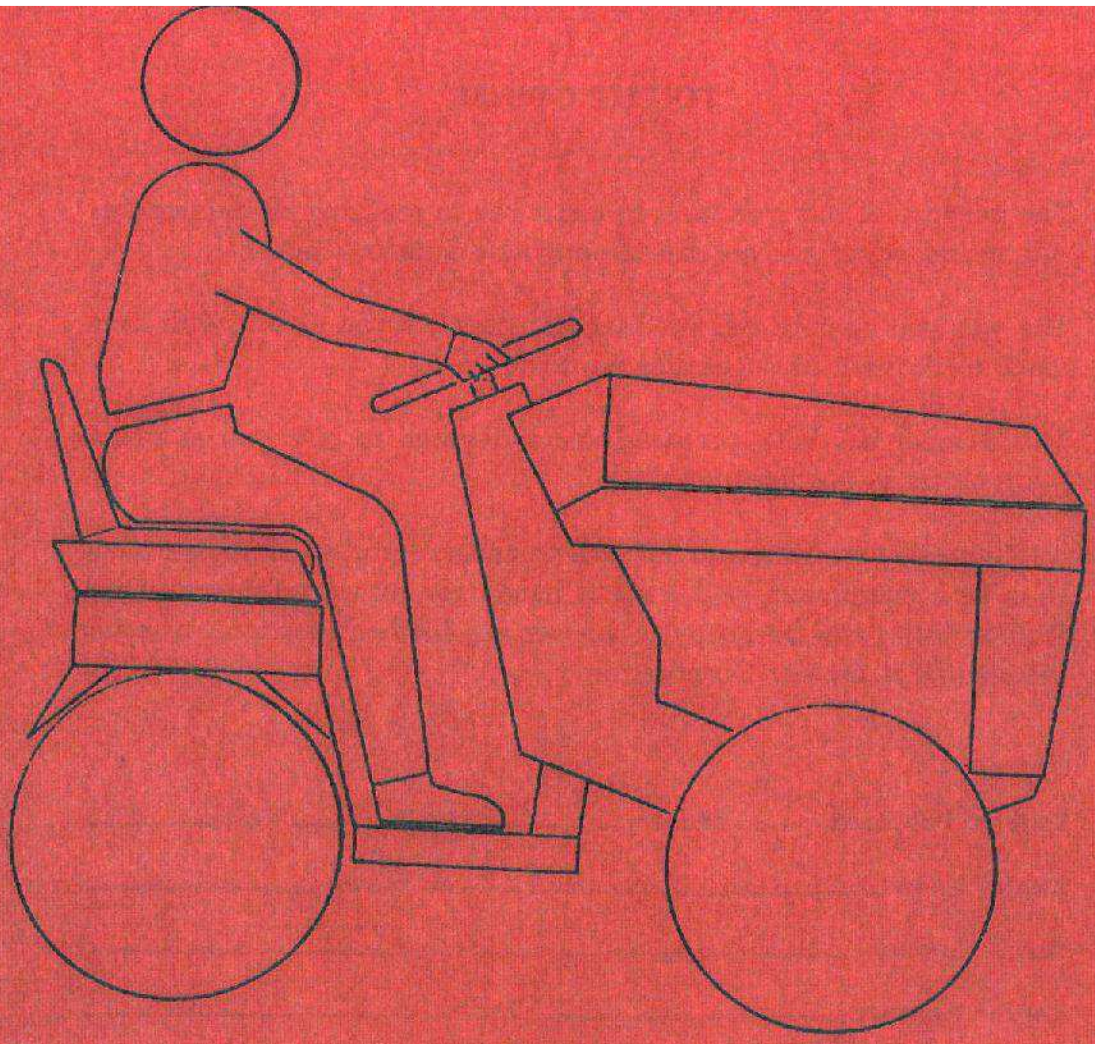
STEINER CORP.

Tractor serial number should be under the steering wheel facing the operator… the number will most likely start like this:
A4XXXXXX =1984 model
A5XXXXXX = 1985 model
A6XXXXXX = 1986 model
A7XXXXXX = 1987 model
A8XXXXXX = 1988 model



TR S-20
OWNERS MANUAL

OM-TR86

930 Penn Ave. • Orrville, Ohio 44667
P.O. Box 85 • 216-683-0055

TO THE OWNER

The purpose of this manual is to assist you in realizing all the benefits anticipated when you purchased your new Steiner Tractor.

The way you operate this product and the care you give it, will have much to do with its successful performance.

This manual has been prepared and illustrated to give you as much information as possible.

It is important that you read the entire manual carefully before operating your new equipment, and keep it handy for future reference. Your Steiner dealer will be happy to answer any further questions, or refer them to us at Steiner Corporation.

Date of Purchase: ___ **Month** _____ **Day** _____ **Year** _____

Dealer Name _____ **Phone** _____

Serial Number _____

Engine Number _____ **Make** _____

STATEMENT OF LIMITED WARRANTY

Steiner Corporation warrants its S-20 tractor line equipment to be free from defects in material and factory workmanship for a period of two (2) years or 1000 hours for power units, and one (1) year for attachments. This warranty begins on the date the equipment is placed into service by the original purchaser.

TERMS AND CONDITIONS OF LIMITED WARRANTY

This guarantee is limited exclusively to equipment manufactured or supplied by Steiner Corp. and is subject to the inspection and analysis by the company to conclusively identify or confirm the nature and cause of failure.

Steiner Corp. reserves the right to incorporate improvements in material and design of its products without notice and is not obligated to make the same improvements in equipment previously manufactured.

Steiner Corp. is not obligated under any warranty different from the warranty as published above.

STEINER CORPORATION'S RESPONSIBILITIES

Steiner Corp.'s obligation under the terms of this warranty is limited to the repair, replacement or credit, at its option, of the equipment or parts that do not conform to this warranty.

Steiner Corp. will pay for the parts and the cost of transportation for the parts.

OWNER'S RESPONSIBILITIES

The owner is obligated to operate and maintain the equipment in accordance with the recommendations published by Steiner Corp. in the operator's manual for the unit. The owner is responsible for the costs associated with such maintenance and any operating adjustments which may be required.

CONDITIONS WHICH VOID WARRANTY

This warranty shall not apply to equipment which:

A) Has had repairs or modifications not authorized by Steiner Corp.

B) Has been subject to misuse or improper maintenance.

WARRANTY EXCEPTIONS

This warranty does not apply to the following items:

A) Wear items including spark plugs, points & condenser, belts, filters, tires, light bulbs and oil.

B) Damages to engine/drive systems caused by a lack of or improper lubricants and/or fluids.

FREIGHT CARRIER DAMAGE

Claims for equipment damaged in transit should be referred to the freight carrier. Visible damage should be reported immediately. Concealed damage, as soon as possible in accordance with freight carrier regulations.

TABLE OF CONTENTS

DESCRIPTION

The hydrostatic, 4-wheel drive Steiner tractor is designed with the user in mind. All components have been field tested and used successfully in other equipment. Parts are readily available.

The tractor is powered by one of three engine options — the Onan Performer, twin-cylinder air cooled gas engine; or a three cylinder Kubota liquid-cooled diesel or gas engine. The engine drives a Sunstrand variable displacement pump. This pump supplies power to the two Sundstrand motors driving two Peerless transaxles, providing the 4-wheel drive.

Center pivot power steering enables it to operate in close quarters and further enhances the 4-wheel drive ability. It's low center of gravity and large, low pressure, high flotation tires enable it to operate well on hills.

The ruggedly built front-mounted mower enables you to mow under bushes and shrubs or out over water or ditch banks. As with other attachments, the mower is designed to be removed in minutes by removing one drive belt, pushing a release latch, and backing away. To hook up, just reverse the procedure.

The blade just snaps on and off the front hydraulic lift. A category "0" 3-point hitch for the rear is optional and enables the tracator to use most of the equipment available, such as plows, scrapers, and cultivators.

Nearly all the bearings on the mower and snowblower are standard industrial relube-type ball bearings that can be purchased "off the shelf" locally. Belts and pulleys likewise are standard industrial items that can also be purchased locally.

The Steiner tractor also has as standard equipment: adjustable seat, 12-volt automotive type battery, electric start, lights, front hydraulic lift, power steeirng, and auxiliary hydraulic valve.

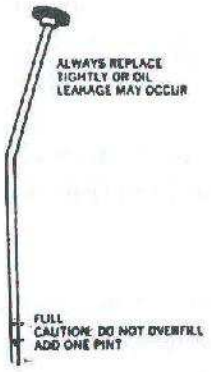
The tractor is used with great success in many places — schools, city and county parks, campgrounds, golf courses, orchards, vineyards, industrial parks, chicken farms, and by homeowners.

It's more than a mower, more than a tractor. It's even a "fun to run" machine!

PRE-START INSTRUCTIONS FOR ONAN ENGINE

BEFORE STARTING

1. READ SAFETY DECALS.
2. Always check engine oil.
3. Make sure BOTH transaxles are in SAME gear.
4. Make sure you have plenty of fuel.
5. Visually check tires.
6. Adjust seat.
7. Always use good judgement in the operation of this machine.

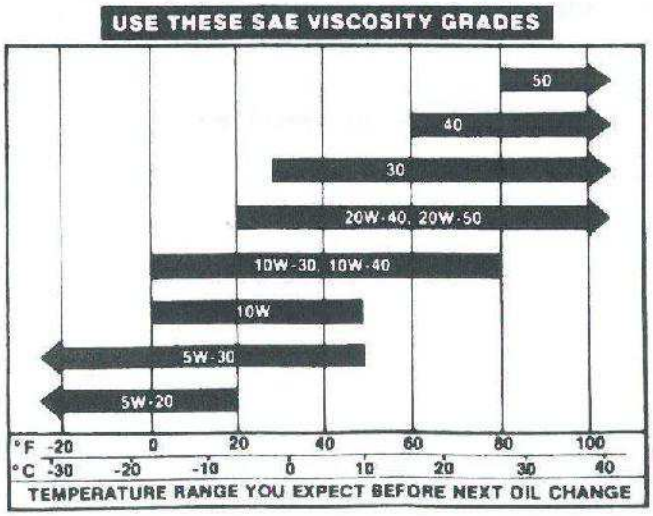


CRANKCASE OIL FILL

WARNING Do not remove the dipstick while the engine is running. Oil may blow out the oil fill tube causing injury.

Crankcase Oil: Fill the crankcase with an oil that meets the API (American Petroleum Institute) service designation SE or SE/CC. Do not mix brands nor grades of motor oil. Recommended oil numbers for expected temperatures are listed in the oil chart.

CAUTION Do not overfill crankcase. Overfilling causes the oil to foam and enter the breather system. Do not use service DS oil or damage to the engine could occur.



Recommended Fuel: Use clean, fresh, unleaded or regular grade gasoline. Do not use highly leaded premium fuels. Using unleaded gasoline results in less maintenance.

Use regular gasoline for the first 25 hours to allow the rings to seat well for best performance. Then use unleaded or regular gasoline thereafter.

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

WARNING Avoid potential explosions. Never fill the fuel tank when the engine is running.

Inspection: Inspect the engine visually before starting. Check for loose or missing parts and any damage that may have occurred in shipment.

STARTING

1. Put forward-reverse control in neutral.
2. Make sure P.T.O. is off.
3. Push throttle forward approximately one inch.
4. Pull choke all the way out.
5. Turn key to right. Tractor should start.
6. Push choke in as engine warms up.
7. In cold weather, let hydraulic oil warm up a few minutes before using tractor.
8. Make sure BOTH transaxles are in the SAME gear to prevent damage to the hydraulic system.
9. The farther you push (or pull) the forward-reverse lever from the neutral positon, the FASTER you go.

NOTE: Move control gradually

10. To stop, pull the control to neutral.
11. Always use sufficient engine speed to prevent stalling. Control ground speed with forward-reverse lever, throttle control.

See Onan Operators Manual for more information.

PRE-START INSTRUCTIONS FOR KUBOTA ENGINES

BEFORE STARTING

1. READ SAFETY DECALS.
2. Always check engine oil.
3. Make sure BOTH transaxles are in SAME gear.
4. Make sure you have plenty of fuel.
5. Visually check tires.
6. Adjust seat.
7. Always use good judgement in the operation of this machine.

Crankcase Oil:

Fill the crankcase with an oil that meets the API service designation of CC or CD for the diesel engine. Engine oil on the gasoline engine should meet the API designation of SF. Do not mix brands nor grades of oil. Recommended oil numbers for expected temperatures are listed in the oil chart below.

Temperature	Type of engine oil
Above 77° (25° cel.)	SAE 30
32°F-77°F (0° Cel.-25°Cel.)	SAE 20
Below 32°F (0° Cel.)	SAE 10W or 10W-30

CAUTION

Do not overfill crankcase.

Recommended Fuel: Use clean, fresh,unleaded or regular grade gasoline for the gasoline engine. Do not use highly leaded premium fuels. Using unleaded gasoline results in less maintenance.

Use clean, fresh No. #2 diesel fuel for the diesel engine. No. #1 diesel fuel may be used when extreme cold temperatures are present. Due to the very low octane rating, kerosene should not be used or engine damage may occur. Refer to the engine operator's manual for proper bleeding procedure.

WARNING

Never fill fuel tank when the engine is runing.

Starting

1. Put forward-reverse control in neutral.
2. Make sure PTO is off.
3. Push throttle forward approximately one inch.
4. Turn key counter clockwise to "preheat." (Diesel engine only) Shown below are the standard preheating times for various temperatures. This operation is not required when engine is warm. On the gasoline engine, pull the choke out.
5. Turn key clockwise. Tractor should start.
6. Warm up the engine at medium speed. Push choke in as engine warms up. (Gasoline engine only)
7. In cold weather, let hydraulic oil warm up a few minutes before using tractor.
8. Make sure BOTH transaxles are in the SAME gear to prevent damage to hydraulic system.

Temperature	Preheating Time
Over 32°F (0° Cel.)	15 Sec.
Below 32°F (0° Cel.)	30 Sec.

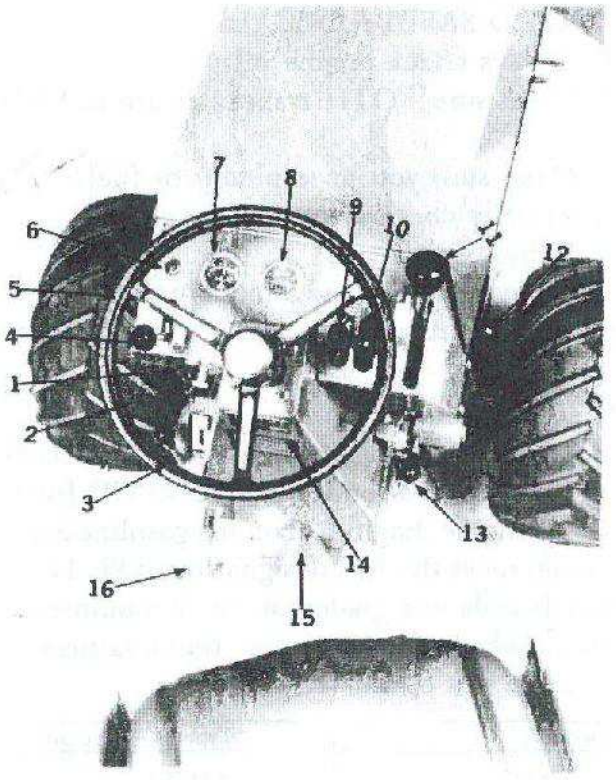
WARNING

Never use ether or any starting fluid as a starting aid or severe damage to engine may occur.

See Kobota Operators Manual for more information.

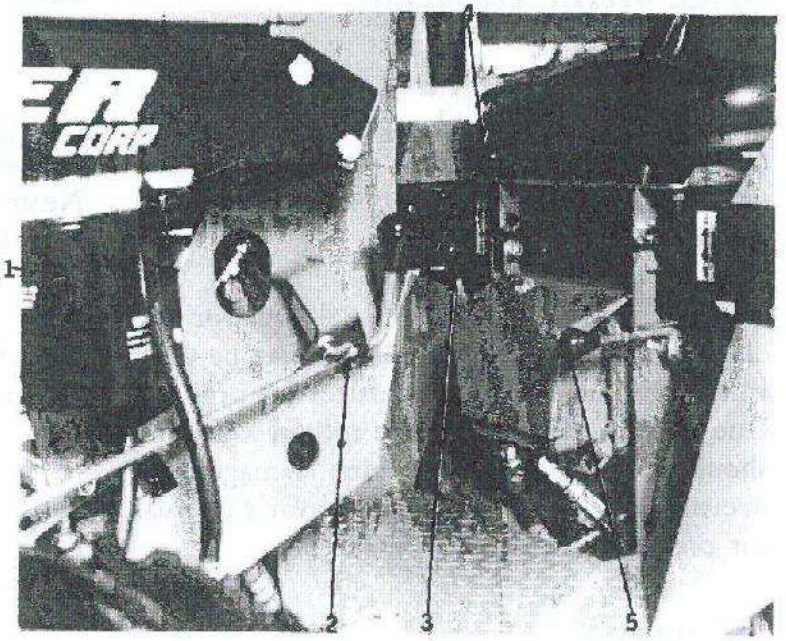
FRONT CONTROLS
Figure A

1. IGNITION SWITCH
2. LIGHT SWITCH
3. P.T.O. LEVER (off position)
4. THROTTLE
5. STEERING WHEEL
6. OIL LIGHT
7. AMMETER
8. HOUR METER - ONAN ENGINES
   TEMERATURE GAUGE -
   KUBOTA ENGINES
   (Hour meter is under the hood on Kubota engines)
9. AUX. HYDRAULIC CONTROL
10. FRONT LIFT CONTROL
11. FORWARD-REVERSE CONTROL
12. FRONT LIFT RELEASE
13. FRONT TRANSAXLE SHIFTER
    (high gear position)
14. SERIAL NUMBER
15. PIVOT GREASE FITTING
16. OPTIONAL STEERING LOCATION



REAR CONTROLS
Figure B

1. HYDRAULIC FILTER
2. P.T.O. LEVER (off positon)
3. REAR TRANSAXLE SHIFTER
   (high gear position)
4. SEAT ADJUST LEVER
5. PARKING BRAKE LEVER
   (on position)



DRIVING THE STEINER TRACTOR

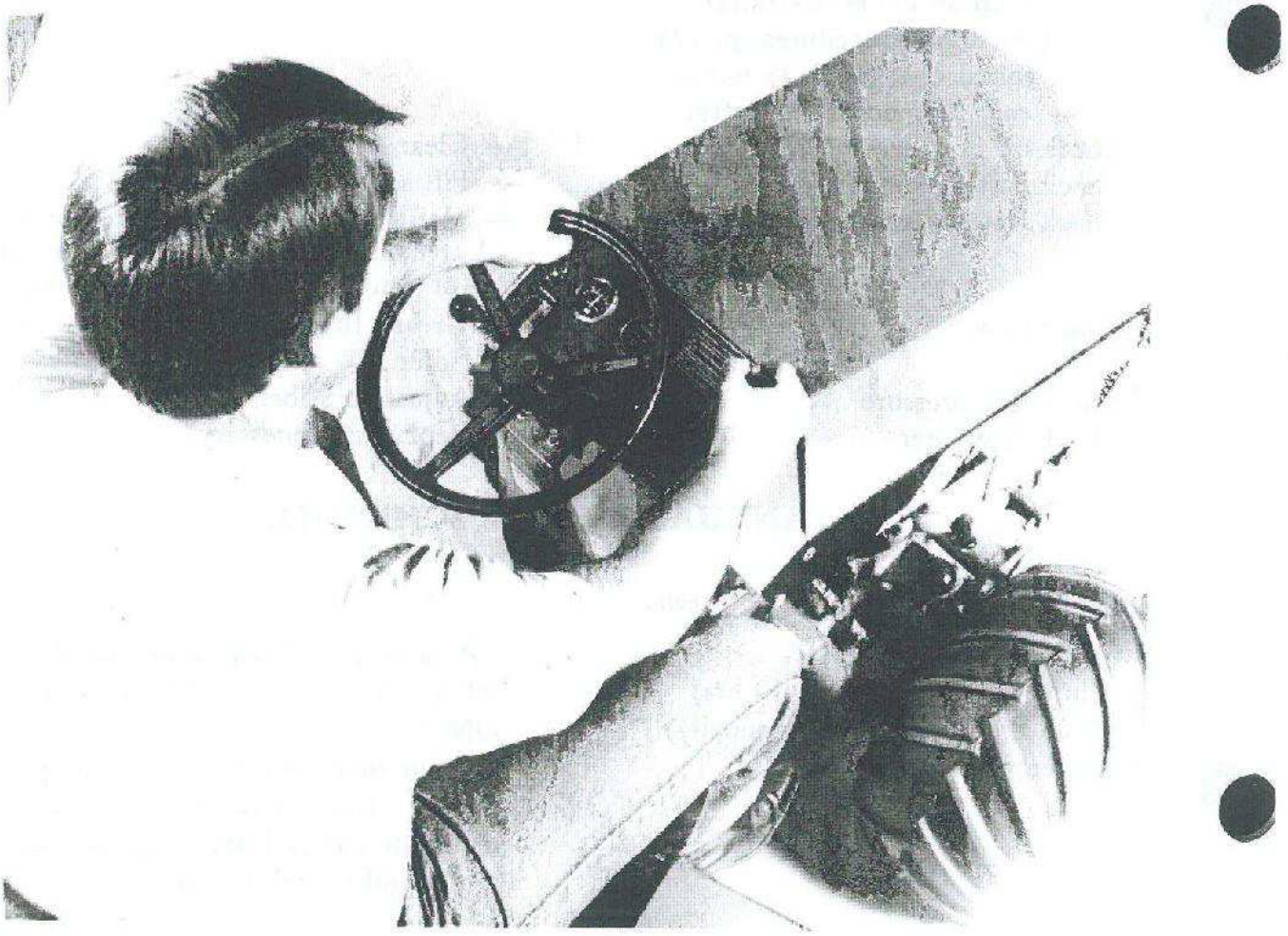
Driving the Steiner tractor with its center pivot steering is usually somewhat of a new experience, but after a few minutes this "different feel" vanishes and is replaced by a feeling of pure pleasure.

With its superb maneuverability and 4-wheel drive, the tractor becomes a "go almost anywhere" machine. Therefore, we urge EXTREME CAUTION, as these features may get you into trouble.

We offer these operating tips to ensure your safety and pleasure:

A. Take some time and get used to the handling characteristics of your new tractor.
B. Always look before backing.
C. Slow down over rough terrain.
D. Do not make sharp turns at high speeds.
E. When going down hill with mower on, put mower in DOWN position.
F. When attachment cannot be lowered, BACK down hill.
G. When going up hill, put transaxles in low gear and open throttle enough to provide adequate power to prevent stalling. Control speed with forward-reverse lever.
H. Always disengage P.T.O., set brake and shut off engine before leaving tractor seat.
I. Do not expect your tractor to think for you.

USE COMMON SENSE!



DAILY SERVICE SCHEDULE

1. Check fuel level.
   -- Use good clean regular or unleaded gasoline.
2. Check engine oil level
   -- Use recommended oil for expected temperatures during operation.
3. Visual inspection of:
   -- a) Bolts, fitting for loosening
   -- b) Accumulation of dirt or foreign material around engine restricting engine cooling.
   -- c) A clean tractor is easier to maintain and a pleasure to use.
4. When the tractor is in operation and the normal operating temp. is reached, check hydraulic functions for any sign of abnormal operation. STOP! IMPORTANT: Do not continue to run the tractor with slow or abnormal hydraulic functions. These conditions could cause serious damage to the hydraulic components.
   -- At the first sign of abnormal hydraulic functions, check oil level. If oil level is OK - change hydraulic oil fiter and refill as needed.

24 HOUR SERVICE SCHEDULE

In addition to daily services:

1. Change engine oil
   A. Onan Engines
      — initial change at 25 hours
      — each 50 hours thereafter
      (see drain procedures, p. 12)
   B. — initial changes at 35 hours
      — each 100 hours thereafter
      — Use HD 30 above 32 degrees F.
      — Use HD5W30 below 32 degrees F.
      — See oil chart, page 5.
2. Check air cleaner. — Clean as necessary.
3. Check battery water level. — Fill so plates are covered ¼".
4. Check front transaxle oil level. — Refill as needed with Steiner approved trans-hydraulic fluid. Do not use motor oil or automatic transmission fluid.
5. Lubrication. — Grease fitting on center pivot & P.T.O. idler.
6. Check tire pressure — Adjust to 5 lbs.
7. Check fuel filter — Replace if necessary.

ANNUAL SERVICE SCHEDULE

In addition to daily and 25 hr. service.

1. Replace hydraulic filter.
   (Initial filter change at 50 hrs)
   (500 hrs. thereafter or annually)
   --Replace ONLY with approved filter. Replace oil at 1000 hr. intervals with approved oil ONLY.
2. When storing tractor.
   --Drain fuel tank and clean sump. Maintain proper tire pressure. Remove battery, maintain charged state. Grease all exposed shafts and cylinder rods.

SERVICE LOCATIONS
FIGURE C

1. Linkage adjustment.
2. F-R control tension spring.
3. Aux. hydraulics couplers.
4. Engine serial number.
5. Engine oil filter.
6. Engine oil drain.
7. Hydraulic oil dipstick.
8. P.T.O. belt release.
9. Hitch latch control.
10. Front transaxle shifter.
11. Engine air inlet screen.

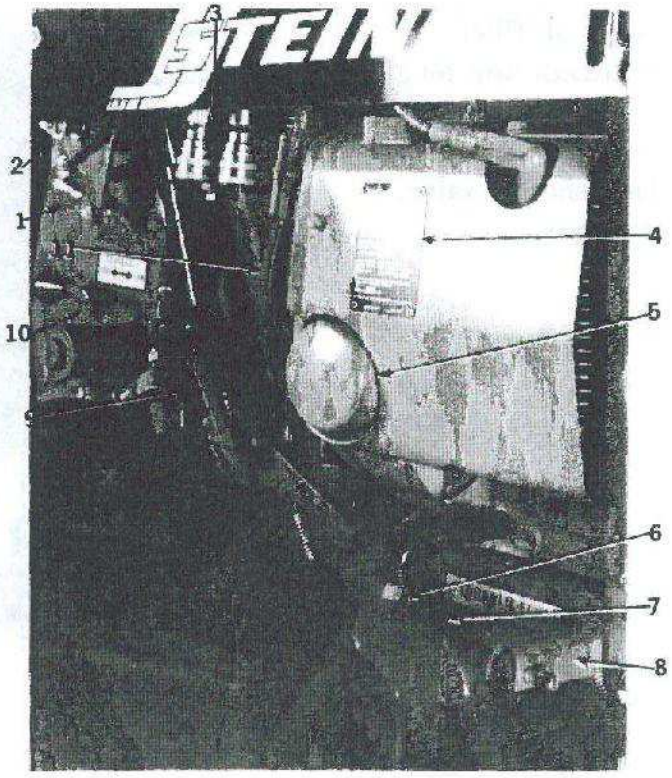
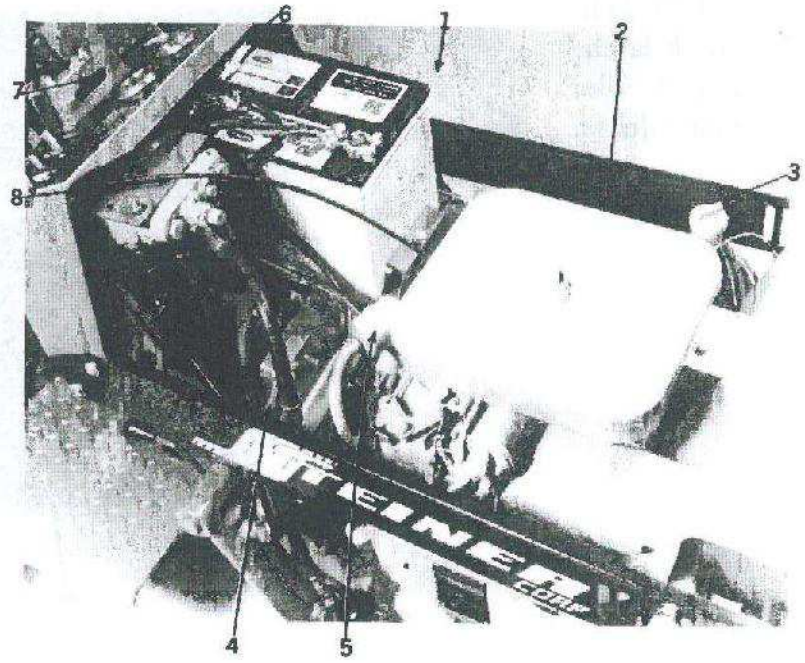


FIGURE D

1. Battery.
2. Air cleaner.
3. Engine oil dipstick.
4. Selector valve location. (3-point hitch only)
5. Fuel filter.
6. Fuse.
7. Tractor lift point.
8. Choke cable.



SERVICE LOCATIONS
FIGURE E

1. Gas tank filler.
2. Transaxle top plug.
3. Parking brake adjuster.
4. Fuel tank sump cap.
5. Fuel shutoff valve.
6. Toolbox.

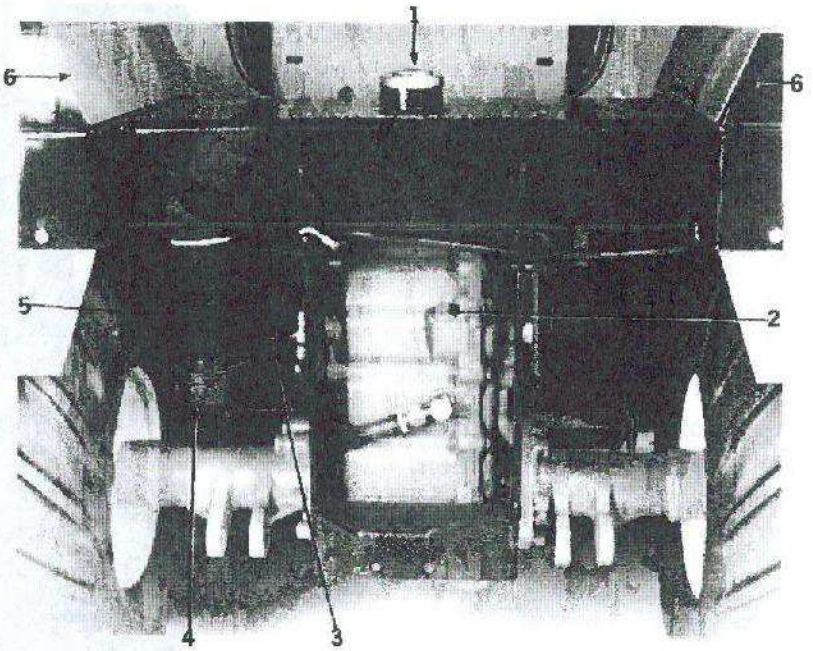
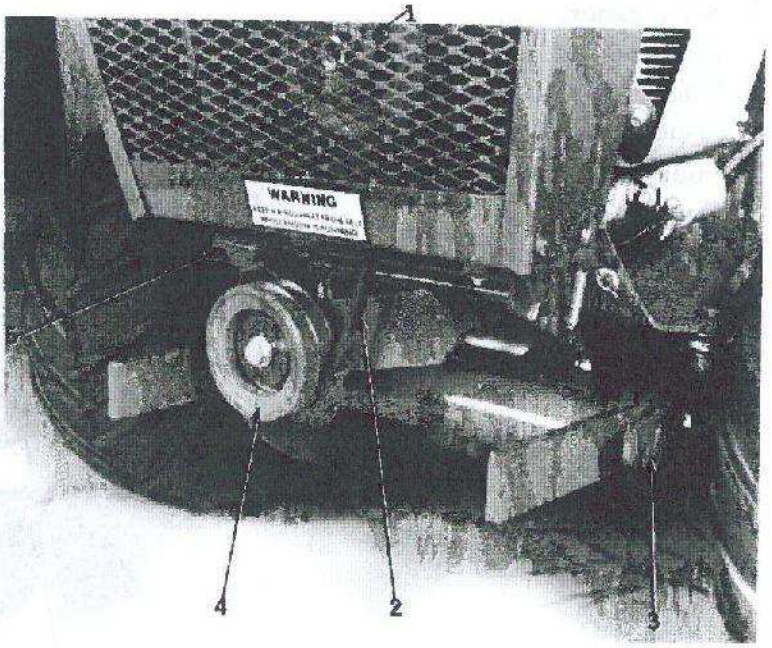


FIGURE F

1. Engine pulley.
2. P.T.O. belt.
3. Hitch latch.
4. P.T.O. idler.
5. Belt release.



SERVICE PROCEDURES
ENGINE OIL DRAIN PROCEDURE

Onan: 25 hours initial; 50 hours thereafter
Kubota: 35 hours initial; 100 hours thereaftesr

1. Run engine until oil is warm for more more complete draining.
2. Remove oil drain plug (figure C)
3. Remove oil filter (figure C) and wipe filter mounting base and shroud clean. Check filter seal surface on base for damage.
4. Lube filter seal and threads with engine oil and mount to base. Tighten ½ turn after filter seal contacts base. Do not overtighten.
5. Install drain plug.
6. Add 1¾ quarts (U.S.) for Onan engines or 3 quarts (U.S.) for Kubota engines of approved motor oil to crankcase. (Refer to engine manual for temperature chart.)
7. Run engine. Check drain plug and filter for leaks.
8. Stop engine. Check oil level and fill to proper level.

TRANSAXLE DRAIN PROCEDURE

Change filter at 50 hrs. initially. Thereafter change filter annually or at 500 hr. intervals whichever occurs first. Change oil at 1000 hr. intervals.

1. It is best to drain the axles soon after the tractor has been worked and the oil is warm to insure maximum drain of foreign material from transaxles.
2. Remove dipstick from front axle and remove drain plug.
3. Remove top plug from rear transaxle (below gas tank, back side) and remove drain plug.
4. Remove Hydraulic Oil Filter and wipe filter base clean, checking threads and seal flange for damage.
5. Fill new filter with approved oil and install. Tighten ¾ turn after filter seal contacts base. Do not overtighten.
6. Reinstall both drain plugs in transaxles.
7. Put 1½ gal. of approved oil in rear transaxle.
8. Fill front transaxle to full mark on dipstick (approx. 1½ gal).
9. Allow axle levels to equalize (approx. 15 min.)Refill as needed.
10. Install rear transaxle top plug.
11. Run tractor, turn steering wheel stop to stop several times to purge all air from implement circuit.
12. With axles in neutral, move F-R control lever to forward position then to reverse position to purge air from drive circuit.
13. Recheck oil level to be sure it is in the safe operating ranges.

APPROVED HYDROSTATIC OILS

USE ONLY T. R. C. (TEXAS REFINERY CO.) - UNIVERSAL TORQUE FLUID

Use of any other oils will void warranty and may damage system.

8/87

NEUTRAL POSITION ADJUSTMENT

If the tractor develops the tendency to creep forward or reverse when it is in the neutral position, the pump neutral position needs to be adjusted. To correct this condition, the link between the forward-reverse lever and the pump arm must be readjusted longer or shorter to match the pump neutral to the control neutral.

1. Run the tractor until the hydraulic oil is at operating temp.
2. With the F-R control in neutral, observe tractor motion.
3. If the tractor creeps forward, the link needs to be shortened. If the tractor creeps backward, the link needs to be lengthened.
4. Set parking brake and turn tractor off.
5. Remove bolt which attaches link to F-R control (FIGURE C).
6. To shorten, turn rod-end clockwise; counter-clockwise to lengthen.
   Caution: The pump has a very narrow neutral positon; a small adjustment makes a lot of difference.
7. Reinstall link to F-R control.
8. Start tractor, release brake; move tractor forward, then reverse, then to neutral.
9. Observe tractor motion.
10. Continue steps 3-9 until tractor remains stationary.

CONTROL TENSION ADJUSTMENT

If the F-R control lever moves too hard or too easy for individual needs, the tension spring (FIGURE C) may be adjusted to correct this. To increase movement tension, tighten spring bolt and nut.

PARKING BRAKE ADJUSTMENT

The parking brake is a mechanical disc type brake fastened to the rear transaxle. As the friction pads wear it may become necessary to adjust the brake for it to remain effective. Refer to FIGURE E.

1. When the parking brake is set, there should be a slight resistance felt in the brake control, but yet when it is released the disc should be able to turn freely.
2. To adjust the brake: Release the brake and remove the cotter pin from the adjusting nut.
3. Tighten the nut to a point where the cotter pin can be reinserted.
4. Set the brake and observe the tension necessary to apply it.
5. Release the brake and move the disc by hand to be sure it is free.
6. Repeat steps 3 - 5 until proper adjustment is achieved.
7. Install cotter pin and bend to lock adjustment.
8. To replace pads: Remove the 2 bolts which fasten the brake assembly to the transaxle. Caution: The two contact pins are loose in the housing. Slide disc off of shaft and replace inner pad. Reinstall disc (must slide freely on shaft). Replace outer pad in brake housing making sure pins and pad backing plate are in position. Reinstall assembly to transaxle and adjust as indicated above.

P.T.O. IDLER ADJUSTMENT

The P.T.O. idler bolt is in a slotted hole to allow adjustment of the implement drive belt. If the implement continues to run after the P.T.O. control is turned off or if the belt is slipping, it may be necessary to adjust the idler. Refer to FIGURE F.

1. If the implement continues to run, the belt is too tight.
2. To adjust idler: Loosen the center bolt which fastens idler bearing to arm. Move idler pulley towards center of tractor to loosen belt tension, away from center to tighten.
3. Tighten bolt securely.
4. To replace engine belt: CAUTION: Note position of various washers and belt guards when removing to assure proper assembly. Remove idler pulley from arm to allow removal of belt guard. Replace belt and reinstall assembly to arm. Final adjustment should be checked with attachment in place for proper belt tension. Rotate belt guard to proper position to prevent interference with belts or pulley. Tighten bolt securely.

STEERING RADIUS ADJUSTMENT

The use of some options (i.e. dual wheels) require that the turning radius of the tractor be modified. This is accomplished by repositioning the steering cylinder attaching point on the rear frame. The inner hole (towards center pivot) is the normal operating position. The outer hole would be the increased radius position. Refer to FIGURE A.

ENGINE ADJUSTMENTS

Refer to the engine manual furnished with your particular tractor for adjustment information.

TRANSAXLE OIL LEVEL

After a period of time the level on the front transaxle dipstick will be lower even with no apparent leaks. This is a NORMAL condition. This is caused by the transfer of oil from the front axle to the back axle. Over a period of time the non-vented rear axle will fill up with oil replacing the air cavity which is lost by air escaping through seals etc.

Before refilling front axle to the top mark on the dipstick, remove the rear axle "top plug" (page 11, Fig. E, ref. 2) and allow air to enter to equalize oil level in transaxles. After oil level stabilizes, the front axle level can be adjusted to the full mark.

The dipstick level reaching the low mark (with no apparent leaks) or a sluggish rear axle would indicate the rear axle being full.

DIMENSIONS & SPECIFICATIONS

Dimensions	Onan B48G	Onan P220	Kubota D600-B	Kubota WG600-B
Width	44 inches			
Length	64 inches			
Height	46 inches			
Wheelbase	38 inches			
Turn Radius	36 inches			
Weight (approx.)	975 lbs.		1010 lbs.	
Engine				
Manufacturer	Onan	Onan	Kubota	Kubota
Model No.	B48G	P220	D600-B	WG600-B
Horsepower	20 at 3600 RPM		16.5 at 3600 RPM	21 HP at 3600 RPM
Design	2 cyl. opposed 4 stroke, air cooled		3 cyl., 4 stroke liquid cooled	
Displacement	47.7 cu. in.	47.7 cu. in.	36.6 cu. in.	36.6 cu. in.
Compression	7.0 to 1	7.0 to 1	23 to 1	9.2 to 1
Ignition	Points & coil	solid state		solid state
Air Filter	Dry Paper Element			
Oil Capacity	1.5 qts.		2.9 qts.	
With Filter	1.7 qts.		3.1 qts.	
Radiator Capacity			3 qts.	3 qts.
Electrical Starting	12 volt, key switch			
Battery	12 volt, Group 22-F			
Charging	15 amp Flywheel alt.	20 Amp Flywheel Alt.	12½ amp. Flywheel	
Fuel System Tank Capacity	6 gal. U.S.			
Tank Location	Under Seat			
Fuel	Unleaded Gas		No. 2 Diesel	Unleaded Gas
Fuel Pump	Diaphragm		Electric	Cam Oper. Diaphragm
Carburetor	Fixed Jet-governed			Fixed Jet
Drive Train Transmission	Hydrostatic			
Type	Piston-type pump & motors			
System	1 pump, 2 motors in series			
Manufacturer	Sundstrand Series 15			
Transaxle	2 Peerless 2500, 2 speed			
Speed	Forward: High 0-11 mph			
	Low 0-7 mph			
	Reverse: High 0-8 mph			
	Low 0-5 mph			
Steering	Hydraulic Power			
Parking Brakes	Dry Disc, Rear Axle			
Tires Type	High Flotation, Goodyear Rawhide			
Size	21 x 11:00-8, 2 ply Chevron			
	Turf tread optional			

3-POINT HITCH INSTALLATION

The 3-point hitch option is supplied as a dealer installed kit. The following instructions will help with installation. Refer to FIGURE G and FIGURES 4 and 6 for proper assembly.

The 3-point hitch kit contains:

- 1 - selector valve
- 2 - hoses
- 1 - lift cylinder
- 1 - rockshaft
- 2 - draft links
- 2 - lift link adjusters
- 1 - top link
- 1 - selector valve handle
- 2 - sway chains
- 1 - cylinder pin
- fittings and fasteners

1. SELECTOR VALVE - Remove and discard the bracket (64-180) which holds the rear quick coupler and install the selector valve in this location. The "IN" port will be toward the battery.
2. PRESSURE HOSE - Connect the 17" pressure hose to the "IN" port.
3. SELECTOR VALVE HANDLE - Install handle through dash hole (handle end towards center of tractor) and fasten to the valve with ¼ x 1 bolt and locknut. The long tab of the handle is installed between the roll pins of the selector valve.
4. QUICK COUPLER - Install the quick coupler to the bottom port of the selector valve.
5. CYLINDER HOSE - Connect the 58" hose to the top port of the selector valve with a 90 degree fitting and carefully route the hose inside the front frame and through the tread plate channel to the 3-point lift cylinder where it will connect to the rod end of the cylinder.
6. CYLINDER HOSE - Connect the 65" hose to the tee fitting of the dash mounted valve and route it the same as the 58" hose. It connects to the closed end of the lift cylinder. (NOTE: Keep hose ends covered during installation to prevent dirt from entering system.)
7. ROCKSHAFT - Install rockshaft assembly to hitch with 4, ⅜ x 1¼ bolts, lockwashers, and nuts.
8. DRAFT LINKS - Install draft links to axle with ⅝ x 2¾ clevis pins and 5/32 x 1 cotter pins. (NOTE: The longer distance from lift hole to end of link goes toward the axle.)
9. LIFT LINKS - Install lift adjuster links to the draft links along with the sway chains and attach to the rockshaft. Attach other end of sway chains to the tractor hitch holes provided.
10. LIFT CYLINDER - Install cylinder pin and cylinder with ports up and 90 degree fittings installed. Connect cylinder rod to rockshaft with a ⅜ x 2¼ bolt and ⅜ locknut. Connect hoses and check to be sure they do not bind anywhere, especially at the tractor center pivot area.

OPERATION OF SELECTOR VALVE

1. With the selector handle turned to the 7 o'clock position the aux. hydraulics are live and controlled by the aux. control.
2. With the selector handle turned to the 11 o'clock position the 3-point hitch is live and controlled by the aux. control.

FIGURE G-1

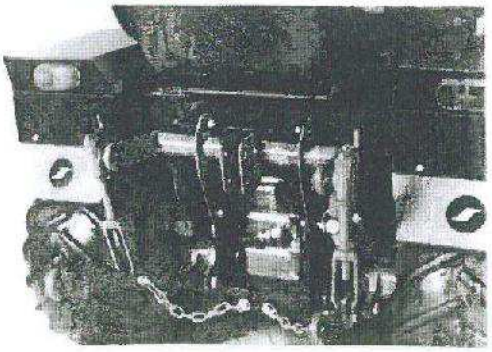
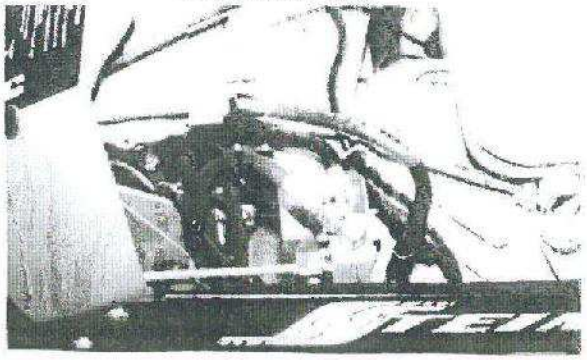


FIGURE G-2



MOWER OPERATION

Be sure to observe all Safety Decals. When attaching the mower: Push implement latch control down and lock to open hitch latches. Drive tractor into place, engaging the quick hitch on the mower fully. Release latch control to engage hitch latches. Be SURE both latches engage fully and control is in the locked positon. Shut off tractor! DO NOT attempt to put drive belt on implement while tractor is running. Make SURE P.T.O. lever is in the "OFF" position.

— Release catch on idler assembly and push rod in.

— Put on belt, and pull rod to engage catch.

— Make sure ALL shields are in place.

— Set mower to desired height.

— Start tractor and engage P.T.O. SLOWLY.

— Mow ONLY with lift in "FLOAT" position.

— When mowing, push the throttle most of the way forward to ensure proper blade speed. Most level mowing can be done in "HIGH" gear with speed controlled by the Forward-Reverse lever.

— When going UP hills,put tractor transaxles in "LOW" gear and keep engine at near full speed to minimize wheel slippage and chance of engine stalling.

— When going DOWN hills or loading on or off truck with mower on, put mower in the "FLOAT" position to prevent lifting rear wheels off the ground.

— Be extremely careful at all times when operating.

NOTE: MOWER LIFT MUST BE IN "FLOAT" POSITION WHEN MOWING TO PREVENT EXCESSIVE WEAR ON WHEELS, ROLLERS AND FRAMES.

MOWER MAINTENANCE

DAILY:

Visual inspection for loose parts and accumulations of grass and dirt. Keep blades sharp. Grease front casters. (4 fittings)

25 HOUR:

In addition to daily maintenance, grease roller and all bearings. (10 fittings)

ANNUAL:

In addition to daily and 25 hr. maintenance, remove the drive belt and check for wear or cracking. Rotate ech spindle and idler to check for roughness which would indicate bearing wear. Remove and sharpen blades, clean and wash deck prior to storage. The acid in grass causes premature corrosion and rusting of mower parts.

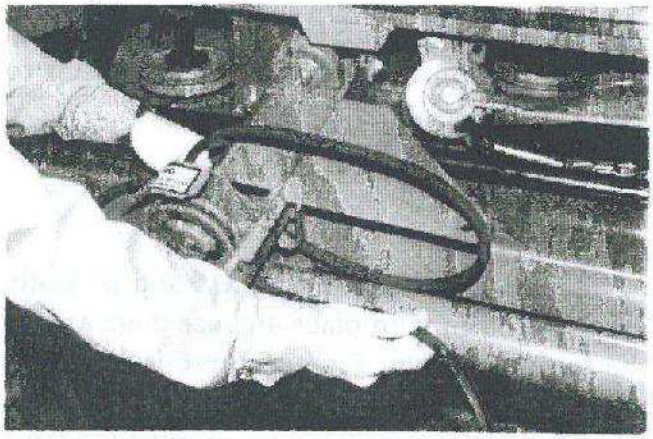
CHANGING MAIN DRIVE BELT

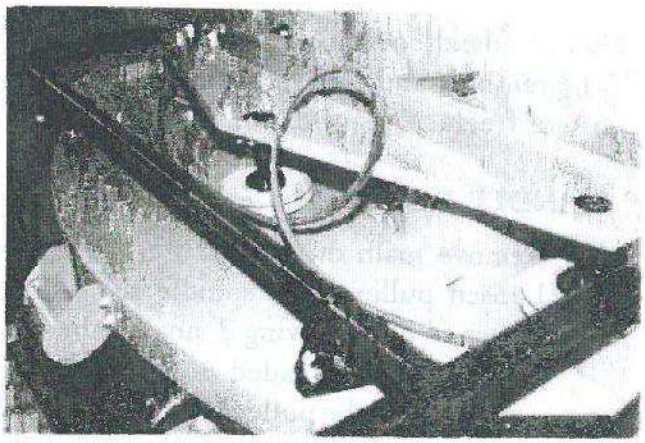
TO REMOVE BELT:

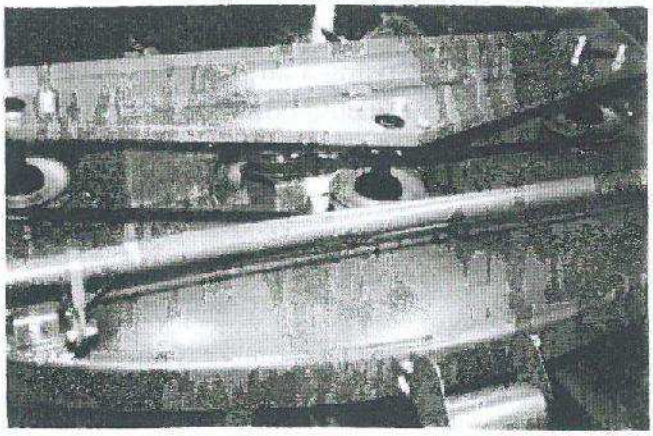
1. Remove top shield and the nut which holds hitch arms together. No further disassembly is necessary.
2. Release the idler spring and swing idler to the left.
3. Slip belt off the end spindle pulleys to gain slack.
4. Slip belt off the front idler and left belt over top deck.
5. Separate hitch arms and slide loop off left arm.

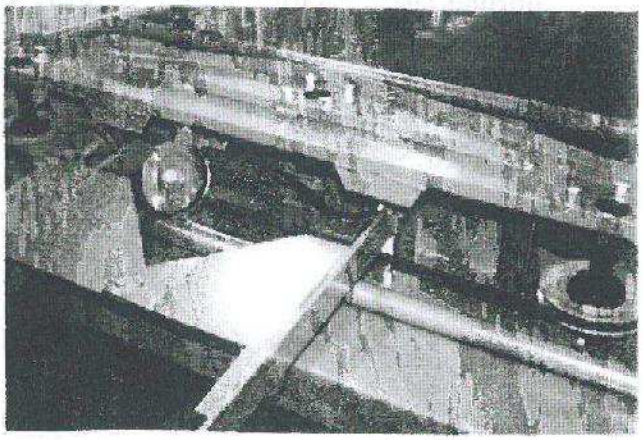
TO INSTALL BELT:

1. Form loop for drive and spring idler pulleys as shown.
2. Slip loop over left hitch arm and in place on pulleys.
3. Flip belt up and over top deck allowing front idler loop to form.
4. Place loop behind center spindle from the left side and install on idler pulley.
5. Position belt on center pulley, then on the two outer pulleys.
6. Hook idler spring chain in place.
7. Reinstall hitch nut and tighten. Reinstall shield.









MOWER ADJUSTMENTS

BLADE ALIGNMENT

When reinstalling blades be sure mounting surface of blades are clean and retainer washer is installed with crown away from blade to insure proper contact. To align blade tips, rotate blades until tips are near each other. At blade tips, the blade height may not vary more than ⅛". If there is more variation it usually can be corrected by loosening the bearing mounting bolts and moving the bearings to correct the variation. NOTE: Be sure blades are not bowed. This may be checked by placing a straight edge across blade corners. When sharpening blades be careful not to round off tip corners as this could reduce overlap of blades and cause skipping.

LEVELING MOWER DECK

There is a front-rear leveling adjustment on the mower frame. The adjustment is made by moving the connecting link (Figure 19, Ref. 8) in the slotted hole provided. The adjustment should be checked with the mower sitting on a level floor. Measure blade height at the front and rear to the floor. The rear end of the blade should be approximately ¼" lower than the front end. This is due to the fact that the rear roller does not penetrate the turf as much as the front wheels. This will allow the mower to cut level when in use.

CASTER WHEEL ADJUSTMENT

(Applies only to mower decks before serial number A7000.)

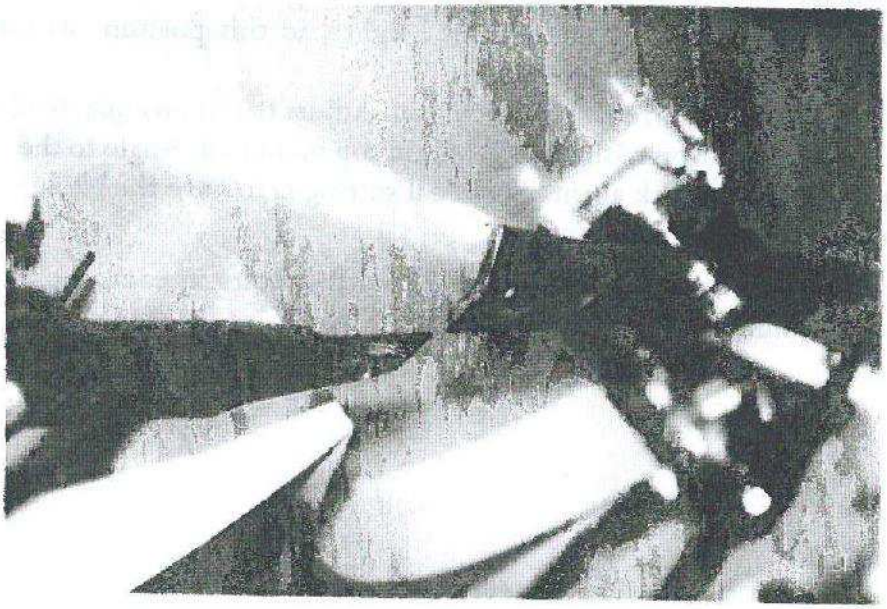
Raise mower so wheels are off the ground. The swivel should rotate freely without binding. Tighten bolt and lock with the nut underneath to take up looseness, but still allow caster to rotate freely. Grease caster area as needed.

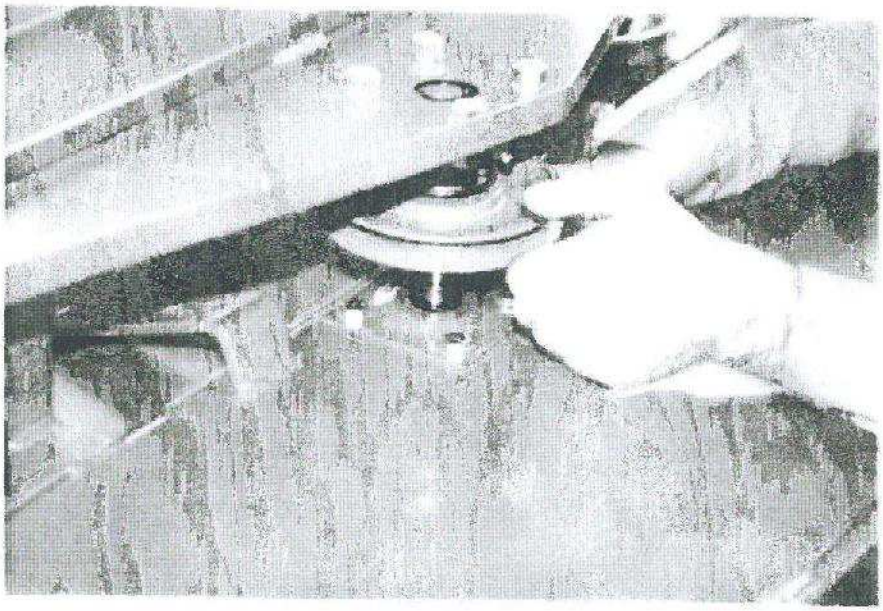
SPINDLE REMOVAL

1. Remove main drive belt.
2. Loosen pulley from spindle shaft. This is a tapered bushing style pulley, and is easily loosened by removing 2 small bolts which hold the bushing in place and use them as jack screws in the threaded holes provided in the bushing flange. Tighten these jack screws equally until the pulley works loose. (A little penetrating oil helps.) Remove key from shaft.
3. Loosen the bearing set collars from the shaft. The bearings employ an eccentric locking collar which tightens by a cam locking action on the shaft. Loosen the collar set screw—then tap with a small punch in the small hole provided to rotate the collar opposite from the normal shaft rotation about ¼ turn. The collar will then be free on the shaft.
4. After upper and lower bearing collars are loosened, the spindle can be driven down through the bearings and pulley (with jack screws still in position) by using a large punch. Use care to prevent swelling the spindle shaft. Remove the bearing mounting bolts if bearing is to be replaced.

SPINDLE INSTALLATION

1. Install upper and lower bearings with dirt shield placed above lower deck. Do not tighten bolts. (Figure 19)
2. Place one eccentric collar for lower bearing on spindle (groove side towards bearing) and start spindle through lower bearing. Place "O-ring", pulley (bushing side up), bushing (taper down), and upper bearing collar (groove up) on shaft in that order. Continue to push spindle up into upper bearing.
3. Set blade and spindle height by measuring from the rear portion of mower deck to the cutting edge of blades (approximately 3 inches). Lock the bearing collars by rotating by hand in the direction of normal shaft rotation. Finish tightening collars by tapping with a small punch to rotate and lock collar. Tighten set screws and bearing mounting bolts.
4. Place key in shaft and set pulley height. Center pulley is ⅜" from deck. Outer pulleys are 1⅛" from deck. Tighten bolts to secure pulley to shaft. NOTE: Bolts must not be in threaded holes of the bushing when tightening pulley.
5. Install belt and check blade alignment as per instructions.

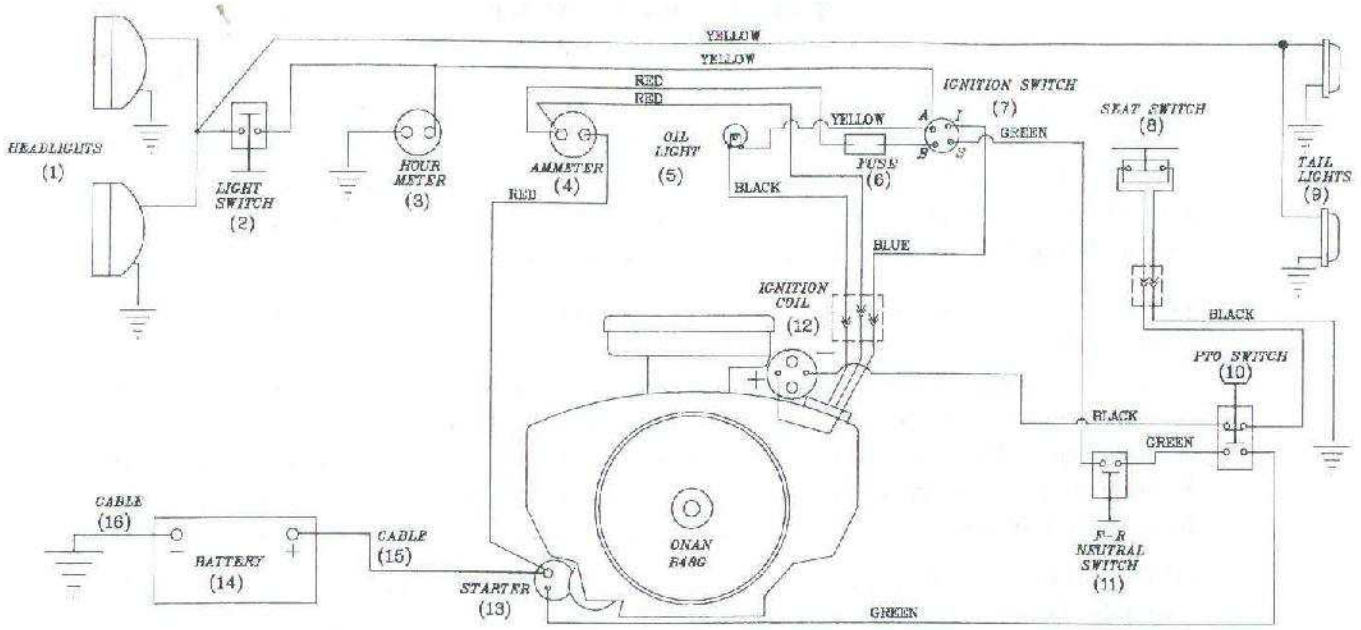




BLADE ASSEMBLY INSTRUCTIONS

1. Remove blade and attaching parts from cartons and place blade face down on a level floor.
2. See Figure 22 for Manual Angle Blade and Figure 23 for Power Angle Blade. Attach the sub-frame to the blade with rod and cotter pins as shown.
3. Hook safety trip springs over sub-frame arms and install adjusters through tabs on the blade. Tighten until about ½" of thread extends beyond the nut.
4. Manual Blades - Insert the attaching frame into the sub-frame and install pins. To angle blade: 1) Pull one pin on the side you desire to move forward. 2) Move blade to angle position and insert pin in rear hole of sub-frame.
5. Power Angle Blades - Connect hoses to the cylinder and pass them through the round hole in the side of the sub-frame. Install the blade on the tractor and hook up the hoses to the quick couplers.
6. Leveling adjustment - Power Angle Only
   A) Place tractor with blade installed on a level floor.
   B) Raise blade 1" off of floor and move to straight position.
   C) Adjust to obtain equal blade corner heights, in this positon, with the two small bolts at the top pivot ball.
   D) Angle blade to the extreme right position. Adjust to obtain equal blade corner height in this position with the ⅝" bolt in top pivot ball. Angle to the extreme left position and check again. The ideal setting is to have the blade touch the floor equally in all positions.
7. Skid Shoes - Install as shown in Figure 22 with 2 bolts in each shoe and adjust as needed to minimize cutting edge wear.

PARTS GROUP
TABLE OF CONTENTS

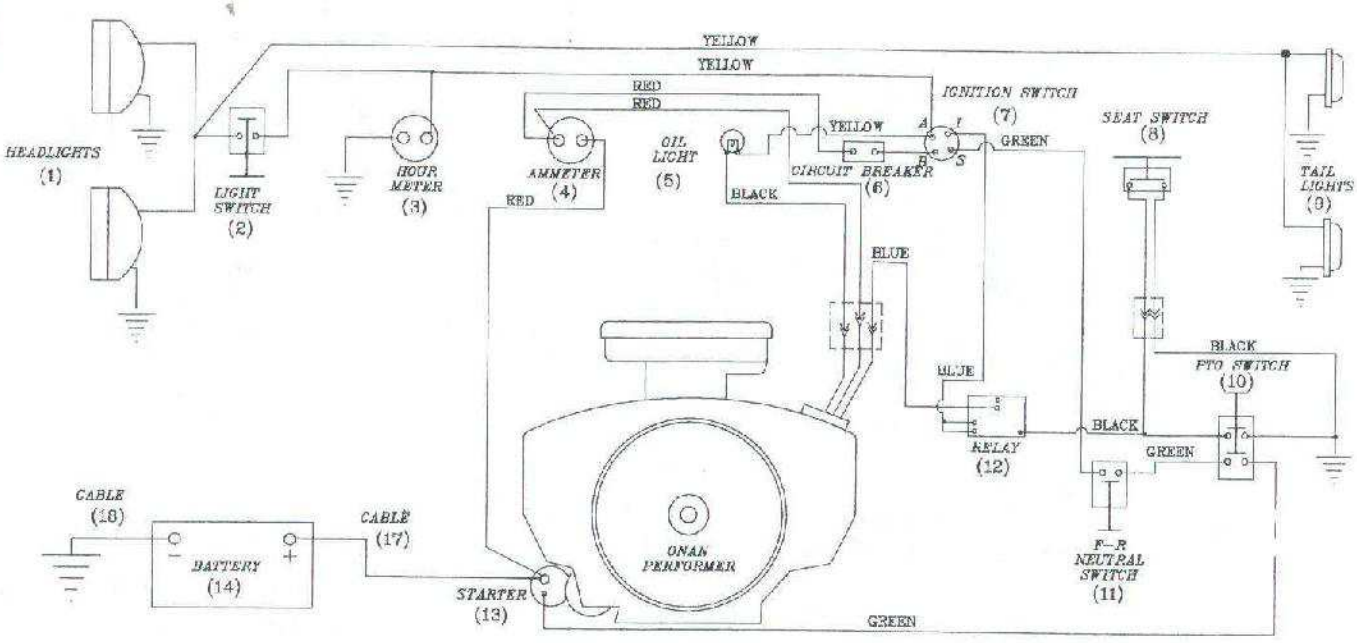


ONAN B48G ELECTRICAL

FOR S-20 TRACTOR Serial No. A60001 to A70000

FIGURE 24
PARTS LIST

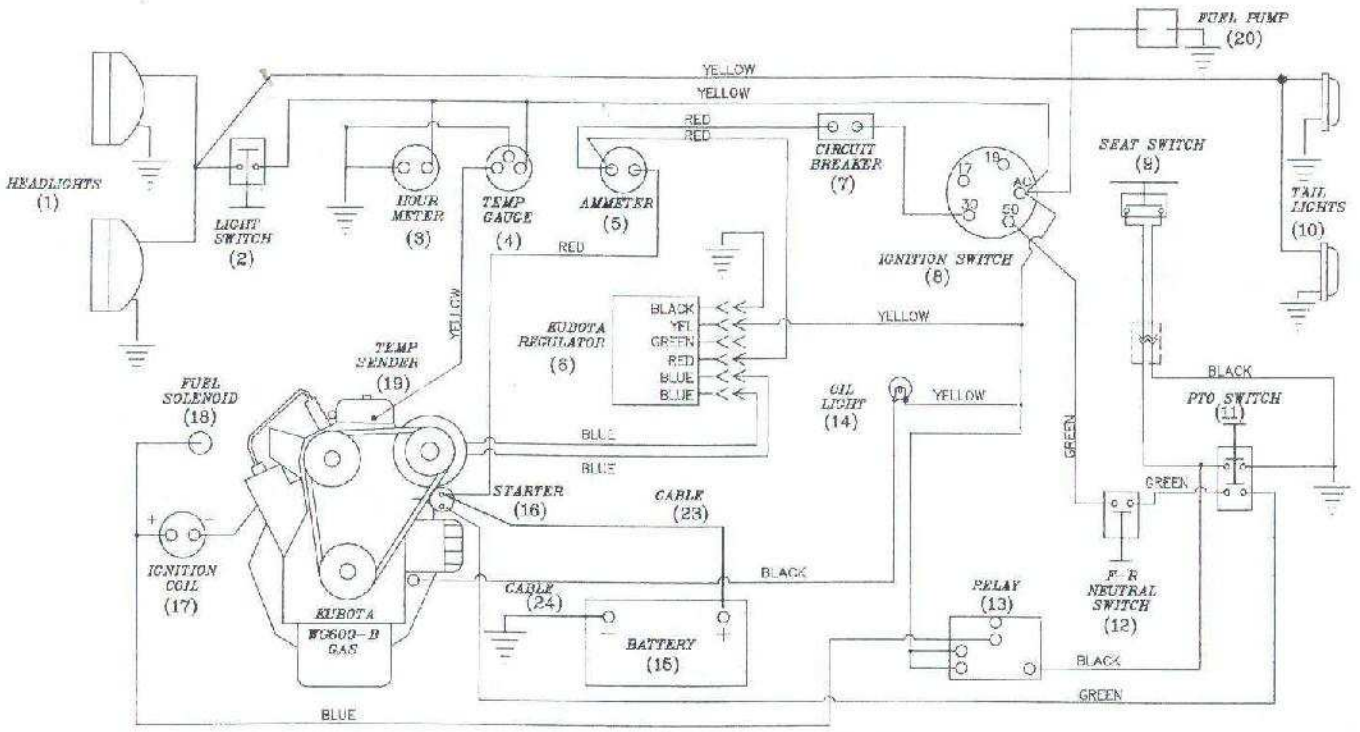
Ref.	Part No.	Description	Quantity
1	33-06	Head Lights	2
2	31-03	Light Switch	1
3	35-14	Hour Meter	1
4	35-16	Ammeter	1
5	33-07	Oil Pressure Light	1
6	35-40	Fuse (20 AMP)	1
7	31-02	Ignition Switch	1
8	31-14	Seat Switch	1
9	33-08	Tail Lights	2
10	31-13	PTO Switch	1
11	31-04	Neutral Switch	1
12	13-166-0535	Ignition Coil	1
13	13-191-1567	Starter	1
14	33-02	Battery (group 22F)	1
15	30-19	Battery Cable (Pos. 30" long)	1
16	30-18	Battery Cable (Neg. 15" long)	1
17	30-20	Wiring Harness, main (not illus.)	1
18	30-21	Wiring Harness, rear (not illus.)	1



ONAN P220 PERFORMER ELECTRICAL
FOR S-20 TRACTOR After Serial No. A70000

FIGURE 1
PARTS LIST

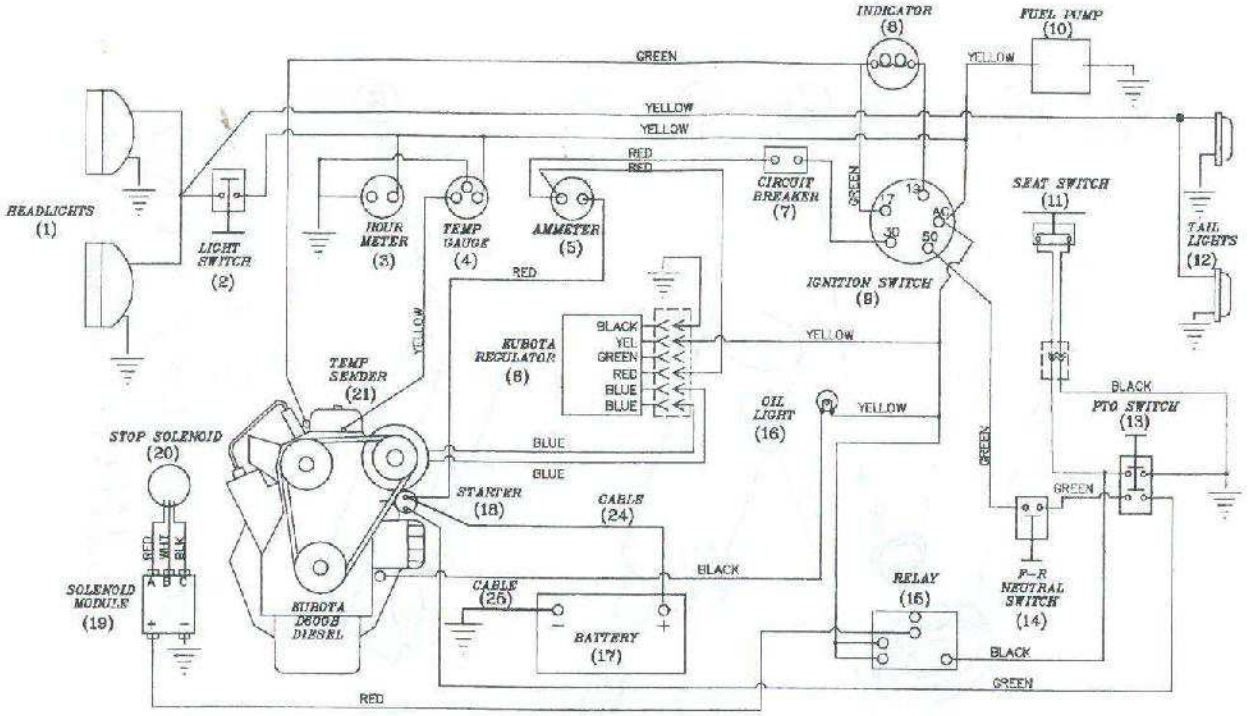
Ref.	Part No.	Description	Quantity
1	33-06	Head Lights	2
2	31-03	Light Switch	1
3	35-14	Hour Meter	1
4	35-16	Ammeter	1
5	33-07	Oil Pressure Light	1
6	35-40	Fuse (20 amp) (Before Ser. #A7O171)	1
6A	30-59	Circuit Breaker (After Ser. #A7O170)	1
7	31-02	Ignition Switch	1
8	31-12	Seat Switch	1
9	33-08	Tail Lights	2
10	31-11	PTO Switch	1
11	31-04	Neutral Switch	1
12	35-44	Relay	1
13	13-191-1567	Starter	1
14	33-02	Battery (group 22F)	1
15	30-61	Wiring Harness, Main (not illus.)	1
16	30-21	Wiring Harness, Rear (not illus.)	1
17	30-66	Battery Cable, To Starter	1
18	30-18	Battery Cable, Ground	1



KUBOTA GAS ELECTRICAL
FOR S-20 TRACTOR

FIGURE 2
PARTS LIST

Ref.	Part No.	Description	Quantity
1	33-06	Head Lights	2
2	31-03	Light Switch	1
3	35-14	Hour Meter	1
4	35-47	Temperature Gauge	1
5	35-16	Ammeter	1
6	13-24	Kubota Regulator	1
7	35-40	Fuse (20 amp) (Before Serial #A7K142)	1
7A	30-59	Circuit Breaker (After Serial #A7K141)	1
8	13-23	Ignition Switch	1
9	31-12	Seat Switch	1
10	33-08	Tail Lights	2
11	31-11	PTO Switch	1
12	31-04	Neutral Switch	1
13	35-44	Relay	1
14	33-07	Oil Pressure Light	1
15	33-02	Battery (Group 22F)	1
16	13-15852-63010	Starter	1
17	13-15661-68900	Ignition Coil	1
18		Fuel Solenoid (Supplied by Kubota)	1
19	35-48	Water Temperature Sender	1
20	35-33	Electric Fuel Pump	1
21	30-21	Wiring Harness, Rear (not illus.)	1
22	30-62	Wiring Harness, Main (not illus.)	1
23	30-65	Battery Cable, Ground	1
24	30-64	Battery Cable, To Starter	1
25	30-67	Engine Ground Cable (not illus.)	1



KUBOTA DIESEL ELECTRICAL
FOR S-20 TRACTOR

FIGURE 3
PARTS LIST

Ref.	Part No.	Description	Quantity
1	33-06	Headlights	2
2	33-03	Light Switch	1
3	35-14	Hour Meter	1
4	35-47	Water Temperature Gauge	1
5	35-16	Ammeter	1
6	13-24	Kubota Regulator	1
7	35-40	Fuse (20 amp) (Before Ser. #A7K142)	1
7A	30-59	Circuit Breaker (After Ser. #A7K141)	1
8	13-15221-65950	Glow Plug Indicator 20 84	1
9	13-23	Ignition Switch	1
10	35-33	Electric Fuel Pump	1
11	31-14	Seat Switch	1
12	33-08	Tail Lights	2
13	31-11	PTO Switch	1
14	31-04	Neutral Switch	1
15	35-44	Relay	1
16	33-07	Oil Presssure Light	1
17	33-02	Battery (Group 22F)	1
18	13-15852-63010	Starter	1
19	35-51	Solenoid Module (After Ser. #A7K141)	1
20	35-43	Stop Solenoid (Before Ser. #A7K142)	1
20A	35-49	Stop Solenoid (After Ser. #A7K141)	1
21	35-48	Water Temperature Sender	1
22	30-62 30-063	Wiring Harness, Main (not illus.)	1
23	30-21	Wiring Harness, Rear (not illus.)	1
24	30-64	Battery Cable, To Starter	1
25	30-65	Battery Cable, Ground	1
26	30-67	Engine Ground Cable (not illus.)	1

ENGINE PARTS
ONAN (standard)
Figure 5

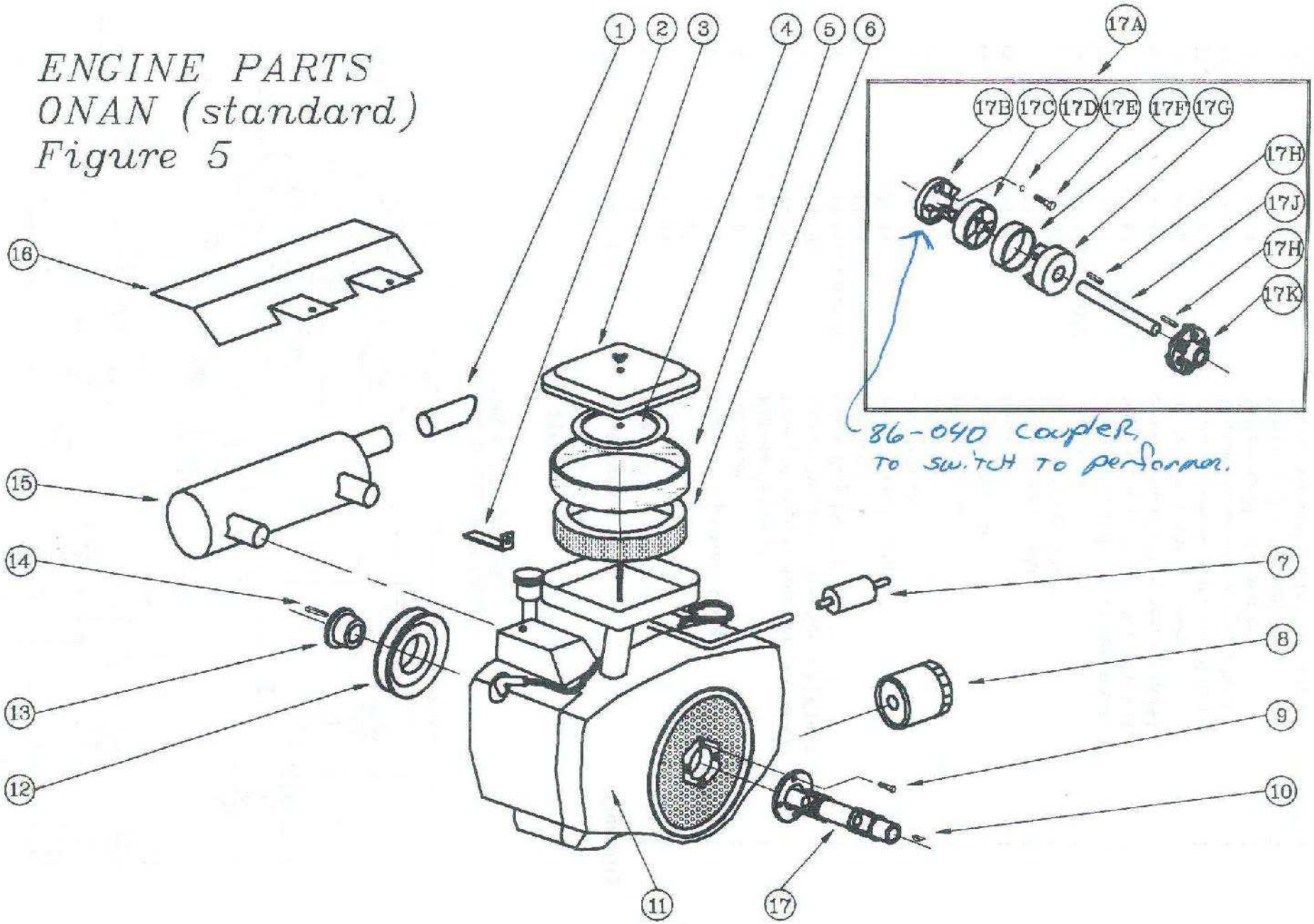
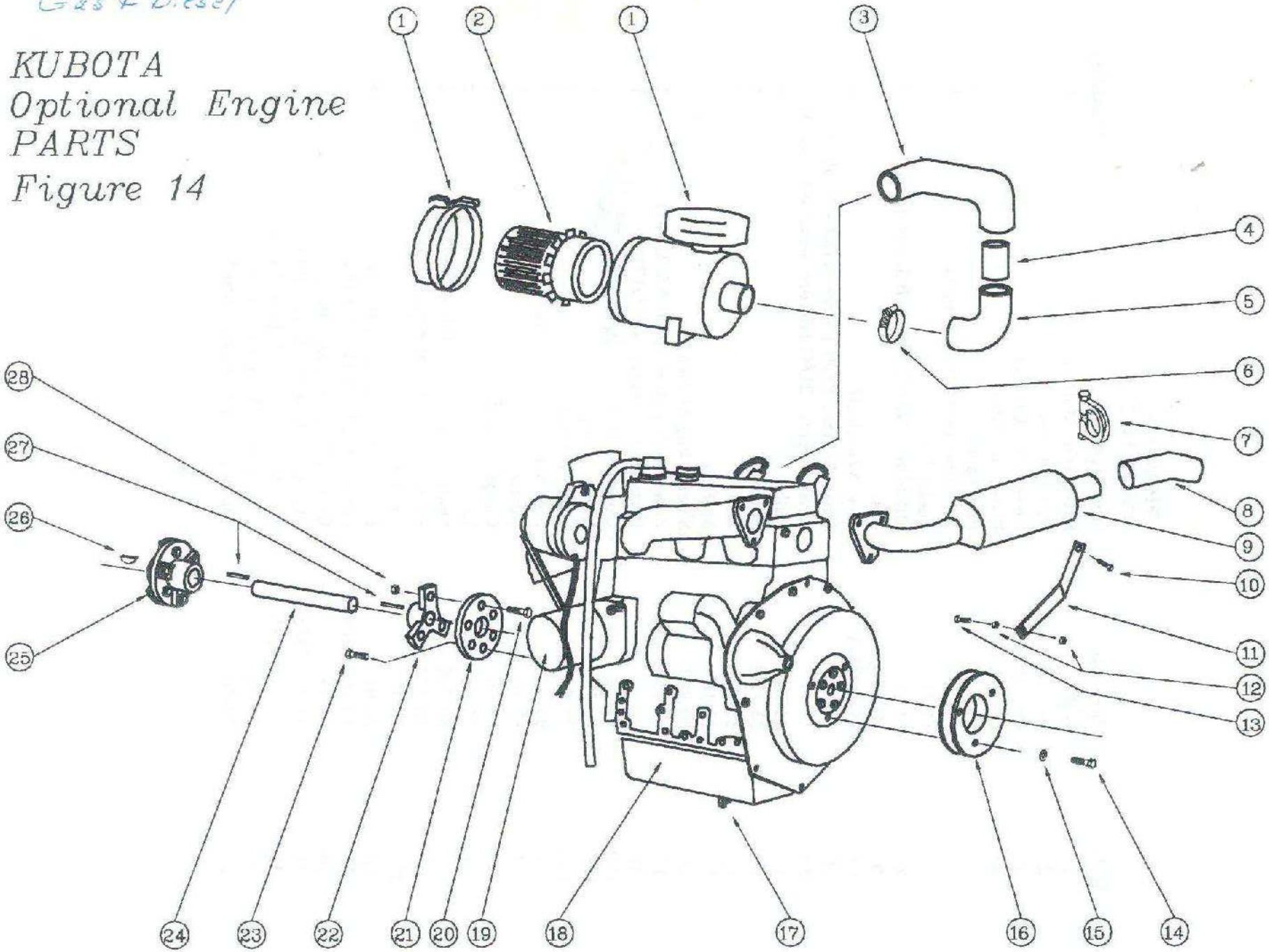


FIGURE 5
PARTS LIST

Ref.	Part No.	Description	Quantity
1	1489	Extension, Muffler	1
2	64-179	Belt Retainer	1
3	13-140-1663	Cover, Air Cleaner	1
4	13-140-1692	Plate, Air Filter	1
5	13-07	Precleaner	1
6	13-06	Air Filter (Baldwin PA2063)	1
7	13-21	Fuel Filter	1
8	13-11	Oil Filter (NAPA 1374) (Baldwin B228)	1
9	90-0508	Bolt	4
10	85-W0305	Key, Woodruff	1
11	13-33	Onan Engine, P220 (After Serial #7O000)	1
11A	13-17	Onan Engine, B48G (Before Serial #A7O000)	1
12	83-BK60H	Pulley	1
13	83-H18	Bushing	1
14	85-K0410	Key	1
15	13-18	Muffler	1
16	60-268	Shield, Engine Heat	1
17	87-116	Powershaft (After Serial #A7O171)	1
17A		Parts (Before Serial #A7O171)	1
17B	87-23	Coupler, Engine 86-040 to switch to Performer	1
17C	87-24	Insert, Coupler	1
17D	99-G02	Lock Washer	2
17E	99-12	Cap Screw, Socket Head	2
17F	87-26	Retainer	1
17G	87-25	Coupler, Shaft	1
17H	85-K0310	Key	2
17J	80-204	Shaft (Serial #A7O000-A7O171)	1
17J	80-152	Shaft (Before Serial #A7O000)	1
17K	87-46	Coupler	1
18	27-01	Fuel Line per ft. (not illus.)	4
19	13-167-0263	Spark Plug RS14YC (not illus.)	2
20	13-19	Clamp, Muffler (not illus.)	2
21	13-154-2343	Manifold, Exhaust R (not illus.)	1
22	13-154-2344	Manifold, Exhaust L (not illus.)	1
23	29-19	Nipple, Oil Drain (not illus.)	1
24	29-20	Elbow, Oil Drain (not illus.)	1

WG600
-WG600
Gas & Diesel

KUBOTA Optional Engine PARTS Figure 14



✓ = in stock

FIGURE 14
PARTS LIST

Ref.	Our Cost	Part No.	Description	Quantity
1	21.63	13-15372-11014	Air Cleaner Assembly	1
2		13-15222-11220	Element, Air Cleaner 26.33 air filter	1
3A		13-38	Air Intake Hose (Kubota Gas)	1
3B		13-30	Air Intake Hose (Kubota Diesel) #18.44	1
4		14-11	Air Intake Connector	1
5	7.49	13-19461-11620	Air Intake Hose /	1
6		11-22	Hose Clamp	1
7		13-66711-54421	Muffler Clamp	1
8		13-66711-59411	Pipe Extension	1
9		14-[illegible] 010	Muffler	1
10		07-0610020	Bolt M6 x 20	1
11		64-295	Muffler Brace	1
12		92-05	Nut (5/16)	2
13		90-0510	Bolt (5/16 x 1¼)	1
14		90-0616	Bolt (⅜ x 2)	3
15		96-06	Lockwasher (⅜)	3
16		82-61	? Pulley, Special	1
17		13-29	Oil Drain Cock 26.11	1
18A		13-31	Engine D600B Kubota Diesel	1
18B		13-34	Engine WG600B Kubota Gasoline	1
19		13-15841-32431	Engine Oil Filter 8.84	1
20		91-0510	Bolt (5/16 x 1¼ NF)	3
21	2.07	87-113	Coupler Disc	1
22	7.81	87-112	Coupler Flange	1
23	.85	07-0812520	Bolt M8 x 20	3
24		80-178	Shaft	1
25	12.19	87-46	Coupler 28.60	1
26		85-W0305	Woodruff Key	1
27		85-0310	Key	2
28		93-05	Nut (5/16 NF)	3

Cost x 3 = net price if less than $15.00

Gas + Diesel

KUBOTA
Optional Engine
COOLING SYSTEM
PARTS

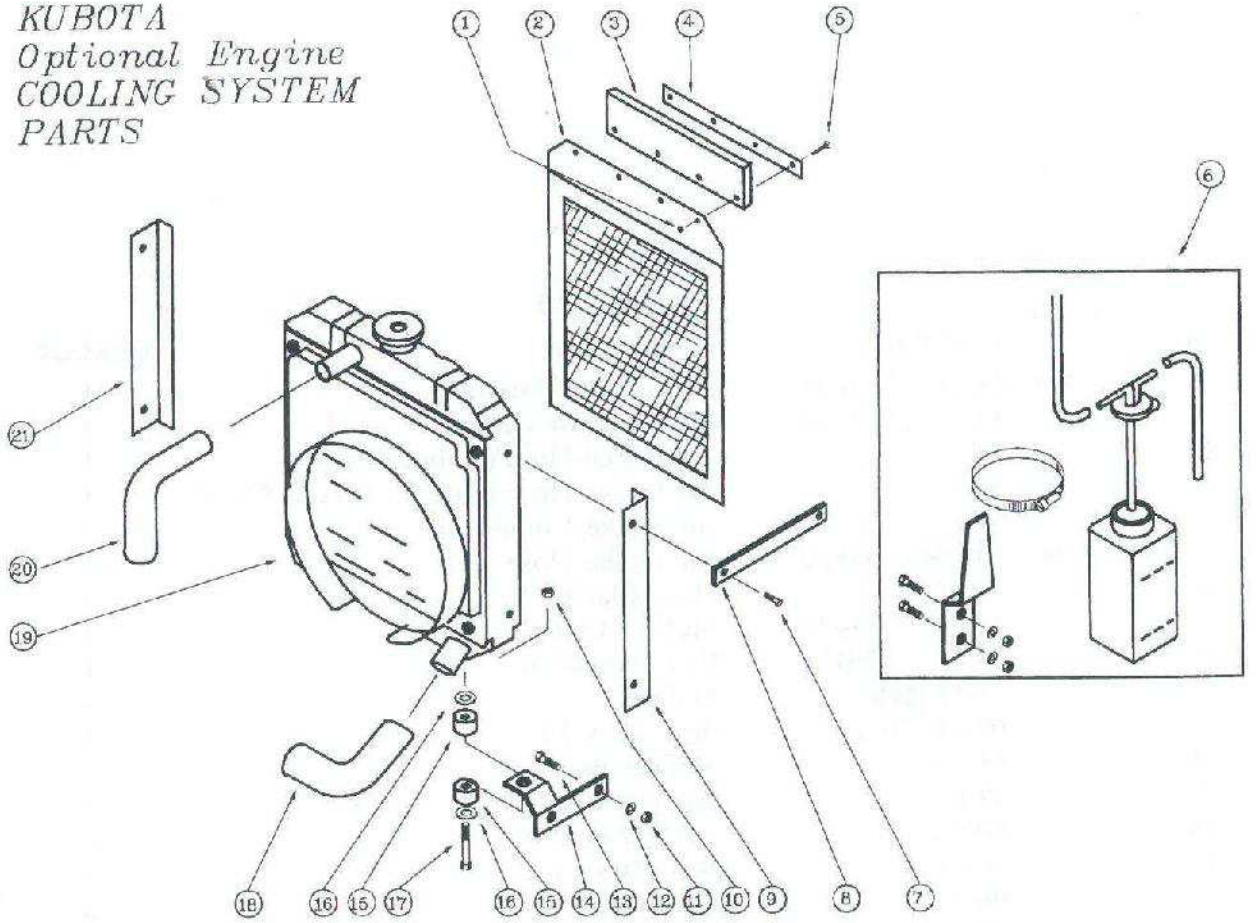


FIGURE 15
PARTS LIST

Ref.	Part No.	Description	Quantity
1	01-04	Nut (#8-32)	4
2	60-304	Screen, Radiator	1
3	44-68	Foam for Screen, radiator	1
4	64-246	Retainer Strip	1
5	01-02	Screw (#8-32 x ½)	4
6	70-29	Coolant Recovery Kit For Kubota	1
7	07-0610020	Bolt (M6 x 20)	4
8	64-222	Upper Radiator Bracket	2
9	64-224	Radiator Screen Mount, Right	2
10		Nut (Supplied w/Radiator Kit)	2
11	92-06	Nut (⅜)	4
12	94-06	Lockwasher (⅜)	4
13	90-0610	Bolt (⅜ x 1¼)	4
14A	64-238	Radiator Support, Right	1
14B	64-239	Radiator Support, Left	1
15		Rubber Bushing (Supplied w/Radiator Kit)	4
16		Washer (Supplied w/Radiator Kit)	4
17		Bolt (Supplied w/Radiator Kit)	2
18	13-15861-72850	Radiator Hose, Lower	1
19A	13-32	Radiator Kit Complete for Diesel	1
19B	13-34	Radiator Kit Complete for Gasoline	1
20	13-15861-72940	Radiator Hose, Upper	1
21	64-315	Radiator Screen Mount, Left	1

Gas & Diesel except #9

KUBOTA FUEL SYSTEM

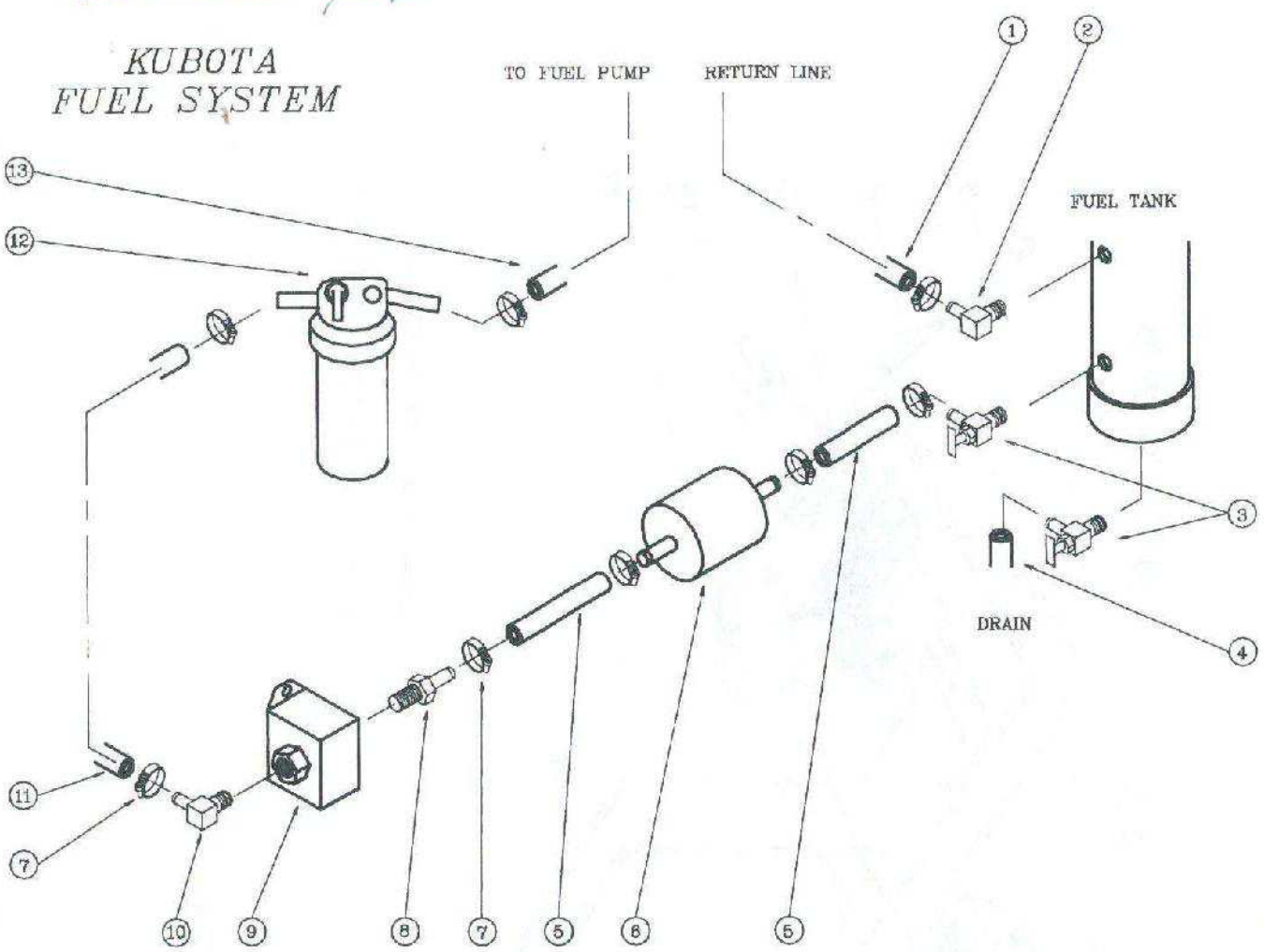
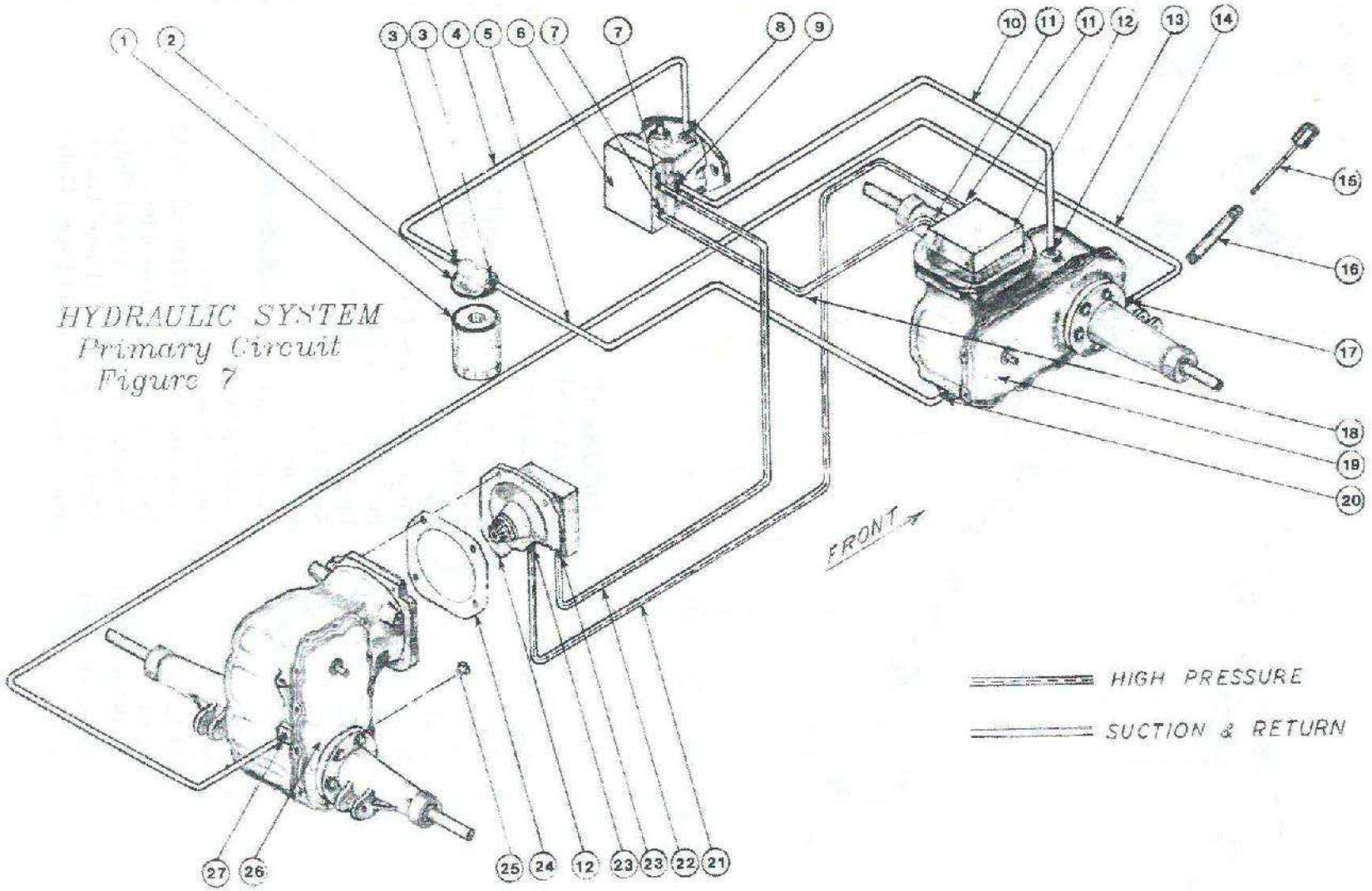


FIGURE 17
PARTS LIST

Ref.	Part No.	Description	Quantity
1	27-01	Return Line (¼ x 72) (Diesel Only)	1
2	29-59	Fitting 90 Deg. (Diesel Only)	1
3	29-47	Fuel Valve	2
4	56-07	Vinyl Drain Tube (¼ x 10)	1
5	27-01	Fuel Line (¼ x 2)	2
6	13-21	Fuel Filter in line 4.46	1
7	11-17	Small Hose Clamp	10
8	29-58 35-52 gravity fuel pump	Fitting	1
9	35-33	Electric Fuel Pump — ~~Both Trans~~ 26.18	1
10A	29-59	Fitting (Diesel Only)	1
10B	29-47	Fitting (Gasoline Only)	1
11A	27-12	Fuel Line (5/16 x 52) (Diesel Only)	1
11B	27-01	Fuel Line (¼ x 54) (Gasoline Only)	1
12A	13-19204-43010	Assembly, Fuel Filter (Diesel Only)	1
12B	13-15231-43563	Element, Fuel Filter (Diesel Only) 3.93	1
13	27-12	Fuel Line (5/16 x 16) Diesel Only)	1



HYDRAULIC SYSTEM
Primary Circuit
Figure 7

FIGURE 7
PARTS LIST

Ref.	Part No.	Description	Quantity
1	21-01	Filter (Steiner)	1
1A		Filter (Michigan Fluid Power S-29)	1
1B		Filter (Zinga AE25)	1
1C		Filter (Can-Flo RSE 30-25)	1
1D		Filter (Baldwin BT839)	1
2	21-02	Assembly, Filter Complete	1
3	25-2103-12-10	Fitting (Before Serial #A7K142 & A7O171)	2
3A	25-2103-8-10	Fitting (After Serial #A7K141 & A7O170)	2
4	22-01	Hose (⅝ x 8) (Onan)	1
4A	22-17	Hose (⅝ x 16¼) (Kubota)	1
5	22-18	Hose (⅝ x 26¼)	1
6	21-03	Pump, Hydraulic	1
7	25-2503-8-8	Fitting (90 Degree, O-Ring)	2
8A	25-2507-8-8	Fitting (90 Degree, Swivel)	1
8B	25-5603-8-10	Fitting (90 Degree, Long)	1
9	25-2503-8-6	Fitting (90 Degree, O-Ring)	1
10	22-15	Hose (⅜ x 19)	1
11	25-6801-LL-8	Fitting (90 Degree, XLong, O-Ring)	2
12	21-04	Motor, Hydraulic	2
13A	25-0502-10-4	Adapter	1
13B	25-2103-4-6	Fitting (90 Degree)	1
14	22-04	Hose (⅜ x 58)	1
15	24-01	Dipstick	1
16	29-11	Nipple (⅜ x 6)	1
17A	25-212T-6-6	Fitting (Tee)	1
17B	25-2103-6-6	Fitting (90 Degree)	1
18	20-24	Hose (½ x 27)	1
19	51-07	Transaxle, Front	1
20A	29-39	Nipple, ⅜ Close	1
20B	29-40	Elbow, ⅜, 45 Degree	1
20C	25-3103-6-10	Fiting (45 Degree)	1
21	20-44	Hose (½ x 44)	1
22	20-03	Hose (½ x 64)	1
23	25-3503-8-8	Fitting (45 Degree, O-Ring)	2
24	21-05	Gasket, Motor	2
25	25-05CP-10	Plug	1
26	51-08	Transaxle, Rear	1
27	25-2103-6-6	Fitting (90 Degree)	1

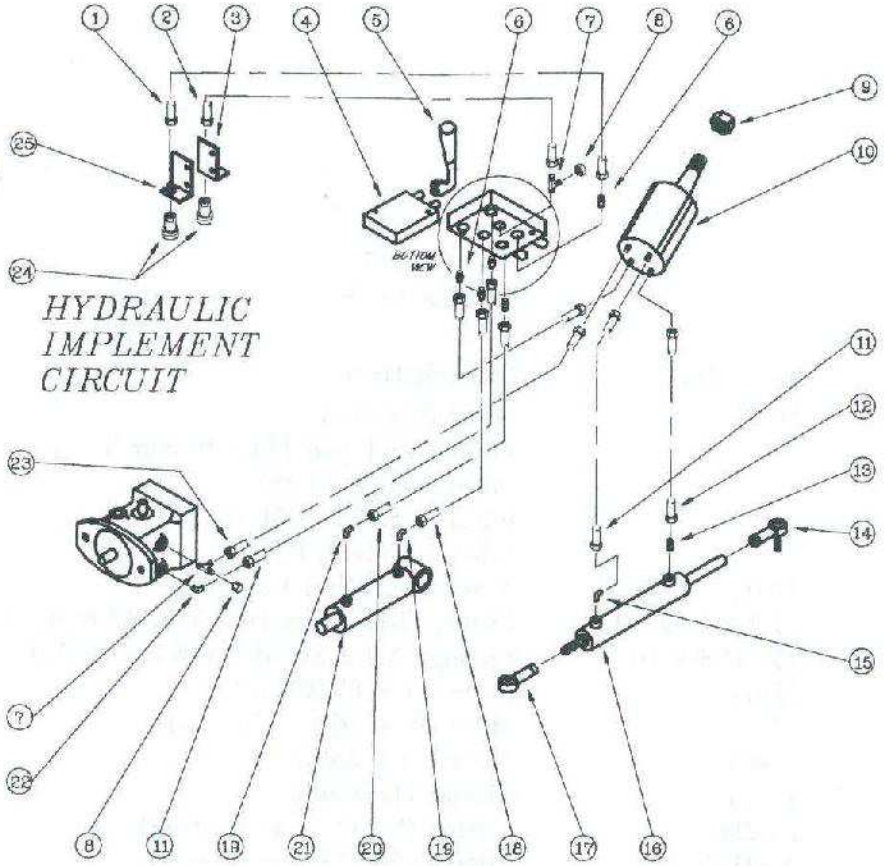


FIGURE 8
PARTS LIST

Ref.	Part No.	Description	Quantity
1	20-26	Hose (¼ x 17)	1
2	20-46	Hose (¼ x 13)	1
3	64-180	Bracket, Coupler	1
4	23-35	Valve, W/Float & Handles	1
5	23-38	Handle (Onan)	1
5A	40-150	Handle (Kubota)	1
6	25-0503-6-6	Fitting (O-Ring)	5
7	25-053T-6-6	Fitting (Tee)	2
8	25-6CP-6	Cap	2
9	99-E11	Nut, Steering Valve	1
10	23-14	Steering Valve	1
11	20-28	Hose (¼ x 28)	2
12	20-06	Hose (¼ x 24)	1
13	25-0103-4-6	Fitting	1
14	43-10S	Rod End Spherical	1
15	25-2103-4-6	Fitting (90 Degree)	1
16	23-02	Cylinder, Steering	1
17	43-08	Rod End, Spherical	1
18	20-45	Hose (¼ x 15½)	1
19	25-2103-6-6	Fitting (90 Degree)	2
20	20-27	Hose (¼ x 22)	1
21	23-05	Cylinder, Front Lift	1
22	25-2503-6-6	Fitting (90 Degree)	1
23	20-30	Hose (¼ x 14)	1
24A	23-03	Coupler, Female	2
24B	23-33	Dust Plug (not illus.)	2
25	64-175	Bracket, Coupler (Onan)	1
25A	64-219	Bracket, Coupler (Kubota)	1

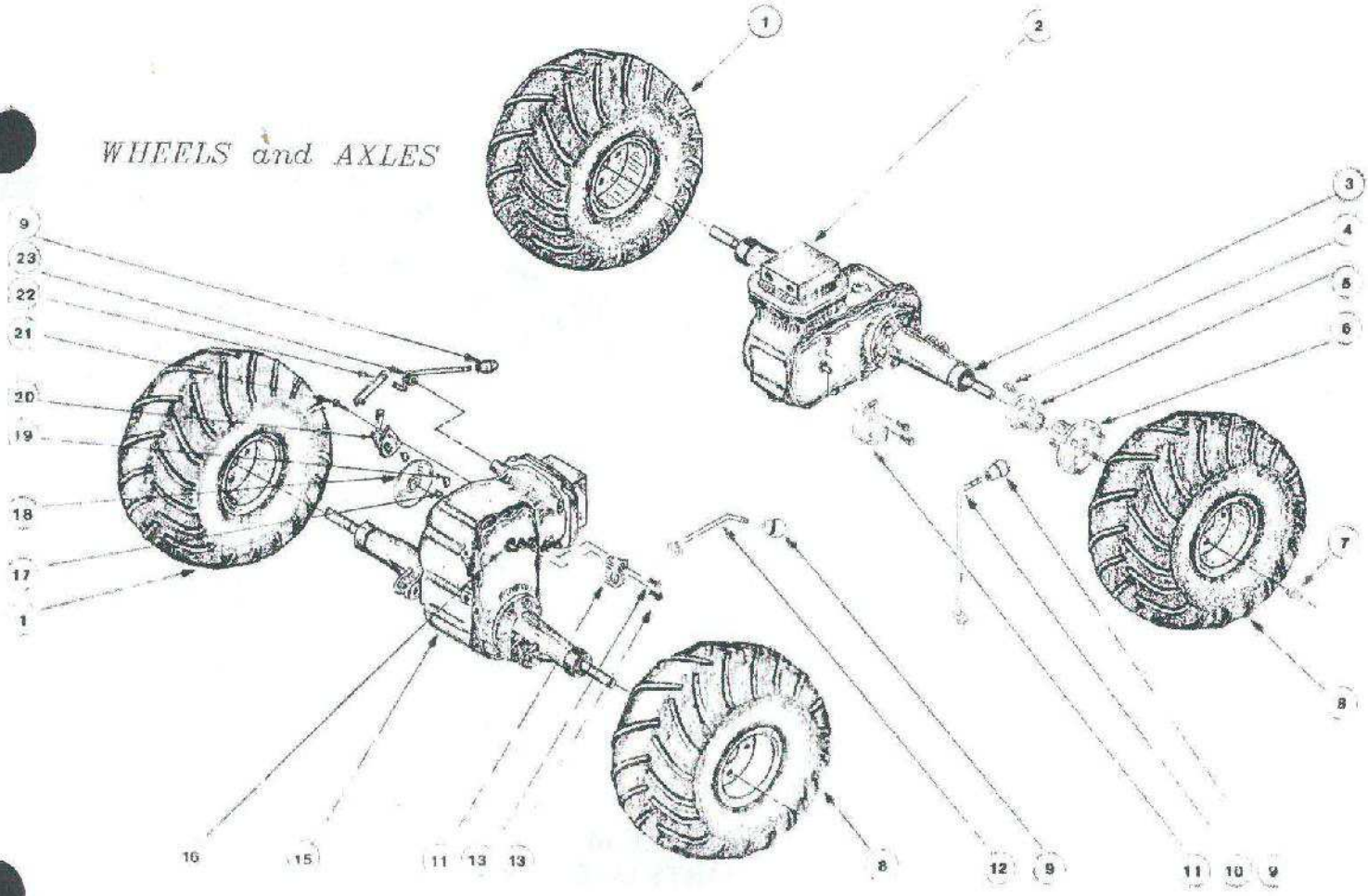


FIGURE 9
PARTS LIST

Ref.	Part No.	Description	Quantity
1	53-15	Wheel & Tire, Left	2
2	51-07	Transaxle, Front (No Motor)	1
3A	89-06	Seal, Axle (NOK 1206-X1)	4
3B	55-R18	Bearing, Axle (NACHI R18) (not illus.)	4
4	85-K0410	Key	4
5	83-P1180	Bushing	4
6	53-35	Hub (Before Serial #A7K081)	4
6A	53-58	Hub (After Serial #A7K080)	4
7	99-E01	Lug Nut	16
8	53-16	Wheel & Tire, Right	2
9	47-01	Knob, Small	3
10	40-140	Lever, Front Shifter	1
11	64-176	Bracket, Shifter	2
12	40-141	Lever, Rear Shifter	1
13	90-0406	Bolt (¼ x ¾)	4
15	51-08	Transaxle, Rear (No Motor)	1
16	89-07	Seal, Shifter Rod	2
17	85-W0306	Key, Woodruff	1
18	53-20	Disc, Parking Brake	1
19	53-21	Puck, Brake (Set of 2)	1
20	53-22	Assembly, Parking Brake	1
21	90-0612	Bolt (⅜ x 1½)	2
22	40-33	Link, Brake	1
23	40-34	Lever, Brake	1

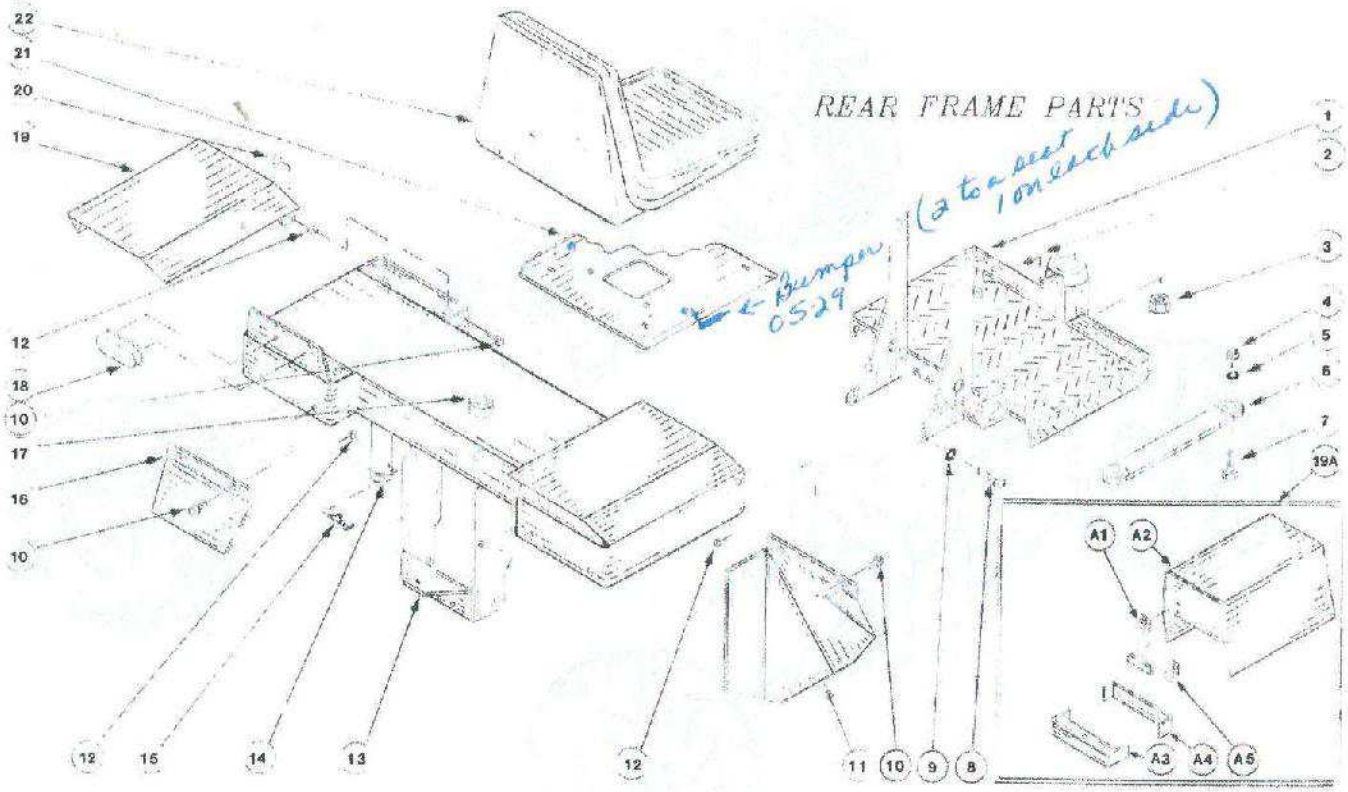
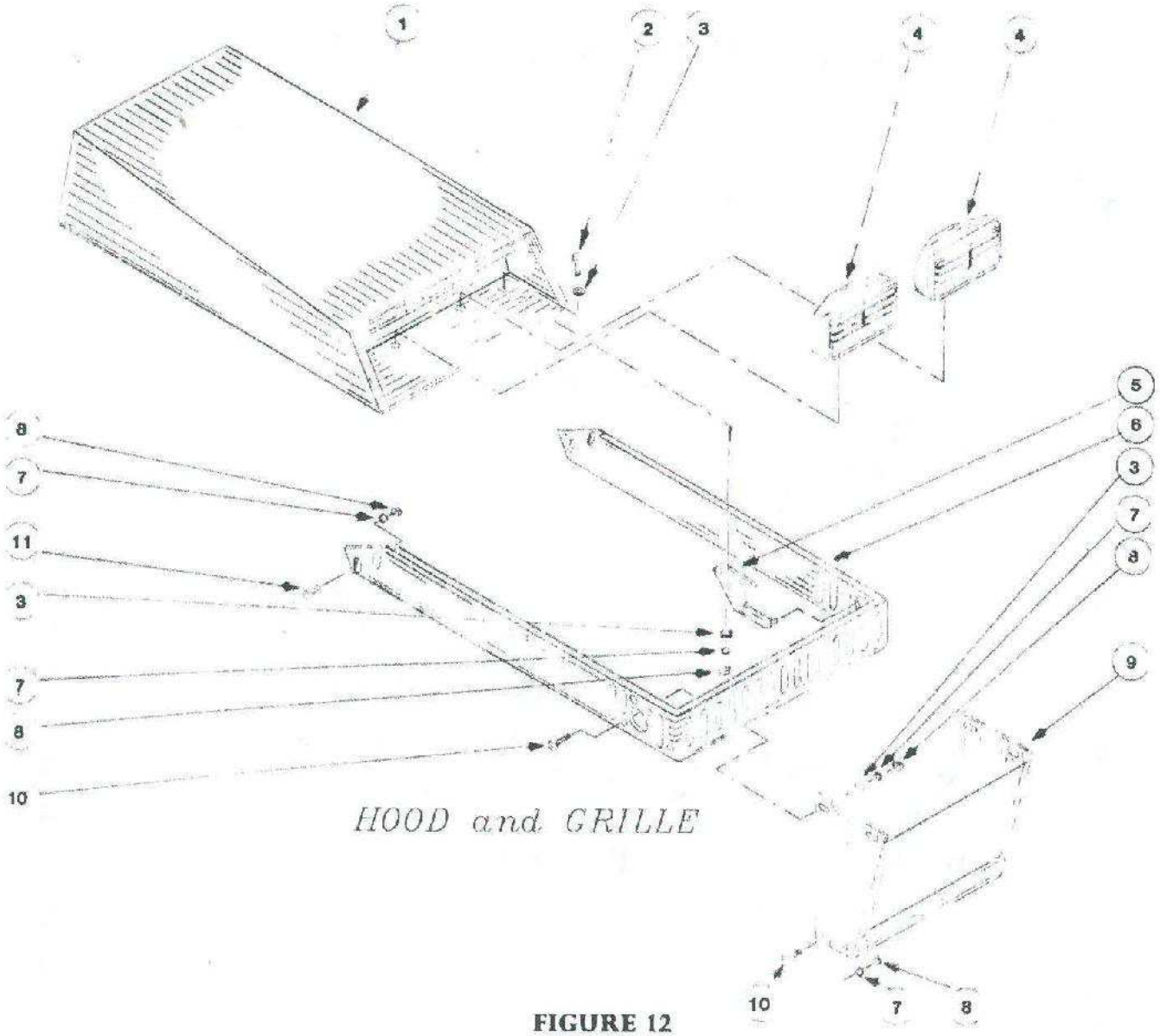


FIGURE 10
PARTS LIST

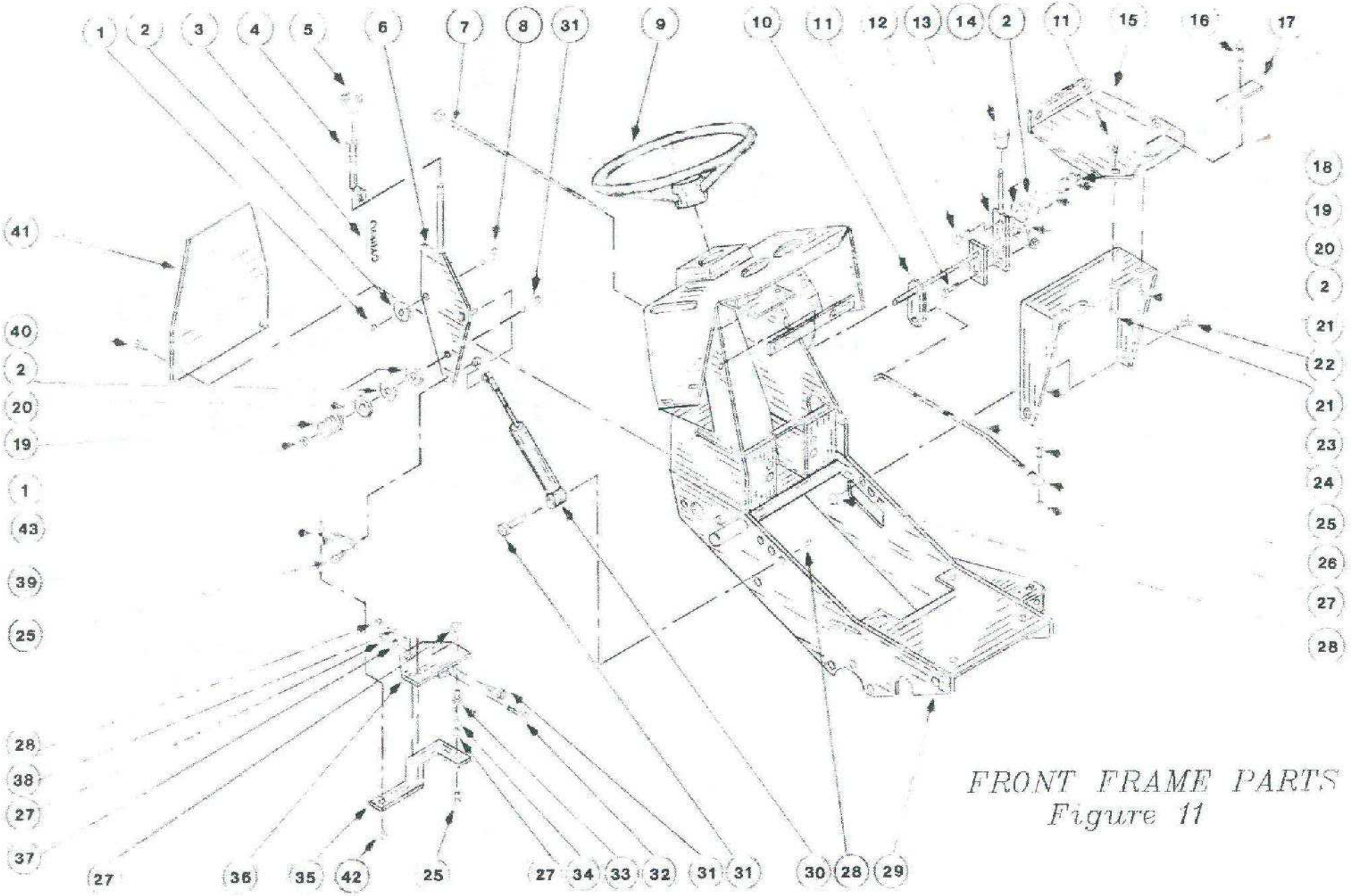
Ref.	Part No.	Description	Quantity
1	62-435	Frame, Rear	1
2	29-14	Fitting, Grease	1
3	99-A16	Locknut (1")	1
4	93-10	Nut (⅝ SAE)	2
5	96-10	Lockwasher (⅝)	2
6	62-116	Link, Center	1
7	91-1016	Bolt (⅝ x 2 SAE)	2
8	90-0814	Bolt (½ x 1¾)	8
9	96-08	Lock Washer (½)	8
10	90-0408	Bolt (¼ x 1)	12
11A	60-266	Fender, Right Front	1
11B	60-267	Fender, Left Front	1
12	92-04	Nut (¼)	12
13	62-434	Frame, Gas Tank	1
14	24-10	Cap, 2" NPT	1
15	29-16	Valve, Fuel Shutoff	1
16A	60-264	Fender, Right Rear	1
16B	60-265	Fender, Left Rear	1
17	47-07	Cap, Fuel Filler	1
18	33-08	Tail Lights	2
19	60-261	Lid, Tool Box	2
19A		Kubota Only	0
19B	47-30	Rubber Latch	2
19C	60-302	Rear Fender Lid	2
19D	64-243	Battery Holder Front	1
19E	64-242	Battery Holder Rear	1
20	99-A04	Locknut (⅜)	4
21	62-439	Plate, Seat	1
22A	47-24	Seat, W/Switch	1
22B	47-29	Seat, High Back w/Switch	1



HOOD and GRILLE

FIGURE 12
PARTS LIST

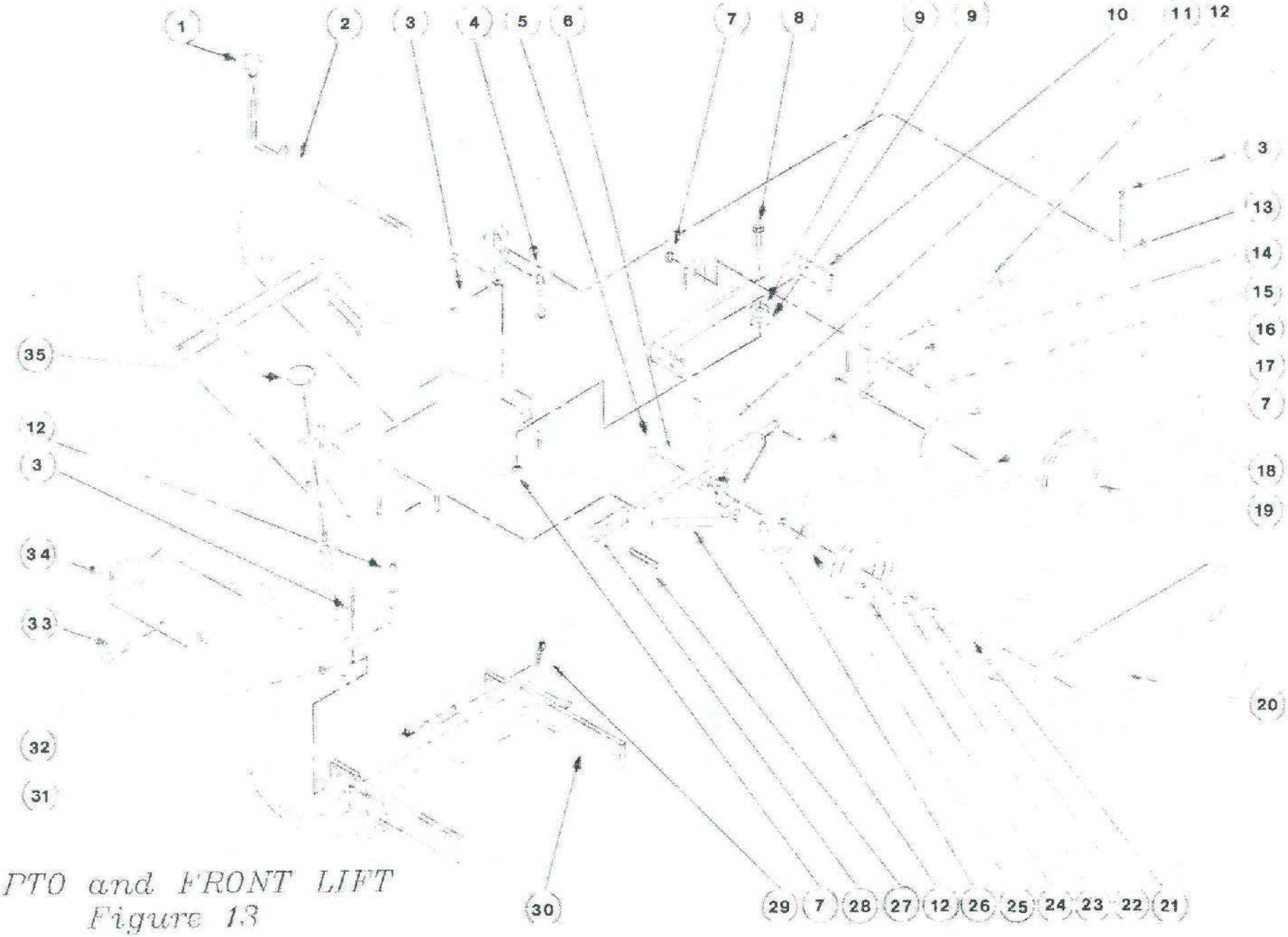
Ref.	Part No.	Description	Quantity
1	60-263	Hood	1
2	90-0408	Bolt (¼ x 1)	4
3	94-04	Washer	14
4	33-06	Head Lights	2
5A	64-181	Hinge, Hood Left	1
5B	64-182	Hinge, Hood Right	1
6	60-260	Panel, Side (Onan)	1
6A	60-321	Panel, Side (Kubota)	1
7	96-04	Lockwasher	20
8	92-04	Nut (¼)	20
9	62-438	Grill, Front Assembly	1
10	90-0406	Bolt (¼ x ¾)	10
11	99-F056	Bolt	4
12	00-45	Decal, Steiner (not illus.)	2
13	00-47	Decal, S-20 (not illus.)	2



FRONT FRAME PARTS
Figure 11

FIGURE 11
PARTS LIST

Ref.	Part No.	Description	Quantity
1	99-A06	Locknut (3/8)	1
2	05-24	Washer, Friction	6
3	41-13	Spring	1
4	40-153	Neutral Tube (After Serial #A7O023)	1
4A	40-137	Neutral Tube (Before Serial #A7O024)	1
5	47-03	Knob, Large	1
6	40-152	For-Rev Lever (After Serial #A7O023)	1
6A	40-136	For-Rev Lever (Before Serial #A7O024)	1
7	47-23	Cable, Choke	1
8	90-0614	Bolt (3/8 x 1 3/4)	1
9	47-19	Wheel, Steering	1
10	42-252	Linkage, Throttle	1
11	90-0508	Bolt (5/16 x 1)	1
12	90-0514	Bolt (5/16 x 1 3/4)	1
13	40-1424	Lever, Throttle	1
14	47-01	Knob, Small	1
15	64-170	Battery Tray (Onan Only)	1
16	90-0516	Bolt (5/16 x 2)	1
17	64-06	Battery Hold Down (Onan Only)	1
18	99-A05	Locknut (5/16)	1
19	41-39	Spring, Compression	1
20	99-B10	Washer	2
21	92-05	Nut (5/16)	3
22	90-0608	Bolt (3/8 x 1)	4
23	64-1743-8-10	Battery Support (Onan Only)	1
24	42-254	Rod Throttle (Onan Only)	1
25	90-0408	Bolt (1/4 x 1)	3
26	43-04	Rod End, Spherical (Onan Only)	1
27	92-04	Nut (1/4)	4
28	92-06	Nut (3/8)	7
29	62-433	Frame, Main	1
30	47-02	Stabilizer	1
31	90-0614	Bolt (3/8 x 1 3/4)	1
32	90-0416	Bolt (1/4 x 2)	1
33	50-25	Rubber Grommet	3
34	95-04	Washer (1/4 SAE)	3
35	40-134	Arm, Pump	1
36	40-135	Hub, Pump Lever	1
37	96-06	Lock Washer (3/8)	7
38	96-04	Lock Washer (1/4)	7
39	43-04M	Rod End, Spherical	1
40	99-C0406	Bolt, Self Tapping	2
41	60-30306	Panel, Pump Access	1
42	93-04	Nut (1/4 SAE)	1
43	43-04S	Rod End, Spherical	1
44	00-44	Decal, Dash Panel (not illus.)	1



PTO and FRONT LIFT
Figure 13

FIGURE 13
PARTS LIST

Ref.	Part No.	Description	Quantity
1	47-01	Knob, Small	1
2	40-138	Lever, PTO (Onan Only)	1
2A	40-186	Lever, PTO (Kubota Only)	1
3	02-CP0308	Cotter Pin	3
4	41-13	Spring	1
5	92-08	Nut (½)	1
6	96-08	Lock Washer	1
7	92-06	Nut (⅜)	1
8	90-0616	Bolt (⅜ x 2")	2
9	99-B12	Spacer	4
10	62-440	Support, Front End (Onan Only)	1
11	62-441	Frame, Idler	1
12	41-10	Spring	3
13	42-251	Link, PTO Spring	1
14	40-133	Arm, Idler (Onan Only)	1
15	90-0608	Bolt (⅜ x 1")	1
16	02-CP0512	Cotter Pin	1
17	83-13	Idler, Flat	1
18	94-08	Flat Washer	1
19	81-A38	Belt, Engine	1
20	81-A40	Belt, Implement	1
21A	99-F31	Bolt, Special	1
21B	86-33	Bushing	1
22	95-08	Flat Washer (SAE)	1
23	83-IDH1	Bushing, Idler	1
24	83-2BK50H	Pulley	1
25	99-E0650H	Nut (Jam)	1
26	64-103	Retainer, Belt	1
27	02-RP1224	Roll Pin	1
28	64-05	Lock, Idler	1
29	02-CP0510	Cotter Pin	2
30	62-445	Hitch Front	1
31	03-1022	Clevis Pin	2
32	40-139	Lever,Implement Release (Onan)	1
32A	40-165	Lever, Implement Release (Kubota)	1
33	90-0810	Bolt (½ x 1¼)	4
34	62-443	Frame, Lower Front	1
35	47-03	Knob, Large (Onan)	1
35A	47-01	Knob, Small (Kubota)	1

KUBOTA Optional Engine SUB–FRAME PARTS Figure 16

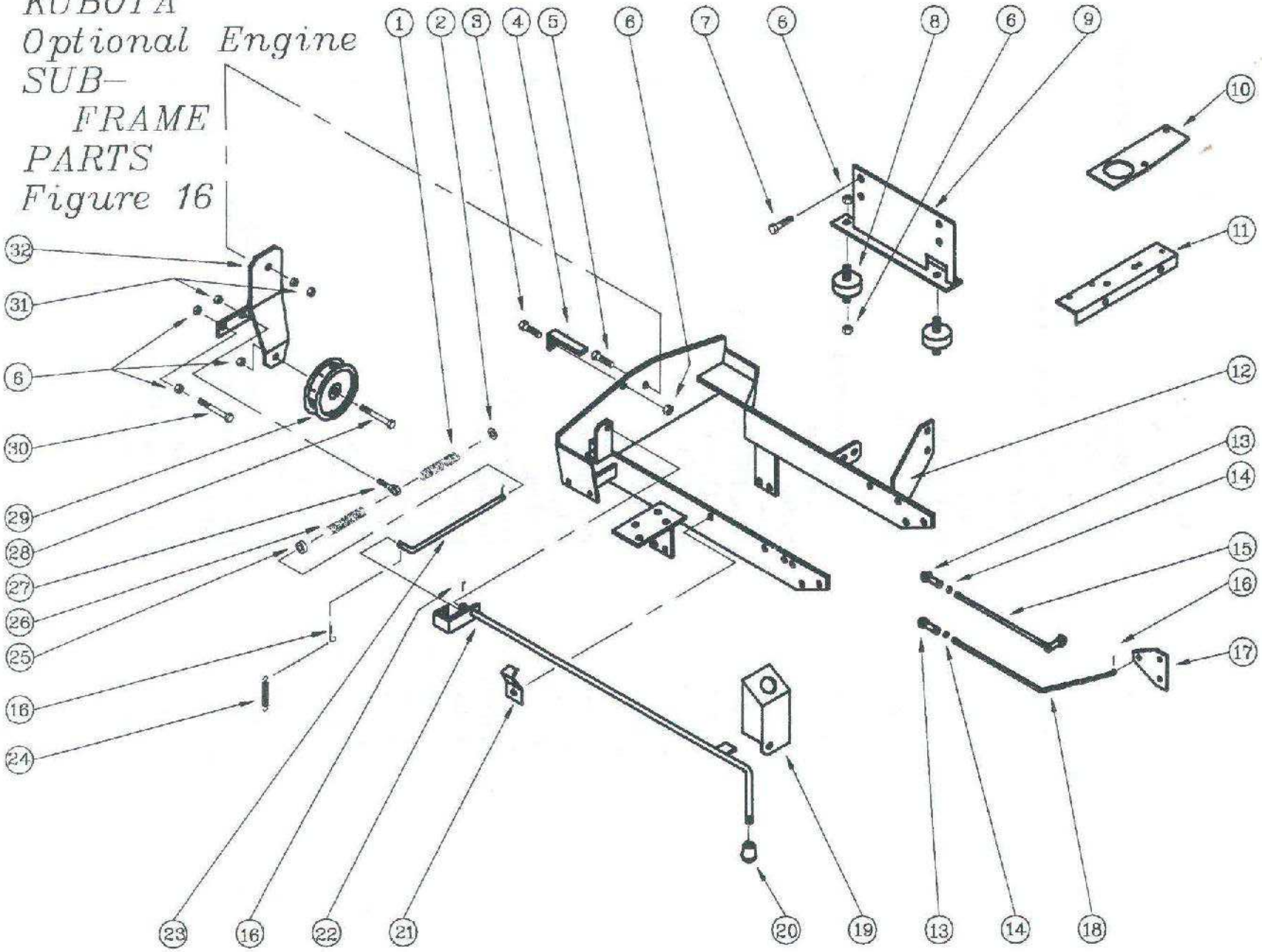
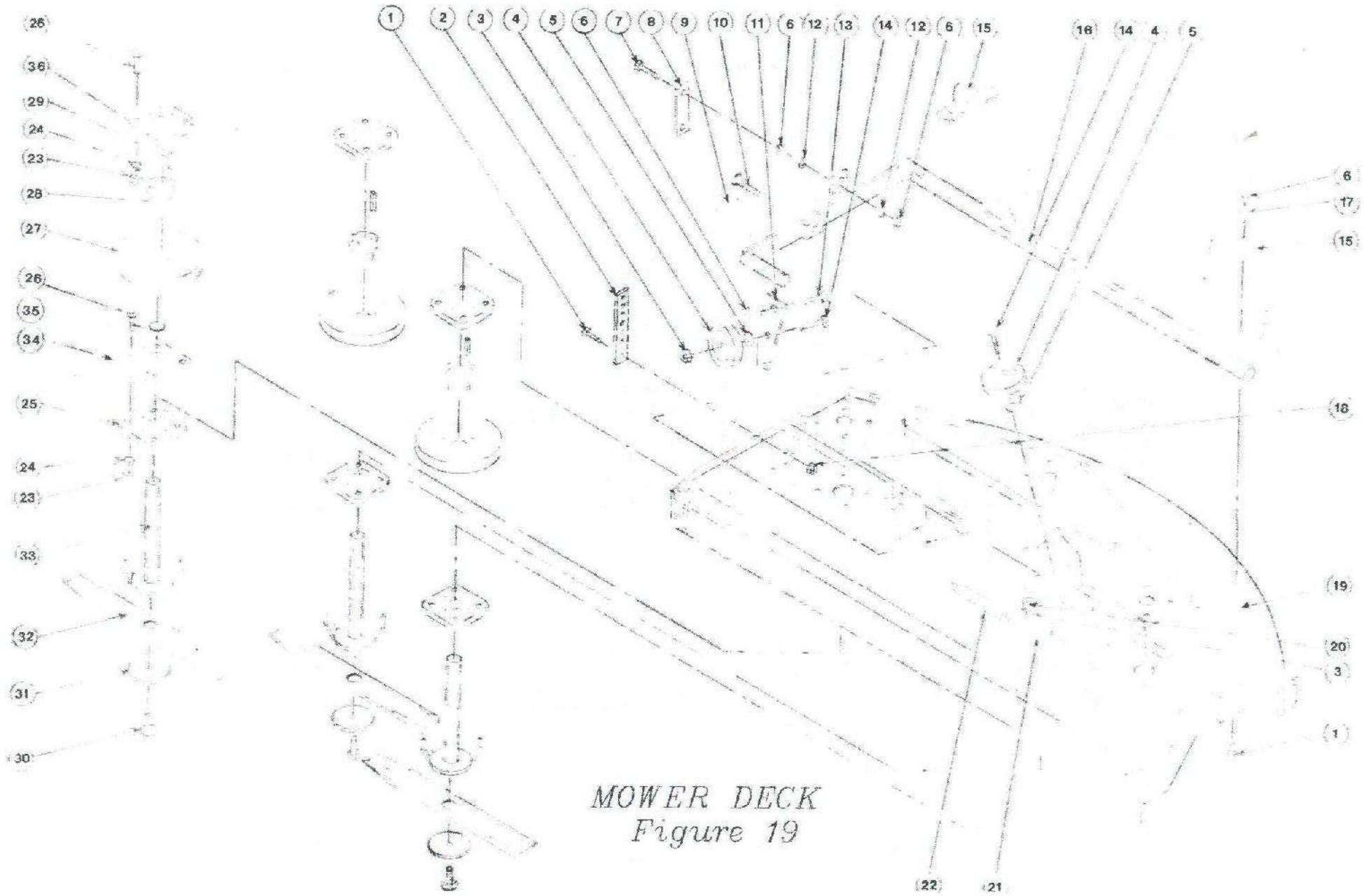


FIGURE 16
PARTS LIST

Ref.	Part No.	Description	Quantity
1	41-21	Compression Spring	2
2	95-06	Flat Washer	1
3	90-0612	Bolt (⅜ x 1½)	1
4	64-179	Belt Retainer	1
5	90-0608	Bolt (⅜ x 1)	1
6	92-06	Nut (⅜)	12
7	07-1012520	Bolt (M10 x 20)	8
8	05-06	Motor Isolator	4
9	62-471	Engine Mount Plate	2
10	64-284	Hour Meter Bracket	1
11	64-218	Solenoid and Relay Mount Bracket	1
12	62-470	Sub-Frame for Kubota	1
13	43-04	Spherical Rod End ¼"	2
14	93-04	Nut (¼)	2
15	42-277	Stop Solenoid Linkage, Diesel Only	1
16	02-CP0308	Cotter Pin	3
17	64-220	Throttle Lever Plate	1
18A	42-276	Throttle Linkage, Diesel Only	1
18B	42-310	Throttle Linkage, Gasoline Only	1
19	64-215	PTO Switch Mount	1
20	47-01	Knob	1
21	64-257	PTO Bracket	1
22	40-186	PTO Lever	1
23	42-309	PTO Link	1
24	41-13	Spring	1
25	85-SC06	Set Collar ⅜"	1
26	41-21	Compression Spring	1
27	64-285	Idler Fastener	1
28	90-0616	Bolt (⅜ x 2)	1
29	83-13	Flat Idler	1
30	90-0620	Bolt (⅜ x 2½)	1
31	99-A06	Locknut (⅜)	2
32	40-149	PTO Clutch Idler Arm	1

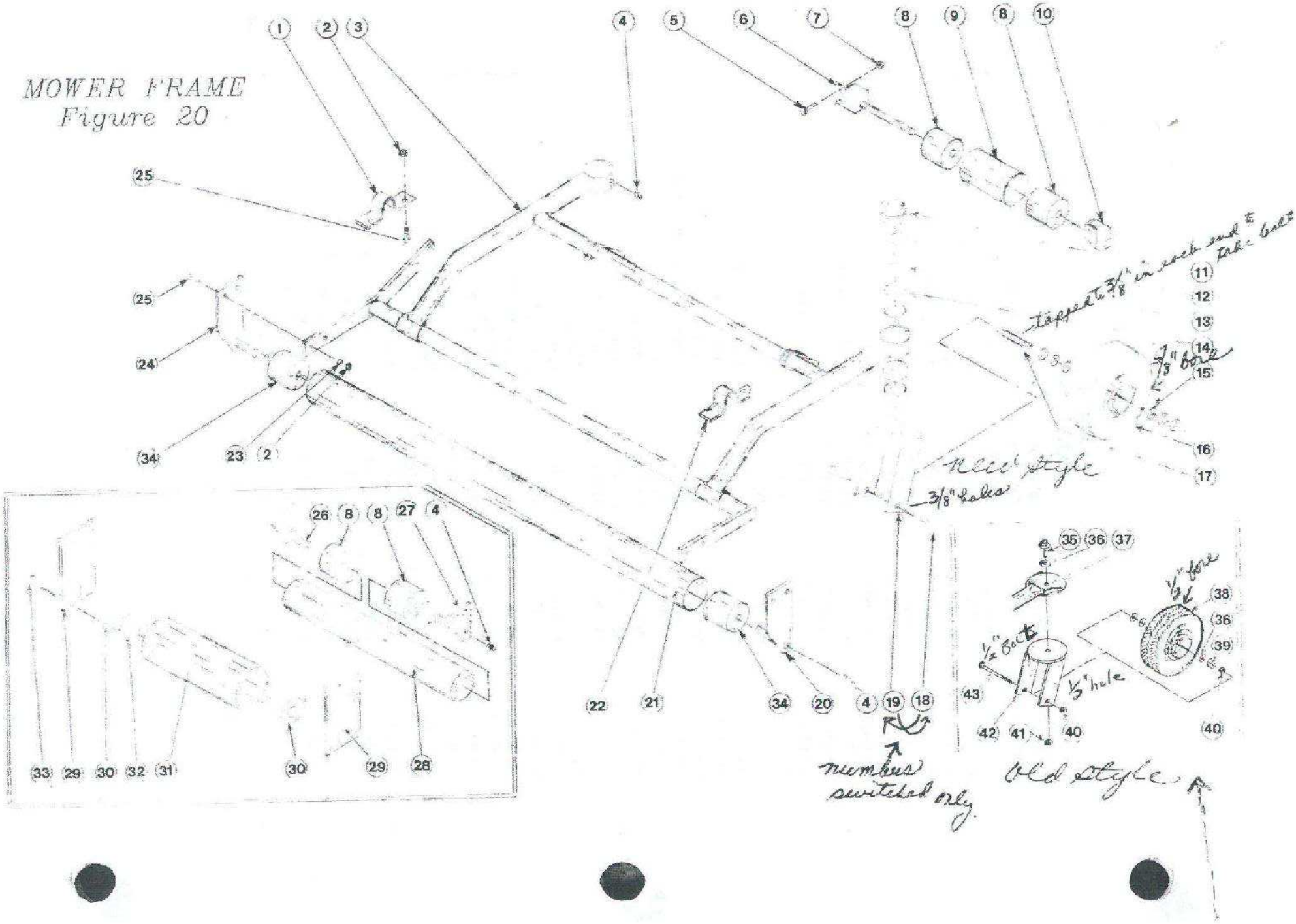


MOWER DECK
Figure 19

FIGURE 19
PARTS LIST

Ref.	48"Deck Part No.	60"Deck Part No.	72"Deck Part No.	Description	Quantity
1	90-0610	90-0610	90-0610	Bolt (⅜ x 1¼)	5
2	64-15	64-15	64-101	Strap, Adjusting	1
3	92-08	92-08	92-08	Nut (½)	2
4	83-12	83-12	83-12	Pulley, Idler	2
5	99-B12	99-B12	99-B12	Spacer	2
6	92-06	92-06	92-06	Nut (⅜)	6
7	90-0612	90-0612	90-0612	Bolt (⅜ x 1½)	2
8	42-55	42-55	42-180	Link, Connecting	1
9	02-PP03	02-PP03	02-PP03	Clip Pin	1
10	03-0610	03-0610	03-0610	Clevis Pin	1
11	40-43	40-43	40-43	Idler Arm	1
12	94-06	94-06	94-06	Flat Washer	2
13	90-0610	90-0610	90-0610	Bolt (⅜ x ¼)	1
14	90-0816	90-0816	90-0816	Bolt (½ x 2)	2
15	64-11	64-11	64-13	Clamp	2
16	40-44	40-45	40-104	Lever, Height Adjustment	1
17	96-06	96-06	96-06	Lockwasher	4
18	99-A06	99-A06	99-A06	Locknut	2
19	62-198	62-199	62-324	Main Deck	1
20	94-08	94-08	94-08	Flat Washer	1
21	45-10	45-10	45-10	Chain	1
22	41-10	41-10	41-10	Spring	1
23	92-07	92-07	92-07	Nut (7/16)	24
24	96-07	96-07	96-07	Lock Washer	24
25	55-RCJ16	55-RCJ16	55-RCJ16	Bearing, Lower	3
26	90-0710	90-0710	90-0710	Bolt (7/16 x 1¼)	24
27	83-BK50H	83-BK60H	83-BK80H	Pulley	3
28	83-H16	83-H16	83-H16	Bushing	3
29	85-K0410	85-K0410	85-K0410	Key	3
30	90-0808	90-0808	90-0808	Bolt (½ x 1)	3
31	99-B14	99-B14	99-B14	Washer, Special	3
32	79-27	79-28	79-29	Blade Standard High Lift	3
32A	79-14	79-15	79-22	Blade Optional Low Lift	3
33	80-115	80-115	80-115	Spindle	3
34	60-273	60-273	60-273	Shield, Dirt	3
35	26-01	26-01	26-01	O-Ring	3
36	55-VCJ16	55-VCJ16	55-VCJ16	Bearing, Upper	3

MOWER FRAME
Figure 20



70-028 KIT TO change TO New style.

FIGURE 20
PARTS LIST

Ref.	48"Deck Part No.	60"Deck Part No.	72"Deck Part No.	Description	Quantity
1	64-11	64-13	64-13	Clamp, Left	1
2	92-06	92-06	92-06	Nut (⅜)	8
3	62-543	62-544	62-645	Pipe Frame (After Serial #A7000	1
3A	61-129	62-130	62-323	Pipe Frame (Before Serial #A7001)	1
4	29-10	29-10	29-10	Grease Fitting ¼ NF	4
5	90-0506	90-0506	90-0506	Bolt (5/16 x ¾)	4
6	Opt.	50-06	50-06	Bracket Set (Ref. 6 & 10)	1
7	92-05	92-05	92-05	Nut (5/16)	4
8	Opt.	85-B11	85-B11	Wood Bearing ¾" Bore	2
9	Opt.	50-07	50-07	Roller	1
10	Opt.	50-06	50-06	Bracket Set (Ref. 6 & 10)	1
11	53-60	53-60	53-60	Dust Cap	2
12	9-A12NF	99-A12NF	99-A12NF	Locknut (¾ NF)	2
13	55-Z9504AB	55-Z9504AB	55-Z9504AB	Ball Bearing ¾"	4
14	95-12	95-12	95-12	Flat Washer SAE ¾"	6
15	95-10	95-10	95-10	Flat Washer SAE ⅝"	12
16	53-57	53-57	53-57	Wheel	2
17	80-212	80-212	80-212	Shaft	2
18	50-49	50-49	50-49	Frame, Caster Wheel	2
19	99-K13	99-K13	99-K13	Flange Bolt (⅜ x 1)	4
20	50-26	50-26	N/A	Roller Support, Right	1
21	50-04	50-05	N/A	Roller	1
22	64-12	64-14	64-13	Clamp, Right	1
23	96-06	96-06	96-06	Lock Washer	8
24	50-27	50-27	N/A	Roller Support, Left	1
25	90-0610	90-0610	90-0610	Bolt (⅜ x 1¼)	8
26	N/A	N/A	50-19	Roller Support, Left	1
27	N/A	N/A	50-20	Roller Support, Right	1
28	N/A	N/A	50-21	Roller, Anti-Scalp	1
29	N/A	N/A	64-100	Support, Bearing	4
30	N/A	N/A	55-FB16016	Bearing	4
31	N/A	N/A	50-18	Roller	2
32	N/A	N/A	97-0508	Carriage Bolt (5/16 x 1)	8
33	N/A	N/A	92-05	Nut (5/16)	8
34	85-B24	85-B24	N/A	Wood Bearing, 1" Blind Hole	2
35	90-0812	90-0812	90-0812	Bolt (½ x 1½) (Before Serial #A7001)	2
36	94-08	94-08	94-08	Flat Washer (½) (Before Serial #A7001)	10
37	62-129	62-130	62-323	Pipe Frame (Before Serial #A7001	1
38	53-23	53-23	53-37	Wheel (Before Serial #A7001)	2
39	92-10	92-10	92-12	Nut (Before Serial #A7001)	2
40	92-08	92-08	92-10	Nut (Before Serial #A7001)	4
41	92-08	92-08	92-08	Nut (½) (Before Serial #A7001)	2
42	50-01	50-01	50-17	Frame, Caster (Before Serial #A7001	2
43	90-0840	90-0840	90-1044	Bolt (Before Serial #A7001	2

SHIELDS and HITCH

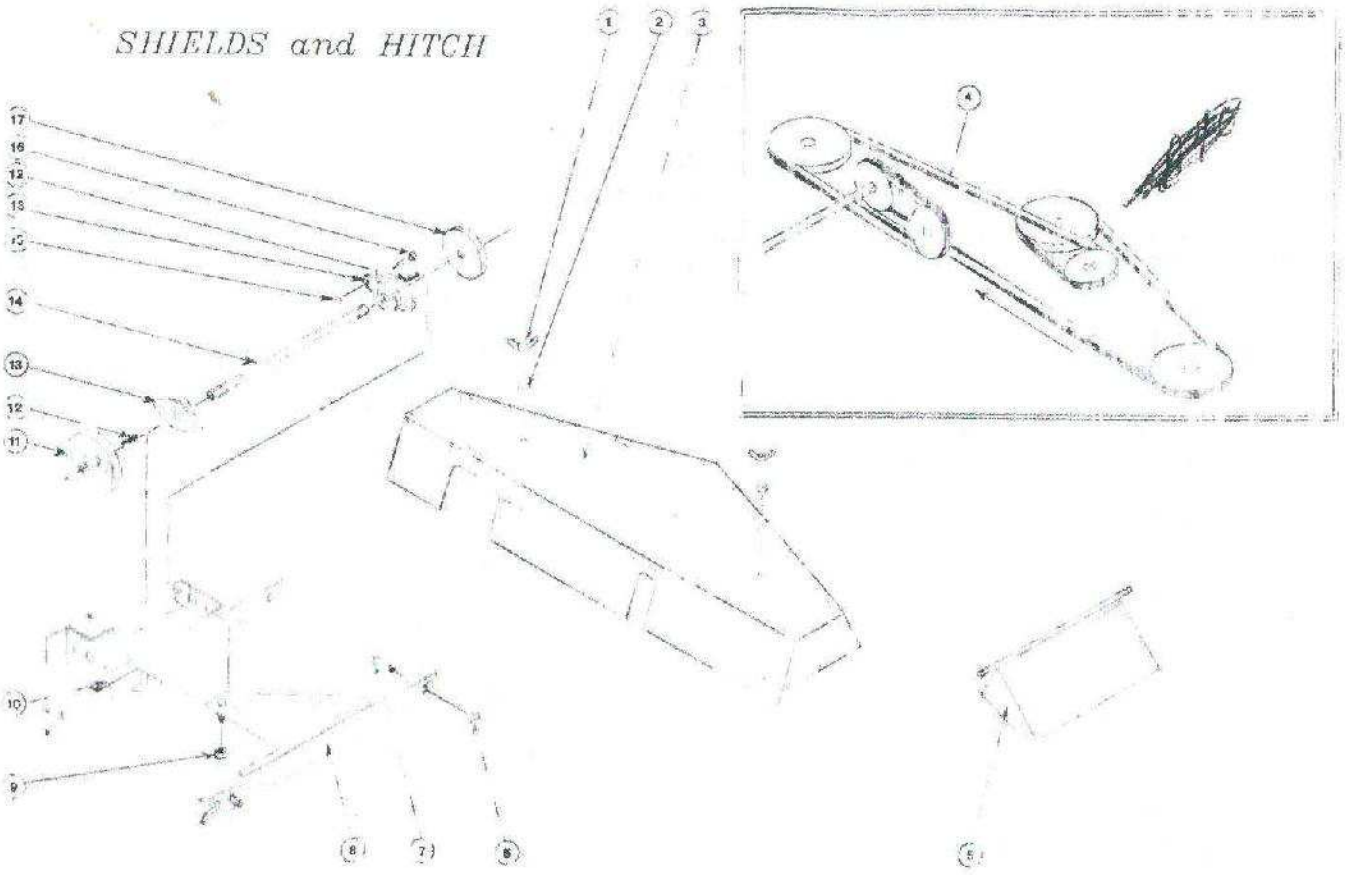
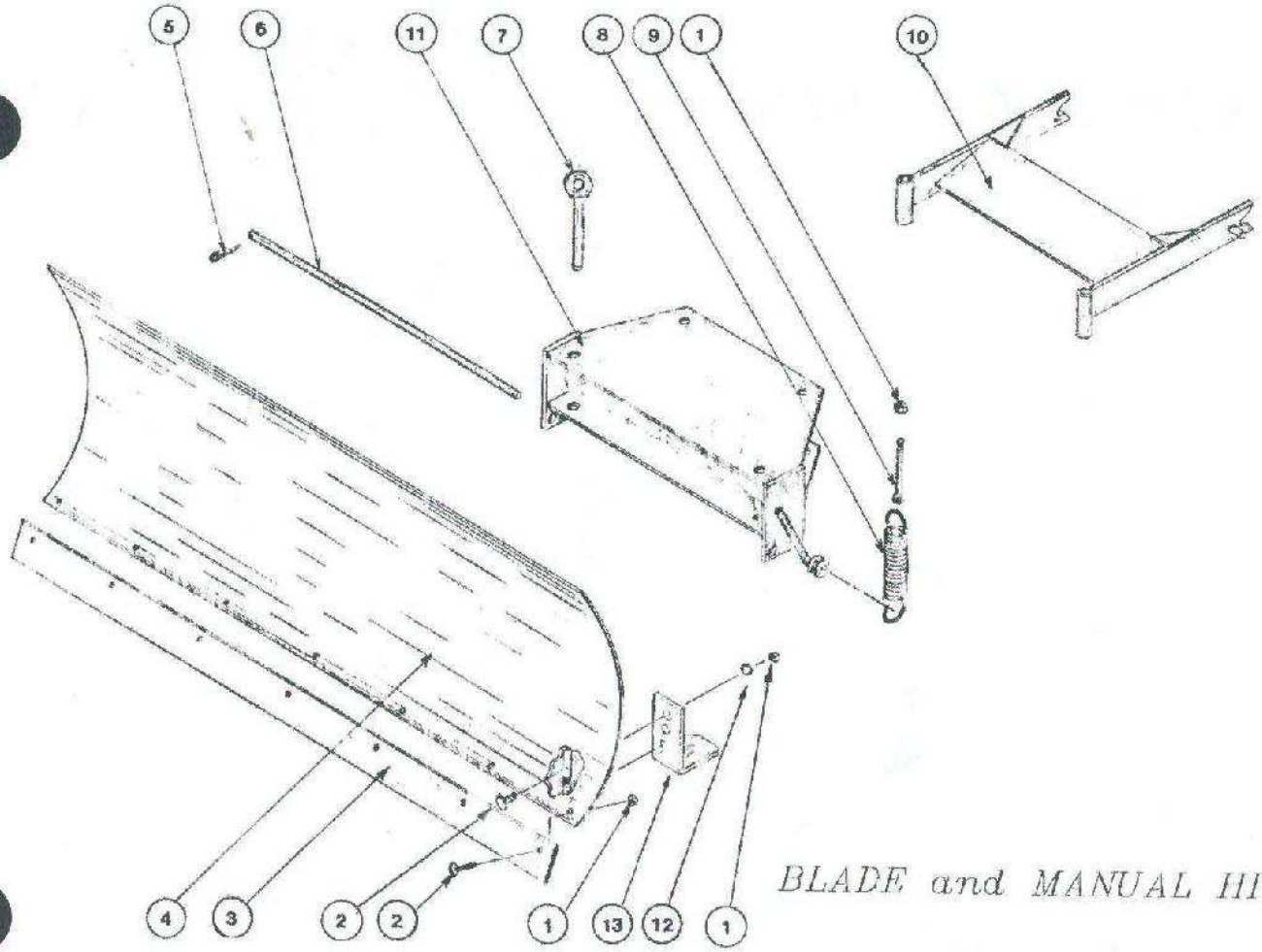


FIGURE 21
PARTS LIST

Ref.	48"Deck Part No.	60"Deck Part No.	72"Deck Part No.	Description	Quantity
1	99-E03	99-E03	99-E03	Wing Nut	2
2	94-05	94-05	94-05	Flat Washer	2
3	60-118	60-119	60-173	Shield, Top	1
4	81-A128	81-A144	81-A180	Belt, Main Drive	1
5	60-56	60-56	60-56	Chute, Discharge	1
6	99-A08	99-A08	99-A08	Lock Nut	2
7	90-0812	90-0812	90-0812	Bolt (½ x 1½)	2
8	62-132	62-132	62-132	Hitch Arm, Right	1
9	99-A08	99-A08	9-A08	Lock Nut	1
10	62-131	62-131	62-131	Hitch Arm, Left	1
11	83-BK5012	83-BK5012	83-BK5012	Pulley	1
12	85-K0310	85-K0310	85-K0310	Key	2
13	55-FB23012	55-FB23012	55-FB23012	Bearing	2
14	80-44	80-44	80-44	Shaft	1
15	92-06	92-06	92-06	Nut (⅜)	4
16	90-0610	90-0610	90-0610	Bolt (⅜ x 1¼)	4
17	83-BK4012	83-BK4012	83-BK4012	Pulley	1



BLADE and MANUAL HITCH

FIGURE 22
PARTS LIST

Ref.	Part No.	Description	Quantity
1	92-06	Nut (⅜)	6
2	97-0608	Bolt (Carriage)	4
3	78-04	Cutting Edge (48")	1
3A	78-05	Cutting Edge (60")	1
4	62-122	Blade (48")	1
4A	62-123	Blade (60")	1
5	02-CP0410	Cotter Pin	2
6	64-08	Rod	1
7	64-09	Pin	2
8	41-12	Spring	2
9	42-54	Adjuster, Sprsing	2
10	62-124	Frame, Attaching	1
11	62-125	Sub-Frame	1
12	96-06	Lock Washer	4
13	78-21	Skid Shoe	2

POWER ANGLE HITCH

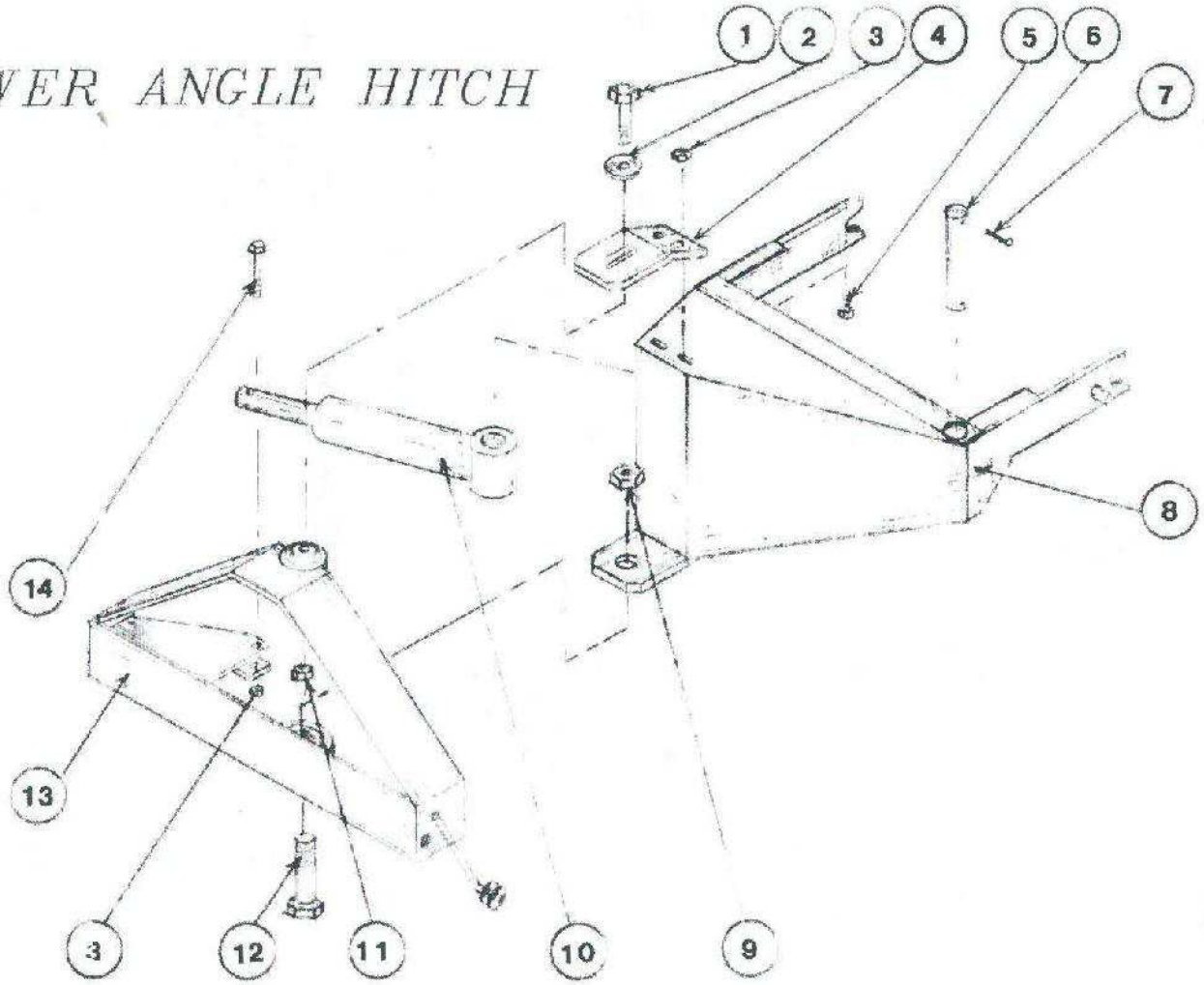
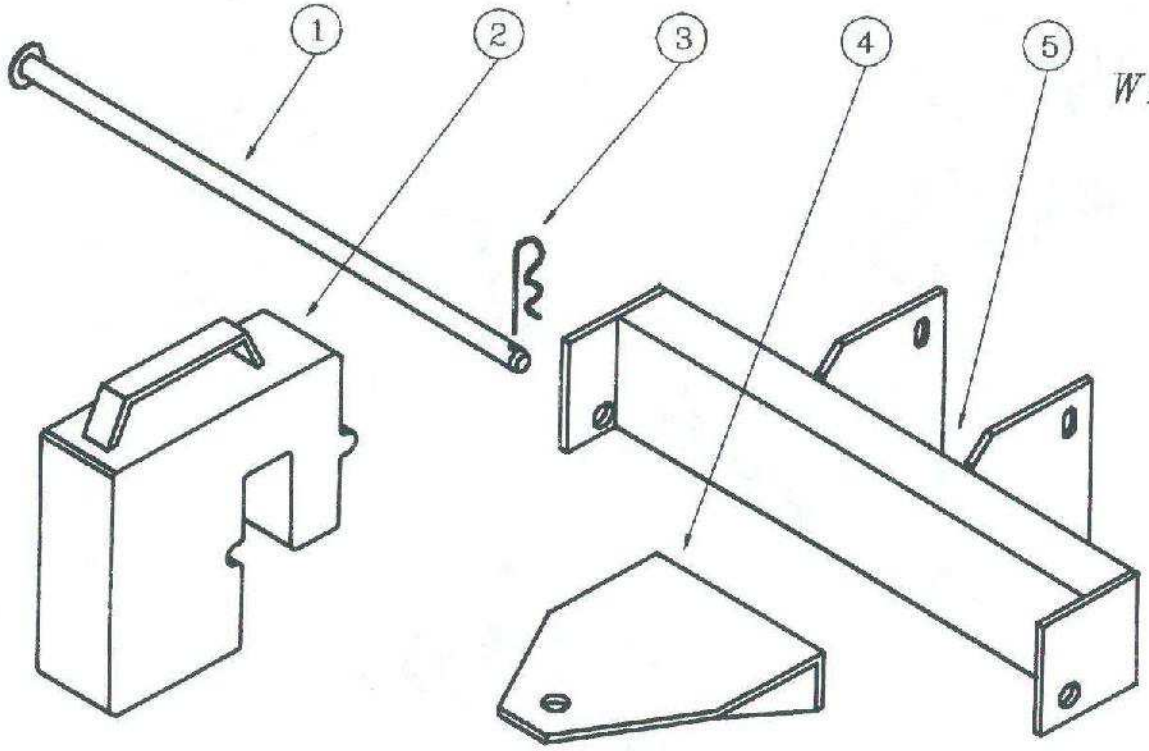


FIGURE 23
PARTS LIST

Ref.	Part No.	Description	Quantity
1	90-1020	Bolt (5/8 x 2½)	1
2	94-10	Washer	1
3	92-06	Nut (3/8)	3
4	64-61	Plate	1
5	90-0610	Bolt (3/8 x 1¼)	2
6	64-62	Pin, Cylinder	1
7	02-CP0516	Cotter Pin	2
8	62-200	Frame, Attaching	1
9	99-E04	Locknut	1
10	23-05	Cylinder	1
11	99-A10	Locknut	1
12	91-1624	Bolt (1 x 3)	1
13	62-2014	Sub-Frame	1
14	90-0620	Bolt (3/8 x 2½)	1



WEIGHTS

FIGURE 18
PARTS LIST

Ref.	Part No.	Description	Quantity
1	42-324	Weight Security Rod	1
2	62-540	Weight 55# (6 Used)	1
3	02-PP0524	Presto Pin (5/32)	1
4	62-542	Drawbar Extension	1
5	62-541	Tractor Weight Bar	1

3–POINT HITCH HYDRAULIC CIRCUIT

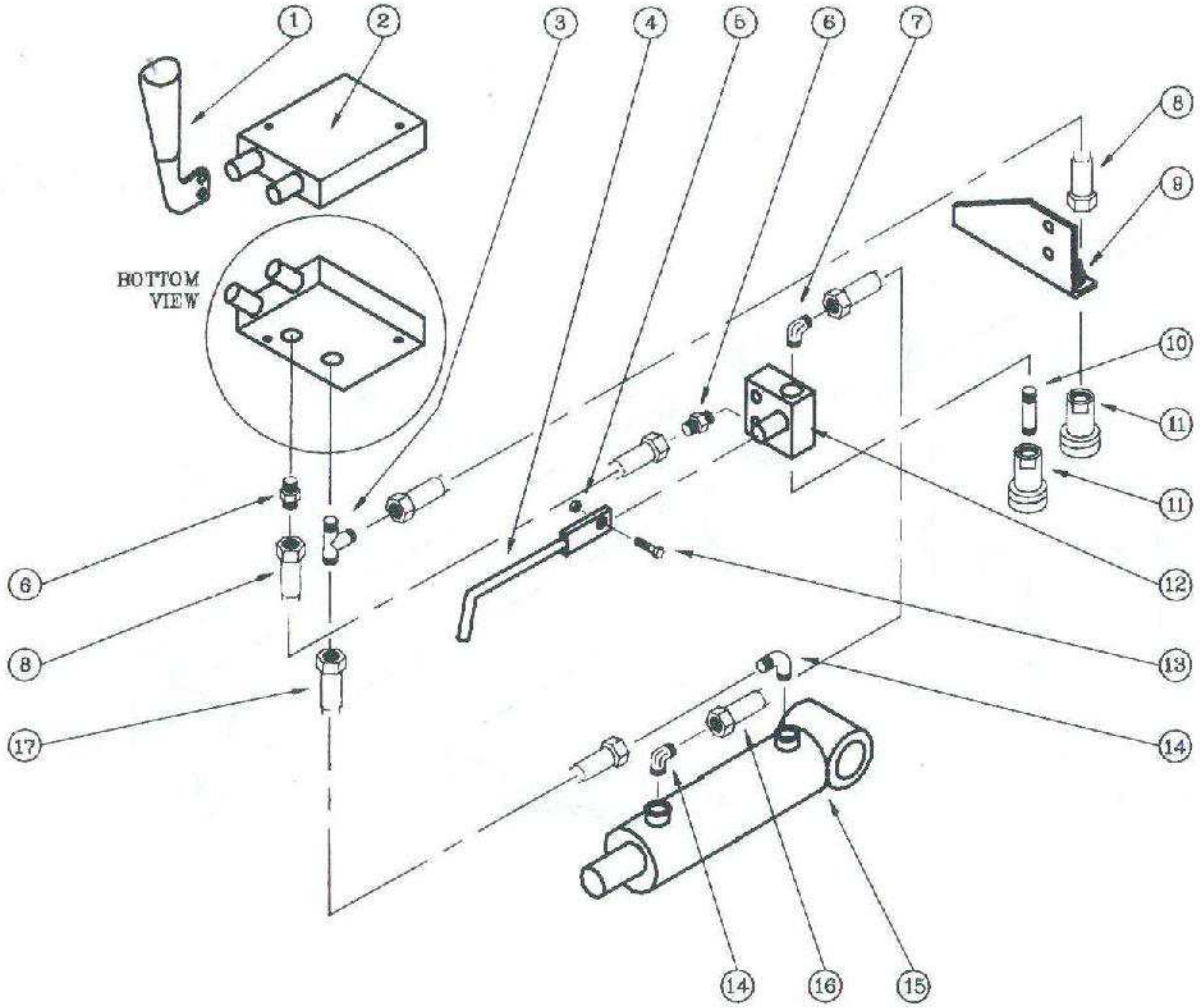


FIGURE 4
PARTS LIST

Ref.	Part No.	Description	Quantity
1	23-38	Handle (Onan)	2
1A	40-150	Handle (Kubota)	2
2	23-35	Valve	1
3	25-053T-6-6	Fitting (Tee)	1
4	40-143	Lever, Selector Valve (Onan)	1
4A	40-151	Lever, Selector Valve (Kubota)	1
5	99-A04	Locknut (⅜)	1
6	25-0503-6-6	Fitting	1
7	25-2503-6-6	Fitting (90 Degree)	1
8	20-26	Hose (¼ x 17)	2
9	64-175	Coupler Bracket (Onan)	1
9A	64-219	Coupler Bracket (Kubota)	1
10	29-46	Nipple (¼ x 2)	1
11	23-03	Coupler (Female)	2
12	23-36	Valve, Selector	1
13	90-0408	Bolt (¼ x 1)	1
14	25-2103-6-6	Fitting (90 Degree)	2
15	23-05	Cylinder	1
16	20-47	Hose (¼ x 58)	1
17	20-10	Hose (¼ x 65)	1

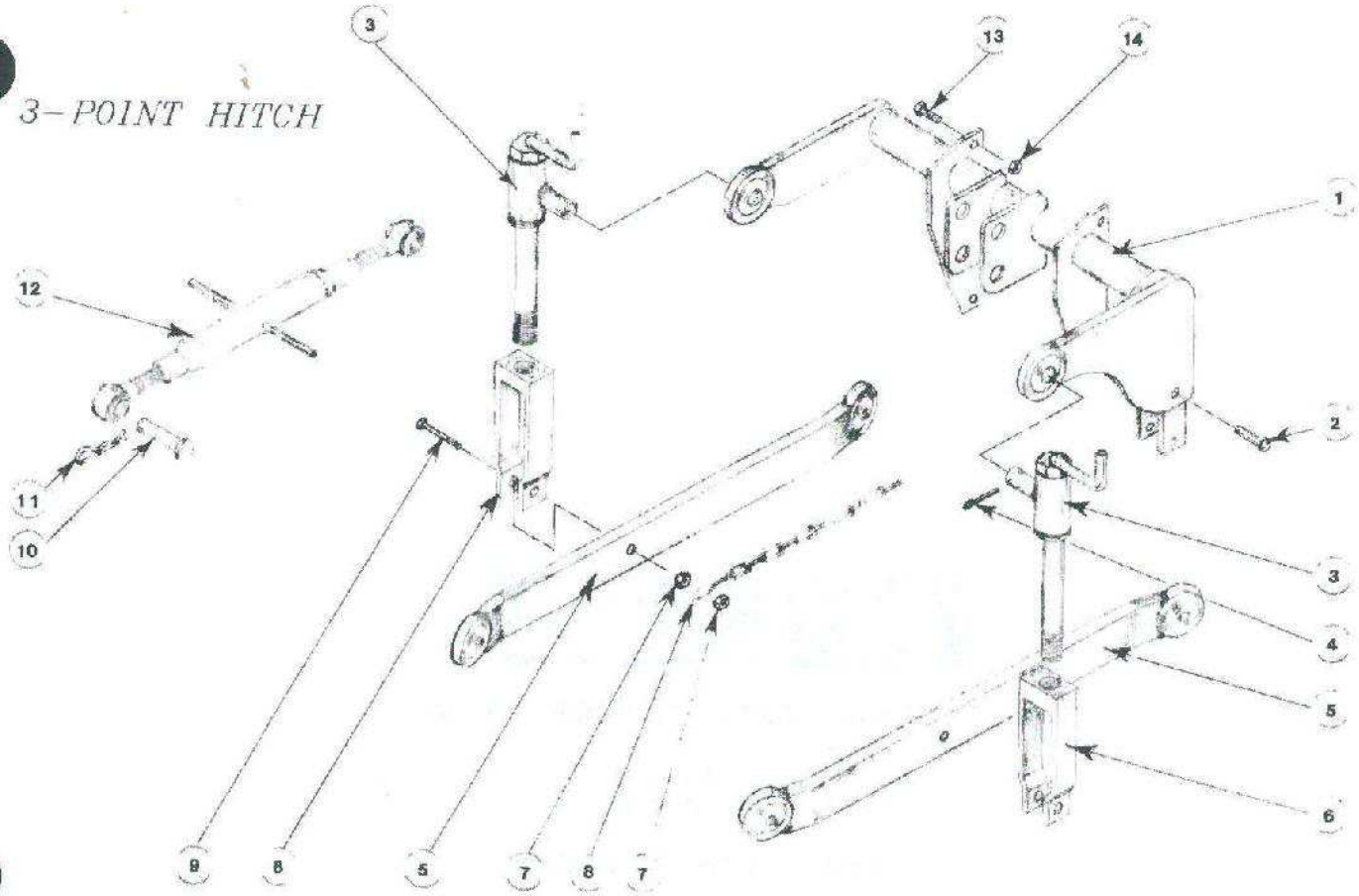


FIGURE 6
PARTS LIST

Ref.	Part No.	Description	Quantity
1	62-120	Rockshaft assembly	1
2	03-610	Clevis Pin	1
3	42-52	Lift Adjuster	2
4	02-CP0410	Cotter Pin	2
5	62-121	Draft Link	2
6	42-53	Lift Link	2
7	99-A06	Locknut (3/8)	4
8	45-14	Sway Chain	2
9	90-0616	Bolt (3/8 x 2)	2
10	03-1020	Clevis Pin	2
11	02-PP03	Clip Pin	2
12	47-09	Top Link	1
13	90-0610	Bolt (3/8 x 1 1/4)	4
14	92-06	Nut (3/8)	4

STEINER

SUPPLEMENT TO TR S-20 OWNERS MANUAL

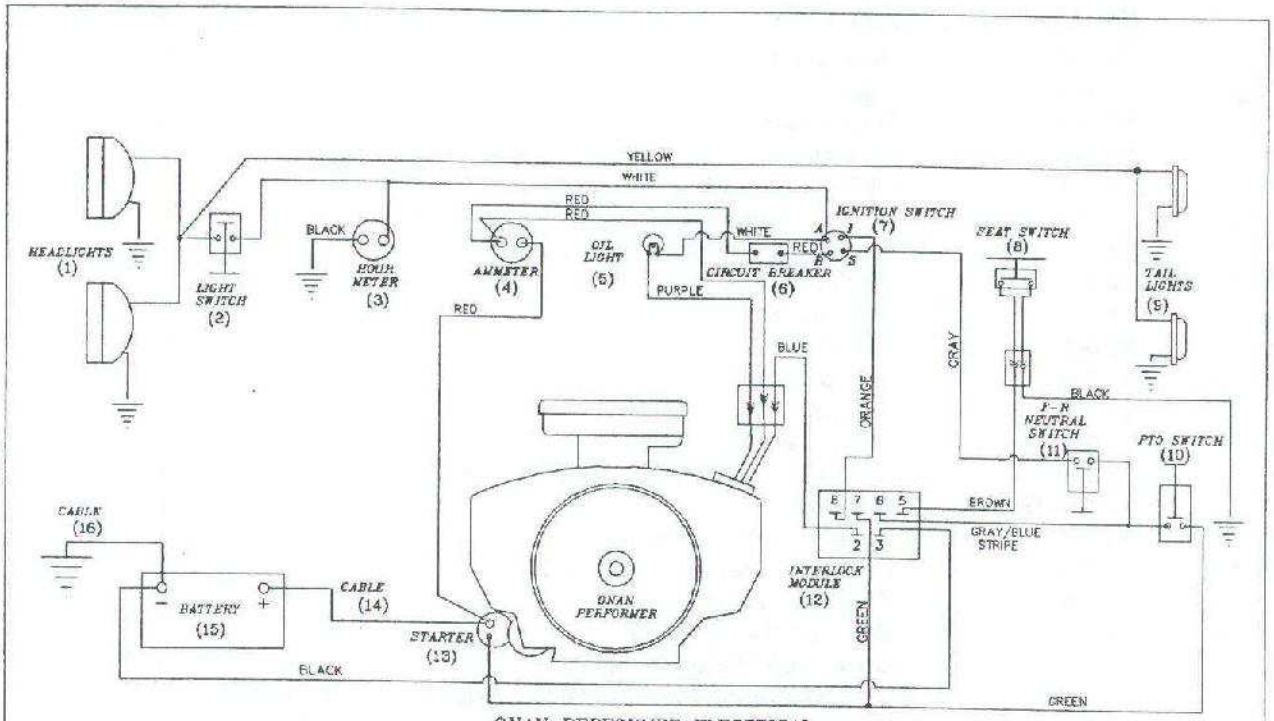
for
OM-TR86 Form122 4/87

Serial No.'s A8O214 to A8O579

Please place this supplement in your owner's manual for future reference. The information in this supplement applies specifically to the units which were built from Serial No. A8O214 to A8O579. Electrical systems are the most affected, so new pages are provided for Figure 1, 2 and 3. Disregard old Pages 25, 26, & 27.

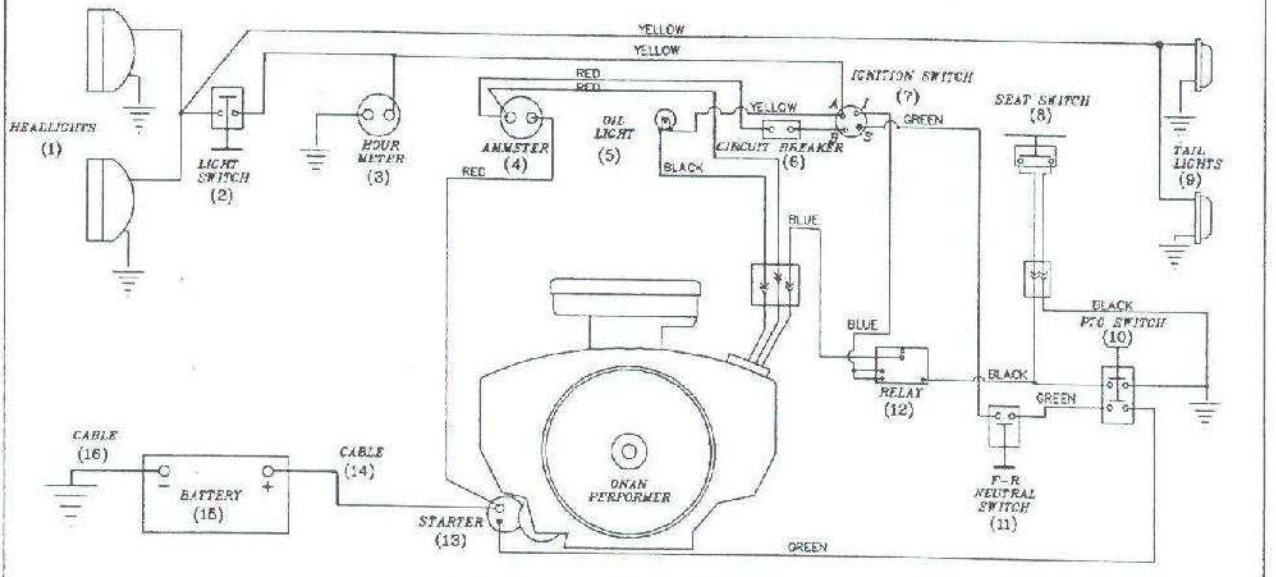
Note also the Part No. additions and changes for all Model S-20 units listed on page 7 of this supplement.

Onan Electrical
Figure 1



ONAN PERFORMER ELECTRICAL

S-20 AFTER SERIAL # A80214 and MODEL 420



ONAN PERFORMER ELECTRICAL

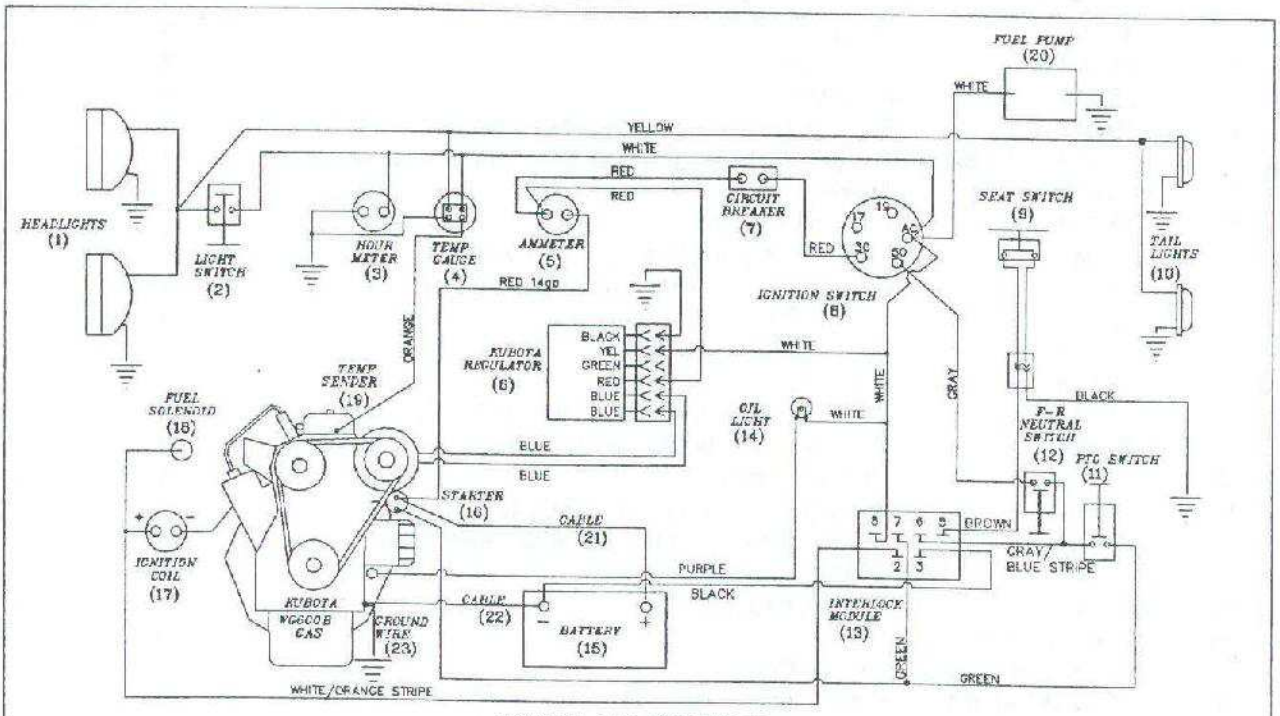
MODEL S-20 SERIAL # A70000 to A80214

Parts List for Figure 1

Ref	Part no.	Description	Quantity
1	33-006	Head Light	2
2	31-003	Light Switch	1
3	35-014	Hour Meter	1
4	35-016	Ammeter	1
5	33-007	Oil Pressure Light	1
6	35-040	Fuse, 20 amp (Before Serial No. A7O171)	1
	30-059	Circuit Breaker (After Serial No. A7O170)	1
7	31-002	Ignition Switch	1
8	31-012	Seat Switch	1
9	33-008	Tail Light	2
10	31-004	PTO Switch	1
11	31-004	Neutral Switch	1
12	35-044	Relay (Serial No. A7O000 - A8O214)	1
	35-059	Interlock Module (After Serial No. A8O214)	1
13	13-191-1808-04	Starter	1
14	30-066	Battery Cable, To Starter	1
*	30-098	Cover Pos. Battery Terminal (Red)	1
15	33-002	Battery, Group 22F	1
16	30-018	Battery Cable, Ground	1
*	30-105	Cover Neg. Battery Terminal (Black)	1
*	30-061	Wiring Harness, Main (Serial No. A7O000 - A8O214)	1
*	30-021	Wiring Harness, Rear (Serial No. A7O000 - A8O214)	1
*	30-099	Wiring Harness, Complete (After Serial No. A8O214)	1

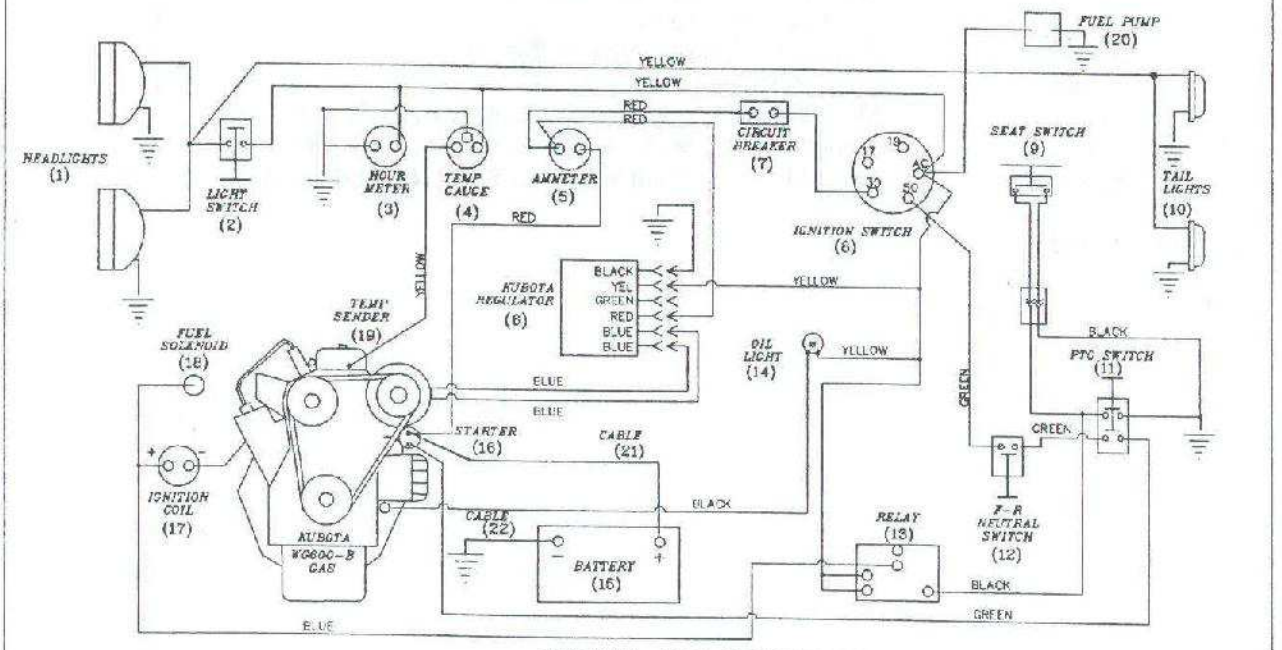
* Not Illustrated

Kubota Gas Electrical
Figure 2



KUBOTA GAS ELECTRICAL

MODEL S-20 AFTER SERIAL # A6KG239 and MODEL 420



KUBOTA GAS ELECTRICAL

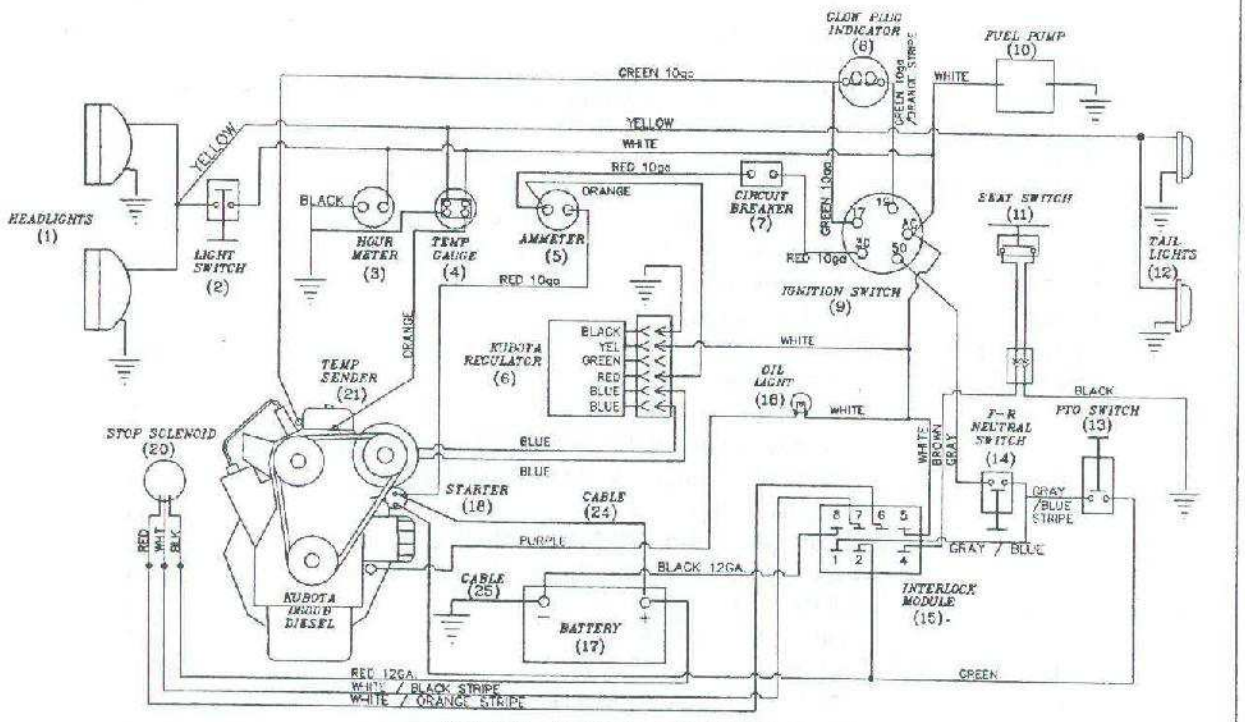
MODEL S-20 SERIAL # A7KG000 to A8KG239

Parts List for Figure 2

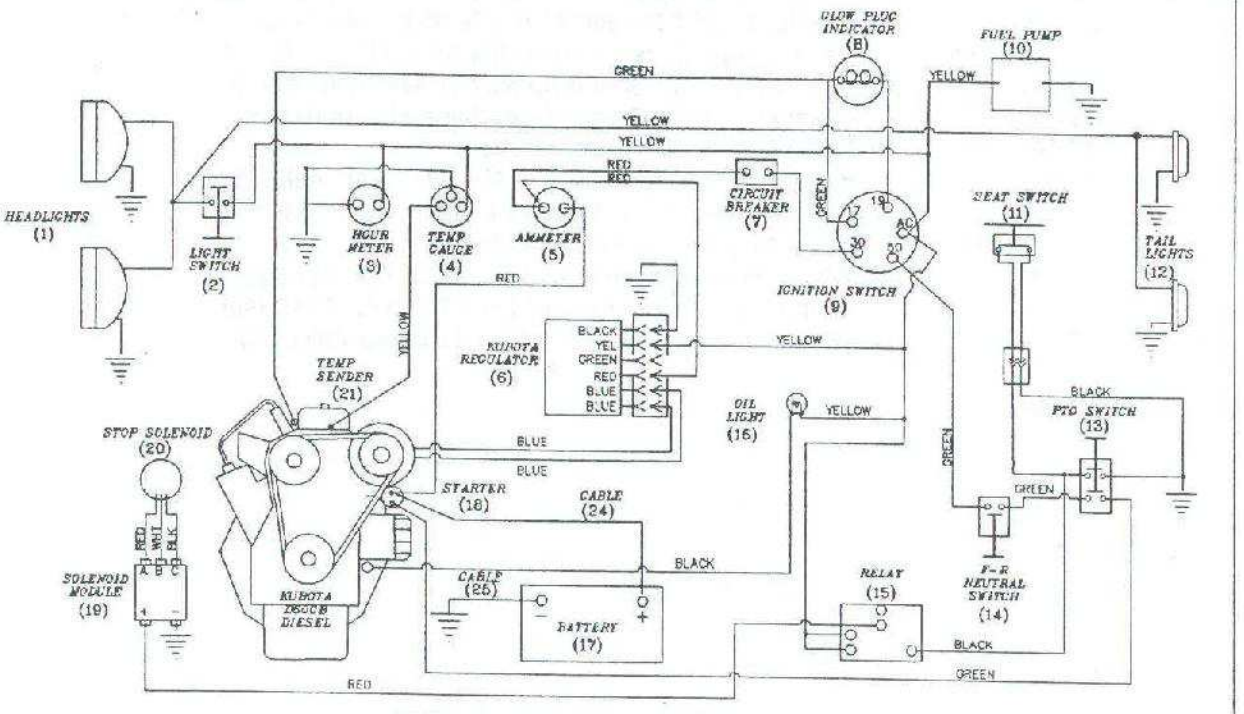
Ref	Part no.	Description	Quantity
1	33-006	Head Light	2
2	31-003	Light Switch	1
3	35-014	Hour Meter	1
4	35-047	Temperature Gauge (Serial No. A7KG000 - A8KG239)	1
	13-19488-83032	Temperature Gauge (After Serial No. A8KG239)	1
5	35-016	Ammeter	1
6	13-024	Kubota Regulator	1
7	35-040	Fuse, 20 amp (Before Serial No. A7KG142)	1
	30-059	Circuit Breaker (After Serial No. A7KG141)	1
8	13-023	Ignition Switch	1
9	31-012	Seat Switch	1
10	33-008	Tail Light	2
11	31-011	PTO Switch (Before Serial No. A8KG240)	1
	31-004	PTO Switch (After Serial No. A8KG239)	1
12	31-004	Neutral Switch	1
13	35-044	Relay (Before Serial No. A8KG240)	1
	35-059	Interlock Module (After Serial No. A8KG239)	1
14	33-007	Oil Pressure Light	1
15	33-002	Battery, Group 22F	1
16	13-15852-63010	Starter	1
17	13-15661-68900	Ignition Coil	1
18	13-12581-45381	Fuel Solenoid Valve Kit	1
19	35-048	Water Temperature Sender (Serial No. A7KG000 - A8KG239)	1
	29-093	Adapter for 35-048 (Serial No. A7KG000 - A8KG239)	1
	13-31351-32831	Water Temperature Sender (After Serial No. A8KG239)	1
20	13-12584-52031	Electric Fuel Pump	1
21	30-064	Battery Cable, To Starter	1
*	30-098	Cover Pos. Battery Terminal (Red)	1
22	30-064	Battery Cable, Ground	1
*	30-105	Cover Neg. Battery Terminal (Black)	1
23	30-067	Engine Ground Cable	1
*	30-021	Wiring Harness, Rear (Before Serial No. A8KG240)	1
*	30-062	Wiring Harness, Main (Before Serial No. A8KG240)	1
*	30-101	Wiring Harness, Complete (After Serial No. A8KG239)	1

* Not Illustrated

Kubota Diesel Electrical
Figure 3



KUBOTA DIESEL ELECTRICAL
MODEL S-20 AFTER SERIAL # A8KD250 and MODEL 420



KUBOTA DIESEL ELECTRICAL
MODEL S-20 SERIAL # A7KD000 to A8KD250

Parts List for Figure 3

Ref	Part no.	Description	Quantity
1	33-006	Head Light	2
2	31-003	Light Switch	1
3	35-014	Hour Meter	1
4	13-047	Water Temperature Gauge (Serial No. A7KD000 - A8KD250)	1
4	13-19488-83032	Water Temperature Gauge (After Serial No. A8KD250)	1
5	35-016	Ammeter	1
6	13-024	Kubota Regulator	1
7	35-040	Fuse, 20 amp (Before Serial No. A7KD142)	1
	30-059	Circuit Breaker (After Serial No. A7KD141)	1
8	13-15521-65950	Glow Plug Indicator	1
9	13-023	Ignition Switch	1
10	13-12584-52031	Electric Fuel Pump	1
11	31-012	Seat Switch	1
12	33-008	Tail Light	2
13	31-011	PTO Switch (Serial No. A7KD000 - A8KD250)	1
	31-004	PTO Switch (After Serial No. A8KD250)	1
14	31-004	Neutral Switch	1
15	35-044	Relay, (Serial No. A7KD000 - A8KD250)	1
	35-060	Interlock Module (After Serial No. A8KD250)	1
16	33-007	Oil Pressure Light	1
17	33-013	Battery, Group 22F	1
18	13-15852-63010	Starter	1
19	35-051	Solenoid Module (Serial No. A7KD142 - A8KD250)	1
20	35-043	Stop Solenoid (Before Serial No. A7KD142)	1
	35-049	Stop Solenoid After Serial No. A7KD141	1
21	35-048	Water Temperature Sender (Serial No. A7KD000 - A8KD250)	1
	29-093	Adapter for 35-048 (Serial No. A7KD000 - A8KD250)	1
	13-31351-32831	Water Temperature Sender (After Serial No. A8KD250)	1
24	30-064	Battery Cable, To Starter (Serial No. A7KD000 - A8KD250)	1
	30-090	Battery Cable, To Starter (After Serial No. A8KD250)	1
	30-098	Cover Pos. Battery Terminal (Red)	1
25	30-090	Battery Cable, Ground (Serial No. A7KD000 - A8KD250)	1
	30-065	Battery Cable, Ground (After Serial No. A8KD250)	1
	30-105	Cover Neg. Battery Terminal (Black)	1
*	30-063	Wiring Harness, Main (Serial No. A7KD000 - A8KD250)	1
*	30-021	Wiring Harness, Rear (Serial No. A7KD000 - A8KD250)	1
*	30-100	Wiring Harness, Complete (After Serial No. A8KD250)	1

* Not Illustrated

S-20 PARTS NOTES

Onan Engine Conversion from B48G to Performer P220

Yes it is possible to install a P220 in place of a B48G in S-20 tractors Serial No. A6O000 - A6O999.

Take these things into consideration before deciding to change engines:

- 1. Spacer is needed for engine coupler. Part No. 86-040.
- 2. PTO lever needs to be bent to fit around starter.
- 3. Throttle linkage requires modification.
- 4. Wiring and safety switches need to be changed. The P220 uses electronic ignition and you cannot ground the coil to kill the engine. Damage to the electronic ignition will result. Thus it becomes necessary to replace wiring harness, seat switch, PTO switch and add an interlock module to wire it like the late S-20 and 420.
- 5. Use the B48G manifold and muffler system.
- *NOTE: Steiner Turf Service Dept. recommends a new short block instead of converting to a P220.*

Part No. Additions to S-20 Parts Lists

*	35-061	Block Heater for Kubota Diesel
*	14-027	Adapter, 4-bolt manifold to 3-bolt muffler (Kubota)

Please note these changes on the following pages:

	14-009	Muffler Extension (Page 29 Ref. 1)
	13-70000-11221	Air Filter Element (Page 31 Ref. 2)
	13-66711-54412	Pipe Extension (Page 31 Ref. 8)
	14-010	Muffler (Page 31 Ref. 9)
	87-142	Coupler Disc, Kubota -sub for 87-113 (Page 31 Ref. 21)
	85-K0310	Key (Page 31 Ref. 27)
	14-016	Fan Shroud, Kubota (Page 32 Ref.19)
	13-12581-72060	Radiator only, Kubota (Page 32 Ref. 19)
	13-12584-52031	Electric fuel pump (Page 33 Ref. 9)
	13-15231-43560	Fuel Filter Element (Page 33 Ref. 12a)
	51-780103	Bearing (Page 37 Ref. 3B)
*	60-277	Rear Motor Shield (Page 38 *)
	05-029	Rubber Seat Bumper (Page 38 Ref. 21)
	62-438	Grille, Front Assembly-Onan (Page 39 Ref. 9)
	62-560	Grille, Front Assembly-Kubota (Page 39 Ref. 9)
	47-023	Choke Cable, Onan (Page 41 Ref. 7)
	47-032	Choke Cable, Kubota Gas (Page 41 Ref. 7)
	40-142	Lever, Throttle (Page 41 Ref. 13)
	64-174	Battery Support, Onan only (Page 41 Ref. 23)
	05-025	Rubber Grommet (Page 41 Ref. 33)
	60-303	Pump Access Panel (Page 41 Ref. 41)
	83-026	Idler Pulley with bearings, New Style (Page 43 Ref.24)
	70-029	Coolant Recovery Kit (Page 32 Ref. 6) Substitute the following:
	13-036	Coolant Recovery Bottle
	11-020	Clamp
	64-272	Bracket

* Not Illustrated

Other Additions and Corrections

13-010	Spark Pug (page 29, ref. 19)
13-048	Molded hose, Kubota gas engine (page 31, ref. 3A, 3B, & 4)
13-049	Molded Hose, Kubota Diesel engine (page 31, ref. 3A, 3B, & 4)
13-66711-54412	Extension pipe (page 29, ref. 8)
13-68371-51211	Kubota gas fuel pump (page 29, no ref. #)
13-15841-97010	Engine Belt, not illustrated
13-15241-11350	Air cleaner cap
13-15861-72852	Lower radiator hose (page 32, ref. 18)
14-012	Radiator shroud (page 32, not illustrated)
23-002	Replaced by 24-009 after Serial # A7__109
21-0A002813	Seal kit for 24-009
21-0A006763	Seal kit for lift cylinder after Serial A7__109
19B	Refers to diagram A1 (page 38)
19C	Refers to diagram A2 (page 38)
19D	Refers to diagram A4 (page 38)
19E	Refers to diagram A3 (page 38)
99-K02	Bolt (page 39, ref. 11)
99-E10	Nut (page 43, ref. 25)
55-6204	Replacement Bearings for 83-026 pulley(page 43)

Mower Deck parts

page 47	Item 2	72" Deck 64-101 subs to 42-330
	Item 9	correct part number is 02-PP0318
	Item 15	48" deck 64-11 subs to 64-419
	Item 15	72" deck 64-13 subs to 64-011
	Item 36	55-VCJ16 subs to 55-RCJ16
page 49	Item 1	48" deck 64-11 subs to 64-419
	Item 1	60" & 72" decks 64-13 subs to 64-419
	Item 3	72" deck 62-645 subs to 62-570
	Item 3A	48" deck 62-129 is correct part Number
	Item 6	60" & 72" decks 50-06 subs to 50-060
	Item 10	60" & 72" decks 50-06 subs to 64-484
	Item 17	80-212 subs to 50-062 on all decks
	Item 19	99-K13 subs to 90-0640 on all decks
		Add 99-E13 nut not shown
		53-069 Bushings for 53-057 wheels
page 50	Item 8	62-132 subs to 62-574 on all decks
		Add 1 85-SC08 bushing
	Item 10	62-131 subs to 62-575 on all decks
		Add 1 85-SC08 bushing

Other Additions and Corrections

page 52

Parts Not Illustrated

64-240	Adjusting Plate	
25-2103-6-6	Fittings	1
25-0103-4-6	Fittings	1
23-004	Quick Couplers	2
20-021	Hose ¼" x 44"	1
20-031	Hose ¼" x 42"	1
25-3103-6-6	Fittings	2

page 54

64-007 Cylinder Pin Not illustrated

page 55

Item 2 03-0610