

ALL JEEPS!

CLASSICS!
OLD-IRON JEEPS
SPECIAL SECTION



**5-INCH TJ
STRETCH
SUSPENSION**

**PORTABLE
CHAINSAW
THAT RIPS**

**TOTAL
SOUND
SYSTEM
UPGRADE
(ALSO RIPS!)**

TRAIL TESTED



ADEN
ETHRIDGE'S
JEEP TJ
TACKLED THE
2019 JP DIRT 'N
DRIVE TRAILS
WITH GENERAL'S
GRABBER X3 TIRES

**GLADIATOR VS
POWER WAGON**

WHICH PICKUP IS
BETTER FOR THE TRAIL?

NEW JEEP PRODUCTS

10 WAYS TO BUILD AN AWESOME JEEP

TEN: PUBLISHING

It was 2004 when the last Jeep WJ was produced, but hundreds of thousands of those Jeep Grand Cherokees are still running, providing everything from daily transportation to Rubicon-ready trail capability. While they remain serviceable, they lack some of the amenities of their current counterparts, especially in the area of what we now call infotainment.

How would you like to have virtually all of the current uConnect system's suite of features—streaming and satellite radio, fully integrated GPS navigation, Bluetooth phone connectivity, a rear-camera system, full engine monitoring through the car's OBD-II port, a tire pressure monitoring system, and so much more—in your Jeep WJ for about one

month's car payment? Thanks to a new generation of Android-based head units, it's within your reach.

Head units based on the same operating system software that powers your non-Apple smartphone are now available to fill that space just above the HVAC vents where your current head unit resides. Chances are good that the factory-installed 1.5-DIN "radio" (7x3-inch front panel) is long gone, replaced by some sort of aftermarket head unit. Numerous Android-powered head units have flooded the aftermarket. Most feature-packed units, those that provide uConnect levels of features with the latest Android 8 operating system, are now priced at \$500 or less.

There's only one problem: Most of these head units, especially at the lower end of the price spectrum, are double-DIN-sized units (7x4-inch front panels) that simply don't fit in

Jeep produced nearly 1.5 million Grand Cherokees between 1999 and 2004, and many units are long overdue for a sound/nav/info system upgrade

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DIY JEEP INFOTAINMENT UPGRADE



Once the system is tested, the head unit is reinstalled in the dash. Here's what the start screen looks like (above). Now comes the fun part—exploring all the cool features of the unit. For maximum functionality, you must remember to use your smartphone as a Wi-Fi hotspot. This will allow for the installation of all the apps through Google Play, giving these units a degree of flexibility that is not found on traditional name-brand, non-Android head units.



DIY JEEP INFOTAINMENT UPGRADE



Our system of choice was the Joying Android 8 head unit with Infinity amplifier, front and rear replacement speakers, and a powered subwoofer. The head unit features an Octa Core processor, 4 GB of RAM, 32 GB of onboard storage (for apps as well as content like music), and a SIM card slot for a dedicated data plan. It's also Android Auto and Apple CarPlay compatible and has a gigantic touchscreen. Best of all, its chassis is a traditional 1-DIN (7x2-inch), meaning that it will fit almost every Jeep dating back to the 1980s, including Wranglers, Cherokees, and even Grand Wagoneers—without any cutting in most instances.



Our starting point was the previously installed single-DIN Pioneer aftermarket head unit in this 1999 Jeep Grand Cherokee (WJ).

a 1999–2004 Grand Cherokee without costly custom installation. There are solutions that fit, the best providing a gigantic tablet-like 10-inch touchscreen (the standard iPad screen is 9.6 inches measured diagonally), which features a removable screen that can be hidden when your Jeep is parked. These units, which use your smartphone's Wi-Fi hotspot capability to access features like built-in navigation, are mostly available on Amazon or sold directly from companies you've likely never heard of.

Joying was the manufacturer we sourced for the full-featured unit going into our 1999 Jeep Grand Cherokee



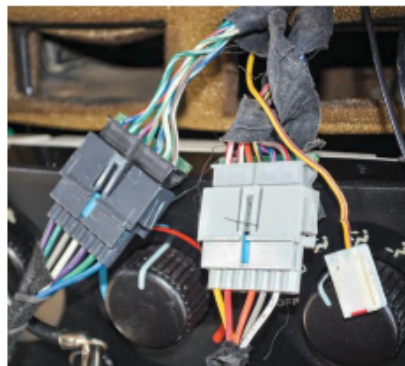
Using a plastic tool found on Amazon (or very carefully using a flat-blade screwdriver), we pried out the factory bezel. This revealed the four screws securing either the factory radio or, in our case, the plastic adapter panel holding the aftermarket radio in place.



Remove the four screws of the existing aftermarket mounting kit (or the screws that hold the factory radio in place) to pull out the radio. The open cavity will look like this.

Laredo. This \$450 unit's specifications read like a top-of-the-line Android smartphone—Octa Core processor, 4 GB of RAM, 32 GB of onboard storage (for apps as well as content like music), a SIM card slot for a dedicated data plan, Android Auto and Apple CarPlay compatibility, and that gigantic Tesla-like touchscreen. Best of all, its chassis is a traditional 1-DIN (7x2 inches), meaning that it will fit almost every Jeep dating back to the 1980s (without cutting in most instances), including Wranglers, Cherokees, and even Grand Wagoneers.

If your WJ suffers from a blown amp or speakers, you can upgrade the rest of



Remove the two multi-pin gray and black plugs from the factory harness (if an aftermarket radio has already been installed) or plugs from the back of the OEM radio. If a factory-installed CD changer is in place, remove the circular plug from the back of the radio as well as the radio antenna plug. If you have a non-amplified system or are not replacing the amplifier, an adapter—available on Amazon, electronics stores, or car audio stores—will allow access to all the speakers wires without having to rewire each speaker.



Using factory-style plugs, match up the wires on the Joying harness to the aftermarket connectors. These plugs can be found through Metra or Scosche. This will include the yellow wire supplying a constant 12V signal, the red wire supplying a switched 12V signal, and the orange illumination wire. If you need to trigger an external amplifier, run a blue wire from the harness.



After snapping out the panel below the instrument cluster, route the Bluetooth and USB cable antenna to the cavity underneath the instrument cluster. Because the Grand Cherokee's instrument panel is mostly plastic, the GPS antenna can be mounted in a more permanent location later during the installation, possibly in the right-side 12V socket.

DIY JEEP INFOTAINMENT UPGRADE



Because the configuration of our evaluation installation is in a state of flux, we ran the second USB socket down the righthand side of the center stack, giving the passenger his or her own USB input. It's shown here with a 16 GB flash drive. A more permanent placement could be in the passenger-side 12V socket.



If you want the best possible hands-free phone performance (having already removed the panel below the instrument cluster), snap off the A-panel trim and route the microphone cable to the forward edge of the headliner. Mount the microphone to the dome light above the mirror.

your system at the same time. With our suggested upgrade path you can make your WJ sound rival the sound produced by the 2019 Harman/Kardon premium system. The cost? Less than \$1,200, including professional installation.

The replacement of the previously installed (before we purchased our WJ) Pioneer single-DIN head unit was straightforward. We were even able to use the existing installation kit, the wire harness adapter, and the heavy 12-gauge power wire running directly from the battery to the replacement amplifier and powered subwoofer.

Things do get complicated upgrading the amplifier and speakers. In our installation, we bypassed the factory-installed Infinity Gold six-channel amplifier mounted under the rear passenger seat. That amplifier powered 6x9 woofer-midrange speakers mounted in each front door and separate tweeters at each corner of the top of the dash, each individually powered. Two more full-range speakers are mounted in each rear door, powered by the factory-installed Infinity amplifier. The new setup will replace the six-channel Infinity Gold amplifier with a traditional four-channel Infinity Kappa Four 4x100-watt amplifier (\$400). The front two channels of the replacement

Wiring Codes

The passive crossovers for the front component speaker set were pre-wired out of the car. We used color-coded wire from the amp and back into the car's wiring to each of the six speakers (see wiring guide for the wires going to all six factory speaker locations). Cut your speaker wires longer than you think is necessary. They will be trimmed after the system is installed and tested, cleaning up the installation. The 2002-2004 Grand Cherokees use a slightly different wiring setup, although the speaker wiring is the same. We found that the most accurate wiring information, mounting kits, and wire harness adapters required can be found at Metra Online (metraonline.com). If you want to interface your Jeep's steering wheel controls, a CAN bus adapter will be required, also available from Metra.



- Tan/Dark Green RR door -
- White/Violet RR door +
- White/Dark Green LR door -
- Dark Green/White LR door +
- Light Green/Dark Green LF door -
- Light Green/Red LF door +
- Light Blue/Black RF door -
- Light Blue/Red RF door +
- Yellow/Black LF Dash -
- Yellow/Red LF dash +
- Orange/Black RF dash -
- Orange/Red RF dash +



After removing the four screws, hold the HVAC control panel in place and pull out the snap-in ashtray and 12V outlets (this makes the cable-routing process much easier). Then, route three sets of RCA cables to the area below the glove compartment and under the carpet on the passenger side, along with the rear-camera cable and a wire (typically blue) to serve as a switched 12V output from the head unit to the area where the amplifier will be mounted to turn on the amplifier if your amplifier does not have signal-sensing capability.



To run the cables and wires to the back of the car, the snap-fit doorsills need to be removed along with the trim covering the B-pillar. Remove the trim panel behind the shoulder harness to reveal the hidden screw securing the panel and the Torx 50 bolt holding the shoulder belt in place at the bottom of the panel. This will make the process easier and faster.



The Infinity Gold amplifier from the factory is seen here, along with some heavy-gauge power wire and all the spliced connections. In the case of our upgraded amplifier, speaker, and subwoofer system, most of the required connections will be made at this central location, as wires for all six speaker locations (top of the instrument panel, front doors, and rear doors) can be accessed here.



With all the connections made to the new amplifier, things look messy. Once the connections are made to the powered BassLink subwoofer enclosure, the wiring will be cleaned up.

In the WJ, Jeep never offered a factory subwoofer



Continue with taking the rear-camera cable, the third set of RCA cables, and the power and ground wires to the passenger side of the cargo compartment. To make things easier to route the cables and wires, remove the screw at the hatch opening for the passenger side and unsnap the large trim panel.



The rear camera is mounted to the tailgate above the license plate. After removing the trim panel, the cables need to be run up to the top of the tailgate so they can be routed back into the car. The license plate light was detached to start threading the cable back to the top of the tailgate.



For a factory appearance, the cable from the camera is routed through the existing rubber tube running between the tailgate and the car. Using a straightened coat hanger, the cable coming back from the camera is pulled through the tube by taping the cable to the coat hanger and pulling it through the tube.



Different rear cameras will have different connections, but typically the connections can be made as done here, above the headliner after running the cable up the passenger-side D-pillar. To gain access to this area, snap off the trim panel that secures the headliner.



Remove the passenger-side taillamp assembly to gain access to the violet/black wire. This is what will trigger the screen to go to the rear-camera view when the car is put into Reverse.



After reinstalling all of the interior trim panels, make the connections to the BassLink subwoofer enclosure. This includes the RCA signal cable and power and ground. In our installation, the power and ground shares the same connection point—the power and ground terminals on the aftermarket Infinity amplifier. The BassLink amplifier turns on when it senses a signal. The orange wire to trigger the amplifier is not used here, but it could be if needed.



The BassLink enclosure is connected but not mounted, as it will be hidden in an enclosure that will be built at a later date.

amplifier will power an Infinity Reference 9630CX two-way component set (\$250), featuring a 6x9 woofer-midrange for each door, a 1-inch tweeter for the top of each side of the instrument panel, and frequencies divided by the included passive crossover instead of each speaker being individually amplified.

The remaining two amplifier channels will power a set of Infinity Reference 6532EX integrated two-way speakers (\$100) for each rear door. Standard RCA audio cables were run between the Jonying head unit and the underseat amplifier and the powered subwoofer in the cargo compartment.

In the WJ, Jeep never offered a factory subwoofer. Our replacement system addresses that shortcoming with a simple solution. The Jonying head unit offers a dedicated line-level subwoofer output that's adjustable from a huge touchscreen. A set of line-level RCA cables runs from the back of the head unit, down the passenger side, and under the carpet to an Infinity BassLink M powered 8-inch subwoofer (\$250), whose compact enclosure has its own dedicated 100-watt amplifier. As Jeep provided no factory-installed subwoofer for the WJ generation, the BassLink M enclosure is mounted on the passenger side of the cargo compartment.

DIY JEEP INFOTAINMENT UPGRADE



This view shows how the wiring connecting the amplifier is cleaned up. Note how the wiring from the two passive crossovers to the existing harness are routed using the existing framework above the front of the amplifier. Because we plan on future changes to the system, butt connectors were used. For a more permanent installation, we would have soldered all connections, covering them with heat-shrink tubing.

Using the factory-installed speakers, after reconnecting the negative terminal at the battery, the system could be powered up. If all your connections are correct, all six of the factory speakers (front mid-woofers in each door, the tweeters in the top of the dash, and the full-range speakers mounted in the rear doors) will play. Ours did, confirming that all connections were correct.

It provides a level of bass performance that simply wasn't available from the factory-installed Infinity Gold system.

Finally, unlike many Android-based head units, the Joying head unit boots up immediately, probably faster than your smartphone. Since all Android head units use your smartphone as a Wi-Fi hotspot, remember to activate this feature before entering your Jeep. For those of you wanting cutting-edge infotainment technology in your now-vintage WJ, the Joying head unit, mated with our Infinity amplifier, replacement speakers, and the powered subwoofer upgrade, will bring your 1999 to 2004 Jeep Grand Cherokee fully into the 21st century.

The shortcoming of many of these Android-based systems is the lack of printed installation and user manuals. If you run into issues, go online. Most manufacturers have help forums and YouTube videos that can answer many questions. But a lot of the fun in having an Android-based system comes from the endless customization options, with thousands of apps available. Follow along with our step-by-step installation tutorial and your 1999-2004 Grand Cherokee will surely rock, providing you with just about every amenity you'll find in a current 2019 WK2. 🎶

Sources

Golden State Autosound, 951/616-7028, gsautosound.com

Infinity, 800/553-3332, infinityspeakers.com

Joying, joyingauto.com

Metra (mounting kits, connectors, harnesses), 800/253-8324, metraonline.com



The biggest improvement in the system's sound quality will come from the replacement of the front speaker set. We mounted the tweeters to panels made from foam core, using hardware supplied with the speakers in the original factory locations.



After removing the front door trim panels (watch for that No. 3 hex screw behind the door handle), place the factory speakers with the 6x9 mid-woofers from the Infinity component set. In the case of our system, how low the door-mounted subwoofer will go will be controlled by the settings on the amplifier. Bass levels can also be controlled by settings in the Joying's settings menu. (Not shown: the installation of the replacement rear door that follows basically the same procedure.)



The Joying's screen is removable and has adjustable tabs on the reverse side of its 10.2-inch screen that can be adjusted up or down. In the case of the Grand Cherokee, the tabs were adjusted to the lowest position. This ingenious solution positions the screen to not obstruct the airflow of the registers below the head unit.



While it's easy to use Google Maps (or the included Sygic app) as your default navigation system, we also like the Waze app. Like many apps, it uses your smartphone as a Wi-Fi hotspot, so make sure you have a robust data plan.



The unit's surround-sound capabilities were excellent and very flexible, allowing adjustment of the size and height of the sound image. But use these adjustments in moderation for the most realistic sound. Otherwise, the results can sound like a reverb effect from the 1960s. With the way we set up the system, the bass could be adjusted from the touchscreen once we found the right sub-menu.



From the passenger seat, you can see how well the Joying Android 8 head unit integrated into the dashboard of our 1999 Jeep Grand Cherokee.