

Machinery Maintenance

Bruce M. Pendery and Melvin D. Rumbaugh

Many machines are used in range and agronomic field research and ranching/farming operations. Maintenance of these machines is important because it insures proper functioning, reduces repair costs, and reduces the possibility of injury. Maintenance is often neglected, however, because people forget about it in the day-to-day rush to complete work, or the manuals are stored in a file, out of sight, where they are less likely to be consulted.

To encourage proper maintenance of our equipment, we developed a poster that lists maintenance requirements for the machines that we use (Figure 1). The poster is 32 inches high and 28 inches wide and is mounted in our shop. This keeps the maintenance items plainly in view of the operators where they are less easy to forget.

Cooperative contribution of the USDA-Agricultural Research Service and the Utah Agricultural Experiment Station. Approved as Journal Paper No. 4131. Authors are Range Scientist and Research Geneticist, USDA-Agricultural Research Service, Logan, UT 84322-6300.

We thank Carolyn Lemon for help in preparing the poster, Howard Horton, Ray Cartee, and Glenn Shewmaker for reviewing an earlier draft of this paper.

The poster is easy to make and maintenance descriptions can be as simple or detailed as needed. Maintenance charts in many manuals can be copied and mounted on the poster verbatim (a copyright release may be needed). Or, a checklist can be prepared using a word processing or graphics program. We covered our poster with plastic and mounted it on plywood to make it more durable.

Other kinds of information could be included on a poster. The names of those responsible for maintenance could be listed. The names, addresses, and telephone number(s) of machinery service centers might also be listed.

Again, the primary advantage of a machinery maintenance poster is that it makes maintenance easier to remember because it combines maintenance schedules into a convenient, difficult-to-ignore, package. Nevertheless, the poster is not a substitute for reference to a machine's owner's manual for details about maintenance.

(see facing page for poster)

MACHINERY MAINTENANCE SCHEDULES

MAINTENANCE CHART

Service Required	Page	After Each Cycle of Indicated Hours			
		10	50	200	600 or Yearly
Lubricate Drag Link Ends	68	✓			
Lubricate Front Axle Pivot Point	"	✓			
Check Engine Oil	"	✓			
Check Fuel Filter Sediment Bowl	"	✓			
Check Coolant Level	"	✓			
Lubricate Tie Rod Ends	"	✓			
Lubricate Steering Spindles	"	✓			
Clean & Check Battery	70		✓		
Inspect for Loose Nuts and Bolts	"		✓		
Inspect Tires & Inflation Levels	"		✓		
Lubricate Clutch & Brake Pedal Fittings	"		✓		
Check Front Wheel Drive Axle Oil Level	"		✓		
Check Transmission-Hydraulic Oil Level	"		✓		
Service Air Cleaner	72			✓	
Change Oil	"			✓	
Replace Oil Filter	"			✓	
Check Clutch Pedal Free Play	73			✓	
Adjust Brake Pedal	"			✓	
Inspect Fan Belt	"			✓	
Check Front PTO Stop Time	"			✓	
Clean Transmission-Hydraulic Filter Screen	74			✓	
Replace Transmission-Hydraulic Filter Element	"			✓	
Clean Fuel Filter Sediment Bowl	75			✓	
Lubricate Right-Hand Lift Link	"			✓	
Check Neutral Start System	"			✓	
Flush Cooling System	80				✓
Replace Air Cleaner Element	"				✓
Change Engine Oil	"				✓
Replace Oil Filter	"				✓
Replace Thermostat	81				✓
Service Air Cleaner	82				✓
Replace Fuel Filter	"				✓
Check Front PTO Stop Time	"				✓
Adjust Throttle Friction	"				✓

- * Every Two Years
- ** As Required
- § There are several maintenance items John Deere should do (see page 125).

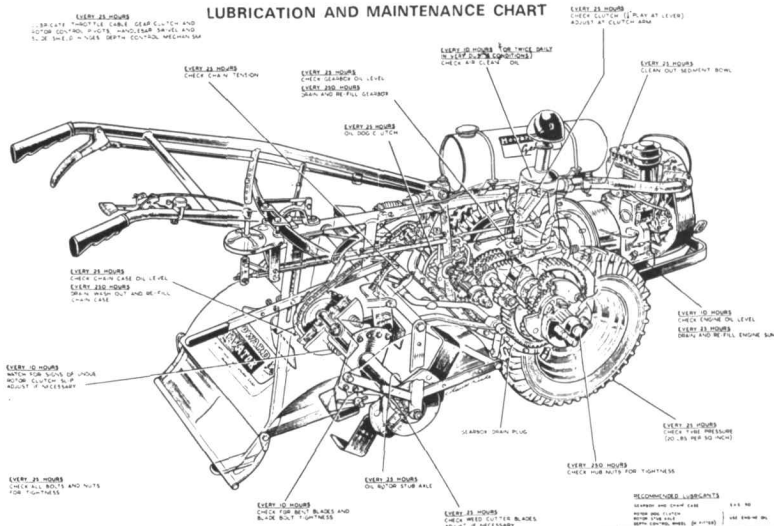
John Deere Tiller

MAINTENANCE CHART

Service Required	Page	After Each Cycle of Indicated Hours	
		25	100
Check Gear Case Lubricant Level	17	✓	
Lubricate Powershaft	18	✓	
Adjust Drive Chain	22	✓	
Service Times	19		✓
Service Drive Chain	21		✓

Howard Gem

LUBRICATION AND MAINTENANCE CHART



Simplicity Tractor

SCHEDULED MAINTENANCE CHART

Service Required	Page	After each cycle of indicated hours	
		25	100
Check the tractor and engine	14	●	
Check engine condition on level	14	●	
Check transmission oil cooler	14	●	
Check engine fan and screen	14	●	
Change engine oil (see screen 1 hour)	14	●	
Check engine oil filter	14	●	
Check gear pressure	18		
Check transmission oil (full) level	17		
Check the bearing on level	17		
Check front garden on level	17		
Check front wheel	17		
Check or replace oil filter assembly	18		●
Replace fuel filter	18		●
Adjust front wheel bearing	18		●
Check and reset spark plug	19		●
Check battery cables	19		●

*More often under dusty and/or hot weather operating conditions.

**TROY-BILT® TRAIL BLAZER®
MOWER****

MAINTENANCE SCHEDULE	After Each Use	Every 5 Hours of Operation	Every 10 Hours of Operation	Every 25 Hours of Operation	Every 100 Hours of Operation	As Required	As Noted	Before Storage
Adjust Carburetor						✓	3	
Check for Oil Leaks	✓							
Check Engine Oil Level		✓						
Check Operation of Handbrake Levers	✓							
Clean or Filter Elements							1	✓
Change Engine Oil							1.4	
Check and Adjust if necessary Wheel Drive Mechanism and Brake Disc Mechanism							5	
Lubricate Grease Fittings			✓					✓
Lubricate Mower								✓
Oil Cutter Bar Blade						✓		
Check & Adjust if necessary Brake Switch								✓
Check Air Filters in 1988 (10-20 psi)								✓
Check Air Filters in								✓
Inspect Spark Plug								✓
Recharge Battery							3	
Inspect Spark Arrestor on Muffler	✓							
Clean Engine and Engine's Cooling System							3	

More frequently if you're using the mower in a very dusty or dirty environment.
 *See also "Seasonal Charging" in the Maintenance Section of this Manual.
 *Refer to the Briggs & Stratton Engine Operating and Maintenance Instructions Manual.
 *Also do this after the initial five hours of engine operation.
 *You'll also have to perform this maintenance item after the initial 5 hours of mower operation. Also, whenever a belt has been replaced, you'll have to perform this maintenance item after several hours of operation due to the new belt's having become seated on the pulley grooves.

American Yard Products Tiller

MAINTENANCE CHART

Service Required	Page	After Each Cycle of Indicated Hours			As Needed
		10	25	50	
Check Cooling System	7	✓			
Check V Belts	9	✓			
Change Oil	8		✓		
Replace Spark Plug	8			✓	
Throttle Control Adjustment	8				✓
Adjust Carburetor	8				✓

Mantis Tiller

LUBRICATION AND MAINTENANCE

Maintaining the Air Filter

Do this prior to each use or when working for prolonged periods in a dusty environment.

A clogged or dirty air filter can cause poor engine performance, difficult starting or, in extreme cases, engine failure. Be sure to check the air filter frequently. If you work in dusty soil, be sure to be sure to check the filter before each use. Under most normal conditions, check the filter once a month. Always check your air filter once a year at the spring or fall. Replace or clean as needed.

[illegible]

***Mention of a trademark, proprietary product, or vendor does not constitute a guarantee or warranty of the product by the U.S. Department of Agriculture or the Utah Agricultural Experiment Station, and does not imply its approval to the exclusion of other products that may also be suitable.