

Service brakes lock up when using...



[Jerry Holmes, jr](#) 4 posts since Jun 26, 2020

Service brakes lock up when using engine brakes Nov 12, 2020 10:25 PM

VIN # 3AKGGLD57GSGC5386.

The front drive axle service brakes are engaging and locking up when the engine brakes are on high. The service brakes apply at other engine brake settings but it is not as noticeable. I have never run across this issue before. I do not see a parameter that would cause this. There are no codes in any module. The wheel speeds are showing up as normal. The service brake switch does activate when the engine brakes are on. I will add a log file of the issue. Any assistance would be greatly appreciated.

- [\(3AKGGLD57GSGC5386\) 11-12-2020 1340.42.DrumrollLog](#) 405.1 KB

Tags: engine brake, brakes



[Eddie Stacy](#) 11 posts since Dec 19, 2014

Re: Service brakes lock up when using engine brakes Nov 13, 2020 2:05 PM

I would look into and issue with the ATC or possibly a wheel speed sensor slip that is happening too fast to be captured on a laptop. I had a p-3 with a manual trans that would lock up the brakes and stall the engine about two weeks ago. What I found was the rear ATC valve would activate when the wheels would spin and it would not release the air to disengage the brakes in time.



[Jerry Holmes, jr](#) 4 posts since Jun 26, 2020

Re: Service brakes lock up when using engine brakes Nov 13, 2020 5:21 PM

Just an update on this. I have disconnected the atc valve with no change. Also unplugged the abs module and it had no effect. the customer just told us the vehicle was in a wreck and the front drive axle was replaced. Everything appears to be installed correctly.



[Clayton Campbell](#) 143 posts since Feb 16, 2016

Re: Service brakes lock up when using engine brakes Nov 13, 2020 5:42 PM

I'd unplug the ESC module and then the RDF



[Jason Black](#) 40 posts since Apr 27, 2016

Re: Service brakes lock up when using engine brakes Nov 13, 2020 8:33 PM

My VIN: FY0684

I'm not convinced that the front drive service brakes are coming on at all...

The jakes aren't designed to be used bobtail with this single axle drive and ECAS. My opinion. A 6 x 2 configuration will never ever behave like a 6 x 4, but many drivers expect it to.

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The engine has SO much brake horsepower that it will lock up the drives in a single axle configuration. I've been fighting with one that I'd bet has the same symptoms. I have started a WABCO help ticket and the ticket has been escalated.

Using WABCO Toolbox, monitor your front vs rear suspension air pressures and test drive in the parking lot again. Part of the issue I think is that the ECAS isn't behaving like the Freightliner manual says it will. It's supposed to have more air in the front drive bags than the rear, until we near GAWR and the tag needs to assist by carrying a good bit of the load. Mine always has more pressure in the rear. The wiring and plumbing checks out, front to front and rear to rear.

Does yours have a load transfer switch? Mine doesn't.

A brief transcript of my encounters thus far with WABCO:

Comment

Jason emailed in to update the case with the following results "Per the test request: ***Pressure sensors disconnected, Key on: 1: DC V from pin 1-2 drive axle pressure sensor connector, 12.8 V 2: DC V from pin 1-2 tag axle pressure sensor connector, 12.8 V ***Key off with pressure sensors, both X2 and X3 ECAS ECU connectors unplugged: 3: Ohm X2/7 to chassis ground, OL 4: Ohm X2/1 to chassis ground, OL 5: Ohm X2/6 to chassis ground, OL 6: Ohm X3/3 to chassis ground, OL 7: Ohm X2/7 to X2/1, OL 8: Ohm X2/7 to X2/6, OL 9: Ohm X2/1 to X2/6, OL 10: Ohm X2/7 to X3/3, OL 11: Ohm X2/1 to X3/3, OL" TSR noted that all values are within specification. TSR advised that escalation will be updated. TSR advised that facility will be notified when information is available. TSR e-mailed case to the facility.

Jason emailed to update case. " Still waiting on updated troubleshooting checklist. " TSR adjusted contact email to: JBlack@premiertruck.com (and facility prefers emails be sent to him as well). TSR emailed case to facility.

TSR reached out to facility and spoke to Jason. TSR advised that previous wiring checks were sent for the incorrect ECU. TSR advised that new wiring checks should be performed to ensure that wiring is correct for the vehicle. TSR requested the following wiring checks be performed: With the sensors disconnected and the Key On- DC voltage from pin 1 - 2 on the drive axle sensor connector = DC voltage from pin 1 - 2 on the tag axle sensor connector = Key Off with sensors and both the X-2 and X-3 connectors unplugged - Resistance from X2 connector pin 7 to chassis ground = Resistance from X2 connector pin 1 to chassis ground = Resistance from X2 connector pin 6 to chassis ground = Resistance from X3 connector pin 3 to chassis ground = Resistance from X2 connector pin 7 to pin 1 = Resistance from X2 connector pin 7 to pin 6 = Resistance from X2 connector pin 1 to pin 6 = Resistance from X2 connector pin 7 to X3 connector pin 3 = Resistance from X2 connector pin 1 to X3 connector pin 3 = TSR emailed case to facility and advised to call back with results. TSR e-mailed case to the facility.

Jason emailed in to update the case stating "Thank you for your response. I found no faults in any OEM module relating to lack of communication with the ECAS system. I inspected the OEM wiring. I was looking specifically at the datalink wiring. Both the ECAS and ABS ECUs are wired to a 250K J939 datalink. I shut everything off including the battery disconnect switch and checked the resistance of J1939 high to low, for both modules, and found 60 ohms +/- 1 ohm at each module." TSR advised that case will be escalated for review. TSR advised that facility will be updated when information is available. TSR e-mailed case to the facility.

Jason emailed to update case (added additional inquiries to previous case comment). " perhaps I should request a test drive with a loaded trailer. -maybe I should block off the air to the rear bags (with the rear pressure sensor still in the circuit) and test drive bobtail in the parking lot to see if less air to the rear would actually make a difference in the hopping/skidding of the drive tires. " TSR requested if the OEM wiring has been inspected. TSR requests if there were any faults in any OEM module for lack of communication to the ECAS ECU? TSR emailed case to facility.

Jason emailed in to update the case stating "The ECAS ECU arrived so I shut everything down and disconnected battery shutoff and replaced the ECU. I recalibrated the suspension height and sensor pressures. The vehicle is still exhibiting the same symptoms as before, hopping of drive tires when bobtail and clutch pushed in and then released while in gear going down a hill. I pulled back in to the shop and measured the voltage across the two terminals of the harness plug that goes to the height sensor, and found 1.93 volts, again. Since this vehicle is a 6 x 2 configuration, I'm wondering a few things: -is this just normal behavior for a 6 x 2 vehicle? I would kind of expect this behavior out of a 4 x 2 truck, that is. -driver possibly inexperienced with 6 x 2 trucks and interpreting the normal behavior as abnormal? -I'm suspecting that we have the wrong spec of 8-30 V DC at X2/5 or there is an OEM wiring problem preventing X2/5 from being at normal voltage ,since we are STILL getting 1.93 volts at the height sensor and there are no issues between the ECU and that sensor. - Pressure should always be more in the drive axle bags (than the tag axle) if the statement in the driver's manual "In bobtail or with a loaded trailer less than the GAWR, the tag axle supports a negligible load while the drive axle supports nearly the full weight..." is a true statement, yet the opposite seems to be the case. -Using the J1708 ToolBox program, tire sizes are listed as having 126.00 inches circumference for all 3 axles, but the tires are different across the axles. All are 275/80 R 22.5 tires, but the steers are listed as 517 revs/mile, the drives as 511 revs/mile, and the tags as 507 revs/mile. These, divided by 63,360 inches per mile gives 122.55, 123.99, and 124.97 inches circumference, respectively, from steer to tag. I know there is an acceptable margin that these can differ and still function without incident, but does this matter in this case? -The shocks look used, Mad-Max-in-the-Apocalypse used. I wouldn't be surprised if they were the original ones. The stated purpose of shocks is to dampen spring oscillation, so I'm thinking this could certainly worsen the exhibited symptoms as well." TSR requested if the OEM wiring has been inspected. TSR requests if there were any faults in any OEM module for lack of communication to the ECAS ECU? Facility may call or email to update the case, TSR emailed case to the facility.

Jason called in to update the case stating that they traced the wire from the sensor to the ECAS ECU and did not find any issues in the wiring. Jason stated that they back probed the ECU connector and found that the ECU is only putting out 1.93 Volts TSR advised that based on the results provided if the ECU is only outputting 1.93 Volts then there is most likely an internal failure of the ECAS ECU and it will need to be replaced. TSR advised the component is outside of WABCO warranty guidelines. WABCO cannot advise replacement of any part because WABCO is not paying for the repair. TSR advised it is up to the customer to give authorization for any and all diagnostics and repairs. Facility will update case for further diagnosis or when vehicle is repaired. TSR e-mailed case to the facility.

Jason emailed in to update the case stating: "I sent these troubleshooting test results last week, still awaiting a response" TSR reached out and spoke to Jason. TSR requested did the wiring checks that were out of specification, from the previous update been addressed? Jason stated that there was no update to his knowledge being sent over. Jason stated to email the case to jblack@premiertruck.com TSR advised if the out of spe-

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cification checks have not been addressed to continue with troubleshooting those issues by contacting OEM for wiring troubleshooting. TSR advised facility may reach back out for further diagnostics or when all is well. TSR e-mailed case to the facility.

No updates have been made regarding this case. TSR requests facility update the case by REPLYING to this e-mail, sending updates to WNACustomerCare@WABCO-Auto.com (including case number and the word WABCO in the subject line), or by contacting WABCO Customer Care by phone at 855-228-3203.

Jason emailed in the results: Set 1: 1: X1/12-chassis ground, 0.1 ohms 2: X1/7-chassis ground, 12.53 volts 3: X1/10-chassis ground, 0.47-0.50 volts 4: X1/7-chassis ground, 12.45 volts 5: X1/10-chassis ground, 12.45 volts 6: X1/12-headlight-X1/7, ok, sealed beam operates 7: X1/10-headlight-X1/12, ok, sealed beam operates Set 2: 1: 1.93 volts***** 2: X2/7-chassis ground, OL 3: X2/1-chassis ground, OL 4: X3/4-chassis ground (There is no terminal in socket X3/4) 5: X2/7-X2/1, OL 6: X2/7-X3/4 (There is no terminal in socket X3/4) 7: X2/1-X3/4 (There is no terminal in socket X3/4) It looks like the only sockets populated in X3 are 3,6, and 8. TSR called the facility and was advised Jason left for the day. TSR advised the voltage in check 1 for set 2 should be between 8 to 30 volts. TSR advised Jason to contact the OEM for assistance with the wiring. Jason will update the case with the results. TSR emailed a copy of the case to the facility.

No updates have been made regarding this case. TSR requests facility update the case by REPLYING to this e-mail, sending updates to WNACustomerCare@WABCO-Auto.com (including case number and the word WABCO in the subject line), or by contacting WABCO Customer Care by phone at 855-228-3203.

TSR called facility and advises additionally; TSR advises based on intermittent; to do the checks while the concern can be duplicated (i.e. with the clutch pushed in). TSR advises do not ground the X3 pin 6, doing so could damage the ECAS ECU. TSR emailed case to facility.

TSR advises result of case escalation. TSR called facility to update case. TSR requests; are there any ABS fault codes (regarding fault code 40-2)? 12 V system and no ABS fault codes found. TSR advises; perform power and ground -> Turn IGN off unplug the ECAS X1 connector, on harness side. 1) Measure resistance to ground pin 12= 2) Measure voltage to ground at pin 7= 3) Measure voltage to ground at pin 10= Turn ignition on: 4) Measure voltage to ground pin 7= 5) Measure voltage to ground pin 10= 6) Load check with sealed beam headlamp from pin 12 to 7= 7) Load check with sealed beam headlamp from pins 10 to 12= TSR advises regarding 27-5. Disconnect at the sensor and inspect both connector and component for damage, contamination or corrosion. Key On 1) At the sensor connector, measure voltage across pins 1 and 2= Key Off- Disconnect both pressure sensors and disconnect both the X-2 and X-3 connectors 2) At the ECAS ECU check resistance from: X2/7 - chassis ground = X2/1 - chassis ground = X3/4 - chassis ground = Key Off- Check X2/7 - X2/1 = X2/7 - X3/4 = X2/1 - X3/4 = Facility will call or email to update case with exact results. TSR emailed case to facility.

Jason emailed to update case; stated: " Shots: normal level saved, upper level saved, lower level saved, calibration successful, pressure values saved. Please don't forget to copy my e-mail in to the address field. I had to have someone forward me the last one because it didn't get to me. (JBlack@premiertruck.com) " These codes appeared in memory after just now re-calibrating the ECAS. I may have unplugged both pressure sensors at one time or another during this to check for corrosion or pin and socket problems, but they are both ok. " A view of the diagnostic screen showing no codes. " It is probably also worthy of mentioning that I and the trainer while thinking of things to help figure out what is wrong, noted that there is no load transfer switch

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on this truck, nor is there ever an indication on the dash display that load transferring is taking place. I added a socket and wire to terminal 6 in connector X3 and briefly connected it with ground. It seemed like something had happened because I felt the truck move a little, but when driving again in the parking lot I experienced the same loss of traction upon pushing and releasing the clutch pedal a moment later. This occurred even after touching the new circuit to ground again several times. The ECAS Toolbox switch test screen indicates that the "traction help" switch is going to ground each time I ground terminal 6 in X3. " Jason provided walkthrough of calibration steps; fault code report with stored 27-5 and 40-2, ECAS main menu screenshot. TSR escalated case for further review. TSR advises facility will be contacted with results of escalation. TSR emailed case to facility.

TSR reached out and spoke to Jason. TSR requested if blocks were being used during calibration. Jason stated yes blocks are being used, the blocks were precision crafted out of spring shackles and machined grounded to spec. TSR requested screenshots of both the high and low calibration steps from ToolBox. TSR advised facility will update the case with the requested information for further diagnostic assistance. TSR e-mailed case to the facility.

Jason called in to update the case with further information. Jason stated that the ECAS part number is 446 170 300 0. Jason stated that the tag axle has a higher pressure than the drive axle and it is not getting any traction. Jason stated that the wiring is not crossed due to being able to command air into the correct axle air bags with no issue. TSR advised that the case will be reviewed and the facility will be contacted when further diagnostics is able to be given. TSR e-mailed case to the facility.

Jason (T) emailed in a Pre-Call worksheet for System TBD outside of WABCO and OEM warranty. Complaint: "LOSS OF TRACTION ON DRIVE WHEELS" Jason stated: "CUSTOMER COMPLAINT IS "DRIVE AXLE AIR BAGS NOT WORKING CORRECTLY. TIRES ARE NOT GETTING TRACTION. BAGS INFLATE BUT AFTER BEING DRIVEN FOR ABOUT 10 MINUTES, NO PRESSURE." UNIT IS 6 X 2 CONFIGURATION WITH ONE DRIVE AXLE AND ONE TAG AXLE IN THE REAR. I HAVE RECALIBRATED RIDE HEIGHT AND PRESSURE VALUES SEVERAL TIMES, INSTALLED PRESSURE GAUGES TO VERIFY SENSOR VALUES (CORRECT), TEST DRIVEN IN LOT MULTIPLE TIMES TO VERIFY LOSS OF TRACTION. IT SEEMS TO BE OK BOBTAIL UNTIL CLUTCH IS DEPRESSED A FEW SECONDS DURING DECELERATION AND RELEASED. AT THAT POINT THE DRIVING WHEELS LOCK UP OVER AND OVER AND BOUNCE ACROSS THE PAVEMENT. " TSR requested if the vehicle is equipped with Electronic Controlled Air Suspension(ECAS), if so what is the ECAS ECU part number. TSR advised if equipped with ECAS are there any faults in the ECAS? Facility will update case for further diagnosis or when vehicle is repaired. TSR advised the unit is outside of WABCO warranty by time and/or mileage. TSR advised this case is for diagnostics only. TSR advised to obtain customer approval for all testing and repairs. TSR e-mailed case to the facility.



[Scott Trippel](#) 3,993 posts since Dec 13, 2014

Re: Service brakes lock up when using engine brakes Nov 17, 2020 5:54 PM

In Jake mode if the wheel skid the ABS will disable the engine brake. Does this not happen?

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Jason Black 40 posts since Apr 27, 2016

Re: Service brakes lock up when using engine brakes Nov 20, 2020 1:19 PM

Honestly, I wasn't even using the jakes on my truck and have not tested using the jakes.

I was just pushing the clutch in while going on a downhill stretch of pavement (low range gears), and then releasing the clutch suddenly. This gets the front drive axle to hopping across the pavement over and over again.

With air mechanically disabled to the tag axle bags (leaving the air pressure sensor plumbed in to suspension air), the hopping is all but stopped. My feeling is that we have improper programming or parameters that are biasing too much air to the tag axle. I've shared this with WABCO and am awaiting another response from them.



Jason Black 40 posts since Apr 27, 2016

Re: Service brakes lock up when using engine brakes Nov 30, 2020 10:51 PM

I keep getting told that the problem is corrosion in the wiring. 10 wires from the ECAS ECU turn in to 16 at the last ECAS harness (of the 4). I've ohmed everything from X1 and X2 to the sensors and valves with a Fluke, and each leg is 0.2 ohms. I came in Saturday and swapped the pressure sensors and even the ECAS valves... to no avail. Apparently I'm missing something somewhere. I have been told by WABCO that a point to point ohm test might overlook the corrosion that could cause this problem. I've been on this ticket so long I found out I'm gonna be a grandpa (no joke, baby here in May, they say...).

I'd love to have an overlay/breakout harness for this, may have to make one.



Kyle Siebert 4,101 posts since Nov 14, 2014

Re: Service brakes lock up when using engine brakes Nov 13, 2020 9:02 PM

Sounds like a cocked drum on the hub. Look for one of the pilots to be smashed over and the opposite side to have a gap.



Kyle Siebert 4,101 posts since Nov 14, 2014

Re: Service brakes lock up when using engine brakes Nov 13, 2020 9:03 PM

Nevermind that. Its only happening with engine brake, not service brake. Sorry about that.



Kyle Siebert 4,101 posts since Nov 14, 2014

Re: Service brakes lock up when using engine brakes Nov 13, 2020 9:05 PM

A dd15 has 600 engine brake horsepower at something like 1800 rpms. So the idea of a 6x2 brakes locking up with engine brake makes sense.



Kyle Siebert 4,101 posts since Nov 14, 2014

Re: Service brakes lock up when using engine brakes Nov 13, 2020 9:07 PM

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Would be nice if there was a parameter to change engine brakes to default to medium or low when there isn't a heavy load. Say if fuel milage was low it would have high engine brakes. Or if engine load was high it would default to high engine brakes. But when load decreased or mph increased it would drop max engine brake to medium or low.



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

Re: Service brakes lock up when using engine brakes Nov 13, 2020 9:08 PM

I think the owners manual says not to use engine brakes when bobtailing...



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

Re: Service brakes lock up when using engine brakes Nov 13, 2020 9:12 PM

Also if it has ECAs, I would highly recommend calibrating it CORRECTLY. There's room for error and it could be causing issues.



[Jason Black](#) 40 posts since Apr 27, 2016

Re: Service brakes lock up when using engine brakes Nov 20, 2020 1:48 PM

I couldn't agree more.

I use custom blocks, crafted from locally-harvested spring shackles and precision-ground at 2.625" +/- 0.001".



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

Re: Service brakes lock up when using engine brakes Nov 20, 2020 7:40 PM

locally-harvested

Hahahaha



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

Re: Service brakes lock up when using engine brakes Nov 13, 2020 9:16 PM

WARNING

To avoid injury from loss of vehicle control, do not activate the **engine brake** system under the following conditions: **on wet or slippery pavement, unless the vehicle is equipped with antilock braking system (ABS) and you have had prior experience driving under these conditions; when driving without a trailer or pulling an empty trailer; This is from section 13 of the drivers manual. Sub section ENGINE BRAKE.**



[Jerry Holmes, jr](#) 4 posts since Jun 26, 2020

Re: Service brakes lock up when using engine brakes Nov 13, 2020 9:30 PM

Thanks for all the input! This is starting to make sense now. I have removed the air lines from the brake chambers and tested. Verified the brakes are not engaging. The ECAS ride height is 4" which I am in the process of recalibrating that now. I am sure the ecas system and engine braking when bobtail is the cause of this issue.

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Jason Black 40 posts since Apr 27, 2016

Re: Service brakes lock up when using engine brakes Nov 13, 2020 9:53 PM

Something else that I just did was to remove both fittings from the rear drive air bags and cap the pipe thread ends off, then reinstall to the original air lines and hook the air pressure sensor back up. I test drove in parking lot and the difference is like night and day. It is so much better. I'm thinking that we're dealing with some messed up parameters or programming that is backwards or biased and is providing too much air to the rear bags.

I have calibrated this suspension 6x, each time with blocks on the front axle. At WABCO's behest, I replaced the ECAS ECU and recalibrated the ride height again. Things just haven't gotten any better at all until I "disabled" the rear suspension. I sent my comments on this experiment to WABCO.... we'll see what they say.



Jerry Holmes, jr 4 posts since Jun 26, 2020

Re: Service brakes lock up when using engine brakes Nov 14, 2020 2:36 PM

Thanks for sharing that. I tested mine after adjusting the ride height and it is better but still noticeable when bobtail. The issue does not occur when truck is pulling a trailer. I am curious to see what wabco says on your issue. I have been around and around on other ecas issues with wabco before so I can feel your pain.



Jason Black 40 posts since Apr 27, 2016

Re: Service brakes lock up when using engine brakes Nov 20, 2020 1:53 PM

This issue doesn't seem to be isolated to just this 6 x 2 Cascadia. I've talked to one other guy here who has dealt with similar circumstances. I have to wonder how many accidents hypothetically could have resulted from a loss of traction similar to this, and if some sort of recall or campaign involving reprogramming theoretically could have helped.



Steve Reppard 126 posts since Jun 29, 2020

Re: Service brakes lock up when using engine brakes Nov 17, 2020 12:23 PM

This is not "uncommon" when bobtailing as the engine brakes are very aggressive on high and can cause "skidding" of tires. DT12's will shift down to get rpm's in proper "max" engine brake range but if you have no load on tires it can cause what your explaining. Bobtailing I would use med and low as high is not necessary.