



ENGINEER CANDIDATE CERTIFICATION

PRE-TRIP – PART AND FLUID IDENTIFICATION MANIPULATIVE GUIDE

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Introduction: Candidates will be responsible for all information contained in this ECC Pre Trip Part and Fluid Identification Manipulate Guide. Of those parts and fluids listed in this guide, the ECC candidate will need to identify 10 randomly labeled items, give a brief description, and any considerations related to that item.

DRIVER SIDE

- 1. Air Governor**
 - Description: Controls brake air system minimum (Cut-In) pressure and maximum (Cut-Out) pressure.
 - Considerations: Properly mounted and secure. Check fittings for air leaks.

- 2. Air Compressor**
 - Description: Responsible for supplying air to the brake system.
 - Considerations: Properly mounted and secure. No audible air leaks.

- 3. Engine Oil Fill (2)**
 - Description: Access to add engine oil.
 - Considerations: Make sure cap is secure with locking tabs.

- 4. Fuel Filter**
 - Description: Removes foreign particles as well as water
 - Considerations: Properly mounted and secure. No visible leaks.

- 5. Oil Filter**
 - Description: Removes foreign objects from lubrication oil systems
 - Considerations: Properly mounted and secure. No visible leaks

- 6. Power Steering Canister Fill/Check with Dipstick**
 - Description: Canister holds power steering fluid.
 - Considerations: Properly mounted and secure. Ensure cap is secure and proper fluid levels.

- 7. Transmission**
 - Description: Moves power from the engine to the wheels through the drivetrain (drive shaft, differential, axles, and wheels).
 - Considerations: Properly mounted and no visible leaks.

- 8. Upper and Lower Control Arms ("A" Arms)**
 - Description: Keep the apparatus and the wheels aligned and moving in unison. Helps to stabilize movement.
 - Considerations: Properly mounted and secure. No cracks.

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| 9. | <p>Torsion Bar</p> <ul style="list-style-type: none"> Description: Metal bars that function as a spring. Considerations: Properly mounted and secure. No exposed bare metal and wraps secure. |
| 10. | <p>Steering Rod</p> <ul style="list-style-type: none"> Description: Turns the vehicle's wheels according to the desired direction. Considerations: Properly mounted and secure. No loose or missing nuts/bolts. |
| 11. | <p>Tires (Inflation/Condition/Depth/Wear)</p> <ul style="list-style-type: none"> Description: N/A Considerations: Check for proper inflation, foreign objects, worn and uneven tread wear, proper depth (2/32" or 4/32"). |

PASSENGER SIDE

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| 12. | <p>Alternator</p> <ul style="list-style-type: none"> Description: Uses power from the running engine to generate electricity. Considerations: Properly mounted and secure. Check alternator belts for proper tension and all electrical connections are secure and not frayed. |
| 13. | <p>Radiator</p> <ul style="list-style-type: none"> Description: Allows air to cool down coolant. Sight glass allows for quick check of coolant level. Radiator can be filled through cap access. Considerations: Properly mounted and secure. No visible leaks. Proper level of coolant and cap secure. |
| 14. | <p>Fan Blades</p> <ul style="list-style-type: none"> Description: Allows for supplemental air to assist in cooling coolant in radiator. Considerations: Properly mounted and secure. No cracks or missing blades. |
| 15. | <p>Serpentine Belt</p> <ul style="list-style-type: none"> Description: A single, continuous belt used to drive multiple devices in the engine, such as alternator, a/c pump, water pump, crank shaft, and fan. Considerations: Properly mounted and secure. Not frayed or cracked and no more 3/4" play. |
| 16. | <p>A/C Compressor</p> <ul style="list-style-type: none"> Description: Pumps freon through AC system. Considerations: Properly mounted and secure. No visible leaks. Check sight glass for compressor oil. |
| 17. | <p>Turbo</p> <ul style="list-style-type: none"> Description: Compresses more air flowing into the engine's cylinder. Considerations: Properly mounted and secure. No audible or visible leaks. |
| 18. | <p>Valve (Engine) Cover</p> <ul style="list-style-type: none"> Description: Hard cover that protects the valves and other engine parts. Considerations: No visible leaks or cracks. |
| 19. | <p>Air Intake Filter</p> <ul style="list-style-type: none"> Description: Filters air entering engine's intake system. Considerations: Properly mounted and secure. Check for cleanliness. |

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| 20. | Exhaust <ul style="list-style-type: none">Description: Conduit from engine that expels a mixture of gases and particulates produced during combustion.Considerations: Properly mounted and secure. No visible leaks. |
| 21. | Frame <ul style="list-style-type: none">Description: Supports all of apparatus body and mechanical componentsConsiderations: Not cracked or broken or missing frame bolts. |
| 22. | Transmission Fluid Canister Fill/Check with Dipstick <ul style="list-style-type: none">Description: Access to transmission fluid with dipstick and fill.Considerations: Ensure cap is secure with locking tabs. |
| 23. | Batteries (6) <ul style="list-style-type: none">Description: Maintenance-free type, no caps. Electrolyte is in gel form.Considerations: No bulging or visible leaks. Recommended not to disconnect because of electronic programming. |
| 24. | Coolant Reservoir <ul style="list-style-type: none">Description: Clear, plastic container housing radiator coolantConsiderations: Properly mounted and secure. Not cracked or broken including cap. No visible leaks and cap secure. |

BRAKES (ENGINE)

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| 25. | Brake Canister <ul style="list-style-type: none">Description: Contains brake actuator.Considerations: Not leaking, cracked, or dented, and are mounted securely. See that there are no loose or missing clamps |
| 26. | Brake Hoses/Lines <ul style="list-style-type: none">Description: Provides air from tanks.Considerations: Check for cracked, worn, or frayed hoses and that all couplings and fittings are secured and not leaking. |
| 27. | Rotor <ul style="list-style-type: none">Description: The rotating part of the disc brake assembly of wheel. The brake pads clamp down on the rotor to stop the wheels from spinning.Considerations: Check for cracks, contaminates such as debris or oil/grease |

BRAKE (PROP)

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| 28. | Push Rod <ul style="list-style-type: none">Description: Moves the slack adjuster.Considerations: Check that it is securely mounted, Look for broken, loose, or missing parts. No more than 1" play (pull it by hand) |
| 29. | Slack Adjuster <ul style="list-style-type: none">Description: Adjusts the brakes.Considerations: Check that it is securely mounted, is at a 90-degree angle. Look for broken, loose, or missing parts |

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| 30. | <p>Clevis and Pin</p> <ul style="list-style-type: none">• Description: Fastener between slack adjuster and push rod.• Considerations: Check for proper measurement per manufacture settings |
| 31. | <p>Brake Pad/Linings</p> <ul style="list-style-type: none">• Description: Component of disc brake system that creates stopping friction against rotor.• Considerations: Properly mounted and secure, brake pads (where visible) has minimum ¼", no excessive grease or oil in area |

FLUIDS

Engine Oil

- Used to lubricate pistons as they are pushed into combustion chamber and return. Black viscous liquid.

Radiator Coolant

- Used to absorb heat generated by running engine. Green, Yellow or Red watery liquid.

Automatic Transmission Fluid (ATF)

- Used to lubricate gears in transmission. Red, semi viscous liquid.

Diesel Exhaust Fluid (DEF)

- Used to neutralize emissions otherwise harmful to environment. Clear, colorless, non-hazardous liquid like water with a slight odor of ammonia.

NOTES:
