

DON'T LET THE LIGHTS

GO OUT

CVSA's Roadcheck inspection blitz is a great reason to get up close and personal with your lighting system.

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The Commercial Vehicle Safety Alliance has moved the dates of its International Roadcheck inspection blitz from the first week in June to the first week in May – May 4-6, to be precise. This year, vehicle lighting is one of the areas inspectors will pay special attention to.

PHOTOS: JIM PARK

There's no better way to get invited into a roadside inspection than to drive around with a light or two out.

That's not surprising. Lighting problems account for six out of 25, or 24%, of the most common vehicle violations found at roadside. Data from the Federal Motor Carrier Safety Administration shows the top violation, "inoperable required lamp - 393.9" appeared more than 312,000 times last year. It accounted for 12.2% of all vehicle violations and 4.4% of all out-of-service vehicle violations.

Considering all possible lighting-related violations issued in fiscal 2020, one in four vehicles chosen for inspection (25.3%) was issued a lighting-related violation. Slightly more than one in seven out-of-service vio-

lations (16.4%) was lighting-related.

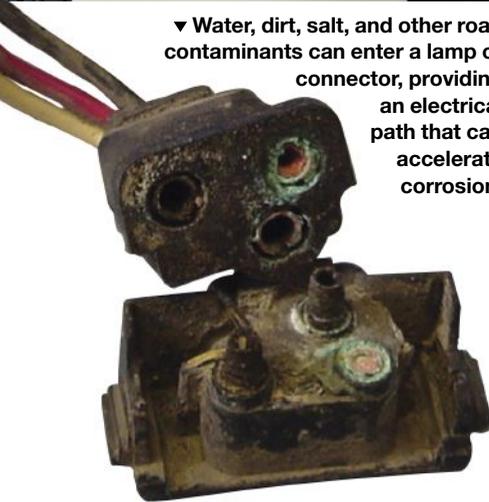
"Lighting issues draw attention to the truck," says Kyle O'Dell, director of engineering and new product development at Optronics International and USA Harness International. "Even when a vehicle is station-

"It is part of the driver's job to help spot defects and problem areas and report these to the fleet maintenance manager."

– Kyle O'Dell, Optronics



▼ Water, dirt, salt, and other road contaminants can enter a lamp or connector, providing an electrical path that can accelerate corrosion.



▲ Some lights have specific orientation for proper lighting visibility and heat dispersion. Make sure they are installed correctly.

til long after the trailer has been dropped at another customer's yard.

In addition, lighting is the kind of problem that can appear with little warning. A light may be fine when the vehicle is initially inspected, but it can fail as the trailer is driven out of the yard.

Here are five tips that can help keep you out of Roadcheck "jail."

1

Advance warning

Alert drivers to the date change for Roadcheck and advise them to be particularly vigilant for lighting problems. Remind them of FMCSA's lighting requirements. Distribute bulletins on what to look for when inspecting tractor and trailer lighting, such as non-working lamps or lamps burning dimmer than others, damaged lenses; loose tractor/trailer seven-way connectors; damaged, corroded, or frayed wiring, etc. Encourage them to report everything.

2

Spring cleaning

Winter can play havoc with electrical systems and lighting. Aside from being bathed in corrosive road spray and the constant freeze/thaw cycles in the winter, trailer wiring can be damaged by ice accumulation, warns Alicia Jones, global market manager - trailer/body builder at Grote Industries.

3

Focus on older equipment

Older equipment is more susceptible to problems because corrosion has had time to set in, connectors may have loosened over time, and the light fixtures may have been damaged.

"Small cracks can develop in the inner and outer insulation of constantly flexing cable, and abrasions may occur as it relentlessly contacts metallic surfaces," cautions O'Dell. "Any breach in the protective surface of the wire can admit water and road chemicals. The same flexing and undulation can promote the migration of moisture throughout the electrical system."

Older lamp housings may have been subject to abuse over the years, from striking tree limbs to being washed in harsh chemicals. Cracks and breaks in the housing or the lens could admit moisture, which can cause corrosion in the terminals and the wire connecting the lamp to the harness. While they may continue to function, they should be flagged for replacement next time the vehicle is in for preventive maintenance.

4

Keep the lenses clean

Peterson Lighting and Harness Systems cautions against using acetone, alcohol, abrasive cleansers, or acidic or caustic compounds and solvents when washing tractors and trailers.

Peterson service literature says warm

ary, an inoperable vehicle lamp suggests to authorities that a vehicle is not being properly maintained. If a vehicle is stopped for a lighting problem, a more thorough roadside inspection is almost inevitable."

While drivers are required to inspect their vehicles daily, O'Dell says they are often placed in a difficult position between the time needed for a thorough inspection and the minutes ticking away.

"A full inspection will take between 30 to 50 minutes," he says. "But in an industry where time is quite literally money, there is pressure to keep the pre-trip inspection as brief as possible. In some instances, drivers don't get paid for the time they spend on pre-trip inspections, which adds additional anxiety and can lead to omissions."

Not only that, but there also are additional barriers to reporting defects and following through with repairs. It's a little easier to get the message back to the maintenance department with an electronic inspection report, but a paper report may not be seen un-

LIGHTING

water and mild dishwashing soap will do an excellent job of removing dirt from the lenses of vehicle lights without damaging the light or the vehicle. When cleaning a non-sealed incandescent light, do not allow water to enter the light housing.

Never direct the spray from a high-pressure power washer at your vehicle's lights or electrical connections.

Finally, when replacing a damaged lamp, be sure the conductor and connector are clean and corrosion-free. Otherwise you are setting the same problem in motion again. Peterson recommends using a high-quality dielectric grease on bullet connectors plus. However, do not apply grease or sealant to silicone-sealed modular connectors.



All the energy needed for the trailer electrical system comes from the tractor. A logical place to look for bad connections or low-voltage problems is the seven-way pigtail cable.

5

Don't ignore the tractor

Since all the energy needed for the trailer electrical system (lights, antilock brakes, and the multitude of new telematics equipment and sensors) comes from the tractor, the logical place to look for bad connections or low-voltage problems is the seven-way pigtail cable or the seven-way connector socket on the tractor.

Phillips Industries recommends using a simple seven-way socket circuit checker and plug circuit checker to check for electrical continuity. That won't indicate what voltage is at the socket, but it will indicate if the cable is properly connected and providing power to the trailer circuits.

Clean out all the old grease and watch for corrosion while there. TMC RP 159, Installation and Inspection Guidelines for Seven-Conductor Truck-Trailer Connector, from the American Trucking Association's Technology & Maintenance Council, can help here.

"As ice accumulates, the increased weight pulls on the wiring, causing more fraying, loose, or severed connections, lamp dislocations, and stress on splices. If a wire or cable pulls out completely, you can lose your lighting."

— Alicia Jones, Grote Industries

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There are right and wrong ways of repairing and splicing wire. TMC's RP 186-Wire and Cable Repair Guidelines can help eliminate messes like this one.

6

Continuity vs. voltage

When checking to see if a circuit is live, it's easy to poke a continuity tester into the socket — never pierce the wire insulation with the probe — but that only tells half the story. It reveals nothing about the voltage on the circuit. Even one volt beyond the designed voltage will reduce the expected life of an incandescent bulb filament by more than 50%, according to Clariance Technologies, maker of the Truck-Lite brand.

“Voltage should be checked regularly to ensure the vehicle is operating within a safe range,” notes the company’s Lighting User’s Guide.

Voltage-drop in a circuit can have several origins, from badly corroded wire to incorrect wire gauge.

“Wire size or gauge is very important,” notes the Truck-Lite guide. “The use of a wire gauge too small can cause dim or intermittent operation or excessive voltage drop and presents a potential fire hazard.”

When making repairs, always use stranded copper wire of the correct gauge and used correctly sized connectors.

LED lighting systems eliminate this problem, but they can be sensitive to voltage, too. While they will function on a range of voltages and still appear just as bright, once the voltage dips below a certain point, LEDs simply go out. They don’t dim first, warns Larry Rambeaux, a sales

application engineer at Purkeys.

“LED lights are what’s referred to as constant current,” he says. “An LED will work from, say, 7 volts to 15 volts or whatever, and be the same brightness. But if they drop down to 6.99 volts, suddenly they don’t work. And there’s no difference in brightness with the LED in between. That light will appear the same brightness, whether it’s 10 volts, 11 volts,

12 volts, whatever. But if the voltage drops below that minimum, they go from working fine to nothing.”

Roadcheck is only three days out of 365. It’s good to prep equipment for this special period, but roadside inspections go on year-round. There’s no better way to get “invited” to participate in one of those inspections than to drive around with a light or two out. 

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