

Chapter Five:

MAINTAINING GROOMING EQUIPMENT

Preventative Maintenance

The place for grooming equipment is out on the trails working – not sitting in a service shop waiting for parts or broken down out on the trail with a failed component that was not properly maintained. There are enough things that can go wrong through normal grooming operations without aggravating the problems with a lack of due care.

The key to ensuring that downtime and emergency repairs are kept to an absolute minimum, and that the equipment remains safe to operate, is establishing a comprehensive preventative maintenance program. As noted earlier, it is far easier to preserve what you have than to restore what you've lost.

Regardless of the type of maintenance being performed, there are four elements to the work that need to be addressed:

Four Elements to Preventative Maintenance

1. Inspection.

A great deal can be learned about the condition of a vehicle by carefully looking, listening, smelling, and feeling. While general overall surveillance is important, the areas where failures commonly occur should be identified and the inspection criteria and methods detailed. A good operator does not necessarily have to be a good mechanic. But a good operator does need to be observant and aware of their machine's sounds and appearances.

2. Lubrication.

Ensuring that lubricating fluids are fresh and full is extremely important for tracked vehicles. As well as lubricating, installing fresh lubricants will displace water, dirt, and spent lubricant which has accumulated in places it shouldn't be.

3. Adjustment.

Tracked vehicles have a number of adjustments that can compensate for wear and changes in alignment. Ensuring that mechanical adjustments are made to maintain specific characteristics is the best way to prevent nuisance failures in the field that can have serious consequences for the operator.

4. Repair.

Any part or system found to be damaged, worn out, or otherwise not doing its job must be promptly and fully repaired by a qualified individual.

Types of Maintenance

There are a number of types of maintenance performed at different times for different purposes. A good overall maintenance program should include the following:

- First-Time Operation of a New Unit Inspection
- Pre-Season Inspection and Maintenance
- Pre-Operation Inspection and Maintenance
- Post-Operation Inspection and Maintenance
- Routine Shop Inspection and Maintenance
- Off-Season Storage Procedures

Each type of maintenance has a different purpose, so procedures should be developed for each one based upon the type of equipment. And since there are such a wide variety of grooming tractors, drags, tillers, and attachments currently available, it is impossible to provide generic preventive maintenance procedures that fit all situations. Therefore, general guidelines as to what each type of maintenance procedure should address include:

First-Time Operation of a New Unit

It is important to both the condition of the vehicle and safety of the operator to proceed slowly when operating a new vehicle (or a “new used” vehicle) for the first time.

While the Owner’s Manual should have detailed procedures, the following basic procedures should be followed prior to operating any vehicle for the first time:

- Visual inspection of entire vehicle, inside and outside.
- Check fuel and oil levels and fill as necessary.
- Familiarization with all controls and functions including Owner’s Manual recommendations.
- With engine running, verify that all gauges are operating and within specified limits.
- Proceed very slowly, getting the feel of the vehicle and its characteristics.
- After the first 10 hours or as specified in the manual, check for loose bolts, nuts, fittings, etc.

Pre-Season Inspection and Maintenance

If the off-season recommendations below have been followed, readying the vehicle at the start of a new season should be relatively easy:

- Refer to maintenance records and be sure that all required work was performed.
- Check all fluid levels and look for signs of leaks.
- Install and/or adjust tracks.
- Inspect all welded joints and stress areas for cracks.
- Inspect bearings, joints, and all moving parts.

Pre-Grooming Operation Inspection and Maintenance

Before starting operations for a new day, the operator should be required to perform a pre-operation inspection. A set program should be developed for each piece of equipment based upon the manufacturer's recommendations. See the sample Daily Grooming Log in the Appendix for a sample Pre-Operation Checklist.

Post-Grooming Operation Inspection and Maintenance

As discussed earlier, many tracked vehicles should not be simply turned off at the end of a work session or engine damage can occur. Develop a routine for shutting down the vehicle at the end of the run, based upon the manufacturer's recommendations. This shut-down/cool-down period is also an excellent time to walk around the equipment to perform a visual inspection, as well as to refuel. Oftentimes, it is also a good idea to remove excess snow and ice that may have accumulated on the equipment during the grooming run. See the Daily Grooming Log in the Appendix for a sample Post-Operation Checklist.

Routine Shop Inspection and Maintenance

In addition to the ongoing operational maintenance described in the two previous sections, most tracked vehicles require regular and frequent shop inspection and maintenance. A regular program should be developed for each machine and operators should be instructed as to when shop maintenance is required. A maintenance log can make this easier to remember and track. See the sample Vehicle and Equipment Report, the Vehicle/Equipment Maintenance Records form and the Grooming Equipment Maintenance Requests form in the Appendix for checklists useful for tractors. Table 5.1 provides a sample checklist that can be used for grooming drag maintenance.

Grooming Drag – Example Service Item Description	Frequency
Walk Around Inspection	Daily
Remove and Inspect Shear Bolt	Daily
Inspect Hydraulic System for Leaks	Daily
Check Blade Spring Tension	Daily
Check Cutting Blade Condition	Daily
Clean Ice and Snow Buildup from Face of Blades and Packing Pan	Daily
Clean Snow from Rear of Packing Pan	Daily
Check Rear Wheel Tire Pressure (22psi)	Daily
Inspect Wear Strips Under Side Rails	Weekly
Check Rear Skegs	Weekly
Torque Blade Mounting Bolts (150 Ft. Lbs.)	Monthly
Torque Wheel Nuts (70 Ft. Lbs.)	Monthly
Grease Blade Pivot Points	Monthly
Remove, Clean, and Lube Draw Bar	Monthly
Check and Re-Pack Rear Wheel Bearings	Yearly
Touch Up Paint as Necessary	Yearly
Check Blade Height Adjustment (refer to Owner's Manual)	Yearly

Table 5.1 Sample Grooming Drag Maintenance Checklist

Off-Season Storage Procedures

Most tracked vehicles spend a significant part of the year sitting completely idle. Taking the time to properly store them simply makes sense in terms of protecting a major investment. While an off-season maintenance program unique to each vehicle should be developed based upon the manufacturer's recommendations, the following general guidelines should be followed universally:

- Clean and service the battery and battery compartment.
- Change the oil, transmission fluid, hydraulic fluids, and filters.
- Lube all fittings to displace water and spent grease.
- Check for wear points: track belts and related components, wheel wear, cracks in carrier and frame, hydraulic assemblies, etc.
- Check engine compartment for belt wear, tension, and alignment; throttle linkages and springs; broken or worn wiring; etc.
- Clean interior and exterior.
- Park in a garage if possible. If exposed to weather, remove or cover tracks to prevent Ultra Violet (UV) light damage to the rubber. If stored with tracks on, release tension.
- All engines (gas and diesel) should be started monthly and operated for at least 15 minutes to keep valve stems coated and to put moving parts in a different position.

General Tractor Maintenance Tips

- If at all possible, completely thaw out the grooming tractor for every scheduled maintenance session regardless of the mess and time involved. It's the only way to discover cracks in welds, missing small parts like nuts and screws, etc., and will save on valuable downtime later.
- Always jack up each track for journal bearing lubrication, for checking track tension, and for track adjustment. When greasing track journals, a very thorough greasing is required – it's easy to under grease but nearly impossible to over-grease them.
- Aluminum or steel track cleats are often over tightened when fastened to track belts, which can lead to premature belt failure. A torque wrench should always be used for this task since manufacturer guidelines typically stipulate tightening the nuts to as low as 25 foot-pounds (34 Newton-meters).
- Always refuel the grooming tractor at the end of a grooming run. This ensures the unit is ready to go the next time it is needed or in the event of an emergency. It also helps avoid condensation buildup in the empty fuel tank, which could lead to fuel line freeze up and/or engine problems.

CHAPTER QUIZ

1. Preventative maintenance can help prevent downtime and keep equipment safe to operate. The four main elements of a good preventative maintenance program include:
 - a) measurement, fueling, tinkering and replacement
 - b) monitoring, greasing, tuning and overhauls
 - c) inspection, lubrication, adjustment and repair
 - d) surveillance, servicing, alignment and rebuild
2. Before operating any grooming equipment, always check all fluid levels and check for leaks. True False
3. If you identify a repair that needs to be made while doing a pre-operation inspection, go ahead and do the scheduled grooming run and report the condition to the Grooming Manager when you return. True False
4. When operating a vehicle for the first time, run it as fast as it will go to see if it has enough power. True False
5. A tractor should be shut off as quickly as possible after a grooming shift to conserve fuel. True False
6. Never remove ice or snow that has built up on grooming equipment since it might damage the equipment; plus the added weight is good for trail compaction. True False
7. Grooming tractors should be stored inside or have their tracks removed during the off-season to avoid UV light damage to rubber tracks and belts. True False