



Wheel Horse®

TRACTORS/SNOWTHROWERS/MOWERS



OWNERS MANUAL

**RAIDER 10 & 12
TRACTORS**

MODELS

**1-6051, 1-6251,
1-6252 & 1-6253**

Wheel Horse Products, Inc.
SOUTH BEND, INDIANA 46614

INTRODUCTION

Your new Wheel Horse tractor is engineered to meet the need for big-tractor power and compact-tractor versatility and maneuverability. It comes to you from a long line of thoroughbreds which has put more Wheel Horses on the world's lawns and gardens than any other tractor.

The information in this manual can help get the most in year-around work and pleasure from your tractor. By following the maintenance instructions, you will be able to handle all the routine, day-to-day care your tractor needs.

In addition, your Wheel Horse authorized dealer, a member of the nation's Number One compact tractor team, stands behind the products he sells with replacement parts and trained mechanics. He wants to serve you and your neighbors, and will gladly answer your questions concerning the use, care, and application of your "horse."

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A separate parts manual is available on request. To obtain a parts manual for your tractor mail a Post Card to the address below. Be sure to state the tractor model number and your return address.

WHEEL-HORSE PRODUCTS, INC., 515 W. IRELAND ROAD, SOUTH BEND, INDIANA 46614

SAFETY SUGGESTIONS

Recommended by Outdoor Power Equipment Institute

PLEASE READ AND FOLLOW THE SAFETY SUGGESTIONS LISTED BELOW

1. Know the controls and how to stop quickly — read the owners manual.
2. Do not allow children to operate machine; nor adults to operate it without proper instruction.
3. Clear work area of objects which might be picked up and thrown.
4. Disengage all clutches and shift into neutral before starting motor. Keep hands, feet, and clothing away from power driven parts.
5. Do not carry passengers. Keep children and pets a safe distance away.
6. Never direct discharge of any material toward bystanders, nor allow anyone near machine while in operation.
7. Disengage power to attachment (s) and stop motor before leaving operator position.
8. Take precautions when leaving machine unattended (to avoid accidental starting, rolling away, accidental dropping of any attachment, etc.)
9. Disengage power to any attachment whenever it is not in use, or when traveling from one work area to another.
10. Stay alert for holes and other hidden hazards. Know what is behind you, before backing up.
11. Beware of steep slopes; reduce speed on all side slopes and sharp turns, to prevent tipping or losing control.
12. Don't stop or start suddenly when going uphill or downhill.
13. 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. Don't turn too sharp and use care when backing.
 - d. Use counterweight (s) when suggested in owner's manual.
14. Watch out for traffic when near roadways.
15. Handle gasoline with care — it is highly flammable.
 - a. Use approved gasoline container.
 - b. Never add gasoline to a running motor — fill tank out of doors — wipe up spilled gasoline.
 - c. Replace gasoline cap securely.
 - d. Open doors if motor is run in garage — exhaust gases are dangerous.
17. Keep machine in good operating condition and keep safety devices in place. Use guards as instructed in owner's manual.

SPECIFICATIONS

(Specifications subject to change without notice.)

ENGINE

Model 1-6051

Make/Model: Lauson HH100 Cast Iron-Horizontal Shaft

Model 1-6253

Make/Model: Lauson HH120 Cast Iron-Horizontal Shaft

Models 1-6251 and 1-6252

Make/Model: Koehler K301S Cast Iron-Horizontal Shaft

Type: 4 cycle, single cylinder, air cooled

Bore: { 1-6251 and 1-6252 3 $\frac{3}{8}$ "
1-6253 3 $\frac{1}{2}$ "
1-6051 3 $\frac{5}{16}$ "

Stroke: { 1-6251 and 1-6252 3 $\frac{1}{4}$ "
1-6253 2 $\frac{7}{8}$ "
1-6051 2 $\frac{3}{4}$ "

Displacement: { 1-6251 and 1-6252 .. 29.07 cu. in.
1-6253 27.66 cu. in.
1-6051 23.75 cu. in.

Horsepower: Engine Mfrs. Rating @ 3600 R.P.M.

1-6251, 1-6252 and 1-6253 12

1-6051 10

Automatic Compression Release for easy starting

Ignition: Solid State-Breakerless

Air Cleaner: Dry type

TRANSMISSION — Six Speed Transaxle

Automotive type all gear drive, cast iron case

All shafts rotate on needle or ball bearings

Gear Ratio: Input to axles

Maximum reduction 1st gear, low range 272:1

Final Drives are steel forged gears

Speeds: 6 Forward
2 Reverse
 $\frac{1}{2}$ to 6 M.P.H.

Transmission Lube: #90 Gear Lube

Automatic Transpower Differential — Limited Slip

CAPACITIES

Engine Cankcase { 1-6251 and 1-6252 .. 2 qts.
1-6051 and 1-6253 .. 5 pts.

Fuel Tank 2 gals.

Transmission (#90 Gear Lube) 2 qts.

DIMENSIONS

Length-Overall 65"

Wheel Base 45.5"

Width-Overall 37"

Width at Front Wheels 33.5"

Height-Overall 39"

Height to Top of Hood 35"

Crop Clearance 7 $\frac{1}{4}$ "

Frame Clearance 13 $\frac{1}{2}$ "

Transmission Clearance 7 $\frac{1}{4}$ "

Turning Radius 6' 9"

Shipping Weight { 1-6251 and 1-6252 600 lbs.

{ 1-6051 and 1-6253 570 lbs.

DRIVE

V-Belt idler, combination clutch and brake pedal

Clutch is automatically released when brake is applied

Brake band operates on transmission brake shaft drum

Parking brake: adjustable

TIRES

Turf Saver — Standard

Cleat Type — Optional

Size/pressure: Front: 16 x 5.50-8 12 lbs.

Rear: 23 x 8.50-12 6 to 8 lbs.

Rear Opt.: 23 x 8.00-12 6 to 8 lbs.

Rear tires may be ballast filled.

ELECTRICAL

Battery: 12 volt Heavy Duty — 42 Amp. Hr.

Charging System: 10 Amp. Alternator w/Solid State Regulator

Starter: Bendix Type

Switch: Key start, 4 position, w/Accessory Terminal

Lights: Flush type Headlights, Tail Lights, Rocker type Switch

Fused Lighting and accessory circuits

Cigar Lighter

SERIAL NUMBERS

Serial and model numbers are necessary to correctly identify your tractor and engine whenever you need repair parts. The tractor serial and model number plate is located on hood stand below the dash panel. The engine serial and model number plate is located on the engine shroud.

For your convenience and ready reference, enter serial numbers in the spaces below.

TRACTOR	ENGINE
Model number _____	Model number _____
Serial number _____	Serial number _____

OPERATION

INSTRUMENTS AND CONTROLS

The controls are clearly identified on the instrument and control panels. A few minutes spent getting acquainted with them will repay you with safer, more comfortable, and satisfactory operation from the start.

Refer to the accompanying illustration, Fig. 1, for the location of the controls described below.

1. P.T.O. Clutch Rod

Attaching tools are started and stopped by operating the engine mounted P.T.O. By moving the clutch rod from the outside notch in the bracket, to the inside notch, (toward the tractor), the friction clutch is engaged.

2. Light Switch

Push left side of rocker switch to turn on head and tail lights. Push right side of switch to turn them off. **Note:** The ignition switch must be on "run & accessory" position before lights will function.

3. Choke Control

Pull knob to choke when starting engine. Push knob in slowly after engine starts. If engine is warm and has been running, choking may not be necessary.

4. Ignition Switch

Turn key all the way to right, "start" position, to start engine. When engine starts, release key and it will automatically return to "run"

position. They key must be turned manually to "run & accessory" position before the lights or other electrical accessories will function. When the switch is turned off, the engine stops and all electrical accessories are automatically turned off as well. (See Fig. 2).



FIGURE 2

5. Cigar Lighter

Push knob until lighter clicks into heating position. Lighter pops up when ready for use. **Note:** Ignition switch must be in "run & accessory" position before lighter will function.

6. Throttle Control

Pull knob to increase engine speed; push to decrease engine speed. Turn the knob to the right to lock throttle in position. Turn to the left to unlock and change position.

7. Dial-A-Height Lift Control

Turning the knob to the right or left limits the down positions of the lift arm. Controlling the down position is necessary when using implements such as a plow, grader blade, or a snow blower.

8. Gear Shift Lever

The shift lever may be shifted to either a forward or reverse gear. Three forward gears and one reverse are provided. See the shift pattern on the instruction plate for gear positions.

9. High/Low Range Selector Lever

The high/low range selector lever may be moved either left or right. Two ranges are provided. See the instruction plate for range position.

10. Hood Release

Pull the hood lever forward (toward front of tractor) to release the hood. Pull up and forward until the hood stops and rests in the open position.

STARTING THE ENGINE

1. Before starting the engine, fill the gas tank with a good grade of regular gasoline and open the fuel shutoff valve at the left side of the hoodstand.
2. Check the oil level in the engine crankcase with the dipstick. Add oil as necessary to bring oil to proper level. Do not overfill.
3. Pull throttle knob $\frac{1}{2}$ way out and turn to the right to lock in position.

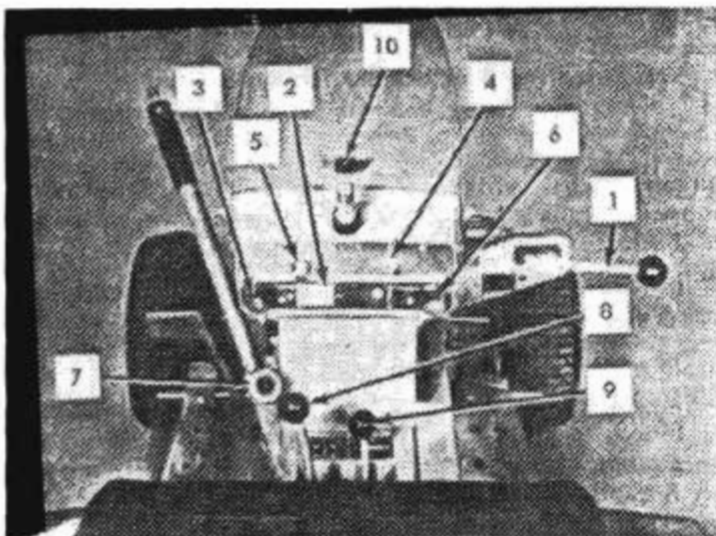


FIGURE 1

4. Pull choke knob all the way out to choke engine. When restarting a warm engine, choking may not be necessary.
5. Make sure P.T.O. clutch rod is in the disengaged position. Turn ignition key all the way to the right to operate the starter.
6. When engine starts, push the choke knob in and regulate engine speed with the throttle control. Turn throttle control to the left to unlock and change its position.

STOPPING THE ENGINE

1. Disengage the P.T.O. clutch rod.
2. Lower any attachment.
3. Unlock and push the throttle control to idle position. If the tractor has been working hard, allow the engine to idle a short time to normalize temperatures before shutting it off.
4. Engage parking brake.
5. Turn ignition key to the left to "off" position. Remove key from the ignition switch.

SIX SPEED TRANSMISSION

LOW AND HIGH RANGE SELECTOR

The low range drive provides a slower speed in each respective gear, by a 4 to 1 reduction in speed from high range. When the range selector lever is all the way to the left it is in low range, or all the way to the right it is in high range. (See instruction decal on cover plate.) Do not use a mid-point position on the range selector as neutral. Neutral position must be selected only with the standard transmission gearshift lever.

Low range is used for working heavy banked snow, tilling, high weeds, or hill sides. The following table shows the maximum speeds available in each of the three forward gears and the reverse gear.

MILES PER HOUR

GEAR	HIGH	LOW
First	2.2	.5
Second	3.4	.8
Third	6.0	1.5
Reverse	2.8	.7

CLUTCHING

Don't force the gear shift lever if the gears do not immediately mesh. Depress clutch pedal all the way down and let up, then depress again and shift. To avoid sudden starts, release clutch pedal slowly. While in motion do not shift gears.

The clutch pedal also operates the brakes WHEN DEPRESSED ALL THE WAY DOWN. This clutch-brake pedal combination makes clutching automatic as you apply the brakes to stop. See Figure 2.

PARKING BRAKE

The parking brake is located on the left side of the tractor as shown in Figure 6. To set the parking brake depress the clutch-brake pedal as far as possible and push the parking brake down. To release the brake depress the clutch-brake pedal.

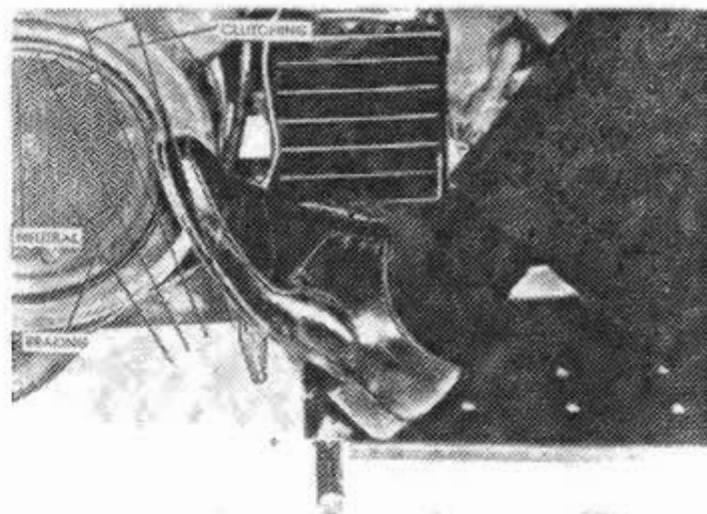


FIGURE 3

BRAKE ADJUSTMENT

The brake band, located on the left side of the transmission, brakes the transmission and in turn stops the wheels.

To adjust, depress clutch-brake pedal and move parking brake lever forward into the engaged position. Tighten nut on brake rod until both rear wheels skid when tractor is pushed — parking brake engaged. Tighten nut another $\frac{1}{2}$ turn. The brake and parking brake are now properly adjusted. See Fig. 4. The clutch-brake pedal rod may be turned in or out to adjust the pedal to operator's desired position. Remove pin from rod and turn rod in or out for adjustment. There are also two holes in the pedal to adjust for travel. The upper hole is for a short travel, the lower hole is for a long movement.

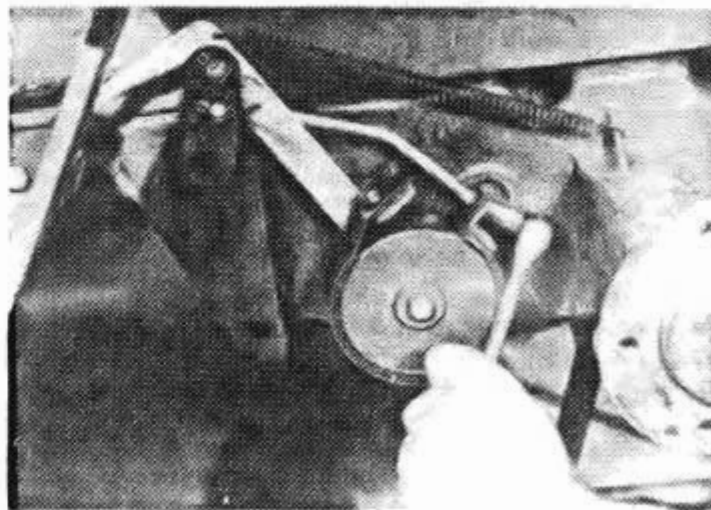


FIGURE 4

BELT GUIDE ADJUSTMENT

For proper declutching the belt guides mounted on the belt guard should clear the belt by not more than $\frac{1}{32}$ of an inch. See Fig. 5. To make this adjustment bend the belt guides with a pair of pliers.

P.T.O. CLUTCH OPERATION AND ADJUSTMENT

Attaching tools are started and stopped by operating the engine mounted P.T.O. By moving the clutch rod from the outside notch in the bracket, to the inside notch, (toward the tractor), the friction clutch is engaged. The other end of this rod is fork shaped with a $\frac{3}{8}$ " locknut on each side. By moving



FIGURE 5

these nuts in toward the tractor, more tension will be applied to the clutch. Adjust nuts so that clutch just disengages with clutch rod in middle notch (above arrow) of bracket. Refer to decal on bracket. **Note:** Always disengage the clutch before stopping the engine.

LIFT LEVER

To lift an attachment, move the lift lever toward the driver. To lower, move lever forward. The Dial-A-Height will hold an attachment at any position from full up to full down. All attachments should be lowered after use.

LUBRICATION AND MAINTENANCE

BATTERY

With proper care this battery should give the long service life built into it.

A battery which does not function properly is not necessarily worn out or defective. It may only need a good recharge. Therefore, if battery trouble is suspected, a full recharge and test by a competent battery man is recommended.

Care In Service

A hydrometer test of the battery solution should be made monthly. If the specific gravity tests 1.225 or less, the battery should be removed and thoroughly recharged. At the same time the solution level should be examined and distilled water added when necessary to retain the level over the plates. When necessary to add distilled water, do it just prior to recharging so that the added water mixes with the solution.

When recharging is necessary and user does not have his own charging equipment, he should request service station to slow charge the battery at a rate of 2 to 3 amperes. Fast charging is not recommended.

Any collection of grease or any other substance should be removed from the top of the battery and the top kept dry and clean at all times. The battery should be kept snug in its cradle and not permitted to get loose. If removed for charging, it should be fastened snugly enough to prevent any movement when in use. Vent caps should be kept tight and the small vent holes in top or side of cap be kept open at all times to permit escape of gas formed in the battery.

Care should be exercised not to overfill the battery at any time and to always retain solution above the plates.

Winter Care

If battery will not be used during the winter months it should be removed and stored in a cool, dry place. Any collection of grease or other substance should be removed from the top of the battery.

The battery must be recharged monthly or whenever the hydrometer reads less than 1.225.

Before reinstalling the battery in the spring, it should always be given a thorough recharge.

BELTS

Drive belt tension is automatically maintained by a spring-loaded idler pulley on the parking brake linkage. When the parking brake is released, the belt is properly engaged with the engine and transmission pulleys.

Drive Belt Replacement:

1. Remove the belt guard from the tractor.
2. Remove the hairpin cotter from the clutch rod.
3. Engage the parking brake to release the tension on the drive belt.
4. Remove old belt and install new belt in its place.
5. Release parking brake to apply tension to the new belt.
6. Reinstall belt guard making certain the upper and lower belt guides run along the under edge of the belt.
7. Swing clutch rod into position and insert the hairpin cotter.

Attachment Belts:

Install attachment belts on the P.T.O. clutch by following steps (2) and (7) above.

When replacing belts, it is advisable to purchase them from Wheel Horse dealer. These belts are specifically designed for each tractor and attachment.

CHASSIS LUBRICATION

At least every 25 hours, lubricate the four pressure fittings with a grease gun and a good quality multi-purpose gun grease.

Fitting Locations:

- Steering sector gear (See Fig. 6).
- Center of front axle.
- Both front wheel spindles.

Use a light machine oil to lubricate other wear points and linkage joints.

At least once per year, remove, clean and repack front wheels with wheel bearing grease.

LUBRICATION — P.T.O. CLUTCH

The clutch housing has a needle bearing pressed inside with a grease seal. This bearing has been greased at the factory. Every 25 hours the clutch housing should be removed and a **SMALL** amount of good quality grease applied to partially fill the spaces between the rollers.

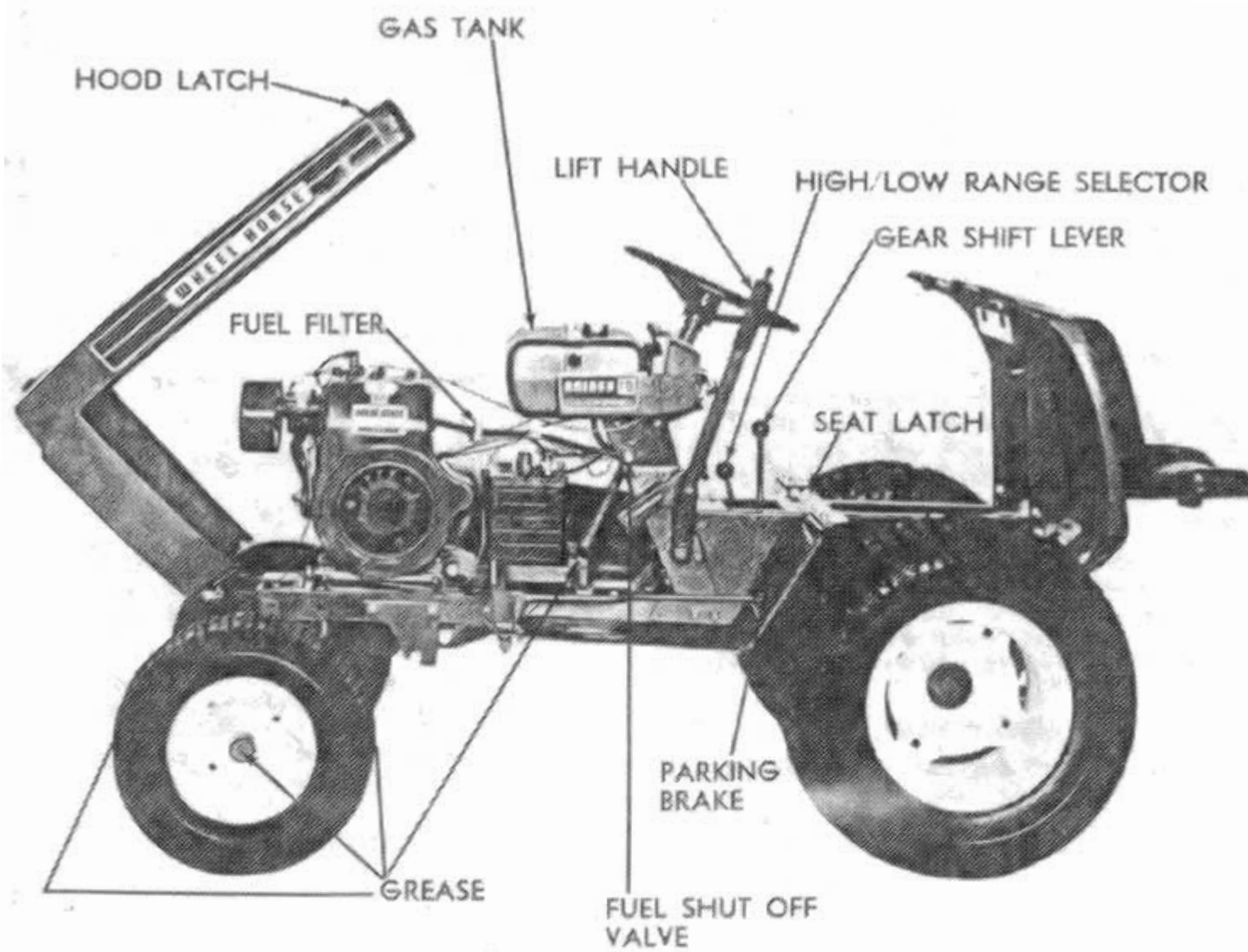


FIGURE 6

ENGINE

PERFORM SERVICE AT INTERVALS INDICATED (X)

	Each Day	Every 25 Hours	Every 100 Hours
Check Oil Level (Keep in safe range) ..	X		
Clean Air Intake Screen	X		
Change Oil (Use API Service MS) ..		X	
Check Air Cleaner Element		X	
Service Spark Plug (gap, .025")			X

Note: Intervals stated are for good, clean operating conditions — perform more frequently if dusty or dirty conditions prevail.

OIL CHART API Service MS

Air Temperature	Lauson	Kohler
Above 30°F	SAE 30	SAE 30
30°F - 0°F	SAE 10W	SAE 10W-30
Below 0°F	SAE 10W	SAE 5W-20

Air Cleaner:

Every 25 hours, service by tapping element lightly against flat surface to remove loose dirt. Do not clean in any liquid or with compressed air. Replace element after 100 hours. This can be extended up to 200 hours if good, clean operating conditions prevail.

Note: The engine manufacturer's maintenance schedule and procedures are given in the engine manual which came with your tractor. It is advisable to study these recommendations and follow them to assure long engine life and trouble-free operation.

FUEL SYSTEM

Use clean, fresh, REGULAR GRADE gasoline. Do not mix oil with fuel. Take the time to clean the area surrounding the fuel tank filler neck to prevent entrance of dirt and clippings into the tank.

Caution: Never fill fuel tank with engine running. Use care not to spill fuel on engine, especially when hot.

Fuel Filter:

The in-line fuel filter (Fig. 6) should be cleaned after the first 25 hours operation and at 25 hour intervals thereafter. To clean the filter, remove and wash in solvent.

HEAD AND TAIL LIGHTS

The head and tail light circuit is protected by the AGC 20 amp. accessory fuse in the line from the ignition switch. It is replaced by separating the capsule to remove the spent fuse and insert the new one.

The head and tail lamp lenses are removable to provide access to the bulbs. The headlamp lens is secured by four screws. The tail lamp lenses snap in place. A lifting slot is provided at the bottom of the lens to facilitate removal.

TIRES

The front tires are size 16 x 5.50-8. They should be inflated to 12 p.s.i. air pressure.

Standard rear tires are Turf Saver, high flotation type, size 23 x 8.50-12. Inflation pressure is 6 to 8 p.s.i.

The optional Cleat type tires are size 23 x 8.00-12. Inflation pressure is 6 to 8 p.s.i.

Rear tires may be filled with ballast for additional weight.

TRANSMISSION

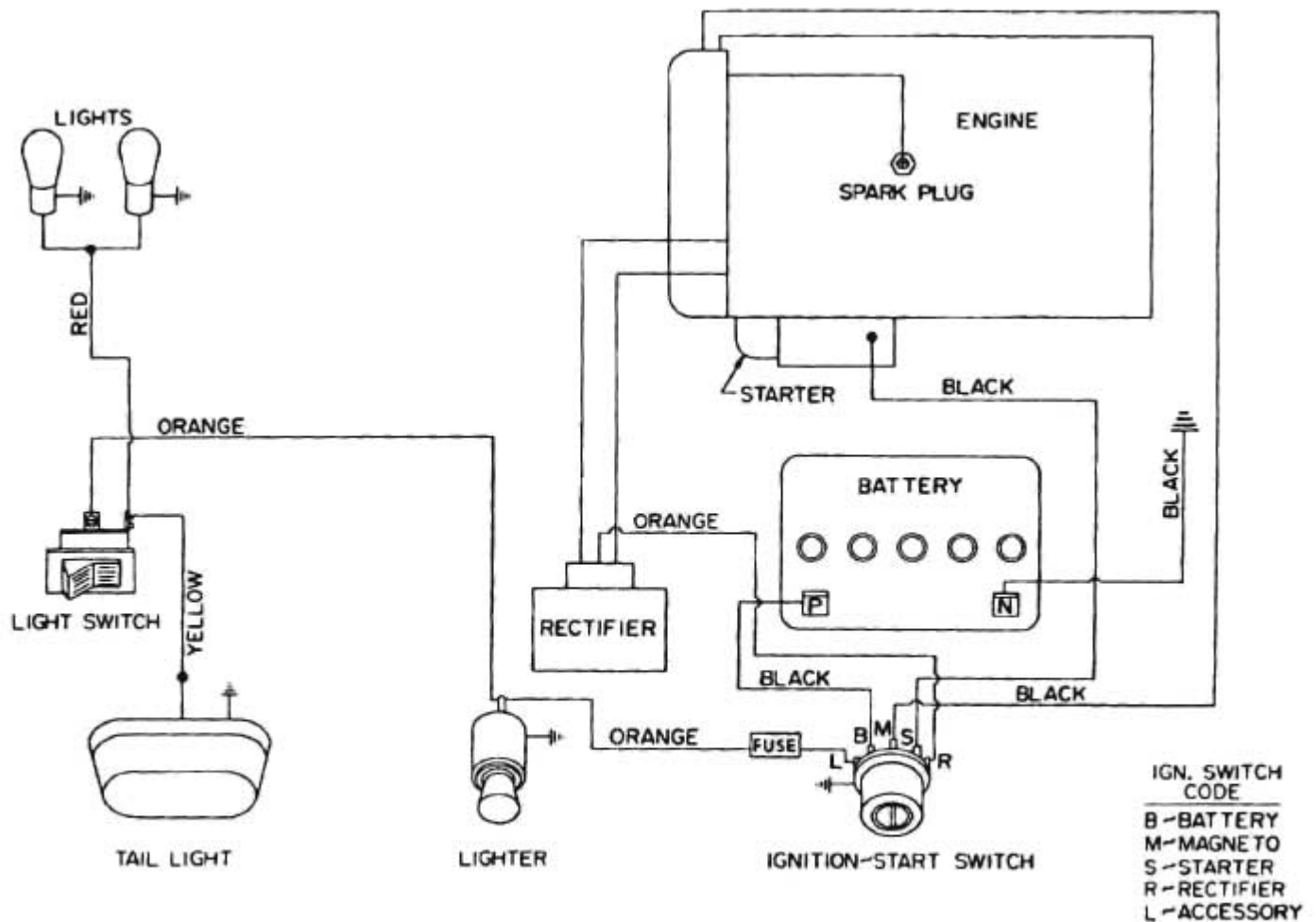
Oil:

Check oil level after every 40 hours of use. Replenish as necessary to maintain proper level as indicated on dipstick attached to filler pipe vent plug. (Located under seat.) Fill to full level with a good grade of S.A.E. 90 oil.

The transmission should be drained once a year by removing plug on bottom to drain oil. Refill as outlined in above paragraph. This is a regular automotive type transmission with sliding gears and should have the same care as your car.

ATTACHING TOOLS

Complete information on the assembly, attachment, operation and service of the many attaching tools is provided with each attachment.



WIRING DIAGRAM

***ATTACHMENTS AVAILABLE FOR
 RAIDER 10 & 12**

- 48" ROTARY MOWER (5-1483)
- 42" ROTARY MOWER (5-1423)
- 36" ROTARY MOWER - 3 BLADE (5-7366)
- 37" SNOW THROWER (6-6212) WITH (6-9112)
- 42" DOZER BLADE (6-4113) WITH (6-9622)
- GRADER BLADE (7-1112)
- TILLER (7-1211)
- DISC (7-1512)
- SPIKE TOOTH HARROW (7-1611)

- UTILITY WAGON (7-2111)
- DUMP TRAILER (7-2211)
- LAWN ROLLER (7-2311)
- SPIKE DISC AERATOR (7-2411)
- TWO SECTION CULTIVATOR (7-1722)
- SICKLE BAR MOWER (7-1331)

*27 OTHER WHEEL HORSE APPROVED
 ATTACHING TOOLS AVAILABLE THROUGH
 YOUR WHEEL HORSE DEALER.

OPTIONAL ACCESSORIES

- ATTACHMENT CLUTCH - ELECTRIC (8-3512)
- IMPLEMENT HITCH - CLEVIS TYPE A (8-5511)
- IMPLEMENT HITCH - SLOT (8-5521)
- CHROME WHEEL DISC (8-0512)
- WHEEL WEIGHTS - REAR (8-1111)

- WHEEL WEIGHTS - FRONT (8-1211)
- TIRE CHAINS (8-2511)
- DUAL WHEELS (8-0731)
- SEAT ADJUSTMENT (8-6711)

