

Rhode Island Vehicle Inspection & Maintenance Program



RI Inspector Training Outline

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Vehicles Subject to Emissions and Safety Testing

- RI I/M Program requires the following vehicles pass an emission and safety inspection every two years:

All gasoline and diesel-powered light duty passenger vehicles and light duty trucks with a GVWR of 8,500 pounds or less.

– OBD II Emission Tests + Safety Inspection for:

- 1996 and newer (1997 + newer diesel)

– Emission Component Check + Safety Inspection for:

- 1995 and older (1996 + older diesel)
- Vehicles 25 years old or older must pass a safety inspection and are subject to an emission test; however, they are not required to meet emissions standards.

**** New vehicles must be inspected within 2 years of the date of purchase or when the vehicle accumulates 24,000 miles, whichever occurs first***





Why Does RI Need an Emission Inspection Program?

Air Quality

Bad Air Quality Day Photo

Good Air Quality Day Photo





Why Does RI Need an Emission Inspection Program?

Ozone: Good Up High, Bad Nearby

I THOUGHT **OZONE** WAS A **GOOD THING?**

It is – when it's in the upper atmosphere. Ozone (abbreviated O₃) is a colorless, odorless gas composed of three atoms of oxygen.

Ozone occurs naturally in the upper atmosphere, shielding the earth's surface from the sun's harmful ultraviolet rays.

However, when ozone forms closer to the ground, in the troposphere, it can cause big problems.

The diagram shows a cross-section of the Earth's atmosphere. From top to bottom, the layers are labeled: THERMOSPHERE, MESOSPHERE, OZONE LAYER, STRATOSPHERE, TROPOSPHERE, and SURFACE. A city skyline is visible at the surface level, with a green glow emanating from it, labeled GROUND-LEVEL OZONE.

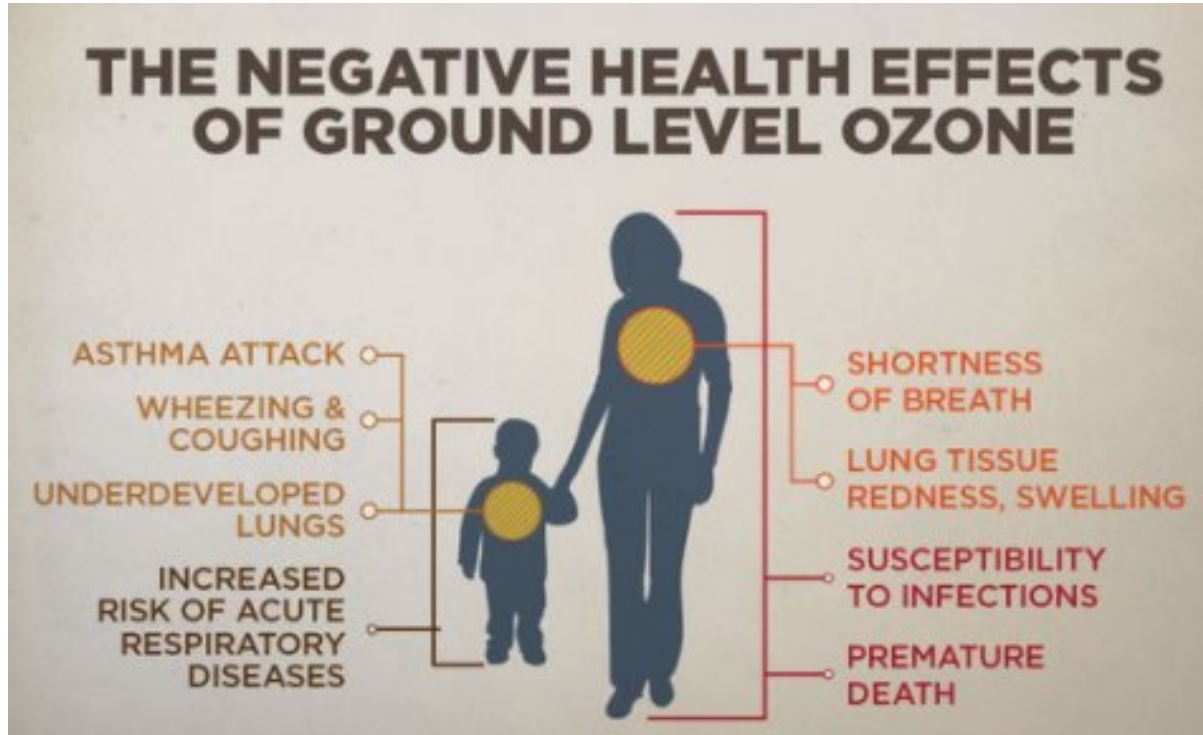
Ozone concentrations can reach unhealthy levels when weather is hot and sunny with little or no wind.





Why Does RI Need an Emission Inspection Program?

Why is Ozone a Concern?



People most susceptible include: Those with respiratory illnesses, older adults, children who are active outdoors, and even healthy adults.



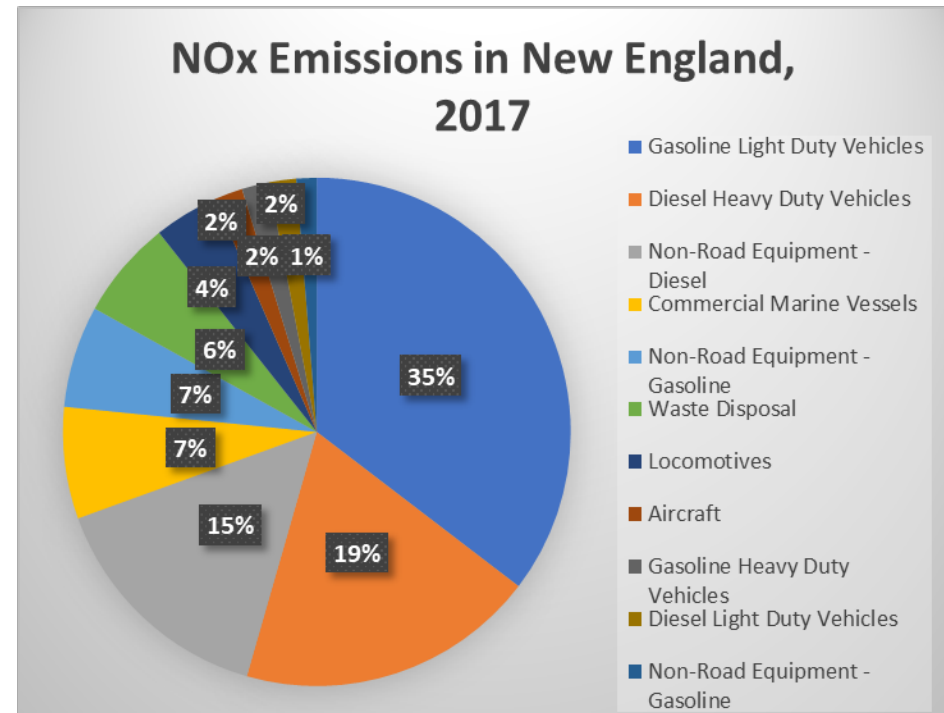


Why Does RI Need an Emission Inspection Program?

What is NOx (Nitrogen Oxides)?

Nitrogen Oxides are a family of poisonous, highly reactive gases.

- These gases form when fuel is burned at high temperatures.
- NOx pollution is emitted by automobiles, trucks and various non-road vehicles (e.g., construction equipment, boats, etc.) as well as industrial sources such as power plants, industrial boilers, cement kilns, and turbines.
- NOx often appears as a brownish gas.
- NOx can combine with oxygen and other chemicals to form acid rain and contributes to the production of ozone/smog on hot summer days.



Source: EPA's National Emissions Inventory, 2017



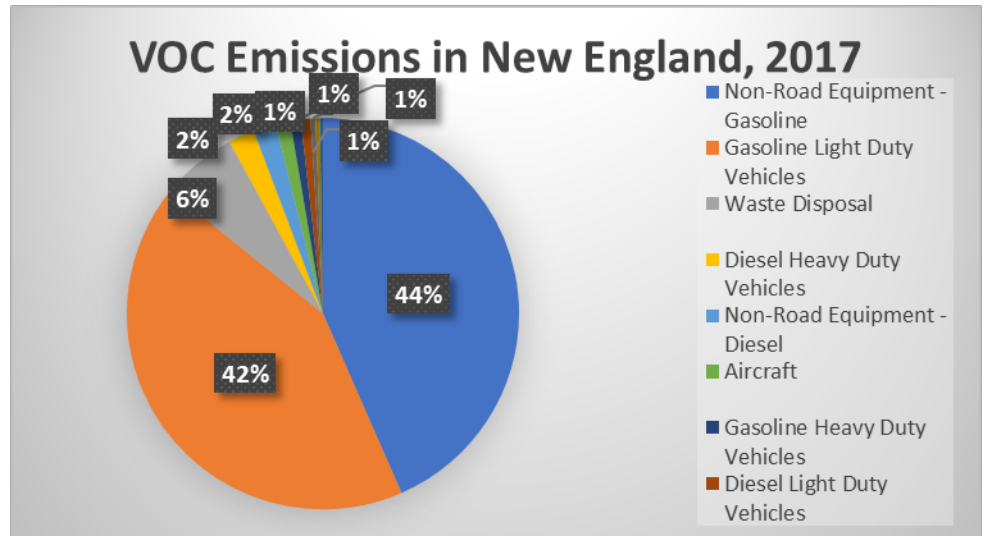


Why Does RI Need an Emission Inspection Program?

What are VOCs (Volatile Organic Compounds)?

Volatile organic compounds (VOCs) are emitted as gases from certain solids or liquids and includes a variety of chemicals, some of which may have short- and long-term adverse health effects.

- Sources of vehicle VOCs include:
 - Fuel evaporation
 - Fuel supply line leaks
 - Gas cap seal leaks
 - Evaporative emissions systems malfunctions
 - Vehicle exhaust products
 - Incomplete fuel combustion
- Effects:
 - Eye and respiratory irritants
 - Carcinogenic
 - Lowered visibility due to brown haze/smog





Why Does RI Need an Emission Inspection Program?

Air Quality in Rhode Island

- The Department of Environmental Management (DEM) provides a daily “Air Quality Forecast” all year round.
- It includes Ozone, particle pollution, carbon monoxide, sulfur dioxide, and nitrogen dioxide.
- From April – September, when levels are typically higher, DEM will announce when air quality reaches “Levels of Concern”.
- Announcements are made on local news channels and can be found on DEM’s website.

<http://www.dem.ri.gov/programs/air/air-quality-forecast.php>

Daily AQI Color	Levels of Concern	Values of Index	Description of Air Quality
Green	Good	0 to 50	Air quality is satisfactory, and air pollution poses little or no risk.
Yellow	Moderate	51 to 100	Air quality is acceptable. However, there may be a risk for some people, particularly those who are unusually sensitive to air pollution.
Orange	Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is less likely to be affected.
Red	Unhealthy	151 to 200	Some members of the general public may experience health effects; members of sensitive groups may experience more serious health effects.
Purple	Very Unhealthy	201 to 300	Health alert: The risk of health effects is increased for everyone.
Maroon	Hazardous	301 and higher	Health warning of emergency conditions: everyone is more likely to be affected.





Safety Inspection Procedures

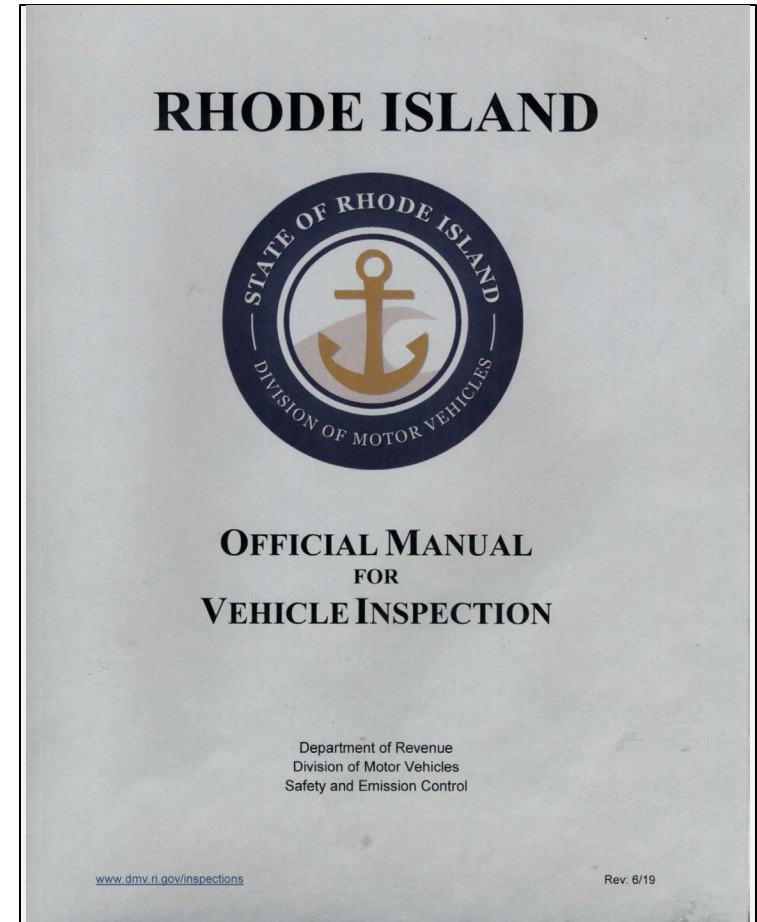
It is expected that you are familiar with all the standards, guidelines and procedures set forth in the RI Official Manual for Vehicle Inspection.

When in doubt refer to the manual!

If, after reviewing the manual, you encounter an issue or item that is still not clarified call the Safety and Emission Control Office at 462-5890 for assistance.

Copies of the RI Official Manual for Vehicle Inspection can be obtained from the following locations:

- Safety and Emissions Control Office
- [DMV website \(www.dmv.ri.gov/inspections\)](http://www.dmv.ri.gov/inspections)
- On the inspection analyzer





Safety Inspection Procedures

Vehicle Safety Inspection

Motor Vehicles up to 8500 lbs. GVWR

Items to be inspected include (but are not limited to):

1. ABS Light
2. Air bag light
3. Back up lamps
4. Ball joints
5. Body items
6. Brakes (ABS)
7. Brake drums and discs
8. Brake failure warning lamp
9. Brake lining or pads
10. Brake performance
11. Brake pedal reserve
12. Bumper (rear end protection)
13. Check engine light
14. Clearance lamps
15. Directional signals
16. Door (front latches)
17. Emergency brake
18. Emissions
19. Exhaust system
20. Fenders and flaps
21. Floor and other panels
22. Fuel tank – cap
23. Glass
24. Hazard switch
25. Headlamps
26. Height altered
27. Horn
28. Master cylinder
29. Mirrors
30. Parking lamps
31. Parking brakes
32. Plates and plate light
33. Reflectors
34. Registration certificate
35. Seat belts
36. Seats
37. Side market lamps
38. Springs, torsion bars, shocks
39. Steering, alignment and suspension
40. Stop lamps
41. Tail lamps
42. Tires
43. Transmission
44. Universal joints
45. Wheels
46. Wheel safety chock blocks
47. Windshield wipers
48. Windshield

Remember: Inspection regulations are designed to prevent continued use of defective emissions and safety equipment so that at least one time during the required inspection cycle a vehicle is inspected by qualified personnel to ascertain that the vehicle is properly equipped for continued use. The inspector is **not** guaranteeing that any particular component will last until the expiration of the inspection sticker, but rather that the components meet minimum standards at the time of the inspection and the vehicle owner is maintaining the vehicle properly.





Safety Inspection Procedures

Window Tint

Passenger Cars

- All Passenger Cars must have a visible light transmittance of 70% on all windows.
- This includes tint installed within the glass from the vehicle manufacturer.
- Most OEM glass on passenger vehicles is tinted within 5% of the limit; any aftermarket tint added will bring the light transmittance below 70%. (see photo).
- Refer to section 3.13, GLASS in the RI Official Manual for Vehicle Inspection for details.



Light transmittance reading of factory glass with no aftermarket tint installed. Note: reading must be 70 or above to be approved.





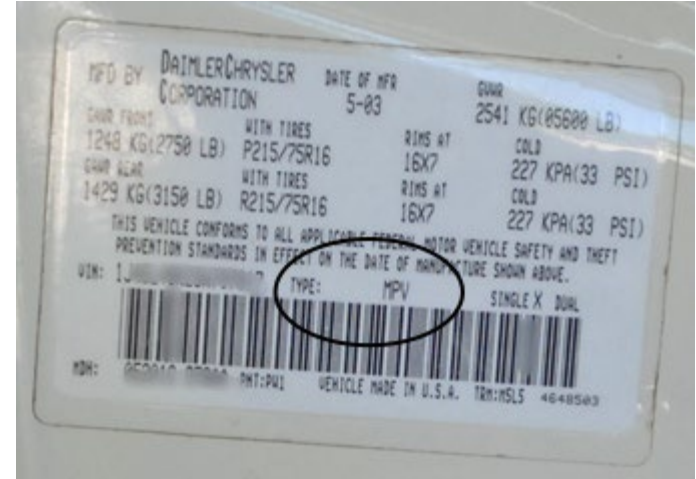
Safety Inspection Procedures

Window Tint Exemptions

- MPVs (Multi Purpose Vehicles), SUVs, Trucks, Vans, Buses, Trailers, Campers, Funeral Vehicles, Limos:
 - The windows to the left and right of the driver along with the windshield must meet the 70% transmittance.
 - All other windows are exempt as long as the vehicle is equipped with two outside mirrors.
- Motor vehicles owned or leased by Federal, State and Local Law Enforcement Agencies.
- Vehicles issued a certificate of medical exemption, issued by the Adjudication Office of the Rhode Island DMV.*



**Medical exemptions do NOT apply to the windshield below the AS-1 mark. Inspectors must include a photo of the DMV tint exemption with the inspection record.*



When in doubt check the manufacturer's vehicle information tag to determine the vehicle type.





Safety Inspection Procedures

Windshield Tint

No Windshield Tint Allowed



Any aftermarket tint installed below the AS-1 line (or more than 6 inches from the top of the windshield if there is no marked AS-1) will bring the light transmittance below 70% and is prohibited.





Safety Inspection Procedures

Exhaust Systems

- Any exhaust that has been modified, deleted, or adjusted that causes the sound level to be louder than the manufacturer's original equipment is cause for rejection.





Safety Inspection Procedures

Body and Frame Rot

Common Causes for Rejection:

- Body frames
- Chassis
- Structural issues
- Running boards
- Floorboards including:
 - Trunk bottoms and other parts of the vehicle that are rusted out should be rejected if they are considered dangerously damaged or, if they allow any fumes to enter the passenger compartment.
- When it's a judgment issue and you're not sure whether the damage is severe enough to be cause for rejection, call DMV or fail the vehicle and refer the owner to DMV.
- Specify defects on the vehicle inspection report.





Safety Inspection Procedures

Always Check For:



Frame rot and structural integrity



Rotted or broken suspension components





Safety Inspection Procedures

Always Check For:



Severely corroded, cracked,
or broken brake lines and
hoses



Rotted fuel lines





Safety Inspection Procedures

Seat Belts and Air Bags

Remember to check for proper functionality of seat belts and SRS (Air Bag) systems.

Seat belts are the single most effective traffic safety device for preventing death and injury, according to the National Highway Traffic Safety Administration. Wearing a seat belt can reduce the risk of crash injuries by 50 percent. Seat belts and Air Bags save lives.

All Motor Vehicles beginning with the 1964 models are required to have seat belts. The seat belts and SRS systems should be checked to make sure they are equipped as they were from the vehicle manufacturer and are working properly.





Inspector Authentication

Authenticating your identity and inspector license is a Program requirement.



Fingerprint Reader

- **DO NOT authenticate your identity and allow someone else to operate the analyzer – this is a Program violation.**
- You are responsible for each inspection completed under your license number.
- Problem with scanning your fingerprint? Call Opus.





Inspector Authentication

Emissions Inspection System

RHODE ISLAND OPUS INSPECTION

CIT Name: **Your Name**

CIT #: **Inspector Number** Certification Expires: **Expiration Date**

I confirm that I am the individual listed above, and that I am currently certified as a motor vehicle inspector for the State of Rhode Island. Any misuse of login credentials shall be considered a program violation and subject the individual and/or station to fines and suspensions and may also invalidate this inspection and any sticker that may be issued.

Confirm **Cancel**

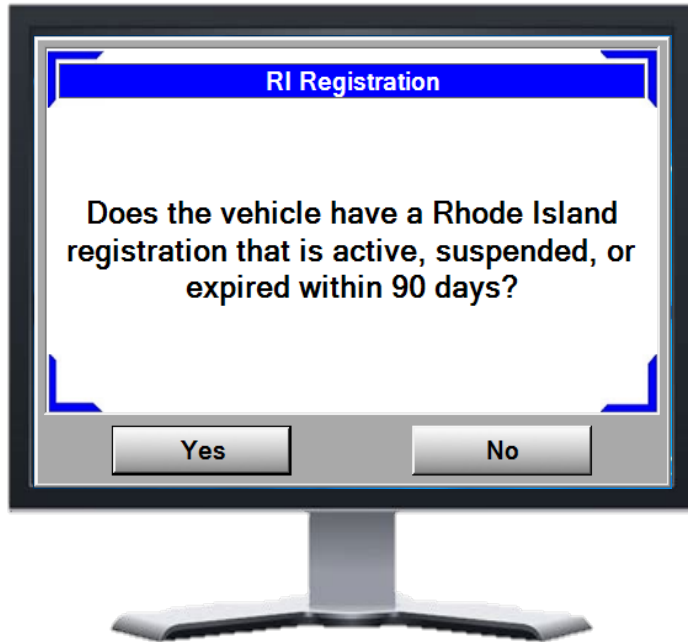
- Confirming your identity is required on each inspection.
- Confirm your **name, inspector ID, and expiration date** each time.
- Contact Opus within 30-days of your expiration for instructions on recertification.





Registration Pass/Fail Component

RI Registered Vehicles :



Select YES if the customer presents a Rhode Island registration that is:

Active

- Future expiration.
- No issues here!

Suspended

- It is not the inspector's responsibility to determine if a vehicle's registration is suspended.
- If the vehicle passes the safety portion of the inspection, but is not issued a sticker, the vehicle owner must contact the DMV Safety and Emissions office to request clearance.
- Actively registered vehicles that are issued a sticker will be reinstated automatically within 48hrs.

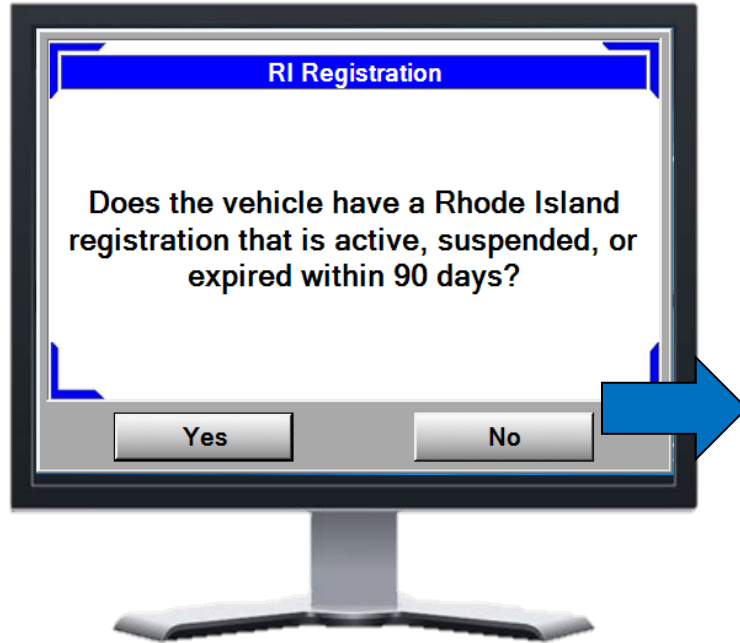
Expired (within 1 year)

- Expired registrations are eligible for renewal for 1 year after the expiration.
- Passing safety may be required to clear a registration block.





Unregistered And Out of State Vehicles



Select NO if the vehicle is:

Seeking RI Registration/Reinstatement

- Unregistered vehicles
- Expired over 1 year
- Will not be issued a sticker until return with valid RI Reg
- Will allow for clearance if passed safety
- Vehicle owner must contact DMV for clearance

Vehicles Registered Out of State

- This inspection will allow for the inspection of vehicles registered in another state.
- States sometimes require this inspection to renew the registration.
- Sometimes called a “Courtesy” or “Reciprocity” inspection.
- The vehicle owner must submit the results of the emissions test to their DMV for consideration.

Federal Government Vehicles

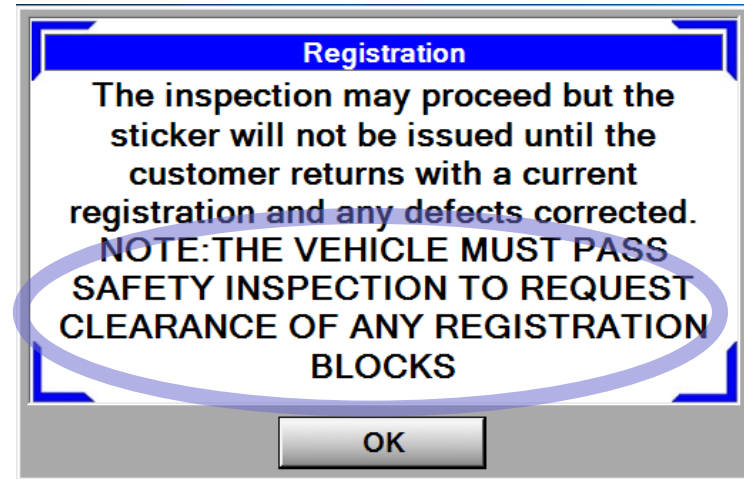
- Used only to inspect vehicles belonging to the Federal Government that are exempt from registration (Postal vehicles, etc.)
- Sticker will be issued upon passing safety & emissions





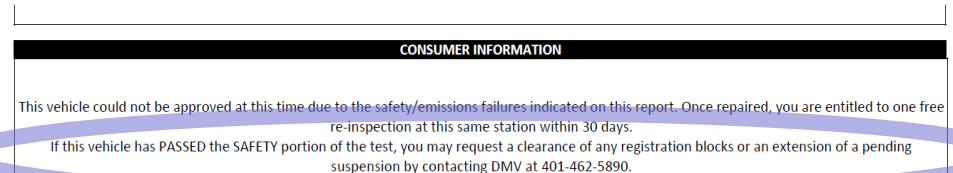
Unregistered And Out of State Vehicles Registration Suspensions / Blocks

- Occasionally, RI vehicles that are unregistered or expired may need clearance of an inspection related suspension prior to registration.
- These vehicles may be inspected but will not be issued an inspection sticker until they are registered and display valid plates.



- Only vehicles that PASS the SAFETY portion of the inspection will be reinstated.

Instruct the vehicle owner to contact the Safety and Emissions Office for clearance. The contact information will be on the VIR.





Registration Pass/Fail Component

Enter RI Registration Info

Enter info from the customer's registration:

- Plate Number
- Plate Type
- Expiration

The screenshot shows a web form titled "Vehicle License Plate" with a blue header. Below the header, it says "Enter License Plate Number and Registration Expiration Date". There are three main input fields: "Registration State" with a dropdown menu set to "Rhode Island", "License Plate Type" with a dropdown menu showing options like "Private Passenger", "Commercial", "Trailer", "Motorcycle", and "Public Service", and "Plate Number" with a text box containing "TEST". Below these is an "Expiration" section with "Month" and "Year" dropdown menus, currently set to "10" and "2020" respectively. At the bottom of the form, there is a button labeled "Select Continue to Proceed".

- **NOTE:** For vehicles with the expiration listed as indefinite (Police, Fire, State), enter the expiration as the current month and year.





Registration Pass/Fail Component

- Vehicles with registration expirations within the past year may be inspected but will not be issued a sticker until the customer returns with a valid registration for the reinspection.
- This will allow the clearance of any registration blocks if the vehicle **PASSES** the **SAFETY** portion of the inspection.

The screenshot shows a web form titled "Vehicle License Plate" with a blue header. Below the header, it says "Enter License Plate Number and Registration Expiration Date". The form contains the following fields:

- Registration State: A dropdown menu with "Rhode Island" selected.
- License Plate Type: A dropdown menu with "Private Passenger" selected. Other options include "Commercial", "Trailer", "Motorcycle", and "Public Service".
- Plate Number: A text input field containing "TEST".
- Expiration: A section with two dropdown menus for "Month" (set to "10") and "Year" (set to "2020").

At the bottom of the form, there is a button labeled "Select Continue to Proceed".



Important!

- **Advise vehicle owners that THEY MUST contact DMV to request clearance of any blocks or suspensions after the vehicle has PASSED at least the SAFETY test.**

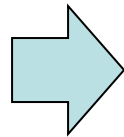




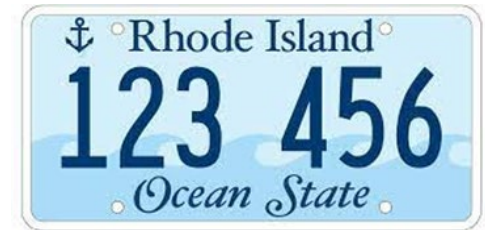
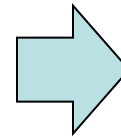
Display of Plates

Match VIN, Registration and Plates (registered vehicles)

Begin inspections by verifying the vehicle you are inspecting.



VEHICLE INFORMATION	REGISTRATION INFORMATION
VEHICLE IDENTIFICATION NUMBER (VIN)	REGISTRATION NUMBER
PLATE NUMBER	REGISTRATION DATE
VEHICLE MAKE	REGISTRATION TYPE
VEHICLE MODEL	REGISTRATION FEE
VEHICLE YEAR	REGISTRATION TAX
VEHICLE WEIGHT	REGISTRATION FEE
VEHICLE COLOR	REGISTRATION TAX
VEHICLE MAKE	REGISTRATION TAX
VEHICLE MODEL	REGISTRATION TAX
VEHICLE YEAR	REGISTRATION TAX
VEHICLE WEIGHT	REGISTRATION TAX
VEHICLE COLOR	REGISTRATION TAX



Match the VIN from the vehicle to the registration.

Match the plate # on the registration to the plates on the vehicle.



Important!

- Always verify that the GVWR on the registration and the vehicle are both 8500lbs or less.
- If either GVWR is over 8500lbs, do not inspect the vehicle and refer the customer to DMV.





Display of Plates

Enter RI Display of Plates Info

- Inspectors will be asked to confirm if the vehicle has the required number of properly displayed registration plates that are clearly visible from at least 60 feet.
- RI Law requires that all vehicles display front and rear license plates, except that the following plate types only require a rear plate:
 - Used/New Car Dealer
 - Motorcycle
 - Trailer
 - Farm Vehicles (until 2/24)
- **Answering “No” will cause the vehicle to fail for improper display of plates.**

Plate Confirmation

Are the correct number of license plates properly displayed On the vehicle and clearly visible from at least 60 feet?

Yes No



Important!





Display of Plates

License Plates, Registrations and License Plate Validation Stickers

- Check for Valid Registrations, Proper Display of License Plates and Current Validation Stickers.
- All vehicles presented for inspection must have a valid registration or dealer plate at the time of inspection.
- All registered vehicles (except Motorcycles, Trailers, and Farm Vehicles), must have two (2) license plates properly affixed with current validation stickers.
- Check that the V.I.N. from the registration matches the vehicle; if it does not match, refer customer to DMV to correct the issue prior to inspection.



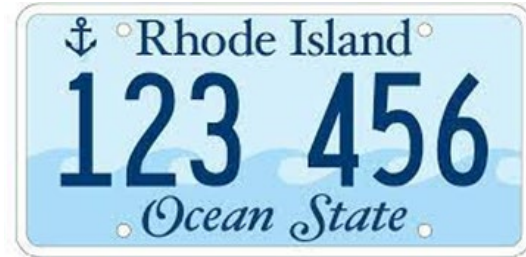


Display of Plates

New RI Plate Reissuance



Old "Wave" Plate



New "Ocean" Plate

- **Effective on January 1, 2023, thru December 31, 2024, you may approve the display of plates if the following conditions are met:**
 - The license plates are faded, worn out, or damaged; **and**
 - The vehicle has the old “**wave**” designed plate; **and**
 - The registration is expiring within the current month of inspection or the following two months.



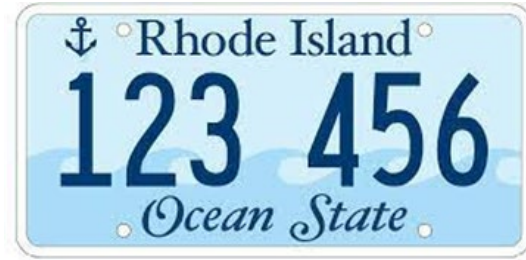


Display of Plates

New RI Plate Reissuance



Old "Wave" Plate



New "Ocean" Plate

- **DO NOT** approve the old “Wave” plate (damaged, faded, etc.) if:
 - 1) The registration expires more than 3 months in the future; **or**
 - 2) The vehicle is missing both license plates.
- The scenarios above require replacement or new plates.
- Plate reissuance **DOES NOT** apply to any other plate design; **ONLY** the Wave plate is being reissued.





Display of Plates

CAUSE FOR REJECTION OF LICENSE PLATES:

Below are examples of plates that are in violation of RI Law and/or Regulation and should be rejected during an inspection:

I. Plates that are damaged, faded, deteriorated, or obscured so as to reduce the visibility or reflectivity.



Damaged



Damaged



Faded



Obscured by decals or badges

II. Plates that are missing or are covered by colored glass or plastic, decals or other implements that may interfere with the identification of the plate.



Missing front plate



Colored plate cover



Colored plate cover



Traffic camera defeat devices





Display of Plates

WHEN A PLATE REPLACEMENT IS REQUIRED TO PASS INSPECTION

Option 1 PLATE CHANGE



If the customer DOES NOT desire to keep the existing plate number:

In this event the vehicle owner should perform a “Plate Change” at any DMV Office. Plate changes cost less than plate remakes and the customer will be handed new plates with validations stickers on the spot. This will enable the customer to return to the inspection station immediately to obtain the passing inspection.

Option 2 PLATE REMAKE



If the customer DOES desire to keep the same plate:

Replacement plates can be ordered online or at any DMV or AAA office (if a member), however, it may take up to 6 weeks to obtain the replacement plates. Therefore, *if the customer returns to the inspection station with the DMV receipt from the plate remake order, the inspector may proceed and approve the vehicle.* Inspectors shall make a note that the replacement plates were ordered and approve the vehicle (if all other defects have been approved).



State of Rhode Island
Vehicle Inspection & Maintenance Program

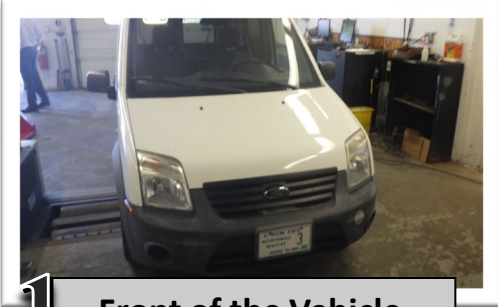
DIGITAL IMAGING





Digital Imaging Component

Each inspection will require a **minimum** of 5 photos of the vehicle to be taken. The **required** 5 photos shall be taken as follows:



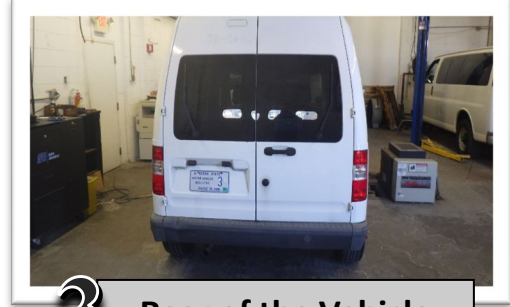
1 Front of the Vehicle

The first required photo is of the front of the vehicle. **Be sure to include the front license plate properly displayed.**



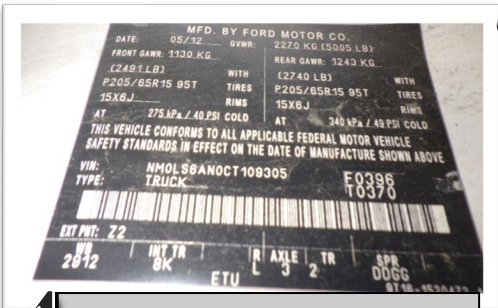
2 Driver's Side Window

The second required photo is of the driver's side window, **rolled halfway up.**



3 Rear of the Vehicle

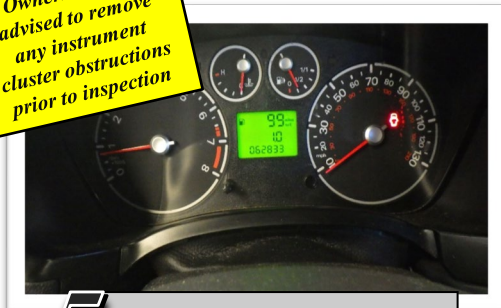
The third required photo is of the rear of the vehicle. **Be sure to include the rear license plate properly displayed.**



4 Vehicle Information Tag

The fourth required photo is of the vehicle information tag with VIN, located in/on the drivers door or jamb. **If this is not available, take a photo of the VIN plate on the dashboard.**

! Owners must be advised to remove any instrument cluster obstructions prior to inspection



5 Instrument Cluster

The last required photo is of the vehicle instrument cluster, **with the vehicle running**, displaying mileage and indicator lamps.



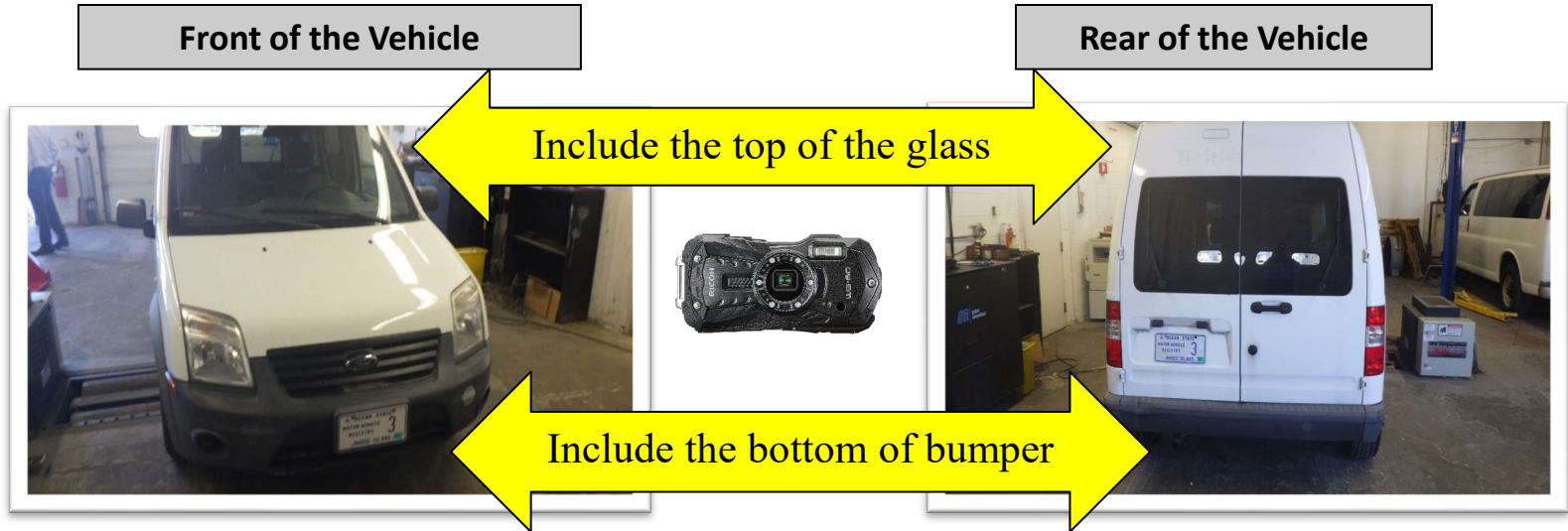
6-13 Optional Photos

Inspectors will have the option to add up to 8 additional photos (in addition to the 5 mandatory photos) of defects and other items noted during the inspection.





Digital Imaging Component



! When taking the photo of the front and rear of the vehicle, always include the top of the windshield and the bottom of the bumper.

DO NOT ZOOM IN ON JUST THE PLATE!







Digital Imaging Component

Instrument Cluster Photo



 Vehicle owners must be instructed to remove any instrument cluster obstructions prior to inspection.

 **IMPORTANT REMINDER:**
Always remember to allow for the lamp check to complete before taking the photo of the instrument cluster. Regulations require that SRS and ABS lamps are not illuminated during a passing inspection.



Emission Testing Procedures



Electric Vehicles – On the Road to Stay

- Pure Electric Vehicles (EVs) are growing in popularity.
- They do not have internal combustion engines and don't have tailpipes.
- When inspecting an EV, select the correct Fuel Type – Electric.
- EVs do not receive an OBD II or fuel cap inspection but they must receive a complete Safety inspection.



No Tailpipe = EV



- *Hybrid & Plug-in Hybrid vehicles have internal combustion engines and are required to pass an emission test!*



Emission Testing Procedures



1. Drive vehicle into inspection bay.

- a. All emission tests must be performed with the vehicle in the view of the inspection video camera.
- b. Videos may be reviewed for any test deemed suspicious or under investigation by DMV.

2. Inspector logs in with CIT credentials.

- a. CITs must use fingerprint reader to verify credentials.

3. Data Entry:

- a. Registration Entry
 - i. Verify registration is valid (not expired).
 - ii. Verify registration matches plates on vehicle and vehicle VIN.
- b. VIN Entry
 - i. Plug into OBD DLC to obtain VIN and perform test (Model Years 1996 and newer).
 - ii. Barcode VIN.
 - iii. Manual Entry
- c. Verify VIN matches vehicle AND registration.
- d. Verify/Enter Vehicle Data.

4. Perform Gas Cap Visual Check.

5. Perform Visual Emissions Tampering Inspection.

6. Record Safety Inspection Results.

7. Perform MIL bulb check (KOEO/KEOR).

- a. Record MIL illumination results KOEO.
- b. Record MIL illumination results KOER.

8. Perform Emissions Test (if not completed in step 3).

- a. OBD II Test – MY (Model Years) 1996 and newer (1997 and newer Diesel powered vehicles)
- b. Emission Component Check (MY 1995 and older gas, MY 1996 and older Diesel)

9. Test Completion - Pass

- a. Print sticker, verify and barcode sticker number into software.
- b. Verify that VIN on sticker matches registration/vehicle VIN.
- c. Remove existing inspection sticker (if present) and clean windshield to facilitate adherence of new sticker.
- d. Affix new sticker in lower right corner of windshield.
- e. Print VIR and provide to customer.

10. Test Completion - Fail

- a. Print VIR and provide ALL PAGES to customer.
- b. Inform customer of Safety and or Emission defects found.
- c. Inform the customer of right to free retest within 30 days (at same station).



Emission Testing Procedures



Drive Vehicle Into Inspection Lane

- All emission testing must be performed in view of the video camera in the inspection lane/bay to maintain program integrity.
- Videos may be reviewed for any test deemed suspicious or under investigation by DMV.
- Failure to comply may result in suspension of Inspector and/or Station license.



Emission Testing Procedures



Data Entry

Always make sure the data entered into the analyzer is correct. Verify that the **V.I.N., plate number and plate type entered match the vehicle and registration exactly**. Failure to do so may result in:

- Suspension of the vehicle registration
- Vehicles being towed
- Re-inspecting the vehicle at the station's expense

*If the V.I.N. from the registration does **not** match the V.I.N. tag on the vehicle, do not proceed with the test. Refer the customer to DMV to correct the issue prior to inspection.*

Common mistakes:

- Not verifying V.I.N.s after electronically obtaining (i.e. door changed, PCM changed etc.)
- Wrong plate numbers and/or plate types entered
- Digit missed or extra digit in the V.I.N. entered
- Most 1981 and newer vehicles will have 17 digits



Emission Testing Procedures

Fuel Cap Check

- **Always perform visual inspection of fuel cap.**

All gasoline powered vehicles must receive a gas cap visual check (if originally equipped with a gas cap). Perform a visual inspection to make certain the cap is in place and the O-ring is intact. Missing or defective gas caps will cause the vehicle to FAIL the emissions test.



Fuel caps prevent vapors from leaking out of the gas tank that would pollute the atmosphere, causing damage to the ozone. Proper use of the gas cap also increases fuel economy by effectively eliminating gas evaporation.

Emission Testing Procedures



Visual Emission Tampering Inspection

What is Emissions Tampering?

Tampering is removing, disconnecting, altering, bypassing or rendering ineffective any pollution control equipment installed in a motor vehicle. Tampering with a vehicle emissions control system is illegal and can negatively affect vehicle performance, void warranties, and contribute to air pollution. These actions are considered illegal, and are **cause for emissions inspection failure**.

The components of a vehicle emission control system that typically tampered with include, but are not limited to:

- Catalytic converter
- Oxygen sensors
- Exhaust gas recirculation (EGR)
- Air injection systems
- Diesel particulate filters
- Evaporative emission systems
- Crankcase ventilation (PCV)
- Engine Computer Software
- Thermostatic air intake systems

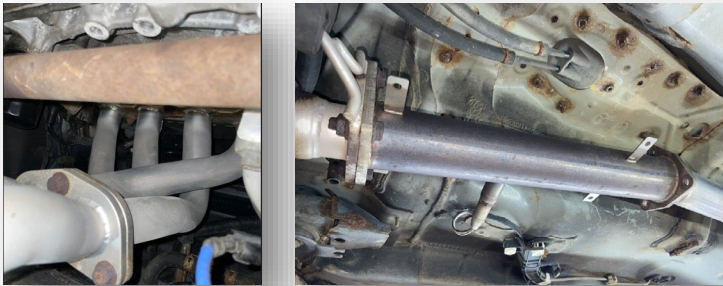


Emission Testing Procedures



Visual Emission Tampering Inspection

Below are some examples of common emission tampering



Catalytic Converter: Removing, bypassing, defeating, disconnecting, damaging, or in any way rendering ineffective the catalytic converter or the catalyst in the converter is considered illegal, and is **cause for emissions inspection failure.**

Oxygen (O2) Sensor De-fouler or Oxygen (O2) Sensor Non-fouler:

These devices keep the O2 sensor out of the exhaust flow which causes a drop in readings between the first and second sensor, tricking the PCM (Powertrain Control Module) into thinking the catalyst is working as designed, when in fact it is not.



EGR Delete Kits: An EGR delete kit is an aftermarket performance part that removes the EGR valve and prevents exhaust from being redirected back to the engine.



Emission Testing Procedures



Recording of Safety Inspection Results

- Record Safety Inspection Results by Category.
- List all Defects Found.
- List Defects Clearly Within Comments.
- You can take up to eight (8) additional photos of safety defects, which will be included with the electronic test record



Remember: Complete the Inspection!

Do not assume the vehicle will pass the emissions inspection if the Malfunction Indicator Lamp (MIL) is not on!

- When a vehicle is presented for inspection, the complete inspection should always be performed regardless of MIL status.
- This provides a complete picture of all required repairs to the vehicle owner.
 - Mechanical repairs needed
 - Emission-related repairs needed
 - MILlamp malfunctions



Emission Testing Procedures



Perform MIL Bulb Check



Key On/Engine Off (KOEO)

- Turn the ignition to the run position but do not start the engine.
- Check for illumination of the MIL
- Inspectors must fail a vehicle during the bulb check test if the MIL does not illuminate with the key in the on position and the engine is off.

Key On/Engine Running (KOER)

- Start the engine.
- Check for illumination of the MIL
- Inspectors must fail a vehicle during the bulb check test if the MIL is illuminated while the key is in the on position and the engine is running (even if there are no DTCs present).



Emission Testing Procedures



Perform Emissions Test

Perform the Emission Test Required for the Vehicle Type

- ***OBD II Test***
 - Model Years 1996 and newer Gas-powered vehicles
 - 1997 and newer Diesel-powered vehicles
 - NOTE: The OBD test may have been completed at the time of OBD VIN capture.
- ***Emission Component Check***
 - 1995 and older gas-powered
 - 1996 and older diesel-powered
 - Verify the presence and apparent functionality of the vehicle's originally equipped emission control components. (EGR Valve, Catalytic Converter, Air Pump, etc.)
 - Vehicles 25 years old or older **must pass a safety** inspection and receive an emission test; however, they are **not required to meet the emissions standards**.



Emission Testing Procedures



Test Completion - Pass

- Print sticker, and barcode reader to enter sticker number into the software.
- Verify that VIN on the sticker matches the registration/vehicle VIN.
- • Remove existing inspection sticker (if present) and thoroughly clean windshield to facilitate adherence of new sticker (remove adhesive from old sticker and make sure windshield is clean, completely dry and (if possible) above 40 degrees before applying new sticker
- Place new sticker in lower right corner of windshield.
- Print VIR and provide to customer.

The image shows a 'Vehicle Inspection Report' form from the State of Rhode Island. The report is for a 2015 Honda Civic, inspected on 08/27/2018 at 11:46:28. The overall result is 'Pass'. The form includes sections for Station Information, Vehicle Information, Dashboard Mileage, Emission Test Results, Registration Verification, Safety Inspection, and Consumer Information. The Emission Test Results section shows 'Overall Result: Pass', 'Emissions Result: Pass', 'Safety Result: Pass', and 'Registration Result: Pass'. The Safety Inspection section shows 'Pass' for all items: Air Brags, Headlight Lamps, Tail Light(s), Horn(s), Brake Pedals, Brake Parking, Brake Failure Warning Lamp, Brake Linings / Shoes, Brake Drum or Rotor, Brake Hydraulic System, Brake Power Assistance, Brake Acceleration, Brakes - ABS, Brakes - AEB, and Brakes - ESP. The Registration Verification section shows 'Pass' for 'Valid Registration Check' and 'Copy of Plates Check'. The Safety Inspection section shows 'Pass' for all items: Air Brags, Headlight Lamps, Tail Light(s), Horn(s), Brake Pedals, Brake Parking, Brake Failure Warning Lamp, Brake Linings / Shoes, Brake Drum or Rotor, Brake Hydraulic System, Brake Power Assistance, Brake Acceleration, Brakes - ABS, Brakes - AEB, and Brakes - ESP. The Consumer Information section includes a congratulatory message: 'Congratulations, you have completed the Rhode Island Safety and Emissions test and the overall result indicates you have passed. The inspection results will be automatically transferred to DMV by the inspection station within 24 hours.'

Test Completion - Failure

- Print VIR and provide ALL PAGES to customer.
- Inform customer of any Safety, Emission and/or Registration deficiencies.
- Inform the customer of right to free retest within 30 days (at same station).



Emission Testing Procedures



Proper Sticker Application

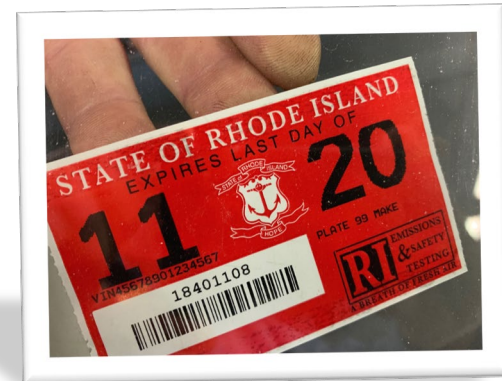
Proper surface preparation and adherence of Safety and Emissions Inspection Stickers is imperative, as they need to adhere to the vehicle's windshield for at least two (2) years.



Remove existing inspection sticker (if present) and thoroughly clean and dry windshield to facilitate adherence of the new sticker.



Thoroughly clean and dry where the area the sticker will be applied; **be sure to remove all residue and adhesive from previous sticker** (a standard window cleaner or alcohol wipes are recommended)



Remove adhesive strips and **firmly press the new sticker onto the windshield.**



Emission Inspection Program



Emission Retesting Process

Vehicles will be retested once at no cost to the motorist when:

- Performed at the same station within 30 days of the initial test.
- **The retest period does NOT automatically extend any pending DMV suspension.**
- **DMV suspension order extensions may be requested only if the vehicle passes the safety portion of the inspection, by calling 401-462-5890.**



Motorist Options After Retest Failure

Always inform vehicle owners of their options after failure.

- Repairs / Additional Repairs
- Apply for a Waiver from the Department of Motor Vehicles
 - Cost Limit Waiver
 - Time Delay Waiver
 - Diagnostic Waiver





Purpose & Review of OBD II Testing

OBD II

The Clean Air Act of 1990 established the requirement that passenger vehicles be equipped with on board diagnostics. The diagnostics system is designed to trigger a dashboard “Check Engine” light alerting the driver of a possible pollution control device malfunction. To help ensure that motorists respond to the “Check Engine” light in a timely manner, the Act requires that I/M programs include an inspection of the on-board diagnostic system.

Purpose:

- Prevent excessive emissions by identifying emissions control aspects that fail to meet manufacturer established parameters and alerting the driver to the problem
- Improve inspection and diagnostic processes by standardizing:
 - **Component terms**
 - **Data Link Connector (DLC)** location, shape and pin assignment
 - **Diagnostic Trouble Codes (DTCs)**





Purpose & Review of OBD II Testing

OBD II Operation

- OBD II monitors actively evaluate performance of vehicle emissions control systems and components.
- Problems noted by the OBD II computer will cause a DTC to be stored and the malfunction indicator lamp (MIL) will be commanded to illuminate.
- Emission testing equipment uses this information to determine pass or fail.

OBD II Hardware

- **O2 Sensor(s)** behind catalytic converter
 - Monitors catalytic converter efficiency
- **Enhanced Powertrain Control Module PCM**
 - Needed to manage OBD II software and network
- **EPROM Memory (erasable programmable read-only memory)**
 - Allows flash reprogramming
- **Upgraded crank sensor resolution**
 - Enhances misfire monitoring
- **Standard location and 16 pin terminal for DLC**
 - Required to be within 18" steering column





Purpose & Review of OBD II Testing

Vehicles Subject to OBD II Testing

- **Gasoline** powered motor vehicles
 - 1996 and newer vehicles
 - up to 8,500 lbs. GVWR
- **Diesel** powered motor vehicle
 - 1997 and newer vehicles up to 8500 lbs. GVWR are to be OBD II tested. (Note:1996 and older diesel vehicles up to 8500 lbs. GVWR must be tested at a diesel opacity equipped station. The current list of diesel opacity equipped stations can be found at WWW.RIINSPECTION.ORG)

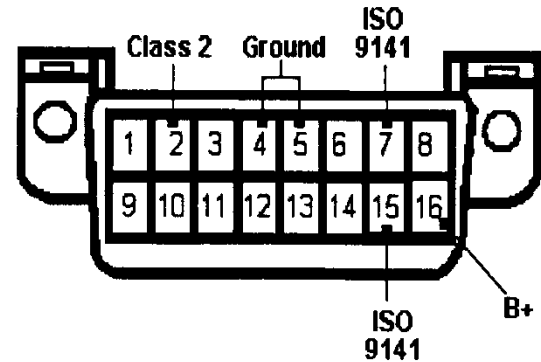




Purpose & Review of OBD II Testing

Data Link Connector

- Vehicles will fail the OBD test if the DLC is:
 - Tampered with
 - pins damaged or missing
 - used as a power source for other items on vehicle
 - Blocked by aftermarket equipment installation
 - Not located where the manufacturer installed the DLC
 - Not powered as required at pin 16



Example of a Data Link Connector (DLC)





Purpose & Review of OBD II Testing

Readiness Monitors

What are readiness monitors? Readiness monitors are essentially testing exercises, performed by the PCM, which are very carefully designed to indicate that all sensors within a portion of the engine management system are working properly to minimize emissions. Each monitor is run by the PCM under very specific vehicle operating conditions. Because of this, all monitors may not run each time the vehicle is driven. A given monitor may not run for quite some time, until the exact combination of conditions occurs to trigger it. This set of conditions is called the **enabling criteria** for the monitor and may include operating temperature, RPM, load, etc.

Types of Readiness Monitors

Continuous: These monitors run all the time when the key is turned to the on position and/or the engine is running. There are three (3) continuous monitors in every OBD II equipped vehicle: they are the Comprehensive Component Monitor, The Fuel Monitor and the Misfire Monitor.

Non-Continuous: These monitors require certain conditions such as speed, acceleration/deceleration, fuel level, ambient and other conditions to be met in order for the monitor to run its testing sequence. If the specific conditions are not met, the monitor will not perform its tests and cannot report any problems. Non-continuous monitors include the Catalyst, Heated Catalyst, Evaporative System, Secondary Air System, Air Conditioning (A/C) System, Oxygen (O₂) Sensor, Heated O₂ Sensor and Exhaust Gas Recirculation (EGR) System.





Purpose & Review of OBD II Testing

Readiness Status

- Readiness Status indicates if a monitor test has been run or not.
- This may be displayed as:
 - Yes/No
 - Ready/Not Ready
 - Complete/Not Complete
- Readiness Status does not indicate Pass or Fail - only that the test has been completed.

Communications

- The OBD II emission test requires successful communication with vehicle's OBD computer.
- The Inspector does not determine result.
- Vehicles will fail for communications during the initial test if:
 - The vehicle does not transmit the necessary information to the inspection equipment after the analyzer completes three (3) OBDII data retrieval attempts
 - The analyzer reports failed communications
 - Pin 16 of the DLC is not powered





Purpose & Review of OBD II Testing

Readiness Monitor Descriptions

Below are the basic OBD II monitors and the components and subsystems that they monitor.

Remember, not all vehicles have all of these monitors. If a vehicle is not equipped with or not designed to have a certain monitor, that monitor is “Unsupported.” Unsupported monitors **do not** affect the results of the emissions inspection.

Misfire: This monitor looks for any engine misfires. A misfire is when the air/fuel mixture in the engine’s cylinder does not ignite. This condition can cause damage to the vehicle’s engine and/or catalytic converter. In the case of a severe misfire condition, the OBDII system will cause the Malfunction Indicator Lamp to flash indicating a serious threat of damage to the catalytic converter. In the case of a flashing Malfunction Indicator Lamp, the operator should reduce speed and seek diagnostic and repair services as soon as possible.

Fuel System: This monitor constantly checks the amount of fuel that is used by the engine. Through the use of an oxygen sensor(s), the OBDII system can determine if more or less fuel is needed. This fuel adjustment is performed many times a second and helps to maximize fuel economy and minimizes harmful emissions.

Comprehensive Component: This monitor is looking at all of the various switches and sensors that are involved with engine management. It looks for voltage readings, resistance readings, and other conditions. The monitor records readings from the vehicle’s components and compares them with programmed values that reflect what the readings should be. If they differ by a certain amount, then that component is determined to be suspect.

Catalyst (also known as catalytic converter): This monitor uses the readings from oxygen sensors located before and after the catalyst(s) to determine the efficiency of the catalyst.

Heated Catalyst: Some vehicles may have an electrically heated catalyst. This heater helps warm up a cold catalyst faster so that it can start working sooner which leads to earlier reduction of harmful emissions. This monitor will check to make sure that the catalyst heater is working.





Purpose & Review of OBD II Testing

Readiness Monitor Descriptions

Evaporative System: This monitor works to ensure that the Evaporative System is kept in a condition to minimize the release of gasoline vapors.

Secondary Air System: Some vehicles are equipped with a secondary air system, or air injection system. The air injection system is designed to place extra oxygen into the exhaust stream to reduce exhaust pollutants. This monitor checks the components, switches, and solenoids that are part of the air injection system.

A/C (Air Conditioning) System: In some older vehicles, this monitor was intended to monitor the vehicle's air conditioning system if it had the older "R-12" style of refrigerant. Since R-12 is harmful to the ozone layer of the earth's atmosphere, a leaking air conditioning system needed to be repaired as soon as possible. Several years ago, R-12 was banned from use; therefore, this monitor will show up as "Unsupported" on most newer vehicles.

O2 (Oxygen) Sensor: The O2 Sensor Monitor watches for the performance of the vehicle's oxygen sensors. Oxygen sensors are used to fine tune the amount of fuel that is used by the engine. These adjustments are made several times a second and have a direct impact on fuel economy and emissions reductions. When an oxygen sensor goes bad, the vehicle will usually begin to use more fuel than it needs to, thereby increasing the amount of harmful emissions.

Heated O2 (Oxygen) Sensor: Some oxygen sensors include an electric heater to help them warm up quicker and to begin operating faster. This monitor ensures that the heater circuit of the oxygen sensor is working properly. Since not all vehicles have a heated oxygen sensor, some vehicles will show this monitor as "Unsupported."

EGR (Exhaust Gas Recirculation) System: Many vehicles are equipped with an EGR system. This emissions control system is designed to reduce nitric oxide tailpipe emissions by reducing the temperature inside the engine's combustion chamber. This monitor checks the components of the EGR system to ensure that it is working properly and that there is sufficient flow of exhaust gas through the system.





Purpose & Review of OBD II Testing

Readiness Monitors Failures

- A vehicle will fail for readiness if:
 - More than two (2) monitors are ‘Not Ready’ on 1996 - 2000 model year vehicles
 - More than one (1) monitor is ‘Not Ready’ on 2001 and newer model year vehicles
- The Readiness Indicators will all be set to “Not Ready” if the DTC’s are erased or by loss of battery power.
- Common causes of “Not Ready” Monitors:
 - DTCs erased - Battery replacement - Blown fuse to PCM - Battery disconnected for vehicle service

Setting Readiness Monitors

The purpose of completing an OBD II drive cycle is to force the vehicle to run its onboard diagnostics. Some form of a drive cycle needs to be performed after DTCs have been erased from the PCM’s memory or after the battery has been disconnected. Running through a vehicle’s complete drive cycle will “set” the readiness monitors so that the vehicle will pass inspection or faults can be detected.

Drive cycles vary depending on the vehicle and the monitor that needs to be re-set. **Whenever possible, follow the drive trace prescribed for the specific vehicle/monitor in question.** Some vehicle-specific drive cycles can be found in the vehicle’s service manual.

- It is the vehicle owner’s responsibility to set the Monitors.
- It is not part of the Emission Test procedure.
- The vehicle is tested as received.





Purpose & Review of OBD II Testing

Generic Drive Cycle

Although Drive cycles vary slightly among manufacturers, the following generic drive cycle can be used in most cases:

- This generic OBD II drive cycle begins with a cold start (coolant temperature below 122 degrees F and the coolant and air temperature sensors within 11 degrees of one another). This condition can be achieved by allowing the vehicle to “sit” overnight, and then by beginning the drive cycle the next day. Most drive cycles will be difficult to follow exactly under normal driving conditions, so the driver should exercise caution, road safety, and courtesy to others.
- Start the engine. Idle the engine in drive for two and a half minutes with the A/C and rear defroster on.
- Turn the A/C and rear defrost off and accelerate to 55 mph at half throttle.
- Hold at a steady speed of 55 mph for three minutes.
- Decelerate (coast down) to 20 mph without braking or depressing the clutch.
- Accelerate back to 55 to 60 mph at $\frac{3}{4}$ throttle.
- Hold at a steady speed of 55 to 60 mph for five minutes.
- Decelerate (coast down) to a stop without braking.





Purpose & Review of OBD II Testing

Drive Cycle Problems

- If the MIL illuminates while trying to run the Monitors, it means a code has set and a repair is necessary prior to passing inspection.
- If the Monitors will not run:
 - Check TSB's.
 - Follow the "Enabling Criteria" for the Monitor that will not run.
 - Obtain specific Drive Cycle information and follow it.

Readiness Exception Vehicles

These are vehicles that have been determined by EPA to have known issues setting the readiness monitors. The vehicles that are on the readiness exception list will pass regardless of readiness status as long as the MIL is not commanded on. (DTC Stored)

- Applies on initial test and retest
- System software will identify these vehicles.
- The list is determined and maintained by EPA for these vehicles.
- Example = 1996 Chrysler Cirrus 2.4





Purpose & Review of OBD II Testing

Diagnostic Trouble Codes

Vehicles fail the DTC test if:

- The OBD system has stored at least one (1) mature (non-pending, non-historic) DTC that commands the MIL to be illuminated
- The vehicle commands the MIL to be illuminated but the OBD system has no mature DTCs stored in the system

DTC Identification

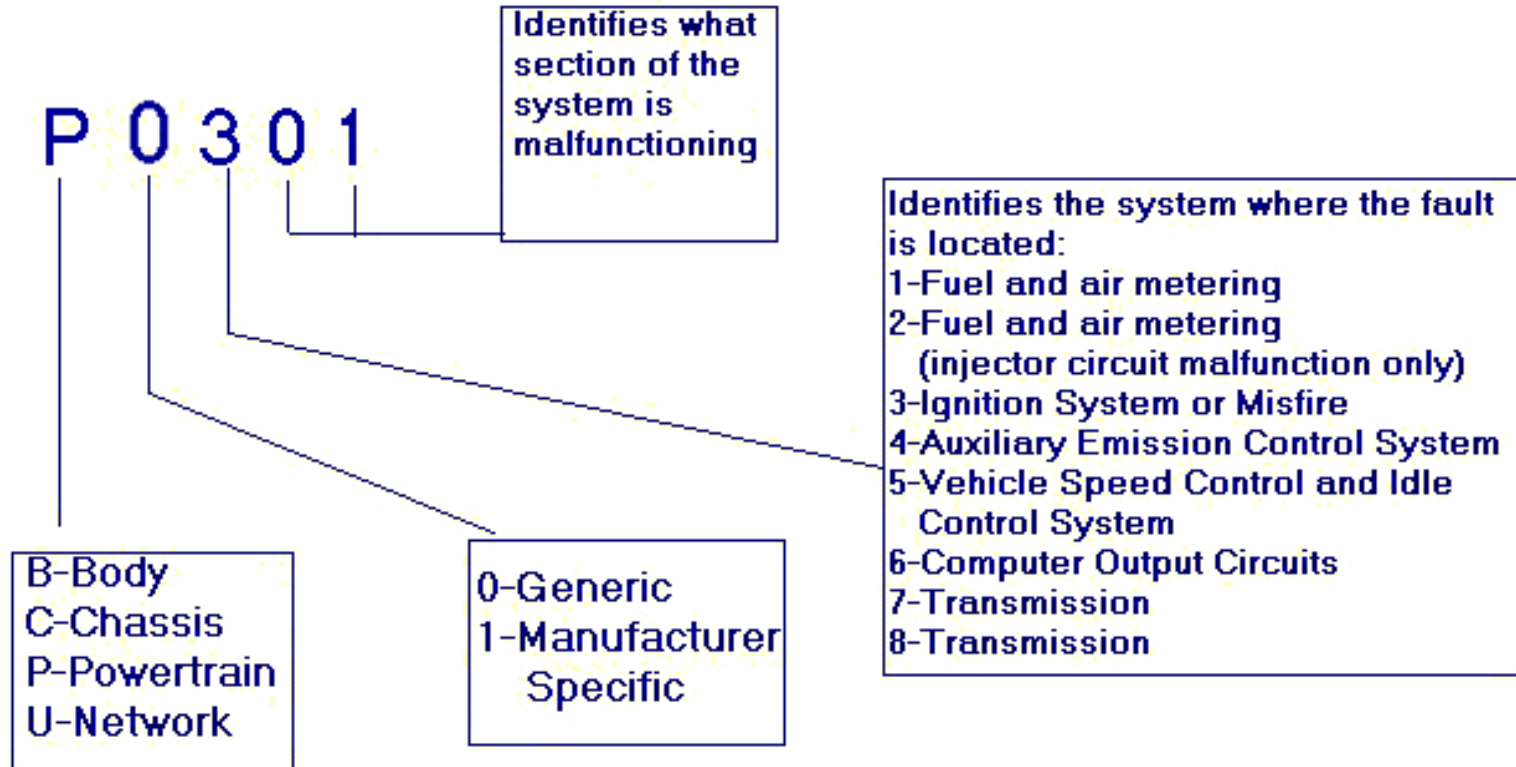
- OBD II codes (emissions related) are found in the PCM and will start with a “P” (Power train Control Module).
- Codes that start with a “U” prefix are communication codes.
- They can indicate a problem with code and data transmission on the DLC (data link connector)





Purpose & Review of OBD II Testing

Understanding OBD II DTC's





Purpose & Review of OBD II Testing

DTC Types

TYPE A

- Emissions related
- Requests illumination of the MIL on the first trip with a fail
- Stores a HISTORY DTC on the first trip with a fail
 - Typically misfire codes
 - MIL Light will flash during misfire

TYPE B

- Emissions related
- "Pending" after one trip with a fail
- "Disarmed" after one trip with a pass
- Requests illumination of the MIL on the second consecutive trip with a fail



Emission Inspection Program



Emission Waiver Requirements

- **Vehicles must meet safety inspection requirements.**
- No repair costs (parts or labor) for repairing tampered or missing emission control equipment will be applied toward the emission waiver.
- Refer the customer to the DMV (contact info on the VIR) for Waiver consideration.
- The department will verify that the repair receipts or invoices submitted meet the requirement, that the repairs indicated on the itemized receipts for qualifying repairs were made, and that the parts were repaired or replaced as claimed.



Emission Inspection Program



Emission Waiver Types

The three types of Waivers are as follows:

Cost Limit

- Must spend \$700 in emissions related repair costs
 - Parts, labor and diagnostic time will be considered if work is performed by a CIRT (Certified Inspection Repair Technician).
 - Cost of emission related parts only will be considered if performed by anyone other than a CIRT

Diagnostic

- Parts required for the necessary repair(s) are not available
- All reasonable options to repair the vehicle have been exhausted

Repair Time Delay

- Owner needs time to get the vehicle repaired
 - must provide proof of economic hardship
 - Issued only once per vehicle



Emission Inspection Program



Fraud Detection

One of the goals of the Safety & Emissions inspection program is to ensure the vehicles operating on Rhode Island roadways are safe and environmentally clean. Fraudulent emission inspections undermine these goals and defame the integrity of inspection stations that conduct fair and honest inspections; as such, fraudulent vehicle inspections will not be tolerated.

In a constant effort to support the integrity of the Safety and Emissions inspection program, the DMV and Opus Inspection work together to ensure that vehicles are being properly inspected and repaired. Please be aware that compliance is vigorously enforced through:

- Routine enhanced inspection data monitoring
- Covert vehicle audits
- Challenge inspections
- Road checks
- Complaint investigations

Violators will be caught, and, upon conviction, subjected to fines, suspensions, and/or license revocations. Those convicted of violating federal statutes, such as the Clean Air Act, risk prison time and fines that can run into hundreds of thousands of dollars.

The Rhode Island Safety and Emission Inspection Laws, regulations, and procedures are intended to provide for clean air and a safe roadway for everyone and are expected to be properly carried out and enforced by all inspectors. If an issue cannot be clarified by referring to the RI Official Manual for Vehicle Inspection, please remember that a DMV Inspector may be reached during normal office hours at 401-462-5890.



Emission Inspection Program



Conclusion

Your responsibility to perform accurate and honest inspections and make only necessary repairs make it possible to accomplish our mutual goals of safety and improving air quality for everyone in the State of Rhode Island.

The I/M Program has shown significant emissions reductions since the program was implemented in 2000. By reducing emissions, we have helped people at risk from the negative health consequences of ground level ozone.

Remember, you are required to complete inspector re-certification training every two(2) years. Your certification expiration will be listed every time you login. Please contact Opus Inspection 30 days prior to your expiration date to coordinate the re-certification process.

If at any time during an inspection, you are in doubt; refer to the RI Official Manual for Vehicle Inspection. This document is located on the inspection analyzer and on the DMV website (www.dmv.ri.gov/inspections). Also, a copy can be obtained from the Safety and Emissions Control Office (462-5890).



Emission Inspection Program



Resources

Online Resources

- OBD Clearing House www.obdclearinghouse.com
- U.S. EPA AirNow www.airnow.gov
- Department of Environmental Management www.dem.ri.gov
- Division of Motor Vehicles www.dmv.ri.gov
- RI I/M Emissions Program www.riinspection.org

If you have any questions, please feel free contact:

- Opus Inspection
 - 401-737-0556
- DMV Safety & Emission Control
 - 401-462-5890



Emission Inspection Program



Completion of Re-Certification

- Perform the practice test (required).
- Contact Opus at 401-737-0556 to schedule an appointment to take the recertification examination at the Warwick office.

