



Introduction To Vehicle Inspection



A few things to go over before you get started with your vehicle inspection.

First absolutely, everything on this vehicle is mounted and secured. Even if it doesn't make sense the first thing out of your mouth every time any component being inspected is mounted and secured.

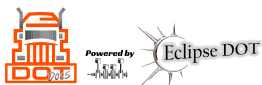
Second, you should usually follow up that it is mounted & secure by checking the component.

If the item is metal you are looking for any breaks, bends, or cracks. I like to shorten that to BBCs.

If it is a rubber or plastic, like a hose or a tire then You will be looking for abrasions, bulges, or cuts. Or in my shortened terms ABCs.

Third and this is going to depend on your mechanical knowledge. If you are somewhat mechanically inclined, you should be able to look at a component and figure out if it has nuts and bolts. Could any of them be loose or missing?

Is there a grease zerk on the component? Since it has a grease zerk is the component properly greased?



Check out our blogs at www.EclipseDOT.com/blog to learn more about DOT, leadership, and being your own boss!



Take your time and look over your component. Don't rush this part of the inspection.

Fourth have an order of operation when doing your pre-trip inspection. If you are bouncing around all over the place, then you will end up missing a component.

That's why it is so important to have a method for your inspection and to follow that method every time. Just like airline pilots have a method for inspecting each plane they fly, You are going to help you find a method for inspecting your rig.

I prefer a top-down method or an inside-out method. Where you work your way out depends on the section of the vehicle you are inspecting.

Lastly, you will not lose points during the test if you talk about a component that is not required. So, if you feel it might be on the test bring it up.



Overview Of A Vehicle Inspection Front Of The Vehicle

Without further ado let's get started.

You always start your vehicle inspection at the front of the vehicle.

For this section, You are going to use the top-down method.

To begin with, You are looking for three Ls. Lights, lean, and leaks.

As you approach the vehicle, you will check the top clearance lights and multi-function lights on the front making sure that they are mounted and secured, no cracks to the lenses, no moisture in the lenses, no

damage, and that all the lights are of the proper color, amber or clear.

Next, you will inspect the vehicle for any leans. Which could be an indicator of a suspension issue or a low tire.

The last L You are inspecting is for leaks. You are looking for any fluids dripping down from underneath the vehicle. These fluids could be oil, power steering fluid, coolant, or fuel.

Let's move on to the Second section, the engine compartment, all the steering items, and the front driver-side axle.

You will also use a top-down method with the engine compartment. And when You get to the driver-side axle, You will use the inside-out method.

We like to start your engine inspection from the passenger side.

You will only be inspecting engine components on the passenger side and when You move over to the driver's side, that's when you will finish up with the remaining engine components and move into steering, suspension, brakes, and tires from there.

Starting You will give a general overlook of all hoses in the engine compartment checking that they are mounted & secured, have no abrasions, bulges, or cuts, and no leaks. You should also be checking for any rub points on the hoses that could eventually wear through the hose.

Next, check your oil level by finding the oil dipstick. Then pull it out, wipe it clean, reinsert it, pull it back out, and then check it to be sure it's between the add and full marks. This is also a good time to inspect the color and viscosity of the oil. It should NOT be milky in color. And viscosity is just a \$5 word for how thick it is.

Let's move on to the main components in the engine compartment.

You are looking for the alternator, water pump, air compressor, and compressor steering pump.

What we are looking for in each of these is how they are driven. It could either be that they are run off a belt or driven by gear.

First will be the alternator. Make sure that it is mounted & secured, and has no breaks, bends, or cracks. It's most likely belt driven. So, we want to make sure that the belt has no more than 3/4 inch of slack or play in the belt.

Next, You will inspect the water pump. The easiest way to find it is to follow the big hose that comes out of the top of the radiator. It usually leads straight to the water pump. You want to make sure that the water pump is mounted & secured, not bent, broken, or cracked, and has no leaks. Lastly is it belt or gear driven? If there is a pulley on the front of it, then most likely it is belt driven. If there is no pulley on the front of it then most likely it is gear driven.

Now, let's move over to the driver's side of the engine compartment. Keep in mind that not all vehicles are the same, so be sure to check your vehicle and figure out where each component is.

On the driver's side, you will start with the coolant reservoir. You are mostly checking that the coolant level is in proper operating range. That means that it is filled between the fill (add) and full lines. Also check

that the reservoir (tank) is mounted and secured, has no leaks, and has no ABCs or BBCs.

Then you look at your air compressor. You are checking that it is mounted & secured, not bent, broken, or cracked, has no audible leaks and most likely it will be gear driven.

The last major component is the power steering pump. You want to check that it is mounted & secured, not bent, broken, or cracked, is not leaking, and find out how it is driven. Most power steering pumps on new vehicles (95 and newer) are gear driven.

That finishes up the engine. Let's move into the steering components.

First, you should inspect the steering column. Making sure it is mounted & secured, not bent, broken, or cracked, and has no more than 10 degrees of rotation or play. Also, check to be sure that the u joints are properly greased because they have grease zerks.

Second, move down to the steering gearbox and check to see that it is mounted & secured, not bent, broken, cracked, or leaking, and is

not missing any of the hardware like bolts or nuts.

Check the power steering hoses to be sure they are mounted & secured, have no abrasions, bulges, or cuts, and have no leaks.

The last thing you will check is the three-piece steering linkage. The pitman arm, drag link, and steering knuckle make sure that they are mounted & secured, with castle nuts and cotter pins on both ends. They are not bent, broken, or cracked and the grease boots are in good working condition free from any defects.

Next, Let's move into all components on the driver-side steering axle. For this, we will use the inside-out method starting with the "Suspension" and working your way out to the very outside parts, "lug nuts".

Starting with the suspension. Look at the leaf spring hangers making sure that they are mounted & secured, not bent, broken, or cracked, and have no missing hardware (Like bolts or nuts).

Next move on to the leaf springs themselves. Making sure that they

are mounted & secured, not bent, broken, or cracked, and have no signs of them scissoring or shifting in any way.

Now on to the U bolts. make sure that they are mounted & secure, not bent, broken, or cracked, and have no missing hardware (the saddles, nuts, or bolts themselves).

The last part of the suspension is the shock absorber. You want to be sure that it is mounted & secure, not bent, broken, or cracked, and not leaking any hydraulic fluid.

Now moving out from the suspension and into the brake components.

We like to start with the air line that goes into the brake chamber. Make sure that it is mounted & secured, with no abrasions, bulges, or cuts, and no audible leaks.

The brake chamber itself is mounted & secured, not bent, broken, or cracked, and has no audible air leaks. On top of that make sure that the C-clamp that holds the chamber together is present and not lose.

Next, make sure that the slack adjusters and pushrods, in front of the chamber have no more than one inch of slack when you pull on the slack adjuster.

Then we inspect the brake drums and the pads of the brakes. Unless of course, they have disc brakes, then you would be inspecting the rotors and the pads.

For the pads, you just want to be sure that there is at least a $\frac{1}{4}$ inch of the pad and that they are not worn dangerously thin. Also inspect that they are mounted and secure, with no BBCs. On the drums check to see that they are mounted & secured, not bent, broken, or cracked, with no discoloration and no grease or oil in the drum.

Finally, You will move to the tire.

On the tire, you should inspect that the tire itself is free of any abrasions, bulges, or cuts (ABCs) and that the tread depth is at least $\frac{4}{32}$ s of an inch, or for those of us who can reduce fractions that's $\frac{1}{8}$ th of an inch, on the front steer tires.

Next let's look for your valve stem to make sure it's not bent, broken, or

cracked, and check the air pressure with an air gauge to make sure that the tire is filled to the proper PSI and has a cap on it.

Moving on to the rim you want to be sure that it is free of any breaks, bends, or cracks. Check to see that the lug nuts are tight. You can check to see if there are any rust trails or shiny threads which would indicate that the lug had loosened up.

Last but not least, check the hub seal to be sure it is mounted & secure, not bent, broken, or cracked, there are not any visible leaks, and it is filled to the proper level.

That concludes the front of the vehicle inspection.



Side Of The Vehicle

Next, we will move onto the driver entry area down the side of the vehicle and around the rear of the vehicle. This also includes any components under the vehicle as well as anything unique to the other side of the vehicle.

As You work your way down the vehicle, You will be using a top-down method of checking components.

I like to start checking the multi-function lights on the side of the vehicle. You are looking for any damage, moisture, and fading. Also check to make sure that they are clean, clear, and of the proper color.

Then you inspect the mirror to ensure that it is mounted & secure not bent, broken, or cracked, and won't fly off and become a hazard. I would also check that the glass is in good condition and clean.

Next check the driver's door. you want to be sure that it opens, and closes, has a weather seal, that the hinges are in good condition operating condition and that they are tight.

Moving down to your steps make sure they are mounted & secure, not bent, broken, or cracked, and have no-slip hazards such as grease or ice.

Look at the fuel tanks next, You want to be sure that the tank is mounted & secure, not bent broken, or cracked, with no leaks, and that there is rubber or something like that between the straps and the tank itself.

While you are there check the fuel cap to be sure that it has a gasket, and chain and is tight.

Moving to the middle of the vehicle.

We like to start with the exhaust system. Make sure it's mounted & secure, not bent, broken, or cracked, and check all the piping for any black carbon soot on pre-DEF trucks or a white powdery substance on vehicles with DEF, those indicate that there is an exhaust leak.

Next, let's check the catwalk. Ensuring that it is mounted & secured, not bent, broken, or cracked, and won't fly off and become a hazard while driving the vehicle. It should also be able to hold your weight.

Since you are right there, You won't look at the frame of your vehicle to check that it is mounted & secured, not bent, broken, or cracked, with no twists, illegal welds, or excessive holes drilled into it.

From there you can easily see the drive shaft. Check it to be sure that it is mounted & secured, not bent, broken, or cracked, and if you were to grab it and move it up and down, side to side that there is no play in it.

Let's look at the back axles. This inspection should be done using the inside-out method starting with the "Suspension" and working your way out to the very outside parts, "lug nuts".

I like to start with all components on one axle. Then do the other axle the same way.

Starting with the suspension. Look at

the leaf spring hangers making sure that they are mounted & secured, not bent, broken, or cracked, and have no missing hardware (Like bolts or nuts).

Next move on to the leaf springs or torsion bar, or torque arm themselves. For springs you want to make sure that they are mounted & secured, not bent, broken, or cracked, and have no signs of them scissoring or shifting in any way. For all the other types of suspension, you want to check that all of the components are mounted & secured, not bent, broken, or cracked and that the bushings are in proper working condition.

From there I like to check the airbags if your vehicle has them. On the airbags, you check the mounts both top and bottom to ensure that they are mounted & secured, not bent, broken, or cracked, and pin proper operating condition.

That takes us to the airbags themselves. They are rubber so you are looking for ABCs on them and that they are inflated properly.

Now on to the U bolts. make sure that they are mounted & secure, not bent, broken, or cracked, and have no missing hardware (the saddles, nuts,

or bolts themselves).

The last part of the suspension is the shock absorber. You want to be sure that it is mounted & secure, not bent, broken, or cracked, and not leaking any hydraulic fluid.

Now moving out from the suspension and into the brake components.

We like to start with the air line that goes into the brake chamber. Make sure that it is mounted & secured, with no abrasions, bulges, or cuts, and no audible leaks.

The brake chamber itself is mounted & secured, not bent, broken, or cracked, and has no audible air leaks. On top of that make sure that the C-clamp that holds the chamber together is present and not loose.

Next, make sure that the slack adjusters and pushrods, in front of the chamber have no more than one inch of slack when you pull on the slack adjuster.

Then we inspect the brake drums and the pads of the brakes. Unless of course, they have disc brakes, then you would be inspecting the rotors and the pads.

For the pads, you just want to be sure that there is at least a $\frac{1}{4}$ inch of the pad and that they are not worn dangerously thin. Also inspect that they are mounted and secure, with no BBCs. On the drums check to see that they are mounted & secured, not bent, broken, or cracked, with no discoloration and no grease or oil in the drum.

Finally, You will move to the tires.

On the tires, you should inspect that the tires themselves are free of any abrasions, bulges, or cuts (ABCs) and that the tread depth is at least $\frac{2}{32}$ s of an inch, or for those of us who can reduce fractions that's $\frac{1}{16}$ th of an inch, on the drive tires.

Since we just checked the condition of the tires and your head is right there between the drums, it is a great time to check the spacing between the tires. You want to make sure that the rims are touching and the tire themselves are not touching. Also looking to make sure that there is nothing stuck between the drums. Like a rock, or a dead animal. lol

Next let's look for your valve stem to make sure it's not bent, broken, or

cracked, and check the air pressure with an air gauge to make sure that the tire is filled to the proper PSI and has a cap on it.

Moving on to the rim you want to be sure that it is free of any breaks, bends, or cracks. Check to see that the lug nuts are tight. You can check to see if there are any rust trails or shiny threads which would indicate that the lug had loosened up.

Last but not least, check the hub seal to be sure it is mounted & secure, not bent, broken, or cracked, there are not any visible leaks, and it is filled to the proper level.

Moving to the back of the vehicle, check that your mud flaps are mounted & secured, not excessively damaged, and won't fly off while you are diving down the road.

Last but not least check your rear reflectors and multi-function lights. Make sure they are mounted & secured, not bent, broken, or cracked, are the proper color, and have no moisture in the lenses.

External Light Inspection

Next is the external light inspection. You want to be in the vehicle making sure all the windows are rolled down. You can turn the key to the on position, but don't start the vehicle. Then make sure that the headlights and clearance lights are turned on.

Start at the front of the vehicle and work your way down the driver's side around then the rear of the vehicle. After that, you move to the front of the trailer, the driver's side of the trailer, and the rear of the trailer. After that, you move up the passenger side of the trailer and hit the passenger side of the truck.

First, You will inspect six light functions on the front of the vehicle.

Be sure to operate the lights and tell the inspector which ones you want them to inspect.

Let's get started.

On the front of the vehicle check your clearance lights up top. then will move to your low-beam headlights, next to your high-beam headlights. Then on to your left blinker (turn signal), right blinker (turn signal), and last check your hazard lights.

Next, ask the tester/inspector to move to the driver's side of the vehicle.

Have them check for all clearance lights, the left blinker, and hazards.

Ask the tester/inspector to check the lights on the rear of the vehicle. You want to have them check the following lights: taillights, clearance lights, left blinkers (turn signals), right blinkers (turn signals), hazards, and brake lights.

Last ask the tester/inspector to check the lights on the passenger side of the vehicle. Here you will want to have them check the clearance lights, the right blinker (turn signal), and hazards.

In Cab Inspection

The last section of the inspection is the in-cab inspection and brake check.

While all of the sections are important. You will want to MASTER this section because it is the only part of the inspection that has an AUTO FAIL portion.

If you don't complete the airbrake test exactly as it is directed then you will automatically fail the inspection.

So pay close attention here.

Safety First!

As soon as you get in the vehicle check your seatbelt making sure it's not ripped, torn, or frayed. Also,

check that it buckles and unbuckles and is free of any defects.

From there check the safety equipment. You'll want to be sure you have spare fuses, 3 reflective triangles, and a fire extinguisher that is mounted and secured, charged in the green, not expired, and is at least a 5-pound B, C chemical rating.

Next, move onto your mirrors making sure nothing is obstructing your vision and they are properly adjusted and clean so that you can safely operate the vehicle.

From there look forward to the windshield, making sure there is nothing that will obstruct your vision. It is clean and clear, and there are no pits or cracks in the glass.

I like to check the wipers making sure they work. While I'm there I test the windshield washer system making sure that it sprays fluid.

Now you get to turn on the heater and defroster making sure they are blowing hot air. Be sure to check that the defroster is blowing air out of the top and that the heater is blowing warm out of the bottom.

Here is the fun part, check both your city horn and air horn making sure they both work.

Move into your dash.

First, You will inspect your indicator lights of which there are 5. When you first turn the key to the on position, check that the ABS light comes on and turns off. After that check to be sure that the left blinker indicator, right blinker indicator, hazard indicator, and high beam indicator all work in the dash.

Next to properly read your gauges you need to perform a safe start. To do that you want to be sure the brakes are set, the transmission is in neutral, and you push the clutch to the floor (if you have one).

Now you are ready to start your vehicle.

Turn the key to crank the engine. With the vehicle started you can check your four main gauges.

The water temperature gauge, make sure it is slowly rising indicating it is working. Then the oil pressure gauge makes sure it's in a safe operating range. Next, the voltmeter makes

sure the battery is charging and is in a safe operating range. Then check the air pressure gauges for both air tanks making sure they are building up to the governor cut out. Next, your fuel gauge making sure you have enough fuel for the trip. And last but not least your DEF gauge if you have one, making sure that you have enough DEF for the trip.

Air Brake Test

Let's go back to the air gauges. As you build up to full air pressure (approximately 120 psi) you hear the relief valve blow off or as we like to say "Sneeze". Now you are ready to start your 3-part brake check.

Before performing this you want to make sure that your air is at the

governor cutoff psi. make sure your air tanks are full and the vehicle is on level ground where it will not roll. It is a GREAT idea to ask the tester/inspector if they would like you to chock the wheels.

Ok, let's start the test.

First, shut off the vehicle, then turn the key back to the on position. Next release all of your brakes by pushing in both parking brake knobs so air is going through the whole system.

The first test you need to do is the systems leak check.

The first test you can do but is not required is the static system test. This is where you release the parking brakes (push the knob in), and let the air pressure settle. And then set a timer for 60 seconds. You are making sure that for a Class B vehicle the air pressure does not leak down more than 2 PSI in 60 seconds.

The next test that you MUST complete is the APPLIED PRESSURE test.

For this test you again set your timer for 60 seconds, then with the parking brakes released (pushed in) and the

air pressure stabilized you apply the service brakes (press on the brake pedal) hard for 60 seconds. Making sure that you don't lose more than 3 PSI in the 60 seconds for a Class B.

**Be sure to tell the tester/inspector that you can not lose more than 3 psi in 60 seconds. And also tell them that it passed that part of the test.*

The next test is to make sure that your low-air alarm is working. You bleed your air down by pumping the brake pedal to about 60 PSI. Making sure that your low air alarm sounds and that a low air light comes on.

**Be sure to tell the tester/inspector what pressure that low air alarm comes on*

The last test is to make sure your parking brakes are set. You continue to bleed it down more making sure that your emergency/parking brakes are set between 20 and 40 PSI.

**Be sure to tell the tester/inspector what pressure they set.*

That finishes up your brake check!

Hydraulic Brake Test

If your vehicle is not equipped with air brakes, then you most likely have hydraulic brakes and will need to inspect them.

Instead of performing the airbrake test, you will want to complete the following hydraulic brake test.

Let's get started.

Before performing this you want to make sure that the vehicle is on level ground where it will not roll. It is a GREAT idea to ask the tester/inspector if they would like you to chock the wheels.

With the vehicle running, press the brake 3 times and hold it for 5 seconds making sure that the peddle stays firm.

next, shut the vehicle off and turn the key back to the on position.

Press on the brake peddle. if the vehicle is equipped with an electronic brake booster (found in the compartment) then you should hear the electric motor engage.

**Note. these are not common on smaller vehicles like pickups. They are mostly found on 1.5-ton and bigger vehicles.*

After the air is built back up, Fasten your seat belt and ask the tester/inspector to fasten there too.

Next, you release (push in) your vehicle parking brakes and put the transmission into a low gear pulling. Then slowly release the clutch pulling gently on the parking brakes of the vehicle to be sure that they work.

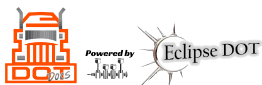
The last test you want to do is the service brake test. Release (push in) your parking brakes and put the transmission in a gear. Move forward at about 5 MPH and then gently press the brake pedal while holding the steering wheel loosely. You are checking to see if the wheel pulls hard to one side or another and if the service brakes will stop the vehicle.

That finishes up your vehicle inspection! Congratulations!!

Finishing Up The Inspection

You get to finish up your inspection by checking your parking brake. You do this by performing a tug test.

To do this you need to start the vehicle up again and build your air pressure back to the governor cutout. Let the air build up to the sneeze.



Want to be an indispensable asset to your company? Check out www.EclipseDOT.com/ELDT-Bootcamp-For-Trainers/

