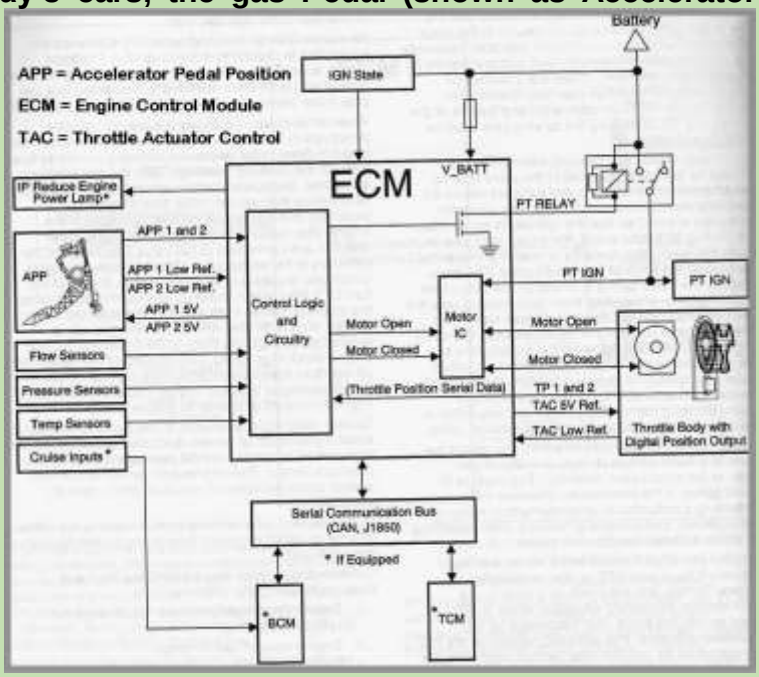
WA Technology

C7 Vitesse Throttle Control Install on Grand Sport

(*See page 11 for Update. I removed it and added a Soler Modified Throttle Body*)

Remember when all there was between the gas pedal and the air/fuel induction system was a simple cable or rod? Be it a carburetor or air control throttle body it was just a mechanical link. *No more!* Today, like most other things in your car the link is controlled by a computer and software! Electrical connections and software operate the *throttle-by-wire* between the gas Pedal and the C7 Throttle body.

In the C7, as with most of today's cars, the gas Pedal (shown as Accelerator Pedal Position (APP) control right, is not attached to anything mechanically. Schematic right is from the C7 Service Manual.



There are only wires going to the Engine Control Module (ECM.) With Pedal sensor input and those from other sensors the ECM sends signals to the Throttle Motor controller that uses pulse width modulated power to open and close the Throttle body butterfly valve.

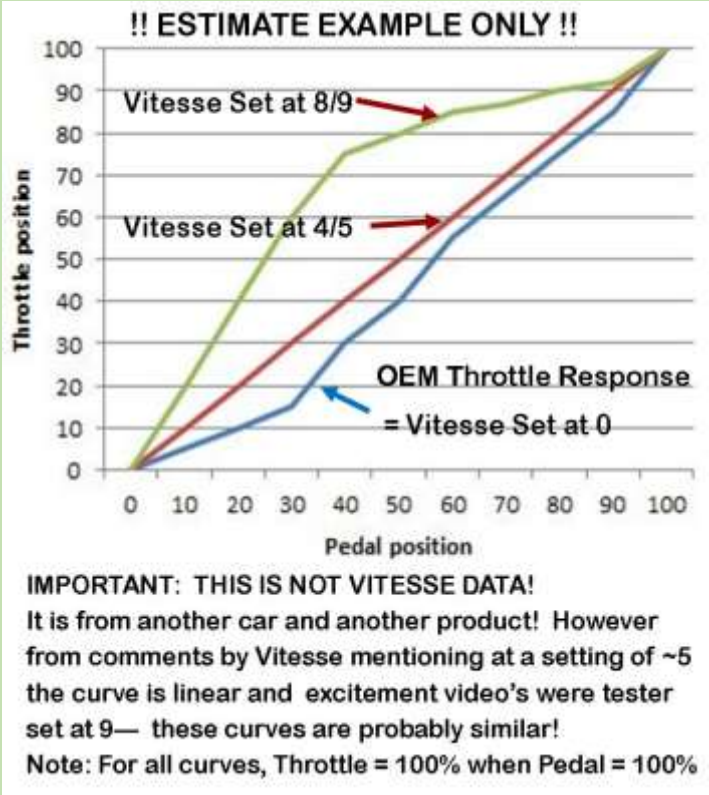
The ECM does not just take a linear signal and send the same linear signal to the Throttle Motor Control, it processes the signal! GM (and most manufacturers) decided it would be best to not allow the butterfly valve to open to quickly but rather initially open the throttle less. It makes the car more controllable in bumper to bumper traffic, for example. The C7 Grand Sport has four OEM software programs that control that opening rate. Weather driving mode, very slow; Touring slow; Sport faster opening; the most aggressive, fast opening in Track. But some have found these are not as fast as they find optimum. In addition, if you are driving in Tour mode there is no choice but the slower opening software GM selected for you to use. The aftermarket offers devices that allow more control!

VITESSE Throttle Controller

There are electronic devices that can capture the Pedal signal and alter it before it goes into the Engine Control Module. The Vitesse controller allows these settings to be adjusted from 0 (no change from the factory settings) to 9 (a much faster opening.)

Pic right is what was received. A Controller, a Remote Control, and two Plugs that connect between the existing Pedal to Throttle connections.

Note, I disconnected the plug (*I labeled P in the pic right)* **that goes from the plug harness to the Controller. This allows that plug and cable to be put through the existing small hole in the carpet along with the OEM wires.**



IMPORTANT: THIS IS NOT VITESSE DATA!
It is from another car and another product! However from comments by Vitesse mentioning at a setting of ~5 the curve is linear and excitement video's were tester set at 9— these curves are probably similar!
Note: For all curves, Throttle = 100% when Pedal = 100%

Note: Vitesse *DOES NOT* provide graphs that show just how the Throttle body responds to Pedal input for the various settings. By using descriptive words from the Vitesse website, my driving tests and from YouTube posted video's the following estimates are shown on the graph left. *Note, the data is actually from another car and another device.*

The OEM Pedal to Throttle response is NOT linear; there is a large initial delay. A ~25% Pedal movement only opens the Throttle ~15%. Vitesse indicates a setting of 0 is equal to OEM.

Vitesse states a setting around 5 is more linear, which this graph presents. Therefore 25% Pedal movement equals 25% Throttle movement.

My observation and the excitement expressed in posted videos from folks when they set it at 9 reflect what this graph shows. At a Pedal opening of ~35% the throttle is opened ~75%.

Note, all curves end with 100% Pedal activation (floored) the Throttle is open 100%. *The Vitesse and similar devices just make it "feel" like it's providing more power, IT'S NOT.*

Where to mount the Vitesse Adjustment Controller was a question I and many forum posters raised. One poster showed this spot (pic left) that is easy to implement and works great. Will provide details in in a later pic why it is a good location and IMO better that in the console some installers have used. The console requires lifting the cover to adjust the setting and trying to see the display- *distracting.* With the new Vitesse "clicking Knob adjustment" it's not necessary to see the display to adjust!

It's also a very easy place to install the system in less than an hour, no removing the console cover etc.

The easiest way to connect the new cable and plugs to the existing connectors is to remove the gas Pedal. Some have done it without removing the Pedal and if you have long arms and understand how the connectors in a C7 come apart, perhaps, but it's so easy to remove the Pedal, why not!

Access is awkward! **Best to sit or kneel on the ground next to the Vette and reach through a fully open door. I used towels to pad my knees as well as a foam cushion over the door sill to make it more comfortable when I reached.**

First remove the rubber plug over the single bolt.

Use a 10 mm socket and remove the bolt. The Pedal has clips on the bottom side toward the seat that slip into recesses in the floor. Don't pull up on the Pedal assembly. First pull back toward the seat with it pressed in the floor. It's like pulling your foot out of slippers with an open back!

Mine was very easy to pull back and it released from the floor with little force.

This is a picture of the Pedal sitting on its side making access to the control plug easy. As with other similar plugs on the C7 it has a red lock covering the black release button. The red button slips backward away from the junction and uncovers a black button that is then pressed and releases the latch that holds the two parts together.

Also note the small hole in the carpet (circle) where the OEM cable coming from the Pedal goes to the ECU that controls throttle opening. That hole will be used to also route the Vitesse cable to its Controller.

Connecting the Vitesse is straight forward. First separate the existing plug by pulling the red lock back and pressing the back button. Then insert the Vitesse plugs into the two separated OEM plug ends. *They can only connect one way*, and have a click sound when fully engaged.

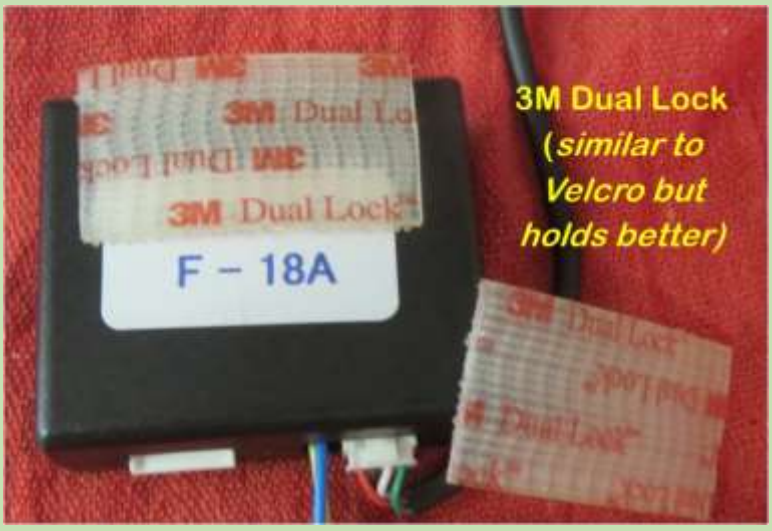
Then push the red locks back in.

Then push plug "P" (note that "P" label is one I named) and its cable into the carpet hole and insert your hand behind the carpet and grab the plug P and pull it with its cable out so it can be reconnected to the Vitesse Controller.

Wondered where the best place was to mount the controller. Some who installed on the forum slipped it behind the carpet. Someone insulated it and another thought it would best to install it in the open.

Found a location just above the carpet that looked usable. It was a flexible rubber type material. Tried a 3M Dual Lock product that holds better than Velcro. Both sides are the same and consist of many mushroom type protrusions per square inch. The heads slip past each other and lock together.

Used alcohol to clean the surface *but the adhesive was not strong enough to attach to the rubber with the strength needed.*



This Did Not Work!

Installed the controller behind the front carpet between the flexible rubber panel insulated with padding from the firewall. It was working well, but the manufacturer responded to my Forum post to another member showing my mounting location, stating: *"The Controller should not be placed under the carpet because it could get too hot. Place it under the dash with a Zip Tie."*

I checked out his suggestion and found a spot. These are the details.

It is necessary to reach under the dash. Unless there is an 8 to 10-year-old who can look under while on their back, suggest you get a cushion and lean in sitting on the floor! LOL

Feel under the dash above the gas pedal. I felt a loop of bundled wires that had a covering. It was about 3/8 inch in diameter and stiff. It would not move very much.

Used a 12-inch-long plastic Zip Tie and put it through the wire loop. It can be done with one hand, which is all I could use as I leaned into the car. Might have to practice but I did this many times when wiring my street rod! Start the Zip Tie loop with one hand as shown. Leave it opened at this point. It can be done, practice outside the car!

Tried slipping the Controller though the Zip Tie and tightening around the wires. NO GOOD! Pulled out one of the connectors from the Controller! Started the car and check engine light came on!

Used the small "spring loaded open" side cutters shown to reach up and with one hand carefully cut the Zip Tie without cutting any wires!

Now how to attach the Controller? **Decided to use a strong heavy "O" Ring and attach it to the Controller with first, a piece of "Sticky Ass Tape" - great stuff. The tape was being used just to keep the "O" Ring from slipping. Another Zip Tie provides a strong attachment. It will not come loose!**

This is a pic of the" O" Ring attached to the Controller with a piece of "Sticky Ass Tape" so it does not move. . The tape holds it in position so a subsequent Zip Tie can't just slip off.

A Zip Tie will be used to secure the Controller tightly to the "O" Ring.

A Zip Tie was put through the "O" Ring and the Controller body. It was pulled tight and the tail subsequently clipped.

A small black Zip Tie was placed through the "O" Ring and the large white Zip Tie loop that went around the wires under the dash.

This was much easier than trying to put the white Zip Tie through the "O" Ring before closing. The large white Zip Tie was low enough that I could use two hands to put the black Tie together. Could be done with one hand if needed.

The black Zip Tie was pulled snug first onto the white Zip Tie.

Then the white Zip Tie was pulled snug around the ~3/8 inch wire bundle under the dash. This allowed the Controller to be held in open air under the dash. No heat issues.

This is the finished mount. The Controller is held securely to a wire bundle under the dash. A strong "O" Ring is secured to the Controller with "Stick Ass Tape" to assure it does not slide and a Zip Tie that will be more than strong enough to hold the light weight Controller.

The unused wires coming from the Controller as well as the uncut tail from the 12 inch Zip Tie that looped around the wires under the dash are all tucked under the top of the carpet.

Note, upper white plug in the pic on the Controller goes to the gas pedal and the lower one that routes to the right goes to the Remote.

Next, routing the wire for the Remote Control. They come from the Controller. Pull on the top of the carpet on the side of the console with your fingers so there is room to insert the wires. It just tucks behind a bolt head and tab an easily pulls away.

Once the wire is in place the trim can be pushed back in position. There is more than enough wire length so what is not needed stays behind the carpet.

The next step takes a little more force. The console trim, like others used on the C7, is held with strong clips. However, they are very rugged and are easily put back once unclipped, just by pressing.

Pull hard with your fingers about 2-3 inches in from the end of the colored trim and one clip will become lose. That is all that is needed. I inserted a socket extension *only to show* it was separated. Put the wire in the gap. Install the adhesive pad that came with the kit on the back of the Remote Control. Snap the trim back.

Cleaned the surface on the side of the console with rubbing alcohol. Pressed the Remote Control with the adhesive pad provided attached, onto the cleaned surface pushing the cable behind the trim so a minimum length is exposed.

The control knob is easily accessed with the right hand while sitting in the driver's seat. It has held well and does not interfere with my right leg, etc.

The last thing to secure are the wires and connectors that connect to the Pedal. Checked both Velcro and the 3M Dual Lock to see how it held when pressed into the carpet. Both held securely but the Dual Lock somewhat better.

Used a piece of Dual Lock and attached the adhesive side to one of the wire connectors. Pressed the "mushroom side" of the Dual Lock into the carpet. It can be seen as a clear plastic under the connector in the picture left. It keeps the connectors and wire away from any moving parts. Probably wasn't essential to do but kepts the wires neat looking.

Note: The Knob clicks as the setting is changed. For example, if in bumper to bumper traffic and you'd like the OEM throttle sensitivity just turn the Knob fully CCW and it will read SP0, equal to the OEM setting. To return to SP5 turn the knob 5 clicks CW.

SETTING UP, CALIBRATING THE SYSTEM

Review the instructions that came with the unit. The sheet supplied follows and I have added a section called" **"How To Use The Throttle Controller"**

Note: As Vitesse states, this device does NOT affect warranty. It does not interfere with the cars computer. It simply alters the existing signal from Pedal to Throttle.

The two charts below from the 2014 and 2017 Owner's Manual show why I was seeing too slow a throttle response with my Grand Sport.

With my 2014 Z51 that did not have magnetic controlled shocks I mostly drove in Sport for the steering, "Nannies" and NPP settings. As noted, it had the fastest throttle response available that year from the three provided.

In 2017 there are 4 OEM throttle response levels. To get the most aggressive you have to be in Track. I found the Grand Sport set at Sport was a stiffer ride than my none mag shock Z51. In Track I validated what one posted said, "you could feel if you were going over a dime!" Believe my Vitesse setting of 4 or 5 matches what I had in my 2014 Z51 set at Sport mode.

2014 Owner's Manual

Previous N

Modes:	WEATHER	ECO	TOUR *Default*	SPORT	TRACK
Cluster Display	Tour	Tour	Tour	Sport	Track
Throttle Progression	Weather	Normal	Normal	Sport	Sport
Trans Shift Mode (if equipped)	Normal	Normal	Normal	Sport	Track
Active Fuel Management	Normal	Eco	Normal	Normal	Normal
Exhaust Mode	Eco	Eco	Tour	Sport	Track
Steering	Comfort	Comfort	Comfort	Sport	Track
StabiliTrak	Normal	Normal	Normal	Normal	Comp Mode Avail
Electronic Limited Slip (if equipped)	Mode 1	Mode 1	Mode 1	Modes 2 & 3	Modes 2 & 3
Magnetic Selective Ride (if equipped)	Tour	Tour	Tour	Sport	Track
Launch Control	NA	NA	NA	NA	Available
Traction Control	Weather	Normal	Normal	Normal	Track
Performance Traction or Competitive Mode (if equipped)	Off	Off	Off	Off	Available

3 Ranges

2017 Owner's Manual

Driving a

throttle

Previous Next

Modes:	WEATHER	ECO	TOUR *Default*	SPORT	TRACK
Cluster Display	Tour	Tour	Tour	Sport	Track
Throttle Progression	Weather	Normal	Normal	Sport	Track
Trans Shift Mode (if equipped)	Normal	Normal	Normal	Sport	Track
Active Fuel Management	Normal	Eco	Normal	Normal	Normal
Exhaust Mode	Eco	Eco	Tour	Sport	Track
Steering	Comfort	Comfort	Comfort	Sport	Track
Stability Control	Normal	Normal	Normal	Normal	Comp Mode Avail
Electronic Limited Slip (if equipped)	Mode 1	Mode 1	Mode 1	Mode 2	Modes 2 & 3
Magnetic Ride (if equipped)	Tour	Tour	Tour	Sport	Track
Launch Control	NA	NA	NA	NA	Available
Traction Control	Weather	Normal	Normal	Normal	Track
Performance Traction or Competitive Driving Mode (if equipped)	Off	Off	Off	Off	Available

4 Ranges

After the MRC software upgrade I was able to drive in Sport Mode with a ride stiffness similar to what I had with my none MRC C7 Z51. That also provided similar nannie and transient control. However, I noted, at the 4 or 5 Vitesse setting I was using, especially when cold, the Throttle response appeared to be more aggressive than desired. When set at "0" it appeared to be fine. Also noted when set at "0" the throttle response in Sport, were I was now driving, was close to my 2014 Z51, which was the maximum GM Throttle response as noted Sport = Track in 2014.

2017 Owner's Manual

Driving a

throttle

Previous Next

Modes:	WEATHER	ECO	TOUR *Default*	SPORT	TRACK
Cluster Display	Tour	Tour	Tour	Sport	Track
Throttle Progression	Weather	Normal	Normal	Sport	Track
Trans Shift Mode (if equipped)	Normal	Normal	Normal	Sport	Track
Active Fuel Management	Normal	Eco	Normal	Normal	Normal
Exhaust Mode	Eco	Eco	Tour	Sport	Track
Steering	Comfort	Comfort	Comfort	Sport	Track
Stability Control	Normal	Normal	Normal	Normal	Comp Mode Avail
Electronic Limited Slip (if equipped)	Mode 1	Mode 1	Mode 1	Mode 2	Modes 2 & 3
Magnetic Ride (if equipped)	Tour	Tour	Tour	Sport	Track
Launch Control	NA	NA	NA	NA	Available
Traction Control	Weather	Normal	Normal	Normal	Track
Performance Traction or Competitive Driving Mode (if equipped)	Off	Off	Off	Off	Available

2019 Owner's Manual

Driving and Operating 201

Modes:	WEATHER *(except ZR1)*	ECO *(except ZR1)*	TOUR *Default*	SPORT	TRACK
Cluster Display	Tour	Tour	Tour	Sport	Track
Throttle Progression	Weather	Normal	Normal	Sport	Track
Trans Shift Mode (if equipped)	Normal	Normal	Normal	Sport	Track
Active Fuel Management	Normal	Eco	Normal	Normal	Normal
Exhaust Mode	Eco	Eco	Tour	Sport	Track
Steering	Comfort	Comfort	Comfort	Sport	Track
Stability Control	Normal	Normal	Normal	Comp Mode Avail	Comp Mode Avail
Electronic Limited Slip (if equipped)	Mode 1	Mode 1	Mode 1	Mode 2	Modes 2 & 3
Magnetic Ride (if equipped)	Tour	Tour	Tour	Sport	Track
Launch Control	NA	NA	NA	NA	Available
Traction Control	Weather	Normal	Normal	Normal	Track
Performance Traction or Competitive Driving Mode (if equipped)	Off	Off	Off	Off	Available

Was the Throttle response different with the MRC software update? Since all 2019 C7s have the new updated software it's possible the Owner's Manual could reflect the change. As noted above, the table is the same as my 2017. It could still be different but the table does not reflect it.

If driving with Vitesse set at "0," which they say is equal to OEM, than why have it installed? Good question! ***Suggest if you can drive in Sport with the new MRC software the Vitesse Throttle Control may not be needed from my observation!***

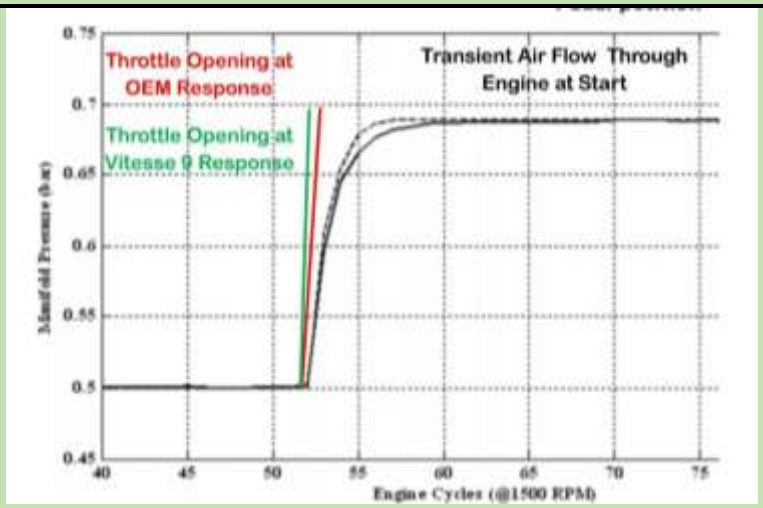
Update:

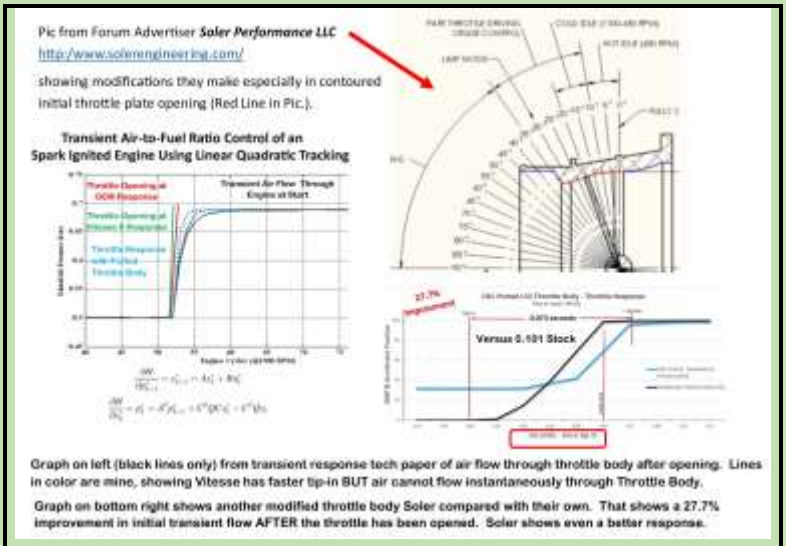
An ASME technical paper showed no matter how fast the throttle plate was opened, *gas flow takes a finiate time to reach maximum flow.* The Vietesse Controler was a help BUT a Modified Throttle Body is better!

Gas cannot travel faster than the speed of sound. At that intial opening this limits rate of change of the flow rate. *Same reason there is a time delay in heaing thunder after you see lightening!*

It can travel somewhat faster than the speed of sound by using a entarnce and exit shape like a converging- diverging nozzle.

Modified Throttle Bodies can provide this feature.





Graph on left (black lines only) from transient response tech paper of air flow through throttle body after opening. Lines in color are mine, showing Vitesse has faster tip-in BUT air cannot flow instantaneously through Throttle Body.

Graph on bottom right shows another modified throttle body Soler compared with their own. That shows a 27.7% improvement in initial transient flow AFTER the throttle has been opened. Soler shows even a better response.

The short summary of what one company making such a modified Throttle Body, Soler Performance makes a compelling case for using their product to improve throttle response.

I added one of their modified Throttle Bodies and agree it does more than what the Vitesse Controler acomplished by just changing the relationship between pedal depression and throttle plate movement.

See this Link for that "Why To/How To" install PDF: http://netwelding.com/Soler_Mod_TB.pdf

WA Technology

"48" 2017 Grand Sport & 2014 Stingray PDF's Available:

48 PDFs discuss improvements or information about a 2017 Grand Sport and 2014 Stingray function and/or esthetics. Some are minor and others, like the installing the rear diffuser & MGW shifter, include detailed install information.

Below are the PDF's available. Click on picture (may need Ctrl pressed.) Or just copy and paste the PDF info (Blue type) into your browser. Or email me at GUttrachi@aol.com **and state the title desired, shown in Yellow:**

Note: **A GS in the title indicates the info was updated from that available for the C7 Z51 PDFs.**

Rusty GS/C7 Muffler ***Why the C7 muffler is rusted and a simply way to make rust turn matte black.*** ***Bottom pic rusted, top pic treated*** **http://netwelding.com/Muffler_Rust.pdf**	
Change GS/C7 Oil ***WHY change your own oil and HOW to do it*** ***Revised, includes C7 Lifting Methods*** **http://netwelding.com/Changing_Oil.pdf**	
C7 Carbon Fiber Side Skirts ***How to install side skirts with jacking information for DIY's without lifts*** **http://netwelding.com/Side_Skirts.pdf**	
C7 Carbon Fiber Splitter w/End Plates ***How to install Splitter & Nylon bra fit*** **http://netwelding.com/CF_Splitter.pdf**	
C7 Removing GM Plastic Film ***How To Remove The Rocker Panel Film*** **http://netwelding.com/Rocker_Panel_Film.pdf**	

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GS/C7 Mirror Proximity Alarm

Limit switch alarm warns when passenger mirror is too close to door frame

http://netwelding.com/Mirror_Proximity_Alarm.pdf

Jacking Pads for GS/C7

Manual says Jacking Pads 2 1/2 inch max OD.. Have 1 inch, 2 inch pads semi-permanent pads.

http://netwelding.com/Jacking_pads.pdf

GS/C7 Radar Power

For C7 tapped rear fuse panel. For GS tapped mirror

http://netwelding.com/Radar_Detector_Power.pdf

GS/C7 Belt Rattle

Passenger seat belt rattles against the seat back. The solution, add a shoulder belt pad.

http://netwelding.com/Eliminate_Rattle.pdf

Aluminum C7 Chassis and Weld Repair

The C7 has an all aluminum chassis, made from 117 welded pieces. Includes weld repair info.

http://netwelding.com/Aluminum_Chassis.pdf

GS/C7Ceramic Brake Pads

The Z51 has very dusty brakes. These pads help!

http://netwelding.com/Ceramic_Pads.pdf

GS/C7 License Plate Frame;

Must Meet South Carolina Law

http://netwelding.com/License_Plate_Frame.pdf

Manage GS/C7 Spilled Gas & Door Lock

Protect the side of the Vette when filling up with gas. Includes info on preventing door lock failure.

http://netwelding.com/Manage_Spilled_Gas.pdf

GS/C7 License Plate & Cargo Lights

LED license plate light & cargo area bulbs are brighter and whiter

http://netwelding.com/License_Plate_Light.pdf

GS/C7 Rear Cargo Area

Rear cargo area needs storage device and rear protector

http://netwelding.com/Rear_Cargo_Area.pdf

GS Rear Diffuser (Fits Any C7)

Rear Carbon Flash Composite Diffuser

http://netwelding.com/Rear_Diffuser.pdf

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GS/C7 Door Panel Protector

Black plastic protector added to prevent scuffing of door when exiting

http://netwelding.com/Door_Panel_Protector.pdf

GS/C7 Improved Cup Holder

A solution to the cup holder spilling under hard braking or shape turns.

http://netwelding.com/Improved_cup_Holder.pdf

GS/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

C7 Carbon Fiber Grille Bar

Install genuine carbon fiber grille bar overlay

http://netwelding.com/CF_Grille_Bar.pdf

Jacking a GS/C7 Vette

Safely jacking either front only or back & front

http://netwelding.com/Jacking_A_C7.pdf

Deer Whistle Installed on GS/C7

Do they work? Plus Install Info

http://netwelding.com/Deer_Whistle.pdf

Replacing C7 Battery

After using a GM type charger and showing fully charged a voltage low, replaced battery with AGM!

http://netwelding.com/Battery_Issues.pdf

GS/C7 Window Valet

Lower Windows with FOB

Window Valet Helps 2014/2015 Latch Hatch

http://netwelding.com/Hatch_Latch.pdf

GS/C7 Splash Guards

GM offers splash guards for the C7 Corvette. An easy DIY installation. ACS Best Front Guards for GS.

http://netwelding.com/Splash_Guard.pdf

GS/C7 Blind Spot Mirror

Smaller rear and side windows cause C7 blind spots. Small "blind spot mirrors" help

http://netwelding.com/Blind_Spot.pdf

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GS/C7 Skid Pad Protector

After the air dam, the aluminum "skid pad" hits driveway ramps etc. Plastic protector helps.

http://netwelding.com/Skid_Pad_Protector.pdf

GS/C7 Wheel Locks

Wheel locks, torqued to required 100 ft-lbs, help protect your expensive wheels from theft.

http://netwelding.com/Wheel_Locks.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 with suggestions on jacking a C7.

http://netwelding.com/Skip_shift_Eliminator.pdf

GS/C7 Catch Can & Clean Oil Separator

Direct inject engines are subject to "coking." 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 on Front and Grill. 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

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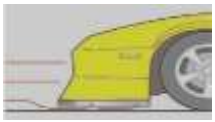
GS/C7 Cold Air Intake ***Low Restriction Air Filter & Duct*** **http://netwelding.com/Cold_Air_Intake.pdf**	
GS/C7 Soler Modified Throttle Body ***For Improved Throttle Response*** **http://netwelding.com/Soler_Mod_TB.pdf**	
Garmin GPS for GS Cubby ***Garmin Mounts in GS Cubby & Apple CARPLAY*** **http://netwelding.com/GPS_In_Cubby.pdf**	
GS Splitter Stage 3 Winglet ***Stage 3 Winglets Integrate with Spats*** **http://netwelding.com/Stage_3_Winglets.pdf**	
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**	
GS Splitter Protector ***Scrape Armor Protection for Splitter*** **http://netwelding.com/Splitter_Protectors.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**	
Engineering a ProStreet Rod ***How Our '34 ProStreet Rod Was Designed and Built*** **http://netwelding.com/Engineering%20Street%20Rod%203-08.pdf**	
Motorsports Welding Article ***Wrote a 5 Page Article for AWS March 2018 Journal Covers NHRA and NASCAR Chassis Design*** **http://netwelding.com/Motorsports_Welding_2018.pdf**	

 GUttrachi@aol.com