# WA Technology

### E-Ray PDI, Bedding Brakes + Other Info

**Too Many Pics So Made This PDF** 

This PDF has more PDI pictures than logical to post on a Forum. In addition, had planned to have the GM Option of a Scrape Armor Rad/AC Condenser protective mesh installed. BUT last minute it was not available. Will cover the issues with



removing the bumper if the dealer had installed. After looking at the car, aftermarket options available with and without bumper removal I made, and outline a decision of not using!

NOTE: This covers what I did BUT is not what I expect others might consider or do. But if some of the info is useful, great!



As with the ~60 other How To/Info PDF's this format is a Picture on one side of a typical Storyboard type layout uses as if making a professional quality video. A graphic on one side, text on the other. Only need to look at what is important to you. Can quickly scan the pics and read text were desired. Links to the other PDFs are at the end.

### **Photo Sequence**





No different than C8 underneath!

However, the cover for my 2020 C8 center "tunnel" was just a structural member in addition to being an aero panel.

Now that panel is where the batteries are attached with electronic control. In the BG manufacturing video, they show that "install station" putting the panel with batteries. Said "That station was planned from the start of C8 assembly line as we knew a C8 hybrid of some type was in the plan."

Leaked E-Ray details in a November 2019 article stated "most" C8's would be hybrids at some point. Yep the EPA 2012 plan said the "Corvette Family" (and other 2 seat Sports Cars) would be required to achieve ~39 mph in 2025! Much bigger story!



Asked the Corvette tech what the differences were between my 2020 C8 PDI and the E-Ray. He said he had to assemble and install what I call a "Mini Splitter" (*don't know GMs name*) and the aero panels behind it. But all else was about the same. He was sitting at his desk at one point filling out the GM PDI form. He does everything by the book!

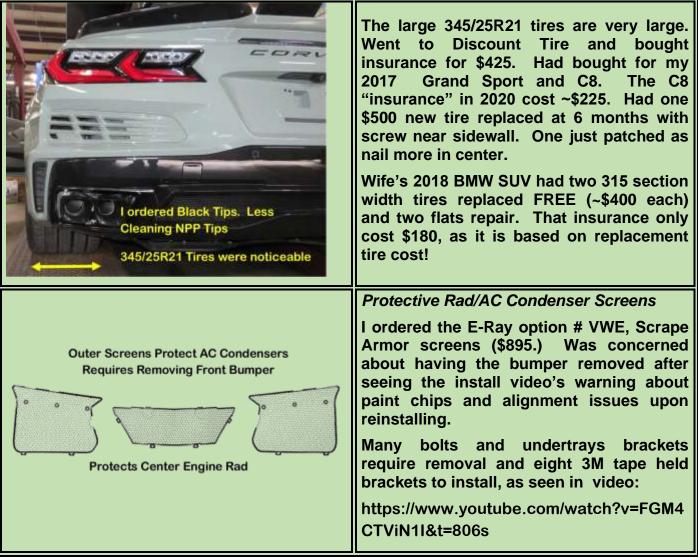


**Massive CCB Front Brakes stand out!** 

I have a somewhat unique situation needing excellent stops with ambient Temp brakes most times after I merge into ~70 mph traffic to turn to a narrow rural road. Tossed a set of cheap low dust pads on my 2017 Grand Sport BUT I (and others) found they were not good stopping with room temp pads. The Carbotech 1521's I replaced them with were great. Max allowed ~900 F not the 1500 F the other pads advertised. There is no free lunch on pads that are good at low and high temperatures. The rear CCB 15.4 inch rotors are not quite as big as the 15.7 inch fronts and don't "fill" the larger 21 inch wheels.

Seeing Carbotech 1521's being used on C7 Z06 CCB's called the Carbotech engineers. They said yep 1521's are compatible with CCB rotors AND stop the same as when on rotors! They iron have very linear modulation and stop great at room and temps to ~900F. But not for Tracking. They have sets to fit the Brembo brakes. After bedding and 700 miles don't believe they will be needed for good stops with room temp pads.





Paragon has similar screens to Scrape Armor. Their Install video has helpful hits if contemplating installing your own requiring bumper removals, watch both. C8 Corvette Z06 Radiator/Grill Guard Install - Bolt In - Paragon Performance (youtube.com)

Paragon also makes screens similar and with similar installation to Scrape Armor. They provide some important hits. Smart to watch both video's if planning to install screens requiring bumper removal.





For those planning a non-bumper removal installation of Radiator Grill Store plastic OR Custom Car Grill aluminum (*many of us installed on our early C8s*) there is a great video by RGS.

BUT it's not easy AND you'll see he bends their plastic mesh to get in.

CCG mesh aluminum mesh does not bend. They only have written instructions and recommend a pro install. I would wait for an install video before I bought the CCG E-Ray screens. Would also want to see how the wire ties look. I was able to have non show on my 2020 C8 install by removing the grill bar and vertical portion so they could be placed behind. That is not possible with the E-Ray. The wide plastic grill segments would made ties visible.

A good example of where the Paragon video is clearer is where they remove the wheels and wheel well and you can see the bolt that has to be removed, not visible in the Scrape Armor video



	Knew a few weeks prior to my build the GM VME Option would not be on my order! Started to look at alternatives. Thought, perhaps the CCG power coated aluminum mesh in the ¼" used for my 2020 C8 would work. Or their larger mesh like Scrape Armor. But their install text and the fact that RGS bends their plastic to install, and both use visible wire tires is not what I would like. My street rod grill bars are so narrow can't get anything between to clean bugs. Removing the grill is a major task. So, I use an external fine mesh grill guard that attaches with wire clips.
But the E-Ray grill has very wide openings. Yep some bugs will get in BUT I can suck them out with this attachment I bought that fits my Shop Vac! Pic right. Tried today, it fits and easily can cover the whole AC Condenser area. Before I try anything else will see how this works. Your car your choice!	23 inch Flexible Shop Vac Attachment
<image/>	This is a thought for Custom Car Grills (or whoever.) They could use their Neoprene edge cover and make their hard to install behind an easy install in front of the OEM Grill! Just use a "clip" similar to what holds the fine mesh screen in place on my Street Rod. They are quick, easy to install and remove wire clips that hook behind the grill bars with a simple 90 degree turn. Because Custom Car Grill Aluminum screens are so ridged, two clips might be all that are needed. But even four are not a problem because they could be made not much bigger ten their mesh! Would not be very noticeable. Just A Thought for a Manufacturer!



#### Hard to see the improvement in "shine" without sun. Here is a comparison inside the garage when I pulled in after driving ~50 miles from Dealer in moderate to heavy rain. Note still had GM window sticker! Hit some big puddles where water splashed higher than the fenders. Wheels and side skirts looked very dirty.

Having spent a day washing, claybar, rise, applying Zaino's new Pro Polish #2 and new bottle of their Clear Seal. *Sal, owner of Zaino* says sets the one layer of polish so no need to add accelerator. But can only use one layer of polish.



Wheels look great!



Wheels look great cleaned. Were a mess from the ~50 miles drive on back roads from the dealer in moderate to heavy rain.

Far fewer Water Sports than on my 2020 C8. BUT still, some in engine compartment. As it did for my 2020, Meguiar's Water Sport Remover worked great, far better than vinegar etc and no hash chemicals.

In 3 <sup>1</sup>/<sub>2</sub> years only had to use on my 2020 one more time prior to applying their Ultimate Black polish. Did not need on the E-Ray!







different colors. But it's the way light reflects form the texture differences, i.e. Napa Leather, faux Mulan "leather" and the faux Suede microfiber. More Suede than I thought. Looks great!

## **Bedding Brakes**

(GM refers to as burnishing in Track section of Owner's Manual)

This is a critical step as initially braking is poor for the first 50 to 100 miles. Improves by ~200 miles. Bedding is needed for best stopping. Even if just street use where I use a less aggressive bedding method, as I have in past Vettes.

GM shows this multi-step process in the Owner's Manual under Tracking:

Step 1: Apply the brakes 25 times starting at 60 mph to 30 mph while decelerating at 0.4 g. This is a medium brake application. Drive for at least 1.6 km (1.0 mi) between applications. They state: *This first step may be skipped if there are more than 200 miles on the brake pads.* 

Step 2: Apply brakes **20 times** starting at 60 mph to 15 mph while decelerating at 0.8 g. This is a hard brake application. **Drive for at least 1.0 mile between applications. MY NOTE: For Street, no Tracking, I have found 8 to 10 stops are sufficient as brakes will not get to the very high Track temps.** 

Step 3: Apply brakes 12 times starting at 60 mph to 5 mph while decelerating at 0.8 g. This is a hard brake application. *MY NOTE: This step of 12 more aggressive stops no doubt gets the CCB brakes very hot as if you were going to Track and want to reach max temps they will see. IMO not needed for Street Driving.* 

**Cool Down**: Drive at 60 mph for approximately 10 mi without using the brakes. MY NOTE: After finding a place to safely brake as recommend and driving ~1 mile between you must also be able to drive 5 to 10 miles WITHOUT USING THE BRAKES OR STOPPING.

#### Abstracted From Autozone: IS BEDDING BRAKES NECESSARY?

If you want your pads to perform great right out of the gate, and minimize potential issues, doing a procedure known as "bedding in" is extremely helpful.

The first thing to understand is what actually is happening. A <u>brake pad</u> pressing against bare rotor (beit iron or CCB) actually doesn't stop well. But, a brake pad pressing up against a very thin layer of brake pad material on the rotor surface stops great! Brake pad material through the high temperature, high friction "bedding" process deposits on the rotor. But, with pads and rotors, you have none of this pad transfer material on your rotors, and laying down a good foundation for future material is what the bedding-in procedure accomplishes.

#### **Other Sources:**

If pad material is deposited unevenly that can occur if you don't bed several things can occur. Less than optimum stopping is one. If some material is deposited on top of and this extra deposit, it creates an uneven surface on the rotor. The new pads and rotors may develop a pulsation felt with light slow speed brake application. (*MY NOTE: Uneven deposits also cause vibration and high pitched Squeal, like a stuck Pig, on low speeds modest pressure braking.*) Another source noted it's important to periodically apply the brakes aggressively to maintain that uniform pad layer. I do frequently, it's legal, safe and fun!

### My Street Driving, Never Tracking, Bedding Method.

This is what I used on my E-Ray and now get great stopping with pads at room temperature to the max temp they will see with my aggressive street driving:

First, as the GM procedure notes, can skip Step 1 IF you have >200 miles. So, with high spots probably worn-in I started Bedding with ~200 miles in a modified Step 2 + 3 with Cool Down.

Found a ~15 mile long two lane road with few intersecting roads so few cars entered. I applied the brakes aggressively from 60 mph to 5 to 10 mph with their suggested ~0.8 "g" not activating ABS. Drove for a minute (~1 mile) to let that layer of pad material bond with the rotor.

### REPEATED 10 TIMES.

Then continued to drive 5+ miles without applying the brakes to allow rotors to fully cool.

Brakes Work Great!

Install Radar Detector	Installed Radar Detector in 5 Minutes!
on Dash as I did on	



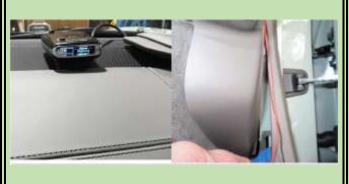
Reinstalled wires and Detector from my 2020 C8. Trim tool lifted small side trim behind door so wires could be hidden on way up to the Side "Wing" on the dash. Just pushed the wires under the Dash wing.

To mount the detector on the dash, sed 2 pieces of 3M Dual Lock back to back in the rear. On the front used 2 pieces of Dual Lock attached to a ¼ inch thick spacer block and two pieces of Dual Lock under the block. Perfectly level!



Decided to try dash mount when my 2020 C8 mirror was being replaced (took a month to get parts.)

I liked the dash mount location so made it the permanent mount using a 90 degree flush mount power plug. All wires hidden.



### **No Spilled Milk!**

As I added to my 2020 C8 after a Doogie box we were talking home from a restaurant spilled a sauce in the Trunk. I took a device made for my C7s and modified.

It fits unassembled flat in the rear net. But when needed, it slips together in 30 seconds to avoid Spilled Milk! Here it is installed in my 2020 but tested in the E-Ray and fits fine. Was easier to see in the 2020 C8 as the added partition seen in raw wood was painted Black.

Had bought a commercial narrow carrier but the funny truck shape did not allow to fit. These custom cut partitions fit perfect and just slip together.





### Dear Whistle Install

Understand this will be controversial but have used for years and there is a very compelling, statistically sound one year test run by a rural California County! Full details are my PDF, now updated. <u>netwelding.com/Deer\_Whistle.pdf</u>

Basically, a rural County in California, Modac had many dear collisions. They offered FREE dear whistles to anyone in the county. Only 1648 out of 8300 took advantage. In the year after, 29 folks without dear whistles hit dear. Those with hit NONE!

A straight math ratio shows 1648/6652 X 29 = 7.2 should have hit dear. But statically you must consider "chance" was the reason. There is a Statistical Test called the Chi Squared Test. Crunch the #'s and it says there is a 99.6% probability this result was NOT just random occurrence! Pretty compelling! A Canadian responsible for reducing dear collisions and a US State Tropper suggest *Dear Whistles may work because folks using them pay more attention in mating season, when they see dear crossing signs etc.* 

In my case, having lived 2 miles down a twisty narrow road mostly homes one side on a Lake (*like mine*) and woods the other see many dear crossings every night to eat out year plants! Some hit and killed (even though our CC street speed *limit is 25 mph.*) I have seen deer look right at me standing on the side of the road, ears tuned in my direction. Was it the dear whistle I have had on all Vettes and my wife's SUV? For \$10 who cares. I install and keep a carful watch





Few More Pics of E-Ray





Interior at Dealer before I installed my GM Jake Weather Mats for the heavy rain trip home.



## WA Technology

"60" E-Ray, C8 Z51, 2017 Grand Sport & 2014 Z51 Stingray Mods or Info Available As PDFs:



60 PDFs discuss improvements or info about a E-Ray, C8, 2017 Grand Sport, 2014 Z51 Stingray function and/or esthetics. Some are minor and others, like installing "Low Dust Brake Pads" on C8 & C7s, have detailed information.

Below are the PDF's available. Click on picture or Blue PDF link or copy and paste the PDF link (Blue type) into your browser. Or email me at <u>TechSupport@NetWelding.com</u> and state the title desired, shown in Yellow:

E-Ray PDI & Info Details of My E-Ray PDI http://netwelding.com/E-Ray_PDI.pdf	
E-Ray 1 <sup>st</sup> Mod Details of My E-Ray Cross Brace http://netwelding.com/E-Ray_Mod_1.pdf	
E-Ray Need Lift? Yep, How I Scraped My Front Aero Panel http://netwelding.com/E-Ray_Lift.pdf	I CE
E-Ray PPF Bottom Of Rocker Panels Small Amount of PPF Added To Rocker Panels http://netwelding.com/E-Ray_PPF.pdf	
C8 Bigger Brakes C8 Brakes Are Anemic Compared to Other MEs http://netwelding.com/C8_Big_Brakes.pdf	
<b>C8 PDR SD Card Selection</b> <i>Things to Consider When Buying SD Card</i> http://netwelding.com/PDR_SD_Card.pdf	128 - Tri Ser L <sup>a</sup>
E-Ray, C8, C7 eLSD vs Positraction eLSD is a Modern Dif; Positraction is from 1960s http://netwelding.com/eLSD _VS_Posi.pdf	a Wheel State and
Yep, How I Scraped My Front Aero Panel http://netwelding.com/E-Ray_Lift.pdf E-Ray PPF Bottom Of Rocker Panels Small Amount of PPF Added To Rocker Panels http://netwelding.com/E-Ray_PPF.pdf C8 Bigger Brakes C8 Brakes Are Anemic Compared to Other MEs http://netwelding.com/C8_Big_Brakes.pdf C8 PDR SD Card Selection Things to Consider When Buying SD Card http://netwelding.com/PDR_SD_Card.pdf E-Ray, C8, C7 eLSD vs Positraction eLSD is a Modern Dif; Positraction is from 1960s	

Copyright by WA Technology, LLC

E-Ray, C8 FWD Hybrid WFWD Hybrid Provides More Power & MPG http://netwelding.com/C8\_FWD\_Hybrid.pdf

C8 Edge Red Engine Cover Engine Cover Matches Valve Cover http://netwelding.com/Engine\_Cover.pdf

C8 Engine Compartment Lights Multicolor Lights Remote operated http://netwelding.com/Engine\_Lights.pdf

C8 Side Skirts & Splitter Install C7 Carbon side skirts & splitter on C8 http://netwelding.com/Side\_Skirts.pdf

C8 Z51, GS/C7 Z51 Ceramic Brake Pads Performance Vettes have dusty brakes. These help! http://netwelding.com/Ceramic\_Pads.pdf

> **C8 Low Restriction Air Intake** Low Restriction Air Filter Why & How To

http://netwelding.com/C8\_Air\_Intake.pdf

C8 & C7 Splitter & C8 Condenser Mesh Mesh Protects AC Condenser & Splitter Install http://netwelding.com/CF\_Splitter.pdf

**C8 NAV SD Card Removed Error** *Error When SD Card and Reader Are Fine* http://netwelding.com/NAV\_SD\_Card.pdf

C8/GS/C7 Splash Guards GM splash guards. ACS Best Front Guards for GS. http://netwelding.com/Splash\_Guard.pdf

Jacking a E-Ray/C8/GS/C7 Vette Safely jacking either front only or back & front http://netwelding.com/Jacking\_A\_C7.pdf

E-Ray, C8 & C7 Plates & Frame; Must Meet South Carolina Law http://netwelding.com/License\_Plate\_Frame.pdf

Change C8/GS/C7 Oil WHY change your own oil and C7 Lifting Methods http://netwelding.com/Changing\_Oil.pdf

E-Ray/C8/GS/C7 Mirror Proximity Alarm Limit switch alarm warns when close to door frame http://netwelding.com/Mirror\_Proximity\_Alarm.pdf

Jacking Pads for E-Ray/C8/GS/C7 Manual says Jacking Pads 2 1/2-inch max OD.. http://netwelding.com/Jacking\_pads.pdf

Copyright by WA Technology, LLC



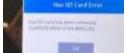
























E-Ray/C8/GS/C7 Radar Power For C7 tapped rear fuse panel. For GS tapped mirror http://netwelding.com/Radar\_Detector\_Power.pdf

E-Ray, C8 & C7 Wheel Chatter/Hop Why sharp, low speed turns with cold tires causes the front tires to chatter/hop. http://netwelding.com/Wheel\_Chatter.pdf

E-Ray/C8/GS/C7 Wheel Locks Wheel locks, help protect your expensive wheels. http://netwelding.com/Wheel\_Locks.pdf

Deer Whistle Installed on E-Ray/C8/GS/C7 Do they work? Plus Install Info http://netwelding.com/Deer\_Whistle.pdf

C8 & C7 Splitter Protector Scrape Armor Protection for Splitter http://netwelding.com/Splitter\_Protectors.pdf

E-Ray, C8 & C7 Cargo Area Rear cargo area storage device and rear protector http://netwelding.com/Rear\_Cargo\_Area.pdf

C8 Front Coilover Tower Covers Prevent water from filling Cast aluminum cavities http://netwelding.com/Tower\_Covers.pdf

C8.R Info & GS Rear Diffuser (Fits Any C7) Rear Carbon Flash Composite Diffuser http://netwelding.com/Rear\_Diffuser.pdf

#### GS/C7 Belt Rattle

Passenger seat belt rattles against the seat back. http://netwelding.com/Eliminate\_Rattle.pdf

Aluminum C8 & C7 Chassis and Repair The C7 aluminum chassis. Includes weld repair info. http://netwelding.com/Aluminum\_Chassis.pdf

Manage GS/C7 Spilled Gas & Door Lock Protect when filling gas. Preventing door lock failure. http://netwelding.com/Manage\_Spilled\_Gas.pdf

GS/C7 License Plate Light LED license plate light & cargo area bulbs http://netwelding.com/License\_Plate\_Light.pdf

E-Ray/GS/C7 Door Panel Protector Black plastic protector prevents scuffing of door http://netwelding.com/Door\_Panel\_Protector.pdf

**GS/C7 Improved Cup Holder** *A solution to the cup holder spilling* http://netwelding.com/Improved\_cup\_Holder.pdf







Copyright by WA Technology, LLC

**C7 Carbon Fiber Grille Bar** Install genuine carbon fiber grille bar overlay http://netwelding.com/CF\_Grille\_Bar.pdf

**GS/C7 Blind Spot Mirror** Smaller rear and side windows cause C7 blind spots. http://netwelding.com/Blind\_Spot.pdf

**GS/C7 Skid Pad Protector** After the air dam, the aluminum "skid pad" hits http://netwelding.com/Skid\_Pad\_Protector.pdf

GS/C7 OnStar Lights Rear view mirror OnStar LED's, at a quick glance, look like a police car flashing light! This is a fix. http://netwelding.com/OnStar\_Lights.pdf

GS/C7 Skip Shift Eliminator Skip Shift Eliminator install http://netwelding.com/Skip\_shift\_Eliminator.pdf

GS/C7 Catch Can & Clean Oil Separator What is Coking and how to reduce the potential http://netwelding.com/Catch\_Can.pdf

GS MGW Flat Stick Shifter The MGW shifter shortens throw and is more precise http://netwelding.com/MGW\_Shifter.pdf

GS/C7 Round Shift Knob A round shift knob shortens throw on OEM shifter http://netwelding.com/Shift\_Knob.pdf

> **GS/C7 Stingray Sill Plate** *Stingray sill plate replaces original.* http://netwelding.com/Sill\_Plate.pdf

GS/C7 Nylon Bra Nylon Bra Stops Bugs. Fits with Stage 3 Winglets http://netwelding.com/Nylon\_Bra.pdf

**GS/C7 Clutch Fluid Change** *Clutch fluid after 3000 miles gets dirty* http://netwelding.com/Clutch\_Fluid.pdf

C7 Carbon Fiber Hood Vent Replaces Plastic Hood Vent http://netwelding.com/Hood\_Vent.pdf

GS/C7 Cold Air Intake Low Restriction Air Filter & Duct http://netwelding.com/Cold\_Air\_Intake.pdf

GS/C7 Soler Modified Throttle Body For Improved Throttle Response http://netwelding.com/Soler\_Mod\_TB.pdf





























GS Splitter Stage 3 Winglet Stage 3 Winglets Integrate with Spats http://netwelding.com/Stage\_3\_Winglets.pdf

**C7** Removing GM Plastic Film How To Remove The Rocker Panel Film <u>http://netwelding.com/Rocker\_Panel\_Film.pdf</u>

GS 2LT to 2.5 LT Red Upper Dash Pad Like 3LT http://netwelding.com/Red\_Dash\_Pad.pdf

Jake Emblem/Decals for GS Jake Symbols Support GS Racing Image http://netwelding.com/Jake\_Emblems.pdf

Rusty GS/C7 Muffler Why the C7 muffler rusts way to turn matte black. http://netwelding.com/Muffler\_Rust.pdf

GS Engine Compartment Mods Cosmetic Additions in Engine Compartment http://netwelding.com/Engine\_Compartment.pdf

GS Vitesse Throttle Controller: Fits All C7s Adjustable Throttle-by-Wire Control http://netwelding.com/Throttle\_Control.pdf

Boomy Bass Solution Use Presets to Adjust Bass etc. Tone/Balance http://netwelding.com/Boomy\_Bass

**GS/C7 Air Dam, Functions** Why Missing from Z51, Some GS & Z06 http://netwelding.com/Air\_Dam.pdf

Rusty GS/C7 Muffler Why the C7 muffler rusts way to turn matte black. http://netwelding.com/Muffler\_Rust.pdf

Engineering a ProStreet Rod How Our '34 ProStreet Rod Was Designed and Built http://netwelding.com/Engineering%20Street%20R od%203-08.pdf

Motorsports Welding Article Wrote Article on NHRA and NASCAR Chassis Design http://netwelding.com/Motorsports\_Welding\_2018.pdf

























Copyright by WA Technology, LLC