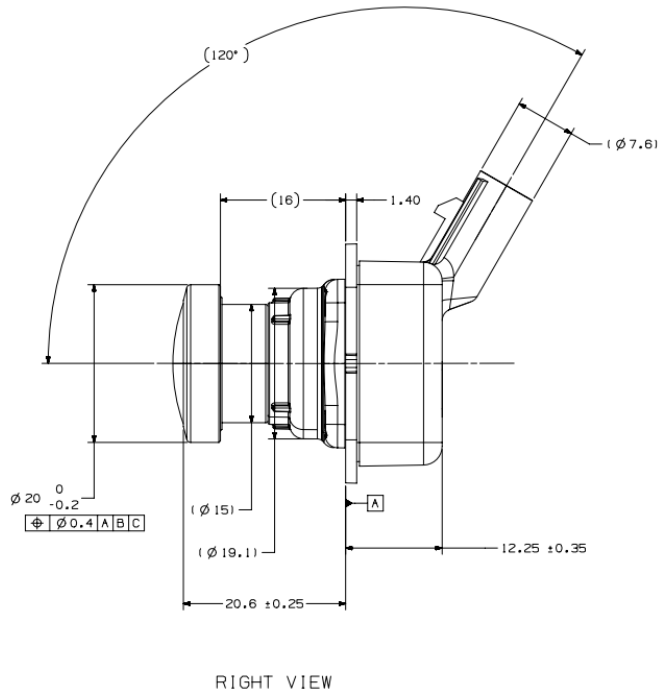
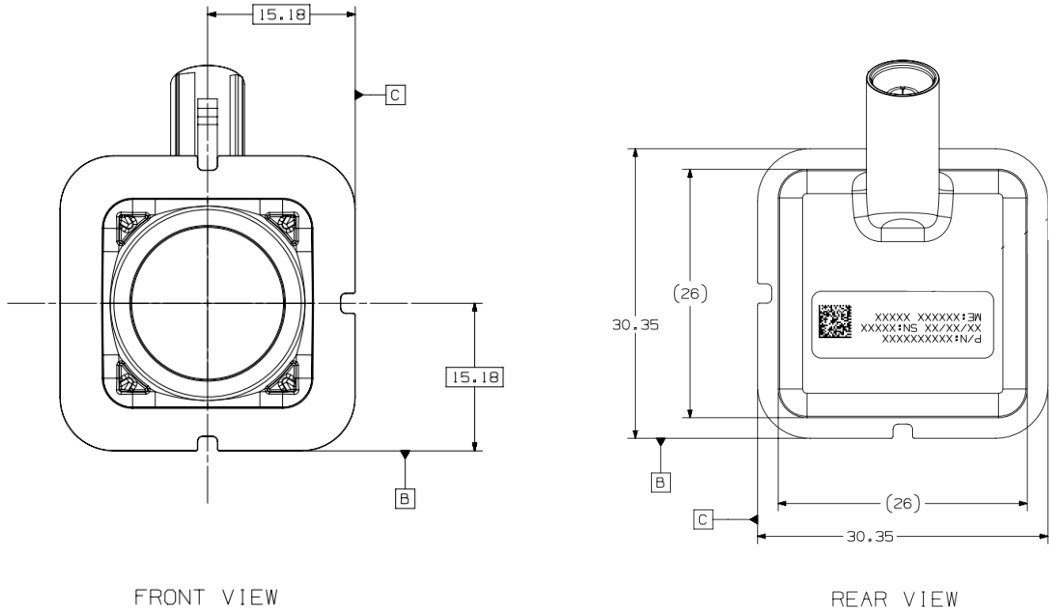
The vertical aim or “look down angle” will be selected to achieve FMVSS111 compliance.

## Look Down Angle Determination

The NTEA FMVSS111 field of view conformity manual and kit (NTEA # 2297) should be used to determine the appropriate look down angle to meet FMVSS111 field of view and image size requirements.

**ATTENTION:** When the vehicle is first placed in reverse, there will be a warning message at the top of the screen for the first 5 seconds. **THAT WARNING MESSAGE CANNOT INTERFERE WITH THE TEST OBJECTS.** If it does, you may need to adjust the look down angle upward slightly to compensate. Examples of images to demonstrating message interference are in **Appendix B** Please note these are SIMULATED images.

**Appendix A**



**DIGITAL CAMERA SYSTEM (WITHOUT SURROUND VIEW)**

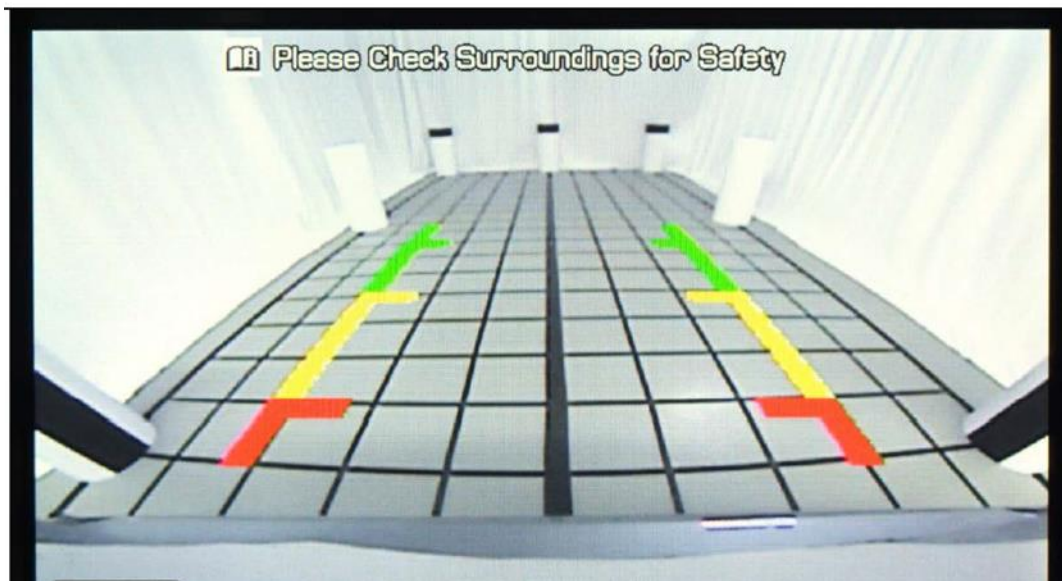
---

## Appendix B

In the following image, the **system does not meet FMVSS11** requirements with the warning message displayed. The message covers the top of the rear cones and the black stripes are obscured.



In the following image, the **system meets FMVSS11** requirements with the warning message displayed. The message is well above the top of the rear cones and the black stripes are completely visible.



---

### DIGITAL CAMERA SYSTEM (WITHOUT SURROUND VIEW)