OPERATOR'S MANUAL

GARDEN TRACTORS

Operating Instructions
Maintenance Information

Wheel Horse

Part Number 810514R1

FOR YOUR SAFETY

Two of the most potentially serious types of accidents involving power mowers are contact with the mower blade and overturning the rider/tractor. To minimize the possibility of having these types of accidents, read and follow these instructions. Also refer to the Safe Operation Practice in this Operator's Manual for other important safety information.

BLADE CONTACT

! DANGER! Mower Blades are Designed to CUT: therefore,

ALWAYS:

- Shut off engine and set parking brake.
- Remove ignition key.
- Allow moving parts to stop before dismounting, servicing, or cleaning unit.

NEVER:

- Perform ANY work on the mower with engine running.
- Mow with other people around, especially children.
- Leave mower unattended.

RIDER/TRACTOR STABILITY

Vehicle stability changes with conditions and is affected by:

- Slope angle and length/bumps/holes, etc.
- Slippery conditions (lawn moisture and length)
- Operator size and position/how loaded/ equipment used
- Speed/braking/steering changes
- Operator physical limitations/alertness

ALWAYS:

- Use good judgement when operating the rider/ tractor, especially on slopes.
- Maintain the vehicle in good operating condition.
- Be attentive to changing conditions affecting vehicle stability.

NEVER:

- Operate vehicle on extreme slopes.
- Operate vehicle across slopes.
- Abruptly change speed or direction.

CONTENTS

⚠ CAUTION ⚠

This symbol marks important instructions relating to your personal safety. To avoid the possibility of injury, read and follow such instructions carefully.

When manual refers to left or right side of vehicle, it means your left or right when sitting in driver's seat.

TRACTOR SPECIFICATIONS:

ENGINE:

TRACTOR MODEL	ENGINE MODEL*	RATED H. P.**	DISPLACEMENT cu. in./cc	BORE in./mm	STROKE in./mm	IGNITION
516-H	P216-G	16	43.3/710	3.25/82.6	2.62/66	Electronic
518-H	P218-G	18	47.7/782	3.25/82.6	2.88/73	Electronic
520-H	P220-G	20	47.7/782	3.25/82.6	2.88/73	Electronic
520-HC	P220	20	47.7/782	3.25/82.6	2.88/73	Electronic

*P = Onan. Basic engine model shown; specification and serial numbers from engine I. D. plate are required to completely identify engine.
**Engine manufacturer's rating at 3600 RPM.

TRANSMISSION:

Automatic

Type: Hydrostatic

Approximate Ground Speeds (at full throttle)

516-H, 518-H, 520-H	520-HC
Variable 0-6.4 mph (10.3 kmh) Forward	Variable 0-7.5 mph (12.1 kmh) Forward
Variable 0-4.0 mph (6.4 kmh) Reverse	Variable 0-4.8 mph (7.7 kmh) Reverse

ELECTRICAL SYSTEM:

Type:	12 Volt D.C., Negative Ground
Battery:	516, 518-H Models — 200 Cold Cranking Amps.
	520-H Model — 260 Cold Cranking Amps.
	520-HC Model — 400 Cold Cranking Amps.
Alternator:	20 Amp. — regulated circuit

TIRES:

Sizes:	Front	Rear
516-H	16 x 6.50-8	23 x 8.50-12
518-H	16 x 6.50-8	23 x 9.50-12
520-H	16 x 6.50-8	23 x 9.50-12
520-HC	16 x 7.50-8	23 x 10.50-12
Pressure:		
PSI	12	12
kg/cm^2	.85	.85

TRACTOR SPECIFICATIONS (continued)

PHYSICAL DATA:

TRACTOR MODEL	HEIGHT in./cm	LENGTH in./cm	WIDTH in./cm	WHEEL BASE in./cm	INSIDE TURNING RADIUS in./cm	NET WEIGHT (APPROXIMATE) lbs./kg
516-H	40.5/103	65/165	36.4/92	45.5/116	36/91	601/273
518-H	41.6/106	65/165	38/96.5	45.5/116	36/91	621/283
520-H	41.6/106	65/165	38/96.5	45.5/116	36/91	646/294
520-HC	41.6/106	67/168	40.5/102.8	47.5/121	36/91	684/311

TUNE-UP/GENERAL MAINTENANCE SPECIFICATIONS:

ENGINE:

TRACTOR MODEL	POINT GAP in./mm	TIMING MARK LOCATION	IGNITION TIMING (BTDC)	SPARK PLUG TYPE*	SPARK PLUG GAP in./mm	DIRECTION OF ROTATION (Facing PTO)	IDLE RPM (No Load)	GOVERNED MAX. RPM (No Load)
All	N/A	N/A	Fixed	RS14YC	.025/.64	Counterclockwise	1200	3600

*Or equivalent (Champion number shown).

LIQUID CAPACITIES:

Crankcase: 1.5 qts. (1.4 *l*) w/o Filter
1.7 qts. (1.6 *l*) w/Filter

Transmission: 516, 518 Models Automatic
Hydrostatic Unit — ¾ qt. (.7 *l*)
Transaxle — 3 qts. (1.4 *l*)
520 Models Automatic — 5 qts. (.47 *l*)

Fuel Tank: 3 gal. (11.4 *l*)

CHASSIS:

Zerk Fittings: 516, 518, 520-H Models - 7
520-HC Model - 11

PTO Brake Adjustment (PTO engaged): .012 (.3 mm) gap between brake pad and pulley

Front Wheel End Play: 0-.015 in. (.4 mm) — All Models

SAFE OPERATION PRACTICES — RIDING VEHICLES

GENERAL

1. This machine is capable of amputating hands and feet and can throw objects that can cause injury and damage. KNOW the controls and how to stop machine quickly. READ THIS OPERATOR'S MANUAL and instructions furnished with attachments. Read, understand, and obey all safety messages appearing on the machine and in the operator's manual. LEARN from your operator's manual and from careful EXPERIENCE how to operate your equipment correctly. Know your machine's limitations.
2. Keep hands, feet, hair and loose clothing away from attachment discharge area, underside of mower deck or any moving parts while engine is running.
3. The use of drugs or alcohol while operating any equipment will place your safety in peril. Do not attempt operation of this machine while taking drugs or medication or while drinking alcoholic beverages.
4. Only responsible persons with mature judgment and proper physical capabilities should be allowed to operate this machine, and only after instruction in the proper use of this equipment.
5. Do not allow children to operate machine.
6. Do not carry passengers.
7. The purpose of this machine is to perform work. This equipment is not intended for sport or recreation.
8. Do not mow when people or pets are around.
9. Clear work area of objects (wire, rocks, etc.) which might be picked up and thrown.
10. Take all possible precautions when leaving vehicle unattended, such as disengaging power-take-off, lowering attachments, shifting into neutral, setting parking brake, stopping engine and removing key.
11. Watch out for traffic when crossing or near roadways.
12. Machine and attachments should be stopped and inspected for damage after striking a foreign object. Damage should be repaired before restarting and operating equipment.
13. Do not change engine governor settings or overspeed engine.
14. Wear appropriate protective clothing when operating equipment. Long pants and substantial footwear, not barefoot or open sandals, are essential.
15. Do not operate equipment unless properly seated with feet on footrests or pedals.
16. Keep your eyes and mind on your machine, attachment and the working area. Do not let other interests distract you.
17. Safety switch(es) are intended to stop or prevent starting of engine to help prevent accidents. OPERATOR SHOULD TAKE PRECAUTIONS AND NOT RELY ENTIRELY ON SAFETY SWITCH(ES).
18. Care should be used not to touch equipment or attachment parts which may be hot from operation. Muffler and nearby areas may exceed 150° F. Allow cooling to occur before attempting to maintain, adjust or service.
19. Use of stereo headphones, ear protection or other sound altering/dampening devices may limit your ability to hear warning sounds (horns, shouts, etc.).

FUEL/FIRE PRECAUTIONS

20. Handle gasoline with care — it is highly flammable.
21. Use approved gasoline container. Place container out of reach of children.
22. Use gasoline only as a fuel — never as a cleaner.
23. Never remove fuel cap or add gasoline to a running or hot engine, or an engine that has not been allowed to cool for several minutes after running.
24. Never fill fuel tank indoors. Wipe up spilled gasoline.
25. Open doors if engine is run in garage — exhaust fumes are dangerous. Do not run engine indoors.
26. Do not fill machine with gasoline while smoking or when near open flame or sparks.
27. Never store equipment with gasoline in the tank inside a building where fumes may reach an open flame or spark.
28. Allow engine to cool before storing in any enclosure.
29. To reduce fire hazard, keep engine and attachments free of grass, leaves or excessive grease.
30. Battery acid is a poison and can cause burns. Avoid contact with skin, eyes and clothes and protect your face, eyes and clothing when working around the battery.
31. Battery gases can explode. Keep cigarettes, sparks and flames away from battery.

EQUIPMENT USE AND OPERATION

32. It is recommended that first operation of equipment be done at a slow speed with attachment disengaged. Continue this practice until operator is thoroughly familiar with the controls and has developed operating skills.
33. Disengage all attachment clutches, set parking brake and shift into neutral before attempting to start engine.
34. Disengage power to attachment(s), set parking brake and stop engine before leaving operator position.
35. Disengage power to attachment(s) and stop engine before making any repairs or adjustments.
36. Disengage power to attachment(s) when transporting or not in use.
37. Disengage attachment clutch before attempting to remove the mower from a hole or other obstruction.
38. Disengage power to attachment(s) before backing. Do not mow in reverse unless absolutely necessary and then only after careful observation of the entire area behind the machine.
39. LOOK behind machine to make sure the area is clear before placing the transmission in reverse and continue looking behind while backing.
40. Always back up loading ramps and tilt bed trailers.

41. The parking brake is designed to hold tractor in place at rest, with engine off. Parking brake **will not** restrain tractor with engine running and transmission engaged.

STABILITY/TIPOVER/TRACTION

42. Know the terrain on which you are operating your equipment. There are areas on which your equipment can not be safely operated.
43. Avoid operating equipment on hillsides, slopes or rough terrain. DO NOT operate machine on hillsides or slopes exceeding 15° (27% grade). If safety is in doubt — **STAY OFF THE SLOPE.**
44. Reduce speed and exercise extreme caution on slopes above 10° (18% grade) to prevent tipping or loss of control. Never mow uphill on these slopes — mow downhill only. If a steep hill must be ascended, back up the hill, and drive forward down the hill, keeping tractor in gear. If necessary to turn on hill, always turn downhill.
45. Mow up and down the face of slopes greater than 5° (9% grade), never across the face. Be especially cautious when changing directions on all slopes.
46. Operate your machine smoothly and at a ground speed slow enough to insure complete control at all times. Avoid erratic operation and excessive speed.
47. Sharp turns on any terrain may cause loss of control. Reduce speed and use caution when making sharp turns.
48. Do not stop or start suddenly when going uphill or downhill. Avoid uphill starts. If machine is stopped going up a slope, turn the attachment off and back slowly down the slope keeping the machine in gear. Do not stop or change gears (speed) on slopes.
49. Know the terrain on which you are working. Find hidden obstacles by walking through and inspecting the area prior to operating your equipment in that area. Plainly mark obstacles, such as rocks, ruts or holes and **stay well clear of these obstacles** when operating.
50. While operating, stay alert for holes, rocks or roots, which may cause damage to equipment or upset. Keep at least 3 ft. away from drop-offs, ditches, creeks, culverts, washouts and public highways.
51. Exercise care when mowing around a fixed object to prevent the equipment or attachment from striking the object. When mowing never deliberately run over any foreign object.
52. Areas wet with dew, rain or snow will be more slippery than when dry. Areas covered with loose gravel are more slippery than firm dry ground. Greater stopping distances are required in these slippery areas.
53. Learn to expect changes in operating conditions. Adding or removing attachments or weight to your equipment will make your machine perform differently. Rain, snow, loose gravel, wet grass, etc., change the tractive conditions of the terrain requiring changes in your operating technique, which may include a decision not to operate on that terrain.
54. Use care when pulling loads or using heavy equipment.
    A. Use only approved drawbar hitch points.
    B. Limit loads to those you can safely control.
    C. Do not turn sharply. Use care when backing.
    D. Use counterweight(s) or wheel weights when suggested in operator's manual.

ATTACHMENT USE

55. When using attachments never direct discharge of material toward bystanders nor allow anyone near vehicle while in operation.
56. When using machine with mower:
    A. Mow only in daylight or in good artificial light.
    B. Never make a cutting height adjustment while engine is running if operator must dismount to do so.
    C. Shut engine off when unclogging chute.
    D. Check blade mounting bolts for proper tightness at frequent intervals.
57. Keep hands and feet away from rotating blade(s) underneath mower deck. Never place foot on ground when mower is engaged or when mower is in motion.
58. DO NOT operate mower attachment without the chute deflector or complete bagger in place.
59. Exercise care while maneuvering with grass catcher. Front to rear stability may change.
60. When using machine with snowthrower and auger becomes plugged or jammed:
    A. Declutch snowthrower and stop tractor engine immediately.
    B. Disconnect spark plug wire(s).
    C. Clear snow from discharge chute if plugged.
    D. If auger is jammed, remove foreign object and repair any damage to snowthrower before continuing.
    E. Reconnect spark plug wire(s) and resume operation.
61. Never permit anyone to stand near snowthrower auger or discharge opening. Objects may be present in snow, which when thrown, could cause injury.
62. When using snow/dozer blades:
    A. Avoid hitting solid objects. This can damage blade and injure operator.
    B. Always travel at a safe, slow speed.
63. Keep all persons a safe distance away when operating tillers. Always disengage the PTO, lower the attachment and remove the ignition key before making any adjustments.
64. If tiller starts to push tractor, disengage PTO clutch immediately.
65. Use chains, counterweight(s) or wheel weights when suggested in the operator's manual.

MAINTENANCE

66. Keep all nuts, bolts, fasteners and screws tight to be sure equipment is in safe working condition and check them frequently. Repair or replace worn, damaged, distorted or broken parts as needed.

67. Keep vehicle and attachments in good operating condition and keep safety devices in place and working.

68. Under normal usage, grass catcher bag material is subject to deterioration and wear. It should be checked frequently to determine need for bag replacement.

69. Use only genuine Wheel Horse replacement parts to assure that original standards are maintained.

70. Shields, deflectors, switches, blade controls and other safety devices must be in their proper position and functional.

71. Do not operate without muffler or tamper with the exhaust system. Damaged mufflers or spark arresters can create a fire hazard. Periodically inspect and replace if necessary.

72. If equipment begins to vibrate abnormally, disengage power to attachments and stop engine at once. Repair any damage before starting or continuing operation.

73. Periodically inspect all shafts, levers, friction devices and other moving parts subject to wear. Make required adjustment or replace these parts if damaged, distorted or broken, or as soon as wear affects the normal operation of the vehicle or attachment. DO NOT operate equipment that is not functioning properly.

VEHICLE IDENTIFICATION NUMBER (VIN) LOCATIONS

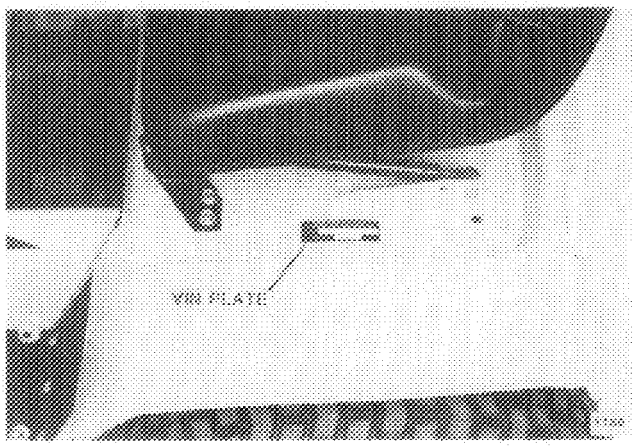
Vehicle identification numbers are used to identify your new tractor and major attachments. These numbers should always be referred to when consulting dealer or factory concerning service, parts, or other information you may require. If these plates are removed during repair operations, they should always be replaced.

Tractor vehicle identification number plate is located just below seat on rear fender.

Engine identification numbers are located on engine shrouding and indicate model, specification or type number and serial number of tractor's engine.

Major attachments also have a vehicle identification number plate attached to them.

For your convenience and ready reference, enter tractor and engine numbers below.



VIN Location

Tractor Identification Number

Engine Identification Number

Model _____

Type or Spec. No. _____

Serial No. _____

OWNER REGISTRATION AND WARRANTY

Service and warranty assurance is as important to Wheel Horse as it is to you, the owner. To facilitate warranty service at an Authorized Wheel Horse Dealer, Wheel Horse requires factory registration. A registration card is supplied with each new tractor and attachment. **Either you or your dealer must fill in required information and mail card to Wheel Horse.**

Wheel Horse Limited Warranty Statement is on a "hang tag" attached to each product. This statement describes what items are covered by the Wheel Horse Limited Warranty, your rights and obligations, and procedure to follow to obtain warranty service. Please familiarize yourself with the warranty statement. **All of us at Wheel Horse want you to be satisfied with your Wheel Horse tractor; please don't hesitate to contact us for assistance.**

RED BLANKET PROTECTION PLAN

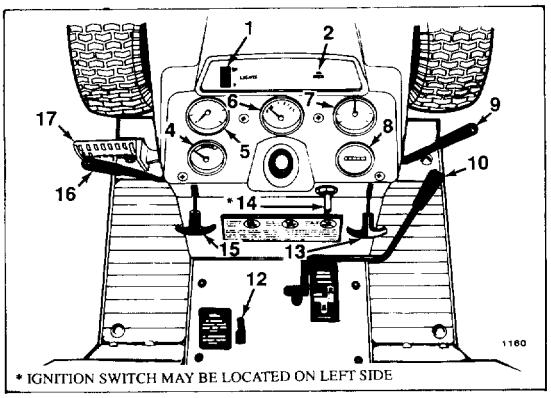
Wheel Horse offers an optional extended service contract to protect your Wheel Horse investment for a full three years. Ask your participating Wheel Horse dealer for full details. Commercial units excluded.

PARTS MANUAL

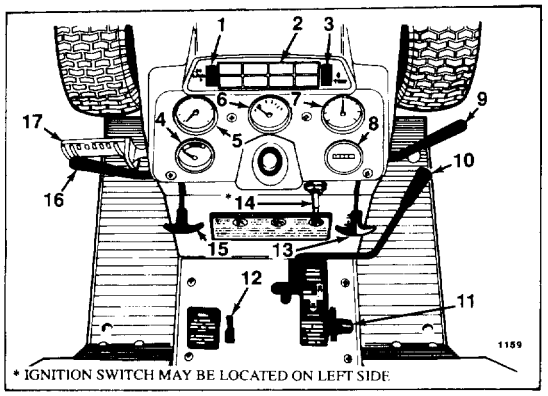
A separate parts manual is available for your Wheel Horse equipment. To obtain a parts manual, see ordering information at end of this publication.

BE SURE TO INCLUDE VEHICLE IDENTIFICATION NUMBER OF EQUIPMENT.

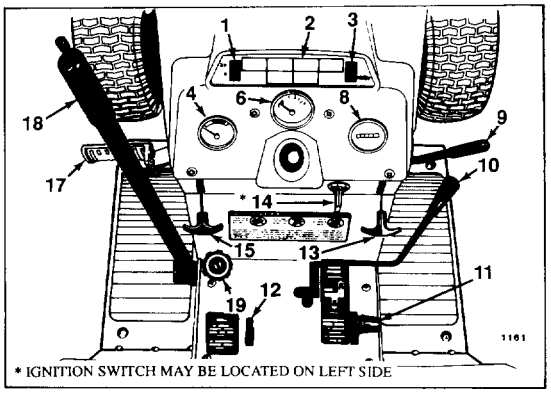
INSTRUMENTS AND CONTROLS



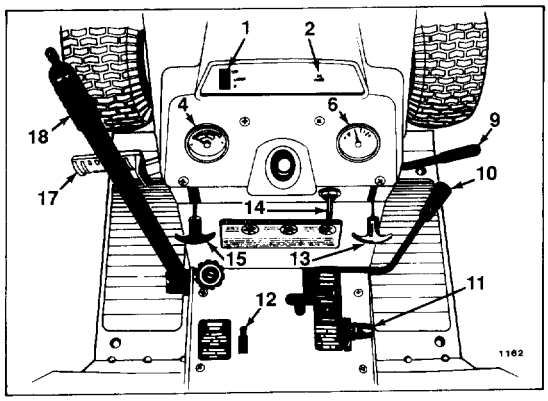
520-H MODELS



520-HC MODELS



518-H MODELS



516-H MODELS

1. LIGHT SWITCH

Push on top of switch to turn lights on. Push on bottom of switch to turn lights off. Lights work only when ignition switch is in Run position.

2. INDICATOR LIGHT(S) — AS INDICATED ON YOUR PANEL.

All lights must be OFF during operation; if light(s) is on, a malfunction is indicated in that operation(s) and must be corrected.

"AIR FILTER" light indicates air flow through air cleaner assembly. When light intermittenly comes on, service pre-cleaner and air cleaner. (1)

"SEAT SWITCH" light comes on when seat is unoccupied with ignition switch in Run position and PTO engaged.

If **"PTO LEVER"** or **"MOTION LEVER"** light is on when attempting to start engine, check that control is in proper position for starting.

"HYDRO TEMP" light senses automatic transmission and transaxle oil temperature. If light comes on clean transmission fins and check cooling fan. (1)

"OIL PRESS" light measures oil pressure of engine. Light flashes before engine is started and goes out for normal operation. If light flashes during operation an oil pressure malfunction is indicated. Stop engine at once and contact your Authorized Wheel Horse Dealer for service.

"PARK BRAKE" light comes on when parking brake lock lever is set with ignition switch in Run position.

"ENG TEMP" light senses cylinder head temperature. If light comes on, clean engine fins.

(1) As outlined in Maintenance section of this manual.

3. INDICATOR LIGHT TEST SWITCH

"TEST" switch is used to check lights and electrical circuits. Push on top of switch to turn indicator lights "ON" or "FLASHING"; if one or more lights are out, consult your Authorized Wheel Horse Dealer for service.

4. VOLTMETER

Gage indicates electrical system battery voltage. With ignition key in Off position, gage is not actuated. When ignition key is turned to Run position, gage should read 12 Volts or slightly above. After engine is started and running, gage should read between 12 and 15 Volts. If gage reads less than 12 Volts battery is discharging. If gage reads 15 Volts for long periods of time, check battery water more frequently.

5. VACUUM GAGE

Gage measures load applied to engine. As load increases gage reading will decrease. Gage should read between 5 and 15 for normal operation. With engine running at full throttle, load should be reasonably heavy for first 25 hours of operation to seat piston rings.

6. FUEL GAGE

Gage indicates level of fuel in tank. Refill tank with fuel as gage approaches "E" marking.

7. TACHOMETER

Gage measures engine revolutions per minute. Gage is actuated only when ignition switch is in Run Position. With engine running at full throttle and no load, gage should read as indicated in "Specifications" section of this manual. If gage reads less than specifications, contact your Authorized Wheel Horse Dealer for service.

8. HOUR METER

Gage records operating hours of tractor. Gage is actuated when ignition switch in Run position.

9. PTO (POWER TAKE-OFF) CLUTCH LEVER

Power driven attachments are engaged and disengaged with PTO level. Push lever forward to engage attachment. Pull lever back to disengage attachment. PTO clutch lever actuates a safety interlock switch in starter circuit; therefore, indicator light comes on, if so equipped, and tractor will not start unless lever is in disengaged position. If operator's seat is vacated while PTO is engaged, seat switch indicator light comes on (if so equipped) and seat switch will automatically shut engine off.

10. MOTION CONTROL LEVER

Brake pedal returns motion control lever to neutral position for dynamic braking. Lever must be all the way left in shift plate horizontal neutral slot to actuate a safety interlock switch to allow starting engine. Indicator light will come on, if so equipped, when interlock switch is not actuated and ignition switch is in Start position.

Move motion control lever all the way right and push ahead to move tractor forward; pull lever back to neutral position to stop. Position lever at horizontal neutral reverse slot and pull back to move tractor in reverse; push lever forward to neutral position to stop. Motion control lever varies ground speed and pulling power of tractor independent from engine speed. To increase ground speed, move lever away from neutral. Increase pulling power by moving lever toward neutral.

11. TRANSMISSION CLUTCH LEVER

Lever disconnects engine from transmission. Pull lever up and rearward to disconnect transmission. Push lever forward and down to engage transmission. Always disengage transmission when starting engine in cold weather.

12. PARKING BRAKE LOCK LEVER

To engage parking brake, first apply foot brake pedal solidly and then move parking brake lock lever back to lock brake. To release parking brake push down on foot brake pedal. Parking brake lock lever is spring loaded and will return to disengaged position when foot brake pedal is applied. Indicator light is on, if so equipped, when parking brake is locked with ignition switch in Run position.

13. THROTTLE CONTROL

Lever controls engine speed. Raise lever to operate tractor; lower lever before shutting engine off.

14. IGNITION SWITCH

Switch has three positions from left to right: (1) Off, (2) Run, (3) Start. To start engine turn key all the way right to Start position. Release key when engine starts and it will automatically return to Run position. When switch is turned to Off position, engine stops and all electrical accessories are turned off.

15. CHOKE CONTROL

Raise choke knob up when starting engine. Slowly lower knob after engine starts. If engine is warm and has been running, choking may not be necessary to restart engine.

16. HYDRAULIC ATTACHMENT LIFT LEVER

Pull lever back to lift attachment. Release lever to hold attachment in position. Push lever forward to lower attachment. Neutral position will hold attachment at any up or down position. Always lower attachments before leaving tractor unattended.

17. BRAKE/RETURN TO NEUTRAL PEDAL

Pedal provides dynamic braking to both rear wheels through automatic transmission. As pedal is depressed, transmission is shifted to neutral. When pedal is fully depressed a mechanical brake is also applied for additional braking action.

18. MANUAL ATTACHMENT LIFT

Depress lift lever release button and move lever forward or rearward to lower or raise attachments used with tractor. Always lower attachments before leaving tractor.

19. MANUAL ATTACHMENT LIFT DIAL-A-HITE

Knob is used to hold an attachment (other than a mower) at a desired height above ground. Turn knob left or right to limit forward travel of manual attachment lift lever.

20. FUEL SHUT-OFF VALVE (Not Shown)

Valve is located on bottom of fuel tank. Valve is normally left open, except when service on fuel system becomes necessary.

OPERATING YOUR TRACTOR

SAFETY INTERLOCK SYSTEM

Safety interlock system incorporates two switches, for safe starting.

Starting switches are actuated by motion control lever and PTO clutch control. If tractor will not start, check that PTO clutch is disengaged and motion control lever is all the way left in horizontal slot of shift plate. Indicator lights will be on, if so equipped, and engine will not start unless both switches are properly actuated. Tractor is also equipped with a seat switch. This switch shuts off engine if indicator light is on, if so equipped, and driver rises off seat while PTO is engaged.

Safety interlock system must be tested periodically. To test operation of safety interlock system, following functions must be observed. If not, immediate repairs must be performed by an Authorized Wheel Horse Dealer for your protection.

1. Engine should NOT start if:
   a. Motion control lever is in forward or reverse position.
   b. PTO is not disengaged.

   Test each of the above one at a time.
2. With engine running, test operate seat switch by engaging PTO and rising off seat. Engine should shut off.

CORRECT ENGINE OPERATION

⚠ CAUTION ⚠

Before starting engine, become familiar with all controls. Read this Operator's Manual thoroughly. Always check engine oil level before starting. Always check transmission oil level before starting.

⚠ WARNING ⚠

Care should be taken to avoid inhaling exhaust gases as they contain carbon monoxide gas which is colorless and odorless. Carbon monoxide is a dangerous gas that can cause unconsciousness and is potentially lethal.

Do not run engine in confined areas such as a closed garage.

STARTING ENGINE

Because of a built-in safety interlock system, your tractor will not start until motion control lever is all the way left in horizontal slot of shift plate and PTO is disengaged. Indicator light(s) will be on, if so equipped, when controls are not in correct position for starting.

Engine is equipped with a low oil pressure switch. Engine will start and run when light flashes. If light flashes during operation, stop engine at once and contact your authorized Wheel Horse dealer.

To start engine position motion control lever all the way left in horizontal slot of shift plate and disengage PTO.

Move throttle control lever about half way to Operate position. Raise choke control all the way to Cold position.

Turn ignition key clockwise until starter engages. When engine starts, release key. Switch is spring loaded and will return to Run position automatically.

If engine fails to start after 10 seconds of continuous cranking, turn key to Off position and allow starter motor to cool. Check for cause of hard starting; consult Troubleshooting Checklist.

Once engine has started, slowly return choke control to its normal position. If engine stalls at low speeds, or hesitates during acceleration, choke should be applied as necessary until engine reaches normal operating temperature.

When starting engine during cold weather, be sure to follow special procedures for warming up engine and transmission as described under "Correct Automatic Transmission Operation", before placing tractor into operation.

STOPPING ENGINE

To stop engine, return throttle lever to Idle position and turn ignition key to Off position. If engine has been working hard, or is hot, allow engine to idle a short time before turning key off. This practice will help to cool engine before stopping.

Note: In case of emergency, engine may be stopped by turning ignition key to Off position.

⚠ CAUTION ⚠

. Always remove key and set parking brake when leaving tractor unattended, even if for just a few minutes. Prevent accidents, don't give children or unauthorized persons an opportunity to operate this machine.

THROTTLE CONTROL

Throttle control regulates speed of engine as measured in RPM (Revolutions Per Minute). This control **should not** be used to regulate ground speed of tractor.

Engine in your new Wheel Horse has been designed with a special governor that limits maximum RPM. Governor allows engine to operate most efficiently at a set speed, and protects it from damage caused by excessive RPM. Always operate tractor with throttle control set at full speed.

Engine MUST be operating at Full throttle whenever tractor is in use. Using tractor while engine is operating at less than Full throttle may result in extensive transmission damage as well as poor overall tractor performance.

CHOKE CONTROL

Choke control activates a "butterfly" valve in carburetor. When choke is partially or completely closed, less air is admitted to engine. This results in a higher fuel-to-air (richer) mixture that is easier to ignite when engine is cold. Choking engine is required when engine is started cold. Warm engines may not need choking.

FUEL RECOMMENDATIONS

⚠ WARNING ⚠

Ignition of fuel can cause serious personal injury or death by fire or explosion. Do not permit any flame, cigarette, or other igniter near the fuel system. Handle fuel with care — it is highly flammable.

Use clean, fresh, unleaded gasoline. Regular leaded gasoline may also be used but it is not a preferred fuel. Do not use highly leaded premium gasoline. Use of unleaded gasoline results in less maintenance.

⚠ CAUTION ⚠

Do not use gasoline de-icers. Gasoline de-icers can cause internal damage to carburetor and fuel pump parts. Do not use fuels containing alcohol concentrations greater than ten percent. Fuel containing alcohol may cause poor engine performance and internal engine damage.

If regular leaded gasoline is used continually, carbon and lead deposits should be removed from the cylinder heads as required because of engine power loss. Unleaded gasoline may be used safely after lead deposits have been removed.

⚠ WARNING ⚠

Spilled fuel can ignite and cause serious personal injury or death. Never fill fuel tank when engine is running. Fill fuel tanks outdoor with extreme care. Never fill fuel tanks indoors. Replace gasoline cap(s) securely and wipe up all spilled fuel.

OIL SPECIFICATION

To protect your tractor's engine, check oil level before each use. Engine is equipped with a low oil pressure switch. Engine will start and run when light flashes and oil pressure is low. If light flashes during operation, stop engine at once and contact your authorized Wheel Horse dealer.

Complete information concerning recommended oils and how to check oil level is given in "Maintaining Your Tractor" section of this manual.

CORRECT AUTOMATIC TRANSMISSION OPERATION

During cold weather, start engine with parking brake engaged and transmission clutch lever disengaged, if so equipped. Run engine for at least two minutes to allow engine to warmup; engage transmission clutch, if so equipped, with engine at full throttle. For temperatures between 0° and 30°F (18° and −2°C) allow transmission to run in neutral for 5 minutes before attempting to set unit into motion. For temperatures below 0°F (−18°C) allow transmission to run in neutral for 10 minutes before attempting to set unit in motion. Failure to do so may result in extensive internal transmission damage.

TO GO FORWARD

⚠ CAUTION ⚠

Before tractor will move either forward or backward, parking brake must be disengaged. ALWAYS depress brake/return to neutral pedal when disengaging parking brake.

Motion of your tractor is controlled by a single "Motion Control Lever". To go forward, move motion control lever all the way right and push lever forward. Farther forward lever is pushed, faster tractor will go.

⚠ CAUTION ⚠

For safe operation, never move motion control lever too rapidly, especially on grades.

By adjusting motion control lever, forward speed of tractor can be regulated **without** adjusting engine throttle control. For heavy pulling, moving control lever toward neutral reduces tractor ground speed and increases pulling power as shifting to a lower gear with a mechanical transmission.

TO GO BACKWARD

To reverse motion of tractor, position motion control lever in horizontal slot in line with reverse slot of shift plate, and pull lever back. Farther back lever is pulled, faster tractor will go in reverse.

⚠ CAUTION ⚠

For safe operation, never move motion control lever too rapidly, especially on grades.

By adjusting motion control lever, reverse speed of tractor can be regulated **without** adjusting engine throttle control.

TO STOP

Stopping tractor from either forward or reverse direction can be achieved by one of two methods:

1. Return motion control lever to its neutral position.
2. Depress brake pedal.

Activating brake pedal automatically returns motion control lever to its neutral position and applies a mechanical brake. Brake pedal will hold motion control lever in neutral position. Pedal must be released before motion control lever can be moved either forward or back.

Tractor is stopped by a "dynamic braking" action inside hydrostatic transmission and a mechanical brake. 520 model tractors are **free to roll** (at a very slow speed) when transmission is in neutral. Therefore, always depress brake pedal when tractor is stopped on unlevel terrain. Although 516 and 518 models will tend to remain stationary in neutral even when brake is released, use of brake is recommended to avoid accidental movement when stopped on unlevel terrain.

HAND PUSHING TRACTOR

Hand push tractor only. Do not tow. Towing can cause severe damage to hydrostatic transmission.

Automatic transmission tractors can be pushed at a slow speed. To do this, disengage transmission clutch lever, if so equipped, and move motion control lever fully forward; tractor will then move when pushed.

CORRECT TRACTOR USAGE

⚠ CAUTION ⚠

Read manuals provided with attachments before operating. Manuals give a more detailed description of operation and point out other areas of caution.

Familiarize yourself thoroughly with equipment before attempting to use it.

ATTACHMENT MOUNTING

HITCHES

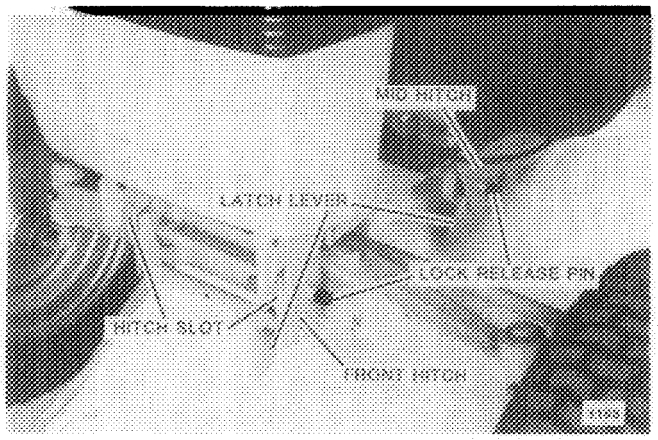
Tach-a-matic front and mid hitches are provided for easy installation and removal of attachments without tools.

Rear mounted attachments are secured to tractor's rear drawbar hitch, or to a special hitch supplied with attachment or available as optional equipment.

To install attachments make sure hitch latch is in released position — to do this, push in on lock release pin; move latch lever so latch is open and release lock pin to hold latch in open position. Insert and center attachment shaft in hitch slots and move latch toward closed position until release pin snaps outward.

Removal of attachment is done by pushing in on lock release pin, which allows latch to be moved to open position.

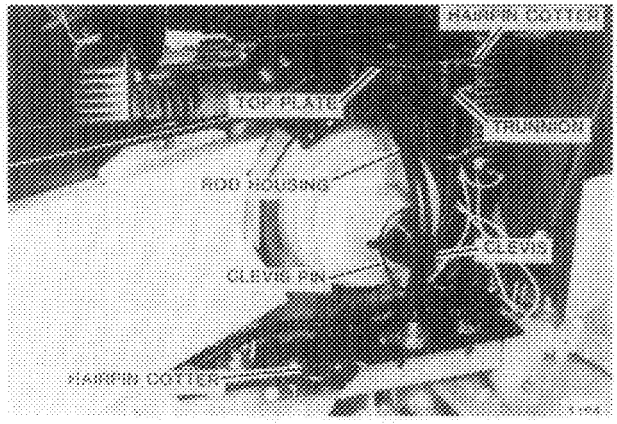
Note: For specific installation and removal instructions refer to attachment instructions.



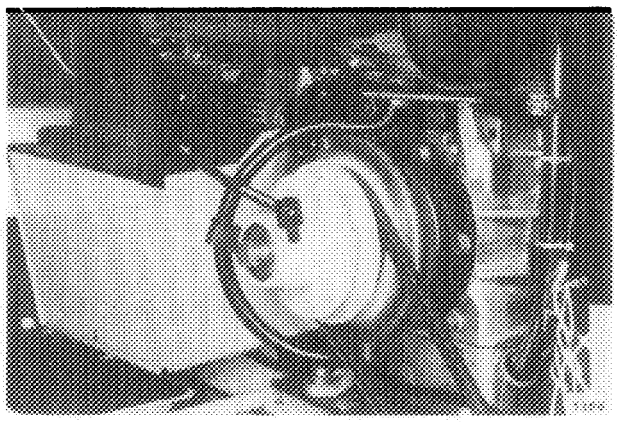
Front and Mid Attachment Hitches

ATTACHMENT BELTS

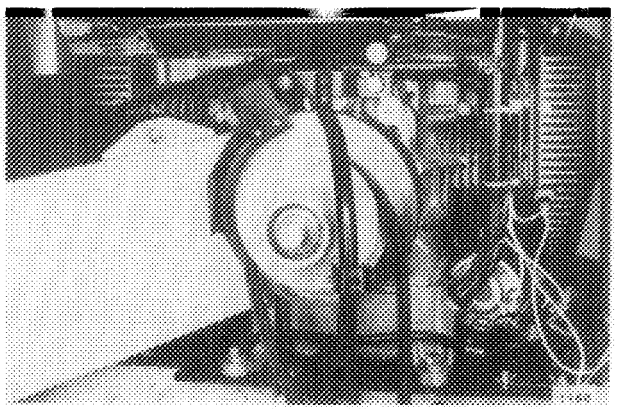
1. Remove hairpin cotter from trunnion and remove trunnion out of top plate.
2. Remove clevis pin from clutch shaft and clevis.
3. Move top plate forward and remove large hairpin cotter at bottom of rod housing. Slide rod housing down and out of top plate.
4. Install belt in inner groove of PTO pulley for mower and tiller. Install belt in outer groove for Snowthrower, Lawn Vac, Generator and Loader.
5. Move top plate forward, insert top end of rod housing in hole in top plate and install large hairpin cotter in bottom of rod housing. Move top plate rearward. Line up clevis with hole in clutch shaft and install clevis pin.
6. Insert trunnion in top plate and secure with hairpin cotter.



Power Take-Off (PTO)



Belt Routing —
Both belt strands OUTSIDE of Rod Housing.



Belt Routing — One belt strand OUTSIDE,
one INSIDE of rod housing.

OPERATION OF TRACTOR:

Because of sufficient tractor engine power no problems should be encountered using attachments under normal conditions. Front wheel weights may be used to increase front wheel traction. Rear wheel weights and tire chains may also be used to increase rear wheel traction. All front tires may be fluid filled. Rear tires may be fluid filled on 520 model tractors only.

WITH A MOWER (All Models)

⚠ WARNING ⚠

Keep all shields and mower discharge chute in place. Never put hands or feet under mower deck. Never attempt to clear discharge areas or mower blades without disengaging PTO clutch and removing ignition key.

For best operation on average lawns, operate engine at full throttle while controlling ground speed with transmission. Tractor should be operated at 2 to 3.5 MPH (3.2 to 5.6 KMH)* while mowing grass. Uneven cutting is often a result of excessive ground speed. To correct, reduce ground speed with transmission. Average lawns are usually cut at a height between 2 and 3 in. (5-7.6 cm). Tall grass and weeds should be cut with mower in its highest position, making a second pass cutting at height desired.

Always keep mower blades sharp.

⚠ CAUTION ⚠

Sharp edges of mower blades can cut you during blade maintenance or adjustment. Use suitable covering over cutting edges of blade to prevent bodily harm.

WITH A SNOWTHROWER (All Models)

⚠ CAUTION ⚠

Thoroughly inspect area where snowthrower is to be used. Remove all door mats, sleds, boards and other foreign objects. Never make any adjustments while engine is running. Never try to clear chute while engine is running.

Snow removal will vary greatly with condition of each snowfall. Light fluffy snow will be cleared with ease. Heavy wet snow will be more difficult. It is advisable to coat auger and chute with a light coat of wax or paraffin to keep snow from sticking. Best results are usually attained when tractor ground speed is set at 1 to 2 MPH (1.6 to 3.2 KMH).*

Experience will teach you not to throw snow into wind.

Care should be exercised whenever snow thrower is engaged. Auger is capable of picking up sticks, stones and other foreign objects and expelling them with great velocity. Always aim discharge chute away from persons or objects subject to harm.

Tire chains and wheel weights are recommended when using a snowthrower.

Average walking speed is 2.5 MPH (4 KMH).

WITH A SNOW, DOZER OR GRADER BLADE

Although front end dozer blade is generally used for snow removal, it can also be used for moving dirt, sand or gravel. Care should be taken and a slow ground speed should be maintained whenever blade is used. Impact with a solid object may result in injury to operator and/or damage to blade.

Grader blades are generally preferred for leveling sand, dirt or gravel. Operation of these blades is similar to that of a dozer blade. Rear mount grader blades may require special hitches; consult your dealer for proper hitch(es) required for your tractor.

WITH A TILLER (All Models)

Wheel Horse tiller does an excellent job of preparing gardens for planting.

Caution should be exercised when tilling virgin ground or clay as tiller may have a tendency to push tractor. This can be corrected by raising tiller with attachment lift so tiller penetrates only very top of soil. Tiller can be lowered to its full depth on following passes. Cleat tires will reduce pushing effect of tiller.

⚠ CAUTION ⚠

If tiller starts to push tractor, shut tiller off immediately by disengaging PTO clutch.

Slowing tractor's ground speed will improve aggressive action of tiller. Best results are usually attained when tractor ground speed is set at less than 1.0 MPH (1.6 KMH).*

Do not over-till soil. Soil tilled excessively will not hold water, and will compact easily.

WITH A PLOW, DISC, CULTIVATOR, OR HARROW (520-Models)

Plows and disc require maximum tractor efficiency. Cleat tires, or tire chains, as well as wheel weights increase rear tire traction. Front wheel weights add to steering control of tractor.

Some of these attachments require special rear hitches. Consult your dealer for proper hitch(es) required for your tractor.

There are two methods of preparing a seed bed for planting.

1. Use a tiller, which will prepare soil in one operation.
2. Use a plow to turn ground, a disc to break up large clumps, and a harrow to pulverize and smooth soil.

Plows are classified by width of furrow they will turn. Generally, plows are set to cut 4 to 6 in. (10-15.2 cm) deep.

A disc is used immediately after plowing. Disc will break large clumps of soil.

After discing, generally, a spike tooth harrow is dragged over soil. Spike tooth harrow helps pulverize soil and levels seed bed. Soil should now be ready for planting.

Cultivator is used during growing season to help remove unwanted weeds, and to help aerate plant roots. Generally, width of cultivator is taken into consideration before planting seed bed to insure cultivator fitting between rows without damaging crop roots.

WITH OTHER ATTACHMENTS (All Models)

There are numerous other special-purpose attachments available, which greatly increase tractor's versatility. Attachment can be a completely self-contained system (front bucket loader), one that is used along with another attachment (lawn vacuum), or one intended for operator comfort (snow cab). These attachments are custom designed for a particular tractor model, but many others simply use tractor as a towing vehicle. They are attached or removed from tractor by installation or removal of a single drawbar hitch pin. Some of these attachments are powered by a separate gasoline engine, some are ground driven and some are simply towed, such as a dump cart.

In any case, all these attachments should be approached with same amount of caution given any mechanical device. Always read each Operating Instruction Manual carefully before attempting to use attachment. Keep children and pets away from vehicle when in operation. Never allow any unauthorized personnel to operate equipment.

Your authorized Wheel Horse dealer can assist you with selecting attachments for use with your tractor.

DUMP CART LOAD LIMITS

Wheel Horse recommends following load limits be observed when using tractor with a dump cart. Load limits have been set to provide for safe braking on slopes.

275 lbs. (127 kg)

MAINTENANCE

⚠ CAUTION ⚠

To minimize chance of injury, perform all maintenance and adjustments on your machine with engine off and ignition key removed, unless instructed otherwise in this section. Use extreme care when working near operating machinery. Do not wear loose fitting clothing. Remove watch and jewelry before beginning work and observe common safety practices when using tools.

MAINTENANCE CHECKLIST

NOTE: Service intervals shown are considered MAXIMUM under normal operating conditions. Increase frequency under extremely dirty or dusty conditions.	Before Each Use	Every 8 Hours	Every 25 Hours	Every 50 Hours	Every 100 Hours	Every 200 Hours/One Year (2)	Every 1000 Hours
SERVICE OPERATION							
Check Safety Interlock System	X						
Check Engine Oil Level	X						
Check Battery Water Level				X			
Check Auto. Trans. Oil Level	X						
General Equipment Condition	X						
Clean Engine Chaff Screen	X						
Check Tire Pressure			X				
Check Fasteners In Place & Tight			X				
Check Fuel Filter					X		
Clean Air Filter/Precleaner			X				
Lubricate Chassis			X				
Change Engine Oil(1)				X			
Check Parking Brake Adjustment					X		
Check PTO Electric Clutch/ Brake Adjustment					X		
Clean Engine Exterior and Cooling Fins				X			
Clean Breather Valve & Baffle							X
Clean Cylinder Head Deposits							X
Replace Engine Oil Filter(3)					X		
Replace Spark Plugs						X	
Replace Air Filter						X	

Refer to Engine Owner's Manual for Applicable Information Concerning:

Adjustments
Special Cleaning Instructions
Recommended Dealer Maintenance

(1) Refer to text for initial service interval for new tractors.
(2) Whichever occurs first.
(3) 518, 520

ENGINE

Cooling

Check chaff screen and rotating screen behind chaff screen on engine every time machine is used. Restricted air flow through engine can cause overheating and engine damage.

Oil Quality

For maximum engine protection under all operating conditions use API Service Classification SF oil. This letter will appear on oil can.

Oil Level

Form a habit of checking oil level regularly.

Check oil level of engine every 8 hours or before each use. An improper oil level can cause extensive internal damage to engine.

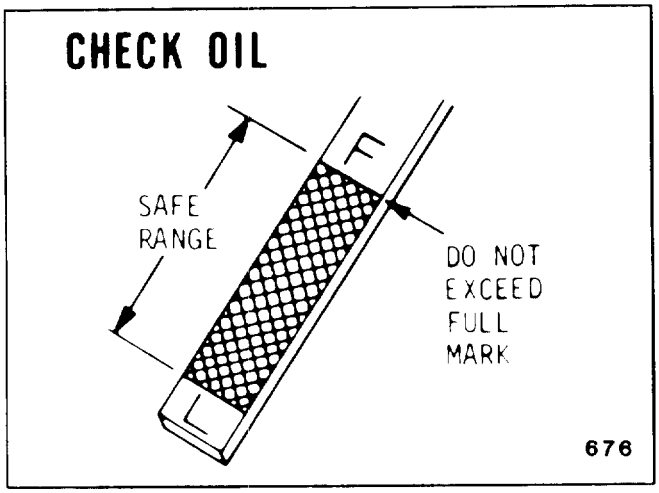
Oil filler dipstick and oil drain location for engine is illustrated in following illustrations.

To check engine oil level, stop tractor where engine is level. Shut off engine, set parking brake, and remove ignition key.

⚠ WARNING ⚠

Crankcase pressure can blow out hot oil and cause serious burns. Do NOT check oil while engine is operating.

Remove oil dipstick from engine.



Correct Oil Level

Wipe dipstick with a clean lint free rag; insert it into engine block as far as it will go. Remove dipstick again and read scale on lower portion of stick.

Add oil through oil dipstick tube.

⚠ CAUTION ⚠

Do not overfill crankcase. Excess oil causes high oil consumption and oil accumulation in air cleaner housing.

Oil Changes

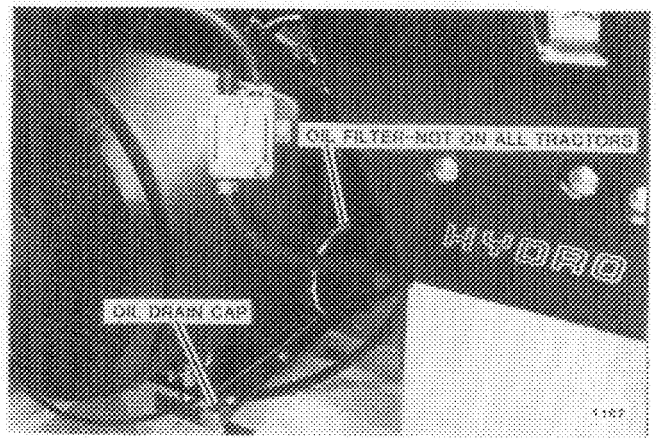
Engine oil in your machine should be changed after first 25 hours of operation. Thereafter, oil should be changed at 50 operating hour intervals. Oil filter, if so equipped, should be changed every 100 hours. If operating conditions are extremely dusty or dirty frequency of oil changes should be increased.

Failure to change engine oil at recommended intervals can lead to serious damage to engine. This is especially true when using detergent oils which are designed to hold impurities in suspension; when saturation point is reached, oil may suddenly break down to form a gelatin-like substance which seriously impairs and can even stop flow of oil. Increase frequency of oil changes if machine is operated under extremely dusty conditions.

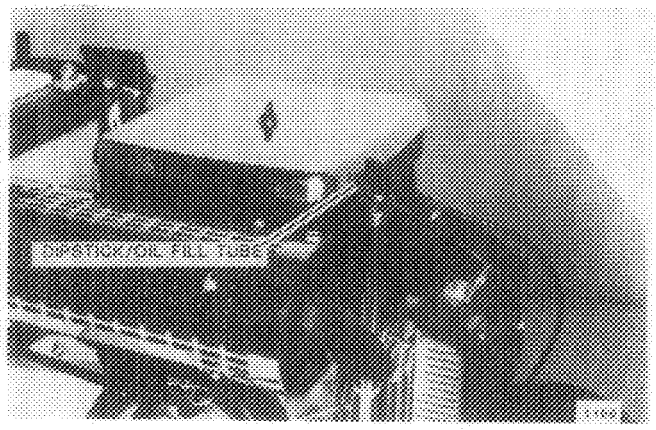
Before changing oil, start engine and allow it to warm up. This will allow oil to flow more freely. Shut off engine and remove key.

To drain oil:

Open oil drain. After oil has drained completely, reinstall drain cap.



Engine Oil Filter and Drain Cap



Engine Oil Dipstick/Fill Tube

If oil filter, on engines so equipped, is to be replaced, unscrew used filter and install new filter on engine.

Remove dipstick/oil fill cap and add about 80% of amount of oil specified in following chart. Also shown are charts for selecting correct oil type and oil viscosity. When using temperature — viscosity chart, select air temperature most likely to be encountered within next 50 hours of operation.

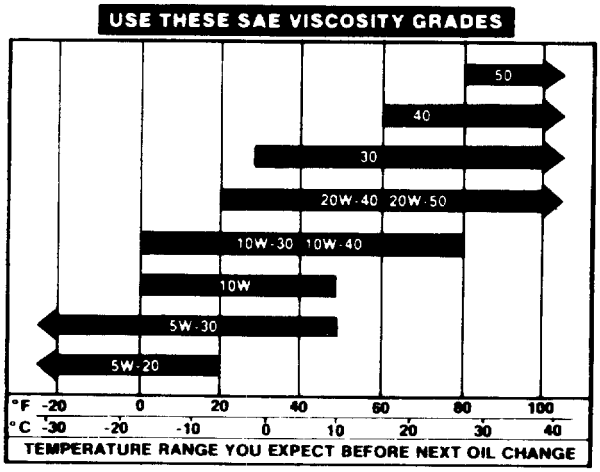
ENGINE OIL TYPE

API Service SF or SF/CC

CRANKCASE OIL CAPACITY

1.5 qts. (1.4 *l*) w/o Filter
1.7 qts. (1.6 *l*) w/Filter

ENGINE OIL TEMPERATURE — VISCOSITY CHART



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After adding 80% of prescribed amount of oil, check oil level. Add oil as necessary to bring oil to "Full" level.

Never overfill engine crankcase with oil. Oil level must not exceed "F" level on dipstick.

Air Filter

Dirt induced through improperly installed, poorly serviced, or inadequate air filter elements, is more often cause of a worn out engine than long hours of operation. A small amount of dirt will destroy a set of piston rings in a matter of hours. A clogged element causes a richer fuel mixture which wastes gasoline, and may lead to formation of harmful sludge deposits.

If tractor is equipped with an **AIR FILTER** indicator light, clean air filter and precleaner when light comes on intermittenly during operation.

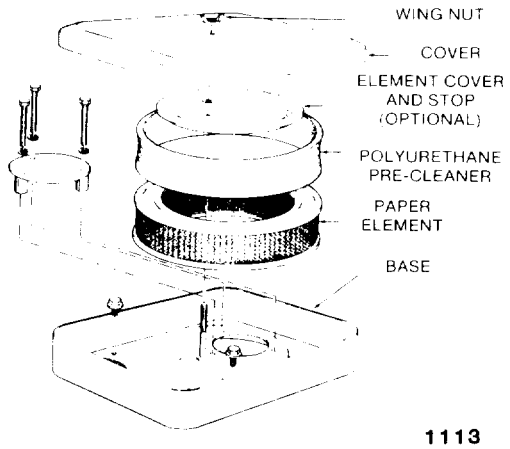
If engine does not have an **AIR FILTER** indicator light, clean engine air filter and precleaner after every 25 hours of operation (more often if machine is operated under extremely dusty conditions).

Replace filter elements at 200 hour intervals. Replace more frequently in dusty operating conditions. To protect your engine, use only manufacturer's replacement filter, or replacement filters with equivalent specifications.

Check following when installing a new or serviced element:

1. Base must be securely tightened to carburetor. Replace base if bent or cracked.
2. Gasket surfaces of element must be flat against base and cover to seal effectively.
3. Tighten screws securely.
4. Be sure cover seals and gaskets are in good condition and will seal properly. Bad gaskets and seals can let unfiltered air into carburetor.

To prevent any dirt or other contaminates from entering engine, always cover carburetor air horn when air cleaner is removed.



Air Cleaner Assembly

Dry type air filter element is cleaned by tapping it lightly on a flat surface to remove loose dirt particles. Replace element if dirt does not drop off easily. DO NOT wash elements in liquid. Do not attempt to blow dirt off with compressed air as this can puncture filter element.

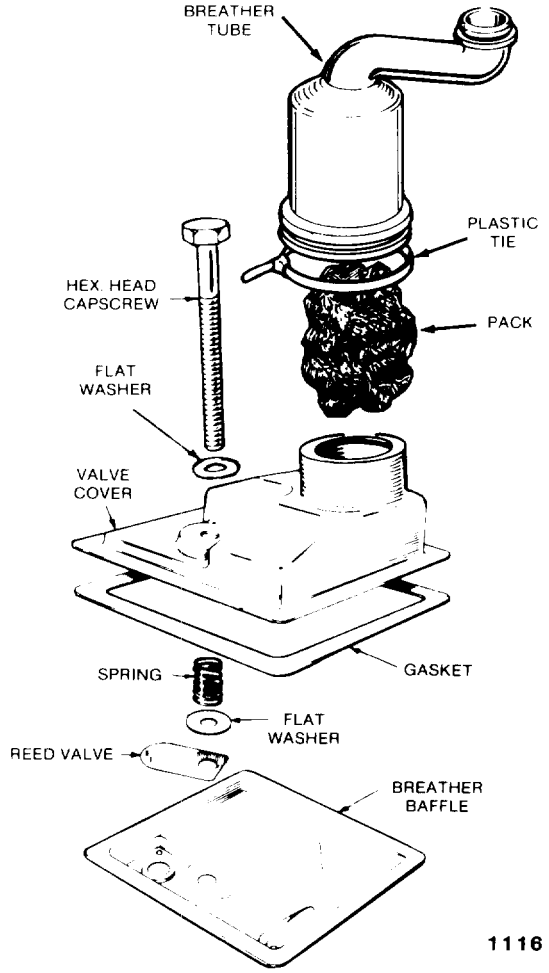
Foam precleaners are used over filter elements on engine. Clean precleaner at 25 hour intervals, when air cleaner is serviced. Wash precleaner in a solution of liquid dishwashing detergent and water. Squeeze out excess water and allow it to dry. Coat precleaner evenly with two tablespoons of SAE 30 engine oil. Knead into and wring out excess oil from pre-cleaner. Install precleaner over air cleaner element.

1. WASH
2. SQUEEZE DRY
3. COAT WITH OIL – WRING OUT EXCESS
4. INSTALL OVER PAPER ELEMENT

Pre-Cleaner Service

CRANKCASE BREATHER

Engines use a crankcase breather valve and "Pack" for maintaining crankcase vacuum. If crankcase becomes pressurized as evidenced by oil leaks at seals, clean pack and valve screens in a suitable solvent. Check and clean valve and baffle every 1000 hours of operation.



Crankcase Breather

Spark Plug

Engine misfires, or generally poor operation, is often caused by spark plugs in poor condition or with incorrect spark plug gap setting. Check spark plugs at 200 operating hour intervals. Replace if inspection reveals fouling or excessive deterioration.

Always clean area around spark plugs before removing them to prevent dirt from entering engine. Use a spark plug wrench to remove and install plugs.

Check condition of plug(s). Good operating conditions are indicated by a light coating of gray or tan deposit. A dead white, blistered coating could indicate engine overheating. A black coating could indicate an "overrich" fuel mixture caused by a clogged air cleaner, or improper carburetor adjustment.

Replace spark plugs that are not in good condition. **Never sandblast, wire brush, scrape or otherwise service a spark plug in poor condition. Best results are obtained with a new plug.**

Always check spark plug gaps before installing a new plug or reinstalling original plug. Use a spark

plug gap gauge to adjust electrode air gap to .025 in. (.64 mm).

Carburetor Adjustment

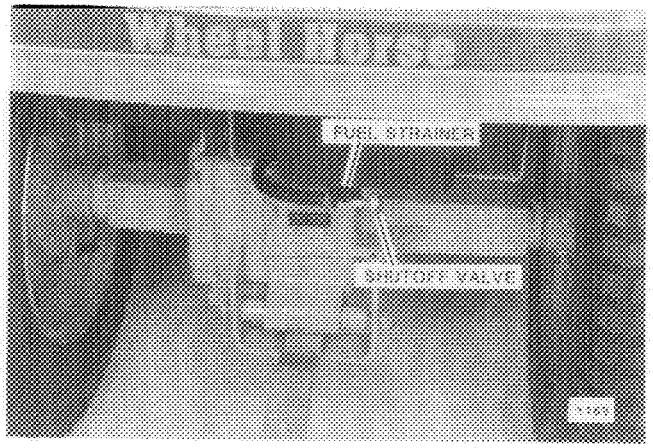
Carburetors are adjusted at factory and should not have to be reset. If however, one of following conditions is noted, carburetor should be readjusted immediately as continued operation with incorrect setting can lead to fouled spark plugs, overheating, excessive valve wear or other problems. If black exhaust smoke is noted, check air cleaner first — an "overrich" mixture is usually caused by a poorly serviced, clogged air cleaner element, not an improperly adjusted carburetor.

CONDITION	POSSIBLE CAUSE/PROBABLE REMEDY
A. Black, sooty exhaust smoke, engine sluggish.	A. Mixture too rich — readjust idle fuel mixture.
B. Engine misses and backfires at high speed.	B. Mixture too lean — readjust idle fuel mixture.
C. Engine starts, sputters and dies under cold weather starting.	C. Mixture too lean — readjust idle fuel mixture.
D. Engine runs rough or stalls at idle speed.	D. Idle speed too low or improper idle adjustment — readjust speed then idle fuel needle if needed.

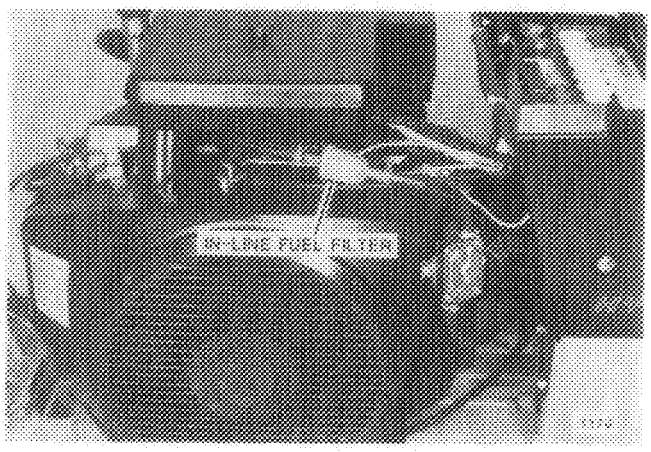
Carburetor Adjustment Chart

Correct carburetor adjustment requires a significant amount of knowledge as well as special equipment. In addition, other adjustments, such as governor settings, may also be necessary after adjusting carburetor. For these reasons, it is suggested that carburetor adjustments be performed by an authorized dealer.

Fuel System



Fuel Strainer



Fuel Filter

A fine-mesh screen type strainer, incorporated into fitting at bottom of tank, and an inline fuel filter, both filter foreign matter from gasoline before it reaches carburetor. This strainer and fuel filter normally require service only if fuel supply becomse severely contaminated.

Always clean area around fuel cap before removing it to prevent excessive amounts of dirt from entering fuel system. Also insure that fuel storage container you are using is clean and in good condition.

Keep fuel tank full during winter operation, when cold and damp weather conditions can cause moisture to condense in tank.

Exhaust System

Make regular visible and audible inspections of exhaust system throughout life of tractor. Locate leaks in muffler and piping while engine is operating. Repair all leaks immediately after they are detected for personnel safety.

⚠ WARNING ⚠

Inhalation of exhaust gases can result in serious personal injury or death. Inspect exhaust system audibly and visually for leaks daily. Repair any leaks immediately.

CHARGING AND ELECTRICAL SYSTEMS

Alternator

An alternator is used to charge battery. Alternator charging system normally requires no service other than periodically checking all exposed wiring and electrical connections on tractor are clean, tight and in good condition. A 30 amp automotive type ATO or ATC fuse is used to protect charging circuit.

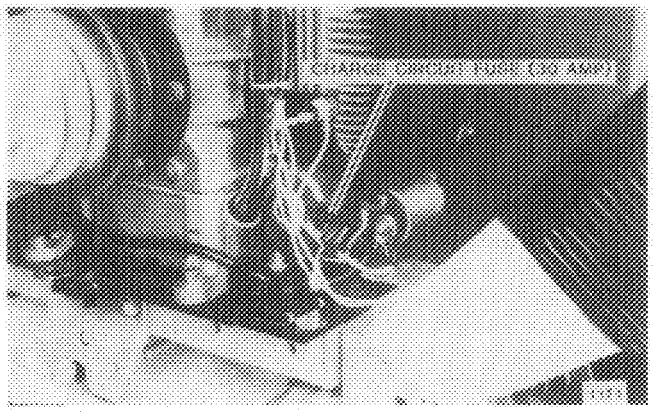
⚠ CAUTION ⚠

Proper polarity is critical with an alternator equipped charging system. Always disconnect battery ground cable (negative) before working on any part of the electrical system. Verify all components are connected correctly before reconnecting ground cable (negative) or damage to alternator system components will result.

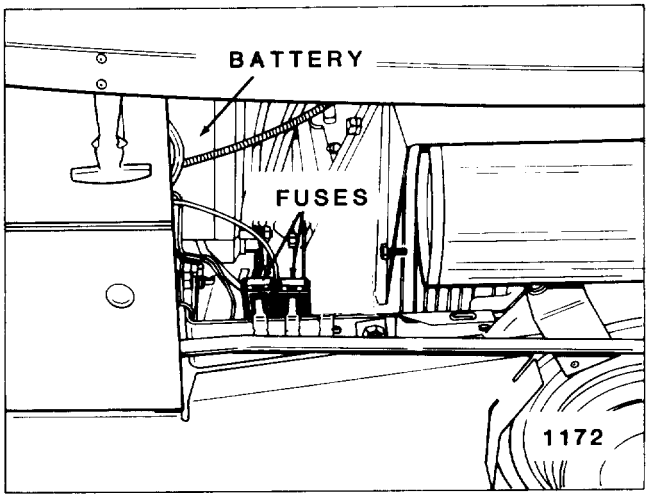
Never run engine if battery is removed, or if battery is not connected to charging system. Serious damage to voltmeter, circuit board and charging system components may result.

Main Fuse

A 20 amp automotive type ATO or ATC fuse is used to protect main circuit of electrical system.



Charge Circuit Fuse Location



Main and Light Fuse Locations

Light Circuit Fuse

Light circuit is powered by battery. Lights will operate when ignition switch is in Run position. A 10 amp automotive type ATO or ATC fuse is part of light circuit.

Gage Circuit Fuse

Gage circuits are protected by light circuit 10 amp automotive type ATO or ATC fuse.

Battery

⚠ CAUTION ⚠

When servicing battery or any other part of electrical system, or if battery must be removed for any reason, always disconnect negative (ground) cable FIRST and reconnect it LAST to avoid possibility of electrical shorts.

This paragraph does not pertain to a "Maintenance Free Battery." Maintain electrolyte level above plates in each cell by adding distilled water as necessary. Best time to add water is just prior to operating tractor so water will mix with solution. Do not overfill battery. Electrolyte solution is corrosive and overfilling can cause damage to surrounding metal parts. Battery should be maintained at 1.265 specific gravity charge. When battery has been out of tractor for servicing, take care to connect cables to battery exactly as they were before removal.

For longest service life, battery should be kept clean by wiping it off with a paper towel. Any corrosion around battery terminals should be removed by applying a solution of one part baking soda to four parts water. A light coating of grease may be applied to all exposed terminal surfaces to prevent corrosion.

At temperatures below 32°F (0°C), full charge state must be maintained to prevent cell electrolyte from freezing and causing permanent battery damage.

Light Bulb Replacement

Headlight and tail light bulbs (on models so equipped) are replaced as described below. Care should be taken when handling bulbs, particularly if they are broken.

Either sealed beam headlamp unit is replaced by first disconnecting both terminal wires. Note way headlamp is installed, then carefully remove bolt and retainer to release headlamp.

To replace a tail light bulb, pry lens off with a screwdriver. A slot is located at each end of lens for this purpose. If bulb has a metal socket, push bulb down and turn counterclockwise to remove it. If bulb has a plastic socket, simply pull bulb straight out. Tail light bulbs are automotive #1895 (metal base) or #194 (all glass).

To replace indicator light bulb, consult your authorized Wheel Horse dealer.

AUTOMATIC TRANSMISSION

Oil Quality

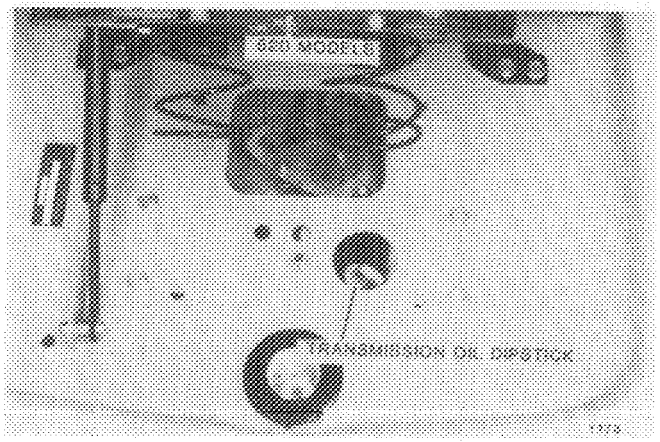
520 MODELS:

Hydrostatic transmission requires 10W-30 or 10W-40 premium quality motor oil.

516, 518 MODELS:

Hydrostatic transmission requires a straight SAE 20 weight premium quality motor oil API Service Classification SC, SD, SE or SF. Transaxle requires 10W-30 or 10W-40 premium quality motor oil.

Oil Level

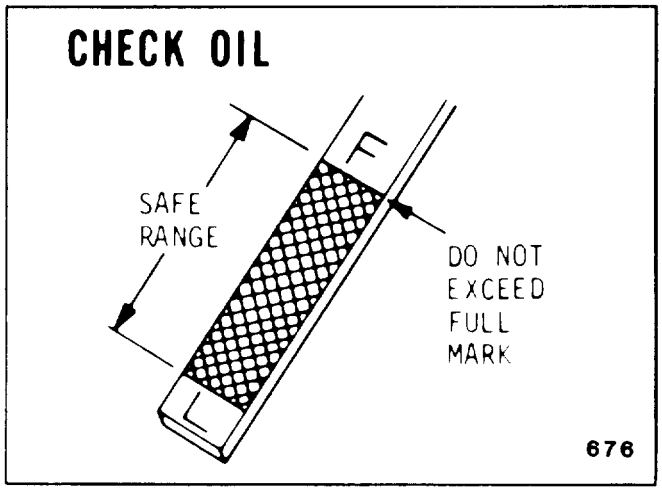


520 Models Automatic Transmission Dipstick

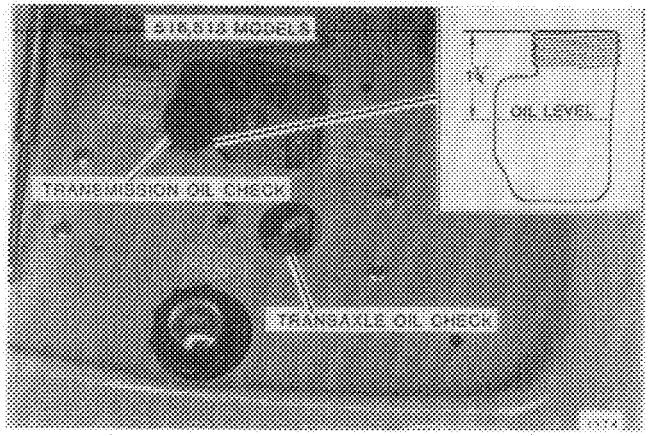
520 MODELS:

Lubricant level should be checked before each use. Dipstick is located in a filler tube coming up from transmission. Dipstick is marked for COLD oil. Remove dipstick and wipe clean with a clean lint free rag. Replace dipsitck and remove again. Oil level should be maintained between "F" and "L" levels on dipstick. Never operate tractor with oil BELOW or ABOVE marks on dipstick. Add oil as necessary. Replace dipstick making sure it is fully seated in filler tube.

Use care to prevent dirt, clippings or other foreign material from entering transmission during oil level checks, oil fillings, or oil changes.



520 Models — Correct Transmission Oil Level



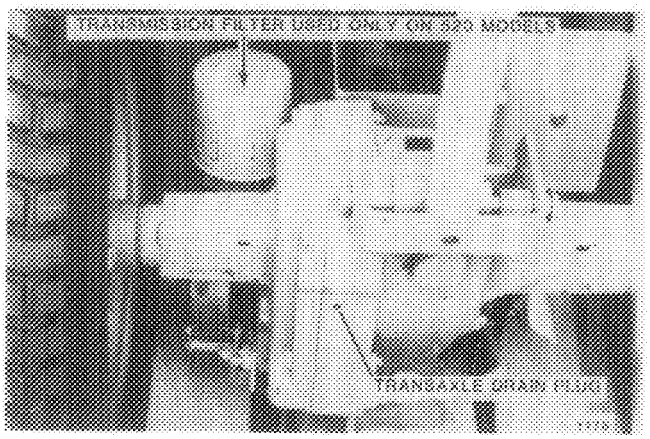
516, 518 Models Transmission/Transaxle Oil Level

516, 518 MODELS:

Lubricant levels should be checked before each use. Check oil levels when oil is COLD. Transmission oil level should be 1¾ inches down from top of filler neck. Transaxle oil level should be maintained between "F" and "L" marking on dipstick.

Use care to prevent dirt, clippings or other foreign material from entering transmission during oil level checks, oil fillings, or oil changes.

Oil Changes



Transaxle Drain Plug

520 MODELS:

Drain and refill transmission oil once per year or 100 hours of operation, whichever occurs first.

Oil is drained by removing pipe plug at bottom of transaxle. Plug is located near left rear of transaxle. Approximate refill capacity is 5 quarts (4.7 liters). After adding 4 quarts of oil, check oil level; Add oil as necessary to bring oil level between "F" and "L" marking on dipstick.

516, 518 MODELS:

Changing oil in hydrostatic transmission is not recommended except for major service. If oil must be frequently added, a leak is indicated and should be corrected immediately.

For information purposes, oil capacity is:

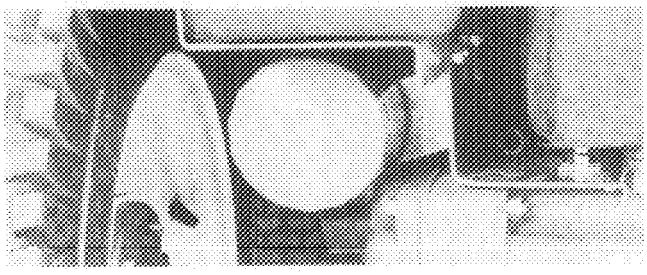
Hydrostatic Transmission — ¾ qt. (.7 liters) SAE 20

Drain and refill transaxle oil once per year or 100 hours of operation, whichever occurs first.

Oil is drained by removing pipe plug at bottom of transaxle. Plug is located near left rear of transaxle. Approximate refill capacity is 3 quarts (2.8 liters). After adding 2 quarts of oil, check oil level; Add oil as necessary to bring oil level between "F" and "L" marking on dipstick.

Oil Filter (520 Models Only)

Replace oil filter after first 10 hours of operation. Thereafter, replace filter with each transmission oil change. (100 hours or one year, whichever occurs first).



520 Model Transmission Oil Filter

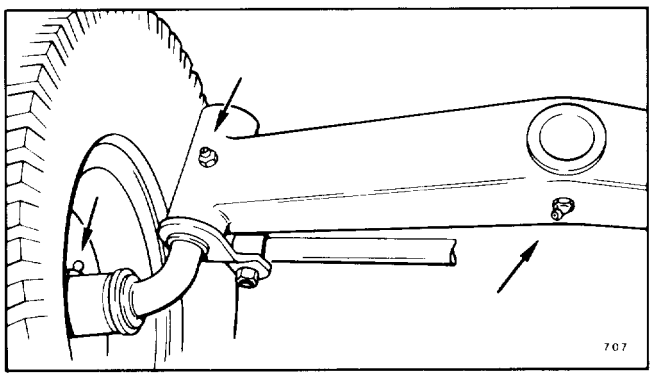
Cooling Fan

A cooling fan is bolted to transmission input shaft (located just behind right footrest). Fan forces air over transmission cooling fins to cool transmission oil. Replace cooling fan if it becomes cracked or broken. Be sure to install it so that maximum airflow is directed across transmission.

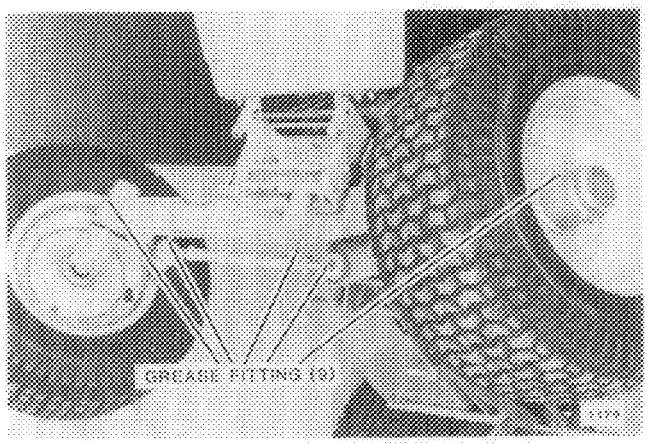
Cooling fins on transmission should also be kept clean for best cooling efficiency. Periodically inspect for dirt buildup, and brush or wash out any accumulated dirt or clippings. If pressure washing equipment is used, avoid directing spray at joints and seal areas, to prevent forcing water into system.

CHASSIS LUBRICATION

Steering gear, foot pedal, spindles, front wheel bearings, tie rods (520-HC) and front axle pivot are equipped with fittings to facilitate lubrication with a pressure grease gun. Before applying grease gun, clean zerk fittings carefully to prevent dirt from being forced into fitting. After inserting grease, wipe off any excess grease. A general purpose grease (lithium base) is used to lubricate tractor.

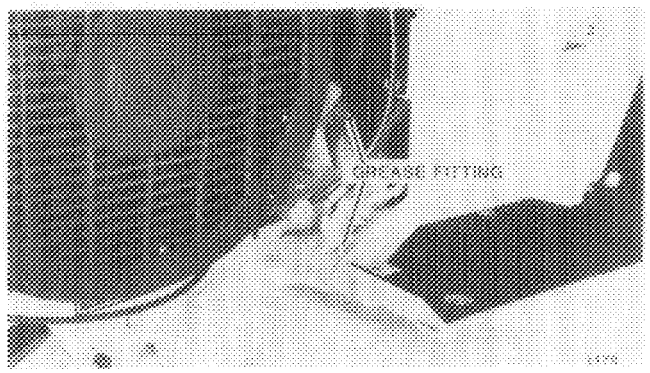


Front Wheel, Spindle and Front Axle Lube Fittings (516-H, 518-H, 520-H Models)



Front Axle Assembly Lube Fittings (520-HC Model)

Lubricate chassis after each 25 hours of operation. All other pivoting arms and levers should be lubricated at same intervals with either general purpose grease or machine oil, applied directly to wear surfaces.



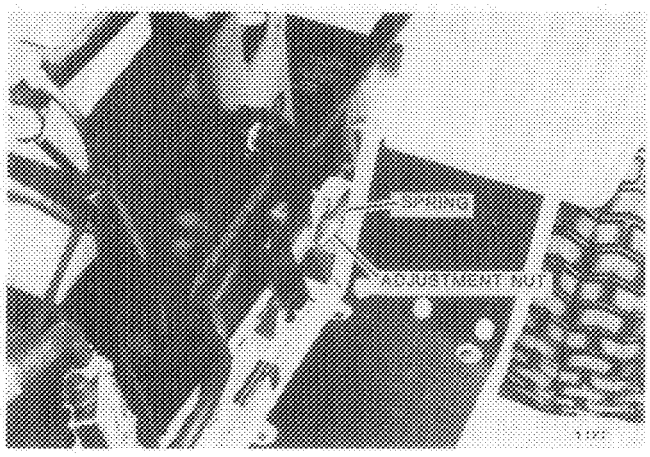
Steering Gear and Foot Pedal Lube Fitting

FOOT BRAKE ADJUSTMENT

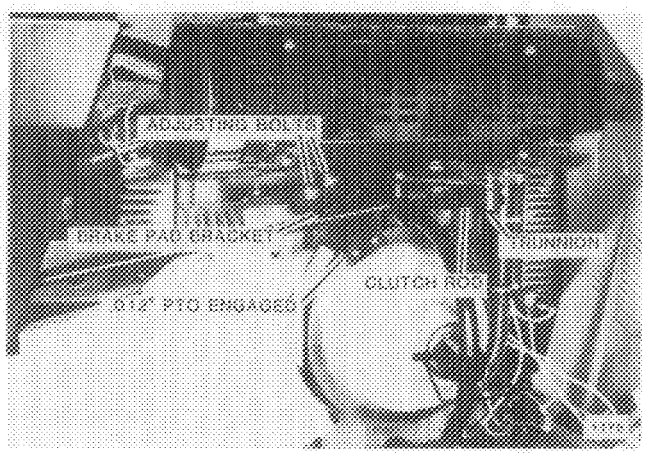
Brake band, located on left side of transmission, brakes transmission shafts and, in turn, brakes rear wheels. As brake pedal is depressed, linkage returns transmission to neutral, dynamically braking tractor. Brake band is actuated after transmission reaches neutral, providing additional braking action. Brake band also serves as parking brake.

To adjust brake, remove left hand side cover, which is secured by two screws at top, one screw at bottom and a bolt at front.

1. Set parking brake so that lever is latched in second notch in control cam. This is done by pulling back on parking brake lever as brake pedal is slowly depressed. You will feel lever move back slightly as it drops into second notch of control cam.
2. Tighten nut on brake linkage bolt until coils of heavy spring are fully compressed, then back off nut ½ turn.
3. Release parking brake and check that brake band is not dragging on brake drum.

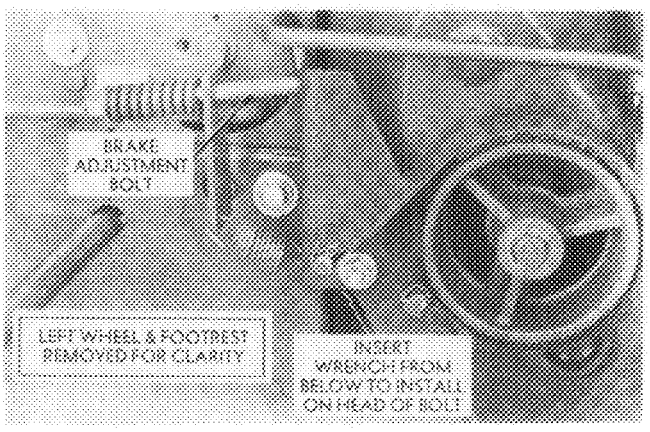


Brake Adjustment



PTO Adjustments

If tractor creeps after brake pedal is depressed and then released, linkage that returns tractor to neutral requires adjustment. Your authorized dealer should make this adjustment.



Brake Band and Drum

PTO CLUTCH AND BRAKE ADJUSTMENT

PTO clutch and brake may require periodic adjustment due to normal wear of friction surfaces. If clutch slippage is apparent, turn trunnion farther onto clutch rod in one turn intervals until slippage is eliminated.

To adjust PTO brake:

1. Engage PTO clutch.
2. Loosen two bolts that hold brake pad bracket to support bracket.
3. Place a .012 in. (.3 mm) feeler gauge between brake pad and clutch pulley.
4. While holding brake pad against feeler gauge and pulley, tighten two brake bracket bolts.

CLEANING AND STORAGE

Tractor should be washed regularly with a mild automotive detergent and water. After 30 days, painted surfaces may be waxed to protect original finish.

Minor paint scratches or abrasions can be removed with an automotive cleaning and polishing compound. Rubbing compound is not recommended under normal circumstances, as it is highly abrasive. Exposed bare metal surfaces should be given a light coating of oil or grease to prevent rust until permanent repairs can be made. Aerosol cans of Wheel Horse paint are available through your Authorized Wheel Horse Dealer.

When tractor will not be used for an extended period of time, following steps will help insure minimum difficulty when unit is returned to service:

1. Perform required maintenance steps called for in "Maintenance Checklist".
2. Check tires for proper inflation.
3. Drain all fuel from fuel tank. Start tractor and let engine run out of gas. As gasoline grows old, it becomes less volatile and forms harmful gum and varnish deposits in carburetor and fuel pump. DO NOT STORE GASOLINE FOR MORE THAN 2 MONTHS.
4. Wash tractor and repaint all bare metal surfaces.
5. Charge battery. In temperatures lower than 40°F (4°C) a battery will maintain a charge for about 60 days. In temperatures above 40°F (4°C) water level should be checked and battery "trickle charged" every 30 days, (more often in higher temperatures). Battery must be fully charged to prevent freezing and internal damage in weather below 32°F (0°C).
6. Remove key from tractor.

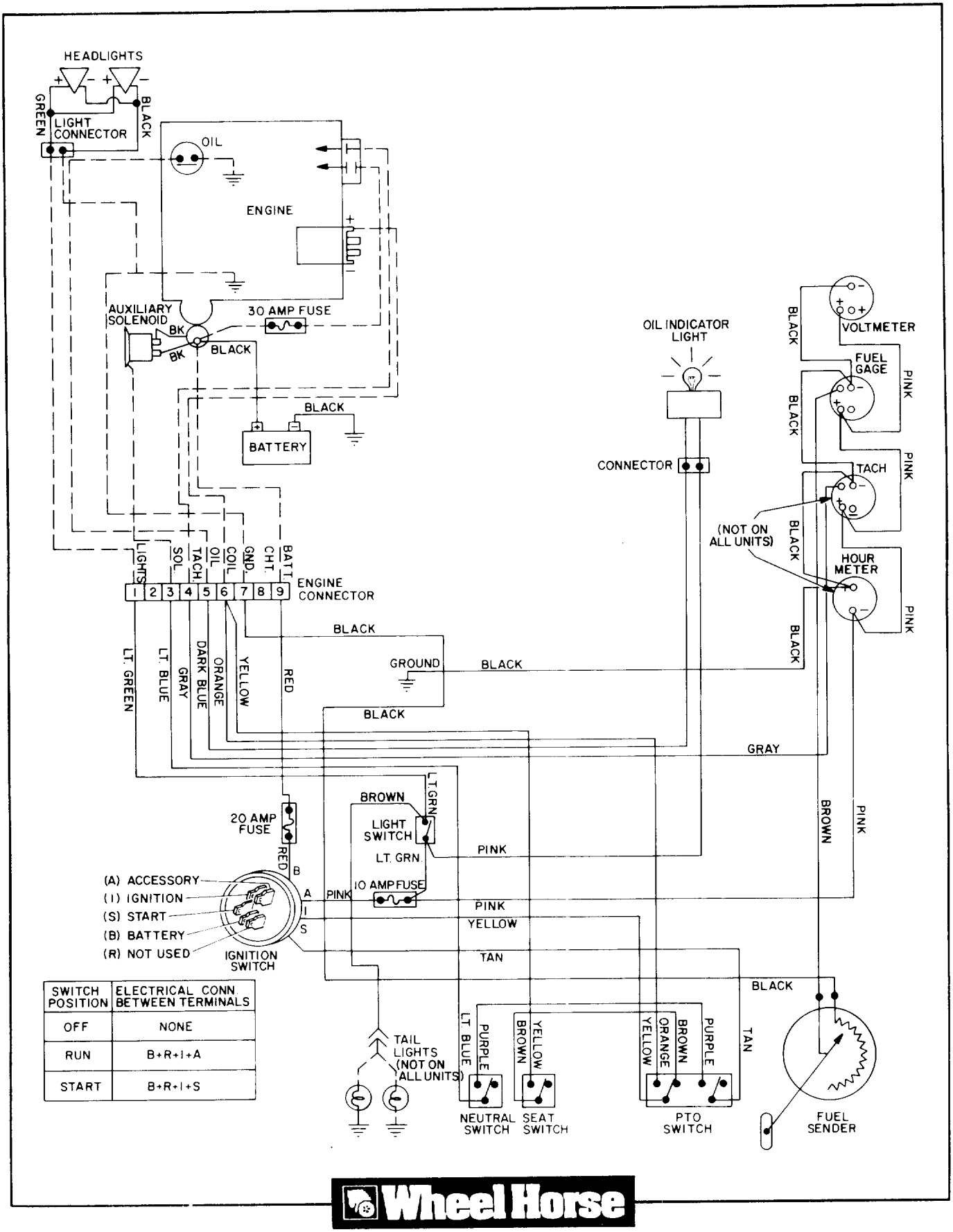
TROUBLESHOOTING CHECKLIST

SYMPTOM	POSSIBLE CAUSE	POSSIBLE REMEDY
Engine will not turn over.	Dead battery.	Charge or replace battery.
	Open safety interlock switch.	Be sure PTO is disengaged and motion control lever is all the way left in horizontal slot of shift plate.
	Starter.	Consult authorized dealer.
	Solenoid.	Consult authorized dealer.
	Ignition switch.	Consult authorized dealer.
Engine turns over but will not start.	Spark plug not firing.	Check spark plug condition and reset gap.
	Ignition system.	Consult authorized dealer.
	No fuel in tank.	Refuel tractor.
	Fuel valve closed.	Open fuel valve.
	Improper carburetor adjustment.	Reset carburetor adjustment.
	Ignition switch.	Consult authorized dealer.
Engine hard to start.	Spark plug wire(s) grounded or loose.	Check spark plug wires.
	Ignition system.	Consult authorized dealer.
	Spark plug(s) faulty or improperly gapped.	Check spark plug condition and reset gap.
	Fuel line clogged.	Clean fuel line and change line filter; check strainer in fuel tank.
	Faulty fuel pump.	Consult authorized dealer.
	Carburetor dirty or improperly adjusted.	Readjust carburetor. Consult dealer for authorized carburetor service.
Engine starts, but operates erratically.	Clogged fuel line.	Clean fuel line; check strainer in fuel tank.
	Water in fuel.	Drain old fuel and replace with fresh supply.
	Vent in fuel cap plugged.	Check vent.
	Ignition system.	Consult authorized dealer.
	Improper carburetor adjustment.	Readjust carburetor.

TROUBLESHOOTING CHECKLIST (Continued)

SYMPTOM	POSSIBLE CAUSE	POSSIBLE REMEDY
Engine knocks.	Fuel octane too low.	Drain fuel and replace with higher octane supply.
	Faulty Ignition System.	Consult authorized dealer.
	Engine overheated.	Shut off engine and allow to cool.
Engine occasionally "skips" at high speed.	Spark plug(s) fouled, faulty or gap too wide.	Check spark plug condition and gap.
	Faulty Ignition System.	Consult authorized dealer.
	Incorrect carburetor adjustment.	Readjust carburetor.
Engine overheating.	Air intake screen or fins clogged	Clean intake screen and fins.
	Oil level too high or too low.	Adjust oil level as necessary.
	Fuel mixture too lean.	Readjust carburetor.
	Faulty Ignition System.	Consult authorized dealer.
	Engine overloaded.	Reduce load on tractor.
Engine idles poorly.	Improper carburetor adjustment.	Readjust carburetor.
	Improper spark plug gap.	Check condition and gap of spark plug(s).
Engine backfires.	Improper carburetor adjustment.	Readjust carburetor.
	Ignition system.	Consult authorized dealer.
Engine runs fine, but tractor will not move.	Transmission clutch disengaged.	Engage clutch.
	Faulty Transmission.	Consult authorized dealer.
Tractor loses power or transmission overheats. (Automatic models)	Transmission oil level too high or too low.	Adjust oil level as necessary.
	Transmission damage has resulted from operating engine at low RPM or contamination of oil.	Consult dealer for authorized service.
Engine stalls whenever PTO is engaged.	Excessive load on PTO.	Check for jammed attachments. Lessen load on attachment.
	Faulty interlock system.	Seat must be occupied to close interlock system. Consult authorized dealer.

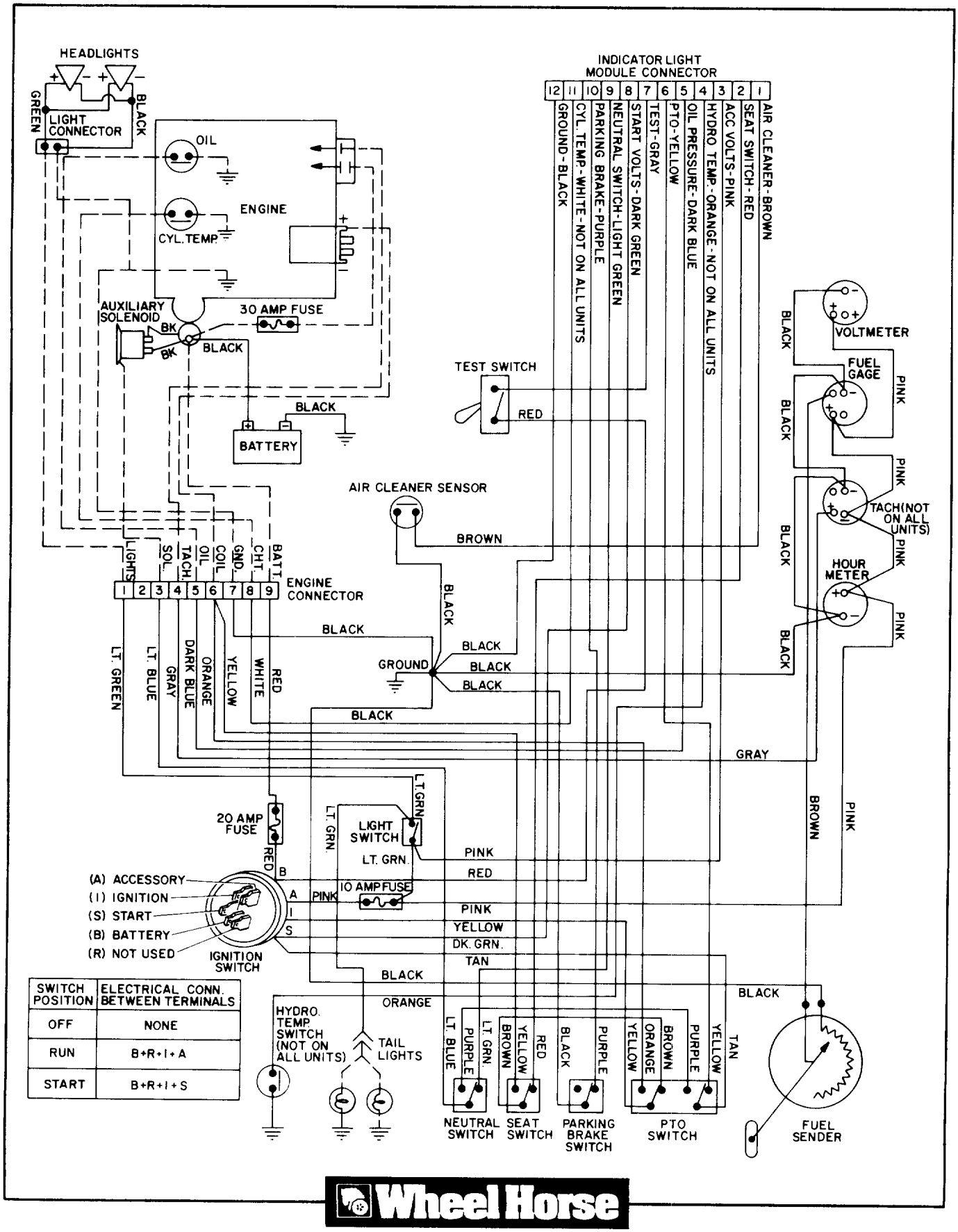
WIRING DIAGRAM — 516-H, 520-HC



SWITCH POSITION	ELECTRICAL CONN BETWEEN TERMINALS
OFF	NONE
RUN	B+R+I+A
START	B+R+I+S

Wheel Horse

WIRING DIAGRAM — 518-H, 520-H MODELS



SWITCH POSITION	ELECTRICAL CONN. BETWEEN TERMINALS
OFF	NONE
RUN	B+R+I+A
START	B+R+I+S

Wheel Horse

Dear Customer,

Congratulations on your new investment! Your purchase of a Wheel Horse product clearly demonstrates that you place a high value on sound engineering, quality, and reliable performance. To maintain the value of your investment and achieve the ultimate in performance, we ask that you specify GENUINE WHEEL HORSE REPLACEMENT PARTS when the time comes to change a component due to normal wear. Our replacement parts are subjected to intense design, test and evaluation to meet the highest standards of safety, quality, and reliability. We know they will work!

A separate Parts Manual for your Wheel Horse Mowing Machine can be obtained by completing order form below. You will receive an invoice with manual.

PUBLICATIONS
WHEEL HORSE PRODUCTS, INC.
P. O. Box 2649
South Bend, Indiana 46680

ATTACHMENT
PARTS MANUAL ORDER FORM

Enter number shown on your attachment:

MAILING LABEL — PLEASE PRINT CLEARLY

To:

Name _____

Address _____

City _____ **State** _____ **Zip** _____

DELIVERY RECORD

Wheel Horse Dealer: This checklist is to assist you with the delivery of a Wheel Horse product to its new owner, and provide you with a record of this service

Tractor/Rider VIN & Serial No. _____

Attachment VIN & Serial No. _____

Non-Wheel Horse Equipment VIN & Serial No. _____

_____

Deliver to Customer:

- ☐ Owners manual for tractor/rider, attachments, and accessories
- ☐ Warranty Statements (Tractor, Engine/Transmission/Other)
- ☐ Ignition Keys/Miscellaneous (Extra blades, discharge chute, etc.)
- ☐ Completed Maintenance Chart Decal

Discuss with Customer:

- ☐ Cautions and Warnings in Owner's Manuals
- ☐ Importance of reading all Owner's Manuals before operation
- ☐ Proper method of operation on slopes. Point out slope limitations on vehicle "danger" decal
- ☐ Warn not to dismount tractor or perform **any** work on unit with engine running

Show Customer:

- ☐ Safety interlock system is functional on this vehicle and method of testing seat switch system before each use
- ☐ Proper operating techniques, while test operating equipment
- ☐ All safety shields and guards are in place
- ☐ Location of all periodic maintenance points and maintenance intervals
- ☐ All items requiring periodic adjustment or an initial adjustment after run-in

New Wheel Horse Owner

I acknowledge delivery of my Wheel Horse products and other equipment listed on this form. My dealer has reviewed all information referred to on this form with me. I will read all Owner's Manuals supplied and familiarize myself with this equipment prior to operating it.

_____
Wheel Horse Owner-Signature

Delivered this date:_____ by _____
Wheel Horse Dealer-Signature

ORIGINAL-DEALER COPY-OWNER COPY-WHEELHORSE, CUSTOMER SERVICE DEPT

Product Information and specifications are shown herein as of the time of printing. Wheel Horse Products, Inc. reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligation.

Wheel Horse