

ABS trailer code 520216 31 P4 New...



[Russell Thornley](#) 16 posts since Nov 20, 2018

ABS trailer code 520216 31 P4 New Cascadia Jul 2, 2020 9:36 PM

We have been receiving multiple ABS complaints on newer P4 new Cascadia's for trailer ABS. The re-occurring code that every truck is having is 520216 31, ESC function is reduced (trailer ABS not OK) condition exists. Wabco info is short and sweet, saying faulty ABS functionality. Trucks have ranged from 19k, 41k miles etc and upwards. Operators that pull multiple/different trailers have come in, not specific to a truck with same route/trailer. Two trucks in question, also present with the 629-11 code, are really new P4's too, (19,805 miles) and these two units happen to have a seven way cord that does not ground to the cab back wall. Instead routes under the headache rack, under the left side cab and grounds to a frame stud. Ground load tests from the seven way cord end have always been successful, and no other problems like dirty frame connections. This 520216 does not effect truck ABS but the display does not tell the driver that, they perceive that they have a truck ABS problem instead, often times dropping the current trailer and bringing to the shop.

- [IMG_20200626_135534744 \(1\).jpg](#) 413.6 KB
- [IMG_20200626_135544218 \(1\).jpg](#) 1.0 MB



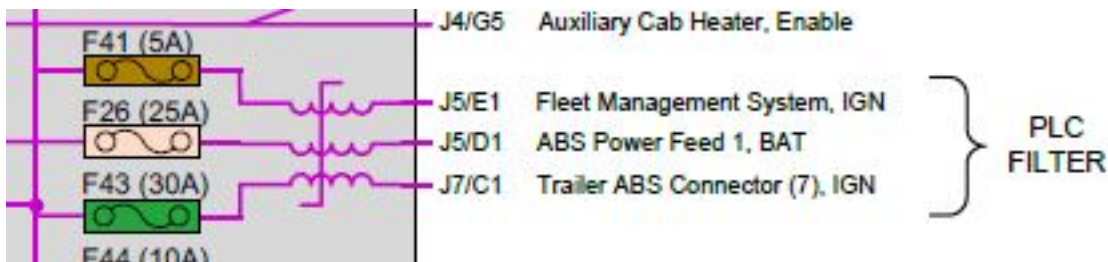
[Michael Palumbo](#) 1,496 posts since Nov 13, 2014

Re: ABS trailer code 520216 31 P4 New Cascadia Jul 2, 2020 10:24 PM

You probably already seen [HAVE A 2020 P4 COMPLAINT IS THAT TRACTION CONTROL LIGHT COMES ON , WHEELS GET STUCK HAVE TO CYCLE KEY TO GET WHEELS TO MOVE](#) It's mainly others agreeing on the ground issue.

If not the ground then the circuit that the PLC signal piggybacks on? A serial number would help define that circuit. I want to say it is 45?

The trucks ABS ECU talks to the trailers ECU through the PLC filter that is built into the VPDM. I'm not sure how to test a PLC but you could check the terminals for proper crimping and drag tension.



[Jon Cecil](#) 881 posts since Nov 25, 2014

Re: ABS trailer code 520216 31 P4 New Cascadia Jul 3, 2020 12:12 AM

ABS trailer code 520216 31 P4 New...

[SS 1033950 New Cascadia - Trailer Receptacle - Back Wall Grounding Stud](#)

This SS addresses the code you are having. I understand the grounding for the 7 way is different on your unit. I wonder if the ground is still attached to the back wall on the 7 way. A VIN would definitely help.



[Kyle Siebert](#) 4,084 posts since Nov 14, 2014

Re: ABS trailer code 520216 31 P4 New Cascadia Jul 5, 2020 4:48 PM

EDIT 7/5/2020 Kyle: Added parts in quotes.

The PLC filter feeds power to Trailer ABS and trailer pulses this to indicate faults. "This battery power is also fed to the ABS ECU." The abs ecu is able to detect these pulses and indicate a trailer abs issue. So yeah, bad trailer ground will cause this as we all know. But I had one the other day the BCA power feed cable was loose at batteries, had many counts for smart gear box codes and trailer ABS 520216/31. So, basically if the power feed is interrupted by; a actual trailer ABS fault, poor trailer ground feed, or ABS ECU power feed (two of them), it will cause these faults. Inspect the VPDM for loose connectors or drag test ABS battery terminals, trailer feed terminals, this power for trailer abs comes over to driver lower a- pillar, I believe. Maybe check BCA feed cable, fuses and outputs, VPDM positive cables for issues, fuses and relay if it has it.

Mine also had the trailer ground to the left frame rail. Could be a 7 way trailer cable too...



[James McFadden](#) 157 posts since Dec 9, 2014

Re: ABS trailer code 520216 31 P4 New Cascadia Jul 8, 2020 2:49 PM

have you had any issues with it kicking out cruise control due to it being an abs problem ? have a unit in now with this code and customer complaint of intermittent cruise problems . all switches are working normal and see no issue to why CC would not work. .



[Russell Thornley](#) 16 posts since Nov 20, 2018

Re: ABS trailer code 520216 31 P4 New Cascadia Jul 9, 2020 4:08 PM

Between ideas on this thread (thanks for all helpful info), Wabco and CSC tech help, checked battery connections, all were ok. Checked torque and then removed and cleaned the mgjb grounds at left front firewall, they were so so but don't think the issue. Did the same at both sides of BCA connections. Drag tested the ABS pins, then ohmed and then ended up load testing the pwrs, ground and ignition circuits to the ABS module, was able to get 16+ amps through each circuit without issue. Also checked for loose or damaged vpdm backside pins on the back side by wiggling the circuits while doing the load test and nothing dropped out like I have seen in past instances when was a damaged pin. CSC suggested re-flashing the ABS module at that point, we did and the customer had to take truck to make a delivery. He didn't make it 25 miles before the complaint returned and the truck was bobtail, however I have not seen it back in my shop to confirm certainly that it's the same codes yet. I suggested what was mentioned here to Wabco and CSC about a PLC issue. CSC advised I put an ABS module on it next. Im sorry, the customer had not mentioned a cruise issue with or without complaint,

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but this is a local truck that makes deliveries in the next valley, don't know how much they use cruise. Forgot to mention VIN#MJ8950, only 20k miles.



[Mark Walstead](#) 26 posts since Apr 30, 2018

Re: ABS trailer code 520216 31 P4 New Cascadia Sep 28, 2020 8:55 PM

VIN- MG0823

miles- 21046

I have the same issue with this truck. Customer complaint of intermittent ABS light, cruise drops out. I have inactive SPN 520216 FMI 31 logged 125x and SPN 629 FMI 11 logged 29x. I checked the Vpdm, BCA, ground at the frame, etc. and all looks good. As everyone has already mentioned, SS1033950 would not apply as the 7 way receptacle runs under the left side of the cab as shown in G66-11723-00x.

[Russell Thornley](#), I am curious if the ABS ECU corrected the problem? I have never been able to get WABCO to commit to an ECU unless SPN 629 is the only fault and everything else has been repaired.

Has any body had a verified successful repair with this issue? I noticed something not mentioned in any of the talk aside from possibly a bad 7 way cable. I have seen this issue before when customer would replace the primary receptacle with the incorrect type and trailer lighting problems would occur. Is it possible we are overthinking this just because it is a P4? I took the primary receptacle off the back of the cab and now I am thinking it was not tight. When I first went to take it off, I felt on the inside of the plate to see if there were nuts on the other side or rivet nuts. I don't remember the bolt sticking through the back side of the bracket. When I inspect the primary receptacle and the trailer cord, it doesn't look like they are making full contact as seen by the wear patterns.

I can't say for certain as all ABS faults are inactive when it came in, and I was just checking things over. this is a local run truck, so I'm sure they will be back if this didn't correct the issue.







ABS trailer code 520216 31 P4 New...



[Kyle Siebert](#) 4,084 posts since Nov 14, 2014

Re: ABS trailer code 520216 31 P4 New Cascadia Sep 29, 2020 12:04 AM

I did mention a bad 7 way cable. I do think that is likely your issue. Anything that will interrupt the power trailer power or ground feed to the 7 way or ABS ECU ignition circuit can cause this. I believe both circuits (trailer power and ABS ECU ignition) come out of the VPDM, and the PLC filter is inside the VPDM.



[Mark Walstead](#) 26 posts since Apr 30, 2018

Re: ABS trailer code 520216 31 P4 New Cascadia Sep 29, 2020 11:19 AM

Thanks for the info Kyle. I saw where the PLC filter was mentioned a few times, didn't see it in the schematic. I didn't realize it is part of the vPDM. That would make sense as the trailer ignition is from the vPDM

Thank you,

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Mark Walstead
Express Assessment Team Leader
Excel Truck Group
Chesapeake, VA
757-424-3000



[Kyle Siebert](#) 4,084 posts since Nov 14, 2014

Re: ABS trailer code 520216 31 P4 New Cascadia Sep 29, 2020 4:06 PM

When you understand how something works, it makes it a lot easier to fix.

Some of these solutions are a band aid addressing one of the issues that causes failure. We're it should be explaining how the system works and explaining why a certain common issue will cause the failure.



[Russell Thornley](#) 16 posts since Nov 20, 2018

Re: ABS trailer code 520216 31 P4 New Cascadia Oct 2, 2020 10:00 PM

The ABS ECU replacement was unsuccessful. This customer and many others are continuing to have this complaints. We have talked to our DSM and he advised Daimler is working on it and will likely have a software fix for it down the road? So we have just continued to inform customer of that and clear the faults for them.



[Michael Palumbo](#) 1,496 posts since Nov 13, 2014

Re: ABS trailer code 520216 31 P4 New Cascadia Nov 21, 2020 12:33 PM

ABS trailer code 520216 31 P4 New...

Something curious I'm noticing in Virtual tech.

Russell Thornley MG0823

Mark Walstead MJ8950

Kyle Siebert MF8770

Virtual tech has no recording of ABS code 520216 31 for any of your VINs.

For all of these, Virtual tech has 1243 12

1243 - 12 = ABS Fully Operational - bad intelligent device or component	ABS Function Is Not Fully Operational	This failure is displayed if the ABS function is temporarily deactivated (partly or completely). Possible causes are: - After ABS-deactivation during driving, the ABS requires certain driving conditions to be met prior to becoming active again? - The ABS function was deactivated by parameter - Important parameters for ABS-function are not available	• This DTC does not require any repair. It is only driver information.
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Perhaps this DTC does require a repair if you can link it to 520216 31



Mark Walstead 26 posts since Apr 30, 2018

Re: ABS trailer code 520216 31 P4 New Cascadia Nov 25, 2020 1:45 PM

Description	Number	Mode	Status	Troubleshooting Type
[UDS-11] ABS02T - Antilock Braking System				
SPN/FMI=520216/31 ESC function is reduced (trailer ABS not OK) / conditio...	520216	31	not active	Refer to OEM
SPN/FMI=629/11 Controller #1 / failure mode not identifiable / root cause n...	629	11	not active	Refer to OEM
[UDS-17] IPPC01T - Integrated Predictive Powertrain Control				
Measurement CAN common circuit error	520203	6	previously active	Traditional
HW Watchdog Error	520213	11	previously active	Traditional
Application Error	520217	11	previously active	Refer to PSL
[UDS-23] ICUC01T - Instrument Cluster				
D-DTC9 - Incompatible ECU variant in the SMF	523021	31	active	Traditional
Auto Config routine not performed	523023	31	active	Traditional
Short to battery or ground in right speaker circuit detected.	523032	31	not active	Traditional
ECU 'BS' is missing	524011	31	not active	Traditional
EEPROM checksum fault	523002	31	not active	Traditional
[UDS-33] SSAM02T - Single SAM				

very curious Michael Palumbo. you are correct, when looking at Virtual Tech, it shows the SPN 1243 FMI 12, several times since July. but this code was not logged when I connected to it, assume it has been cleared. I never thought to look at Virtual Tech. when I looked just now, it logged this code a few days ago. I assume they are not interested in having it looked at. With that said, I probably cursed myself and truck is on its way back right now.



Kyle Siebert 4,084 posts since Nov 14, 2014

Re: ABS trailer code 520216 31 P4 New Cascadia Nov 25, 2020 8:27 PM

ABS trailer code 520216 31 P4 New...

Wouldn't be the first time I saw abs clear it's own codes. I've personally seen it with the brake position sensor.

I do worry about VT though. 1243/12 I believe could also be a CPC code I think. VT isn't really clear on Source Addresses.