4200/4300/4400
4420/4500/4600
Hustler Tractor
Owner's Manual

HUSTLER®

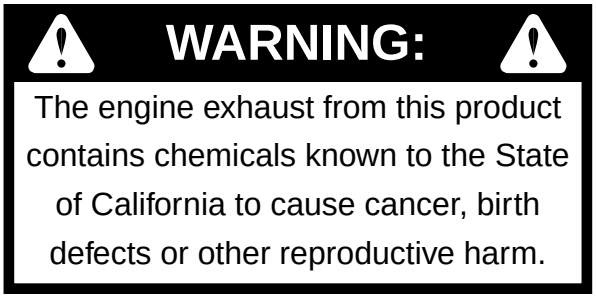
Hustler Turf Equipment

P.O. Box 7000

Hesston, Kansas

67062-2097

728444 Rev. 11/02


WARNING:
The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

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GENERAL INFORMATION

This manual applies to the following equipment:

4200 Hustler tractor, number 924621
4300 Hustler tractor, number 924647
4400 Hustler tractor, number 924639
4500 Hustler tractor, number 924654
4200 Hustler tractor, BTO, number 924704
4300 Hustler tractor, BTO, number 924712
4400 Hustler tractor, BTO, number 924720
4420 Hustler tractor, BTO, number 925024
4500 Hustler tractor, BTO, number 924738
4600 Hustler tractor, BTO, number 925008

To the new owner

The purpose of this manual is to assist owners and operators in maintaining and operating the Hustler tractor. Please read it carefully; information and instructions furnished can help you achieve years of dependable performance.

This model meets ANSI B71.4 safety specifications for commercial turf care equipment.

A separate Engine Manual is included with your owner's packet which contains additional engine information that will not be repeated in this manual. You are urged to read it before attempting any operation or repair of the engine.

The Quick Reference Decal located on your tractor is designed to give the operator brief information needed in the daily operation of the machine. This decal is not intended to be used in place of this manual but instead is to be used as an extension of this manual. This decal should be kept legible at all times and replaced if it becomes damaged. **It is the owner's responsibility to make certain that the operator reads and understands this manual and the Quick Reference Decal before operating this machine.**

Using this manual

General operation, adjustment and maintenance guidance is outlined for both the experienced and novice Hustler user. Operating conditions vary considerably and cannot all be addressed individually. Through experience, however, operators should find no difficulty in developing good operating skills suitable to most conditions.

Directions used in this manual, for example RIGHT or LEFT, refer to directions when seated on tractor facing forward, unless otherwise stated.

Photographs and illustrations used were current at the time of printing, but subsequent production changes may cause your machine to vary slightly in detail. Hustler Turf Equipment reserves the right to redesign and change the machine as deemed necessary, without notification. If a change has been made to your machine which is not reflected in this owner's manual, or the parts manual, see your Hustler dealer for current information and parts.

Warranty registration

The Delivery and Warranty Registration card must be completed and signed to validate your warranty protection. As the new equipment owner, you are expected to see that the card is completed and forwarded to Hustler Turf Equipment at time of delivery.

Be sure to register the tractor plus each attachment that displays a model and serial identification number plate; i.e. mower decks, snow blower, front blade, etc.

IMPORTANT: Any unauthorized modification, alteration, or use of non-approved attachments voids the warranty and releases Hustler Turf Equipment from any liability arising from subsequent use of this equipment.

Model and serial number

Tractor model and serial numbers are found on the serial identification plate, located on the panel directly below and to the right of the operator's seat.

These numbers are required on the Warranty Registration card. They will also assure you of the correct service parts when replacement becomes necessary.

Parts and service

Use original Hustler equipment replacement parts only. These parts are available through your local Hustler equipment dealer. To obtain prompt, efficient service, always provide the following information when ordering parts:

1. Correct part description and number, as given in the parts manual supplied with your owner's packet.
2. Correct model number.
3. Correct serial number.

All warranty repair and service must be handled through an authorized Hustler dealer. Arrangements should be made through your local service center.

For location of nearest dealer, or should you need further assistance, contact:

Customer Service Department
Hustler Turf Equipment
P.O. Box 7000
Hesston, KS 67062
Telephone (316) 327-4911
FAX (316) 327-2117

Hustler Turf Equipment TWO YEAR LIMITED WARRANTY FOR TRACTORS AND POWER UNITS

WHAT IS COVERED BY THIS WARRANTY

Hustler Turf Equipment, makes the following warranty to the original purchaser only:

a. First Year: Hustler Turf Equipment Tractors and Power Units are warranted for **one (1) year or 1200 hours of use, whichever comes first, from date of delivery** on all materials and workmanship.

If the Purchaser discovers within this warranty period a defect in materials or workmanship:

- He must promptly notify Hustler Turf Equipment, or an authorized dealer, in writing of the defect. In no event shall such notification be received by Hustler Turf Equipment, or an authorized dealer later than thirteen (13) months from date of delivery.
- Within a reasonable time after such notification, Hustler Turf Equipment, will correct any defect in material or workmanship on the Hustler Turf Equipment, with either new or used replacement parts.
- Such repair, including parts and labor shall be at the expense of Hustler Turf Equipment, and,

b. Second Year: At the conclusion of the one year limited warranty, if the 1200 hour of use limit has not been reached, described in paragraph (a) above, there shall be an additional one year limited warranty on all defects in materials and workmanship in the covered drive train only (see Covered Drive Train Description). The second year of the warranty will be in effect until the 1200 hour of use limit is attained or the second year from the date of delivery is reached, whichever comes first.

If the Purchaser discovers within this warranty period a defect in materials or workmanship in the covered drive train:

- He must promptly notify Hustler Turf Equipment, or an authorized dealer, in writing of the defect. In no event shall such notification be received by Hustler Turf Equipment, or an authorized dealer later than 120 days from date of delivery.
- Within a reasonable time after such notification, Hustler Turf Equipment, will provide either new or used replacement parts and labor to correct any defect in material or workmanship in the covered drive train on the Hustler Turf Equipment.
- Such repair, including parts and labor shall be at the expense of Hustler Turf Equipment, and,

c. Rental Units (90 days): Within 90 days of date of delivery Hustler Turf Equipment, provides a limited warranty on all materials and workmanship for units used for rental purposes.

If the Purchaser discovers within this warranty period a defect in materials or workmanship:

- He must promptly notify Hustler Turf Equipment, or an authorized dealer, in writing of the defect. In no event shall such notification be received by Hustler Turf Equipment, or an authorized dealer later than 120 days from date of delivery.
- Within a reasonable time after such notification, Hustler Turf Equipment, will repair any defect in material or workmanship on the Hustler Turf Equipment, with either new or used replacement parts.
- Such repair, including parts and labor shall be at the expense of Hustler Turf Equipment, and,

COVERED DRIVE TRAIN DESCRIPTION

Covered drive train components include and are limited to hydraulic pumps and wheel motors. However, such definition shall not include fittings, hoses, or seals utilized on the Hustler Turf Equipment and shall be specifically excluded hereunder.

WHO MUST PERFORM THE WARRANTY SERVICE

All warranty service will be performed by dealers authorized by Hustler Turf Equipment. **Service calls and/or transportation expense** of the product to and from the authorized dealer, for warranty work, will be paid by the owner of the product. For warranty service you can contact an authorized dealer or write Hustler Turf Equipment, 200 South Ridge Road, Hesston, Kansas 67062, or call 1-620-327-4911.

WHAT IS NOT COVERED BY THIS WARRANTY

Hustler Turf Equipment, does not warranty:

- Some product, components or parts not manufactured by Hustler Turf Equipment
- Repairs made by unauthorized persons
- Damage caused by use of the Hustler Turf Equipment for purposes other than those for which it was designed
- Damages caused by disasters such as fire, flood, wind, and lightening
- Damages caused by neglect, abuse, abnormal use, improper or unreasonable use, accident, negligence or misuse
- Repairs or replacement resulting from the use of unauthorized parts, accessories or attachments
- Repairs or replacement as the result if any alterations or modifications, in the determination of Hustler Turf Equipment, which adversely affects the operation, performance or durability of the equipment.
- Hustler Turf Equipment which has the serial number removed or made illegible
- Depreciation or damage caused by normal wear, lack of reasonable and proper maintenance, failure to follow the product's owner's manual operating, maintenance and adjustment instructions or other

operational instructions provided by Hustler Turf Equipment.

- Normal maintenance parts and service including, but not limited to, filters, fuel, lubricants, tune-up parts, belts, brake or steering adjustments
- Repairs necessary due to improper fuel, contaminates in the fuel system, or failure to properly prepare the fuel system prior to any period of non-use over three months

DISCLAIMER OF WARRANTY

The foregoing warranties are in lieu of all other warranties, expressed or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. However, if the Hustler Turf Equipment is purchased as a consumer product, any implied warranty of merchantability or fitness for a particular purpose is limited to the duration of this limited warranty. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

LIMITATION OF REMEDIES

In no case shall Hustler Turf Equipment, be liable for any special, incidental, or consequential damages based upon breach of warranty, breach of contract, negligence, strict liability in tort, or any other legal theory.

Such damages include, but are not limited to:

- Loss of profits
- Loss of savings or revenue
- Loss of use of Hustler Turf Equipment or any associated equipment
- Cost of capital
- Cost of any substitute equipment, facilities, services or downtime
- The claims of third parties including customers, and injury to property

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

TIME LIMIT

Any action for breach of warranty must be commenced within twenty-five (25) months following delivery of the goods in a non-rental application. Any action for breach of warranty must be commenced within 120 days following delivery of the goods in a rental application.

NO OTHER WARRANTIES

Unless modified in writing, signed by both parties, and approved by the President of Hustler Turf Equipment, this agreement is understood to be the complete and exclusive agreement between the parties, superseding all prior agreements, oral or written, and all other communications between the parties relating to the subject matter of this agreement. No employee of Hustler Turf Equipment, or any other party is authorized to make any warranty in addition to those made in this agreement.

ALLOCATION OF RISKS

This agreement allocates the risks of product failure between Hustler Turf Equipment, and the purchaser. This allocation is recognized by both parties and is reflected in the price of the goods.

OWNER'S RESPONSIBILITY

You must maintain your Hustler Turf Equipment product following the maintenance procedures described in your owner's manual. Such routine maintenance, whether performed by a dealer or by you, is at your expense.

This machine like any other powered equipment is potentially dangerous unless properly operated. Any operator **must** be cautious and keep safety in mind at all times. Any operator, prior to using the Hustler Turf Equipment, should thoroughly familiarize himself with the owner's manual regarding operation and safety of the machine, as well as all safety warnings on the machine itself.

WARRANTY REGISTRATION

1. The Warranty registration form MUST be completed and signed by the authorized dealer and original purchaser.
2. For validation, the completed Warranty registration form MUST be forwarded to Hustler Turf Equipment, within ten (10) days following date of purchase.
3. The date of purchase constitutes delivery.

SAFETY PRECAUTIONS

This safety alert symbol is used to call attention to a message intended to provide a reasonable degree of **PERSONAL SAFETY** for operators and other persons during the normal operation and servicing of this equipment.

DANGER – denotes immediate hazards which will result in severe personal injury or death.

WARNING - denotes a hazard or unsafe practice which COULD result in severe personal injury or death.

All operators should read this manual, or be instructed about safe operating and maintenance procedures. This is the owner's responsibility.

Incorrect usage of this machine may result in severe injury. Personnel operating and maintaining it should be trained in the proper use and should read the manuals completely and thoroughly before attempting to set-up, operate, adjust, or service this machine.

The Quick Reference Decal located on your tractor is designed to give the operator brief information needed in the daily operation of the machine. This decal is not intended to be used in place of this manual but instead is to be used as an extension of this manual. This decal should be kept legible at all times and replaced if it becomes damaged. **It is the owner's responsibility to make certain that the operator reads and understands this manual and the Quick Reference Decal before operating this machine.** Local regulations may restrict the age of the operator.

The owner should also ensure that the operator/mechanic know that they are responsible for their own safety as well as the safety of other persons within the vicinity. **Remember,** the operator is responsible for accidents or hazards occuring to other people or their property.

- ▲ Always stop tractor engine, engage neutral lock levers, engage parking brake and remove ignition key, when leaving operator's seat.
- ▲ Always remain seated while operating machine.
- ▲ Always keep safety shields and covers in place, except for servicing.
- ▲ Always maintain a safe distance from people and pets when mowing.
- ▲ Always operate machine in daylight or with adequate working lights.
- ▲ Follow daily and weekly checklists, making sure hoses are tightly secured and bolts are tightened.
- ▲ Always observe traffic laws while driving machine from one location to another.
- ▲ **Always keep engine and machine clean, removing accumulated dirt, trash, grass clippings and other material from machine to reduce wear, prevent overheating and fire.**
- ▲ Always keep engine and machine clean, removing accumulated dirt, trash and other material from machine.
- ▲ Always be alert for hazards such as rocks, metal objects and other debris which may be thrown or entangled by mower blades. Watch out for holes or deep depressions.
- ▲ Always wear adequate eye protection when servicing the hydraulic system, battery and cooling system, or when grinding mower blades and removing accumulated debris.
- ▲ Always wear adequate ear protection, such as earplugs, when operating this equipment as prolonged exposure to uncomfortable or loud noises can cause impairment or loss of hearing. Do not wear radios or music headphones while operating the machinery. Safe operation requires your full attention.
- ▲ Always be aware of what is behind the machine before backing up.
- ▲ Always inspect machine for damage after striking a foreign object. If damage is found, repair machine immediately. Be sure to disengage deck clutch, place steering control lever in neutral, engage neutral lock levers, stop tractor engine, engage parking brake, and remove ignition switch key before leaving operator's seat to inspect damage.
- ▲ Always buckle seat belt, if provided with one, before starting tractor.
- ▲ Never pull back suddenly on your control lever while the machine is in forward motion.
- ▲ Never turn the PTO switch on unless the PTO shaft is securely connected to a power driven attachment.
- ▲ Never operate a poorly maintained machine.
- ▲ Never carry passengers.
- ▲ Never attempt high speed maneuvering, especially in crowded or congested areas.
- ▲ Always keep clear of the mower blades and attachments during their operation.
- ▲ Never make sudden starts, stops, turns, or reverse direction, especially when manuevering on slopes. The steering is designed for sensitive response. Rapid movement of the steering lever in either direction could result in a reaction of the tractor that can cause serious injury.
- ▲ If any attachment or additional weight is mounted on the rear of the unit, any sudden movement of the steering lever could cause the front of mower to come off of the ground resulting in possible loss of control.
- ▲ Always stay alert for holes and hidden hazards.
- ▲ Use extreme caution when operating on slopes.
  - Be extremely careful changing directions on a slope. Slow down.

- Do not operate where the machine could slip or tip.
- Install a ROPS and seat belt on the tractor when operating on slopes.

▲ The Hustler mower is capable of operating horizontally (traverse) on moderately steep slopes. When operating on slopes of 15 degrees or more, be aware of any conditions that may cause the tractor drive tires to lose traction resulting in a possible loss of control of the machine. An operator should not operate on a slope until he is thoroughly familiar with the equipment.

It is strongly recommended that the operator drive the machine off of the slope, using extreme caution, if any sign of loss of traction is detected. Wait until the condition that caused the problem is resolved before attempting to operate on the slope again.

Terrain conditions can affect traction resulting in possible loss of control of the machine. Some of the conditions to be aware of are:

1. Wet terrain
2. Depressions in the ground; i.e. holes, ruts, washouts
3. Soil type; i.e. sand, loose dirt, gravel, clay
4. Grass type, density, and height
5. Extremely dry conditions of grass
6. Tire pressure

The attachments mounted to the tractor will also affect the way it handles on a slope. Attachments such as the grass collection system may affect the machine differently than another attachment would. Be aware that each attachment's characteristics vary.

Another consideration to safe mowing on slopes is to be aware of what is located at the bottom of the slope. Extreme caution should be used when there is a hazard located at the bottom of the slope. Some examples are:

1. Water; i.e. lake, river
2. Cliff
3. Roads, highways
4. Buildings
5. Rocks

These are just a few examples of situations when caution must be used when operating on a slope. There are many other possibilities too numerous to mention. Just remember to always exercise extreme caution when operating on any slope.

▲ Never allow persons to operate this machine without proper instruction or allow children to operate machine.

▲ Never put hands or feet under any part of the machine while it is running.

▲ Never drive the tractor at high speeds without a front end attachment mounted to the tool bars. Keep the attachment as low to the ground as possible, mower decks should rest on the gauge wheels.

▲ Never leave machine unattended with ignition key in switch, especially with children present.

▲ Never refuel tractor while engine is running; never refuel near an open flame or near devices which can create a spark. Refuel outdoors preferably, or in well ventilated areas.

▲ Never attempt to start engine when there is a strong odor of gasoline fumes present. Locate and correct cause.

▲ Never run the engine in an enclosed area unless exhaust is vented to the outside. Exhaust gases contain carbon monoxide which is odorless and deadly poison.

▲ Never attempt to make any adjustments or repairs to the tractor drive system or attachment while the tractor engine is running. Repairs or maintenance requiring engine power should be performed by trained personnel only.

▲ Never work under the machine or attachment unless it is safely supported with stands, blocks or a hoist.

▲ Do not touch hot parts of machine.

▲ Never attempt to back machine onto transport trailer with attachment in raised position.

▲ Never direct discharge of material from mower deck or snow thrower towards bystanders.

▲ Always disengage the blades and wait for them to stop before crossing gravel drives, walks or roads.

▲ **When operating on terrain where there is a potential for a roll over, it is important that a ROPS be installed on the equipment. The ROPS will prevent serious injury in the event of roll over. Seat belt must be fastened while operating a machine equipped with ROPS. Failure to use seat belt will result in serious injury in the event of a roll over.**

▲ **Clean flammable material from machine. Prevent fires by keeping engine compartment, battery, hydraulic lines, fuel line, fuel tank and operator's station clean of accumulated trash, grass clippings, and other debris. Always clean up spilled fuel and oil.**

Specific safety warning decals are located on the equipment near the immediate areas of potential hazards. These decals should not be removed or obliterated. Replace them if they become non-readable.

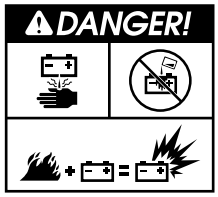
▲ Replace all safety decals that are damaged, lost, or otherwise illegible. Replace all decals after repainting. If a part is replaced that has a decal on it, obtain a replacement decal from your Hustler dealer and install the decal in the same location.

The following illustrations show the various **safety decals** that are located on the machine. A brief explanation is shown to help the operator understand the meanings of these decals.

Read Owner's Manual and Quick Reference Card before attempting to operate this machine.

Block or chock the machine when parked on a slope or when trailering.

Never operate the mower deck with side deflector removed or in raised position, except when the grass catcher attachment is being used.



Avoid skin contact with battery acid.
Always wear eye protection when checking the battery, acid can cause serious injury to skin and eyes. If contact occurs, flush area with clean water and call physician immediately. Acid will also damage clothing.
Do not allow open flame near the battery when charging.
Hydrogen gas forms inside the battery. This gas is both toxic and flammable and may cause and explosion if exposed to flame. Always remove the negative ground first and replace it last.
Do not overfill battery.
Electrolyte may overflow and damage paint, wiring or structure. When cleaning the battery, use soap and water. Be careful not to get soap and water into the battery. Use soda mixed in water to clean corrosion off the terminals.

Hot surface!

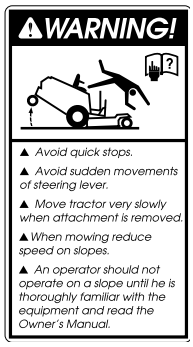
Seat belt **must** be fastened while operating a machine equipped with ROPS. Failure to use seat belt will result in serious injury in the event of a roll over.

When operating on terrain where there is a potential for a roll over, it is important that a ROPS be installed on the equipment. The ROPS will prevent serious injury in the event of roll over. Seat belt must be fastened while operating a machine equipped with ROPS. Failure to use seat belt will result in serious injury in the event of a roll over.

Whirling blades! Keep hands and feet away.
Beware of thrown objects.

Do not smoke while refueling.
Do not fill tank with engine running, or while the engine is hot.
Allow engine to cool before storing machine inside a building.Store away from open flame or spark if there is fuel in tank.

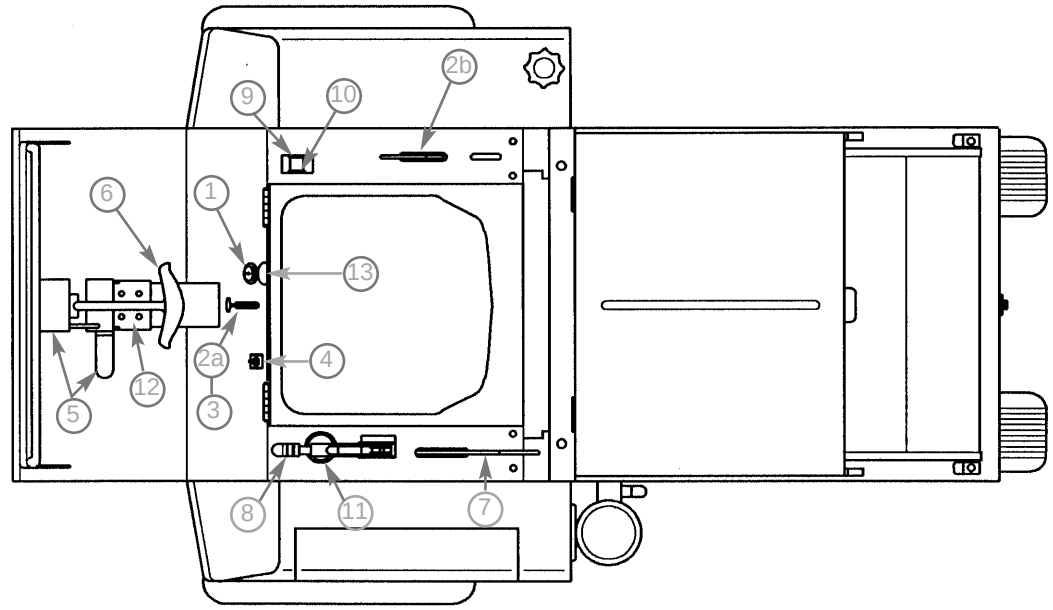
Hydraulic fluid escaping under pressure can penetrate skin.
Hydraulic fluid may also cause infection in a minor cut or opening in the skin; if exposed to hydraulic fluid, see a doctor at once.
Before applying pressure to hydraulic system, make sure all connections are tight and all hoses and lines are in good condition.
Relieve all pressure in the system before disconnecting or working on hydraulic lines.
To find a leak under pressure, use a piece of cardboard or wood – never use your hands.
To relieve all pressure in system, turn engine off and lower attachment.



The Hustler tractor steering is designed for sensitive response. Rapid movement of the steering lever in either direction could result in a reaction of the tractor that can cause serious injury.
Keep the neutral lock lever in the down position except while backing.
Avoid quick stops.
Keep attachment lift cylinder fully extended (attachment wheels on ground) when transporting and going down slopes.
Move tractor very slow when attachment is removed.
Reduce speed on slopes.

Keep covers in place while machine is in operation.

OPERATION



1. Ignition Switch
2a. Throttle Lever (4200, 4400 4420 & 4600)
2b. Throttle Lever (4300 & 4500)
3. Choke Lever (4300 & 4500 only)
4. Electric Clutch Switch
5. Neutral Lock Levers
6. Steering Control Lever
7. Pump Clutch Lever
8. Parking Brake
9. Attachment Lift Lever
10. Auxiliary Control Lever
11. Hour Meter
12. Warning Lights
13. Seat Latch

Figure 3-1

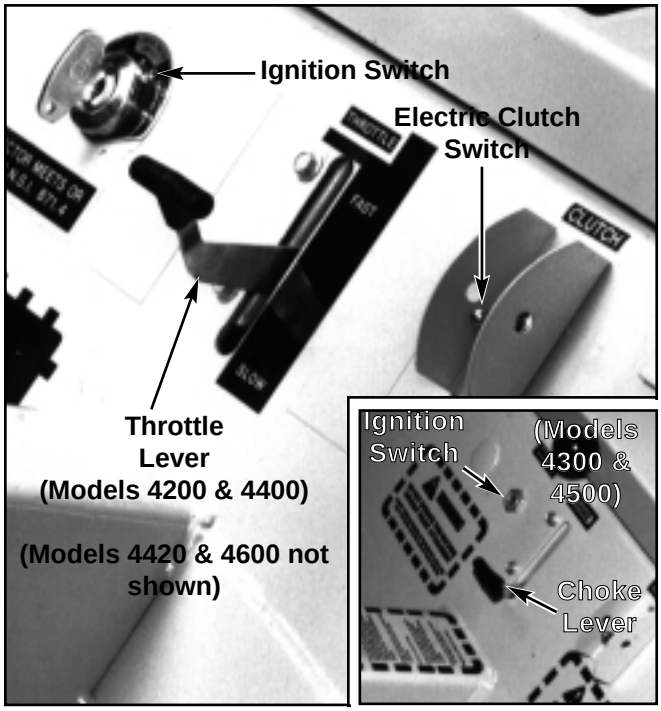


Figure 3-2

Controls

For general location of the controls described in this section, refer to Figure 3-1.

1. **Ignition switch (Fig. 3-2) – Models 4200,4400, 4420 and 4600.** A four-position switch: off, pre-heat, run and start. With key inserted, rotate it counterclockwise for engine pre-heat, then rotate full clockwise for start; release key when engine fires, and switch will automatically return to RUN position.
   Models 4300 and 4500. A three-position switch: off, run and start. With key inserted, rotate it clockwise to start. Release key when engine fires, and switch will automatically return to RUN position.
2. **Throttle (Figs. 3-2 and 3-3) –** a mechanical link connected to the engine governor for controlling engine rpm. On models 4200/4400/4420/4600 (Fig. 3-2), move lever up to increase engine rpm, move down to decrease engine rpm. On models 4300 and 4500 (Fig. 3-3), move lever down and forward to increase engine rpm, pull up and back to decrease engine rpm.
3. **Choke control (Fig. 3-2) –** a cable link to manual engine choke, models 4300 and 4500 only. Move up for cold starting, move down for normal run.

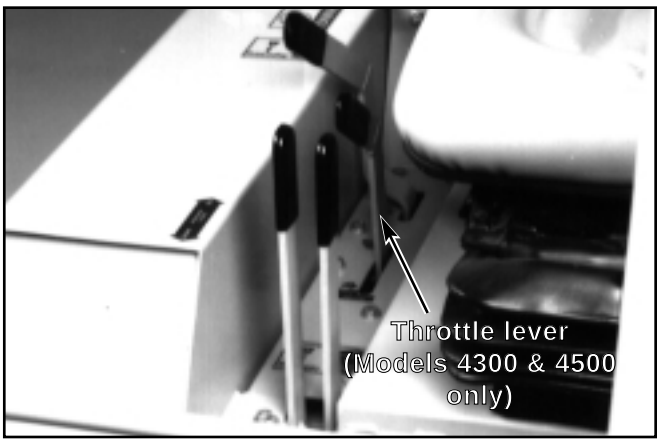


Figure 3-3

4. **Electric PTO clutch switch (Fig. 3-2) –** a two-position switch which controls the electric clutch on the PTO shaft. Down position is OFF and up position is ON. When clutch switch is on, the PTO shaft rotates and delivers live power to attachment requiring it.

IMPORTANT: Never engage clutch with engine running at high rpm. Clutch, drive line or attachment could be damaged.

WARNING: Never turn the PTO switch ON unless the PTO shaft is securely connected to a power driven attachment.

5. **Neutral locks (Fig. 3-4) –** front and rear locking devices hold the steering control lever in a neutral position as tractor will not move when the engine is running and drive pump is operating. Rotating the front lock, up and forward, allows the control levers to be moved forward. Lifting the rear lock with toe of operator's foot allows the control lever to be moved in reverse.

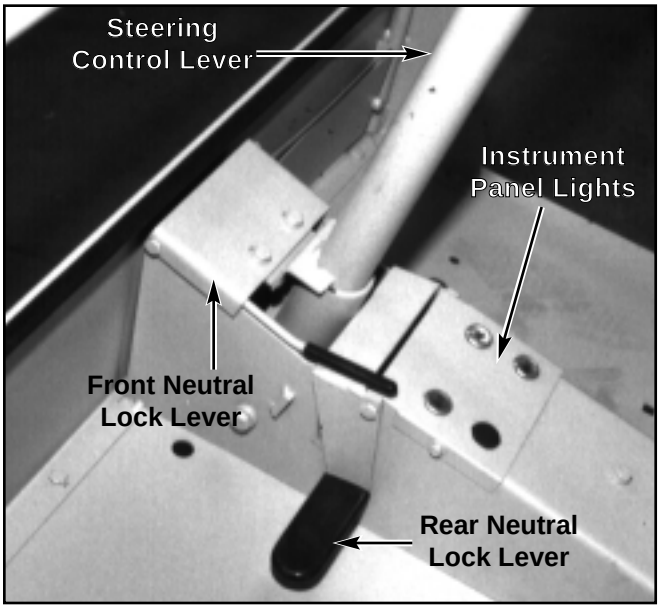


Figure 3-4

6. **Steering control lever (Fig. 3-4) –** this lever controls tractor speed and direction. The lever is used to steer, accelerate, brake, and change direction.
7. **Pump clutch lever (Fig. 3-5) –** this lever engages and disengages the hydraulic pump drive belt. Push forward on lever to engage the hydraulic pump drive. Pull back on lever to disengage.

IMPORTANT: Always let the engine warm up to operating temperature and set the throttle at a moderate rpm before engaging the hydraulic pump clutch. Engage the clutch slowly. Sometimes more than one attempt is necessary, particularly when the oil is cold and thickened. Never snap the clutch to engage. Allow the machine to run and warm the oil a short time before driving or using hydraulics.

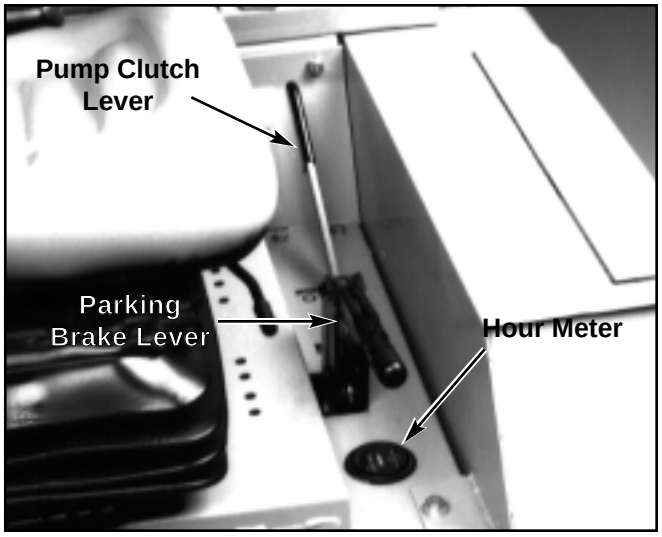


Figure 3-5

8. **Parking brake lever (Fig. 3-5) –** engage the parking brake by rotating the lever up and back until it over-centers and locks. Release by rotating the lever forward and down.

WARNING: The parking brake is not designed to hold tractor on steep slopes.

9. **Attachment lift lever (Fig. 3-6) –** This lever controls the hydraulic raising and lowering of tractor tool bars and front end attachments. Pull lever back to raise the bars and push it forward to lower them.

   Normally the attachment is lowered to rest directly on the ground or gauge wheels and allowed to follow, or float, over the ground contours (referred to as "flotation"). For best flotation, push the lever forward until attachment reaches the ground and hold it for several seconds until all weight is removed from the tool bars and lifting cables are slack.
10. **Auxiliary control lever (Fig. 3-6) –** this lever is for control of the hydraulic cylinder mounted on some optional attachments. Use of lever varies with each

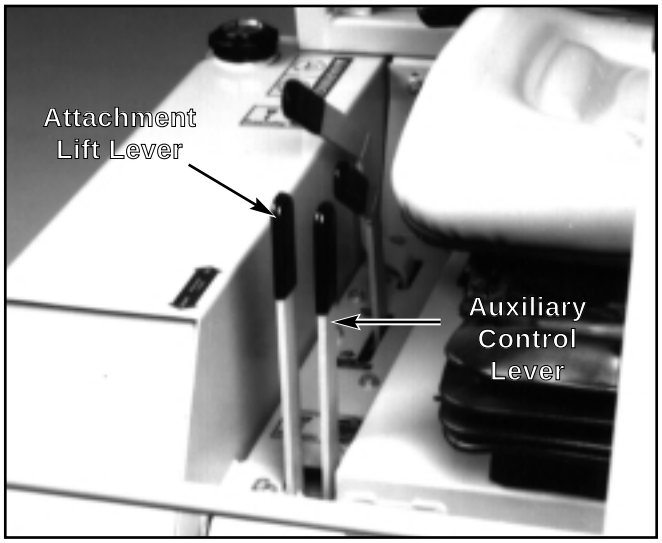


Figure 3-6

attachment and is described in more detail in the operating instructions provided with the attachment.

Instrumentation

11. **Electronic hour meter (Fig. 3-5) –** registers 1/10 hour increments up to 9,999.9 total hours. Connected to the ignition switch, the meter records the accumulative time while the ignition key is switched to the ON position.
    - **Audible alarm signal (not shown)** will sound when the ignition switch is turned to the ON or START position. It will silence when the engine starts. This alarm will also sound to indicate a problem with low engine oil pressure or high water temperature. If alarm sounds when the engine is running, check the instrument warning lights to determine problem area.
12. **Warning lights (Fig. 3-4) –** a cluster located on the footrest panel directly behind the neutral locks. These lights will come on if an operating problem exists with the engine oil, cooling or electrical alternator system.
    - **Oil pressure warning light –** this light comes on when the ignition switch is placed in ON position, and stays lit until engine is running and a safe oil pressure is developed. If light comes on during operation, shut off the engine immediately and locate the problem.
    - **Temperature warning light –** this light will come on when the engine coolant temperature reaches an unsafe level during operation. If light comes on, shut down the machine as soon as possible. Never risk continued operation when light remains on; high temperatures can severely damage the engine.
    - **Alternator warning light –** this light will come on when the ignition switch is placed in the ON position, and stays lit until the engine is running and alternator is supplying the electrical system. If light remains on while engine is running, it indicates that the battery is being discharged.
    - **Pre-heat light (models 4200 and 4400) –** this light comes on when ignition switch is placed in the PRE-HEAT position to indicate that the diesel engine glow plugs are operating.

      Pre-heat light (models 4420 and 4600) – this light comes on when ignition switch is placed in the PRE-HEAT position to indicate that the diesel engine glow plugs are operating. The light will go off when the engine is ready to start.

Safety start interlock system

Check tractor safety start interlock system daily, prior to operation. This system is an important tractor feature. It should be repaired immediately if it malfunctions. The machine incorporates a separate seat switch which will stop the tractor engine when the operator is unseated for any reason while the tractor, mower or other attachment is operating. This is a safety feature designed to prevent runaway or accidental entanglement. To inspect system:

1. The operator must be on the seat when testing the seat switch.
2. Set parking brake and set the steering control lever in the neutral position and disengage pump clutch. (Fig. 3-7)
3. Start the engine and allow it to warm up to operating temperature.
4. With the front neutral lock in the up position and/or the clutch switch on, slowly raise off of the seat. **The engine should stop within one second.**
5. With the front neutral lock in the down position and the clutch switch off, slowly raise off of the seat. **The engine should continue to run.**
6. **If the engine fails to stop** when the clutch switch is on or front neutral lock lever is up and the operator is off the seat, check the function of the seat switch. If the seat switch is not operating properly **(is not opening and closing)** and if the cause can not be determined, replace the seat switch.

   If the problem can not be located, contact the Hustler Service Department.

This safety interlock system should always function per steps 4 and 5. If it does not function properly, it should be corrected immediately. Do not operate machine without properly functioning seat safety switch.

IMPORTANT: Never switch the PTO on unless it is securely connected to a suitable attachment.

Engine starting

Your Hustler tractor incorporates a safety interlock system. Designed to protect the operator and others from accidental injury, this system prevents unintentional engine starting. The engine starting motor will not engage until:

A. Steering control lever front and rear neutral locks set.

B. PTO clutch switch is in the OFF position.

WARNING: The safety interlock system must not be disconnected or bypassed.

NOTE: The operator's seat is equipped with a separate safety switch. If for any reason the operator should become unseated when the neutral lock is disengaged, or the PTO switch is in the ON position, this switch will open and engine will stop.

Before engaging the starting motor, disengage the hydraulic clutch lever to lessen drag on the starter motor, particularly when oil is cold. Always rotate the key switch to the ON position to make sure that each warning light is operating.

The following is general information taken from the respective engine owner's manual. If difficulty is encountered, refer to the engine manual for more specific details.

Models 4200/4400/4420/4600:

1. Before starting tractor each day, perform daily pre-operation checking.

2. Engage safety start interlock system, buckle seat belt if tractor has seat belt.
3. Set parking brake.
4. Set throttle at approximately 1/3 OPEN position.
5. **4200 & 4400 —** Rotate key switch counterclockwise to PRE-HEAT; hold this position for 15 seconds when temperature is above freezing, or for 30 seconds when temperature is below freezing. This operation is not necessary when restarting a warm engine.

   4420 & 4600 — Rotate key switch counterclockwise to PRE-HEAT; hold this position until glow plug light goes off. This is necessary only when the temperature is below 50° F. This operation is not necessary when restarting a warm engine.

   Shown below are the standard preheating times for various temperatures. This operation, however, is not required when the engine is warmed up.

Ambient temperature	Preheating time Ordinary heat type
Above 10°C (50°F)	No Need
10°C (50°F) to -5°C (23°F)	Approx. 6 seconds (Pre-heat position until glow plug light goes off)
Below -5°C (23°F)	Approx. 12 seconds (Pre-heat position until glow plug light goes off the second time)
Limit of continuous use	20 seconds

   Failure to follow these recommendations can lead to premature failure of the starter motor and the fuel shut-off solenoid.

   NOTICE: Ether, or other starting fluids, must never be used as a starting aid with this engine. Warranty will be denied when engine damage results from such use.
6. Rotate key switch full clockwise to START position, release key immediately after engine starts.

   NOTE: If the engine does not start 10 seconds after the starter switch is set at "Start", wait for another 30 seconds and then start the engine starting sequence over again. Do not allow the starter motor to run continuously for more than 20 seconds.
7. Check to make sure the engine oil pressure and alternator warning lights are off. If not, stop engine immediately and check for the cause.
8. Allow the engine to idle a few minutes before advancing the throttle or engaging the hydraulic pump. This allows the hydraulic oil to warm up for easier system circulation.
9. Stop the engine by disengaging drive clutch and throttle back to low idle for a couple of minutes; move steering control levers to neutral, engage neutral lock levers; then rotate ignition key counterclockwise to the OFF position. Remove the key from switch before leaving the tractor and set parking brake.
10. If the machine is allowed to run out of fuel, bleeding the fuel system will be required before restarting the engine. Refer to the Maintenance & Adjustment - Fuel System section of this manual.

WARNING: Excessive starter cranking after running out of fuel and not following proper fuel system bleeding will lead to premature failure of the starter motor and/or the fuel shut-off solenoid.

Models 4300 and 4500:

1. Before starting the tractor each day, perform daily preoperation checking.
2. Your Hustler tractor incorporates a safety interlock system. Designed to protect the operator and others from accidental injury, this system prevents unintentional engine starting.

   The engine starter will not engage until:

   A. Steering control lever front and rear neutral locks are set.

   B. PTO clutch switch is in the "OFF" position.

WARNING: The safety interlock system should not be disconnected or bypassed.

NOTE: The operator's seat is equipped with a separate safety switch. If for any reason the operator should become unseated when the neutral lock is disengaged or the PTO switch in the "ON" position, this switch will open and engine will stop.

3. Disengage the hydraulic clutch lever to lessen drag on the starter motor, particularly when oil is cold.
4. Advance throttle to approximately 1/4 open slot.
5. Insert key in ignition switch and rotate full clockwise to engage starting motor. Release key when engine fires.

   NOTE: Continuous cranking for longer than 20 seconds may damage the starter motor. After continuous cranking for 20 seconds, wait two minutes before engaging starting motor again.

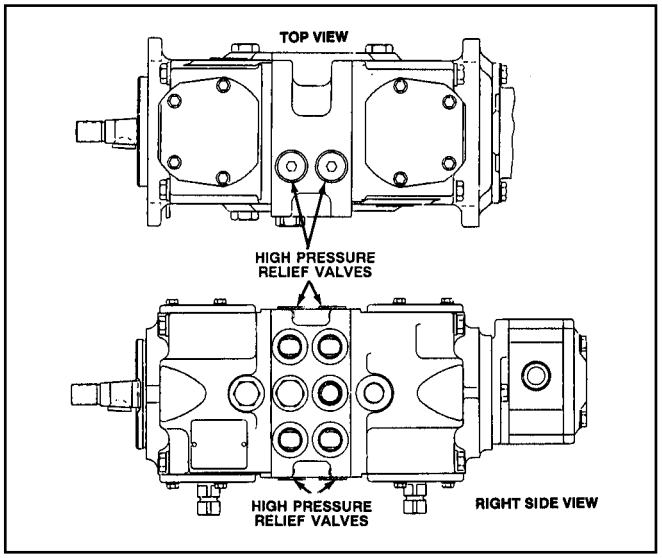


Figure 3-7

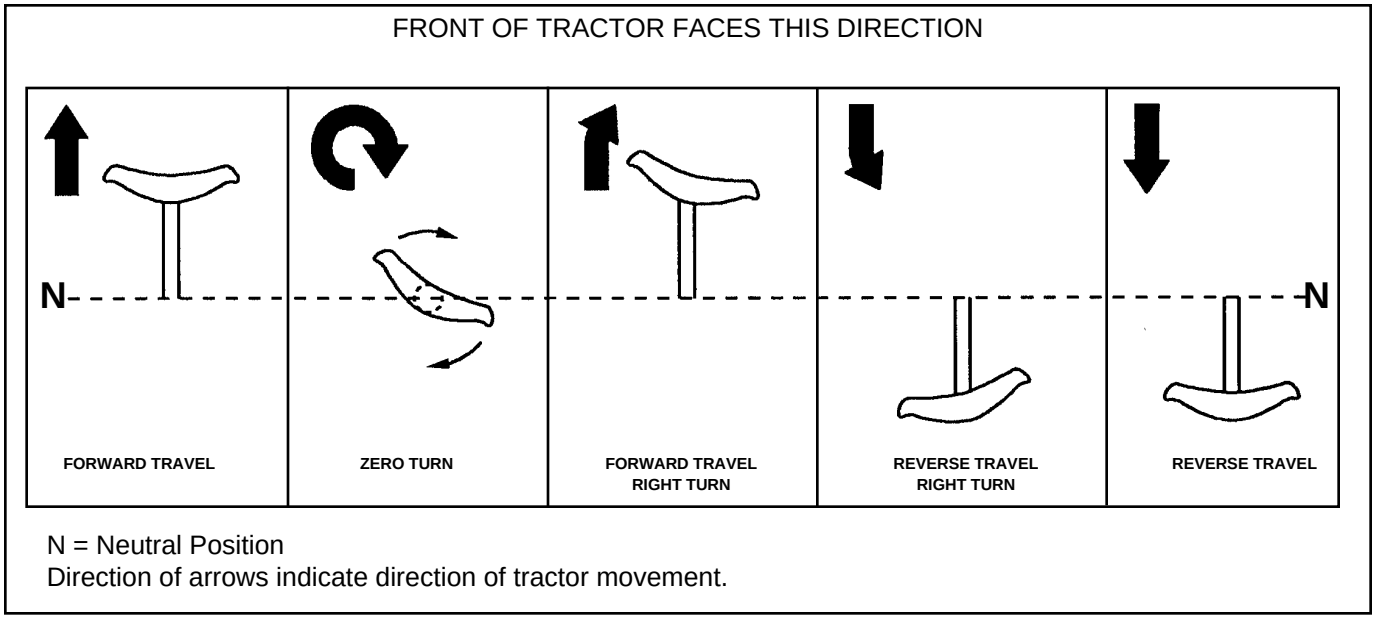


Figure 3-8

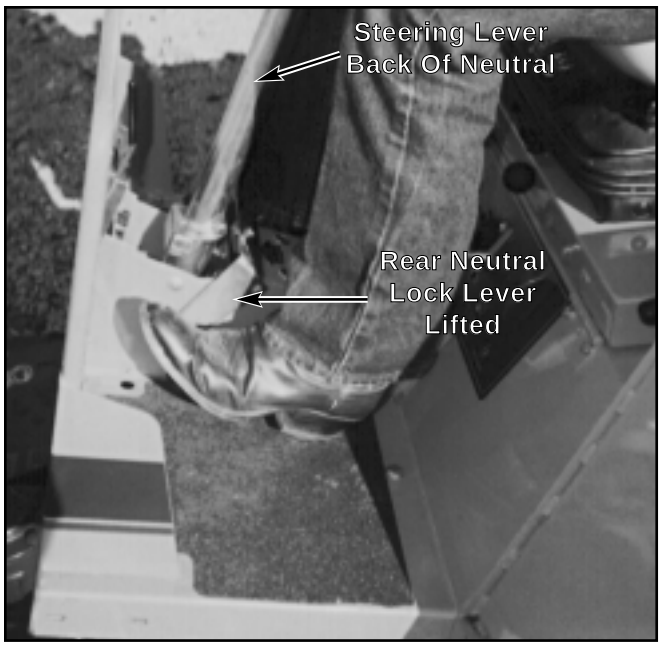


Figure 3-9

Figure 3-10

Moving tractor with stalled engine

Should it become necessary to transport the tractor because the engine stalls and cannot be restarted:

1. The hydraulic pump is equipped with tow valves. Before towing the tractor, turn the tow valves counterclockwise four complete revolutions, using a 5/16" allen wrench. This allows the hydraulic oil to flow freely in the system. The valves are located per Fig. 3-7.
2. Move the tractor by hand or use a winch to pull it onto a transport vehicle.
3. If towing is necessary, tractor may be towed for distances up to 1/2 mile at speeds not greater than 3 mph at a time. Exceeding these limits at one time will overheat the hydraulic system and may damage the pumps and motors.
4. After towing, make certain the two valves are returned to their operating position. Turn them clockwise and torque to 40-50 foot pounds.

Driving the tractor

Only one hand is required to control speed and direction of the tractor, in most conditions (Fig. 3-8).

DANGER: Never make sudden stops or reverse direction, especially when going down a slope. The steering is designed for sensitive response. Rapid movement of the steering lever in either direction could result in a reaction of the tractor that can cause serious injury.

WARNING: Never drive the tractor at high speeds without a front end attachment mounted to the tool bars or with the attachment in a raised position.

After starting engine, release parking brake (if set); engage hydraulic pump clutch lever, release the front neutral lock (move it up and forward) and steer as follows:

To go forward, push steering control lever forward (Fig. 3-8).

To go in reverse, use ball of the left foot to lift rear neutral lock and pull lever back (Fig. 3-8 and 3-9). The lock should return to down (lock) position when lever is returned forward past neutral. This prevents sudden reversing during normal forward operation and stopping.

To turn left, rotate steering control lever counter-clockwise while pushing steering control lever forward.

To turn right, rotate steering control lever clockwise while pushing steering control lever forward. The tractor will make a smooth wide turn (Fig. 3-10).

To zero turn, rotate steering lever the direction desired with the lever at or near the neutral position. This will allow the drive wheels to counter-rotate.

To stop or decrease speed, move steering lever to neutral. When going forward pull back gently on lever. When going in reverse push forward gently on lever.

To increase speed, increase steering lever's distance from neutral. The farther forward lever is from neutral, the faster tractor will travel forward. The farther back lever is from neutral, the faster tractor will go in reverse.

Operating suggestions

WARNING: The Hustler steering control lever is very responsive: Easy does it! For smooth operation, move lever slowly, avoid sudden movement. Skill and ease of operation come with practice and experience.

Inexperienced operators may have a tendency to oversteer and lose control. Slow-moving practice maneuvers are recommended to become familiar with these characteristics before attempting normal speed operation.

Sharp depressions or raised obstacles (such as gutters or curbs) should not be directly approached at high speed in an attempt to "jump" them. Approach at a slow speed and angle one drive wheel at the obstruction. Continue at an angle until the wheel clears and then pivot the opposite wheel around.

When turning on soft wet turf, keep both wheels rolling either forward or backward. Pivoting on one stopped wheel can damage turf. This is especially important when mowing.

Maintain an even recommended tire pressure. This affects the rolling radius of the wheels and tractor will want to veer off in the direction of the tire with least pressure.

Tractor performance is maximum when the throttle is set at full rpm. This gives maximum power to the drive wheels when needed, faster response for the hydraulic lift and auxiliary cylinders plus maximum PTO power. Use the steering control lever to control ground speed rather than engine rpm.

WARNING: Some front mounted attachments are heavy enough to lift the rear tractor wheels off the ground when raised for turning, backing or transporting. Your Hustler can be equipped with rear stack weights to counter-balance the tractor in these circumstances. Consult your dealer for information.

WARNING: If tractor is equipped with a ROPS always buckle seat belt before starting tractor.

ACCESSORIES

A large variety of attachments are specifically designed for your Hustler tractor to handle most ground maintenance chores. These mount directly on the tractor in various ways, and each is provided with individual Assembly Instructions, Parts Manual, and Owner's Manual which includes operation and maintenance information.

The following describes standard tractor equipment for accepting and powering these attachments (Fig. 4-1).

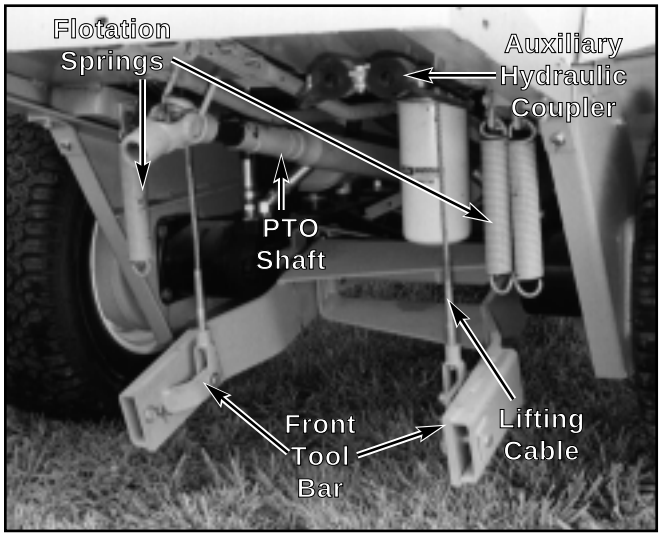


Figure 4-1

Front tool bar

This is the point of connection between the tractor and mower decks or other front mounted attachments (dozer blades, snow thrower, utility scoop, etc.). The tractor hydraulic system raises and lowers the tool bar assembly through a series of lifting cables.

These cables can be adjusted to keep attachments level when in the raised position. If adjustment is necessary, loosen the lock nut, remove the clevis pin to free the threaded cable yoke from tool bar bracket. Turn yoke on threaded cable end to lengthen or shorten effective length as needed.

Flotation springs

Flotation springs connected between the tractor and front mounted attachments act as shock absorbers, allowing the attachment to float when moving over uneven ground. Proper flotation provides good balance and weight distribution with tractor for best drive wheel traction. The tractor comes standard equipped with three of these springs which must be connected as specified in instructions supplied with the attachment being mounted.

PTO shaft

This telescoping shaft assembly delivers live engine power to front mounted attachments through the electric clutch. When not connected to an attachment, the shaft must be secured to the hanger located under the tractor footrest.

WARNING: Never turn the PTO switch ON unless the PTO shaft is securely connected to a power driven attachment.

The PTO electric clutch switch bracket (on operator's platform) has provisions for inserting a lock out pin so switch may not be unintentionally switched on when PTO shaft is not connected to attachment.

This shaft assembly has three grease fittings for periodic servicing when in use. Refer to the maintenance schedule for frequency.

Auxiliary hydraulics

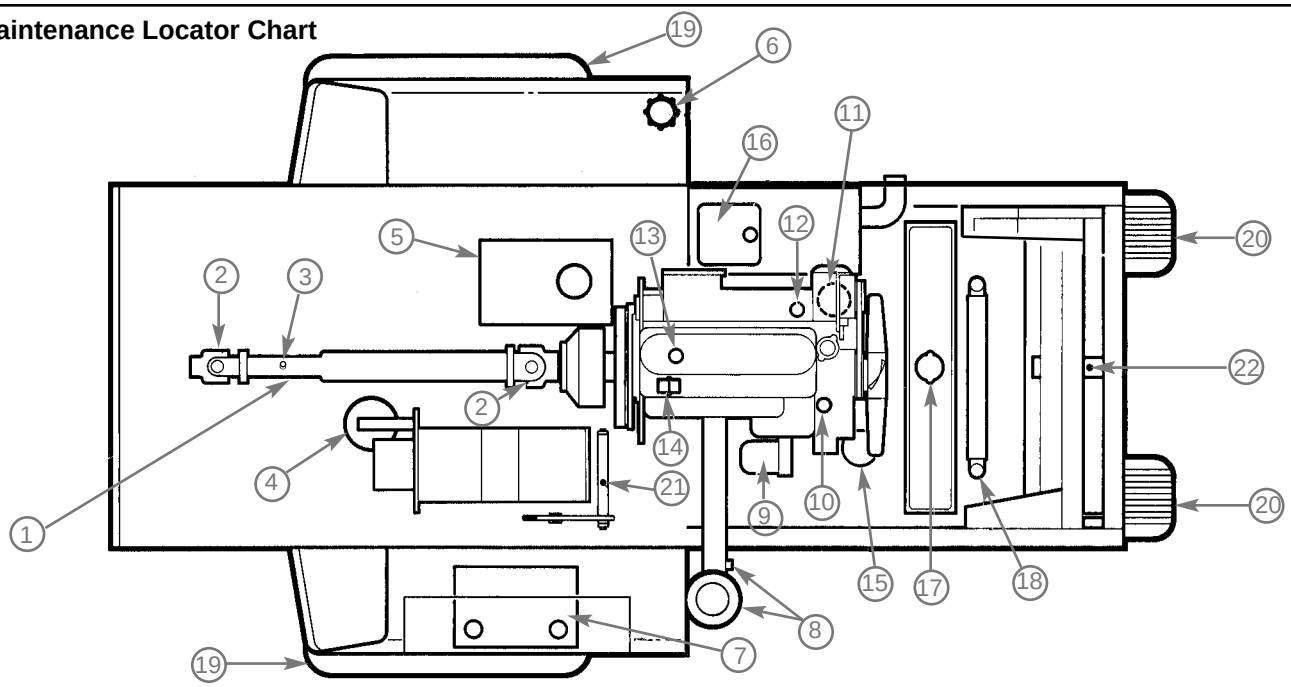
The tractor's hydraulic system includes a control valve, hoses and quick-connect couplers for supplying hydraulics to attachment cylinders. When not in use, the coupler dust covers must be in place to prevent contamination. Always replace them immediately if damaged or lost.

Once connected, the operator has control of the attachments' hydraulic cylinder by means of the control lever on operator's deck. If stroking the lever produces the wrong cylinder movement (up-down, right-left, etc.), reverse the attachment hoses at the quick-connect couplers.

WARNING: Never attempt to connect or disconnect the couplers with pump clutch engaged and system oil under pressure.

MAINTENANCE AND ADJUSTMENTS

Maintenance Locator Chart



1. PTO Shaft
2. U-Joint Grease Zerks (2)
3. PTO Spline Grease Zerk
4. Hydraulic System Filter
5. Hydraulic Reservoir
6. Fuel Gauge & Filler Cap
7. Battery Location
8. Air Filter & Service Indicator
9. Oil Filter (gas units)
10. Oil Dipstick (gas units)
11. Oil Filter Location (diesel units)
12. Oil Dipstick (diesel units)
13. Oil Fill Location
14. Fuel Filter (gas units)
15. Fuel Filter (diesel units)
16. Coolant Recovery Tank
17. Radiator Cap
18. Oil Cooler
19. Drive Tire
20. Rear Tire
21. Pump Clutch Mount Grease Zerk
22. Tail Wheel Pivot

	MAINTENANCE SCHEDULE	INTERVALS (HOURS)									
	SERVICE AT INTERVALS INDICATED	100	200	300	400	500	600	700	800	900	1000
	Check coolant level	Every 8 hours									
I	Visually inspect tractor for loose hardware and/or damaged parts	Daily									
	Visually inspect tires	Daily									
	Check oil level, engine	Every 4 hrs.									
	Check radiator screen	Every 4 hrs.									
	Clean air filter intake screen	Every 4 hrs.									
	Check fuel level	Every 8 hrs.									
G	Check air cleaner service indicator+	Every 8 hrs.									
	Lube rear wheel axle	Every 8 hrs.									
	Visually inspect radiator core+	Every 40 hrs.									
	Lube rear wheel bearings (2)	Every 40 hrs.									
	Lube PTO spline	Every 50 hrs.									
	Tighten hub bolts on wheels (Y)(X)	Every 50 hrs.									
	Check oil level, hydraulic	X	X	X	X	X	X	X	X	X	X
	Lube PTO U-joints (2)	X	X	X	X	X	X	X	X	X	X
AC	Check alternator belt tension	X	X	X	X	X	X	X	X	X	X
F	Check pump belt tension & condition	X	X	X	X	X	X	X	X	X	X
	Check steering lever tension	X	X	X	X	X	X	X	X	X	X
ABE	Change engine oil and filter +*	X	X	X	X	X	X	X	X	X	X
	Lube pump clutch mount	X	X	X	X	X	X	X	X	X	X
D	Check governor oil level	X	X	X	X	X	X	X	X	X	X
H	Check fuel & hydraulic hoses	X	X	X	X	X	X	X	X	X	X
D	Check alternator & governor belt tension		X		X		X		X		X
AD	Lubricate throttle, governor & choke linkage		X		X		X		X		X
	Check grommets and ball joints on steering linkage (XX)		X		X		X		X		X
AD	Adjust idle mixture & speed				X				X		
A	Change fuel filter +				X				X		
AD	Replace spark plugs				X				X		
	Clean hydraulic filler cap					X					X
	Clean radiator core +					X					X
	Change hydraulic filter (Z) and oil +										X
	Change radiator coolant					X					X
	Check steering shock absorbers					X					X

- • – Refer to break-in services for initial change.
- \+ – More often under dusty or dirty conditions and during hot weather.
- X – Torque after first 50 hours also.
- Y – Torque after first 2 hours of operation.
- XX – Check monthly or every 200 hours, whichever comes first.
- Z – Perform initial hydraulic filter change after 50 hours, at same time initial engine break-in adjustments are performed.
- A – See Engine Manual. Refer to Engine Owner's Manual for recommendations and other maintenance items.
- B – 4200/4400/4420/4600 change after first 35 hours of operation. Refer to Engine Owner's Manual for recommendations and other maintenance items.
- C – 4200/4400/4420/4600 tractors only.
- D – 4300/4500 tractors only
- E – Use oil with a rating equivalent to CD or higher
- F – **Inspect every 100 hours** and replace if worn or cracking is noticed. Otherwise, **replace every 1000 hours or 2 years** whichever comes first.
- G – **Do not** clean filter element. Replace with a new one.
- H – Check hydraulic and fuel line hoses for any cracks or leaks.
- I – Trash & clipping buildup around engine could cause a fire. Keep engine compartment and muffler area clean.

NOTE: After completing maintenance cycle (1000 hours), repeat cycle.

Introduction

WARNING: Unless specifically required, DO NOT have engine running when servicing or making adjustments to tractor. Engage neutral lock levers and parking brake. To prevent carbon monoxide poisoning, be sure proper ventilation is available when engine must be operated in an enclosed area. Read and observe safety warnings in front of manual.

Regular maintenance is the best prevention for costly downtime or expensive, premature repair. The following pages contain suggested maintenance information and schedules which the operator should follow on a routine basis.

Remain alert for unusual noises, they could be signaling a problem. Visually inspect the machine for any abnormal wear or damage. A good time to detect potential problems is while performing scheduled maintenance service. Correcting the problem as quickly as possible is the best insurance.

WARNING: Keep your machine clean, remove any deposits of trash and clippings, which can cause engine fires and hydraulic overheating as well as excessive belt wear.

Clear away heavy build-up of grease, oil and dirt, especially in the engine and hydraulic reservoir area; minute dust particles are abrasive to close-tolerance engine and hydraulic assemblies.

Some repairs require the assistance of a trained service mechanic and should not be attempted by unskilled personnel. Consult your Hustler service center when assistance is needed.

Torque values

Particular attention must be given to tightening the drive wheel lug and wheel motor nuts. Failure to correctly torque these items may result in the loss of a wheel, which can cause serious damage. Torque values given below are in foot pounds.

Wheel (lug) nuts .....65-75 ft.-lbs.
Wheel motor nut .....425-450 ft.-lbs.

It is recommended that these be checked after the first 2 hours of operation, initially and every 50 hours following removal for repair or replacement.

For engine torque values, see engine owner's manual.

Tires

It is important for level mowing that the tires have the same amount of air pressure. The recommended pressures are:

Drive Wheels .....14-18 psi
Tail Wheels.....14-18 psi

If the machine has Hustler Range Wings or a Hi-Lift BAC-VAC then the tire pressure should be increased to:

Drive Wheels.....20-22 psi
Tail Wheels .....20-22 psi

Solid fill tires are not recommended for Hustler turf equipment. On any machine, with a failure due to solid filled tires, the warranty claim will be denied.

Hour meter

To recognize when your machine needs servicing, check the hour meter and the maintenance schedule. The hour meter shows the number of hours the engine has run and the maintenance schedule lists the service intervals.

Lubrication

There are seven grease fittings on the tractor which require regular servicing. Use a good grade SAE multi-purpose grease and wipe accumulated dirt from fitting before attaching grease gun. Refer to the diagram for location and frequency.

Steering linkage

There are two types of steering adjustments that are discussed in this section.

1. Neutral adjustment in the neutral lock position.
2. The rotational resistance spring and linkage connecting the two pump levers, located near the pump.

Prior to making either of these adjustments, visually inspect the urethane grommets at the hydraulic pump end of the steering control levers (or linkage straps) and ball joints at front at least once a month or every 200 hours of operation, whichever occurs first. These grommets and ball joints must be replaced if lost or worn.

WARNING: Failure to maintain these grommets and ball joints will affect steering.

Visually inspect steering shock absorbers every 500 hours for damage or wearing. If excessive oil leakage is evident, then replace that shock absorber.

The tractor steering has been factory adjusted to eliminate creeping when the neutral lock is engaged. However, should the tractor begin to creep, the steering control lever linkage can be adjusted as follows (Fig. 5-1 and 5-2):

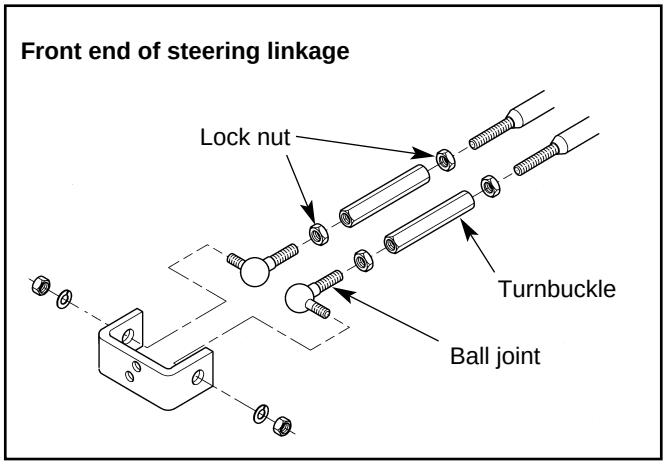


Figure 5-1

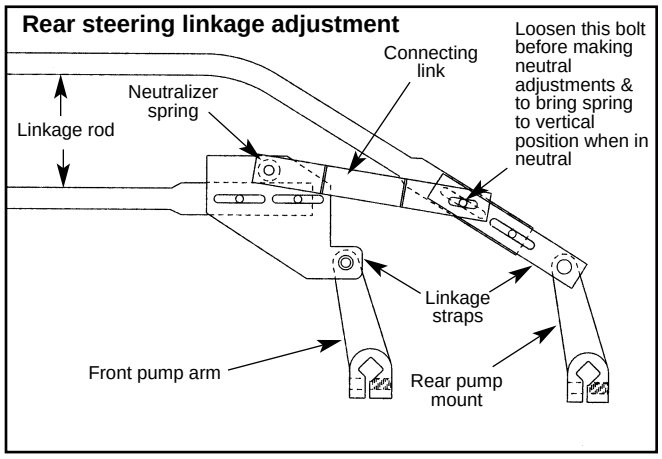


Figure 5-2

Steering Lever Neutral Adjustment with Turnbuckle

Fine adjustment to the steering is made with the turnbuckle on the front end of the steering control lever linkage. Additional adjustment is available if necessary at the rear linkage straps near the pump.

Neutral is properly adjusted when the T-Lever steering tube is locked in the neutral position and the drive wheels are in neutral (not turning).

If the tractor creeps in neutral position the control linkage may be adjusted as follows:

1. Raise and block the tractor up so the drive wheels are off of the floor.

WARNING: Make certain machine is secure when it is raised and placed on the jack stands. The jack stands should not allow the machine to move when the engine is running and the drive wheels are rotating. Use only certified jack stands.

2. Position the T-Lever steering tube in neutral position and lock the neutral lock lever.
3. Start the engine, engage hydraulics and observe which way the wheels are rotating.

   NOTE: On units with serial numbers prior to and including 11374 (last five digits) before making the neutral adjustment, loosen the nut securing the connecting link to the rear pump steering linkage. Fig. 5-2. This will be tightened again **after** neutral is adjusted.

   NOTE: On units with serial numbers after 11374 (last five digits) before making the neutral adjustment, loosen the nut securing the connecting link to the front pump steering linkage. Fig. 5-4. This will be tightened again **after** neutral is adjusted.
4. If wheel(s) are rotating forward, loosen the lock nuts on the turnbuckles and rotate the turnbuckle to shorten the linkage referenced in Fig. 5-1 until the wheel(s) come to a stop.

   Turnbuckle already at maximum adjustment:

   On units with serial numbers prior to and including 11374 (last five digits) if the turnbuckle is adjusted to the maximum (threads bottomed out or extended with more than 1-1/4" exposed when ignoring the jam nut on either side of the turnbuckle), turn the turnbuckle back to the center of its adjustment (3/4" of threads showing when ignoring jam nut). Then adjust to approximate neutral using the slots in the rear steering linkage before making the final adjustment with the turnbuckle.

   On units with serial numbers after 11374 (last five digits) if the turnbuckle is adjusted to the maximum (threads bottomed out or extended with more than 1-1/4" exposed when ignoring the jam nut on either side of the turnbuckle), turn the turnbuckle back to the center of its adjustment (3/4" of threads showing when ignoring jam nut). Then check the 3.59" ± .06 dimension shown in Fig. 5-5. Make certain this dimension is correct then loosen the front nut and adjust to approximate neutral. Fig. 5-4 Re-tighten nut and make the final adjustment with the turnbuckle.
5. If wheel(s) are rotating in reverse then loosen the lock nuts on the turnbuckle and rotate the turnbuckle to lengthen the linkage as referenced in Fig. 5-1 until the wheel(s) come to a stop.
6. When both wheels remain in neutral then tighten the lock nuts to lock the turnbuckle.
7. Test again by raising the neutral lock lever and moving the T-lever around and returning it again to the neutral position and locking it.

   NOTE: On units with serial numbers prior to and including 11374 (last five digits) if the tires are in neutral, adjust the connecting link to make the spring vertical, then tighten the nut holding the

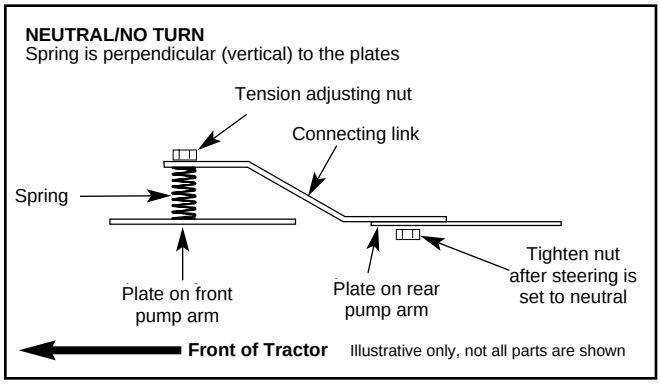


Figure 5-3

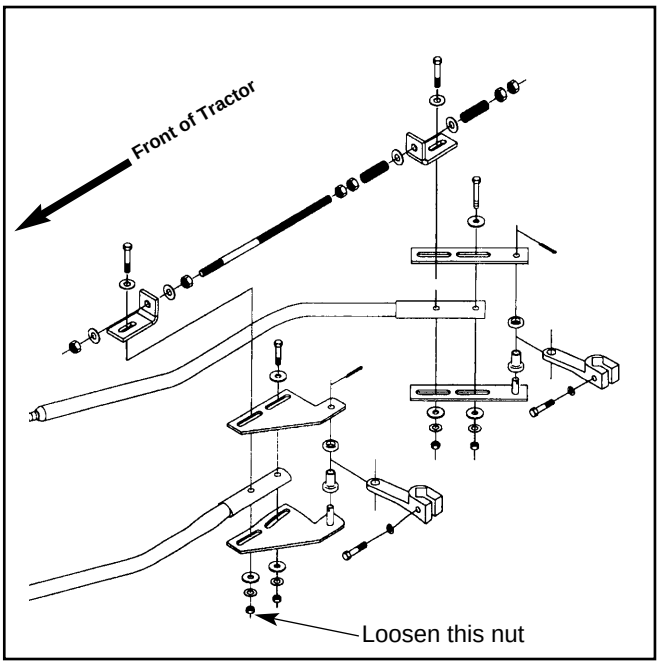


Figure 5-4

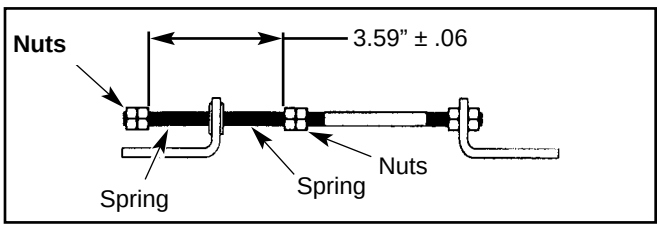
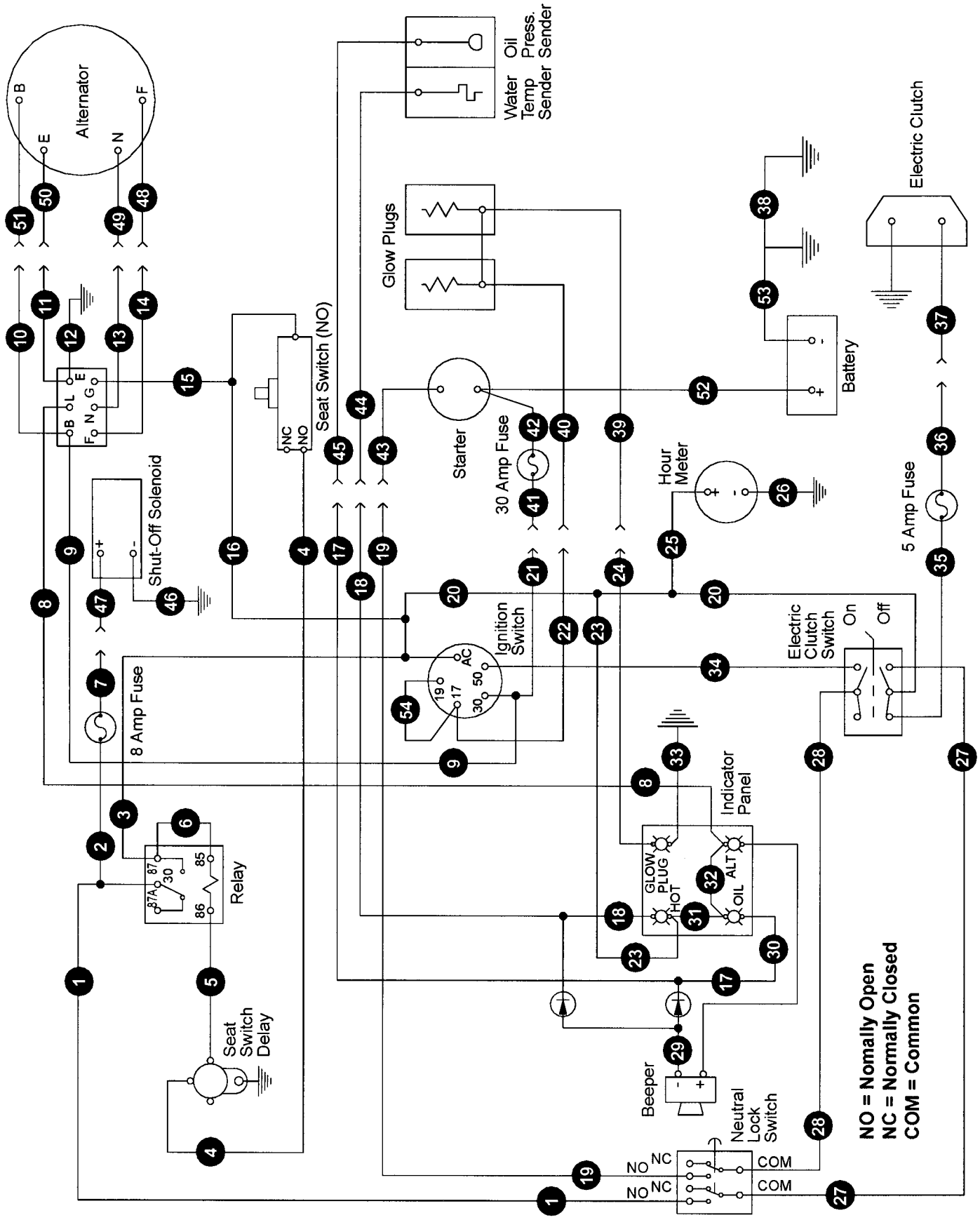


Figure 5-5

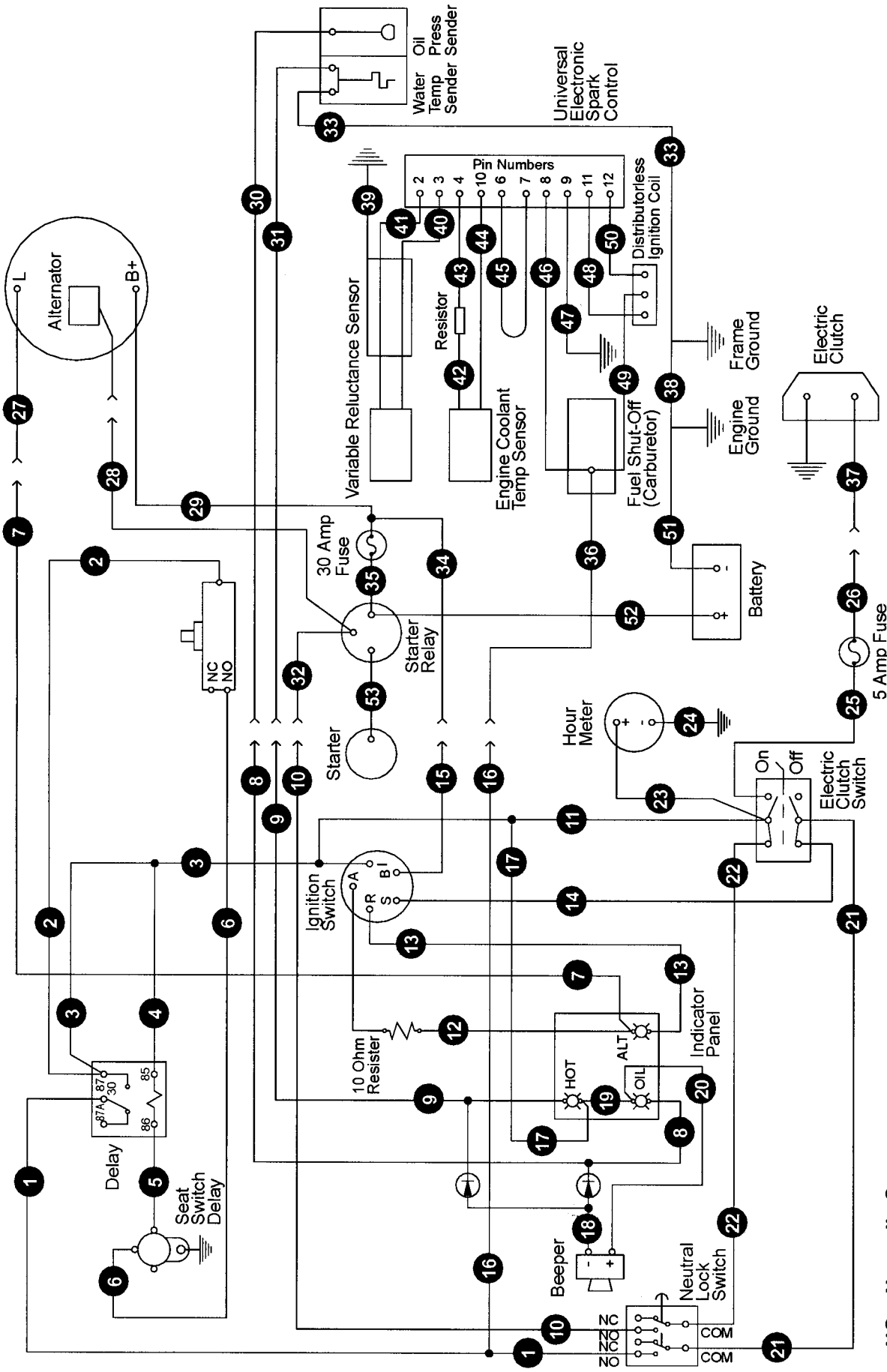
Electrical Diagram • Models 4200 & 4400



PART NO.	INDEX	COLOR	GA.	DESCRIPTION
726810	1	RED	12	Neutral Lock Switch (NO) to Relay (30)
	2	ORANGE	12	In Line Fuse Holder to Splice
	3	WHITE	12	Ignition Switch (AC) to relay (87)
	4	BROWN	18	Delay Module (yellow lead) to Seat Switch
	5	BLUE	18	Relay (86) to Delay Module (green lead)
	6	BLACK	18	Relay (85) to Relay (87)
	7	ORANGE	12	In Line Fuse Holder to Wire Harness Junction
	8	ORANGE	18	Alternator Light to Regulator
	9	WHITE	16	Splice to Regulator
	10	WHITE	16	Regulator to Wire Harness Junction
	11	BLACK	16	Regulator to Wire Harness Junction
	12	BLACK	16	Regulator to Ground
	13	RED	16	Regulator to Wire Harness Junction
	14	GREEN	16	Regulator to Wire Harness Junction
	15	BROWN	16	Splice to Regulator
	16	WHITE	18	Ignition Switch (AC) to Seat Switch
	17	RED	18	Oil Light to Wire Harness Junction
	18	BROWN	18	Hot Light to Wire Harness Junction
	19	YELLOW	14	Neutral Lock Switch (NO) to Wire Harness Junction
	20	GREEN	16	Splice to Electric Clutch Switch
	21	RED	10	Ignition Switch (30) to Wire Harness Junction
	22	BLUE	10	Ignition Switch (17) to Wire Harness Junction
	23	YELLOW	18	Splice to Hot Light
	24	GREEN	16	Glow Plug Light to Wire Harness Junction
	25	ORANGE	18	Splice to Hour Meter (+)
	26	BLACK	18	Hour Meter (-) to Ground
	27	RED	12	Neutral Lock Switch (COM) to Electric Clutch Switch
	28	YELLOW	14	Neutral Lock Switch (COM) to Electric Clutch Switch
	29	BLACK	18	Buzzer (-) to Splice
	30	YELLOW	18	Buzzer (+) to Alternator Light
	31	YELLOW	18	Oil Light to Hot Light
	32	YELLOW	18	Alternator Light to Oil Light
	33	BLACK	18	Glow Plug Light to Ground
	34	ORANGE	14	Ignition Switch (50) to Clutch Switch
	35	BLUE	16	In Line Fuse Holder to Electric Clutch Switch
	36	BLUE	16	In Line Fuse Holder to Wire Harness Junction

PART NO.	INDEX	COLOR	GA.	DESCRIPTION
039701	37	BLUE	16	Wire Harness Junction to Electric Clutch
	38	BLACK	10	Engine Ground to Frame Ground
	39	GREEN	18	Wire Harness Junction to Glow Plug
	40	BLUE	10	Wire Harness Junction to Glow Plug
	41	RED	10	Wire Harness Junction to Fuse Holder
	42	RED	10	Fuse Holder to Starter
	43	YELLOW	14	Wire Harness Junction to Starter Solenoid
	44	BROWN	18	Wire Harness Junction to Water Temperature Sender
	45	RED	18	Wire Harness Junction to Oil Pressure Sender
	46	BLACK	12	Fuel Shut-Off Solenoid (-) to Ground
	47	ORANGE	12	Wire Harness Junction to Fuel Shut-Off Solenoid (+)
	48	GREEN	16	Wire Harness Junction to Alternator (F)
	49	RED	16	Wire Harness Junction to Alternator (N)
	50	BLACK	16	Wire Harness Junction to Alternator (E)
	51	WHITE	16	Wire Harness Junction to Alternator (B)
012153	52	RED	4	Starter to Battery (+)
084772	53	RED	4	Battery (-) to Engine Ground
039859	54	BLUE	10	Jumper Ignition Switch (17) to (19)

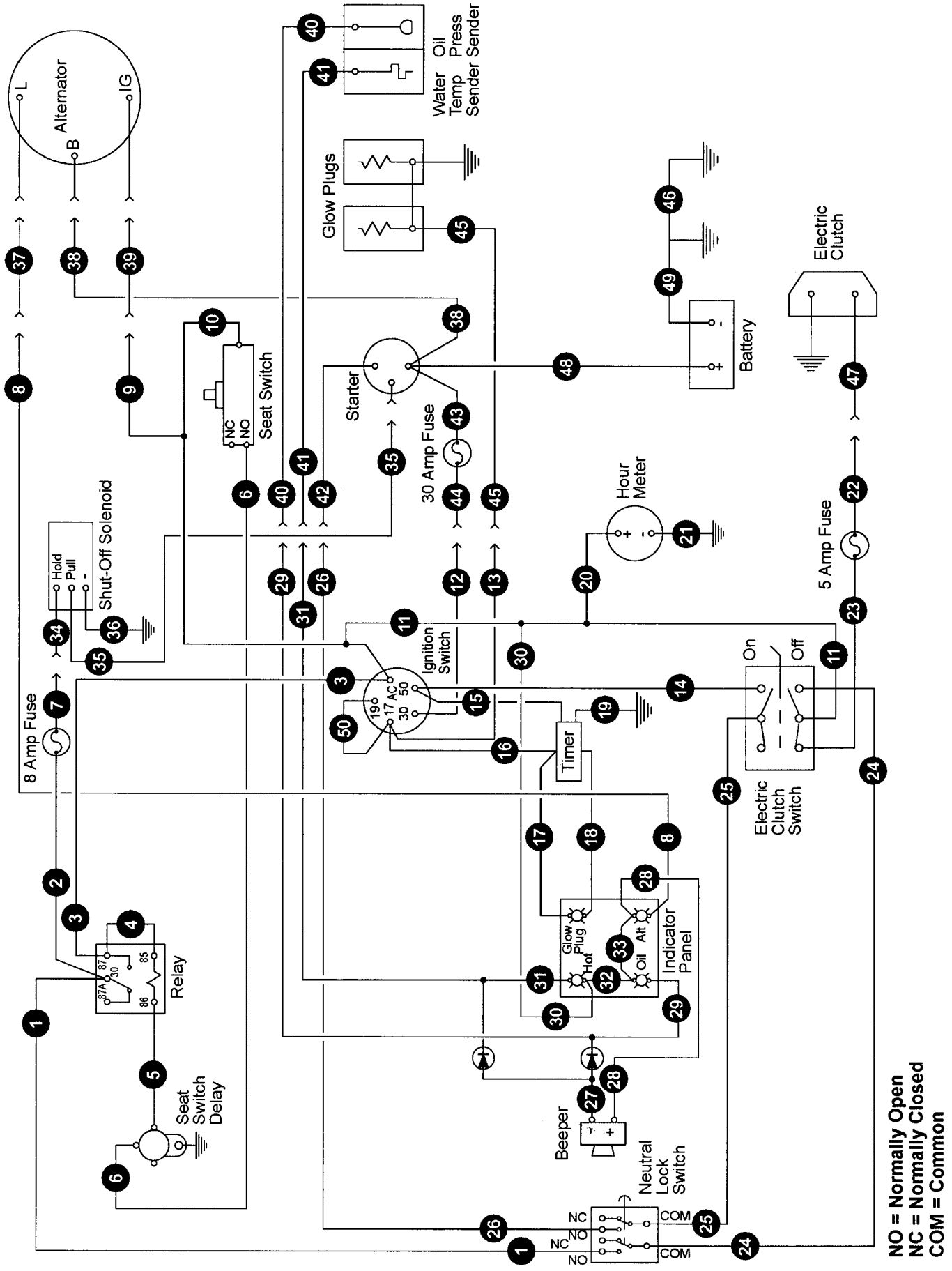
Electrical Diagram • Models 4300 & 4500



PART NO.	INDEX	COLOR	GA.	DESCRIPTION
726802	1	RED	14	Neutral Lock Switch (NO) to Relay (30)
	2	WHITE	18	Relay (87) to Seat Switch
	3	BROWN	14	Ignition Switch (I) to Relay (87)
	4	BLACK	18	Splice to Relay (85)
	5	YELLOW	18	Delay Module (green lead) to Relay (86)
	6	BLUE	18	Delay Module (yellow lead) to Seat Switch
	7	ORANGE	18	Alternator Light to Wire Harness Junction
	8	RED	18	Oil Light to Wire Harness Junction
	9	BROWN	18	Hot Light to Wire Harness Junction
	10	YELLOW	14	Neutral Lock Switch (NO) to Wire Harness Junction
	11	GREEN	16	Splice to Electric Clutch Switch
	12	ORANGE	18	Alternator Light to Ignition Switch (A)
	13	BLACK	18	Alternator Light to Ignition Switch (R)
	14	ORANGE	14	Ignition Switch (S) to Electric Clutch Switch
	15	RED	12	Wire Harness Junction to Ignition Switch (B)
	16	RED	18	Splice to Wire Harness Junction
	17	YELLOW	18	Splice to Hot Light
	18	BLACK	18	Buzzer (-) to Splice
	19	YELLOW	18	Oil Light to Hot Light
	20	YELLOW	18	Oil Light to Buzzer (-)
	21	RED	14	Neutral Lock Switch (COM) to Electric Clutch Switch
	22	YELLOW	14	Neutral Lock Switch (COM) to Electric Clutch Switch
	23	ORANGE	18	Electric Clutch Switch to Hour Meter (+)
	24	BLACK	18	Hour Meter (-) to Ground
	25	BLUE	16	In Line Fuse Holder to Electric Clutch Switch
	26	BLUE	16	In Line Fuse Holder to Wire Harness Junction

PART NO.	INDEX	COLOR	GA.	DESCRIPTION
751743	27	ORANGE	18	Wire Harness Junction to Alternator (L)
	28	WHITE	18	Starter Relay to Alternator (Exciter)
	29	WHITE	10	Alternator (B+) to Splice
	30	RED	18	Wire Harness Junction to Oil Pressure Sender
	31	BROWN	18	Wire Harness Junction to Water Temperature Sender
	32	YELLOW	14	Wire Harness Junction to Starter Relay
	33	BLACK	18	Water Temperature Sender to Splice
	34	RED	12	Wire Harness Junction to Splice
	35	WHITE	10	Fuse Holder to Starter Relay
	36	BLACK	18	Carburetor Solenoid to Wire Harness Junction
	37	BLUE	16	Wire Harness Junction to Electric Clutch Switch
	38	BLACK	10	Engine Ground to Frame
715243	39	SILVER	18	Module to Engine Ground
	40	BLACK	18	Module to Variable Reluctance Sensor
	41	CLEAR	18	Module to Variable Reluctance Sensor
	42	TAN/BLACK	18	Resistor to Engine Coolant Temperature Sensor
	43	TAN/BLACK	18	Module to Resistor
	44	BLUE	18	Module to Engine Coolant Temperature Sensor
	45	BROWN	18	Module to Module
	46	YELLOW	18	Module to Fuel Solenoid
	47	BLACK	18	Module to Engine Ground
	48	YELLOW/RED	18	Module to DIS Connector
	49	RED	18	DIS Connector to Fuel Solenoid
	50	YELLOW/BLACK	18	Module to DIS Connector
085852	51	RED	4	Battery (-) to Engine Ground
012153	52	RED	4	Starter to Battery (+)
085381	53	RED	4	Starter Relay to Starter

Electrical Diagram • Models 4420 & 4600



PART NO.	INDEX	COLOR	GA.	DESCRIPTION
754960	1	RED	14	Wire Neutral Lock Switch (NO) to Relay (30)
	2	ORANGE	14	In-Line Fuse Holder to Relay (30)
	3	BROWN	12	Ignition Switch (AC) to Relay (87)
	4	PURPLE	18	Relay (85) to Relay (87)
	5	BLUE	18	Relay (86) to Delay Module (Green Lead)
	6	BROWN	18	Seat Switch (NO) to Delay Module (Yellow Lead)
	7	ORANGE	14	In-Line Fuse Holder to Wire Harness Junction
	8	BLUE	18	Alternator Light to Wire Harness Junction
	9	PURPLE	16	Splice to Wire Harness Junction
	10	WHITE	18	Ignition Switch (AC) to Seat Switch (COM)
	11	GREEN	14	Splice to Electric Clutch Switch
	12	RED	10	Ignition Switch (30) to Wire Harness Junction
	13	PURPLE	10	Ignition Switch (17) to Wire Harness Junction
	14	ORANGE	14	Ignition Switch (50) to Electric Clutch Switch
	15	GREEN	18	Glow Plug Light Timer to Ignition Switch (50)
	15	BLUE	18	Glow Plug Light Timer to Ignition Switch (17)
	17	GREEN	18	Glow Plug Light Timer to Glow Plug Light
	18	PURPLE	18	Glow Plug Light Timer to Glow Plug Light
	19	BLACK	18	Glow Plug Light Timer to Ground
	20	ORANGE	18	Splice to Hour Meter (+)
	21	BLACK	18	Hour Meter (-) to Ground
	22	BLUE	16	In-Line Fuse Holder to Wire Harness Junction
	23	BLUE	16	In-Line Fuse Holder to Electric Clutch Switch
	24	RED	14	Neutral Lock Switch (COM) to Electric Clutch Switch
	25	YELLOW	14	Neutral Lock Switch (COM) to Electric Clutch Switch
	26	YELLOW	14	Neutral Lock Switch (NO) to Wire Harness Junction
	27	BLACK	18	Buzzer (-) to Splice
	28	YELLOW	18	Buzzer (+) to Alternator Light
	29	RED	18	Oil Light to Wire Harness Junction
	30	YELLOW	18	Splice to Hot Light
	31	BROWN	18	Hot Light to Wire Harness Junction
	32	YELLOW	18	Oil Light to Hot Light
	33	YELLOW	18	Alternator Light to Oil Light

PART NO.	INDEX	COLOR	GA.	DESCRIPTION
754952	34	ORANGE	14	Wire Harness Junction to Fuel Shut-Off Solenoid (+)
	35	BROWN	12	Starter Solenoid Lead to Shut-Off Solenoid (Pull)
	36	BLACK	14	Ground to Fuel Shut-Off Solenoid (-)
	37	BLUE	18	Wire Harness Junction to Alternator (L)
	38	WHITE	12	Starter Solenoid Post to Alternator (B)
	39	PURPLE	16	Wire Harness Junction to Alternator (IG)
	40	RED	18	Wire Harness Junction to Oil Pressure Sender
	41	BROWN	18	Wire Harness Junction to Temperature Sender
	42	YELLOW	14	Wire Harness Junction to Starter Solenoid Spade Term
	43	RED	10	In-Line Fuse Holder to Starter Solenoid Post
	44	RED	10	Wire Harness Junction to In-Line Fuse Holder
	45	PURPLE	10	Wire Harness Junction to Glow Plug
	46	BLACK	10	Frame to Engine Ground
	47	BLUE	16	Wire Harness Junction to Electric Clutch
012153	48	RED	4	Starter to Battery (+)
085852	49	RED	4	Battery (-) to Engine Ground
039859	50	BLUE	10	Ignition Switch (17) to Ignition Switch (19)

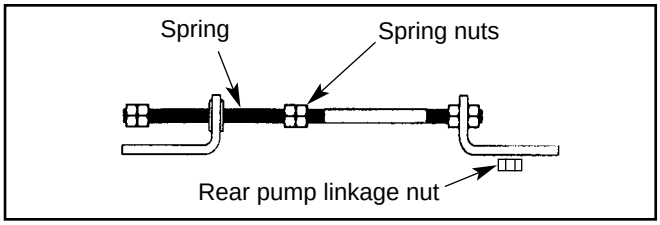


Figure 5-6

connecting link to the rear pump steering linkage. Fig. 5-3 The unit is now ready to operate.

T-Bar rotational resistance adjustment

On units with serial numbers prior to and including 11374 (last five digits)

Purpose of this spring and connecting link assembly (Fig. 5-3) is primarily to provide the operator with a means of adjusting the rotational resistance of the T-bar handle. Before adjusting for rotational resistance, lock the T-bar in neutral and make sure the spring is vertical, (see previous step 7).

The spring may be tightened to increase the rotational resistance or loosened to decrease it to suit the operator's comfort. Adjustment may be made by turning the nut (Fig. 5-3) to vary the spring tension until the operator is satisfied with the resistance to rotation. As a starting point, turn the tension adjusting nut (Fig. 5-3) until the connecting link compresses the spring 0.06"-0.10" (1-1/2 - 2 turns). Test neutral again by raising the neutral lock lever and moving the T-lever around and returning it again to the neutral position and locking it. Re-adjust for neutral if necessary.

IMPORTANT: The spring does not need to be very tight for this system to work properly.

On units with serial numbers after 11374 (last five digits)

To adjust the rotational resistance of the T-bar handle on these units, lock the T-bar in neutral.

The spring may be tightened to increase the rotational resistance to suit the operator's comfort. Adjustment may be made by loosening the rear pump linkage nut (Fig. 5-6) and tightening the two spring nuts to compress the spring. When the operator is satisfied with the resistance to rotation, tighten the rear pump linkage nut. Test neutral again by raising the neutral lock lever and moving the T-lever around and returning it again to the neutral position and locking it. Re-adjust for neutral if necessary.

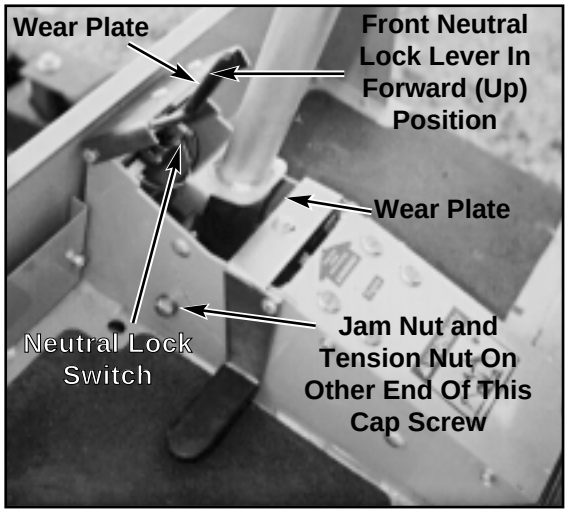


Figure 5-7

Steering lever tension

Lever action should be positive and smooth, allowing free movement forward and back with very little or no side play. It should remain where set, when released from your grasp, anywhere in the forward travel position. If lever is too loose: loosen the jam nut on steering lever pivot bolt, tighten the tension nut to remove slack and tighten the jam nut (Fig. 5-7).

Wear plate

Adjustable wear plates, attached to the front and rear neutral lock devices positions the control lever in neutral. Loosen the mounting cap screws and move the plate (holes are slotted for this purpose) to compensate for wear, or when tractor wants to creep when neutral locks are engaged. When plate becomes worn to the point that adjustment is no longer possible, it can be turned over to utilize the opposite side. Replace plate when both sides are worn (Fig. 5-7).

Parking brake adjustment

Occasionally check the parking brakes by engaging the parking brake lever; start engine and set throttle at slow idle. Advance steering control lever approximately 1" forward; brakes should hold tractor from movement.

When adjustment becomes necessary, disengage the parking brake lever and rotate the knob located on end of lever clockwise (Fig. 5-8).

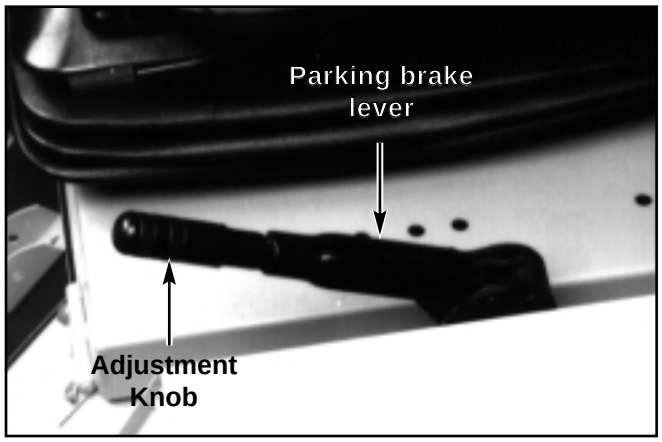


Figure 5-8

Electrical system

A 12-volt, negative ground system is used for ignition and accessories throughout. The battery is located behind the hinged compartment cover on the left fender (Fig. 5-8). A BCI-group 24F battery is recommended for all-season use. The batteries recommended for the different machines are:

4300/4500 ....12V, 350 CCA (cold cranking amps)
4200 .....12V, 65AH, 385 CCA (cold cranking amps)
4400/4420 ....12V, 80AH, 500 CCA (cold cranking amps)
4600 .....12V, 80AH, 500 CCA (cold cranking amps)

A heavier reserve battery may be required if extremely cold conditions make engine cranking difficult.

Follow battery manufacturer's maintenance, safety,

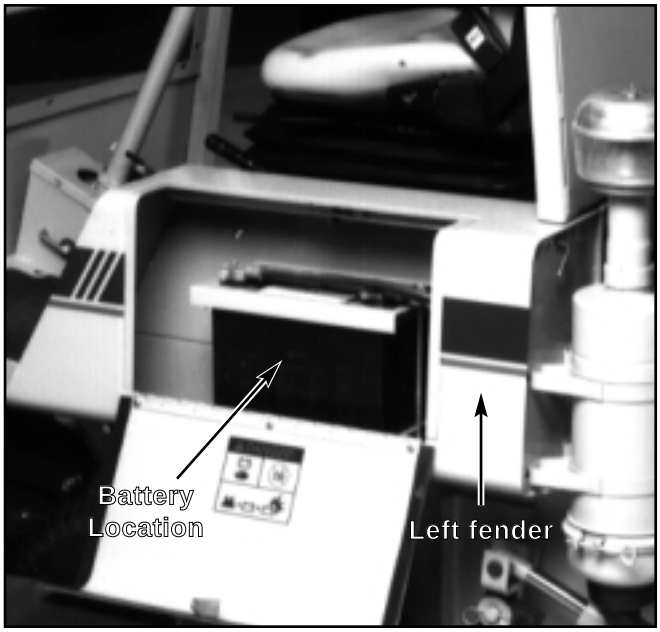


Figure 5-9

storing and charging specifications.

Common circuit failures are usually caused by shorting, corroded or dirty terminals; loose connections, defective wire insulation or broken wires. Switches, solenoids and ignition components may also fail, causing a shorted or open circuit.

Before attempting any failure diagnosis of the electrical system, use a test light or voltmeter to check the battery voltage. If the battery voltage is satisfactory, check the cleanliness and tightness of the terminals and ground connections. A general understanding of electrical servicing and use of basic test equipment is necessary for troubleshooting and repair.

Major overhaul or repair of the starting motor or alternator should be performed by trained technicians only.

Although integral, the tractor electrical system can be described as three separate circuits for explanation and troubleshooting.

1. **Run Circuit:** this circuit supplies needed continuity for normal operation of engine, controls and electric clutch while the operator remains seated on the tractor. For personal protection, the engine will stop should the operator become unseated while operating the tractor, when the neutral lock is disengaged or the electric clutch is switched ON.

   When the ignition switch is turned to the RUN position, battery voltage is supplied from the switch to the operator's seat switch. When weight is applied to the seat, the normally open seat switch closes and completes the circuit through the relay coil to ground. Current flowing through the relay coil closes the normally open relay switch, which completes the circuit to the neutral lock switch and fuel shut-off solenoid.

   So long as appropriate weight remains on the seat, the engine will run when the electric clutch switch is ON and/or the neutral lock is disengaged. However, when weight is removed from the seat, the engine fuel shut-off solenoid will close and the engine will stop.

2. **Starting Circuit:** this circuit supplies electrical power for engine starting, providing the interlock is engaged and electric clutch is switched OFF. The operator seat switch is bypassed in this mode.

   When the ignition switch is turned to the START position, battery voltage is available from the switch to the electric clutch switch. When the electric clutch switch is in the OFF position, current passes through the center switch tap to the normally open neutral lock switch. When the neutral lock is engaged, the switch is closed and current flows through one switch circuit to the starter for engine cranking.

   Current from the ignition switch passes through the electric clutch switch, when it remains in the OFF position, to and through the other neutral lock switch circuit and on to the fuel shut-off solenoid and coil.

   In summary, this is a safety control circuit which inhibits the supply of heavy current to the starter motor, unless the electric clutch switch is in the OFF position and the neutral lock is engaged.

3. **Accessory and Instrument Circuit:** this circuit is used for the warning lights and audible signal connected to the engine oil, alternator and water sensing units. It also supplies power for the hour meter and electric clutch switch.

   When the ignition switch is turned to the RUN position, battery voltage is supplied to the engine alert system via ignition switch terminals. Grounding, to complete the circuit and signal the operator, is through the oil pressure and water temperature sending units.

   The alternator warning light is connected between the ignition switch and the alternator field circuit.

   The ignition switch also supplies battery voltage through the on-off toggle switch and in-line 5 amp fuse to the electric clutch with frame ground wire. The hour meter operates from a wire tap at electric clutch switch and a frame ground wire.

Burnishing the electric clutch

WARNING: To insure maximum performance and life, it is necessary to burnish the clutch.

The electric clutch will need to be burnished properly if a new clutch is installed. Burnishing the clutch develops maximum contact between the clutch armature and the rotor. To burnish the clutch use the following procedure:

1. Attach an implement to the tractor PTO shaft per the implement's mounting instructions.
2. Cycle the clutch on and off 50 times (15 seconds on and 15 seconds off) with the engine operating at low idle, approximately 1500 rpm. Make certain that the PTO shaft comes to a complete stop between cycles.

Access to engine and hydraulic pumps

WARNING: Always wear adequate eye protection when servicing the hydraulic system, battery and cooling system.

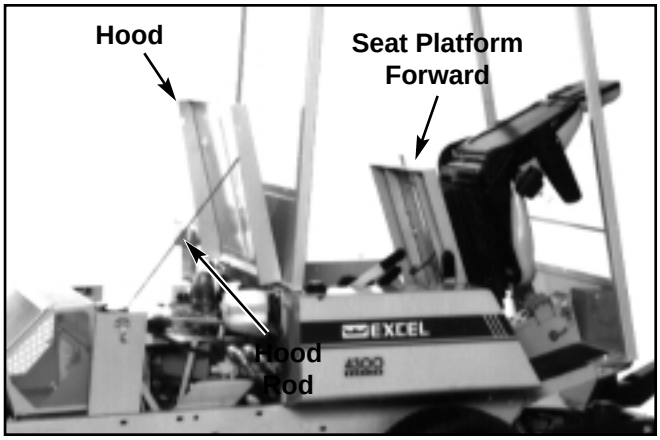


Figure 5-10

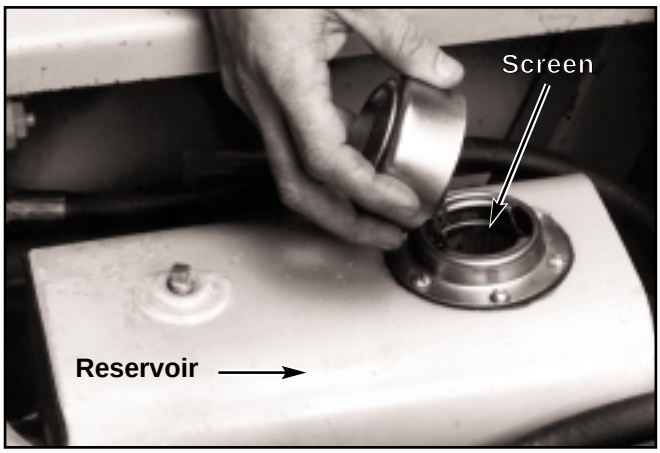


Figure 5-11

The engine hood at rear is hinged. To raise it, unfasten the two latches and tilt hood up and forward. A hood support rod is stored clipped to the bottom side. Insert this rod in the hole provided in the rear support on right side (Fig. 5-10).

Access to the hydraulic reservoir and pumps is gained by pulling forward on the spring latch (located at the front of the operator's seat platform) and tilting the seat up and forward.

Hydraulic system

IMPORTANT: Never use hydraulic or automatic transmission fluid in this system; use only motor oil as specified. Always keep quick-release couplers capped when separated and wipe them clean before connecting. Remember, dirt is the prime enemy of any hydraulic system.

WARNING: Hydraulic oil escaping under pressure can penetrate skin. Before applying pressure to hydraulic system, make sure all connections are tight and all hoses and lines are in good condition. To find a leak under pressure, use a piece of cardboard or wood – **never** use your hands. Lower all attachments and shut off engine before opening any hydraulic lines.

The 3.5 U.S. gallon (13.2 liter) hydraulic oil reservoir is located under the tractor seat platform (Fig. 5-11).

Check level of oil in hydraulic system after every 100 hours of tractor operation or monthly, whichever occurs first. Check more often of system appears to be leaking or otherwise malfunctioning.

Fluid level should touch the bottom of screen under filler cap. Use only SAE 10W40 SG, SF/CC, CD service motor oil.

Change hydraulic system filter element after first 50 hours of tractor operation, then replace filter and oil in reservoir every 1000 hours or annually, whichever occurs first. When changing hydraulic oil use one unit (approximately 7 oz.) of Lubrizol additive (Hustler P/N 027912). This additive, available from your Hustler dealer, will increase the performance life of the hydraulic system components.

Filter is located to the left of reservoir and is accessible from underneath (Fig. 5-12). A standard oil filter wrench is used to change filter, threads are right handed. Use a 10 micron, 700 psi filter element only.

IMPORTANT: Fill the filter element with clean oil, before installing, to prevent drawing air into the system pumps.

1. Fill the filter element with approximately 1.8 pints (0.82 liter) clean system oil. Smear a light coating of oil on upper surface of rubber seal.
2. Install the filter element on base, tighten 1/2 turn after initial gasket contact - DO NOT OVERTIGHTEN.
3. Start tractor engine, engage the hydraulic pump clutch and let it run at approximately 2/3 throttle for a few minutes to work any trapped air out of the system before stroking the wheel motor control levers.
4. Disengage the pump clutch lever, stop the engine and check the filter and connections for leaks.
5. Check hydraulic reservoir for specified oil level. Add clean oil as necessary.

NOTE: The hydraulic pump is equipped with tow valves. For more information refer to Operation section, Moving tractor with stalled engine.

Fuel system

WARNING: Observe usual fuel handling precautions; do not smoke while refueling, do not fill tank with engine running or while engine is hot; allow engine to cool before storing machine inside a building, keep fuel away from

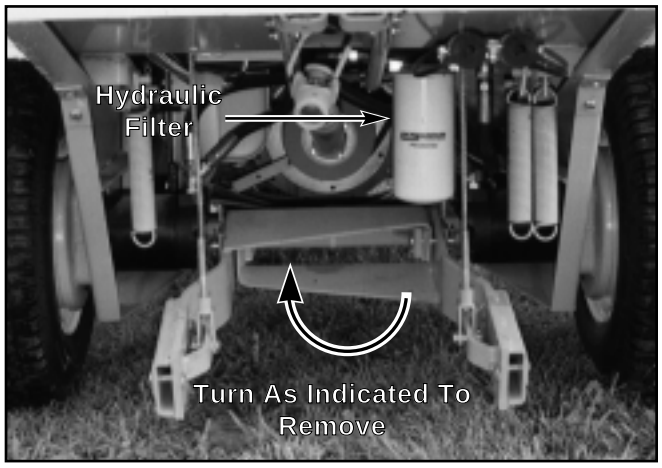


Figure 5-12

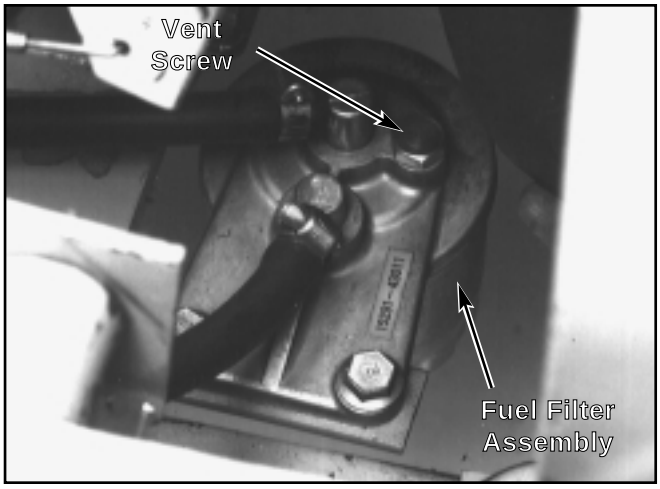


Figure 5-13

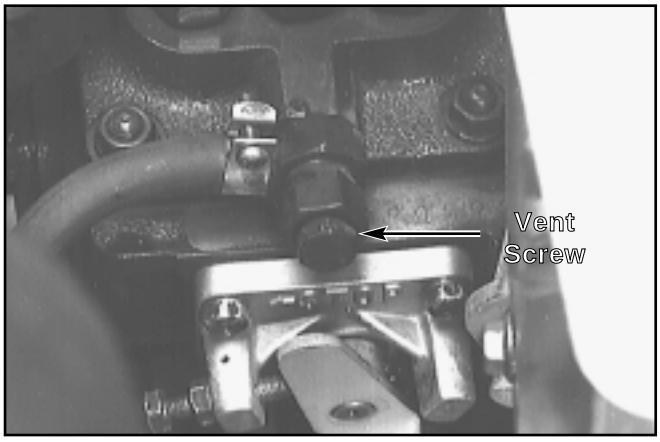


Figure 5-14

open flame or spark and store machine away from open flame or spark if there is fuel in the tank. Read and observe safety precautions at front of this manual.

The 11 U.S. gallon (41.6 liter) fuel tank is located in the tractor's right fender. It is equipped with a gauge built into the filler cap.

There is a fuel shut-off valve installed on the fuel tank. Close this valve to prevent fuel loss or spill whenever changing filter, performing maintenance, transporting or storing the tractor.

Models 4200, 4400, 4420 and 4600: This engine requires number 2 diesel fuel only. The spin-on type fuel filter is located on the left, rear side of the engine. Change filter after every 400 hours of operation or annually, whichever occurs first.

Diesel engines are subject to air blockage whenever the fuel tank runs empty, the fuel filter has been removed, any fuel lines have been disconnected or removed and replaced, or when the tractor has been stored for a period of time. Should such air blockage occur, it will be necessary to bleed the system, removing any trapped air between the fuel tank and filter, then trapped air between the filter and injector pump as follows:

1. Fill the tank with fresh fuel and make sure the shut-off valve is open at tank.

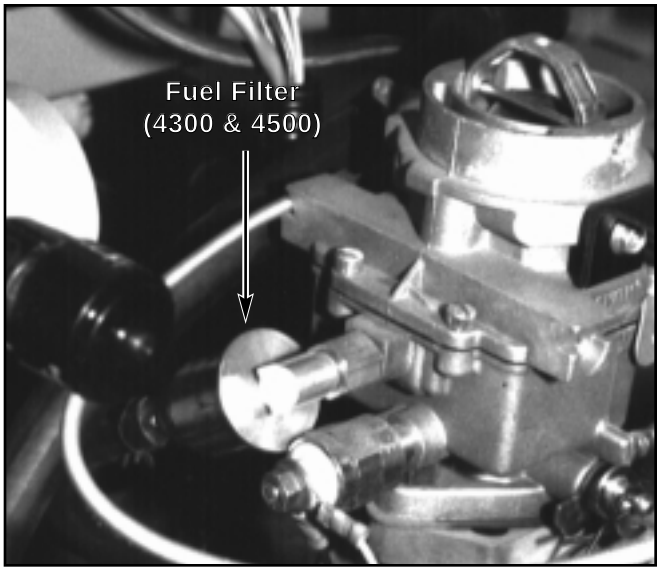


Figure 5-15

2. Loosen the vent screw (Fig. 5-13) located on top of the fuel filter and leave it open until air bubbles are no longer present, then close the vent screw.
3. Loosen the vent screw on the injector pump (Fig. 5-14). Operate the hand priming lever (located below the injector pump) 10 to 30 times.
4. Start the engine and run at low rpm for 15 to 30 seconds to expel air from pump, then close the air vent screw.
5. If engine fails to start, repeat steps 2, 3 and 4.

Models 4300 and 4500: This engine is designed to use unleaded gasoline with a minimum octane rating of 87. See engine manual for exceptions.

The fuel filter is located on the left side of the carburetor (Fig. 5-15). Change filter every 400 hours or annually, whichever occurs first. When changing filter, by sure to note direction of fuel flow marked on filter case.

When replacing the fuel filter, check the fuel line hoses for any cracks or leaks. Replace as needed.

Engine oil and filter

Check engine oil daily and after every 4 hours of operation. Tractor must be setting level when checking oil. Refer to engine manual and maintenance schedule for oil recommendation and capacities.

Engine air filter

A specially designed two-stage dry filter, with restriction indicator (Fig. 5-16), supplies clean combustion air to the engine. This is a self-cleaning element, but it needs to be replaced whenever the restriction indicator shows red. Check the indicator daily and replace element as needed or annually whichever occurs first.

Recommended service procedure

Many engine failures can be attributed to improper air cleaner servicing. Ingested dust and dirt will cause cylinder, piston and bearing damage in a few hours. "Dusted" engines will result from:

1. Overservicing the air filter element.
2. Improper installation.

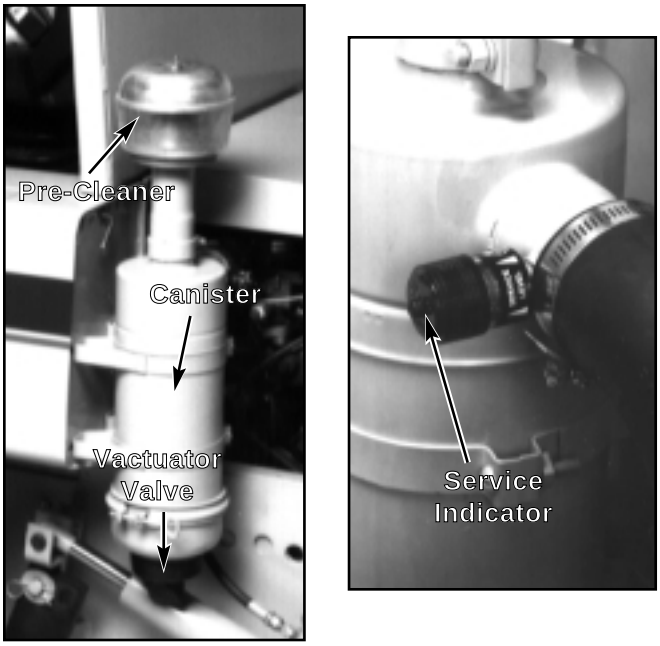


Figure 5-16

3. Damaged filter, seals or canister.

4. Incorrect air filter element size.

5. Use of poorly designed aftermarket air filter elements.

Air cleaner servicing is an inexpensive maintenance check that can prevent costly non-warrantable premature engine damage.

Overservicing

Overservicing occurs when an air filter element is removed for cleaning or replacement before it is necessary. Each time the filter is removed a small amount of dirt and dust could fall in the intake system. This accumulated dirt can cause a dusted engine. It only takes a few grams of ingested dirt over the normal service life of an engine to cause a dusted engine.

An air cleaner element should only be changed when the restriction indicator shows red. **Do not clean element, replace with a new element only.** Cleaning used air filter elements, through improper cleaning procedures, can get dust on the inside of the filter causing dirt ingestion and engine failure.

It is important to note that whenever an air filter element is cleaned by **any method,** the person or company performing the cleaning assumes responsibility for the integrity of the filter from then on. **The Donaldson warranty for air filters expires upon cleaning or servicing in any manner because the condition of the filter after servicing is completely out of their control. Therefore, on a dust ingested engine failure, there will be no warranty consideration if the air filter element has been cleaned or serviced in any manner.**

A partially dirty air filter element works better than a new element. Therefore, a dirty filter element is not bad for the engine unless it is excessively restricting the air flow and engine performance is affected. The reason is simple. The media in the filter must be porous to allow air to pass through it. When dirty air passes through the filter, the dirt plugs some of the holes in the media and actually acts as part of the filter media. When the next round of dirt enters, the first dirt helps filter out even smaller particles making the filter more efficient at stopping dirt from entering the engine. This is referred to as barrier filtration.

Of course, at some point the filter media becomes too clogged to allow air to pass. That is why it is so important to monitor airflow restriction with a restriction indicator. A restriction indicator takes the guesswork out of air cleaner servicing and allows you to safely benefit from the filter's optimum performance.

The mowing conditions will determine the frequency of air filter element changing. Generally, it's time to service the air filter element when the restriction indicator shows red or when the engine begins to lose power.

Improper installation of an air filter element

Dust must not leak past the seals on each end of the air filter element. The filter must be aligned within the canister and properly seated for an effective seal so that no dirt can enter the engine. Be sure to tighten the filter retaining nut securely to insure a proper seal.

Damaged filter, seals or canister

Never bang or bump the filter element against the tire or any solid object, as dust and dirt particles will be forced through the media causing continual passing of dirt into the engine. Visually inspect the outside of the air cleaner canister periodically for external damage and replace if necessary.

Incorrect air cleaner element

Use only the correct Donaldson air filter element, Hustler part number 032029, which is designed to fit the canister properly.

Hustler air filter elements have the correct media composition, filter area, micron size and dimensions. Always use genuine Hustler filters. Many aftermarket filters have been found to be incompatible with Hustler's canisters and engines.

The air filter must remain intact to block passage of dirt and foreign particles from entering the engine. Being inclined to disbelieve the need for more expensive air filter elements used on gasoline and diesel engines may cause some individuals to opt for a less expensive part.

The filter element must be sufficient size and construction to withstand stresses, caused by rapid cycling of the air volume demanded by the engine, without cracking or tearing under fatigue and pressure (especially diesel engines). Therefore, Hustler Turf Equipment and the engine manufacturers have carefully selected a reliable filter designed to fit the needs of the engines. The filter specified is a Donaldson filter, Hustler part number 032029.

Owners should be reminded that failure to use original equipment replacement parts is an "alteration" and will not be considered for warranty in the event of engine damage.

Recommended service procedure

1. Check dust cap. Dust or water should not be allowed to build up closer than one inch from the baffle. The Vacuator™ Valve should eliminate dust and water from cup automatically, empty only as necessary. Check to see if the Vacuator™ Valve is functioning and in good condition. Replace if necessary. Do not operate machine without the Vacuator™ Valve installed.

2. Service elements only when restriction indicator shows red. Check restriction indicator daily or more frequently if operating in dusty conditions.
3. Loosen wing nut and remove element. Clean the canister with a damp cloth.
4. Before installing a new element, inspect it by placing a bright light inside and rotate the element slowly, looking for any holes or tears in the paper. Also check gaskets for cuts or tears. Do not attempt to use a damaged element which will allow abrasive particles to enter the engine.
5. Reinstall the dust cup. Make sure it seals all the way around the air cleaner body, then tighten the clamping thumb screw.
6. Check all fittings and clamps periodically for tightness and inspect hoses for holes or cracks.
7. Periodically check the intake hose for signs of ingested dust. Locate and repair the source of ingested dirt.
8. Never operate a machine without an air filter installed.

When operating in extremely dirty conditions, Hustler recommends Pre-Cleaner Kit, part number 462135, be used to extend the life of the element. The Pre-Cleaner mounts on top of the air filter canister and is designed to remove dirt and debris before it enters the air filter.

Cooling system

Engine cooling is accomplished with circulated water and Ethylene Glycol mixture. The radiator is equipped with a pressure cap and recovery tank. System capacity for the 4300 and 4500 tractors is approximately 3.25 U.S. gallon (12.3 liter). System capacity for the 4200 tractor is approximately 2.50 U.S. gallon (9.5 liter). System capacity for the 4400/4420/4600 tractors is approximately 2.75 U.S. gallon (10.4 liter). A 50-50 mixture is recommended for all season operation. This mixture provides freeze protection to -32 degrees F (-35 degrees C). Should temperatures fall below this level, additional Ethylene Glycol must be added to the mixture.

Visually inspect the system daily prior to operating tractor. Check coolant level in the recovery tank located under the engine hood on the right side, behind fender (Fig. 5-17). The tank is marked with cold engine and hot engine levels. Level should not go above the hot level mark when engine is at normal operating temperature, and coolant should be added to maintain level at or slightly above the cold level mark at all times. When adding coolant, pre-mix the solution before adding it to the recovery tank. It is not necessary to remove radiator cap for adding small amounts of coolant to system.

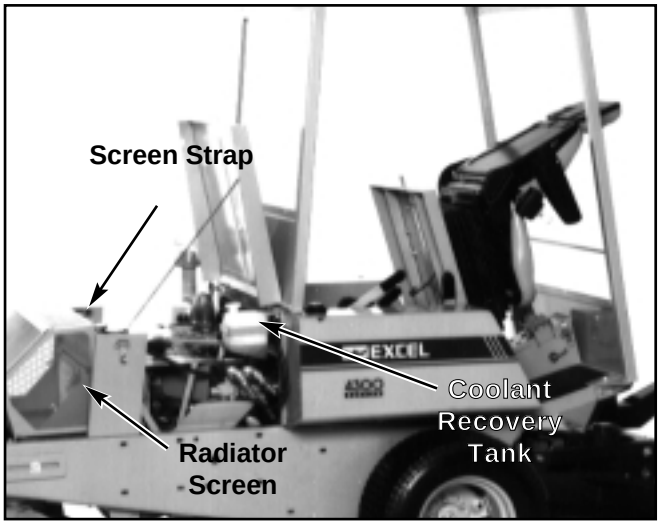


Figure 5-17

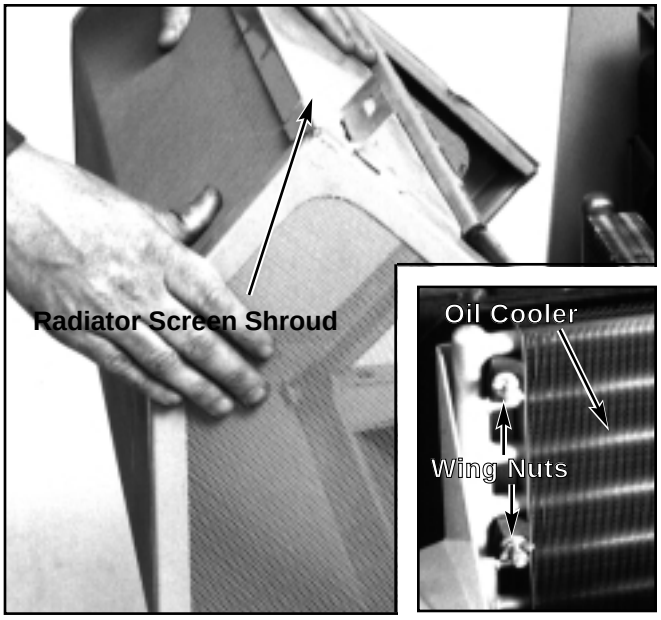


Figure 5-18

DANGER: Never remove radiator cap when engine is hot. Pressurized hot steam and water may be released, causing serious burns or possible blindness.

The system should be drained, flushed and refilled with fresh solution after every 500 hours of operation. The lower radiator tank is equipped with a drain cock. Remove the radiator cap and open this drain for emptying system.

If frequent refilling is necessary or if coolant appears rusty, thoroughly check the system. Refer to the engine manual for information on checking and cleaning system.

The engine cooling fan draws air through both the hydraulic oil cooling and engine cooling radiators. These are protected by a screen shroud. Keep the shroud clean at all times and make sure trash is not allowed to accumulate on or between the radiators, nor allow the fins and cores to become plugged.

The rear screen is removed by lifting engine hood and inserting the support rod. Loosen the strap clamps, one on each side at top, tilt the shroud back, then move the bottom forward to clear the retaining clips and lift shroud off.

The oil cooler may be separated from its mounting by loosening the four rubber mounting pad wing nuts and sliding the cooler assembly back and off the mounts. It should be noticed that it is not necessary to remove the hex lock nut, wing nut or rubber spacer to remove or replace the cooler assembly for servicing or cleaning (Fig. 5-18).

Never force anything into the radiator fins which may bend or distort them. For cleaning, use compressed air or pressurized water only.

Belt replacement

Inspect the pump drive belts frequently for wear and serviceability. Replace a belt that shows signs of severe cuts, tears, separation, weather checking and cracking, or burns caused by slipping. Slight raveling of belt covering does not indicate failure, trim ravelings with a sharp knife.

WARNING: If the pump belt fails, loss of control may occur when operating on a slope.

Inspect the belt pulley grooves and flanges for wear. A new belt, or one in good condition, should never run against the bottom of the groove. Replace the pulley when this is the case, otherwise belt will lose power and slip excessively.

Never pry a belt to get it on a pulley as this will cut or damage the fibers of the belt covering.

Keep oil and grease away from belts, and never use belt dressings. Any of these will destroy the belt composition in a very short time.

General engine maintenance

Detailed instructions and recommendations for break-in and regular maintenance are specified in the **Maintenance Instructions** section of the Ford or Kubota Owner's manual. Please refer to these manuals for engine servicing, lubricating oil levels with quality and viscosity recommendations, belt tensioning, etc. The engine warranty is backed by Ford Motor Co. or Kubota, respectively. Special attention should be paid to applicable data which will not be duplicated here.

TROUBLESHOOTING

The majority of operating problems that occur with a system can be traced to improper adjustments or delayed service. A consistently applied preventive maintenance program, as outlined in the maintenance section of this manual, will prevent many problems. The following chart is designed to help you locate a problem by suggesting probable causes and the recommended solution(s).

SYMPTOMS	PROBABLE CAUSES	SUGGESTED REMEDIES
Starting motor does not crank	Safety interlock system not engaged	Engage system
	Electric clutch switch in **on** position	Put switch in **off** position
	Fuse blown	Replace fuse
	Weak or dead battery	Recharge or replace battery
	For additional causes	See engine manual
Engine cranks but does not start	No fuel or line plugged	Fill tank or replace line
	Pump engaged	Disengage pump
	Numerous	See engine manual
Engine: Runs with continuous misfiring Engine runs unevenly Engine runs improperly	Numerous	See engine manual
Loss of power or system will not operate in either direction	Restriction in air cleaner	Service air cleaner
	Hydraulic line blockage	See your dealer
	Internal interference or leakage in wheel motor	See your dealer
	Insufficient hydraulic oil supply	Check level or reservoir Have dealer check hydraulic pump
Loss of power or system will not operate in either direction	Poor compression or timing	See your dealer or engine manual
	Steering linkage needs adjustment	Adjust linkage
	Relief valves on pump stuck open	See your dealer
	For additional causes	See engine manual
Overheating: Temperature light glows	Leaks in system	Replace/tighten hoses and connections
Frequent refilling of radiator required	Coolant level low	Add coolant
	Fan belt slipping	Adjust belt tension
Coolant appears rusty	Radiator screen clogged	Clean screen
	Radiator core clogged	Clean radiator core
Audible alarm	Thermostat sticking or inoperative	See engine manual
	Heat light malfunction	See your dealer
	For additional causes	See engine manual

SYMPTOMS	PROBABLE CAUSES	SUGGESTED REMEDIES
Oil light glows	Low oil level	Add oil
Audible alarm	Oil pressure gauge or line faulty	See your dealer
	Oil diluted or too light a grade	Change oil and check for source of contamination
	For additional causes	See engine manual
Alternator light glows	Fan belt slipping	Adjust belt tension
	Wiring defective	See your dealer
	Alternator malfunctioning	See your dealer
High oil consumption Engine knocks and other engine noises	Numerous	See engine manual
Tractor jerky when starting or Tractor operates in one direction only	Steering control linkage needs adjustment	Adjust linkage
	Pump or wheel motors faulty	See your dealer
Hydraulic system operating hot	Low hydraulic oil level	Fill reservoir
	Cooling fins plugged	Clean fins
	Hydraulic pump faulty	See your dealer
Tractor creeps when steering control lever in neutral	Steering linkage needs adjustment	Adjust linkage
Tractor circles or veers in one direction	Steering linkage needs adjustment	Adjust linkage
	Wheel motor faulty	See your dealer
	Hydraulic pump faulty	See your dealer
	Unequal tire pressure	Inflate tires equally
Tractor creeps when parking brake on	Brake needs adjustment	Adjust parking brake
	Neutral lock levers need adjusting	Adjust neutral lock levers
Attachment/auxiliary lifts respond slowly	Too much weight on attachment	Reduce amount of weight
	Hydraulic oil level low	Add oil to system
	Hydraulic pump faulty	See your dealer
	Valve control faulty	See your dealer
	Leak in hydraulic system	See your dealer
	Restriction in hose or fitting	Check hoses
PTO shaft will not turn	Fuse blown	Replace fuse
	Loose wires	Check wiring

STORAGE

End of season tractor care

When storing tractor at end of mowing season, the following steps should be taken to ensure readiness for the next mowing season.

1. Remove all grass, dirt, and trash from tractor.
2. If touchup is required order Hustler spray paint (13 oz. can) from your Hustler dealer.
3. Check thoroughly for any worn or damaged parts that need replacing and order them from your dealer.
4. Thoroughly lubricate machine, according to lubrication instructions.
5. Block tractor up so weight is off tires. NOTE: Do not deflate tires.
6. Protect battery from freezing temperatures.
7. Perform separate engine preparation as listed in **engine owner's manual.**
8. Store tractor in a dry place.

New season preparation

Before starting the tractor following post season storage, the following servicing is required:

1. Clean tractor, removing trash and dirt accumulation. Check that all worn or damaged parts were replaced.
2. Check engine oil, hydraulic oil and coolant levels.
3. Fill fuel tank with fresh fuel.

WARNING: At start of new season always check that fresh oil and coolant have been added to machine. If oil and coolant are drained at season's end and not replaced, engine damage will result.

4. Run machine at half-speed for 5 minutes, checking operation of steering control levers and PTO shaft. Stop machine and check for oil leaks, loose fittings and so forth.
5. Tighten any bolts that have loosened and make sure all hairpins, clevis pins and cotter pins are in place.
6. Install all safety shields and review safety precautions listed in this manual.

PRODUCT LITERATURE

This section contains sources of additional literature concerning your tractor. Literature should be ordered from your Hustler dealer, or direct from indicated source.

NOTE: For parts information on your tractor, refer to the Hustler 4200/4300/4400/4420/4500/4600 Parts Manual (Hustler P/N 728436).

Engine information

The 4200 uses a Kubota D950, three-cylinder water-cooled engine. Primary source of information is engine operator's manual, which is included with 4200 owner's manual packet. For additional copies order Hustler P/N 031773 (Kubota P/N 19208-8916-1). Other information includes:

DESCRIPTION	KUBOTA PART NUMBER	ORDER HUSTLER PART NUMBER
Illustrated Parts List Kubota D950	07909-59000	031781
Work Shop Manual Kubota D950	07909-70076	031799

For more information:
See your Hustler dealer.

The 4400 uses a Kubota V1200-B, four-cylinder, water-cooled engine. Primary source of information is engine operator's manual, which is included with 4400 owner's manual packet. For additional copies order Hustler P/N 031807 (Kubota P/N 19286-8916-1). Other information includes:

DESCRIPTION	KUBOTA PART NUMBER	ORDER HUSTLER PART NUMBER
Illustrated Parts List Kubota V1200-BBS-1	07909-50460	031815
Work Shop Manual Kubota V1200-B	07909-70107	031823

For more information:
See your Hustler dealer.

The 4420 uses a Kubota V1205-B, four-cylinder, water-cooled engine. Primary source of information is engine operator's manual, which is included with 4420 owner's manual packet. For additional copies order Hustler P/N 756882 (Kubota P/N 16616-8916-1). Other information includes:

DESCRIPTION	KUBOTA PART NUMBER	ORDER HUSTLER PART NUMBER
Illustrated Parts List Kubota V1205	97898-70850	758920
Work Shop Manual Kubota V1205	97897-00871	758938

For more information:
See your Hustler dealer.

The 4600 uses a Kubota V1505-B, four-cylinder, water-cooled engine. Primary source of information is engine operator's manual, which is included with 4600 owner's manual packet. For additional copies order Hustler P/N 756882 (Kubota P/N 16616-8916-1). Other information includes:

DESCRIPTION	KUBOTA PART NUMBER	ORDER HUSTLER PART NUMBER
Illustrated Parts List Kubota V1505	97898-70870	758896
Work Shop Manual Kubota V1505	97897-00880	758912

For more information:
See your Hustler dealer.

The 4300 & 4500 use a Ford VSG-4111 & VSG-4131 four-cylinder, water-cooled engine. Primary source of information is engine operator's manual, which is included with owner's manual packet. For additional copies order Hustler P/N 031682 (Ford P/N FPPO 194-263). Other information includes:

DESCRIPTION	FORD PART NUMBER	ORDER HUSTLER PART NUMBER
Illustrated Parts List Ford VGS-411/413	194-265	031724
Engine Service Manual Ford VGS-411-413	FPPO 194-264	031716
Ford Service Directory	PPO 192-333	035105

For more information:
See your Hustler dealer.

Hydraulic pump

Power to wheel motors, attachments, and auxiliary cylinders is supplied by a Sundstrand tandem, Series 40 hydraulic pump. For information on pump, see literature listed below.

DESCRIPTION	SUNSTRAND PART NUMBER	ORDER HUSTLER PART NUMBER
Series 40 Service & Repair Manual	BLN—10056A	717231

For more information:
Sundstrand Hydro-Transmission
Customer Services
2800 East 13th Street
Ames, Iowa 50010
Phone: 515-239-6586

Wheel motors

The two hydraulic drive wheel motors on tractor are manufactured by Ross Gear Division of TRW.

DESCRIPTION	ROSS PART NUMBER	ORDER HUSTLER PART NUMBER
Torquemotor MG, MF, MB, ME Series Service Procedures	MG, MF, MB, ME 100	705343

For more information:

TRW Ross Gear Division
800 Heath Street
Lafayette, Indiana 47902
Phone: 317-423-5377
Telex: 279413

NOTE: During warranty period, check with Hustler dealer before attempting repairs on any tractor system. Unauthorized repair work can void warranty of tractor, engine, and other components.

TECHNICAL SPECIFICATIONS

Hustler 4200 specifications

Engine

Make – Kubota
Model – D950-B-26
Type – Three cylinder, in-line, 4-cycle diesel, liquid cooled.
Displacement – 56.6 cu. in. (927 cc)
Horsepower – 21.5 hp (16 KW) mfg. rating @ 3000 RPM
Maximum Torque – 41 ft. lbs. @ 1800 RPM
Compression Ratio – 22:1
Operating RPM – 3000 (max. load), 3200 (no load)
Starter – 12-volt, .8 KW gear drive.
Charging System – 12-volt, 25 amp, belt driven alternator.
Injector Pump – Bosch K type mini pump.
Injector Nozzle – DN 12 SD 12
Starting Assist – Glow plug system is standard. Ignition key operates system.
Crankcase Capacity – 4.5 qts. (4.3 l)
Fuel – Diesel No. 2

Hustler 4400 specifications

Engine

Make – Kubota
Model – V1200-B-27
Type – Four cylinder, in-line, 4-cycle diesel, liquid cooled.
Displacement – 75.49 cu. in. (1237 cc)
Horsepower – 28.5 hp (21.3 KW) mfg. rating @ 3000 RPM
Maximum Torque – 54.7 ft. lbs. @ 1800 RPM
Compression Ratio – 22:1
Operating RPM – 3000 (max. load), 3200 (no load)
Starter – 12-volt, .8 KW gear drive.
Charging System – 12-volt, 25 amp, belt driven alternator.
Injector Pump – Bosch K type mini pump.
Injector Nozzle – DN 12 SD 12
Starting Assist – Glow plug system is standard. Ignition key operates system.
Crankcase Capacity – 6 qts. (5.7 l)
Fuel – Diesel No. 2

Hustler 4420 specifications

Engine

Make – Kubota
Model – V1205-B-1
Type – Four cylinder, in-line, 4-cycle diesel, liquid cooled.
Displacement – 73.15 cu. in. (1198 cc)
Horsepower – 30.0 hp (22.4 KW) mfg. rating @ 3000 RPM
Maximum Torque – 57.0 ft. lbs. @ 2600 RPM Maximum torque
Compression Ratio – 22:1
Operating RPM – 3000 (max. load), 3200 (no load)
Starter – 12-volt, 1.2 KW gear drive.
Charging System – 12-volt, 30 amp, belt driven alternator.
Injector Pump – Bosch MD type mini pump.
Injector Nozzle – DN 12 SD 12
Starting Assist – Glow plug system is standard. Ignition key operates system.
Crankcase Capacity – 6 qts. (5.7 l)
Fuel – Diesel No. 2

Hustler 4600 specifications

Engine

Make – Kubota
Model – V1505-B-1
Type – Four cylinder, in-line, 4-cycle diesel, liquid cooled.
Displacement – 91.44 cu. in. (1498 cc)
Horsepower – 37.5 hp (28 KW) mfg. rating @ 3000 RPM
Maximum Torque – 73 ft. lbs. @ 2200 RPM
Compression Ratio – 22:1
Operating RPM – 3000 (max. load), 3200 (no load)
Starter – 12-volt, 1.2 KW gear drive.
Charging System – 12-volt, 30 amp, belt driven alternator.
Injector Pump – Bosch MD type mini pump.
Injector Nozzle – DN 12 SD 12
Starting Assist – Glow plug system is standard. Ignition key operates system.
Crankcase Capacity – 6 qts. (5.7 l)
Fuel – Diesel No. 2

Hustler 4300 & 4500 specifications

Engine

Make – Ford Industrial
Model –
4300 – VSG-4111-6005-A (S.O. 4363A)
4500 – VSG-4131-6005-A (S.O. 4362A)
Type – Four cylinder, in-line, 4-cycle gasoline, liquid cooled, valve-in-head.
Displacement –
4300 – 67 cu. in. (1100 cc)
4500 – 78.65 cu. in. (1289 cc)
Horsepower –
4300 – 34 (25 KW) mfg. rating @ 3000 RPM
4500 – 42.5 (32 KW) mfg. rating @ 3000 RPM
Maximum Torque –
4300 – 61 ft. lbs. @ 2600-3600 RPM
4500 – 72.5 ft. lbs. @ 2600-3600 RPM
Compression Ratio –
4300 – 9.5:1
4500 – 9.3:1

Operating RPM – 3000 (max. load), 3200 (no load)
Starter – 12-volt Ford, external solenoid.
Charging System – 12-volt, negative ground, 55 amp, belt driven alternator.
Crankcase Capacity – 3.5 U.S. qts. (3.25 l) with filter change.
Fuel – Unleaded gasoline.

Common specifications

Traction drive system

Type – Dual hydrostatic, closed loop system.
Pumps – Tandem hydrostatic pump. Variable displacement, axial piston type. Each pump powers one drive wheel motor.
Pump Drive – V-belt drive from engine crankshaft with manual clutch.
Final Drive – Direct drive, high torque wheel motors. One for each drive wheel.
Filter – 10 micron, pressure side, replaceable spin-on type.
Ground Speed – 0-10 mph (0-16.1 kph) forward, 0-6 mph (0-9.7 kph) reverse, infinitely variable.
Steering – One hand, Tee lever steering provides independent control of each of two drive wheels. Speed, turning, forward, reverse, and braking are all controlled through the dual hydrostatic transmissions.
Turning Radius – True 0 degrees. Turns within its own length. Counter-rotating, independently powered drive wheels provide maximum in maneuverability.

Brakes

Service – Independent, dynamic braking through hydrostatic transmissions.
Parking – Positive, automotive type drum and shoe. Hand operated lock-over-center control lever on left side of operator. Adjustable tension.

Frame – Constructed of 3/16 in. (.5 cm) welded steel and 2 in. x 2 in. (5 cm x 5 cm) steel torsion tubes with 1/8 in. and 3/16 in. (.3 cm and .5 cm) wall thickness.

Attachment drive – PTO shaft, splined, 2-high speed U-joints. PTO shaft speed, 3000 RPM.

Attachment clutch – Electromagnetic

Attachment lift – Hydraulic cylinder with hand lever control.

Attachment tool bar – Two-point tool bar, quick disconnect type. Removing 2 pins and flotation springs releases any attachment. Constructed of 1/4 in. x 1/2 in. (.6 cm x 1.3 cm) welded steel.

Auxiliary hydraulics – Auxiliary hydraulic valve with manual control lever and quick-couplers.

Tires – Standard rear tires - 13 x 6.50-6 with rib tread.
Three drive tire options:
Regular – 23 x 8.50-12 with turf tread.
Wide – 23 x 10.50-12 with turf tread.
Wide – 23 x 10.50-12 with bar tread.

Capacities

Fuel tank – 11 U.S. gal. (41.6 l)
Hydraulic oil system – 3.5 U.S. gal. (13.2 l)
Cooling system
3.25 U.S. gal (12.3 l) (models 4300 & 4500)
2.50 U.S. gal (9.5 l) (model 4200)
2.75 U.S. gal (10.4 l) (model 4400/4420/4600)

Dimensions

Length – 100 in. (254 cm)
Width – 50 in. (128 cm)
Height – 50.5 in. (128 cm)
Weight – 1500 lbs. (681 kg)

Seats – Three seat options:
Regular padded, backrest type with molded vinyl.
Heavy-duty, adjustable suspension seat with armrests and fore and aft adjustment.

Safety features – Safety interlock system with seat switch connected to neutral lock and PTO switches. Steering levers must be locked in neutral and PTO switch must be off before engine will start.

Controls – Hand operated throttle, ignition switch, PTO clutch switch, pump clutch lever, parking brake lever, attachment lift lever, and auxiliary valve lever. Ignition switch controls solenoid activated engine shut-off and glow plugs (models 4200/4400/4420/4600 only). Choke lever (models 4300 & 4500 only).

Indicators – Hour meter, glow plug indicator light*, oil pressure warning light, engine heat warning light and alternator warning light. Audible signal for high engine temperature or low engine oil pressure.

***Model 4200/4400/4420/4600 only.**

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