



South Carolina Department of Transportation

COMPREHENSIVE PREVENTIVE MAINTENANCE PROGRAM

Developed for all Public and Human
Services Providers by
SCDOT Office of Mass Transit

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SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

OFFICE OF MASS TRANSIT

PREVENTIVE MAINTENANCE PROGRAM

The SCDOT/Office of Mass Transit is committed to maintaining a fleet of safe and reliable vehicles for all South Carolina mass transit customers. The policies and procedures outlined in this brochure will ensure all assigned vehicles are kept in top operating condition and the out-of-service time by following an in-depth preventive maintenance schedule. Please keep in mind that this brochure is not all-inclusive. When new vehicles are received from the manufacturer please review the manufacturer's preventive maintenance schedule and incorporate it into your overall maintenance plan. Raising funds to procure a new vehicle is a difficult task. Consequently, the vehicle(s) you receive through state or federal grants will need to last for many years. This brochure offers guidance on how to properly maintain your vehicle and provides a format for safety and mechanical inspections. The SCDOT Office of Mass Transit will be conducting periodic visits to each provider to ensure a comprehensive preventive maintenance program is in place.

Introduction

Preventive Maintenance is essential to every effective maintenance program as it helps to ensure maximum vehicle reliability, safety, and longevity. It entails performing regularly scheduled maintenance procedures in order to minimize malfunctions, rather than simply making repairs when something goes wrong. It also involves performing necessary repairs promptly to prevent further damage and maintain vehicle safety. While PM may be more expensive in the short run, it will likely result in the lowest overall life cycle costs when all vehicle related expenses are considered.

Before taking delivery of your new vehicle you should develop a comprehensive preventive maintenance program. This section is designed to help you develop such a program, since maintaining your vehicle and keeping accurate, complete records is as important to successful service as the vehicle purchase itself.

Please note that several of the tables in this section were adapted from other preventive maintenance publications.

Essential Elements of a Successful Preventive Maintenance Program

A successful PM program consists of a number of different elements. The following discussion highlights these elements and the issues you should consider when developing your program.

Routine Servicing and Maintenance

Routine servicing and maintenance is the heart of any PM program. Every vehicle has its own maintenance requirements and recommended program lay out by the manufacturer. In many cases, it will be desirable to exceed the recommendations, depending on factors such as weather, terrain, service type, and annual mileage. Maintenance intervals should never exceed those recommended by the manufacturer. Table A and B lists items to be considered in developing a PM schedule for the expected life of the vehicle.

In establishing your service program, consider the following suggestions:

- Make all service intervals mileage multiples of some common denominator. For example, if the oil change interval is 3,000 miles, consider performing tire rotations every 6,000 miles and transmission fluid services every 24,000 miles. Consistent service intervals increase the efficient use of labor and minimize the number of times the vehicle is in the shop.
- Consider seasonal variations that may alter service intervals. For example, harsh winters may dictate shorter oil change intervals due to cold starts/running and earlier replacement of air filters when operating over salted or sanded roads. Also, plan seasonal fleet-wide service checks, such as a spring campaign to prepare air-conditioning systems for the summer, and a fall campaign to prepare for adequate winter heating and defrosting.
- Consider local conditions when planning your maintenance program. For example, services operated over unpaved, dusty roads may require more frequent oil changes and shock absorber replacement. Constant slow or stop-and-go driving and low annual mileage are other examples of situations where service intervals for some items should be shortened.
- Have a regular program for washing and cleaning the vehicles. Accumulated salt will greatly accelerate rusting and, where chloride compounds are used to control dust on unpaved roads, corrosion can occur even in summer.

Inspections

Inspections are a key element in the early detection and remedy of potential failures. Both drivers and mechanics should perform them, to varying degrees. Investing a short time on a daily basis to inspect each vehicle will help detect problems, thereby improving safety, decreasing vehicle repair costs and vehicle downtime.

Drivers should perform a regular pre-trip inspection of the vehicle (Table C, in addition to inspecting the vehicle when it is cleaned and refueled. Both mechanics and drivers should inspect the vehicle through observations and checks during routine servicing procedures (it is quite possible to perform a complete vehicle inspection while the oil is being drained). Table D lists items that should be included in the mechanic's inspection at a service interval.

Replacement versus Repair

“If it ain’t broke, don’t fix it!” is a time-honored cliché and if we could always predict the exact point of any component failure, it would be a reasonable way to operate. However, without such predictability, it makes sense to replace or rebuild certain components prior to failure (whenever there is the data to justify doing so without incurring extraordinary costs).

While this routine replacement concept can be applied to a wide variety of components, it does require that you gain experience with your particular vehicles in your unique environment. If you have no prior experience with your new vehicle, we recommend contracting other operators using the same vehicle, under similar circumstances, with good maintenance records to assist in developing a routine component replacement schedule.

Routine replacement is typically applied to those components where little if any diagnostic aid is available, other than visual inspection. These include items such as:

- fluids (except windshield washer and refrigerant)
- hoses
- belts
- wiper blades

Warranties

Your vehicle will come with a number of warranties from the chassis supplier, body builder, and major component suppliers. These take many forms but generally include some combination of mileage and time, and will often contain exclusions for “consumable” items, such as brake pads, batteries, and tires. Additionally, warranties generally have stipulations about operating and maintaining the vehicle in accordance with the supplier’s specific recommendations.

Thoroughly examine and become familiar with all the warranties provided with the vehicle when it is delivered. Make sure that you have read all the fine print. Does your warranty really cover 100 percent of all repair costs for the entire period, or does it only cover full replacement in the beginning with reduced coverage thereafter? What items are specifically included or excluded? What is the trade-off on any extended warranty or service agreement? Also, make sure you understand who is going to be responsible for which warranties – is it the vehicle supplier or the local service representative of a component supplier (such as an air conditioning unit or wheelchair lift)?

All vehicles purchased through state contract or competitive bid have warranties which, at a minimum, cover all labor and replacement parts for a period of one year or 12,000 miles (whichever comes first). Warranties cover the basic vehicle and all ancillary equipment supplied with the vehicle (i.e., air conditioner, wheelchair lift, wheelchair tie-down systems, seats, etc.).

No vehicle will be perfect upon delivery and the vehicle manufacturers expect that some adjustments will be needed. Therefore, plan to take the vehicle to the proper facility to correct these items within the warranty period. It is highly recommended that you take care of problems quickly, before they cause major failures (which often occur after the warranty period). Arguing that you knew of a problem while still under warranty, but could not afford the time to have the vehicle serviced, rarely results in a favorable claim. The end results are that your vehicle may be out of commission for a longer period of time and you may have to pay costly repair bills.

Most repairs can and should be handled by the local auto or truck dealership representing the chassis manufacturer (e.g., Ford, Chevrolet, and Dodge). In order for your warranty to be honored, you must take the vehicle to an authorized representative. If the representative cannot solve the problem to your satisfaction, contact the vendor who delivered the vehicle. In most cases, this vendor is the one who submitted the original bids and is most familiar with all aspects of your vehicle (i.e., chassis, body, ancillary equipment, etc.). The vendor will advise you of the proper procedures to follow and the authorized agent to perform needed repairs. If for some reason you are unable to obtain assistance from either the local dealership or the original vendor, contact SCDOT.

Use the warranties as a basis for future maintenance activities by ensuring that any required servicing is directly incorporated into your preventive maintenance program (e.g., lubrication schedules for lifts). Plan on reviewing the performance and condition of specific warranty-related items and components at a service interval shortly before any major warranty milestones, in order to ensure that you recoup as much benefit as possible from your warranties.

In many cases, extra-cost extended warranties are available. These should be closely examined and related to your operation before any purchase is made. Extended warranties on such items as power trains often have limitation regarding which components are covered. They are often progressive in nature, with a diminishing ability to recover labor and parts costs as time goes by and mileage increases. Therefore, it is essential to think in terms of which combination of conditions are most favorable to you, given your anticipated annual mileage and whether you are able, and authorized to conduct warranty repairs in-house or through a repair shop of your choice.

Monitor Suppliers

Tracking your suppliers' performance (price, quality, and reliability) is another essential element of a successful preventive maintenance program. For instance, the quality of your fuel can have a significant impact on the service and repair level required for your engines in these days of electronic controls, fuel injector systems, and catalytic converters.

One area that requires close monitoring is the performance of rebuilt and after-market parts. Rebuilt parts, such as alternators and pumps, may offer up-front cost savings; however, such units may have a shorter operational life than newer parts. By monitoring the life of rebuilt parts, you can determine whether true savings are realized,

or whether total cost is actually greater, once you factor in the cost of another rebuilt unit and the labor associated with multiple replacements.

You should also be aware that in many cases involving heavy-duty items, such as starters and compressors, a trade-in (core) unit is required. This “core” generally is not used in your rebuilt unit; instead, it goes on to become the rebuilt product for another operation.

Like rebuilt parts, after-market parts (i.e., new parts built by a company other than the original equipment manufacturer – OEM) may offer up-front cost savings. They may claim to be built to the same or superior specifications as the OEM part, but only through careful monitoring can you determine whether the part’s life is truly comparable.

Only through experience will you gain the background necessary to make informed decisions in the future. Good maintenance records and purchasing documentation are essential to learning through experience and must be addressed when you first begin operation, or introduce a new type of vehicle into service.

Documentation

Another key to any successful maintenance program is up-to-date, accurate record keeping. While documentation is necessary for purposes of budget and control, good records will also enable you to optimize your PM program by providing:

- the database to enable you to establish proper intervals for routine maintenance and servicing;
- information on repetitive failures to establish repair and replacement intervals and the performance of rebuilt or after-market parts and of parts and consumables suppliers;
- early warning of impending major problems through telltale signs, such as increased oil consumption;
- back-up information for warranty claims (particularly marginal claims near the end of the warranty period where supporting documentation can often be the “clincher” in claim payment); and
- Documentation of any personnel related patterns (e.g., more frequent tire or brake replacement on one driver’s vehicle versus fleet average).

In situations where maintenance is conducted to a third party, good documentation is key to minimizing disputes. Under this scenario, management should make the extra effort to review repair bills and develop/maintain the database required for adjustments to the preventive maintenance program. Maintenance is never “out of sight, out of mind” to the smart operator. Tables E and F provide examples of basis record keeping forms.

Personnel/Departmental Relationships

Internal conflicts plague many organizations and, unfortunately, transportation operators are no exception. Good communications and interpersonal relationships are key to the effective execution of maintenance and, if anything, their importance increases with the size and complexity of the organization.

Most transportation operations encounter internal conflicts between the various personnel and departments by virtue of the priorities inherent in their duties. For example, drivers who take the time to report a defect may be convinced that the maintenance staff is incompetent if problems are not corrected prior to the time they are next assigned that vehicle. Drivers are likely unaware that, for example, the dispatcher had an urgent need for an extra vehicle; that since the defect was not safety related, maintenance had decided to handle the problem at the next scheduled servicing interval; or that a replacement part was not available at the time. Note: Keeping inventory small is an essential part of low cost operation.

Similarly, dispatchers tend not to understand that repairs and repair times are not entirely predictable, particularly on older vehicles where rusted nuts and bolts do not always easily yield to the wrench, or when making one repair can uncover another problem. Finally, mechanics know that if they had the dispatcher's job there would be no last minute calls for extra vehicles, or for that specific vehicle that they have just raised up onto the garage hoist.

Consistent execution of a PM program requires the cooperation and interaction of all parties, both in establishing the program and making it work on a day-to-day basis. The following actions will help improve interpersonal relationships and reduce organizational conflicts.

- Involve all parties in development of documentation for inspection items, service intervals, and other inter-departmental maintenance activities.
- Be realistic in your expectations (for example, a proper pre-trip driver inspection will improve reliability, but take 20 minutes to perform).
- Pay attention to administrative details. To whom does the driver turn in a defect report? Who is responsible for notifying maintenance or dispatch of a problem with a vehicle? Who prioritizes the repairs or decides that a vehicle is no longer roadworthy? Who tells maintenance what the future vehicle needs are and how much notice they can expect?

Training and Diagnosis

Effective training is essential to proper diagnosis of vehicle problems and their subsequent repair or replacement. As vehicles become increasingly complex and reliant upon electronic and computerized controls and monitoring systems, the need for adequate training becomes that much more important.

We suggest that you encourage or even require your mechanics and/or drivers to take advantage of the training offered by vehicle manufacturers and component suppliers. Some manufacturers run training schools on a regional basis and suppliers, as well as converted vehicle manufacturers, may supply service representatives to provide in-house training. In some instances, such as air-conditioning, there is an increasing trend toward mandatory mechanic competence certification.

If you are performing maintenance in-house, purchasing diagnostic equipment is a sound investment. It is essential, in the electronic era, to take as much of the guesswork out of the troubleshooting process as possible. Diagnostic equipment will handsomely repay itself in increased maintenance department productivity and vehicle reliability.

Vehicle Assignment

Experience shows that assigning a specific vehicle to a driver is beneficial to that vehicle's upkeep and longevity, since they get to know the vehicle better, and take pride in its appearance and mechanical soundness. The same is true for mechanics. While workforce inflexibility may limit the application of this practice, it remains a goal worth striving for.

Measurement of Progress

While thorough documentation of a vehicle servicing and repair are essential, reporting and analyzing summaries and trends related to vehicle maintenance is essential for overall program management. An individual vehicle's service record may be of little interest to an executive director or board of directors, but they will likely be interested in knowing the trends such as miles between roadcalls. It is essential to keep track of factors that affect your client's view of the system and to publicize them within your operation. Such items include:

- Miles between roadcalls;
- Number of complaints of dirty, smoking, or damaged vehicles;
- Number of complaints of inoperable air-conditioners, heaters, lifts, etc.; and
- Number and miles between chargeable accidents attributable to vehicle condition.

Who will maintain the Vehicles?

Every maintenance program will be unique due to the mix of vehicle types and ages, fleet size, services provided, and arrangement for maintaining the vehicles. Determining who will perform vehicle maintenance is an important decision. Options include:

- Contracting part or all of your maintenance to commercial mechanics;

- Contracting part or all of your maintenance to other agencies, municipal garages, or others, such as school bus operators; and
- Performing part or all of your maintenance in-house.

Who will perform which elements of your maintenance program will largely depend upon your ability and desire to obtain the staff, parts inventory, equipment, and facilities to perform your own maintenance, as well as your proximity to existing maintenance facilities that can service your vehicles. Remember that if you contract out your maintenance, you still bear the responsibility of verifying and documenting the work performed.

Summary

Preventive Maintenance is an essential element of every transportation operation. A program tailored to your individual service and vehicle fleet will increase reliability, longevity, and safety. It is important to remember that maintenance may be a dirty job, but must not be a dirty word. It must not be consigned to some corner, where it can be by-passed by the rest of the operation.

Selecting the Right Schedule:

Short Trip/City Definition

Follow the Short Trip/City Scheduled Maintenance if any of the following conditions apply for you vehicle.

- Most trips are less than 5 –10 miles.
- Most trips include extensive idling (such as Frequent stop and go driving).
- You operate your vehicle in dusty areas.
- If the vehicle is used in a commercial application.

One of the reasons you must follow this schedule under the above conditions is that engine oil breaks down sooner.

Short Trip/City Intervals

- Every 3,000 miles: Engine Oil and Filter Change (or 3 months, whichever occurs first). Chassis Lubrication (or 3 months, whichever occurs first). Drive Axle Service (or 3 months, whichever occurs first).
- Every 6,000 miles: Tire Rotation.
- Every 15,000 miles: Engine Air Cleaner Filter Inspection, if driving in dusty conditions. Front wheel bearing repack (2WD only) (or at each brake relining, whichever occurs first). Automatic Transmission Service. (Severe Conditions).
- Every 30,000 Miles: Engine Air Cleaner replacement. Fuel Filter Replacement.

- Every 60,000 Miles: Engine Accessory Drive Belt Inspection.
- Every 90,000 Miles: Fuel Filter Replacement.
- Every 100,000 Miles: Spark Plug Wire Inspection. Spark Plug Replacement. 4.3L V6 Engine Only; Positive Crankcase Ventilation (PCV) Valve Inspection.

Long Trip/Highway Definition

Follow this schedule ***ONLY*** if none of the conditions from the Short Trip/City Scheduled Maintenance is true. Do not use this schedule if the vehicle is driven in a dusty area or off paved roads.

Driving a vehicle with a fully warmed engine under highway conditions causes engine oil to break down slower.

- Every 150,000 Miles: Cooling system Service (or every 60 months, whichever occurs first).

Long Trip/Highway Intervals

- Every 7,500 miles: Engine Oil and Filter Change (or 12 months, whichever occurs first). Chassis Lubrication (or 12 months, whichever occurs first). Drive Axle Service (or 12 months, whichever occurs first). Tire Rotation.
- Every 15,000 miles: Automatic Transmission Service (under severe conditions)
- Every 30,000 miles: Fuel Filter Replacement. Engine Air Cleaner Filter Replacement. Front wheel bearing repack (2WD only) (or at each brake relining, whichever occurs first. Automatic Transmission Service. (Severe Conditions).
- Every 50,000 Miles: Automatic Transmission Service (normal conditions).
- Every 60,000 Miles: Engine Accessory Drive Belt Inspection.
- Every 90,000 Miles: Fuel Filter Replacement.
- Every 100,000 Miles: Spark Plug Wire Inspection. Spark Plug replacement. 4.3L

V6 Engine Only: Positive Crankcase Ventilation (PCV) Valve Inspection

- Every 150,000 Miles: Cooling System Service (or every 60 months, whichever occurs first).

(Table A) Short Trip/City Scheduled Maintenance

The U.S. Environmental Protection Agency recommends that all required maintenance services be performed at the indicated interval and the maintenance be recorded. SCDOT will also require a detailed maintenance log on every vehicle until the title has been released to you after the recommended useful life of the vehicle have been reached. NOTE: It is imperative to conduct all required maintenance on vehicles and continue updating the maintenance schedules provided by SCDOT.

Note: Individual Preventive Maintenance Schedules should be accomplished for each vehicle assigned to your fleet.

The services shown in this schedule up to 100,000 miles should be performed after 100,000 at the same intervals. The services shown at 150,000 miles should be performed at the same interval after 150,000 miles.

Short Trip/City Scheduled Maintenance

3,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter. (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Check and repair wheelchair operations.

6,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check front and rear axle fluid levels and add fluid as needed.
- Rotate tires per manufacturer specifications.
- Check and repair wheelchair operations

9,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Check and repair wheelchair operations.

12,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Rotate Tires.
- Check and repair wheelchair operations.

15,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Clean and repack the front wheels bearings
- Change automatic transmission fluid and filter under the following conditions.

- In heavy city traffic where the outside temp. reaches 90 degrees F or higher.
- In hilly or mountainous terrain.
- Delivery service or “stop” and “go” driving
- Check and repair wheelchair operations.

18,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Rotate Tires.
- Check and repair wheelchair operations.

21,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Check and repair wheelchair operations.

24,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Rotate Tires.
- Check and repair wheelchair operations.

27,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Check and repair wheelchair operations.

30,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Clean and repack the front wheels bearings
- Change automatic transmission fluid and filter under the following conditions.
 - In heavy city traffic where the outside temp. reaches 90 degrees F or higher.
 - In hilly or mountainous terrain.
 - Delivery service or “stop” and “go” driving
- Replace engine air filter.
- Rotate Tires.
- Check and repair wheelchair operations.

33,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Check and repair wheelchair operations.

36,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Rotate Tires.
- Check and repair wheelchair operations.

39,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Check and repair wheelchair operations.

42,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Rotate Tires.
- Check and repair wheelchair operations.

45,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Clean and repack the front wheels bearings
- Change automatic transmission fluid and filter under the following conditions.
 - In heavy city traffic where the outside temp. reaches 90 degrees F or higher.
 - In hilly or mountainous terrain.
 - Delivery service or "stop" and "go" driving
- Inspect engine air filter. Replace if necessary.
- Check and repair wheelchair operations.

48,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Rotate Tires.
- Check and repair wheelchair operations

51,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Check and repair wheelchair operations.

54,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Rotate Tires.
- Check and repair wheelchair operations.

57,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Check and repair wheelchair operations.

60,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Clean and repack the front wheels bearings
- Change automatic transmission fluid and filter under the following conditions.
 - In heavy city traffic where the outside temp. reaches 90 degrees F or higher.
 - In hilly or mountainous terrain.
 - Delivery service or “stop” and “go” driving
- Replace engine air filter.
- Inspect engine accessory belt.
- Rotate Tires.
- Replace Fuel Filter.
- Check and repair wheelchair operations.

63,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Check and repair wheelchair operations.

66,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Rotate Tires.
- Check and repair wheelchair operations.

69,000 Miles	DATE:	MILEAGE:
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SERVICED BY:

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Check and repair wheelchair operations.

72,000 Miles**DATE:****MILEAGE:****SERVICED BY:**

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Rotate Tires.
- Check and repair wheelchair operations.

75,000 Miles**DATE:****MILEAGE:****SERVICED BY:**

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Clean and repack the front wheels bearings
- Change automatic transmission fluid and filter under the following conditions.
 - In heavy city traffic where the outside temp. reaches 90 degrees F or higher.
 - In hilly or mountainous terrain.
 - Delivery service or “stop” and “go” driving
- Inspect and or Replace engine air filter.
- Inspect engine accessory belt.
- Check and repair wheelchair operations.

78,000 Miles**DATE:****MILEAGE:****SERVICED BY:**

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Rotate Tires.
- Check and repair wheelchair operations.

81,000 Miles**DATE:****MILEAGE:****SERVICED BY:**

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Check and repair wheelchair operations.

84,000 Miles**DATE:****MILEAGE:****SERVICED BY:**

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Rotate Tires.
- Check and repair wheelchair operations.

87,000 Miles**DATE:****MILEAGE:**

SERVICED BY:

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Check and repair wheelchair operations.

90,000 Miles**DATE:****MILEAGE:****SERVICED BY:**

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Clean and repack the front wheels bearings
- Change automatic transmission fluid and filter under the following conditions.
 - In heavy city traffic where the outside temp. reaches 90 degrees F or higher.
 - In hilly or mountainous terrain.
 - Delivery service or “stop” and “go” driving
- Replace engine air filter. Replace Fuel Filter.
- Rotate Tires.
- Check and repair wheelchair operations.

93,000 Miles**DATE:****MILEAGE:****SERVICED BY:**

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Check and repair wheelchair operations.

96,000 Miles**DATE:****MILEAGE:****SERVICED BY:**

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Rotate Tires.
- Check and repair wheelchair operations.

99,000 Miles**DATE:****MILEAGE:****SERVICED BY:**

- Change engine oil and filter (or three months, whichever occurs first).
- Lubricate chassis components (or three months, whichever occurs first).
- Check rear and front axle fluid levels and add fluid as needed.
- Check and repair wheelchair operations.

100,000 Miles**DATE:****MILEAGE:****SERVICED BY:**

- Inspect Spark Plug Wires.
- Replace Spark Plugs.
- 4.3L V6 engine only. (Inspect or replace Positive Crankcase Ventilation (PCV) Valve.
- Check and repair wheelchair operations.

150,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Drain, flush, and refill cooling system (or every 60 months since last service).
- Inspect hoses.
- Clean radiator, condenser, pressure cap, and neck. Pressure test cooling system and pressure cap.
- Check and repair wheelchair operations.

(Table B) Long Trip/Highway Scheduled Maintenance

The U.S. Environmental Protection Agency recommends that all required maintenance services be performed at the indicated interval and the maintenance be recorded. SCDOT will also require a detailed maintenance log on every vehicle until the title has been released to you after the recommended useful life of the vehicle have been reached. NOTE: It is imperative to conduct all required maintenance on vehicles and continue updating the maintenance schedules provided by SCDOT.

Note: Individual Preventive Maintenance Schedules should be accomplished for each vehicle assigned to your fleet.

The services shown in this schedule up to 100,000 miles should be performed after 100,000 at the same intervals. The services shown at 150,000 miles should be performed at the same interval after 150,000 miles.

Long Trip/Highway Scheduled Maintenance

7,500 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter. (or twelve months, whichever occurs first).
- Lubricate chassis components (or twelve months, whichever occurs first).
- Check axle fluid levels and add fluid as needed.
- Rotate tires per manufacturer specifications.
- Check and repair wheelchair operations.

15,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or twelve months, whichever occurs first).
- Lubricate chassis components (or twelve months, whichever occurs first).
- Check axle fluid levels and add fluid as needed.
- Change automatic transmission fluid and filter under any of the following conditions.
 - In heavy city traffic where the outside temp. reaches 90 degrees F or higher.
 - In hilly or mountainous terrain.
 - Delivery service or “stop” and “go” driving
- Rotate tires per manufacturer specifications.
- Check and repair wheelchair operations.

22,500 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or twelve months, whichever occurs first).
- Lubricate chassis components (or twelve months, whichever occurs first).
- Check axle fluid levels and add fluid as needed.
- Rotate tires per manufacturer specifications.
- Check and repair wheelchair operations.

30,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or twelve months, whichever occurs first).
- Lubricate chassis components (or twelve months, whichever occurs first).
- Check axle fluid levels and add fluid as needed.
- Clean and repack the front wheels bearings
- Change automatic transmission fluid and filter under the following conditions.
 - In heavy city traffic where the outside temp. reaches 90 degrees F or higher.
 - In hilly or mountainous terrain.
 - Delivery service or “stop” and “go” driving
- Replace fuel filter.
- Replace air cleaner filter.
- Rotate Tires.
- Check and repair wheelchair operations.

37,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or twelve months, whichever occurs first).
- Lubricate chassis components (or twelve months, whichever occurs first).
- Check axle fluid levels and add fluid as needed.
- Rotate Tires.
- Check and repair wheelchair operations.

45,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or twelve months, whichever occurs first).
- Lubricate chassis components (or twelve months, whichever occurs first).
- Check axle fluid levels and add fluid as needed.
- Change automatic transmission fluid and filter under the following conditions.
 - In heavy city traffic where the outside temp. reaches 90 degrees F or higher.
 - In hilly or mountainous terrain.
 - Delivery service or “stop” and “go” driving
- Rotate Tires.
- Check and repair wheelchair operations.

50,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- If you haven't used your vehicle under severe conditions listed previously and, therefore, haven't changed your automatic transmission fluid, change both the fluid and filter. Manual transmission doesn't require changing.

52,500 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or twelve months, whichever occurs first).
- Lubricate chassis components (or twelve months, whichever occurs first).
- Check axle fluid levels and add fluid as needed.
- Rotate Tires.
- Check and repair wheelchair operations.

60,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or twelve months, whichever occurs first).
- Lubricate chassis components (or twelve months, whichever occurs first).
- Check axle fluid levels and add fluid as needed.
- Clean and repack the front wheels bearings
- Change automatic transmission fluid and filter under the following conditions.
 - In heavy city traffic where the outside temp. reaches 90 degrees F or higher.
 - In hilly or mountainous terrain.
 - Delivery service or “stop” and “go” driving.
- Replace engine air filter.
- Inspect engine accessory drive belt.
- Rotate Tires.
- Check and repair wheelchair operations.

67,500 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or twelve months, whichever occurs first).
- Lubricate chassis components (or twelve months, whichever occurs first).
- Check axle fluid levels and add fluid as needed.
- Rotate Tires.

- Check and repair wheelchair operations.

75,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or twelve months, whichever occurs first).
- Lubricate chassis components (or twelve months, whichever occurs first).
- Check axle fluid levels and add fluid as needed.
- Change automatic transmission fluid and filter under the following conditions.
 - In heavy city traffic where the outside temp. reaches 90 degrees F or higher.
 - In hilly or mountainous terrain.
 - Delivery service or “stop” and “go” driving.
 - Rotate Tires.
 - Check and repair wheelchair operations.

82,500 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or twelve months, whichever occurs first).
- Lubricate chassis components (or twelve months, whichever occurs first).
- Check axle fluid levels and add fluid as needed.
- Rotate Tires.
- Check and repair wheelchair operations.

90,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or twelve months, whichever occurs first).
- Lubricate chassis components (or twelve months, whichever occurs first).
- Check axle fluid levels and add fluid as needed.
- Clean and repack the front wheels bearings.
- Change automatic transmission fluid and filter under the following conditions.
 - In heavy city traffic where the outside temp. reaches 90 degrees F or higher.
 - In hilly or mountainous terrain.
 - Delivery service or “stop” and “go” driving.
- Replace fuel filter. Replace engine air cleaner.
- Rotate Tires.
- Check and repair wheelchair operations.

97,500 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Change engine oil and filter (or twelve months, whichever occurs first).
- Lubricate chassis components (or twelve months, whichever occurs first).
- Check axle fluid levels and add fluid as needed.
- Rotate Tires
- Check and repair wheelchair operations.

100,000 Miles	DATE:	MILEAGE:
SERVICED BY:		

- Inspect spark plug wires.
- Replace spark pugs.
- If you haven't used your vehicle under severe conditions listed previously and, therefore, haven't changed your automatic transmission fluid, change both the fluid and filter. Manual transmission doesn't require changing.
- Inspect Positive Crankcase Ventilation (PCV) valve.
- Check and repair wheelchair operations.

150,000 Miles

DATE:

MILEAGE:

SERVICED BY:

- Drain, flush, and refill cooling system (or every 60 months since last service, whichever occurs first). Inspect hoses. Clean radiator, condenser, pressure cap, and neck. Pressure test the cooling system and pressure cap.

PREVENTIVE MAINTENANCE INSPECTION

YEAR / MAKE _____ MODEL _____ VIN # _____

VEHICLE # _____ LICENSE # _____ MILEAGE _____ DATE _____

Needs
Ok / Attention / Unsafe

UNDERCARRIAGE (CHECK)

- OR LEAKS**
- ___/___/___ REAR SPRINGS AND SHACKLES*
 - ___/___/___ FRONT AND REAR JOINTS
 - ___/___/___ DRIVESHAFT CENTER SUPPORT
 - ___/___/___ U- JOINTS
 - ___/___/___ TRANSMISSION FOR LEAKS
 - ___/___/___ SHIFT AND CLUTCH LINKAGE
 - ___/___/___ FRONT SUSPENSION AND SHOCKS
 - ___/___/___ STEERING LINKAGE
 - ___/___/___ EXHAUST SYSTEM

UNDER HOOD (CHECK)

- ___/___/___ PRESSURE TEST COOLING SYSTEM
- ___/___/___ COOLANT / ANITFREEZE
- ___/___/___ BRAKE FLUID LEVEL
- ___/___/___ POWER STEERING FLUID LEVEL
- ___/___/___ BATTERY AND CABLES
- ___/___/___ STARTING AND CHARGING SYSTEM
- ___/___/___ WINDSHIELD WASHER FLUID
- ___/___/___ TRANSMISSION FLUID

TIRES

- ___/___/___ TIRE WEAR / TREAD SEPERATION
- ___/___/___ FOR NAILS, GLASS ETC.
- ___/___/___ AIR PRESSURE
- ___/___/___ LUG NUTS (MISSING / TIGHTNESS)

ENGINE (CHECK)

- ___/___/___ ALL FUEL LINES / CONNECTIONS
- ___/___/___ ALL BELTS FOR TIGHTNESS
- ___/___/___ BELTS FOR SIGNS OF WEAR
- ___/___/___ FOR LOOSE WIRING
- ___/___/___ FOR VACUUM LEAKS
- ___/___/___ AIF FILTER
- ___/___/___ ACCELERATOR LINKAGE
- ___/___/___ CHANGE OIL FILTER

ACCESSORIES (CHECK)

- ___/___/___ HEATER OUTPUT
- ___/___/___ AIR CONDITIONER OUTPUT

BRAKES (CHECK)

- ___/___/___ SHOES AND PADS FOR WEAR
- ___/___/___ BRAKE LINES FOR LEAKS
- ___/___/___ BRAKE VACUUM HOSES
- ___/___/___ BRAKE ADJUSTMENT
- ___/___/___ BRAKE PEDAL CLEARANCE
- ___/___/___ EMERGENCY BRAKE

Needs
Ok / Attention / Unsafe

CONTROL PANEL (CHECK)

- ___/___/___ DASH LIGHTS
- ___/___/___ INTERIOR LIGHTS
 - ___/___/___ GAUGES
 - ___/___/___ HEADLIGHTS AND RUNNING LIGHTS
 - ___/___/___ LICENSE PLATE LIGHT
 - ___/___/___ DIMMER SWITCH
 - ___/___/___ BRAKE LIGHTS
 - ___/___/___ DIRECTIONAL SIGNALS
 - ___/___/___ EMERGENCY FLASHER
 - ___/___/___ REVERSE LIGHTS
 - ___/___/___ HORN
 - ___/___/___ WINDSHIELD WIPER OPERATION
 - ___/___/___ BACKUP ALARM

BODY INTERIOR (CHECK)

- ___/___/___ FIRST AID KIT
- ___/___/___ FIRE EXTINGUISHER
- ___/___/___ SEATS - TEARS AND LOOSENESS
- ___/___/___ FLOORS FOR TEARS
- ___/___/___ FOR LOOSE WHEEL CHAIR TRACKS
- ___/___/___ FARE BOX BRACKET (SECURENESS)
- ___/___/___ EMERGENCY EXIT
- ___/___/___ WINDOW OPERATION
- ___/___/___ REARVIEW MIRRORS
- ___/___/___ FOR LOOSE BODY PARTS
- ___/___/___ WHEELCHAIR LIFT OPERATION
- ___/___/___ WHEELCHAIR TIEDOWNS
- (# REQUIRED AND SERVICABILITY)
- ___/___/___ PATHOGEN KIT
- ___/___/___ RADIO OPERATION

BODY EXTERIOR (CHECK)

- ___/___/___ ALL WINDOWS
- ___/___/___ SIDEVIEW MIRRORS
- ___/___/___ BODY PARTS FOR LOOSENESS
- ___/___/___ WINDSHIELD WIPER BLADES
- ___/___/___ BUMPERS FOR DAMAGE AND LOOSNESS

RECOMMENDATIONS

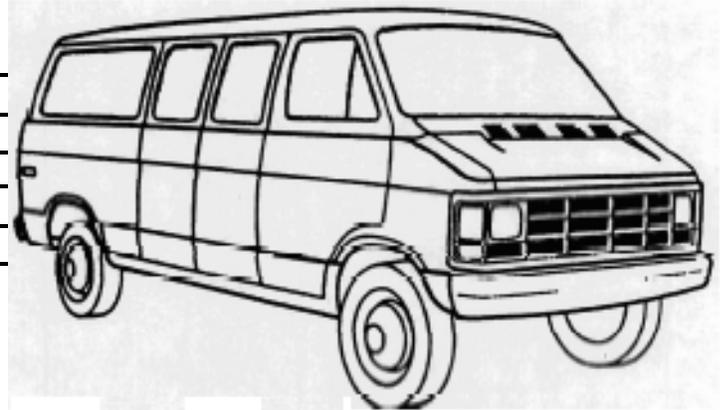
VEHICLES WILL BE TAKEN OFF THE LINE IF FOUND UNSAFE TO TRANSPORT PASSENGERS

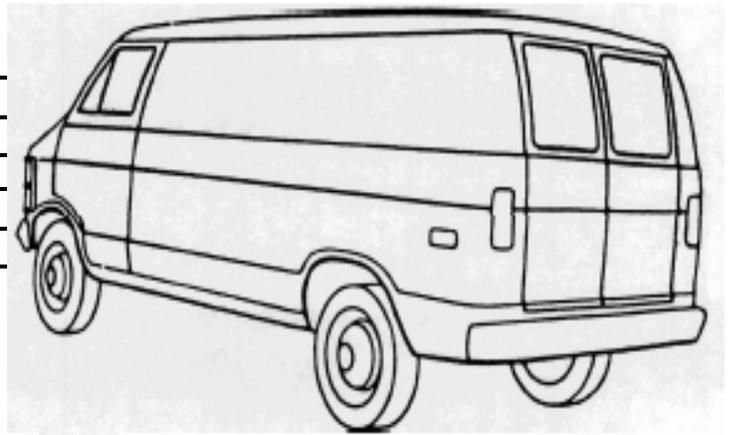
EXTERIOR

- Tires
- Tail / Break Lights
- Turn Signals
- Windshield wipers
- Headlights
- Fresh Body Damage
- Clearance Lights
- Cleanliness

Carefully inspect the entire vehicle exterior.

On the illustrations below, locate and note any damage or problems using the following code: *X* = Dent ----- = scratch. Indicate any other damage by circling the area and then describe the damage.





Daily Vehicle Inspection Checklist

Date ____/____/____

Fuel Added: gal. ____ \$ ____

Vehicle Identification # _____

Oil Added: Qt. ____ \$ ____

Make / Year: _____

Maintenance Reminder Box

Current Mileage: _____

Maintenance Due within 500 Miles

Maintenance Past Due

If there is not a problem, place a check () in the box next to the item

If there is a problem, an item needs maintenance or if damage is found place an (X) in the box next to the item and include a description of the problem in the space to the right.

Check if OK:

Note any problem below:

Under the Hood

Oil level

Windshield Washer level

Radiator level

Engine / Hoses / Belts

Battery

Power Steering Fluid

Brake Fluid

Interior

Brakes / Parking

Gauges / Instruments

Steering

Controls (equipment)

Transmission

Radio

Mirrors (adjust)

Horn

Cleanliness

Blower fan (A/C and Heat)

Wheelchair lift fluid

Emergency Hand pump

Safety Equipment

Flares / Triangles

Back up alarm

First Aid Kit

Rear door buzzer

Extra fuses

Fire extinguisher

Flashlight (fresh batteries)

Accessibility Equipment

Fully – operable wheelchair lift (run through cycle)

Wheelchair lift ramp

Proper number of belts and securing devices

Belts and securing devices in good condition
