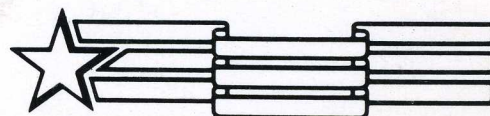


1-414-582-4455
Bill
Ingersoll



Ingersoll

COMPACT TRACTORS
3118, 4116, 4118, 4120
Operator's Manual 8-56800



QUALITY IN THE AMERICAN TRADITION

Ingersoll Equipment Co., Inc.

Winneconne, Wisconsin 54986-9576



This Safety Alert Symbol Indicates Important Safety Messages In This Manual When You See This Symbol Carefully Read The Message That Follows and Be Alert To The Possibility Of Personal Injury Or Death

IF THIS MACHINE IS USED BY AN EMPLOYEE OR IS LOANED OR RENTED, MAKE ABSOLUTELY CERTAIN THAT THE OPERATOR(S), PRIOR TO OPERATING:

1. IS INSTRUCTED IN SAFE AND PROPER USE.
2. REVIEWS AND UNDERSTANDS THE MANUAL(S) PERTAINING TO THE MACHINE.

751253



WARNING

BEFORE STARTING ENGINE

**STUDY OPERATOR'S MANUAL SAFETY MESSAGES
READ ALL SAFETY SIGNS ON MACHINE
CLEAR THE AREA OF OTHER PERSONS**

LEARN & PRACTICE SAFE USE OF CONTROLS BEFORE OPERATING

IT IS YOUR RESPONSIBILITY TO UNDERSTAND AND FOLLOW MANUFACTURER'S INSTRUCTIONS ON MACHINE OPERATION, SERVICE, AND TO OBSERVE PERTINENT LAWS AND REGULATIONS. OPERATOR AND SERVICE MANUALS MAY BE OBTAINED FROM YOUR EQUIPMENT DEALER.

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SAFETY ALERT SYMBOL AND NOTATIONS



Various notations throughout this manual point out special information or operating procedure. Understanding these notations and being aware of unsafe conditions or actions can prevent the possibility of personal injury or death as well as damage to your equipment.

Following is a brief description of the Safety Alert Symbol and notations.

NOTE

A NOTE points out general reference information regarding proper operation and maintenance practices.

IMPORTANT

An IMPORTANT statement indicates specific procedures or information that is required to prevent damage to the machine or its attachments.



This safety alert symbol is used to attract your attention! **PERSONAL SAFETY IS INVOLVED!** When you see this symbol - **BECOME ALERT - HEED ITS MESSAGE.**



CAUTION

A CAUTION identifies safe operating practice or indicates unsafe conditions that could result in personal injury.



WARNING

A WARNING describes a condition where failure to follow the instructions could result in severe personal injury.



DANGER

A DANGER designates a condition where failure to follow instructions or heed warning will most likely result in serious personal injury or death.

SAFETY MESSAGES

The first twenty-five safety messages which follow are provided by the American National Standards Institute *(ANSI). Safety rules to supplement those provided by ANSI also appear on the following pages.

Study these rules carefully before starting and operating your Lawn and Garden Tractor.



Separate Operator's Manuals are provided with the attachments purchased with your tractor. Refer to the appropriate attachment operators manual for specific operating instructions and safety messages that apply to the attachment.



CAUTION: Know the controls and how to stop quickly. **READ THIS OPERATOR'S MANUAL** and instructions furnished with attachments.



CAUTION: Do not allow children to operate the machine. Do not allow adults to operate it without proper instruction.



CAUTION: Do not carry passengers. Do not mow when children and others are around.



CAUTION: Clear the work area of objects (wires, rocks, etc.) that might be picked up and thrown.



CAUTION: Disengage all attachment clutches and shift into neutral before attempting to start the engine (motor).



CAUTION: Disengage power to attachment(s) and stop the engine (motor) before leaving the operator's position.



CAUTION: Disengage power to attachment(s) and stop the engine (motor) before making any repairs or adjustments.



CAUTION: Disengage power to attachment(s) when transporting or not in use.



CAUTION: Take all possible precautions when leaving the vehicle unattended, such as disengaging the power take-off, lowering the attachment(s), shifting into neutral, setting the parking brake, stopping the engine, and removing the key.



CAUTION: Do not stop or start suddenly when going up-hill or downhill. Mow down the face of steep slopes; never across or up the face. (This ANSI rule modified)



CAUTION: Reduce speed and exercise extreme caution on slopes and in sharp turns to prevent tipping or loss of control. Be especially cautious when changing direction on slopes.



CAUTION: Stay alert for holes, rocks, and roots in the terrain and other hidden hazards. Keep away from drop-offs.



CAUTION: Use care when pulling loads or using heavy equipment.

- a. Use only approved draw-bar hitch points.
- b. Limit loads to those you can safely control.
- c. Do not turn sharply. Use care when backing.
- d. Use counterweights or wheel weights when suggested in this operator's manual.



CAUTION: Watch out for traffic when crossing or near roadways.



CAUTION: When using any attachments, never direct discharge of material toward bystanders nor allow anyone near the vehicle while in operation.



CAUTION: Do *not* change the engine governor settings or overspeed the engine.



CAUTION: Handle gasoline *with care - it is highly flammable.*



CAUTION: When using the vehicle with mower, proceed as follows:

- a. Use approved gasoline container.
- b. Never remove the fuel cap of, or add gasoline to, a running or hot engine or an engine that has not been allowed to cool for several minutes after running. Never fill the tank indoors and always clean up spilled gasoline.
- c. Open doors if the engine is run in the garage - exhaust fumes are dangerous. Do not run the engine indoors.

(1) Mow only in daylight or in good artificial light.

(2) Never make a cutting height adjustment while the engine (motor) is running if the operator must dismount to do so.

(3) Shut the engine (motor) off when removing the grass catcher or unclogging chute.

(4) Check the blade mounting bolts for proper tightness at frequent intervals.



CAUTION: Keep the vehicle and attachments in good operating condition, and keep safety devices in place and in working condition.



CAUTION: Under normal usage, the grass catcher bag material is subject to deterioration and wear. Check bag frequently for deterioration and wear and replace worn bags. Check that replacement bags comply with the original manufacturer's recommendations or specifications.



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



CAUTION: *Disengage* power to mower before backing up. Do not mow in reverse unless absolutely necessary and then only after observation of the entire area behind the mower.



CAUTION: Never store the equipment with gasoline in the tank inside a building where fumes may reach an open flame or spark. Allow the engine to cool before storing in any enclosure.



CAUTION: Do not wear loose clothing which may catch in moving parts.



CAUTION: To reduce fire hazard, keep the engine free of grass, leaves, or excessive grease.



CAUTION: Do not smoke when working near fuel.



CAUTION: The vehicle and attachments should be stopped and inspected for damage after striking a foreign object, and the damage should be repaired before restarting and operating the equipment.



CAUTION: Drive at a speed slow enough to insure safety and complete control at all times.



CAUTION: Highway travel should be avoided. If necessary, use SMV safety emblem and lights for adequate warning to the operators of other vehicles. Check local government regulations.



CAUTION: Read operator's manuals.

Know location and function of all controls.

Keep all shields and safety switches functional.

Before starting engine: disengage attachment drive and place travel control in neutral.

Remove objects from the terrain that could be thrown by the attachment.

Keep people and pets a safe distance away.

Never carry passengers.

Always look behind tractor before backing.

On any incline that the tractor can be safely operated use low range/gear.

Front end tip over can occur when operating on loading ramps or hills, back up ramps or hills.

Drive forward going down ramps or hills.

To park tractor: place travel control in neutral, set parking brake, disengage attachment drive, shut engine off and remove key.

Park tractor before servicing or making adjustments to tractor or attachments.

Failure to observe these precautions could result in injury.



CAUTION: Place the transmission in neutral, set the parking brake and stop the engine before standing between the tractor and attachment when hitching.



Become thoroughly familiar with all tractor and attachment controls before operating.



WARNING: Improper operation of your tractor on hillsides and slopes can be dangerous. Avoid improper operation! Read and follow the instructions given in the section titled "Hillside Operation" in this manual before operating your tractor.



CAUTION: If necessary to move tractor on a trailer, always back up onto the trailer and drive off of trailer.



CAUTION: Hydraulic systems are highly pressurized. Escaping hydraulic oil, even an invisible pinhole leak, can penetrate body tissues causing serious injury. Use a piece of wood or cardboard when looking for leaks - never use the hands or other parts of the body.

Relieve hydraulic pressure before disconnecting circuits. When reassembling, make absolutely certain that all connections are tight.

If injured by hydraulic oil escaping under pressure, see a doctor immediately. Serious complications may arise if medical attention is not given at once.



CAUTION: When adjusting steering wheel free play make certain that some free play remains between the sector gear and pinion gear, since a tight fit, with no clearance between the two gears may cause binding and tooth failure.



CAUTION: When removing a battery, always disconnect the (-) negative ground cable first. When installing the battery, always connect the (-) negative ground cable last.



CAUTION: Storage areas for batteries must be well ventilated to prevent accumulation of hydrogen gas from newly recharged batteries.



DANGER: Batteries produce explosive charges. Keep sparks, flame and cigarettes away. Ventilate when charging or using in enclosed space. Always shield eyes when working near batteries.



CAUTION: When working around storage batteries, remember that all of the exposed metal parts are "live". Never lay a metal object across the terminals as a spark or short circuit may result. Sparks, lighted matches and exposed flames must be kept away from the battery due to the presence of explosive gas in the battery. The liquid in the batteries is acid. Use care not to spill it on hands or clothing.



POISON: Batteries contain sulfuric acid which can cause severe burns. Avoid contact with skin, eyes or clothing. Antidote: **EXTERNAL**, flush with water; **INTERNAL**, drink large quantities of water or milk. Follow with milk of magnesia, beaten egg or vegetable oil. Call physician immediately; **EYES**, flush with water for 15 minutes and get prompt medical attention. Keep out of reach of children.



Remember, a careful operator is always the best insurance against an accident. Give complete and undivided attention to the job at hand.



CAUTION: Set parking brake, shut off engine, remove key, and wait until all engine and attachment motion has stopped before dismounting from the operator's seat.



WARNING: To jump start this machine, connect positive jumper cable to battery terminal on starter solenoid and connect negative jumper cable to good engine ground. Start engine only when seated in operator's seat. Stop engine before leaving machine. Disconnect jumper cables. Any other method could result in uncontrolled machine movement.



CAUTION: Never wear rings or metal watch bands when working with the tractor electrical system or battery as you may ground a live circuit.



CAUTION: Too much air pressure in the tires can cause tire or rim failure. Never put more air pressure in a tire than specified in the operator's manual or on the sidewall of the tire. If the tire or rim explode because of too much pressure, injury can result.



CAUTION: Before attempting to service the attachment Drive Clutch, be sure to remove tractor key and spark plug wire(s).



CAUTION: Only operate controls from the operator's seat to prevent injury.

IMPORTANT:

Always install new decals whenever the old decals are destroyed, lost, painted over or illegible. When individual parts are replaced that have decals attached, be sure to install a new decal with the new part. Replacement decals are available from your dealer.

HILLSIDE (SLOPE) OPERATION



WARNING: Improper operation of your tractor on hillsides and slopes can be dangerous. Avoid improper operation! Read and follow the instructions given in the section titled "Hillside Operation" in this manual before operating your tractor.

Avoid operating tractor on hillsides and slopes. To minimize the possibility of accidents while operating on hills and/or rough terrain, obey a combination of rules, practices and good common sense.

These include:

1. Reading, understanding, and obeying all written safety messages appearing on decals on the machine and in operator's manuals.
2. Learning from your operator's manual and carefully from EXPERIENCE how to operate your tractor correctly. Know your tractor's limitations.
3. Knowing the terrain on which you are operating your tractor. There are terrain conditions on which your tractor cannot be operated!
4. Learning to expect changes in operating conditions. Adding or removing attachments or weight to your tractor will make your tractor perform differently. Rain, snow, loose gravel, wet grass, etc., change the tractive conditions of the terrain requiring changes in your operating technique or not to operate on that terrain.

The following paragraphs will cover these practices one at a time. Read and study them. The examples provided are not all inclusive but will give you a firm understanding of the requirements for avoiding accidents while operating your tractor.

Ingersoll Lawn and Garden Tractors are designed and built to comply with the Voluntary Standard ANSI (American National Standards Institute).

THE OPERATOR IS THE SOLE JUDGE AS TO THE DEGREE OF SLOPE ON WHICH THIS TRACTOR CAN BE SAFELY OPERATED. IF IN DOUBT THAT THIS TRACTOR CAN BE SAFELY OPERATED ON A PARTICULAR SLOPE, DO NOT OPERATE ON THAT SLOPE! COMMON SENSE MUST PREVAIL.

Read, Understand, Obey:

Safety messages are found on the tractor and in the operator's manuals. These must be understood by the tractor operator to be of value. Be sure that these messages are studied before starting and/or operating the tractor by an operator not familiar with this particular tractor.

Learn to Operate:

Learn your tractor's controls from decals on the tractor and from instructions in the operator's manual. Practice how to properly manipulate these controls. Practice must be done in a flat area, clear of obstacles and bystanders. Learn your tractor's operating characteristics and limitations. These include:

- a. amount of engine power available
- b. engine governor response
- c. tractive ability
- d. steering characteristics
- e. braking characteristics
- f. movement of travel lever
- g. forward and reverse ground speeds
- h. speed of attachment lift
- i. and others

Attempting any operation which approaches or exceeds the tractor's limitation is risking an accident.

Know the Terrain:

Know the terrain on which you are working. Find hidden obstacles by walking through and inspecting the area prior to operating your tractor on it. Mark obstacles, such as, rocks, ruts or holes with a 6 ft. long pole and red flag and stay well clear of these obstacles when operating.

Operate your tractor at a ground speed slow enough to insure complete control at all times.

Place the transmission in low gear and regulate the throttle control lever slowly and smoothly to maintain this safe speed. Do not stop on a hill or slope to change gears.

Always drive in a forward direction when proceeding downhill. Never drive up a hill. If necessary, back up a hill to the desired position. Always back up loading ramps and tilt bed trailers. If necessary to turn while on a hill, always turn downward.

Your judgement, based on operating experience is the final word in deciding if you should negotiate any given hill or slope. If you are in doubt about safety, **STAY OFF THE SLOPE.**

Under no circumstances should an inexperienced operator attempt to use your tractor on slopes or hill-sides.

You may encounter some terrain on which your tractor cannot be operated even if a different piece of equipment has operated there in the past.

Learn to Compensate for Changes in Operating Conditions:

Adding or removing attachments or ballast (such as wheel weights or fluid) change the weight and weight distribution of your tractor and, therefore, changes your tractor's operating characteristics.

Be alert to these changes. Practice operating the tractor after each change has been made.

Adding an attachment (weight) to the rear of the tractor reduces the weight on the front axle. Adding an attachment (weight) to the front of the tractor reduces weight on the rear of the tractor. You must add counterweight to the front if a rear mounted attachment is installed. You must add counterweight to the rear if a front mounted attachment is installed.

Tractive conditions will vary with weather and terrain and equipment.

Areas wet with dew or rain will be more slippery than when dry. Areas covered with loose gravel are more slippery than firm dry ground. Greater stopping distances are required in these slippery areas.

Spinning rear wheels tend to move the tractor sideways. The addition of tire chains will provide more traction to the rear wheels in the forward-reverse direction but less stability in the sideways direction. Chains will cause more abrupt starting and stopping.

The final word in safe tractor operation rests on your judgement.

If in doubt of your safety, **STAY OFF THE SLOPE.**



FIGURE 1

INTRODUCTION

The Maintenance you give your new tractor is important. Use this manual as your guide. Follow these instructions and tips to keep your tractor in top operating condition.

Using replacement parts, from your authorized dealer, that are the same as the original equipment, assures efficient operation of your tractor for many years.

If you need additional aid or information, contact us.

Your Authorized Dealer

For reference enter:

Dealer Name _____

Address _____

Phone Number _____

NOTE: Ingersoll Equipment Co., Inc. reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.

Illustration Clarity: Illustrations used in this manual are for reference only. Your equipment can be different. To expedite the timely release of this manual, we must use equipment available at time of development.

NOTICE

A spark arrester or spark arrester muffler must be used on some machines. Check the laws in your area.

Some states have regulations for the use of this machine in agriculture, forestry and construction. These laws control the maintenance of spark arrester equipment. These laws also control the installation of spark arrester equipment on the exhaust system of naturally aspirated engines (engines without a turbocharger).

RADIO INTERFERENCE REGULATIONS OF CANADA

Tractors taken into Canada after September 1, 1976 must have resistor spark plugs.

Resistor spark plugs and resistor wires for the spark plug must be used for replacement.

DIRECTION

The words "Right, Left, Front and Rear" as used in this manual indicate directions when you are in the operator's seat in the normal operating position.

PRODUCT IDENTIFICATION NUMBER (P.I.N.) OR SERIAL NUMBER

When you need parts or information, or when you write to your authorized dealer, always give the:

1. Tractor Model Number
2. Tractor Product Identification Number (P.I.N.)
3. Engine Model Number
4. Engine Serial Number
5. Engine Specification Number

For reference, write the numbers below



**TRACTOR MODEL AND
PRODUCT IDENTIFICATION
NUMBER**

FIGURE 2

ENGINE MODEL, SERIAL AND SPECIFICATION NUMBERS

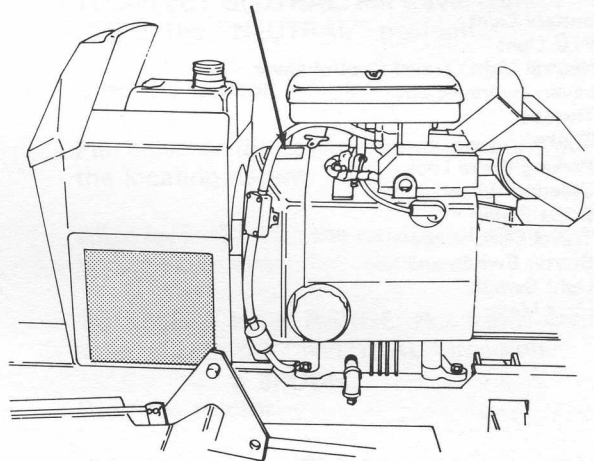
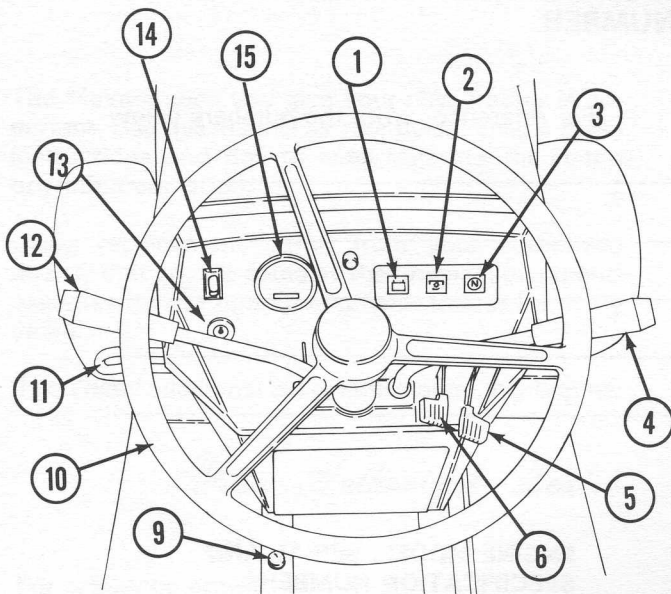


FIGURE 3

OPERATING INSTRUCTIONS



1. Battery Light
2. PTO Light
3. Neutral Light, Travel Control Lever
4. Lever, Hydraulic Lift
5. Throttle
6. Choke
9. Parking Brake Lock
10. Steering Wheel
11. Brake Pedal
12. Travel Control Lever
13. Starter Switch and Key
14. Light Switch
15. Hour Meter

FIGURE 4

OPERATING CONTROLS AND INSTRUMENTS

1. BATTERY VOLTAGE INDICATOR LIGHT

Battery voltage indicator light (1) will illuminate when ignition key is first turned to ignition position or when the battery voltage is low and will go out when the battery voltage is acceptable.

It is normal for the light to illuminate when the tractor is first started after a period of non-use and to glow when the tractor engine is operated at low idle speed.

Stop the engine and have the problem corrected if the indicator light (1) does not go out after running the engine at normal operating speed after a few minutes of operation.

It is normal for the Battery Voltage Indicator Light (1) to remain out if the engine is stopped when the battery is fully charged and the ignition key (13) is turned to the "ignition" position.



CAUTION: Know the controls and how to stop quickly. **READ THIS OPERATOR'S MANUAL** and instructions furnished with attachments.



Become thoroughly familiar with all tractor and attachment controls before operating.



CAUTION: Only operate controls from the operator's seat to prevent injury.

2. PTO INDICATOR LIGHT

PTO Light (2) will illuminate when Attachment Drive Lever (7) is shifted to "ON" position.

Shifting Attachment Drive Lever (7) to "OFF" position will cause PTO light (2) to go out.

3. NEUTRAL LIGHT, TRAVEL CONTROL LEVER

The right hand dash panel indicator light (3) will illuminate when travel control lever (12) is in "Neutral" position. the indicator light (3) will go out if travel control lever (12) is moved from "Neutral" position into either forward or reverse.

4. HYDRAULIC ATTACHMENT LIFT LEVER

TO LIFT: Run the engine

Pull lever (4) rearward.

Release lever (4) when the needed height is reached.

TO LOWER: Run the engine.

Push lever (4) forward a small amount.

Release lever (4) when the needed height is reached.

When you release this lever (4) a spring will automatically return the lever (4) to the "NEUTRAL" position.

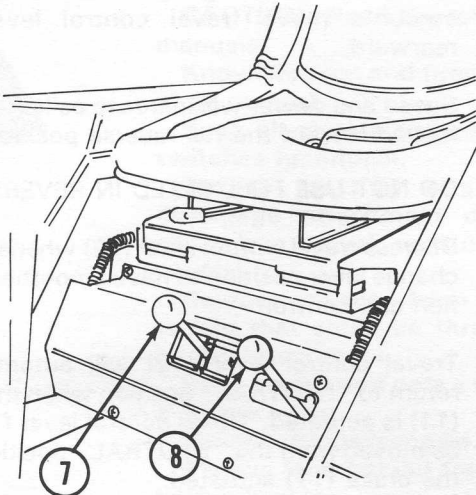
THE "FLOAT" POSITION: Push lever (4) fully forward.

A detent holds lever in the "FLOAT" position. The lever (4) must be manually returned to "NEUTRAL" position from "FLOAT" position.

"FLOAT" position prevents hydraulic down pressure on the attachment.

See instructions included with each attachment for correct attachment lift lever use.

OPERATING INSTRUCTIONS (Cont.)



7. Attachment Drive Lever
8. Range Selector

FIGURE 5

5. THROTTLE

ENGINE LOW IDLE: Pull throttle (5) lever rearward. Put throttle (5) in the "SLOW" position when starting and stopping the engine. This permits a warming and cooling period.

TO INCREASE ENGINE SPEED: Push throttle (5) lever forward until needed engine speed is reached.

Decrease engine speed during operation for maximum fuel efficiency. Do not cause engine lugging. Lugging will cause too much heat and damage to the engine.

6. CHOKE

TO CLOSE THE CHOKE: Push choke lever (6) forward. Close choke to start a cold engine.

TO OPEN THE CHOKE: Pull choke lever (6) rearward. Open choke slowly after engine starts.

Choke must be open during normal operation or when you start a warm engine.

7. ATTACHMENT DRIVE (PTO) (HYDRAULIC)

NOTE: Attachment drive lever (1) must be in "OFF" position before engine will start.

TO ENGAGE PTO (Hydraulic): Shift attachment drive lever (7) to "ON" position. Center light on dash will illuminate when attachment drive lever (7) is in "ON" position.

TO DISENGAGE PTO (Hydraulic): Shift attachment drive lever (7) to "OFF" position. Center light will go out when attachment drive lever (7) is in "OFF" position.

NOTE: Attachment drive lever (7) (PTO) reverse stop, must be in position for all attachments not requiring reverse rotation. Refer to individual attachment instructions for use of reverse stop and attachment drive lever (7).

8. RANGE SELECTOR

TO SELECT LOW RANGE: Put travel control lever (12) in the "NEUTRAL" position.

Stop the tractor.

Pull selector lever (8) down a small amount out of the neutral locating detent.

Pull selector lever (8) to the left and put into low range locating detent.

TO SELECT NEUTRAL: Put travel control lever (12) in the "NEUTRAL" position.

Stop the tractor.

Pull selector (8) down a small amount out of the locating detent.

Align lever (8) with the neutral locating detent and release lever

TO SELECT HIGH RANGE: Put travel control lever (12) in the "NEUTRAL" position.

Stop the tractor.

Pull selector lever (8) down a small amount out of the locating detent.

Push selector lever (8) to right and into high range locating detent.

If the range shift does not move easily, rotate the gears.

To rotate gears:

1. Move travel control lever (12) a small amount into the "FORWARD" position.
2. Return travel control lever (12) to the "NEUTRAL" position.

IMPORTANT: The range shift lever (8) must be in the locating detent while in "LOW" or "HIGH" range. If the lever (8) is not in the correct position, damage to the gears will result.

9. PARKING BRAKE LOCK

TO ENGAGE: Push brake pedal (11) fully down.

Push down on parking brake lock (9).

TO DISENGAGE: Push brake pedal (11) a small amount and release.

A spring will disengage the parking brake lock (9).

10. STEERING WHEEL

Controls a steering valve directing oil to either side of a hydraulic cylinder depending on which way you want to turn. Turning wheel (10) to left will turn front wheels for a left turn. Turning wheel (10) to right will turn front wheels for a right turn. Maintain control by not forcing turns and using both hands on the wheel (10) whenever possible.

NOTE: When engine is stopped, steering wheel (10) turning effort will increase due to control valve operating as a pump for the steering system.

11. BRAKE PEDAL

TO ACTUATE BRAKE: Push brake pedal (11) fully down.

This action will return travel control (12) to the "NEUTRAL" position.

The tractor will come to a quick stop.

NOTE: DO NOT use above method for normal stopping of tractor. The travel control lever (12) is intended for this purpose. It will allow stopping of tractor smoothly and slowly.

Refer to "Operating Procedure Section"

Depress brake pedal (11) fully if tractor does not stop when travel control lever (12) is shifted to neutral position.

12. TRAVEL CONTROL LEVER

TO STOP TRAVEL; Put the travel control lever (12) in the "NEUTRAL" position.

TO START FORWARD TRAVEL: Depress travel control lever (12) slightly. Slowly and in small amounts move travel control lever (12) forward.

Speed and power will increase as lever (12) is moved toward the full forward position.

TO START REVERSE TRAVEL: Depress travel control lever (12) slightly. Slowly and in small amounts move travel control lever (12) rearward.

Speed and power will increase as lever (12) is moved toward the full reverse position.

DO NOT USE FULL SPEED IN REVERSE.

Depress travel control lever (12) whenever you change lever position to have smoother operation and control.

Travel control lever (12) will automatically return to "NEUTRAL" position when the brake (11) is actuated. Travel control lever (12) can be moved from the "NEUTRAL" position with the brake (11) actuated.

NOTE: A neutral start switch is actuated by the travel control lever (12). Lever must be in the "NEUTRAL" position before you can start engine.

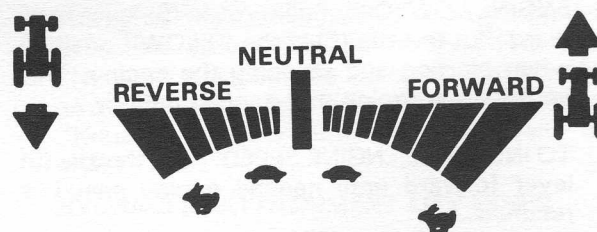


FIGURE 6 - Travel Control

13. IGNITION KEY AND STARTER SWITCH

TO START: Turn key (13) to the right and hold in "START" position.

TO RUN: Release key (13) to the "IGNITION" position when engine starts.

TO STOP: Turn key (13) to the left to "OFF" position.

14. HEADLIGHTS

TO ILLUMINATE: Press switch (14) to illuminate the headlights.

TO TURN OFF: Press switch (14) to turn off the headlights.

15. HOURMETER

The electric hourmeter (15) records hours of operation whenever key (14) is in "RUN" position.

Utilize the hourmeter (15) to meet required maintenance schedule.

PRESTARTING PRECAUTIONS



CAUTION: Read operator's manuals.

Know location and function of all controls.

Keep all shields and safety switches functional.

Before starting engine: disengage attachment drive and place travel control in neutral.

Remove objects from the terrain that could be thrown by the attachment.

Keep people and pets a safe distance away.

Never carry passengers.

Always look behind tractor before backing.

On any incline that the tractor can be safely operated use low range/gear.

Front end tip over can occur when operating on loading ramps or hills, back up ramps or hills.

Drive forward going down ramps or hills.

To park tractor: place travel control in neutral, set parking brake, disengage attachment drive, shut engine off and remove key.

Park tractor before servicing or making adjustments to tractor or attachments.

Failure to observe these precautions could result in injury.



CAUTION: Disengage power to mower before backing up. Do not mow in reverse unless absolutely necessary and then only after observation of the entire area behind the mower.



CAUTION: Do not wear loose clothing which may catch in moving parts.

1. Use only clean fuel, oil, container and funnel.
2. Apply oil or grease to all specified points shown in the Lubrication Chart.
3. Check engine oil level and add oil as required.
4. Check engine air cleaner and air intake screen for dirt or obstructions. Clean as required.

CAUTION: Handle gasoline with care - it is highly flammable.



- a. Use approved gasoline container.
- b. Never remove the fuel cap off, or add gasoline to, a running or hot engine or an engine that has not been allowed to cool for several minutes after running. Never fill the tank indoors and always clean up spilled gasoline.
- c. Open doors if the engine is run in the garage - exhaust fumes are dangerous. Do not run the engine indoors.



CAUTION: Do not smoke when working near fuel.

5. Fill fuel tank with clean fuel. Clean area around the fuel cap before you remove the cap. The requirements are listed in the Fuel Specifications Section of this manual.
6. Check ventilation hole in fuel tank cap and clean as required.
7. Check all operating controls and instruments for correct function before using the tractor.

STARTING PROCEDURES (Operating the Tractor)

CONTROL POSITION



CAUTION: Only operate controls from the operator's seat to prevent injury.



CAUTION: Do not wear loose clothing which may catch in moving parts.

NOTE: This tractor is equipped with a switch under the seat. The tractor engine will stop if you get off the seat when the attachment drive in the "ON" position.

1. Put the travel control lever in the "NEUTRAL" position.
2. Put the attachment drive in "OFF" position.



CAUTION: Disengage all attachment clutches and shift into neutral before attempting to start the engine (motor).

3. Push choke lever forward to close the choke.

Choke setting will change according to air temperature, engine temperature, and grade of fuel.

4. Push throttle lever forward approximately 1/3 of the way between "SLOW" and "FAST" positions.



CAUTION: Do not allow children to operate the machine. Do not allow adults to operate it without proper instruction.



CAUTION: Do not carry passengers. Do not mow when children and others are around.

STARTING

1. Turn ignition key to the right and hold in "START" position. Release key to "RUN" position when the engine starts running.

NOTE: Release key immediately when engine starts. If you hold key in the "START" position after engine is running damage can occur. Release key after 30 seconds if the engine does not start running. Wait 3 minutes before you try again.

2. Pull choke lever rearward slowly after engine starts running.

WARMING

1. Permit engine to warm before applying a load.

NOTE: The hydraulic system must be warm before you use the tractor when air temperatures are less than 32 F (0°C). Use the following procedure:

- a. Set throttle 1/3 of the way between "SLOW" and "FAST" position.
 - b. Select "NEUTRAL" position of the dual range transaxle.
 - c. Move travel control lever to the full "FORWARD" position.
 - d. Run for several minutes before operating the tractor. A noise can occur when the hydraulic system is cold.
2. Set throttle lever approximately 3/4 of the way between "SLOW" and "FAST" positions for normal operation.

Decrease engine speed during most operations for maximum fuel efficiency.

Do not permit engine lugging. Lugging will cause more than normal heat and damage to the engine.

IMPORTANT: DO NOT TRY TO START THE TRACTOR BY PUSHING OR TOWING. SERIOUS DAMAGE WILL HAPPEN TO THE DRIVE SYSTEM.



Separate Operator's Manuals are provided with the attachments purchased with your tractor. Refer to the appropriate attachment operators manual for specific operating instructions and safety messages that apply to the attachment.



Remember, a careful operator is always the best insurance against an accident. Give complete and undivided attention to the job at hand.

STOPPING PROCEDURE (Operating the Tractor)

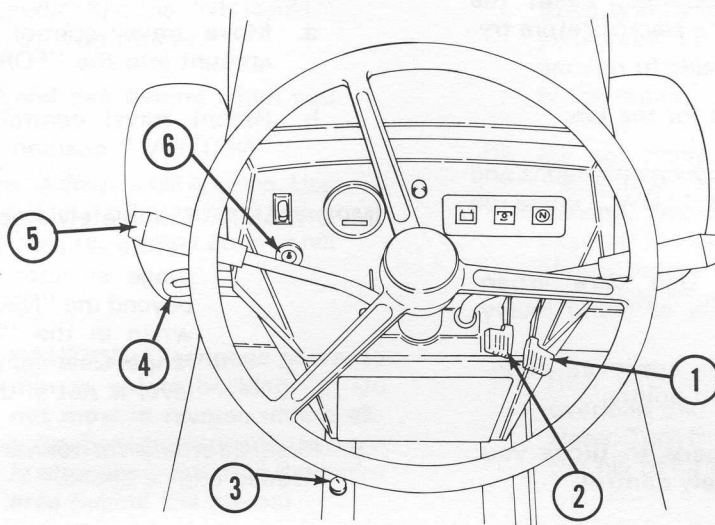


FIGURE 7

1. Throttle
2. Choke
3. Parking brake lock
4. Brake pedal
5. Travel control lever
6. Start switch and key



CAUTION: Know the controls and how to stop quickly. **READ THIS OPERATOR'S MANUAL** and instructions furnished with attachments.

1. Slowly move travel control lever (5) to "NEUTRAL" position. Allow room to gradually come to a stop.
2. Completely stop tractor. Actuate brake pedal (4) if necessary.
3. Engage parking brake lock (3).
4. Pull throttle lever (1) rearward to "SLOW" position.
5. Permit engine to cool. Run engine at idle for several minutes if the work load was severe.



CAUTION: Set parking brake, shut off engine, remove key, and wait until all engine and attachment motion has stopped before dismounting from the operator's seat.

6. Turn key (6) to the left to "OFF" position.

NOTE: Muffler after bang can be prevented by closing the choke at the same time the key switch is turned to the "OFF" position. This action prevents the entry of air into the muffler as the engine comes to a stop and therefore prevents combustion within the muffler.

Do not touch muffler as it is extremely "HOT" at this time.

7. Remove the ignition key (6).



CAUTION: Take all possible precautions when leaving the vehicle unattended, such as disengaging the power take-off, lowering the attachment(s), shifting into neutral, setting the parking brake, stopping the engine, and removing the key.



CAUTION: Disengage power to attachment(s) when transporting or not in use.

OPERATING PROCEDURE (Operating the Tractor)

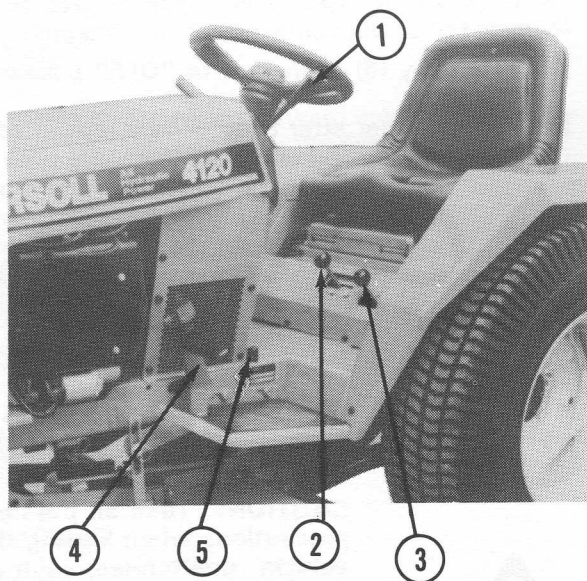
Operate the tractor for the first time on a flat area clear of obstructions and persons. Learn the operating characteristics of your tractor before trying the first job.

1. Select correct gear range for the job.
2. "LOW" range is for all working operations and hillside use. Always use "LOW" range on hillsides or inclines.



CAUTION: Use care when pulling loads or using heavy equipment.

- a. Use only approved draw-bar hitch points.
- b. Limit loads to those you can safely control.
- c. Do not turn sharply. Use care when backing.
- d. Use counterweights or wheel weights when suggested in this operator's manual.



1. Travel control lever
2. Attachment control lever
3. Range selector lever
4. Brake pedal
5. Brake lock

FIGURE 8

3. "HIGH" range is for transport only, "HIGH" range must not be used for hillside operation.
4. If range selector lever (3) does not move easily, rotate the gears.

To rotate the gears:

- a. Move travel control lever (1) a small amount into the "FORWARD" position.
- b. Return travel control lever (1) to the "NEUTRAL" position.

IMPORTANT: Completely stop the tractor motion before changing the range. The range selector lever (3) must be beyond the "NEUTRAL" locating pin when in the "LOW" or "HIGH" range. Gear damage will occur if the lever is not in the correct position.

5. Push throttle lever forward until you get the needed engine speed.

Decrease engine speed during operation for maximum fuel efficiency. Do not cause engine lugging. Lugging will cause more than normal heat and damage to the engine.

6. TO USE FORWARD TRAVEL:

- a. Depress travel control lever (1) slightly and move it slowly and in small amounts from the "NEUTRAL" position toward full "FORWARD" position.
- b. When you reach the correct speed, release lever.
- c. Return travel control lever (1) to the "NEUTRAL" position to stop.
- d. Actuate brake pedal (4) if the "NEUTRAL" position does not stop the tractor.

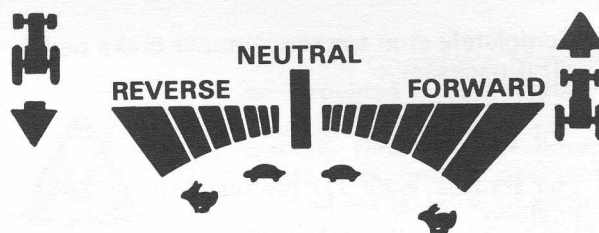


FIGURE 9 - Travel Control

7. TO USE REVERSE TRAVEL:

- a. Depress travel control lever (1) slightly and move it slowly and in small amounts from the "NEUTRAL" position toward "REVERSE" position. Do not travel at full speed in reverse.
- b. Always keep your hand on the travel control lever (1) when moving in reverse.

- c. Return travel control lever (1) to the "NEUTRAL" position to stop.
- d. Actuate brake pedal (4) if the "NEUTRAL" position does not stop tractor.

Always be careful and look behind when you drive in reverse.

Do not travel in reverse down a hill or ramp. Use reverse travel to move up a hill or ramp. Always use forward travel when you come down a hill or ramp.



CAUTION: Disengage power to mower before backing up. Do not mow in reverse unless absolutely necessary and then only after observation of the entire area behind the mower.



CAUTION: Do not stop or start suddenly when going uphill or downhill. Mow down the face of steep slopes; never across or up the face. (This ANSI rule modified)



WARNING: Improper operation of your tractor on hillsides and slopes can be dangerous. Avoid improper operation! Read and follow the instructions given in the section titled "Hillside Operation" in this manual before operating your tractor.

8. Travel control lever (1) controls both speed and power available to rear wheels of the tractor.

During operation, load on the tractor will change. Adjust position of the travel control lever (1) as required.

9. TO ACTUATE BRAKES - Hillside Operation

Hold travel control lever (1) in the needed position, then push on brake pedal (4).

When you actuate brake (4), the travel control lever (1) will return to "NEUTRAL" position unless you hold lever (1) in the needed position.

Travel control lever (1) can be moved (but the lever must be held) while brake (4) is actuated.

Keep brakes in good repair and correctly adjusted at all times. See preventive maintenance section of this manual or see your dealer for brake repair.

10. Do not move travel control lever (1) from "REVERSE" to "FORWARD" while tractor is moving. This can cause the front of tractor to raise off the ground. Stop reverse travel completely before you start forward travel. This is especially important while on a hill or slope.
11. Rear wheels can slip or spin and an engine overload can occur while you go up a small slope. Turn front wheels toward the bottom of the hill before loss of all traction or power.

Do not permit tractor to move rearward down any slope or hillside.

- a. A return to forward travel will cause too much torque at the rear wheels. Front wheels can raise off the ground and cause severe injury to the operator.
- b. Turning front wheels can cause too much thrust to the side. The tractor can roll over and cause severe injury to operator.

Always use reverse travel to move up a hill or slope. Always use forward travel to move down a hill or slope.

12. Decrease travel speed before you turn the tractor.
 - a. Move travel control lever (1) nearer to the "NEUTRAL" position.
 - b. Decrease throttle setting.
 - c. Select "LOW" range of dual range transaxle.



CAUTION: Reduce speed and exercise extreme caution on slopes and in sharp turns to prevent tipping or loss of control. Be especially cautious when changing direction on slopes.

13. Engage attachment drive (2) before you put a load on the attachment.

IMPORTANT: To prevent damage, do not engage the attachment drive (2) with engine throttle in "FAST" position.

14. Actuate the lawnmower over an area of thin grass or an area that has been cut.



CAUTION: When using any attachments, never direct discharge of material toward bystanders nor allow anyone near the vehicle while in operation.

15. Actuate tiller while in the transport position. Then lower tiller into the soil to the needed depth.
16. Actuate the snowcaster before you make contact with snow.
17. Read your attachment manual for complete attachment operation information.

PREVENTIVE MAINTENANCE



FIGURE 10

As owner of this new tractor you have purchased a machine manufactured to high standards.

Preventive maintenance is important to you.

Preventive maintenance is the most efficient way to keep your tractor in top operating condition.

The first part of this manual covers instructions needed for daily operation. The following instructions will help you in maintenance and adjustment of your tractor.

MAINTENANCE CHART

MAINTENANCE PROCEDURE	PAGE	FREQUENCY	25	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500
		DAILY																				
Check and clean obstructions from oil cooler	15	Daily																				
Grease front spindles, axle pivot pin, front wheel bearings, steering gear	14	* 25 Hours																				
Oil travel lever		** 50 Hours																				
Oil brake linkage	14	** 50 Hours																				
Check battery electrolyte level. Add if necessary	20	** 50 Hours																				
Check two speed transaxle oil	16	** 50 Hours																				
Change two speed transaxle oil	16	200 Hours																				
Change hydraulic system oil & filter	15	200 Hours																				
Replace fuel filter	19	500 Hours																				

* or weekly, whichever is first
 ** or monthly, whichever is first

NOTE: For engine maintenance see your engine Operator's Manual

CHASSIS LUBRICATION

Apply grease after every 25 HOURS of operation to the:

- a. front wheel spindles

NOTE: Lift front of tractor to permit grease to flow from top and bottom of spindle.

- b. front wheel bearings

NOTE: Remove dust caps from front wheel hubs before greasing front wheel bearings. The trapped air behind the dust caps can prevent the full lubrication of the bearings.

- c. axle pivot pin

- d. lift shaft

Use number 1 multi-purpose grease (Lithium Base) for all lubrication fittings. Use as many strokes as required, until you see grease pushing out of assembly.

Always wipe dirt from fitting before applying the grease gun.

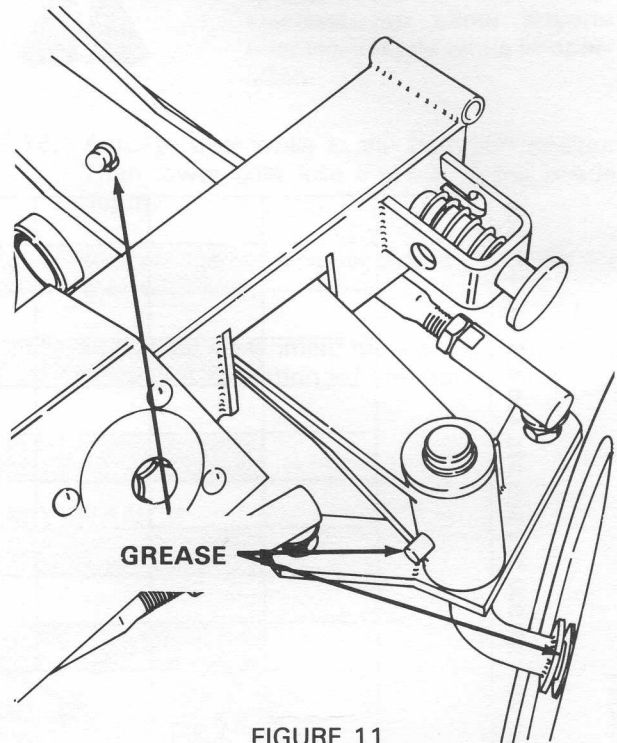


FIGURE 11

Front Wheel Spindle, Bearings and Axle Pivot Pin

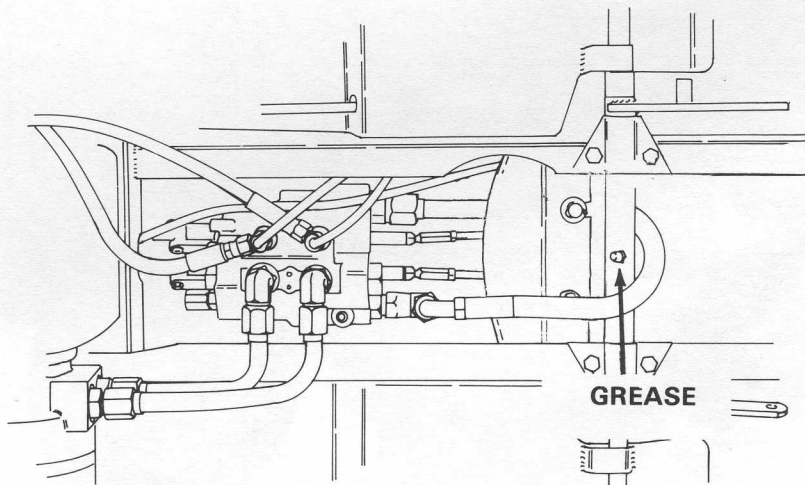


FIGURE 12 Lift Shaft

BRAKE LINKAGE LUBRICATION

Every 50 hours or yearly, apply several drops of oil to each pivot point on the brake linkage. Make sure no oil gets on the brake lining or the brake drum.

HYDRAULIC OIL

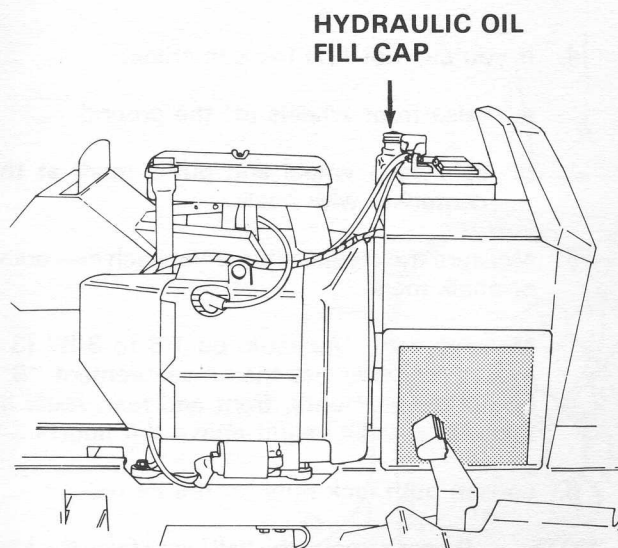


FIGURE 13

Change hydraulic oil and filter after each 200 HOURS of use. Replace hydraulic oil seasonally according to the chart below.

NOTE: Hydraulic oil filter is located under engine.

AIR TEMPERATURE	OIL VISCOSITY
Above 32°F (0°C)	SAE 20W40* OR SAE 15W-40
Below 32°F (0°C)	SAE 5W20*

*Use API Service Classification SF or CC.

Ingersoll Custom Blend motor oil is recommended. This oil is a special blend for hydraulic applications.

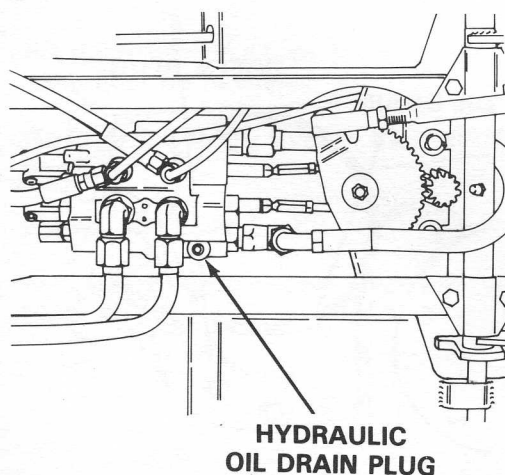


FIGURE 14

The oil level must be kept 5" to 6" (120 mm to 150 mm) down from the top of the filler neck.

Use the following procedure to drain the hydraulic system:

1. Remove spark plug(s) from the engine.
2. Ground spark plug wire(s) to the engine block.
3. Place an oil drain pan with a capacity of two gallons under the travel control valve.
4. Remove 1/4" hex socket plug.
5. Crank engine to "pump" oil out the drain hole.
6. Install drain plug, spark plug(s) and wire(s)
7. Remove hydraulic filter and install new hydraulic filter.
8. Fill reservoir to 5" to 6" (120 mm to 150 mm) from the top of the filler neck.
9. Run engine and (a) drive forward and reverse a short distance and (b) raise and lower the hydraulic lift two times. Check oil level again.

IMPORTANT: Make sure oil reservoir is filled to the proper level. Overfilling will cause oil leakage. Underfilling will cause cavitation and intermittent drive.

NOTE: Dispose of used oil in designated containers and as indicated in the area that you live.

HYDRAULIC OIL COOLER

The hydraulic oil cooler must be kept clean and unobstructed at all times.

Check hydraulic oil cooler DAILY before operating your tractor and frequently during use.

If debris builds up on cooler during tractor operation, STOP tractor engine immediately and clean the debris off.

An obstructed hydraulic oil cooler can cause the tractor hydraulic system and engine to overheat and fail prematurely.

The oil cooler is located under the hood and in front of engine.

TOE-IN ADJUSTMENT

1. Put tractor on a hard and level surface like a concrete floor.
2. Make sure front tires have equal air pressure.
3. Find centerline of the front tires. See the figure below.

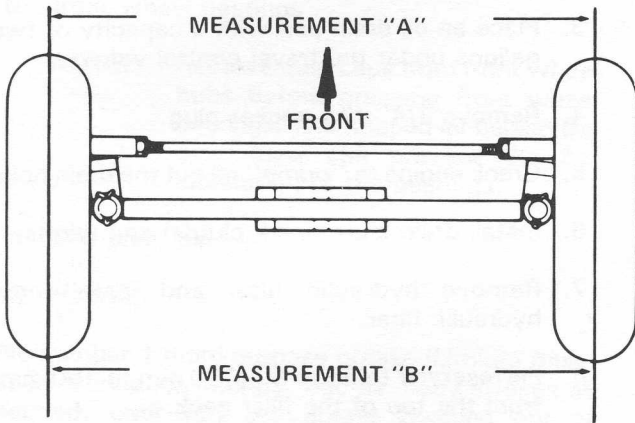


FIGURE 15

4. If you can not find the centerline:
 - a. raise front wheels off the ground
 - b. spin each wheel and put a mark at the centerline with chalk.
5. Measure the distance between each centerline or chalk mark.

Measurement "A" must be $\frac{1}{8}$ to $\frac{3}{8}$ " (3.2 mm to 9.5 mm) less than measurement "B". Both measurements, front and rear, must be taken at spindle height above the floor.

6. Loosen both lock nuts on the tie rod.

NOTE: Do not remove the ball joints from the king pins. Turn the tie rod to change the toe-in.

7. Turn ball joints off of tie rod to decrease the toe-in.
8. Turn ball joints onto tie rod to increase the toe-in.

TRANSAXLE

Check transmission oil ever 50 HOURS or yearly. Which ever is first. Add as required.

Change oil in the transmission after each 200 HOURS of operation.

Oil drain plug is located on the right hand side of transaxle housing.

Oil level check plug is located on the right hand side of transaxle housing just above the drain plug.

Oil fill plug is located on rear of the transaxle housing.

AIR TEMPERATURE

All Temperatures

OIL TYPE & VISCOSITY

API Service Class SE or CC

SAE 20W40 or
SAE 80 EP Gear Lube

Capacity One Pint (.5 l).

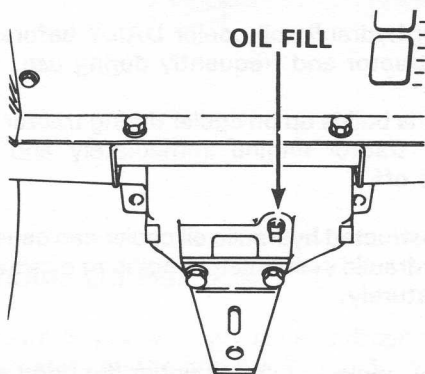


FIGURE 16

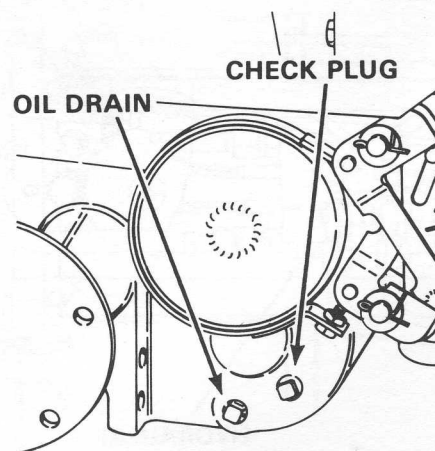
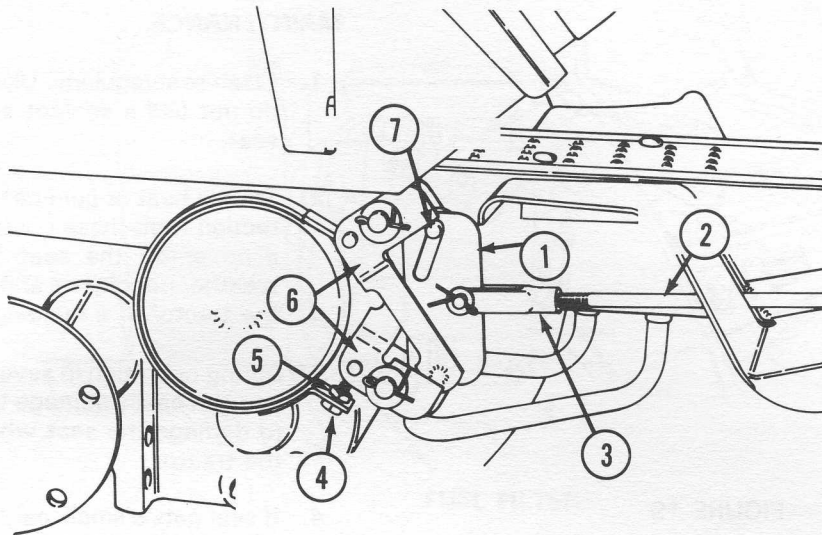


FIGURE 17

BRAKE



1. Guide
2. Brake Pedal Linkage Rod
3. Brake Rod Adjusting Clevis
4. Brake Band Adjustment Bolt
5. Lock Nut
6. Brake Arm
7. Dowel Pins

FIGURE 18

ADJUSTMENT

The brake is correctly adjusted when:

- a. a push of the pedal brings the tractor to a quick stop.
- b. the travel control lever returns automatically to the "NEUTRAL" position from both "FORWARD" and "REVERSE".

Adjust the brakes if needed. Use the procedure below:

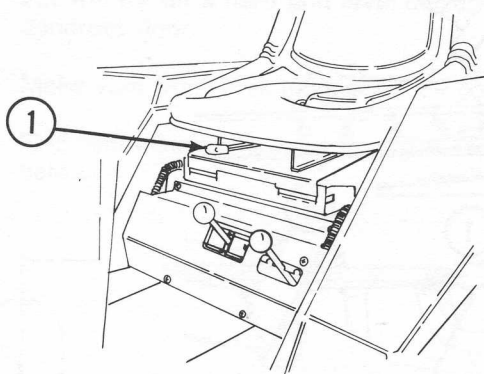
1. Put the tractor on a hard, level surface, a concrete floor for example.
2. Put the dual range lever in the "NEUTRAL" position.
3. Release the brakes.
4. Remove the cotter pin, clevis pin and clevis (3) from the guide (1).

5. Loosen the lock nut (5).
6. Push the guide (1) rearward. Make contact between the dowel pins (7) and arms (6).
7. Tighten the adjusting bolt (4) one half turn at a time. Push the tractor with medium force after each adjustment.
8. When the tractor can not be pushed with medium force, loosen the adjusting bolt (4) one turn. Make sure the brake drum moves freely.

NOTE: Do not permit the adjusting bolt (4) to become too tight. This will cause distortion of the brake band.

9. Tighten the lock nut (5).
10. Hold the guide (1) rearward.
11. Turn the clevis (3). Align the hole in the clevis (3) with the rear of the slot in the guide (1). Install the clevis (3), clevis pin and a new cotter pin.

SEAT



1. Seat Latch

FIGURE 19

ADJUSTMENT

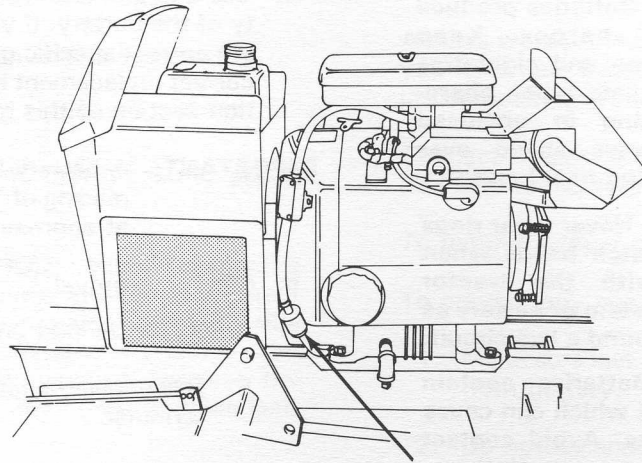
1. Disengage seat latch.
2. Move seat either forward or rearward to get the correct position.
3. Engage seat latch.

MAINTENANCE

1. Clean seat regularly. Use a special vinyl cleaner. do not use a solvent as this will damage the seat.
2. Severe heat or cold can damage the seat. Protection from these conditions is important. Put a cover on the seat for protection against weather conditions and water. It is best to put the tractor in a building when not in use.
3. During operation in severe weather conditions, you can easily damage the seat. Be careful not to damage the seat when you get on and off the tractor.
4. If seat gets a small tear, apply a vinyl repair tape over the damaged area. Black vinyl repair tape can be purchased locally.

NOTE: This tractor is equipped with a safety switch under the seat. Should operator attempt to leave seat when attachment is running, the engine will shut off. Proper position and condition of wires and switch under seat must be maintained so engine will shut off when operator leaves the seat. Operator must be in seat to start the engine. Some attachments may require an "operator's presence control" to operate engine when operator is not in the seat. Refer to attachment instructions for use of "Operator Presence Control".

FUEL FILTER



FUEL FILTER

FIGURE 20

Replace the fuel filter after each 500 HOURS of use or when contamination or restriction is evident.

Use the following procedure to replace fuel filter:

1. If possible, plan to replace fuel filter when fuel tank is as near empty as possible.
2. Place a piece of air tight plastic wrap under fuel tank cap. This will block the vent in the cap and retard leakage of remaining gasoline when filter is disconnected.

NOTE: Be sure to remove plastic wrap after fuel filter is replaced.

3. Place an approved container and funnel under filter to catch spilled fuel.



CAUTION: Do not smoke when working near fuel.

4. Make sure that there is no source of ignition (such as flame, spark or cigarette) near by. Remove the fuel line from the engine side of the filter. Hold filter as high as possible to minimize leakage.
5. Remove the filter from the fuel line.
6. Install new filter insuring that fuel flow direction arrow points toward the engine.
7. Insure that clamps are secure.
8. Put approximately one quart of fuel in the tank and check for leaks. Repair any leaks before filling fuel tank full.

STORAGE BATTERY



DANGER: Batteries produce explosive charges. Keep sparks, flame and cigarettes away. Ventilate when charging or using in enclosed space. Always shield eyes when working near batteries.



CAUTION: Never wear rings or metal watch bands when working with the tractor electrical system or battery as you may ground a live circuit.



POISON: Batteries contain sulfuric acid which can cause severe burns. Avoid contact with skin, eyes or clothing. Antidote: **EXTERNAL**, flush with water; **INTERNAL**, drink large quantities of water or milk. Follow with milk of magnesia, beaten egg or vegetable oil. Call physician immediately; **EYES**, flush with water for 15 minutes and get prompt medical attention. Keep out of reach of children.



CAUTION: When working around storage batteries, remember that all of the exposed metal parts are "live". Never lay a metal object across the terminals as a spark or short circuit may result. Sparks, lighted matches and exposed flames must be kept away from the battery due to the presence of explosive gas in the battery. The liquid in the batteries is acid. Use care not to spill it on hands or clothing.

BATTERY MAINTENANCE

1. Add distilled water, as required, to keep the water level above the cell separators. Check at 50 HOUR intervals of operation or every month. Normal water consumption is 1 ounce (30 ml) every 25 HOURS of operation. More than normal water consumption indicates:
 - a. a battery with a leak
 - b. a charging system that is charging too much
2. Make sure the battery is fastened in position. The battery cables must not contact the battery surface except at the connection.
3. Keep the battery in a clean and dry condition.

4. Use a hydrometer to check the specific gravity of the battery. If your battery will not keep the correct specific gravity, replace it. For the correct replacement battery see the specification section of this manual.

IMPORTANT: A battery having a specific gravity reading of 1.175 will become frozen at approximately 0° F (— 18° C).

5. Battery Removal

- a. Apply parking brake and raise hood.
- b. Disconnect negative terminal than positive terminal.
- c. Disconnect battery hold down.
- d. Remove baffle in front of battery.
- e. Use reverse procedure to replace with new battery.

ADDING WATER

Always use mineral free or distilled water in your battery. When the temperature is 32°F (0°C) or less, immediately charge the battery after adding water. This will mix the water and electrolyte. If the water is not mixed, it will stay on top and become frozen.

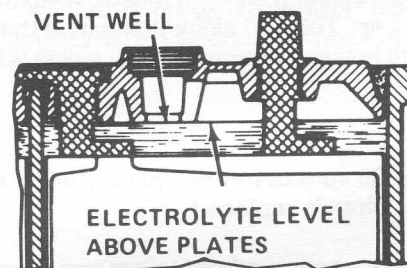


FIGURE 21

Make a monthly check of the electrolyte level.

1. Remove the battery caps.
2. Visually check each cell.
3. Add water if below or level with top of separators.

NOTE: Do not fill too much. Keep the electrolyte level below the base of the filler tubes.

BATTERY CAPS

Always keep the battery caps in place and tight. Make sure the holes in the caps are open. Ventilation must occur to prevent pressure in the cells.

CABLE TERMINALS AND BATTERY POSTS

Keep battery terminals clean and tight.

1. Remove all corrosion with a wire brush.
2. Wash with a neutral solution.
3. Apply a thin layer of light grease to prevent corrosion.



CAUTION: When removing a battery, always disconnect the (-) negative ground cable first. When installing the battery, always connect the (-) negative ground cable last.

IDLE BATTERY

When tractor is not used regularly, storage battery will slowly lose voltage. Charge battery at regular intervals to keep hydrometer reading at 1.250 or more.



WARNING: To jump start this machine, connect positive jumper cable to battery terminal on starter solenoid and connect negative jumper cable to good engine ground. Start engine only when seated in operator's seat. Stop engine before leaving machine. Disconnect jumper cables. Any other method could result in uncontrolled machine movement.

HOW TO USE JUMPER CABLES AND A BOOSTER BATTERY

Always wear protective goggles and clothing when you work near batteries. Prevent acid from coming in contact with your skin or clothing.

Connect jumper cables as shown below. Follow the numbers for correct sequence of installation.

To remove jumper cables, reverse the sequence.

To prevent any possible sparks near battery:

1. Make sure last connection is as far as possible from battery.
2. Do not let ends of cables make contact with each other.
3. If booster battery is on another machine, make sure machines do not make contact.

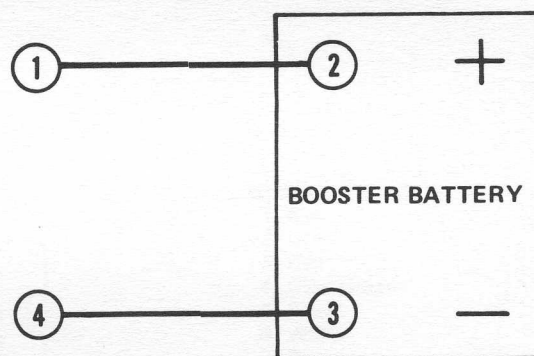


FIGURE 22

FUSE

The 30 amp fuse is located next to hydraulic oil reservoir. This fuse protects all circuits except starter motor.

Use following procedure to replace a fuse:

- a. TO REMOVE: Hold fuse holder while you pull up on the fuse.
- b. Inspect and clean contacts of the fuse holder (if required).
- c. TO INSTALL: Push firmly into fuse holder.

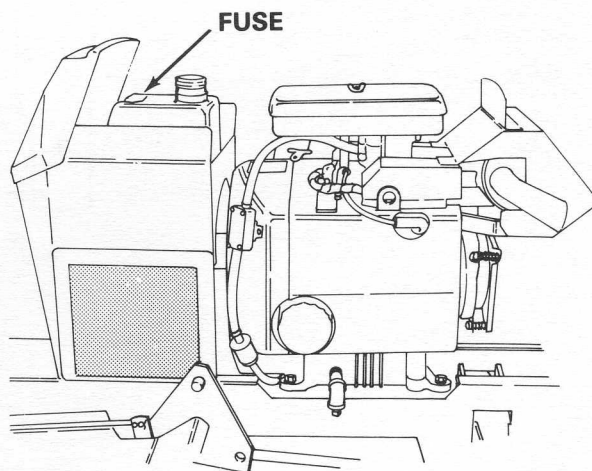


FIGURE 23

HEADLIGHTS

To replace the headlight bulb:

1. Remove two screws and retainers.
2. Remove headlight receptacle.
3. Push in and turn counterclockwise to remove bulb.
4. Push in and turn clockwise to install new bulb.
5. Install the receptacle. Put one gasket between lens and grille. Put other gasket in the groove between lens and receptacle.
6. Install retainers with mounting screws.

NOTE: The new bulb will not illuminate until the receptacle has a ground connection.

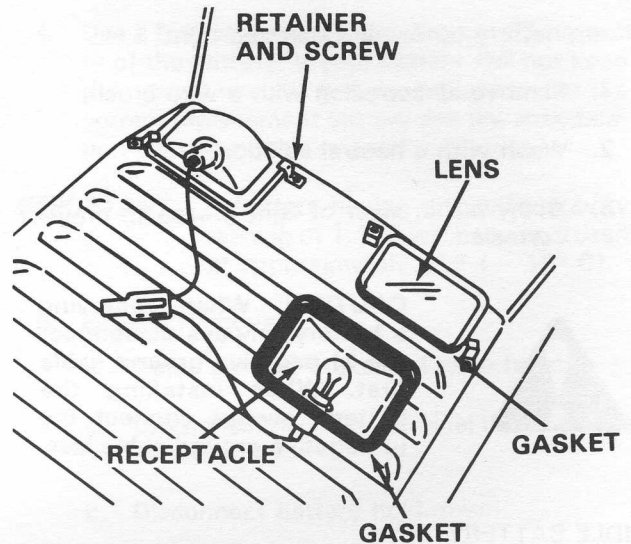
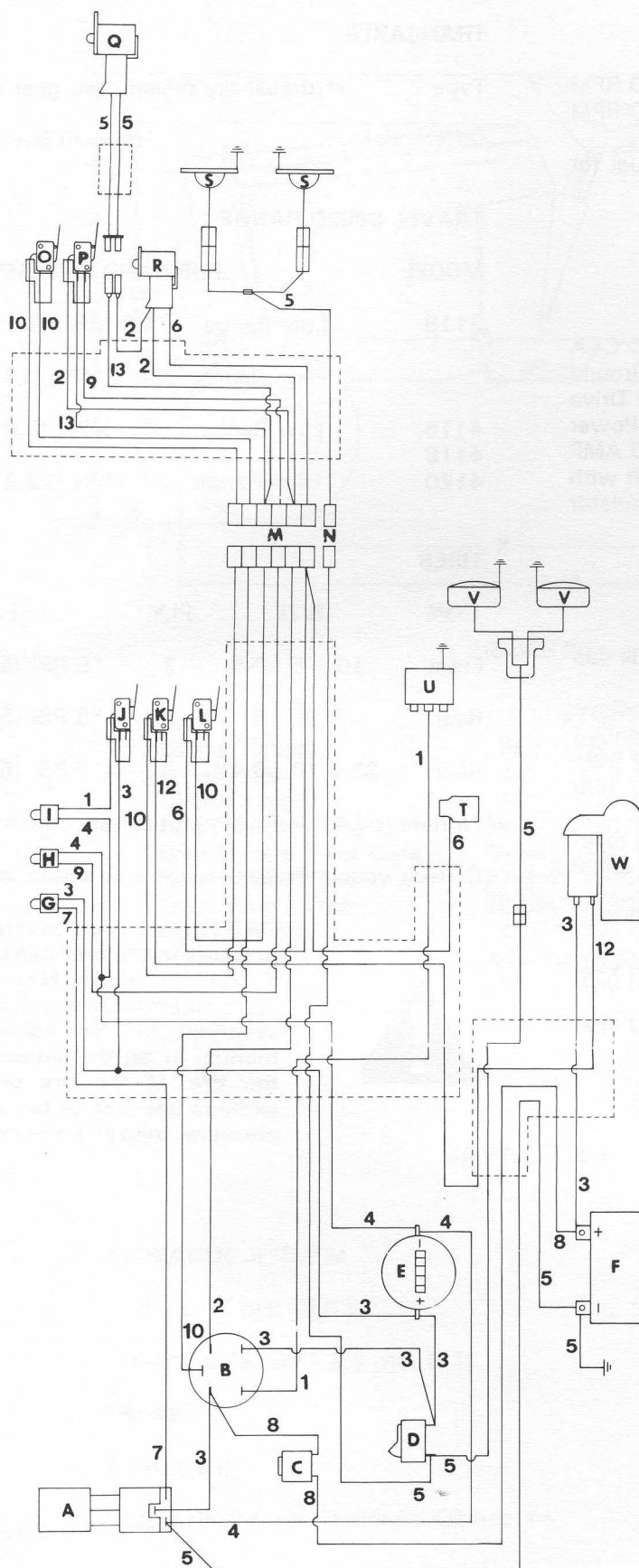


FIGURE 24

WIRING DIAGRAM



COMPONENT CODE

- A. Voltage Sensor
- B. Ignition Switch
- C. Fuse
- D. Light Switch
- E. Hour Meter
- F. Battery
- G. Battery Charging Light
- H. PTO Light
- I. Neutral Start Light
- J. Neutral Light Switch
- K. Neutral Start Switch
- L. Neutral Ignition Switch
- M. Multiple Connector
- N. Single Connector
- O. PTO- Neutral Start Switch
- P. PTO-Ignition Interlock Switch
- Q. Operator Presence Switch
- R. Seat Safety Switch (Special Attachment Only)
- S. Tail Lights
- T. Coil
- U. Rectifier
- V. Headlights
- W. Starter

WIRE COLOR CODE

- 1. Pink
- 2. Grey
- 3. Red
- 4. Dark Green
- 5. Black
- 6. White
- 7. Brown
- 8. Orange
- 9. Lite Green
- 10. Yellow
- 11. Red w/white
- 12. Blue
- 13. Tan

SPECIFICATIONS

ENGINE

Maximum No Load Speed 3600 RPM
Low Idle Speed 1200 RPM

NOTE: See your engine Operator's Manual for engine specifications.

ELECTRICAL SYSTEM

Battery 300 CCA
12 Volt Negative Ground
Starter 12 Volt Gear Drive
Headlights 12 Volt 32 Candle Power
Fuse 30 AMP
Flywheel Alternator 12 Volt 20 AMP with
Rectifier Regulator

HYDRAULIC SYSTEM

Reservoir Atmospheric with vented fill cap
Pump Two Section, Gear type positive displacement
Large section 9.5 GPM @ 3000 RPM
Small section 2 GPM @ 3000 RPM
Valve Two spool, Open center with relief and anti-cavitation spool
Travel Circuit Relief Valve 2800 PSI (19600 kPa)
Lift Circuit Relief Valve 575 PSI (3970 kPa)
Power Steering (Hyd) 720 PSI (5040 kPa)

TRANSAXLE

Type Hydraulically driven, two gear ranges
Differential Standard Bevel Gear

TRAVEL SPEED RANGE

MODEL	FORWARD AND REVERSE
3118	Low Range . . . 4.5 MPH (7.1 km/H) High Range . . . 8.1 MPH (13 km/H)
4116, 4118 4120	Low Range . . . 4.2 MPH (6.8 km/H) High Range . . . 7.6 MPH (12.2 km/H)

TIRES

TYPE	SIZE	PLY	PRESSURE
Front	16 x 6.50-8	2	* 8 PSI (55 kPa)
Rear	8.00-16	2	* 8 PSI (55 kPa)
Rear	23 x 10.50-12	2	* 8 PSI (55 kPa)

*Inflate to 14 PSI (95 kPa) for certain attachments.

Consult your attachment Operator's Manual



CAUTION: Too much air pressure in the tires can cause tire or rim failure. Never put more air pressure in a tire than specified in the operator's manual or on the sidewall of the tire. If the tire or rim explode because of too much pressure, injury can result.

OVERALL MEASUREMENTS

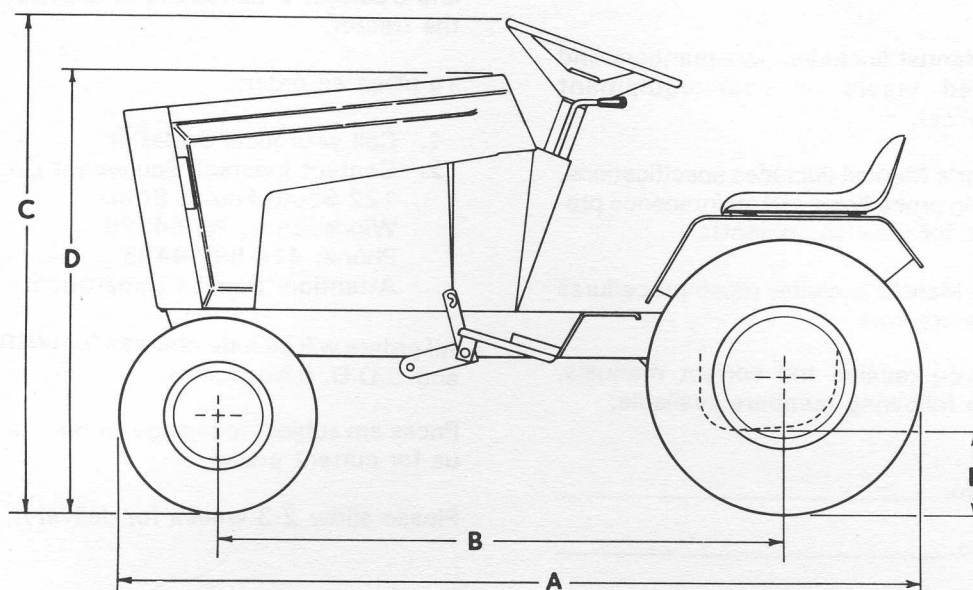


FIGURE 25

	3118	4116, 4118, 4120
A Overall Length	65" (1650 mm)	72" (1830 mm)
B Wheel Base	46" (1170 mm)	48" (1220 mm)
C Overall Height	40" (1020 mm)	43-1/2" (1110 mm)
D Hood Height - Rear	35-1/2" (900 mm)	38-1/2" (980 mm)
Clearance at Gear Case	7-1/8" (180 mm)	11" (280 mm)
Rear Wheel Tread	27-3/4" (700 mm)	31-1/2" (800 mm)
Front Wheel Tread	28-3/4" (730 mm)	33-1/2" (850 mm)
Overall Width	41" (1050 mm)	41" (1050 mm)
Tractor Weight	650 lbs (290 kg.)	725 lbs (330 kg.)
*Turning Radius	53" (1360 mm)	47" (1200 mm)
*Measured to outside of rear tire		

CAPACITIES

HYDRAULIC SYSTEM

*REFILL - 6 qts. (5.6 l)

*TOTAL SYSTEM - 6.5 qts. (6 l)

TRANSAXLE

1 pint (.5 l)

*Approximate, see Hydraulic Oil Section

ENGINE CRANKCASE

1.5 qts. (1.4 l) without filter

1.8 qts. (1.7 l) with filter

FUEL TANK

3 gallons (11.4 l)

MANUAL ORDERING PROCEDURE

These manual are available from the Ingersoll Equipment Co., Inc.

- a. Parts Manual (includes part numbers and exploded views of your equipment assemblies),
- b. Operator's Manual (includes specifications, operating procedures and maintenance procedures for your equipment).
- c. Service Manual (includes repair procedures for your tractor).

To make sure you receive the correct manuals, always have the following numbers available:

Tractor Model No. _____

Tractor Serial No. _____

Attachment Model No. _____

Attachment Serial No. _____

Each attachment usually has a separate parts manual and Operator's Manual. They are not included with the tractor.

To place an order:

1. Call your local dealer or
2. Contact Ingersoll Equipment Co., Inc.
122 South Fourth Street
Winneconne, WI 54986
Phone: 414-582-4455
Attention: Service Department

All orders will include charges for postage, handling and C.O.D. if applicable.

Prices are subject to change without notice. Contact us for current prices.

Please allow 2-3 weeks for delivery.

Printed in U.S.A.