

POWER KING

TRACTOR

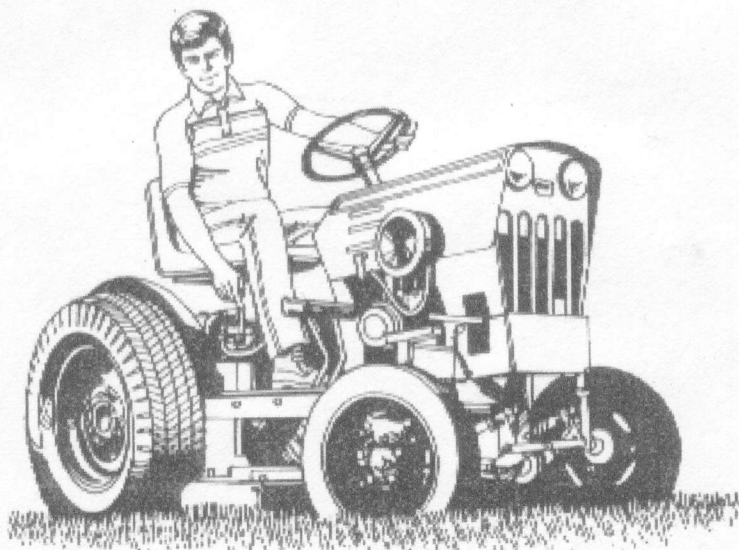
Owners Manual

for

**MODELS 2418, 2416, 2414,
1618, 1616, and 1614**

(after Serial Number 52589)

**NOTE: NEW BRAKE SYSTEM.
SEE SUPPLEMENT FOR
PARTS AND ADJUSTMENT.**



ENGINEERING PRODUCTS CO., INC.

**P.O. Box 1510, 2021 MacArthur Rd.
Waukesha, Wisconsin 53187**

Service on your engine can be obtained through the engine manufacturer's outlets. See the yellow pages of your phone book under "Engines—Gasoline" for address.

HOW TO ORDER REPAIR PARTS

When ordering parts from your local Dealer, be sure to supply the following information:

- Serial number.
- Model number.
- Complete part number.
- Name of each part.
- Quantity of each part.

FILL IN THE FOLLOWING FOR YOUR FUTURE REFERENCE:

For ordering Parts:
(Not including Engine)

Model Number _____

Complete Serial Number _____

For ordering Engine Parts from the
Engine Manufacturer's Outlet:

Engine Model Number _____

Engine Spec. Number _____

Engine Serial Number _____

		HOURS OF OPERATION							
		25	50	75	100	125	150	175	200
AREAS OF REQUIRED MAINTENANCE	ENGINE OIL								
	BATTERY								
	TIRES								
	GEAR CASE								
	GREASE FITTINGS								
	TRANSMISSION								
	STEERING GEAR								
	SPARK PLUG								
	DIFFERENTIAL								
	FUEL FILTER								
	DATE MAINTEN- ANCE PERFORMED								

INDICATED SERVICE INTERVALS ARE MAXIMUMS AND IT IS NOT RECOMMENDED THAT THEY BE EXCEEDED. HOWEVER, UNDER SEVERE OPERATING CONDITIONS IT MAY BE NECESSARY TO PERFORM THE SCHEDULED MAINTENANCE MORE FREQUENTLY. IN ADDITION TO THE MAINTENANCE AREAS INDICATED, DAILY SERVICE IS REQUIRED FOR A NUMBER OF OTHER FUNCTIONS. SEE THE SERVICE MANUAL TEXT FOR THESE AND A MORE EXTENSIVE EXPLANATION OF THE AREAS SHOWN ABOVE.

A WORD TO THE OWNER

This manual contains operational and general maintenance instructions for the Power King Models 2418, 2416, 2414, 1618, 1616, and 1614. The operator should become thoroughly familiar with the operating and service procedures. Proper operation and careful attention to routine services and preventive maintenance are important factors in continuing satisfactory performance of the equipment.

Engineering Products Co., Inc. makes no express or implied warranties, directly or indirectly, including the warranties of merchantability and fitness, to the ORIGINAL RETAIL PURCHASER OR CONSUMER. Engineering Products Co., Inc. expressly excludes all warranties to the retail purchaser and consumer to the extent permitted by law. Any warranties that may be extended to the consumer are extended by the Dealer and not the manufacturer.

Engineering Products Co., Inc. has extended to its Dealers a cost reimbursement plan, denoted a "Limited Warranty to Authorized Dealer". The warranty extended by the Dealer to the purchaser or consumer may differ from the "Limited Warranty to Authorized Dealer". Therefore, the warranty extended by the Dealer to the purchaser or consumer is not binding upon the manufacturer in any manner. Read the warranty statement and mail the registration card promptly to keep the warranty valid.

ATTENTION

Notice to customers in the State of California—The engine on this unit is **NOT** equipped with a spark arresting muffler.

Use of this equipment in grass, brush or forest land without a properly maintained and functioning exhaust spark arrester is in violation of California State Law Sect. 4442 PRC.

Record the unit model number and its serial number in the spaces provided on page 2 of this manual for future reference when ordering repair parts or identification if unit is lost or stolen.

Any references made in this manual concerning the right and left hand sides are determined by the direction the operator is facing when in the tractor's seat.

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GENERAL SAFETY PRECAUTIONS



1. Know the controls and how to stop quickly. Read all instructions carefully and familiarize yourself with all controls.
2. Do not allow children to operate the vehicle. Do not allow adults to operate it without proper instruction.
3. Do not carry passengers. Keep area of operation clear of all persons. Keep children and pets a safe distance away.
4. Clear the work area of objects which might be picked up and thrown.
5. Disengage attachment clutches, shift into neutral and depress tractor clutch before attempting to start the engine.
6. Disengage power to attachment(s) and stop the engine before leaving the operator's position.
7. Disengage power to attachment(s) and stop the engine before making any repairs or adjustments.
8. Disengage power to attachment(s) when transporting or not in use.
9. Take all possible precautions when leaving the vehicle unattended, such as disengaging the power take-off, lowering the attachment(s), shifting into neutral, setting the parking brake, stopping the engine, and removing the key.
10. Do not stop or start suddenly when going up-hill or downhill. Mow up and down the face of steep slopes; never across the face.
11. Reduce speed on slopes and in sharp turns to prevent tipping or loss of control. Exercise extreme caution when changing direction on slopes. Use maximum tread width and wheel weights on slopes.
12. Stay alert for holes in the terrain and other hidden hazards.
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. Do not turn sharply. Use care when backing.
 - d. Use counterweight(s) or wheel weights when suggested in the owner's manual.
14. Watch out for traffic when crossing or near roadways.
15. When using any attachments, never direct discharge of material toward bystanders nor allow anyone near the vehicle while in operation.
16. Handle gasoline with care — it is highly flammable.
 - a. Use approved gasoline container.
 - b. Never remove the cap of the fuel tank or add gasoline when engine is running or hot. Do not fill the fuel tank indoors. Wipe up spilled gasoline. Allow wipe-up rag to dry outdoors.
 - c. Open doors if the engine is run in the garage — exhaust fumes are dangerous. Do not run the engine indoors.
17. Keep the vehicle and attachments in good operating condition, and keep safety devices in place.
18. Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.
19. Never store the equipment with gasoline in the tank inside a building where fumes may reach an open flame or spark. Allow the engine to cool before storing in any enclosure.
20. To reduce fire hazard, keep the engine free of grass, leaves, or excessive grease.
21. The vehicle and attachments should be stopped and inspected for damage after striking a foreign object, and the damage should be repaired before restarting and operating the equipment.
22. Do not change the engine governor settings or overspeed the engine.
23. When using the vehicle with mower, observe the additional precautions as follows:
 - a. Before starting mowing operation, check mower carefully to insure that it is properly installed and all nuts and bolts are tight.
 - b. Determine the best method of mowing according to size, terrain and obstructions in the lawn. Check the lawn for any foreign objects before starting the mowing.
 - c. Mow only in daylight or in good artificial light.
 - d. Never make a cutting height adjustment while the engine is running.
 - e. Shut the engine off when removing a grass catcher or unclogging the chute.
 - f. Check the blade mounting bolts for proper tightness at frequent intervals. Keep blades sharp and in balance.
 - g. Engage mower with engine in low rpm. Tractor engine should operate at 1/2 to full speed for mowing operation. Regulate ground speed with transmission gearing.
 - h. Always look behind when mowing in reverse.
 - i. Never grasp the edge of the blade housing or reach under the housing while the engine is running.

24. Disconnect the rectifier leads before performing any electrical welding on the frame.
25. Do not disconnect the spark plug wire while engine is running or ignition coil may be permanently damaged.
26. Operator's clothing should be free of tears, bulging pockets, frayed edges and heavy cuffs.
27. Wear Heavy shoes with steel toes.
28. Wear ear muffs in conditions of excessive noise.
29. Wear a respirator in extremely dusty conditions and when using dusters, sprayers, rakes, sweepers and blowers.

30. Wear safety glasses or goggles that have tempered or unbreakable lens when operating dusters, mowers, sweepers and blowers or when operator's eyes are exposed to dust or insects. Do not wear glasses, goggles or sunglasses made of ordinary shatterable material.
31. Keep alert. Fatigue, worry, preoccupation, and illness work against safety. Drugs and alcohol impair a person's skill and judgement.
32. Lower equipment to ground and shut off engine before doing any work on the hydraulic system.
33. Read and review frequently the safety and maintenance schedules.

SERIAL NUMBER LOCATIONS

The tractor serial number is located between the headlights and on the dash (See fig. 1). Always

specify the tractor serial number when ordering parts.

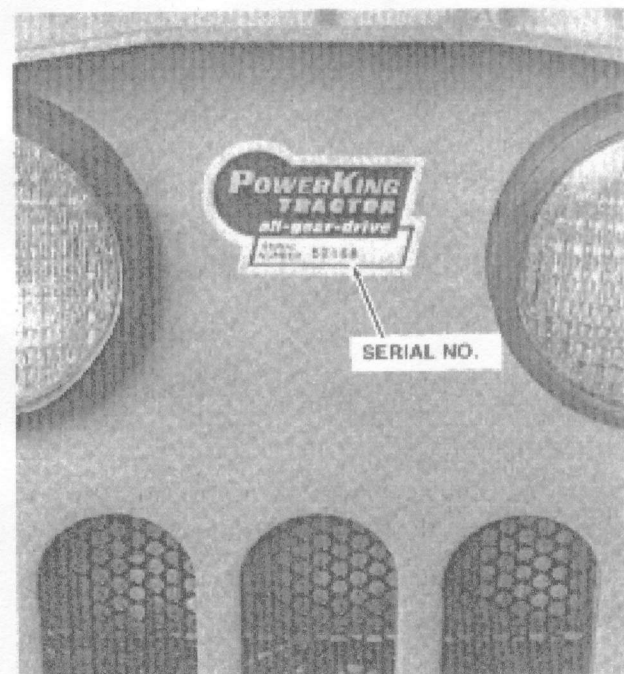


Figure 1. Tractor Serial Number

GENERAL SPECIFICATIONS

ENGINES:

Model 2418—Kohler Model K361S, 18 hp at 3600 rpm, 32.6 lb-ft torque at 2200 rpm, 3-3/4" bore x 3-1/4" stroke, 35.89 cu. in. displacement balanced and governed at 3300 rpm. Four cycle air-cooled, point and coil battery ignition.

Model 2416—Briggs & Stratton Model 326437, 16 hp at 3600 rpm, 25.8 lb-ft torque at 2700 rpm, 3-9/16" bore x 3-1/4" stroke, 32.4 cu. in. displacement, governed at 3300 rpm. Four cycle air cooled, magneto ignition.

Model 2414—Kohler Model K321S, 14 hp at 3600 rpm 23.8 lb-ft torque at 2200 rpm, 3-1/2" bore x 3-1/4" stroke, 31.27 cu. in. displacement balanced and governed at 3300 rpm. Four cycle air-cooled, point and coil battery ignition.

Model 1618—Kohler Model K361S (Same as above).

Model 1616—Briggs & Stratton Model 326437 (Same as above).

Model 1614—Kohler Model K321S (Same as above).

ELECTRIC SYSTEMS: Kohler: 12 volt starting motor with Bendix type drive, geared to engine flywheel. Three-position key switch, 15 amp. flywheel-mounted alternator and rectifier-regulator supply 12-volt battery current. Batteries: 45 amp. hr.

Briggs & Stratton: 12 volt starting motor with Bendix type drive, geared to engine flywheel. Three-position key switch, non-regulated fly-wheel mounted tri-circuit alternator supplies current to headlights, PTO clutch, and 12 volt battery current. Battery: 45 amp hr.

CLUTCH: (by Borg Warner) 6" single dry disc with ball-bearing throw-out. Foot operated, 35 lb-ft torque rating.

TRANSMISSION: (by Borg Warner) Three speeds forward, one reverse. "H" shift pattern, 50 lb-ft torque rating. Reduction: Low and reverse, 3.294:1; second 1.722:1; high, 1.000:1.

OPTIONAL TANDEM TRANSMISSION: An exact duplicate of regular transmission. Total engine-to wheels reduction with both transmissions in low: 581.1:1. Speeds: Divide regular speeds by 3.3, 1.7, and 1.

DIFFERENTIAL: (by Dana Corp.) Hypoid. Torque capacity, 130 lb-ft. Reduction ratio: 5.17:1.

FINAL DRIVE: Spur bull gear keyed to 1-1/2" diameter wheel axles. Reduction: 10.364:1.

ADJUSTABLE TREAD WIDTH: By reversing wheel discs on hubs tread width may be changed. See Dimension Table for maximum adjustments.

STEERING GEAR: (by Ross Gear Div. of TRW) 12:1 reduction, 14" steering wheel.

BRAKES: Cast drum and band. Individual or combined actuation. Pull-up parking brake lever.

FRAME: Welded construction. Front wheel support bar 1" x 3" solid steel; pivots on 1-1/8" diameter pivot stud and two bushings.

POWER TAKEOFF: Two PTO's are standard equipment. Electro-magnetic clutch on front of engine drives mower, tiller, snow blower, rear PTO and other equipment. A three groove pulley behind engine drives sprayer, hydraulic system and other equipment.

Engineering Products Co. reserves the right to make improvements and change product specifications without notice.

SPECIFICATIONS (Continued)

	Models 1618, 1616 and 1614			Models 2418, 2416 and 2414	
TIRES					
Rear: Lug, 4 ply*	7.50-16 (29¾" OD)	9.50-16 (32½" OD)		8.30-24 (38½" OD)	
Lawn, 2-ply*			8.00-16 (31¼" OD)		
All-Weather, 4-ply* ..					8.30-24 (37¼" OD)
Air Pressure:	8 lbs.	8 lbs.	8 lbs.	18 lbs.	18 lbs.
Front: Implement, 4-ply* ...	4.00-12 (20¼" OD)	4.00-12 (20¼" OD)	4.00-12 (20¼" OD)	4.00-12 (20¼" OD)	4.00-12 (20¼" OD)
Air Pressure:	35 lbs.	35 lbs.	35 lbs.	35 lbs.	35 lbs.
DIMENSIONS					
Length overall	93"	93"	93"	93"	93"
Wheelbase	54¾"	54¾"	54¾"	54¾"	54¾"
Width	44⅞"	44⅞"	44⅞"	41½"	41½"
Tread, rear	35¾"	35¾"	35¾"	33½"	33½"
Tread, front	35½"	35½"	35½"	35½"	35½"
Tread adjustment, rear	+5½"	+5½"	+5½"	+12¾"	+12¾"
Tread adjustment, front	+6"	+6"	+6"	+6"	+6"
Height at hood	40½"	40½"	40½"	42¾"	42¾"
Height overall	51¾"	52¼"	52½"	54½"	54¼"
Frame clearance	15¾"	16¼"	16½"	19¾"	19⅞"
WEIGHT					
Standard tractor	966 lbs.	1004 lbs.**	976 lbs.**	1029 lbs.**	1013 lbs.**
75% CaCl ₂ , rear tires	186 lbs.	266 lbs.	262 lbs.	264 lbs.	264 lbs.
75% CaCl ₂ , front tires	40 lbs.	40 lbs.	40 lbs.	40 lbs.	40 lbs.
Wheel weight, rear, pair	118 lbs.	118 lbs.	118 lbs.	216 lbs.	216 lbs.
Wheel weight, front, pair	47 lbs.	47 lbs.	47 lbs.	47 lbs.	47 lbs.
GEAR REDUCTION					
Low & reverse***	176.5:1	176.5:1	176.5:1	176.5:1	176.5:1
Second***	92.3:1	92.3:1	92.3:1	92.3:1	92.3:1
High***	53.6:1	53.6:1	53.6:1	53.6:1	53.6:1
SPEEDS, MPH					
Low & reverse	1.7	1.9	1.7	2.1	2.1
Second	3.2	3.5	3.3	4.1	4.0
High	5.1	5.7	5.6	7.1	6.8

* Ply shown in ply rating.

** For 18 hp models, add 7 pounds. For 16 hp models, subtract 12 pounds.

*** For maximum low-low with optional Tandem Transmission, multiply by 3.29.

CONTROLS

The operator should become familiar with the location and operation of all controls prior to operation of the tractor.

BASIC TRACTOR CONTROLS

Refer to figure 2 for location of basic tractor controls.

1. **IGNITION SWITCH.** The ignition switch is a key operated three position switch with spring return from START position to ON position. Turn key to the right to start engine. Release key when engine starts. Turn key left to OFF position to stop engine.
2. **LIGHT SWITCH.** The light switch controls the tractor headlights. Pull switch knob out to turn on lights, push knob in to turn off lights.
3. **THROTTLE LEVER.** Set throttle lever up half way between FAST and SLOW positions to start. Move throttle lever up to increase speed and down to decrease speed.
4. **FRONT P.T.O. CLUTCH.** The P.T.O. clutch knob controls the magnetic clutch for the power takeoff on the front of the engine. Pull the knob outward to engage the clutch, push the knob inward to disengage clutch.
5. **CHOKE CONTROL.** Pull choke knob out to choke engine. Push choke control in when engine starts.
6. **STEERING WHEEL.** Steering wheel turns front wheels of tractor for steering.

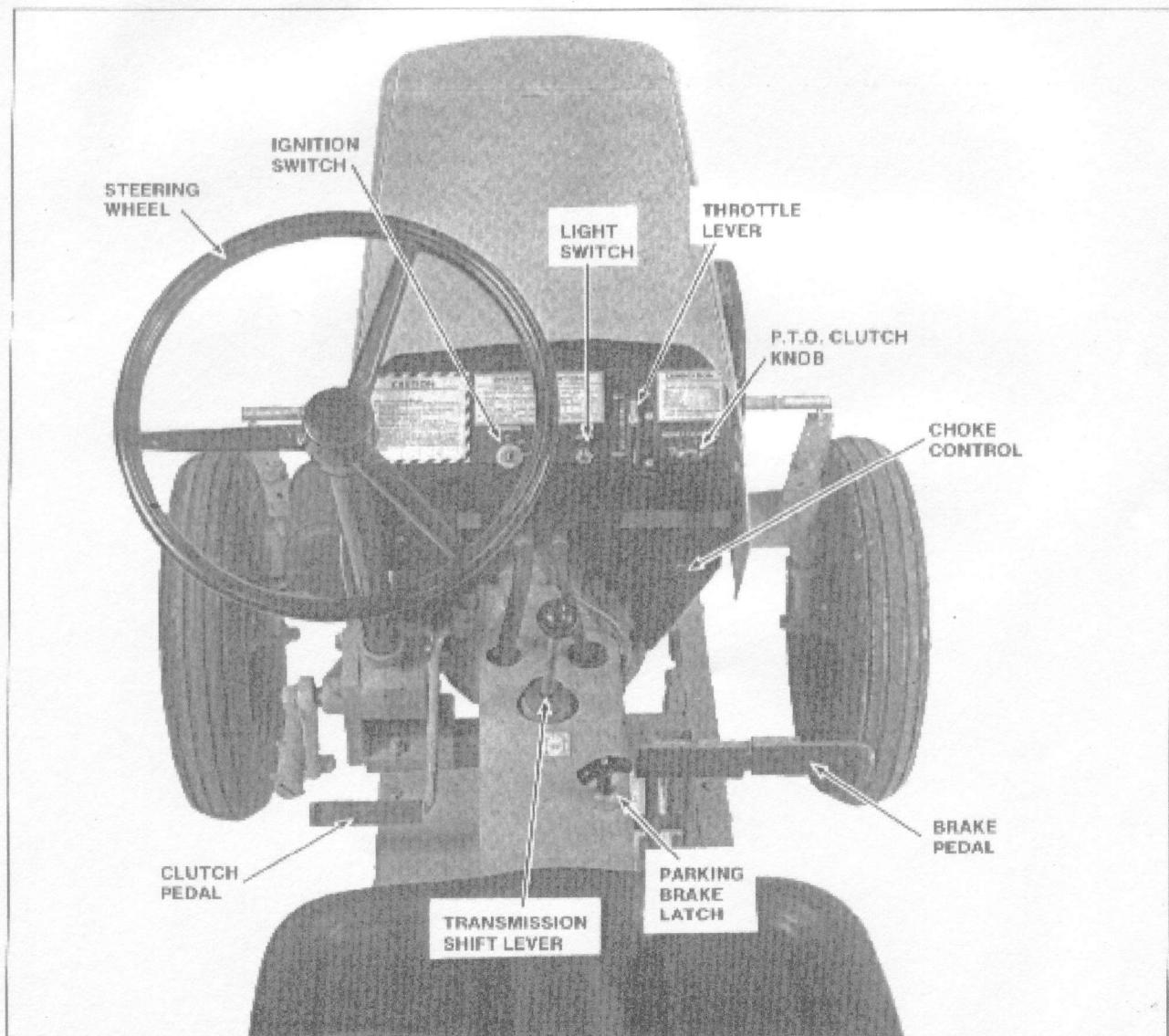


Figure 2. Tractor Controls

7. **TRANSMISSION SHIFT LEVER.** The shift lever has an "H" shift pattern. Reverse is left forward, first (low) is left rearward, second is right forward, third (high) is right rearward and neutral is in the center. When the tractor is equipped with the optional tandem transmission, a second lever with an identical shift pattern is mounted behind the standard lever.

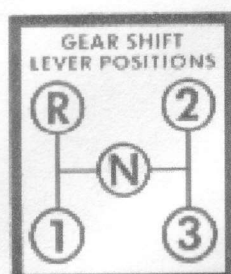


Figure 3. Gear Shift Pattern

8. **CLUTCH PEDAL.** The clutch pedal engages or disengages the clutch between the engine and transmission. Depress the pedal to disengage the clutch. Release clutch slowly to engage the clutch.
9. **BRAKE PEDALS.** The left pedal controls the left wheel brake and the right pedal controls the right wheel brake. Pedals can be operated together by sliding pin-bolt on back of left pedal into receptacle on back of right pedal. Each pedal can be operated independently as left or right wheel brakes for turning with load or for tight turns. Individual brakes can also be used to stop one wheel from spinning on ice or other poor tractive material. Always apply brakes gradually.
10. **PARKING BRAKE.** To lock brakes for parking, depress both foot pedals, pull up and apply an easy one-quarter clockwise turn to the brake handle located next to the gear shift lever on the forward transmission.

(Note: Do not force beyond one quarter turn). To release, reverse the procedure, applying a counterclockwise turn and allowing the handle to return to its lowered position.

LIFT CONTROLS

The Hydraulic Lift Control is located immediately under the right front of the seat. The lever on this single-spool hydraulic control valve has four positions. "Hold" position is in the center. Push lever forward to lower implements mounted on both front and rear hitches. Lever will return to center automatically. Pull lever to the rear to raise. Pull lever further to the rear, past slight detent, to allow implement to "float", or seek its own best operating level. Reverse hoses on top of valve if opposite direction is desired.

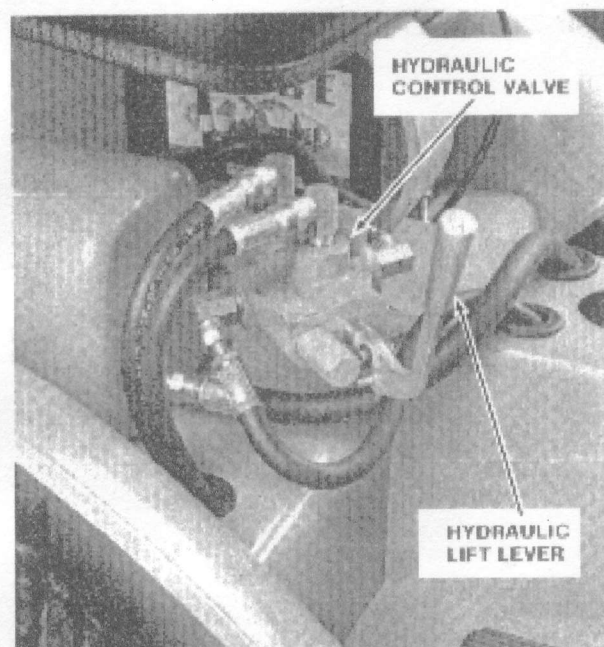


Figure 4. Hydraulic Lift Control

CHECK BEFORE STARTING

The tractor should be checked to insure that it is complete and ready for operation prior to the initial start and operation. Perform the checks and service specified in the following checklist. Refer to Preventive Maintenance and Lubrication sections for details.

PRE-OPERATION CHECKLIST

1. **FUEL TANK.** Check fuel tank for sufficient fuel supply. Use clean fresh regular grade of leaded or non-leaded gasoline with octane rating of at least 85. This is a 4-cycle engine; do not add oil to the gasoline.

CAUTION: Keep flames and sparks away from area when refueling. Do not permit smoking in the area. Turn off all electrical systems.

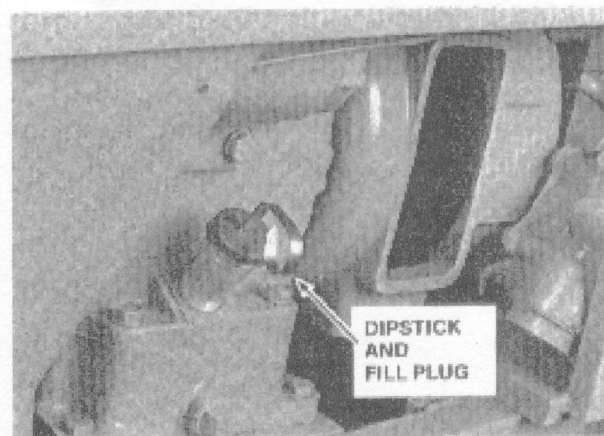


Figure 5. Engine Oil Level Dipstick

2. **ENGINE OIL.** Check level of oil in engine crankcase with dipstick (fig. 5). Add oil as needed to keep level between L and F marks on dipstick.
3. **TRANSMISSION OIL LEVEL.** Check transmission oil level. It should be one inch below the fill plug opening.
4. **AIR CLEANER.** Check air cleaner elements for dirt or damage.

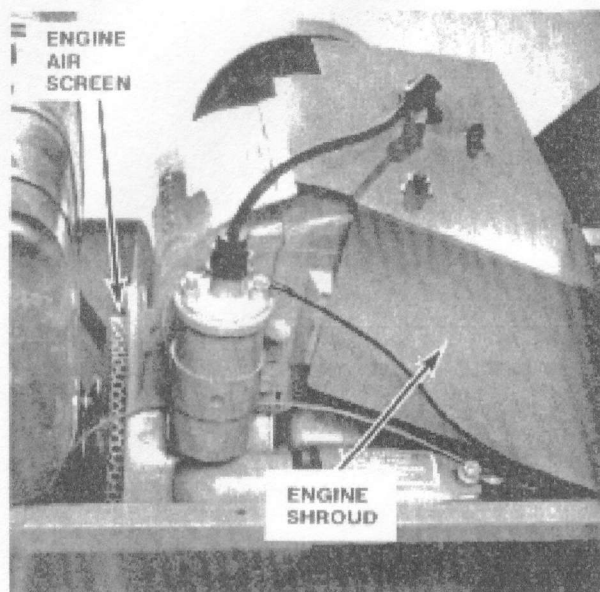


Figure 5. Engine Air Screen and Shroud

5. ENGINE COOLING SYSTEM.

- a. Check air screen (fig. 6) and engine cover for any obstructions to the passage of air.
- b. Check engine cooling fins. Fins must be clean for maximum heat transfer. Remove sheet metal shroud (fig. 6) to check and clean cooling fins.

6. BATTERY.

- a. Check for loose connections. Keep connections tight at all times.
- b. Remove battery caps (fig. 7) and check level of electrolyte. If low, add clean distilled water until level reaches bottom of filler tube.

CAUTION: Keep flames, sparks and burning smoking materials away from battery when caps are removed. If battery has been charging, explosive hydrogen gas is present.

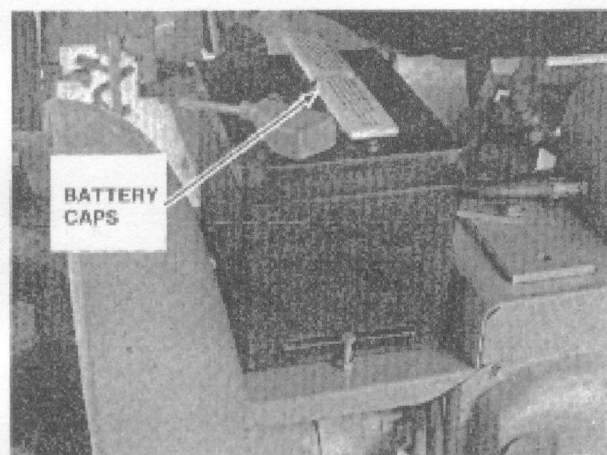


Figure 7. Battery

7. **TIRE PRESSURE.** Check tire pressures as listed in specifications on page 7. Do not depend on tire appearance.

8. GENERAL CHECK.

- a. Make a visual check for damage.
- b. Be sure all guards and shields are in place.
- c. Check for loose bolts and nuts. Tighten as necessary.
- d. Check operation of all controls.

OPERATING YOUR TRACTOR

STARTING THE ENGINE

1. Be sure fuel valve is open (fig. 8) Valve is closed when it is turned in. Turn out 3-1/2 times to open.
2. Be sure Front PTO Clutch is disengaged by pushing knob in. An interlock prevents the engine from starting if the PTO clutch is engaged.
3. Put transmission in neutral, depress clutch pedal (on some models, tractor will not start unless transmission is in neutral and/or clutch pedal is depressed and operator is in tractor seat).
4. Pull the choke knob out and set the throttle lever up about half way.
5. Turn ignition key to START position. Release key as soon as engine starts and push in choke. In cold weather push choke half way in until engine warms up.

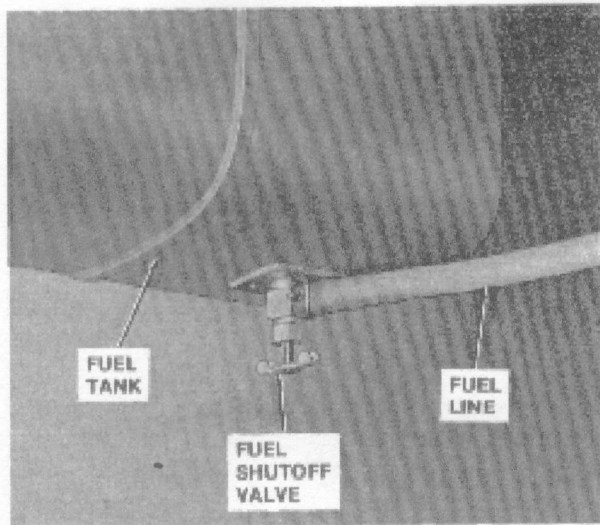


Figure 8. Fuel Shutoff Valve

IMPORTANT

To prevent overheating of the starting motor, limit continuous cranking to 60 seconds and then allow a 2-minute period before re-trying. If there is a false start, the engine must be completely stopped before making another starting attempt.

6. After engine is warm, push throttle lever down to idle speed.

COLD WEATHER STARTING OF ENGINE

Keep battery fully charged in cold weather as cranking power is greatly reduced at low temperatures. Depress the clutch pedal to reduce drag on engine. The use of starting fluids is not recommended.

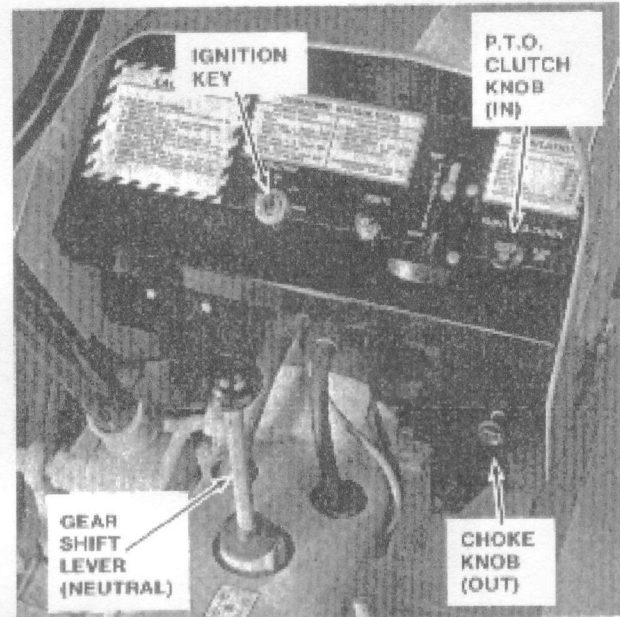


Figure 9. Starting the Engine

STOPPING THE TRACTOR AND ENGINE

1. Depress clutch pedal to interrupt engine power to transmission.
2. Place gear shift lever in neutral.
3. Turn engine ignition key to "off" position.
4. After engine has stopped, place transmission in lowest gear, release clutch, set parking brake and dismount. If tractor is equipped with tandem transmission, put both transmissions in gear before releasing clutch. The gear train of the tractor acts as a brake to minimize the chance of the tractor rolling if it is parked on a grade. Low gear reduces the possibility of injury to the operator if an accidental attempt is made to start the engine with the traction clutch engaged.

EMERGENCY STOPPING OF ENGINE

In an emergency when the engine cannot be stopped by the conventional method, stop it by pulling out choke and opening throttle causing engine to flood.

SETTING TRACTOR AND EQUIPMENT IN MOTION

1. Depress clutch pedal and place gear shift lever in desired position. If tractor is equipped with a tandem transmission, shift both transmissions into the desired gear combination. Refer to SELECTING TRACTOR SPEED RANGE.



CAUTION: Check to be sure that the area around the tractor and equipment and in the path of the tractor is clear of people, animals, and obstructions.

2. Release brakes and let clutch pedal out slowly.
3. If P.T.O. driven equipment is being used, engage equipment before releasing clutch pedal with engine at low rpm. Then gradually increase the rpm up to operating speed. Refer to specific equipment instructions for additional information.

IMPORTANT

Always engage clutch at low rpm to reduce wear and tear on drive components.

4. Operate throttle as required. Use of engine throttle control to reduce engine speed below half throttle is not recommended since equipment is designed to operate at 2400 to 3300 rpm, however, the lower the engine speed, the longer your engine will last.
5. To change gears or reverse, stop tractor completely, disengage clutch and shift rapidly into desired range or direction.

SELECTING TRACTOR SPEED RANGE

Tractor speed requirements will vary with the conditions under which the tractor is operating and the equipment being used. The equipment drive is independent of the transmission so the tractor may be geared down to a slow speed without reducing equipment speed. Refer to the table of specifications for tractor speeds (with various size tires).

The optional tandem transmission gives 6 forward speeds and three reverse ranging from the regular top speed to approximately 0.5 mph for tractors equipped with 16" wheels. Speeds for tractors with tandem transmissions may be obtained by dividing the speeds shown in the table of specifications by 3.29 for low, 1.7 for second and 1 for high. The two transmissions of the tandem option have identical gearing. To place the tandem equipment tractor in reverse, shift only one transmission into reverse and select the desired gear with the other.

DRIVING THE TRACTOR

1. Stay away from ditches, holes, banks and other areas that could cause tractor turnover.
2. Go slow and use extreme caution on slopes, grades and rough ground, when turning around and when view of ground or area is obstructed.
3. When operating on slopes and grades use front and rear wheel weights, maximum tread width and low gear.
4. Use front wheel weights when pulling loads. Use slow speed and apply power slowly. Pull from drawbar only. Do not pull from tractor frame.
5. Observe all safety precautions.
6. Do not ride the clutch as this will wear out the thrust bearing and the friction material of the clutch.
7. Never dismount until tractor is stopped and all power shut off.
8. Never leave the tractor unattended with the engine running.
9. Never leave the ignition key in an unattended tractor.

PREVENTIVE MAINTENANCE

GENERAL

The tractor should be checked and serviced at regular intervals. Some checks and services should be performed daily; others may be made at longer intervals. A little time spent each day will help in keeping maintenance costs down and will make the tractor safer to operate. Regular inspection of the tractor will help locate minor problems that need attention. Prompt correction of minor trouble can prevent a serious accident or a major breakdown later.

MAINTENANCE LOG

The owner or operator should keep a log wherein he records maintenance and repair activities performed on his equipment. Accurate records can be very helpful in determining the length of time between maintenance operations.

CLEANING

Keep the tractor free of debris, dirt and grease. Remove mud, ice or snow from tractor after use to prevent hardening or freezing. Cleaning can help in the discovery of minor difficulties before they become troublesome. Automobile wax on sheet metal will prolong life of painted surfaces.

LUBRICATION

Refer to the lubrication chart for lubricants and service intervals. Always clean the exposed areas of the dipstick, filler plugs, grease fittings, and the areas around these parts before lubricating or checking lubrication.

ENGINE

The engine oil level must be maintained in the safe operating range between the low (L) and full (F) marks on the dipstick. Do not overfill. The oil level must not exceed the "F" mark.

ENGINE COOLING SYSTEM

The tractor engine is air cooled. Air is drawn into the cooling shroud by fins provided on the flywheel. To prevent the engine from overheating or burning out, the rotating air screen (fig. 10) and the cooling fins on the block and cylinder head must be kept clean and unobstructed at all times. To check this, proceed as follows:

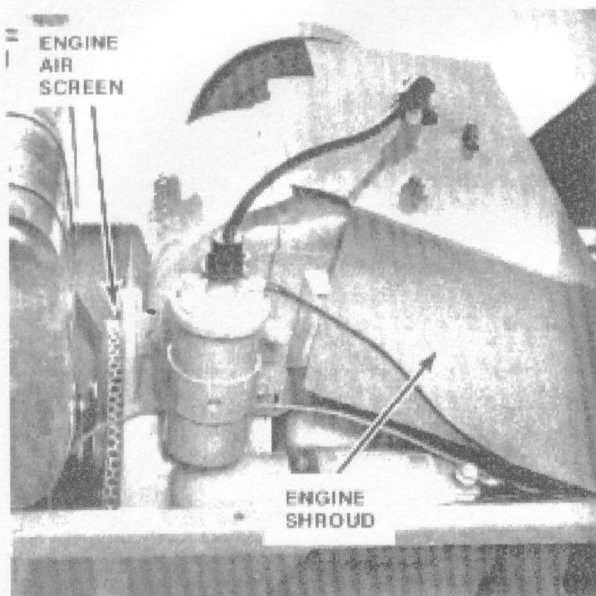


Figure 10. Engine Air Screen and Shroud

1. Unlatch and lift hood.
2. Check the engine air screen and clean it if needed. A dirty screen will cause the engine to overheat.
3. Remove the engine shroud and clean the cooling fins on the engine. Replace the shroud.
4. Close and latch the hood.

SPARK PLUG

Check the condition of the spark plug and reset the gap every 100 hours. The gap gradually widens as the electrodes wear under normal conditions.

AIR CLEANER

A clogged air cleaner causes choking of the engine, decreases fuel efficiency and deposits unburned fuel in the combustion area. The air cleaner should be serviced daily and more often under dusty conditions.

FUEL SYSTEM

Check the fuel tank as follows:

1. Open the engine hood and clean the area around the fuel tank cap (fig. 11).
2. Check the fuel level.

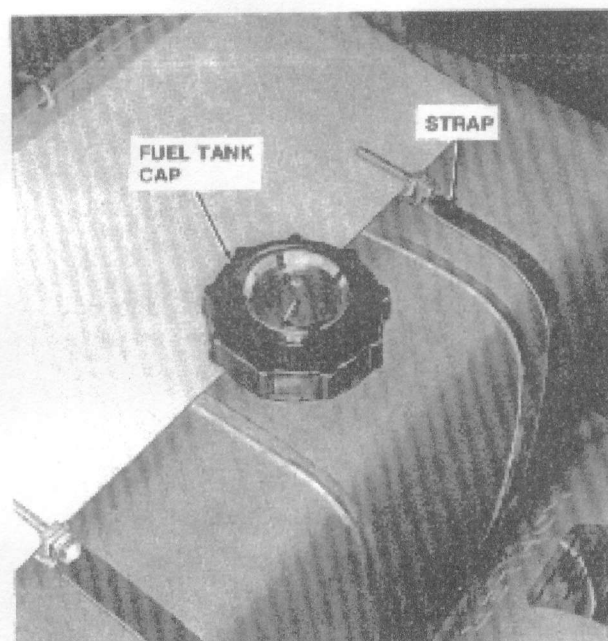


Figure 11. Fuel Tank Cap

CAUTION: Before adding fuel, allow engine to cool if it is extremely hot and turn off all electrical systems including headlights. Do not permit smoking in the area. Keep flames and sparks away from the area. Refuel in well ventilated area.

3. Add fuel as required taking care not to spill any gasoline on any electrical devices or connections. Use clean regular grade of leaded or non-leaded gasoline with an octane rating of at least 85. Do not add oil to the gasoline.
4. Wipe off any spilled fuel with rags. Allow spilled fuel and vapors to dissipate before turning on any portion of the electrical system or attempting to start the engine. Dry rags in a well ventilated area.

5. Check the fuel tank cap to be sure the breather hole is open. If it is plugged, a vacuum is created and fuel cannot be drawn from the tank.
6. With the fuel line shutoff valve open, fig. 8, check for leaks in the fuel tank, fuel lines and connections, fuel pump and carburetor. Correct all leaks before starting the engine.

FUEL FILTER

To remove the fuel filter for cleaning or replacement, drain fuel tank by disconnecting fuel line at the engine (fig. 12) and drain fuel into a suitable container. Loosen screws on fuel tank straps (fig. 11) and remove fuel tank. Unscrew valve and filter from tank (fig. 8). Rinse filter in clean fuel. Reinstall and fill fuel tank. Check for leaks.

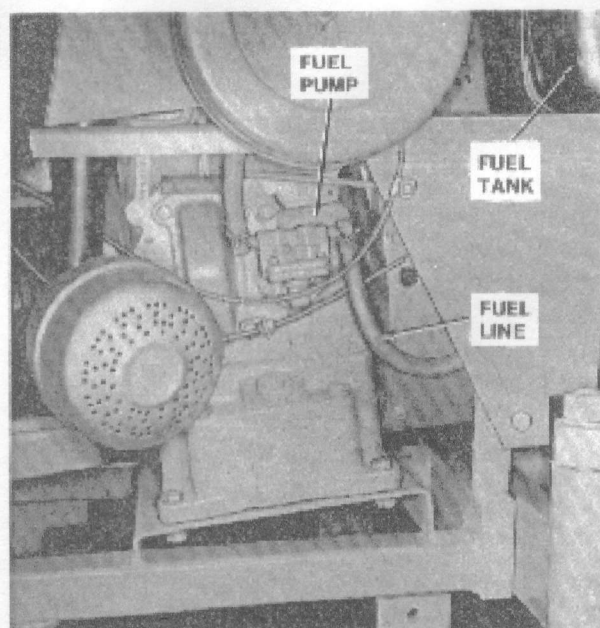


Figure 12. Fuel Pump and Fuel Line

TIRES

It is important to keep tires properly inflated at all times. Further details are included in the "Wheels and Tires" section of this manual.

To check and service the tires, proceed as follows:

1. Inspect tires for general condition. Check for cracks, cuts and imbedded metal or glass.
2. Remove dust cap and check tire pressure with an accurate gauge. A special low-pressure tire gauge with one-pound markings is best for checking tractor tires.
3. Add air or deflate as required to bring the tire to correct inflation. (See inflation pressures listed in specification tables page 7.)
4. Install the dust cap.

BATTERIES

The tractor battery should be checked every 25 hours or each week of operation.

1. Check the electrolyte level of the battery by removing the filler caps (fig. 13).



CAUTION: Do not smoke or light a match while caps are removed. If the battery has been charging, hydrogen gas is present.

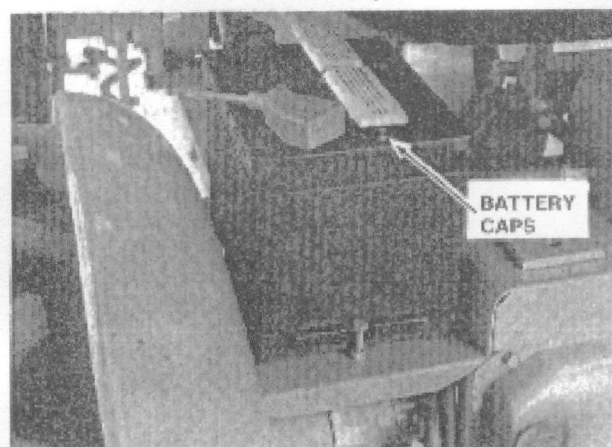


Figure 13. Battery and Cables

2. If the electrolyte is below the correct level, add clean distilled water to cover the plates to the bottom of the filler tube. Do not overfill.
3. If water must be added to the battery in freezing weather, run the engine briefly after doing so. This will mix the water and electrolyte and prevent freezing.
4. Clean corrosion and dirt from cables, connections and top of battery. Dirt and corrosion can cause self-discharging of battery. Apply a coat of a corrosion preventative to terminals.
5. Tighten battery connections. Keep connections tight at all times to prevent arcing, pitting of connections, and eventual battery failure.

DRIVE BELTS

Check P.T.O. and equipment drive belts periodically for wear, cuts, breaks and frayed condition. Replace worn or damaged belts.

Check hydraulic lift pump drive belt for wear or damage.

ATTACHMENTS

See Attachment Parts Books for specific details. General checks are as follows:

1. Check all belts for wear or damage.
2. Check all nuts, bolts and other fasteners for proper installation and tightness.
3. Check equipment and clean up after each use.

MAINTENANCE CHART

MAINTENANCE REQUIRED	INTERVAL	PROCEDURE
Engine Cooling Screen	Daily	Check and clean if necessary.
Engine Cooling Fins	Daily	Check and clean if necessary.
Engine Air Cleaner Element	Daily*	Clean or replace when no longer serviceable.
Spark Plug	100 Hrs.	Check and reset gap.
Battery	25 Hrs.*	Check electrolyte level. Check connections.
Tires	25 Hrs.	Check air pressure. Check for damage.
Tractor General	Before operation After operation	Check general condition. Clean, check for damage.
Fuel Supply	Daily and as required	Check fuel level in tank. Check filler cap vent.
Fuel Filter	100 Hrs.	Clean or replace.
Drive Belts	Daily	Check for wear and damage.
Electrical Connections	25 Hrs.*	Check and clean connections. Check for and repair damaged insulation and insulators.

*More often under extreme conditions

ADJUSTMENTS

CARBURETOR

(See engine manufacturer's manual for complete details on engine.)

Lack of power accompanied by black sooty exhaust smoke usually indicates that the fuel mixture is too rich. A clogged air cleaner can cause the same symptoms. Check the air cleaner; the carburetor may not need adjustment.

FOOT BRAKES

The brake system has been pre-adjusted for maximum braking efficiency. However, adjustments may be made on brakes, brake pedal spring tension, and on parking brake to suit the operator's preference. Refer to Fig. 1-22 on Page 28 for the following adjustment instructions:

Brake pedal spring tension may be adjusted by turning NUT (Item 22) which retains SPRING (Item 24) tighter to increase spring tension, loosen to decrease it.

To adjust brakes, loosen NUT (Item 22), retaining TRANSFER BLOCK (Item 25) and back off approximately 1/4". To tighten Brake Band around Brake Pulley, move TRANSFER BLOCK 1/8" by turning NUT (Item 22) in a clockwise direction. After adjustment, secure the TRANSFER BLOCK by tightening NUT (Item 22).

Whenever the brakes are adjusted and the TRANSFER BLOCK is moved, the stop bolt will also have to be adjusted. Loosen NUT (Item 25) and turn SCREW (Item 24) the same distance the TRANSFER BLOCK was moved. Secure stop by tightening NUT (Item 25).

Always check brakes after adjustment for correct running operation. This adjustment procedure may have to be followed several times before the correct adjustment is obtained.

CAUTION!!!

Do not over adjust. If transfer block is moved too far forward, it may cause the brake band to be partially engaged around the brake pulley at all times. This may result in over heated brake bands and engine loading.

HYDRAULIC PUMP BELT ADJUSTMENT

A tension adjusting rod (fig. 15) is provided on the right side of the tractor next to the pump. Turning the nut on the rod will adjust belt tension. Sufficient tension has been achieved when the belt is taut. Do not overtighten since this will cause unnecessary wear. If the pulley turns without the belt slipping when the valve handle is held forward (not in float), the belt is tight enough.

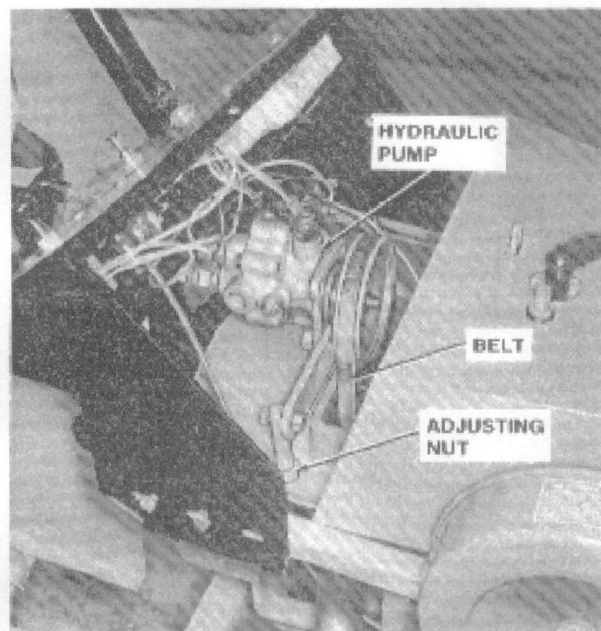


Figure 15. Hydraulic Pump Belt Adjustment

Should hydraulic pump belt require replacement, consult your Power King Tractor dealer for proper procedure. (See Equipment Lift-Hydraulic page 22.)

NOTE: NEW BRAKE SYSTEM.
SEE SUPPLEMENT FOR
PARTS AND ADJUSTMENT.

WHEELS AND TIRES

TREAD WIDTH

Tread width as used here, refers to the spread or spacing between the center lines of the two rear wheels or the two front wheels of the tractor.

When moving on slopes or rough uneven ground, it is important to have as wide a spread as possible between the wheels. This makes the tractor more stable and reduces the possibility of a "rollover".

REAR WHEELS. To increase the tread width from the standard position, mount the right rear wheel on the left side and the left rear wheel on the right side. Switching wheels from one side to the other will maintain the proper direction of tire rotation. 24-inch rear wheels with separate discs and rims have additional adjustment depending on the manner in which the discs are mounted to the rims (fig. 16).

FRONT WHEELS. Turn the front wheels around to widen the tread width from 35 1/2" to 41 1/2".

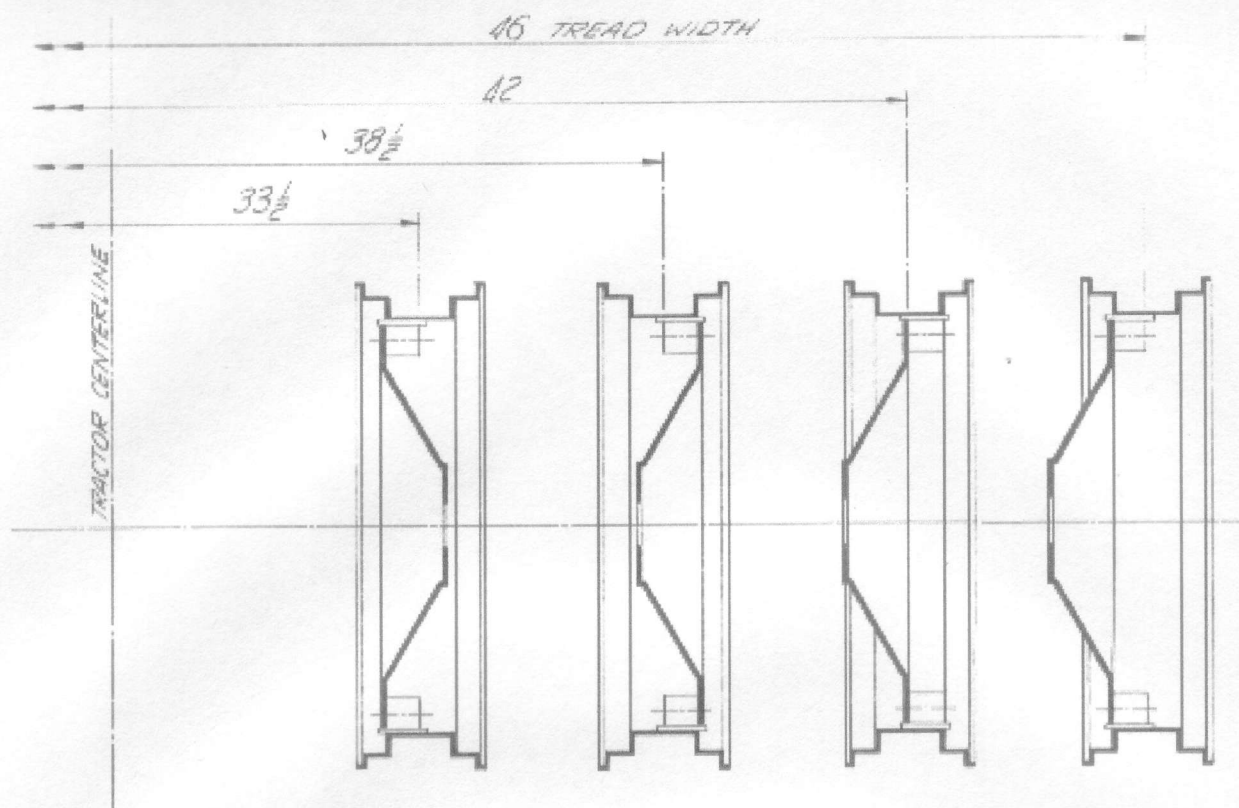


Figure 16. Wheel and Disc Mounting Positions

CHANGING WHEELS

Remove any wheel weights before attempting to remove a wheel. Chock the wheels to prevent the tractor from rolling. Jack up the tractor and remove the wheel bolts or nuts (fig. 17). Carefully slide the wheel and tire from the tractor.

EXTRA WHEEL WEIGHT

Adding weight to the front and rear wheels will make tractor operation easier and safer under certain conditions.

REAR WHEELS. Added weight on the rear wheels will be helpful under the following conditions:

1. When pulling, rear wheel weights will give added traction and reduce slippage.
2. Rear wheel weights will help maintain traction with a heavy load up front (e.g. Snow Blower or Front End Loader).

FRONT WHEELS. Added weight on front wheels will be helpful under the following conditions:

1. Front wheel weights will help balance the lifting action caused by rear-mounted equipment.
2. Weights will help keep the front wheels of the tractor from rising when driving up a slope.
3. When pulling heavy loads on rough ground, front wheel weights will help to keep the front wheels on the ground.

ADDING WHEEL WEIGHT

Weight may be added to the tractor in two ways, by use of metal wheel weights and by the addition of liquid to the tires.

WHEEL WEIGHTS. Wheel weights should be used in pairs to give an equal amount of added weight on each side of the tractor. Operating with weight on one side only will cause uneven tire wear and tend to tip the tractor. This can cause improper operation of certain attachments such as a mower.

NOTE: Do not exceed 3 weights per wheel nor any combination of loads that will exceed the rated tire capacity. See page 4.

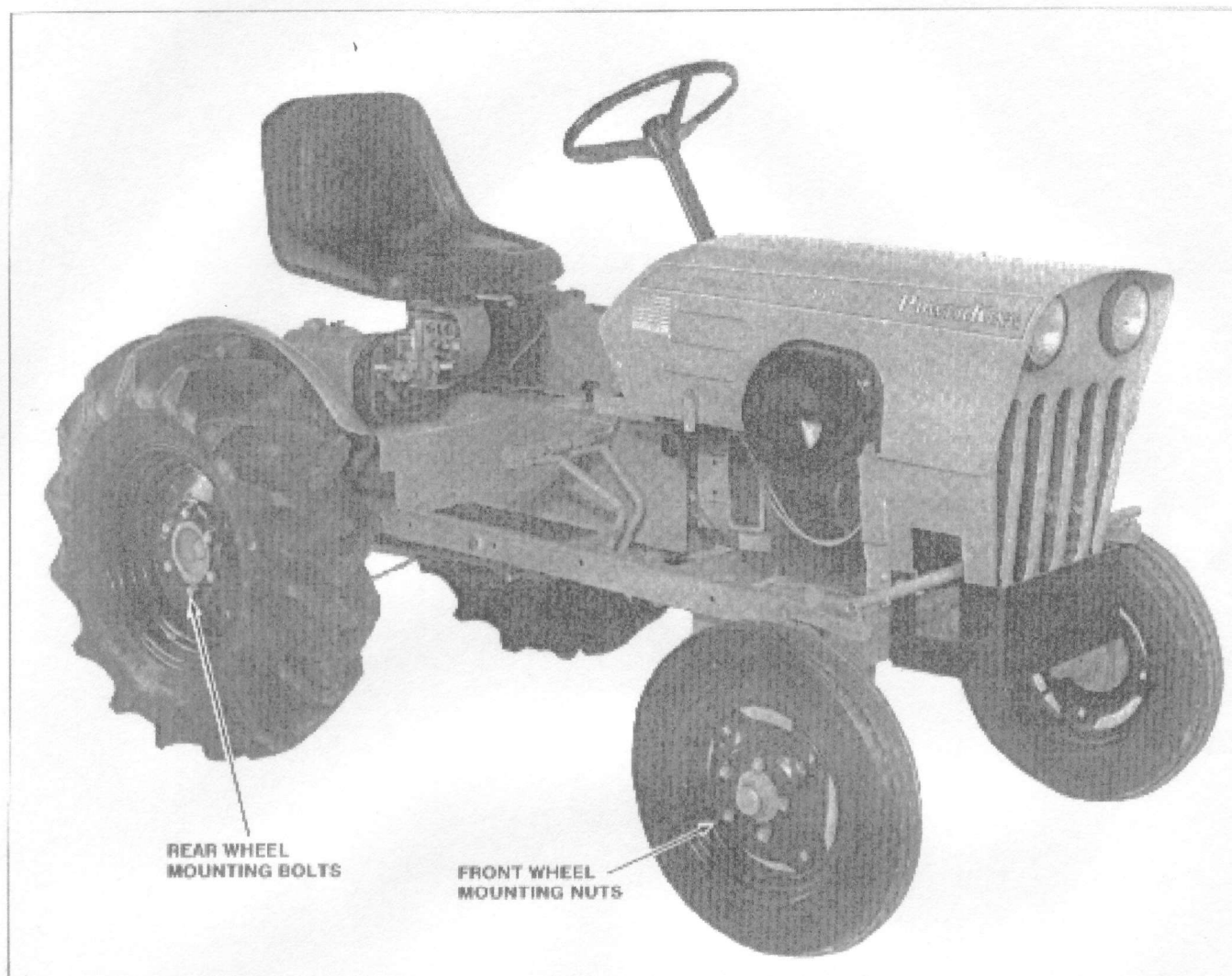


Figure 17. Wheels and Tires

LIQUID. A 75% calcium chloride solution can be used in tires to add wheel weight in lieu of metal wheel weights. Consult your Power King Tractor dealer about liquid ballasting procedure.

CARING FOR YOUR TIRES

1. Avoid locking one rear wheel to make unnecessarily sharp turns. This results in unnecessary additional tread wear.
2. Immediately wipe spilled oil or gasoline from tires. Do not park in spilled oil. Petroleum products attack rubber. Clean chemicals from tires as soon as possible.
3. Avoid sharp objects which may cut or puncture tires.
4. Avoid "bruising" tires by striking hard objects with heavily loaded tractor or at high speeds.
5. Do not "spin" tires during start up.
6. Do not brake to skidding stops.
7. Maintain proper inflation.

UNDER-INFLATION. Under-inflation may cause rim slipping, excessive wear and a low or uneven cut when mowing. An under-inflated tire may appear to be properly inflated but will buckle when the tractor pulls a load and the sidewalls will finally break.

OVER-INFLATION. This may cause the rear wheels to slip under load and cause faster tire wear as a smaller part of the tire is in contact with the ground. When operating mowers, the cut will be higher.

CORRECT-INFLATION. When a tire is correctly inflated it results in good traction with the least wear. The recommended pressure may vary, depending upon the load on tractor wheels.

STORING YOUR TRACTOR

When you do not plan to use your tractor for some time, it should be stored in a dry and protected place. Unnecessary exposure to the elements will damage its appearance and shorten the usual service life.



CAUTION: Children should not be allowed to play on the tractor.

Procedures for preparing the tractor for storage are contained in this section. This will include the engine, battery and tires.

PREPARING THE ENGINE FOR STORAGE

When properly prepared for each storage period the engine will have a longer useful life. It will also be ready for use with a minimum of preparation when needed.

1. Refer to the lubrication section and change the crankcase oil. Run the engine long enough to thoroughly warm the oil in the crankcase before changing oil.
2. Run the engine for about 5 minutes after changing oil.
3. Allow the engine to cool and drain the fuel from the fuel tank and carburetor.
4. Disconnect fuel line using notched pliers on hose clamp. Unscrew fuel strainer from tank. Wash as required. Rinse out tank.

NOTE: Gum will eventually form in the fuel tanks, lines, and carburetor if the unit is not used. Gum in carburetor jets and passages affects engine starting. Gum can be dissolved with acetone or a 50-50 mixture of alcohol and benzol.

5. Remove the spark plug and pour 1 tablespoon of lubricating oil of good quality into the cylinder.
6. Crank the engine 2 or 3 times to distribute the oil over the cylinder walls.
7. Reinstall the spark plug.

PREPARING THE TRACTOR FOR STORAGE

1. Wash, clean and completely lubricate the tractor. See lubrication diagram.
2. Paint any exposed metal or brush a light coat of rust-preventive oil over unpainted metal (except pulley grooves and clutch friction disk).

NOTE: Crankcase oil is not a rust preventative.

3. Remove the battery and clean it. Store battery on a rack or bench in a cool, dry place.

NOTE: The battery should be checked every 30 to 60 days while in storage and should be recharged if necessary. When a battery becomes discharged the electrolyte contains more water than acid. In this discharged condition, the battery will freeze and possibly crack.

4. Place jacks or blocks under the tractor so that the load is off the tires if it is to be out of service over a long period of time. Store the tractor so that tires are protected from the sunlight.

NOTE: If the tractor is not placed on blocks, check the tires at regular intervals and reinflate as necessary to keep them at the recommended pressure.

LUBRICATION

Proper lubrication is important in keeping your tractor functioning satisfactorily and in prolonging its useful life. Clean all filling and checking plugs and the areas around them prior to checking or lubricating. Clean all grease fittings before greasing.

LUBRICATION CHART

The lubrication chart lists the points of application, type and grade of lubricants to be used. It also tells you the amount of lubricant required and the interval between changes for normal operation. Under extreme conditions, the intervals should be shortened.

LUBRICATION POINTS

Refer to the illustrations (figs. 18-23) to locate fill, check and drain points.

ENGINE

RUN-IN OIL. A special "break-in" oil is used in the factory on new engines. Each is test run on this oil for a specific period of time to allow

proper seating of the rings. After factory "run-in", the break-in oil is drained and the engine is fogged with a special preservative oil. Further use of break-in or non-detergent type oil is not required or recommended for new engines. Use detergent type API Service SC.

FIRST OIL CHANGE. The engine lubricating oil should be changed after the first five hours of operation and thereafter at 25 hour operation periods. Drain oil while it is hot by removing drain plug (fig. 18). Oil will flow more freely when hot and will carry away more impurities. After draining the crankcase, install the drain plug and fill the crankcase with the quantity and grade of oil specified in the chart below.

NEW TRACTOR LUBRICATION

Change oil in final drive gear case after the first 10 to 15 hours of operation. Flush gear cases with light oil before refilling. Check other oil and grease levels and replenish as required. After the first lubrication change, subsequent changes should be made according to the instructions in the chart. Use the lubricants specified.

LUBRICATION CHART

LUBRICATION POINTS	LUBRICANT	INTERVAL			
		25 hours	50 hours	75 hours	100 hours
Engine Crankcase (Fig. 18)	Detergent (Type SD) 10W/30 (See Engine Manual)	2 qts.	2 qts.	2 qts.	2 qts.
Transmission (Fig. 19)	Gear Lube 80/90		1/2 pint 1" below fill plug		1/2 pint 1" below fill plug
DIFFERENTIAL (Fig. 20)	Gear Lube 80/90				2 pints
Gear Case (Fig. 21)	Gear Lube 80/90	1-1/2 pints	1-1/2 pints	1-1/2 pints	1-1/2 pints
Steering Gear (Fig. 22)	Gear Lube 80/90		X		X
Grease Fittings	No. 2 water resistant grease	X	X	X	X
Hydraulic Lift (Fig. 23)	Hydraulic Oil or Automatic Transmission Fluid (Dexron)	5 Quarts as needed. Fill to approximately 1 1/2" from top.			

HYDRAULIC LIFT SYSTEM LUBRICATION

To fill the hydraulic system, fill the tank (fig. 23) allowing a small air space for expansion of the oil when it is hot. Make sure the cylinder is fully

retracted. Run the system to make sure that all of the hoses, the pump and the cylinder are filled with oil. Add additional oil if needed.

Check oil level occasionally. Wipe accumulated spilled oil from tractor.

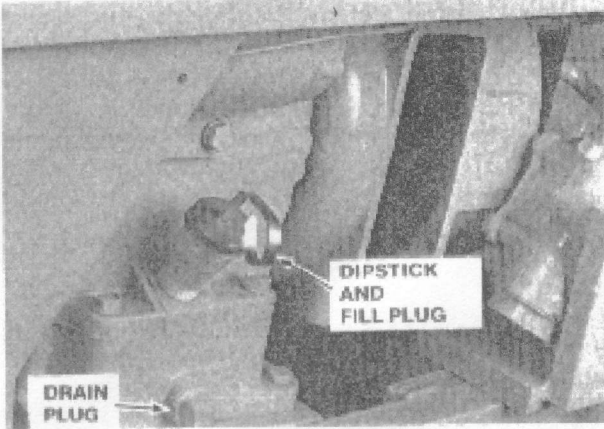


Figure 18. Engine Lubrication Points

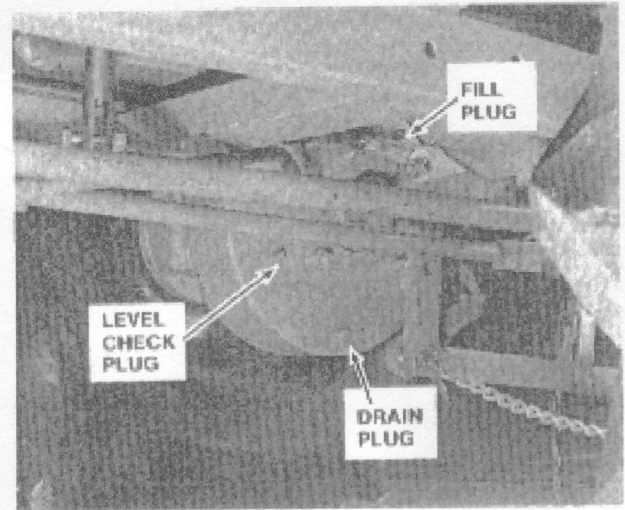


Figure 21. Gear Case Lubrication Points

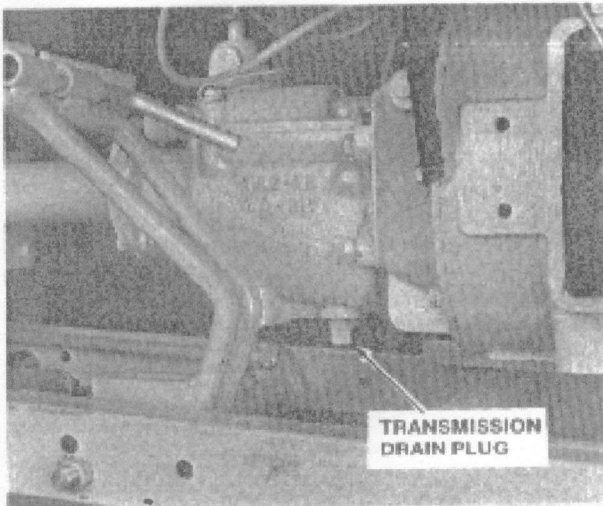


Figure 19. Transmission Drain Plug

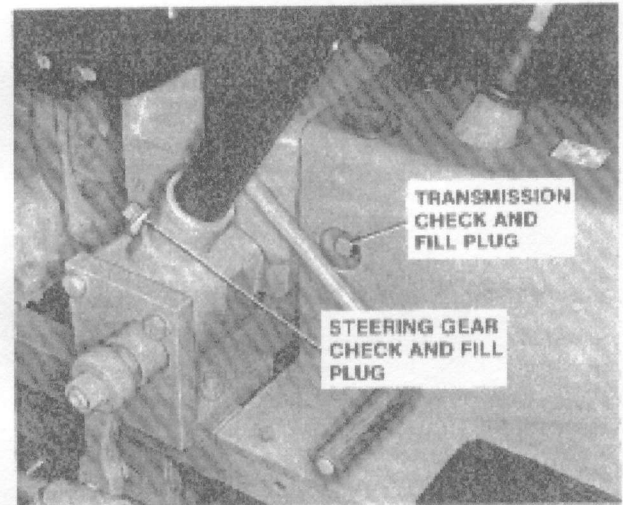


Figure 22. Steering Gear and Transmission Check and Fill Plugs

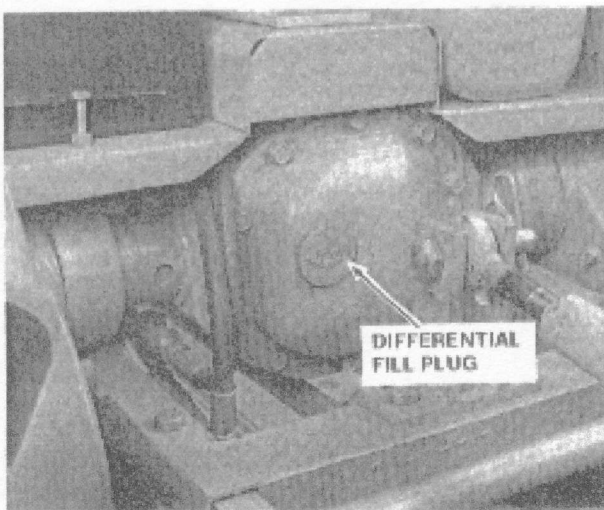


Figure 20. Differential Lubrication Points

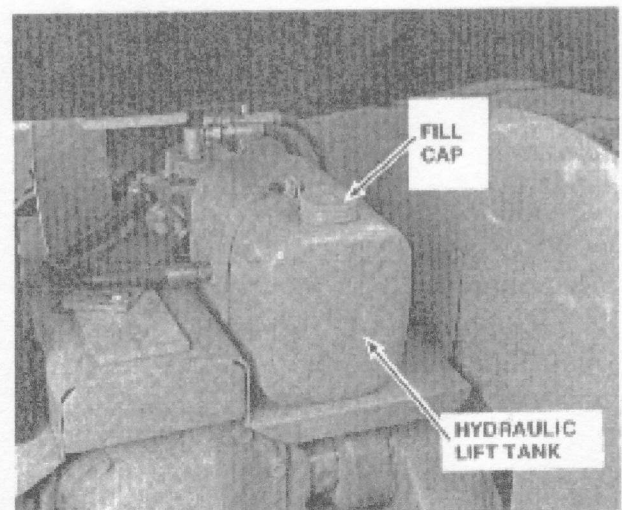


Figure 23. Hydraulic Lift Tank

EQUIPMENT LIFT AND THREE POINT HITCH

GENERAL INSTRUCTIONS

The three point hitch should be used for all pulling. Allowing the hitch to "float" (seek its own height) will maximize the pulling ability. Pulling at a low angle will make the load easier to pull.

When pulling loads use lower gears for more power and better control. Engage clutch and apply power slowly and smoothly. Do not "pop the clutch." The sudden application of power against a heavy load may cause the front wheels to rise off the ground and it is possible for the tractor to flip over backwards.

Be very careful pulling on or across slopes. An upgrade reduces the stability of the tractor and increases the amount of power required to move tractor and load. If cross slope work cannot be avoided, pulling should be done on loads which are stable in themselves (cannot "fall away" to the side and twist the tractor after it). Use lowest possible gear for both climbing and descending slopes.

Wheel weights on the front wheels (or fluid in the tires) helps keep the front of the tractor down on the ground. Rear wheel weights (and/or fluid in the tires) improves rear wheel traction. Wheel weights lower the center of gravity.

Extra tread width can be obtained by reversing the wheels or adding dual wheels. Extra tread width improves lateral stability (harder to tip sideways). Dual wheels increase lateral stability and improve the ground gripping area of the drive tires. This is most useful where traction is a problem.

Chains on the rear wheels improve traction, particularly in mud, snow or on ice.

A Tandem Transmission reduces ground speed and increases pulling power if tractor weight is adequate. Some tools do not work well without a low ground speed and high engine speed combined.

EQUIPMENT LIFT-HYDRAULIC

GENERAL INSTRUCTIONS. The hydraulic valve is a four way valve (double acting) with pressure relief and a float position. Float is achieved by pulling the handle all the way back. Hose connections may be reversed on the top of the valve to reverse the direction of operation of the cylinder. Avoid getting dirt into the system. Use caution not to "over tighten" fittings and hoses in the valve, pump or cylinder. Damage to these parts will result from too much force—tighten only enough to prevent leakage.

LUBRICATION. Use automatic transmission fluid or hydraulic cylinder oil suitable for use over a wide range of temperatures. Approximately five quarts are required. Fill the tank to about 1½" from top. Make sure the cylinder is fully retracted. Run the system to make sure that all of the hoses, the pump and the cylinder are filled with oil. Add additional oil if needed. A small air space should be left in the tank to allow for thermal expansion of the oil.

MAINTENANCE. Check oil level occasionally. Wipe accumulated spilled oil from tractor.

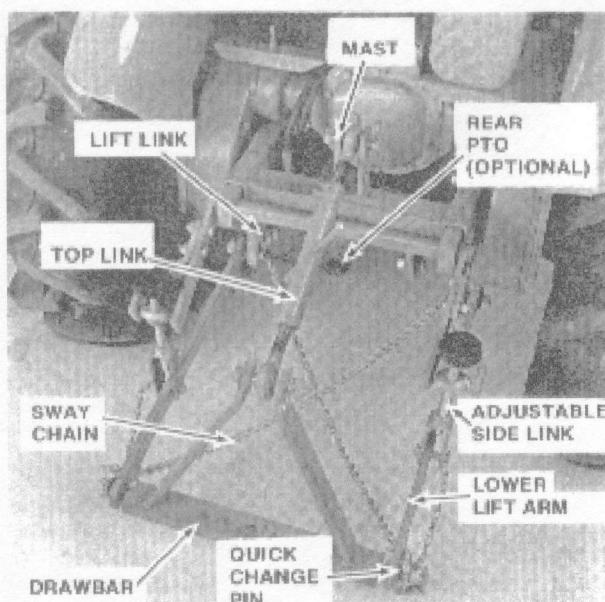


Figure 24. Three-Point Hitch

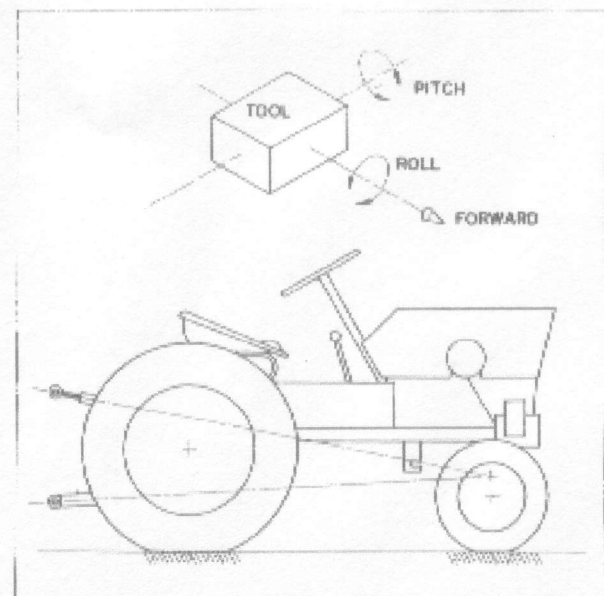


Figure 25. Optimum top link and lower lift arm intersection angles for proper pulling and ground following of the tool with the tool at its working depth.

PUMP. The pump is not repairable. Contact your Power King Dealer for replacement.

CYLINDER. A cylinder repair kit is available. Take care to keep dirt out of the parts and not to damage O-rings. The cylinder is disassembled by removing a snap ring in the ram end of the housing. The cylinder repair kit contains all necessary packings and O-rings.

BELT REPLACEMENT. It is necessary to pull the engine of the tractor forward to install replacement belts. (A link belt may be purchased which does not require the engine to be moved. This belt will stretch, however, and must be tightened occasionally.)

BELT TENSION ADJUSTMENT. A tension adjustment Rod (fig. 15) is provided on the right side of the tractor next to the pump. Turning the nut on the rod will adjust the belt tension. Sufficient tension has been achieved when the belt is taut. Do not overtighten the belt since this will cause unnecessary wear. If the pulley turns without the belt slipping when the valve handle is held forward (not in float), the belt is tight enough.

THREE POINT HITCH INSTALLATION AND ADJUSTMENTS

INSTALLATION

1. Refer to figure 24. Attach the lower lift arms to the mounts using the sway chain and bolt arrangement. Lower lift arms are mounted to the outside of the mounts with the chain eye and hole end toward the rear of the tractor. Chain eye should be upward. Place a 5/8 inch ID wasfer/spacer on the mounting bolt be-

tween the ball joint and the mount to increase the lateral travel of the arms and to ease the mounting of equipment.

2. Attach the top link to the mast at the rear of the frame with a blank bolt and quick change key.
3. Install the side links to the outboard side of the upper lift arms and the clevis end over the lower lift arms.
4. Assemble the drawbar to the lower lift arms and to the top link.
5. Insert the end of the sway chain through the eye on the lower lift arm. Insert a quick change key through the link to retain it.
6. Connect the lift link (fig. 24) to the 3 point hitch lift arm.

Options are provided to allow the use of different operating ranges for various pieces of equipment. Always carefully check the travel throughout the full range when attaching the link for the first time or when changing the range.

ADJUSTMENTS

TOP LINK. (fig. 24) The top link is used to control the fore/aft pitch of the tool.

SIDE LINK. The adjustable side links are used to control the roll of the tool.

MAST. Several holes are provided in the mast. The higher the hole selected, the more nearly parallel is the lift of the tool.

LOWER LIFT ARM MOUNTS. Two positions are available to provide different pulling angles.

FRONT HITCH BLOCKS

The front hitch blocks (fig. 26) are permanently affixed to the forward bottom of the tractor frame. The rear blocks have 1 inch wide horizontal slots; the front blocks have 1 inch wide vertical slots.

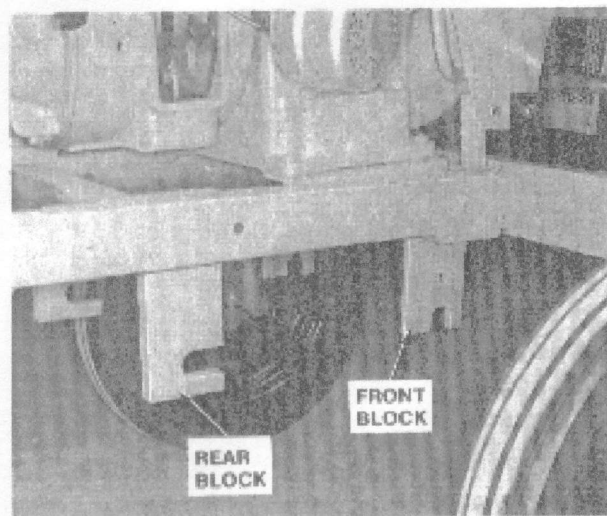


Figure 26. Front Hitch Blocks

INSTALLATION OF FRONT MOUNTED TOOLS

The following is a typical procedure for installing front mounted tools. Specific details are included in the parts book for each equipment item.

1. Lay assembled attachment out on the ground; lift link attached. Position the tractor over the hitch portion of the attachment.
2. Lift rear round cross shaft into slots in rear blocks (fig. 26).
3. Lift front round cross shaft into front blocks. Insert quick change blank bolt through the latch and the hitch block, and insert small quick change key through hole in end of blank bolt. For more rigid and permanent attachment, nuts and bolts may be substituted.

4. Attach lift link to tractor lift arm.

5. If applicable, slip belt over engine Power Take Off Sheave (PTO) using groove which allows belt to enter parallel to sides of groove. Adjust belt position and put tension on clutch idler springs.

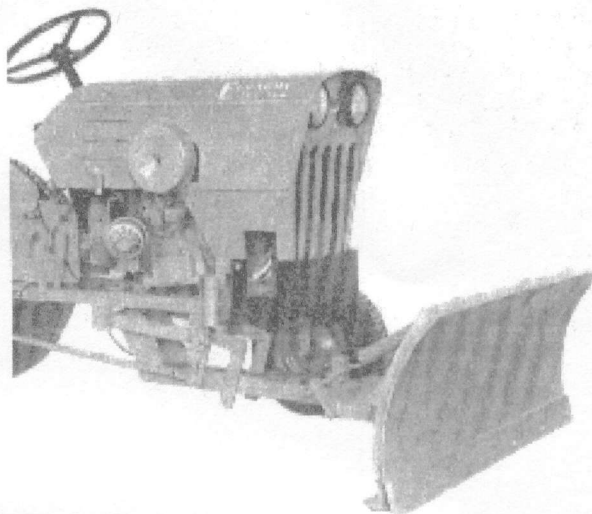


Figure 27. Typical Front Attachment

REMOVAL

To remove attachment, disconnect drive belt (if any), lower attachment to ground, disconnect lift link at tractor lift, remove connecting pins from front hitch blocks, and pull attachment from tractor.

MINOR TROUBLESHOOTING GUIDE

MALFUNCTION	POSSIBLE CAUSE	REMEDY
1. Engine will not turn over	<ul style="list-style-type: none"> a. Improper starting procedure. b. PTO clutch switch on. c. Dead battery. d. Open electrical circuit. 	<ul style="list-style-type: none"> a. Check starting procedure. b. Push control knob in. c. Charge battery. d. Check for loose connections, broken wires or grounded leads.
2. Engine will turn over but will not start	<ul style="list-style-type: none"> a. Empty fuel tank. b. Fuel shutoff valve closed. c. Faulty spark plug. d. Faulty ignition connections. e. Air cleaner clogged. f. Engine flooded. (Strong odor of gasoline) 	<ul style="list-style-type: none"> a. Fill tank. b. Open shutoff valve. c. Remove and check spark plug. d. Check for disconnected lead wires. e. Clean element. f. Push choke in and try to start again.
3. Engine starts but stalls in a few seconds	<ul style="list-style-type: none"> a. Empty fuel tank. b. Incorrect idle adjustment. c. Engine too cold. 	<ul style="list-style-type: none"> a. Fill tank. b. Adjust carburetor. c. Leave choke partially pulled out until engine warms up.
4. Engine idles poorly	<ul style="list-style-type: none"> a. Idle speed too slow. b. Idle fuel improperly adjusted. c. Faulty spark plug. 	<ul style="list-style-type: none"> a. Adjust idle speed. b. Check idle fuel adjustment. c. Check spark plug.
5. Engine overheats.	<ul style="list-style-type: none"> a. Air intake screen or engine cooling fins clogged. b. Oil level too high or too low. c. Fuel mixture too lean. d. Engine overloaded. 	<ul style="list-style-type: none"> a. Clean cooling system. b. Check oil level. c. Adjust carburetor. d. Reduce load; allow engine to cool.

MINOR TROUBLESHOOTING GUIDE (Continued)

MALFUNCTION	POSSIBLE CAUSE	REMEDY
6. One headlight doesn't light	a. Burned out lamp. b. Loose connections or broken wire.	a. Replace lamp. b. Check connections and leads.
7. Headlights do not light	a. Loose connections or broken or grounded wire. b. Dead battery. c. Both lamps burned out. d. Defective light switch.	a. Check wiring and connections between ignition switch, light switch and lights. b. Charge battery. c. Replace lamps. d. Check across switch with jumper.
8. Hydraulic lift does not function properly	a. Low oil level. b. Pump drive belt slipping.	a. Fill hydraulic tank. b. Adjust drive belt.
9. Electro-magnetic clutch malfunction	a. Loose connection. b. Faulty rectifier.	a. Check connections. b. Check rectifier case grounding.
10. Engine continues to run when turned off	a. Defective wiring or ignition switch.	a. Check wire from coil to engine; check ignition switch circuit through switch.
11. Brake pedal travel excessive	a. Linkage requires adjustment. b. Brake band worn.	a. Adjust linkage. b. Check brake band wear.
12. Transmission grinds	a. Improper shifting technique.	a. Refer to "Operating Your Tractor" section of this manual.
13. Transmission does not put tractor in gear	a. Tandem transmission not in gear. b. Other.	a. Put both transmissions in gear. b. See your dealer.
14. Shift into forward tractor goes backward	a. One tandem transmission in reverse. b. Other.	a. Put both transmissions in forward gear. b. See your dealer.

NOTE

Refer to Engine Manual for additional troubleshooting procedures for the engine.

FIGURE 1-1, Hood, Fenders, Gas Tank & Dash Components

2418	2416	2414	1618	1616	1614	NO.	NO.	NAME	DESCRIPTION
		X			X	1	03-2971	HOOD, Front Shell	
X	X		X	X		(1)	01-2907	HOOD, Front Shell	
X	X	X	X	X	X	2	03-2974	TANK, Gas	
		X			X	3	03-2972	HOOD, Cover	
X	X		X	X		(3)	01-2903	HOOD, Cover	
X	X	X	X	X	X	4	03-2979	CURTAIN, Splash gas tank	
X	X	X	X	X	X	7	03-2975	GAUGE, Gas cap	
X	X	X	X	X	X	8	03-2976	STRAPS, Hood gas tank	
X	X	X	X	X	X		03-4702	LINE, Fuel	
X	X	X	X	X	X	9	03-2978	STOP WIRE, Hood cover	
X	X	X	X	X	X	10	98-7018	DECAL, Side	Left mylar clear
X	X	X	X	X	X	11	98-7017	DECAL, Side	Right mylar clear
		X			X	12	03-2977	HOOD, Engine shroud	
X			X			(12)	01-2911	HOOD, Engine shroud	
	X			X		(12)	01-2912	HOOD, Engine shroud	
X	X	X	X	X	X	13	09-0073	FASTENER, Hood lever	
X	X	X	X	X	X	16	01-0515	BRACKET, Steering gear	
X	X	X	X	X	X	17	03-0515	BRACE	1/4"x1-1/4"x1-1/16"
X	X	X	X	X	X	18	98-7007	DECAL, Gear shift	1-1/4"x1-1/2"
X	X	X	X	X	X	19	01-0912	COVER, Steel metal	
X	X	X	X	X	X	20	03-0912	MAT, Floor	
X	X	X	X	X	X	21	03-0517	BRACKET, Seat	U Shaped
X	X	X	X	X	X	22	03-7107	SEAT, Deluxe	
X	X	X	X	X	X	23	03-2101	FENDERS	
X	X	X	X	X	X	24	03-2109	BRACKET, Frame seat	
X	X	X	X	X	X	25	98-7006	DECAL, Dash panel	3-7/8"x15"
X	X	X	X	X	X	26	03-2973	PANEL, Hood dash	
X					X	27	98-7016	DECAL, Side 2418	
					X	(27)	98-7015	DECAL, Side 1614	
		X				(27)	98-7033	DECAL, Side 2414	
			X			(27)	98-7098	DECAL, Side 1618	
				X		(27)	98-7108	DECAL, Side 1616	
	X			X		(27)	98-7109	DECAL, Side 2416	
X	X		X	X		28	03-0908	CONTROL, Throttle	
	X	X		X	X	(28)	03-0907	CONTROL, Throttle	
		X		X	X	29	03-1007	CASING NUTS for Throttle	
X		X	X	X	X	30	03-0911	CONTROL, Choke	25" wire
	X			X		(30)	09-0033	CONTROL, Choke	

HARDWARE

X	X	X	X	X	X	32	84-1012	BOLT, Mach	1/4"-20x1/2"
X	X	X	X	X	X	39	84-0110	NUT, Hex lock	3/8" NF
X	X	X	X	X	X	35	84-2120	SCREW, Hex hd cap	3/8" NF x 1-1/4"
X	X	X	X	X	X	36	84-2110	SCREW, Hex hd cap	3/8" NF x 7/8"
X	X	X	X	X	X	37	84-2223	SCREW, Hex hd cap	7/16" NF x 4"
X	X	X	X	X	X	41	84-0120	NUT, Hex lock	7/16" NF
X	X	X	X	X	X	45	03-2513	GROMMET, Sheet metal	1-1/2" dia. hole
X	X	X	X	X	X	44	84-3020	WASHER, Lock	3/8"
X		X	X	X	X	33	84-1011	BOLT, Mach	10-24" x 5/8"
X	X	X	X	X	X	42	84-0090	NUT, Hex lock	10-24"
X	X	X	X	X	X	34	84-1010	BOLT, Mach	10-24" x 1/2"
X	X	X	X	X	X	46	84-1062	BOLT, Hex hd cap	1/2" NC x 1" lg.
X	X	X	X	X	X	47	84-3041	WASHER, Nylon	1/4" flat

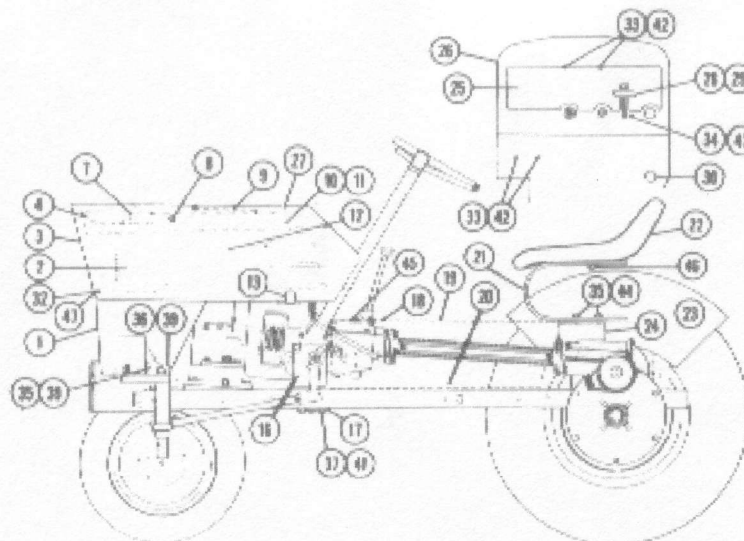


FIGURE 1-2. Frame, Foot Brake Linkage

ITEM NO.	PART NO.	NAME	DESCRIPTION	ITEM NO.	PART NO.	NAME	DESCRIPTION
1	03-0533	BUMPER, Steel Formed		15	84-0130	NUT, Hex Lock	1/2" NF
2	05-0015	BRACKET, Engine	Kohler Pair R & L	16	84-0030	PIN, Clevis	5/16" SAE
3	01-0207	FRAME ASSEMBLY		17	84-4013	KEY, Cotter	3/32" dia. x 5/8" lg.
4	01-6317	SHAFT, Foot Brake	16-5/8" Hyd. Lift	18	84-4003	PIN, Drive	7/32" dia. x 1" lg.
5	01-8707	PEDAL, Foot Brake, Right		19	84-0100	NUT, Hex Lock	5/16" NF
6	01-8705	PEDAL, Foot Brake, Left		20	84-3037	WASHER, Flat	3/8" SAE
7	03-1030	SPRING, Compression	2-3/4" long	21	84-3061	WASHER, Flat	1/2" SAE
8	01-4710	BLOCK, Brake Transfer		22	84-0132	NUT, Jam	1/2" NF
9	01-6313	STRAP, Brake Transfer		23	84-2220	SCREW, Hex hd Cap	7/16" NF x 3-1/4" lg.
10	01-7545	LINK, Brake, Connecting		24	84-2223	SCREW, Hex hd Cap	7/16" NF x 3-1/4" lg.
11	01-0520	SUPPORT BRACKET		25	84-0120	NUT, Hex Lock	7/16" NF
12	01-0005	LOCK CONTROL, Parking Brake		26	84-2141	SCREW, Hex hd Cap	3/8" NF x 1-3/4" lg.
13	01-2915	SLIDING ADAPTOR, Parking Brake		27	84-0110	NUT, Hex Lock	3/8" NF
14	50-0122	HANDLE, Brake Interlock		28	80-9053	BUSHING, Oilite	.75" O.D. x .50 I.D.
				29	98-6997	DECAL, Parking Brake	
				30	03-6325	GRIT PAD, Brake Pedal	

NOTE: NEW BRAKE SYSTEM.
SEE SUPPLEMENT FOR
PARTS AND ADJUSTMENT.

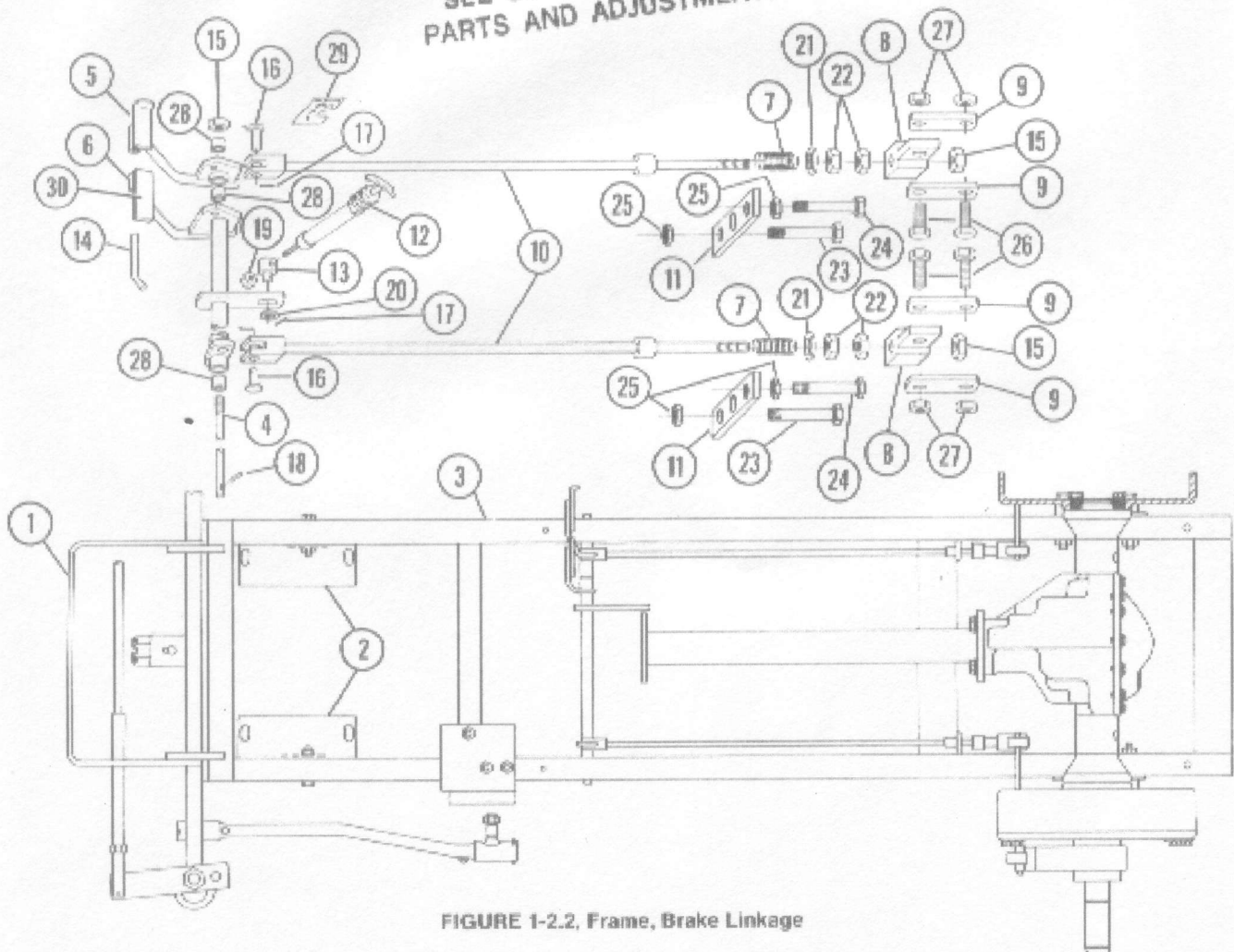


FIGURE 1-2.2, Frame, Brake Linkage

NOTE: PARTS SHOWN ARE TYPICAL ONLY AND MAY NOT BE IDENTICAL TO THE ACTUAL PART.

ITEM NO.	PART NO.	NAME	DESCRIPTION
1	03-0308	STEERING GEAR ASSY	
2	09-9018	HOUSING AND TUBE ASSY	
3	09-9010	CAM & TUBE ASSY	
4	09-9021	LEVER SHAFT ASSY	
5	09-9003	BEARING, Jacket tube	
6	09-9004	KIT, Bearing	
8	09-9033	COVER, Side steering gear	
9	09-9013	GASKET, Side cover	
10	09-9001	KIT, End plug	plug seal, lock nut
11	09-9023	NUT, Acorn for steering wheel	
12	09-9026	COVER, Dust plastic foam	
13	03-0309	CUP, Wheel skirt	
15	03-0312	WHEEL, Steering	
16	03-0310	ARM, Steering	4-1/2"

HARDWARE

17	84-3130	NUT, Hex lock	1/2" NF
18	84-0140	NUT, Hex lock	5/8" NF
19	03-7111	STUD, Steering ball	2-7/16"
20	84-3080	WASHER, Lock	5/8" reg.
21	09-9027	SEAL, Lever shaft	5/32" x 1-1/2"
22	84-4020	KEY, Cotter	
23	03-2112	FITTING, Grease	1/8" 27"
24	03-4703	LINK, Connecting	
25	09-0097	KIT, Ball joint repair	
26	03-9001	CAP, Steering wheel	
27	84-2121	SCREW, HHC	7/16" NC x 1-1/2"
28	84-3030	WASHER, Lock	7/16"

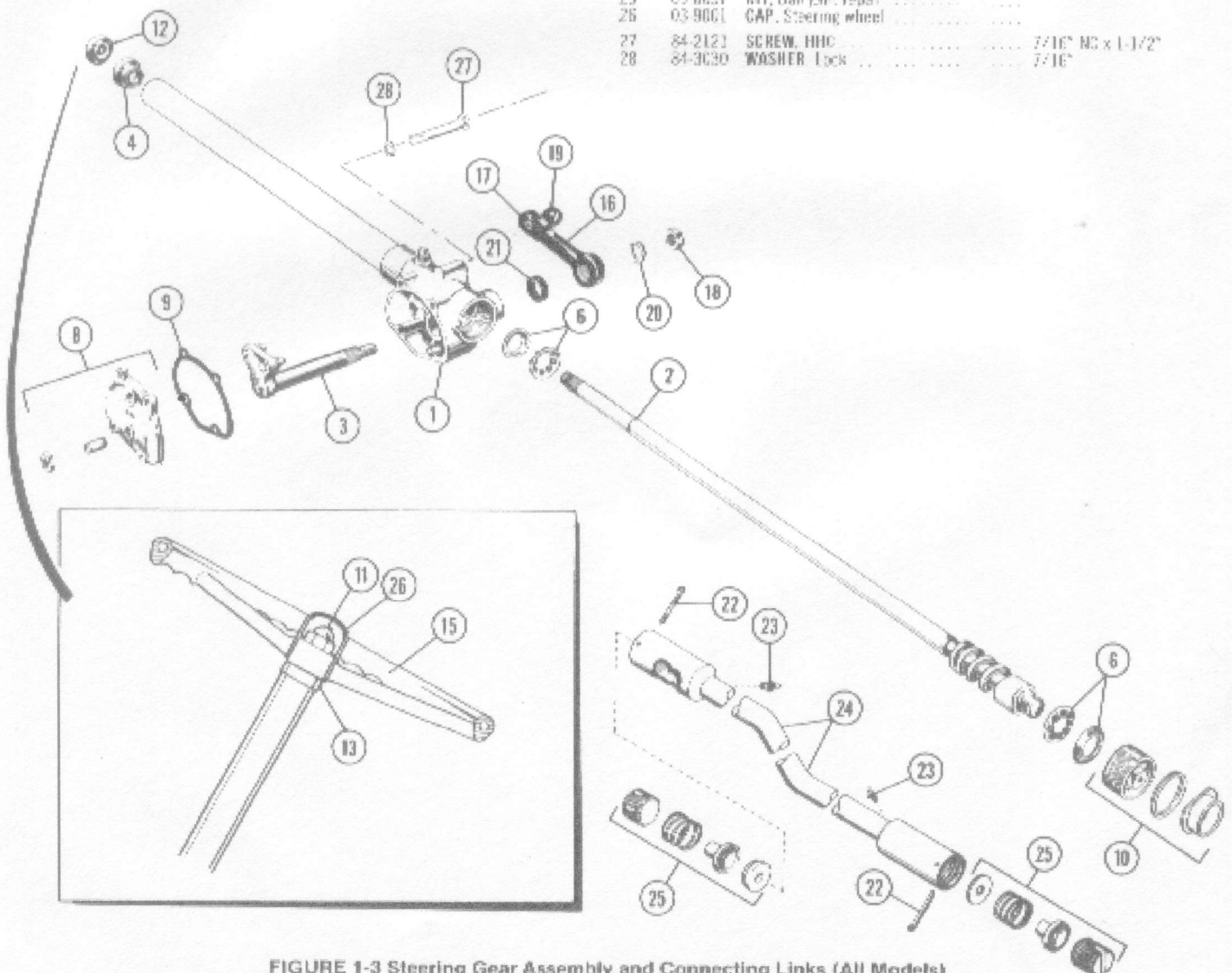


FIGURE 1-3 Steering Gear Assembly and Connecting Links (All Models)

NOTE: PARTS SHOWN ARE TYPICAL ONLY AND MAY NOT BE IDENTICAL TO THE ACTUAL PART.

FIGURE 1-4, Front End Assembly—including Front Wheels and Tires

2418	2416	2414	1618	1616	1614	ITEM NO.	PART NO.	NAME	DESCRIPTION
X	X	X	X	X	X	1	01-0211	FRONT WHEEL SUPPORT BAR ASSY	
X	X	X	X	X	X	(3)	01-9105	SPINDLE, Right Hand	10-7/8" lg. 16" wheels
X	X	X	X	X	X	(3)	01-9102	SPINDLE, Right Hand	13-3/8" lg. 24" wheels
X	X	X	X	X	X	4	01-9103	SPINDLE, Left Hand	13-3/8" lg. 24" wheels
X	X	X	X	X	X	(4)	01-9106	SPINDLE, Left Hand	10-7/8" lg. 16" wheels
X	X	X	X	X	X	5	84-4061	KEY, Woodruff	No. 15 Special
X	X	X	X	X	X	6	80-0024	BEARING, Thrust	
X	X	X	X	X	X	7	80-0013	BUSHING	1-1/16" x 1-3/8" OD x 1" lg.
X	X	X	X	X	X	8	03-2102	FITTING, Grease	1/4-28, short
X	X	X	X	X	X	9	84-3110	WASHER, Lock	1/2" regular
X	X	X	X	X	X	10	03-6703	KNUCKLE, Tie rod	1/2-20 threads
X	X	X	X	X	X	11	03-1010	CASING, Tie rod support	
X	X	X	X	X	X	12	01-0910	TIE ROD	28" long
X	X	X	X	X	X	14	03-4704	LINK, Drag	1" x 1-1/2" x 7-1/4" lg.
X	X	X	X	X	X	15	03-6305	PIN, Steering stop	1/2" x 2-1/8"
X	X	X	X	X	X	16	84-3050	WASHER, Lock	3/4" thin
X	X	X	X	X	X	17	84-0072	NUT, Hex	3/4" NF
X	X	X	X	X	X	18	84-0080	NUT, Hex slotted	1-1/8" NF
X	X	X	X	X	X	19	84-4026	KEY, Cotter	1-1/2" x 1-1/2" long
X	X	X	X	X	X	24	03-7111	STUD, Steering Ball	2-7/16"
X	X	X	X	X	X	25	84-0130	NUT, Hex lock	1/2" NF
X	X	X	X	X	X	26	82-0021	SPACER	1" x 3/4" x 1/2"
X	X	X	X	X	X	27	82-0101	SEAL, Neoprene bearing	
X	X	X	X	X	X	28	80-0026	BEARING, Cone	
X	X	X	X	X	X	29	80-0027	BEARING, Cup	
X	X	X	X	X	X	30	03-7110	SHAFT, Front wheel axle	6-1/8" x 3/4" OD
X	X	X	X	X	X	32	01-8708	WHEEL, Front	2-1/2-12 5 bolts
X	X	X	X	X	X	33	09-9414	TIRE, Front	4.00 x 12
X	X	X	X	X	X	34	84-0073	NUT, Hex slotted	3/4" NF
X	X	X	X	X	X	35	82-0916	CAP, Hub front wheel	
X	X	X	X	X	X	36	84-0170	NUT, Wheel	7/16" NF for Pressed studs
X	X	X	X	X	X	37	09-0427	TUBE	4.00 x 12 tire
X	X	X	X	X	X	38	84-1805	BOLT, Wheel stud	7/16-20" (Pressed into hub)
X	X	X	X	X	X	39	01-2908	HUB, Wheel	12" w/studs, nuts (for 4.00 x 12" wheels)

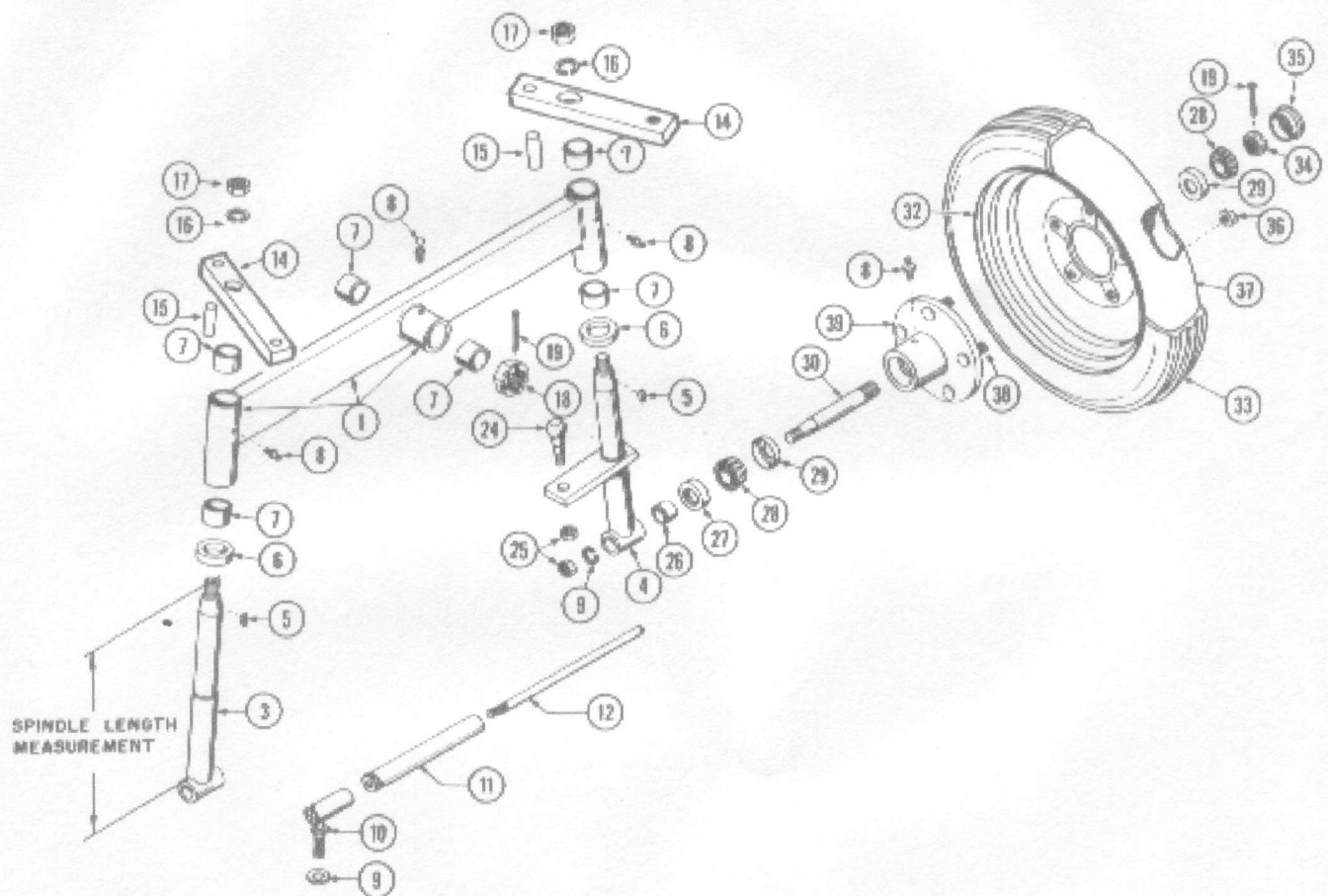
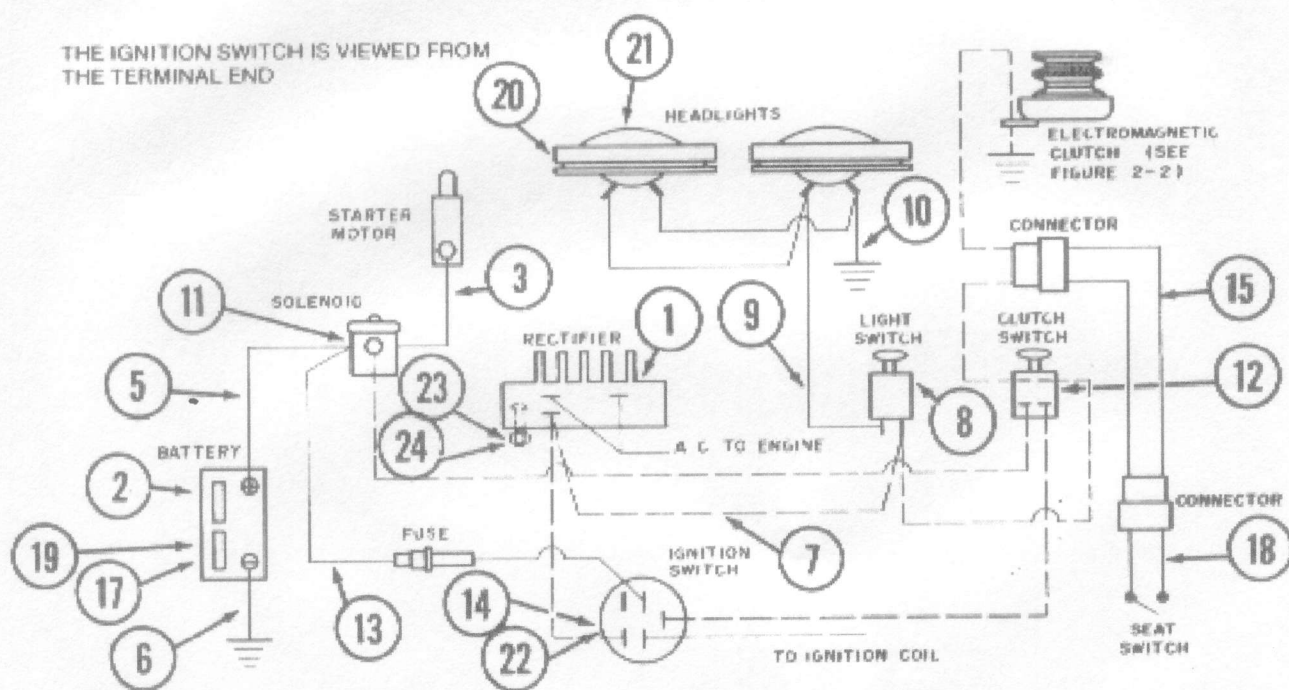


FIGURE 1-4, Front End Assembly—including Front Wheels and Tires

NOTE: PARTS SHOWN ARE TYPICAL ONLY AND MAY NOT BE IDENTICAL TO THE ACTUAL PART.

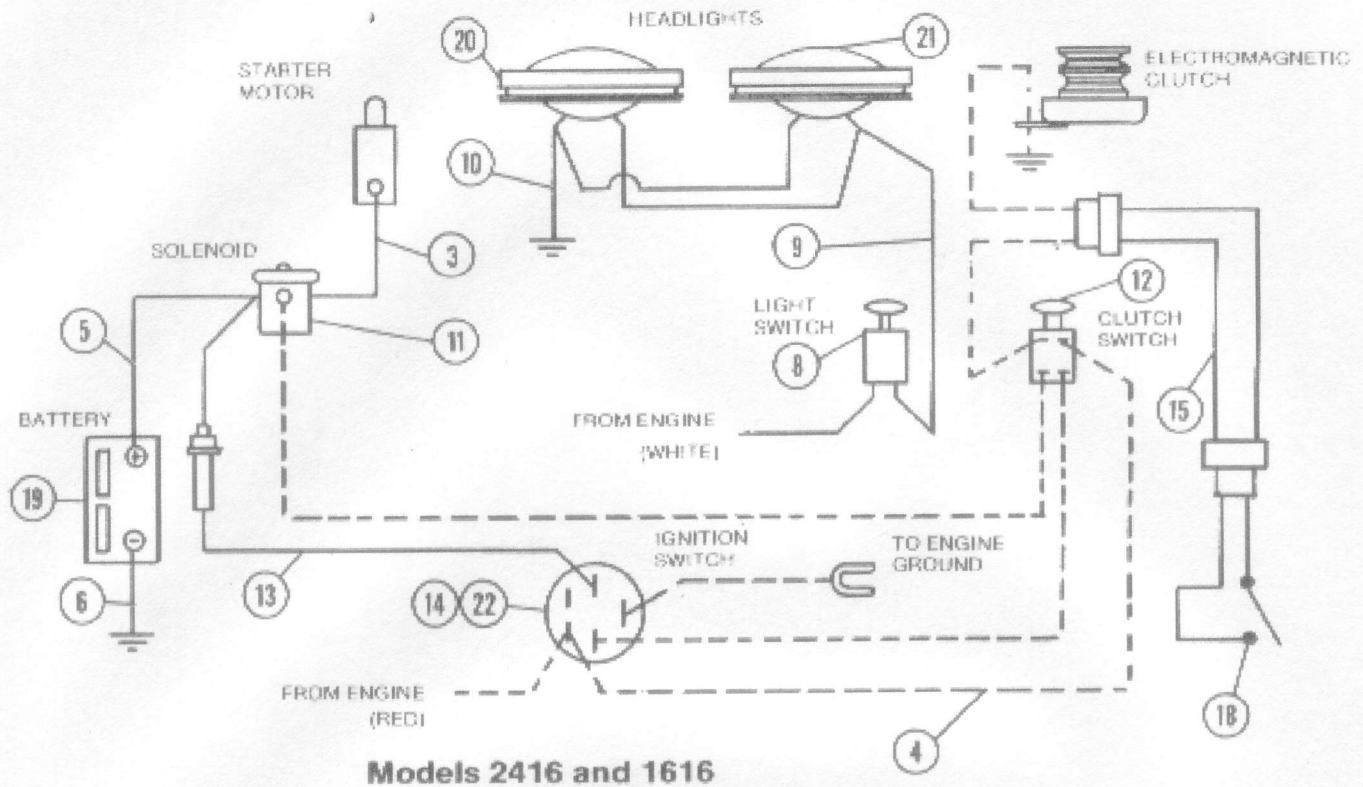
FIGURE 2-8, Electrical Group

ITEM NO.	PART NO.	DESCRIPTION
1	03-2001	RECTIFIER, 15 amp for 14 HP
3	03-2008	WIRE, Solenoid to starter motor
4	03-2009	WIRING HARNESS, for 18 HP
14	03-2036	WIRING HARNESS, for 16 HP
5	03-2012	BATTERY CABLE
6	03-2013	BATTERY CABLE, Ground
7	03-2016	WIRING HARNESS, for 14 HP
8	03-2017	SWITCH, Headlight
9	03-2019	WIRE, Headlight switch to headlight
10	03-2020	WIRE, Headlight ground
11	03-2021	SOLENOID
12	03-2022	SWITCH, Electromagnetic clutch
13	03-2023	WIRE, Ignition switch to solenoid w/fuse
14	03-2018	SWITCH, Ignition for 16HP
14	03-2028	SWITCH, Ignition for 14 & 18 HP
15	03-2029	WIRE, Seal switch to wiring harness
16	03-2031	RECTIFIER, 15 amp for 18 HP
18	03-2033	SWITCH, Seal
19	03-2045	BATTERY, 45 amp
20	03-2516	GROMMET, Rubber headlight
21	03-5004	HEADLIGHT, GE4406-1 (purchase locally)
22	03-0065	KEY, Ignition switch
23	84-0030	NUT, #10-24NF hex lock
24	84-1011	SCREW, #10-24NF x 5/8" long ad hd phil

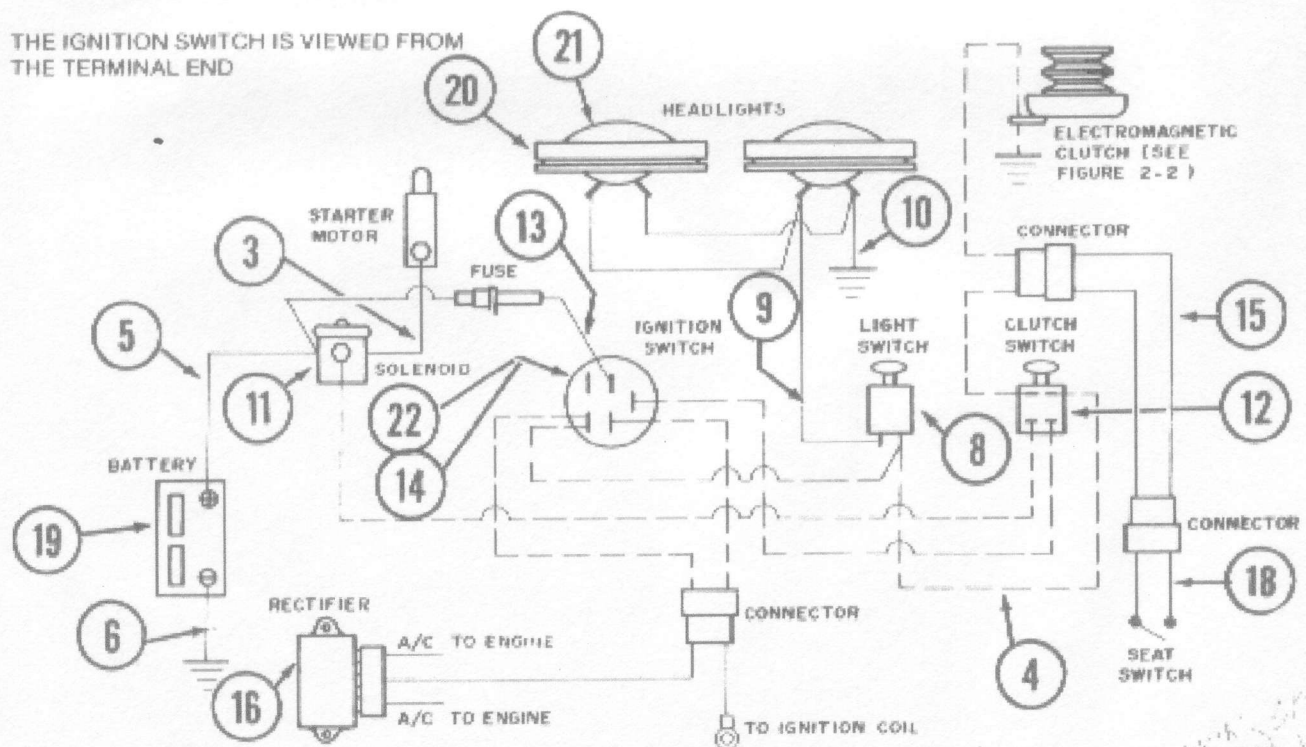


NOTE: PARTS SHOWN ARE TYPICAL ONLY AND MAY NOT BE IDENTICAL TO THE ACTUAL PART

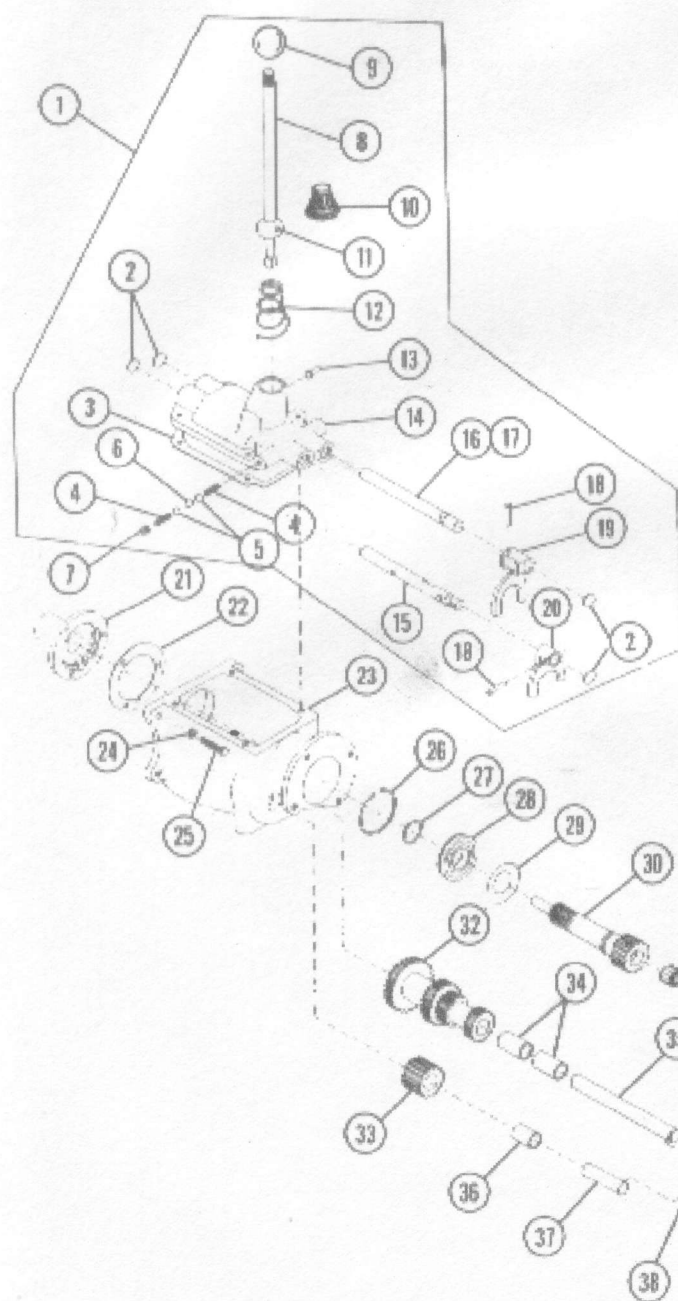
FIGURE 2-8, Electrical Group



THE IGNITION SWITCH IS VIEWED FROM THE TERMINAL END

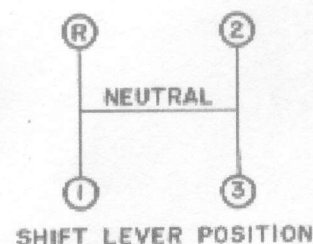


NOTE: PARTS SHOWN ARE TYPICAL ONLY AND MAY NOT BE IDENTICAL TO THE ACTUAL PART.



ITEM NO.	PART NO.	NAME	DESCRIPTION
	03-7507	TRANSMISSION ASSY	
1	09-9219	CONTROL HOUSING ASSY	
2	09-9228	PLUG, Expansion	
3	09-9212	GASKET, Control housing	
4	09-9244	SPRING, Popper	
5	09-9201	BALL, Retainer	
6	09-9229	PLUNGER, Int. lock	5/16" x 9/16"
7	09-9227	PLUG	3/8" NC
8	09-9221	CONTROL LEVER, Straight	
10	09-9222	CONTROL LEVER, Bent (Short)	
9	03-4103	KNOB, Shift lever	#50R 3/8" NC
10	03-2511	GROMMET, Shift lever	
11	09-9223	PIN, Control lever	
12	09-9243	SPRING, Control lever	
13	09-9224	PIN, Control housing	
14	09-9220	CASTING, Control housing	
15	09-9231	RAIL, Second and high	
16	09-9233	RAIL, Low and reverse	
18	09-9225	PIN, Shift fork	
19	09-9210	FORK, Shift, low and reverse	
20	09-9209	FORK, Shift, high and second	
21	09-9234	RETAINER, Front bearing	
22	09-9211	GASKET, Front bearing retainer	
23	09-9208	CASE, Casting only	
24	84-3020	WASHER, Lock	3/8" reg.
25	84-2120	SCREW, Hex hd cap	3/8" NF x 1-1/4"
26	09-9235	RING, Snap	2-3/16" O.D.
27	09-9237	RING, Snap	1-1/16" O.D.
28	09-9203	BEARING, Front ball	2" dia.
29	09-9245	WASHER, Front oil retainer	
30	09-9218	GEAR, M.d. 10 spl, 17 teeth	
31	09-9202	BEARING, Roller	13 required
32	09-9213	GEAR, Cluster	
33	09-9214	GEAR, Reverse idler	
34	09-9206	BUSHING, Countershaft	
35	09-9241	COUNTERSHAFT for gear	
36	09-9205	BUSHING, Reverse idler	3/4" x 5/16"
37	09-9239	SHAFT, Reverse idler	
38	09-9226	PLATE, Lock shaft	
39	09-9240	SHAFT, Main	
40	09-9215	GEAR, Second 23 teeth	
41	09-9216	GEAR, 1 & R, 30 teeth	
42	09-9246	WASHER, Rear oil retainer	
43	09-9236	RING, Snap	2.0" O.D.
44	09-9204	BEARING, Rear ball	
45	09-9238	SNAP, Ring	

SPEED REDUCTIONS	
1 ST	3.294 : 1
2 ND	1.722 : 1
3 RD	1.000 : 1
REV	3.294 : 1



SHIFT LEVER POSITION

FIGURE 2-1.1, Tractor Transmission and Tandem Transmission

NOTE: PARTS SHOWN ARE TYPICAL ONLY AND MAY NOT BE IDENTICAL TO THE ACTUAL PART.

ITEM NO.	PART NO.	NAME	DESCRIPTION
1	03-7507	TRANSMISSION	
2	03-0906	COUPLING, Drive shaft	
7	03-2511	GROMMET, Shift lever	
8	03-4165	KNOB, Shift lever	rubber
9	31-7111	SHAFT	Trans. to differential 3-3/8"
12	33-7113	SHAFT, Coupling	trans. to trans.
15	31-7504	TUBE	Trans. to trans. 6-5/16"
17	31-7505	TUBE	Trans. to differential 6-7/16"

HARDWARE

20	83-0021	SPACER	1" x 3/4" x 1/2"
21	84-2120	SCREW, Hex hd. cap	3/8" NF x 1-1/4"
22	84-2020	SCREW, Hex hd. cap	5/16" NC x 7/8"
23	84-0110	NUT, Hex lock	3/8" NF
24	84-3010	WASHER, Lock	5/16" reg.
26	84-3070	WASHER, Flat	3/4" SAE

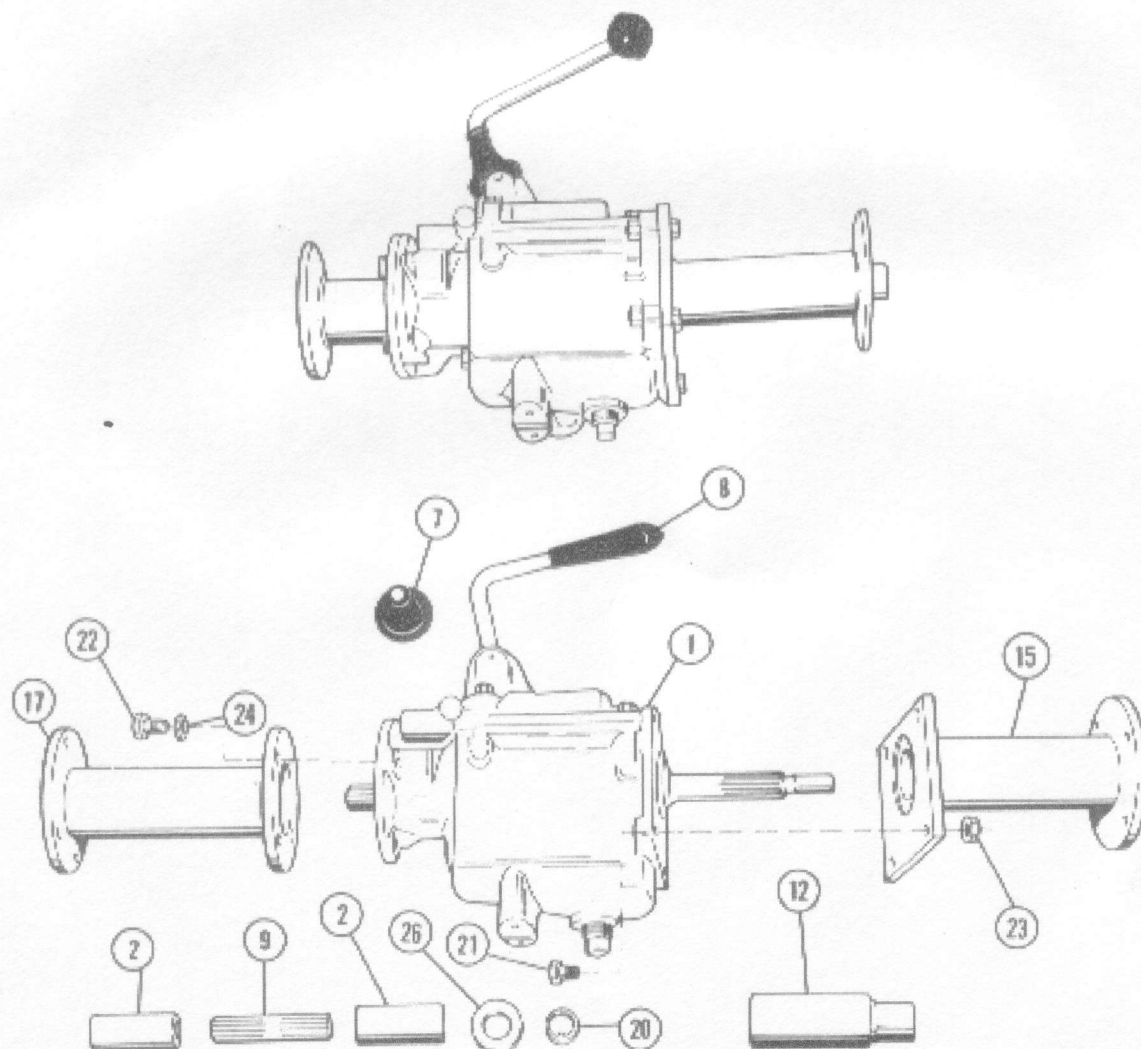


FIGURE 2-1.2, Tractor Transmission and Tandem Transmission

NOTE: PARTS SHOWN ARE TYPICAL ONLY AND MAY NOT BE IDENTICAL TO THE ACTUAL PART

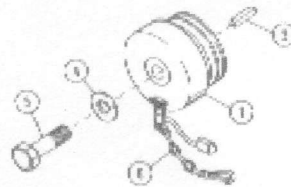


FIGURE 2-2, Equipment Clutch
(All Models)

ITEM NO.	PART NO.	NAME	DESCRIPTION
1	03-0914	CLUTCH, 1" Bore	Electro-magnetic PTO
	03-0916	FIELD COIL ASSEMBLY	
3	84-4007	KEY, Kohler	1/4" sq. x 1" lg.
13	84-4014	KEY, B. & S.	1/4" sq. x 3/4" lg.
4	84-3130	WASHER, Flat	7/16" x 1"
5	84-2200	SCREW, Hex hd. cap	7/16" NF x 2-1/4"
6	03-0905	CHAIN, Clutch safety	

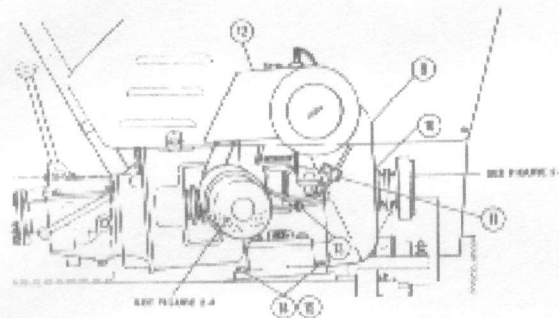
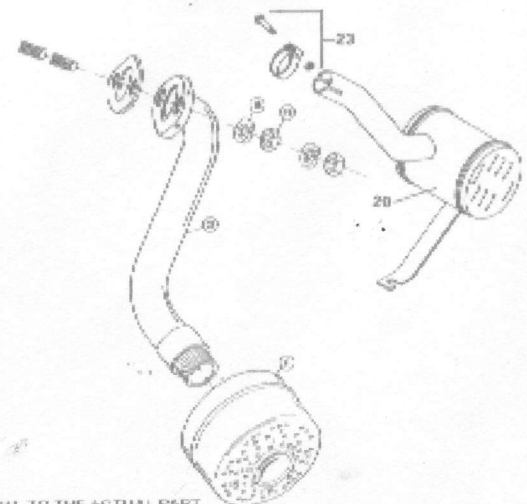


FIGURE 2-3, Engine

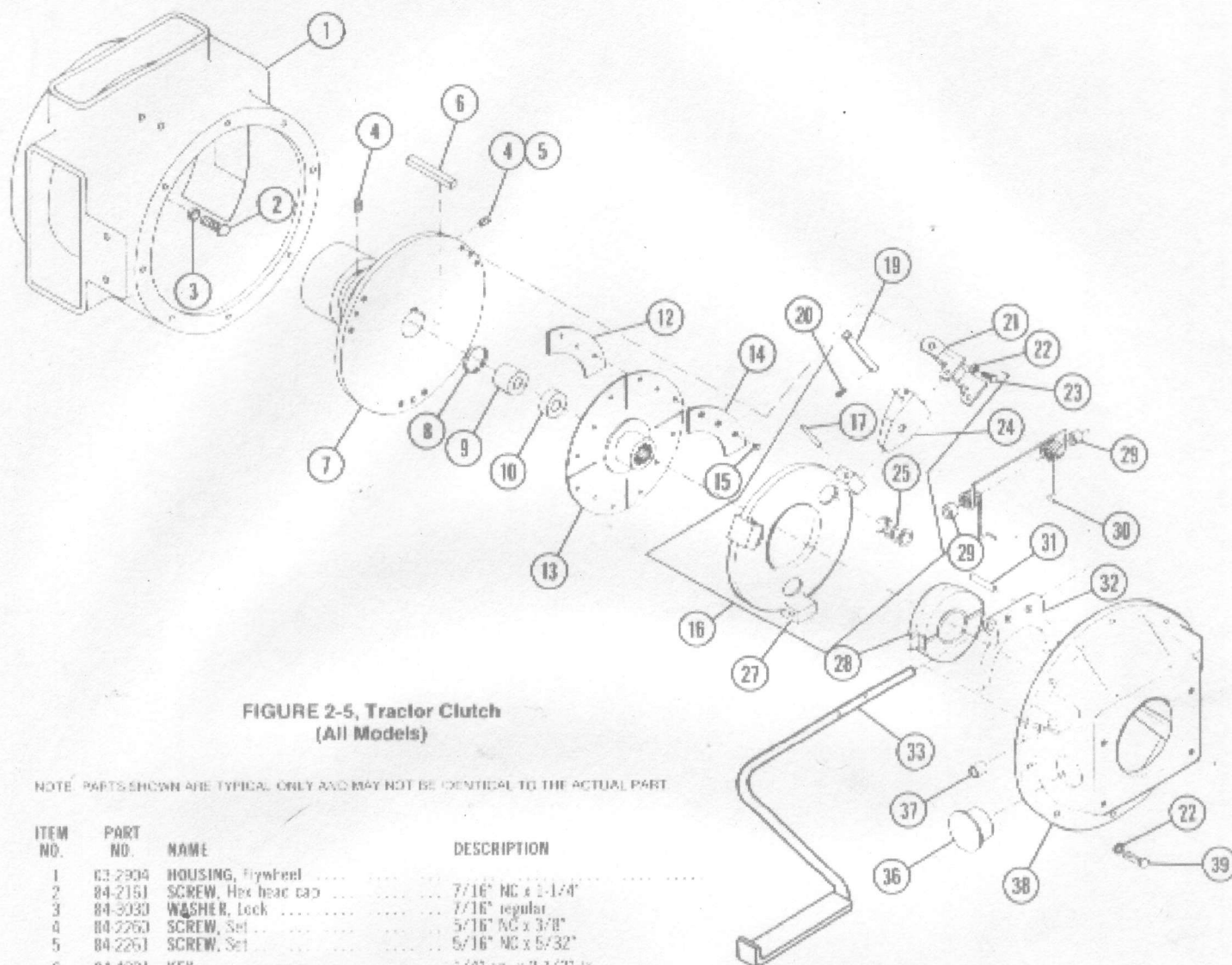
2418	2416	2414	1618	1616	1614	ITEM NO.	PART NO.	NAME	DESCRIPTION
		X			X	10	03-1703	ENGINE, Kohler, 14 hp	K321S
X			X			11	03-1704	ENGINE, Kohler, 18 hp	K361S
	X			X		12	03-1707	ENGINE, B. & S., 16 hp	326437
						Refer to Engine Manufacturer for Parts and Service			
X		X	X		X	10	03-1702	SCREEN, Kohler	
		X			X	11	03-0909	CLIP, Choke	
		X			X	12	03-2977	SHROUD, 14 hp	
X			X			(12)	01-2911	SHROUD, 18 hp	
	X			X		(12)	03-2912	SHROUD, 16 hp	
						HARDWARE			
		X			X		84-1016	BOLT, Mach	1-13/16" x 1/2" 10-24 (Used on item 11)
		X			X		84-0030	NUT, Hex lock	10-24" (Used on item 11)
X	X	X		X	X	13	03-1007	CASING NUTS, Throttle	
X	X	X	X	X	X	14	84-2120	SCREW, Hex hd cap	3/8" NF x 1-1/4"
		X	X	X	X	15	84-0110	NUT, Hex lock	3/8" NF

FIGURE 2-4, Muffler

2418	2416	2414	ITEM NO.	PART NO.	NAME
1618	1616	1614	17	03-5111	MUFFLER, Can
	X	X	18	84-3010	WASHER, 5/16" Lock
		X	19	84-0102	NUT, Hex 5/16" N.C.
X			20	03-5115	MUFFLER ASSY, 18 hp
	X		22	03-5110	PIPE, Muffler exhaust
		X	(22)	03-5117	PIPE, Muffler exhaust
X			23	03-5116	CLAMP, Muffler, 18 hp
	X		(23)	03-5113	CLAMP, Exhaust, 16 hp
	X		35-2110	NIPPLE, 1" Close	
	X		35-2111	ELBOW, 1" Street	



NOTE: PARTS SHOWN ARE TYPICAL ONLY AND MAY NOT BE IDENTICAL TO THE ACTUAL PART



**FIGURE 2-5, Tractor Clutch
(All Models)**

NOTE: PARTS SHOWN ARE TYPICAL ONLY AND MAY NOT BE IDENTICAL TO THE ACTUAL PART

ITEM NO.	PART NO.	NAME	DESCRIPTION
1	03-2904	HOUSING, Flywheel	
2	84-2151	SCREW, Hex head cap	7/16" NC x 1-1/4"
3	84-3030	WASHER, Lock	7/16" regular
4	84-2263	SCREW, Set	5/16" NC x 3/8"
5	84-2261	SCREW, Set	5/16" NC x 5/32"
6	84-4001	KEY	1/4" sq. x 2-1/2" lg.
16	84-4051	KEY	#15, Woodruff
7	09-4012	FLYWHEEL, 3-groove	1-1/8" bore
8	84-1125	RING, Snap	Int. 1-1/8"
9	80-0009	BUSHING, Flywheel	1-1/8" x 1/2" x 1/2" Kohler
10	82-0050	SEAL	5" I.D. x 1-1/8" O.D. x 3/8" Kohler

CLUTCH COMPONENTS ITEMS 12 THROUGH 28

12	09-9116	SEGMENT, Clutch, Friction	thick
13	09-9102	DISC, Clutch	(includes items #12, 14, 15)
14	09-9117	SEGMENT, Clutch	thick
15	09-9105	RIVET, Clutch	
16	09-9103	PRESSURE PLATE ASSEMBLY	(includes items 17-27)
17	09-9107	PIN, Pressure plate clutch	
19	09-9112	PIN, Clutch lever pivot	w/ groove
20	09-9113	RING, Clutch pivot pin snap	
21	09-9110	BRACKET, Lever, Clutch release	
22	84-3010	WASHER, Lock	5/16" regular
23	84-2610	SCREW, Hex head cap	5/16" NF x 1/2"
24	09-9109	LEVER, Clutch release	
25	09-9106	SPRING, Clutch	1-1/4" lg.
27	09-9108	PLATE, Clutch	Casting only
28	09-9101	BEARING, Throwout	
29	83-0023	SPACER	5/8" x 33/64" x 3/8"
30	83-0017	SPRING, Double torsion	
31	84-4002	PIN, Drive	7/32" dia. x 1-1/4" lg.
32	03-7501	THROWOUT, Clutch	
33	03-7109	SHAFT, Clutch Pedal	20-1/4"
36	03-2903	PLUG, Housing, plastic	
37	80-0025	BUSHING	1/2" I.D. x 5/8" O.D. x 1/2" lg.
38	09-4016	HOUSING, Clutch	w/ bushing
39	84-2930	SCREW, Hex head cap	5/16" NF x 7/8"

FIGURE 2-6, Final Drive Assembly, Brake Group and Rear Wheels

2418 2416 2414	1618 1616 1614	ITEM NO.	PART NO.	NAME	DESCRIPTION
X	X	1	01-2508	GASKET, Bearing housing	
X	X	2	01-7506	TUBE, Drive	20-1/2" long
X	X	4	03-0906	COUPLING, Drive shaft	
X	X	5	01-7107	SHAFT, Drive	17-7/16" long
X	X	6	03-1303	DIFFERENTIAL	5:1 ratio
X	X	7	09-4023	HOUSING, Bearing w/bearings	Right
X	X	(7)	09-4024	HOUSING, Bearing w/bearings	Left
X	X	8	82-0100	SEAL	1" ID x 1-1/4" OD
X	X	9	80-0006	BEARING, Roller	
X	X	10	01-7182	SHAFT, Pinion	13-11/16" long right
X	X	(10)	01-7183	SHAFT, Pinion	14-5/16" long left
X	X	12	01-0911	LEVER, Brake	
X	X	15	80-0011	BEARING	
X	X	16	01-0907	CASE, Gear w/bearings	8 holes
X	X	17	01-0103	AXLE	1-1/2" x 11-3/4" long
X	X	18	01-2501	GEAR, Side	9-39/64"
X	X	19	01-2507	GASKET, Side cover	
X	X	20	01-0906	COVER, Gear case w/bearings	8 holes
X	X	21	80-0010	BEARING	
X	X	22	82-0150	SEAL	1-1/2" ID x 2-7/16" OD
X	X	23	01-2905	HUB, Rear wheel	6 holes
X	X	(23)	01-2904	HUB, Rear wheel	5 holes
X	X	24	01-0909	CAM, Brake	
X	X	25	01-0513	BRAKE BAND	4" ID
X	X	26	01-6310	PULLEY, Brake	4" diameter keyway
X	X	27	82-0063	SEAL	5/8" ID x 1-1/8" OD
X	X	28	80-0008	BEARING, Open end	
X	X	29	84-3010	WASHER, Lock	5/16" regular
X	X	30	84-2020	SCREW, Hex head cap	5/16" NC x 13/16"
X	X	31	84-2101	SCREW, Hex head cap	3/8" NC x 1-1/4"
X	X	32	84-3020	WASHER, Lock	3/8" regular
X	X	33	84-3740	WASHER, Thrust	1-1/4" OD x 11/16" ID
X	X	34	84-4012	KEY, Square	3/16" x 1-7/16" lg.
X	X	35	84-3062	WASHER, Flat	
X	X	36	23-6302	PLUG, Pipe 1/4" solid	
X	X	37	23-6301	PLUG, Pipe 1/4" vented	
X	X	38	85-0150	RING, Snap	1-1/2" ext.
X	X	39	84-4004	KEY	3/8" sq. x 2" long
X	X	40	84-3762	WASHER, Thrust axle	2-3/4"
X	X	41	85-1090	RING, Snap, External	1/2"
X	X	42	84-2030	SCREW, Hex Head cap	5/16" NF x 7/8"
X	X	43	84-2250	SCREW, Special cap	1/2" x 1-1/16"
X	X	44	84-4024	PIN, Drive	3/8" x 1-1/2" lg.
X	X	48	84-2260	SCREW, Socket Hds set	5/16" x 3/8"
X	X	49	80-0025	BUSHING	1/2" ID x 5/8" OD x 1/2" long
X	X	53	84-2240	SCREW, Hex head cap	7/16" x 1-1/2"
X	X	54	84-3031	WASHER, Lock	29/64"
X	X	55	84-2170	SCREW, Hex head cap	7/16" NF x 1-1/2"
X	X	56	84-3030	WASHER, Lock	7/16" regular
X	X	57	84-2220	SCREW, Hex head cap	7/16" NF x 3"
X	X	58	84-2280	SCREW, Hex head cap	7/16" x 2"
X	X	59	01-2509	GASKET, Frame	1" OD
X	X	60	09-9419	TIRE, Rear 8.3-24 PT	(Log)
X	X	(60)	01-7522	TIRE & TUBE, Rear 9.5-16 PT	(Log)
X	X	(60)	01-7523	TIRE, Rear 7.50-16 SSG	(Log)
X	X	(60)	01-7543	TIRE & TUBE, Rear 8.3-24	(Lawn)
X	X	(60)	09-9418	TIRE, Rear 8-16 LWG	(Lawn)
X	X	61	09-9415	TUBE, Rear 9.5-16	
X	X	(61)	09-9420	TUBE, Rear 8-16 x 7.50	
X	X	(61)	09-9423	TUBE, Rear 8-24	
X	X	62	03-8707	WHEEL, Rear 6-16	
X	X	63	01-1302	DISC, Wheel	24"
X	X	64	01-6702	RIM, Rear wheel	24"
X	X	65	84-2233	SCREW, Hex head cap	1/2" NF x 2-3/4"
X	X	66	84-0130	NUT, Hex	1/2" NF

NOTE: NEW BRAKE SYSTEM.
SEE SUPPLEMENT FOR
PARTS AND ADJUSTMENT.

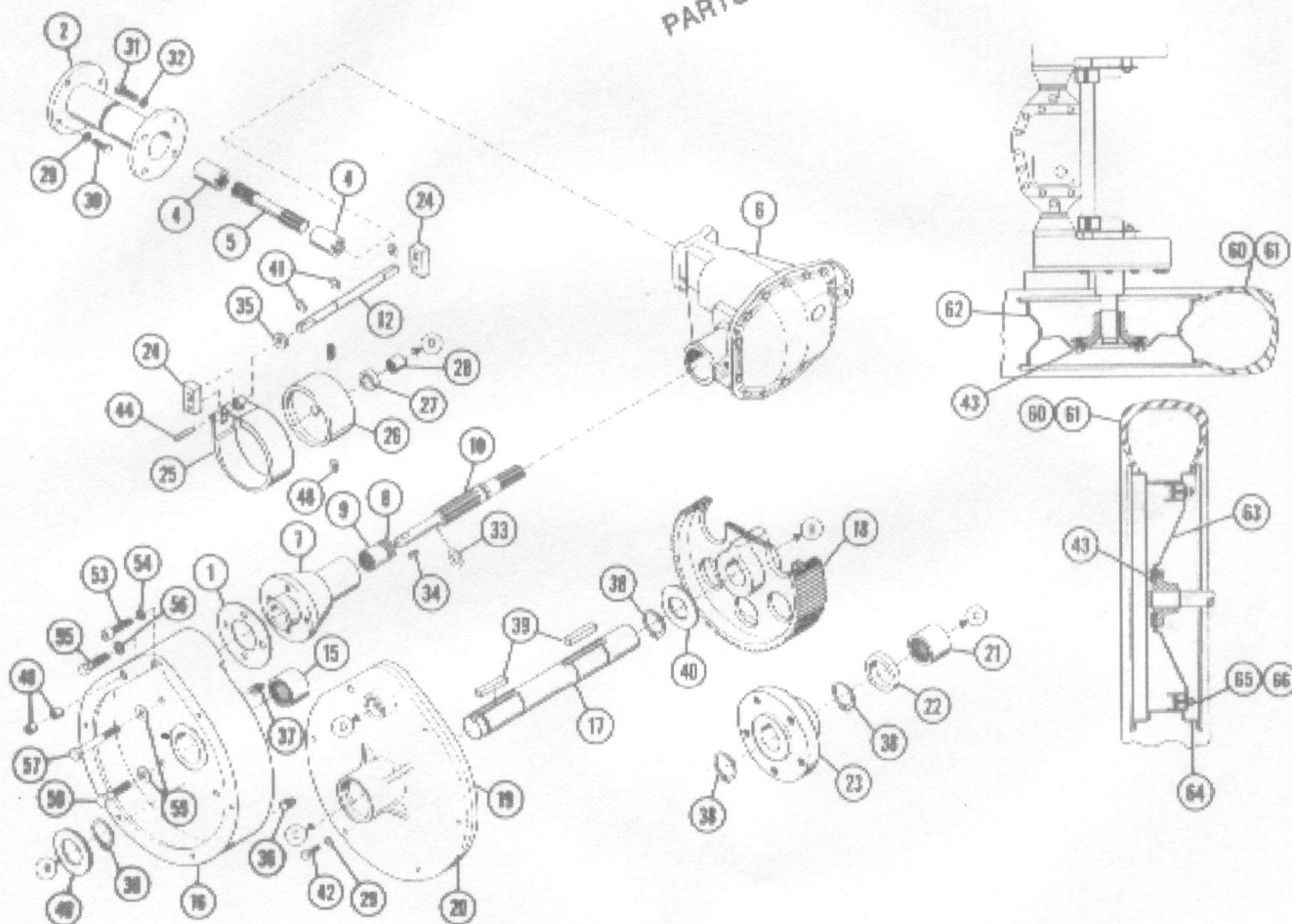
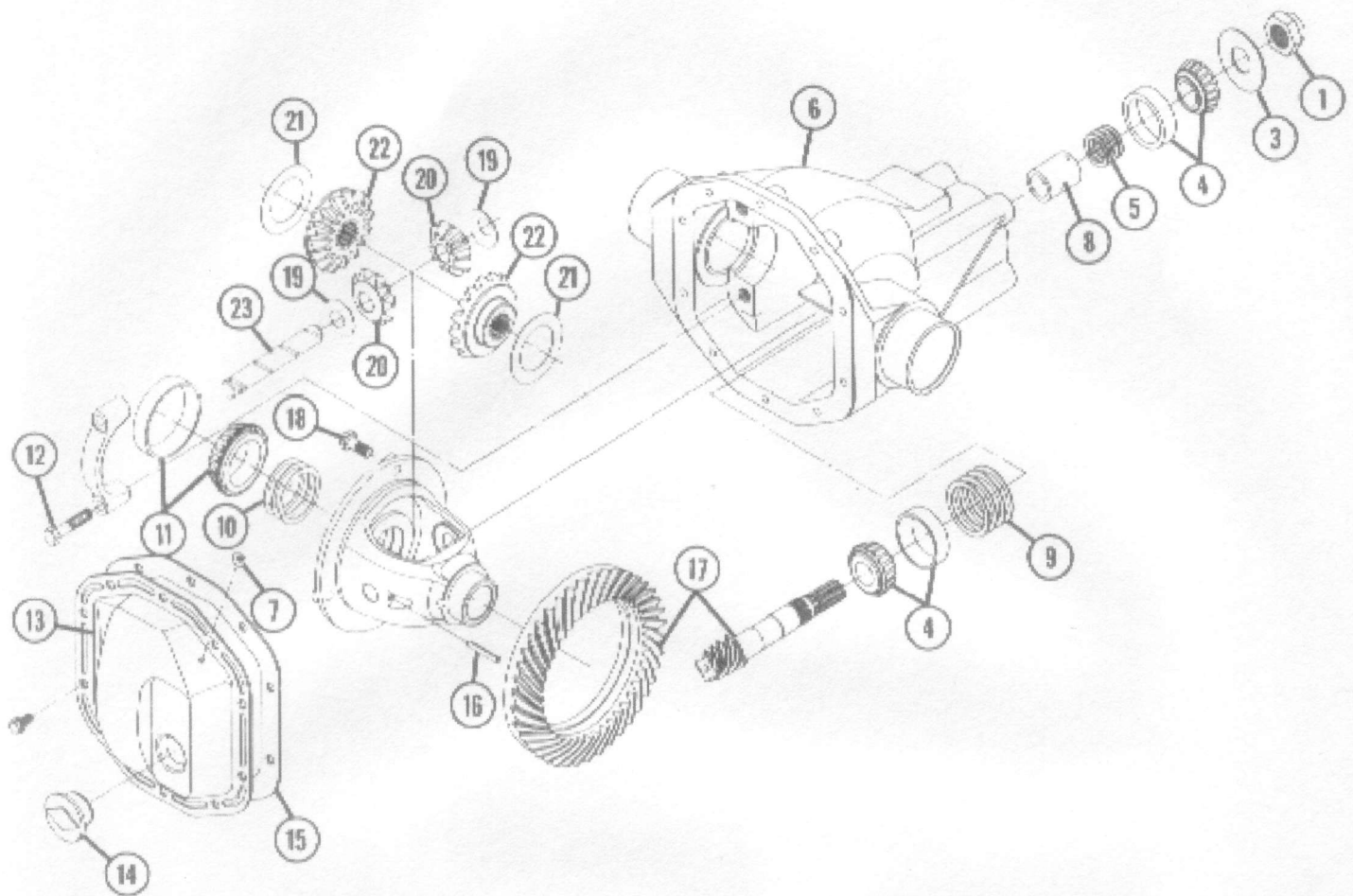


FIGURE 2-6.1, Final Drive Assembly, Brake Group and Rear Wheels

NOTE: PARTS SHOWN ARE TYPICAL ONLY AND MAY NOT BE IDENTICAL TO THE ACTUAL PART

**FIGURE 2-7, Differential Assembly (see Fig. 2-6 as well)
(All Models)**

NOTE: PARTS SHOWN ARE TYPICAL ONLY AND MAY NOT BE IDENTICAL TO THE ACTUAL PART.



ITEM NO.	PART NO.	NAME
1	09-9333	NUT
3	09-9354	SLINGER
4	09-9322	BEARING, Cup and Cone
5	09-9347	SHIM, Front pinion
6		HOUSING, Differential Not Serviced
7	09-9316	PLUG, Vent
8	09-9356	SPACER
9	09-9348	SHIM, Rear pinion shaft set
10	09-9349	SHIM, Set
11	09-9314	BEARING, Cup and cone
12	09-9324	BEARING, Cap bolt
13	09-9321	COVER ASSEMBLY, Differential
14	09-9315	PLUG, Cover
15	09-9317	GASKET, Cover
16	09-9331	PIN, Groove
17	09-9334	PINION & GEAR ASSY, 5.17:1 ratio
18	09-9346	SCREW, Drive gear
19	09-9342	WASHER, Pinion
20	09-9338	PINION MATE
21	09-9353	WASHER, Side gear thrust
22	09-9351	SIDE GEAR
23	09-9340	SHAFT, Pinion mate

Hydraulic Lift and Three Point Hitch Parts List

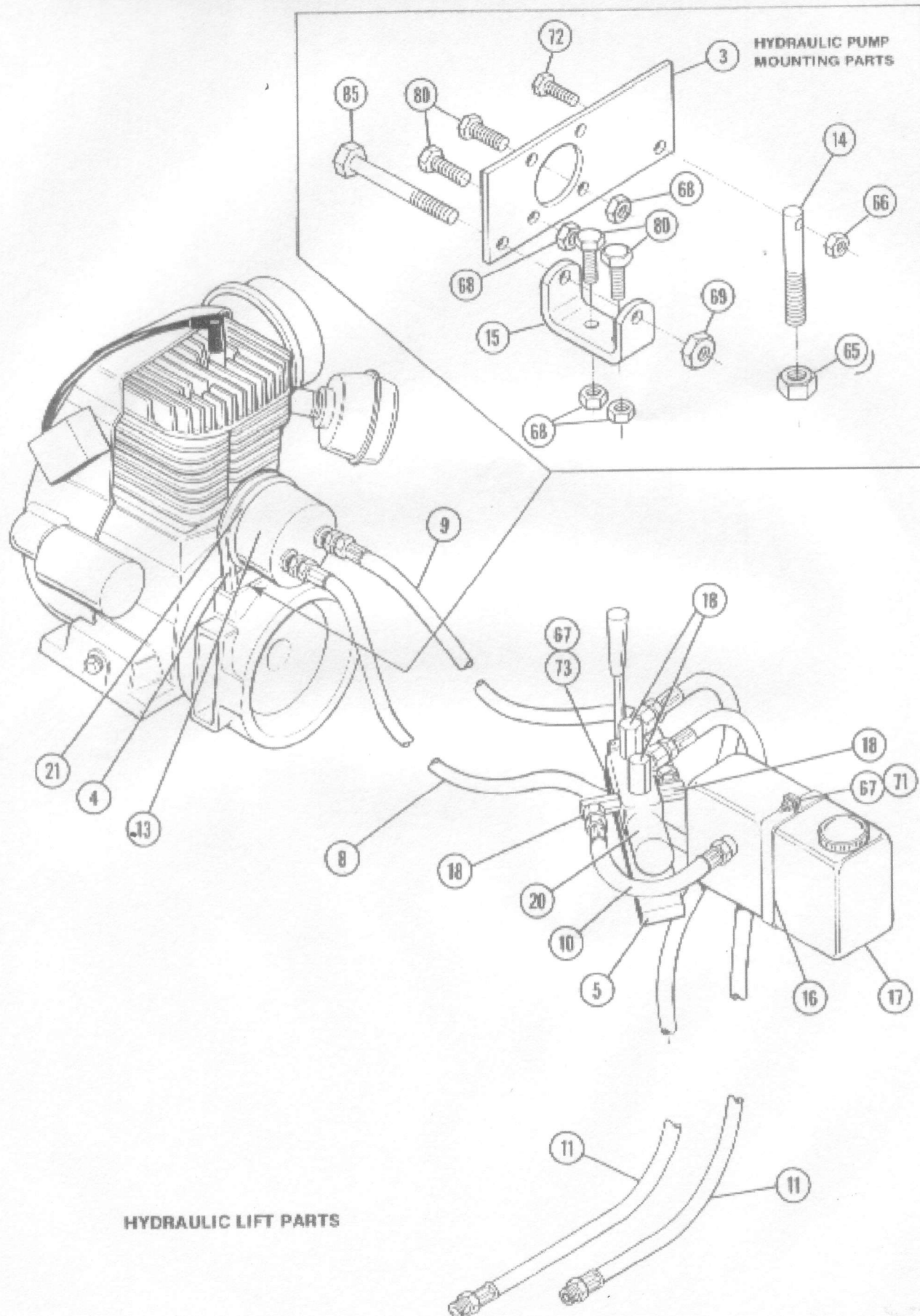
ITEM NO.	PART NO.	NAME	DESCRIPTION
1	15-6700	ARM, Lift assembly	
2	15-2905	LINK, Rotary Mower lift	
3	23-0501	BRACKET, Pump	
4	81-0025	BELT, Pump	
5	23-0504	BRACKET, Valve	1/4" x 2-1/4" x 11-1/8"
6	23-0903	CYLINDER	11" air center, 4" stroke
7	15-0104	PIN, Lynch w/chain	
8	23-2904	HOSE, Tank to pump	3/8" M x 3/8" M x 43"
9	23-2905	HOSE, Pump to valve	3/8" M x 1/4" M x 42"
10	23-2906	HOSE, Valve to cylinder	1/4" M x 3/8" M x 14"
11	23-2907	HOSE, Valve to cyl	1/4" M x 3/8" M x 36"
12	85-2075	KLIPRING, Retainer	3/4 dia.
13	23-6303	PUMP	9/16" diameter shaft
14	84-1001	ROD, Belt tension adjusting	
15	23-7101	BRACKET, Support pump	
16	23-7102	STRAP, Tank hold down	
17	23-7501	TANK, Reservoir	
18	23-7902	FITTING, U. adpt	1/4" M x 1/4" T x 90°
19	35-7103	FITTING	3/8" x 3/8" x 90° Swivel
20	23-8301	VALVE	1000 psi at 1.75 gpm
21	86-0012	PULLEY, Pump	9/16" bore
22	03-2112	FITTING, Grease	
23	15-6705	LIFT, Mower	Weldment
24	15-0105	SHAFT, Mower lift	
25	15-3505	SPACER, Lift arm	
26	15-7501	LINK, Top	w/handle
41	15-4701	BRACKET, Clevis	Weldment
42	15-4709	LINK, Adjusting	Weldment
43	15-4704	KNOB, Side Link	
44	15-4708	BRACKET, Side link	
47	15-0502	MAST, Upper arm	
48	15-1301	DRAWBAR	3 point to drawbar
52	15-0100	LINK, Lift	36"
53	15-0120	LIFT, Weldment	
56	15-0106	ARM, Lower lift	
58	15-0108	CHAIN, Sway	

STANDARD PARTS & HARDWARE

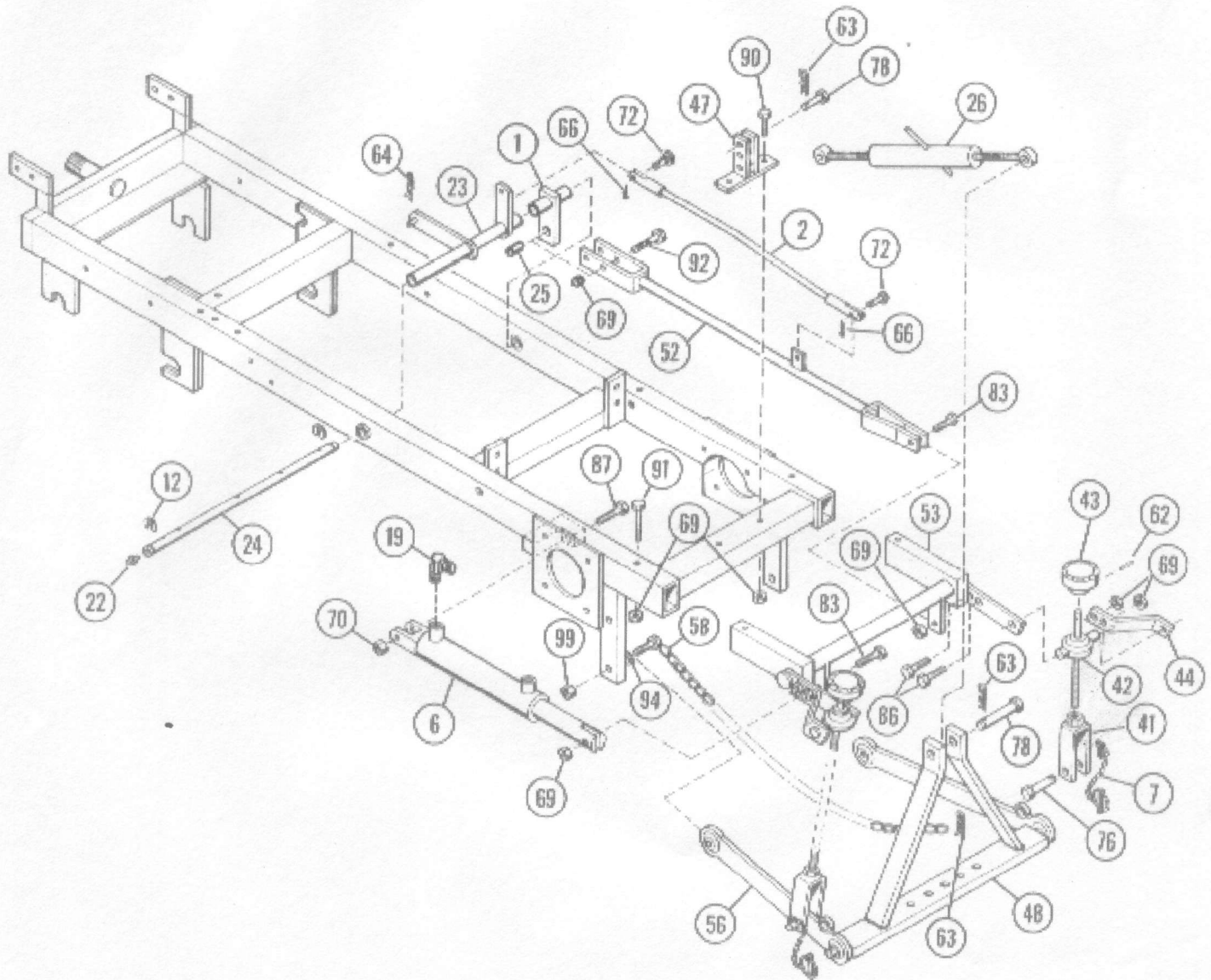
52	84-4009	PIN, Roll	22" x 1-1/4" long
53	84-4031	KEY, Quick change	A9 large
54	84-4032	KEY, Quick change	A11 small
55	84-0050	NUT	1/2" NC
56	84-4013	KEY CUTTER	3/32" dia. x 5/8" lg.
67	84-0010	NUT	1/4" NC Lock
68	84-0110	NUT	3/8" NF Lock
69	84-0120	NUT	7/16" NF Lock
70	84-0130	NUT	1/2" NF Lock
71	84-2360	SCREW, Socket head	1/4" x 1" NC
72	84-4030	CLEVIS PIN	5/16" dia. x 1" lg.
73	84-2035	SCREW, Hex head cap	1/4" NC x 1-1/4"
78	84-1160	BOLT, Blind	5/8" x 2-1/4"
80	84-2110	SCREW, Hex head cap	3/8" NF x 7/8"
83	84-2170	SCREW, Hex head cap	7/16" NF x 1-1/2"
85	84-2223	SCREW, Hex head cap	7/16" NF x 3-3/4"
86	84-2171	SCREW, Hex head cap	7/16" NF x 1-1/4"
87	84-2233	SCREW, Hex head cap	1/2" NF x 2-3/4"
90	84-2200	SCREW, Hex head cap	7/16" NF x 2-1/4"
91	84-2221	SCREW, Hex head cap	7/16" x 2-3/4"
92	84-2180	SCREW Hex Head Cap	7/16" NF x 2"
94	84-3080	WASHER, Lock	5/8"
95	84-0140	NUT, Lock	5/8"

HYDRAULIC SERVICE PARTS (Not illustrated)

23-9021	RING, Snap	Hydraulic cylinder
23-9022	KIT, Cylinder repair	O rings and packings
23-9062	SEAL, Front-Welder pump	



HYDRAULIC LIFT RATCHET LIFT AND THREE POINT HITCH PARTS



POCKETT POWER EQUIPMENT
RT. 171 SO. WOODSTOCK, CT
Tel.: (203) 929-2742
Mon. - Fri. 8 AM to 6 PM
Sat. 9 AM to 5 PM CLOSED SUNDAY

ENGINEERING PRODUCTS CO., INC.

P.O. Box 1510, 2021 MacArthur Road
Waukesha, Wisconsin, 53187

ENGINEERING PRODUCTS CO.

Waukesha, Wisconsin 53186

Model 80 Rotary Mower Owners Manual & Parts List

9/1/79

IMPORTANT

Safe Operation Practices for Mowing with Riding Vehicles

1. Know the controls and how to stop quickly. READ THE OWNER'S MANUAL COMPLETELY.
2. Do not allow children to operate the vehicle. Do not allow adults to operate it without proper instruction.
3. Do not carry passengers. Keep children and pets a safe distance away.
4. Clear the work area of objects which might be picked up and thrown.
5. Disengage all attachment clutches and shift into neutral before attempting to start the engine.
6. Disengage power to mower and stop the engine before leaving the operator's position, or before making any repairs or adjustments.
7. Disengage power to mower when transporting or not in use.
8. Take all possible precautions when leaving the vehicle unattended, such as disengaging the Power Take-Off, lowering the mower, shifting into neutral, setting the parking brake, stopping the engine, and removing the key.
9. Do not stop or start suddenly when going uphill or downhill. Mow up and down the face of steep slopes, never across the face.
10. Reduce speed on slopes and in sharp turns to prevent tipping or loss of control. Exercise extreme caution when changing direction on slopes.
11. Stay alert for holes in the terrain and other hidden hazards.
12. Watch out for traffic when crossing or mowing near roadways.
13. Never direct discharge of material toward bystanders nor allow anyone near the vehicle while in operation.
14. Keep the vehicle and mowers in good operating condition, and keep safety devices in place.
15. Keep all nuts, bolts and screws tight to be sure the equipment is in safe working condition.
16. The vehicle and mower should be stopped and inspected for damage after striking a foreign object, and the damage should be repaired before restarting and operating the equipment.
17. In case of excessive vibration — IMMEDIATELY STOP the vehicle and determine the cause. Correct or repair the problem before proceeding. Continued vibration causes wear and may result in parts failure.
18. Mow only in daylight or in good artificial light.
19. Never make a cutting height adjustment while the engine is running.
20. Shut the engine off when unclogging the discharge chute.
21. Check the blade mounting bolts for proper tightness at frequent intervals.
22. Always look behind when mowing in reverse.
23. Never grasp the edge of the blade housing (deck) or reach under it while the engine is running.
24. Dress properly. Clothing should be free of tears or frayed edges. Wear heavy shoes with steel toes. Wear ear muffs in conditions of excessive noise. Wear a respirator in very dusty conditions.
25. Wear safety glasses or goggles that have tempered or unbreakable lenses when operating dusters, sweepers and blowers or when operator's eyes are exposed to dust or insects.
26. Keep alert. Fatigue, worry, preoccupation, and illness work against safety. Drugs and alcohol impair a person's skill and judgment.
27. Read and review frequently the safety and maintenance schedules.

GENERAL MAINTENANCE

To correct excessive end play (up and down motion) of the pulleys, or sheaves remove the cotter KEY (Item 33 in Parts List and Exploded View of Spindle on back page) which secures the NUT (Item 81) on top of the spindle assembly. Tighten the NUT 1/8 turn at a time until the end play is barely perceptible and yet the spindle turns freely. Re-insert the cotter KEY and bend it over to retain the NUT. If the NUT is tightened too far, back up 1/8 turn and gently tap the spindle SHAFT (Item 75) with a hammer until the spindle again turns freely. When tightening or loosening the NUT, place a block of wood between the mower BLADE (Item 72) and the DECK (Item 1) to prevent rotation. DO NOT HOLD THE BLADE BY HAND.

Initial factory lubrication of the mower spindle assemblies will last for the first 50 hours of operation. Thereafter the spindles should be lubricated after every 50 hours of additional operation with a good wheel bearing grease. The grease FITTINGS (Item 70) are located on each spindle HOUSING (Item 73), underneath the DECK. Be careful not to over fill the spindle since too much grease will expand when hot and freeze the spindle. Also be sure to wipe the FITTING clean before greasing to prevent dirt from being forced into the BEARINGS (Item 76). No other point on this mower is equipped with bearings which need be lubricated, but ROLLER SUPPORT BRACKETS (Item 5) should be oiled occasionally to insure free operation. A light coating of grease or oil on mounting pins and all pivot pins will reduce wear.

REPLACEMENT PARTS

Use only POWER KING Tractor replacement parts and indicate date of purchase of mower to aid in identification when ordering parts. Replacement parts for this mower should be purchased from your local Power King Dealer. They may also be purchased from Engineering Products Company if necessary. (A Service and Handling fee will be applied on all parts orders).

BLADE CARE

Always keep BLADES (Item 72) sharp and NUTS (Item 27) on mounting BOLTS (Item 29) tight. To sharpen, file along original bevel, using care not to file material off the end as the length of the BLADE is important to maintain cutting circle overlap and blade balance for a clean cut. If uncut strips occur between the BLADES, then they probably have been shortened by wear and sharpening, no longer overlap, and will have to be replaced. When sharpening, check balance of the BLADE with a rod or the shank of a screwdriver through the center hole to see if both ends rest evenly. File the heavy side until even.

After each use check for loose bolts, missing Quick Change Pins or Keys. Check mower BLADES for sharpness and to insure they are not loose or bent. Remove accumulated grass clippings from under the DECK, BELT GUARDS (Items 3 and 4), and engine sheet metal shroud on tractor.

Recommended Cutting Practices

1. Read all instructions and familiarize yourself with all controls. Know how to stop and start the tractor and equipment.
2. Check mower carefully to insure that it is properly installed and that all nuts and bolts are tight.
3. Check end tips of blades. Keep them sharp, tight and in balance.
4. Determine the best method of mowing according to size, terrain and obstructions in the lawn.
5. Tractor engine should be operated at 1/2 to full speed when using the mower. Use tractor gears to regulate ground speed, not the clutch or brakes.
6. Most lawns should be mowed to keep the grass 2 to 3 inches high. Cutting the grass high enables you to maintain a green lawn on less water. For extremely tall grass, set cutting height at maximum for the first mowing, then reset to desired height and mow again.

ASSEMBLING AND MOUNTING MOWER ON TRACTOR

Quick Change KEY (Item 25) from BLANK BOLT (Item 24) on ROLLER SUPPORT BRACKET (Item 5). Remove BLANK BOLT and large or lower REAR ROLLER SHAFT BRACKET (Item 15) on ROLLER SUPPORT BRACKET. The lowest hole in the ROLLER SHAFT BRACKET will give a cutting height of approximately 1-7/8". The height may be increased in increments of 3/4 inch from there. Replace BLANK BOLT and small Quick Change KEY.

STEP 2. Attach the DISCHARGE CHUTE GUARD (Item 2) to the left side of the DECK (Item 1) as shown in drawing using 3/8" x 7/8" BOLT (Item 26) and 3/8" NF NUT (Item 27).

STEP 3. After turning the front wheels of the tractor to give maximum working clearance, slide the mower under the tractor. Place the Front Section of the HITCH ASSEMBLY under the Front Hitch Blocks (Vertical slots) of the tractor with the IDLER PULLEYS (Item 49) toward the front of the tractor. Raise the HITCH ASSEMBLY and slide into Front Hitch Blocks. Insert 3/8" x 1-1/2" BLANK BOLT (Item 24) into hole in frame of tractor immediately above the vertical slot in the Hitch Block, through the 1" long SPRING (Item 62), and through the Latch Plate (A) on the HITCH ASSEMBLY. Then put flat side of small Quick Change KEY (Item 25) through the hole near the end of the BLANK BOLT (Item 24).

STEP 4. Connect left LOWER LIFT ARM (Item 46) on HITCH ASSEMBLY to the left FRONT CONNECTION POINT (Item 8) on top, front of MOWER DECK (Item 1) using 5/8" BLANK BOLT (Item 22) and large Quick Change KEY (Item 23). Repeat the procedure for the right LIFT ARM and CONNECTION POINT.

STEP 5. Disconnect the safety chain and electrical wire harness from the Electro-Magnetic Clutch at front of tractor engine. Loop the DRIVE BELT (Item 21) over the clutch pulley (sheave), and reconnect the electrical lead wire harness and safety chain. Position DRIVE BELT in the groove on the underside of the IDLER PULLEYS (Item 49) and around the top groove of the CENTER SPINDLE (Item 7) on the top front of the MOWER DECK (Item 1).

STEP 6. Raise the REAR LIFT (Item 64) section of the HITCH ASSEMBLY and place the bar in the horizontal slots (facing front) of the Rear Hitch Blocks on the tractor frame, with a Hitch Block between each of the arms of the REAR LATCHES (Item 63) located at the ends of the bar. Rotate REAR LATCHES to a horizontal position and insert LATCH RETAINER PIN (Item 68) in holes provided.

STEP 7. Lower rear portion of REAR LIFT WELDMENT (Item 64) so that BLANK BOLT (Item 22) can be inserted through both holes in the clevis arms of the REAR CONNECTOR (Item 66) when they are placed in position on either side of the REAR CONNECTION RING (Item 9) located at front of the center ROLLER SUPPORT BRACKET (Item 5).

STEP 8. When all above connections have been made, insert lugs on Handle in holes at point "B" and rotate toward front of tractor. This will lift entire mowing assembly into cutting position. Lay a line across top of Deck Housing — mower should be slightly higher at front (about 3/16"). Adjust by loosening Locking NUT (Item 67) on REAR CONNECTOR (Item 66) and tightening Retaining NUT (Item 67) on inside of REAR LIFT WELDMENT (Item 64). When properly adjusted, retighten Locking NUT (Item 67) on REAR CONNECTOR.

ITEM NO.	PART NO.	PART NAME	DESCRIPTION
1	60-2501	DECK	Mower, 48"
(1)	60-2502	DECK	Mower, 60"
2	60-2501	GUARD	Discharge chute 48"
(2)	60-25-2	GUARD	Discharge chute 60"
3	60-2503	GUARD	Deck belt 48" left
(3)	60-2513	GUARD	Deck belt 60" left
4	60-2504	GUARD	Deck belt 48" right
(4)	60-2514	GUARD	Deck belt 60" right
5	60-0507	BRACKET	Roller support
6	60-0204	SPINDLE	1 Groove - side
7	60-0203	SPINDLE	3 groove - center
8	60-0512	CONNECTION	Front 48"
(8)	60-0516	CONNECTION	Front 60"
9	60-0513	CONNECTION	Rear
10	60-4911	CHAIN	Lift 5 links
11	60-0509	BRACKET	Idler pulley
12	86-0061	PULLEY	Idler
13	83-0205	SPRING	Tension 5 lg.
14	84-1001	ROD	Belt tension adjusting
15	60-0506	BRACKET	Rear roller shaft
16	60-7105	SHAFT	Rear roller 48"
(16)	60-7106	SHAFT	Rear roller 60"
17	83-0035	SPACER	1" x 3/4" x 3-1/2" lg.
18	60-6701	ROLLER	Pusher
19	60-0518	BRACKET	Idler tension adjusting 48"
(19)	60-0517	BRACKET	Idler tension adjusting 60"
20	81-0294	BELT	Deck crossbelt, 48"
(20)	81-0111	BELT	Deck crossbelt, 60"

STEP 9 Insert lugs on handle (Item 58) in the two lowest holes of the IDLER LINK

PULLEYS (Item 49); pull Handle toward front of tractor so that the bottom hole in the Right Handle Pin Bracket (welded to opposite end of IDLER LINK ARM) is aligned with hole in the Idler Arm of the HITCH WELDMENT (Item 44). Secure with 3/8" x 1-1/2" BLANK BOLT (Item 24) inserted from the inside of the HITCH ASSEMBLY so that Quick Change PIN is on the outside when the flat side is inserted through hole end of BLANK BOLT. This will apply tension to the DRIVE BELT so that power supplied by the engine through the Electro-Magnetic Clutch (Operated by a switch on the dashboard of the tractor) can be transferred to the mower spindles. Tension on the belt should be as low as possible without slippage to ensure longer belt life. A belt with no tension at all, however, will jump out of the grooves on the IDLER PULLEYS. To adjust the tension on the DRIVE BELT (Item 21), tighten or loosen the double 1/2" NUTS (Item 32) on the ADJUSTING ROD (Item 67) located just above the right hand IDLER PULLEY (5 shown).

STEP 10. Attach the LIFT CHAIN (Item 10) to the lift arm on the tractor located just above the LIFT CHAIN when Mower DECK is in proper position. When Lift Arm is operated, the Mower DECK will raise remaining level to very nearly its uppermost position for longer distance transporting or for rough cutting grass or weeds at heights above those provided by the REAR ROLLER.

REMOVING MOWER FROM TRACTOR

STEP 1. Disconnect LIFT CHAIN (Item 10) from tractor Lift Arm.

STEP 2. Insert lugs on handle in two lowest holes of the IDLER LINK ARM (Item 48) and pull Handle toward front to relieve pressure on BLANK BOLT (Item 24) in the Idler Pin Bracket. Remove Quick Change KEY and pull out BLANK BOLT. Allow Handle to move to rear of tractor. Detach Handle when all pressure from belt tension has been relieved.

STEP 3. Disconnect the Electromagnetic Clutch safety chain and electrical lead wire harness and remove DRIVE BELT (Item 21) from clutch grooves at front of any of IDLER PULLEYS (Item 49) and upper groove of CENTER SPINDLE (Item 7) on top of MOWER DECK (Item 1). Reconnect safety chain and electrical lead wire harness on the electro-magnetic clutch.

STEP 4. Lower the Mower DECK to removal position by inserting lugs on Handle into holes in Weldment Arm and rotating Handle to rear of tractor.

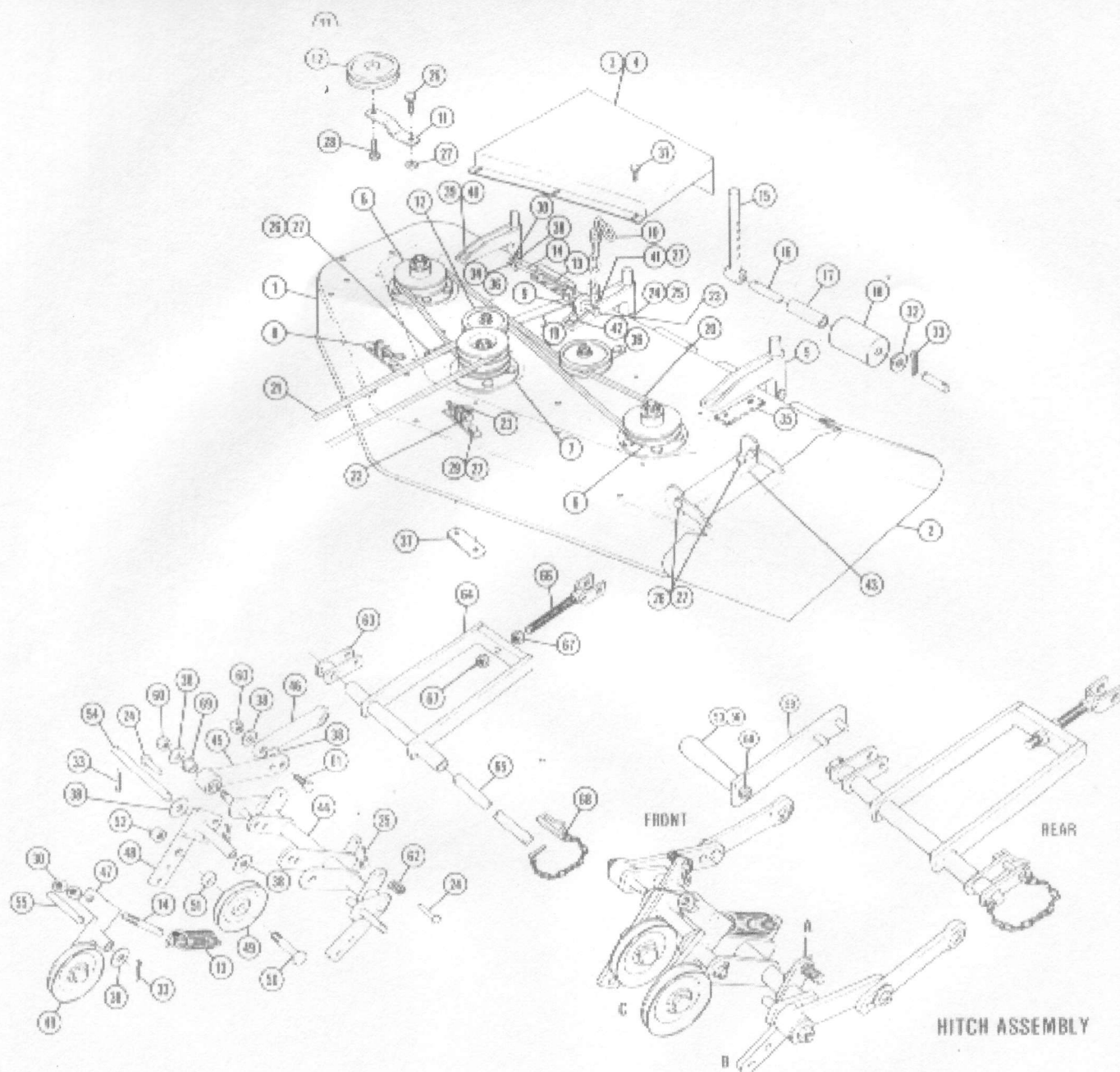
STEP 5. Remove Quick Change KEYS and BLANK BOLTS from front and rear CONNECTION POINTS (Items 8 and 9) on top of Mower DECK. Reinsert BOLTS KEYS in vacated holes to prevent accidental misplacement.

STEP 6. Disconnect LATCH RETAINING PINS (Items 68) and remove REAR LIFT ASSEMBLY (Item 64) at all from Rear Hitch Blocks on Tractor frame.

STEP 7. Slide Mower DECK out from under tractor.

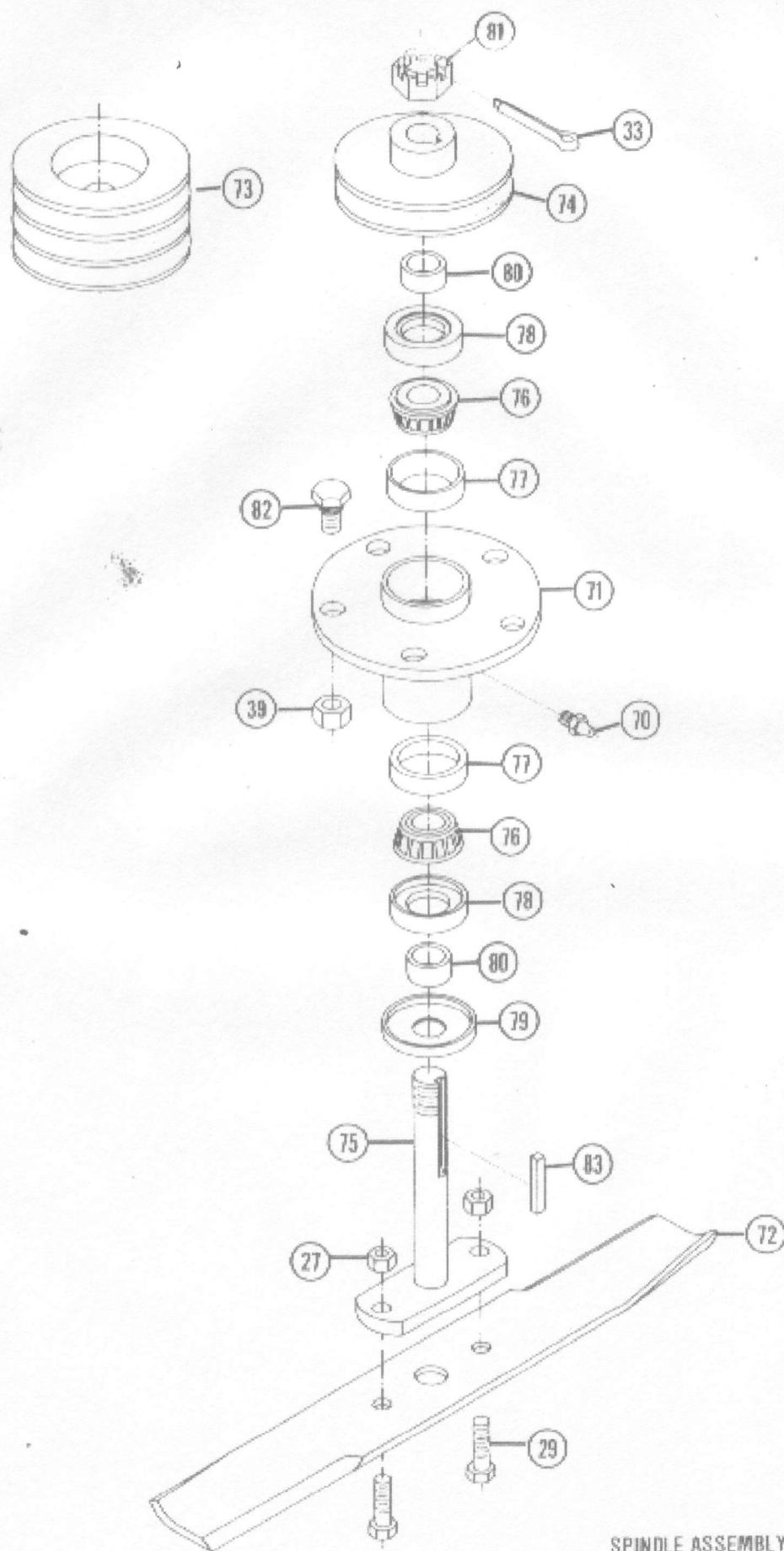
STEP 8. Detach Quick Change KEYS (Item 25) and pull out BLANK BOLT (Item 24) from SPRING (Item 62) and Latch Plate (A) on HITCH ASSEMBLY. Remove front section of HITCH ASSEMBLY from front Hitch Blocks on frame of Tractor.

ITEM NO.	PART NO.	PART NAME	DESCRIPTION
21	81-0085	BELT	Drive, 48"
(21)	81-0089	BELT	Drive, 60"
22	84-1170	BOLT	5/8" x 2-1/4" blank
23	84-4031	KEY	Quick change, large
24	84-1101	BOLT	3/8" x 1-1/2" blank
25	84-4032	KEY	Quick change, small
26	84-2110	BOLT	3/8" NF x 7/8" NF
27	84-0110	NUT	3/8" NF hex lock
28	84-2111	BOLT	3/8" NF x 1-3/4" HHC
29	84-2120	BOLT	3/8" NF x 1-1/4" HHC
30	84-0050	NUT	1/2" NC hex
31	84-2370	SCREW	1/4" - 14 x 3/8" steel metal
32	84-3070	WASHER	3/4" flat
33	84-4020	KEY	5/32" x 1-1/2" cotter
34	84-1000	EYEBOLT	3/8" NC x 1"
35	60-6300	PLATE	Reinforcing
36	84-0040	NUT	3/8" NC hex lock
37	60-0500	BRACKET	Support
38	84-3051	WASHER	1/2" flat
39	84-0120	NUT	7/16" NF hex lock
40	84-2117	BOLT	7/16" NF x 1-1/4" lg. HHC 14 reg. on 48", 5 reg. on 60"
41	84-2151	BOLT	3/8" NF x 2-1/2" 148 only
42	84-2102	BOLT	3/8" NC x 2" 148 only
(42)	84-2120	BOLT	3/8" NF x 1-1/4" HHC 160 only, 3 reg.
43	60-0511	BRACKET	Discharge chute support
44	60-0501	WELDMENT	Hitch
45	60-0504	LIFT ARM	Upper



ITEM NO.	PART NO.	PART NAME	DESCRIPTION
46	60-0626	LIFT ARM	Lower
47	60-0620	IDLER SUPPORT	Weldment
48	60-0620	IDLER LINK	Weldment
49	60-0620	PULLEY	Idler
50	64-1041	BOLT	5/8" NF x 2-1/4" H-C
51	83-1023	SPACER	1" x 5/8" x 3-1/8" hard
52	84-0140	NUT	5/8" NF hex lock
53	03-4105	KNOB	Shift lever, rubber
54	60-0607	ROD	1/2" dia. x 5-5/16" long
55	60-0605	ROD	1/2" dia. x 3-3/16" long
56	60-0615	ROD (Handle)	1/2" dia. x 4-5/8" long
59	60-0614	WELDMENT	Handle
60	84-0130	NUT	1/2" NF hex lock
61	84-1171	BOLT	1/2" NF x 1-1/2" long
62	03-0124	SPRING	Compression, 1" long
63	60-0610	REAR LATCH	Weldment
64	60-0611	REAR LIFT	Weldment
65	60-0608	SHAFT	3/4" x 14-5/8" long
66	60-0609	REAR CONNECTOR	Weldment

ITEM NO.	PART NO.	PART NAME	DESCRIPTION
67	84-0861	NUT	5/8" NC hex
68	84-4015	KEY	Latch retaining
69	60-0606	BUSHING	0.185
70	03-2102	FITTING	1/4" - 28 Short grease
71	60-2901	HOUSING	Spindle
72	60-4301	BLADE	48" Deck
73	60-7101	PULLEY (Sprocket)	3 Groove, center
74	60-7102	PULLEY (Sprocket)	1 Groove, side (R or L)
75	60-7104	SHAFT	Spindle
76	80-0026	CONE	Bearing
77	80-0027	CUP	Bearing
78	82-0101	SEAL	Neoprene
79	82-0922	CAP	Just - 2-3/16" x 3/4" x 1/4"
80	83-0021	SPACER	Spindle - 1" x 3/4" x 1/2"
81	84-0073	NUT	3/4" NF hex slotted
82	84-0170	NUT	7/16" NF hex wheel
83	84-0012	KEY	3/16" sq x 1-7/16" long



SPINDLE ASSEMBLY

NOTE: NEW BRAKE SYSTEM.
SEE SUPPLEMENT FOR
PARTS AND ADJUSTMENT.

**FOOT BRAKE
SUPPLEMENT TO
POWER KING TRACTOR
OWNER'S MANUAL
for
Models 2418, 2416, 2414,
1618, 1616 and 1614**

The brake system on each Power King Tractor has been pre-adjusted at the factory for maximum braking efficiency. Adjustments may be made, however, if necessary. The tractor is equipped with individually controlled brakes mounted on the drive axle at the rear. Referring to the drawing on the opposite side of this sheet, the brake for each rear wheel should be adjusted separately as follows:

1. Free the CLEVIS (Item 14) at the rear end of the brake ROD (Item 24) by loosening the NUT (Item 11A) located just forward of the CLEVIS itself.
2. Tighten the other NUT (Item 11B) located inside the CLEVIS, just behind the SPRING (Item 7) until the brake band is tight on the brake drum.

3. Then tighten the NUT (Item 11A) just forward of the CLEVIS against the CLEVIS itself until the SPRING is compressed to approximately 2-1/4" long.

4. Follow the same procedure for the brake on the other side of the tractor.

To check brake adjustment, depress one of the pedals. There should be approximately 1/2" of free travel on the pedal before resistance is encountered. This means the brake bands are tight on the drum and the tractor will quickly begin to stop its travel motion. The pedal may be depressed another 3 to 4 inches but little or no additional pressure will be brought to bear on the drum which is protected by the compression of the override spring.

FORKOUT POWER EQUIPMENT
RT. 177 - SO. BETHLEHEM, PA.
Tel. (202) 528-2743
Mon. - Fri. 9AM - 5PM
Sat. 9AM - 1PM CLOSURE SUNDAY

**Supplement to
FIGURE 1-2, Frame, Foot Brake Linkage
Serial Number 55661-**

ITEM NO.	PART NO.	NAME	DESCRIPTION	ITEM NO.	PART NO.	NAME	DESCRIPTION
1	03-0533	BUMPER, Steel Formed		16	84-0010	NUT, Hex Lock	1/4" NC
2	09-0015	BRACKET, Engine	Kohler Pair R & L	17	84-4013	KEY, Cotter 3/32" dia	5/8" long
3	01-0207	FRAME ASSEMBLY		18	84-4003	PIN, Drive, 7/32" dia	1" long
4	01-5317	SHAFT, Foot Brake	15-5/8" Hyc. Ltr.	19	84-0100	NUT, Hex Lock	5/16" NF
5	01-5720	PEDAL, Foot Brake, Right		20	84-3037	WASHER, Flat	3/8" SAF
6	01-5721	PEDAL, Foot Brake, Left		21	84-2050	SCREW, Hex hd Cap	1/4" NC x 1-1/2" lg
7	83-1032	SPRING, Compression	2-3/4" long	22	01-5716	SHAFT, Brake Actuating	Left
8	84-4041	PIN, Brake Lock		23	01-0134	ARM, Brake	2-19/64" long
9	84-4008	PIN, Roll, 7/32" dia	1-1/4" long	24	01-7546	ROD, Brake	25" long
10	84-0130	NUT, Hex Lock	1/2" NF	25	84-4000	PIN, Drive, 7/32" dia	1-1/4" long
11	84-0110	NUT, Hex Lock	3/8" NF	26	83-1031	SPRING, Brake Return	
12	01-0065	LOCK CONTROL, Parking Brake w/knob		27	80-9053	BUSHING, Oilite	3/4" OD x 1/2" ID
13	01-2915	SLIDING ADAPTOR, Parking Brake		28	03-4100	KNOB, Parking Brake Lock Control	
14	01-2510	CLEVIS, Brake	5-5/8" long	29	03-6925	PAD, Grt.	
15	01-5717	SHAFT, Brake Actuating	Right				

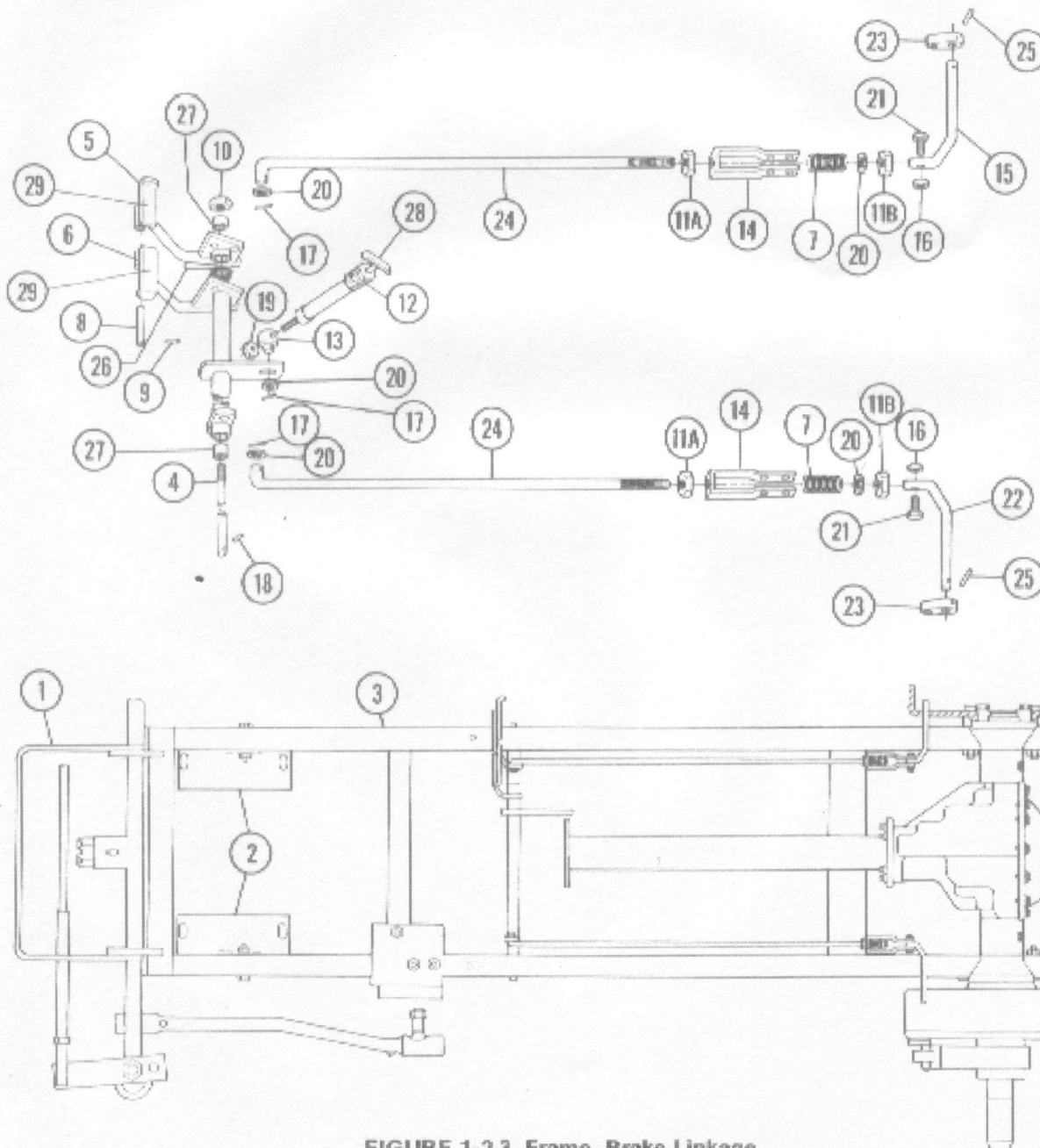


FIGURE 1-2.3, Frame, Brake Linkage

ENGINEERING PRODUCTS CO.

Waukesha, Wisconsin 53186

9/1/73

Spring Trip Bulldozer/Snow Plow for Economy Tractors

ASSEMBLY INSTRUCTIONS:

Step #1. Remove Assemblies from carton; blade assembly (1 & 3) and the Tongue and lift assembly (2 & 4).

Step #2. Attach the swivel assembly to the blade assembly with two (Item #28) socket head cap screws (requires 5/16" Allen wrench).

Step #3. Attach large springs (Item #12) to top edge of blade in the holes provided with open end of hooks up. Insert the other end of these springs through the hole in the end of the tensioning rods, (Item #14). Insert this rod through the angle straps on the side of the swivel bracket (hole A). Place 1/2" (Item #29) washer over the threaded end of the shaft, then the two 1/2" nuts (Item #21). Tighten nuts down as far as possible, and wrench together to lock in place. Install two 7/16 x 3 (Item #17) blank bolts & (Item #18) large quick change key through holes in blade & swivel bracket at (G).

Step #4. Bolt lift arm link (Item #8) to tongue at (H). Use end hole for PK and middle hole for JD.

Mounting to Tractor.

Step #1. Slide assembled unit under tractor. Raise the rear round cross shaft into the slots in hitch blocks at (B). Raise the front round cross shaft into the front hitch blocks at (C). Insert quick change bolts (Item #16) through the hole in the latches, then the hole in the upper portion of the hitch blocks. Insert small quick change key (Item #20) through the hole in the end of the quick change bolt. Do this for both sides.

Step #2. Attach hole end (end hole for JD, 2nd hole for PK) of lift link SPL-2D (Item #8) to the bottom (or center) hole in the arm of the lift assembly at (D), using an SS-12 Screw (Item #26) and Nut (Item #22). With the arm at (E) as far toward the rear of the tractor as possible, connect the other end of the lift link in the hole at the bottom of the arm using the 7/16 x 3 Blank bolt (Item #17) and key (Item #18).

Step #3. Connect starter rope supplied with tractor to the welded washer at (F). Run the rope underneath and to one side of the tractor so that it can be wrapped around the shift lever of the tractor.

Step #4. Adjustment of the Ratchet Lift assist spring to carry some of the load will reduce lift effort (see Ratchet Lift Parts List).

OPERATION

1) The swivel bracket (Item #3) is designed to provide a forward tilt to the blade, a rolling action in snow. This forward tilt also permits the trip mechanism to operate more efficiently. By removing the two 7/16 x 3 Blank bolts from the blocks at (G) the blade is permitted to trip. With these bolts installed, the trip mechanism is locked out of operation.

2) Angulation: The blade may be locked into any one of the several operating angle positions by pulling on the rope attached to the SPL-7 latch (Item #10) until the swivel bracket is released, and pushing the blade with the tractor against some object until the desired angle setting is achieved.

3) Lift Effort and Height. Varying combinations of blade lift and lift effort are obtainable by varying assist spring tension on hand lift equipment tractors, or hole selections at D & E.

4) Cutting Edge Knife SPK-1E (Item #6) is reversible simply by removing the screws and nuts which attach it to the blade and turning it top for bottom.

5) Occasionally check bolted connections to insure that nuts or bolts have not loosened and are in danger of being lost.

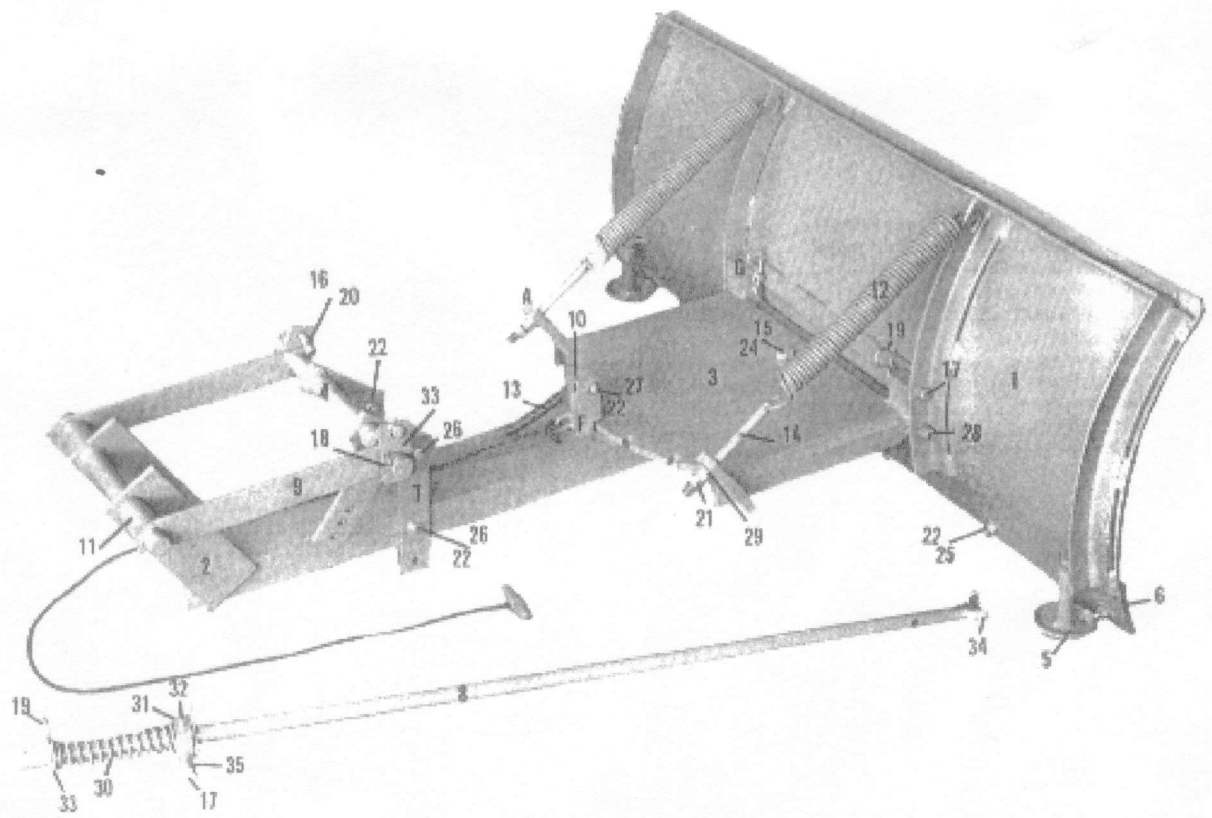
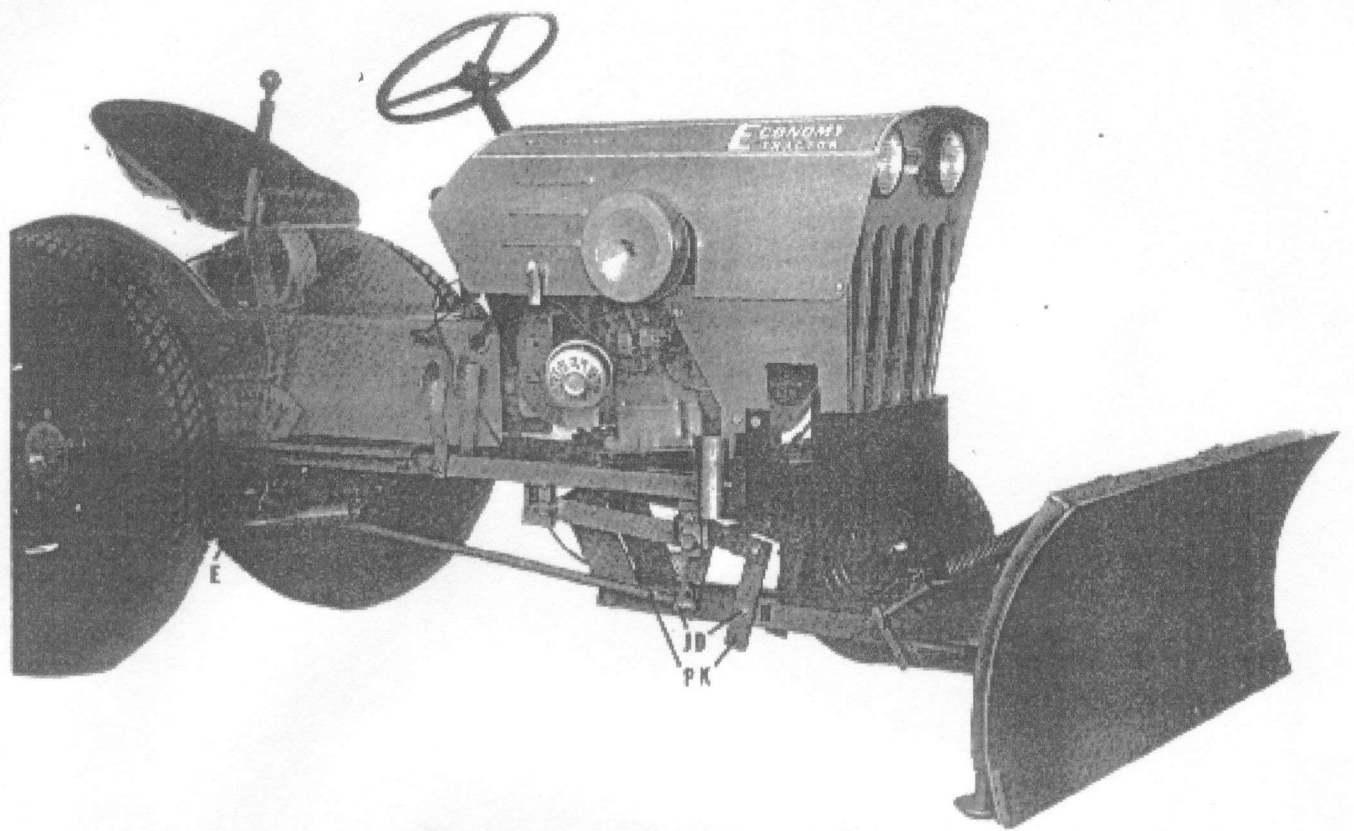
6) Do not use Bulldozer/Snowplow as a battering ram.

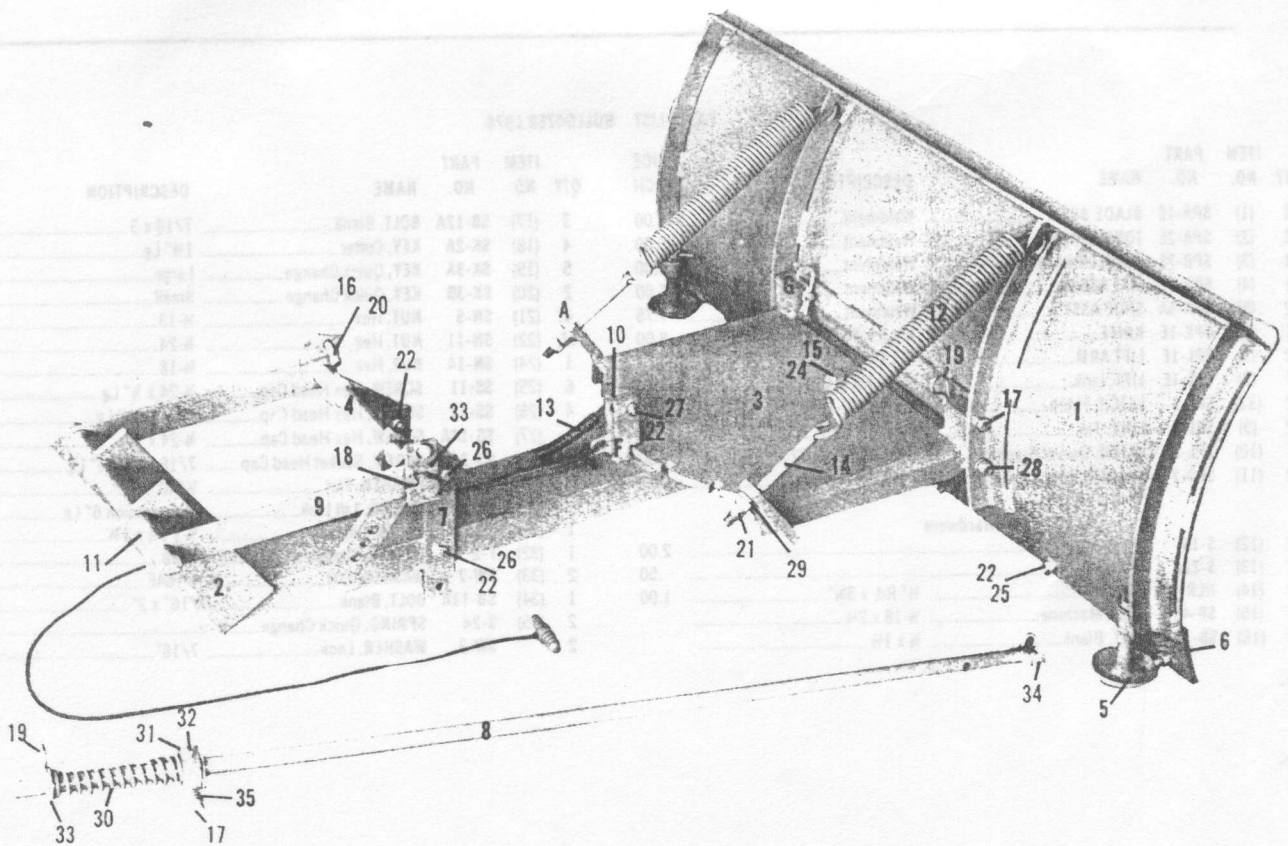
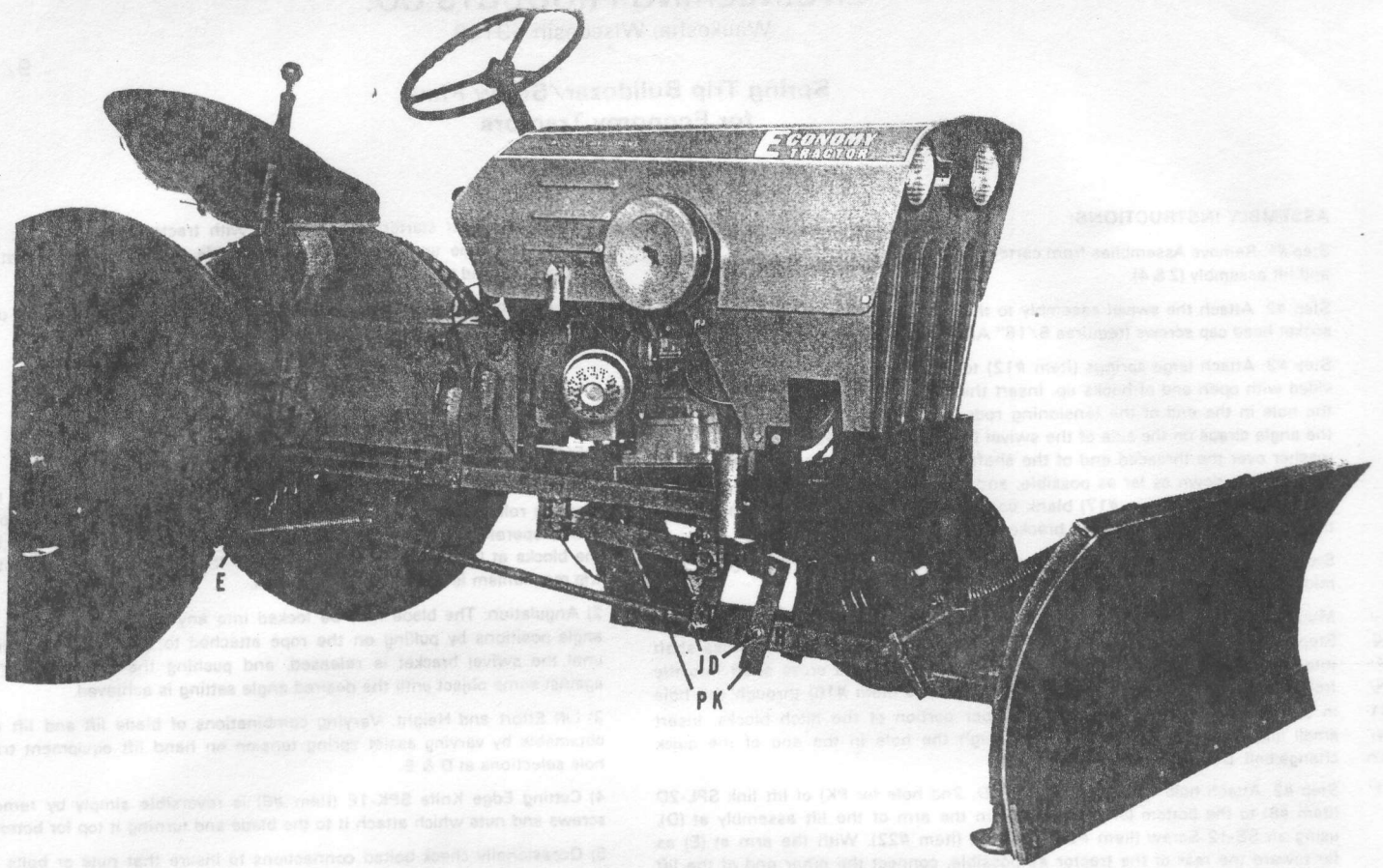
PARTS LIST BULLDOZER 1974

QTY.	ITEM NO.	PART NO.	NAME	DESCRIPTION	PRICE EACH	QTY.	ITEM NO.	PART NO.	NAME	DESCRIPTION	PRICE EACH
1	[1]	SPA-1E	BLADE ASSY.	Weldment	\$40.00	3	[17]	SB-12A	BOLT, Blank	7/16 x 3	
1	[2]	SPA-2E	TONGUE ASSY.	Weldment	35.00	4	[18]	SK-2A	KEY, Center	1 1/2" Lg.	
1	[3]	SPB-7E	SWIVEL BRACKET ASSY.	Weldment	40.00	5	[19]	SK-3A	KEY, Quick Change	Large	
1	[4]	SPA-3E	LIFT ASSY.	Weldment	5.00	2	[20]	SK-3B	KEY, Quick Change	Small	
2	[5]	SPA-5A	SHOE ASSY.	Weldment	1.75	4	[21]	SN-5	NUT, Hex	1/2-13	
1	[6]	SPK-1E	KNIFE	1/4 x 3 x 4 7/8	8.00	11	[22]	SN-11	NUT, Hex	1/2-24	
2	[7]	SPL-1E	LIFT ARM	1/4 x 1 1/4 x 7 1/2	1.50	1	[24]	SN-14	NUT, Hex	1/2-18	
1	[8]	SBL-1E	LIFT, Link	1/4 Rd. HR x 45 1/2" Lg.	3.00	6	[25]	SS-11	SCREW, Hex Head Cap	1/4-24 x 1/2" Lg.	
2	[33]	SPL-5	LATCH, Hitch	1/4 x 1 1/4 x 2-15/16" Lg.	1.00	4	[26]	SS-12	SCREW, Hex Head Cap	1/4-24 x 1 1/4" Lg.	
2	[9]	SPL-6	LINK, Tie	1/4 x 1 1/4 x 13 1/2	1.10	1	[27]	SS-14A	SCREW, Hex Head Cap	1/4-24 x 1 1/2" Lg.	
1	[10]	SPL-7	LATCH, Swivel Bracket	1/4 x 1 1/4 x 2-31/32	1.00	2	[28]	SS-24	SCREW, Socket Head Cap	7/16-20 x 1 1/2" Lg.	
2	[11]	SPS-2	SPACER, Rear Shaft	1" Pipe x 2 1/2" Lg.	.80	2	[29]	SW-6A	WASHER, Flat	1/2" ID SAE	
Hardware						1	[30]	CS-24	SPRING, Lift Link	Compression 6" Lg.	.40
2	[12]	S-15	SPRING		2.00	1	[31]	CB-5B	BLOCK, Lift Link	1/4 x 1 1/4 x 1 1/4	1.30
1	[13]	S-22A	SPRING		.50	1	[32]	F-2	FITTING, Grease	1/4-28	
2	[14]	HLR-1	ROD	1/2" Rd. x 3 1/2"	1.00	2	[33]	SW-7	WASHER, Flat	1/2" SAE	
1	[15]	SB-4B	BOLT, Machine	1/2-18 x 2 1/2		1	[34]	SB-11A	BOLT, Blank	7/16" x 2"	
2	[16]	SB-10A	BOLT, Blank	1/2-16		2	[35]	S-24	SPRING, Quick Change		
								SW-3	WASHER, Lock	7/16"	

See Tractor List for Prices

Order Parts by Part Number and Description, NOT by Item Number





Order Parts by Part Number and Description, NOT by Item Number

ENGINEERING PRODUCTS CO.
Waukesha, Wisconsin 53186

9/1/73

**Spring Trip Bulldozer/Snow Plow
for Economy Tractors**

ASSEMBLY INSTRUCTIONS:

Step #1. Remove Assemblies from carton; blade assembly (1 & 3) and the Tongue and lift assembly (2 & 4).

Step #2. Attach the swivel assembly to the blade assembly with two (Item #28) socket head cap screws (requires 5/16" Allen wrench).

Step #3. Attach large springs (Item #12) to top edge of blade in the holes provided with open end of hooks up. Insert the other end of these springs through the hole in the end of the tensioning rods, (Item #14). Insert this rod through the angle straps on the side of the swivel bracket (hole A). Place 1/2" (Item #29) washer over the threaded end of the shaft, then the two 1/2" nuts (Item #21). Tighten nuts down as far as possible, and wrench together to lock in place. Install two 7/16 x 3 (Item #17) blank bolts & (Item #19) large quick change key through holes in blade & swivel bracket at (G).

Step #4. Bolt lift arm link (Item #8) to tongue at (H). Use end hole for PK and middle hole for JD.

Mounting to Tractor.

Step #1. Slide assembled unit under tractor. Raise the rear round cross shaft into the slots in hitch blocks at (B). Raise the front round cross shaft into the front hitch blocks at (C). Insert quick change bolts (Item #16) through the hole in the latches, then the hole in the upper portion of the hitch blocks. Insert small quick change key (Item #20) through the hole in the end of the quick change bolt. Do this for both sides.

Step #2. Attach hole end (end hole for JD, 2nd hole for PK) of lift link SPL-2D (Item #8) to the bottom (or center) hole in the arm of the lift assembly at (D), using an SS-12 Screw (Item #26) and Nut (Item #22). With the arm at (E) as far toward the rear of the tractor as possible, connect the other end of the lift link in the hole at the bottom of the arm using the 7/16 x 3 Blank bolt (Item #17) and key (Item #19).

Step #3. Connect starter rope supplied with tractor to the welded washer at (F). Run the rope underneath and to one side of the tractor so that it can be wrapped around the shift lever of the tractor.

Step #4. Adjustment of the Ratchet Lift assist spring to carry some of the load will reduce lift effort (see Ratchet Lift Parts List).

OPERATION

1) The swivel bracket (Item #3) is designed to provide a forward tilt to the blade, a rolling action in snow. This forward tilt also permits the trip mechanism to operate more efficiently. By removing the two 7/16 x 3 Blank bolts from the blocks at (G) the blade is permitted to trip. With these bolts installed, the trip mechanism is locked out of operation.

2) Angulation: The blade may be locked into any one of the several operating angle positions by pulling on the rope attached to the SPL-7 latch (Item #10) until the swivel bracket is released, and pushing the blade with the tractor against some object until the desired angle setting is achieved.

3) Lift Effort and Height. Varying combinations of blade lift and lift effort are obtainable by varying assist spring tension on hand lift equipment tractors, or hole selections at D & E.

4) Cutting Edge Knife SPK-1E (Item #6) is reversible simply by removing the screws and nuts which attach it to the blade and turning it top for bottom.

5) Occasionally check bolted connections to insure that nuts or bolts have not loosened and are in danger of being lost.

6) Do not use Bulldozer/Snowplow as a battering ram.

PARTS LIST BULLDOZER 1974

ITEM QTY.	PART NO.	NAME	DESCRIPTION	PRICE EACH	ITEM QTY.	PART NO.	NAME	DESCRIPTION	PRICE EACH		
1	(1)	SPA-1E	BLADE ASSY.	Weldment.....	\$40.00	3	(17)	SB-12A	BOLT, Blank.....	7/16 x 3	
1	(2)	SPA-2E	TONGUE ASSY.	Weldment.....	35.00	4	(18)	SK-2A	KEY, Cotter.....	1½" Lg.....	
1	(3)	SPB-7E	SWIVEL BRACKET ASSY.	Weldment.....	40.00	5	(19)	SK-3A	KEY, Quick Change.....	Large.....	
1	(4)	SPA-3E	LIFT ASSY.	Weldment.....	5.00	2	(20)	SK-3B	KEY, Quick Change.....	Small.....	
2	(5)	SPA-5A	SHOE ASSY.	Weldment.....	1.75	4	(21)	SN-5	NUT, Hex.....	½-13.....	
1	(6)	SPK-1E	KNIFE.....	¾ x 3 x 47½.....	8.00	11	(22)	SN-11	NUT, Hex.....	¾-24.....	
2	(7)	SPL-1E	LIFT ARM.....	¾ x 1½ x 7½.....	1.50	1	(24)	SN-14	NUT, Hex.....	¾-18.....	
1	(8)	SBL-1E	LIFT, Link.....	¾ Rd. HR x 46¾" Lg.....	3.00	6	(25)	SS-11	SCREW, Hex Head Cap.....	¾-24 x ¾" Lg.....	
2	(33)	SPL-5	LATCH, Hitch.....	¼ x 1½ x 2-15/16" Lg.....	1.00	4	(26)	SS-12	SCREW, Hex Head Cap.....	¾-24 x 1¼" Lg.....	
2	(9)	SPL-6	LINK, Tie.....	¼ x 1½ x 13½.....	1.10	1	(27)	SS-14A	SCREW, Hex Head Cap.....	¾-24 x 1½.....	
1	(10)	SPL-7	LATCH, Swivel Bracket.....	½ x 1½ x 2-31/32.....	1.00	2	(28)	SS-24	SCREW, Socket Head Cap.....	7/16-20 x 1½" Lg.....	
2	(11)	SPS-2	SPACER, Rear Shaft.....	1" Pipe x 2½" Lg.....	.80	2	(29)	SW-6A	WASHER, Flat.....	½" ID SAE.....	
Hardware					1	(30)	CS-24	SPRING, Lift Link.....	Compression 6" Lg.....	.40	
2	(12)	S-15	SPRING.....		2.00	1	(31)	CB-5B	BLOCK, Lift Link.....	¾ x 1½ x 1½.....	1.30
1	(13)	S-22A	SPRING.....		.50	1	(32)	F-2	FITTING, Grease.....	¼-28.....	
2	(14)	HLR-1	ROD.....	½" Rd. x 3¾".....	1.00	2	(33)	SW-7	WASHER, Flat.....	¾" SAE.....	
1	(15)	SB-4B	BOLT, Machine.....	¾-18 x 2¼.....		1	(34)	SB-11A	BOLT, Blank.....	7/16" x 2".....	
2	(16)	SB-10A	BOLT, Blank.....	¾ x 1½.....		2	(35)	S-24	SPRING, Quick Change.....		
						2		SW-3	WASHER, Lock.....	7/16".....	

See Tractor List for Prices

See Tractor List for Prices

Order Parts by Part Number and Description, NOT by Item Number