



# Wyoming Department of Transportation

Office of Local Government – Transit Program

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Cheyenne, WY 82009

## Vehicle Maintenance Guide

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### PREVENTIVE MAINTENANCE INSPECTIONS & SERVICES

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#### INTRODUCTION

Vehicle and component (e.g., handicapped access equipment) manufacturers manuals that recommend maintenance practices as well as specific guidance and instructions for troubleshooting, removal, overhaul, repair, and replacement of components. These manuals are an important part of the vehicle maintenance plan as they define specific maintenance intervals and provide critical information when the maintenance work is actually to be performed.

**Preventive maintenance (PM) inspections and services should follow the recommended intervals (within 500 miles or 7 days) by the manufacturer, supplier, or builder.** If preventive maintenance services are not being done according to the guidelines of the manufacturer, supplier or builder, the agency may jeopardize any claim to a warranty.

Services eligible for warranty payment must be made by the appropriate personnel and filed with the manufacturer. Documentation of such services should remain in the vehicle file and a copy should be forwarded to the WYDOT Transit office.

#### DOCUMENTATION

Preventive maintenance (PM) inspections and services should be performed, and documented according to a schedule. All documentation should be kept through the life of the vehicle plus 3 years. Whenever a mechanic or tow truck is dispatched to a vehicle in service, documentation should be submitted to the office and placed in the vehicle file.

#### PM INSPECTIONS

Preventive maintenance (PM) inspections are scheduled to provide an opportunity to detect and repair damage or wear conditions before major repairs are necessary.

Each inspection will:

- Specify each item to be checked;
- Record repairs and the routine application of fluids;
- Indicate inspection interval (i.e., daily or weekly); and
- Contain a pass/fail standard for each item.

Portions of check lists and procedures may come from the manufacturer or the vendor. Refer to Appendix A for an example of a daily PM Inspection Checklist.

## IDENTIFIED DEFECTS

Identified defects should be reported to the project manager. Defects must be reviewed and repair considered. Categories of repair include:

- SAFETY DEFECT

The vehicle cannot be released until the repairs are completed, except in case of an emergency. Safety cannot be compromised.

- MECHANICAL DEFECT

A defect that will worsen and increase cost. The vehicle cannot be released until the repairs are completed, except in case of an emergency.

- ELECTIVE MECHANICAL DEFECT

A defect that does not compromise safety, will not cause further damage if operated but needs to be corrected prior to the next PM cycle. Repair should be scheduled. Due to transportation costs and disruption to operations, this decision should not be made lightly.

- ELECTIVE OR COSMETIC DEFECT

The defect will not compromise safety and will not cause further damage or cost as it is an aesthetic defect. This vehicle should be scheduled for an off-peak time in the future, as determined by management, or at the next scheduled PM service.

If the fleet experiences recurring defects, the Program Director should check vehicle maintenance files, check manufacturers' recall notices, service bulletins, and campaigns.

## PM SERVICES

**The manufacturer's recommended service schedule should be adhered to, within +/- 500 miles or 7 days.** Many transit agencies will group PM services into different levels, the most commonly used are A, B, C, and D. Level A comprises the most basic and frequent level of PM services while level D consists of more complicated services performed less frequently.

Level A – Conducted at 3,000 miles interval. Change oil and filter, inspect tires, electrical system, service all fluid levels, lubricate chassis and doors, check A/C, hoses, fire extinguishers, belts, brakes, lights, test drive, body damage, etc. Inspect and test vehicle lift.

Level B – Conducted at 12,000 mile intervals. Includes all items in level A, plus transmission fluid and filter change. Check coolant, specific gravity, and pH.

Level C – Conducted at 24,000 mile intervals. All items in levels A and B, plus change fuel filter, perform complete engine tune-up, replace air filter, drain and refill differential lubricant and inspection of braking system.

Level D – Conducted at 48,000 mile intervals. All items in levels A, B, and C, plus inspection and repack of wheel bearings.

A recommended PM maintenance schedule based on cumulative mileage would follow a chart as such:

Preventive Maintenance Level – Schedule by Mileage

PM Level	Cum. Mileage	PM Description
A	3,000	
A	6,000	
A	9,000	

B	12,000	A + B
A	15,000	
A	18,000	
A	21,000	
C	24,000	A + B + C
A	27,000	
A	30,000	
A	33,000	
B	36,000	A + B
A	39,000	
A	42,000	
A	45,000	
D	48,000	A + B + C + D

*Repeat the schedule.*

## PM MANAGEMENT BY EXCEPTION

There are many good reasons to vary a scheduled PM service. It will not necessarily hurt the vehicle to have the PM service performed off schedule and still allow your agency to manage its PM program to achieve its overall goal.

Management by exception allows flexibility in the PM program by authorizing the mechanic to make decisions on deleting or adjusting certain items listed on the PM schedule.

For example, if vehicle A comes in for level D service and according to the vehicle's records, the front wheel bearings were inspected and repacked at the time of the last front brake job (only 1300 miles ago), s/he could then delete the requirement to repeat this service.

## PRE-TRIP INSPECTIONS

An important aspect of preventive maintenance is the establishment of strong communication between drivers and management. An easy way to ensure and document this communication link is through the use of the driver's daily vehicle inspection checklist.

Each vehicle should have blank copies of the checklist on-board for the drivers to conduct the inspection. The driver should identify any defects and report them to the program manager before driving the vehicle. If a problem arises during the shift, the driver should add comments to the checklist. All checklists are to be maintained in the vehicle's permanent file.

***NOTE: When malfunctions and/or defects are detected which threaten safe operating performance, the vehicle will not be used to transport persons until defects are corrected.***

The pre- and post-trip inspection forms should be legibly completed and signed by the vehicle driver. Pre-trip inspections should include as a minimum:

- Cleanliness – Properly maintained and free of loose articles.
- Lights and reflectors – High/low beams, tail lights, turn signals,
- 4-way hazard flashers, marker lights, license plate light and reflectors should be cleaned as needed
- Brakes – Both foot and emergency brakes should be capable of effectively stopping or restraining the vehicle. Brake pedal should be firm after 1-2 inch free-play on a single down stroke. No noises, vibration or steering changes should result from applying the brakes while moving.
- Horn – Gives an adequate and reliable warning signal.

- Windshield, washer, wipers and defroster – Surfaces must be clean and unobstructed, inside and outside. Washer reservoirs are to be filled as needed.
- Mirrors – All rear vision mirrors must be clean, properly adjusted and unobstructed. Outside mirrors must be mounted on both sides.
- Tires – Must be of adequate load capacity when vehicle is fully loaded. Tires shall be inflated to recommended pressures and compatible with each set (i.e., all radials or all bias ply; no mixed sets.) Tire wear surfaces and sidewalls shall be inspected daily for debris, damage, and wear. Tires shall be replaced prior to revealing the “wear bars” between the treads at the contact surface.
- Speedometer – Shall be operational and accurately record speed.
- *Seat Belts – If the vehicle has seat belts, they must be in good operating condition and used by all passengers and drivers. Wheelchair passenger restraints and securement systems shall be fully operational.*
- Doors – Capable of being opened, shut, and locked as required.
- Fluids – All fluid levels must be checked each time the vehicle is fueled and maintained at the manufacturers recommended operating levels. This includes engine coolant, oil, brake fluid, power steering fluid, transmission fluid and washer solvent.
- **Wheelchair lifts – Check operating and structural condition by operating through two (2) complete cycles..**
- Emergency Equipment – Should be present and operational: ***Must meet each agency’s policies***
  - Flares
  - Fire Extinguishers
  - First Aid Kits
  - Flashlight W/Batteries
  - Blood Borne Pathogens Clean-Up Kit
  - Reflective Triangle
  - Reflective Vest for Driver
  - Clean-Up Kit for Cleaning & Sanitizing the Vehicle

## POST-TRIP REPORTS

Drivers should prepare a report in writing at the completion of each day's work on each vehicle operated and the report shall cover at least the following parts and accessories:

- Service brakes including trailer brake connections
- Parking (hand) brake
- Steering mechanism
- Lighting devices and reflectors
- Tires
- Horn
- Windshield wipers
- Rear vision mirrors
- Emergency equipment
- Wheelchair lifts

(a) Report content. The report shall identify the vehicle and list any defect or deficiency discovered by or reported to the driver which would affect the safety of operation of the vehicle or result in its mechanical breakdown. If no defect or deficiency is discovered by or reported to the driver, the report shall so indicate. In all instances, the driver shall sign the report. Driver needs to sign the driver vehicle inspection report. If a driver operates more than one vehicle during the day, a report shall be prepared for each vehicle operated.

(b) Corrective action. Prior to requiring or permitting a driver to operate a vehicle, every transit agency shall repair any defect or deficiency listed on the driver vehicle inspection report which would be likely to affect the safety of operation of the vehicle.

(1) Every transit agency or its agent shall certify on the original driver vehicle inspection report which lists any defect or deficiency that the defect or deficiency has been repaired or that repair is unnecessary before the vehicle is operated again.

(2) Every transit agency shall maintain the original driver vehicle inspection report, the certification of repairs, and the certification of the driver's review for the life of the vehicle plus 3 years.

**Post-Trip Report sample is provided in Appendix B.**

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## ADA ACCESSIBILITY EQUIPMENT

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### INTRODUCTION

The American Disability Act (ADA), Title 49, CFR, Section 37.161, Subpart G requires that transportation services maintain the ADA features of their facilities and vehicles in operative condition. These ADA features, include, but are not limited to:

- Lifts and other means of access to vehicles;
- Securement devices;
- Signage or systems to aid communications with persons who have impaired vision or hearing.

Accessibility features must be repaired promptly if they are damaged or out-of-order. When an accessibility feature is out-of-order, your agency shall take reasonable steps to accommodate persons with disabilities who would otherwise use the feature.

ADA, Title 49, CFR, Section 37, 163 requires the establishment of regular and frequent maintenance checks of the lifts. The vehicle drivers must report, by the most immediate means available, any failure of a lift. If there is no available spare vehicle to take the place of a vehicle with an inoperable lift, your agency will contact a repair facility within **five days** from the date of discovery and schedule repairs as soon as possible..

ADA, Title 49, CFR, Section 37, 173 requires **all personnel to be trained to proficiency in the use of ADA equipment**, as appropriate to their duties.

### PREVENTIVE MAINTENANCE PLAN

A preventive maintenance plan for ADA accessibility features should be in place; including a system of maintenance checks based on **manufacturers recommended guidelines within 50 cycles or yearly**,

**whichever comes first.** The ADA elements have been incorporated in the transportation program's regular maintenance plan.

(For example, NL-2 series lifts should be serviced at 750 cycles, 1500 cycles, 4500 cycles, and consecutive 750 cycles after 4500 cycles. All intervals should be within 50 cycles of the stated cycle interval)

## **MANAGEMENT OF FLEET**

### **PHYSICAL INVENTORY**

Your agency will conduct a physical inventory of capital items of value >\$1000 and of all vehicles and reconcile the results with its equipment records annually.

### **VEHICLE HISTORY FILE**

Each vehicle will have a written record documenting preventive maintenance, regular maintenance, inspections, lubrications, and repairs performed. A minimum of the following information will be maintained in the records:

- Identification of the vehicle
  - Year
  - Manufacturer
  - Make
  - Model
  - License number
  - Registration of ownership
- Date
- Mileage
- Description of each inspection, maintenance, repair, lubrication performed
- The name & address of any business performing an inspection, maintenance, lubrication, or repair

**APPENDIX A: DAILY INSPECTION CHECKLIST**

Last 5 digits of VIN \_\_\_\_\_

Odometer \_\_\_\_\_

Work Order No. \_\_\_\_\_

Date \_\_\_\_\_

INTERIOR INSPECTION			EXTERIOR INSPECTION		
1	All Seats and Seat Belts		20	Exterior Body And Components	
2	Doors/ Hinges/Latches/locks		21	Tires / Wheels – Lug Nuts, Tire Pressure	
3	Flooring/Headliner/Side Panels		22	Access Doors/Emergency Doors	
4	Mirrors		23	Fuel Cap And Port	
5	Interior Lights		24	Engine Oil /Trans. Fluid Check	
6	Exterior Lights <ul style="list-style-type: none"> <li>• Directional</li> <li>• Step/door</li> <li>• Emergency flashers</li> <li>• Clearance</li> <li>• Head lights</li> <li>• Panel lights</li> <li>• Tail lights</li> <li>• Back up lights</li> <li>• Brake lights</li> </ul>		25	Power Steering Fluid Level	
7	Warning System/Horn/radio		26	Battery	
8	Starter System/Automatic Choke/Backup Alarm		27	Radiator Fluid Level	
9	Windshield Wiper/ Washers/ Windshield		28	Belts/Hoses/Wiring	
10	Windows/Emergency Windows		29	Underhood/Exhaust System	
11	AC/Heater/defroster – front /rear		30	Brakes/Brake Fluid/Brake Pedal	
12	GAUGES: Fuel/Oil/Volt/Temp		31	Parking Brake/Emergency Brake	
13	Roof Hatch		32	Acceleration/Steering/Tracking	
14	Fare Box		33	Suspension - Shocks/Springs	
15	Clean?		34	Water/Fluid Leaks	
16	Required Stickers/posters displayed		35	Lift/Ramp	
			36	Wheelchair Lift/Ramp – Cycled Y/N - Smooth Operation?	
			37	Interlock System Lift Fluid Levels	
			38	4 Tie Downs Per Position	
			39	4 Min. Safety Loop Strap Per Vehicle	
			40	Other	
			41	Fire Extinguisher/First Aid Kit/Safety Triangles	
			42	Bloodborne Kits /Seat Belt Cutter	
			43	License Plate/Operators Manual	
			44	Registration/Insurance	

ADDITIONAL COMMENTS:

Inspector: \_\_\_\_\_

Remarks	SYMBOLS	
	/	OK
	X	REPAIRS REQUIRED
	R	REPAIRED
	O	NOT APPLICABLE

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**APPENDIX B: POST-TRIP REPORT**

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Driver: \_\_\_\_\_

Date: \_\_\_\_\_

Last 5 digits of VIN \_\_\_\_\_

Time/End of Trip: \_\_\_\_\_

Check all Items and Indicate by checking box:

- |   |  |
|---|--|
| <input type="checkbox"/> Parking (hand) brake                               | <input type="checkbox"/> Horn                |
| <input type="checkbox"/> Steering mechanism                                 | <input type="checkbox"/> Tires               |
| <input type="checkbox"/> Lighting devices and reflectors                    | <input type="checkbox"/> Coupling devices    |
| <input type="checkbox"/> Windshield wipers                                  | <input type="checkbox"/> Wheels and rims     |
| <input type="checkbox"/> Emergency equipment                                | <input type="checkbox"/> Rear vision mirrors |
| <input type="checkbox"/> Service brakes including trailer brake connections |  |

Identify or list any defect or deficiency discovered or reported that would affect the safety of operation of the vehicle or result in its mechanical breakdown (indicate if none discovered or reported as well).

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(Use the back side if more room is needed)

\_\_\_\_\_  
Driver's Signature

Describe correction action taken: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(Corrective action. (1) Every transit agency shall certify on the original driver vehicle inspection report which lists any defect or deficiency that the defect or deficiency has been repaired or that repair is unnecessary before the vehicle is operated again)

Print Name of Authorized Individual: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

(2) Every transit agency shall maintain the original driver vehicle inspection report, the certification of repairs, and the certification of the driver's review for three months from the date the written report was prepared.