

KOMMANDER™ — BASE — FORD F-150
INSTALLATION GUIDE



1. REVISION

Description	Author	Revision	Date
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Suggested installation configuration

TABLE OF CONTENTS

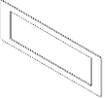
1.	REVISION	2
2.	COPYRIGHT.....	3
3.	INCLUDED IN THE KIT.....	6
4.	EXPLODED VIEW	8
5.	WIRING DIAGRAM.....	10
6.	INSTALLATION PREPARATION	11
7.	DASHBOARD REMOVAL.....	12
8.	IN-DASH DISPLAY SUPPORT INSTALLATION.....	18
9.	DISPLAY INSTALLATION	21
10.	COMPUTER INSTALLATION.....	23
11.	PULL OUT THE COMPUTER ASSEMBLY FROM THE CAGE.....	25
12.	COMPUTER WIRE CONNECTIONS.....	26
13.	OPTIONS	29
14.	QUALITY ASSURANCE	31
15.	TECHNICAL SUPPORT.....	33

3. INCLUDED IN THE KIT

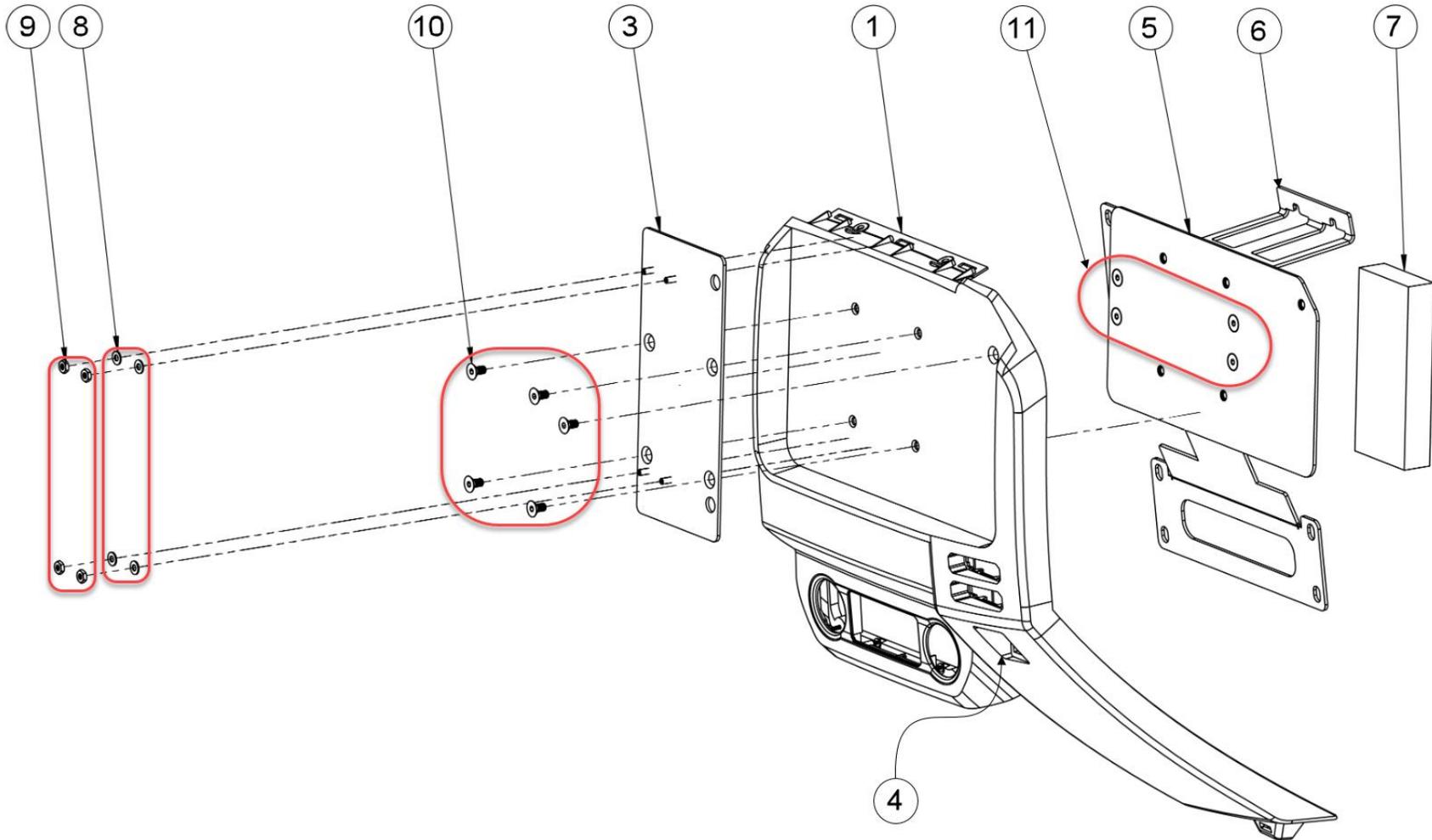
<u>PART REF #</u>	<u>PART NAME</u>	<u>QTY</u>	<u>ILLUSTRATION</u>
1	Kommander™ Front Shell (F-150)	1	
2	Universal support	1	
3	Universal screen support adapter plate assembly	1	
4	Dash mount USB ports	1	
5	Back plate	1	
6	Back-support bracket	1	
7	Foam plug (Vent block)	1	
8	Black-Oxide 18-8 Stainless Steel Washer for Number 10 Screw Size, 0.203" ID, 0.438" OD	4	
9	18-8 Stainless Steel Hex Nut Black-Oxide, 10-32 Thread Size	4	

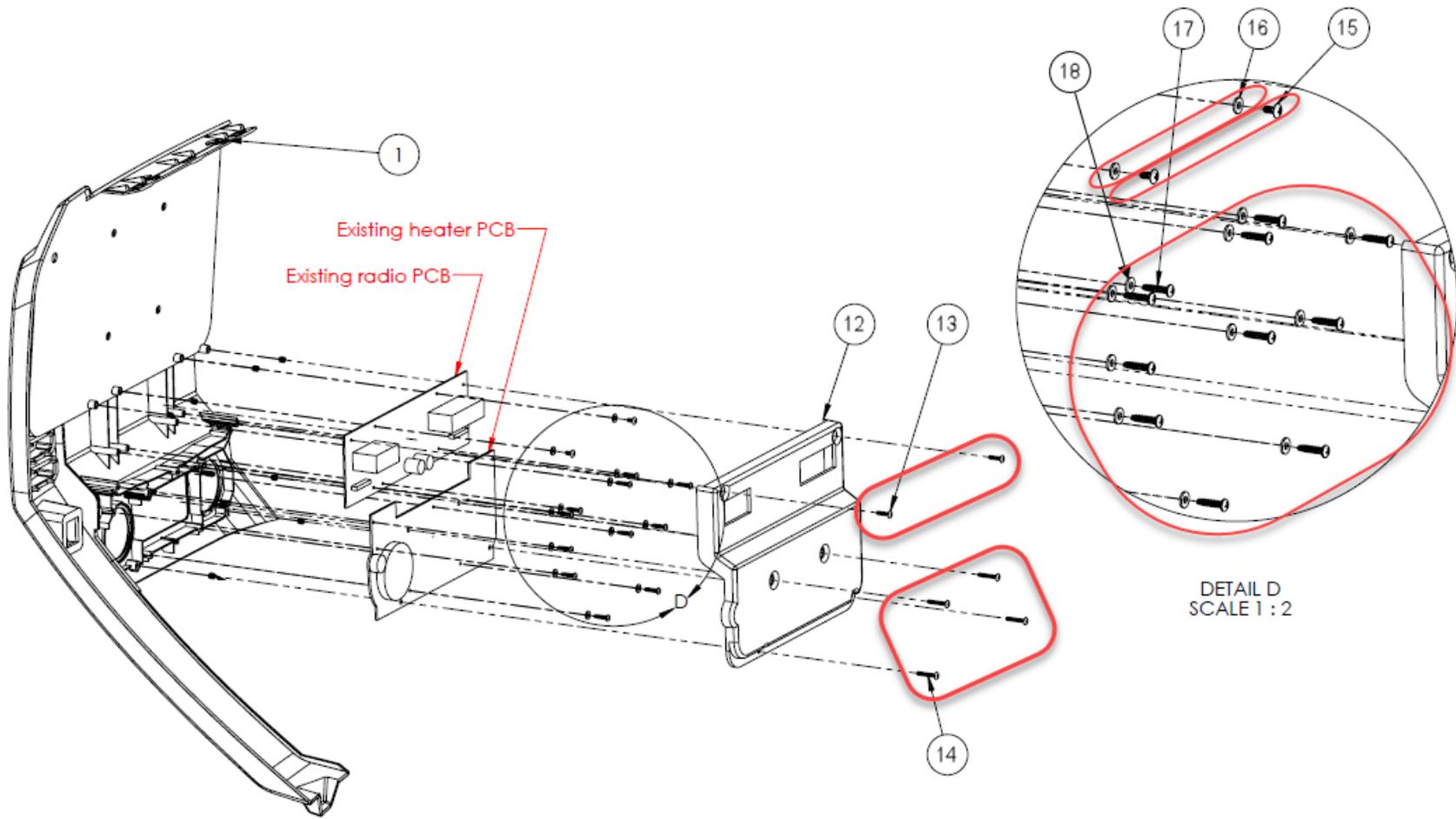
10	Black-Oxide Alloy Steel Hex Drive Flat Head Screw 1/4"-28 Thread Size, 1/2" Long	5	
11	Black-Oxide Alloy Steel Hex Drive Flat Head Screw 1/4"-28 Thread Size, 1/2" Long	4	
12	PCB Cover	1	
13	Extra-Wide Truss Head Phillips Screws Passivated 18-8 Stainless Steel, 4-40 Thread, 1/2" Long	2	
14	Extra-Wide Truss Head Phillips Screws Passivated 18-8 Stainless Steel, 4-40 Thread, 3/4" Long	4	
15	Extra-Wide Truss Head Phillips Screws Passivated 18-8 Stainless Steel, 4-40 Thread, 1/4" Long	2	
16	Nylon Plastic Washer for Number 4 Screw	2	
17	Phillips Rounded Head Thread-Forming Screws for Plastic, 18-8 Stainless Steel, Number 4 Size, 1/2" Long	11	
18	Nylon Plastic Washer for Number 4 Screw	11	
19	Bracket (Display mounting bracket assembly)	1	
20	Display back cover (Display mounting bracket assembly)	1	
21	Pan washer head torx screw (black, Display back cover)	2	

22	Cyberkar® 12" touch Display	1	
23	Pan Head Allen Machine bolt 0.50" 10-32	4	
24	Star Lock Washer	4	
25	Pan Head Allen Machine bolt 0.50" 10-32	4	
26	Star Lock Washer	4	
27	Socket Head Allen bolt 1.5" 10-32 (Universal support lock)	1	
28	Steel Nylon Lock nut 10-32 (Universal support lock)	1	
29	Antenna adaptor	1	
30	Stereo headunit	1	
31	Hand-free microphone (Kenwood)	1	
32	Bracket (Headunit mounting)	2	
33	Antenna extension cable (2.4 m/8')	1	

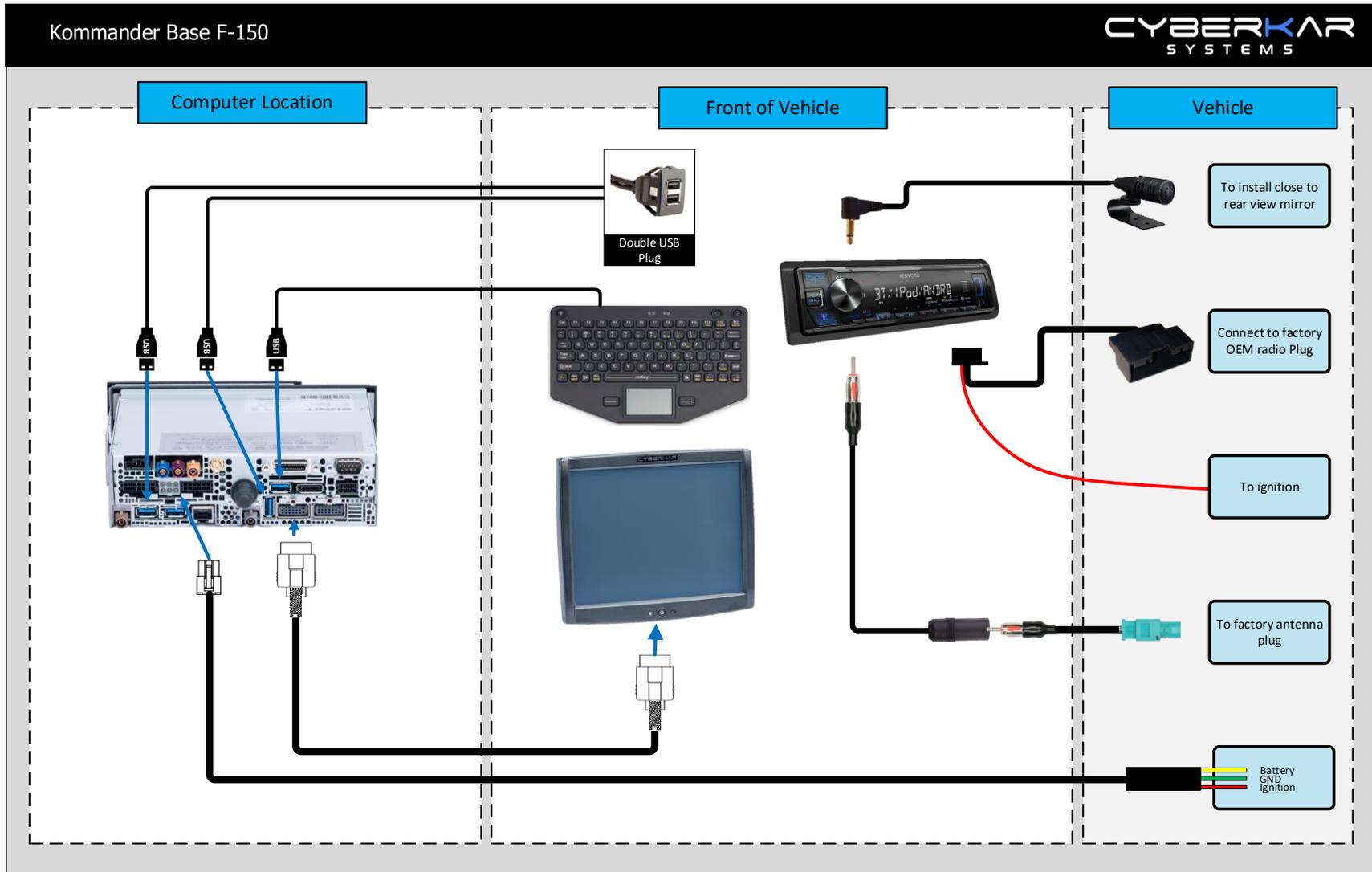
34	Kenwood headunit Harness Adaptor (Ford®)	1	
35	Display cable (1.5 m/5')	1	
36	KMD-ORD-SE Quad Core Integrated Computer System	1	
37	Computer power cable (1.5 m/5')	1	
38	Computer I/O cable (12 pin)	1	
39	Edge Clip Cable Tie	2	
40	Plastic Cap	2	
41	Computer I/O cable (14 pin)	1	
42	Computer DIN cage	1	
43	DIN size metal faceplate Ext: L8.875" x 3" (L225mm X H76mm)	1	
44	Cage unlocking keys	2	

4. EXPLODED VIEW





5. WIRING DIAGRAM



6. INSTALLATION PREPARATION

The following guide will help prepare the area before the installation of the Kommander™ in-dash display kit. These instructions are based on a common example of a F-150.

- The basic installation of components in the Kommander™ BASE kit should require approximately 3.5 hours of labor time.
-
- The installation of the Kommander™ in-dash display will require relocation of climate control center unit. The removal of the OEM infotainment unit is also required. An aftermarket stereo head unit (supplied with the kit) will need to be installed as a replacement unit. Proper planning of their install location is strongly suggested to achieve optimal vehicle interior ergonomics.
- Label all OEM components removed during this installation using the Vehicle Identification Number (VIN). They can be stored away in a box and reinstalled back when the vehicle is decommissioned.
- For cold climates, the interior cabin panels and trims are stiff and prone to breaking when cold. Allow the vehicle interior compartment and cabin to reach room temperature before removing plastic trims and components.
- We recommended the use of crimp metal terminal protected by an adhesive lined shrink tubing on all wire connections.

Kommander™ Quad-core computer

- Please refer to the **KMN-ORD-SE** User Guide for the configuration details for the Kommander™ Quad-core computer.
- Install the computer inside the passenger compartment or trunk of the vehicle. Avoid area subjected to dust, dirt, or liquid spill.
- The computer system is cooled through the aluminum body using an automatically controlled fan in the front of the computer. Install in a well-ventilated area.
- Make a list of all peripheral devices that will be used with the computer. Note their required connectivity, plan extension cables, and any additional vehicular graded IT components such as a USB hub, Ethernet adaptor, antennas, etc.
- The minimum depth required for the computer must exceed 8.5" to allow enough clearance for connectors.
- Allow for 12 inches of excess cable length must be left available to slide the computer in or out of the DIN cage. Calculate enough cable coiling space behind the computer when fully inserted in the cage.
- To release the computer from the cage, 2 release keys are supplied. Insert these keys on each side of the computer to release the locks and pull the computer out.
- Kommander™ uses FAKRA style connectors for the GPS, cellular and video inputs.

7. DASHBOARD REMOVAL



1
Remove the speaker grille as shown in the picture using plastic trim removal tool. The grille is secured in place with clips.



2
Remove the 2 screws close to the speaker using a 7 mm hex box.



3
Remove the stowage tray insert using a plastic trim removal tool. The tray is secured with 3 clips in front of the assembly.



4
Disconnect the harness of the speaker under the tray.



5
Remove the 2 screws using a 7 mm hex box.



6
Pull the front bezel by unclipping it.



7
Disconnect these 4 connectors. Two of them are for the top buttons and 2 of them are for HVAC module.



8
Next steps will describe how to remove right vent assembly.



9
Unclip the lower floor bezel on the right side.



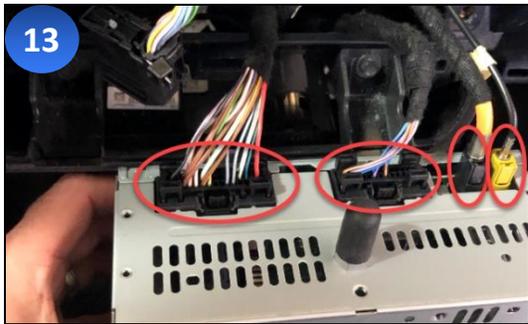
10
Remove the right vent bezel, disconnect the 2 cables and wrap it and keep it to put back the vehicle at its original state after decommissioning.



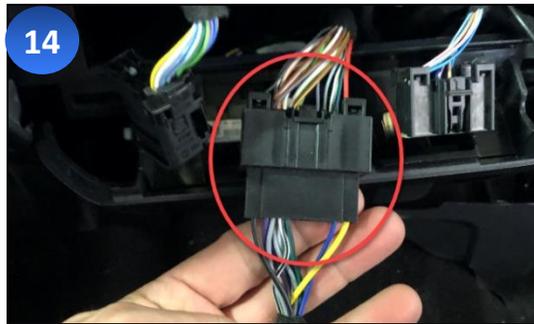
11
Remove the 10x screws using a 7 mm hex box. It will permit to remove the OEM infotainment and display unit.



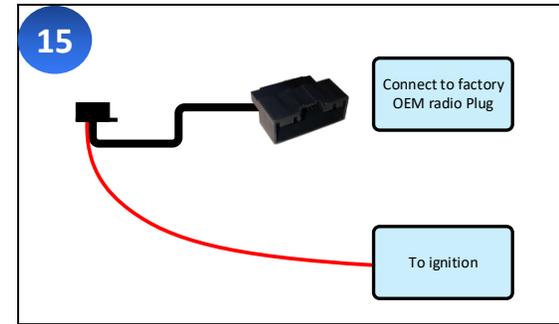
12
Pull the display unit and disconnect the 3 cables. Attach them securely as they will not be used. Wrap the screen and keep it to reinstall the vehicle at its original state for decommissioning.



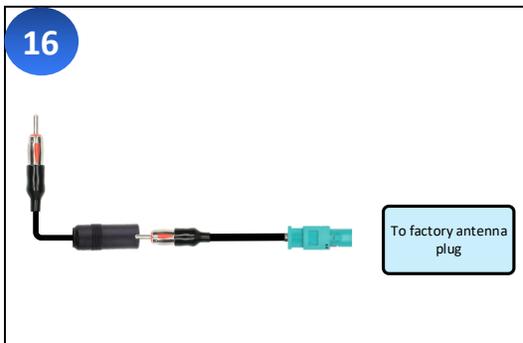
13 Disconnect the 2 main connectors and the 2 Fakra connectors of the OEM infotainment module. Follow steps 14 to 17 to reconnect radio (left one) and antenna cables (black fakra) to Kommander™ interface cables.



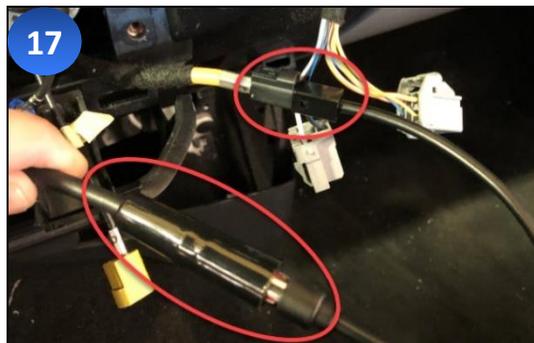
14 Connect the OEM infotainment harness to the stereo head unit harness adapter (**Part#34**).



15 Connect the stereo head unit wire (RED) to a 12 volts accessory signal supply.



16 Connect the antenna adapter (**Part#29**) to the antenna extension (**Part#33**). Install the provided hands-free microphone (**Part#31**) close to the rearview mirror.



17 Connect the antenna adapter (**Part#29**) to the OEM antenna Fakra connector (black). Route the other end of the antenna, speaker and power adapter (**Part#34**) and hands-free microphone (**Part#31**) to the radio head unit (**Part#30**) installation location.



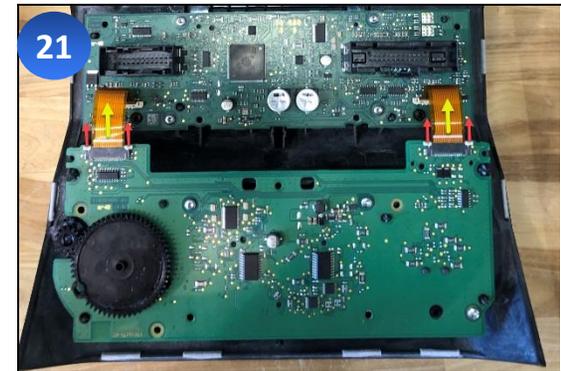
18 Block the right (passenger) side central ventilation duct using the Foam plug (**Part#7**). Use the 2x Edge Clip Cable ties (**Part#39**) and interlock them to hold the plug in the vent.



Remove the 2 top buttons from the OEM center bezel by pushing on both side of each connector.



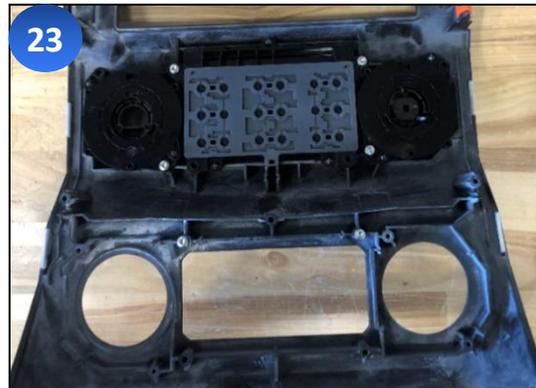
Using Torx 10 screwdriver, remove the back cover protecting the HVAC printed circuit boards. It recommended to perform this task into a clean environment with static protection equipment (if possible).



Gently pull up ribbon connectors lock (each side of each connector) and remove the 2 ribbons from those connectors. Unscrew remaining screws of retaining the PCBs and remove them.



Remove the 2 buttons and HVAC control buttons on the center of the assembly.



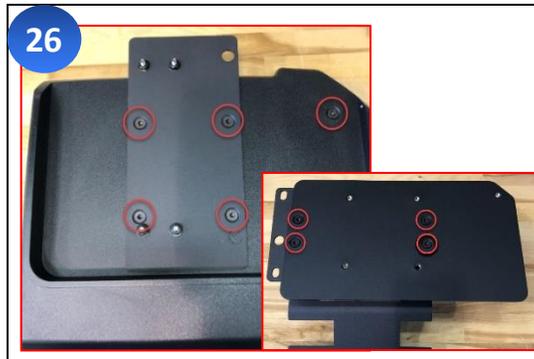
Fix back the radio buttons on the OEM assembly and put back the original screws on unused spaces. It will prevent losing them.



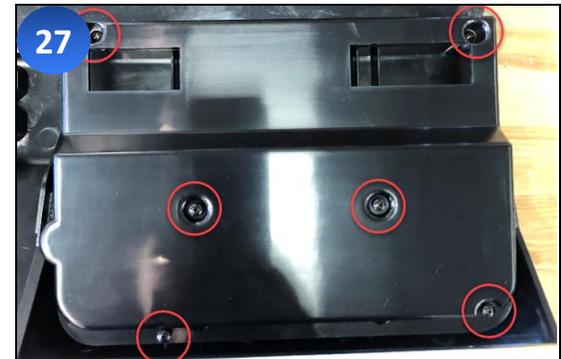
Fix back the original back cover on the OEM bezel. It will prevent losing parts to put back the vehicle at its original state when decommissioning the vehicle.



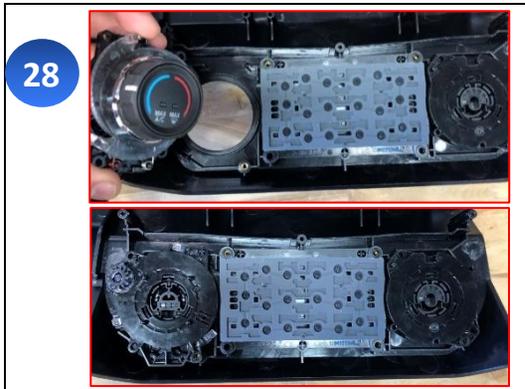
25 Drill a hole at desired place/size to route the screen cable and/or other. It is recommended to drill it at the center of the 4 screws, as shown in the picture.



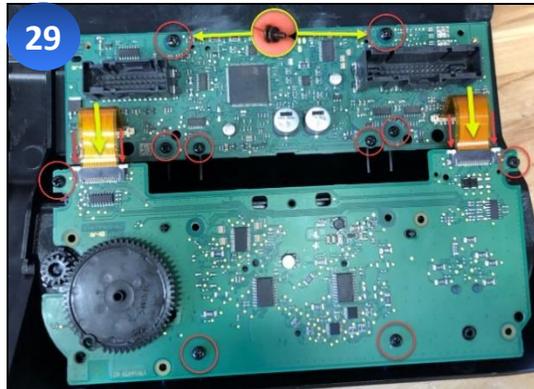
26 Using 4 mm Allen screwdriver, remove screws on the front part of the assembly and remove the back plate.



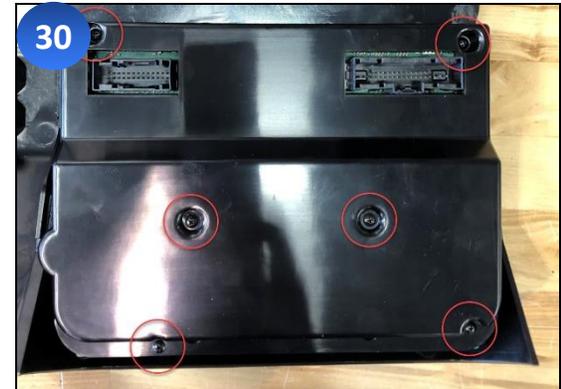
27 Remove the PCB cover (**part #12**) at the back of the plastic assembly.



28 Put back the 2 buttons and button pad (removed at step 22) and place them in the same way in the new plastic trim.



29 Fix back the 2 PCB into the plastic trim at the locations showed in the picture. Use **Part#15 and 16** screws and washers for 2 top one and **Part#17 and 18** for other ones.



30 Fix the 2 top screws of back cover using **Part#13** screws and **part #14** for 4 bottom ones.

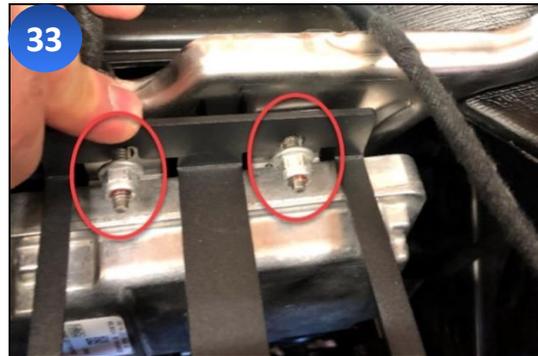


Insert the 2 buttons removed at step 19 and USB double plug (**Part#4**) as shown in the picture.

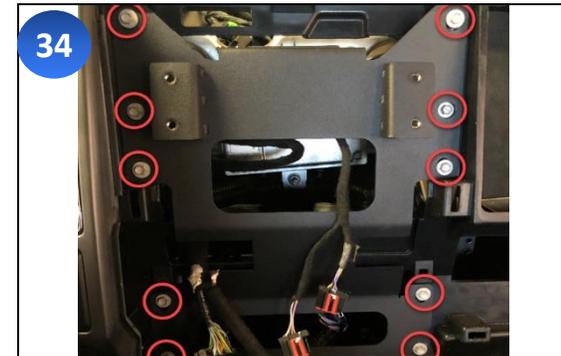
8. IN-DASH DISPLAY SUPPORT INSTALLATION



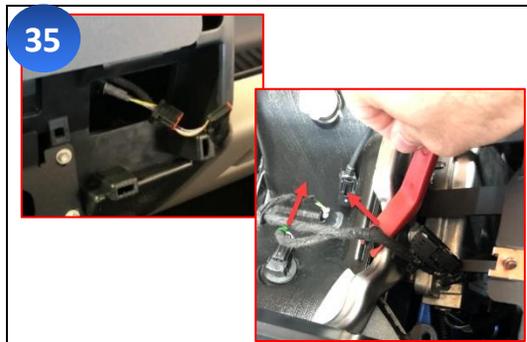
Loose the 2 nuts on top of module located behind the OEM LCD unit.



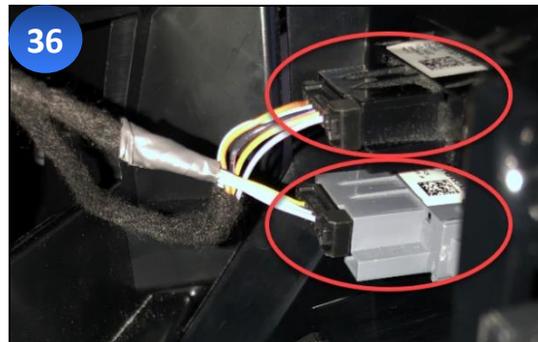
Insert the back-support bracket (**Part#6**) and secure it by tightening the nuts.



Use the OEM screws (used to fix the Infotainment display and module) to fix back the front support mounting bracket.



Route the 2 cables used for buttons behind the OEM vent. To provide more room, it is recommended to unplug the cable and remove the fastener as shown above. Once the plastic trim is in place, don't forget to plug it back in.



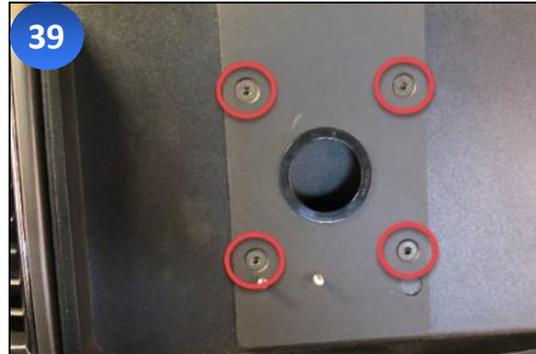
Connect the 2 buttons back and connect the 2 cables on the factory HVAC module.



Fix the back plate (**part #5**) retainer on the support using 4 screws (**PART #11**).



Fix the top of the trim using 7 mm screws removed previously and install the top right screw (**part#10**), as shown in the picture.



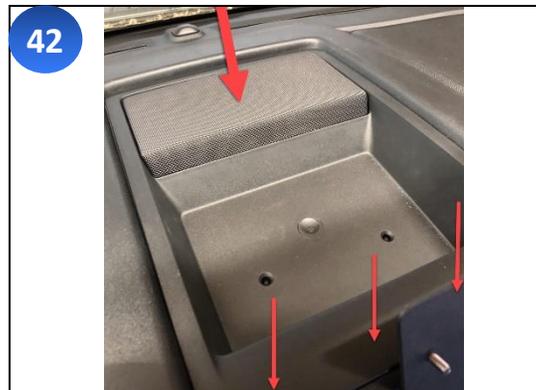
Fix the universal screen support adapter plate (**part #3**) using 4 screws (**part#10**).



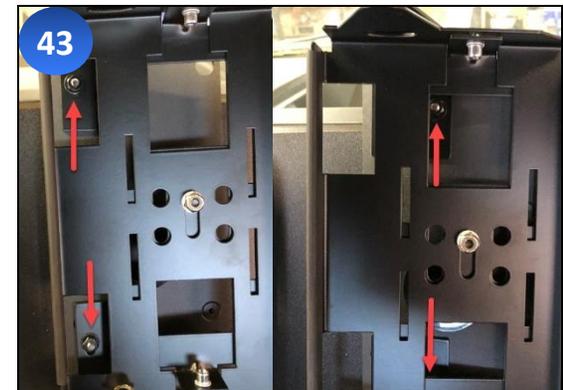
Plug back the speaker on the stowage tray insert and clip it in place. Make sure to clip the 3 front clips to the Kommander™ dashboard.



Secure the stowage tray insert using 2 7 mm OEM screws.



Clip back the stowage tray inserts speaker grille.

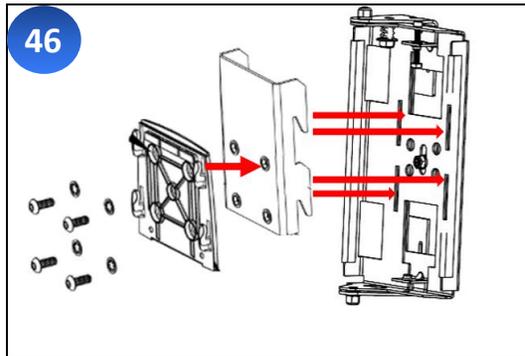


Fit the universal support (**part #2**) into studs and ensure the pivot is located on the left side. Secure the assembly with provided 4 washers and nuts (**part #8 and 9**). Move the mechanism from right to left and slide the locking part to ease installation.

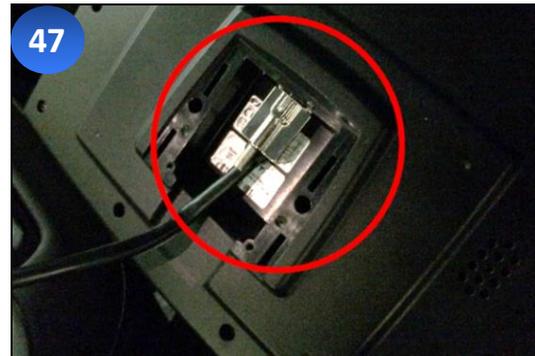


Clip back the lower floor bezel into the new dashboard and into the vehicle.

9. DISPLAY INSTALLATION



46 Assemble the display mounting bracket and cover (**Part#19 and 20**) using 4x bolt and star washer sets (**Part#23 and 24**). Notice the orientation of all components in the picture.



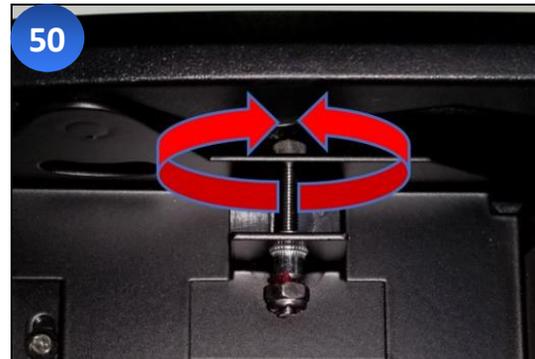
47 Connect the display cable (**Part#35**) in the back of the Display (**Part#22**). Lock the connector in place using a flat head screwdriver and turn screw clockwise.



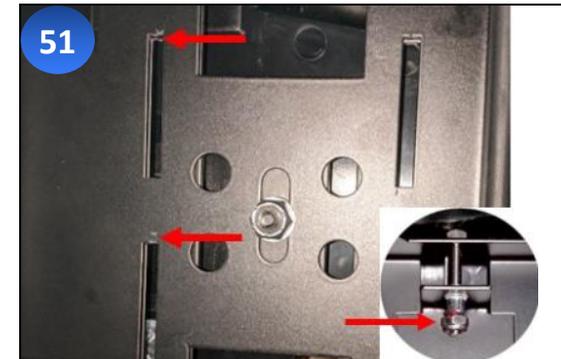
48 Insert the assembled cover (**step 46**), hooks pin facing the display UP. Press and slide in the assembly fully. This may require some force. When the cover is properly seated, the two lock screw holes will be aligned.



49 Use the 2x black screws (**Part#21**) to lock the mounting bracket assembly in place.



50 The top bolts (**part #27**) will bring the locking mechanism up or down in the Universal support.



51 Tighten or loosen the lock bolt (**part #28**) to align the vertical locking slots of slider with the support. When they are perfectly aligned, readjust the lock nut snug to the threaded insert. This is the unlock position and the nut will serve as a limiter.



Insert the display assembly in the Universal Support. The 4 hooks will fit into their designated slots and slide down. Route the cable to allow left and right swivel movement.



Tighten the Lock bolt until the display assembly is securely locked in place.



Fully swivel the screen left and right assuring it can move freely. Ensure friction is sufficient and adjust as needed. Once finished, insert the 2 plastic caps (**Part#40**) on the pivots, as shown in the picture.

10. COMPUTER INSTALLATION



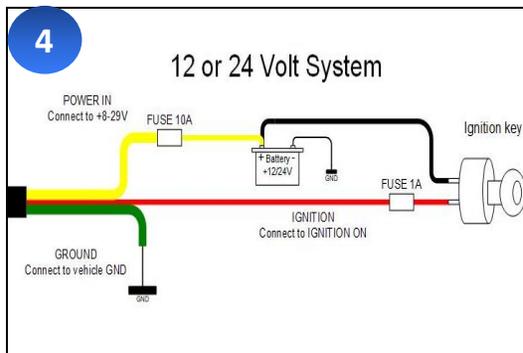
Slide the computer DIN size cage (**Part#42**) in the metal faceplate (**Part#43**). Bend the tabs outward to lock the cage in. Install the faceplate assembly.



Mount the cage assembly in the equipment console or at desired location.



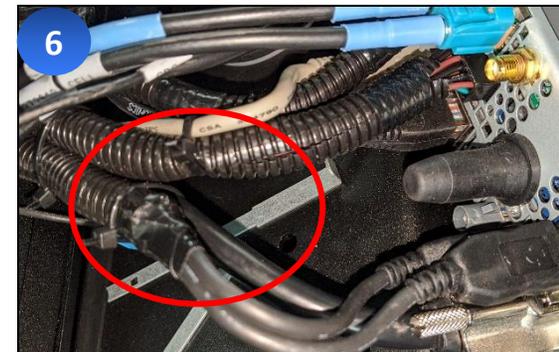
Route the cables through the cage. Account for approximately 30 cm (12") of excess length to allow enough flexibility for their connections.



Connect the computer power supply cable (**Part#37**). The heavy gage YELLOW wire must be connected to a fuse protected constant 12V power source. The RED wire must be connected to a vehicle ACC signal.



Connect all positive locking connectors in the back of the computer. Tighten the LVDS display cable locking screw using a flat head screwdriver.



For all other peripheral device connectors with no positive lock mechanism (i.e.: USB), use nylon ties to secure them to a locked cable.



Carefully slide the computer in the cage all the way in, working the cables to fold properly behind. The side tabs of the cage will lock the computer in position.



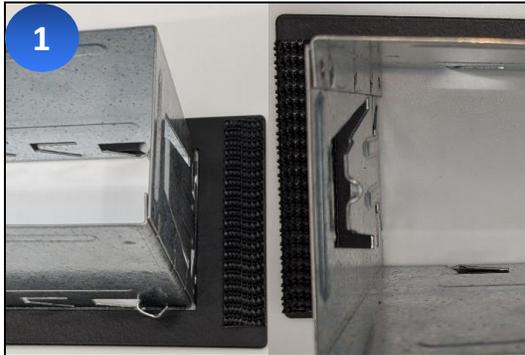
To remove the front grill, press the bottom edge in using your thumb. This will release the locking tab. Lift and remove. A filter is found behind the grill and must be cleaned periodically.



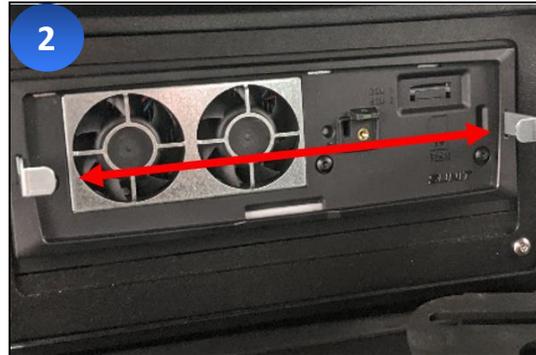
Insert the cellular SIM card. Re-install the front grill.

*The SIM connector is present by default whether the optional modem is installed or not.

11. PULL OUT THE COMPUTER ASSEMBLY FROM THE CAGE



The computer is locked in the cage by 2 tabs, found on each side of the cage. These tabs must be bent slightly inwards.

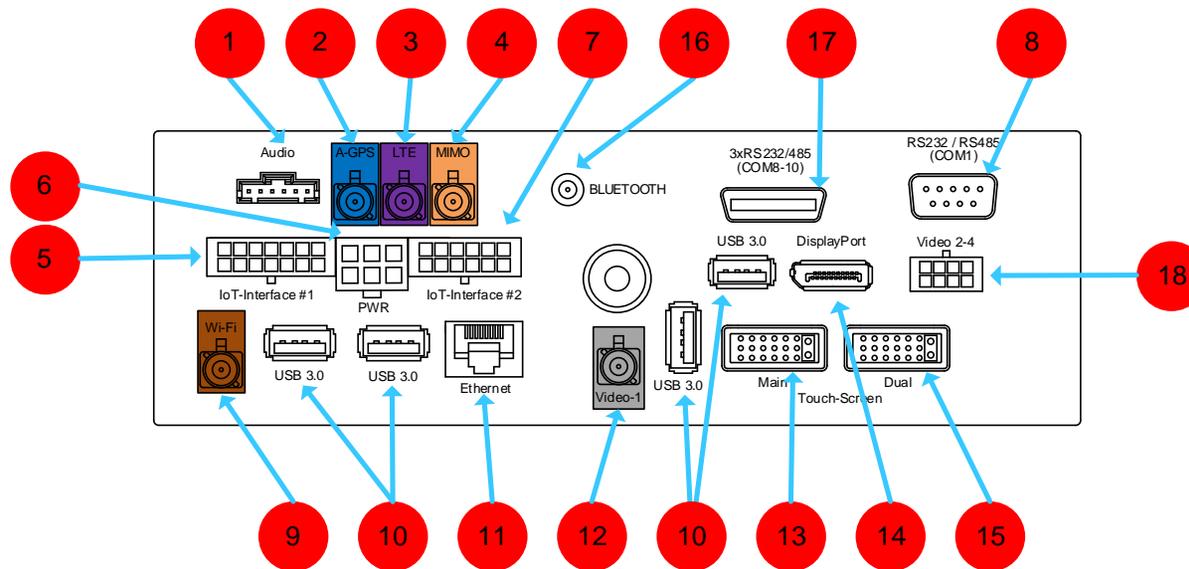


To remove the computer assembly, insert the 2 keys (**Part#44**) in the vertical slots on each side of the plastic trim. The key grip tabs must be facing each other. Push both in until a “click” is felt.

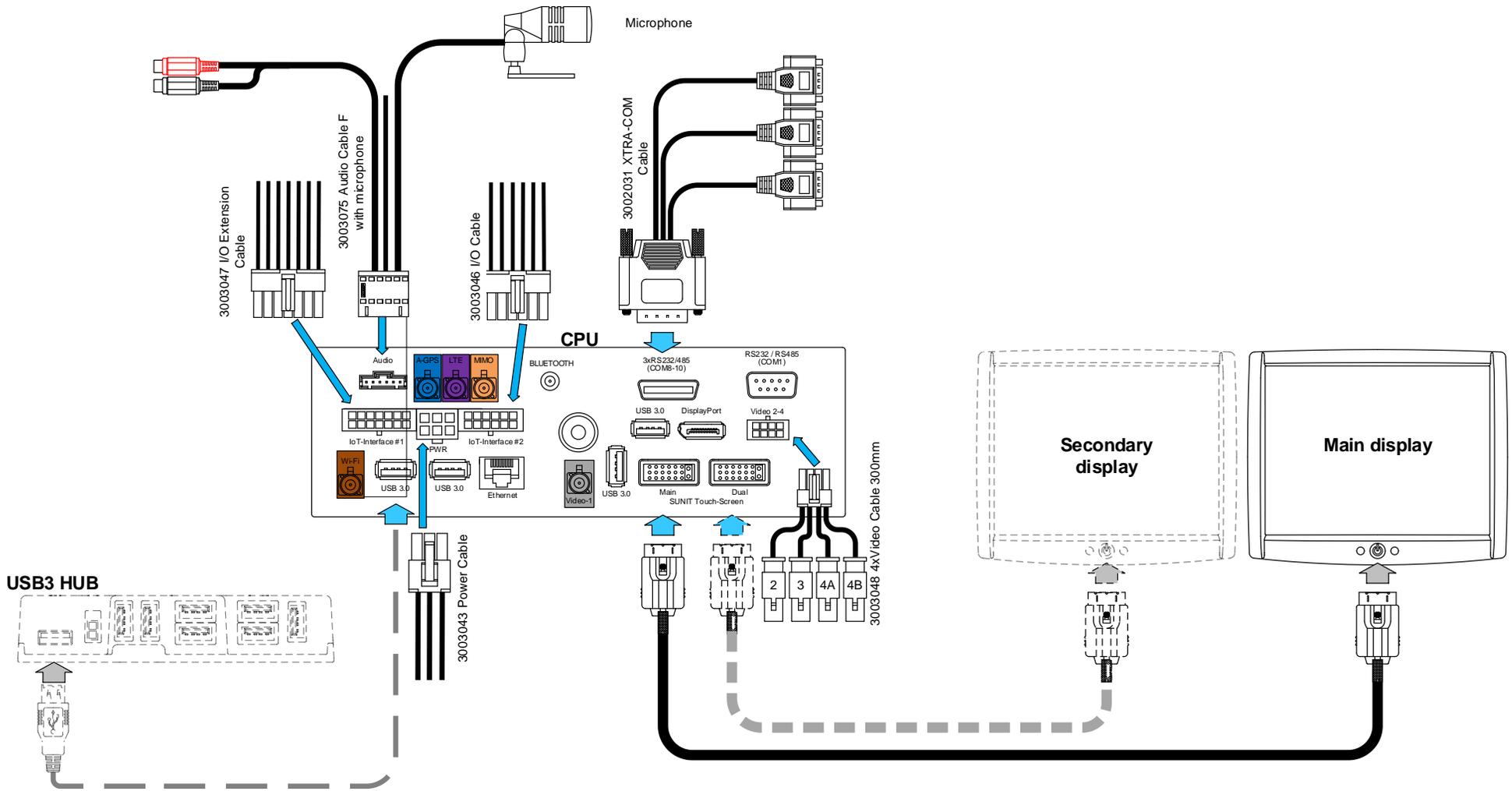


Pull on both tabs to slide out the computer.

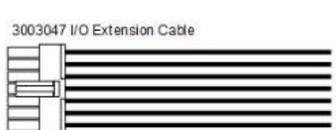
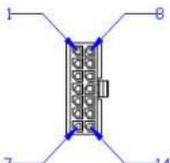
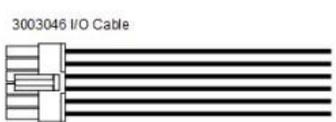
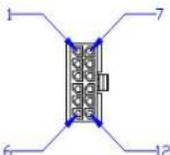
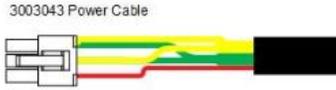
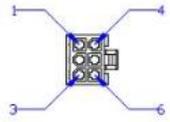
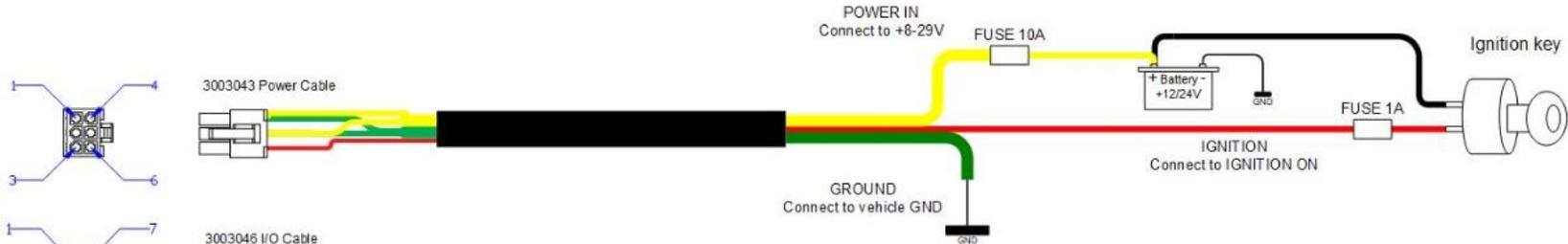
12. COMPUTER WIRE CONNECTIONS



1. Audio In/Out
2. GNSS-antenna (**FAKRA "C" blue**)
3. LTE-antenna (**FAKRA "D" burgundy**). **Connector is installed by default. The modem is optional.*
4. LTE-antenna secondary (**FAKRA "D" orange**). **Connector is installed by default. The modem is optional.*
5. Vehicle interface; IoT-Interface #1; 2 x CAN, 1 x AIn, 4 x DI-In, 2 x DO-Out
6. Power Supply Input and Accessory Signal
7. Vehicle interface; IoT-Interface #2; PA-Out, 3xAln, 3 x DI-In, 2 x DO-Out
8. 1 x RS232/485 serial port
9. Wi-Fi antenna (**FAKRA "F" brown**)
10. 4x USB 3.0
11. LAN.
12. Analog Video In (**FAKRA "G" gray**)
13. Main Cyberkar® touchscreen display
14. DisplayPort
15. Secondary Cyberkar® touchscreen display
16. Bluetooth antenna (**SMA**)
17. 3 x RS232/485 serial ports
18. 3 x Video-



12 or 24 Volt System



3003043 Power Cable pinout

Pin	Signal Name	Marking	Color	Specification
1	POWER GROUND	GND(31)	GREEN	Ground
2		N/A		DO NOT CONNECT
3				DO NOT CONNECT
4	POWER IN	PWR IN(30)	YELLOW	8-29V
5				
6	IGNITION	IGN(15)	RED	High active input (active >10V / Inactive <7V)

3003046 I/O Cable pinout

Pin	Signal Name	Marking	Color	Specification
1	CAN1 LOW	CAN1 L	BLACK	J1939 vehicle standard, CAN L
2	CAN2 LOW	CAN2 L	BLACK	J1939 vehicle standard, CAN L
3	#DIGITAL INPUT 5	DI5/SPEED IN	BROWN	Low active input (Vehicle Speed Sensor (VSS) Max 4kHz, internal Pullup to 12V)
4	DIGITAL OUTPUT 1	DO1	BLACK	High active output (POWER IN-1V), Iout max 0.3A
5	ANALOG GROUND	A REF	BLACK	Analog reference ground
6	ANALOG INPUT 1	AI1	BROWN	Input voltage range 0-50V
7	CAN1 HIGH	CAN1 H	BROWN	J1939 vehicle standard, CAN H
8	CAN2 HIGH	CAN2 H	BROWN	J1939 vehicle standard, CAN H
9	DIGITAL OUTPUT 2	DO2	BLACK	High active output (POWER IN-1V), Iout max 0.3A
10	#DIGITAL INPUT 6	DI6/ALARM IN	BROWN	Low active input (internal pullup to 12V)
11	#DIGITAL INPUT 4	DI4/DIR IN	BROWN	Low active input (Vehicle Direction Sensor (VDS), internal pullup to 12V)
12	GROUND	GND(31)	GREEN	High active output (POWER IN-1V), Iout max 0.3A

3003047 I/O Extension Cable pinout

Pin	Signal Name	Marking	Color	Specification
1	Speaker L+	SPKR L+	BROWN	Left speaker +
2	Speaker L-	SPKR L-	BLACK	Left speaker -
3		N/A		DO NOT CONNECT
4	DIGITAL OUTPUT 3	DO3	BLACK	High active output (POWER IN-1V), Iout max 0.3A
5	DIGITAL INPUT 1	DI1	BROWN	High active input (internal pulldown to GND)
6	ANALOG INPUT 4	AI4	BROWN	Input voltage range 0-10V
7	ANALOG INPUT 3	AI3	BROWN	Input voltage range 0-10V
8	GROUND	GND(31)	GREEN	Ground
9	Speaker R+	SPKR R+	BROWN	Right speaker +
10	Speaker R-	SPKR R-	BLACK	Right speaker -
11	DIGITAL OUTPUT 4	DO4	BLACK	High active output (POWER IN-1V), Iout max 0.3A
12	DIGITAL INPUT 3	DI3	BROWN	High active input (internal pulldown to GND)
13	DIGITAL INPUT 2	DI2	BROWN	High active input (internal pulldown to GND)
14	ANALOG INPUT 2	AI2	BROWN	Input voltage range 0-10V

13. OPTIONS

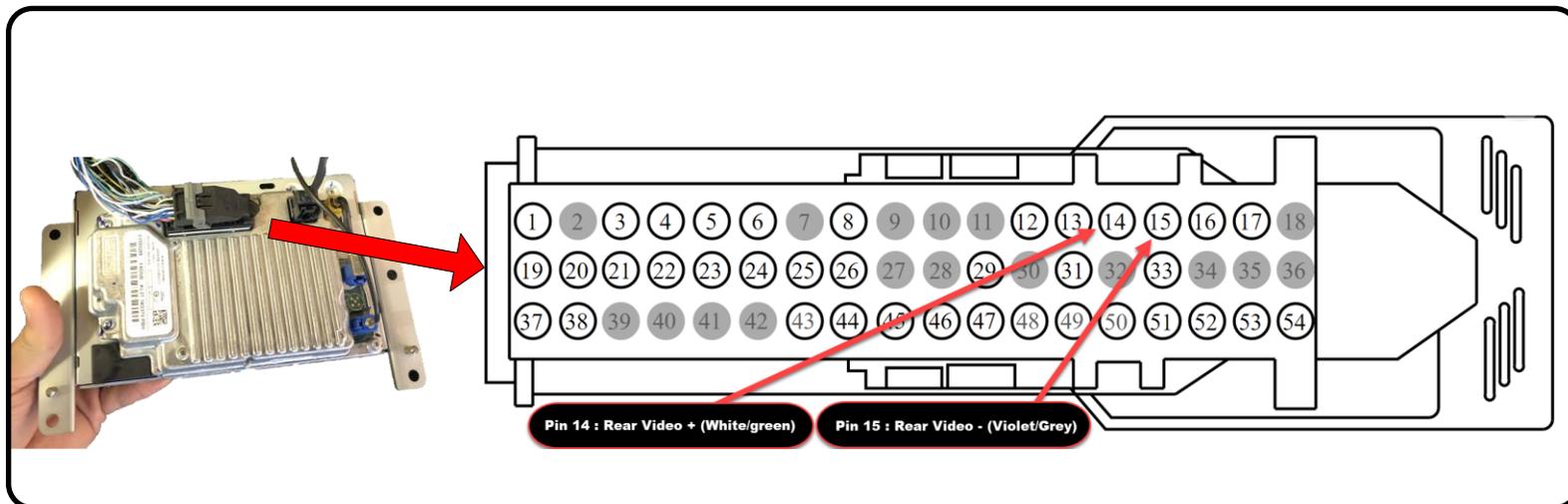
Backup camera:

If the vehicle came equipped with a backup camera option, the original camera analog signal can be redirected to an external monitor, such as a rear-view mirror monitor.

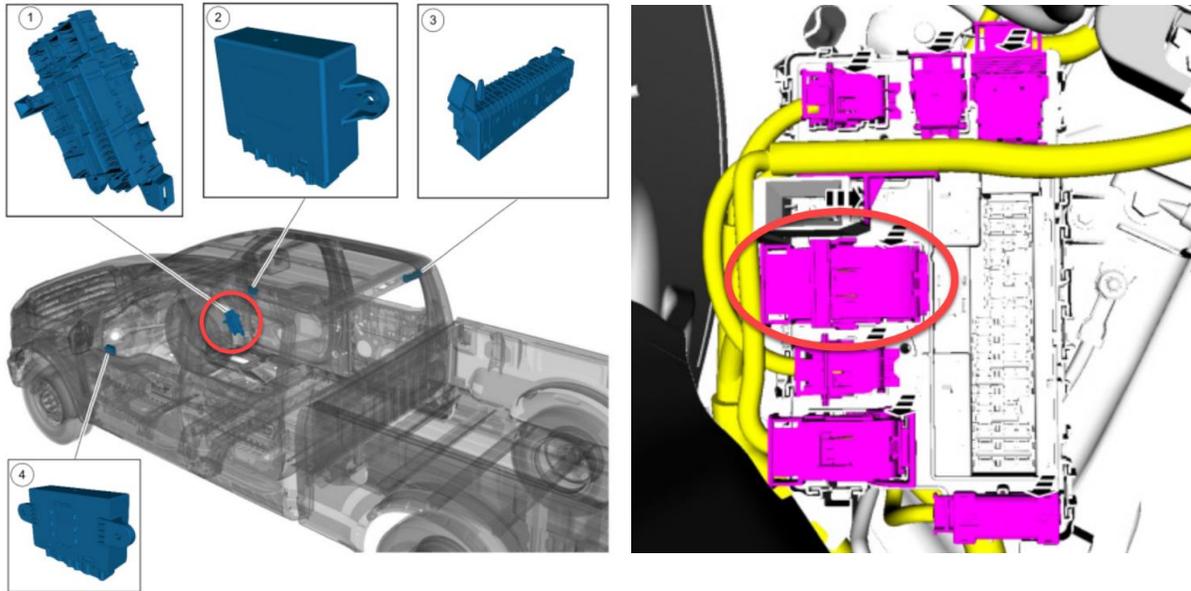
Ford F-150 analog camera signal can be found in the OEM infotainment module connector

PIN# 14 (White/Green) = analog OEM camera signal

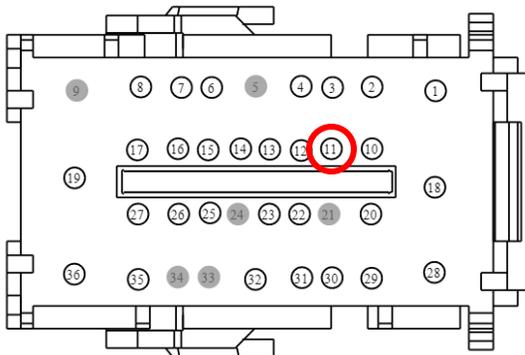
PIN# 32 (Violet/Grey) = GND



Reverse signal = Connector C2280C of body control module right side, accessible by removing the glovebox compartment.



Reverse signal is on Pin #11 (green/brown)



14. QUALITY ASSURANCE

Display movement test:

Rotate the display from left to right.

- The display must move freely against the Kommander™ shell.
- The pivot must provide enough friction to keep the display in position during road operation. Make sure the display can be pivoted left or right without requiring excessive force. To add more pressure, a ½” washer can be added between the nylon washer and the spring.
- The cable does move freely and does not interfere with the display movement

Corrective actions:

Remove the display by unlocking it from the support.

- a. Interference with the Kommander™ shell:
 - i. Loosen the 4 screws of the Universal Support and fine-tune the position up or down. Tighten the back the screws.
 - ii. Small left or right adjustment can be done with loosening the shell screws. Tighten back all the screws when done.

- b. Friction adjustment (ref **FIG A**):
 - i. Tighten or loosen the pivot bolts to increase or decrease the load force of the spring on the friction washer.
 - ii. Add a steel washer between the spring and the friction washer to increase contact pressure.



FIG A: Friction bolt: tighten to add more friction.

Touchscreen display functional test:

Turn the computer ON

- Check for display to turn ON.
- Check for the correct display resolution.
- Test the touch display operation.
- Test the display power center button:
 - a. 1x quick press:
 - i. Display feedback: 1x bib, status LED BLUE, screen is black (display ON with backlighting OFF).
 - b. 1x quick press:
 - i. Display feedback: 1x bib, status LED GREEN, screen is ON.
- Test the display integrated audio speakers.

Corrective actions:

- a. Display won't turn ON:
 - 1- Test for adequate power supply to the display converter.
 - 2- Verify all connections to and from the display converter.
 - 3- Verify both ends of the display cable are properly inserted and locking screw is set in.
 - 4- Revise Window's Display Settings. Make sure Windows can identify the display.
 - 5- Install the correct display drivers on the computer.
- b. touchscreen is not calibrated
 - 1- Run the display calibration tool.
- c. No Audio
 - 1- Make sure volume is UP.
 - 2- Change "selected playback device" (click on the speaker icon in the tool bar).

Stereo headunit test:

- Turn the key to Accessory position. Head unit turns ON. (Press power button.)
- Set the time and date.
- Turn the Key OFF. The headunit should turn OFF.
- Turn the Key back to Accessory position, the time display should be correct.
- Test the AM and FM tuner by selecting known local radio stations.
- Pair a smartphone Bluetooth and test the hand-free system, assuring the microphone and speaker system are functioning correctly.

Corrective actions:

- a. The stereo headunit does not turn ON with key on Acc or ON.
 - 1- Test for adequate ACC power supply on the head unit RED wire.
 - 2- Press the head unit ON button.
 - 3- Test for proper ground connection.
- b. Time is reset when the key is turned OFF.
 - 1- Test for adequate CONSTANT power supply on the head-unit YELLOW wire.
- c. Weak reception on AM or FM radio station.
 - a. Check proper antenna connection.
 - b. Amplified antenna: Test for adequate ACC power supply on the antenna adaptor BLUE wire.

Test vehicle Climate Control System and all other remaining OEM electrical devices. Ensure all controls are functioning properly.

15. TECHNICAL SUPPORT

Tech Support Team

Days/Hours of operation: Monday to Friday 8 a.m.—5 p.m. (EST)

Toll-free number: 1-855-884-6688

Escalation process: Email is used for escalations outside of hours of operation.

Email: support@cyberkar.com