

# OEM Navigation Conversion Guide

This document is a compilation of the guides listed throughout GXOR in one spot for easy reference for converting your OEM navigation equipped GX470 to non-navigation temp controls so you can upgrade the head unit. The steps within this guide are intended to assist you with the conversion, and have helped many users convert to a 100% working solution. The creators of this guide are not responsible for any damage you may cause to your vehicle if performed incorrectly.

## I. Decide your route

Here's how to read/use the chart to help with your options:

Step 1: Choose your current system:

1. Non-Nav
2. Non-Nav w/ ML
3. Nav w/ ML

Step 2: Choose your head unit replacement option:

1. Standard Double-DIN
2. 9" Android Full Screen (Landscape Display)
3. 10.4" Android Vertical Tesla-type Display

Step 3: Follow the column down to see what to expect.

There are a few things people need to be aware of when upgrading their stereo:

1. Add-on options like GROM, USA Spec and VAIS are great options, but this chart focuses on whole unit replacement options only.
2. It doesn't matter if you have a DVD player in the center console or a CD changer in the glovebox... neither will work after you replace the factory stereo so you'll want to take them out at some point in the future... or not. Same goes for the rear screen on the ceiling.
3. Steering wheel control can work if your head unit allows and you may need a Toyota/Lexus wiring adaptor.
4. Most standard double-DIN adapters do not match the color of the factory AC controls.
5. This does not include tablet replacement options. While they may share some of the same steps, tablets are a different beast.

1 Non-Nav WITH OUT ML Amp & Speakers			
Head Unit Options:	Standard Double-DIN	9" Android Full Screen (Landscape Display)	10.4" Android Vertical Tesla-type Display
Installation Kit:	You'll need a Double-DIN Installation kit	None. New unit replaces head unit, AC controller stays intact	None. New unit replaces nav unit and AC controller
Wiring Harness:	You'll need a Toyota/Lexus wiring harness		You'll need a Toyota/Lexus wiring harness and you'll need to extend the wires for the AC controller
Backup Camera:	3rd party add-on Option		
Other Notes:	None	AC controls may have issues and not work 100%	
Installation Notes:	Install the head unit and enjoy!	Install the head unit and enjoy!	Install the head unit and expect 80% functionality

2 Non-Nav WITH ML Amp & Speakers			
Head Unit Options:	Standard Double-DIN	9" Android Full Screen (Landscape Display)	10.4" Android Vertical Tesla-type Display
Installation Kit:	You'll need a Double-DIN Installation kit	None. New unit replaces head unit, AC controller stays intact	None. New unit replaces nav unit and AC controller
Wiring Harness:	You'll need a Toyota/Lexus wiring harness with CAN-BUS		You'll need a Toyota/Lexus wiring harness with CAN-BUS and you'll need to extend some wires for the AC controller
Backup Camera:	3rd party add-on Option		
Other Notes:	None	AC controls may have issues and not work 100%	
Installation Notes:	Install the head unit and enjoy!	Install the head unit and enjoy!	Install the head unit and expect 80% functionality

Note: Red text indicates what's different from the previous head unit descriptions

3 Navigation with ML Amp & Speakers			
Head Unit Options:	Standard Double-DIN	9" Android Full Screen (Landscape Display)	10.4" Android Vertical Tesla-type Display
Installation Kit:	You'll need a Double-DIN Installation kit, an AC controller from a like-year non-nav GX470, non-nav side brackets to mount the AC controller and head unit	None. However you will need an AC controller from a like-year non-nav GX470, finishing panels, and non-nav side brackets to mount the AC controller and head unit	None. New unit replaces nav unit and AC controller
Wiring Harness:	You'll need a Toyota/Lexus wiring harness with CAN-BUS and you'll need to extend some wires for the AC controller		
Backup Camera:	3rd party add-on Option or you can use factory camera with an adaptor		
Other Notes:	None. However you will want to make sure the AC Controller works after extending the wires		AC Controls may have issues and not work 100%
Installation Notes:	Install the head unit and enjoy!	Install the head unit and enjoy!	Install the head unit and expect 80% functionality

Note: Red text indicates what's different from the previous head unit descriptions

## II. Acquiring the correct temp control unit

Due to limited space in the dash, your factory navigation equipped GX470 contains the amplifier air assembly air conditioner box in the front passenger footwell, it's a white box with 3 wires running into it, a photo of this box and its location can be seen in the photo below. There are several components which make up the whole control unit so the part numbers we have listed here are for the "Amplifier Assy, Air Conditioner" which is clearly identifiable by a Toyota part number sticker located on the left male connector on the rear of the unit. (See pictures below.)

With that, here are the part numbers specific to each production date:

Production Date: 11/2002-11/2004 88650-60770  
 - Also for '03+'04 Production Years 88650-60B50 -  
 Production Date: 11/2004-08/2005 88650-60771  
 Production Date: 08/2005-01/2006 88650-60772  
 Production Date: 01/2006-08/2009 88650-60773

\* For those of you with manufacture dates on the switch-over months, you'll have to try either model. Unfortunately, Toyota doesn't track manufacture dates down to the day... only to the month.

Keep in mind, you'll still need the front panel/facia and left and right metal support brackets (for non-nav, obviously) to put it all together. **Identifying and finding the correct temp control unit for your rig has been the trickiest part of the planning process, and requires patience.**



Factory Nav Amplifier Assembly Air Conditioner in its stock location near the passenger footwell. Once you obtain the correct Non Nav part # for your GX above, be sure to test the module before you begin, by unplugging the 3 plugs below and plug them into your newly acquired unit to cycle its functions. Photo below for reference:





Testing newly acquired temp control unit at passenger kick panel plugs.



Temp control unit attached to the mounting brackets



If using 9" android screen, be sure to use a rotary tool to carefully file off the tab on top of the temp control unit for a snug fit.

### III. Detailed parts guide

The following inserted PDF was created as a detailed guide for acquiring the parts required in the conversion.

# Lexus GX470 Nav-to-Non-Nav Conversion Planning: Parts is Parts

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Created: 2018.09.04

I put this guide together to get you ready for your Lexus GX470 Navigation to Non-Navigation Conversion project. This document will only cover the parts needed for the conversion and assumes that you have already found the Temperature Control unit. The actual installation process will be covered in another documentation series.

The main part of your conversion is the temperature control unit. There are several ways to acquire them. Either by ordering one from the dealer (\$\$\$), GXOR (\$\$), or a salvage yard (\$\$), this should be your first step in this project. Note: 08/2006 was a transition year so make sure you get the right year for your GX.

Once you have obtained a matching temperature control unit for your vehicle's production date, you will need the surrounding pieces.

The seven (7) parts you'll need for the conversion are:

## Internal Mounting Parts:

- 1. Internal Bracket – Right** (see figure 1)  
(Part # 86211-60170) for Production Date: 08/2003-08/2006  
- or -  
(Part # 86211-60180) for Production Date: 08/2006-
- 2. Internal Bracket – Left** (see figure 1)  
(Part # 86212-60170) for Production Date: 08/2003-08/2006  
- or -  
(Part # 86212-60180) for Production Date: 08/2006-
- 3. Bezel Clips** (see figure 2)  
(Part # 90467-10203) Qty. 2



figure 1

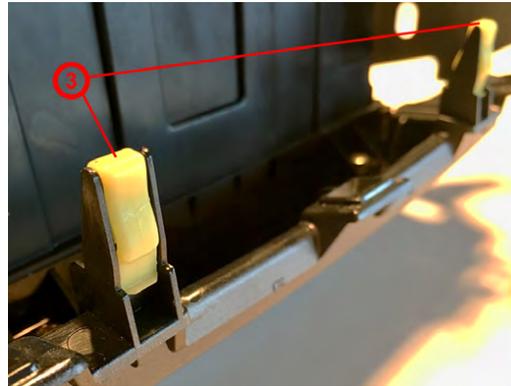


figure 2

External Part:

**4. Bezel for Temp Control and/or Radio**

Depending on what head unit you'll be using, you have two installation choices: single-piece or two-piece bezel

a. Single-Piece Bezel

(Part # varies) Internet search for "Double DIN Installation Kit" to see options

b. Two-Piece Bezel

Standard on all non-nav models, you'll only need the bottom half

(Bottom panel is not sold separately) Contact salvage yard for used parts (not year specific)



figure 3

## 5. Stereo / Head Unit

### Double DIN head unit

There are hundreds of options out there. Be sure to pick a head unit that suites your needs and is compatible with the phone and/or navigation options you prefer.



figure 4

### 9" full-screen Android head unit

These require no bezel and fill the whole radio area. If ordering an Android head unit, be sure to order one with the CAN bus connection (see section 6 for details)



figure 5

### Wiring Harness:

#### 6. CAN bus Wiring Harness

You'll need a wiring harness to match your new head unit's wires to your Lexus' wires. (Since you're replacing the OEM navigation, you most likely will be using the Mark Levinson amplifiers and speakers.)

There are several options out there so be sure to do your homework and get the correct harness. Look for wiring harnesses which work with your Lexus' "CAN bus" connection... this will elevate most of your wiring troubles.

Note: Depending on the harness, your steering wheel controls should also work with the CAN bus connection.

#### 7. Rear Camera Wiring Harness

Again, there are several options out there so be sure to find a harness which fits your head unit's camera input options. PAC makes a model (Part # CAM-TY11) that does the trick.

Alternatively, you could just replace the camera with a newer, higher resolution model, but that would typically require running new wires and modifying the camera mount.

### Head Unit Options:

Here are a few other accessories and add-ons which will add additional functionality to your new head unit:

- Apple CarPlay USB dongle (for Android head units)
- Birds-Eye-View 360-degree 4-camera system (for head units with video inputs)
- OBD II Integration Adaptor to monitor engine performance, tire pressure, etc... (typically for head units with Bluetooth or other diagnostics features; may require additional software)

## IV. Wire extension

Supplies:

- Approximately 25ft-30ft of 20-22AWG stranded copper wire from online, Home Depot, etc.
- Your choice of wire connectors for your preferred connection method (soldering, various crimps, solder seal heat shrink, etc)

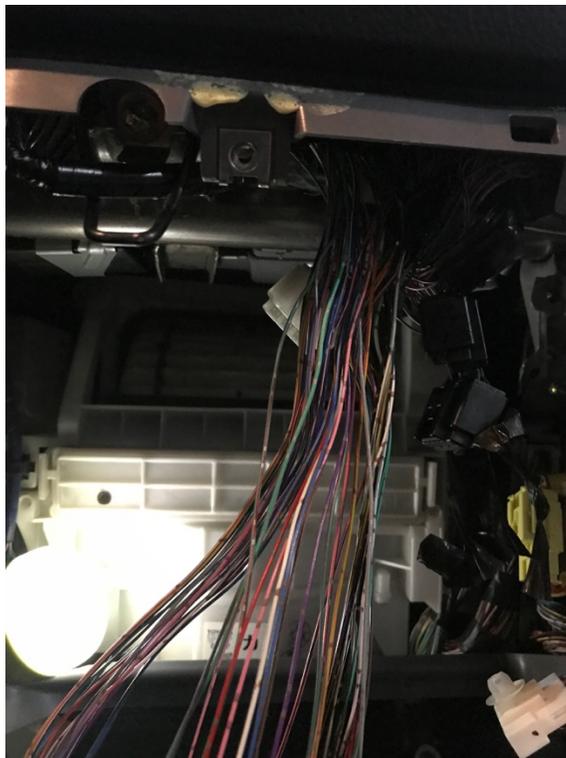
Now that you have tested your non-navigation temperature control unit and confirmed it is working, it is time to get started. Begin by going back to the three plugs in the passenger kick panel, those plugs will need be plugged into your new temp unit at the center of the dash. There is enough slack for those three white plugs to reach, except for seven wires which do not have enough length, here you will need to add in your own wire to allow enough length for the harnesses to reach the center of the dash. Start by carefully unwrapping the tape securing them tightly together. You will begin to notice as you unravel the tape, there are seven wires that simply do not have enough length to them as you unravel the rest. It is easy to get overwhelmed as you look at the large bundle of wires, take your time and do not panic-the wires are individually color coded so you will not have trouble connecting them later.



The 7 wires that were cut to splice in additional length.



Continue unraveling the rest of the wires after you clip the 7 short ones



The wires unraveled to the above the glove box, now they have enough length to reach the temp unit at center of the dash.

Now that you have successfully unraveled the wires and have enough length to them to reach the center console, it's time to splice in your supplied wire to the seven wires you clipped in the passenger footwell. Take your time here as you connect each color-coded wire with your own, make sure each connection you soldered or crimped is solid, properly shrink wrapped and secured-you don't have to chase down a poor connection years down the road if one of your connections came loose.



Completed relocation of the 3 harnesses from the passenger kick panel to the center dash where they will be connected into the temp control unit.

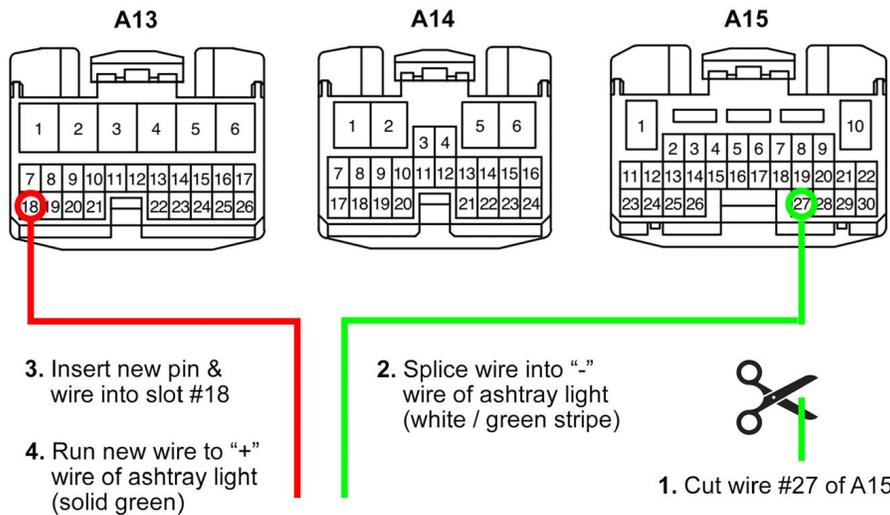
# V. Button illumination

The guide below details the wiring steps involved in getting the buttons of the temp control unit to illuminate with the rest of the interior lights.

## Temperature Control Unit Illumination Fix

Use this guide to allow the lights on your temperature control unit to illuminate and dim with the rest of your dash lights.

**NOTE: This view is looking at the female connector side... NOT the wire side**



The OEM pin part number is 82998-12750

You'll need to release the pin lock on the harness to insert the new pin. Refer to Toyota guides for reference.

**Warning:** Once you insert the pin in the slot you will not be able to remove it without damaging it. Be careful inserting it into the slot.

### Repair Wire (Non-waterproof Type)

Type	Size ----> 0.64	
	Male	Female
	Sleeve : Medium (Blue)	Sleeve : Medium (Blue)
	<p>A = 0.64mm D = 1.6mm E = 0.5</p>	<p>A = 1.5mm D = 1.6mm E = 0.5</p>
P/N	82998-24230 82998-24240*	Part Number 82998-12750 82998-12760

\*If you plan on ditching your factory CD player in the glove box, OEM pin number 82998-12750 can be found in the CD player wire harness, there are 30 pins you can extract.

It should be mentioned for those who just want to get it done, and not fool with buying or extracting an OEM pin, some users have simply stripped the wire back an inch, and folded it a couple of times so it will fit nice and secure into the pin slot. Be sure to leave enough bare wire in the female end of the connector so it will make contact with the male end of the connector on the temp control unit when it is plugged in. It is not the ideal solution, but as long as the cables are securely bound together with the other wires and won't move, you should be good to go. Once you've got your button illumination finished, you can now button everything back up. You may notice your factory radio had two antenna wires coming out of the old head unit, and your new head unit likely only has a port for one. These two antennas (main and the diversity) can be combined into one by purchasing a cheap splitter to plug into the head unit, it will help some with the radio reception.

## VI. Back up camera

There are two methods you can use for a back-up camera, and many different aftermarket rear camera solutions available. Do your research to see which model and install method is best matched with your skillset and budget.

### **1. Use existing OEM camera:**

Since most factory navigation equipped GX 470s come with a back-up camera, you can choose to tap into the camera ECU, and run wires to your head unit. The biggest issue with tapping into the camera ECU is getting access to the actual ECU and the wires. It's buried even deeper than the air amplifier assembly in the same footwell, and will require removal and loosening of other ECUs and wire bundles to gain access to the wires.

Please see the inserted guide below for using the OEM back up camera.

How to tap into a 2004 GX470 stock camera feed for aftermarket headunit with RCA input.

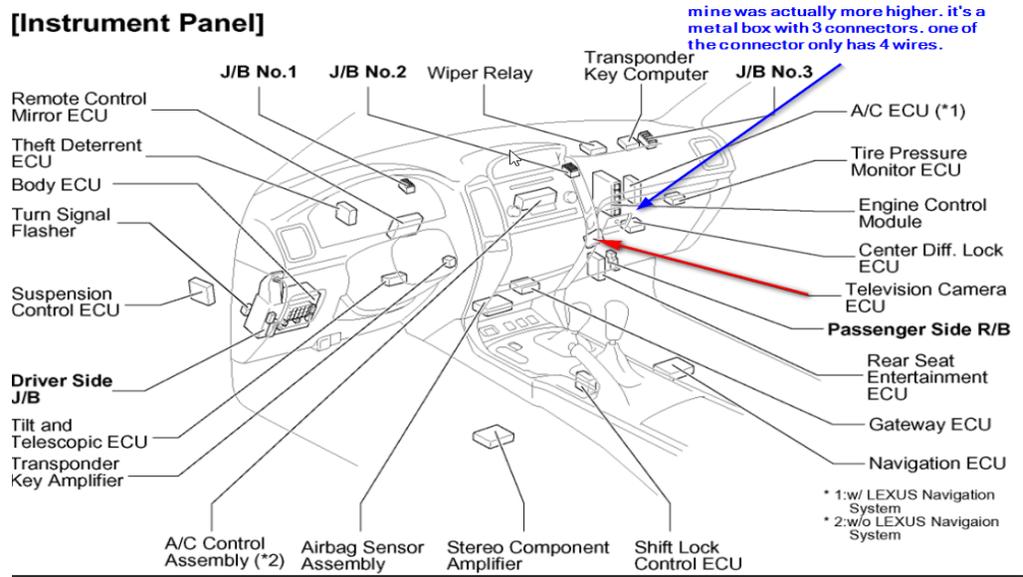
The camera is power by 6volt so if you do it this way by tapping into the ECU you don't have to mess with the power because the ECU will provide power to the camera. All you are doing is tapping into the video feed and tapping into the reverse trigger. Took me awhile to figure this out with the help from a post by RyanBlace over at clublexus.

High level steps:

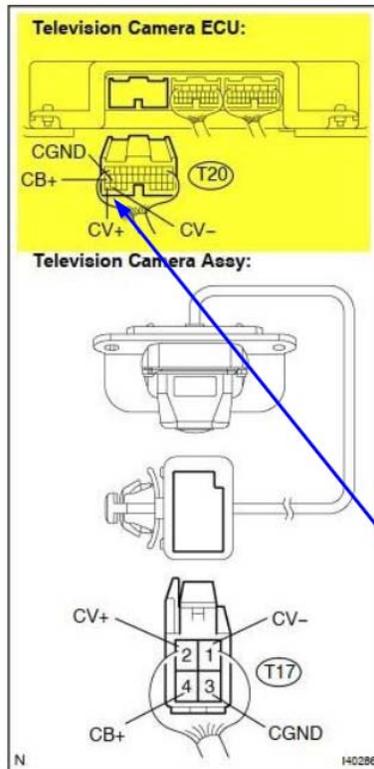
- Locate the T20 and T18 connectors on the camera ECU.
- Tap into the CV+ and CV- on the T20 connector for the video feed.
- Tap into pin 11 on the T18 connection for the reverse trigger.

1. Location of Camera ECU.

**[Instrument Panel]**



2. Tap into CV+ and CV-



- Disconnect the T20 connector from the television camera ECU.
- Disconnect the T17 connector from the television camera Assy.
- Measure the resistance according to the value(s) in the table below.

**Standard:**

Tester connection (Terminal No.)	Condition	Specified condition
CB+ (T20-22) - CB+ (T17-4)	Always	Below 1 Ω
CGND (T20-21) - CGND (T17-3)	Always	Below 1 Ω
CV+ (T20-30) - CV+ (T17-2)	Always	Below 1 Ω
CV- (T20-29) - CV- (T17-1)	Always	Below 1 Ω
CB+ (T20-22) - Body ground	Always	10 kΩ or higher
CV+ (T20-30) - Body ground	Always	10 kΩ or higher
CV- (T20-29) - Body ground	Always	10 kΩ or higher

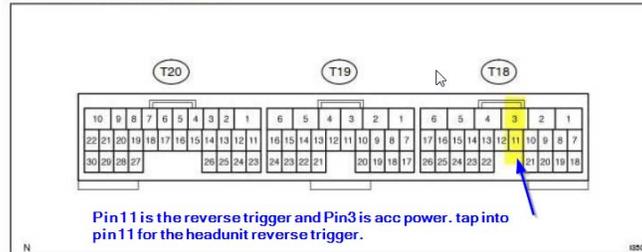
tap into CV+ and CV- for the RCA connector that feed the headunit. this is the video feed. The RCA middle pin is the CV+. This is the T20 connector with 4 wires, at least on my 04.

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**REPAIR OR REPLACE HARNESS OR CONNECTOR**

- If you want the camera to be always on so that you can manually switch to the reverse feed without having to shift to reverse then cut the pin 11 wire and splice pin 11 into pin 3 on the connector side so that it is always getting power. Pin3 is acc power. Connect the after market headunit reverse trigger to the wire side of pin 11. If you just want to turn on the camera when you shift into reverse then just splice the headunit reverse trigger to pin11.

**2. TELEVISION CAMERA ECU:**



Symbol (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified value
+B (T18-1) - GND (T18-6)	W-R - W-B	Battery supply	Always	10 to 14 V
IG (T18-2) - GND (T18-6)	B-R - W-B	IG signal input	IG switch ON	10 to 14 V
ACC (T18-3) - GND (T18-6)	GR - W-B	ACC signal input	IG switch ON or ACC	10 to 14 V
GND (T18-6) - Body ground	W-B - Body ground	Power ground	Always	Below 1 Ω
REV (T18-11) - GND (T18-6)	R-B - W-B	Reverse signal input	IG switch ON, shift lever R position	10 to 14 V
BCTY (T18-23) - Body ground	R-L - Body ground	Back door courtesy switch signal input	Back door is opened.	10 to 14 V
VG (T19-7) - GND (T18-6)	Shielded - W-B	Display signal output ground (Shielded)	Always	Below 1 Ω
R (T19-8) - GND (T18-6)	B - W-B	Display signal output (Red)	While displaying map or back monitor	Signal waveform 2

**2. Add aftermarket camera:**

Alternatively, you can choose an aftermarket camera of your choice, and run new wires from the head unit to your new camera. You can start by running a camera wire from the back door through the grommet to the center console before your head unit even arrives. Doing this ahead of time allows users to select whatever camera they want, and install it before the head unit goes in. You'll need to do this on the passenger side, because of the way the rear door opens. You can run the wire behind the glove box and under the plastic tray on the door seals, all the way to the cargo area. You will then need to run the wiring through the grommet and into the rear door. There is almost no room inside the grommet to run the cable, so this will take some time. Build a fish with some zip ties, to pull the line through, you can make this easier by very lightly lubing the wire with a small amount of soap and water.



Using a zip tie "fish" to pull wires through.

Next, the rear door paneling will need to be removed to gain access to finish running the camera wires. If you decide to mount the new camera in the factory camera location, you will first need to remove the old camera, and you may need to modify its mount to hold the new camera. To remove the factory camera, use a long screwdriver and gently push the four tabs out from the door holding the chrome trim above the license plate. It helps to have two people during this process to avoid breaking the fragile clips. After removing the trim, you will now have access to the two bolts holding the factory camera. Remove the camera, and if needed, use a small rotary tool to cut either plastic or metal and seal it across the housing to create a place for the camera to sit. Mount up your new camera and you are good to go.



Example of modified factory camera housing to mount new backup camera

Congratulations, you have completed the factory OEM navigation screen conversion to a non-navigation temp unit, and added the head unit of your choice. Now go enjoy the updated look and feel of your Lexus GX 470.



Before

After