PLANT OPERATIONS PROCEDURE MANUAL

Grounds Care

SECTION 8

GROUNDS CARE

Carroll County Board of Education employees take great pride in the appearance of the public schools throughout the county. This takes some planning and a lot of hard work to accomplish, and one of the first impressions the citizens will have is how well the outside grounds are maintained. While most people who pass by your school may never set foot inside of it, their first impression of your school is what they see from the outside. If it is neat and well cared for on the outside, they will assume the interior is the same. Not only is this true for the spring and summer months, but also for the fall and winter months.

The building supervisor at each school location in part performs spring and summer ground maintenance. The Plant Maintenance personnel will maintain large areas such as large play fields. Assistance from the Plant Operations department will be necessary for the removal of large or broken tree limbs and other debris that would require the use of a mulching machine and/or a chain saw.

A plan for spring grounds care should be identified early in the season so it is in place by the time the grass and shrubs start growing. The number one priority should focus on the equipment that will be used throughout the spring and summer. Grounds equipment is very costly and must be properly maintained at all times. This will certainly reduce down time for repairs and add to the safety of the operator.

Once the mowing season is over you should make plans for the coming of winter. The equipment needed for the removal of snow should be maintained and ready to use when the snow arrives. Ice melting materials should be on hand as well as snow shovels and ice scrapers.

Custodial personnel are required to work when schools are closed due to inclement weather. They will be responsible for the removal of snow and ice around the outside perimeter of the building; i.e., walkways, door entranceways. The Plant Maintenance Department personnel and the IPM technicians will accomplish removal of snow on large parking lots and driveways.

RESPONSIBILITIES/FUNCTIONS
Integrated Pest Management Program
School Grounds Phase II

This department is responsible for managing the IPM Program for all Carroll County Public Schools. This program currently consists of five (5) employees, one (1) manager and four (4) grounds technicians. This is a mandated program regulated by state law designed to perform specific duties for school grounds, eradicating noxious weed control, maintaining fence rows, pruning of trees, wastewater management facilities, assisting with snow removal, maintaining children's tot lots, and wild life capture and/or removal as needed.

PLANT OPERATIONS
IPM GROUNDS PROCEDURE

All work requests are to be submitted on a maintenance work order by the building supervisor and/or principle. The IPM manager responds to each approved request to investigate the job to determine the appropriate actions necessitated in completing the work requests. All work requests are based on a priority system. The number one priority is safety concerns. All safety related work requests are taken care of as soon as possible. The IPM manager conducts a complete visual inspection of each individual school ground. This entails checking the IPM grounds log books, inspecting all trees and shrubs of all varieties for different types of insect species that are either harmful or beneficial to the plants. Also, for dead wood, low hanging limbs and shrubs to be pruned. The chain-link fencing will be inspected at this point in time to determine what types of vegetation exists and how much has accumulated. All vegetation will be removed by hand in the winter months. These findings will determine if there will be a need to treat these areas with any certain types of chemical applications. All the recorded information is transferred to a survey sheet and placed into a projects book. All projects are categorized as tree, grounds or spraying projects. All tot lots are inspected each year in early spring for the ability to meet or surpass all insurance safety codes. At this point, the IPM manager determines the necessary recommendation to have the timbers replaced, mulch added or complete renovations performed in the spring and summer months. All renovations consist of removing all old decomposed mulch and installing new material.

The stormwater ponds and banks are on a regular mowing schedule. There are 24 schools that contain stormwater ponds and 24 schools that contain steep banks. This scope of work consists of a two man crew to mow and maintain these areas for the complete mowing season which runs from early spring through late fall. The IPM manager has the responsibility for completing a through inspection of all stormwater management ponds in the spring and fall. This consists of the proper operation and maintenance of both the management structures and infiltration facilities. The inspections describe what the conditions are and a description of what types of maintenance or repairs are needed on the following items:

- The type of infiltration device installed.
- Are they functioning properly?
- Are they maintained?
- What type of vegetation exists?
- How are the fences?
- What conditions are the principal spillways?
- What conditions are the emergency spillways?
- What conditions are the embankments or earth terms?
- What conditions are the reservoir areas? Do they contain silt?
- What conditions are the outlet structures?
- What conditions are the inlet structures?
- What conditions is the accessibility for maintenance?

During the spring inspections of these facilities, all trash and/or debris will be removed and distributed into the county landfill. Any tree growth will be removed in late fall or early spring. The Carroll County Department of Planning conducts these inspections on a two-year basis. If in the event they detect a problem, they present the Board of Education with a written letter requesting a repair order. The Board of Education has 30-days to repair or correct any known problems. In the event these areas are not repaired in 30-days following a reinspection, there will be a citation issued until the necessary repairs have been completed.

All over seeding and repairs to the athletic fields is the responsibility of the IPM program. In the event of any construction or grounds work the maintenance department has conducted and the final grading completed, the maintenance department will notify the IPM manager by e-mail.

Overview of School Grounds Pest Management

- Trapping and removal of groundhogs around buildings and relocatables
- Mowing banks and maintaining storm water management facilities
- Mulching trees and flower beds will be the responsibility of the school custodial staff and mulch will be provided by Plant Operations and IPM Grounds technicians
- Trimming of all trees
- Renovating tot lots by removing old mulch and installing new
- Aerating main stadium fields at high schools and other playfields as schedule permits
- Over seeding of selected areas
- Taking soil samples as needed
- Coordinating the application of fertilizers
- Removing poison ivy, oak, and sumac under stadium bleachers and other locations generally accessible to students and staff
- Chemical application will be performed after weeds and vegetation is removed by school custodial staff
- Treating grubs and bagworms
- Spraying of vegetation (only when absolutely necessary)
- The IPM manager will work with the maintenance department in evaluating larger trees to be trimmed and or removed

The IPM Grounds technicians will not be providing the following services:

- Mowing around the buildings and/or relocatables
- Mowing of ball fields
- Watering of high school stadium fields or landscape vegetation
- Maintenance of courtyards, flower beds or flower gardens (belonging to student organizations, PTA, PTO, and etc).
- Trimming of brushes or shrubs
- Repairing or removal of chain link fencing

Integrated Pest Management Grounds Responsibilities

Trapping and removal of groundhogs around buildings and relocatables, mowing banks and maintaining stormwater management facilities, trimming of all trees, renovating tot lots by removal of old mulch and adding new, aerating main stadium ball fields, over seeding of selected areas, taking soil samples as needed, application of fertilizers, removal of poison ivy, oak and sumac under stadium bleachers and area generally accessible to students, staff and the public, assisting custodial staff (as scheduling and time permits) with removal of vegetation, treatment for grubs and bagworms, the IPM manager will work with the maintenance department in evaluating larger trees for trimming or removal.

IPM Grounds Non-Responsibilities

Mowing around buildings and relocatables, mowing of ball fields, watering of ball fields and landscape vegetation, maintenance of school courtyard, flower beds and gardens (from student organizations, PTA, PTO, and etc.), trimming of bushes and shrubs, repairing or removing chain link fencing.

Community Organizations are not permitted to apply chemicals, fertilizers, and etc., to school grounds**.**

Maintenance Department

Contact the maintenance department for the following:

Mowing ball fields, removal and replacement of tot lot timbers, removal and installation of playground equipment, landscape improvements relating to construction projects and snow removal.

Education

Building supervisors, custodial staff, school staff, students and the public will be educated about potential school pest problems and the IPM policies and procedures to achieve the desired pest management objectives.

Record Keeping

Records of pesticide shall be maintained by the building supervisor on site to meet the requirements of the state regulatory agency and Carroll County Public School Board. Records must be current and accurate for IPM to work properly. In addition, pest surveillance data sheets record the number of pests or other indicators of pest populations to maintain and verify the need for treatments.

Notification

The Carroll County Public School system takes full responsibility to notify the school staff and students of upcoming pesticide treatments. Notices will be posted in designated areas at the school site and sent home in advance to inform parents of pesticide and herbicide applications.

Other Important Reminders

- Community groups are not permitted to apply chemicals, fertilizers, and etc. to the grounds
- The maintenance department is to be contacted to have ball fields mowed
- The maintenance department is to be contacted to have tot lot timbers maintained or replaced, playground equipment installed, removed or relocated
- The school construction department is to be contacted about trees and landscape items relating to construction projects
- The maintenance department is to be contacted about snow removal

NOTIFICATION TO PARENTS, GUARDIANS, AND STAFF OF HERBICIDE APPLICATION

Integrated herbicide-pest management procedures such as inspections and monitoring are used to determine when to control weeds and vegetation in order to identify conditions contributing to herbicide and pest problems. The necessity for herbicide control, if warranted, is evaluated and one or more herbicide methods including sanitation, structural repair, non-chemical methods and herbicides are utilized. Problem areas are identified where alternative herbicide control technologies can be incorporated in order to eliminate routine herbicide applications. It has been determined that a current herbicide-pest problem warrants the use of a herbicide to effectively control the weed, vegetation, and pest problem.

SCHOOL: _____

COMMON NAME OF HERBICIDE TO BE APPLIED:

_____

LOCATION(S) OF THE HERBICIDE APPLICATION:

_____

PLANNED DATE AND TIME OF APPLICATION:

If unfavorable weather conditions or other extenuating circumstances arise, the intended pesticide application may have to be delayed or postponed to a later date(s). If the application cannot be made within 14 days of the original planned date a new notice will be issued.

_____

Note: The Maryland Department of Agricultures Regulations pertaining to Integrated Herbicide-Pest Management and Notification of Herbicide Use in Public Schools requires that the following information be provided as part of this notice:
The Office of Herbicide Programs of the United States Environmental Protection Agency has stated: Where possible, persons who potentially are more sensitive, such as pregnant women and infants (less than two years old), should avoid any unnecessary herbicide exposure.

The following information regarding potential adverse effects was taken from the material safety data sheet (MSDS) of the herbicide to be applied:

1. May be harmful if swallowed.
2. Causes moderate eye irritation.

If you require further information regarding this notice you can contact John Timcheck at 410-751-3114.

GROUNDS EQUIPMENT PRE-SEASONAL CHECK SHEETS

Building supervisors are required to perform annual pre-seasonal maintenance inspection for all grounds equipment, spring and summer equipment, and fall and winter equipment. The check sheets are forwarded to Plant Operations by April and November.

FALL AND WINTER EQUIPMENT
CHECK SHEET

SCHOOL: _____ DATE: _____

INSPECTED BY: _____

PLEASE RETURN TO FACILITIES OPERATIONS BY NOVEMBER 9, 2015

	Good	**Poor**	**Comments**
Simplicity Tractor			
Starting Conditions			
Operation			
Oil and Hydraulic Levels			
Cooling System			
Grease Tractor			
Attachment Snow Blower			
Grease Auger			
Grease Drive Chain			
Grease Drive Shaft			
Gear Box Oil			
Check Scrapper Bar			
Check Shear Bolts			
Check Skid Shoes			
Check Operation			
Accessories			
Snow Shovels			
Scrapers			
Salt			
Walk Behind Snow Blower			
Check Engine Oil			
Lubricate According to Manual			
Check Scrapper Bar			
Check Shear Bolts			
Check & Adjust Skid Shoes			
Check Belts			
Check Operation			
Do you have used oil to pick up?	**Yes**	**No**	

Revised 10/21/15

SPRING AND SUMMER GROUNDS EQUIPMENT
CHECK SHEET

SCHOOL _____ DATE _____

INSPECTED BY _____

PLEASE RETURN TO PLANT OPERATIONS BY APRIL 4, 2008

Weed Eater	**Good**	**Poor**	**Comments**
Gear Box Greased			
Polly Blades Condition			
Head Condition			
Starting Condition			
Operation			
Push Mower	**Good**	**Poor**	**Comments**
Oil Clean			
Oil Level			
Blade is Tight			
Blade Condition			
Air Filter Condition			
Starting Condition			
Operation			

Gravely Riding Mowers	**Good**	**Poor**	**Comments**
Battery Fluid			
Battery Cable Ends Clean			
Battery Charged			
Oil is Clean			
Oil Filter Changed			
Air Filter Clean			
Pre Cleaner Clean			
Engine Screen Clean			
Engine Fan Clean			
Starting Condition			
Operating Condition			
General Lubrication Points Refer to Operator's Manual On the front Pedal			
On the front Axle			
On the front Axle at Both King Pins			
On the steering Mechanism			
On the Steering Arm Columns			
On the Steering Gear Rack			
On the Adjustment Bar			
On the Adjustment Nuts			
On the Brake Pedal			
In the Front Wheel Bearing Caps			
Gravely Mower Deck	**Good**	**Poor**	**Comment**
Belt Condition			
Belt tension			
Blade Condition			
Lifting Rod Condition			
Height Setting			
General Lubrication Points Refer to Operator's Manual 3 each Spindles			

Gear Box ¾ in. Full			
Drive Shaft			
2 Each Gauge Wheels			
Do you have used oil to be picked up?	**Yes**	**No**	

Simplicity Riding Mowers	Good	Poor	Comments
Battery Fluid			
Battery Cable Ends Clean			
Battery Charged			
Oil is Clean			
Oil Filter Changed Every 150 Hours			
Air Filter Clean			
Clean Cooling Fins			
Check Engine Coolant Level			
Starting Condition			
Operating Condition			
General Lubrication Points Refer to Operator's Manual (Pages 30 & 31)			
Grease Steering Linkage			
Grease Foot Pedal			
Grease Mower Linkage			
Grease Transmission Idler Assy. Pivot			
Grease Rear Axle Shafts			
Grease Front Axle at Frame			
Grease All Drive Shaft Universal Joints			
Grease Mower Belt Tension Bracket Pivots			
Oil Control Linkage			
Oil Seat Adjustment Assembly			
Oil Brake Linkage			
Oil Mower Deck Height Adjustment Linkage			
Oil Manual Lift Lever			

Simplicity Mower Deck	**Good**	**Poor**	**Comment**
Belt Condition			
Blade Condition			
Grease Idler Pully			
Grease Mower Arbor			
Grease Lift Rod			

PLAYGROUND EQUIPMENT

Playground equipment should be inspected semi-annually, before school begins and in the early spring (mid-March). Inspections are important to determine faulty equipment to eliminate risk of injury to students and other community users. Following preventative maintenance inspections and detailed record keeping will aid in the reduction of liability issues.

Requests for repairs should be submitted to the Maintenance Department. Some replacement parts are stocked for minor repairs while other parts may have to be ordered.

Bedding material or mulch is necessary in playground areas. Injuries due to falls from equipment are greatly reduced when sufficient bedding material is maintained. Mulch can be requested from the Plant Operations IPM program.

Painting of playground equipment should be submitted as a request to the Maintenance Department.

Tot lots are usually purchased and installed from funds provided by the school PTA/PTO and recreation council groups. The Director of Facilities must approve these projects.

Maintenance and repair of tot lots are the responsibility of the Board of Education. Wooden tot-lots are no longer in usage in the CCPS system and are being replaced with modular equipment such as metal, aluminum, and plastic.

The location of all new or replacement tot lots or other outside playground equipment must be approved in advance by the Director of Facilities.

CARROLL COUNTY PUBLIC SCHOOLS
PLAYGROUND INSPECTION CHECKLIST

School _____ **Date** _____

Inspected by _____

Playground equipment should be inspected for safety before school starts in the fall. A July inspection allows time for repairs to be made before students return for the first day of school. An early spring inspection (mid-March) should also be accomplished. The following checklist should be used for these semi-annual inspections and keep with other preventive maintenance records. Minor repairs should be made at the school level. Repairs beyond the capability of in-school personnel should be placed on a "Maintenance Requisition."

Checked	Play Equipment	State the Repairs Needed	What Repairs Were Made
	SLIDES		
	Exposed concrete footing		
	Protruding bolts or hardware		
	Head entrapment areas (between 3" and 9")		
	Metal slide bed separating from equipment base at entrance, exit or joints		
	Loose, bent, sharp, or missing parts		
	Unstable equipment		
	Rough or broken slide bed		
	Finger entrapment areas (between 3/8" and 1")		
	Rust or dry rot on frame		
	Peeling paint or graffiti		
	Obstructions in 8' fall zone		
	Rusty/worn hardware		
	Debris littered steps		

Checked	Play Equipment	State the Repairs Needed	What Repairs Were Made
	CLIMBERS		
	Exposed concrete footing		
	Protruding bolts or hardware		
	Head entrapment areas (between 3" and 9")		
	Loose, bent, sharp, or missing parts		
	Unstable equipment		
	Peeling paint or graffiti		
	Finger entrapment areas (between 3/8" and 1")		
	Rust-worn hardware		
	Rust or dry not on frame		
	Loose railings		
	Obstruction in 8’ fall zone		
	TENNIS COURTS		
	Surface cracked or pitted		
	Concrete footing of next supports loose		
	Fixtures broken		
	Fencing around courts loose, torn or broken		
	Broken glass or gravel on courts		
	FOOTBALL/SOCCER FIELDS		
	Goals bent or broken		
	Grounds in poor shape		

Checked	Play Equipment	State the Repairs Needed	What Repairs Were Made
	BASEBALL/SOFTBALL DIAMONDS		
	Backstop fencing bent, torn or broken		
	Glass or rocks scattered on fields		
	Grounds in need of care (i.e., ground hog holes, gullied areas, etc.)		
	Glass, bottles, paper or cans need to be cleaned up		
	SWINGS		
	Loose/worn chain swivels		
	Badly worn chain links		
	Seats cracked or broken		
	Protruding nuts and bolts		
	Loose concrete footings – unstable equipment		
	Lose, bent or missing parts		
	Excessively dangerously rusted parts		
	SEESAWS		
	Rotted or cracked boards		
	Protruding or exposed nuts or bolts		
	Badly worn pivotal joints		
	Cracked boards or handles		
	Loose concrete footing		

Checked	Play Equipment	State the Repairs Needed	What Repairs Were Made
	BASKETBALL COURTS/HOOPS		
	Hoops loose/broken		
	Backstop loose		
	Surface (concrete or blacktop) cracked, loose or pitted		
	Surfaces with broken glass or gravel		
	CRAWL TUNNELS		
	Peeling pant		
	Finger entrapment areas (between 3/8” and 1”)		
	Cracked or broken areas		
	Obstruction in 8’ fall zone		
	Rough/sharp edges		
	Glass or debris present		
	PLAY AREA SURFACING & BORDERS		
	Surfacing border has rough or cracked concrete, rough boards, or protruding bolts or nails		
	The depth of loose surfacing material is less than 6”		
	Surfacing border is not adequately containing the material		
	Glass and/or debris present		
	Play pieces are not at least 8’ apart		

Checked	Play Equipment	State the Repairs Needed	What Repairs Were Made
	MODULAR EQUIPMENT (WOODEN CLIMBING EQUIPMENT)		
	Split uprights on wooden equipment		
	Exposed footing		
	Uprights worn/loose		
	Platforms, rungs, railings loose or worn		
	Loose bolts		
	SPRING RIDING TOYS		
	Concrete footing loose		
	Exposed bolts and nuts		
	Plastic structure broken or cracked		

Please Note: In no case should the <u>fall</u> height of a child to the cushioned ground surface exceed 7 feet.

Overall comments on playground: _____

_____

_____

_____

OUTDOOR AND GROUNDS CARE

Consists of keeping school grounds clear of trash, glass, leaves and other debris; sweeping sidewalks, parking lots and paved play areas; hosing down sidewalks, steps and outside entrance areas; maintaining the lawn in a neat and presentable condition by mowing grass, trimming around the building, sidewalks, fence lines, etc.; pulling weeds and trimming shrubbery as necessary; spreading mulch in tot-lots as needed. During winter months removing snow and ice from sidewalks, entrances, bus loading and unloading areas, oil fill pipe and stick measuring caps, fire hydrants, and treating icy areas as required.

Purpose

To maintain outside grounds for safety of staff, students and visitors.

Equipment and Materials Needed (Spring/Summer)

Heavy work gloves, hedge trimmer, gas powered grass trimmer, power mower, lawn tractor equipped with mower deck, utility cart/wheel barrow, large plastic bags, trash can, pruning shears, shovel, rake, fuel, safety goggles.

Equipment and Materials Needed (Fall/Winter)

Lawn tractor equipped with snow blade and chains, snow blower, heavy winter clothes, gloves, fuel, salt/calcium, spreader, shovel, ice scraper.

Safety Precautions (Spring/Summer)

1. Use caution when picking up broken glass.

2. Use gloves when using power equipment.

3. Check fuel and oil reservoir on equipment before attempting to start.

4. Keep children and pets away from mowers and other related equipment.

5. Do not place any yard waste in waste container designed for other trash. Put in plastic bags and contact Plant Maintenance for pick up; i.e., tree branches, leaves, grass clippings, trimmings from hedges.

6. Pick up all objects before attempting to operate mowing equipment.

7. Keep blades sharpened and balanced, grease and adjust equipment to proper adjustments (read operator's manual). Make safety a first priority.

8. Keep lawn grasses approximately 3" high. Do not scalp the ground. This could ruin the equipment and cause blades to fly off.

9. Use safety goggles when using gas operated grass trimmer.

10. Never leave a mower unattended and with the engine running. This situation tempts the curious youngster.

11. Mow a sloping lawn sideways, not up and down. This way you won't be hurt if you slip or if the mower slides backward.

12. Shut down engine before attempting to clean grass from chute or working on the blades or other mowing parts.

Safety Precautions (Fall/Winter)

1. Always read operator's manuals carefully and learn how to operate all equipment before using. Safety should always be a first priority.

2. Check oil reservoir and fuel before attempting to start equipment. Use recommended fuels and oils.

3. Do not use calcium/salt on new concrete. Concrete must cure for one (1) year. Use sand/barn grit instead.

4 Stop engine before attempting to dislodge ice and snow from snow blower. Safety first.

5. Use tire chains on lawn tractor for better traction.

OUTDOOR AND GROUNDS CARE
BUILDING SUPERVISORS/GROUNDS KEEPERS

	FREQUENCY				
DUTIES	D	W	M	A	R
Pick up trash & debris	X			X	
Sweep entrances & sidewalks	X			X	X
Inspect play area pavement		X		X	X
Remove graffiti	X			X	X
Check playground equipment			X	X	
Rake grounds				X	X
Remove leaves				X	X
Clean storm drain grating			X	X	X
Clean roof drains			X	X	X
Inspect gutters & downspouts			X	X	
Mow lawn (in season)		X			X
Trim around building & walks		X			X
Trim along fence lines		X			X
Pull weeds					X
Trim shrubbery					X
Remove ice & snow					X
Salt icy areas .					X
Replace burnt out light bulbs				X	X

LAWN TRACTOR

Always read the owner's manual.

Before operating:

Pick up trash and debris.
Be sure the tractor and engine have been properly serviced and maintained.

General Safety Precautions:

1. Clear area of all objects which could be picked up and thrown by the mower or other attachments.
2. Be sure area is clear of other people.
3. Before starting make sure PTO lever in OFF position.
4. Never carry passengers.
5. Operate only while in seat.
6. Always look down and behind before and while using reverse.
7. Slow down before making turns.
8. Never leave tractor running unattended.
9. Turn off power to attachment when not in use.
10. Do not wear loose clothing that may get caught in rotating parts of unit.

Slope Operation Safety:

1. Slopes are a major factor related to loss-of-control and tip-over accidents, which can result in severe injury or death. All slopes require extra caution. If you cannot back up the slope or if you feel uneasy on it, do not operate on it.
2. Operate up and down slopes, not across. Do not operate on steep slopes.
3. Remove obstacles such as rocks, tree limbs, etc. from the area of operation.
4. Watch for holes, ruts or bumps. Uneven terrain could overturn the machine. Tall grass or deep snow can hide obstacles.

5. Use slow speed. Choose a low ground speed so that you will not have to stop or shift while on the slope. Engage the directional control pedal slowly.

6. Follow the manufacture's recommendations for wheel weights or counterweights to improve stability.

7. Use extra care with grass catchers or other attachments. These can change the stability of the machine. Use only approved hitch points.

8. Limit loads to those you can safely control.

9. Keep all movement on the slopes slow and gradual. Do not make sudden changes in speed or direction.

10. Avoid starting or stopping on a slope. If tires lose traction, disengage attachment power and proceed slowly straight down the slope. If you must stop when going up the slope and cannot safely back down, disengage the PTO, release the direction control pedal, and depress the brake pedal. Then place the gear selector in low speed and slowly release the brake pedal, while slowly engaging the direction control pedal.

11. DO NOT turn on slopes unless necessary, and then turn slowly and gradually downhill, if possible.

12. DO NOT operate near drop-offs, ditches, or embankments. The tractor could suddenly turn over if a wheel is over the edge of a cliff or ditch, or if an edge caves in.

13. DO NOT operate on wet grass. Reduced traction could cause sliding.

14. DO NOT try to stabilize the machine by putting your foot on the ground.

15. DO NOT use grass catcher on steep slopes.

Service Safety:

1. Do not change engine governor setting or over speed the engine.

2. Replace damaged or worn out muffler immediately. Continued use could result in fire or explosion.

3. Use extra care in handling gasoline and other fuels. They are flammable and vapors are explosive.

    A. Use only an approved container.

    B. Never remove gas cap or add fuel with the engine running. Allow engine to cool before refueling. Do not smoke. Wipe off any spilled gasoline and allow vapors to dissipate before starting engine.

C. Replace fuel tank cap and container cap securely.

D. Never refuel the machine indoors.

E. Never store the machine or fuel container inside where there is an open flame, such as in a water heater. Allow engine to cool before storing in any enclosure.

4. Never run a machine inside a closed area. Exhaust fumes contain carbon monoxide, an odorless and deadly gas.

5. Keep nuts and bolts, especially blade attachment bolts, tight and keep equipment in good condition.

6. Never tamper with safety devices. Check their proper operation regularly.

7. Keep machine free of grass, leaves or other debris build up. Clean up oil or fuel spillage. Allow machine to cool before storing.

8. Stop and inspect the equipment if you strike an object or if their is a sudden change in the sound or vibration of the equipment. Repair any damage before restarting.

9. Never make adjustments or repairs with the engine running or when engine and exhaust parts are hot from operation.

10. Mower blades are sharp and can cut.

11. Refer to Storage Section in owners manual if tractor is to be stored for extended period.

Operation:

NOTE: Read the tractor and attachment(s) manuals before operating the equipment. Operate the tractor only from the operator's position on the seat. Service the tractor and attachment before operating.

1. Direction Control Pedal

The direction control pedal controls the movement of the tractor. Push the pedal forward to go forward. Push the pedal back to move the tractor backwards.

2. Throttle Control

The throttle lever is used to control the engine speed. To increase the engine speed, move the lever up to the "FAST" position. To decrease the engine speed, move the lever down to the "SLOW" position.

3. Choke Control

   The choke control is used to choke a cold engine for starting. The choke control is located on the instrument panel. Pull the choke out to the "ON" position to choke the engine. When the engine is warm, move the control to the "OFF" position.

4. PTO Control

   The PTO control is used to connect or disconnect the engine power to an attachment. The forward position is "OFF," the rearward position is "ON."

5. Hourmeter

   The hourmeter (on some models) shows total time which the ignition switch has been in the "ON" position.

6. Fuse

   All models have a fuse to protect the electrical system. The fuse is located in the wire harness.

7. Ignition Switch

   The ignition switch is operated with a removable key. The switch has three positions: "Off," "On," and "Start."

   To start the engine, the key must be in the "Start" position. Once the engine has started release the key and it will return to the run position. To stop the engine, turn the key to the "Off" position.

8. Gear Selector

   The gear selector has four operating positions. See manual for ground speeds produced in each gear.

9. Attachment Lift Switch

   The attachment lift switch is used to raise and lower the attachment. The lift switch is located on the instrument panel. Move the switch up to raise and down to lower the attachment.

10. Ammeter

    The ammeter indicates the condition of the charging system. Normal operation will show the indicator needle slightly to the "Plus" side of zero.

11. Brake Pedal

Pushing the brake pedal down will stop the tractor and return the direction control pedal to "NEUTRAL." Use the brake pedal for sudden stops and for holding the tractor on slopes.

12. Brake Lock Lever

To lock the brake for parking, depress the brake pedal and pull back on the brake lock lever. To release, push on the pedal and move the lock lever forward.

13. PTO Control

To power an attachment, push the PTO control forward to "ON." To stop an attachment, pull the PTO control rearward to "OFF." The operator must be in the tractor seat to operate the PTO. If the operator leaves the seat while the PTO control is in the "ON" position, the engine will stop.

14. Warning Light

The tractor is equipped with a warning light to alert the operator in the event there is a problem with the engine. The warning light is located on the upper left side of the instrument panel.

NOTE: The light is activated when there is a loss of oil pressure. If the light comes on while operating the tractor, stop the tractor and engine as quickly as possible and check the engine oil level.

To check to see if the light is operating correctly, turn the ignition switch to the "ON" position. The light should glow red.

NOTE: The engine must have been off for at least five minutes prior to performing this test.

15. Using the Attachment Lift Systems

Manual or hydraulic lift systems are used to raise and lower attachments. Either can hold an attachment in position or let it follow the ground.

A. Using the Manual Lift System

1. To hold an attachment in position:

a. Lift the attachment to the raise position.

b. Lift the lift range control and slide it to the desired position.

c. Lower the attachment. The lift lever will stop against the lift range control. If the attachment is not in the desired position, repeat the first two steps.

2. To let an attachment follow the ground

a. Move the lift range control to the lowest position.

b. Lower the attachment to the ground.

B. Using the Hydraulic Lift System

1. To hold an attachment in position

a. Lift the attachment by moving switch to the “up” position until the attachment is fully raised.

b. Lower the attachment to the desired position by moving switch to the “down” position.

c. When the attachment reaches the desired position, release the switch. The attachment will be held in that position.

2. To let an attachment follow the ground

a. Move the switch to the “down” position. When the attachment reaches the ground, hold the switch in the ”down” position for approximately 1/2 second before releasing the switch.

Preventive Maintenance

See operator’s manual for full instructions

Engine:	Check oil daily Change oil every 25 hours See engine manual for oil specifications Keep engine and cooling fins clean
Air Cleaner:	Check daily or every 5 hours Replace element when clogged

Transmission: Check oil level every 200 hours or at any sign of leakage
Fill to check level plug with SAE 10W-30

Hydraulic System: Check hydraulic fluid every 200 hours or at any sign of leakage
See operator's manual

REF.	LUBRICATION	QTY.	DESCRIPTION-LOCATION	INTERVAL	
				Daily	25 Hrs.
1	GREASE	2-3	MOWER SPINDLE	•	
2	GREASE	1	STEERING SPINDLES		•
3	GREASE	2	STEERING PIVOT		•
4	GREASE	2	STEERING ARMS		•
5	GREASE	2	STEERING COLUMN		•
6	GREASE	2	WHEEL BEARING	•	
7	GREASE★	2	U-JOINT		
8	GREASE✲	2	WHEEL BEARING		•
9	GREASE✲	2	CASTER SPINDLE		•
10	GREASE	1	SLIP JOINT		•
11	GREASE✲	2	IDLER ARM PIVOT	•	
	OIL		ALL PIVOT POINTS, PIN CONNECTIONS		

★ Grease every 500 hrs.

✲ 60" Mower deck only

Tire Pressure: Front 14 - 18 PSI (94 - 124 kN/m^2)
Rear 10 - 14 PSI (69-97 kN/m^2)

PUSH MOWERS

Always read the owner's manual.
Do not allow children in the mowing area.

Safety Preparation:

1. Never operate mower without proper guards, plates, safety switches, or other safety protective devices in place and properly connected. Inspect to determine that these safety devices are installed properly, are in good repair, and operate properly. If the condition or operation of these devices are questionable, they must be repaired or replaced before using the mower. Be thoroughly familiar with the controls and proper use of the equipment.

2. Thoroughly inspect the area where the mower is to be used and remove all stones, sticks, wire, bones and other foreign objects. Also note the location of holes, stumps, and other possible hazards.

3. DO NOT operate mower when barefoot or wearing open sandals. Always wear substantial footwear and long pants.

4. Fill fuel tank before starting engine. Use approved fuel container. DO NOT smoke near open fuel container. DO NOT fill fuel tank indoors or when engine is running. Allow engine to cool for at least ten minutes before refilling. Wipe off any spilled fuel before starting engine. DO NOT run engine indoors.

5. Make sure that the wheel drive clutch control is disengaged before starting engine.

6. Never attempt to make a cutting height adjustment while the engine is running.

7. When mowing over rough ground or in tall grass, mower must be set at highest cutting position.

8. Mow only in daylight or in good artificial light.

9. Never operate mower in wet grass. Always be sure of your footing; keep a firm hold on the handle and walk; never run!

Safety Operation:

1. DO NOT change engine governor settings or over speed engine.

2. DO NOT put hands or feet near or under rotating parts. Keep clear of discharge area while engine is running.

3. STOP engine when crossing gravel drives, walks, or roads, and under any conditions where thrown objects might be a hazard.

4. After striking a foreign object or if mower vibrates abnormally, STOP the engine, disconnect and secure spark plug wire. Inspect the mower for any damage and repair the damage.

5. STOP blade and engine whenever you leave the operating position behind the handle for any reason, including clearing grass, emptying grass bag and making any adjustments, repairs, or inspections.

6. Before cleaning, repairing or inspecting, make certain blade and all moving parts have STOPPED. Disconnect and secure spark plug wire away from plug to prevent accidental starting.

7. STOP engine and wait until the blade comes to a complete STOP before removing grass bag and/or clearing grass.

8. Mow across slopes, never up-and-down. Exercise CAUTION when changing directions on slopes. DO NOT mow steep slopes or other areas where stability or traction is in doubt.

9. STOP engine and blade before shifting ground speed control.

Operation:

1. Move choke/engine speed control to the choke.

2. Push primer button three times to start cold engine.

3. Pull blade control against handle

4. Pull rope start handle to crank engine.

5. After engine starts, move choke/engine speed control away from the choke position to the fast position and allow engine to warm up, until engine runs smooth.

6. To stop engine release blade control handle.

SNOW THROWERS

Always read the operator's manual.

General Safety Precautions:

1. Never allow children to operate the machine. Do not allow adults to operate it without proper instructions.
2. Keep the area of operation clear of all persons. Never discharge materials towards persons or pets.
3. Make sure snow thrower is in good operating condition.
4. Make sure all safety devices and shields are in place and working.
5. Make sure all adjustments are correct.

Safety Preparation:

1. Never make adjustment while engine is running.
2. Inspect the area where the snow thrower is to be used and remove all objects that could enter the auger gear case.
3. Disengage all clutches, release drive levers, before starting engine.
4. Do not operate snow thrower without wearing proper winter clothing and foot wear.
5. Handle gasoline with care.
6. Never remove fuel tank cap or add gasoline while engine is running or hot.
7. Fill the fuel tank outdoors. Wipe off all spills.
8. Adjust skid shoe height to clear gravel surface.
9. Do not run engine indoors.

Operation Safety:

1. Keep hands and feet away from rotating parts. Keep clear of discharge opening at all times.
2. Always remove snow up and down the face of slopes, never go across the face of slopes. Do not attempt to clear slopes over 19.3^{o}.

3. If striking an object, release drive levers, stop the engine, remove spark plug wire. Inspect the snow thrower for damage before restarting.

4. Use extreme caution when operating on or crossing gravel areas.

5. Be especially careful not to touch parts of the snow thrower that might be hot from operation. Allow to cool down.

6. If snow thrower starts or vibrates abnormally, disengage drives and stop engine. Vibrations are a warning of trouble.

7. When leaving snow thrower, always shut off engine.

8. Before cleaning, repairing or inspecting make certain all moving parts are stopped. Remove spark plug wire and key.

9. Do not overload machine capacity by clearing snow at too fast a ground speed.

10. Disengage auger drive when transporting or not in use.

11. Never operate the snow thrower without good visibility or lighting. Always be sure of your footing.

12. Do not change the engine governor settings or engine speeds.

Maintenance and Storage Safety:

1. Keep all nuts, bolts and screws tight to be sure the equipment is in safe working condition.

2. Allow the engine to cool before storing in any enclosure.

3. Run auger drive a few seconds after each completion of throwing snow to help clear out shoot.

Operation:

1. Checks before each startup

    A. Make sure all safety guards are in place and all nuts, bolts and clips are secure.

    B. Check the engine oil level. See your engine Owner=s Manual for procedure and quantity.

    C. Check the fuel supply. Fill the tank to within 3 to 2 inch of top of tank to provide space for expansion.

D. Position the deflector at the desired angle and the scraper bar at the desired height. Engage or disengage the traction drive lock. These procedures are explained in the following paragraphs.

2. Deflector Adjustment

A. The angle and distance of the discharged snow is controlled by the position of the deflector. (Engine speed also affects distance of discharge.) The more the deflector is tilted back, the farther snow will be thrown.

3. Scraper Bar Height Adjustment

A. On smooth surfaces such as concrete or asphalt, the scraper bar should scrape the surface. On surfaces such as gravel, the scraper bar should be high enough so that it will not pick up gravel or debris. The height of the scraper bar is controlled by raising or lowering the skid shoes.

B. To raise the scraper bar, rest the scraper bar on a piece of wood of thickness equal to desired height of the scraper bar. Make sure the scraper bar is parallel to the surface. Loosen the skid shoe nuts and let the skid shoes drop to the surface. Tighten the nuts, making sure the skid shoes are adjusted equally and are parallel to the surface.

C. To lower the scraper bar, raise the skid shoes.

D. If the scraper bar becomes worn, it can be moved down. Rest the skid shoes on pieces of wood. Loosen the nuts which secure the scraper bar to the housing, and slide the scraper bar down (holes in housing are slotted). Tighten the nuts securely.

4. Traction Drive Lock

A. For easier turning when transporting unit, disengage the traction drive lock so each wheel can turn independently. When blowing snow, engage the lock so both wheels drive the snow thrower.

B. To disengage the lock, insert the pin thru the outer hole in the axle.

C. To engage the lock, insert the pin thru the hub and axle. If the hole in the hub is not aligned with the inner hole in the axle, push the snow thrower until the holes align. Be sure to install spring clip to secure pin.

5. Starting the Engine

A. To start the engine with the rewind starter or with the 120 volt electric starter, follow the instructions in the engine Owner's Manual. If the snow thrower is equipped with battery start, follow this procedure to start the engine.

1. Move the throttle lever to FAST position.

2. To crank the engine, turn the key switch to START. If the engine is cold, move the choke to FULL while cranking. If the engine is warm, try starting without the choke. If engine doesn't start, move the choke to FULL while cranking.

3. When the engine starts, release the key switch. If the engine falters, move the choke to FULL and then gradually to OFF.

6. Ground Speed Selection

   A. Use the ground speed selector to control the drive speed of the snow thrower. There are five forward speeds and two reverse speeds. Use the lower speeds to blow deep or wet snow. Use the higher speeds to blow light snow or to drive the snow thrower without blowing snow. To change speed, first release the traction drive lever. Then move the selector to the desired speed.

7. Engine Speed

   A. Set the engine speed control lever to full speed.

8. Starting and Stopping Operation

   A. Determine the best snow removal pattern. Wind direction is an important factor to consider. Avoid blowing snow on cleared areas and on yourself as you=re operating. Always rotate the spout to discharge snow downwind.

   B. Start the engine.

   C. Select desired ground speed and engine speed.

   D. To transport the snow thrower, engage only the traction drive lever. To throw snow, engage the auger drive first and then the traction drive. If snow stops flowing freely from the spout, stop or back up to allow snow thrower to clear itself.
   E. To stop auger drive, release the auger drive lever. To stop traction drive, release the traction drive lever. To stop engine, move throttle control lever to SLOW and turn ignition key to OFF.

Preventive Maintenance:

1. Off-Season Storage

Before you store your snow thrower for the off-season, take the following precautions.
NOTE: Fuel may be stored in the tank or in a container for long periods if a gasoline stabilizer is used which prevents formations of gum and varnish for up to one year.

A. Prepare your snow thrower engine for storage according to your engine Owner's Manual.

B. Lubricate the snow thrower as described in the Normal Care section.

C. If equipped with a battery, disconnect the cables or remove the battery from the snow thrower. The battery should be kept fully charged during storage.

D. Clean the snow thrower thoroughly. Coat all exposed bare metal parts with a good quality paint (available from your dealer) or a light film of grease, oil or automotive wax.

Care Required	**See**	**Every 25 Hours****	**Yearly**
Check auger gear case lubrication		X	
Lubricate snow thrower		X	
Check tire pressure		X	
Inspect battery (if equipped)		X	
Change engine oil*	Eng. Manual	X	
Clean or replace spark plug	Eng. Manual		X
* Change original engine oil after first two hours of operation ** At least once a year			

Normal Care Chart

2. Starting After Storage

A. Remove the spark plug and wipe dry. Crank engine a few times to blow excess oil out of plug hole. Then reinstall plug.

B. Fill fuel tank with fresh gasoline (unless a fuel stabilizer was used).

C. Check to be sure engine fins are clean and air flow is unobstructed.

D. Start the engine outdoors. Do not run engine at high speeds immediately after starting.

E. Check the operation of the controls. If necessary lubricate the snow thrower to improve operation of the spout control.

3. Check Auger Gear Case Lubrication

A. Place the snow thrower on a level surface. Remove the pipe plug. The lubricant should be level with the hole.

WEEDEATERS

Always read the owner's manual.

Safety Precautions:

1. You should be shown how to use your weed eater for the first time.
2. Children should not be around when using the weed eater.
3. If lending your weed eater, the person should be familiar with it. Always give them the manuals.
4. Only use cutting tool and attachment supplied or explicitly approved for mounting on your weed eater. (No other cutting attachments may be used.)
5. Always wear the proper safety equipment such as goggles or a helmet and shield, gloves, safety shoes.
6. Never wear clothes or jewelry that might get caught.
7. Use ear plugs to protect your hearing.
8. Always inspect your area for stones, glass, pieces of metal, trash, and other solid objects before cutting.
9. Never touch a rotating cutting tool.
10. Always adjust harness.
11. Check for cracks and breaks on attachments. If damaged, replace.
12. If the cutting attachment becomes clogged or stuck, always switch off engine before cleaning.

Operation Procedures:

1. Adjust harness and hand grip to suit your size before starting. The machine must be balanced.
2. Hold down the throttle trigger interlock and squeeze the throttle trigger.
3. Move the slide control to start position.
4. Now release the control and trigger interlock in that order.

5. Set the choke lever.

6. Press fuel pump bulb several times until you see fuel in the transparent hose.

7. Put the unit on the ground. Hold firmly.

8. Pull the starter cord grip slowly until you feel it engage and then give it a brisk strong pull. Slowly release the starter cord grip back into housing.

9. When engine begins to fire, change the choke lever. As soon as the engine runs, grab the throttle trigger. Slide the control to the run position in the middle. This will have the engine run its idle speed.

10. Squeeze throttle trigger to proper speed, move weed eater in sweeping motion same as or similar to a scythe. When area is complete, push control to stop position.

Preventive Maintenance:

		Before starting work	After finishing work or daily	Weekly	Monthly	As required
Complete machine	Visual inspection (condition, leaks)	x				
	Clean		x			
Throttle trigger, slide control	Check operation	x				
Air filter	Clean	x				
	Replace					x
Fuel tank	Clean				x	
All accessible screws and nuts (not adjusting screws)	Retighten					x
Cutting tools	Visual inspection	x				
	Replace					x
Gear box lubrication	Check			x		
	Top up					x