SS 1023366-Detroit Successful Regen Reference for GHG17 DD Engines

Summary: When reviewing a parked regen with DDDL, it is important to know what parameters to monitor, and what normal results look like. This guide will assist with diagnosing regen related codes and issues for GHG17 DD Engines.

Engine Speed	**1250 rpm for the first 12 minutes then may be variable, down to 1100 rpms**
Turbo Speed	**No longer used**
Fuel Cut Off Valve	**100% (once DOC inlet reaches 529° F)**
Actual Torque Load	**20 – 40%** [15GHGAT 20 – 60% (Torque load will be higher with a PTO)]
Throttle Valve Actual	**75 – 90%** [Not used in DD13 or DD15]
Actual Fuel Mass	**100 – 160 mg/h (if lower could be weak Jakes or bad front solenoid)**
Fuel Comp Pressure	**100 – 110 psi**
Doser Fuel Line Pressure	**15 – 30 psi**
DPF Outlet Temp	**750° – 1070° F**
DOC Inlet Temp	**550° – 800° F** [DD13 will run hotter. Firetruck/Bus/Crane may all see 700-850°F.]
DOC Outlet Temp	**750° – 1070° F**
DOC Inlet Pressure	**Less than 0.89 psi (1-box) or less than 1.9 psi (2-box)**
DPF Outlet Pressure	**Around ½ of DOC Inlet Pressure (calculated value)**
SCR Inlet Temp	**700° – 1050° F (calculated value based on DPF temp)**
SCR Out Temp	**700° – 1050° F**
SCR Temp Sensors	**Must be within 68.4° F of each other** **(2V2's have a significantly lower SCR out temp than inlet)**
SCR NOx Sensors	**Use a low temp ATD to determine value**
• **NOx Sensors**	**Up to 50 ppm from each other**

• NOx Conversion	over 85%
Doser Injection Status	gradual increase from 10% to 25% (No dosing in the first 12 minutes) (DOC inlet temp must be at 529° F or higher)
Intake Manifold Pressure	Less than 27 psi
ExGas Mass Flow Rate	Greater than 500 Kg/h (no requirement for any code to meet this)
EGR Actual Valve	85 – 100%
Delta-P	2 – 3 psi
ADS DEF Pressure 2	140 – 150 psi
DEF Pump Speed	900 – 1150 rpm
If a DOC is plugged:	
See DOC Air Cleaning Procedure in the Troubleshooting Manual: https://extranet-ddc.freightliner.com/power_service/literature/Content/13A/13A080500.xml	
GHG17: 6 kPa (0.9 psi) for a 1-box or 13 kPa (1.9 psi) for a Two-box option.	
GHG17 15AT: 7 kPa (1.01 psi) for a 1-box or 13 kPa (1.9 psi) for a Two-box option.	
GHG17 13: 6 kPa (0.7 psi) for a 1-box or 13 kPa (1.9 psi) for a Two-box option.	
A full DPF (end-of-life use) can replicate a plugged DOC (10kPa for a 1-box and 13kPa for a Two-box option). This may be an issue on higher mileage units.	

Labels :

Powertrain & Driveline

modified regen

regen

Add tags

96 Kudos

Comment

Comments

Scott_Trippel 05-13-2016 02:18 PM

Love it

THX Esther.

Robert_Cadell_J 05-13-2016 02:45 PM

I've talked to Jamie a few times, good man !

Buxton_Okebiro 05-13-2016 11:08 PM

This is very vital information especially for growing technicians like me.

Good job on that cheat sheet. Love it.

Epi_Martinez 05-16-2016 04:58 AM

Thanks Esther and Jaime. with right information we can do the job right.

Kyle_Siebert 06-20-2016 06:49 PM

At what temp do you have to replace the DOC or SCR? I got a note from class saying at 1300 deg f that the DPF has to be replaced.

And is that going to be the same for all years? ie EPA07 to GHG17.

Robert_Cadell_J 06-20-2016 06:58 PM

1240 rings in my head for some reason kyle, if I remember right the epaulets 07 and 10 run hotter than ghg product

Robert_Cadell_J 06-20-2016 07:07 PM

I do wish we could data mine these log files, ran into several well we data mined the log file meaning the csc, the box over temped, then you hear replace it I would love to see the data

Scott_Trippel 06-21-2016 06:43 AM

Last I heard they were working on that, but if it does have VT, you do have some hope of seeing something.

1 Kudo

Kyle_Siebert 06-26-2016 11:16 AM

I did speak with teck support on this and they said it only needs to be replaced if there is a DOC outlet temp high code or a SCR oultet temp high code. In my case they had us run a successfull regen. NOx efficiancy was good and no other issues were found during the regen so just the one box was replaced and they had me replace the rear jake solinoid as there was nothing wrong found with the ATD checklist.

1 Kudo

Bill_Ostrynski 11-03-2017 11:08 AM

Thank You

Kyle_Siebert 01-10-2018 10:21 AM

I seem to recall the GHG17 regens being shorter but I couldn't find anything. A customer is asking. Are they shorter regens?

Scott_Trippel 01-10-2018 11:40 AM

About 30 to 45 min.

Kyle_Siebert 01-10-2018 04:20 PM

Thanks scott

1 Kudo

Service_Tech2 12-31-2018 06:00 AM

Whats is the doc "light off temp" for the mcm to command the 7th injector to begin dosing?

Talbert_Simonia 12-31-2018 09:42 AM

The DOC inlet temperature should reach 550 degrees. Then it commands the HC Doser to open the HC injector to open. But the front Jake Brakes should have been at 100% by then. And the Actual Fuel Mass should be between 100 and 160 mg/h. If the Actual Fuel Mass is not above 100 mg/h. Then there maybe a issue with the front Jake Brakes. If you see the actual Fuel Mass higher than 160 mg/h. I would not worry.

3 Kudos

Robert_Cadell_J 12-31-2018 09:46 AM

Dont forget about the first approx 10 mins is a doc unplug routine

Rob "Doc" Cadell

DTNA Master Technician

TransChicago Truck Group BFWD

Shorewood IL 60404

803 917 5397 Cell

Good Hunting - you'll find your issue

1 Kudo

Gillian_Paddon 02-15-2019 01:13 PM

When I click on "view as PDF" under Actions drop down menu, the table looses all the info. Is that just me or is there something wrong with the base file?

Chaz_Trimble 02-15-2019 01:22 PM

I'd have to look it up and check it on my laptop. Checkout Parked regen reference. If you go to PSL they are listed I believe in the workshop manuals under parked regen.

1 Kudo

Talbert_Simonia 02-15-2019 11:15 PM

Yes I had that happen to me the other day. Maybe JUSTJO can look into it.

Robert_Cadell_J 02-18-2019 07:42 AM

I have a question with these readings at what software level, current, one step backwards ? And are these numbers going along with current fuel maps ?

Rob "Doc" Cadell

DTNA Master Technician

TransChicago Truck Group BFWD

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803 917 5397 Cell

Good Hunting - you'll find your issue

1 Kudo

Justin_Johnson1 02-18-2019 08:00 AM

Should be working now. Thanks for the heads up.

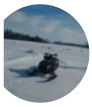
1 Kudo

Scott_Trippel 02-19-2019 06:58 AM

I question them as well.

Modified regen, we see torque load way above 50%, if we followed the values we would be changing injectors on all the engines.

1 Kudo



Metro_Roadservi 04-20-2019 11:45 AM

I did read that Before. Which is why I am asking about egr delta pressure readings. It's saying between 2-3 psi. I am always getting usually above 4 psi at the start and it drops to the low 3's towards the end. even on new trucks with only like 100,000 miles on them with no emissions issues. just curious why the numbers don't line up. Cheers.

Christopher_Kol 04-22-2019 09:49 PM

I am a corporate Detroit trainer assigned to Ryder. I actually had Ryder remove this one, as well as the GHG 14 cheat sheet from their technician info center web site. It's a searchable site for tech tips. In some instances, their call center and technicians were going off of these cheat sheets instead of following specific troubleshooting steps. One in particular was the GHG14 cheat sheet that stated a 1 box should be replaced at 2.9 psi DOC inlet psi. We all know these can now be cleaned.

I had a tech actually repair a certain issue but decided to do a regen after the repair (didn't need to) and became hung up on the high torque load that contradicted what is stated in the GHG 17 cheat sheet above for TC engines. Needless to say that truck was down for an additional 2 days with multiple parts thrown at it for no reason. I looked at the log file, emailed the tech back and said that he fixed it the first time. (six pack of injectors) Get that truck out of the shop now!!

Cheet sheets are great if ***used correctly.*** I never, ever go solely off a cheat sheet and I teach this to my techs. Yes, I know, the service procedures do not always lead you to the correct diagnosis 100% of the time but I do know the process in the plant and their are folks actively engaged in staying on top of the problem childs. I was involved in both Quality, Field Quality, Service and the Training side so I do have the privilege of seeing behind the curtain so-to-speak.

Just my humble opinion and take it for what it is worth, but I recommend always following service literature first (could make an update or change weekly), whatever the call center is advising at that moment, and of course whatever the legend Mr. Scott Faris says... lol.

Had to give my buddy a nod!

3 Kudos

Mark_Zaplishny 04-23-2019 03:13 AM

THIS HAS HELPED ME OUT QUITE A FEW TIMES THANKS

Jean_luc_Collet 04-23-2019 08:41 AM

I made copies got them laminated and shared them with my fellow techs.

tkx.

Scott_Trippel 04-23-2019 09:51 AM

100% agree with you there

Gillian_Paddon 07-05-2019 12:49 PM

Could you have a look at the GHG14 Successful Regen chart as well? It is doing the same thing when you click "View as PDF".

Brandon_Button 07-08-2019 10:24 AM

Believe it is actually 536 F.

Jon_Cecil 07-09-2019 06:17 AM

Have any of you guys heard that they are no longer looking at NOx conversion efficiency during a regen anymore on a GHG17?. I have been talking with Detroit Support. Have a unit VIN GX2836. Customer brought in for CEL. Active 520342/16 and inactive 5298/14. Troubleshot 5298/14 with no issues found. Troubleshot 520342/16 with no issues found. After running parked regen and SCR efficiency test, codes cleared with no parts repaired. This unit was just at another shop for the same active code. While reviewing the log file, I noticed the NOx efficiency started out at 90% when the NOx sensors both came online. By the end of the regen, NOx efficiency was at 50%. However no codes were produced. The SCR efficiency test did show 96% efficiency. I hate releasing units for them to show back up in a shop. I would rather fix them the first time around.

Jon_Cecil 07-09-2019 07:16 AM

LARMF bin 1 shows .75 at beginning of SCR efficiency test. It improved to .88 by the end. No parts have been replaced. Previous tech was working on this before it got to me. Previous tech found DPF filters leaking around clamps which he noticed accumulation was at 80%. Customer didn't want DPF's replaced so DPF's were cleaned and reinstalled. Parked regen ran and SCR efficiency test ran but didn't clear inducement codes. Truck was assigned to me at this point. Went through 520342/16 troubleshooting which led to running parked regen again and SCR efficiency test. This time the codes cleared but reviewing the log file, I noticed NOx conversion was poor and the actual fuel mass was reading 50-60. Found all engine brake lash out of spec. Reset all valves and brake lash. Ran parked regen again and fuel mass up to 120 now, but NOx efficiency still poor. Ran low temp ATD, which everything looked ok, ran another regen with poor NOx efficiency. I removed the dosing unit at this point while it was still hot to see if issue with dosing when hot. Measured about 120 ml each time.

Jon_Cecil 07-09-2019 09:22 AM

I actually verified no def buildup in one box by scoping with doser removed. No virtual tech or subscription not enabled. I'm would suspect a degraded scr as well but Detroit is advising no problem found. This unit is still under warranty, so I don't think it is wise to replace the scr at this time. It would probably get kicked back to us. The log files I have are 20 mb or more. I would have to redo the logs to make smaller. So I could attach them.

Kyle_Siebert 07-09-2019 09:36 AM

Deactivated user was not looking for virtual tech data, he's looking for the fault history data. It's a tab in diagnostic link under fault codes. Should be next to virtual tech tab. You can change the display to 180 days. Every time you connect to a truck, the codes are

saved as data to upload to the server. So when you connect to the server, those codes get saved to the server and are able to be viewed with the fault history tab.

Gary_Alden 04-27-2020 05:26 A

Thank you to all involved with this, getting this out helps us techs out in the field,

1 Kudo

Anthony_Delia 05-01-2020 08:58 AI

Is this chart in a printable format?

Scott_Trippel 05-01-2020 11:48 AM

Yes it is

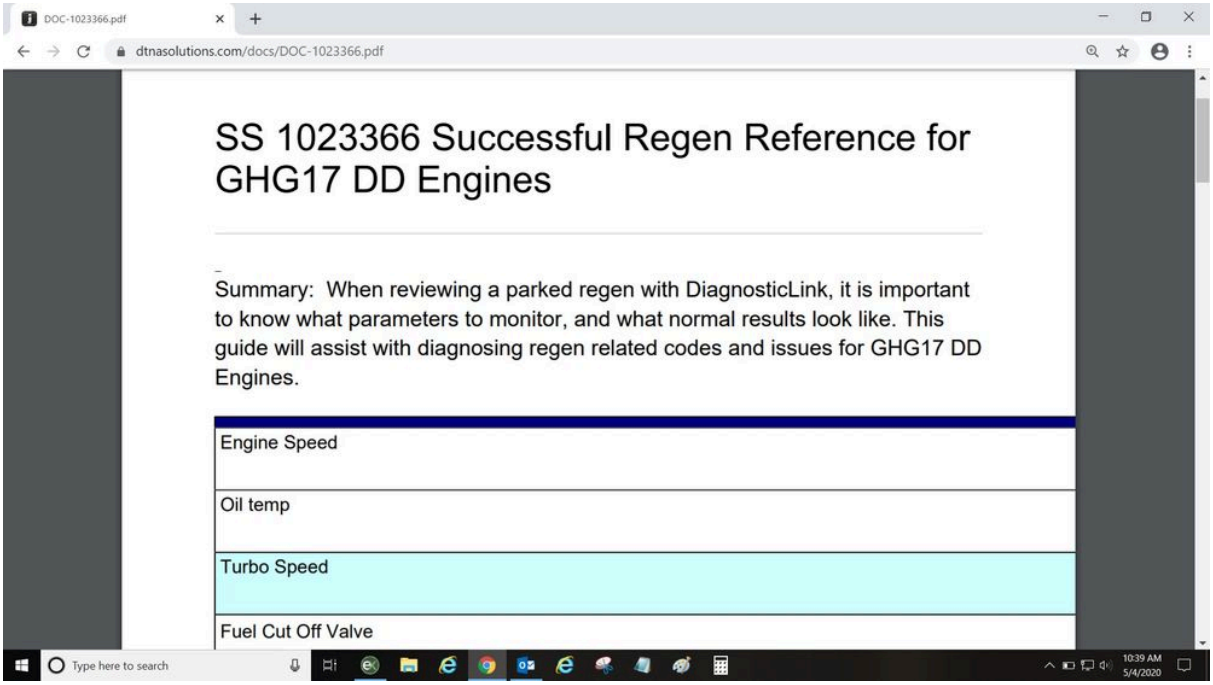
If you are in the full discussion, so do not just click on the notifications click on the thread.

When it opens in the upper right click on actions and you can print and save a PDF

Anthony_Delia 05-04-2020 10:47 AI

Scott,

My service MGR. says that it used to open correctly in PDF, but now it opens and prints like this. Im not a computer guru maybe a issue with web browser??



Kyle_Siebert 05-04-2020 12:09 PM

I usually take screen shots of the chart and piece it together. I have done it for several other regen reference sheets. I'll get this one at work. And post the picture in the comments. Then you can save the picture from my comment, open and print it.

1 Kudo

Anthony_Delia 05-04-2020 01:45 PM

Thanks Kyle!

Kyle_Siebert 05-04-2020 05:03 P

See post PDF format of Regen Reference Cheet Sheets

1 Kudo