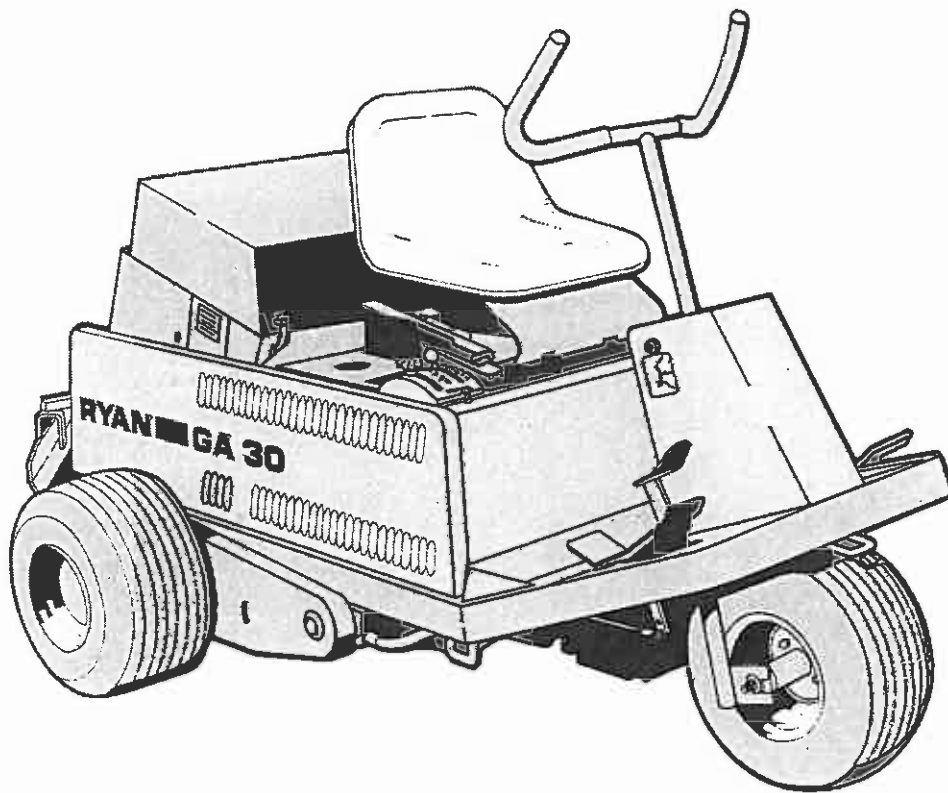

RYAN[®]

GA[™] 30 AERATOR



MODEL 544885

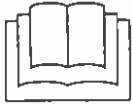
**OPERATOR'S / PARTS
MANUAL**



RYAN

Driven to be the best.
Part No. 524343 Rev. 2

GENERAL INFORMATION



IMPORTANT!

THIS MANUAL WILL AID YOU IN THE SAFE OPERATION AND PROPER MAINTENANCE OF YOUR EQUIPMENT. READ MANUAL THOROUGHLY BEFORE ATTEMPTING OPERATION. IF ANY PORTION IS NOT CLEARLY UNDERSTOOD, CONTACT AN AUTHORIZED DEALER FOR CLARIFICATION.

To make sure you are fully aware of safety and service information, the following two symbols are used throughout this manual.



This symbol is used throughout the manual to alert you to information about unsafe actions or situations, and will be followed by the word DANGER, WARNING, or CAUTION. DANGER indicates immediate hazards that may result in severe injury or death. WARNING indicates unsafe actions or situations that may cause severe injury, death and/or major equipment or property damage. CAUTION indicates unsafe actions or situations that may cause injury, and/or minor equipment or property damage.

NOTICE

This symbol appears next to information or instructions which will help you operate and maintain your equipment the right way.



WARNING

- **The information and instructions included in this manual alert you to certain things you should do very carefully. If you do not, you could:**
 - hurt yourself or others
 - hurt the next person who operates the equipment
 - damage the equipment.

- **This manual contains essential operation and safety information and must remain with the unit at all times, within easy access of any operator.**

IMPORTANT!

THIS EQUIPMENT SHOULD NOT BE MODIFIED OR ADDED TO WITHOUT THE MANUFACTURER'S AUTHORIZATION.

Additional manuals are available through your dealer.

- **Altering this equipment in any manner which adversely affects the equipments operation, performance, durability or use, may cause hazardous conditions.**

Direct any inquiries to:

Ransomes America Corporation
Attn: Chief Engineer
P.O. Box 82409
Lincoln, NE 68501-2409 USA

SPECIFICATION INFORMATION

All information contained in this manual is the latest available at the time of printing. Ransomes America Corp. reserves the right to make changes at any time without notice.

Whenever a name brand product is specified, an equivalent product may be used unless stated otherwise.

CHANGE OF OWNERSHIP OR ADDRESS

Ransomes America Corp. makes every effort to keep owners informed of all safety related information. Therefore, changes in ownership and/or address should be reported to the manufacturer.

Your dealer has REGISTRATION CHANGE FORMS which will be filled out and filed by the dealer for his records, and a copy will be sent to the manufacturer.

DEALER INFORMATION

For your nearest dealer location write to:

Ransomes America Corporation
Attn : Sales Coordinator
P.O. Box 82409
Lincoln, NE 68501-2409 USA

In the USA and Canada call 1-800-228-4444 (dealer information only).

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SPECIFICATIONS

Engine:	18 H.P. Kohler, twin cylinder model M18QS, Spec PS-24598, 42.18 cu. in. (691.3 cc) 3600 r.p.m. at no load speed w/electric starter
Differential:	SpurGear
Drive:	Sundstrand Pump (.91 cu. in. Variable Disp.) to Nichols Motor (16 cu. in. Fixed Disp.)
Equipment Weight:	1300 Lbs. (590 Kg)
Equipment Width:	60 in. (1524 mm)
Equipment Length:	77 in. (1956 mm)
Swath width:	30 in. (762 mm)
Speed:	
Engine	3600 r.p.m.
Aeration	Variable (See chart on page 5)
Transport speed	6 m.p.h. (9.65 Kh)
Tines:	
Type	Hollow tapered or solid (optional)
Material	Case hardened steel
Quantity	12 tines (std.), 20 (optional w/solid tines)
Sizes	1/4, 3/8, 1/2 & 5/8" (7, 10, 13 & 16 mm)
Penetration Depth	Up to 3 3/4 in. (95 mm)
Hole Spacing	2 1/2 in. x 1 in. to 5 in. variable (64 x 25 to 127 mm)
Tires:	
Front	18–9.50 x 8 Rib Terra-Tire
Rear	18–10.50 x 8 Rib Terra-Tire
Battery	430 cold cranking amps, 12 volt/70 amp, 10 1/4 in. long x 6 13/16 in. wide x 8 7/8 in. high (260 mm x 173mm x 225mm)

SET UP



WARNING

- To prevent possible injury to yourself or others, stay clear when cutting banding. Banding is under tension and can snap back when cut.
- DO NOT operate this equipment until you have read the controls and operating sections thoroughly.

Loose parts kit includes additional tines.

1. Remove carton from unit.
2. Lift seat assembly (lever located below seat on right side), cut ties from wooden block located on hydraulic cylinder and remove block.
3. Insert three (3) tines per holder and tighten screws securely. BE SURE tines are tight against shoulder of tine holder.
4. Attach tine holders to tine rams and secure with two (2) flangelock nuts. See Figure 1.

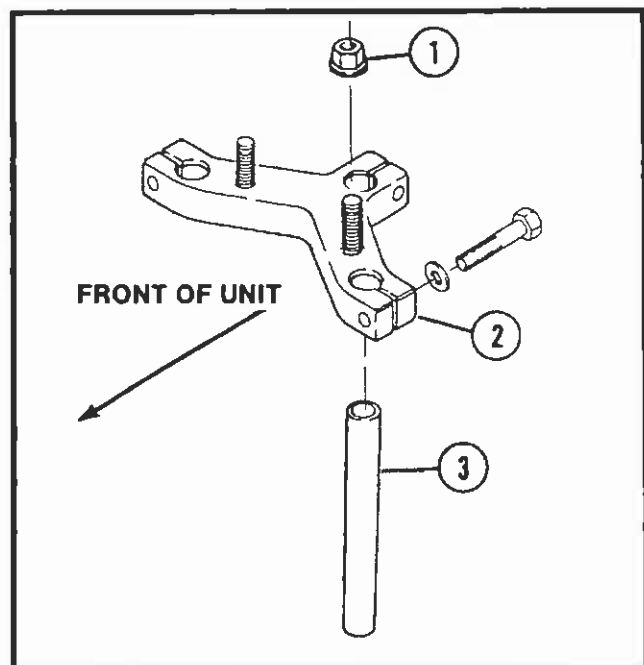


FIGURE 1

1. Flangelock Nut
2. Tine Holder
3. Tine

5. Remove screw from beneath aerator lift pedal.

NOTICE

- To prevent corrosion on gauge stem, replace fuel tank cap with gauge cap after two (2) full tanks of fuel have been run through the system.

On models shipped with a plastic bag over gauge stem, fill fuel tank and remove bag before installing into fuel tank.

6. Read controls and operation sections thoroughly before operating unit.

CONTROLS

IGNITION SWITCH

The ignition switch is located on the right side of the steering cover. See Figure 2.

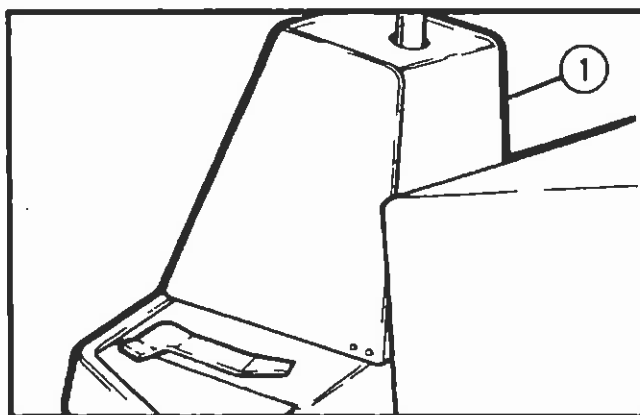


FIGURE 2

1. Ignition Switch

NOTICE

- DO NOT turn key to start position with the unit engine running. Damage to starter drive or flywheel teeth can result.

THROTTLE

The throttle is located on the control panel. Push forward to increase speed, pull back to decrease speed. See Figure 3.

CHOKE

The choke is located in front of the control panel. Pull up on the choke control knob to choke engine. See figure 3.

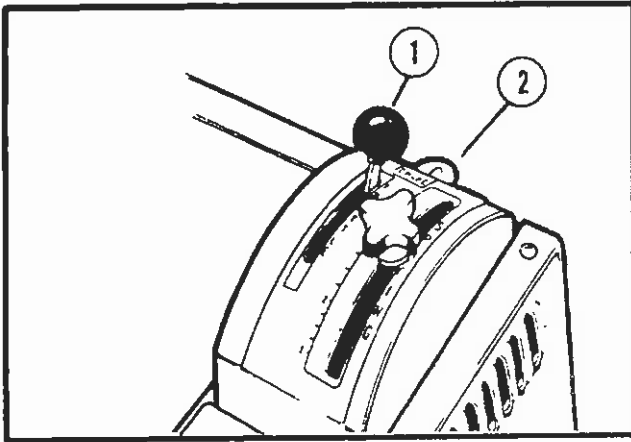


FIGURE 3

1. Throttle
2. Choke

AERATOR LIFT PEDAL

The aerator lift pedal is located on the left floorboard. To lower and start tines, depress pedal forward and down. To raise and stop tines, depress pedal back and down.

The engine must be running to lower aerator head. See Figure 4.

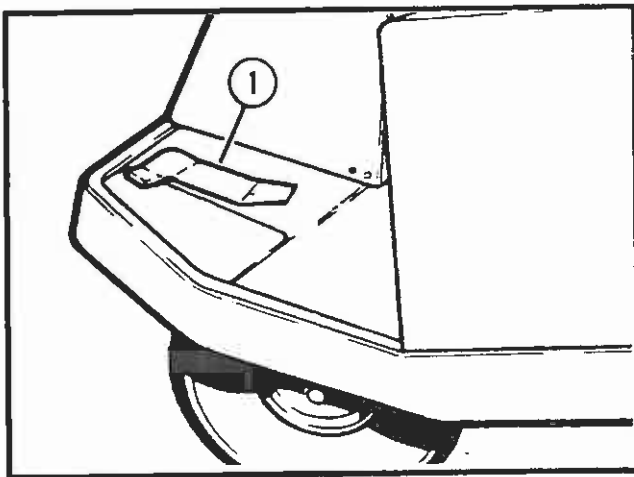


FIGURE 4

1. Aerator Lift Pedal



WARNING

- The aerator lift pedal must return to “Neutral” position after releasing from “Raised” or “Lowered” position. If lever sticks in “Raise” or “Lower” position, the hydraulic oil will over-heat, and could cause hydraulic lines to rupture, releasing hot hydraulic oil.

- Escaping hydraulic oil under pressure can have sufficient force to penetrate the skin, causing serious injury.

If a leak is suspected, use a piece of cardboard or wood, not your hands, to check for leaks.

If injured by escaping oil, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.

DO NOT use a unit with a leaking hydraulic system. See your authorized RYAN dealer for necessary repairs.

DIRECTION/SPEED CONTROL PEDAL

The direction/speed control pedal is located on the right side of the floorboard.

The direction/speed control pedal has three positions, forward, neutral and reverse. The correct operating procedure is to place the entire foot on the pedal. To obtain forward movement of the unit, rotate the front part of the pedal downward with the toe. Reverse movement of the unit is obtained by rotating the rear portion of the pedal downward with the heel.

The pedal returns to neutral position when the foot is removed. See Figure 5.

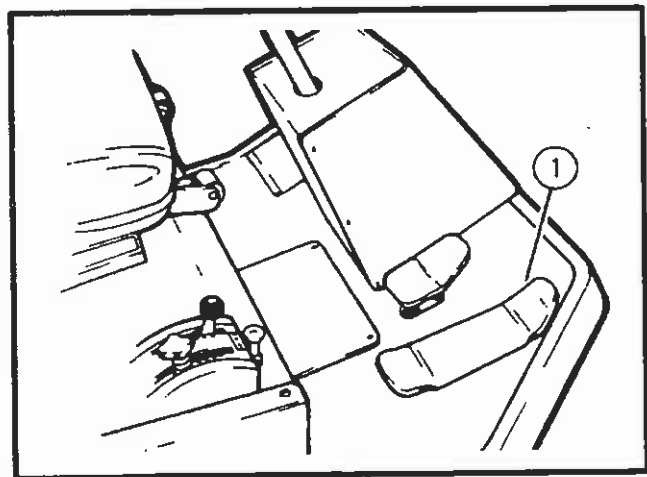


FIGURE 5

1. Direction/Speed Control Pedal

The vehicle should not “creep” in either direction when the pedal is functioning properly. The adjustment of the pedal linkage is extremely critical.



WARNING

- NEVER operate the unit if it creeps or if the speed control pedal does not return to neutral when the pedal is released.
- NEVER operate the unit if you are able to start the engine with the speed control pedal in forward or reverse position. Sudden, unexpected unit movement will occur when starting and may injure bystanders or cause loss of control. The speed control neutral switch should be replaced immediately.
- NEVER attempt adjustment or repair of the pedal linkage or speed control neutral switch. Improper adjustment or repair may cause loss of unit control or serious damage to the unit.

Any repair or adjustment necessary should be made only by an authorized RYAN dealer.

BRAKE PEDAL/BRAKE LOCK

The brake pedal is located on the right floorboard. Push brake pedal down and pivot forward to apply brake lock. See Figure 6.

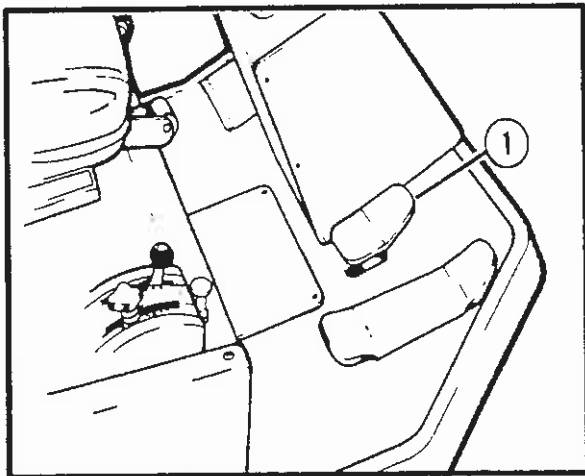


FIGURE 6

1. Brake Pedal

TINE SPACING LEVER

The tine spacing lever is located on the control panel. To obtain desired spacing, loosen knob, position lever so knob is centered by desired spacing and tighten. See Figure 7.

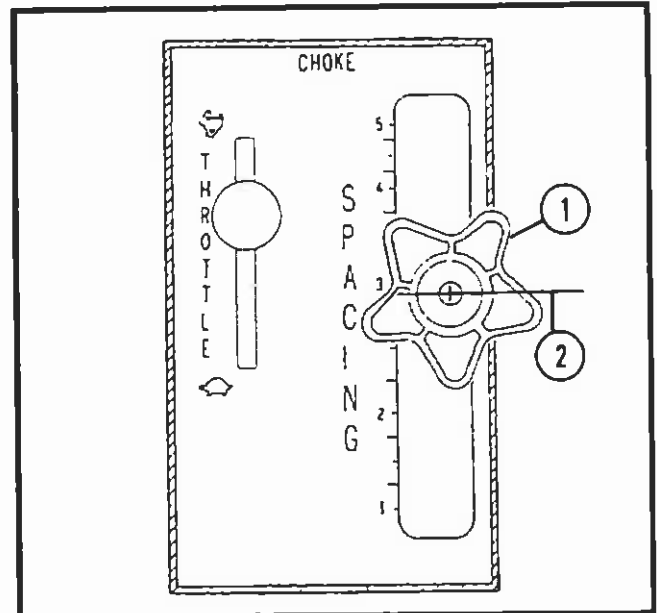


FIGURE 7

1. Tine Spacing Lever Knob
2. Center Line (invisible)

NOTICE

The chart below will assist you in obtaining desired spacing.

SPACING CHART

Spacing 2.50 inches X ()inches	Production Square Feet Per Hour	Yield Holes Per Square Foot
1.00	5,625	57.6
1.50	8,440	38.4
2.00	11,250	28.8
2.25	12,660	25.6
2.50	14,060	23.0
2.75	15,470	20.9
3.00	16,875	19.2
3.50	19,690	16.5
4.00	22,500	14.4
4.50	25,310	12.8
5.00	28,125	11.5

OPERATION

SEAT ADJUSTING LEVER

The seat adjustment lever is located on the left side of seat. Pull lever out and slide seat to desired position and release lever.

SEAT ASSEMBLY COVER LATCH

The seat assembly cover latch is located below the seat on the right side. Push lever towards center of unit to release latch.



WARNING

BEFORE OPERATING

- Check grounds area and remove foreign objects which may be a hazard to the operator or could damage the equipment.
- Visually check all moving parts and all fasteners, if broken or loose, replace or tighten. Check for broken or bent tines, replace as necessary.
- **MAKE SURE** that all shields and guards are in place. **NEVER** make adjustments or perform any maintenance while the engine is running.
- **DO NOT** run unit over hard surfaces (driveways, sidewalks, etc.) with aerator in lowered position.

BEFORE STARTING ENGINE

Check engine oil level and fill if necessary, following recommendations of engine manufacturer for type and quantity of oil.

Fill fuel tank with fuel according to engine manufacturer specifications.

STARTING PROCEDURE

NOTICE

- If aerator frame is lowered, depress aerator lift pedal to RAISE position, and turn engine over with starter.
- Follow starting procedures in the engine owner's manual.



WARNING

- **ALWAYS** run unit engine where there is plenty of fresh air to prevent a buildup of carbon monoxide fumes. Carbon monoxide is colorless, odorless and deadly. **NEVER** run unit in an enclosed space where exhaust fumes will collect.
- **NEVER** use the unit in, or near an area where there is dust or fumes in the air which are explosive. The electrical and exhaust systems of this unit will make sparks which can ignite explosive materials.
- Any warning decal that becomes illegible should be replaced immediately.
- Gasoline is extremely flammable and highly explosive under certain conditions. **ALWAYS** stop engine and do not smoke or allow open flames or sparks when refueling.
- **DO NOT** place hands or feet beneath unit at any time.
- **ALWAYS** use good judgment when operating on or near hills or slopes. **NEVER** start or stop suddenly. **NEVER** change directions of unit abruptly or make sharp turns on slopes. **ALWAYS** drive straight up and down the face of slopes, **NEVER** across the face of slopes.

- **Never** carry any passengers. This unit is designed to carry only the operator, in the seat provided from the factory.
- Use extreme care when backing unit, **DO NOT** back unit with aerator in DOWN position.
- **DO NOT** place foot on directional/speed pedal when starting engine.
- **ALWAYS** keep arms and legs inside unit while it is moving.
- **DO NOT** leave unit with engine running or keys in ignition.

AERATING

Drive unit to location to be aerated. To prevent turf damage, lower aerating head at slow speed, keep directional /speed pedal fully depressed to obtain desired hole spacing, move throttle to full speed. After a short run, check hole spacing to calibrated handle. Adjust as required to be sure calibrated handle is same as actual hole spacing. Unit may be turned while aerating. Hole spacing will vary during turning radius. After eight (8) hours of use, check roller chains for proper tension. Adjust as required.

LOADING

If loading unit with ramps for transport, be sure all three (3) wheels are firmly supported on ramps. Ramps must not exceed a 20° incline.

UNLOADING

When unloading unit with ramps, run unit at slow speed to maintain control while going down ramps.

FREE WHEELING OR TOWING UNIT

NOTICE

- To prevent damage to the pump, the following steps should be followed.
 1. Engine must be off.
 2. Turn lever on pump 180° clockwise.
 3. Tow unit slowly, below 2 mph (3.2 K/h) to area to load on trailer or truck.
 4. Before starting engine on unit, be sure to turn pump lever counter-clockwise to fully closed position.



WARNING

- To prevent injury, use brakes in **FREE WHEEL** mode on slopes and ramps.

STORAGE PROCEDURE



WARNING

- To prevent possible explosion or ignition of vaporized fuel, **DO NOT** store equipment with fuel in tank or carburetor in an enclosure where an open flame is present (Example: Furnace or water heater pilot light).

DAILY STORAGE

1. Inspect and clean tines, replace as necessary any broken or bent tines.
2. Check engine oil and hydraulic oil levels, fill as required.
3. Check for loose or missing hardware. Tighten or replace as required.
4. Place a board beneath tines, in case aerator head is lowered accidentally.

EXTENDED STORAGE

1. Drain all fuel from fuel tank and lines.
2. Start the engine and run until all fuel is used from carburetor float bowl.
3. While engine is warm, drain the crankcase oil and replace with the proper weight of oil corresponding to the season when the equipment will next be used.
4. Remove the spark plug and squirt a small quantity of engine oil into the cylinder. Turn the engine over a few times to distribute this oil.
5. Remove and thoroughly clean tines. Cover with a light coat of oil to prevent rust and store tines with the unit.
6. Lower aerating head (without tines on) to relieve hydraulic pressure.

To put equipment into operation after an extended storage, check crankcase oil level, fill fuel tank, start engine and check for fuel leaks, **RAISE** aerator head, check hydraulic reservoir oil level. Stop engine and install tines.

SERVICE



WARNING

- When replacement parts are required, use **genuine RYAN parts** or parts with equivalent characteristics including type, strength and material. Failure to do so may result in product malfunction and possible injury to the operator and/or bystanders.
- **Disconnect battery** before performing any service work on the unit.
- **Any warning decal that becomes illegible should be replaced immediately.**
- **DO NOT operate equipment without shields in place. DO NOT make any adjustments or perform any maintenance while the engine is running.**

To keep the GA 30 aerator in good operating condition the following steps should be performed.

- Check engine and hydraulic reservoir oil level daily.
- Check for loose screws or connections and repair if necessary.
- Check roller chains for tightness. Lubricate chains with Lubriplate #13563 or an equivalent chain lube.
- Lubricate unit according to instructions.
- Frequently check condition of tines.
- Check tires and maintain proper tire pressure.
- Change engine oil according to engine manual.
- Wash equipment with water after every use.

NOTICE

- To prevent possible damage to the engine, **DO NOT** wash a hot engine with cold water.

TIRE PRESSURE

BE SURE to maintain the proper recommended tire pressure at all times.

Tires

Front 18-9.50 x 8 4 ply

Rear 18-10.50 x 8 4 ply

Tire Pressure

Front 12 PSI (165 kPa)

Rear 12 PSI (165 kPa)

NOTICE

- Improper inflation will considerably shorten the life of tires.



WARNING

- Caution must be used when reinflating or bringing a low tire up to the recommended pressure. Use a pressure gauge before connecting an air hose to a partly inflated tire. Due to the low air volume requirements of a small tire, over-inflation may be reached in a matter of two or three seconds, which may cause the tire to explode.

BATTERY



WARNING

- DO NOT allow open flames or sparks near a battery when connecting for jump starting or while recharging the battery with a charger.

Hydrogen gas is generated during the charging process and can be explosive. Provide adequate ventilation to prevent possible danger.

- Untrained or unauthorized persons should NEVER attempt to service or recharge the battery in this unit.

NOTICE

- The battery top should be kept clean and free of corrosion by washing with a solution of baking soda and water or ammonia and water. Rinse with clean

water. Terminals with heavy corrosion should be removed and cleaned with solution. Replace terminal and tighten.

The battery is located beneath the center floorboard. For access to the battery to check fluid level or for charging, remove four (4) screws in top of access cover. See Figure 8.

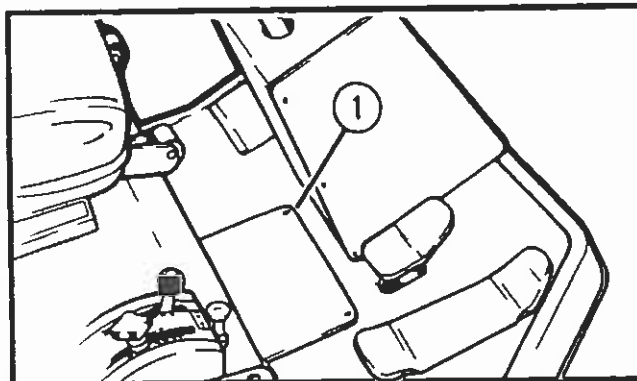


FIGURE 8

1. Battery Access Cover

BATTERY REMOVAL

Turn front wheel to the right side, remove access cover, battery cables and holder. Remove battery from beneath unit.

NOTICE

- Refer to engine owner's manual for BATTERY CHARGING and JUMP STARTING procedures.

BATTERY SPECIFICATIONS

430 Cold Cranking Amps, 12 Volt/
70 Amp, 10 1/4" Long x 6 13/16" Wide x 8 7/8" High

TOUCH UP PAINT

Evergreen Green (dark green)

16 oz. (0.5 L) spray order no. 825361

1 qt. (0.95 L) can order no. 825363

Turfkin Green (light green)

16 oz. (0.5 L) (lead free) spray order no. 523340

1 qt. (0.95 L) (lead free) can order 523339

Ransomes Green (medium green)

16 oz. (0.5 L) (lead free) spray order no. 838140

1 qt. (0.95 L) (lead free) can order 838141

LUBRICATION

HYDRAULIC SYSTEM

After 200 hours of use, the hydraulic oil and filter should be changed.

The hydraulic system capacity is approximately twelve (12) quarts (10.35 L) . Use API Grade CC or SG or SH SAE 30W for the hydraulic system.

Check reservoir in RAISED position after unit has been operated and aerator head has been raised and lowered for a few minutes. Fill to FULL mark on dipstick. See Figure 9.

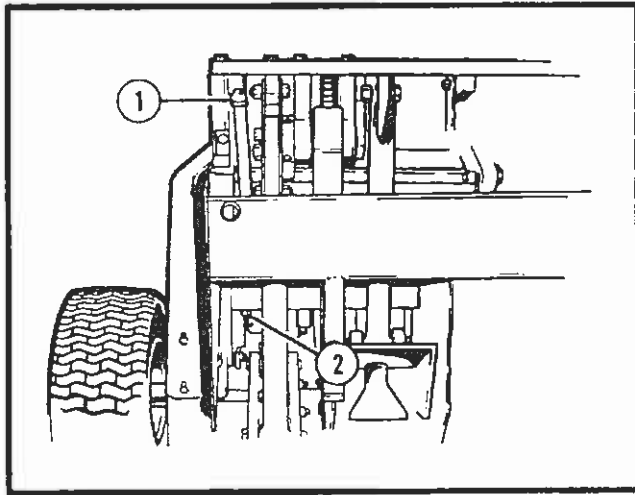


FIGURE 9

1. Dipstick
2. Oil Drain Plug

ENGINE OIL

Follow recommendations according to engine owner's manual.

LUBRICATION FITTINGS

The GA 30 aerator has five (5) lubrication fittings. See lubrication chart on next page for locations. Use a good grade lithium base lubricant. Lubricate unit daily.

REVERSING GEAR BOX

The GA 30 aerator has two (2) reversing gear boxes located below the hydraulic reservoir. Fill to bottom of threads in housing with a lithium based pressure gun lubricant. See lubrication chart for location.

DRIVE CHAINS

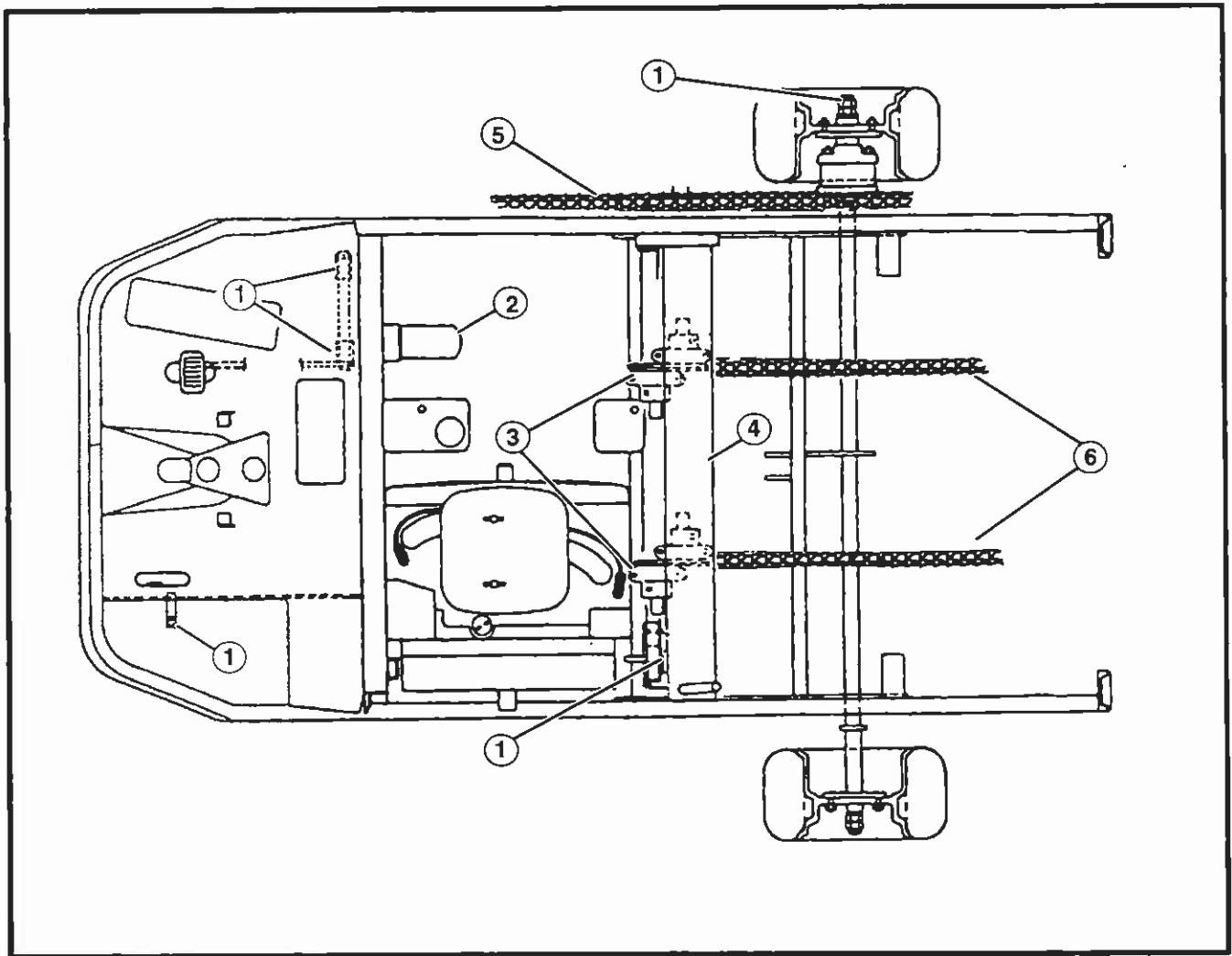
AERATOR DRIVE CHAINS

Lubricate daily or every time the unit is refueled with Lubriplate #13563.

VEHICLE DRIVE CHAIN

Lubricate weekly with Lubriplate #13563.

LUBRICATION CHART



- 1. Lubrication Fitting
- 2. Hydraulic Oil Filter
- 3. Reversing Gear Box
- 4. Hydraulic Reservoir
- 5. Vehicle Drive Chain
- 6. Aerator Drive Chains

HYDRAULIC FLUID FLOW & PRESSURES

WARM UP TIME OF 15 MINUTES
FOR TEMPERATURES UNDER 45° F.

DRIVE MOTOR
16.4 CU. IN./REVOLUTION
1500 P.S.I. CONTINUOUS PRESSURE
2000 P.S.I. INTERMITTENT PRESSURE
(To be less than 1 minute in 10)
1500 P.S.I. PEAK BACK PRESSURE

FRONT OF UNIT

FILTER BASE
3 PSI BYPASS

FILTER
25 MICRON FULL
FLOW SUCTION

HYDRAULIC RESERVOIR

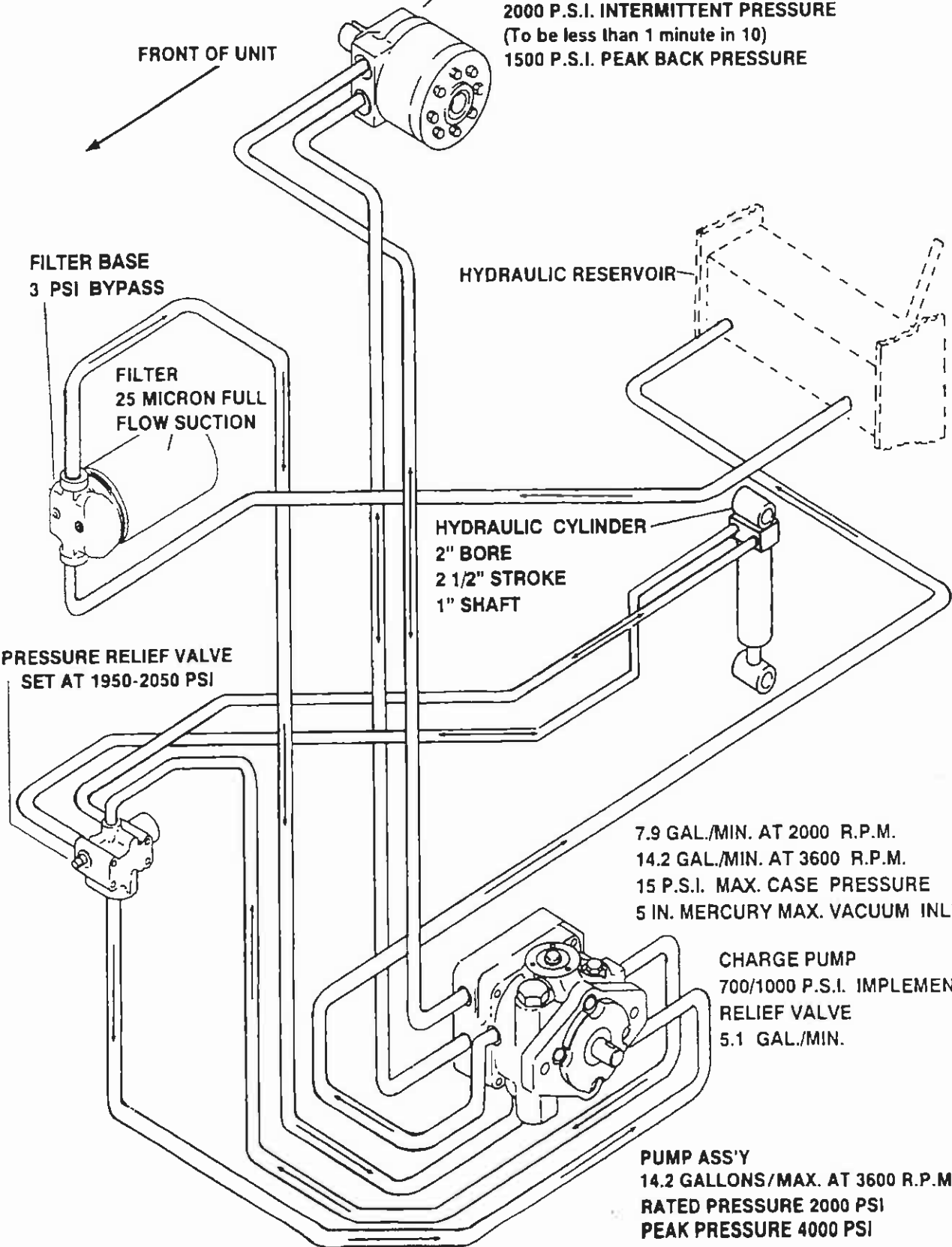
HYDRAULIC CYLINDER
2" BORE
2 1/2" STROKE
1" SHAFT

PRESSURE RELIEF VALVE
SET AT 1950-2050 PSI

7.9 GAL./MIN. AT 2000 R.P.M.
14.2 GAL./MIN. AT 3600 R.P.M.
15 P.S.I. MAX. CASE PRESSURE
5 IN. MERCURY MAX. VACUUM INLET

CHARGE PUMP
700/1000 P.S.I. IMPLEMENT
RELIEF VALVE
5.1 GAL./MIN.

PUMP ASS'Y
14.2 GALLONS/MAX. AT 3600 R.P.M.
RATED PRESSURE 2000 PSI
PEAK PRESSURE 4000 PSI



MAINTENANCE AND SERVICE TIPS

TINES & HOLDERS

- Tine sizes, part numbers and uses (see page 19).
- Check the torque on the 523474 screws attaching the tine holders to the tine rams. The torque should be 70 ± 5 ft.-lbs. (90–100 N·m).
- Clean tine and core deflectors daily or as the soil builds up.

SEALED CHAIN MAINTENANCE

- All aerating drive chains should be sprayed with Lubriplate #13563 chain spray or an equivalent daily or each time aerator is refueled, to greatly extend chain life.
- Oil the wheel drive chain every week with Lubriplate #13563 or an equivalent chain spray lubricant.

WINDROW ATTACHMENT

- If windrow attachment is missing some cores, check for proper assembly. See Figure 10.

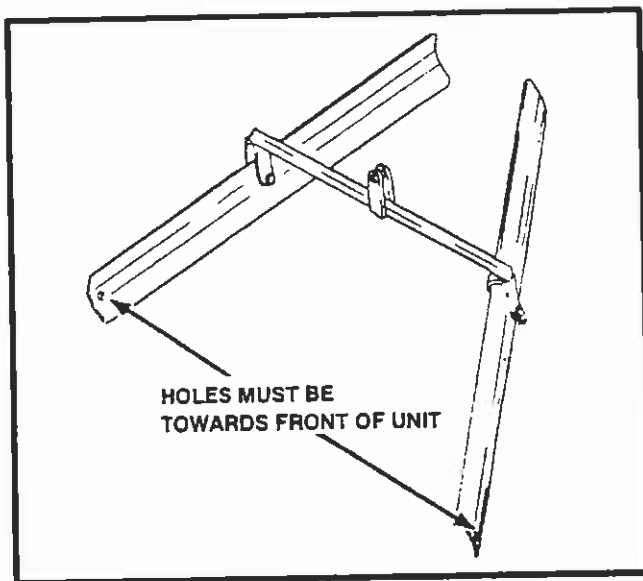


FIGURE 10

MOTOR DRIVE SPROCKET

- When replacing screw that mounts the drive sprocket to the hydraulic drive motor, (Part No. 547595), use Loctite 271 or an equivalent on the threads.

SPACING CONTROL ADJUSTMENT

- Hole spacing on the GA-30 is controlled by the forward speed of the unit. The faster the unit travels, the more space between the holes.
1. Make a test run with the spacing control knob set at 2 1/2" (64 mm), and direction control pedal fully depressed.
 2. Measure the distance (center to center) between the holes. If the distance is more or less than 2 1/2" (64 mm) adjust as follows:

Set the spacing control lever at the 2 1/2" mark. With the drive belt removed, aerator head fully lowered, and the throttle at full speed (3600 ± 75 R.P.M.), place a slow speed tachometer against the threaded center of the hydraulic motor. Adjust the spacing control rod (Part No. 524160) until the hydraulic motor speed stabilizes at 28 ± 1 R.P.M. Use adjusting screw (Part No. 524453) to set position by screwing forward to decrease hole spacing (lengthening rod). Screw backward (shorten rod) to increase hole spacing. Lock the two (2) nuts (Part No. 306320) and override spring (Part No. 524083) into position so that the spring may compress 1/8" (3.2 mm) after adjustment is complete. Refer to Figure 11.

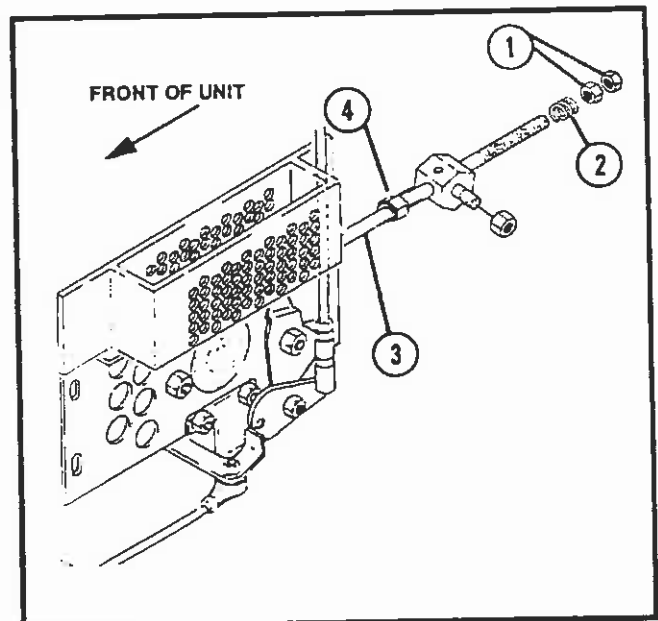


FIGURE 11

1. Nuts
2. Override Spring
3. Spacing Control Rod
4. Adjusting Screw

DRIVE BELT ADJUSTMENT

1. Position the driven belt pulley (Part No. 522890) .12-.19" (3 – 5 mm) away from the aerator frame.
2. Adjust the driver pulley (Part No. 521680) to align with the driven pulley within .06" (1.5 mm).
3. Adjust all belt guides to within .06-.13" (1.5 – 3.5 mm) of gap from the belt.
4. The belt stop (Part No. 547547) should be positioned below the belt.
5. A .13-.19" (3.5 – 5 mm) gap must be left between the threaded ends of the belt guide and all return linkage.

BRAKE ADJUSTMENT

1. Position the brake cam (Part No. 540039) so the brake buttons (Part No. 523203) are located in the bottom of the cam groove surface.
2. Locate the 3/8-16 centerlock nut (Part No. 800292) at the caliper pivot point. This nut is used to retain the calipers but must have clearance to allow pivoting action. Adjust the nut to 1/16 turn short of being tight.
3. Adjust the brake rod (Part No. 523202) and clevis (Part No. 827498) with the return spring (Part No. 817613) installed, to the correct length which will allow the bellcrank to be connected to the rotary cam.
4. Adjust the caliper by using the two (2) 1/2-13 nuts (Part No. 548051) until the calipers allow the 38 tooth sprocket (Part No. 522856) on the differential to rotate freely.
5. Adjust the calipers to allow $.50 \pm .13$ (13 mm + or -3.5 mm) inches of brake pedal travel before the calipers engage firmly against the sprocket. Secure the two (2) 1/2-13 nuts to maintain the adjustment.

HYDROSTAT PEDAL AND LINKAGE ADJUSTMENT

1. Locate the hydrostat pump arm (Part No. 547680) at the rear of the machine and against the internal stop of the pump.
2. Move the pump arm off the internal pump stop with the pump arm stop bracket (Part No. 523410), approximately .03" (.8 mm).

3. Connect the control link (Part No. 523419) with the bellcrank (Part No. 547738) in the "Neutral" position.
4. Adjust the rod (Part No. 523419) so there is no hydraulic fluid output to the drive motor.
5. Install the control rod (Part No. 523115) with the foot pedal (Part No. 547614) in a "Forward" position against to .06" (1.55 mm) off the floor pan and the hydrostat pump arm (Part No. 547680) against the stop bracket (Part No. 523410), toward the rear of the machine.

GA 30 AERATOR TROUBLE SHOOTING GUIDE

A. DRIVE BELT Breaking

- Clean all dirt and debris from belt pulley "V"s.
- Check proper clearance on belt guide studs.
 1. 1/16-1/8" (3-5 mm) clearance between drive belt and belt guide studs.
- Check alignment of drive and engine pulley
 1. Position large pulley 1/8-3/16" (3-5 mm) away from aerator frame.
 2. Align small pulley to large pulley within 1/16" (2 mm). Use shim part number 523317 behind engine pulley as needed.
- Check pulleys for groove wear. See Figure 12.

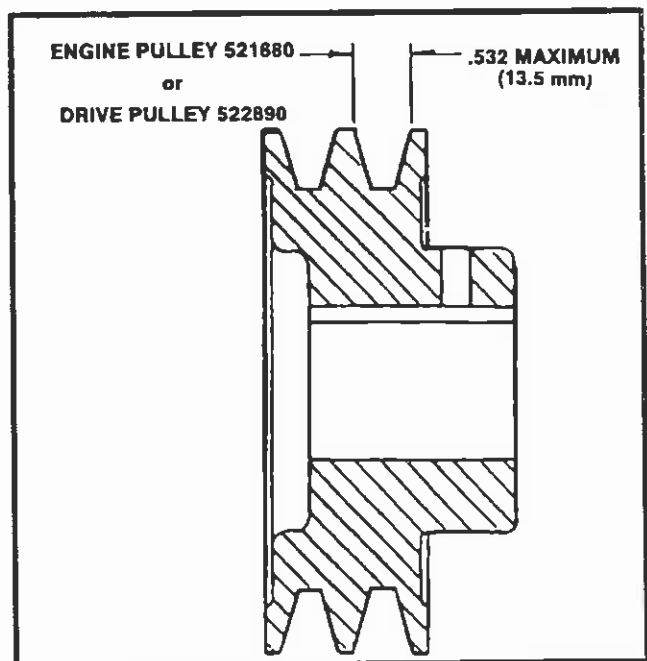


FIGURE 12

B. LEAVING CORES IN THE TURF

-Use tine part no. 524419

C. RETURN LINK HITTING REVERSING GEARBOX

-Install new bumper stop assembly (P.N. 547708).
-Replace rubber bumpers part no. 523126.
-Check alignment of keyways on reversing gearbox
See Figure 13.

1. Keyways must be aligned as shown in Figure 13. If the gears are off one tooth, the keyways will be approximately 24° out of alignment. This misalignment will cause one of the return links to hit the rubber bumpers hard and hit the bottom of the gearbox. Elongated holes in the turf, torn and tufted turf, and broken tines could also result from this condition.
2. Check alignment of keyways by raising the aerating head and making a gauge using the template in Figure 15. Place one edge along the bottom of the hydraulic tank and the other edge along the vertical link. Then hold the vertical link in place and move the gauge to the other vertical link on the same gearbox. The square edges of the gauge should fit flush against the vertical link and the bottom of the hydraulic tank, without moving the tine ram. See Figure 14.

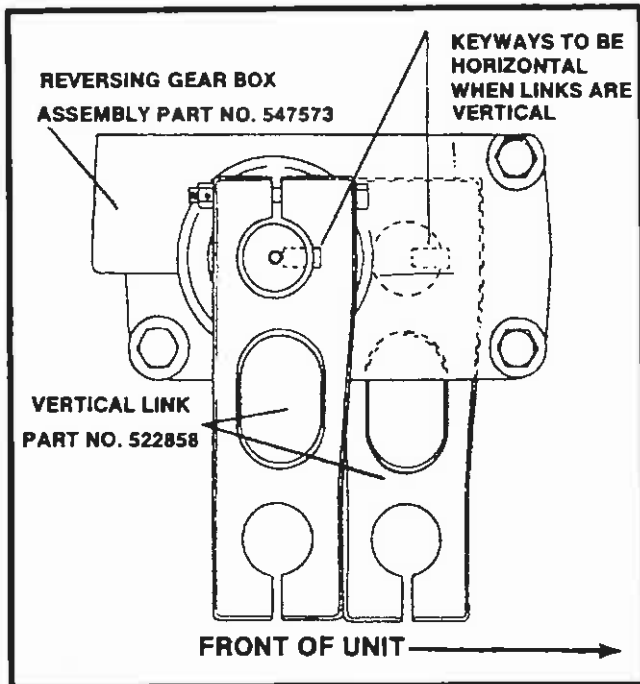


FIGURE 13

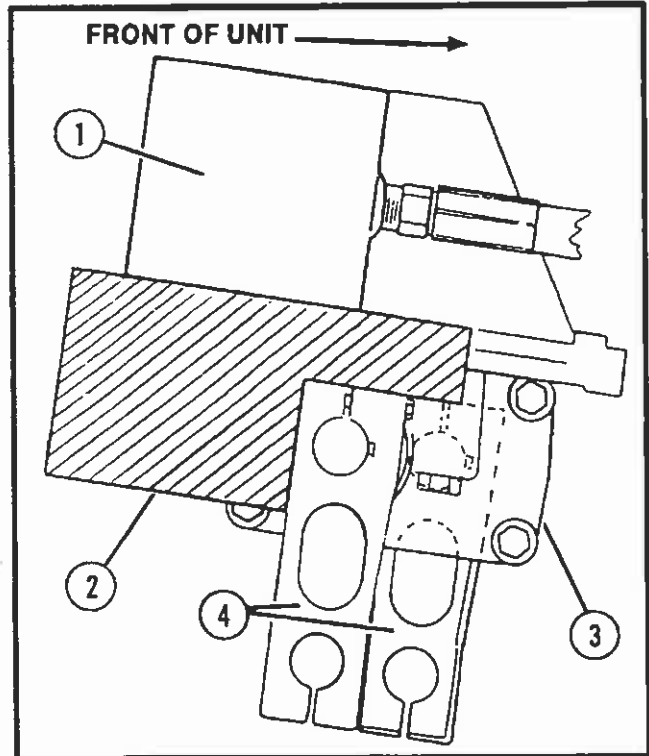


FIGURE 14

1. Hydraulic Oil Tank
2. Gauge
3. Reversing Gearbox
4. Vertical Links

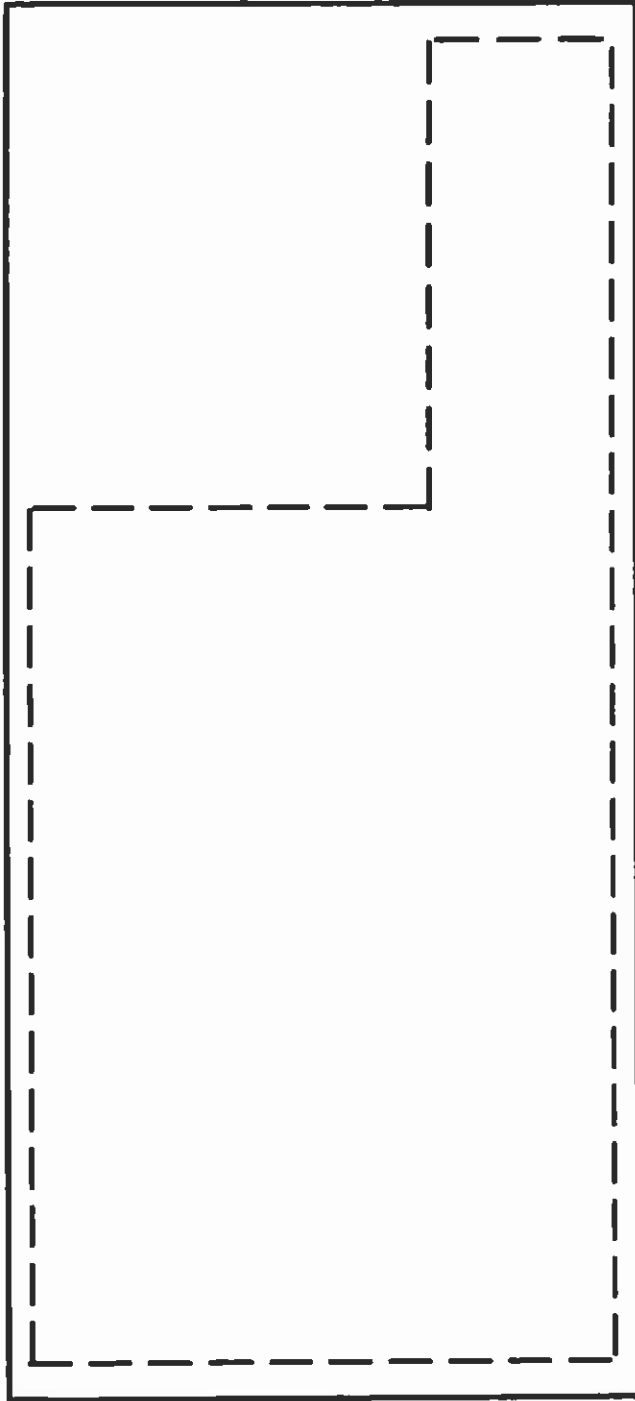


FIGURE 15

D. UNIT WILL NOT MOVE

- Hydraulic suction or return hose kinked or pinched.
 1. Check hose routing with head up and down.

- Drive Chain broken.
- Key on hydraulic motor sheared.
- Hydrostat low on oil.
- Oil filter plugged.
- Oil too heavy.

E. SYSTEM NOISY

- Air in hydraulic system.
 1. Check for proper oil level.
- Loose suction line clamp.
- Clogged suction filter.
- Internal pump or motor damage.
- Pump not turning (locked up).

F. SLUGGISH RESPONSE TO ACCELERATION OR DECELERATION

- Air in hydraulic system.
 1. Check for proper oil level.
- Low charge pressure.
 1. Charge pressure should be 50–70 P.S.I. (385–482 kPa).

G. HYDRAULIC OIL HOT

- Oil supply low.
- Lift control valve sticking.

H. CORRECTION OF TUFTING PROBLEMS

- Check tires for proper inflation: 12 psi (83 kPa).
- Reduce engine speed.
- Reduce hole spacing: 1–3/4" to 2–1/4" (44–57 mm).
- Cut back or reduce watering of greens before aerating.
- Use shorter tines.
- Adjust aerator ram timing for reduced tufting. See page 16.

I. HOLE SPACING INCONSISTANT

- Linkage binding.
- Operator overriding spring pressure of override spring on spacing control rod.

AERATOR RAM TIMING FOR REDUCED TUFTING

When aerating greens under certain conditions, as the unit moves forward, the holes may appear elongated with an angular tear or tuft toward the front of the hole. Usually tufting will be more severe on the holes produced by outer tine rams. This type of tufting is caused by the unit swaying from side to side, which is caused by the reciprocating masses and the forces produced when making holes in the turf.

Changing the ram timing of the unit will improve hole quality, but the ride generally will be rougher.

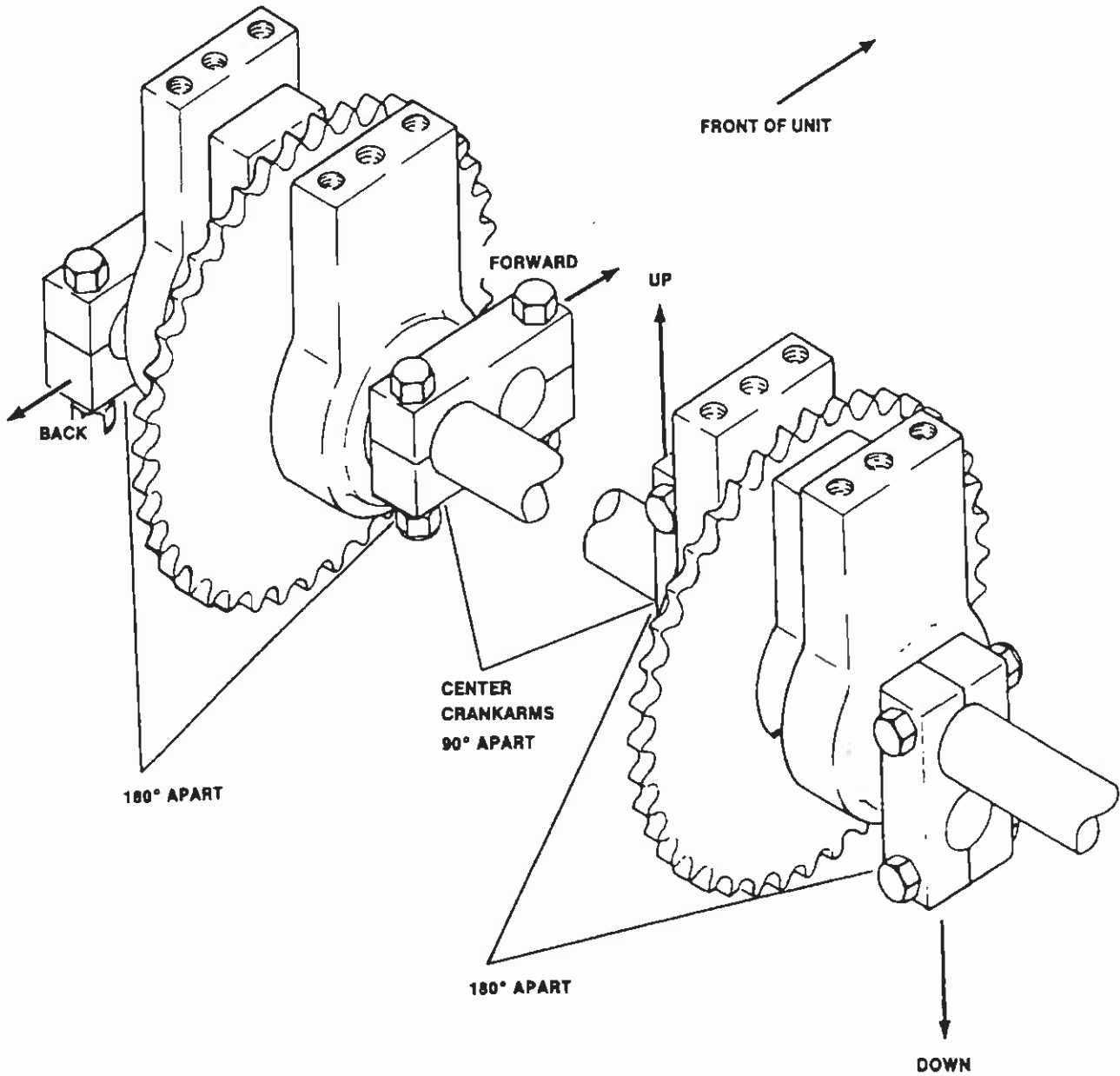
If ride quality is more important to you, or you do not have trouble with tufting, you may choose to not change the timing of the GA-30.

To determine how your GA-30 is timed, see the following pages. Page 18 shows timing for REDUCED TUFTING (greens aeration), Page 17 shows timing for SMOOTHER RIDE (fairway aeration).

AERATOR RAM TIMING FOR SMOOTHER RIDE (fairway aeration)

DESCRIPTION

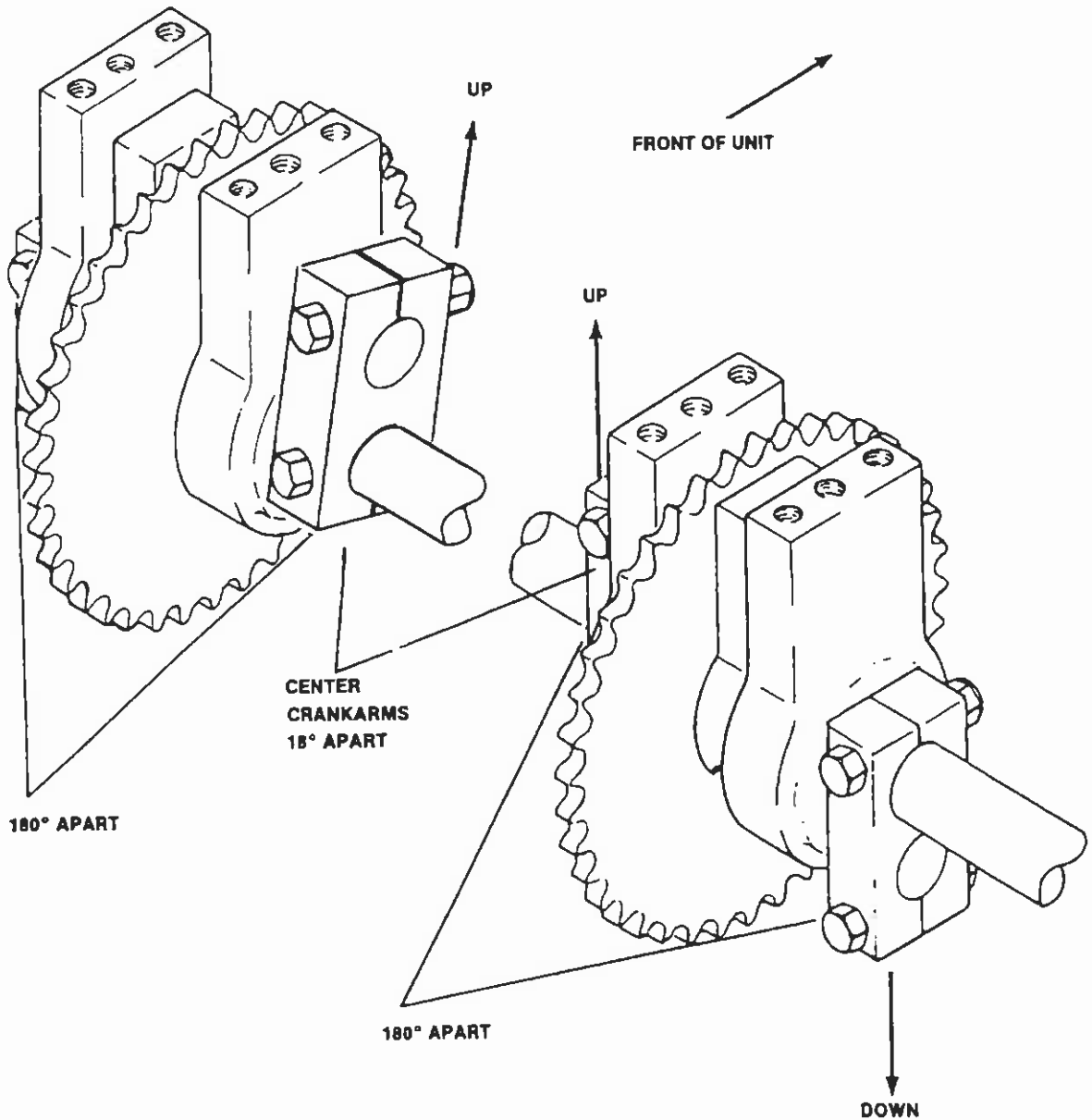
Rotate crankshaft/sprocket assemblies and position one center crank arm in the "UP" position. The other center crank arm will be offset approximately 90°. See illustration below.



AERATOR RAM TIMING FOR REDUCED TUFTING (green aeration)

DESCRIPTION

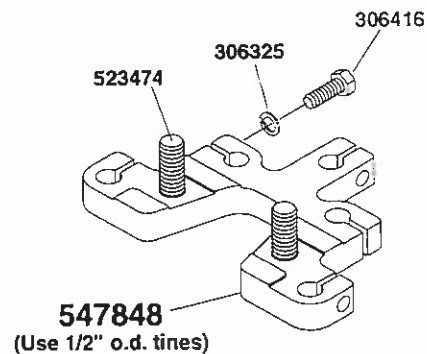
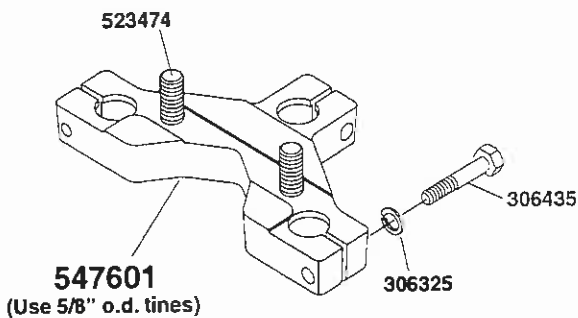
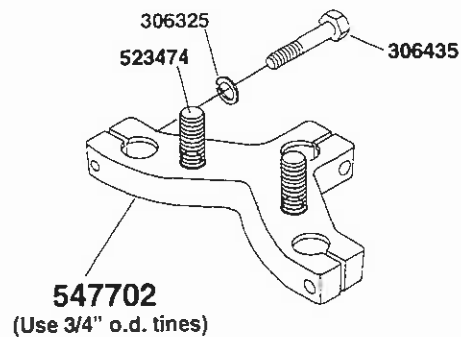
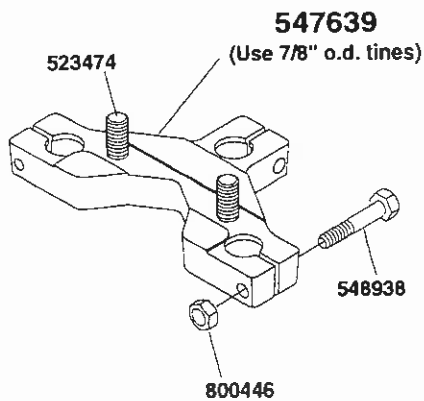
Rotate crankshaft/sprocket assemblies and position on center crank arm in the "UP" position. The other center crank arm will not be parallel, but should be offset approximately 18° (2 teeth on sprocket). See illustration below.



TINES

PART NUMBER	ACTUAL LENGTH	HOLE SIZE	TINE HOLDER USED	APPLICATION
517486	4 1/4" (108 mm)	1/4" x 2 1/2" (6 mm x 64 mm)	547601	Less penetration (use on hard soils).
517487	4 1/4" (108 mm)	3/8" x 2 1/2" (10 mm x 64 mm)	547601	Less penetration (use on hard soils).
517488	4 1/4" (108 mm)	1/2" x 2 1/2" (13 mm x 64 mm)	547601	Less penetration (use on hard soils).
517489	4 1/4" (108 mm)	5/8" x 2 1/2" (16 mm x 64 mm)	547702	Less penetration (use on hard soils).
523028	5 1/2" (140 mm)	5/8" x 3 3/4" (16 mm x 95 mm)	547702	Older greens with high soil content, fairways & tees with irrigation and no rocks.
523273	5 1/2" (140 mm)	3/4" x 3 3/4" (19 mm x 95 mm)	547639	Intensive fairway aerification or soil change in greens. Soil must be in good condition.
523421	5" (127 mm)	3/8" x 3 1/4" (10 mm x 83 mm)	547702	Older greens with high soil content, fairways & tees with irrigation and no rocks.
523472	5 1/2" (140 mm)	1/2" x 3 3/4" (13 mm x 95 mm)	547702	Older greens with high soil content, fairways & tees with irrigation and no rocks.
547132 Carbide Tip	4 1/2" (114 mm)	1/2" x 2 1/2" (13 mm x 64 mm)	547601	More durable tine with less penetration (use where tine wear rate is a problem).
523863 Solid Tine	5" (127 mm)	1/4" x 3 1/8" (6 mm x 79 mm)	547848	For drought conditions or areas that won't take water. For complete accessory, order P.N. 540115.
838323 Solid Tine	5 1/2" (140 mm)	1/2" x 3 3/4" (13 mm x 95 mm)	547702	Heavy aeration when no clean up is desired.
523864	4" (102 mm)	1/4" x 2 1/2" (6 mm x 64 mm)	547848	Primarily used for light aeration for soil-based greens and for overseeding.

TINE HOLDERS



Tine Holder 547639

Tines Used W/Holder

834973 3/4" Coring Tine
523273 3/4" Coring Tine

Tine Holder 547601

Tines Used W/Holder

517486 1/4" Coring Tine
517487 3/8" Coring Tine
517488 1/2" Coring Tine
547132 1/2" Carbide Tine
523995 1/2" H.D. Tine

Tine Holder 547702 (Standard)

Tines Used W/Holder

517489 5/8" Coring Tine
Standard 523028 5/8" Coring Tine
523421 3/8" Coring Tine
523472 1/2" Coring Tine
Standard 524419 5/8" Coring Tine
838323 1/2" Solid Tine

*Tine Holder 547848

Tines Used W/Holder

523863 1/4" Solid Tine
523864 1/4" Coring Tine

*Turf guards must be removed when using this tine holder.

TINES



523863
(1/2" o.d.)



523995
(5/8" o.d.)



523864
(1/2" o.d.)



523421
(3/4" o.d.)



834973
(7/8" o.d.)



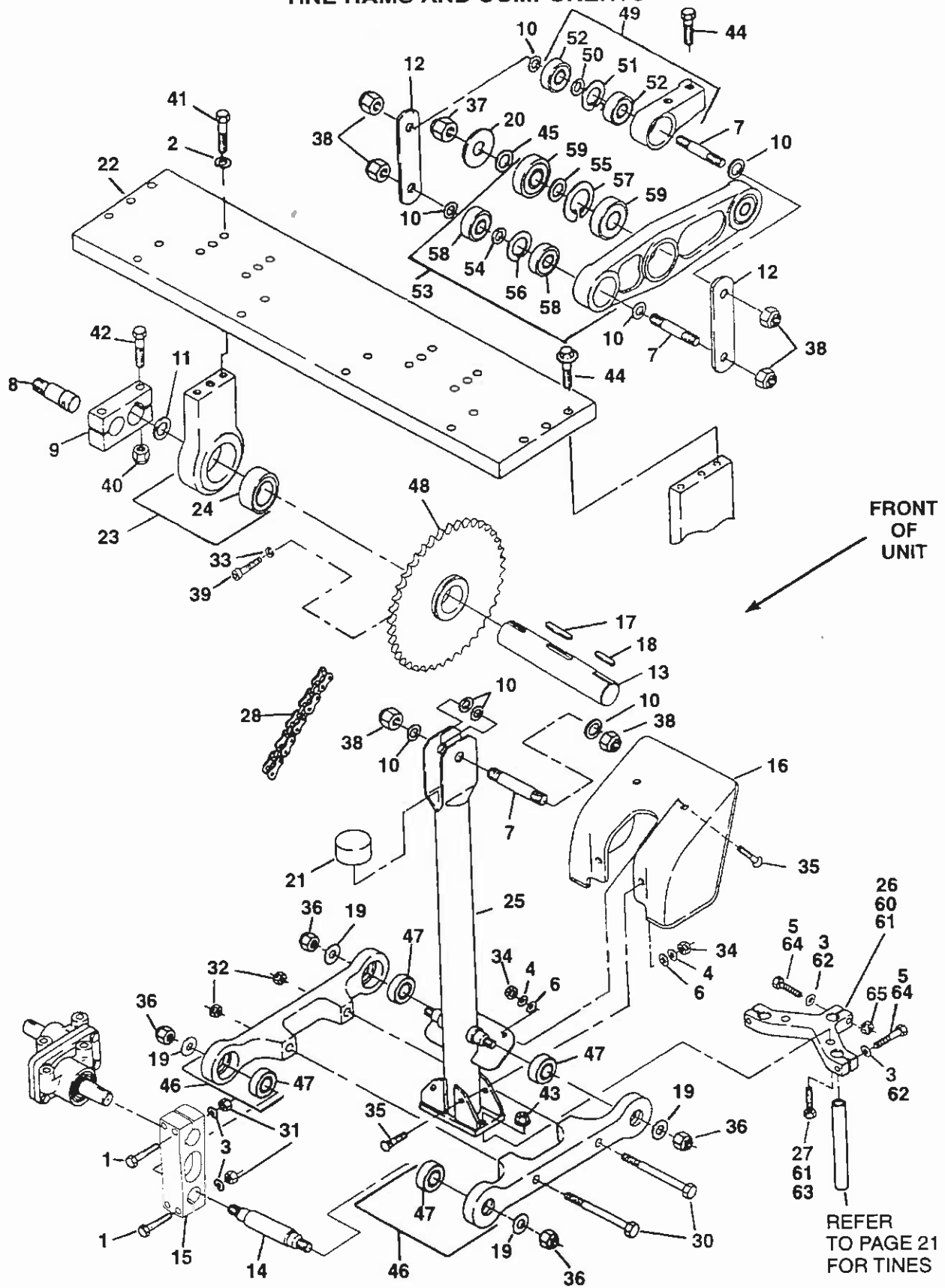
523394
(3/4" o.d.)



838323
(3/4" o.d.)

TINE P.N.	DESCRIPTION	HOLE SIZE	HOLDER P.N.
523863 (1/2" o.d.)	1/4" Solid Tine	1/4" x 2 1/2"	547848
523864 (1/2" o.d.)	1/4" Coring Tine	1/4" x 2 1/2"	547848
517486 (5/8" o.d.)	1/4" Coring Tine	1/4" x 2 1/2"	547601
517487 (5/8" o.d.)	3/8" Coring Tine	3/8" x 2 1/2"	547601
523421 (3/4" o.d.)	3/8" Coring Tine	3/8" x 3 1/4"	547702
517488 (5/8" o.d.)	1/2" Coring Tine	1/2" x 2 1/2"	547601
523472 (3/4" o.d.)	1/2" Coring Tine	1/2" x 3 3/4"	547702
523995 (5/8" o.d.)	1/2" Coring Tine (H.D.)	1/2" x 2 1/2"	547601
547132 (5/8" o.d.)	1/2" Coring Tine (Carbide tip)	1/2" x 2 1/2"	547601
838323 (3/4" o.d.)	1/2" Solid Tine	1/2" x 3 3/4"	547702
524419 (3/4" o.d.)	5/8" Coring Tine (open side)	5/8" x 3 3/4"	547702
517489 (3/4" o.d.)	5/8" Coring Tine	5/8" x 2 1/2"	547702
523028 (3/4" o.d.)	5/8" Coring Tine	5/8" x 3 3/4"	547702
523273 (7/8" o.d.)	3/4" Coring Tine	3/4" x 3 3/4"	547639
834973 (7/8" o.d.)	3/4" Coring Tine (open side)	3/4" x 3 3/4"	547639
540115	Quint Solid Tine Accessory (includes tines, holder and turf guard)		

TINE RAMS AND COMPONENTS

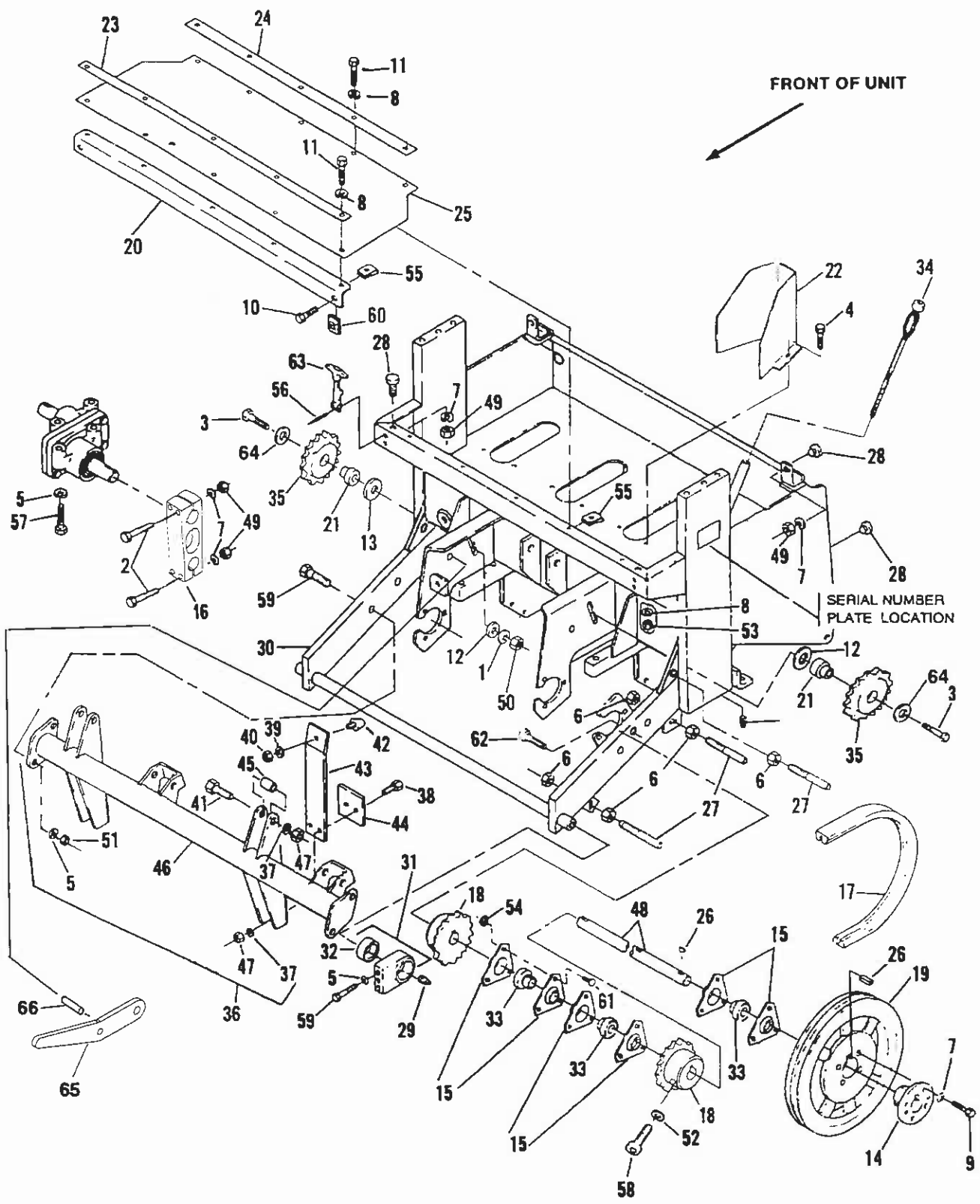


TINE RAMS AND COMPONENTS

Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	130167	Screw, 5/16-18 x 2 1/4"	16	35	800026	Screw, 1/4-20 x 3/4" P.T.H.	16
2	303269	Lockwasher, 7/16"	14	36	800198	◊Nut, 1/2-20 conelock	16
3	306325	Lockwasher, 5/16"	28	37	800508	◊◊Nut, 3/4-16 stop	4
4	306396	Lockwasher, 1/4"	16	38	800509	◊◊Nut, 5/8-18 stop	24
5	306435	Screw, 5/16-18 x 1 1/4"	12	39	800513	Screw, 5/16-18 x 1 1/4" socket head	2
6	308090	Washer, 1/4"	16	40	800531	Nut, 3/8-24 crownlock (grade 8)	8
7	522836	Pin, linkage	12	41	800550	◊Screw, 7/16-14 x 2 1/4"	12
8	522837	Pin, crank	4	42	800552	Screw, 3/8-24 x 2 3/4" (grade 8)	8
9	522838	Arm, crank	4	43	800559	Nut, 1/2-20 nylon lock	8
10	522839	Washer, thrust (.062 thick)	32	44	800594	◊Screw, 1/2-20 x 1 1/4" flangehead (grade 8)	14
11	522841	Washer, thrust (.032 thick)	4	45	831096	Washer, thrust	4
12	522843	Link, rocker	8	46	889447	Link, return	8
13	522847	Shaft, crank	2	47	832498	•Bearing, ball	2
14	522857	Pin, pivot	4	48	889115	Sprocket, crank	2
15	522858	Link, vertical	4	49	890542	Pivot, rocker	4
16	522952	Deflector, core	4	50	522839	•Washer, thrust	1
17	523184	Key, 1/4" x 1/4" x .845"	4	51	548325	•Ring, lock	2
18	523185	Key, 1/4" x 1/4" x 1.470"	2	52	832498	•Bearing, ball	2
19	523222	Washer, thrust (.062 x .531 x 1")	16	53	890543	Arm, pitman	4
20	523234	Washer, thrust (.083 x 1 x 1.28")	4	54	522839	•Washer, thrust (.062 x .670 x 1.06")	2
21	523297	Plug, tine arm	4	55	522840	•Washer, thrust (.083 x 1 x 1.28")	1
22	524175	Plate, top	1	56	548325	•Ring, lock	2
23	547529	Support, crankshaft	4	57	548355	•Ring, retaining	1
24	523127	•Bearing, ball	2	58	832498	•Bearing, ball	4
25	547537	Ram, tine	4	59	832499	•Bearing, ball	2
26	547702	Holder, tine, 5/8" (15.9 mm)	4	60	547601	Holder, tine, 5/8"	4
27	523474	•Screw, special, 1/2-20 Grade 8	2	61	547639	Holder, tine, 3/4"	4
28	547886	Chain, #50 sealed roller w/connector	2	62	306325	•Lockwasher, 5/16"	3
29	522123	*•Connector, #50 sealed	1	63	523474	•Screw, special, 1/2-20, Grade 8	2
30	548024	Screw, 3/8-16 x 4 1/4	8	64	548938	•Screw, 5/16-24 x 1 3/4, Grade 8	3
31	548048	Nut, 5/16-18 lock	16	65	800446	•Nut, 5/16-24	3
32	548052	Nut, 3/8-16 lock	8	*	823549	Cable ties, 15 1/2" (394 mm)	2
33	548183	Lockwasher, 5/16"	2				
34	800706	Nut, 1/4-20 lock	16				

- INDENTED PART NAMES INDICATE THESE PARTS ARE INCLUDED IN PRECEDING ASSEMBLY
- * Not Illustrated
- ◊ Torque to 70 ± 5 ft.- lbs.
- ◊◊ Torque to 145 ± 10 ft.- lbs.

AERATOR FRAME COMPONENTS

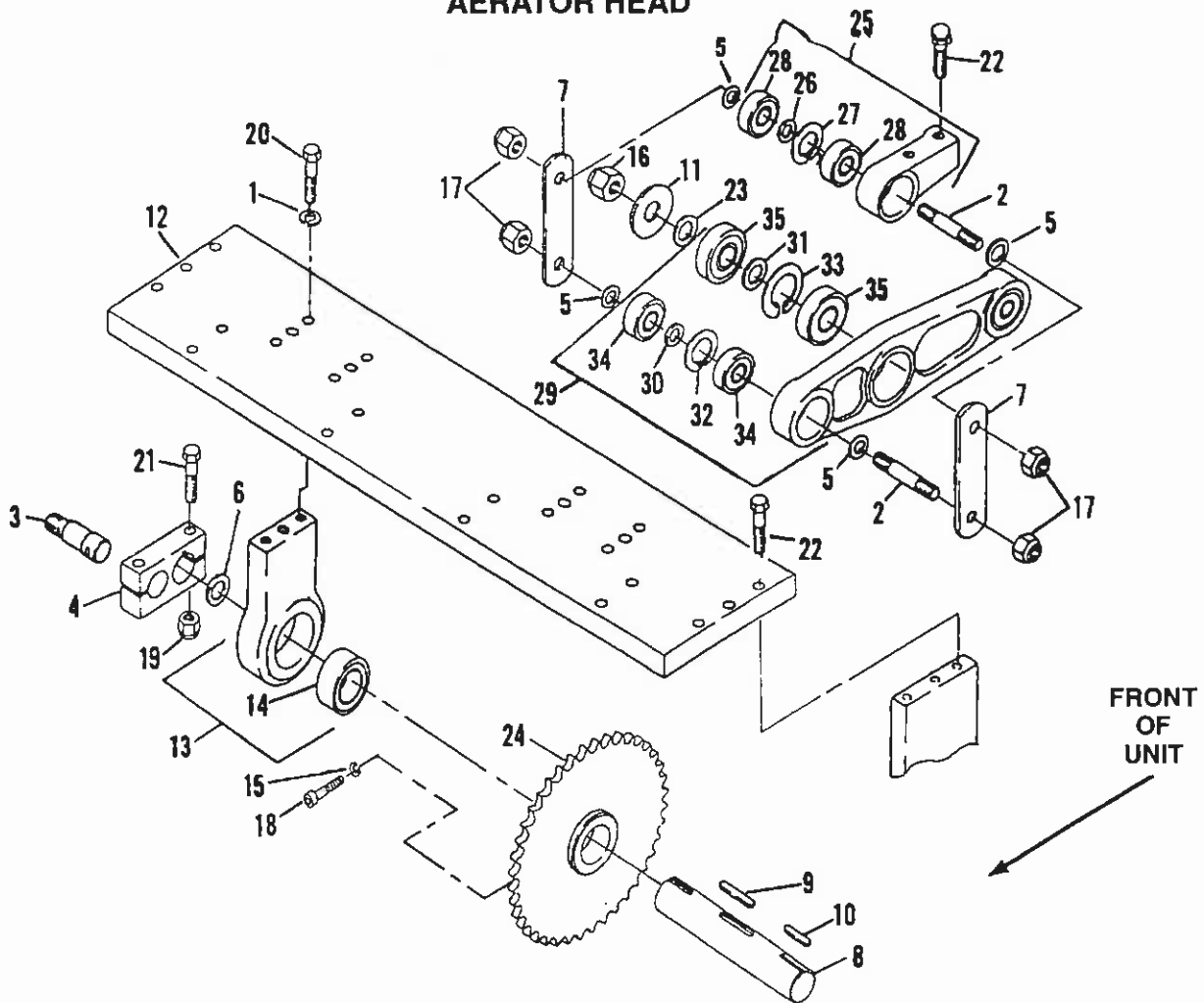


AERATOR FRAME COMPONENTS

Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	120177	Lockwasher, 3/8"	4	34	545801	Dipstick, reservoir	1
2	130167	Screw, 5/16-18 x 2 1/4"	8	35	547596	Sprocket, idler, 15T - 5/8P	2
3	131794	Screw, 3/8-16 x 2"	2	36	547708	Bumper, return	1
4	300646	Screw, 1/4-20 x 3/4"	4	37	120177	•Lockwasher, 3/8"	6
5	303269	Lockwasher, 7/16"	16	38	302600	•Screw, 3/8-16 x 1 1/2"	4
6	304632	Nut, 3/8-16	6	39	306325	•Lockwasher, 5/16"	4
7	306325	Lockwasher, 5/16"	12	40	306932	•Nut, 5/16-18	4
8	306396	Lockwasher, 1/4"	4	41	311213	•Screw, 3/8-16 x 3"	2
9	306435	Screw, 5/16-18 x 1 1/4"	4	42	523126	•Bumper, rubber	4
10	306450	Screw, 5/16-18 x 3/4"	2	43	523346	•Spring	2
11	306487	Screw, 1/4-20 x 5/8"	10	44	523348	•Pad	2
12	306981	Washer, 3/8"	3	45	523349	•Bushing	2
13	515390	Retainer	2	46	547661	•Arm, stop	1
14	520856	Hub	1	47	548052	•Nut, 3/8-16 lock	6
15	522723	Flange, bearing	6	48	547807	Shaft	1
16	522858	Link, vertical	4	49	548048	Nut, 5/16-18 lock	8
17	522887	Belt, drive 2V	1	50	548052	Nut, 3/8-16 lock	2
18	522889	Sprocket, 15 T - 5/8 P	2	51	548056	Nut, 7/16-14 lock	4
19	522890	Pulley, 12" (305 mm) 2 groove	1	52	548183	Lockwasher, 5/16"	2
20	522956	Angle, expansion joint	1	53	548597	Nut, 1/4-20 lock	4
21	523100	Bushing	2	54	548911	Nut, 5/16-18 lock	9
22	523107	Shield	2	55	800169	Nut, 1/4-20 speed	10
23	523161	Strip, mounting	1	56	800390	Rivet, pop, 1/8" x 3/8"	4
24	523162	Strip, mounting	1	57	800444	Screw, 7/16-14 x 2 1/2" grade 8	8
25	523163	Cover, expansion joint	1	58	800513	Screw, 5/16-18 x 1 1/4" grade 8	2
26	523184	Key, 1/4" x 1/4" x .845"	4	59	800522	Screw, 7/16-14 x 1 3/4" grade 8	12
27	523215	Stud, belt guide	3	60	800536	Nut, 5/16-18 "J"	2
28	523224	Bumper, rubber	4	61	800557	Bolt, 5/16-18 x 3/4" carriage	8
29	523431	Plug	2	62	800606	Bolt, 5/16-18 x 1 1/2" carriage	1
30	540038	Frame, aerator	1	63	888102	Handle, latch	2
31	540107	Pivot, frame	2	64	548155	Washer, 5/16	2
32	832499	•Bearing, ball	1	65	840082	Lever, adjusting	2
33	545786	Bearing, complete	3	66	316946	Pin, spring	2

• INDENTED PART NAMES INDICATE THESE PARTS ARE INCLUDED IN PRECEDING ASSEMBLY

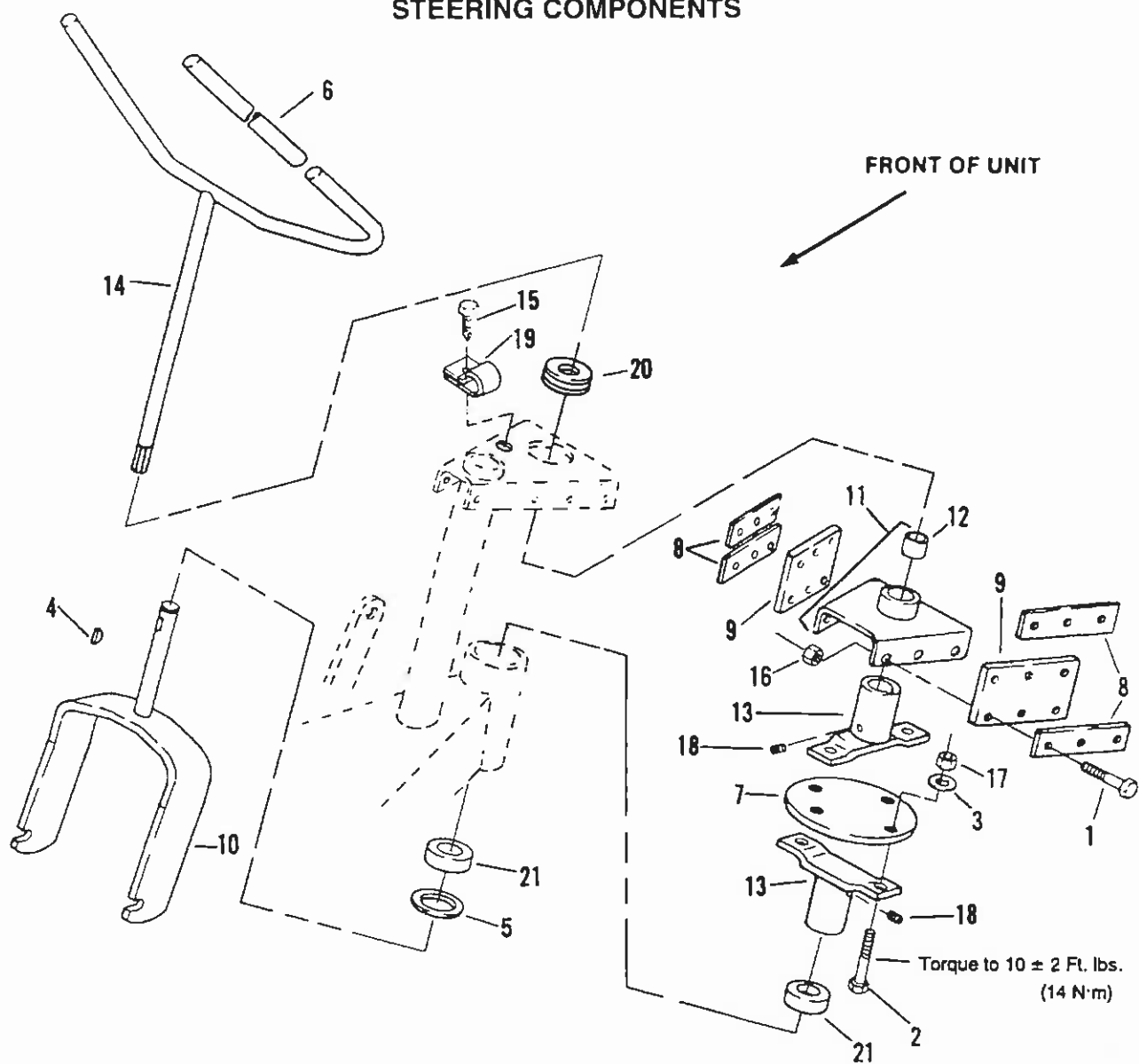
AERATOR HEAD



Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	303269	Lockwasher, 7/16"	12	19	800531	Nut, 3/8-24	8
2	522836	Pin, linkage	8	20	800550	Screw, 7/16-14 x 2 1/4" grade 8	12
3	604174	Pin, crank	4	21	800552	Screw, 3/8-24 x 2 3/4" grade 8	8
4	522838	Arm, crank	4	22	800594	Screw, 1/2-20 x 1 1/4" flange head	20
5	522839	Washer, thrust (.062 thick)	16	23	831096	Shim (.033 thick)	4
6	522841	Washer, thrust (.083 thick)	4	24	889115	Sprocket, crank	2
7	522843	Link, rocker	8	25	890542	Pivot, rocker	4
8	522847	Shaft, crank	2	26	522839	•Washer, thrust (.062 thick)	1
9	523184	Key, 1/4" x 1/4" x .845"	4	27	548325	•Ring, lock	1
10	523185	Key, 1/4" x 1/4" x 1.470"	2	28	832498	•Bearing, ball	2
11	523234	Washer, thrust	4	29	890543	Arm, pitman	4
12	524175	Plate, top	1	30	522839	•Washer, thrust (.062 thick)	2
13	547529	Support	4	31	522840	•Washer, thrust	1
14	523127	•Bearing, ball	2	32	548325	•Ring, lock	2
15	548183	Lockwasher, 5/16"	2	33	548355	•Ring, retaining	1
16	800508	Nut, 3/4-16 lock	4	34	832498	•Bearing, ball	4
17	800509	Nut, 5/8-18 lock	16	35	832499	•Bearing, ball	2
18	800513	Screw, 5/16-18 x 1 1/4" grade 8	2				

• INDENTED PART NAMES INDICATE THESE PARTS ARE INCLUDED IN PRECEDING ASSEMBLY.

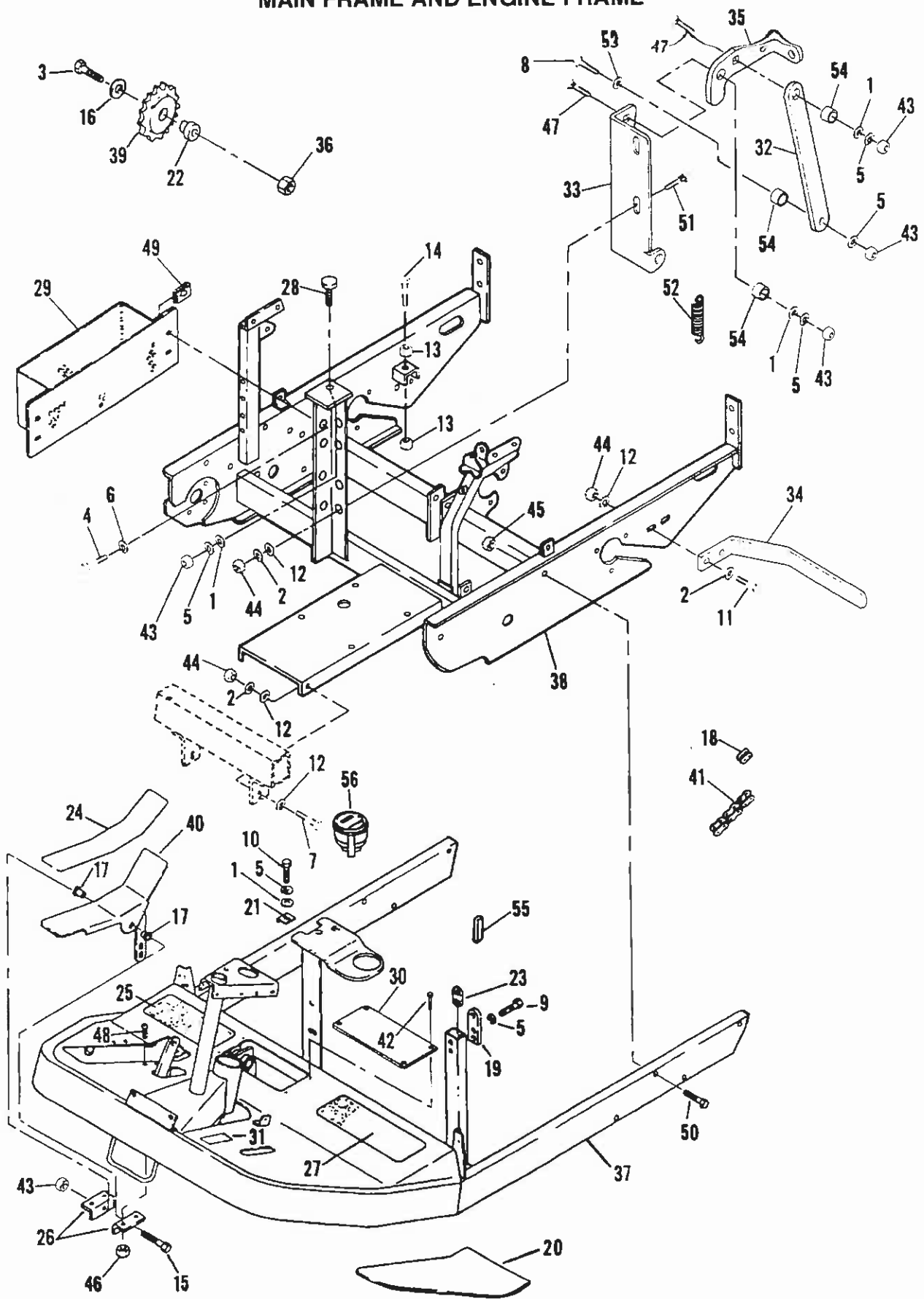
STEERING COMPONENTS



Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	306416	Screw, 5/16-18 x 1"	12	12	520528	•Bushing	1
2	306835	Screw, 3/8-16 x 1 1/4"	4	13	547672	Coupling, steering	1
3	604174	Washer, 3/8"	4	14	547673	Handle, steering	1
4	307662	Key, woodruff, 1/4" x 1"	1	15	548013	Screw, 1/4-20 x 1/2"	1
5	522840	Washer, 1"	1	16	548048	Nut, 5/16-18 lock	12
6	522899	Grip, hand	2	17	548052	Nut, 3/8-16 lock	4
7	522962	Disc, coupler	1	18	800554	Screw, set 1/4-20 x 5/8"	2
8	522969	Strip, protection	4	19	814924	Clamp, wire	1
9	522970	Isolator	2	20	829997	Grommet	1
10	540035	Yoke, front wheel	1	21	832499	Bearing, ball	2
11	547560	Steering guide, complete	1				

• INDENTED PART NAMES INDICATE THESE PARTS ARE INCLUDED IN PRECEDING ASSEMBLY

MAIN FRAME AND ENGINE FRAME

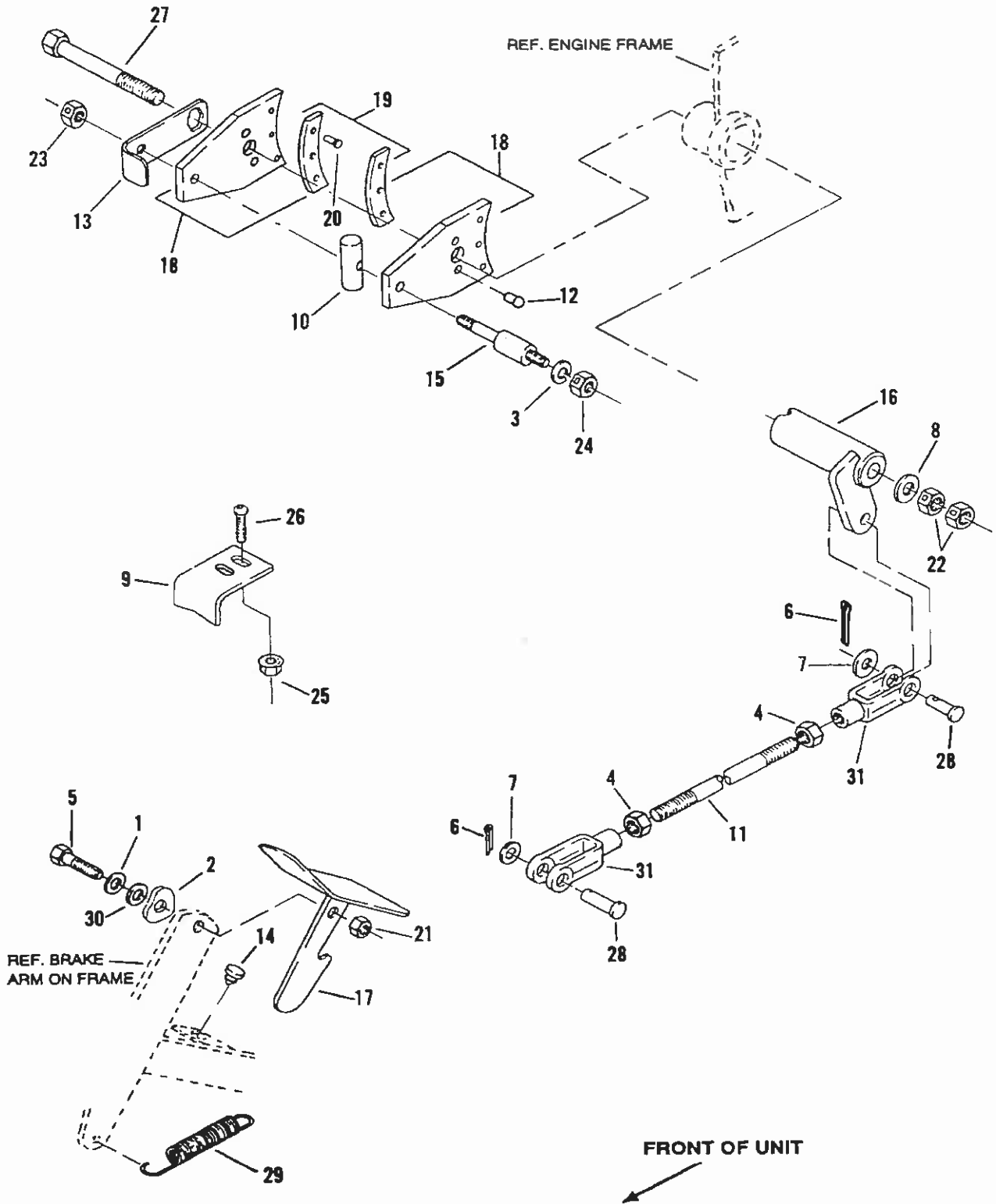


MAIN FRAME AND ENGINE FRAME

Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	103867	Washer, 5/16"	2	29	523426	Box, tool	1
2	120177	Lockwasher, 3/8"	3	30	523804	Plate	1
3	131794	Screw, 3/8-16 x 2"	1	31	523970	Decal, information	1
4	300646	Screw, 1/4-20 x 3/4"	4	32	524166	Pivot, link	1
5	306325	Lockwasher, 5/16"	2	33	524167	Pivot, bracket mounting	1
6	306396	Lockwasher, 1/4"	5	34	524169	Scraper, tire	2
7	306414	Screw, 3/8-16 x 1"	2	35	524170	Pivot, cam	1
8	306416	Screw, 5/16-18 x 1"	1	36	524268	Nut, idler	1
9	306450	Screw, 5/16-18 x 3/4"	2	37	540037	Frame, outer	1
10	306555	Screw, 5/16-18 x 5/8"	1	38	540104	Frame, inner	1
11	306835	Screw, 3/8-16 x 1 1/4"	4	39	547596	Sprocket, idler	1
12	306981	Washer, 3/8"	15	40	547614	Pedal	1
13	308332	Nut, 1/2-13	4	41	547887	Chain, #50 sealed roller	1
14	311393	Screw, 1/2-13 x 1 1/4"	2	42	548013	Screw, 1/4-20 x 1/2"	4
15	316909	Screw, 5/16-18 x 4 1/2"	1	43	548048	Nut, 5/16-18 lock	4
16	515390	Retainer	1	44	548052	Nut, 3/8-16 lock	12
17	522009	Bearing	2	45	548804	Nut, 3/8-16 flangelock	21
18	522123	Link, #50 connector	1	46	548911	Nut, 5/16-18	6
19	522912	Bracket	1	47	800085	Bolt, 5/16-18 x 1"	2
20	523073	Pad	1	48	800177	Screw, 5/16-18 x 3/4"	4
21	523075	Bracket	1	49	800449	Nut, 1/4-20 speed	4
22	523100	Bushing	1	50	800477	Screw, 3/8-16 x 1 3/4"	12
23	523106	Nut, double	1	51	800500	Bolt, 3/8-16 x 1" carriage	5
24	523169	Tread, pedal	1	52	805376	Spring, extension	1
25	523171	Tread, floor	1	53	809152	Washer, 5/16"	1
26	523197	Bracket, mounting	2	54	823332	Bushing	3
27	523223	Tread, floor	1	55	829726	Trim, push on, 50' (15.2 M)	As Req'd
28	523224	Bumper, rubber	1	56	886802	Meter, hour	1

• INDENTED PART NAMES INDICATE THESE PARTS ARE INCLUDED IN PRECEDING ASSEMBLY

BRAKE COMPONENTS

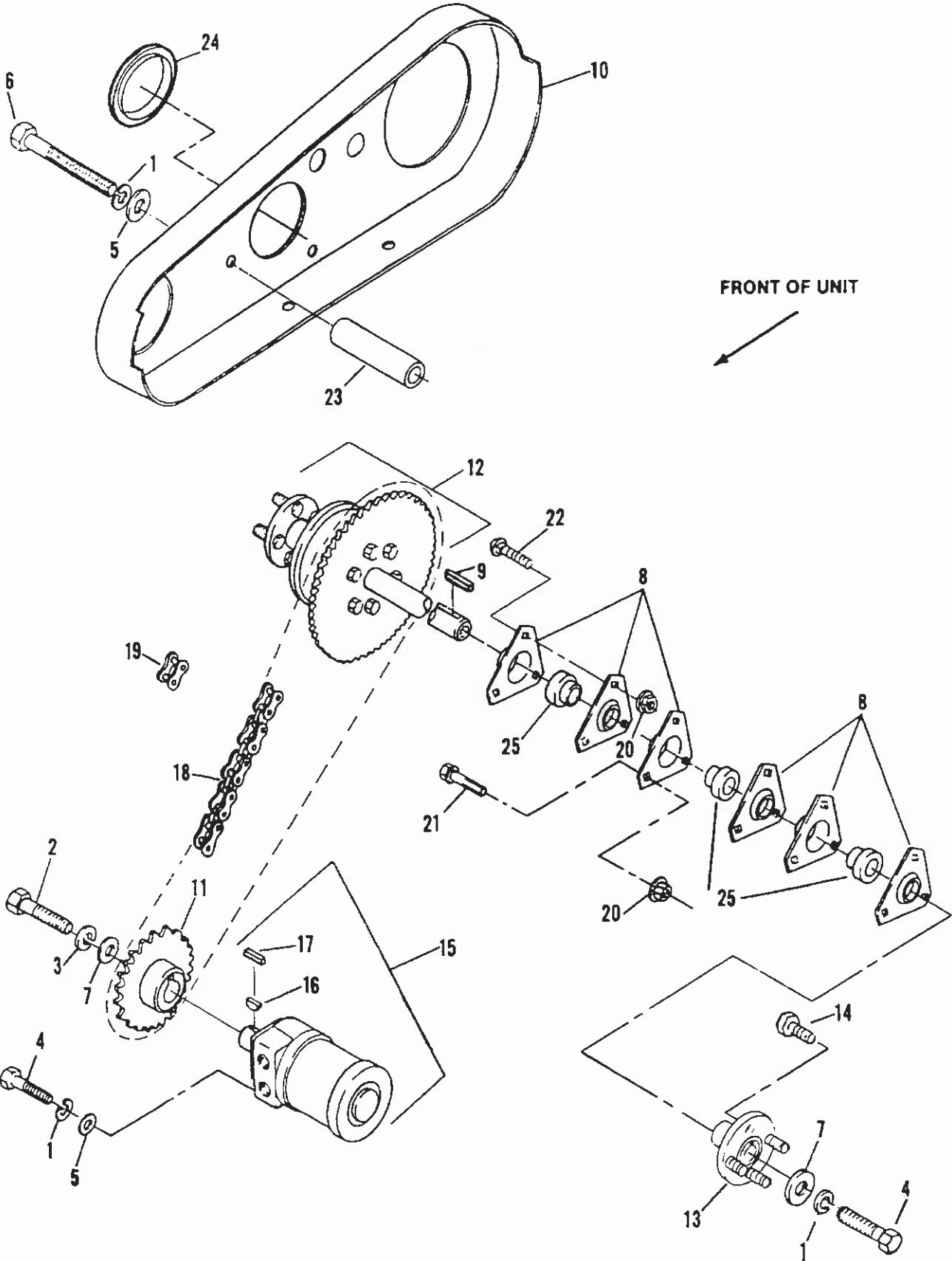


BRAKE COMPONENTS

Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	103867	Washer, 5/16"	1	18	547612	Caliper	2
2	111840	Washer, wave	1			•Lining, brake	1
3	303269	Lockwasher, 7/16"	1	*	800527	•Rivet	3
4	306319	Nut, 3/8-24	2	19	547613	Lining kit, brake	As Req'd
5	306322	Screw, 5/16-18 x 7/8"	1			•Lining, brake	2
6	306328	Pin, 3/32" x 3/4" cotter	2	20	800527	•Rivet	6
7	306981	Washer, 3/8"	2	21	548048	Nut, 5/16-18 lock	1
8	308091	Washer, 1/2"	1	22	548051	Nut, 1/2-13 lock	2
9	522993	Bracket, brake lock	1	23	548052	Nut, 3/8-16 lock	1
10	523200	Bushing, brake pivot	1	24	548056	Nut, 7/16-14 lock	1
11	523202	Rod, brake	1	25	548911	Nut, 5/16-18 whizlock	2
12	523203	Button, brake	2	26	800177	Screw, 5/16-18 x 3/4" P.T.H.	2
13	523211	Bracket, retainer	1	27	800784	Screw, 1/2-13 x 5 1/2"	1
14	523224	Bumper, rubber	1	28	815636	Pin, 1/2" x 1 3/32" clevis	2
15	524159	Bolt, shoulder	1	29	817613	Spring, brake return	1
16	540039	Cam, rotary	1	30	823332	Bushing, brake pedal	1
17	547566	Pedal, brake	1	31	827498	Yoke, brake rod	2

- INDENTED PART NAMES INDICATE THESE PARTS ARE INCLUDED IN PRECEDING ASSEMBLY
- * Not Illustrated

DRIVE COMPONENTS



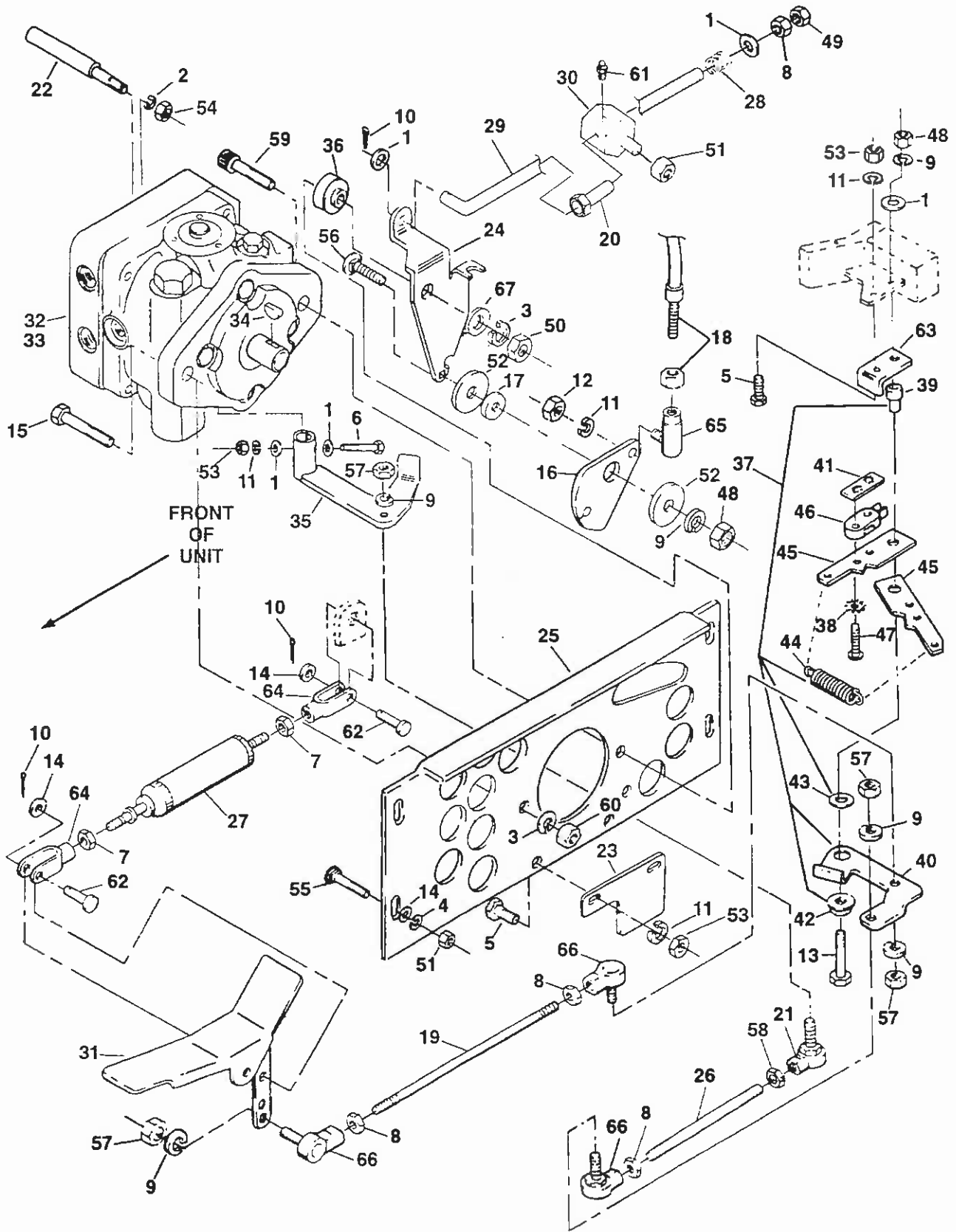
DRIVE COMPONENTS

Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	120177	Lockwasher, 3/8"	7	14	816320	•Screw, wheel	4
2	302288	Screw, 1/4-20 x 1"	1	15	547595	Motor, hydraulic	1
3	306396	Lockwasher, 1/4"	1	16	307662	◊•Key, woodruff	1
4	306539	Screw, 3/8-16 x 7/8"	5	17	548365	◊•Key, 1/4" x 1/4" x 1 1/4"	1
5	306981	Washer, 3/8"	6	18	547887	Chain, No. 50 sealed roller	1
6	315340	Screw, 3/8-16 x 3 1/2"	2	19	522123	•Link, connecting (sealed)	1
7	515390	Retainer	2	20	548804	Nut, 3/8-16 flangelock	9
8	835104	Flange, bearing	6	21	548905	Screw, 3/8-16 flangelock	6
9	523185	Key, 1/4" x 1/4" x 1 1/2"	1	22	800500	Bolt, 3/8-16 x 1" carriage	3
10	524145	Guard, chain	1	23	824163	Spacer	2
11	540043	Sprocket, drive, 20 tooth	1	24	824438	Plug, hole	1
12	540045	Differential, complete	1	25	835105	Bearing, ball	3
13	547581	Hub, wheel	1				

• INDENTED PART NAMES INDICATE THESE PARTS ARE INCLUDED IN PRECEDING ASSEMBLY

◊ Order correct key for your motor

HYDROSTAT LINKAGE

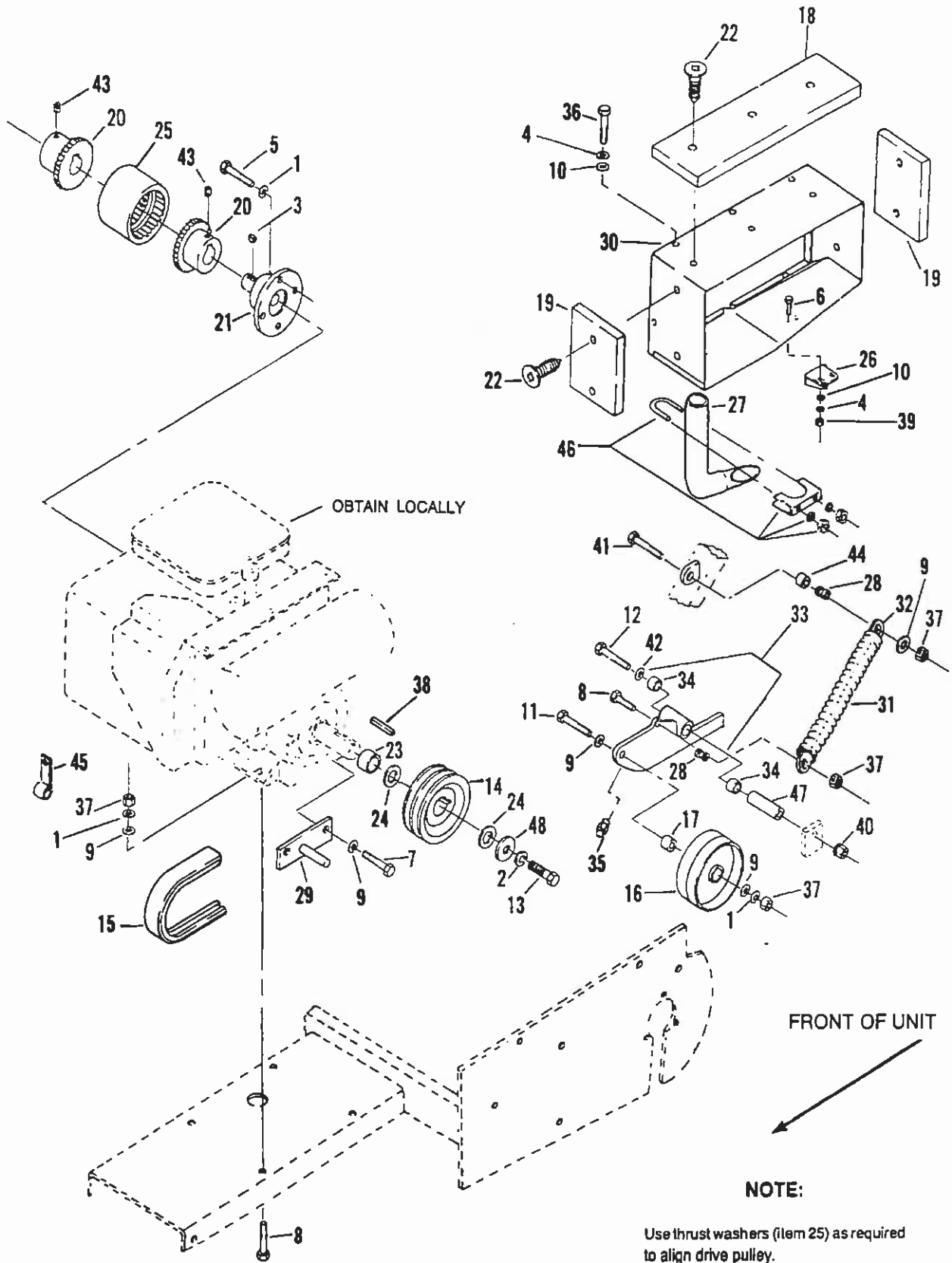


HYDROSTAT LINKAGE

Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	103867	Washer, 5/16"	5	37	547738	Bellcrank, complete	1
2	120052	Washer, #10	1	38	306990	•Lockwasher, #6 ext. tooth	4
3	120166	Lockwasher, 1/2"	2	39	523492	•Bushing	1
4	120177	Lockwasher, 3/8"	4	40	523497	•Arm, neutral	1
5	300646	Screw, 1/4-20 x 3/4"	3	41	800421	•Nut, speed	2
6	303459	Screw, 1/4-20 1 1/2"	1	42	800559	•Nut, 1/2-20 crownlock flange ...	1
7	306319	Nut, 3/8-24	2	43	809180	•Washer, 1/2"	1
8	306320	Nut, 5/16-24	4	44	817598	•Spring	1
9	306325	Lockwasher, 5/16"	6	45	827320	•Arm, control	2
10	306328	Pin, 3/32 x 3/4" cotter	3	46	830139	•Switch, neutral safety	2
11	306396	Lockwasher, 1/4"	5	47	888503	•Screw service, set	1
12	306397	Nut, 1/4-28	1		◇	••Screw, #4-40 x 3/4" (rd. hd.) ...	2
13	306464	Screw, 5/16-18 x 2 1/4"	1		◇	••Screw, #4-40 X 1" (rd. hd.) ...	2
14	306981	Washer, 3/8"	6		◇	••Screw, #4-40 x 1 3/4" (rd. hd.) .	2
15	311401	Screw, 1/2-13 x 1 1/4"	1		◇	••Nut, w/washer, #4-40	2
16	523037	Cam, speed control	1	48	548048	Nut, 5/16-18 lock	2
17	523038	Bushing	1	49	548049	Nut, 5/16-24 lock	1
18	523049	Cable, shifter	1	50	548051	Nut, 1/2-13 lock	1
19	523115	Rod, pedal to stop	1	51	548052	Nut, 3/8-16 lock	5
20	524453	Screw, adjusting	1	52	548159	Washer, 5/16"	2
21	523253	End, rod (left hand thread)	1	53	800706	Nut, 1/4-20 lock	4
22	523409	Arm, relief	1	54	548973	Nut, #10-24 stop	1
23	523410	Bracket, linkage stop	1	55	800500	Bolt, 3/8-16 x 1" carriage	4
24	523412	Arm, spacing cam	1	56	800085	Bolt, 5/16-18 x 1" carriage	1
25	523415	Plate, pump mounting	1	57	800716	Nut, 5/16-24 lock	4
26	523419	Rod, stop to pump	1	58	800543	Nut, 3/16-24 (left hand thread) ...	1
27	523473	Absorber, shock	1	59	800560	Screw, 1/2-13 x 3 1/2"	1
28	524083	Spring	1	60	800602	Nut, 1/2-13 stop	1
29	524160	Rod, spacing control	1	61	807439	Fitting, lubrication	1
30	524471	Connector, rod	1	62	815636	Pin, 1/2" x 1 3/32" clevis	2
31	547614	Pedal, directional	1	63	827316	Bracket, neutral control	1
32	547674	Hydraulic pump, complete	1	64	827498	Yoke, shock	2
33	547731	•Kit, seal	As Req'd	65	831518	Ball joint, control rod	1
34	548369	•Key, woodruff	1	66	831586	Ball joint, control rod	3
35	547680	Arm, pump	1	67	831783	Washer, cam pivot	1
36	523411	Bushing	1				

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ENGINE GROUP

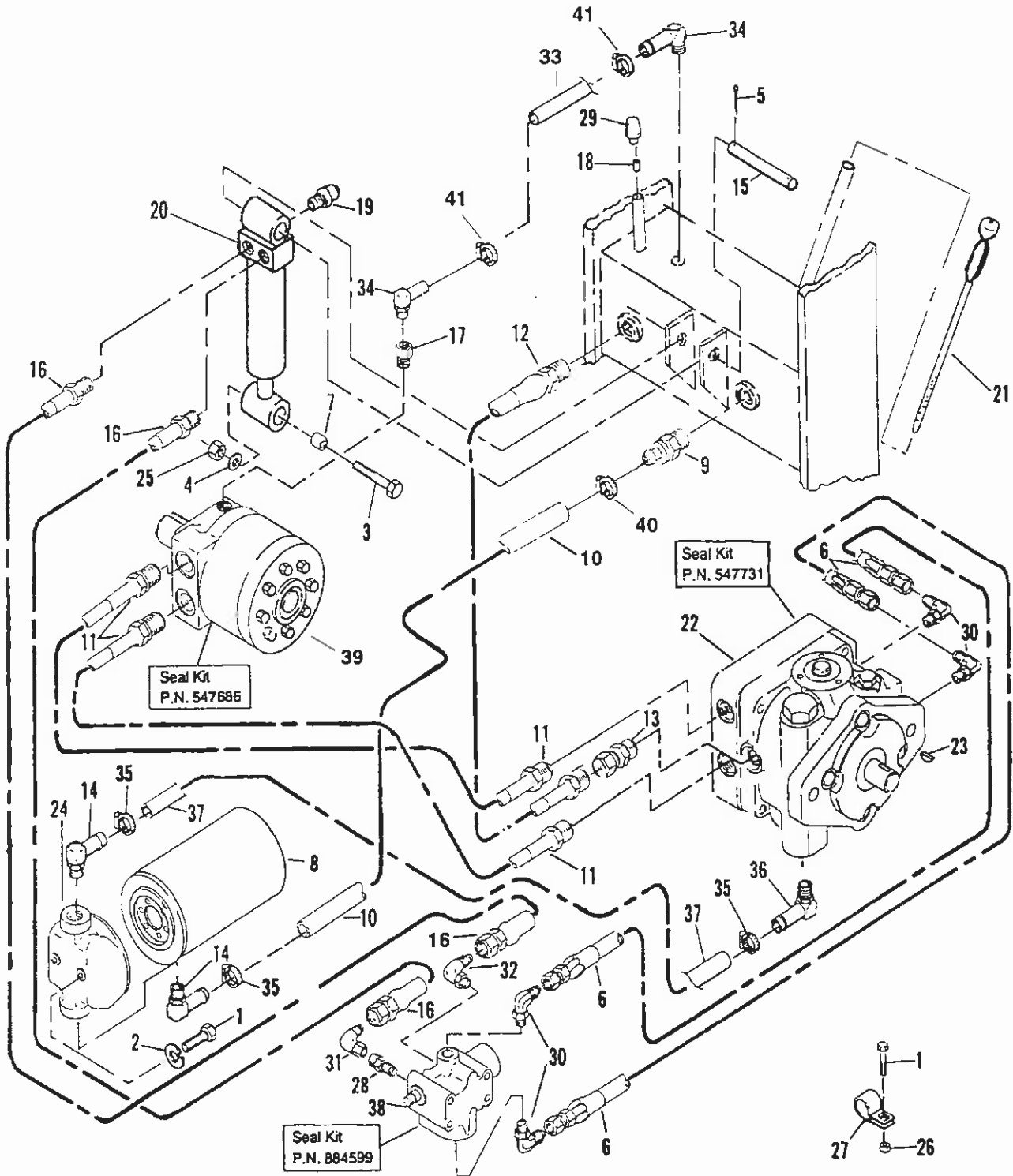


ENGINE GROUP

Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	120177	Lockwasher, 3/8"	9	24	523317	Washer, thrust	As Req'd
2	303269	Lockwasher, 7/16"	1	25	523323	Sleeve, coupler, nylon	1
3	306367	Key, woodruff, 3/16" x 3/4" x 5/16"	1	26	523368	Guide, belt	1
4	306396	Lockwasher, 1/4"	7	27	523389	Extension, exhaust	1
5	306414	Screw, 3/8-16 x 1"	4	28	523424	Bushing, idler spring hook	2
6	306487	Screw, 1/4-20 x 5/8"	2	29	547547	Stop, belt	1
7	306539	Screw, 3/8-16 x 7/8"	2	30	547571	Hood, engine exhaust	1
8	306835	Screw, 3/8-16 x 1 1/4"	5	31	523380	Spring, extension	1
9	306981	Washer, 3/8"	9	32	523381	•Hook	2
10	308090	Washer, 1/4"	9	33	547703	Idler arm, complete	1
11	311213	Screw, 3/8-16 x 3"	1	34	515511	•Bushing	2
12	315340	Screw, 3/8-16 x 3 1/2"	1	35	807439	•Fitting, lubrication	1
13	515008	Screw, 7/16-20 x 1"	1	36	548013	Screw, 1/4-20 x 1/2"	7
14	521680	Pulley, engine 2v (4 1/4" dia.) (108 mm dia.)	1	37	548052	Nut, 3/8-16 lock	7
15	522887	Belt, aerator drive (2v)	1	38	548359	Key, 1/4" x 1/4" x 1 3/4"	1
16	522973	Pulley, idler	1	39	800706	Nut, 1/4-20 lock	2
17	523096	Bushing, idler pulley	1	40	548804	Nut, 3/8-16 flangelock	1
18	523190	Insulation, exhaust	1	41	551094	Screw, 3/8-16 x 1 3/4"	1
19	523192	Insulation, exhaust	2	42	604174	Washer, 3/8"	1
20	523239	Hub, coupler	2	43	800274	Screw, set, 1/4-20 x 5/16"	2
21	523246	Shaft, flywheel	1	44	808930	Bushing, idler spring	1
22	523282	Clip, x-mas tree	7	45	816070	Clamp, wire	3
23	523316	Spacer, engine pulley	1	46	818962	Clamp, exhaust	1
				47	829270	Bushing, idler	1
				48	831106	Washer, engine shaft	1

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HYDRAULIC SYSTEM

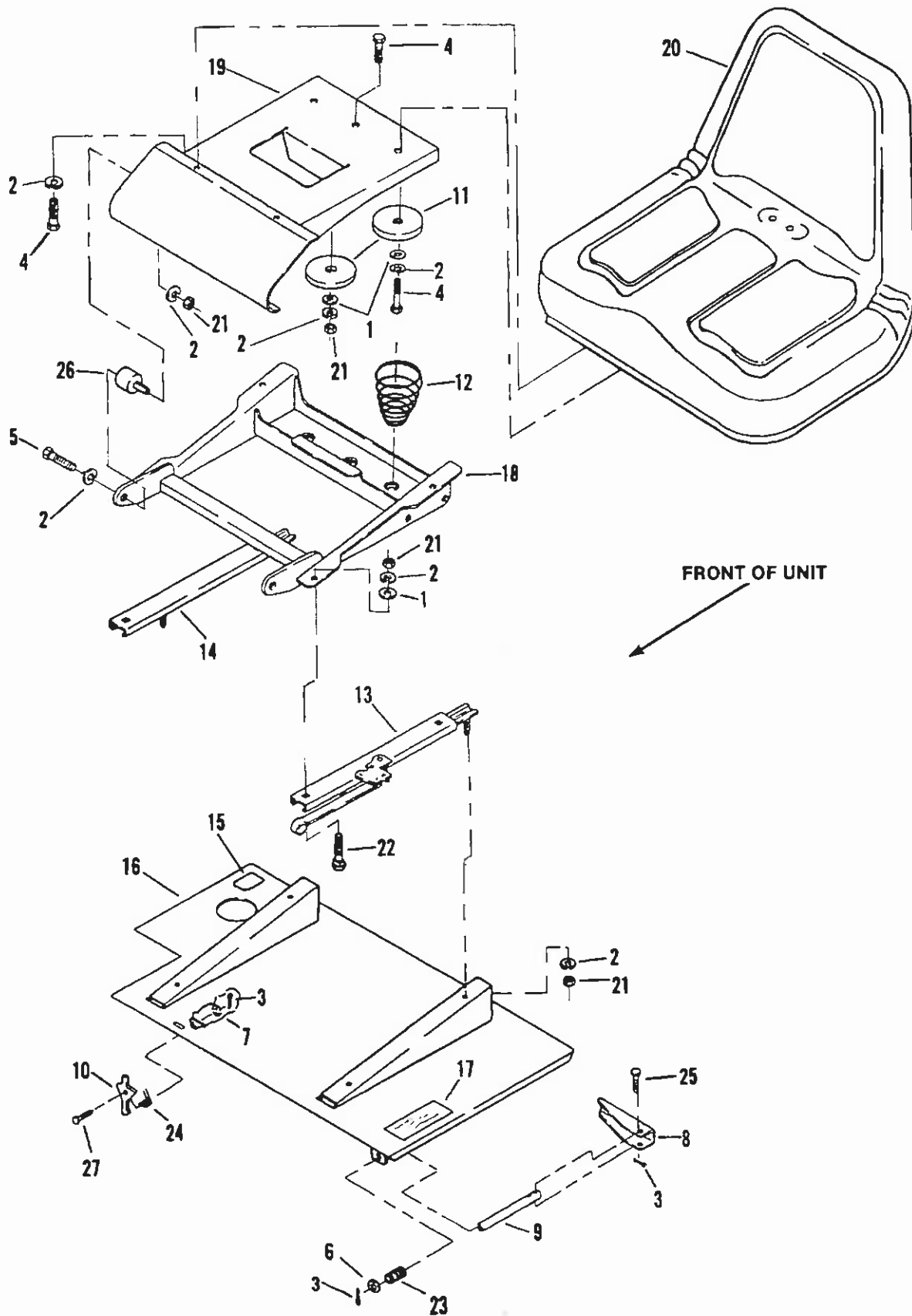


HYDRAULIC SYSTEM

Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	300646	Screw, 1/4-20 x 3/4"	2	22	547674	Pump, hydraulic	1
2	306396	Lockwasher, 1/4"	2	*	547731	•Kit, seal	As Req'd
3	307144	Screw, 5/8-11 x 3"	1	23	548369	•Key, woodruff	1
4	310856	Lockwasher, 5/8"	1	24	547818	Head, filter	1
5	325109	Pin, 5/32 x 1 3/4" cotter	2	25	548060	Nut, 5/8-11 lock	1
6	522113	Hose, 3/8" I.D. x 38 3/4" (984 mm)	2	26	800706	Nut, 1/4-20 lock	2
7	522964	Bushing	1	27	814924	Clamp	2
8	522972	Filter, oil	1	28	823118	Fitting, hydraulic	1
9	523112	Nipple	1	29	823587	Breather	1
10	524602	Hose, 3/4" I.D. x 41" (1041 mm)	1	30	826558	Elbow, 90°	4
11	523159	Hose, 1/2" I.D. x 21" (533 mm)	2	31	828056	Fitting	1
12	523345	Hose, 5/8" I.D. x 48" (1219 mm)	1	32	828057	Fitting	1
13	523416	Adapter, straight	1	33	830425	Hose, 1/4" I.D. x 30" (762 mm)	1
14	523768	Adapter, 90° elbow	2	34	831205	Elbow, pickup	2
15	524164	Pin, lift cylinder clevis	1	35	836206	Clamp, hose	3
16	524205	Hose, 1/2" I.D. x 42" (1067 mm)	2	36	837753	Adapter	1
17	524210	Adapter	1	37	869034	Hose, 3/4" I.D. x 7 1/2" (191 mm)	1
18	524221	Plug, reservoir vent	1	38	884892	Valve, hydraulic	1
19	524302	Valve, counterbalance	1	*	884599	•Kit, seal	As Req'd
20	540112	Cylinder, hydraulic	1	39	547595	Motor, hydraulic	1
*	884574	•Kit, seal	As Req'd	*	547686	•Kit, seal	As Req'd
21	545801	Dipstick, reservoir	1	40	836206	Clamp, hose	1
				41	825624	Clamp, hose	2

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- * Not Illustrated

SEAT AND SEAT DECK BASE

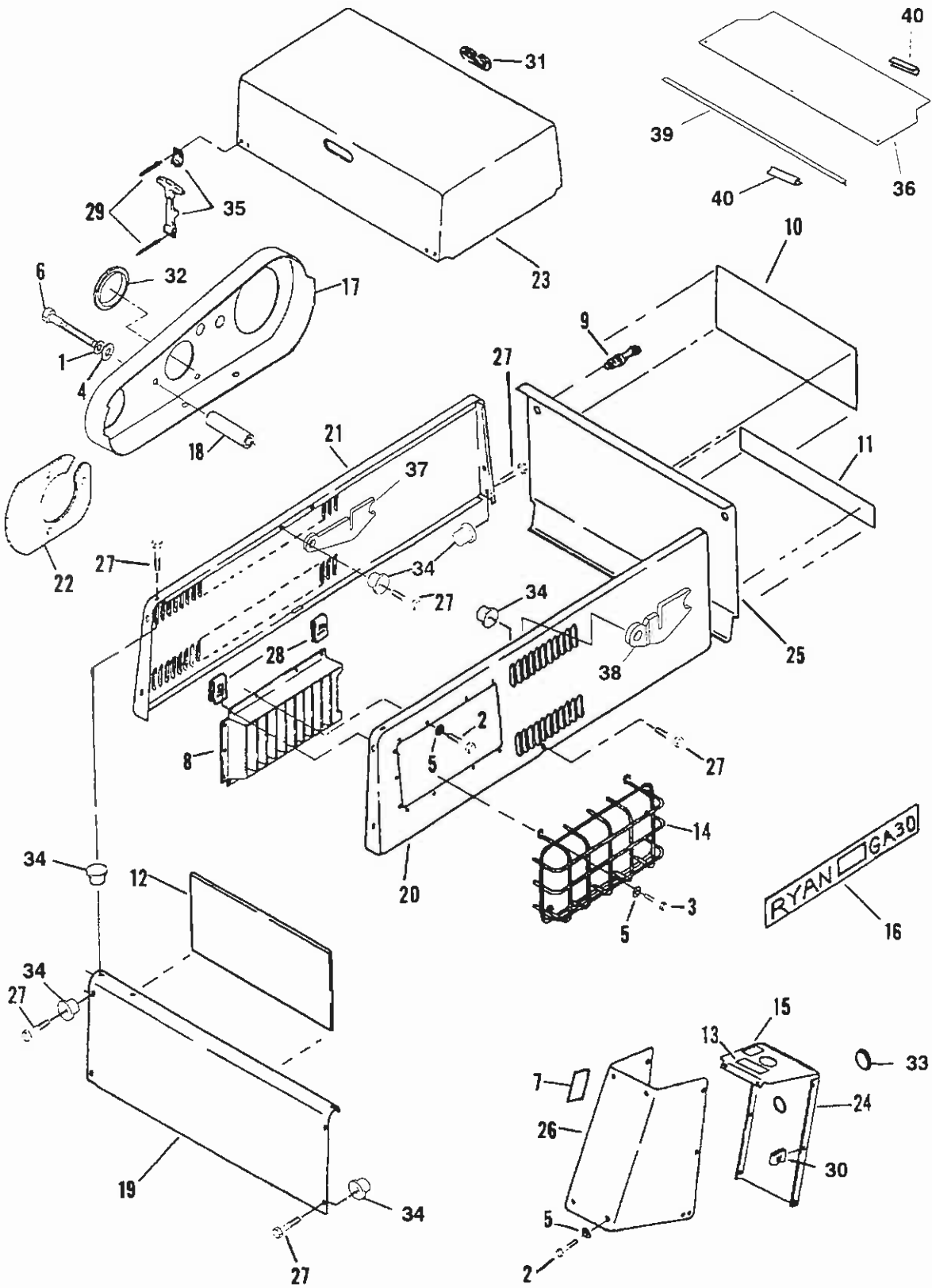


SEAT AND SEAT DECK BASE

Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	103867	Washer, 5/16"	7	15	523476	Decal, towing	1
2	306325	Lockwasher, 5/16"	17	16	547543	Seat base, complete	1
3	306328	Pin, 3/32 x 3/4" cotter	3	17	523199	•Decal, information	1
4	306450	Screw, 5/16-18 x 3/4"	5	18	547603	Base, lower seat	1
5	306555	Screw, 5/16-18 x 5/8"	2	19	547604	Base, upper seat	1
6	306981	Washer, 3/8"	1	20	547606	Seat	1
7	308090	Washer, 1/4"	1	21	548048	Nut, 5/16-18 lock	11
8	523077	Latch	1	22	800557	Bolt, 5/16-18 x 3/4" carriage	4
9	523078	Pin, latch	1	23	805408	Spring, seat pivot	1
10	523085	Bracket, latch	1	24	816401	Spring, seat latch	1
11	523167	Retainer, spring	3	25	823225	Pin, clevis, .19 x 1"	1
12	523172	Spring, compression	3	26	829148	Mount, isolation	2
13	523356	Adjuster, seat w/handle (left)	1	27	830784	Pin, pivot	1
14	523357	Adjuster, seat (right)	1				

• INDENTED PART NAMES INDICATE THESE PARTS ARE INCLUDED IN PRECEDING ASSEMBLY

SHROUDS AND PANELS

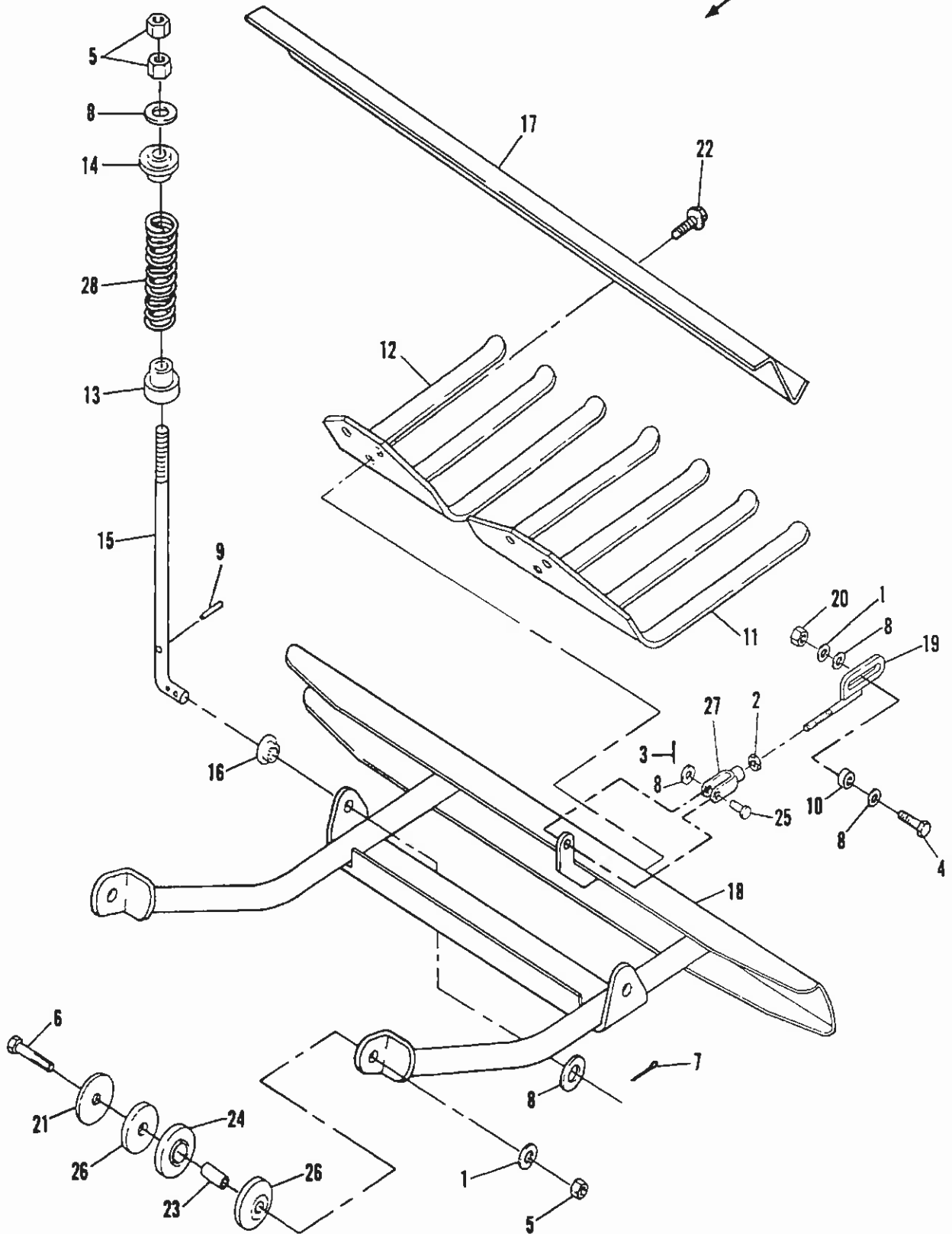


SHROUDS AND PANELS

Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	120177	Lockwasher, 3/8"	2	21	524203	Body panel, RIGHT	1
2	300646	Screw, 1/4-20 x 3/4"	21	22	524208	Cover panel, chain guard	1
3	302288	Screw, 1/4-20 x 1"	4	23	547550	Cover, rear	1
4	306981	Washer, 3/8"	2	24	547627	Panel, dash	1
5	308090	Washer, 1/4"	25	25	547633	Panel, rear	1
6	315340	Screw, 3/8-16 x 3 1/2"	2	26	547645	Cover	1
7	522879	Decal, information	1	27	548902	Screw, 5/16-18 x 1" flangelock ..	16
8	523015	Cover	1	28	800169	Nut, 1/4-20 speed	11
9	523054	Plug, bail	2	29	800390	Rivet, 1/8"	4
10	523101	Decal, RYAN	1	30	800449	Nut, 1/4-20 speed	6
11	523168	Decal, safety	1	31	821893	Molding, 12' (3.6 M)	As Req'd
12	523212	Insulation	1	32	824438	Plug, hole	1
13	523225	Decal, safety-operating	1	33	825922	Plug, hole	1
14	523289	Shield, heat	1	34	831846	Nut, isolation	16
15	523315	Decal, noise level	1	35	888102	Keeper, latch	2
16	523396	Decal, product	2	36	524452	Cover	1
17	524145	Guard, chain	1	37	840076	Anchor, RIGHT cover	1
18	524163	Guard, spacer	2	38	840077	Anchor, LEFT cover	1
19	524201	Body panel, front	1	39	840078	Angle	1
20	524202	Body panel, LEFT	1	40	829726	Trim, 12' (3.6 M)	As Req'd

TURF GUARD

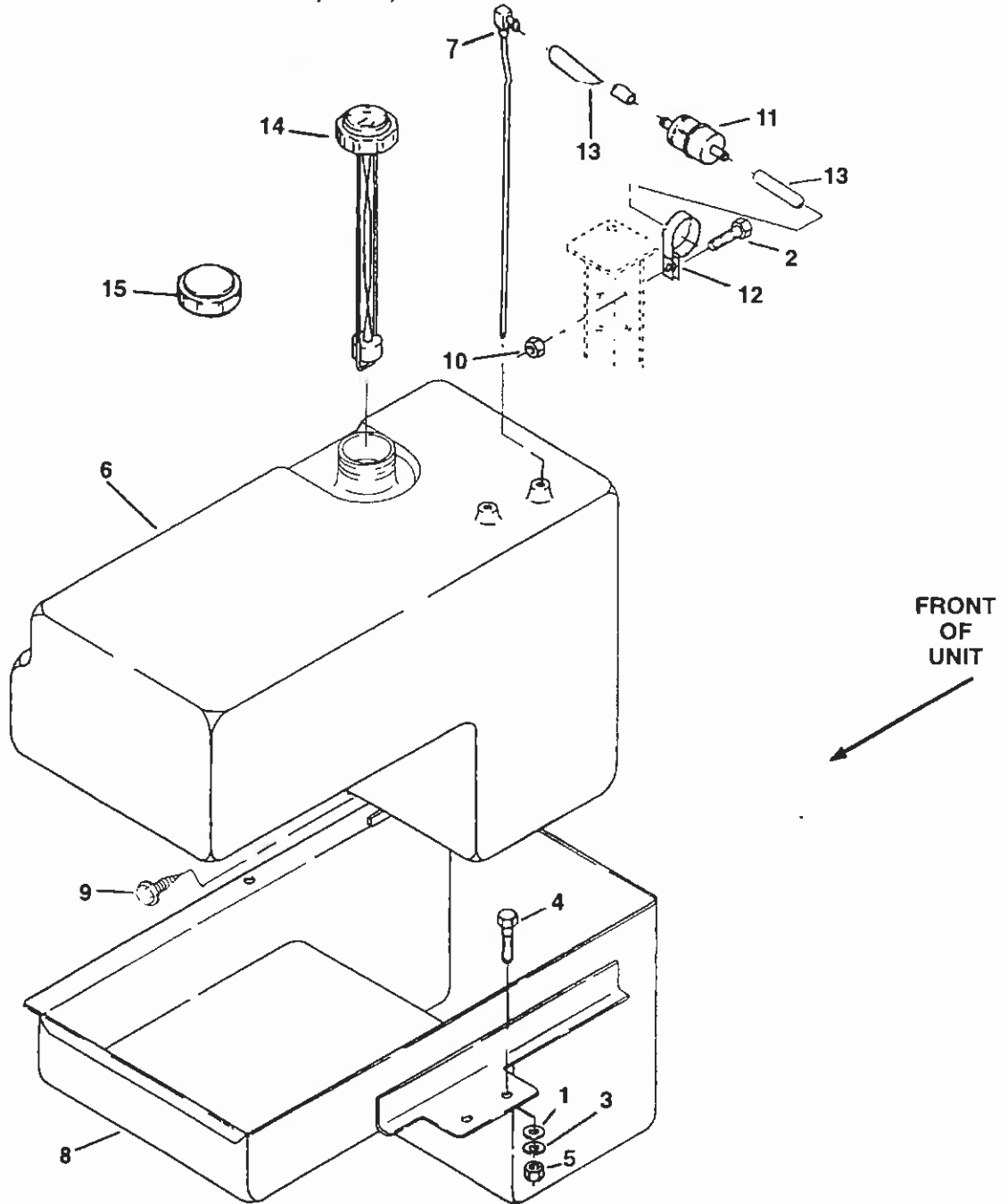
FRONT
OF
UNIT



TURF GUARD

Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	120177	Lockwasher, 3/8"	3	15	524165	Rod, spring	2
2	306319	Nut, 3/8-24	1	16	524215	Bushing	2
3	306328	Pin, 3/32 x 3/4" cotter	1	17	524228	Bracket, clamp	1
4	306414	Screw, 3/8-16 x 1"	1	18	540041	Frame, turf guard	1
5	306562	Nut, 3/8-16	4	19	540108	Link, lift	1
6	306836	Screw, 3/8-16 x 2 1/4"	2	20	548052	Nut, 3/8-16 lock	1
7	306956	Pin, 1/8 x 3/4" cotter	4	21	809174	Washer, 3/8"	2
8	306981	Washer, 3/8"	7	22	800385	Screw, 3/8-16 x 3/4" flangelock ..	4
9	603501	Pin, 1/8 x 3/4" spirol	2	23	808959	Spacer	2
10	521679	Bushing	1	24	809242	Retainer	2
11	523026	Guard, four finger turf	1	25	815636	Pin, 1/2 x 1 3/32" clevis	1
12	523027	Guard, three finger turf	3	26	823765	Mount, rubber	4
13	523100	Bushing	2	27	827498	Yoke	1
14	524161	Keeper, spring	2	28	837120	Spring, turf guard	2

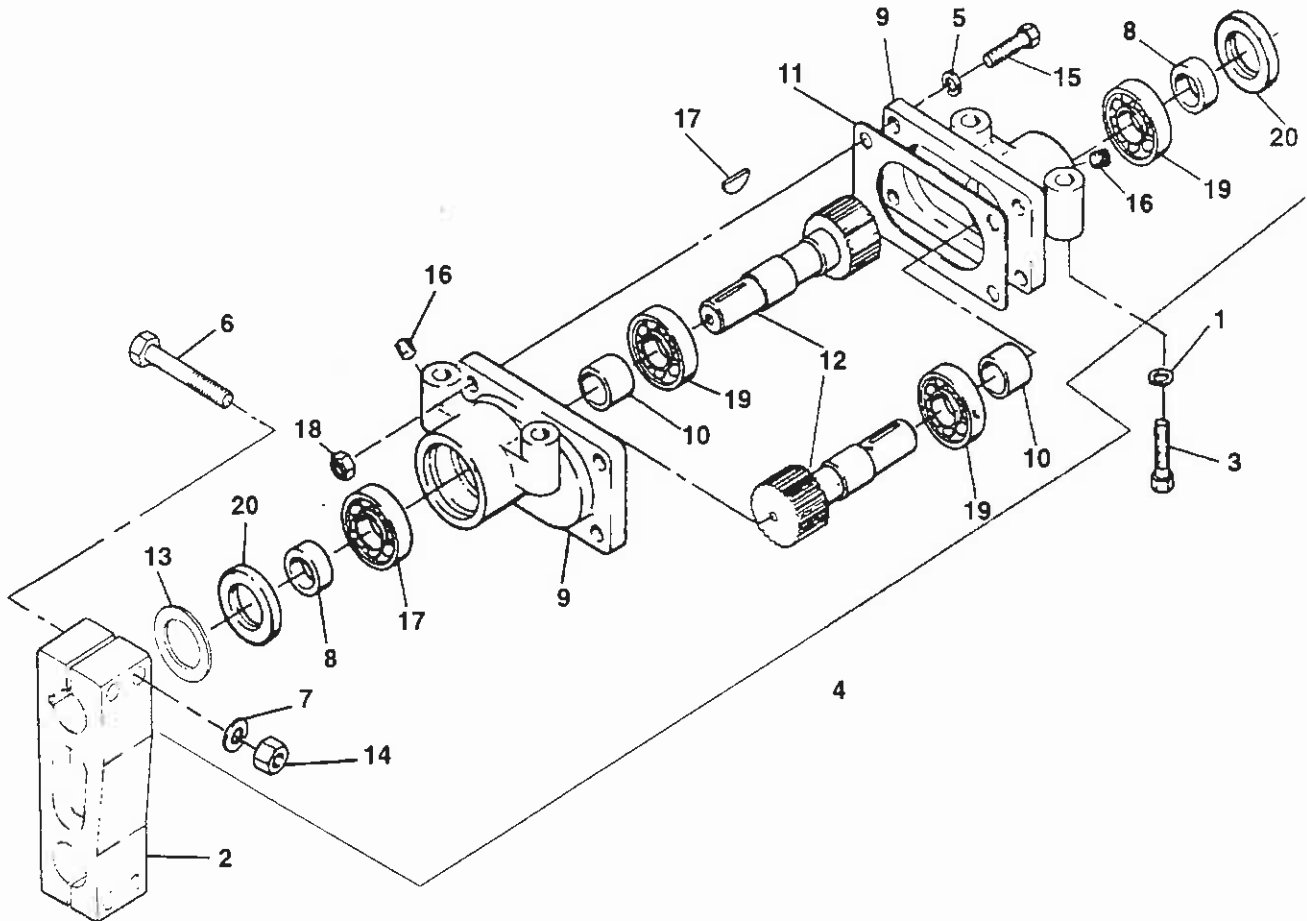
FUEL TANK, PAN, FILTER AND HOSE



Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	103867	Washer, 5/16"	2	8	547617	Pan, fuel tank	1
2	300646	Screw, 1/4-20 x 3/4"	1	9	548013	Screw, 1/4-20 x 1/2"	4
3	306325	Lockwasher, 5/16"	2	10	800706	Nut, 1/4-20 lock	1
4	306416	Screw, 5/16-18 x 1"	2	11	821814	Filter, fuel (1/4" inlet/outlet)	1
5	306932	Nut, 5/16-18	2	12	825884	Clamp, fuel filter	1
*	320107	Tie strap, 7" (178 mm)	4	13	830425	Hose, fuel, 1/4" I.D., 25' (7.6 M) length	As Req'd
6	523098	Tank, fuel	1	14	831306	Cap, fuel w/gauge	1
7	547597	Tube, fuel pickup	1	15	833790	Cap, fuel	1

* Not illustrated.

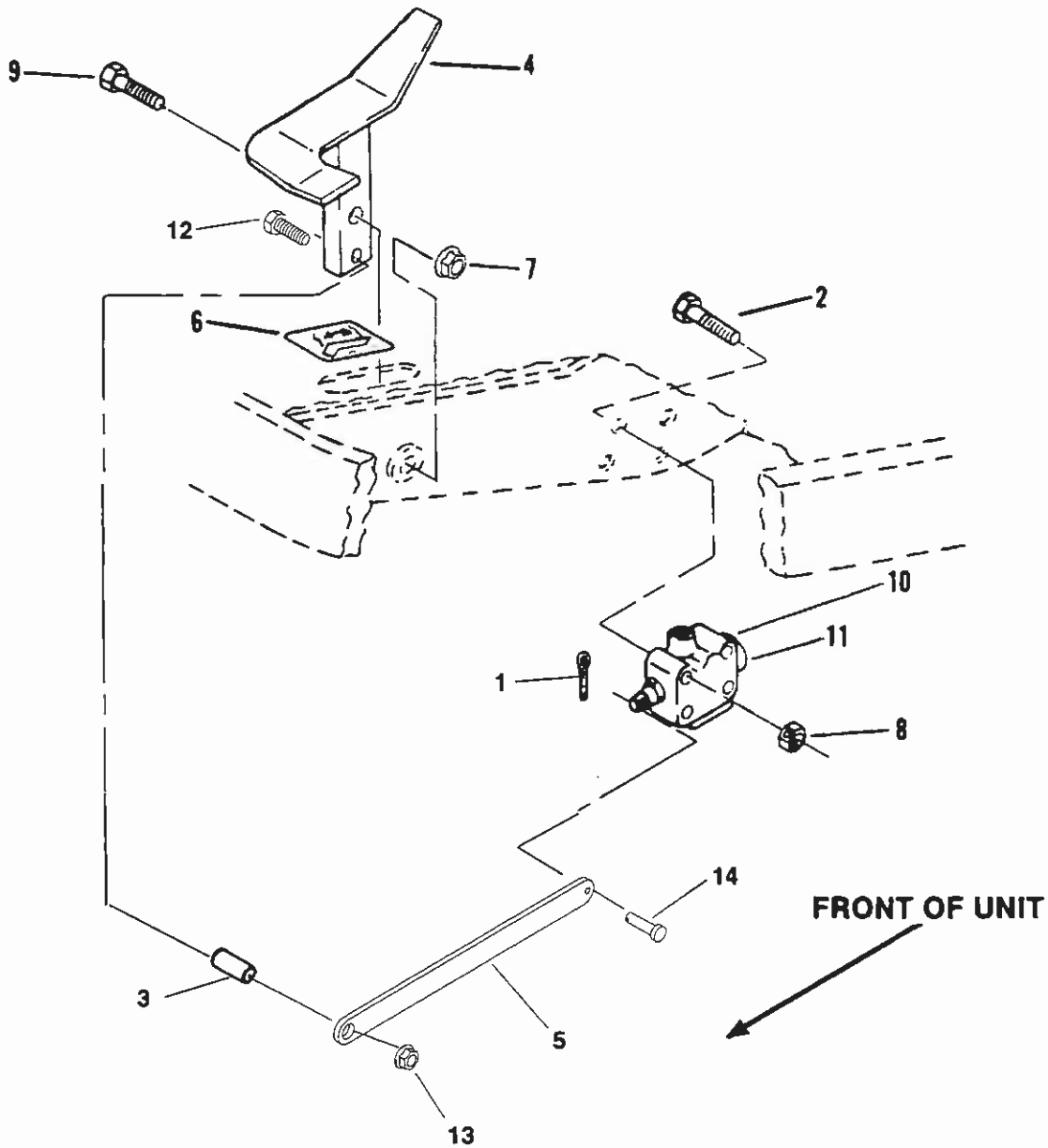
REVERSING GEARBOX AND VERTICAL LINKS



Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	303269	Lockwasher, 7/16"	8	11	522992	•Gasket, reversing gearbox	1
2	522858	Link, vertical	2	12	523104	•Shaft, rocker	2
3	800444	Screw, 7/16-14 x 2 1/2" grade 8	8	13	523240	•Washer, thrust	2
4	547573	Gearbox, reversing	2	14	548048	•Nut, 5/16-18 lock	4
5	120177	•Lockwasher, 3/8"	4	15	548798	•Screw, 3/8-24 x 1 1/4" grade 8	4
6	130167	•Screw, 5/16-18 x 2 1/4"	4	16	800227	•Plug, 1/8-27 NPT	2
7	306325	•Lockwasher, 5/16"	4	17	800519	•Key, 1/4 x 1 1/4"	2
8	522747	•Spacer	2	18	800531	•Nut, 3/8-24	4
9	522807	•Case, reversing gearbox	2	19	815093	•Bearing, ball	4
10	522991	•Spacer	2	20	831024	•Seal, oil	2

• INDENTED PART NAMES INDICATE THESE PARTS ARE INCLUDED IN PRECEDING ASSEMBLY

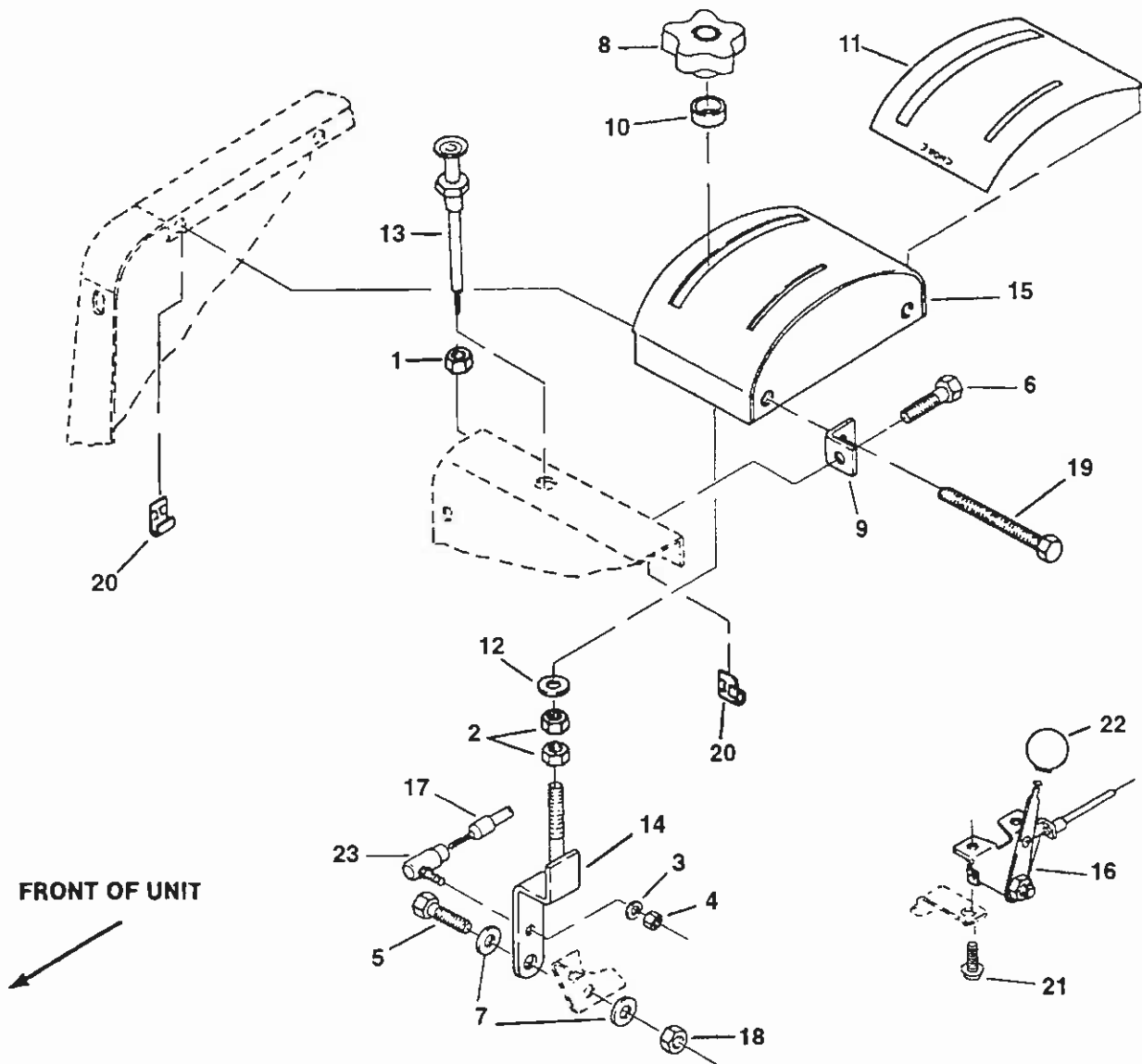
LIFT VALVE, PEDAL AND LINKAGE



Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	306328	Pin, 3/32 x 3/4" cotter	1	8	800706	Nut, 1/4-20 flange crown lock	4
2	316907	Screw, 1/4-20 x 2 3/4"	4	9	311396	Screw, 3/8-16 x 2 1/4"	1
3	819337	Bushing	1	10	884892	Hydraulic valve, complete	1
4	523654	Pedal, lift	1	11	884599	*Kit, seal	As Req'd
5	524612	Link, lift valve	1	12	306416	Screw, 5/16-18 x 1	1
6	523970	Decal, lift	1	13	800697	Nut, 5/16-18, flangelock	1
7	548912	Nut, 3/8-16 flangelock	1	14	823225	Pin	1

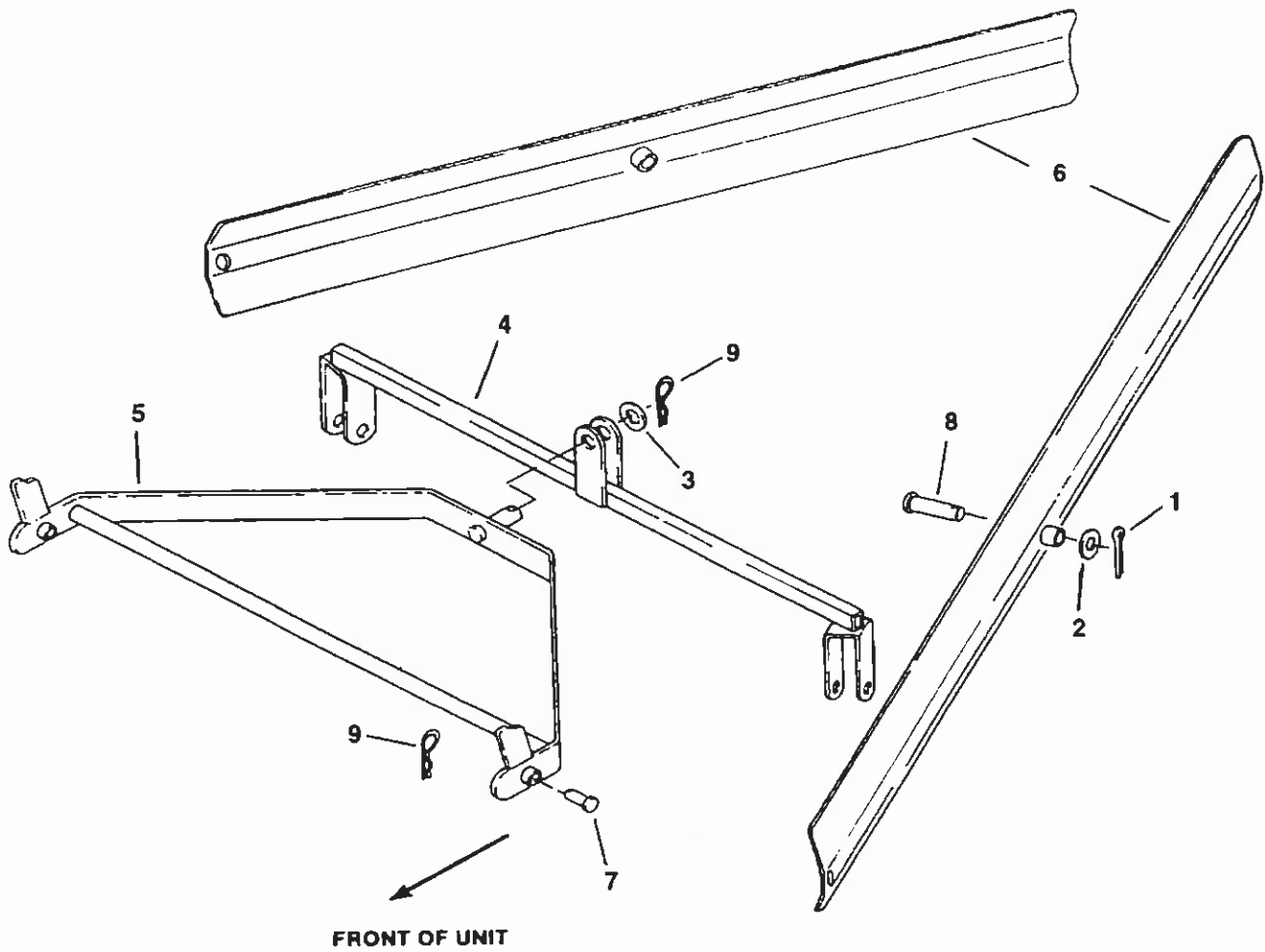
• INDENTED PART NAMES INDICATE THESE PARTS ARE INCLUDED IN PRECEDING ASSEMBLY

TINE SPACING LINKAGE, THROTTLE AND CHOKE CONTROLS



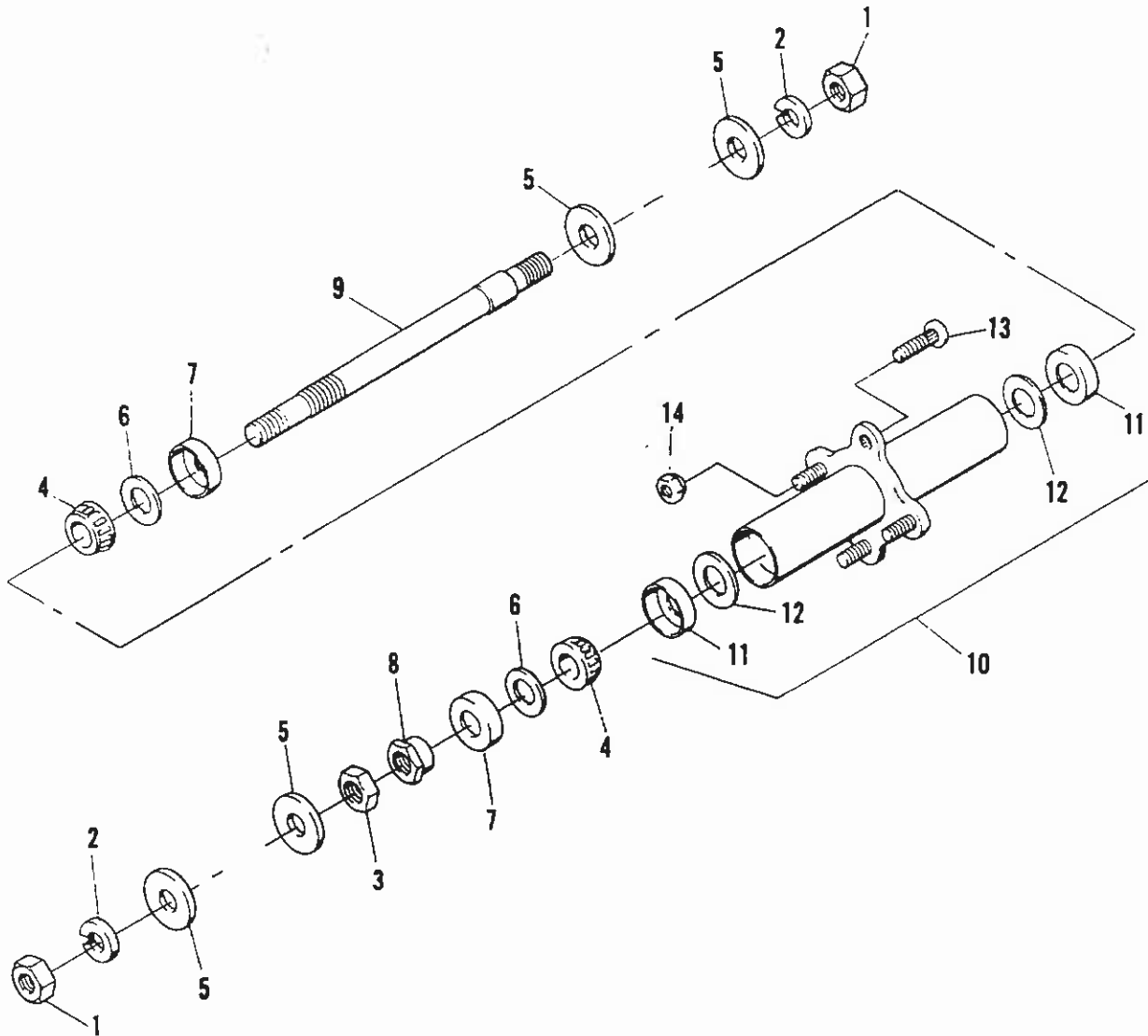
Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	306319	Nut, 3/8-24	1	13	830815	Cable, choke	1
2	306388	Nut, 3/8-24, jam	2	14	523736	Lever, control	1
3	306396	Lockwasher, 1/4"	1	15	547574	Panel, control	1
4	306397	Nut, 1/4-28	1	16	547610	Cable, throttle	1
5	306414	Screw, 3/8-16 x 1"	1	17	547881	Cable, shifter	1
6	306555	Screw, 5/16-18 x 5/8"	1	18	548052	Nut, 3/8-16 lock	1
7	306981	Washer, 3/8"	2	19	800524	Screw, 5/16-18 x 5"	2
8	523052	Knob, control	1	20	800536	Nut, 5/16-18 speed	3
9	523088	Bracket, mounting	1	21	800896	Screw, #10-24 x 3/4, tapping	2
10	523176	Bushing	1	22	827821	Knob, throttle lever	1
11	523179	Decal, control panel	1	23	831518	Balljoint	1
12	523183	Washer, 3/8" nylon	1				

WINDROW ATTACHMENT



Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	304636	Pin, 1/8 x 1 1/8" cotter	2	6	547579	Blade, windrow	2
2	308091	Washer, 1/2"	2	7	548458	Pin, 5/8 x 1 1/4" clevis	2
3	309488	Washer, 3/4"	1	8	548462	Pin, 5/8 x 2 3/4" clevis	2
4	547577	Crossmember	1	9	809265	Hairpin, 25/32 x 2.69"	3
5	547578	Arm	1				

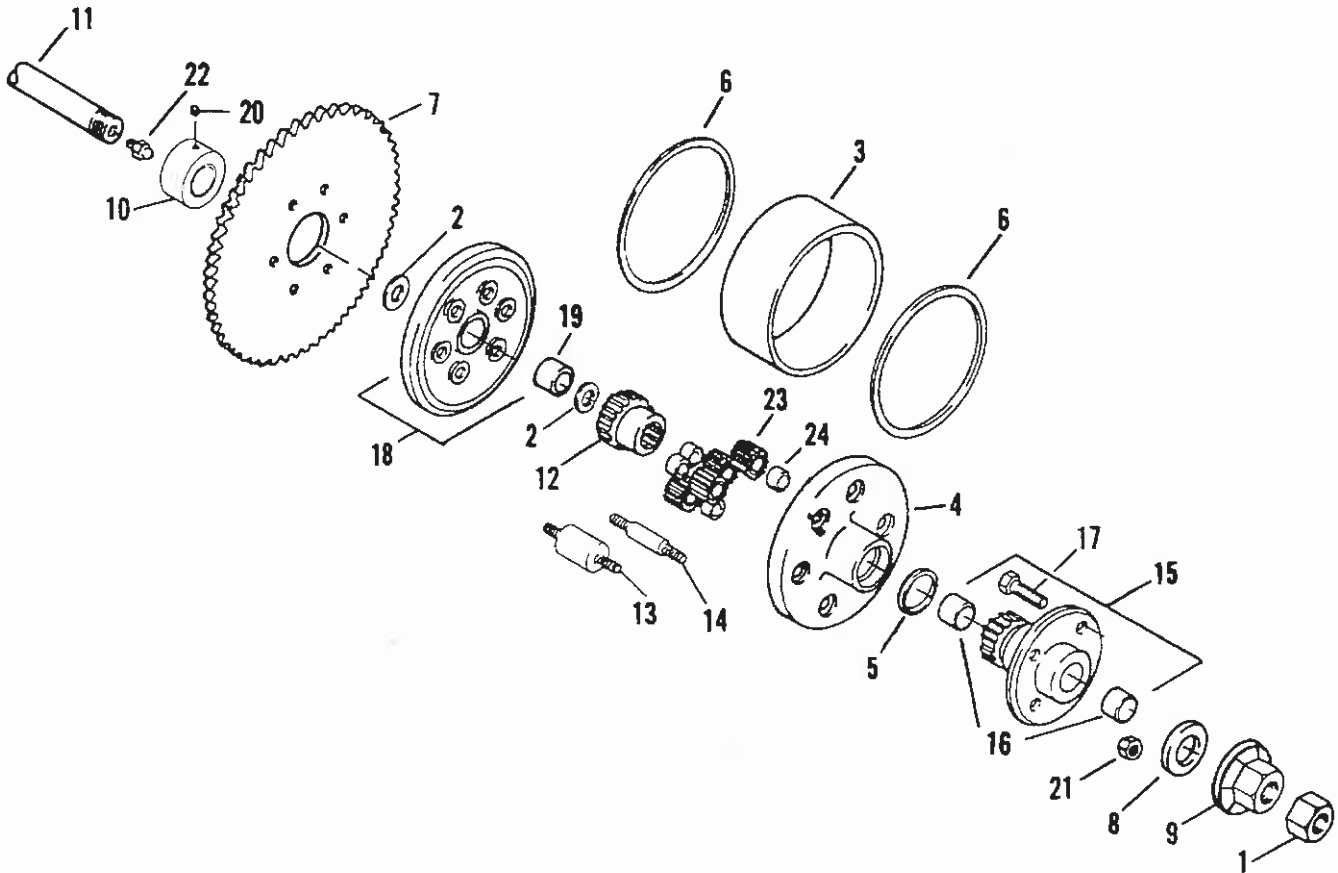
FRONT HUB AND AXLE



Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
	889845	Hub and Axle complete	1	8	836719	•Nut, bearing adjustment	1
1	304104	•Nut, axle, 5/8-18	2	9	889843	•Axle	1
2	306494	•Lockwasher, 5/8"	2	10	889844	•Hub, front	1
3	307665	•Nut, jam, 3/4-16	1	11	808088	••Cup, bearing	2
4	385174	•Bearing, cone & roller	2	12	809268	••Ring	2
5	809156	•Washer, thrust	4	13	816320	••Screw	4
6	809229	•Slinger, grease	2	14	805860	Nut, wheel mounting, 7/16-20	4
7	836621	•Seal	2				

• INDENTED PART NAMES INDICATE THESE PARTS ARE INCLUDED IN PRECEDING ASSEMBLY

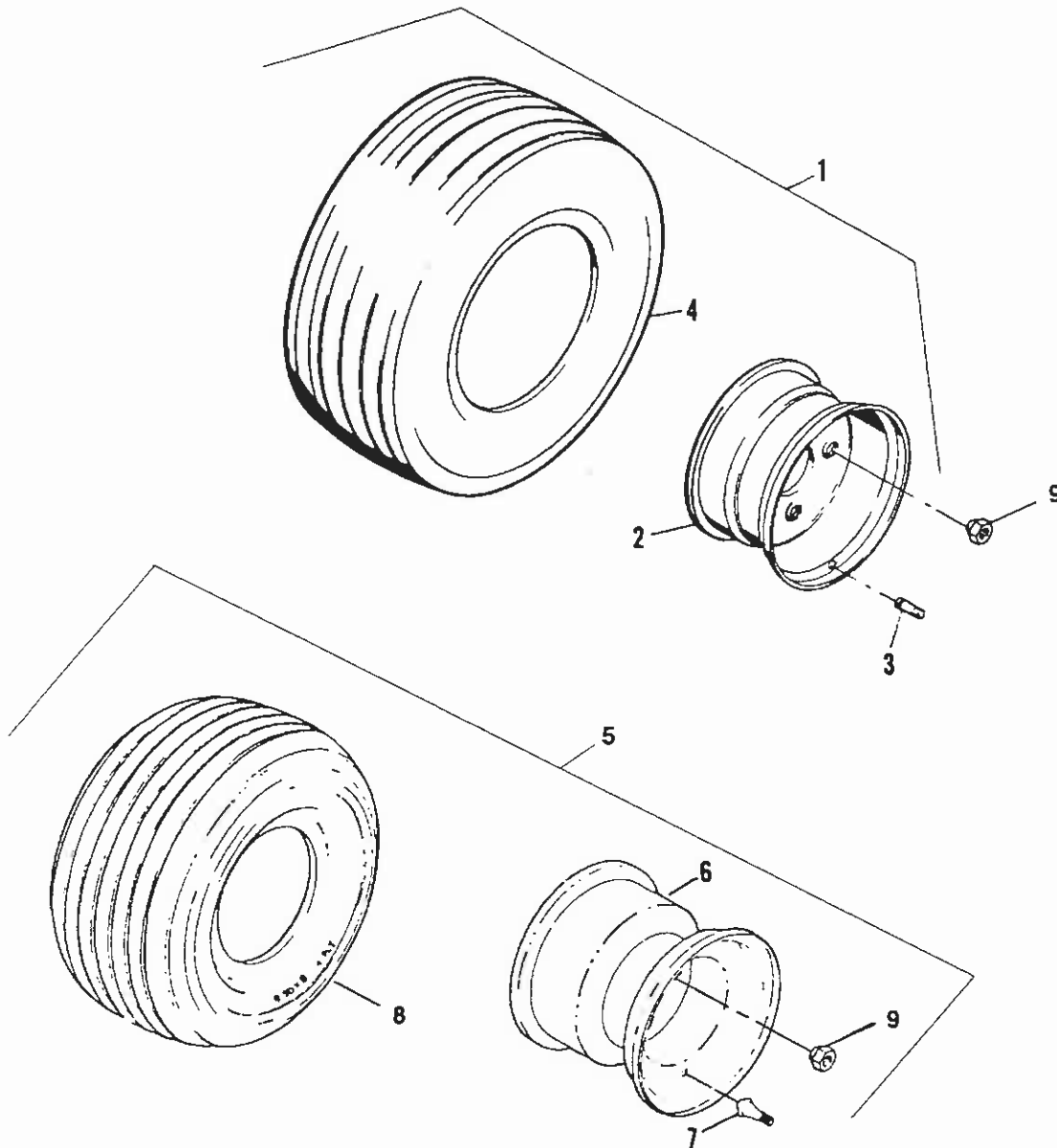
DIFFERENTIAL



Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
	540045	Differential, complete	1	13	524151	•Spacer, differential	2
1	310854	•Nut, 1-14	1	14	524153	•Spacer, differential	4
2	520231	•Washer, thrust	2	15	540040	•Gear, hub	1
3	522576	•Tube, housing	1	16	520528	••Bushing	2
4	522581	•Housing, end	1	17	816320	••Screw, wheel mounting	4
5	522583	•O-ring, seal	1	18	540046	•Housing	1
6	522649	•O-ring	2	19	520528	••Bushing	1
7	522856	•Sprocket, 38 tooth	1	20	548205	•Screw, 1/4-20 x 1/4" set	1
8	523304	•Washer, thrust	1	21	800351	•Nut, 3/8-16 crownlock	12
9	524147	•Nut, seal	1	22	807439	•Fitting, lubrication	1
10	524148	•Spacer, axle	1	23	814482	•Gear, differential planetary	4
11	524149	•Shaft, axle	1	24	814483	•Spacer, gear	4
12	524150	•Gear, axle	1				

• INDENTED PART NAMES INDICATE THESE PARTS ARE INCLUDED IN PRECEDING ASSEMBLY

TIRE AND WHEEL SETS



Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	547783	Tire and wheel set, REAR	1	6	815474	•Wheel, 8.00 x 7.00, four bolt holes	2
2	547882	•Wheel	1	7	886735	•Stem, valve	2
3	886735	•Stem, valve	1	8	◇	•Tire, 18 x 9.50 - 8, 4 ply rating, rib tread	2
4	523897	•Tire, 18 x 10.50 - 8	1	9	805860	Nut, wheel mounting	8
5	889878	Tire and wheel set, FRONT	1				

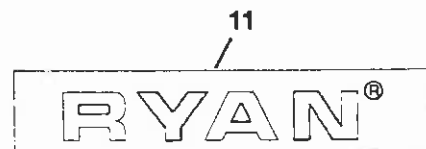
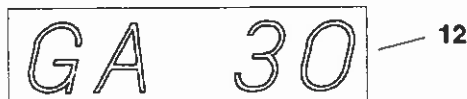
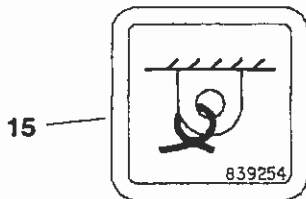
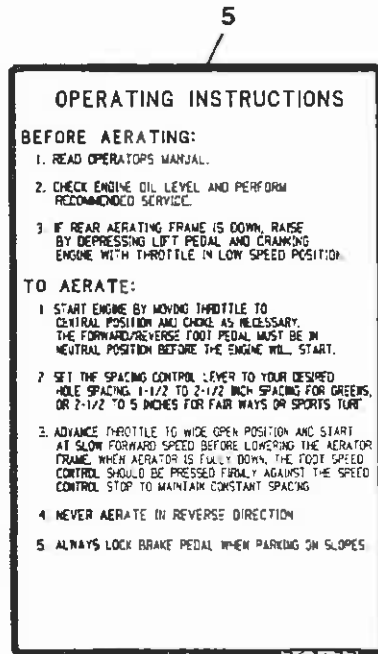
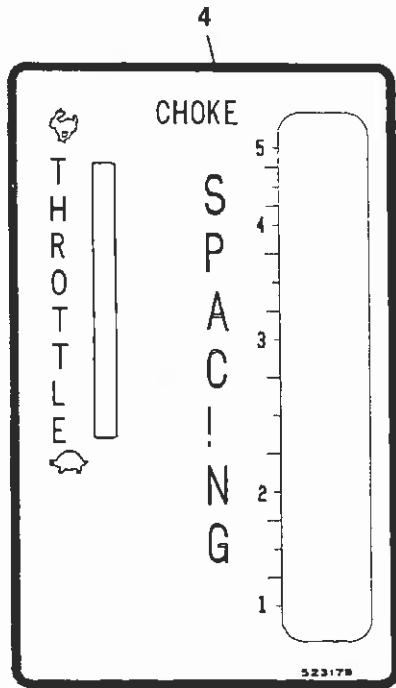
• INDENTED PART NAMES INDICATE THESE PARTS ARE INCLUDED IN PRECEDING ASSEMBLY
 ◇ Obtain locally

DECALS

2 **RYAN**

RYAN  **GA 30**

8



Free Wheeling Or Towing Unit:
To Prevent Damage To Pump
1. Engine Must Be OFF
2. Turn Lever On Pump 180°
Clockwise.
3. Tow SLOWLY Below 2 mph.
4. Before Starting Engine, Turn
Pump Lever Counter-Clockwise
To FULLY CLOSED Position

9



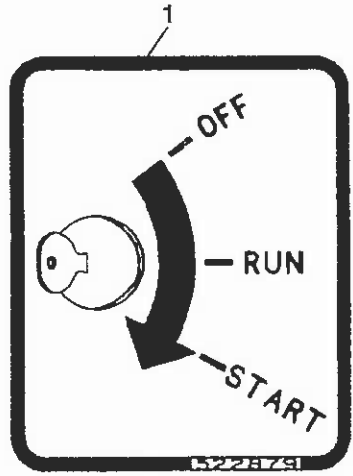
7

SAFETY WARNING
Never Operate Across STEEP SLOPES. Hitting
A BURIED OBJECT On A STEEP SLOPE Could
Turn Machine Over And Injure The Operator.
Extreme Care Should Be Taken When LOADING
Into Or Out Of Trucks Or Trailers. Never
Operate Machine Without All GUARDS in
Proper Place. Keep hands And Feet
From Under Machine. Use Brakes In
FREEWHEEL Mode On Slopes. Ramps To
Prevent Injury

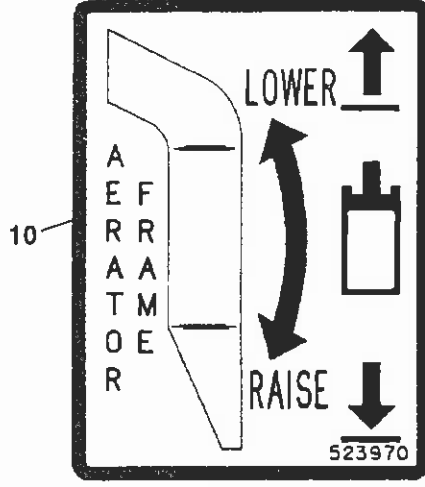
6

SAFETY WARNING
KEEP HANDS & FEET FROM UNDER MACHINE

3



1

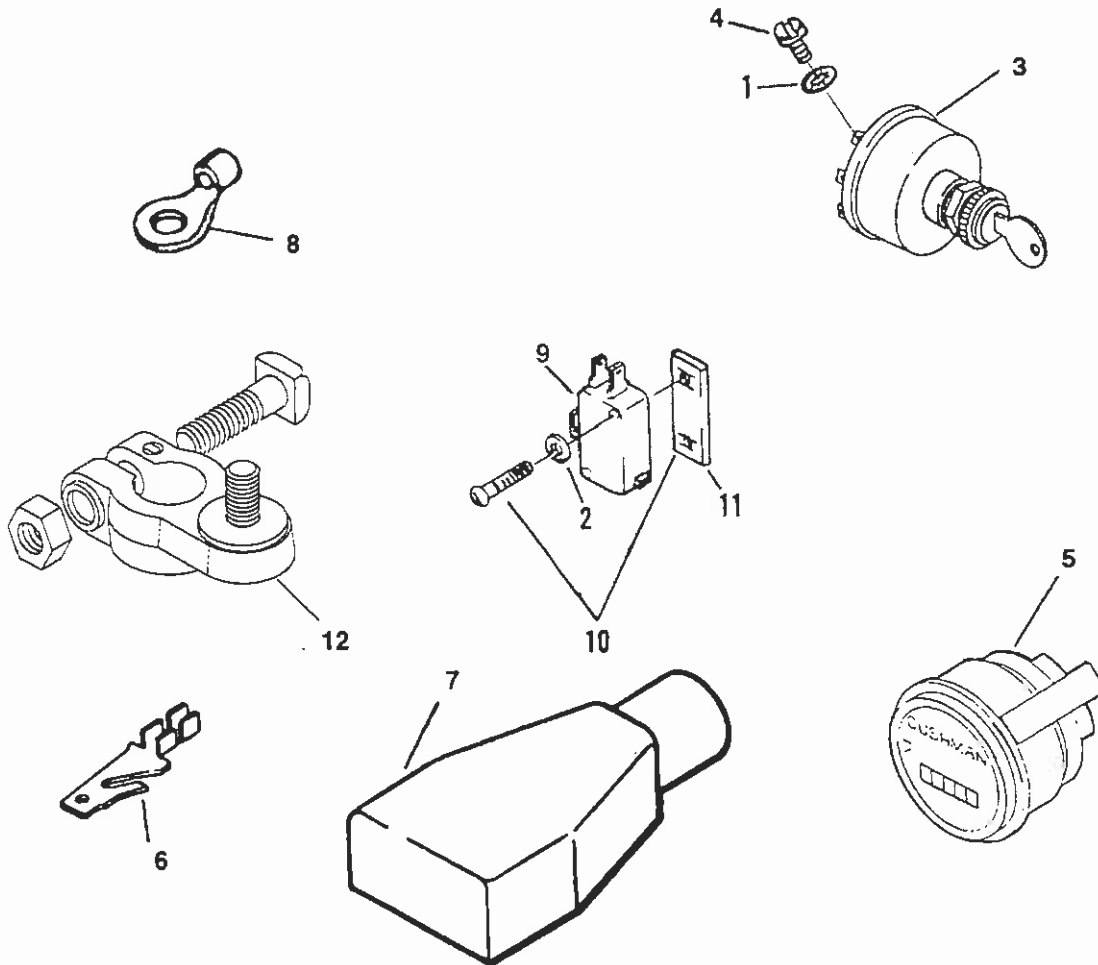


10

DECALS

Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	522879	Decal, information, On/Off switch	1	9	523476	Decal, towing instruction	1
2	523101	Decal, RYAN	1	10	523970	Decal, information, hydraulic lift	1
3	523168	Decal, warning, hands & feet	1	11	524281	Decal, RYAN	3
4	523179	Decal, control panel	1	12	524392	Decal, GA - 30	3
5	523199	Decal, information, operating instructions	1	13	835892	Decal, danger, hands & feet	1
6	523225	Decal, warning, operating	1	14	838495	Decal, stripe, 3.8 x 20' (6.1M)	As Req'd.
7	523315	Decal, noise level	1	15	839254	Decal, tie down	5
8	523396	Decal, RYAN - GA 30	2				

ELECTRICAL COMPONENTS



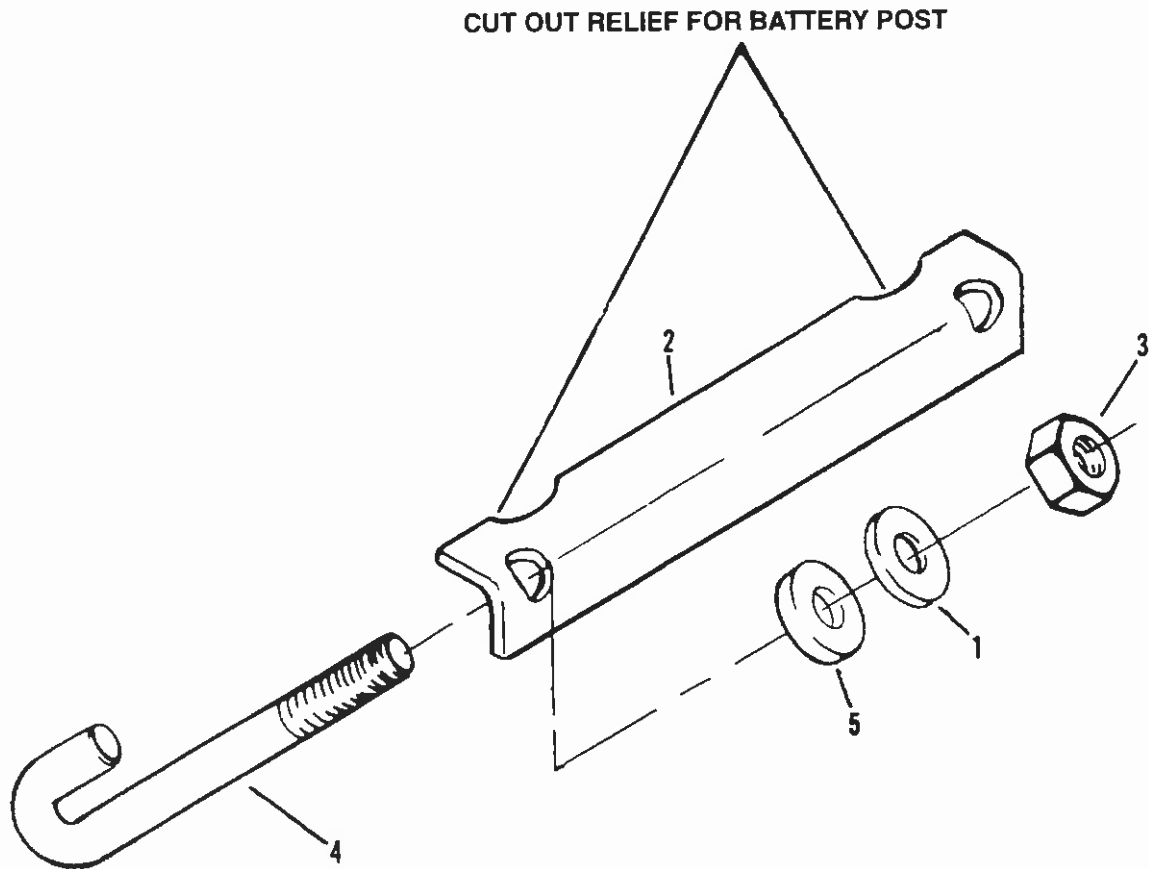
Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	304642	Lockwasher, #8	5	7	837462	Cover, terminal	1
2	306990	Lockwasher, #6	4	8	828343	Terminal, 1/4" eyelet	1
3	393301	Switch, ignition	1	9	830139	Switch, start safety	2
4	323772	•Screw, #8-32 x 1/4"	5	10	888503	Service set, screw	1
5	886802	Meter, hour	1	11	800421	•Nut, speed	2
*	547691	Harness, wire	1	◇	•Screw, #4-40 x 3/4" (rd. hd.)	2	
*	888076	Cable, battery, 46" (1168 mm)	1	◇	•Screw, #4-40 x 7/8" (rd. hd.)	2	
*	882954	Cable, battery, 18" (457 mm)	1	◇	•Screw, #4-40 x 1 3/4" (rd. hd.)	2	
6	825886	Terminal, male	As Req'd	12	893395	Terminal, battery	1

• INDENTED PART NAMES INDICATE THESE PARTS ARE INCLUDED IN PRECEDING ASSEMBLY

* Not illustrated

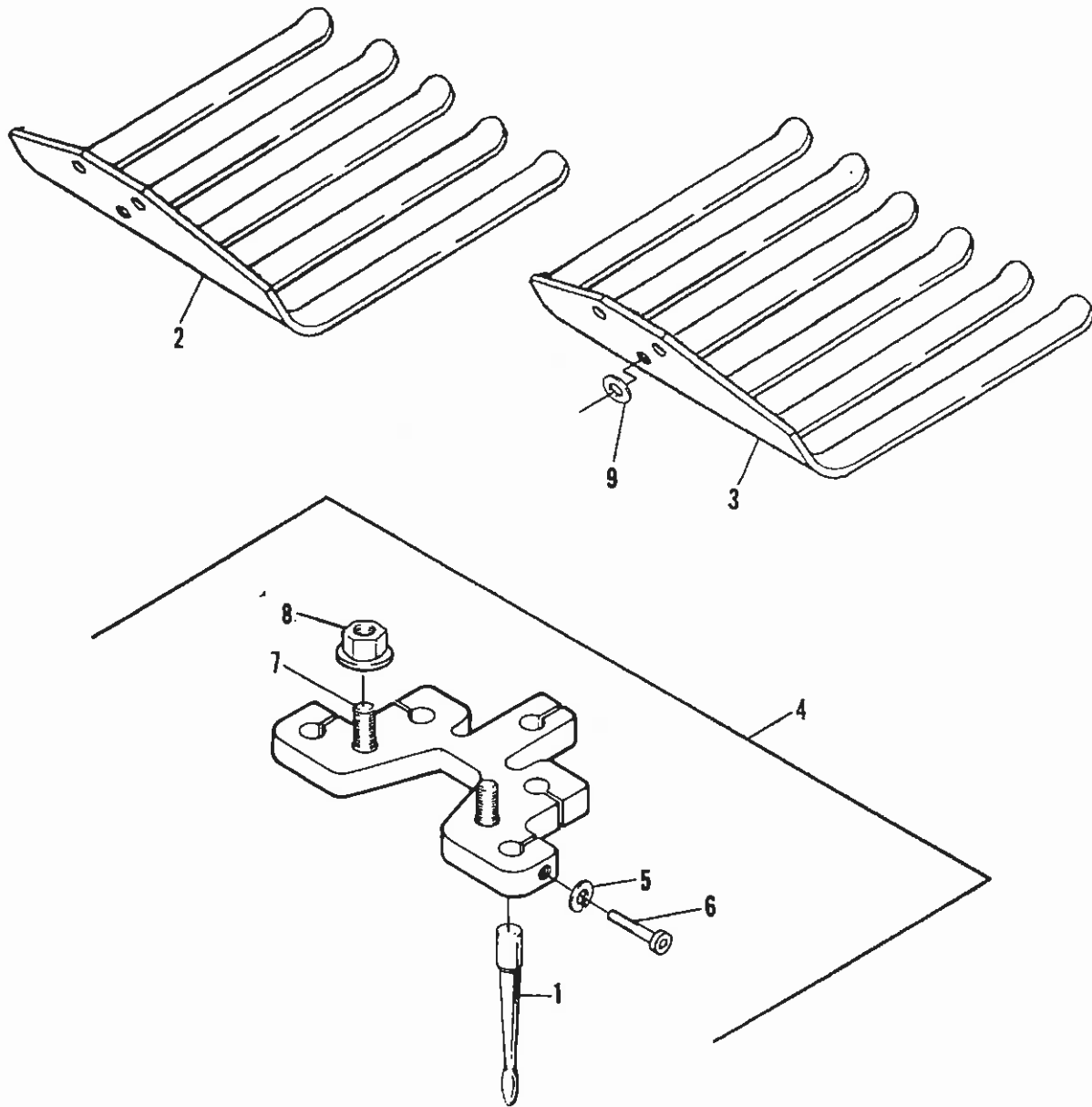
◇ Not offered separately

BATTERY HOLDDOWN



Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	103867	Washer, 5/16"	2	4	806953	J-bolt, battery	2
2	815847	Angle, holddown	1	5	818303	Spacer, rubber	2
3	548048	Nut, 5/16-18 lock	2				

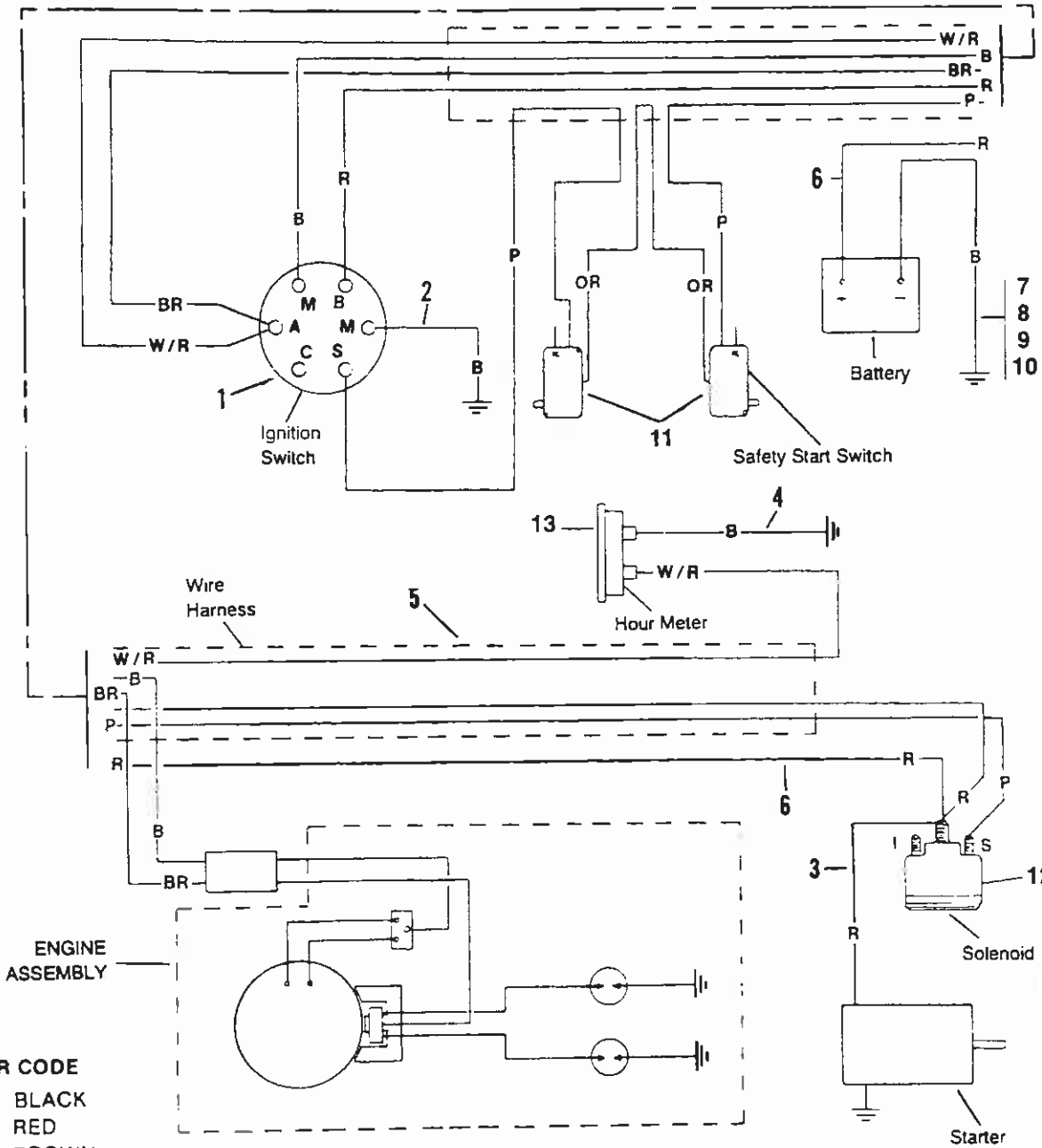
QUINT TINE ACCESSORY



Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
	540115	Quint Tine Accessory	1	5	306325	•Lockwasher, 5/16"	5
1	523863	Tine, 1/4" solid	20	6	306416	•Screw, 5/16-18 x 1"	5
2	524192	Turf guard, 5 finger	3	7	523474	•Screw, serrated	2
3	524193	Turf guard, 6 finger	1	8	800559	••Nut, 1/2-20, crownlock flange	2
4	547848	Tine holder	4	9	809183	•Washer, 1/4"	4

• INDENTED PART NAMES INDICATE THESE PARTS ARE INCLUDED IN PRECEDING ASSEMBLY

WIRING DIAGRAM



Ref. No.	Part No.	Description	No. Req'd.	Ref. No.	Part No.	Description	No. Req'd.
1	393301	Switch, ignition w/keys	1	8	306932	Nut, 5/16-18	1
2	547589	Wire, switch to ground	1	9	893395	Terminal, battery	1
3	547591	Wire, solenoid to starter	1	10	882954	Wire, assembly	1
4	547598	Wire, hour meter to ground	1	11	830139	Switch, safety start	1
5	547691	Harness, wire	1	12	879945	Solenoid, ignition	1
6	547695	Cable, battery	1	13	886802	Meter, hour	1
7	306325	Lockwasher, 5/16	1				

TORQUE SPECIFICATIONS HEX HEAD CAP SCREWS

The torque values shown should be used as a general guideline when specific torque values are not given.

U.S. Standard Hardware

Grade	Shank Size (Diameter in inches, fine or coarse thread)													
		1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4	7/8	1	1 1/8		
SAE grade 5 *	ft.-lbs.	9	18	31	50	75	110	150	250	378	583	782		
	N·m	12	24	42	68	102	150	203	339	513	790	1060		
SAE grade 8 **	ft.-lbs.	13	28	46	75	115	165	225	370	591	893	1410		
	N·m	18	38	62	108	156	224	305	502	801	1211	1912		
Flangelock Screw w/ Flangelock Nut	ft.-lbs.		24	40										
	N·m		33	54										

* Grade 5 marking –  Minimum commercial quality (Lower quality not recommended).

** Grade 8 marking – 

Metric Standard Hardware

Grade	Shank Size (Diameter in millimeters, fine or coarse thread)														
		M4	M5	M6	M7	M8	M10	M12	M14	M16	M18	M20	M22	M24	M27
Grade 8.8*	ft.-lbs.	1.5	3	5.2	8.2	13.5	24	43.5	70.5	108	142	195	276	353	530
	N·m	2	4	7	11	18	32	58	94	144	190	260	368	470	707
Grade 10.9**	ft.-lbs.	2.2	4.5	7.5	12	18.8	35.2	62.2	100	147	202	275	390	498	747
	N·m	3	6	10	16	25	47	83	133	196	269	366	520	664	996
Grade 12.9***	ft.-lbs.	2.7	5.2	8.2	15	21.8	43.5	75	119	176	242	330	471	596	904
	N·m	3.6	7	11	20	29	58	100	159	235	323	440	628	794	1205

* Grade 8.8 marking – 

** Grade 10.9 marking – 

*** Grade 12.9 marking – 

RYAN® LIMITED WARRANTY

CUSHMAN INC., a Ransomes Company, warrants for one (1) year all new Ryan turf care products, 8910 and later. All previous models (8910 and prior) with the exception of LA 28, GA 24 and GA 30, have a 90 day warranty. The Ryan LA 28, GA 30 and GA 24 models (8810 and prior) have a (1) year warranty. All new Ryan products are warranted according to the following terms:

This warranty extends to the original retail purchaser only and commences on the date of original retail purchase. Accordingly this warranty is not transferable to any subsequent purchasers. Any part of the Ryan Product or accessory manufactured by Cushman Inc. and found in the reasonable judgement of Cushman Inc. to be defective in material or workmanship will be repaired or replaced by an authorized Ryan distributor without charge for parts and labor.

The Ryan product including any defective part must be returned to an authorized Ryan distributor within the warranty period. The expense of returning the Ryan product to an authorized distributor for warranty service and the expense of returning it back to the owner after repair or replacement will be paid for by the owner. Cushman Inc.'s responsibility in respect to claims is limited to making the required repairs or replacements, and no claim of breach of warranty shall be cause for cancellation or rescission of the contract of sale of any Ryan product. Proof of purchase will be required by the authorized Ryan distributor to substantiate any warranty claim. All warranty work must be performed by an authorized Ryan distributor.

Cushman Inc. makes no warranty with respect to engines, tires, or other parts not of their manufacture as such parts are usually warranted separately by their respective manufacturers.

This warranty does not include service items subject to normal wear, such as blades, tines, filters, spark plugs, ignition points, brake and clutch linings, or belts. This warranty does not cover any Ryan product that has been subject to misuse, neglect, negligence, or accident, or that has been operated or maintained in any way contrary to the operating or maintenance instructions as specified in the Ryan Operator's Manual. The warranty does not apply to any Ryan product that has been altered or modified so as to adversely affect the vehicle's operation, performance or durability or that has been altered or modified so as to change its intended use. In addition, the warranty does not extend to repairs made necessary by normal wear, or by the use of parts or accessories which in the reasonable judgement of Cushman Inc. are either incompatible with the Ryan product or adversely affect its operation, performance or durability.

Cushman Inc. reserves the right to change or improve the design of any Ryan product without assuming any obligation to modify any vehicle previously manufactured.

ALL IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE APPLICABLE ONE YEAR PERIOD. ALL IMPLIED WARRANTIES, INCLUDING MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE ARE DISCLAIMED IN THEIR ENTIRETY AFTER THE EXPIRATION OF THE ONE YEAR WARRANTY PERIOD.

CUSHMAN INC.'S OBLIGATION UNDER THIS WARRANTY IS STRICTLY AND EXCLUSIVELY LIMITED TO THE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS, AND CUSHMAN INC. DOES NOT ASSUME OR AUTHORIZE ANYONE TO ASSUME FOR THEM ANY OTHER OBLIGATION.

CUSHMAN INC. ASSUMES NO RESPONSIBILITY FOR INCIDENTAL, CONSEQUENTIAL OR OTHER DAMAGES INCLUDING, BUT NOT LIMITED TO, EXPENSE FOR GASOLINE, EXPENSE OF RETURNING THE RYAN PRODUCT TO AN AUTHORIZED DISTRIBUTOR AND EXPENSE OF RETURNING IT BACK TO THE OWNER. MECHANIC'S TRAVEL TIME, TELEPHONE OR TELEGRAM CHARGES, TRAILERING OR TOWING CHARGES, RENTAL OF A LIKE PRODUCT DURING THE TIME WARRANTY SERVICE IS BEING PERFORMED, TRAVEL, LODGING, LOSS OR DAMAGE TO PERSONAL PROPERTY, LOSS OF REVENUE, LOSS OF USE OF THE RYAN PRODUCT, LOSS OF TIME OR INCONVENIENCE.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

This warranty applies to all Ryan products sold in the United States. Any products sold elsewhere are warranted by the affiliated marketing company of Cushman Inc.

CUSHMAN INC. • A RANSOMES COMPANY
P.O. BOX 82409
Lincoln, Nebraska 68501-2409

9-22-91

WARRANTY SERVICE

To make a claim under warranty, contact the distributor immediately upon realizing a problem exists. We recommend having the warranty work performed by the distributor who originally sold you the product; however, warranty work can be sought from any authorized Ryan distributor. Remember, your Ryan product must be delivered to an authorized Ryan distributor within the warranty period, and all warranty work must be performed only by an authorized Ryan distributor. Proof of purchase will be required by the distributor to substantiate any warranty claim.

EXAMPLES OF ITEMS NOT COVERED UNDER WARRANTY

Provisions of the warranty will not apply to:

Normal service work over and above the repair and replacement of defective parts.

Products subject to misuse, neglect, negligence, or accident.

Products that have been altered or modified so as to adversely affect their operation, performance or durability or to change their intended use.

Repairs made necessary by the use of parts or accessories which are either incompatible with the vehicle or adversely affects the operation, performance or durability.

Products not operated or maintained in accordance with the instructions in the Ryan Operator's Manual.

Normal cleaning, adjusting or replacing of such items as filter, spark plugs, ignition points.

Periodic checking or adding of lubricants to the products or service check-up, tune-up or diagnosis.

Expense of delivering the product to the dealer and expense of returning the product back to the owner, mechanic's travel time, trailering or towing charges, or rental of a like product during the time warranty repairs are being performed.

Engines, tires, or parts manufactured by other than Ryan are not covered under this warranty as such parts are usually warranted by their respective manufacturers.

This warranty applies only to the original retail purchaser. Second-owner or subsequently owned products are not covered under warranty.

OWNER'S OBLIGATION AND RESPONSIBILITY

Normal maintenance service and replacement of service items are the responsibility of the owner and as such are not considered defects in material or workmanship within the terms of the warranty. Individual operating habits and usage contribute to the need for maintenance service.

See your Ryan distributor for proper maintenance and care of your product. Proper maintenance and care will assist in keeping your overall operating cost at a minimum.

To validate a warranty claim, it is the owner's responsibility to maintain all components in proper adjustment and service the product as specified in the Ryan Operator's Manual. It is the owner's responsibility to provide proper lubrication for all components and provide correct recommended fuel for the products. It is the owner's responsibility to maintain the correct tire pressures where applicable.

Customer Response Card



Customer Information

Name _____

Address _____

City _____

State _____ Zip Code _____

Contact Name _____

Phone () _____

Type of Business _____

Product Information

Model Number _____

Serial Number _____

Date Of Purchase _____

(FOLD)

Dealer Information (Optional)

Dealer Name _____

City _____ State _____

2. Please rate your dealer's explanation of how the unit operates. *(Circle One)*

Poor Fair Good Excellent

1. Please rate your dealer's explanation of our warranty policy. *(Circle One)*

Poor Fair Good Excellent

3. Please rate your dealer's service during this sale. *(Circle One)*

Poor Fair Good Excellent

Comments _____

(cut on line, fold at center and tape)

Thank you for purchasing a Ransomes America Corporation product. Please take a moment to fill out and mail the customer response card.

The customer response card will provide valuable information about our dealer's service to you. The card also makes it possible to keep you informed of any important safety, warranty and update information for the product you have purchased. If you would like to write to Ransomes America Corporation please include unit model and serial number, your name, address, state, zip code and send to:

Ransomes America Corporation
Attn: Warranty Department
P.O. Box 82409
Lincoln, Nebraska 68501-2409



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 20 LINCOLN NE

POSTAGE WILL BE PAID BY ADDRESSEE

RANSOMES AMERICA CORPORATION
WARRANTY DEPARTMENT
P O BOX 82409
LINCOLN NE 68501-9971





WARNING

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



**RANSOMES
CUSHMAN
RYAN**

Driven to be the best.

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