

ABS trailer code 520216 31 P4 New...



[Russell Thornley](#) 18 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



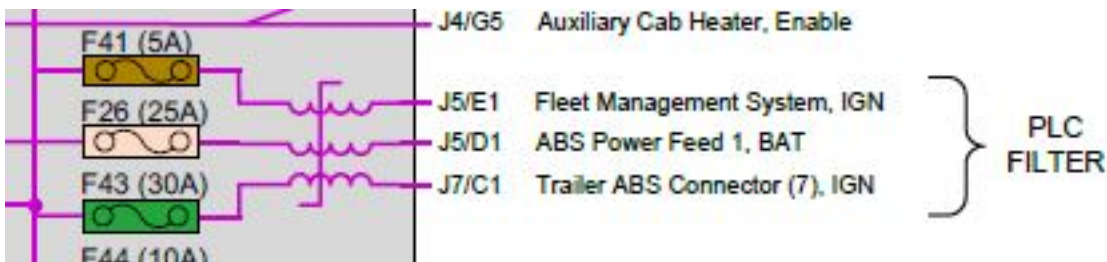
[Michael Palumbo](#) 1,584 posts since Nov 13, 2014

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](#) 925 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](#) 4,101 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](#) 186 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](#) 18 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](#) 27 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](#) 4,101 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](#) 27 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,

01001101 01100001 01110010 01101011

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



[Kyle Siebert](#) 4,101 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](#) 18 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](#) 1,584 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 27 posts since Apr 30, 2018

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

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 4,101 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.



[James McFadden](#) 186 posts since Dec 9, 2014

Re: ABS trailer code 520216 31 P4 New Cascadia Dec 2, 2020 1:17 PM

Well I have had 3 P4 units in for the 520216/31 trl abs code and causing other issues , and EACH one had the fuse in the vpdm #43 30amp for the trl abs connector (7) ign. blown . . installed new fuse and had no issues with the truck side. im wondering if the trailer has some sort of issues and back feeding or short and popping the fuse .



[James McFadden](#) 186 posts since Dec 9, 2014

Re: ABS trailer code 520216 31 P4 New Cascadia Dec 2, 2020 1:22 PM

Well I might have just answered my own question on why the fuse has blown. [SS 1033950](#) ..



[Kyle Siebert](#) 4,101 posts since Nov 14, 2014

Re: ABS trailer code 520216 31 P4 New Cascadia Dec 2, 2020 5:55 PM

Im pretty sure its supposed to be a 30 amp circuit breaker, but all the drawings are restricted for me to possibly prove it.



[Kyle Siebert](#) 4,101 posts since Nov 14, 2014

Re: ABS trailer code 520216 31 P4 New Cascadia Dec 2, 2020 5:56 PM

My only hope would be to verify the physical cover has the correct p/n and calls out a circuit breaker for it. I haven't seen a fuse for this, its always been a circuit breaker for me.



[Kyle Siebert](#) 4,101 posts since Nov 14, 2014

Re: ABS trailer code 520216 31 P4 New Cascadia Dec 2, 2020 5:57 PM

Nevermind, it does show it in the wall chart. Use circuit breaker p/n 23-13126-230



[James McFadden](#) 186 posts since Dec 9, 2014

Re: ABS trailer code 520216 31 P4 New Cascadia Dec 2, 2020 6:06 PM

well for whatever reason they had 30 amp fuse in them. I do see the ones with a breaker in it and don't have a problem ..



[Kyle Siebert](#) 4,101 posts since Nov 14, 2014

ABS trailer code 520216 31 P4 New...

Re: ABS trailer code 520216 31 P4 New Cascadia Dec 2, 2020 6:15 PM

I personally think its a safety issue, using a fuse. I believe if the fuse is used and blown, after a key cycle, there is no notification after there is no trailer abs. So then he's driving a rig without trailer abs and that could be a huge liability if he gets into a crash and its discovered there was no driver warning on the dash there was no trailer abs. Its a stretch but, id stick to what the wall chart says.



[Kyle Siebert](#) 4,101 posts since Nov 14, 2014

Re: ABS trailer code 520216 31 P4 New Cascadia Dec 2, 2020 6:16 PM

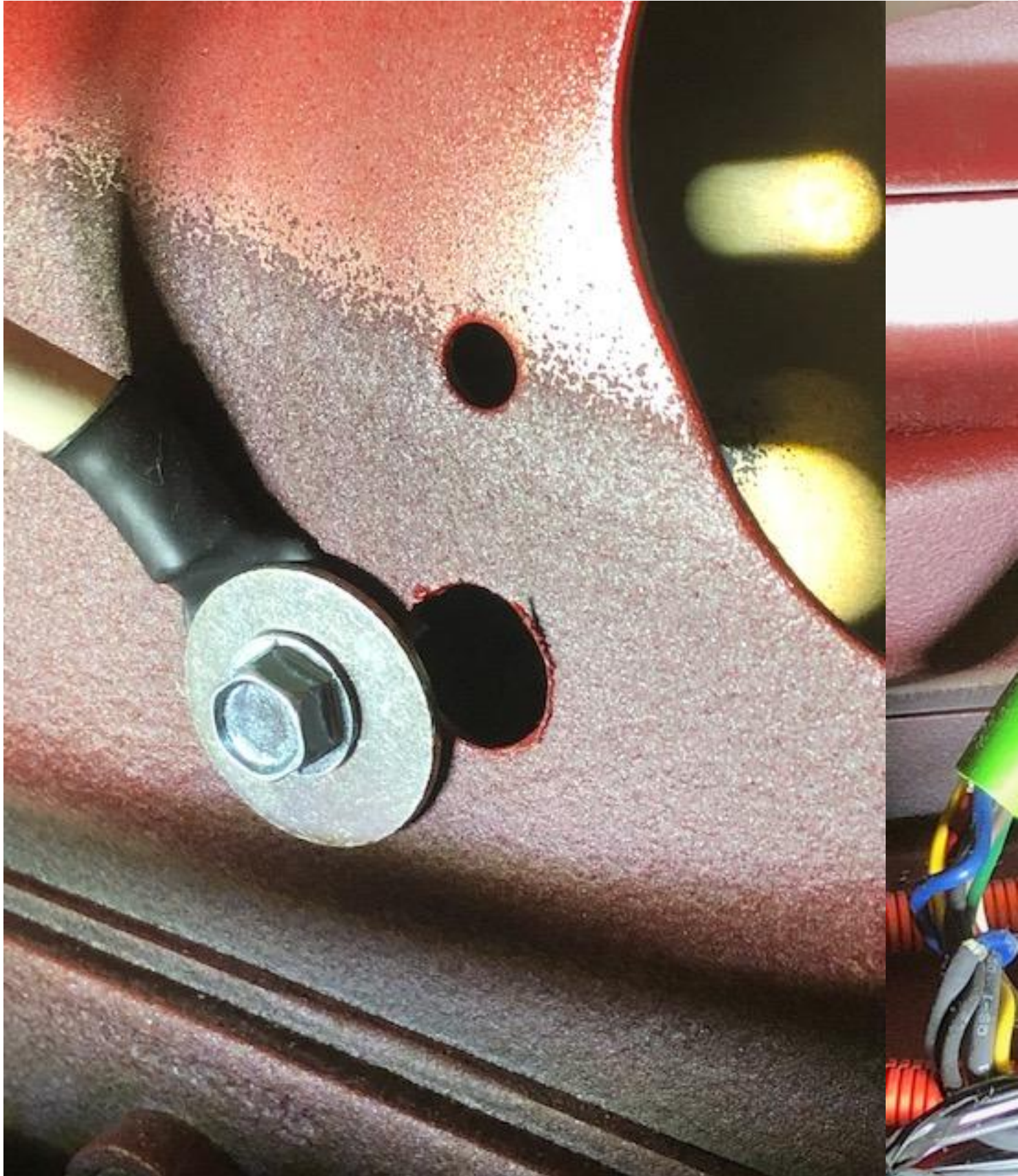
But at least with a fuse you can see there is a short causing the 520216 and not a loose ground or issue with trailer PLC feed or abs ignition feed.



[Jim Langeveld](#) 11 posts since Feb 22, 2019

Re: ABS trailer code 520216 31 P4 New Cascadia Dec 3, 2020 4:06 PM

We have seen this a couple times and found the ground for the 7way on the rear wall to be the problem each time. Clean it up and re-attach properly.



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[Russell Thornley](#) 18 posts since Nov 20, 2018

Re: ABS trailer code 520216 31 P4 New Cascadia Jan 15, 2021 5:09 PM

Some updates, we have two more unit with the same customer that have the same ABS codes/complaints for the 629-11 & 520216-31, each has low miles like 34k miles, VINS MJ8944 & LV6758. Note, on each of this customer's units, the trucks are NOT equipped or spec'd with back wall trailer receptacle plugs, rather they run under the cab and left side chassis, the ground circuit runs directly to a frame stud behind fuel tank and harness goes back up to left front wall, so the issue with the back wall grounding is not the issue. Our DSM replied that it sounds like a software update to help address this is almost ready for release? On one of these units, we noticed the codes had been logged going through a separate issue, although the truck was not specifically brought in for any ABS complaints, BUT the trailer ABS lamp was illuminated all the time driving the truck in. No codes were active, only the two mentioned above were logged. We flashed the single Sam for another issue related to dome lamps and the trailer ABS lamp was extinguished after.



[East Chicago Penske](#) 1 posts since Nov 23, 2020

Re: ABS trailer code 520216 31 P4 New Cascadia Jan 25, 2021 2:03 PM

Question; where are the batteries mounted? In cab or outside? If mounted inside checked for loose grounds at battery we have been seeing several units where stud nuts are lose at battery.



[Russell Thornley](#) 18 posts since Nov 20, 2018

Re: ABS trailer code 520216 31 P4 New Cascadia Jan 25, 2021 9:55 PM

...Each truck we have encountered have been outside in the batt. step box. We have even started performing fixed load voltage drop checks on each seven way ground with a carbon pile and a fair amount of amps.